(No Model.)

# T. W. WRIGHT.

## MANUFACTURE OF SHOVELS.

No. 455,587. Patented July 7, 1891.

Fig. 1.

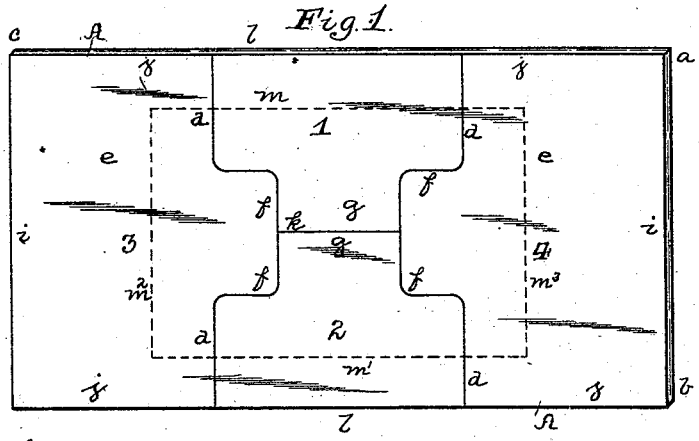



Fig. 3.

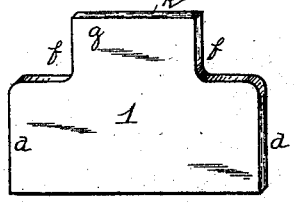



Fig. 2.

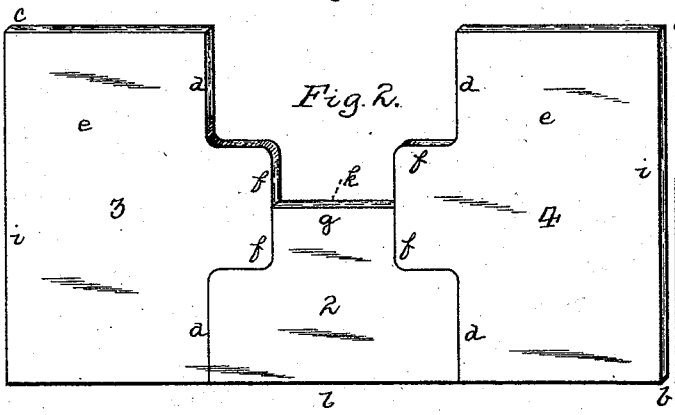



Fig. 4.

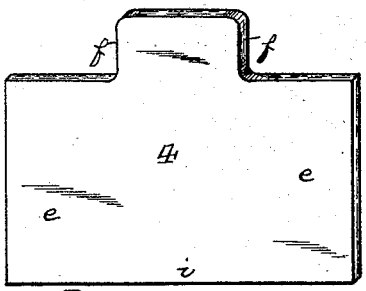



Fig. 5.

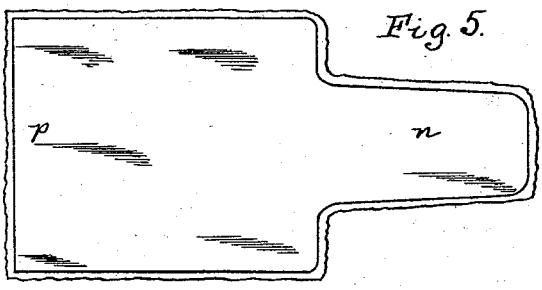
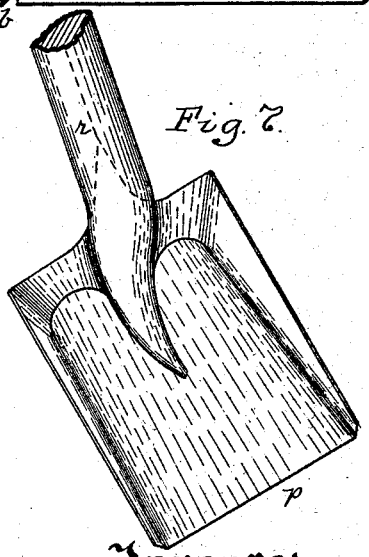
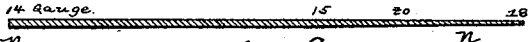



Fig. 7.




p n

Fig. 6.

Witnesses:
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# UNITED STATES PATENT OFFICE.

THOMAS W. WRIGHT, OF NEW BRIGHTON, ASSIGNOR OF ONE-HALF TO WILLIAM J. ALFORD, OF BEAVER FALLS, PENNSYLVANIA.

## MANUFACTURE OF SHOVELS.

SPECIFICATION forming part of Letters Patent No. 455,587, dated July 7, 1891.

Application filed February 24, 1891. Serial No. 382,401. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS W. WRIGHT, a resident of New Brighton, in the county of Beaver and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Shovels; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the manufacture of shovels, spades, and scoops, and is particularly, though not exclusively, adapted for the manufacture of such articles having single straps—that is, shovels in which the strap portion is bent into tubular shape, so as to practically encircle the shovel-handle—these being known in the market as "single-strap shovels." It is also applicable to shovels having one strap formed with a blade and the other riveted or welded on. The usual way to make these shovels has been to cut them from the heavy sheet or light plate metal from which they were formed, cutting the blanks to the size ready for bending up the strap portion into ordinary circular or socket shape; but this has caused considerable waste in the metal, as the only course was to cut the blanks from the plates, wasting the metal on each side of the strap portions thereof. For the manufacture of other classes of shovels different ways of cutting the blanks therefor from the plates or slabs have been devised; but, so far as I know, in none of them have the blanks been cut from the plates or slabs with practically no wastage whatever, all such methods of cutting requiring loss of metal either at one or both ends of the plate or slab from which they were cut.

The object of my invention is to provide a method of cutting these blanks from the plate or slab which will do away with the loss of metal, and also to provide a way of rolling the blanks for forming single-strap shovels, by which I am enabled to form the strap portion of a lighter gage than the body of the shovel, this being extremely desirable, as it reduces the weight and saves metal without weakening the shovel itself.

To these ends my invention consists, generally stated, in cutting four blanks from a plate or slab with the strap portions of all the blanks formed in the central part of the plate, two extending in from the ends and two extending in from the sides, and so utilizing the central part of the plate for the formation of all the straps and doing away with wastage.

It also consists in certain other improvements in the manner of cutting, such as by cutting one blank from the side of the slab, having its strap portion extending inwardly or toward the central portion thereof, and then cutting another blank from the opposite side of the plate, having its strap portion extending inwardly, and so at the same time forming the two blanks at the ends of the plate, having their strap portions extending inwardly, the strap portions of the four blanks being thus formed from the central portion of the plate.

It also consists in forming these single-strap shovels from a blank corresponding substantially in width to the finished shovel and having the strap portion extending out at one end thereof by reducing this blank to the proper gage by rolling the same in plain-faced rolls from the point through the body, and thence to the strap portion, and thereby, on account of the strap portion being so much narrower than the body, and on account of the reduction in pressure consequent to passing onto a narrower body, enabling the rolls to reduce said strap portion several gages thinner than the body portion of the blank.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a view of the plate or slab from which the plates are to be formed, having the lines of shearing marked thereon. Fig. 2 is a like view showing one of the side blanks cut therefrom. Figs. 3 and 4 are views of the side and end blanks, respectively, obtained from the plate. Fig. 5 shows the blanks rolled to finished gage and indicates the line on which the shovel is cut therefrom. Fig. 6 is an enlarged edge view of the same, and Fig. 7 shows the finished shovel.

Like letters and figures indicate like parts.

The plate or slab A is rolled from steel of the proper quality, the usual custom being to reduce the ingot between rolls to substantially

the width required for the end blanks—that is, on the line *a b*—and then to cut the plate into smaller plates of a length sufficient for forming the several blanks—that is, between *a* and *c*. The plate A is then taken to suitable shears or punch and a blank cut from the side thereof—such as the blank 1, which, as seen in Fig. 2, forms the cut along the top edge of the blanks 3 and 4—cutting out half the top edges *d* of the body portions *e* thereof and half of the strap portions *f* thereof and along the top edge of the strap portion *g* of the blank 2. The plate is then turned around by the operator and again fed to the shears and the blank 2 cut therefrom, severing the plate along the remaining top edges *d* of the blanks 3 and 4 and along the remaining portions of the straps *f* thereof and forming the four blanks, 1 and 2 having their strap portions *g*, which meet in the center of the plate along the line *k*, while the blanks 3 and 4 have the strap portions *f*, formed by the spaces between the bodies *k* of the blanks 1 and 2, so that the four blanks are formed without any waste. It is thus seen that the strap portions of four blanks are formed from the central part of the plate, the point edges *l* of the blanks 1 and 2 being formed from the side edges of the plate, while the point edges *i* of the blanks 3 and 4 are formed by the ends of the plate, and the side edges *j* of said blanks are formed by the side edges of the plate.

It will be noticed that in the blanks illustrated in the drawings the two end blanks 3 and 4 are of greater width and of greater length than the blanks 1 and 2. For forming single-strap shovels this is desirable, as it enables me to form the large blanks for scoops and wide shovels from the end blanks 3 and 4, while the ordinary small shovels and spades can be formed from the blanks 1 and 2. As shown by the dotted lines $m\ m'\ m^2\ m^3$, however, blanks of practically the same size may be formed in the same manner, though this will only be applicable to the formation of blanks for double-strap shovels, the blanks being cut from the plate or slab of a size corresponding to said lines $m\ m'\ m^2\ m^3$, and the strap portions being then punched so as to form the double straps, and the blanks then rolled to shape. In such case the exact lines of division for the straps might be changed somewhat, but would embody the same principle. It will thus be seen that in cutting the blanks from the plates or slabs with the strap portions in the central part of the plate I am enabled to cut out the blanks without any waste of metal whatever. In rolling these blanks to the proper gage or thickness for single-blank shovels such as shown in Figs. 5 and 6 I generally employ the ordinary plain-faced chilled rolls, which can either be formed with parallel sides or may be made slightly hollowed, so as to roll the side edges of the shovel somewhat thinner than the central portion of the same, which is sometimes desirable to increase the strength and wearing qualities, and I feed the heated blanks to the rolls with the front edge *l* or *i* of the body portion first, so that the rolls will first compress and draw out the body of the blank and then pass onto the strap portion thereof to draw it out. I employ this method of rolling in order to obtain a somewhat thinner strap portion than the body of the shovel, as I find that as the strap portion is so much narrower than the body of the blank as the rolls pass onto this strap portion they will act to reduce the same thinner than the body or blade, this result being obtained because there is not such a body of metal between the rolls when they are acting upon the strap portion, and they therefore act with greater power, and so reduce said strap portion thinner than the plate, a strap portion *n* of several gages thinner than the blade *p* being obtained in this way, and this being desirable in the finished shovel, spade, or scoop, as the strap portion is bent, as shown in Fig. 7, into tubular form to form the socket *r* and does not require so much metal as is required in the blade of the shovel, and the strap also fits more closely to the handle inserted within the socket thereof. By this method of cutting blanks I am also enabled by regulating the thickness, length, and width of the plates or slabs acted upon to obtain shovels of different weight, as may be desired, and at all times to form the same without any loss of metal further than the ordinary trimming of the rolled blank shown in Fig. 5, from which the shovel is to be cut.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The herein-described method of forming shovel-blanks, consisting in cutting four blanks from a plate or slab and forming the strap portions of all the blanks in the central part of the plate, the straps of two of the blanks extending in a right angle to the straps of the other two blanks, substantially as and for the purposes set forth.

2. The herein-described method of forming shovel-blanks, consisting in cutting from the side of a plate or slab a blank having the strap portion extending inwardly and then cutting from the opposite side of the plate another blank having the strap portion extending inwardly, and so at the same time forming two blanks at the ends of the plate having their strap portions extending inwardly, the strap portions of the four blanks being formed from the central portion of the plate, substantially as and for the purposes set forth.

In testimony whereof I, the said THOMAS W. WRIGHT, have hereunto set my hand.

THOMAS W. WRIGHT.

Witnesses:
JOHN P. EDGAR,
C. H. CORBUS.