

**ASSEMBLING AND OPERATING  
INSTRUCTIONS**

**MODEL 77**



**NEW HOLLAND  
AUTOMATIC PICK-UP BALER**



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## ABOUT IMPROVEMENTS

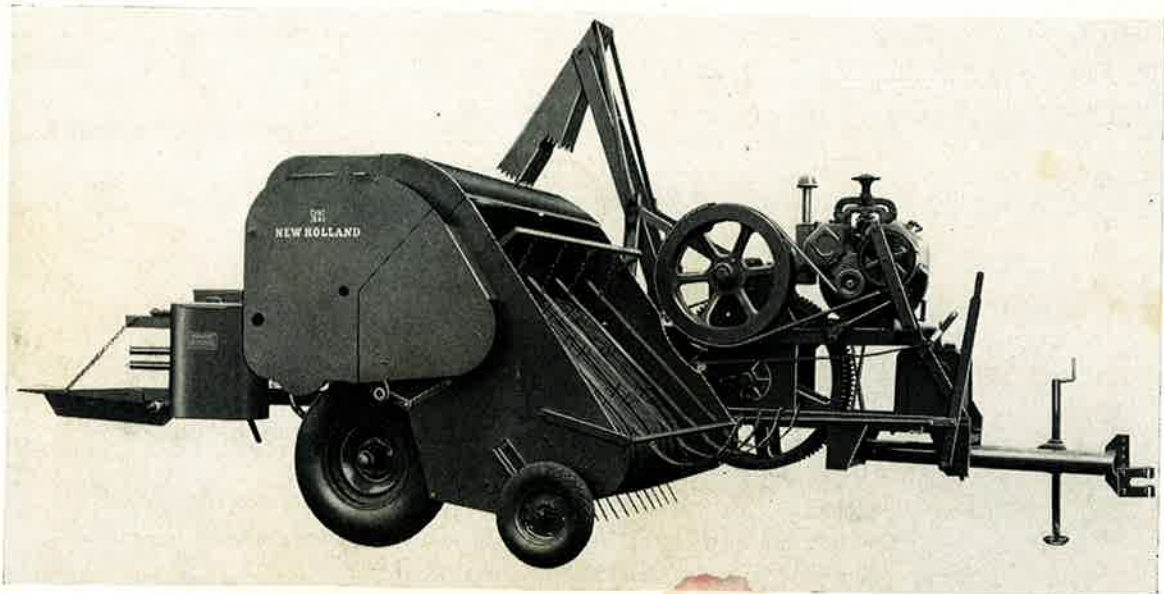
The New Holland Machine Company is continually striving to improve its products.

We must, therefore, reserve the right to make improvements or changes when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to equipment sold previously.

# SPECIFICATIONS

## BALER

Length overall .....	21' 8"
Width overall .....	8' 6"
Height with feeder head down .....	5' 7"
Width of the pick-up .....	57½"
Wheel tread width .....	75"
Size of the feed opening .....	16" by 24¾"
Size of the bale chamber .....	16" by 18"
Length of bale (standard) .....	36"
Plunger stroke .....	30"
Plunger and main working parts .....	steel
Fly wheel (diameter) .....	26"
Fly wheel shaft (diameter) .....	2½"
Main bearings .....	self-aligning ball bearings
Feeder .....	steel
Knotter Drive sprocket .....	steel
Knotter drive chain .....	steel roller with extended pitch
Gears .....	Pinions and sprockets
Plunger speed (maximum) .....	50 strokes per min.
Capacity.....	up to ten tons per hour
Tires—pneumatic .....	4:00 x 8, 7:50 x 16, 7:50 x 24



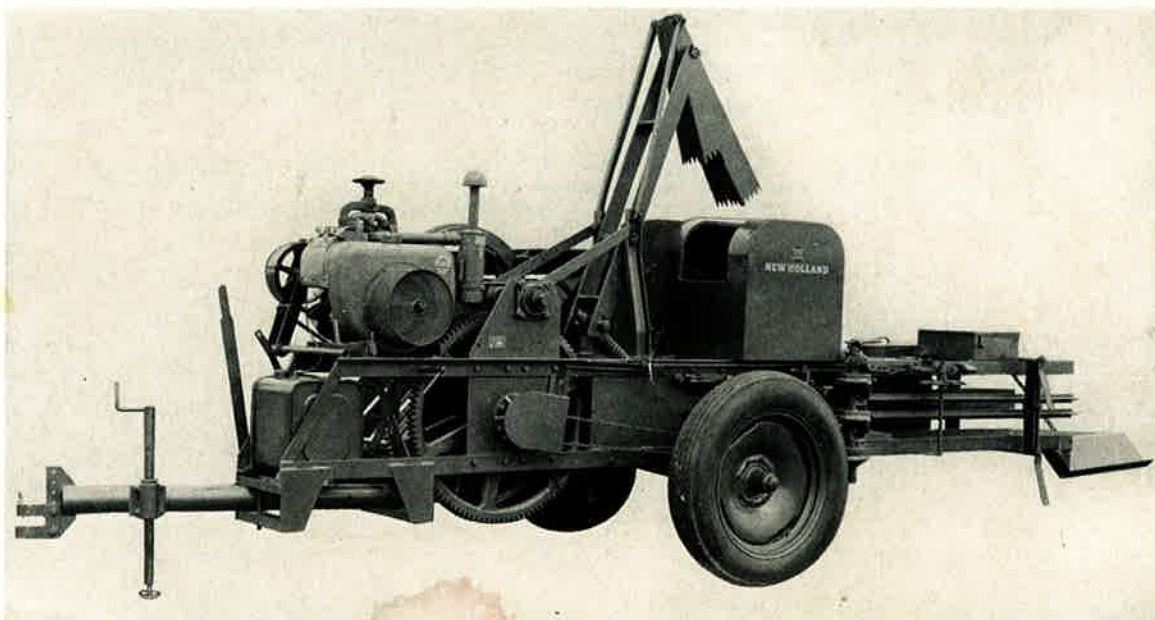
# SPECIFICATIONS

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Power required to draw the Baler ..... 2-plow tractor  
Weight complete ..... 4525 pounds  
Type of feed ..... positive auger  
Pick-up ..... power driven, right hand feed  
Optional Equipment ..... hydraulic bale tension  
metering wheel cam for 18" bale  
electric starting equipment  
straight bale chute

## ENGINE

Make ..... Wisconsin  
Type ..... VE-4  
Rated Horse Power ..... 20 horse power at 2160 r.p.m.  
No. of cylinders ..... 4  
Bore and stroke ..... 3" by 3¼"  
Oil bath air cleaner  
Replaceable cartridge oil filter  
Fuel tank capacity ..... 11 gallons  
Crank case capacity ..... 4 quarts  
4-V sheave motor drive  
Optional Equipment ..... starter  
generator



## A NOTE TO YOU, MR. BALER OWNER.

In buying a New Holland Pick-up Baler, you have chosen wisely. Into it have gone years of thought, research and improvement, both in the factory and under actual field conditions. You have the best that engineering skill and down-to-earth testing can produce. Thousands of users all over the country are pleased with the results obtained with their New Holland Balers. Many of them have made valuable suggestions which have resulted in improvements.

This manual contains information concerning the assembling, preparation for use, operation, and care of the New Holland Baler, KEEP IN MIND THAT BALING CONDITIONS VARY FROM CROP TO CROP, FIELD TO FIELD, AND EVEN FROM ONE SECTION OF A FIELD TO ANOTHER. THE OPERATOR MUST THOROUGHLY ACQUAINT HIMSELF WITH THE BALER, ITS ADJUSTMENTS AND WHAT EFFECT EACH ADJUSTMENT HAS IN ITS PERFORMANCE. THE SERVICE YOU GET FROM YOUR NEW HOLLAND BALER IS LARGELY DEPENDENT UPON HOW WELL YOU READ AND UNDERSTAND THIS MANUAL AND MAKE APPLICATION OF THIS KNOWLEDGE. Please do not assume that you know how to operate and maintain your Baler **before reading the manual carefully.** KEEP THIS MANUAL AVAILABLE FOR READY REFERENCE.

Your New Holland Dealer will instruct you in the general operation of this machine. He is interested in your getting the most from your investment, and will be glad to answer questions that may arise regarding the operation of the New Holland Baler.

Your New Holland Dealer also carries a complete line of genuine New Holland repair parts. These parts are manufactured and carefully inspected in the same factories that build the Balers to assure high quality and accurate fitting of any necessary replacements.

NEW HOLLAND MACHINE COMPANY

New Holland, Pennsylvania

# ASSEMBLY

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## THE RESPONSIBILITY OF THE DEALER

The assembly and pre-delivery servicing of the New Holland Baler are the responsibility of the New Holland Dealer. The machine should be completely assembled, adjusted, serviced, and given the recommended break-ins as outlined on page 11 before it is delivered to the customer.

The Dealer will show the customer how to operate the machine, making the necessary operating adjustments and answer any questions which may arise pertaining to its operation and adjustment.

Pages 6 to 11 of this manual are prepared primarily for the dealers' information.

## SHIPPING INFORMATION

When the Baler is shipped from the factory, it is assembled as far as loading requirements will permit.

Check the shipment against the packing list and the bundle layout sent with Baler to be sure that all parts have been received.

The engine on your Baler is covered with a waterproof paper for protection against the weather.

## ASSEMBLING INSTRUCTIONS

After the shipment has been checked against the shipping list arrange all parts for convenience and follow assembly instructions carefully.

Use lock washers under every nut.

The terms "left" or "right", as used herein, are determined from a position facing in the direction of Baler travel.

# ASSEMBLY

## DRAWBAR AND JACK

FIGURE 2

Install the drawbar and jack as shown, using a  $\frac{3}{4}$ " x  $6\frac{1}{2}$ " machine bolt and elastic stop nut at A. Install drawbar positioning pin at B.

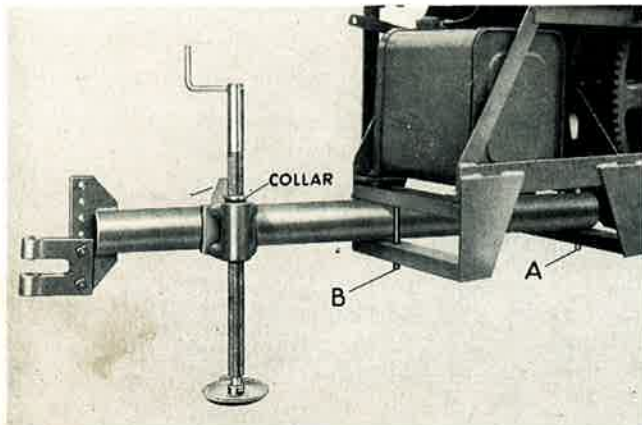


FIGURE 2

## OPERATION OF THE JACK

After Baler is hitched to tractor, remove the weight of the Baler from the jack by turning hand-wheel in a counter clockwise direction. Raise collar, lift jack away from drawbar and pull up.

To lower jack into position to carry baler weight, turn hand-wheel clockwise until the weight of the baler is supported by the jack.

Important: Keep threads well lubricated.

## FEEDER

FIGURE 3

1. Remove flywheel guard. Turn the flywheel by hand until the wadboard is in its highest position.
2. Install the feeder support plate on the axle with two  $\frac{1}{2}$ " x  $1\frac{1}{4}$ " machine bolts and  $\frac{1}{2}$ " flat washers. Do not tighten nuts.
3. Install the feeder assembly. Attach to the bale chamber with four  $\frac{1}{2}$ " x  $1\frac{1}{4}$ " and two  $\frac{1}{2}$ " x 1" machine bolts. Do not tighten nuts.
4. Place one 29-tooth sprocket and two pillow block bearings on feeder and pick-up drive shaft. Install with four  $\frac{3}{8}$ " x  $1\frac{1}{2}$ " machine bolts.
5. Attach feeder bearing support plate with two  $\frac{1}{2}$ " x 1" machine bolts.
6. Install front plate using nine  $\frac{3}{8}$ " x  $\frac{3}{4}$ " machine bolts. Do not tighten nuts (see figure 4).

Using a jack or hoist, raise right end of feeder assembly until level and push forward. Tighten securely nuts in front plate, feeder assembly, and feeder support plate.

7. Install belt tightener shaft using two  $\frac{3}{8}$ " x 2" cap screws S.A.E thread, and two hex nuts on clevis

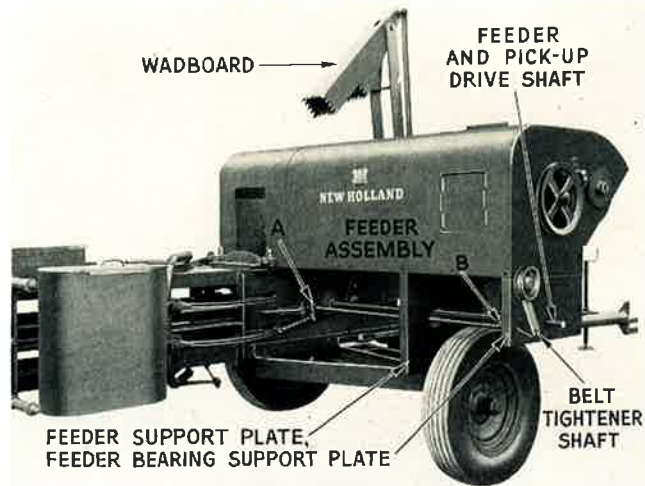


FIGURE 3

CAUTION: IF FOREGOING PROCEDURE IS NOT FOLLOWED, INSUFFICIENT CLEARANCE MAY BE HAD BETWEEN GROUND WHEEL AND PICK-UP LIFT PIPE.

at "A" and a 1" cotter key at "B". After the cotter pin has been inserted at "B" push the shaft to the right as far as possible. Holding the shaft in this position install adjustment clevis at "A" flush with mounting bracket on bale chamber side plate. To make proper adjustment wait until belts are installed, pull the belt tightener shaft control lever to its extreme forward position, loosen nuts at "A" and place idler against the belt lightly. Retighten nuts at "A". Install 2223 Tightener Pulley with  $1\frac{1}{2}$ " flat washers and  $\frac{1}{8}$ " x 1" cotter pin.

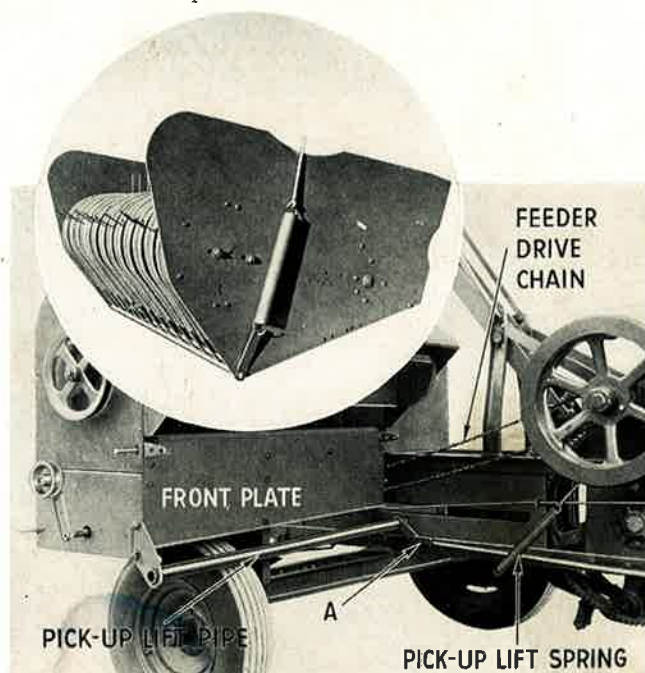


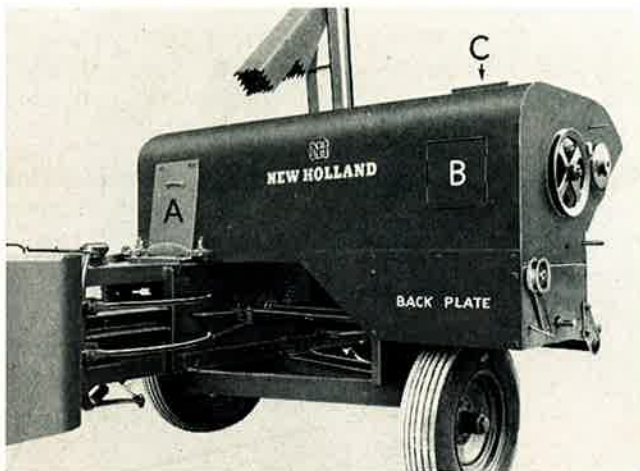
FIGURE 4



# ASSEMBLY

**FIGURE 4**

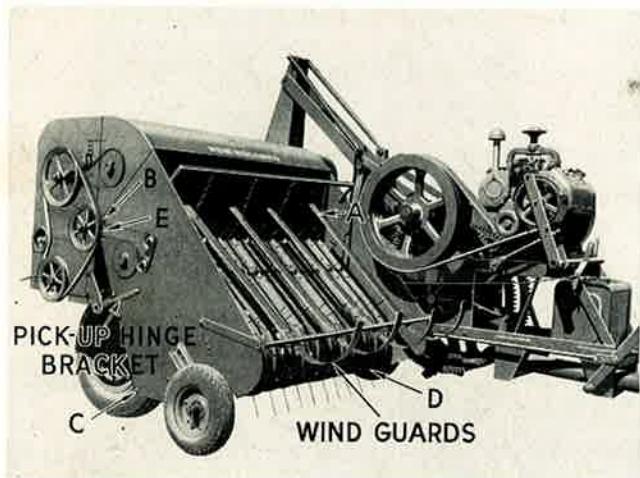
8. Install pick-up lift pipe with two  $\frac{1}{2}$ " x 1" machine bolts and one  $\frac{1}{4}$ " x  $2\frac{1}{2}$ " cotter pin. Attach lift lever at "A" with yoke pin and  $\frac{1}{8}$ " x 1" cotter pin.
9. Align sprockets and install feeder drive chain and idler. Use  $\frac{1}{2}$ " x  $1\frac{1}{4}$ " cap screw to install idler with flat and lock washer.



**FIGURE 5**

**FIGURE 5**

10. Install back plate with four additional  $\frac{1}{2}$ " x 1" machine bolts.
11. Install inspection covers, "A", "B", "C". Use wing nuts on cover "A".



**FIGURE 6**  
**PICK-UP**

**FIGURE 6**

1. Install pick-up hinge bracket on each side of pick-up with one  $\frac{1}{2}$ " x  $1\frac{1}{4}$ " machine bolt. Install pick-up lift spring clip (see figure 4). Install pick-up using two  $\frac{1}{2}$ " x  $1\frac{1}{2}$ " machine bolts at "A" and two at "B".

[SUGGESTION to facilitate installation of the pick-up assembly: Block the pick-up with a 4" block at corner "C" and corresponding point "D". Loosen

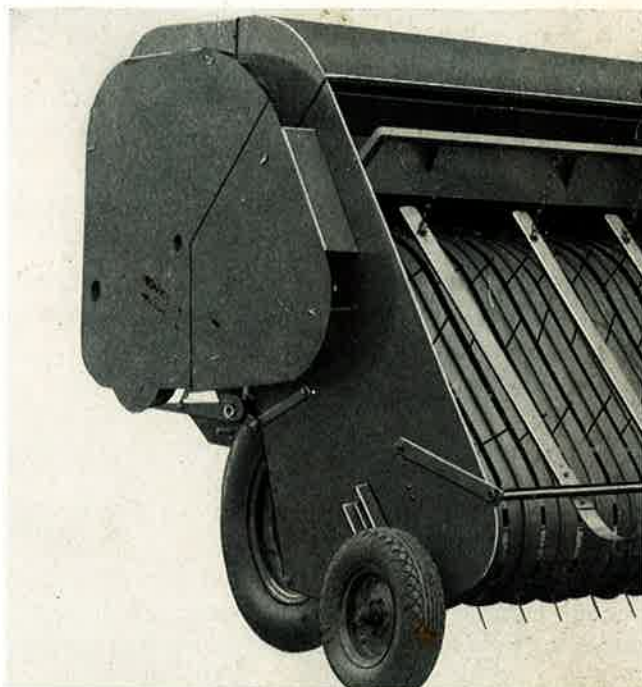
pick-up slats by removing stud at point "E" and corresponding stud on opposite end plate. Pry or lift the left side of pick-up into position. Replace studs holding pick-up slats in position.

CAUTION: (1) Be certain pick-up slats are above feeder floor.  
(2) Be certain end plates are inside feeder end plates.]

2. Install pick-up auxiliary wheel.
3. Install pick-up lift spring and adjust to make pick-up floating (See figure 4). For correct adjustment see page 15.
4. Install wind guards, using two  $\frac{3}{8}$ " x 1" machine bolts. Caution: Be certain guards will raise and lower freely.

## SHEAVES, SPROCKETS, BELTS, CHAINS

1. Install sheaves, sprockets, and idlers. If necessary align with spacer washers. Keep inside edge of sheaves 1" from feeder. Use 2 washers back of sheave at "B" and one on outside. Install support bar back of roller chain idlers.
2. Install roller chain and belt. For proper adjustment see page 14.
3. Install four motor drive belts.
4. Use eccentric collar on main drive belt tightener pulley for belt alignment.



**FIGURE 7**  
**GUARDS**

**FIGURE 7**

1. Install the two belt guards on right side of feeder. Use square nuts and wing nuts. Use longer spacers on front shield.
2. Install engine drive belt guard.

# LUBRICATION

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## LUBRICATION

This machine is designed to use the minimum amount of lubrication; however, careful and sufficient lubrication is the best assurance against delays, increases the life of the machine, and saves many dollars in repair parts.

The operator should become familiar with the lubrication points and establish a systematic routine to assure a proper and quick lubrication of the Baler. The lubrication chart is provided to help the operator learn this information. Start to lubricate at the engine, greasing points circled in white in Group 1. Following through as indicated by group numbers takes you systematically around the Baler.

Be sure that all grease fittings are open and free of paint or dirt so that the grease actually gets into the bearings. Force enough grease into each fitting with exception of main fly wheel shaft and pillow block bearings so that it will come out around the shaft. Wipe off the excess grease to avoid getting grease on belts or sheaves, causing belt slippage and deterioration, or the collection of chaff and grit which may cause unnecessary bearing wear.

During the first ten hours of operation, check all lubrication points hourly for overheating. The bronze and babbitt bearings, if cared for properly during this first period of operation, will provide long lasting service. After the first ten hours of operation, LUBRICATE ALL POINTS EVERY SIX HUNDRED BALES.

Keep threads of jack well oiled.

## EXCEPTIONS

The main flywheel shaft and pillow block bearings do not require frequent greasing—once every 10,000 or 12,000 bales is sufficient. EXCESSIVE LUBRICATION, WILL FORCE AND BREAK BEARING SEALS CAUSING DAMAGE. If these bearings are not equipped with a grease fitting, this indicates they are sealed bearings and need no lubrication.

The ground wheels are packed with a standard wheel grease when leaving the factory. Examine these wheels twice a season and pack with a standard wheel grease as required.

The main drive gears and pinions and knoter cam gears should be kept well lubricated. For best results use a fibrous texture lubricant, such as universal grease.

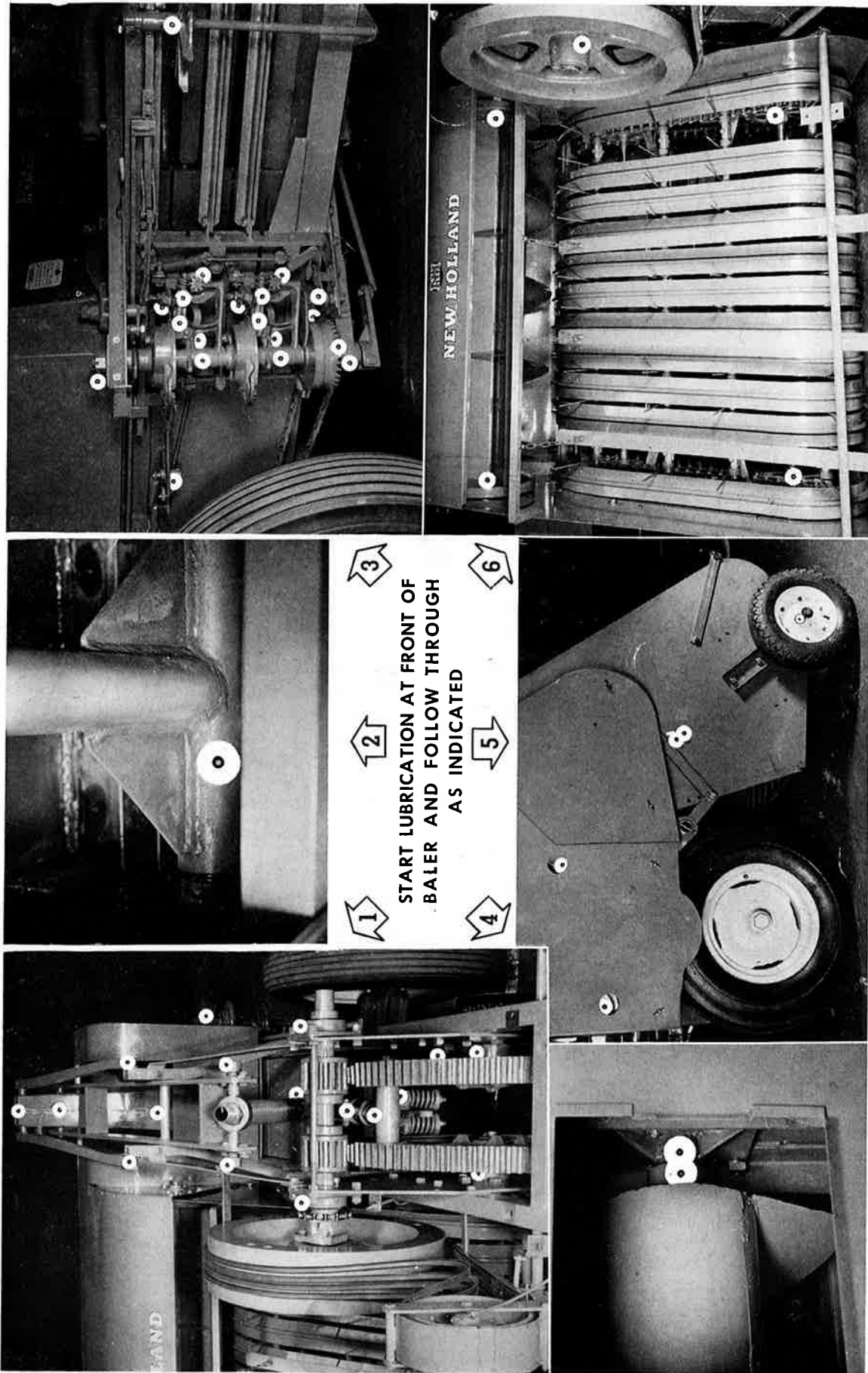
Placing a light oil on the square trip-rod will improve its operation.

## TIRES

The Baler is equipped with one 7:50x16 tire, one 7:50x24 tire, and one 4:00x8 tire. These are standard implement tires.

The 4:00x8 tire should be inflated to 20 pounds pressure. The other two tires should be inflated to 45 pounds pressure. Check the tire pressure at least once a week when the Baler is in use. Low pressure may cause unnecessary damage and bruising of the tire.

Avoid driving over stumps, stones or sharp obstructions. At the end of the season, when the Baler is placed in storage, it is well to remove the weight off the tires by placing blocks under the axles. Do not deflate tires.



1      2      3  
 START LUBRICATION AT FRONT OF  
 BALER AND FOLLOW THROUGH  
 AS INDICATED  
 4      5      6

FIGURE 8: LUBRICATION GUIDE

# BREAKING IN

## THE ENGINE

The Baler is powered by a Model VE-4 Wisconsin Engine. It is a four-cylinder V-type air-cooled engine that develops approximately 20 horse power at 2160 r.p.m. The engine governor is set at the factory to maintain an engine speed of 2160 r.p.m. when the throttle is open. This gives the Baler a speed of 50 strokes per minute.

For information on starting and operating the engine, refer to the engine manual which is shipped with your Baler. Of special importance are the instructions for agricultural engines in the same manual.

## BALER

It is important that a new Baler be broken in properly before it is taken into the field. After completion of the assembly and thorough lubrication the Baler should be hitched to a tractor, given a final inspection and operated. The following procedure should be followed:

1. Check all belts for proper installation and proper tension. Make any adjustments necessary at this time. (See page 14.)
2. Check all roller chains for proper tension and alignment. (See page 14.)
3. Check all bolts and nuts to make sure that they are tight.
4. Check the air pressure of the tires. The pick-up tire should be inflated to 20 pounds pressure; ground wheel tires to 45 pounds pressure.

5. Turn the machine over by hand several times to be sure that all parts move freely. Do this by turning the flywheel in a clock-wise direction. **CAUTION:** Take care that you do not catch your hand between the belt and the motor pulley. Start the knoter by turning the metering wheel. See that the over-center assembly and knoter clutch are working freely.
6. Check the oil level in the engine crank case and in the oil bath air cleaner. If low, fill to the proper level.
7. Fill the fuel tank with a good grade of gasoline with an octane rating of 70 to 75.
8. With the clutch disengaged, start the engine. (See engine book.)
9. Be sure that the Baler is free and clear and that no one is in a position where he may be injured when the machine is operated.
10. Operate the baler.
  - A. Start the Baler by engaging the clutch slowly. Operate the Baler for 10 or 15 minutes.
  - B. Inspect all belts and chains to be sure that there is no slippage.
  - C. Disengage the clutch and shut off the engine.
  - D. Check all bearings for signs of overheating.
  - E. Lubricate all grease fittings.
  - F. Start engine again and operate the Baler for about 30 minutes.
  - G. Check the speed of the Baler to determine if it is operating at about 50 strokes per minute.
  - H. Check all bolts and nuts again to make sure they are tight and seated.

# OPERATION

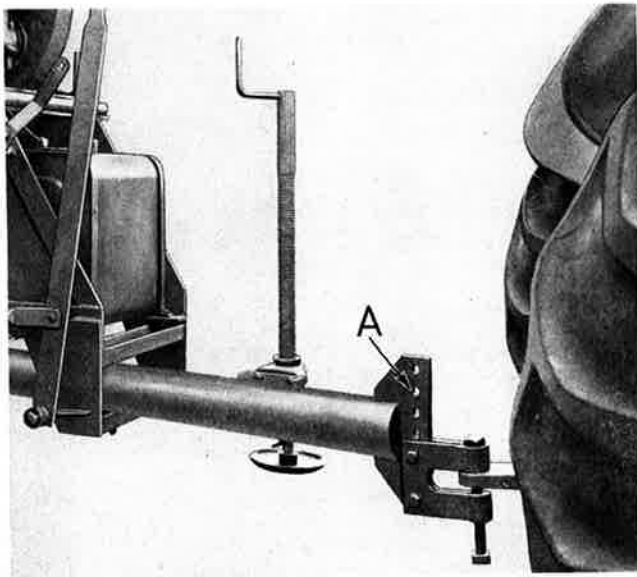


FIGURE 10: ROAD TRAVEL

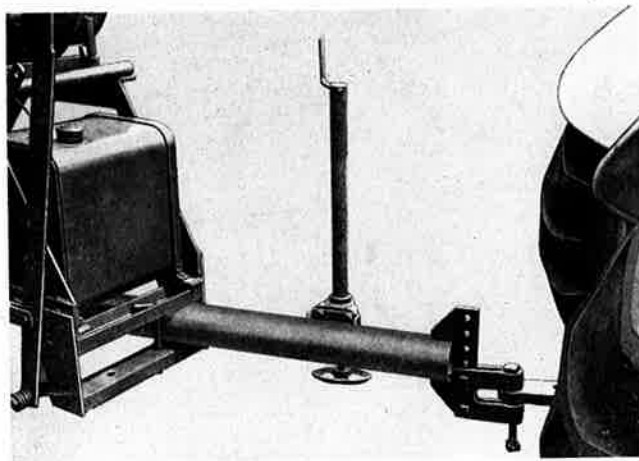


FIGURE 11: FIELD TRAVEL

## STARTING TO BALE

1. Attach the Baler to the tractor. It is important to attach the Baler to the tractor so that the Baler frame will be nearly level. An adjustment, figure 10 "A", is provided to compensate for the height variance of drawbars on various model tractors. The drawbar can be shifted from side to side for offsetting the Baler as shown in figures 10 and 11. It is preferable to use a straight type drawbar over a U-type so that shorter turns can be made.
2. Observe safety precautions.
3. Remove all tension from the tension rails on the bale chamber.
4. Be sure the safety clevis is free of all dirt, paint, etc., and can slide freely on the connecting link. (See figure 29.)
5. After being sure that no one is in a position where he may be injured, start the Baler by engaging the clutch.
6. Start to bale and continue until the bale chamber is full of hay.
7. Thread the needles. (See page 13.)
8. Do not interfere with the mechanical parts of the machine while it is working. Serious damage may be caused both to the operator and to the machine. Safety devices have been built into the machine to help take care of itself. Therefore, let it do its own job.
9. Continue to bale.

## FEEDING THE BALER

This should be done uniformly and steadily to insure well-formed bales being produced. The capacity of the Baler depends entirely upon the manner in which it is fed. Responsibility is placed upon the tractor operator to drive the tractor at proper speed to keep a uniform amount of material going into the Baler. Well formed, medium sized windrows made by a New Holland Side Delivery Rake will aid the feeding.

An experienced tractor operator will keep the Baler motor pulling at every compression stroke.

## GROUND TRAVEL OR TRACTOR SPEED

The ground speed of the Baler is determined by the size of the windrows made by the Side Delivery Rake.

Small windrows permit a ground speed up to approximately 5 miles per hour. Large windrows and bunches frequently necessitate slight hesitation in ground travel to free the overloaded pick-up.

Of course, rough and uneven ground conditions will necessitate slower ground travel.

Experience will teach the tractor driver the best ground speed at which to get the greatest efficiency from the Baler.

# OPERATION

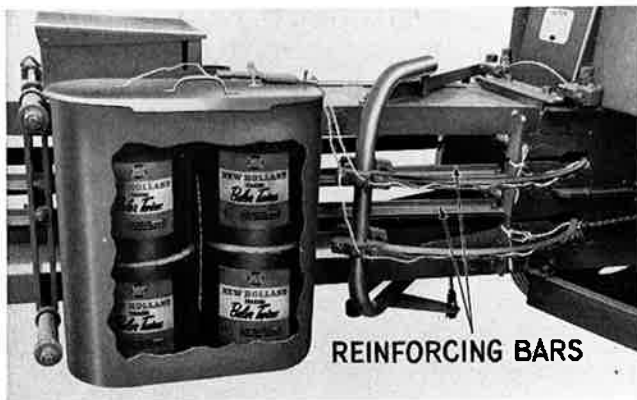
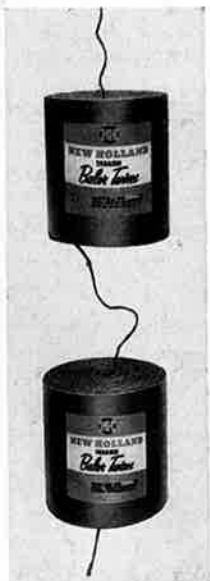


FIGURE 12

## THREADING NEEDLES

FIGURE 12



1. Place four balls of Certified New Holland Baler Twine in the twine box. Tie the two balls on each side of the box together as shown. Be sure that the outside end of the twine of the upper ball is tied to the center end of the lower ball. Do not remove the wrappers from the twine, and be sure that they are placed in the box with the right side up. Be sure that the knots are tied securely and small enough to pass through the guides of the needle.
2. Start baling until the bale chamber is full of hay.
3. Thread the twine through the guides and needles, as shown. Be sure that the twine on the side of the twine box closest to

the feeder is fed through the bottom needle, as shown.

4. Tie the ends of the twine to the reinforcing bar on the bale chamber.
5. Continue to bale, and as the hay turns the metering wheel, the knoter will start working automatically, bringing the needle through and threading the knoter.
6. Remove the ends of the twine that are tied to the reinforcing bar.

Similar instructions will be found on the Twine Labels.

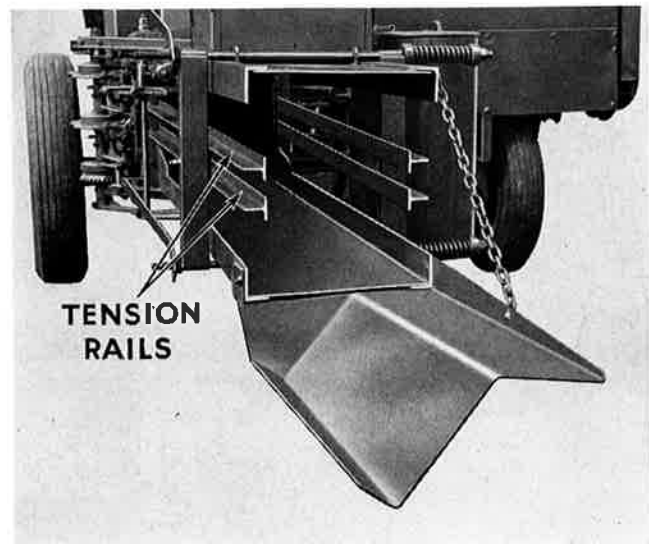


FIGURE 13

## TWINE AND BALE TENSION

FIGURE 13

The tension screws located at the rear of the Baler control the tension of the twine as well as the weight of the bale. These tension screws are spring loaded to require a minimum of adjustment in order to maintain proper twine tension on the finished bale. The correct adjustment of the tension screws is determined by the tension of the twine on the finished bale. To increase the weight of the bale, tighten the tension lever one or two turns. Usually, one or two turns of the handle will give the increased bale weight desired. However, after baling three or four bales, if it is determined that this is not sufficient, turn the handle one or two more times.

To decrease the bale weight, follow the same instructions in reverse.

TWO SETS OF SPRINGS ARE PROVIDED WITH THE NEW HOLLAND BALER. THE HEAVIER SPRINGS, PAINTED YELLOW, SHOULD BE USED WHEN BALING STRAW OR A SIMILAR LIGHT PRODUCT WHICH REQUIRES GREATER COMPRESSION. THE LIGHTER SPRINGS, PAINTED RED, SHOULD BE USED FOR BALING HAY OR OTHER CROPS REQUIRING LESS COMPRESSION.

The Bale tension springs help produce bales of the same weight where the moisture content of the hay varies. However, occasional bale tension adjustments will have to be made according to the condition of the material. Low damp places in the field usually require less tension than high dry places.

Experience will teach the operator the right tension required to compress the bales.

# ADJUSTMENTS

## BELT INFORMATION

It is necessary that proper attention and care be given to the adjustment of all belts. They should be inspected periodically for proper tension and signs of wear. "V" type belts do not require as much tension as flat type belts.

New belts stretch during the first few days of use. Inspect them frequently for proper tension.

When tightening belts, adjust the belt tighteners so that they are tight enough to prevent slipping, and yet not tight enough to spring the shafts. Slippage will burn the belt as well as reduce the efficiency of the machine.

Insufficient tension or misalignment of sheaves may allow belts to roll over onto their sides. When removing or replacing a belt, the belt tightener brackets should first be loosened. Prying the belt over the edge of the sheave may break or stretch the cord, thereby weakening the belt.

Keep all belts free of grease and oil. Grease causes the belt to slip and causes deterioration of the rubber. In case any oil or grease should get on the belt, it can be removed by using a rag which has been moistened with gasoline.

A liberal application of talcum powder can be used to prevent a new belt from sticking to the sides

of the sheave. DO NOT USE BELT DRESSING ON "V" BELTS AT ANY TIME.

At the end of the baling season, all belts should be removed and hung in a cool dry place.

## Belt Adjustments

FIGURE 14

1. Adjustment for the auger drive belt is provided at point "A", figure 3. For proper installation and adjustment, pull the lever to its extreme forward position, loosen nuts at point "A" and place the idler against the belt lightly. Retighten nuts at "A".
2. Adjustment for the motor drive belts is provided at point "A", figure 14. Failure of the governor to open and close between each plunger stroke, while Baler is being fed heavily, would indicate that the belts are slipping with a consequent loss of efficiency and capacity. This can be detected by counting the number of strokes per minute while the Baler is being fed to capacity. Don't permit the feed arm to get below 50 strokes per minute. Control by adjustment of engine governor. IMPORTANT: KEEP A TIGHT TENSION ON MOTOR DRIVE BELTS WHEN CLUTCH IS ENGAGED.

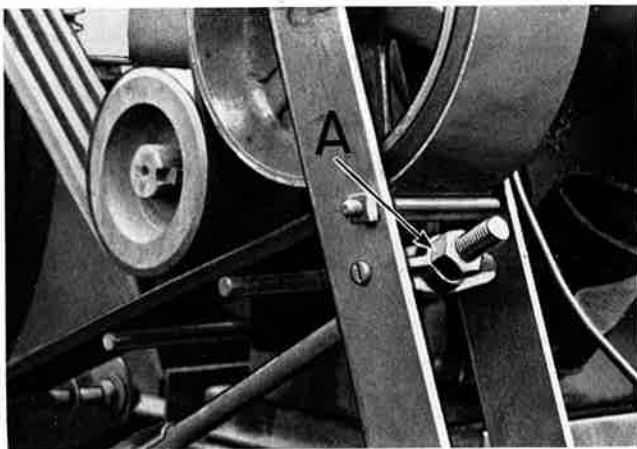


FIGURE 14

## CARE OF ROLLER CHAINS

Roller chains should be adjusted to have a slight amount of slack at all times. Too much tension will cause undue wear on the chains, sprockets and the bearings. Insufficient tension may cause the chain to jump the sprocket or to ride the sprocket teeth, thus causing premature wearing of both the chain and the sprocket teeth.

Lubricate roller chains by using a good grade of kerosene.

At the end of the harvest season, all roller chains should be removed, soaked in kerosene for a short time, and then replaced on the machine.

Always loosen the chain tightener bracket when removing the chain. There is always a connecting link provided for the opening of the roller chain.

# ADJUSTMENTS

## PICK-UP ASSEMBLY

The pick-up is provided with a lift spring that is designed to give the pick-up a "floating action." THE AUXILIARY PICK-UP WHEEL SHOULD STRIKE THE GROUND ONLY OCCASIONALLY and guide the pick-up over rough and uneven ground. At no time should the auxiliary pick-up wheel carry the entire weight of the pick-up.

Failure to keep the chains carrying the pick-up fingers tight at all times, will result in a poor job of picking up hay.

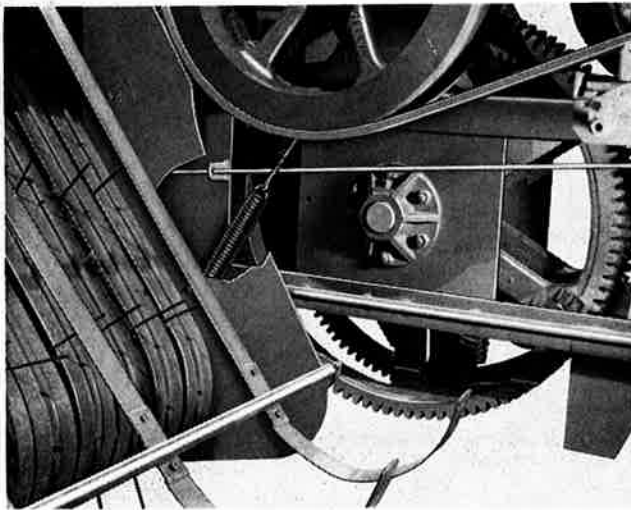


FIGURE 15

## Adjustments

FIGURE 15

1. The adjustment of the pick-up lift spring tension is made by turning the nut on pick-up lift spring tension bolt.

The best way to determine the correct tension on the springs is to grasp the pick-up by hand and lift it up and down. It should require about a 25 pound lift to raise it in this manner.

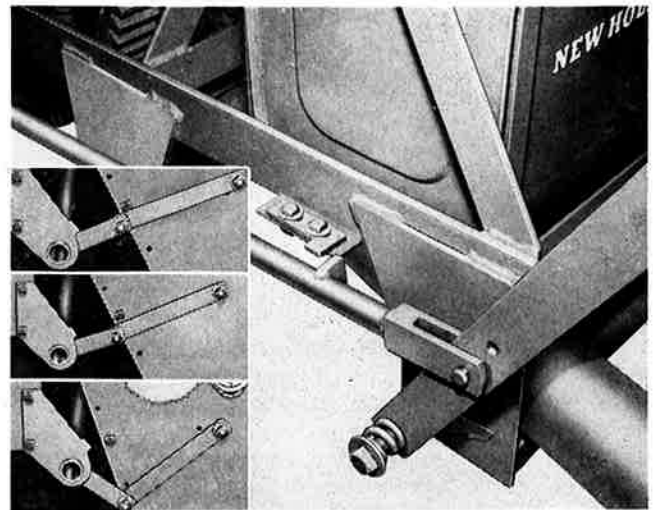


FIGURE 16

FIGURE 16

2. A pick-up lever stop is designed to prevent the pick-up from raising too high in going over rough ground and failing to return to its lowered position. If this should occur, move the stop toward the pick-up as required so that the pick-up hinge does not go over center.

To keep the pick-up raised for road travel, pull the handle away from the motor and toward the front of the Baler as far as possible.

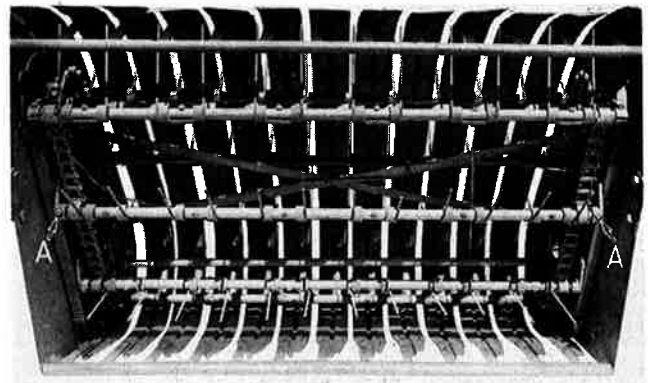


FIGURE 17

## PICK-UP FINGERS

FIGURE 17

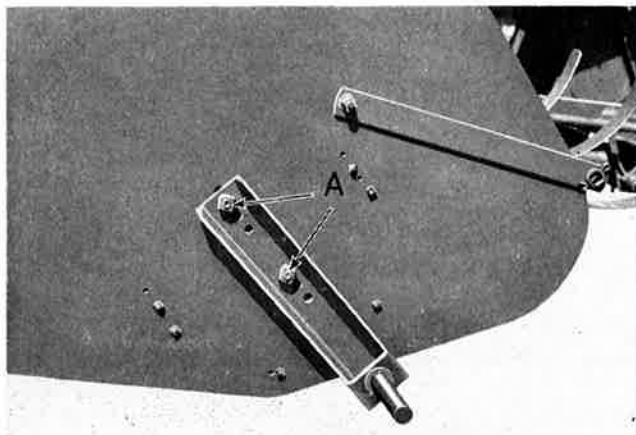
The pick-up fingers can be replaced by removing the cam and the first tooth from the holder pipe at point "A".

Slide one end of the pick-up holder pipe out of the attachment link, and remove the pick-up fingers necessary to install the replacement tooth.

**IMPORTANT:** When reinstalling cams, be sure that the roller part of the cam is following the holder pipe in the direction of pick up travel.



# ADJUSTMENTS



**FIGURE 18**  
**Adjustment**

**FIGURE 18**

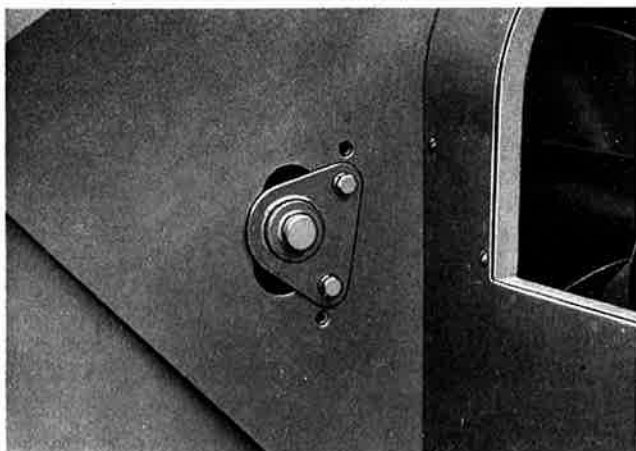
Adjust pick-up carrying chain at "A" and corresponding point on opposite side of pick-up.

**KEEP THESE CHAINS TIGHT AT ALL TIMES TO INSURE CLEAN PICK-UP JOB.**

## FEED ROLL ASSEMBLY

The feed roll assembly assists the material from the pick-up to the feeder producing a positive feed action and increasing the capacity of the Baler. The feed roll should be positioned so that the material is packed lightly as it is moved across the feeder. **ALWAYS REMEMBER TO RUN THE FEED ROLL AS HIGH AS POSSIBLE.**

In extremely light hay and generally in straw, the feeder will have to be lowered in order to provide a constant feed into the Baler. In extremely heavy windrows the feed roll will have to be raised to avoid slowing up the speed. Under normal conditions, the feed roll assembly can be operated in the center position as shown in Figure 19.



**FIGURE 19**

## Adjustment

**FIGURE 19**

To raise or lower the feed roll, remove all bolts which hold the belt and chain guards in position, loosen feeder chain tightener assembly, and remove the four feed roll bearing cap screws.

Move the feed roll to the desired height, install the cap screws to the feed roll bearings and retighten them.

Retighten chain tightener assembly and replace belt guards.



**FIGURE 20**

## FLY WHEEL SAFETY BOLT

**FIGURE 20**

An overload safety bolt is provided on the Fly Wheel. In case of an overload of the Feeder or Plunger, this bolt will shear thus avoiding excessive damage to any part of the Baler.

When this bolt shears, it is important that a careful check be made before replacing the bolt to determine the cause and to ascertain that all parts are moving freely.

## Replacement

After this is done and the shear bolt is replaced with a No. 13803 safety bolt turn the Fly Wheel of the Baler manually to ascertain free working of all parts. Tighten bolt securely.

**IMPORTANT: NEVER INSTALL A HARDENED STEEL BOLT AS THEY WILL NOT SHEAR READILY AND MAY RESULT IN SERIOUS DAMAGE TO THE MACHINE.** Extra No. 13803 bolts, of correct hardness are in the tool box of each new Baler.

## Causes of Shearing of Flywheel Safety Bolt

1. Baling too heavily.
2. Safety bolt nut loose.
3. Dull knives.
4. Excessive clearance between knives.

# ADJUSTMENTS

## MAIN DRIVE SHAFT BEARINGS

The main drive shaft bearings are self-aligning and seldom need adjustment.

Two types are used on the New Holland Baler. The one type is fastened to the shaft with two hollow-head set screws on each bearing. The other type of bearing is fastened to the shaft by means of an eccentric collar and a set screw.

### Adjustments

If the main shaft develops end play, loosen set screws, align the pinion gears with the wide teeth of the bull gears, locate the two set screws in the countersunk holes of the main shaft, and retighten set screws.

In the case of the bearings provided with eccentric collars, there will be no hollows in the drive shaft. To loosen eccentric collars from main drive shaft, turn collars counter-clockwise; to tighten, turn clockwise.

NOTE: See lubrication information page 9 concerning lubrication of these bearings.

## THE CONNECTING ROD

The connecting rod is the connecting link between the main drive gears and the plunger. This telescoping rod is designed in such a manner so as to automatically release and extend, allowing the plunger to remain idle while the knottter is operating.

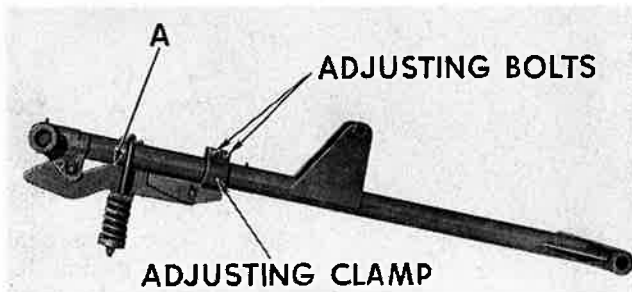


FIGURE 21

### Adjustments

FIGURE 21

1. If this connecting rod develops an excessive amount of noise, it is an indication there is a need for adjustment. Be sure the connecting rod latch does not touch the connecting rod tube at point "A" when the latch is closed. The point of the

connecting rod latch should be just above the mid point of roller. To make this adjustment loosen bolts and slide adjusting clamp backward. The tension of the coil springs are set at the factory and should not require any adjustment. If they are ever replaced be sure the tension nuts are not drawn too tightly. The springs must compress enough to allow the connecting rod hook to clear the roller when the latch opens.

2. Both ends of this rod are equipped with bronze bushings. If any excess play develops at either end, replace bushings only.

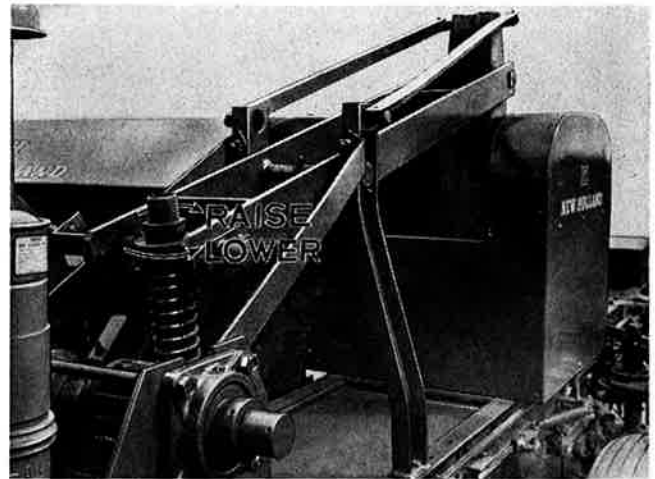


FIGURE 22

## THE WADBOARD

FIGURE 22

The wadboard is designed to distribute the hay evenly between the top and bottom of the bale chamber, thus producing a square bale. IF THE BALE IS TOO LONG ON THE BOTTOM, THE WADBOARD SHOULD BE RAISED. IF THE BOTTOM OF THE BALE IS TOO SHORT, THE WADBOARD SHOULD BE LOWERED.

When baling short material, the wadboard should be raised as much as possible, as short stems have a natural tendency to fall to the bottom of the bale chamber.

### Adjustments

To raise the wadboard, turn the hexagon nuts clockwise; to lower the wadboard, turn hexagon nuts counterclockwise, as shown.

# ADJUSTMENTS

## THE PLUNGER SLIDE

The composition plunger slide block, both above and below the polished metal plunger slide angles, must be inspected and adjusted regularly. An accurate adjustment cannot be made until actual operation has caused them to become set or worn in.

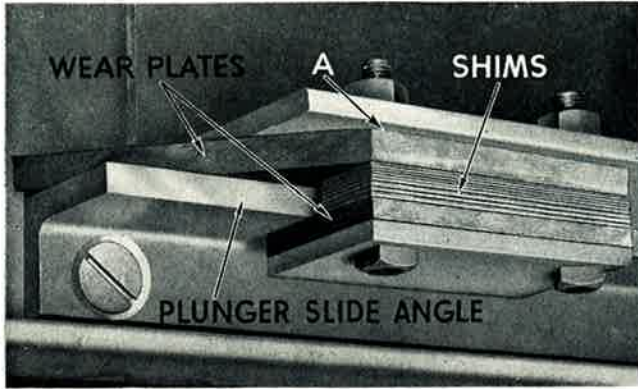


FIGURE 23

### Adjustments

FIGURE 23

Move the plunger to the rear of the Baler so that the shear knife on the plunger, and the stationary knife almost meet. The wear plate on the top of the plunger slide angle must rest firmly on the angles. Eliminate any clearance between the bottom wear plate and the plunger slide angle by removing the necessary shims. These shims are slotted and can be removed by simply loosening the bolts and sliding out the necessary shim.

**CAUTION:** Proper clearance between the bottom wear plates and the angles can be set by inserting the thinnest shim. To check this adjustment, stop and inspect these wear plates, after making approximately fifty bales. If any lining seems to be heating excessively, put back another shim to relieve the binding.

### Replacing the Plunger Wear Plates

When the plunger wear plates become worn to the extent that half the wear plate is gone, it is advisable to REPLACE THE WEAR PLATES IN A COMPLETE SET OF FOUR.

In installing new wear plates, make certain that each wear plate carries an equal portion of the plunger weight. Occasionally it will be necessary to insert a shim between the top surface of the plunger wear plate, and the under side of plunger at "A".

**NOTE:** While checking the wear plate, it is also a good policy to check the wear on the plunger slide angles. If the plunger slide angles show considerable wear, they should be replaced.

In replacement of plunger wear plates follow foregoing adjustments.

## SLICING KNIVES

The slicing knives, one on the plunger and one on the Baler Frame, should be kept sharpened and properly adjusted. Under normal conditions, inspect them daily. If baling under sandy conditions, examine the knives every four hours. A POORLY ADJUSTED OR DULL KNIFE WILL RESULT IN SERIOUS PLUNGER WEAR PLATE AND PLUNGER SLIDE ANGLE DAMAGE.

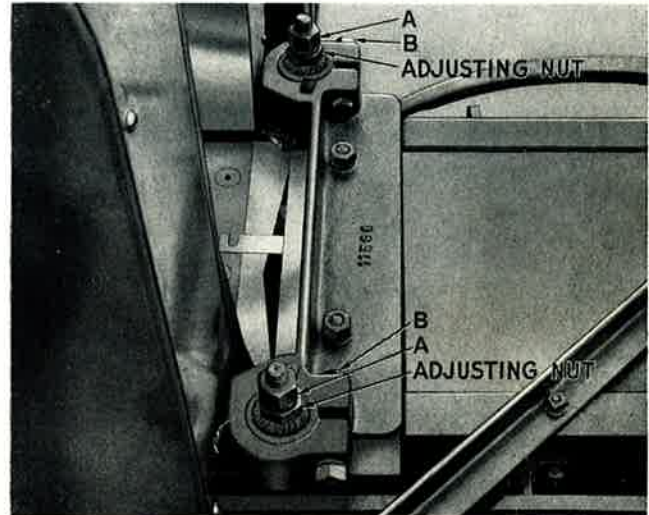


FIGURE 24

### Adjustment

FIGURE 24

Do not attempt to adjust the knives without first adjusting the plunger wear plates. Loosen nuts "A" and "B". Raise the knife by turning the adjustment nuts clockwise, lower the knife by turning the adjustment nuts counter-clockwise. Retighten nuts "A" and "B". **CAUTION:** Always allow a small amount of space between the two knives. This can be determined by the use of the thinnest plunger slide shim of 1/32 of an inch.

### Sharpening the Knives

To take off the stationary knife for sharpening, remove the two bolts holding the knife to the bracket. Take off the plunger knife by removing the three hollow-head set screws. In sharpening the knives, an attempt should be made to keep the knives at their original angle.

# ADJUSTMENTS

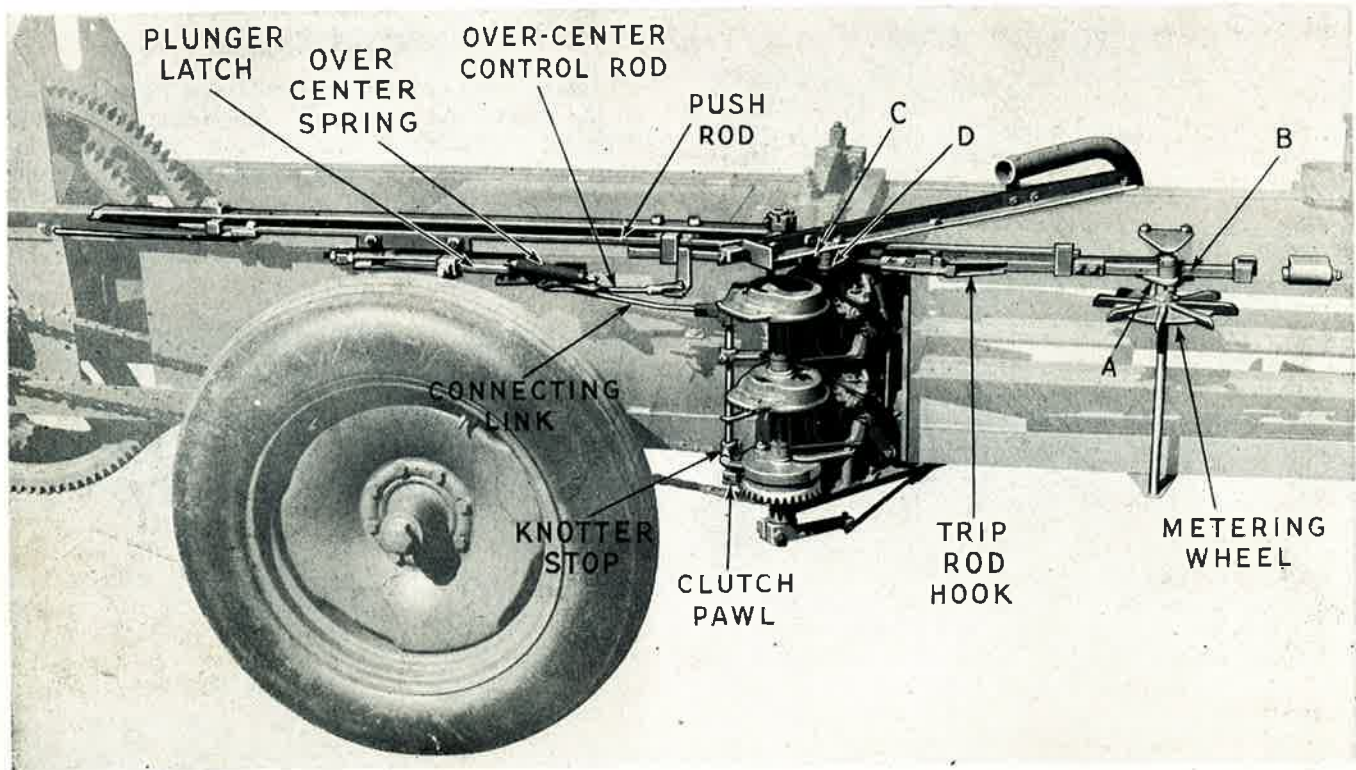


FIGURE 25

## THE OVER-CENTER ASSEMBLY

The over-center assembly, located on the left side of the bale chamber, and shown in Figure 25, has four distinct operations to perform while the main drive gears make one revolution. The four operations in their proper sequence are:

1. Stop the plunger.
2. Start the knotter.
3. Restart the plunger.
4. Stop the knotter.

### Stopping the Plunger

Material passing through the bale chamber turns the metering wheel. The metering wheel cam "A" strikes the trip rod roller "B" and moves the entire trip rod assembly toward the discharge end of the bale chamber. This will leave a space of approximately one inch between points 2 and 3, Figure 27, into which will fall the end of the push rod in its travel toward the discharge end of the bale chamber.

The roller mounted on one of the spokes of the left main drive gear (bull gear) contacts the push rod lever assembly and causes the over-center control rod to pull in the over-center spring.

This spring then pulls the plunger latch in front of the plunger when it reaches the extreme end of the compression stroke.

### Starting the Knotter

When the plunger latch is pulled in front of the plunger, the connecting link moves backward, pulling the knotter stop away from the knotter clutch pawl engaging the knotter clutch.

As the knotter rotates, cam "C" strikes roller "D" releasing the trip rod hook and returns the over-center spring to its "out" position.

### Starting the Plunger

The over-center spring will then pull the plunger latch out from in front of the plunger when the connecting rod latch engages the connecting rod roller.

### Stopping the Knotter

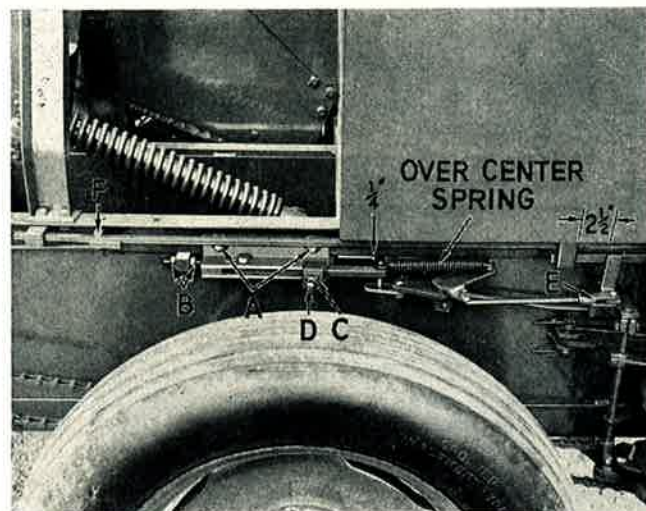
Simultaneously the knotter stop is returned to its original position to disengage the knotter clutch, stopping the knotter when it completes its revolution.

In case of any maladjustment or binding action in the over-center assembly or in the plunger latch assembly, the projection on lower cam gear "B", Figure 29, will return the knotter stop to its original position, disengaging the knotter clutch. This is a special safety feature.

As the metering wheel cam "A" moves off the roller "B", spring action will return the rear trip rod to its original position, allowing the trip rod hook to become engaged.

# ADJUSTMENTS

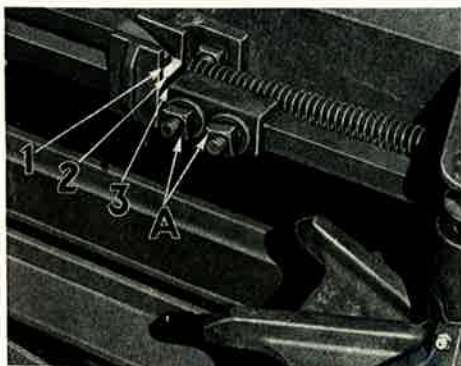
## ADJUSTMENTS OF OVER-CENTER ASSEMBLY



**FIGURE 26**  
**Plunger Latch**

**FIGURE 26**

1. There should be  $3/16$ " to  $1/4$ " clearance between the plunger latch and the plunger when the plunger is at its extreme end of the compression stroke under load. To secure adjustment, loosen nuts "A" and turn nuts "B" as needed.
2. With plunger about 6" to 8" from the end of the compression stroke, push the plunger latch against the side of the plunger, loosen lock nut "C" and turn adjusting screw "D" cautiously until it barely comes in contact with the plunger latch, after which it should be turned back one complete turn. Hold adjusting screw "D" and retighten lock nut "C" securely.
3. Place over center spring in "in" position. There should be a distance of  $2\frac{1}{2}$ " at point indicated. Secure this by adjustment of clevis "E".

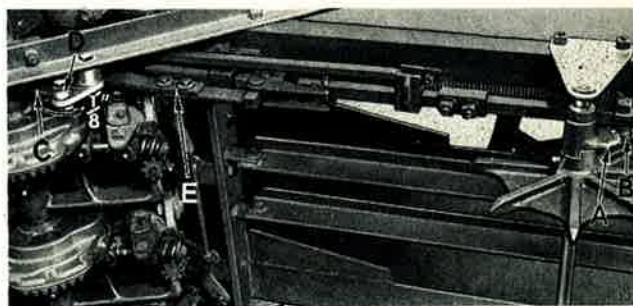


**FIGURE 27**

## Push Rod

**FIGURE 27**

4. With push rod at extreme forward position as shown (toward hitch end of Baler) there must be:  $1/8$ " clearance between points 1 and 2;  $1/16$ " to  $1/8$ " clearance between points 2 and 3. Secure the first adjustment at connecting link "F", Figure 26. Secure the second adjustment at "A" Figure 27. **NOTE:** It is important to see that the push rod lever assembly is not against the roller on the left main drive gear when this adjustment is made.

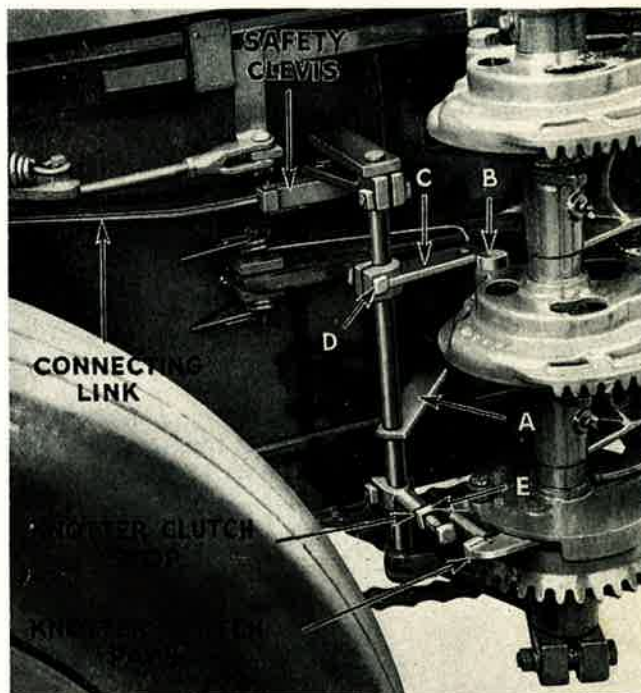


**FIGURE 28**

## Over Center Return Cam

**FIGURE 28**

5. With the high point of the metering wheel cam "A" on the roller "B" and high point of return cam "C" on roller "D" as shown, it should be possible to pull roller "C" away from cam "C"  $1/8$ ". Secure this adjustment at connecting link "E".



**FIGURE 29**

# ADJUSTMENTS

## Knotter Trip Shaft

FIGURE 29

6. With lever "A" against the bale chamber side plate, set knotter clutch stop squarely in front of the clutch pawl.
7. Adjust safety clevis so that the ball bearing drops in center portion of connecting link.
8. Turn the knotter by hand until projection on lower cam gear "B" barely strikes lever arm "C" with the knotter stop in position shown. Tighten bolt "D" securely.

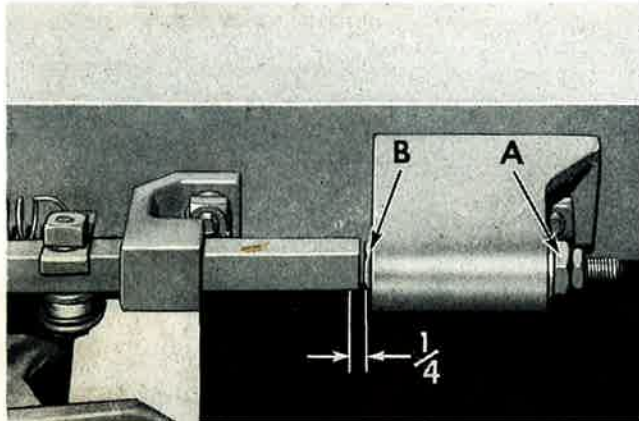


FIGURE 30

## Trip Rod Bumper

FIGURE 30

9. Move the trip rod to its extreme backward position (toward discharge end of the bale chamber.) Adjust nuts "A" until this bumper barely touches shaft at "B". Move the knotter trip rod to its extreme forward position and adjust the bumper toward the trip rod  $\frac{1}{4}$ " as indicated.

## KNOTTERS

All knotters are carefully adjusted and tested at the factory before they are sent out. They should operate successfully if the adjustments are not changed. If, when starting to bale, the knotter should miss tying a few bales, do not tamper with it but allow it to wear a little. The action of the twine upon the parts will smooth any roughness produced by painting.

Experience has shown that a large percentage of knotter difficulties are the result of baling with excessive bale tension. For correct bale tension see page 13. THEREFORE, BEFORE MAKING ANY KNOTTER ADJUSTMENTS BE CERTAIN THAT EXCESSIVE BALE TENSION IS NOT THE CAUSE OF THE KNOTTER DIFFICULTY.

If the knotter fails to work satisfactorily, refer to the Figures 55 to 62 and special instructions before making any adjustments. Comparison of the knots cast with the illustrations should enable the operator to overcome the difficulty.

Do not keep tension adjustment on the twine box too tight.

Do not attempt to regulate the size or the tightness of bales with the tension on the twine box, or by adjustment of the knotter springs.

The Baler works best when just enough tension is kept on the twine to prevent it from getting slack.

Make all adjustments on the knotter assembly carefully, giving each adjustment a quarter of a turn, and then trying the Baler for three or four bales before making further adjustment. This will go a long way toward helping to overcome knotter trouble.

Operators are warned not to mutilate the knotter in any way.

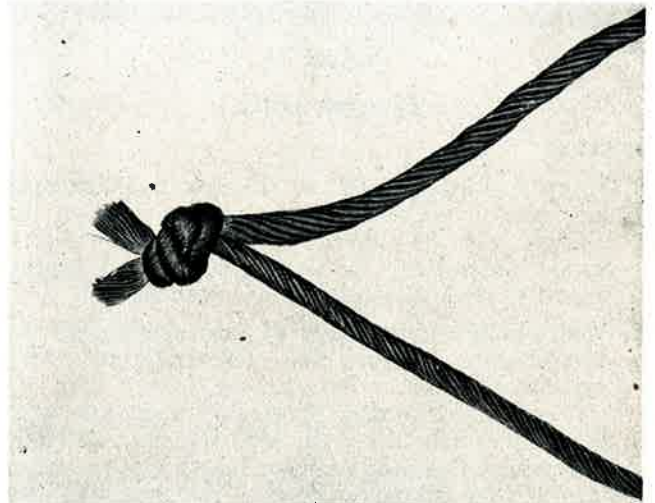


FIGURE 31

## FORMATION OF A CORRECT KNOT

The steps in the formation of a correct knot are:

1. Needles bring the twine through the bale chamber to the knotter.
2. Twine disc turns, picking up the twine from the needles.
3. Bill Hook begins its revolution.
4. Twine fingers pull the twine into the path of the turning Bill Hook.
5. Bill Hook opens, picking up the twine.
6. Bill Hook closes holding the twine.
7. Knife cuts the twine.
8. Stripper flange strips the twine from the Bill Hook, completing the formation of the knot pictured.

# ADJUSTMENTS

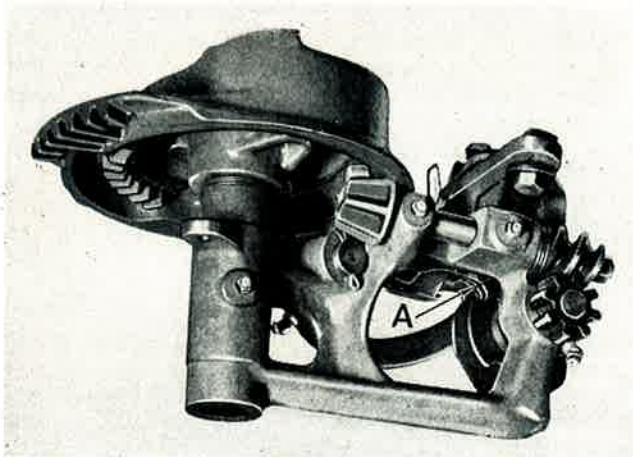


FIGURE 32

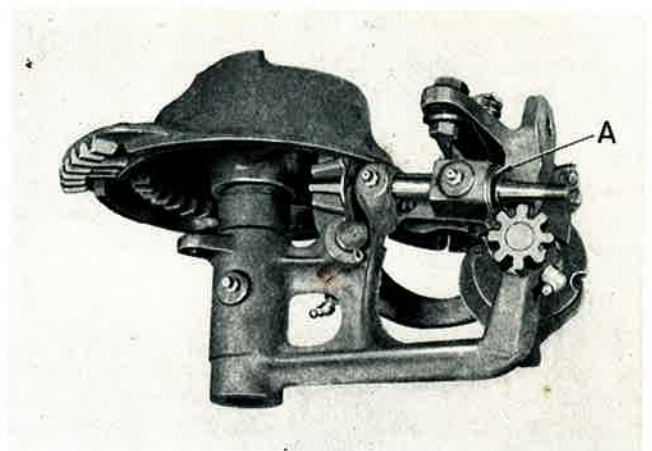


FIGURE 34

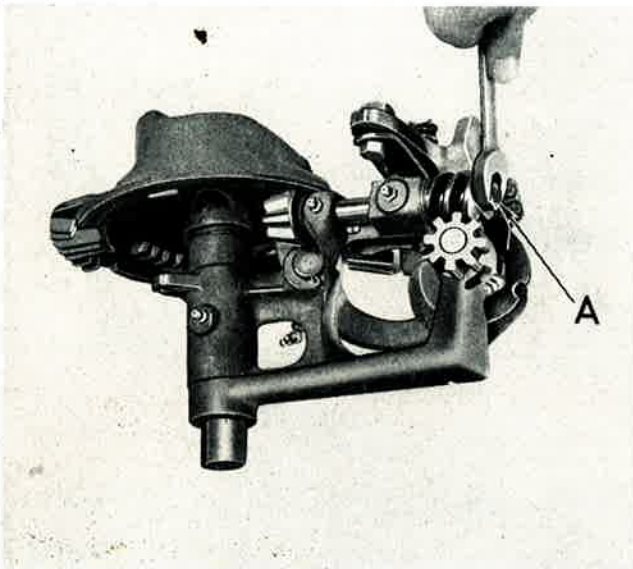


FIGURE 33

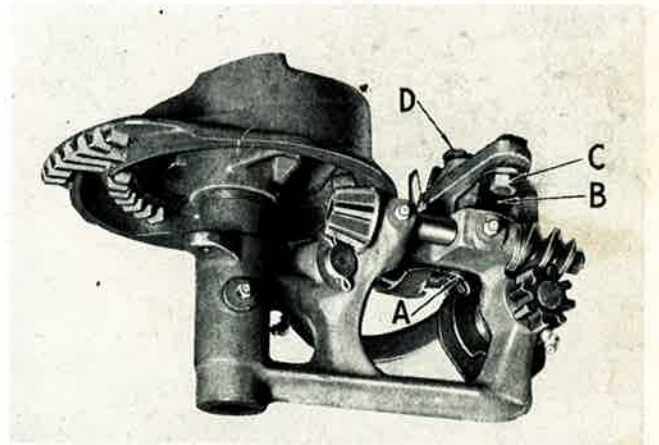


FIGURE 35  
TWINE HOLDER

The twine disc adjustment is determined by the positioning of the notch in the disc to the twine holder at point "A" Figure 32. The top of the notch should be flush with the bottom of the twine holder (when the disc contains twine). If the twine disc is advanced too far the twine will not be caught in the twine disc.

In order to adjust the disc to this position loosen nut "A" several turns as shown in Figure 33. Tap the nut end of the shaft. Then turn the disc to the setting of the notch as shown in Figure 32. Tap the pinion end of the shaft to move it back to its original position. Turn the worm gear so it will fit against the spacer washers then turn the lock nut tight.

**CAUTION:** Be sure the spacer washers at point "A" do not catch on the recess as noted in Figure 34.

The twine holder "A" Figure 35 is a double plate which holds the twine in the twine disc. The holder is retained in position by a flat spring "B" with adjustable tension screw "C". The twine holder tension spring exerts pressure against the twine holder, which in turn holds the twine in the disc under pressure.

The tension spring must be adjusted according to the weight bales that are produced. When the weight of the bale is increased, the adjusting screw on the twine holder tension spring must be adjusted accordingly. The reverse adjustment should be made when the weight is reduced.

It will often be found that moving from one field to another, the tension on the twine holder must be changed due to the moisture content in different types of hay.

# ADJUSTMENTS

## BILL HOOK

Proper adjustment of the bill hook is very important because it is here that knots are formed.

If for any reason the bill hook tongue is bent there is a possibility the bill hook may not catch both strands of twine. The back of the tongue should be straight, not curved. Rough edges and fins on any parts of the bill hook will cause the knots to cling to the bill hook. All these rough edges should be removed with a file, then thoroughly smoothed with emery cloth.

Knots may hang on the bill hook due to excessive tension on the bill hook cam. Some of the tension should be relieved, by loosening the bill hook adjusting screw Figure 35 "D" slightly.

If the knot opens after it has been tied or is very loose and can be pulled open, it is possible that the bill hook does not close tightly enough to hold the ends of the twine securely between the bill hook tongue and the bill hook jaw until the knife arm stripper flange strips the loops over the ends of the twine.

This condition may exist in bill hooks similar to the bill hook in Figure 36. This is caused by the sharp end of the bill hook tongue shown in Figure 37. To correct this, file the sharp end slightly until the tongue is rounded as shown in Figure 38.

Figure 39 shows a closed bill hook with proper amount of space between the bill hook jaw and bill hook tongue. The ends of the twine will be held securely in the bill hook and the loop will be drawn tight over the ends of the twine forming a good knot.

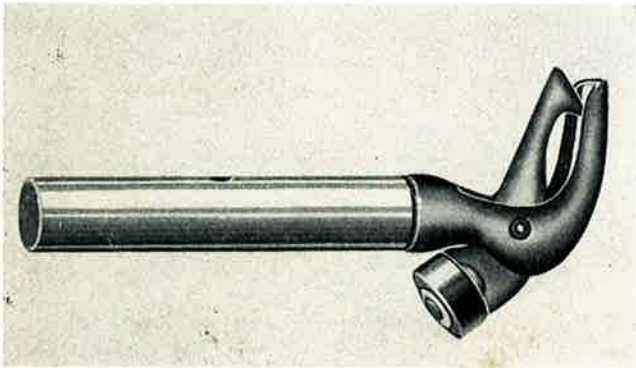


FIGURE 36

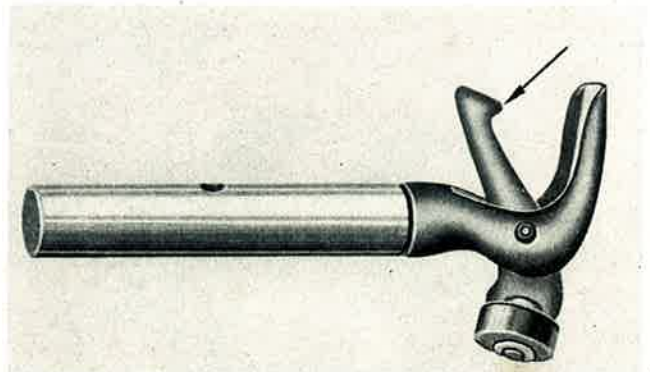


FIGURE 38

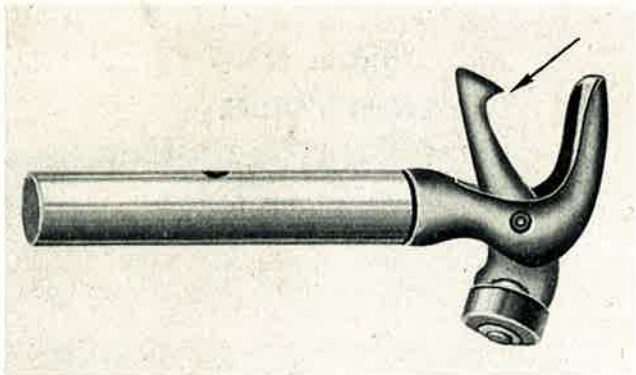


FIGURE 37

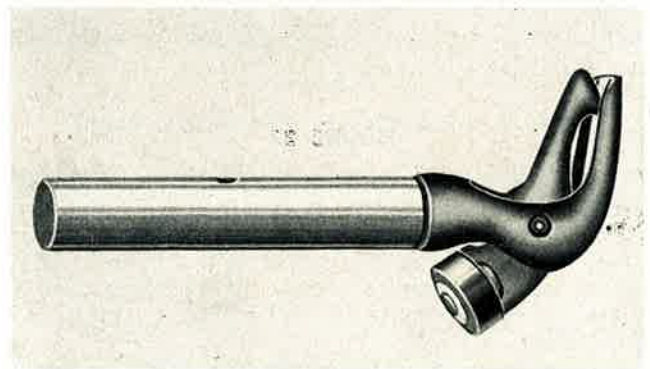
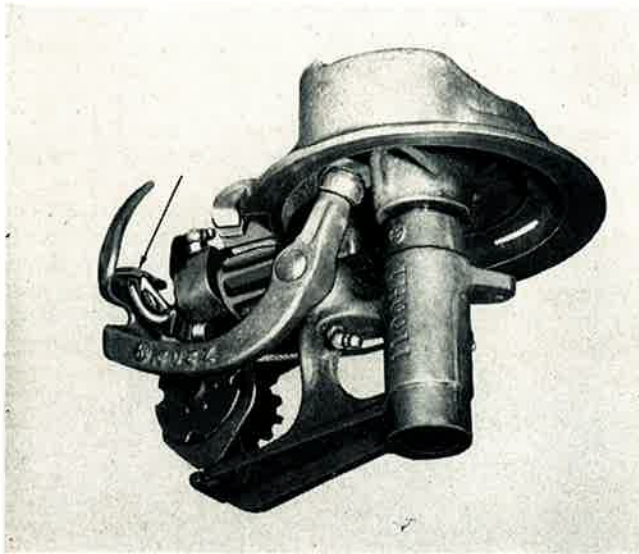


FIGURE 39

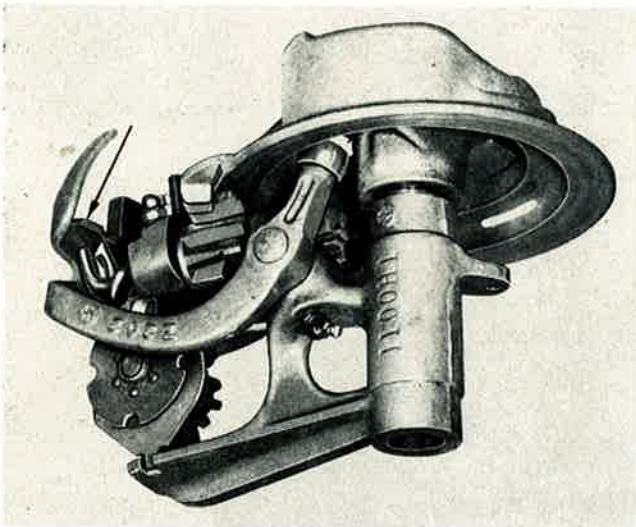


# ADJUSTMENTS

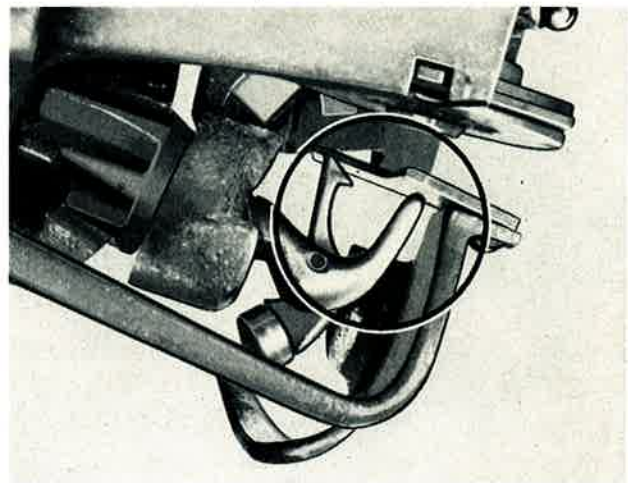


**FIGURE 40**  
**KNIFE ARM**

When the Knife Arm is adjusted too low the Knotter Bill Hook will rub against the Stripper Flange of the Knife Arm as shown in Figure 40. The Bill Hook should revolve without contacting any surface of the Knife Arm Assembly, as shown in Figure 41.

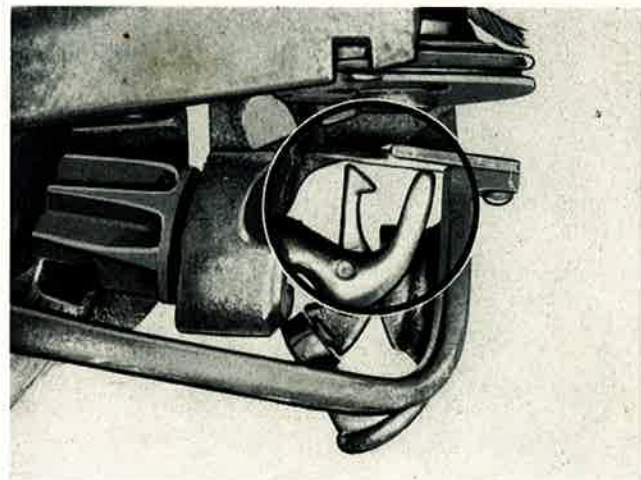


**FIGURE 41**



**FIGURE 42**

Knife Arm in Figure 42 is adjusted too close to the Bill Hook, causing the Bill Hook to strike the Knife Blade riveted to the Knife Arm Assembly.



**FIGURE 43**

Bill Hook in Figure 43 turns freely without striking the Knife Blade.

# ADJUSTMENTS

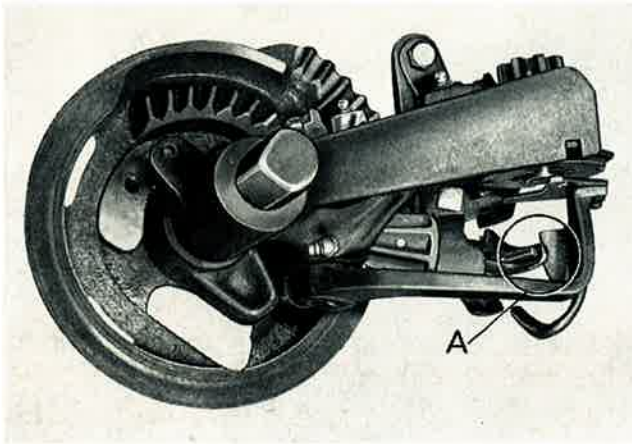


FIGURE 44

The half-moon shaped Knife Arm Stripper Flange should rub against the heel of the Bill Hook when the Knife Arm lowers as in "A". When set in this position, this Flange will push the knot loop off the Bill Hook, the Bill Hook Jaw will hold the two ends and form a good knot. When this half-moon shaped Stripper Flange does not rub against the Bill Hook heel it will pass by the twine, as shown in Figure 45, and, as a result, the twine will not be removed from the Bill Hook.

To determine when Knife adjustment is necessary, first, trip the Over-Center Spring by hand, have

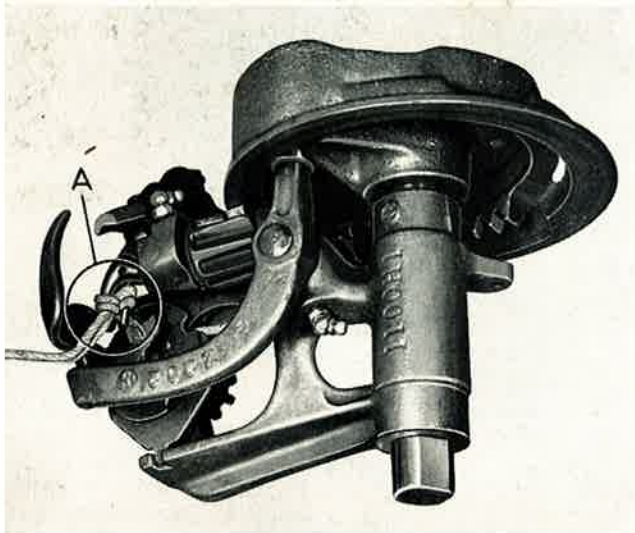


FIGURE 45

the Flywheel turned manually to run the Knotter one complete cycle. By watching the Knife Arm operation, see if any of the above mentioned Knife Arm maladjustments can be noted. If they are noticed, or if there is any reasonable doubt, remove the Knotter Mounting Bolt, ( $\frac{3}{8}$ "x $1\frac{1}{4}$ "), and swing the

Knotter Assembly out from its regular position. By doing this, a closer inspection can be made of Knife Arm setting.

If it appears that slight Knife Arm adjustment is necessary, it may be possible to bend the Knife Arm with a hammer or pry bar without removing any parts of the Knotter.

When considerable adjustment is necessary it is advisable to remove the Knife Arm Assembly and bend by using a wide-jawed vise. The Knife Arm Assembly can most easily be removed by first removing the Bill Hook Adjusting Cam and the Bill Hook.

## INSTALLATION OF KNOTTER H555 ON SHAFT

1. Check knotter shaft for straightness.
2. Examine keyways on all parts for excessive wear.



FIGURE 46

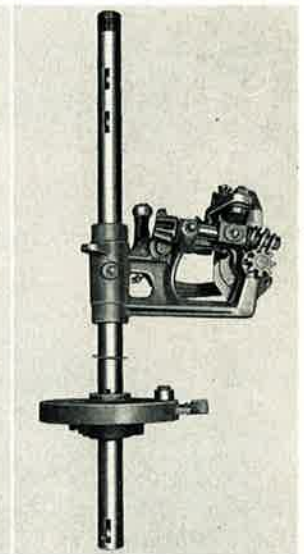


FIGURE 47

FIGURE 46

3. Install knotter clutch disc. Insert key and be sure to position clutch disc so that the set screw will be seated in counter-sunk portion of the shaft. Tighten set screw and lock nut securely.

FIGURE 47

4. Install  $\frac{1}{32}$ " spacer washer and knotter assembly (H555).

CAUTION: Be sure bill hook points towards clutch disc.

FIGURE 48

5. Install spacer washers as needed.

# ADJUSTMENTS

6. Install knotter cam gear (11589). **CAUTION:** Examine knotter pinion gears to ascertain that the flat of the pinion gears rests against the flat of the knotter cam gear and that there is not more than 1/32" clearance.
7. Insert 1/4" x 1 1/8" woodruff key and seat cam gear properly.
8. Install 1/32" spacer washer on shaft.

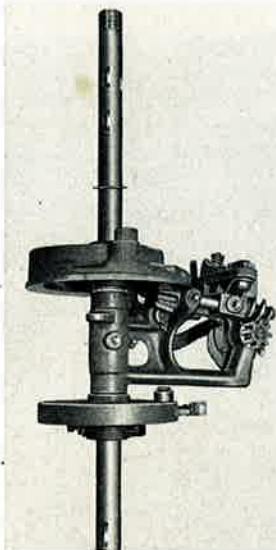


FIGURE 48

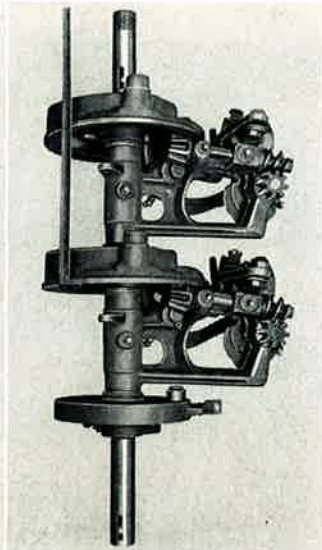


FIGURE 49

FIGURE 49

9. Install second knotter assembly (H555) and knotter cam gear in similar manner as the first.
10. Check the distance as indicated by the measuring tape, between the machined surfaces of the knotter cam gears, to be sure it is 7". To secure this distance add spacer washers as needed.

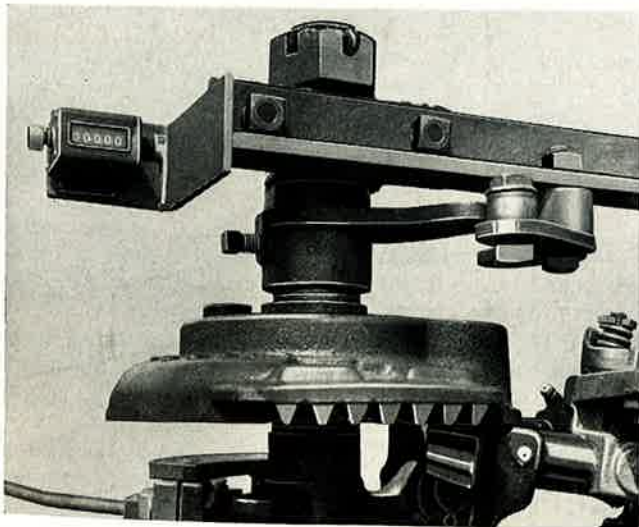


FIGURE 50

FIGURE 50

11. Install trip rod return cam 11588 with necessary spacer washers. Add washers needed to produce alignment of trip rod return cam with 11574 roller. Insert 1/2" x 1 1/4" woodruff key and tighten set screw.
12. Install knotter clutch gear. Use masking tape to keep gear from falling off the shaft.

## INSTALLATION OF KNOTTER ASSEMBLY (11790) ON THE BALER

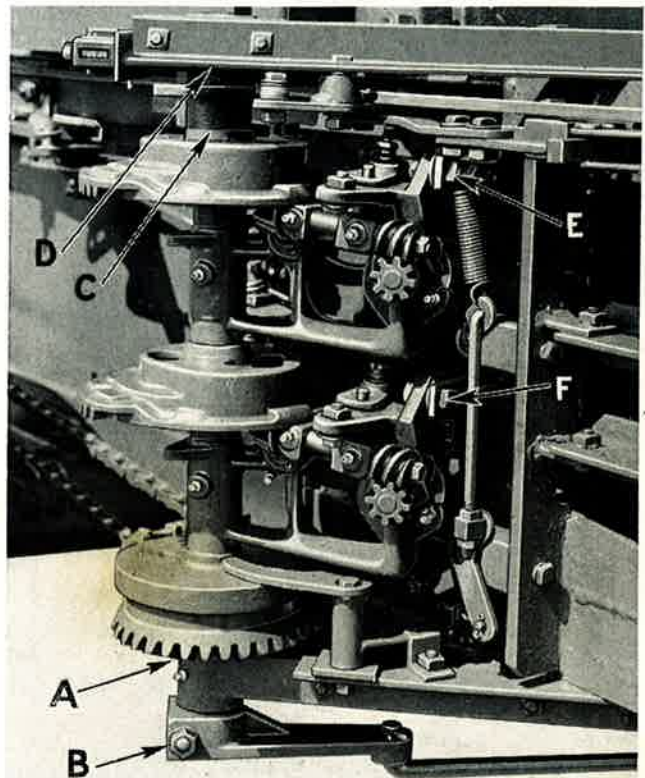


FIGURE 51

1. Install knotter assembly in knotter support bearing bracket "A" with spacer washer as indicated.
2. Install 1/32" spacer washer and knotter arm. Tighten bolt "B".
3. Insert spacer washers at "C" to align return cam with roller.
4. Install top knotter support bearing on shaft with spacer washer as needed at "D". Bolt the bearing to the angle iron support bar as shown. Important: Failure to eliminate end play in knotter assembly may result in serious knotter damage.
5. Install 1/32" spacer washer, castellated nut, and cotter key on top of knotter shaft.
6. Attach knotter assemblies in position at points "E" and "F" with machine bolts. Use washers as indicated.
7. Connect needle yoke rod to knotter arm (For adjustment, see p. 28).

# ADJUSTMENTS

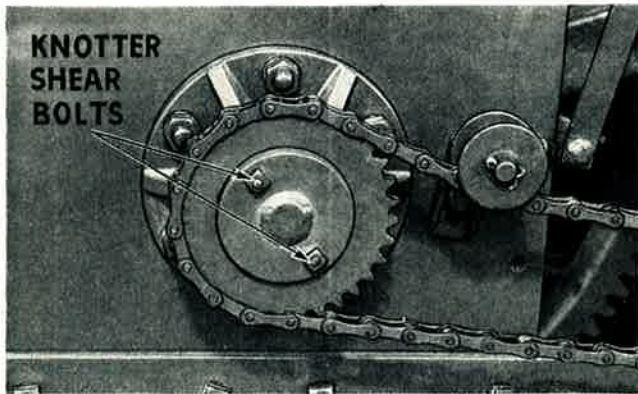


FIGURE 52

## KNOTTER DRIVE SHEAR BOLTS

FIGURE 52

The knotter drive is provided with two safety shear bolts. These knotter shear bolts are a safety feature which prevents excessive damage or breakage to the knotter assembly. When these bolts shear, a careful check should be made before replacing to determine the cause, and to ascertain that the knotter is working freely.

### Replacement of Knotter Drive Shear Bolts

1. Remove the chain guard.
2. Remove the large cotter key on the inner side of the bull gear bearing and the retaining plate. The knotter drive shaft can be pulled out from the bull gear until ample clearance is gained to remove the shear bolts.
3. Replace the shear bolts with 5/16" x 1" square-head machine bolts with heads toward the bull gear; threads and nuts toward the chain guard. Tighten shear bolts to their limit, as loose bolts will shear easily.
4. Replace guard.
5. Turn flywheel of Baler manually through the entire knotter cycle to ascertain free working of the knotter.

IMPORTANT: Never install hardened steel bolts, as they will not shear readily and may result in serious damage to the knotter assembly.

### Causes of Shearing of Knotter Drive Bolts

1. Dirty knotters.
2. Broken knotter parts.
3. Lack of proper lubrication on the knotter shaft bearings.

## TWINE FINGERS

When the needle brings the twine into the twine disc, the twine finger pushes the twine onto the bill hook.

It is advisable to check this adjustment frequently, as a large percentage of all tying failures on Balers is the result of poorly adjusted twine fingers.

When the twine fingers are not in proper adjustment, the knot will appear as in Figure 56.

Figure 53 shows knotter side of bale chamber with knotters removed to reveal correct needle adjustment. Twine fingers should set  $\frac{1}{8}$ " below bottom surface of needle at the instant the roller on knotter clutch disk contacts cam "A" Figure 53.

### Adjustments

1. Stop Baler after half a bale has been made.
2. Release knotter stop, by pushing in over-center spring, Figure 26.

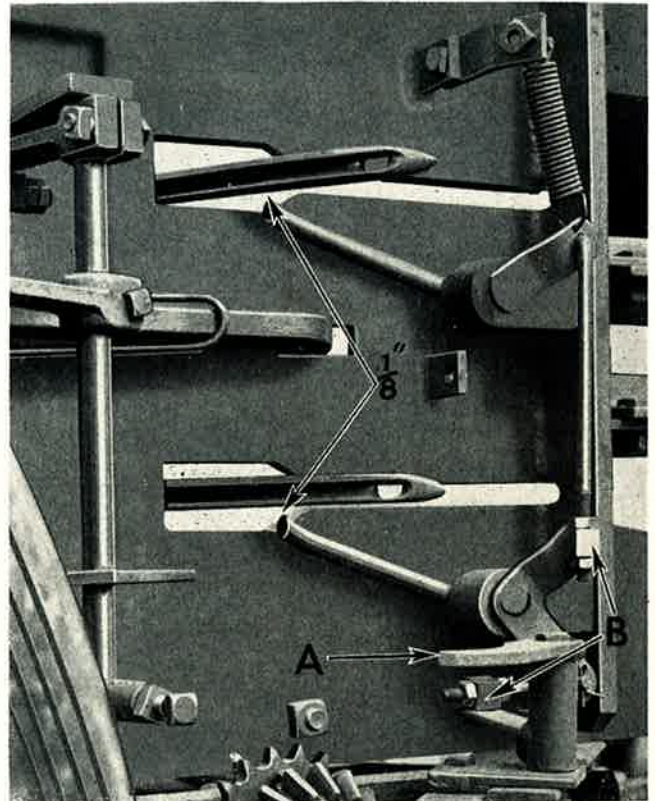


FIGURE 53

FIGURE 53

3. Turn flywheel clockwise by hand until roller comes into contact with cam "A". Adjust both fingers so that they lie approximately  $\frac{1}{8}$ " below the bottom surface of the needles. Either finger can be adjusted by turning the adjusting nuts "B" located on the connecting links. Keep twine fingers away from the main Baler Frame as far as possible, so that they just miss striking the knife arm of the knotter.

NOTE: It is important that the twine finger operates freely between the knife arm and bale chamber. The twine finger should travel in the center of this space.

NOTE: Spring "C" must return the twine fingers to their lower position after the roller passes by the cam "A". It is important therefore, that no binding exists in any of the twine finger linkage. Keep the twine fingers and roller well oiled.

# ADJUSTMENTS

## CONTINUOUS MOVEMENTS OF CLUTCH PAWL

At times the clutch pawl may not come to a dead stop against the knotter stop bolt, but instead continues to move "back and forth".

In new Balers a slight amount of this movement may be necessary. Attempt no adjustment until after baling several hundred bales.

### Adjustment

See Figure 29.

Loosen jam nut "E" and turn knotter stop bolt one complete turn at a time as required.

NOTE: Be sure to disengage main drive belt clutch before making this adjustment.

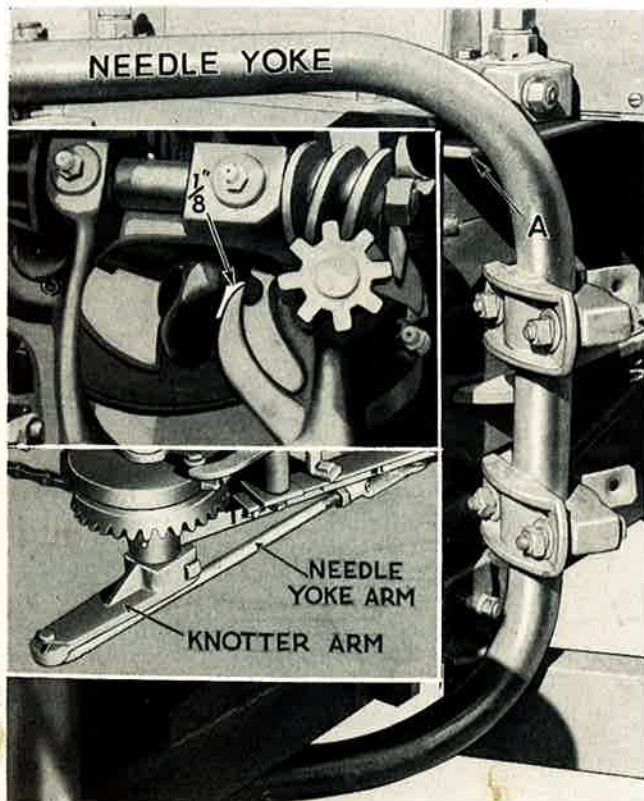


FIGURE 54

## NEEDLE ADJUSTMENT

When replacing either one or both needles, adjust as follows:

1. The needle should ride lightly against the knotter frame. The vertical adjustment of the needle can be obtained by loosening the bolts that hold the needle to the needle yoke adjustment clip and moving the needle as required.

2. Leave sufficient clearance between the needle and the twine disc for the twine. Be sure the needle does not rub against this twine disc. There should not be more than  $\frac{3}{8}$ " nor less than  $\frac{1}{8}$ " at this point. For more clearance, loosen inside bolt, holding the needle to needle yoke, and tighten the outside bolt. To lessen the clearance, loosen the outside bolt and tighten the inside bolt. After needles are adjusted properly, be sure that all bolts are tightened securely.

IMPORTANT: Before starting to bale, make sure that the needles do not touch any part except the knotter frame by tripping the over-center assembly and turning the flywheel by hand in a clockwise direction.

## NEEDLE YOKE

When the needles are all the way through the bale chamber (the needle yoke arm on dead center), there should be  $\frac{1}{8}$ " clearance between the baler frame and needle yoke "A".

### Adjustment

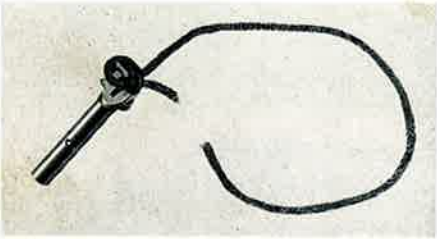
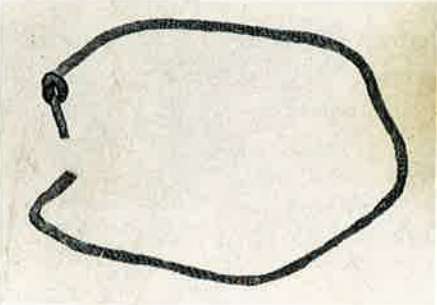
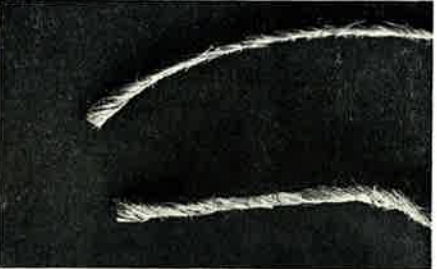
Release the knotter by pushing in the over-center spring. Turn the knotter counter-clockwise until the needle yoke rod is on dead center as shown.

Remove the needle yoke rod from the knotter arm, loosen jam nut and turn as required to produce  $\frac{1}{8}$ " clearance at point "A".


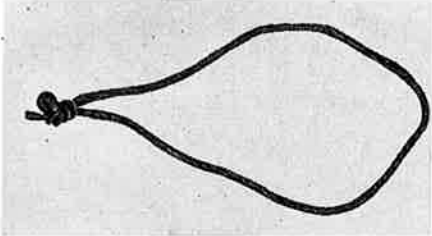
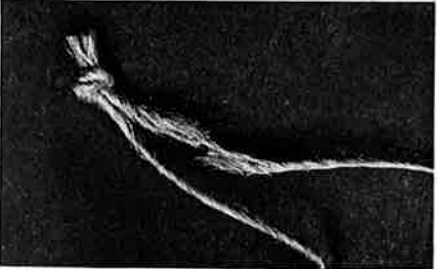
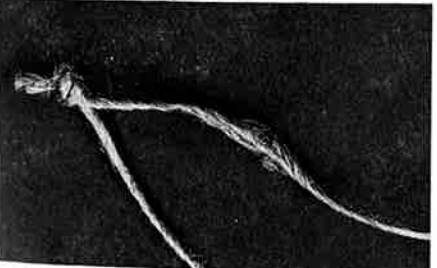
# TROUBLE SHOOTING

## SUMMARY OF KNOTTER DIFFICULTIES AND CORRECTIVE MEASURES

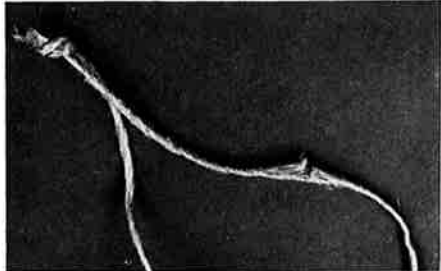
Some of the possible knotter difficulties and their corrective measures are summarized in detail in the next several pages.

Problem	Possible Cause	Correction
<p>1. KNOTS HANGING ON BILL HOOK.</p>  <p><b>FIGURE 55</b></p>	<p>Too much tension on bill hook cam.</p> <p>Rough bill hook.</p> <p>Bill hook cam, binding on bill hook adjusting screw.</p> <p>Knife arm stripper does not contact back of bill hook.</p> <p>Knife arm does not raise high enough.</p>	<p>Loosen bill hook cam adjusting screw.</p> <p>Smooth off all rough edges with emery cloth and fine file.</p> <p>File edges smooth in elongated hole in bill hook cam.</p> <p>Bend knife arm stripper so it touches bill hook lightly.</p> <p>Increase lift on knife arm. (See Page 24).</p>
<p>2. KNOT TIED ONLY ON ONE END OF TWINE.</p>  <p><b>FIGURE 56</b></p>	<p>Twine fingers too low.</p> <p>Twine disc may be too late.</p> <p>Bill hook tongue fails to open wide enough.</p> <p>Bent bill hook tongue.</p>	<p>Adjust twine fingers 1/8" below needle.</p> <p>Advance timing of disc so both strands are caught in bill hook. (See Page 22.)</p> <p>Knotter bill hook roller has worn groove in knotter frame. Replace frame or rebuild groove with weld.</p> <p>Straighten tongue, or replace bill hook.</p>
<p>3. TWINE CUT OR BROKEN, BUT NO EVIDENCE OF A KNOT IS PRESENT.</p>  <p><b>FIGURE 57</b></p>	<p>Tension spring on twine holder does not allow enough twine to slip through holder to form knot.</p> <p>Rough edges on twine holder or disc.</p> <p>Twine tension spring too loose allowing twine to slip out of disc when bill hook turns.</p>	<p>Loosen twine holder tension adjusting screw; clean dust and chaff from under flat twine holder spring.</p> <p>Remove all evidence of sharp edges on twine holder and twine disc.</p> <p>Tighten twine holder spring tension.</p>

# TROUBLE SHOOTING

Problem	Possible Cause	Correction
<p>4. ONE END OF TWINE LONGER THAN OTHER, OR LOOP IN ONE TWINE END.</p>  <p><b>FIGURE 58</b></p>  <p><b>FIGURE 59</b></p>	<p>Dull twine knife.</p> <p>Insufficient tension on twine holder.</p> <p>Twine holder tension springs too loose.</p> <p>Insufficient lift on knife arm.</p> <p>Bale weight too light.</p>	<p>Sharpen blade on knife arm.</p> <p>Tighten twine holder tension spring.</p> <p>Tighten twine holder tension spring adjusting cap screw.</p> <p>Increase lift on knife arm. (See Page 24.)</p> <p>Increase weight by tightening bale tension screws.</p>
<p>5. TWINE FRAYED OR BROKEN APPROXIMATELY ½" BACK OF KNOT.</p>  <p><b>FIGURE 60</b></p>	<p>Insufficient clearance between back of bill hook and inside face of knife arm.</p>	<p>Bend knife arm so bill hook will revolve freely. However, when the knife arm raises, the stripper arm must touch bill hook.</p>
<p>6. TWINE FRAYED OR BROKEN APPROXIMATELY 3" BACK OF KNOT.</p>  <p><b>FIGURE 61</b></p>	<p>Rough fins on knife arm.</p> <p>Twine finger pinches twine against bale chamber or knife arm.</p>	<p>Remove rough surfaces.</p> <p>Bend knife arm to eliminate binding.</p>

# TROUBLE SHOOTING

Problem	Possible Cause	Correction
<p>7. TWINE FRAYED OR BROKEN APPROXIMATELY 6-8" BACK OF KNOT.</p>  <p><b>FIGURE 62</b></p>	<p>Rough surface on needle slots of bale chamber.</p>	<p>Dress needle slots with file or emery cloth.</p>
<p>8. TWINE DISC DOES NOT STAY IN TIME. (SEE PAGE 22.)</p>	<p>Twine disc pinion 1111H1 Driv-Lok pin sheared.</p> <p>Splined shaft in twine disc turns in hub.</p> <p>Adjustable knotter worm slips on shaft.</p>	<p>Replace Driv-Lok pin.</p> <p>Replace twine disc assembly.</p> <p>Lock nut not tight enough. or Spacer washer wedged between recess on tapered shaft and gear.</p>
<p><b>GENERAL PROBLEMS</b></p>		
<p>Plunger rubbing side of Bale Chamber and heating.</p>	<ol style="list-style-type: none"> <li>1. Plunger Wear plates worn.</li> <li>2. Baling material which is too green.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace Wear Plates. See page 18.</li> </ol>



# TROUBLE SHOOTING

Problem	Possible Cause	Correction
Shearing Fly Wheel Safety Bolts.	<ol style="list-style-type: none"> <li>1. Baling too heavy.</li> <li>2. Safety bolt nut loose.</li> <li>3. Dull knives.</li> <li>4. Excessive clearance between knives.</li> </ol>	<ol style="list-style-type: none"> <li>1. Loosen bale tension.</li> <li>2. Tighten safety bolt nut securely. Use jam nut if necessary.</li> <li>3. Sharpen knives.</li> <li>4. Adjust knives. See page 18.</li> </ol>
Failure to pick up material cleanly.	<p>Chains carrying pick-up teeth are too loose.</p> <p>Pick-up too high from ground.</p> <p>Too many pick-up fingers bent or broken.</p> <p>Ground speed too fast.</p> <p>Windrows are too light.</p> <p>Pick-up and auger drive belt slipping.</p>	<p>Tighten chains. See page 15.</p> <p>Raise auxiliary pick-up wheel. See page 15.</p> <p>Replace broken and bent pick-up fingers.</p> <p>Slow down.</p> <p>Rake heavier windrows.</p> <p>Tighten belt tension.</p>
Mis-shaped Bales.		
1. Bales long on top, short on bottom.	Short wadboard stroke.	Lower wadboard by turning adjusting nuts to left. See Figure 22, page 17.
2. Bales short on top, long on bottom.	Long wadboard stroke.	Raise wadboard by turning nuts to right.
3. Variance in bale length.	<ol style="list-style-type: none"> <li>1. Over center assembly not working freely.</li> <li>2. Plunger latch not in correct adjustment.</li> <li>3. Push rod not set correctly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean all grease and oil and free any binding parts on the over center assembly.</li> <li>2. Adjust latch as explained on page 20.</li> <li>3. See Figure 27, page 20.</li> </ol>
4. Long bunches of hay on top and ends of bales.	<ol style="list-style-type: none"> <li>1. Dull slicing knives.</li> <li>2. Too much clearance between knives.</li> </ol>	<ol style="list-style-type: none"> <li>1. Sharpen or replace knives.</li> <li>2. Adjust slicing knives. See page 18.</li> </ol>
Shearing Knotter Drive Bolts.	<ol style="list-style-type: none"> <li>1. Dirty knotter.</li> <li>2. Bearing freezing on shaft.</li> <li>3. Too much end play in assembly.</li> <li>4. Broken needles.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean knotters.</li> <li>2. Loosen bearing and lubricate.</li> <li>3. Reassemble complete knotter assembly. See page 26.</li> <li>4. Check cause of breakage and replace needles making necessary adjustments. See page 28.</li> </ol>

# TROUBLE SHOOTING

Problem	Possible Cause	Correction
Excessive noise in connecting rod latch.	Insufficient clearance at point "A" Figure 21.	Adjust connecting rod according to instructions, on page 17.
Bales too tight with the tensor screws open.	Baling green or wet material.	
	Some foreign object lodged in bale chamber corners.	Remove material from bale chamber and inspect closely.
Plunger missing more than one stroke.	Improper adjustments of plunger latch.	Adjust as needed. See page 20.
	Binding action of plunger latch.	Remove plunger latch, clean off any paint or foreign material. Occasionally it may be necessary to use a file or emery cloth. <b>IMPORTANT: DO NOT GREASE THIS ASSEMBLY.</b>
	Insufficient stroke on push rod.	See over-center assembly adjustment on page 20.
	Over-center spring too weak.	Replace over-center spring.
Pick-up raises and remains up.	Improper adjustment of the lever stop.	Adjust as needed. See page 15.
Pick-up riding on ground at all times.	Insufficient tension on pick-up lift springs.	Tighten pick-up lift springs as required. See page 15.

## EXCESSIVE NEEDLE BREAKAGE

If only one needle breaks:

- (1) Inspect the slots in the plunger where the needle comes through the frame. One or both slots may be plugged with stones or other foreign material.
- (2) The needle may have slipped out of adjustment and struck against some part of the Baler Frame or knoter. Refer to page 28, figure 54.

When both needles break, see page 20, figure 29:

- (1) Does safety clevis work freely on connecting link?
- (2) Are clevises in position, or have they slipped on the trip shaft?
- (3) Does knoter stop set squarely in front of clutch pawl?
- (4) Remove the knoter clutch gear in the clutch disc, and if indication of wear in either gear or clutch is present, replace.

# CARE OF THE BALER

---

## DAILY CARE OF THE BALER

1. The machine should be kept as clean as possible. All of the dust, dirt, hay blossoms, etc., should be kept off to insure proper operation.
2. Inspect the complete machine daily to be sure that all bolts are kept tight, and all parts are kept in adjustment. **INSPECT SLICING KNIVES DAILY FOR ADJUSTMENT AND SHARPNESS.**
3. Keep bearings well lubricated.
4. Keep all excessive grease and oil removed from the machine, as it will have a tendency to collect more dirt.
5. Replace worn parts promptly, using genuine New Holland Repair Parts.

## DUTIES OF THE OPERATOR

1. Control the bale tension.
2. Check lubrication points and give them proper attention.
3. Check twine supply, and refill with certified New Holland Twine when necessary.
4. Keep knotters and over-center assembly clean. The New Holland Knotter assembly is mounted so that it will collect a minimum of dirt and dust.
5. Study and become familiar with the knotter and over-center assembly operation and adjustments.
6. Operate the tractor and control ground speed.
7. Watch the windrow and try to prevent any foreign objects from going into the Baler.

## STORAGE OF THE BALER

1. Open the tension rails and remove all hay from the bale chambers. Coat the inside of the bale chamber with a good grade of rust preventive.
2. Remove any chaff and dirt that may be on the Baler.
3. Lubricate each grease fitting thoroughly until the grease forces out around the shaft, with the exception of the main drive and pillow block bearings.
4. Remove all belts, wipe them clean and store them in a cool dry place. Apply grease in sheave surfaces where belts ride.
5. **CAUTION:** Before starting the Baler next season, remove all grease from the sheave surfaces, and wipe with rag moistened with grease solvent.
6. Remove roller chain, cleaning it in kerosene, then applying a light coating of motor oil. Replace the chain.
7. Apply a coating of rust preventive to all wearing parts, such as bill hooks, cam gears, twine knives, etc.
8. Block up the Baler so as to take the weight off the tires. Do not deflate the tires.
9. Block up the pick-up so as to remove the weight from the balance spring.
10. Check the Baler thoroughly for any parts that may have become worn and need replacing. Make a list of these parts and get them from your New Holland Dealer.
11. Store the Baler in a dry place. If machine must be left in the open, cover it with a tailored-to-fit New Holland Baler Cover.
12. For complete instructions on the storage of the engine refer to the engine manual provided with the Baler.

# ORDERING PARTS

## ORDERING REPAIR PARTS

When preparing the Baler for storage, check the Baler thoroughly for any parts that may have become worn and need replacing. USE THE CHECK LIST PROVIDED BELOW TO ASSIST IN MAKING A LIST OF THE PARTS NEEDED AT THIS TIME.

Repair parts should be ordered at once and installed before the next baling season.

When ordering repair parts, always be sure to give your New Holland Dealer the model and serial number of your Baler, as well as the quantity, part number and an accurate description of each part.

The plate containing the model and serial number of the Baler is located on the left side main bearing support plate. In case this should become lost, the number is also stamped on the angle frame just below this point.

**INSIST ON GENUINE NEW HOLLAND REPAIR PARTS. FOR BEST PERFORMANCE, HAVE YOUR BALER SERVICED BY AN AUTHORIZED NEW HOLLAND DEALER.**

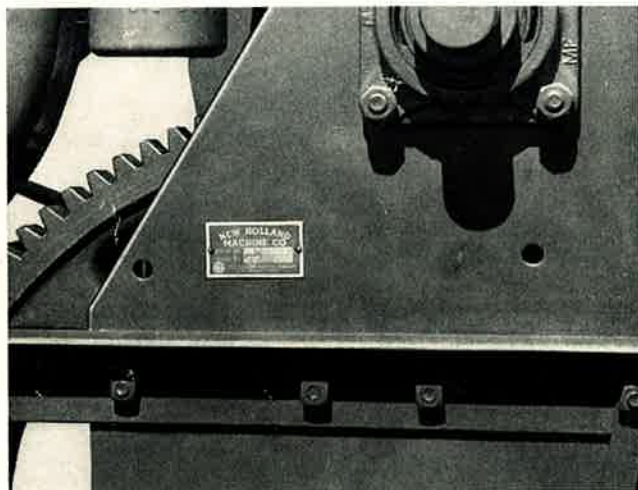


FIGURE 63

## CHECK LIST FOR ORDERING REPAIR PARTS

1. Slicing knives and plunger wear plates (See Note "A").
2. Examine all belts and chains.
3. Inspect the draw bar hook-up clevis for excessive wear.
4. Examine the bull gears and main drive gears.
5. Is there wear in the bushings in the connecting rod evidenced by excessive play at either end of the connecting rod?
6. Examine the connecting rod roller and connecting rod latch for excessive wear.
7. Examine the plunger latch and the plunger stop.
8. Examine and check the complete knotter assembly for any excessive wear and at any point—Especially note any of the rollers on the assembly, bill hooks, bill hook cams, and any other cams on the knotter.
9. Is there excessive wear in the auger bearings?
10. Inspect the pick-up teeth for any that may be broken or badly bent.
11. Are the pick-up cam rollers in good condition?
12. Do any of the sprockets show excessive wear?

Note A—An extra set of slicing knives—part number 12744 and 12786 is a good investment. Dull knives can then be sharpened while the spare set is being used.

# SAFETY PRECAUTIONS

---

**Most farm implement accidents can be avoided by observation of a few simple safety precautions.**

1. Don't clean, lubricate, or make any adjustments on the Baler while it is in motion.
2. Don't engage the clutch until you know that everyone is clear of the machine and that no tools are lying on the machine.
3. Don't work around the machinery in loose clothing that might catch in any of the moving parts.
4. Don't attempt to pull loose hay from any part of the Baler while it is in operation.
5. Don't pour gasoline into the fuel tank while the engine is running.
6. Don't permit anyone to ride on the Baler.

# WARRANTY

---

## WARRANTY

New Holland Machine Company machinery is sold by the dealer or distributor with the following standard warranty of the manufacturer, AND NO OTHER:

New Holland warrants that its machinery is free from defects in material and workmanship and agrees to replace without charge f. o. b. factory for a period of three months after resale by authorized New Holland dealer, such parts which have been acknowledged by the Company, after inspection by it, as defective. The express warranty herein given is in lieu of and excludes all other representatives of warranties, express, implied or statutory.

The Company makes no warranty whatever with respect to tires, tubes, ignition apparatus, magnetos, carburetors, or other trade accessories not manufactured by it, as they are subject to the warranty of their respective manufacturers. No warranty whatsoever is made on any used, second-hand, altered, or rebuilt machines.

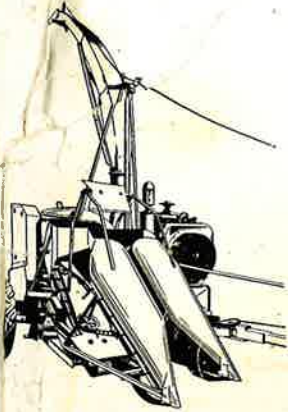
The Company's liability in connection with the manufacture, sales or use of any of its products is expressly limited to the repair or replacement of defective parts as above set forth. The Company specifically assumes no other liability for damages of any kind or nature, direct, consequential or contingent.

NEW HOLLAND MACHINE COMPANY  
New Holland, Pennsylvania

## IMPORTANT

Make sure your warranty card is filled out and returned promptly.

# FULL LINE

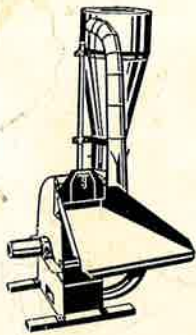


## FIELD FORAGE HARVESTER

Change from Row Crop (shown) to windrow attachment in less than 30 minutes.

## FIELD BALE LOADER

Picks up bales from any angle. Attaches right to side of wagon or truck.



## HAMMER MILL

Big mill capacity at small mill cost . . . 12 free-swinging reversible hammers.

## HAY CHOPPER-ENSILAGE CUTTER

Fills silos fast with exclusive chopping action for even length cuts.

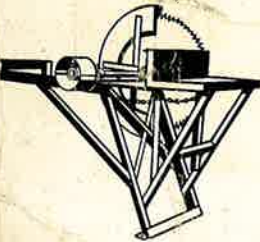


## CORN SHELLER

Shells corn cleanly at up to 200 bushels per hour. Patented interior baffle.

## FORAGE BLOWER

Extra long feed table, 140' square inch feed opening with 30 feet blower pipe.

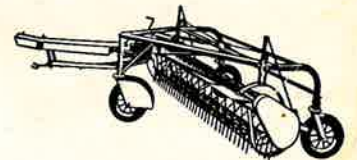


## PORTABLE TRACTOR SAW

Goes to the woods on your tractor—quickly converted to stationary saw frame.

## SIDE DELIVERY RAKE

Power take-off driven, tri-cycle mounted for faster and cleaner windrowing.

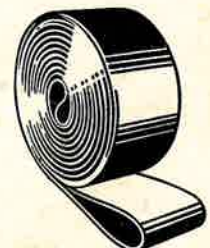


## CERTIFIED BALER TWINE

Checked by U. S. Testing for quality, uniformity and strength.

## SNUG-GRIP BELTING

Red Rubber Belting for every one of your farm drives—in endless and roll.





**NEW HOLLAND MACHINE COMPANY**  
**NEW HOLLAND, PENNSYLVANIA**

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