

(No Model.)

2 Sheets—Sheet 1.

H. G. SAWYER & E. A. HENDRICKS.
DIE FOR CUTTING OUT PLOWSHARE BLANKS.

No. 578,119.

Patented Mar. 2, 1897.

Fig. 1.

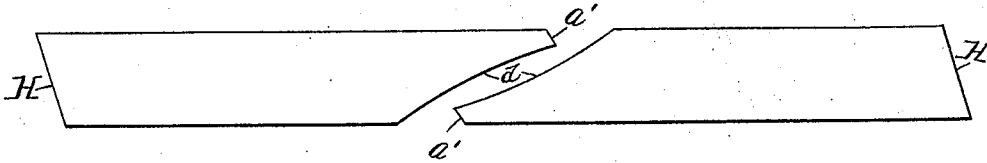


Fig. 2.

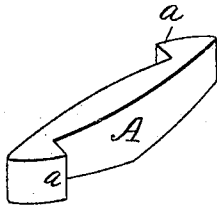


Fig. 5.

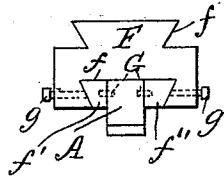


Fig. 4.

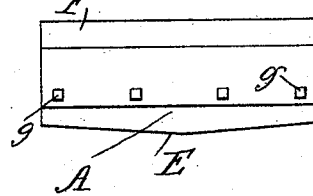


Fig. 3.

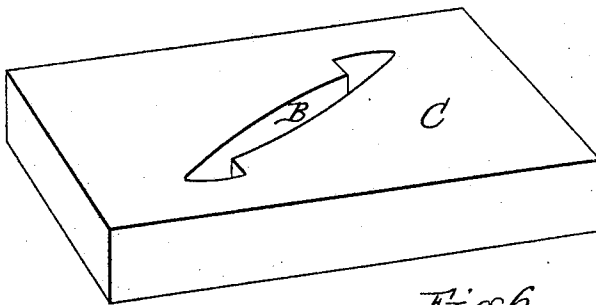
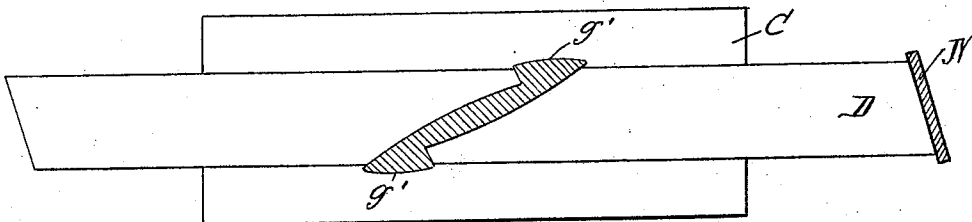


Fig. 6.



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2 Sheets—Sheet 2.

H. G. SAWYER & E. A. HENDRICKS.
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Fig. 8.

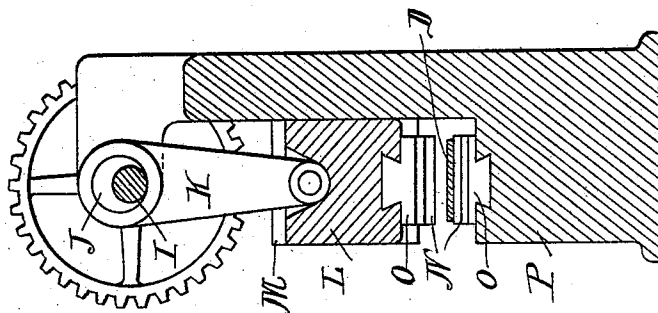
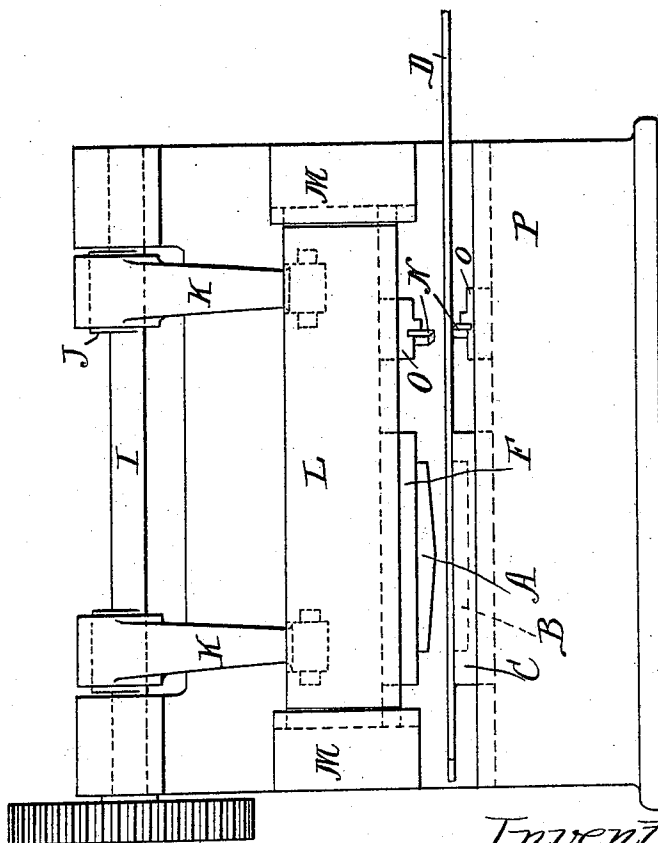


Fig. 7.



Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY G. SAWYER AND EDWARD A. HENDRICKS, OF CARPENTERSVILLE,
ILLINOIS, ASSIGNORS TO THE STAR MANUFACTURING COMPANY, OF SAME
PLACE.

DIE FOR CUTTING OUT PLOWSHARE-BLANKS.

SPECIFICATION forming part of Letters Patent No. 578,119, dated March 2, 1897.

Application filed August 21, 1896. Serial No. 603,460. (No model.)

To all whom it may concern:

Be it known that we, HENRY G. SAWYER
and EDWARD A. HENDRICKS, citizens of the
United States, residing at Carpentersville, in
5 the county of Kane and State of Illinois, have
invented certain new and useful Improve-
ments in Dies for Cutting Out Plowshare-
Blanks, of which the following is a full, clear,
and exact description, reference being had to
10 the accompanying drawings, forming a part
of this specification.

It is our purpose to simplify the manufac-
ture of plowshare-blanks by providing a die
of peculiar form which will operate upon a
15 bar of metal in conjunction with a knife to
produce two blanks at each operation of the
machine, said die being formed so that the
edges of severance made thereby will be of
the proper shape for the blanks. It will of
20 course be distinctly understood in the begin-
ning that the particular configuration of the
die may be varied for plowshares of differ-
ent kinds, but in each instance the substan-
tial and controlling character of the die will
25 be the same to fulfil the object of our inven-
tion. It is essential to have a die which will
operate together with a knife to form two
blanks at each operation of the machine, the
die itself being constructed to cut the metal
30 in such a way that it will have the proper
curves and angles required of a blank for a
plowshare. By this method of operation each
share-blank will be exactly the same in shape
as every other share-blank cut by the same
35 die and knife, which is practically impossible
with other methods.

The primary object, therefore, of our in-
vention is to simplify the manufacture of
blanks for plowshares by reducing the num-
40 ber of operations necessary for the produc-
tion of each blank.

Another object of the invention is to pro-
duce more than one complete blank by one
operation of the dies embodying our improve-
45 ments and to make all blanks alike in size
and shape.

A further object of the invention is to pro-
vide a die which can be operated to sever a

piece of metal in such a manner that the
severed ends thereof will have the desired 50
configuration suitable for preparing a plow-
share.

With these and other ends in view our in-
vention consists in the construction and ar-
rangement of parts which are adapted for 55
operation in the manner described, said parts
being shown fully in the accompanying draw-
ings, in which—

Figure 1 is a top plan view showing the
shape of two blanks and their relative posi- 60
tion to each other immediately after the die
has operated upon the bar of metal out of
which it is made. Fig. 2 is a perspective view
of the die. Fig. 3 is a perspective view of
the die-block or matrix. Fig. 4 is a side ele- 65
vation of the die, showing its arrangement in
the die-head. Fig. 5 is an end view of the
die and the die-head. Fig. 6 is a top plan
view showing the die in section and its ar-
rangement with relation to the bar of metal 70
when operating thereon. Fig. 7 is a front
view of a machine in which our dies may be
used. Fig. 8 is a sectional elevation of said
machine.

In the drawings like letters of reference de- 75
note corresponding parts in all of the figures,
and referring thereto and particularly to Figs.
1 to 6, inclusive, A designates a form of die
which we have found especially useful in this
kind of work and particularly in shaping the 80
blanks, as shown in Fig. 1.

In Fig. 2 and elsewhere we have shown a
form of die which is of especial value in prac-
ticing our invention, the essential character-
istic of said die being the configuration of its 85
sides, which are tapered from the center of
the die to the ends in curved lines, so that
each side of the die will be curved. The die
is adapted to operate in a socket B in the die-
block or matrix C, the socket corresponding 90
substantially in outline to the shape of the
die, so that the piece of metal which is cut
out of the bar D, Fig. 6, by the die will be
to all intents and purposes of the same shape
as the die itself. 95

It is necessary in manufacturing blanks

for all kinds of plowshares, so far as we are at present advised, to provide curved ends *d*, as shown in Fig. 1, and in perhaps the greater number of cases the extreme tapered ends of the blanks should be cut off, as at *a'*, for which purpose shoulders *a* are provided at each end of the die and on opposite sides thereof, the shoulders being of the proper size and shape to cut the points corresponding to the size of the shoulders and make the ends of the blanks of the proper shape, giving to the die the shape of the letter **Z** substantially. The dimensions and locations of these shoulders may be varied in accordance with the particular form of blank it is desired to make; but the sides of the die are curved, so as to produce the desired curved edges *d* on the blanks.

The die is thicker at its center than at its ends, the lower face of said die, which constitutes the cutting-face *E* thereof, being preferably angular and sloping from the center of the die to its ends, so that when the die is operated it will engage the bar of metal first at its center and, descending, cut the metal with a shearing action to punch out therefrom a piece corresponding substantially to the shape of the die itself.

It is obvious that this die may be used in a number of different machines; but to show its general arrangement and its manner of operation we have illustrated in Figs. 7 and 8 just so much of a simple machine as will be necessary for a thorough understanding of our invention. Referring to these figures, power is communicated to the shaft *I* in a suitable manner, and said shaft is provided with eccentrics *J*, which operate the arms *K*, carrying the cross-piece *L*, which is guided in its vertical movements in the guides *M*. The die is supported in a die-head *F*, Figs. 4 and 5, which is provided with a tenon to fit in a mortise in the face of the cross-piece, whereby said die-head can be adjusted laterally, as desired. The die-head is also provided with a mortise *f'* in its lower face to receive the blocks *f''*, which hold the die rigidly in place in the head, dowel-pins *G* being arranged in the openings in the blocks *f'''* and the die *A* to maintain the same in their proper relative positions, and the blocks are held in place in the die-head by means of bolts *g*.

Shearing-knives *N* are secured in the heads *O*, which are adjustably supported, respectively, in the cross-piece *L* and the bed *P* of the machine, these knives and their manner of securing them in place being of a simple character and well known in this and other arts.

The die is arranged to operate in a diagonal position with relation to the direction of the bar of metal *D*, and the knives are also arranged to cut the bar diagonally, the inclination of the die and knives with relation to each other being governed, primarily, by the

character of the blank to be formed. In this arrangement the outer curved edges *g'* on the shoulders *a* will extend beyond the bar of metal, as shown in Fig. 6, and therefore the particular character of these edges is not material. The line of severance made by the die will be diagonal across the bar of metal, and the extreme pointed ends of the two blanks formed, which ends would correspond to the shape of the shoulders *a*, are cut off in the manner shown at *a'* at Fig. 1. At the same time that the die descends upon the bar of metal the knives cut the bar at *H*, so that two complete blanks are formed simultaneously, their relation to each other being shown in Fig. 1. The bar of metal is then arranged in the machine and the operation repeated, two complete blanks being formed at each stroke of the die and knives. Any number of dies and knives may be arranged to operate in the machine without departing from the spirit of our invention, it being simply necessary, for the purpose of fully explaining the invention, to describe and illustrate one die and one pair of shearing-knives.

When the die comes in contact with the metal bar, its widest and thickest portion at the center first engages the bar, and then as the die continues its movement the other parts of the cutting-face of the die engage the metal bar and cut the same with a shearing action. By the use of a die having an angular cutting-face we are able to perform the operation in a much simpler and more expeditious manner, and it will be observed that the particular form of this angular cutting-face may vary. For example, the thickest portion of the die may be located at another point than the center, or there may be an angular face of any description which will answer the purpose of the invention.

We are aware that many changes in the construction and configuration of the die may be made without departing from the spirit or sacrificing the advantages thereof, and we therefore reserve the right to make all such changes as fall within the scope of our invention and use the same in connection with any machine adapted for the purpose.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A die for making plowshare-blanks having a double cutting edge and curved sides and provided with angular shoulders, the outer part of said shoulders being joined to the extreme ends of the body of the die on the median line thereof, substantially as described.

2. A die for making plowshare-blanks having a double cutting edge and curved sides, the die being wider at its center than at its ends and provided with a shoulder at each end and on opposite sides of the body of the die, each of said shoulders being connected with the other side at the extreme ends of the die and

on the median line thereof, substantially as described.

3. A die for making plowshare-blanks having a double cutting edge, shoulders on opposite sides of said die adjacent to the ends thereof, the body of the die having curved sides which extend from the extreme end of

the die to the base of the shoulder, substantially as described.

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