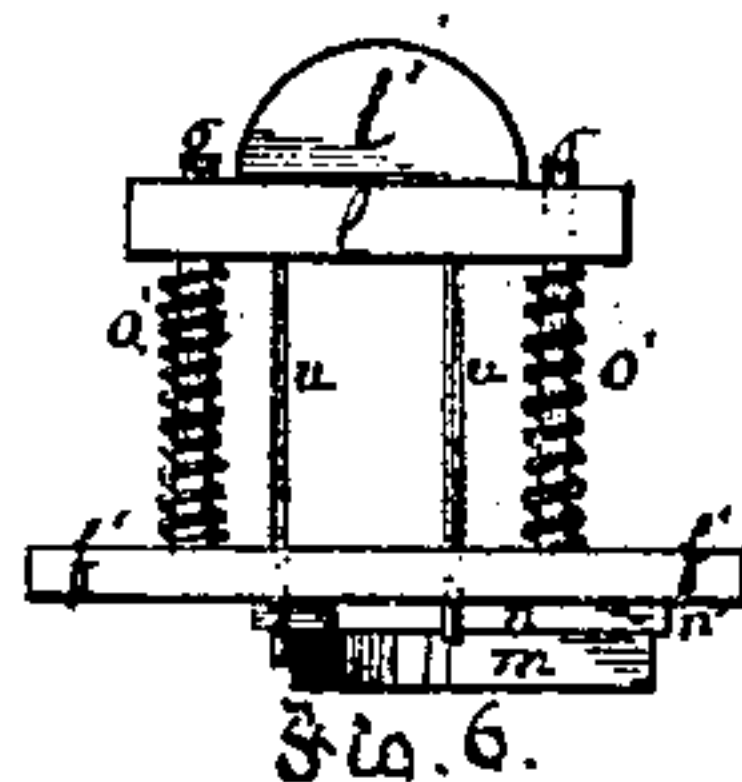
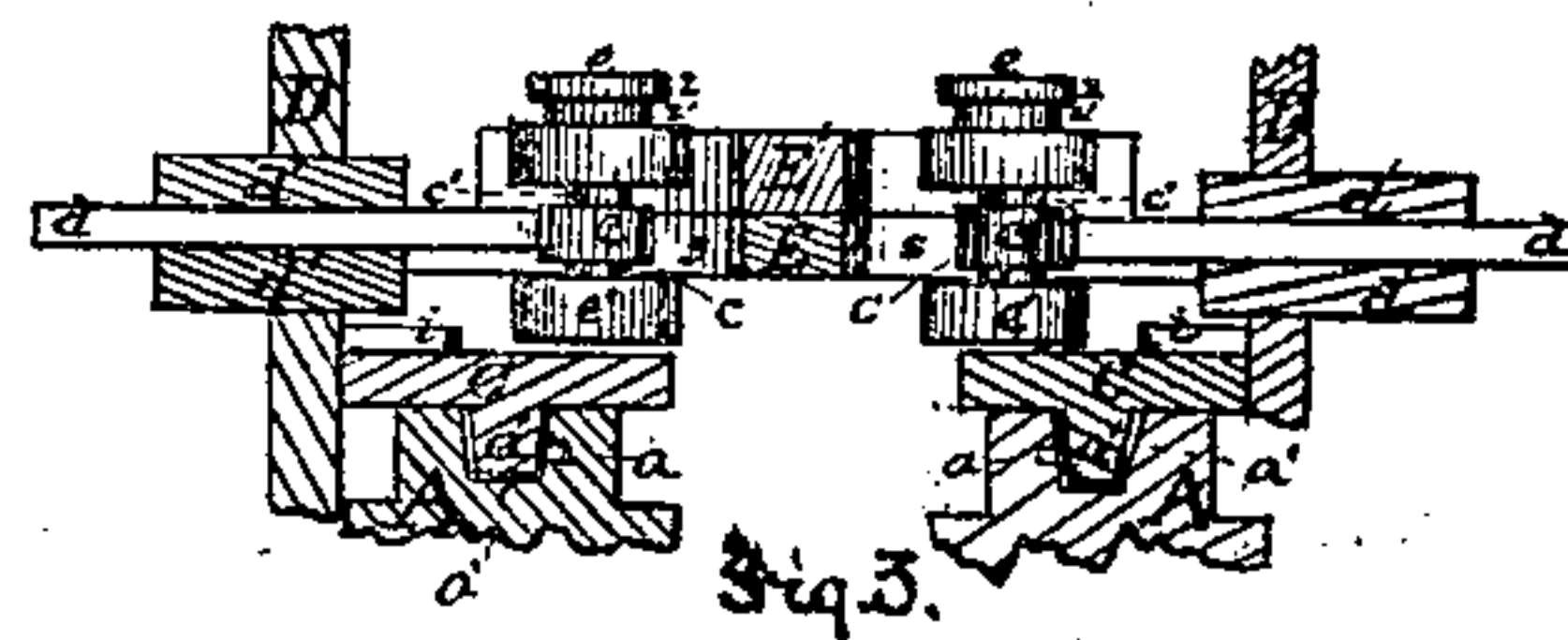
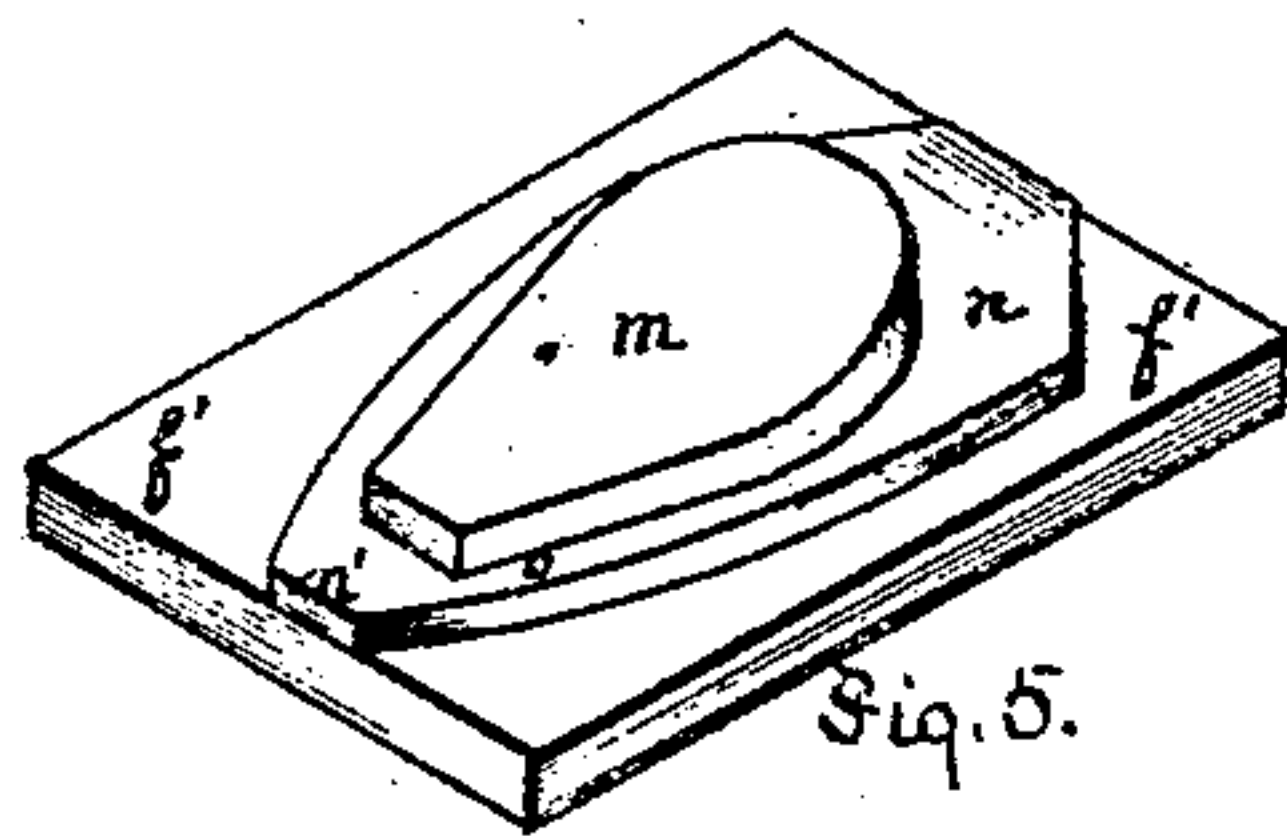
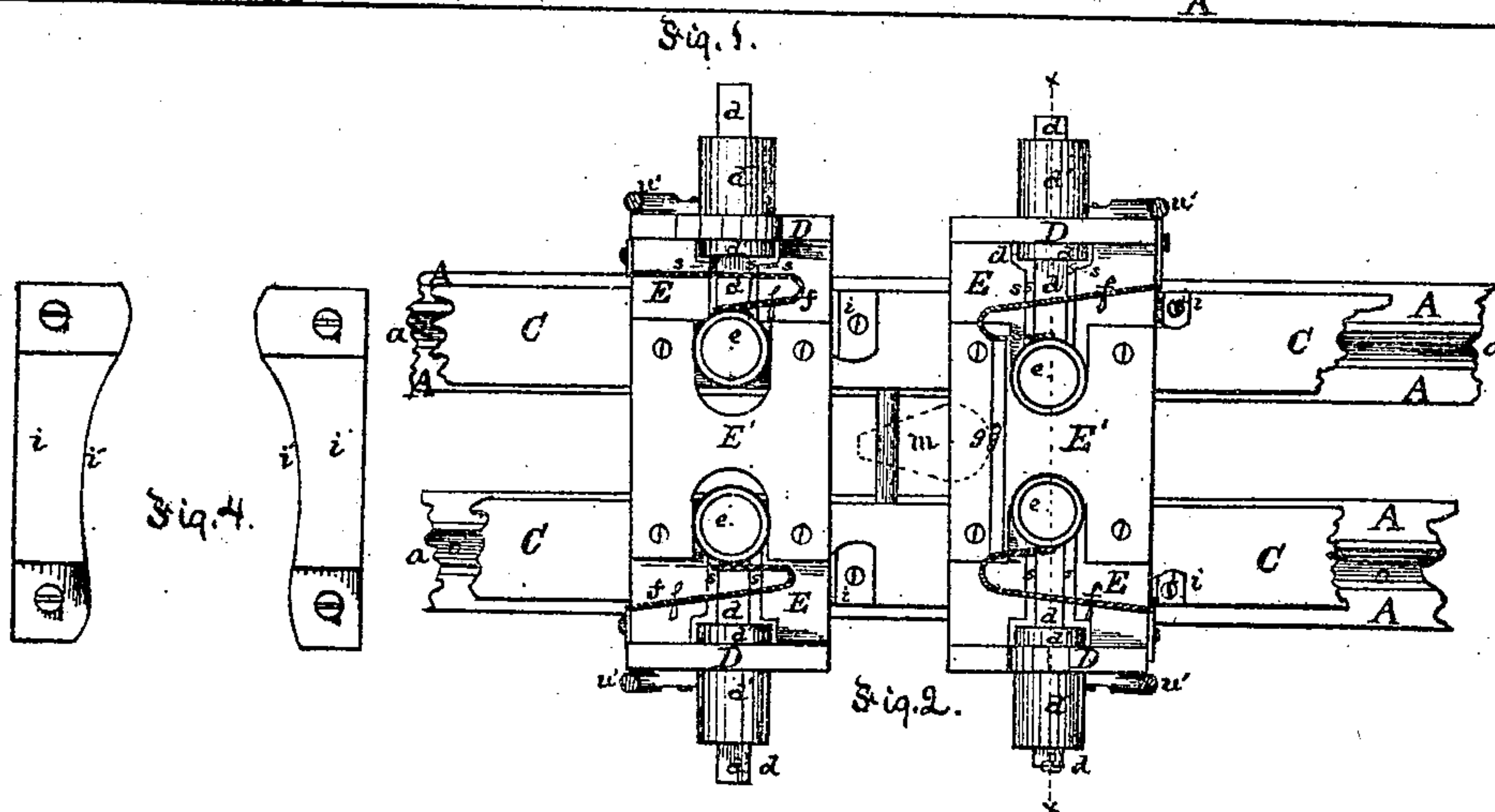
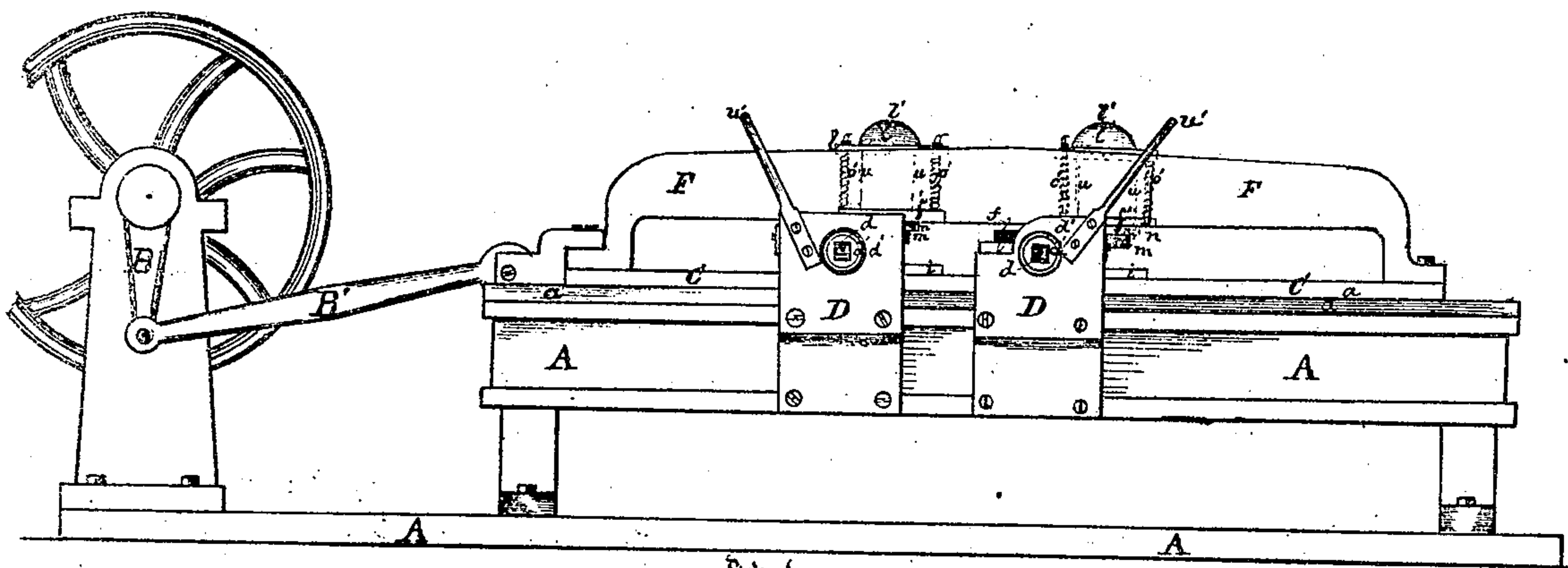


J. & A. Reese,
Horse Shoe Machine.
No. 97,118. Patented Nov 23, 1869.



Witnesses:
R. C. Wrenshall
W. D. Smyth

Inventors:
Jacob Reese,
Abram Reese,
by Baker & Co. Attys.

UNITED STATES PATENT OFFICE.

JACOB REESE AND ABRAM REESE, OF PITTSBURG, PENNSYLVANIA.

IMPROVED HORSESHOE-MACHINE.

Specification forming part of Letters Patent No. 97,118, dated November 23, 1869.

To all whom it may concern:

Be it known that we, JACOB REESE and ABRAM REESE, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Horseshoe-Machines; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of our improved machine. Fig. 2 is a plan view of the swaging devices. Fig. 3 is a cross-section through xx , Fig. 2, except the swaging-rollers are shown in side view. Fig. 4 is a plan view of the forming-plates. Fig. 5 is an inverted perspective view of the former and roller guide and former-block, and Fig. 6 is a side elevation of the discharging-plate and former.

Like letters of reference indicate like parts in each.

The nature of our invention consists in the construction, combination, and arrangement of devices for bending and forming horseshoes from previously-rolled horseshoe-blanks, such devices consisting substantially of a single former or of a series of formers of an improved construction guided in a reciprocating motion by forming-plates, so as to swage the shoe between double rollers, which are held by stems and boxes; also, of rest-plates, and springs for holding the blank in place, and clearing-tools for discharging the shoe when formed.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and mode of operation.

The operating parts are arranged on any suitable bed, frame, or foundation, A, and the necessary power to operate them is communicated through a crank and shaft, B B', or other known way of producing a reciprocating motion.

In the top of the frame A, and extending longitudinally therewith, are grooved ways a , in which operate the tongues a' on the under side of the reciprocating carriage C.

On each side of the frame A, and securely fastened thereto, is a pair of uprights, D, the upper ends of which project a short distance above the top of the frame. Each of these uprights has a stem-box, d' , projecting outward sufficiently far to hold securely against lateral or rotary motion a stem, d , which, so

far as the box is concerned, operates longitudinally therein with freedom. The opposite uprights, D, are connected together by cross-plates E, the lower faces of which are far enough above the frame A to allow the reciprocating carriage C to pass under it. These cross-plates are arranged in the planes of the stems d , and have slots s at either end, as shown, for the operation therein of the stems d .

On the inner end of each stem d is an eye, e , through which passes the closely-fitting axle e' of a double friction or forming roller, $e e'$, the upper roller, e , standing above the cross-plate E, and the lower roller, e' , below it.

On top of the cross-plate E, and arranged between each pair of forming-rollers e , is a rest-plate, E' , its opposite ends being slotted, as shown in Figs. 2 and 3, for the admission of the rollers e therein. The upper ends of the forming-rollers e project above the upper face of the rest-plate E' so far that by a collar, z , on the end a groove, z' , may be formed, which is, as near may be, of a width equal to the thickness of the horseshoe to be made.

With each pair of rollers e , and outside of the same, is a pair of springs, f , which are secured to the uprights D, or to some other convenient stationary part of the machine.

On top of the reciprocating carriage C the forming-plates i are attached, and so arranged thereon that their inner or working faces, i' , shall operate against the lower rollers, e' . The shape of these plates i is more fully shown in Fig. 4.

The reciprocating carriage C consists of a rectangular frame, with tongues a' on its under side, which play in the grooved ways a . Secured to it so as to move therewith, and, in fact, forming a part thereof, is the arched frame F, which passes directly over the space included between the opposite rollers, $e e'$.

Set in the under face of the arch F are two blocks, f' , each one of which has a former, m , standing out from a raised part, n , the height of the raised part n being equal to the breadth of the collar z on the forming-roller e , and the height or thickness of the former m being equal to the breadth of the groove z' in the same roller, and of course equal to the thickness of the shoe-blank. These formers m are so arranged on the arch F that as the latter moves back and forth with the carriage C the formers m will operate back and forth between

the forming-rollers *e*, and so be operative in bending horseshoes, as presently to be described.

It will be observed that the ends of the formers *m* against which the toe part of the shoe is bent are arranged outward, though this is not necessary, except as being more convenient in discharging the shoe.

The shoe-blanks being cut to the required length from ordinary horseshoe-bar, or from bars rolled out into bar-blanks of the desired varying width and thickness, the blanks are heated, and placed successively on the rest-plate *E'* in the position shown at *G* in Fig. 2, the outer edge of the blank resting against the forming-rollers *e* in the grooves *z'*, the inner edge being in front of the former *m*, and the ends being pressed by the springs *f*. These springs *f* are so set and adjusted that they will hold the blank *g*, with its middle point, as nearly as practicable midway between the forming-rollers *e*, and of course directly in front of the former *m*. Then by the forward motion of the carriage *C* the former *m* engages the blank *g* at its middle point, carries it forward between the forming-rollers *e*, which by the means presently to be described are caused to press up against the blank, and so make it hug the sides of the former *m*, even back to that part of it which forms the heel of the shoe. The blank in being thus bent is prevented from twisting by entering the grooves *z'*, the collar on either side of such groove preventing it from being bent in any but the right direction.

The forming-rollers *e* are caused to operate in the manner described by the action of the forming-plates *i* on the lower roller, *e'*. The inner or working faces, *i'*, of these plates have a curvature exactly the reverse of that of each half of the former *m*, so that as the swell of the former *m* causes the rollers *e* to move outward the hollow parts of the forming-plates *i* will permit of such motion, and as the former *m* narrows toward its heel the forming-plates *i*, each by a swell in its inner or working face, will force its roller *e'* inward, and with it the upper roller, *e*, connected therewith, whereby the latter will be made to swage the heel parts of the shoe-blank tightly up against the narrow part of the former *m*, and thus make a well-shaped shoe. With the reverse motion of the carriage *C*, the other former and the other pairs of upper and lower rollers and forming-plates will operate in a like manner in bending up a shoe, so that a shoe will be bent complete with each stroke of the machine.

The raised parts *n* are made with the heel end *n'* tapered back, so as at its end to be narrower than the breadth of a shoe at the heel, and, if found necessary, this taper may be carried to a point, while its opposite end is of a breadth greater than the greatest breadth of the shoe. Then with each stroke of the machine the heel *n'* of the raised part *n*, which we also call a "roller-guide," will operate like a wedge against the collar *z* and in forcing the

rollers *e* as far apart as possible, that being the best position for them to occupy at the beginning of a new forward stroke, since in that position they exert their maximum of leverage in bending the blank, and this feature we desire to claim as a part of our invention.

It will be observed that by passing the stems *d* through the long boxes *d'* we prevent the rollers *e e'* from moving in any direction except inward or outward. The stems *d* and the sockets through which they play may be of any shape in cross-section except circular, the object being in this respect only to prevent a rotary motion.

For the purpose of discharging the shoes from the formers *m*, we use a discharging device more fully shown in Fig. 6. This device is arranged in the arch *F*, over each former *m*, and consists of a plate, *l*, having an oval topped clearing projection, *l'*, the clearing-plate *l* being set on grinding-posts *o*, and supported by spiral springs *o'* thereon, or other like device.

From the under side of the plate *l* the discharging-pins *n* project down through holes in the block *f'*, just outside the edge of the raised former *m*, so as to come against the shoe when bent—one on each side of the former *m* and one at the toe.

Attached to the upright *D*, or other stationary parts of the machine, are the clearing-yokes *u'*, which are so arranged that as soon as the shoe-blank is properly bent and has passed clear of the rest-plate *E* the projection *l'* will strike it, by which the plate *l* will be depressed, the pins *n* forced downward, and the shoe discharged. It then falls to the floor under the machine. The motions and mode of operation are the same with the discharging device for each former. As we usually bevel and crease the shoe-blanks in rolling and before cutting and bending, it only remains necessary to punch the nail-holes to render the shoes ready for market.

By constructing the machine with the formers *m* in sets of two, or with a full set of two, as described, and additional formers in full or part sets, we are enabled to make one or more shoes at each stroke of the machine, and at the same time by using formers *m* and forming plates *i* of different sizes we make different sizes of shoes at the same time, and are thus enabled to supply the demand for such sizes without changing the formers. The machine we now have in operation has five formers, and is capable of bending fifteen tons of shoes per day.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The arrangement of the former *m*, pair of forming-plates *i i*, and double forming-rollers *e e'*, substantially as described.
2. The double rollers *e e'*, arranged on a stem, *d*, which operates in a box, *d'*, substantially as and for the purposes set forth.
3. The raised portion of the die underlying and surrounding the former *m*, with its narrow point *n'* and broad part *n*, in combination

with the collar *z* on the roller *e*, as and for the purposes set forth.

4. The clearing-plate *l*, with its projection *l'* and pins *n*, in combination with its clearing-arm *u'*, substantially as and for the purposes set forth.

5. The arrangement of a series of formers, two or more, with the ends on which are formed the toes of the shoes turned in opposite directions, in connection with a corresponding arrangement of forming-plates, *i*, and forming-

rollers *e*, so as to bend shoes at both strokes of the machine.

In testimony whereof we, the said JACOB REESE and ABRAM REESE, have hereunto set our hands.

JACOB REESE.
ABRAM REESE.

Witnesses:

A. S. NICHOLSON,
THOS. B. KERR.