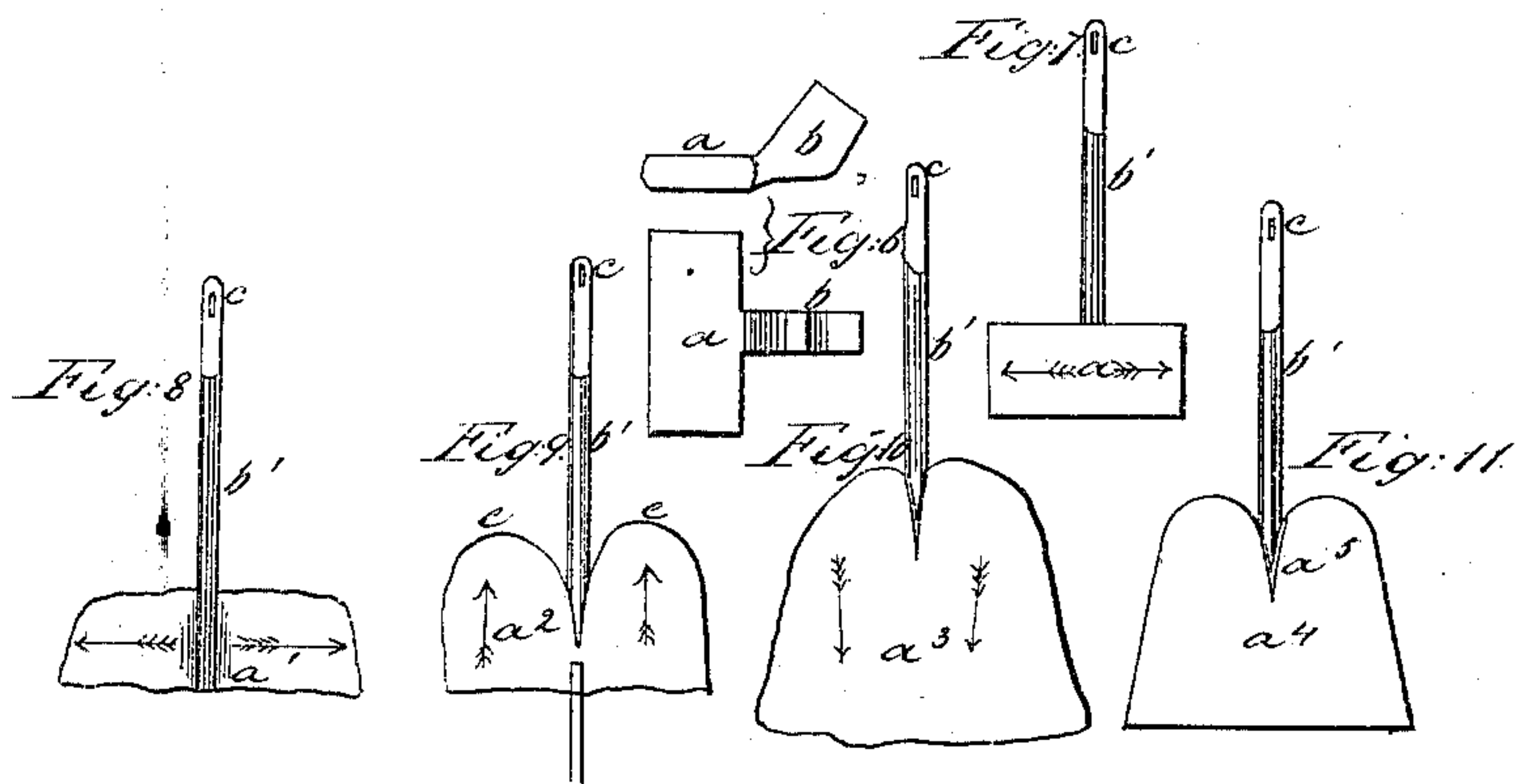
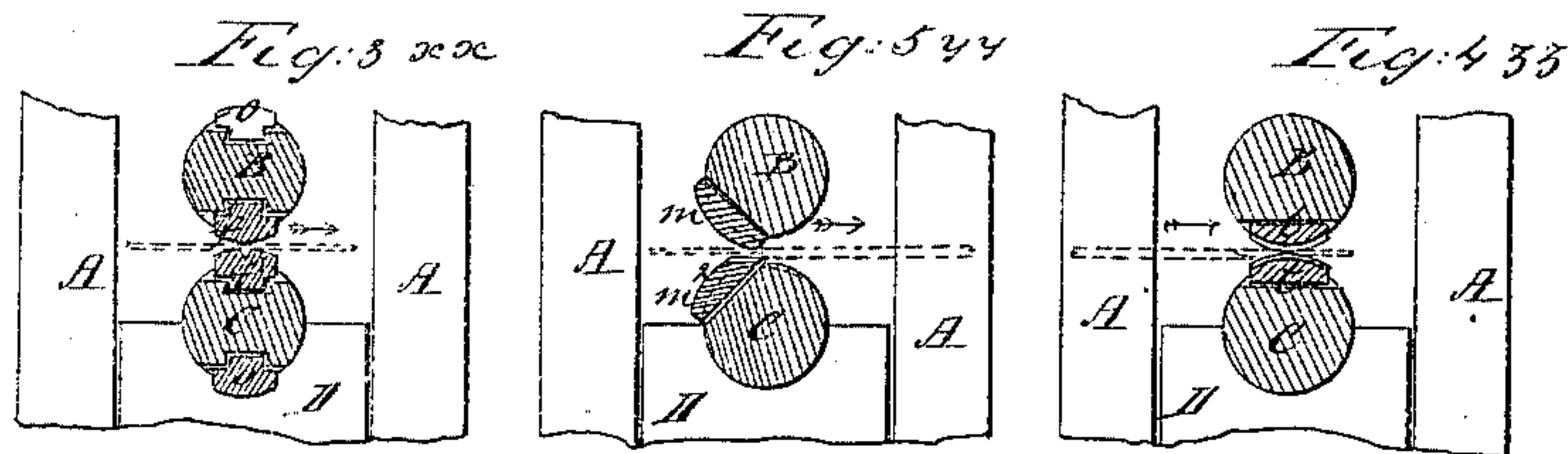
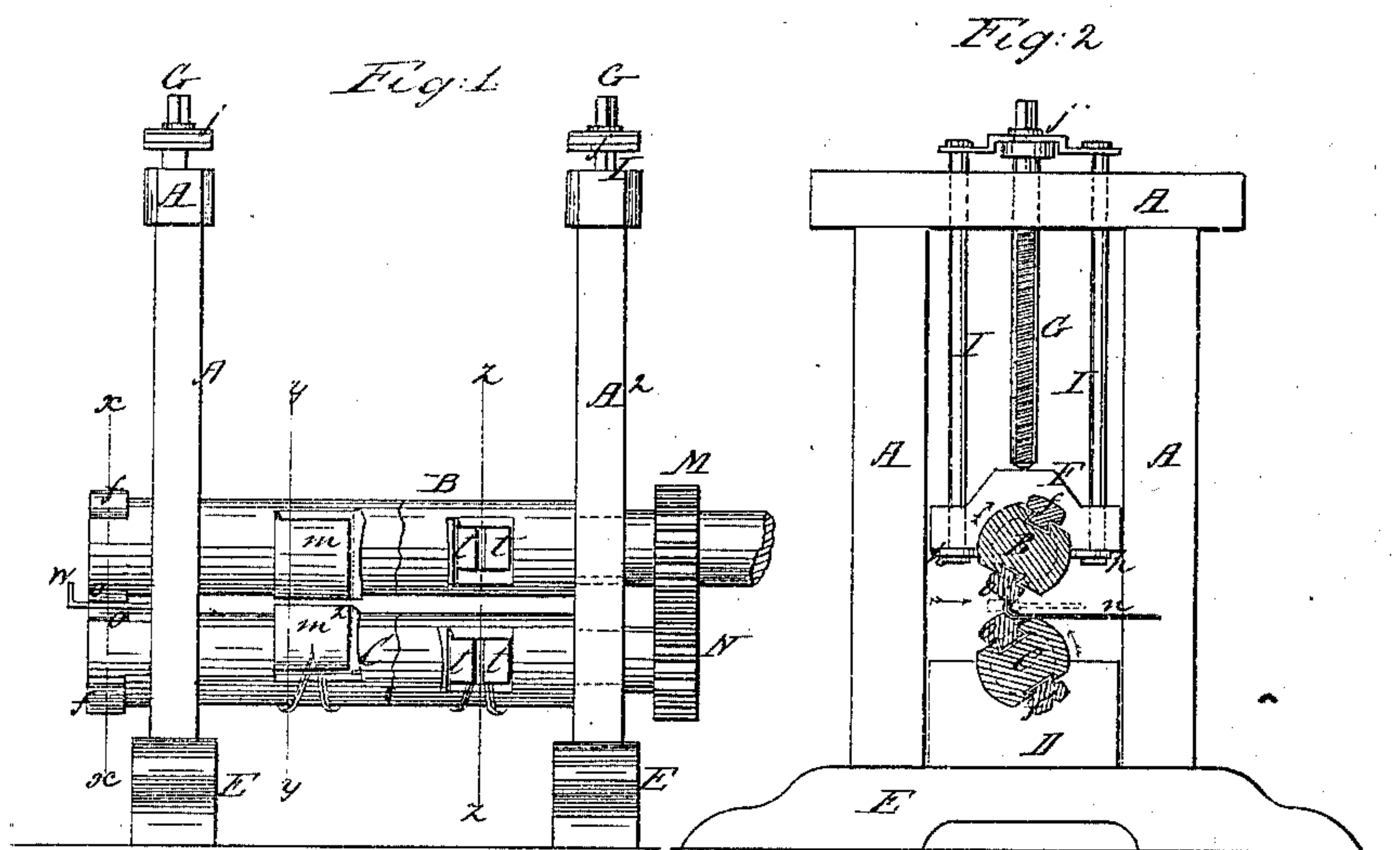


S. A. Millard.

Rolling Hoe Blanks.

N^o 80,083.

Patented Jul. 21, 1868.



Witnesses
Chas. F. Scott
Andrew DeLacy

Inventor
S. A. Millard
My atty J. W. McEntire

United States Patent Office.

S. A. MILLARD, OF CLAYVILLE, NEW YORK.

Letters Patent No. 80,083, dated July 21, 1868.

IMPROVED MACHINE FOR ROLLING HOE-BLANKS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, S. A. MILLARD, of Clayville, in Oneida county, in the State of New York, have invented certain new and useful Improvements in Machinery for Rolling Hoes; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this application.

My invention relates to certain improvements in machinery for rolling what are known as goose-neck hoes, (which are made of one single piece of metal.)

Previous to my invention it was customary, for a long time, to make this kind of hoe by drawing out the stock into shape entirely by means of the trip-hammer, but lately it has been suggested to perform the operations of drawing out the metal from the blank and "plaiting" it by means of oscillating-rolls, and I believe Letters Patent have been granted for such a contrivance.

It has been found in practice, however, that such machinery involves in its operation serious practical difficulties and objections, among which may be mentioned the imperfect working of the dies together, (and consequent imperfection in the work,) on account of the slip or backlash in the gearing during the oscillating motion it is subjected to, the necessary complication of the machinery, difficulty in the management of the same, and the necessity for constantly shifting (or raising and lowering) the rolls during the operation of the mill.

My invention has for its objects to provide a machine adapted to perfectly and rapidly perform all the operations of drawing out or spreading and plaiting up the hoe, which shall involve a simple rotatory motion of two rolls, and be exceedingly simple in its construction, and which shall require little or no manipulation by the operative.

And to these ends my invention consists in a machine for rolling hoes, composed of rotatory rolls, suitably mounted and driven, and provided with sets of dies, arranged to operate together, and provided with guides, all as hereinafter more fully explained.

To enable those skilled in the art to make and use my invention, I will proceed to describe the construction and operation of one of my improved machines for rolling hoes, referring by letters to the accompanying drawings, in which—

Figure 1 is a side elevation,

Figure 2, an end view, and

Figures 3, 4, and 5, detail sectional views at the lines respectively $x x$, $y y$, and $z z$, of fig. 1.

At Figures 6, 7, 8, 9, 10, and 11, I have shown diagrams, illustrative of the hoe-blank and the successive operations performed on it to shape it into a hoe.

In the several figures the same parts are denoted by the same letters of reference.

$A A^2$ are the frames, in which are arranged (in suitable bearings, $D F$,) the rolls $B C$. These frames are supported on suitable bases, $E E$, and, together with the latter and the rolls and driving-gear $M N$, are arranged and operate in the well-known manner of an ordinary "set" of rotating "rolls."

The lower roll, C , is supported in stationary boxes D , and the upper roll, B , is hung in adjustable boxes F , which are suspended, by means of the vertical rods I , screw-shafts G , and strap j , from the top of the frames A , as clearly shown in the drawings.

One end of each of the rolls overhangs, (as clearly seen at fig. 1,) and these overhanging portions are provided with two sets of dies, $f f'$ and $o o$, and on the main portions of the rolls (that is, the parts between the frames $A A^2$), are arranged and secured in the usual manner two other sets of dies, $m m^2$ and $t t$; the lower die, m^2 , of one set, and the lower die, t , of the other set, being each provided with a guide, arranged on the lower roll C , and operating as and for purposes to be presently explained.

w is a guide-rest or stop, consisting of a bar, attached to the frame A , extending out in front of the overhanging ends of the rolls, and so formed that the operative can rest the shank of the hoe-blank on it, as will be presently explained.

The blank of which the hoe is formed is of the usual shape, as illustrated at fig. 6, the portion *a* being the stock for the blade, and *b* the stock for the shank. The stock *b* is drawn out under a trip-hammer into the shape seen at *b'*, fig. 7, (in the well-known manner,) and is perforated with an eye at *c*. The blanks, as seen at fig. 7, are then subjected to the operations under my improved mill as follows, viz: The portion *a*, being properly heated, is placed between the dies *o o* of the overhanging ends of the rotatory rolls, in such manner as to be alternately rolled out from its centre toward each edge, (as illustrated by the arrows,) and made to assume the shape seen at *a'*, fig. 8. By this operation the blank is "spread," so as to be much thinner, and of sufficient width for the hoe.

The dies *O O*, it will be seen, are each formed with a small score or cut at one edge, in such manner that, when they come together on the centre of the portion *a* of the blank, they will leave a ridge of stock in rolling or spreading out the blank into the shape seen at *a'*, fig. 8, and this ridge or projection constitutes, when finished into shape, the bead portion *a^s* of the hoe, (seen at fig. 11.)

The operation of spreading the blank with the dies *O O* is illustrated at fig. 2, where the red lines represent the blank as having had one half of the portion *a* spread or rolled out, and been reversed in position, and placed ready to have the other half rolled out, (the stock passing through the rolls in the direction indicated by the arrow.)

The blank (in the condition shown at fig. 8) is now passed between the dies *f f*, as shown in red lines at fig. 3, whereby the shank *a^s*, fig. 11, is perfectly shaped. It is then grasped in the tongs, at the point indicated by blue lines, fig. 9, and being shoved through between the rolls *B C*, and held in the proper position, is caught between the dies *t t* and rolled back toward the operative, spreading the stock in the direction indicated by arrows, fig. 9, so as to spread up the "ears" *e e*. The blank is then taken out, and being this time held by the shank *b*, is put through between the dies *m m²*, and is plaited out, (in the direction of arrows at fig. 10,) into the shape seen at fig. 10, and ready to be cut or stamped out into the complete form seen at fig. 11, after which it is tempered, polished, &c., and the shank *b'* bent into its proper shape, to be attached to a wooden handle in the usual manner.

It will be understood that the dies *t t* are formed with a deep and sufficiently wide cut or line of separation in the centre of each as shown, so as to constitute really two distinct sets, in order that the stock of the blank may be rolled out in the direction of the arrows, fig. 9, to form the "ears," without touching at all the shank portion of the blank, and the lower die *t* is provided with a funnel-shaped guide, *S*, arranged on the roll, into which the operator puts the tongs, and which serve as a guide and to adjust the blank laterally, so as to insure the passage of the shank through the open space left by the cuts or scores through the centres of dies *t t*.

On the roll *C* is arranged, in connection with die *m²*, another somewhat similar guide, *v*, which serves to effect the ready and perfect adjustment of the blank, so that, in passing it between the dies *m m²*, to plait it out, (into shape seen at fig. 10,) its shank or bead *a^s* shall come exactly in the score of the lower die *m²*.

The operation of the dies *t t* is more clearly illustrated at fig. 4, where they are represented in the act of spreading up the "ears" of a blank, the latter being supposed to be passing through in the direction indicated by the arrows.

At fig. 5 is shown the operation upon the blank of the dies *m m²* by which the blank is plaited out into shape seen at fig. 10. In this figure the blank is shown as inserted, and the dies being just about going to take hold to roll the stock through in the direction indicated by the arrow, (the bead *a^s* having been perfectly adjusted in the score of the lower die *m²*.)

It will be seen that, with a set of rolls and a series of dies and guides, the whole arranged and operating on the blanks as explained, no complication of mechanism is involved, that is, a simple continuous rotatory motion given to the rolls in the usual manner, and that the different operations can be economically and successfully performed on the blank with but little manual labor, and that all the objections consequent to other machines known, and hereinbefore referred to, are avoided.

Having explained the construction and operation of my improved machinery for rolling hoe-blanks, so that one skilled in the art can make and use the same, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The construction of the projecting dies *o o*, together with their arrangement on the projecting portions of the revolving rolls *B C*, as described, said dies being for the purpose of spreading the blank laterally in the manner described.

2. The construction of the projecting dies *f f*, together with their arrangement on the projecting portions of the revolving rolls *B C*, as described, said dies being for the purpose of spreading the blank laterally and giving form to the rib on the surface of the hoe, in the manner described.

3. The construction of the projecting dies *t t*, together with their arrangement on the revolving rolls *B C*, as described, said dies being for the purpose of spreading the metal to form the ears of the hoe, in the direction and in the manner described.

4. In combination with the rotatory rolls *B C*, a set of plaiting-dies *m m²*, constructed as specified, the whole arranged to operate as described, for the purpose set forth.

5. The employment, in combination with a set of rotatory dies, of adjusting-guides, arranged on the face of the roll, and operating to effect the adjustment and retention of the blank, substantially as hereinbefore described.

In testimony whereof, I have hereunto set my hand and seal, this eighteenth day of July, 1867.

S. A. MILLARD. [L. s.]

Witnesses:

B. F. LEWIS,

B. F. ROBERTS.