

1913

DIRECTIONS

For Using
The

Ideal Lawnmower Grinder



MANUFACTURED BY

The Heath Foundry & Mfg. Co.

PLYMOUTH, OHIO

PRESERVE CAREFULLY FOR FUTURE REFERENCE

Price List of Repairs

When ordering Repairs be sure to give the Number of the Grinder stamped on the Brass Name Plate, and always state what Year's Model it is.

FOR 1911 AND 1912 MODEL "IDEAL" LAWNMOWER GRINDER

Part No.	Name of Piece	Price	Postage or Wgt.
J 1	Right Hand Frame	\$3.00	14 pounds
J 2	Left Hand Frame	3.00	14 pounds
J 3	Large Sprocket Wheel	1.50	13 pounds
J 4	Arm	2.25	5 pounds
J 5	Right Hand Side Bar	.45	5 1/2 pounds
J 6	Left Hand Side Bar	.45	5 1/2 pounds
J 7	Attachment Bar Ends	.20	12 cents
J 8	Hand Wheel Bracket	.50	45 cents
H 9	Mower Support Hanger	.35	48 cents
H 10	Mower Support Rest	.25	30 cents
J 11	Drive Shaft Bearing Bracket	.35	12 cents
J 12	Roller Support	.40	26 cents
H 13	Feed Sheave Pulley	.30	12 cents
J 14	Sliding Head	1.25	40 cents
H 15	Counterweight	.20	4 1/2 pounds
H 16	Arm Spreader	.75	8 cents
J 17	Sliding Sprocket Hub	.75	8 cents
J 18	Emery Wheel Hub	1.00	10 cents
J 19	Power Pulley, tight	.40	30 cents
J 20	Power Pulley, loose	.40	30 cents
H 22	Shifter Knuckle	.25	4 cents
J 23	Attachment Bar	.70	7 1/2 pounds
J 24	Sliding Chuck Shaft	.25	4 cents
J 25	Hook	.05	1 cent
J 26	Spring for Chuck Shaft	.15	1 cent
J 27	Adjusting Screws	.15	3 cents
J 28	Finger Point	.15	1 cent
J 29	Feed Trip Lever	.10	1 cent
J 30	Feed Nut, cast iron	.15	2 cents
J 31	Knurled Adjusting Screw	.10	1 cent
J 33	Finger, main part	.20	2 cents
J 34	Cone, left side	.15	1 cent
J 35	Cone, finger side	.15	1 cent
J 36	Nut for Wheel Hub	.15	2 cents
J 37	Grinding Wheel, 5 in. Alundum	.75	2 1/2 pounds
J 38	7 Tooth Sprocket, 3-16 in. tapped	.25	2 cents
J 39	9 Tooth Sprocket, 3-16 in. tapped	.30	3 cents
J 40	7 Tooth Sprocket, 3-16 in. tapped	.25	3 cents
J 44	Cup Case for Wheel Hub	.15	1 cent
J 52	Cup Case for Drive Shaft (Pulley end)	.25	2 cents
J 53	Cone for Drive Shaft	.25	2 cents
J 54	Adjusting Cup Case	.35	3 cents
J 55	Main Drive Shaft	1.75	12 pounds
J 56	Feed Screw	1.25	3 1/2 pounds
J 58	Ball Retainer for 11 Balls, 1/4 in.	.10	1 cent
J 59	Sub-base Casting	1.00	16 pounds
J 63	Leather Belt, 5-16 in.	.15	2 cents
J 64	Long 1/4 in. Chain	.85	18 cents
J 65	Short 3-16 in. Chain	.40	10 cents
	Skate Attachment, complete	1.00	25 cents
J 75	Skate Attachment, main part	.60	13 cents
J 76	Skate Attachment, spreader	.25	6 cents
J 77	Skate Attachment, clamp	.15	3 cents
J 78	Straight Blade Attachment	.65	10 cents
	Power Attachment for Hand Grinder	1.50	

DO NOT FORGET TO ADD POSTAGE ON REPAIRS SENT BY MAIL

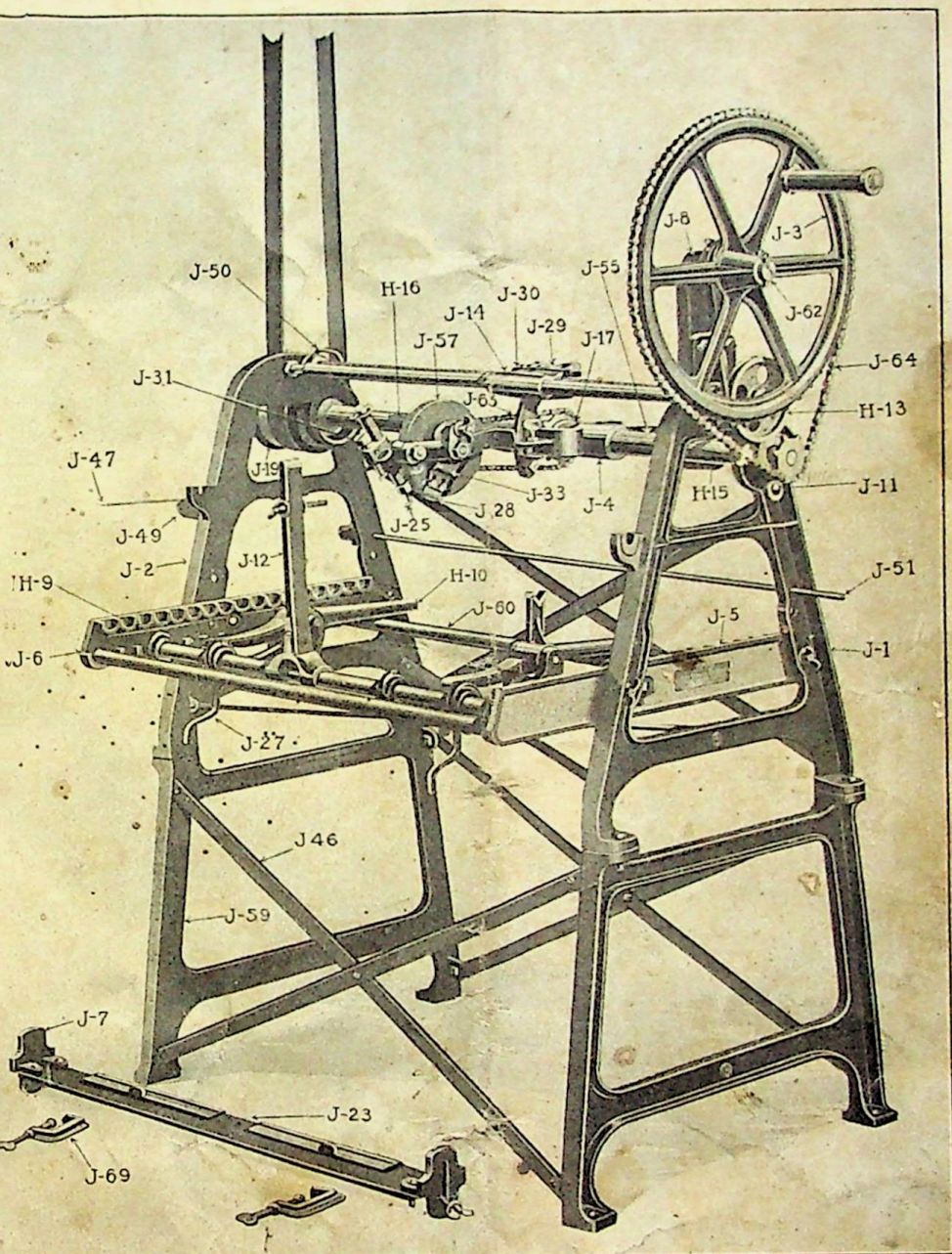


Fig. 1.

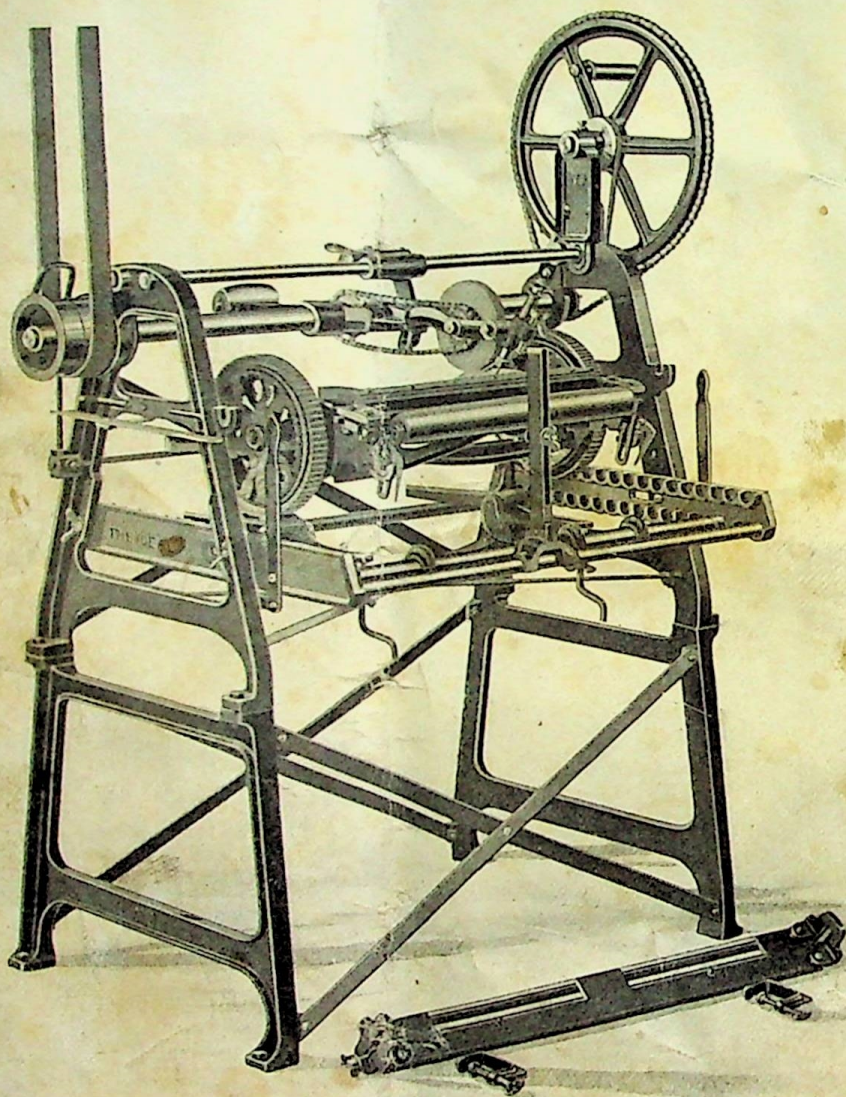


Fig. 2.

Instructions for Setting Up.

First, with the Power Grinder, locate as nearly under the line shaft as possible, and see that it sets level. After assembling the large sprocket see that the Grinder turns easily, as the bearings are liable to get in a bind in transportation. The chain is tightened by raising the bracket J-8 and care must be used in tightening the nuts of the spacing rod or the ball bearings of the main shaft will be in a bind. The main shaft bearings should now be adjusted to run easily. See suggestion No. 6 on page —.

ALWAYS FASTEN THE GRINDER TO THE FLOOR with large screws or short $\frac{3}{8}$ inch lag screws.

SPEED—The Power Pulleys should run at 1400 R. P. M., and when grinding by hand turn the large sprocket wheel 200 R. P. M., or faster.

BELT—Use $1\frac{1}{4}$ inch belt, and if necessary to cross it let it lead to the loose pulley.

OILING—Keep all bearings well oiled, and the chains lightly oiled.

Wipe off the main driving shaft and guide shaft EVERY DAY and oil them well with light oil. If you do not, the emery dust will choke up the arm bearings and make the Grinder run harder and wear faster. THIS IS IMPORTANT.

To Grind The Spiral Reel Knife.

First, adjust the lawnmower so the reel knife will not touch the lower blade. Don't attempt to grind the reel unless it runs free and lost motion in the bearings is all taken up. Often when the mower is turned upside down, the reel knife does not strike the bar. When necessary to adjust it away from the bar, it should be an equal distance at each end, or it will grind more from one end of the reel knife than the other.

Persons without experience are liable to give the reel knife more bevel or clearance than is necessary. It is better not to grind much bevel on them the first time, or it will be necessary to grind them two, or possibly three times. Each year you grind the mowers you can increase the bevel.

Then remove the handle and set the mower upside down on the two supports H-10, always spreading them as far apart as the length of the mower will permit, and put the support under the roller, as shown in Fig. 2.

The mower supports should be adjusted about the same height, before the mower is placed in position, so the straight blade will be level and parallel with the main shaft.

The principal point to bear in mind is to have the lower or straight blade level, or nearly so, and use the row of notches that carry the supporting rods, which will allow the arm to be nearest level.

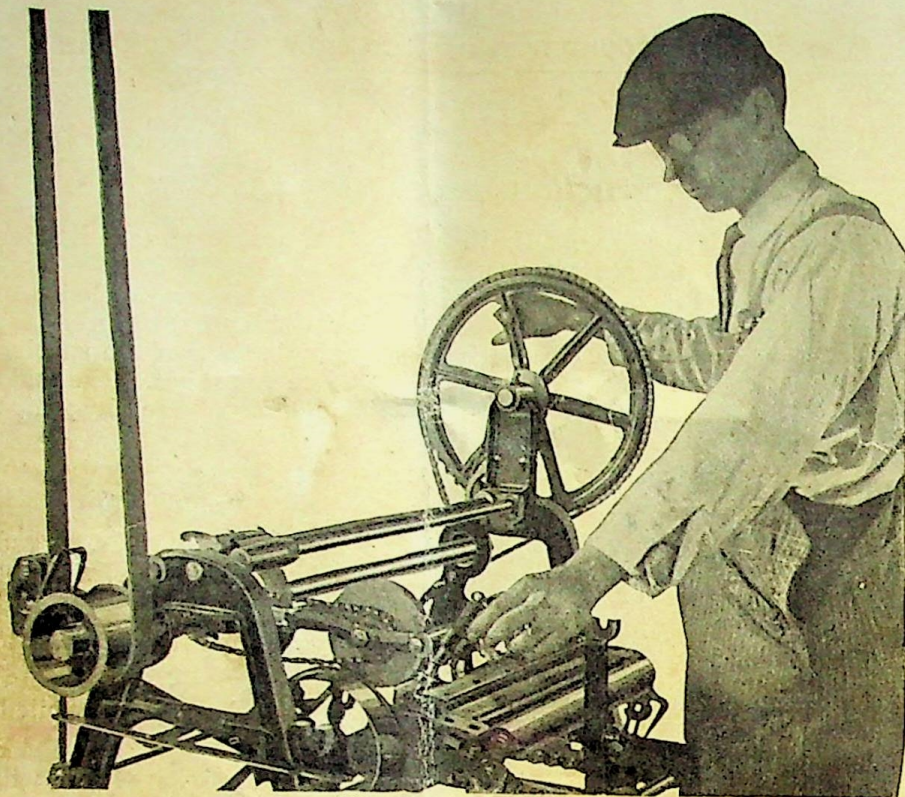


Fig. 3.

Showing the adjusting of the grinding wheel to the reel knife.

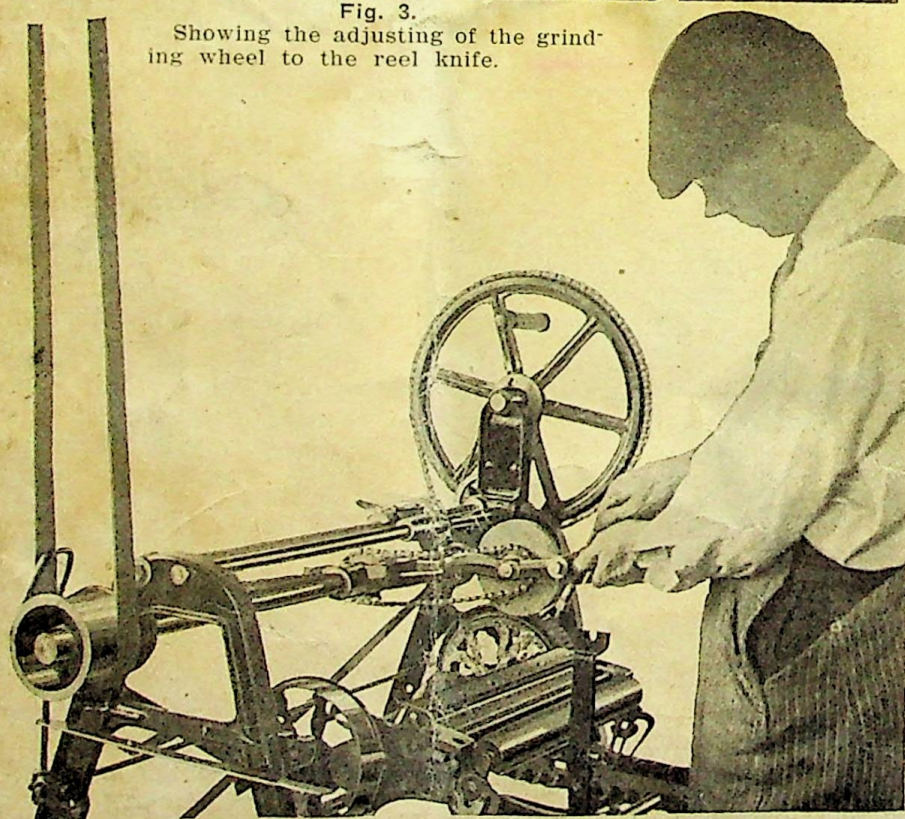


Fig. 4.

Showing the releasing of the hook from under the straight knife.

Try and set them as near like Fig. 2 as possible. Now move the supports K-10 till the hook is as close to the under blade as possible. Place the hook under the straight blade by adjusting the side bars with the hand levers. The hook should not be within $\frac{1}{8}$ of an inch of the front side of the blade. IF THE STRAIGHT BLADE IS CLOSER TO THE HOOK AT ONE END THAN AT THE OTHER adjust the right hand side bar J-5, to suit. The hook should be an equal distance from the blade at each end, and the raised spot or bump on the hook should touch the straight blade where the reel knife has been striking.

When this adjustment has been made, be sure to tighten the large wing nuts on the side bars before proceeding further.

CLEARANCE, or bevel, to the knife is made by adjusting the finger J-33 which keeps the reel from turning, so it will give a slight bevel or clearance behind the cutting edge. Moving the point of the finger towards the operator increases the bevel or clearance.

Beginners usually give the blades too much clearance, and this often makes it necessary to go over the blades a second time in order to get the cutting edge sharp.

After setting the finger, turn the Grinder by hand about one turn, letting the grinding wheel touch lightly. This will show what the bevel will be.

BE SURE TO TIGHTEN THE WING NUT TIGHT which holds the finger on the right hand side of the arm, as the force of grinding is quite strong, and will change its position unless tightened as tight as possible by hand. As the grinding wheel wears away, this finger should be adjusted close to the wheel at all times.

THE HOOK is moved up or down by turning the knurled adjusting screw J-31 which bears against the pin fastened to the sliding hook shaft. Unscrewing the knurled screw draws the arm and grinding wheel down to the spiral reel knife.

It is best to keep the hook as close the grinding wheel as possible, just so the nut on the hook shaft does not strike the finger, when disengaging the hook.

Keep the arm clamped tight at the H-16 spreader so it cannot slip.

When setting the Spreader, always keep the nut, which clamps the hook, as close to the finger as it will work.

Some cases require letting the hook out. Loosening the hexagon nut will unclamp it.

Have the arm J-4 to the left-hand side when the adjustment is first tried, as shown in Fig. 3, the operator turning the large sprocket wheel slowly, and unscrewing the knurled screw J-31 until the grinding wheel just rubs the knife.

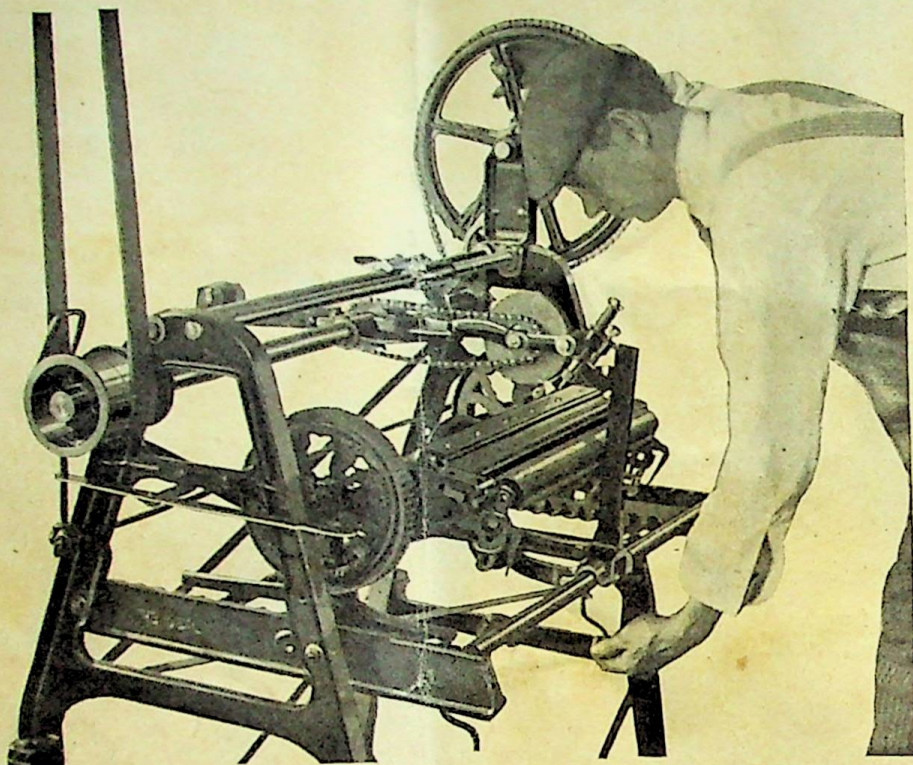


Fig. 5.

Turning the grinding wheel slowly, and adjusting the mower support so the wheel cuts alike at each end.

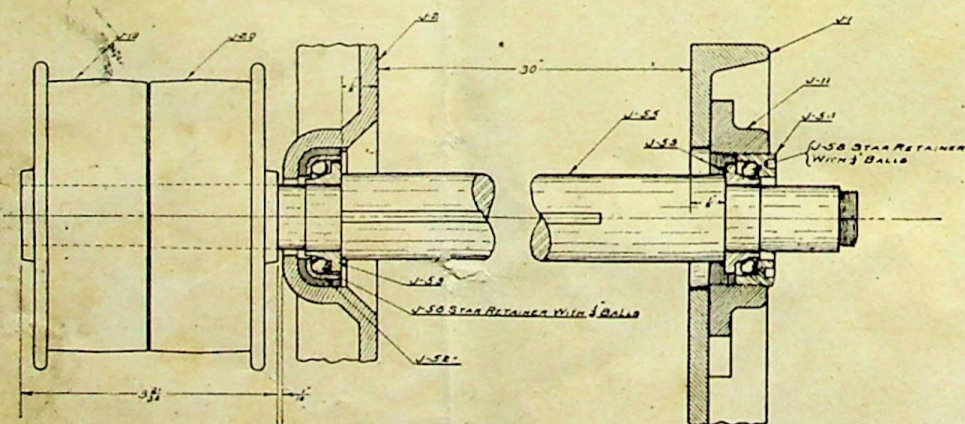


Fig. 6.

Showing Ball-Bearing Main Shaft.

As it is unscrewed it brings the hook nearer the edge of the knife and this may require lowering the support under the roller slightly.

Now release the hook by holding the arm and pushing the sliding shaft down until the pin clears the slot, (see Fig. 4) and turn the hook to the right, which will allow the arm to be raised. The adjusting screw J-31 is prevented from turning by the thumb screw. Tighten this lightly or the threads of the screw will be damaged.

The arm is now moved to the right hand side, the knife placed under the finger, and hook turned back again. If the grinding wheel does not touch the reel knife turn the adjusting screw, J-27, as shown in Fig. 5 and raise the support K-10, which brings the knife against the grinding wheel, always turning the large sprocket wheel slowly when making this adjustment.

Try this a second time, making sure that the grinding wheel rubs lightly and alike at each end.

The amount ground off is regulated by unscrewing the knurled screw at the front of the arm and about one-quarter of a turn is a fair cut.

To Grind.

Move the arm to the left-hand side and place the hook under the knife again. Throw in the feed lever J-29 and shift the belt to the tight pulley.

When the grinding wheel is new it may not be perfectly true with the center, and thus set up a slight vibration on the reel knife. This can be helped by a slight pressure of the hand against the knife to hold it against the Grinder finger.

In using the grinder, the grinding wheel becomes beveled on one edge. This is proper on account of the spiral reel coming against the wheel at an angle, and, as most mowers are right-handed, the wheel will become beveled so the side next to the finger will be the smallest in diameter.

When the grinding wheel is within half an inch of the end of the blade, shift the belt, as the momentum is usually great enough to finish grinding the knife. Don't let the wheel run against the mower and slide it along, as by so doing you are apt to change the adjustment, and the blades will not all be alike. The hook is again released, feed thrown out, arm moved back and the second knife placed under the finger, and all the knives are thus ground alike.

GRIND ALL THE BLADES without changing any of the adjustments, and if it is necessary to go over them a second time it is a good idea to mark the first blade ground, with chalk, so they can be told apart.

Directions for Grinding Straight Knife

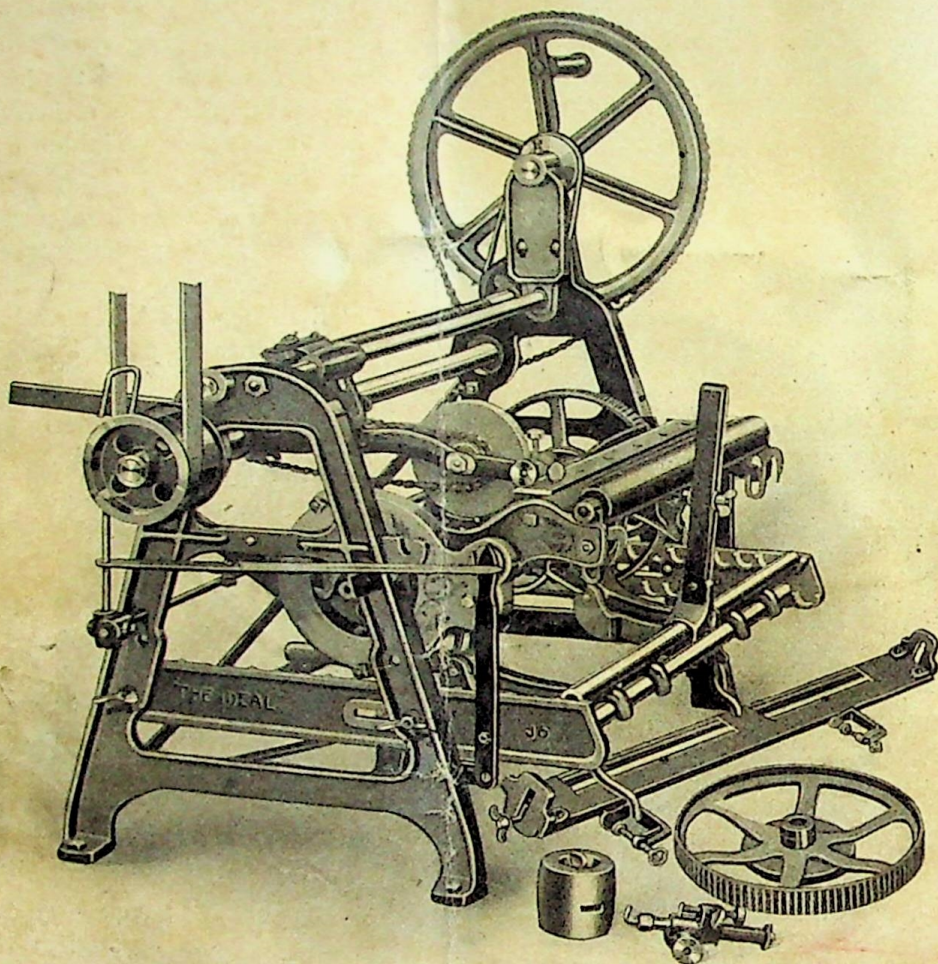


Fig. 7.

Showing Straight Knife Grinding Attachment in use.

The spreader H-16, which carries the hook, is removed from the arm and the attachment J-78 is put in its place. (See Fig. 7.)

The mower is now set so the wheel comes up to the straight knife.

See that the adjustable supports are both raised about the same amount and set the grinding wheel down between the reel knives as far as the reel knife arms will allow. Otherwise more bevel will be given the straight knife to get it sharp than necessary.

Get the adjustment at the left-hand side first, turning the grinder slowly and unscrew the knurled adjusting screw till the wheel touches.

(See next page for balance of description)

Now move the arm to the right-hand side and loosen wing nuts on sidebars and change to suit. If necessary to move it any amount, it will require adjusting the left-hand side again, but a very slight change can be made by turning the adjustable support screw the same as in grinding the reel knife.

Be sure the adjustment or pressure of the wheel is the same at each end before grinding; and when set, use the knurled screw for increasing the cut when going over it the second time.

To grind the straight knife without removing it requires giving it more bevel than usually found on them and the first grinding requires usually two cuts to get the edge sharp, but a single cut will make the edge sharp after they are once beveled.

Time can be saved by grinding the straight knife of the next mower before grinding the reel knife, thus making only one change for each mower.

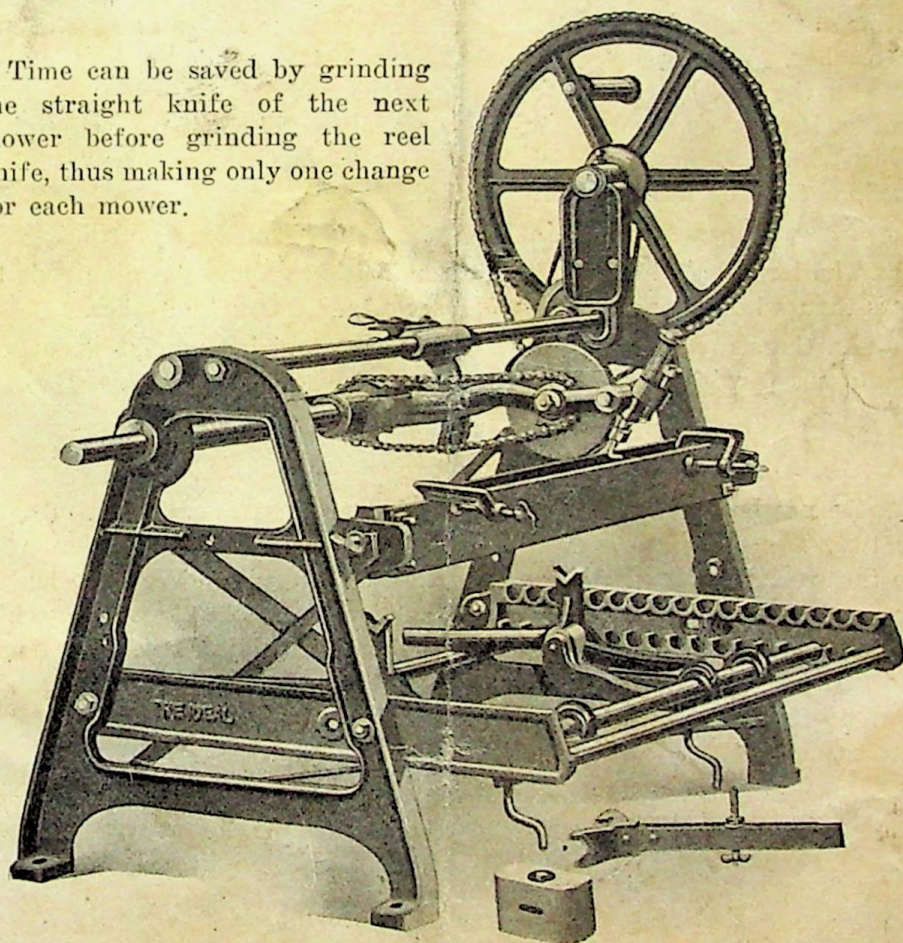


Fig. 8.

Hand Grinder, grinding straight blade with Attachment Bar.

For Directions See Next Page.

When the straight knife cannot be ground on the mower, it is necessary to use the attachment bar as shown in Fig. 8.

Often the thin steel blade can be unscrewed from the cast bar, which is quicker than removing the entire bar.

The thin blade is easily held against the planed side of the attachment bar by the small clamps furnished. The counterbalance, J-15, is removed, and the arm rests on the lug bolted to the sliding head. Place the grinding wheel at the left end of the knife, and adjust the thumb screw at the side of the arm until it just touches the lug on the sliding head.

Now move the grinding wheel to the right side, and if the blade is too low, tap it with a hammer to bring it the right height. The thumb screw at the side of the arm will keep the arm from rounding off the end of the bar. When grinding mowers at our factory we do not let the arm rest on the lug, but set the arm past the knife and throw in the feed and let it down on the end of the blade easily and hold it from dropping down when passing off the blade. The lug is a safe guard and can be used, but never use it when grinding the reel knives.

Always unscrew the thin blade from the bar when possible.

The large hole in the left side bar J-6 is to allow the pipe rods to pass thru while changing from one set of notches to the other.

As there are no places on the Grinder requiring special wrenches, we do not furnish any.

In Conclusion.

Do not lose patience if you do not get the best results the first day or two. As there are over 5,000 Grinders in use, we know they will do the work, if the directions are followed carefully. We have had a great many write us that it took them a week before they thoroughly understood its perfect operation. Being a special machine it will require some study and good common sense; but after you have become used to it you will certainly say it is the only way to grind a lawnmower.

Sometimes there is some particular point which is not clear, and in this case we shall be pleased to give explicit advice by letter. In that event, write direct to us, and not to the jobber from whom you may have ordered.

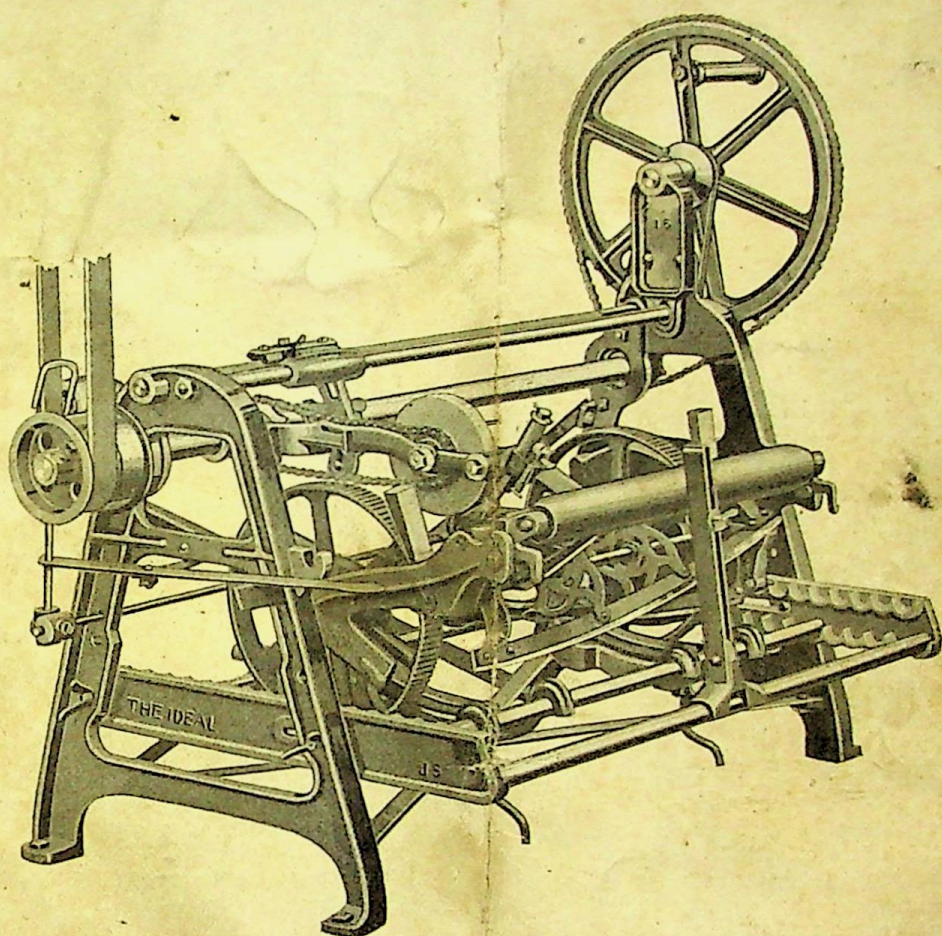


Fig. 10.

Grinding Pennsylvania Highwheel Mower.

When grinding the Pennsylvania High Wheel Mower, remove the plate which covers the small gear and take out gear. Place mower support rod in lower set of notches and sixth notch from the front.

Make two small wooden wedges and drive in between the wheel and bearing. This makes the mower rigid and by removing the gear the center rod does not turn and allows an accurate adjustment.

The blades can be ground their entire length and the straight knife can be ground without removing from the mower.

Special Suggestions.

1. Be sure the wing nuts which hold the side bars, knife finger and roller support are tight enough so they cannot slip. This is very important.

2. When grinding by hand turn at least 200 R. P. M. on the sprocket wheel.

3. Don't disturb the adjustment after one knife has been ground, so as to keep them all like.

4. Don't fail to keep the Grinder well oiled and have the chains run loosely.

5. When the grinding wheel chain jumps off, the jamb nuts of the grinding wheel shaft are loosened and the grinding wheel moved out as the arm is slotted to allow this.

When the ball bearings of the grinding wheel need adjusting, it is best to remove the chain and also loosen the spreader block H-16, and by means of a screw driver the knurled cone can be adjusted. Keep the cone on the finger side clamped tight to keep the bolt from turning.

6. Keep the main shaft bearings adjusted so there is no lost motion. To take up the wear loosen the slotted set screw at the right-hand side and turn the ball cup case to the right, and tighten set screw. Be sure and keep the ball bearings oiled as they will cut if allowed to run dry. See Fig. 6.

The ball bearings of the main shaft and grinding wheel are oiled by turning the grinder slowly and oiling at the joint of the bearing. The oil will quickly work in.

Use coal oil occasionally and wash the grit out by this same method.

7. Do not let the arm rest on the lug when grinding the reel knife or you will spoil your work. It is only a safe guard when grinding the straight knife.

8. To take the grinding wheel out remove the nuts on both sides of the arm and also the arm spreader H-16 and unscrew the bolt. This bolt is threaded its entire length, and it may be necessary sometimes to hold the cones from turning. When the ball bearings wear, and it is necessary to take them up, be sure and put thin washers behind the cones, for if the arm is drawn up to the cones it is liable to be broken. When adjusted the space between the arms should be $1\frac{3}{4}$ inches.

9. It will pay you to keep the feed screw clean and slightly oiled, and to clean off the main shaft every day, as the emery is very destructive and will soon grind the babbitt out in the arm if run without any attention. Keep it well oiled.

10. Do not attempt to grind the straight knife without ENTIRELY removing the counterweight. If the wheel jumps it is because it is out of round and needs dressing down.

11. Don't expect to be an expert at the start. Speed will come through practice.

12. The counterbalancing weight should balance the arm so it will remain in any position. Some have the mistaken idea that it should be set out so as to make the grinding wheel bear upward, but this is wrong as well as troublesome when adjusting.

Do not write to us and say, "The lawnmowers are ground low in the center." Oftentimes the reel knife has worn down into the straight knife until there is a rounded corner at each end which should be filed out straight, if possible.

Always dress the extreme ends of the reel knives down with a fine file, as the ends strike the rounded corners and give the appearance of being ground low in the center. Do not expect to grind the mower so it needs no touching with the file, for we find that the tip ends of the blades are invariably high and require filing down.

When grinding the Coldwell Ball Bearing Mower with the revolving center shaft, let the mower rest on the stationary spacing shaft and place the front mower support rod in the fourth lower notch from the front.

Special Notice.

In ordering repairs be sure to give the Number of the Grinder stamped on the Brass Plate, and always state what Year's Model it is.

Cash for repairs must invariably accompany the order; also Postage if the article is mailable. We do not ship repairs C. O. D. or open accounts for such small amounts.

The Heath Foundry & Mfg. Co.

Plymouth, Ohio