

H. C. MILLAR & J. MEYERS.
METHOD OF MANUFACTURING PLOWSHARES.
APPLICATION FILED DEC. 26, 1908.

963,614.

Patented July 5, 1910.

3 SHEETS—SHEET 1.

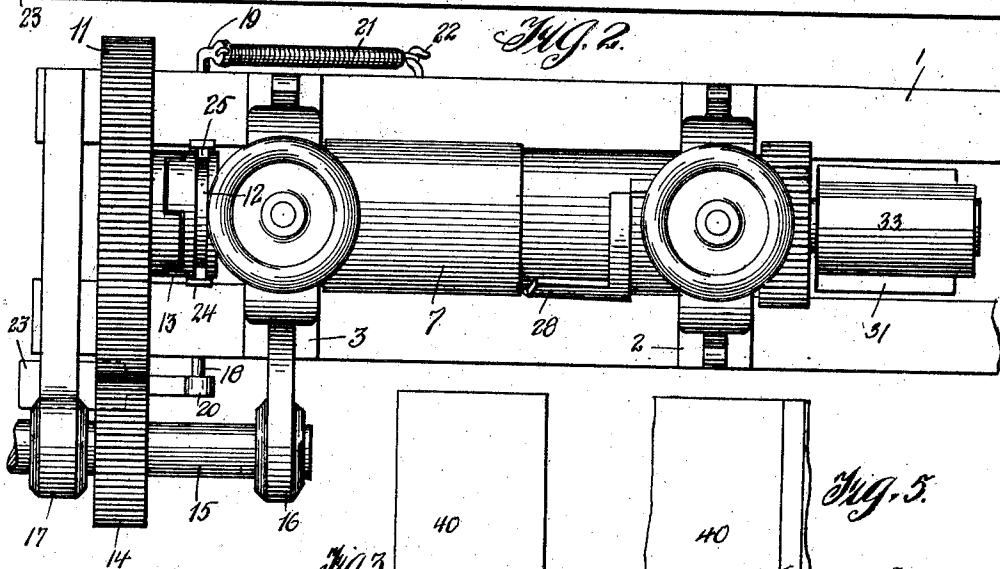
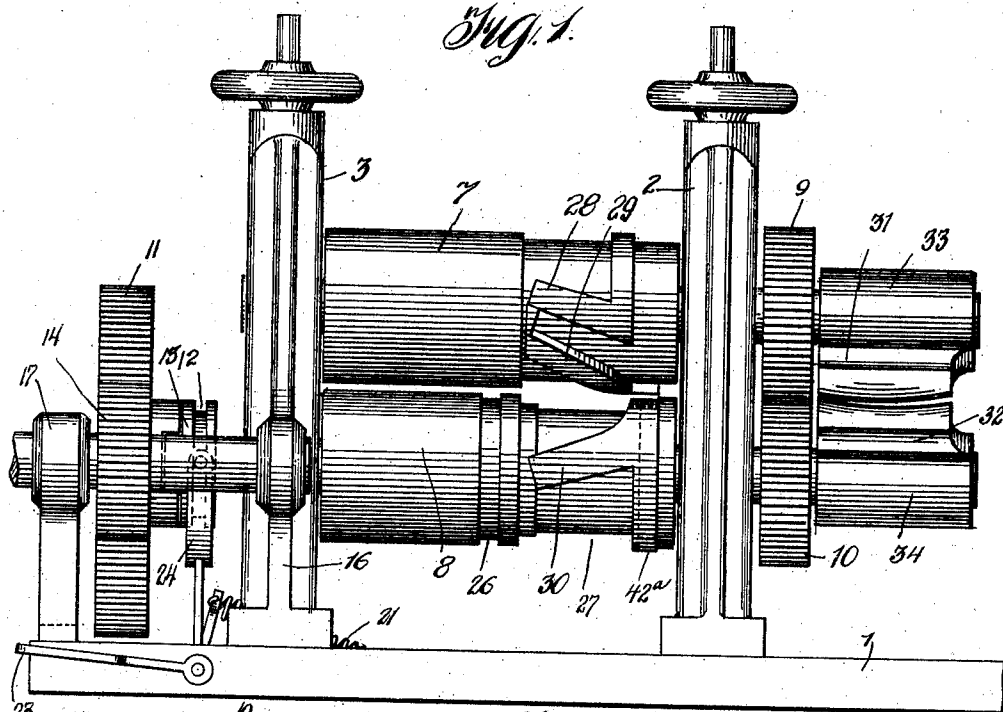


Fig. 3.

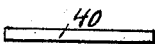
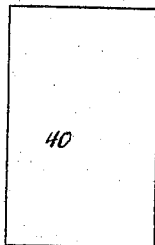


Fig. 4.

Fig. 5.

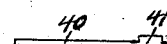
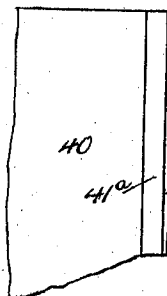


Fig. 6.

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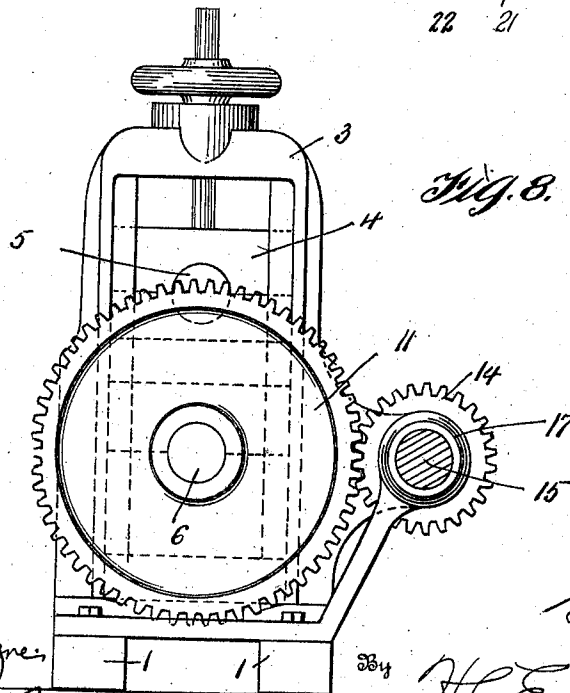
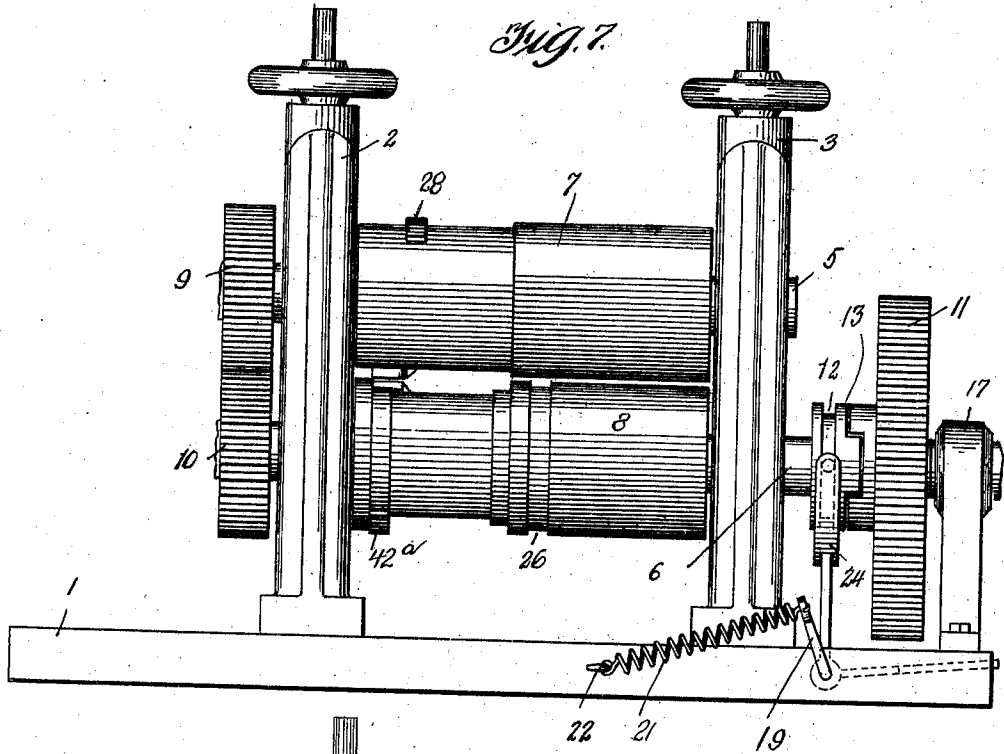
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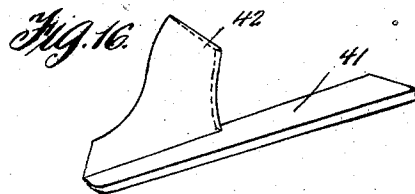
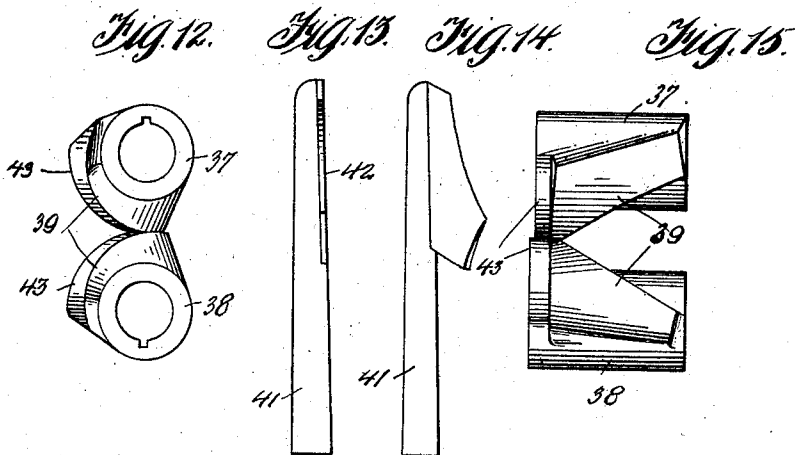
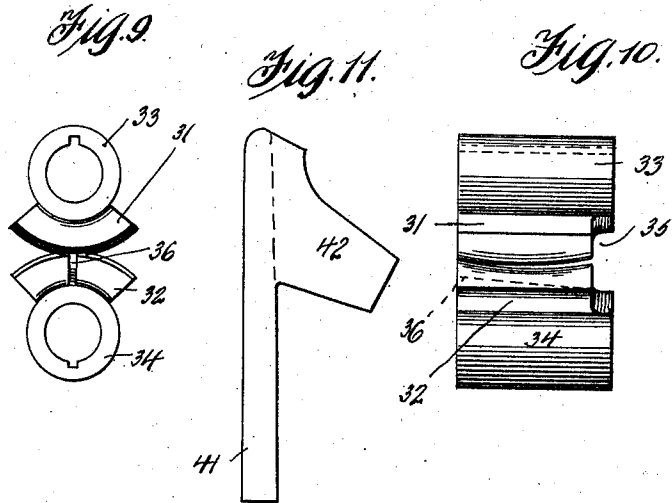
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UNITED STATES PATENT OFFICE.

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METHOD OF MANUFACTURING PLOWSHARES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, HARRY C. MILLAR and JOSEPH MEYERS, citizens of the United States of America, residing at Carnegie, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Methods of Manufacturing Plowshares, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a method of manufacturing plow shares, and the object of our invention is to provide a novel method of rolling, shearing, pressing and bending a blank piece of metal to conform to a plow share, ready to be punched and attached to a plow standard or post.

Briefly described, the method consists in forming a metallic blank, to be hereinafter termed a "skelp," with a ribbed portion thicker than the remainder of the skelp, the thin portion of the skelp eventually forming the share, while the ribbed portion forms the share bar. The ribbed skelp is then formed into a share blade and a share bar, the bar being integral with the blade and then subsequently the blade is shaped to conform to the standard or the post of a plow, and also provided with a feathered edge, and further bent at right angles with respect to one side of the bar whereby the bar is positioned properly with respect to the body of the share blade.

The method will be hereinafter described in detail and pointed out in the claims hereunto appended.

As showing one form of a machine in which a method for manufacturing plow shares can be carried out in accordance with this invention, reference is had to the accompanying drawings in which:—

Figure 1 is a front elevation of the machine, Fig. 2 is a plan of the same, Fig. 3 is a plan of a blank or piece of skelp from which a plow share is formed, Fig. 4 is an edge view of the same, Fig. 5 is a plan of a piece of skelp being subjected to the first rolling operation, Fig. 6 is an edge view of the same, Fig. 7 is a rear elevation of a portion of the same, Fig. 8 is an end view of the machine, partly broken away and partly in section, illustrating a train of gears for operating the machine, Fig. 9 is an end view of detached primary rolls for bending and shaping a cut and sheared blank, Fig. 10 is a front elevation of the same, Fig. 11 is a

plan of a cut and sheared blank, Fig. 12 is an end view of detached secondary rolls for completing the formation of a share, Fig. 13 is a plan of a partly completed share, Fig. 14 is a plan of a completed share, Fig. 15 is a front elevation of the secondary rolls illustrated in Fig. 12, and Fig. 16 is a perspective view of a completed plow share.

In the accompanying drawings, 1 designates foundation frames supporting two vertical housings 2 and 3. In these housings are arranged adjustable bearings 4 for longitudinal shafts 5 and 6, and upon said shafts are mounted rolls 7 and 8 respectively. The shafts 5 and 6 protrude beyond the housing 2 and are provided with meshing gear wheels 9 and 10 respectively, whereby the shafts can be driven in unison.

The shaft 6 protrudes beyond the housing 2 and is provided with a large loose gear wheel 11 having a clutch member 12 adapted to be engaged by a clutch member 13 slidably keyed upon the shaft 6 to rotate therewith. The large gear wheel 11 meshes with a small gear wheel 14 mounted upon a shaft 15, journaled in bearings 16 and 17 carried by the housing 3 and the foundation frames 1.

Journaled in the foundation frames 1 beneath the clutch member 13 is a rock shaft 18 having the ends thereof provided with cranks 19 and 20, the former being connected by a coil spring 21 to a hook 22, carried by the foundation frames 1, while the latter is provided with a tread plate 23. The shaft 18 is provided with a yoke 24 having inwardly projecting pins 25 protruding into an annular groove 26 formed in the clutch member 13, whereby when the plate 23 is tread upon, the clutch member 13 can be drawn into engagement with the clutch member 12 to set the rolls 7 and 8 in motion.

The roll 8 intermediate the ends thereof is provided with an annular groove 26, this groove in conjunction with the smooth surface of the roll 7 providing a pass for the initiatory treatment of a piece of skelp prior to cutting and shearing the same.

The rolls 7 and 8 adjacent to the housing 2 are reduced, as at 27, and upon the reduced periphery of said rolls are located dies 28, 29 and 30, these dies being shrunk upon the rolls or otherwise secured thereon. The dies 28 to 30 inclusive are of such shape that the die 30 will interlock with the dies 28 and 29 and will shear and cut a blank to the desired shape, as will hereinafter appear.

The shafts 5 and 6 protruding beyond the gear wheels 9 and 10 are provided with detachable secondary and finishing rolls, and it is in this connection that we reserve the right to extend the shafts 5 and 6 and mount the finishing rolls thereon in proximity to the secondary rolls. The secondary rolls best shown in Figs. 1, 9 and 10 are provided with enlargements 31 and 32, these enlargements being approximately the same length as the rolls 33 and 34, and providing clearance at the outer ends of the rolls, as designated at 35 for a purpose that will hereinafter appear.

The enlargements 31 and 32 are adapted to confront one another at a certain position of the rolls 33 and 34, and these enlargements are shaped whereby the enlargement 31 will practically interlock with the enlargement 32. In other words, the space between the enlargements when confronting is tapered, whereby a blank will be given a feather edge when passed between the enlargements. In order that the blank can be bent, the enlargement 32 is provided with a longitudinal slot 36, and the function of this slot will be presently described in detail. In connection with the secondary rolls 33 and 34, finishing rolls 37 and 38 are used, and these rolls are provided with enlargements 39 adapted to confront one another in bending a blank to the desired shape.

The method is carried out as follows:—A piece of skelp or blank (see Figs. 3 and 4) cut the necessary length is passed between the rolls 7 and 8, and as the pass between said rolls is approximately half the thickness of the skelp, and the pass between the rolls at the groove 26 the same as the thickness of the skelp, the skelp will be reduced upon one edge, leaving the opposite edge the natural thickness, or in other words, a ribbed skelp will be provided. (See Figs. 5 and 6.) The reduced portion of the skelp which we have designated 40 is employed for forming the share proper, while the ribbed portion designated 41^a, forms the bar of the share. The blank is now passed between the rolls 7 and 8 at the reduced portion 27 thereof, whereby the blank will be operated upon by the dies 28 to 30 inclusive. The rib portion 41^a of the blank travels upon that portion of the die 30 designated 42^a, while the dies 28, 29 and 30 shear the reduced portion 40 of the blank to form a share blade 42, (see Fig. 11). The operation of the dies 28, 29 and 30 removes sufficient material from the reduced portion 40 to leave a blade of the necessary shape to produce a plow share. The blade 42 extends from one edge of the bar 41. The blank shown in Fig. 11 is now ready to be operated upon by the secondary rolls 33 and 34. The bar 41 is placed in the longi-

tudinal groove 36 of the roll 34, whereby as these rolls rotate, the blade 42 will be bent at right angles with respect to one side of the bar 41 (see Fig. 13). The bar 41 and the blade 42 are then removed, and the blank turned whereby the blade 42 can be fed between the enlargements 31 and 32 of said rolls. By reference to Fig. 10 of the drawings, it will be observed that the pass between said enlargements is gradually tapered, and with the bar 41 having clearance at the outer ends of the rolls, the blade 42 can be passed between the enlargements to provide the outer edge thereof with what we term "a feather edge". After this fourth operation, the blank as shown in Fig. 13 is in condition for the finishing rolls 37 and 38 which are designed to bend the share blade 42 (see Fig. 14), whereby the share blade will conform to the post or standard of a plow. The enlargements 39 of the finishing rolls 37 and 38 are shaped to curve the share blade 42, and the confronting depressions 43 of the enlargements 39 provide clearance for the bar 41, while the share blade 42 is being rounded or shaped. The different rolling and pressing steps have a tendency to polish the article as it is completed.

It is thought that the manner of carrying out the method will be understood and that any suitable source of power as a motor can be coupled to the shaft 15.

We would have it understood that while we have herein described the cutting, shearing and shaping of plow shares, that articles of various shapes can also be produced by the rolling process.

Having now described our invention what we claim as new, is:—

1. The method of manufacturing plow shares consisting in forming a ribbed blank into a share blade and a bar integral with the blade, then subsequently feathering the edge of the blade and bending the blade at an angle with respect to one side of the bar, and then curving the blade.

2. A method of manufacturing plow shares consisting in forming a ribbed blank into a share bar and a share blade integral with and extending from one edge of the bar, then subsequently feathering the edge of the blade and bending the blade at an angle with respect to one side of the bar, and then curving the blade.

In testimony whereof we affix our signatures in the presence of two witnesses.

HARRY C. MILLAR.
JOSEPH MEYERS.

Witnesses:

MAX H. SROLOVITZ,
A. J. TRIGG.