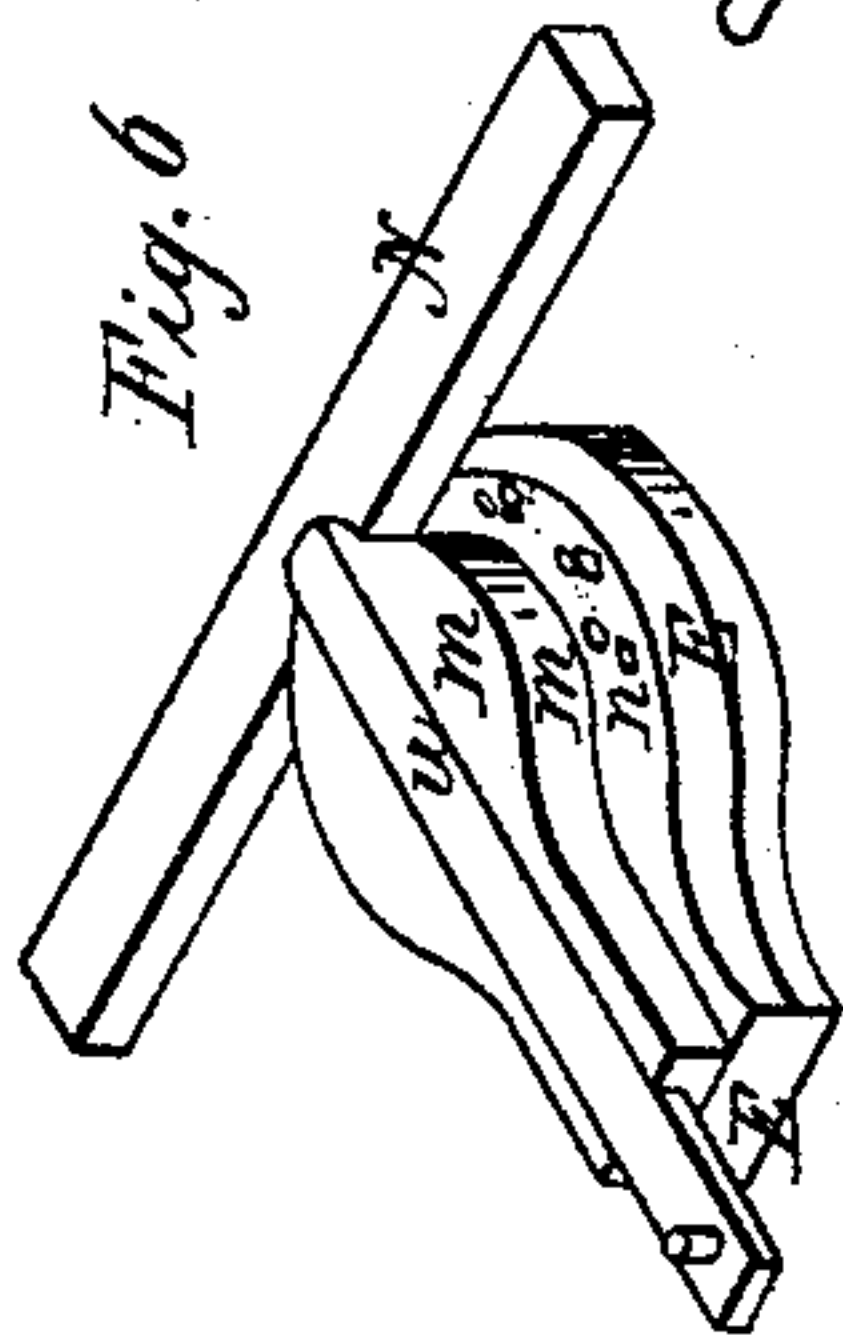
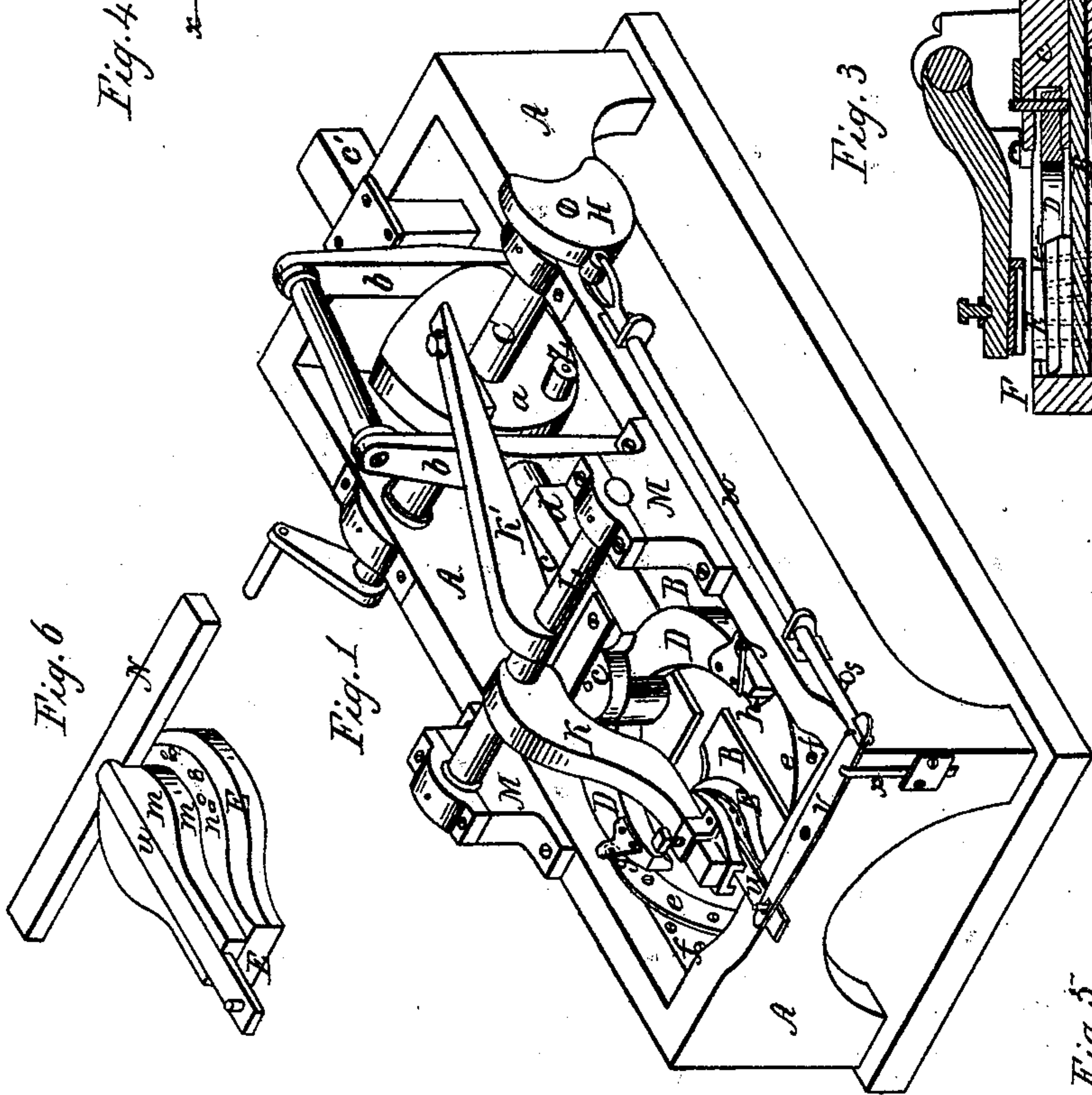
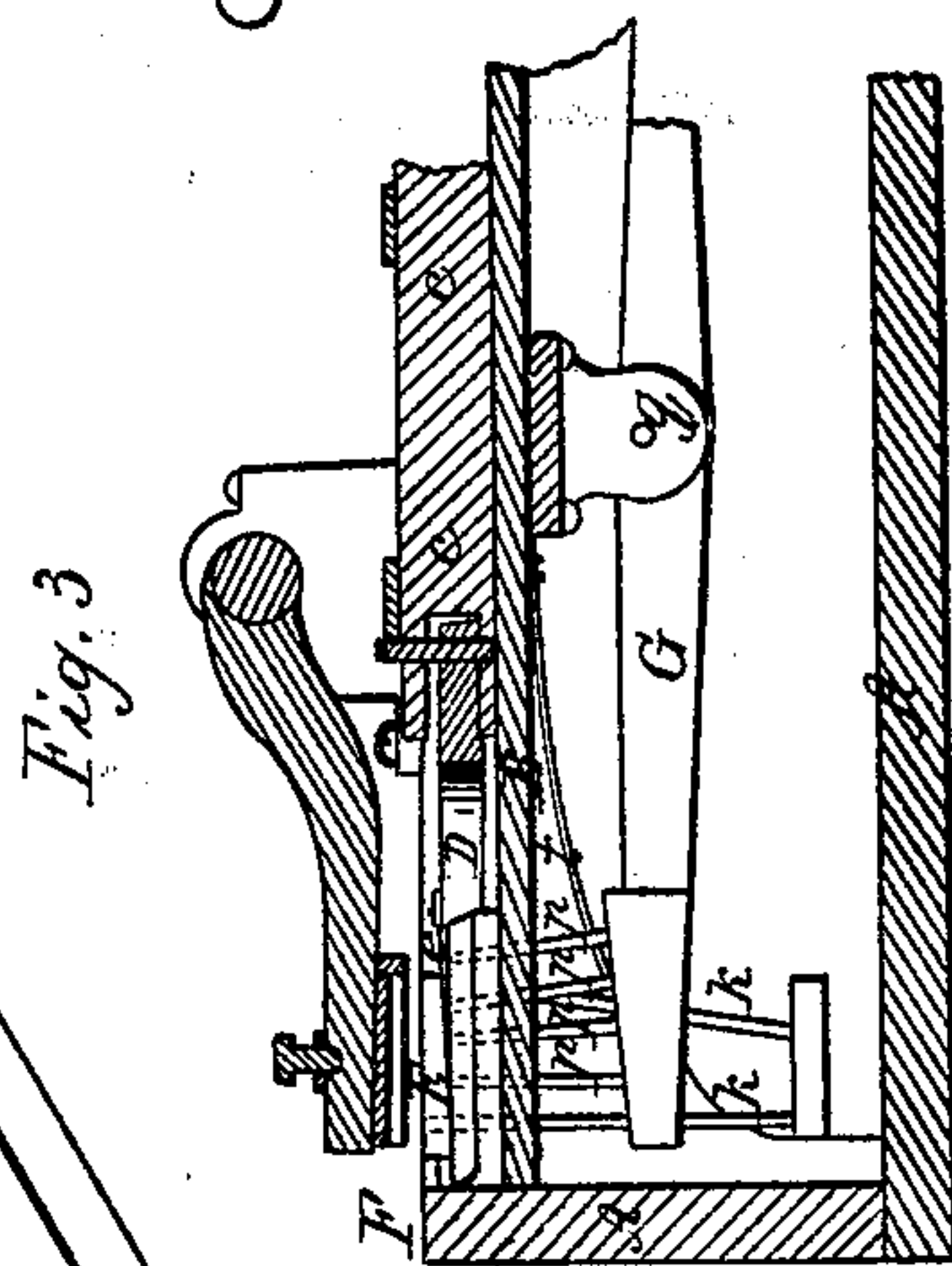
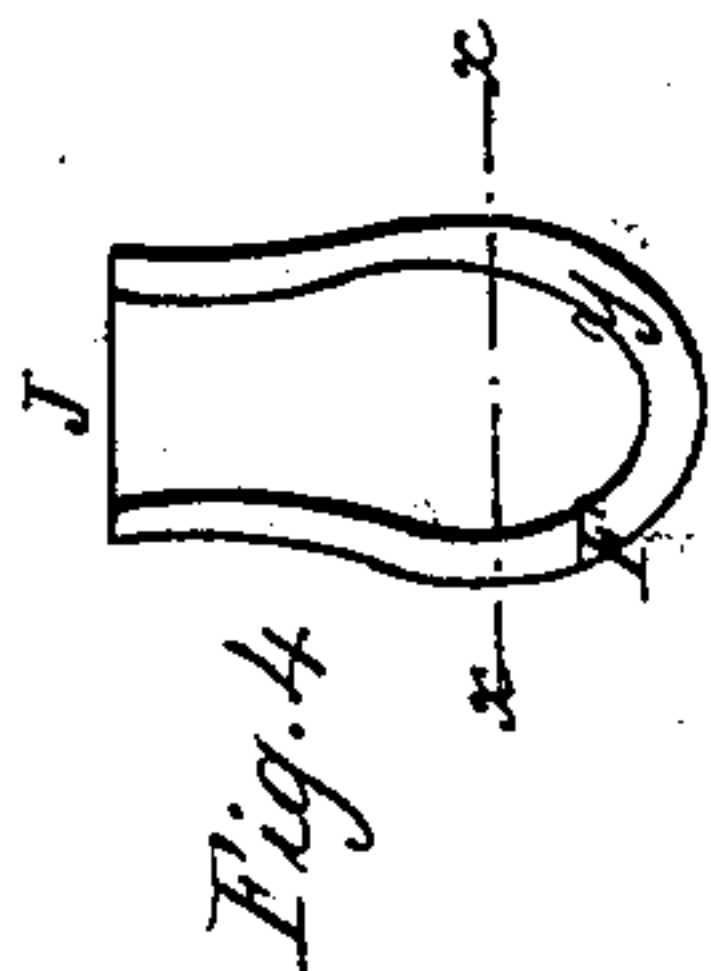
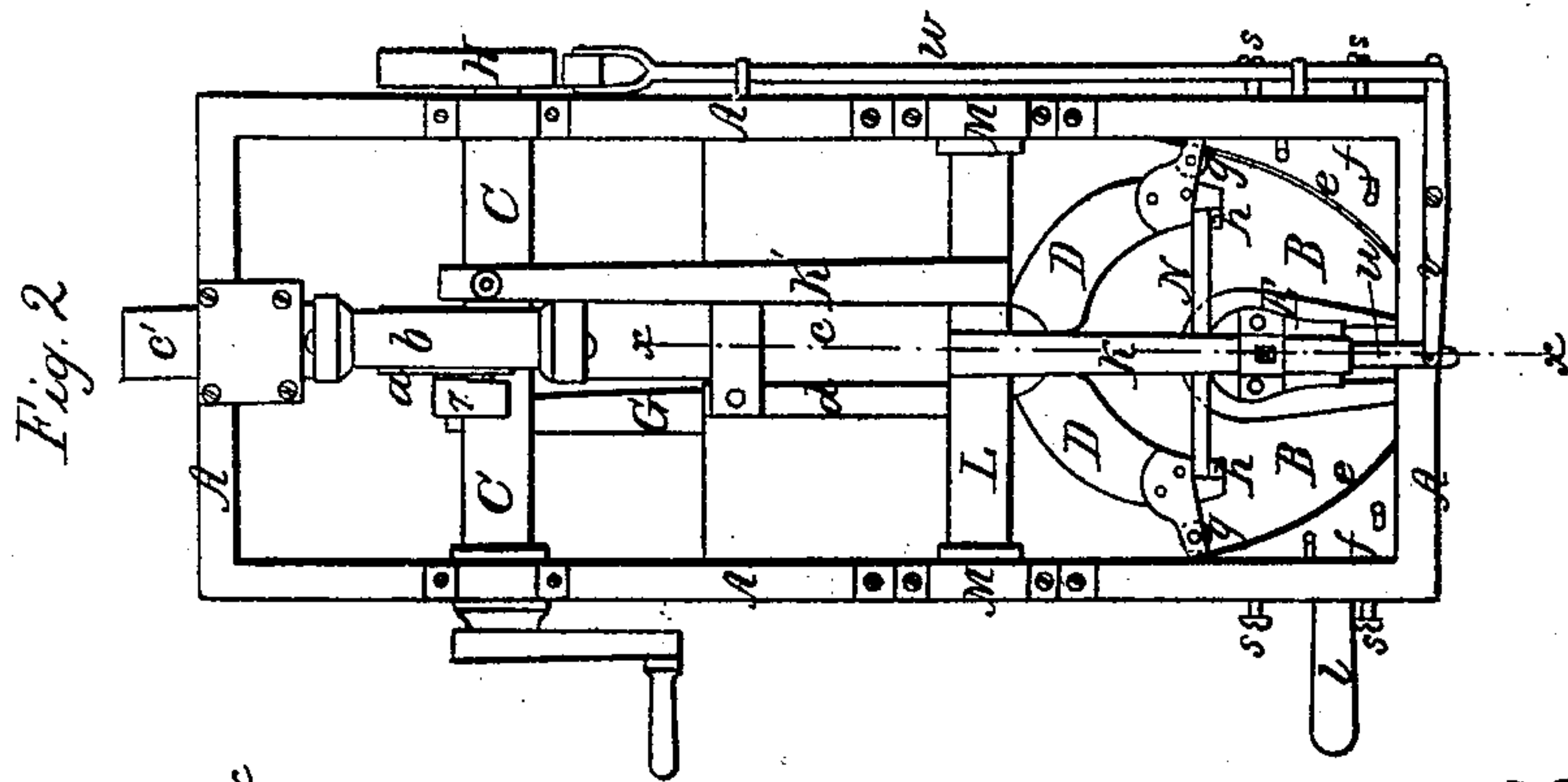


W. Anderson.

Horse shoe Mach.

N<sup>o</sup> 97,021.

Patented Nov. 23, 1869



Witnesses  
R. Wrenshall  
Thos. R. Kerr

Inventor  
Wesley Anderson,  
by Bakewell Christy,  
his Att'y's.



# United States Patent Office.

WESLEY ANDERSON, OF PITTSBURG, PENNSYLVANIA.

Letters Patent No. 97,021, dated November 23, 1869.

## IMPROVED HORSESHOE-MACHINE.

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, WESLEY ANDERSON, 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 I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a perspective representation of my machine, the several parts being in the proper position for commencing operations.

Figure 2 is a top or plan view of the machine, the parts being in the same position as in fig. 1.

Figure 3 is a longitudinal central section of the front end of the machine through the line *x x* in fig. 2.

Figure 4 is a view of the under side of the upper forming-die.

Figure 5 is a cross-section of the upper forming-die inverted, through the line *x x*, fig. 4.

Figure 6 is a perspective representation of the lower forming-die on an enlarged scale.

In the several figures, like letters denote the same parts.

My improved machine forms a horseshoe out of a straight bar or blank of proper length, bending, beveling, punching, and delivering it finished, at one operation.

A A is the frame-work of the machine, the front portion (almost half) having a horizontal table or bed, B, which supports those parts of the machine which are employed directly in making the horseshoe.

Toward the rear end of the frame is the main or cam-shaft C, to which power is applied to operate the machine.

On this shaft C is a cam, *a*, which works within a cam-yoke, *b*, which cam-yoke is supported by the rear and front slides *c' c*.

The front slide *c* works longitudinally with a reciprocal motion in the central line of the machine between guides *d d*.

To the front end of the front slide *c* are pivoted two jaws, D D, which extend forward, one on either side of the lower forming-die E.

The surface of the inner edge of each of these arms is so shaped as to correspond exactly with the outer edge of one-half of a finished horseshoe, from the toe to the heel, and the contour of the bottom die (which is embraced by the jaws D D when they are closed,) is that of the inner edge of a finished horseshoe, so that the jaws bending and compressing a bar of iron or "shoe-blank" around the lower die, form it into the requisite horseshoe-shape.

The forward motion of the jaws D D is produced by the slide *c*, but the side motion toward the die E,

necessary to shape the shoe, is effected by curved guide-plates *e e*, one on each side of the die E.

Each of these guides *e* is attached to an adjustable guide-block, *f*, so that, by means of set-screws *s s*, the degree of curvature to be given to the horseshoe by the jaws D D, may be adjusted to correspond with the curvature of the lower forming-die E.

The jaws D D are caused to follow the curvature of the guide-plates *e e* by means of a roller, *g*, attached to the outside of the jaws, near their front end, which presses against and follows the curvature of the guide-plate *e* and a pin, *i*, which is attached to the upper plate *h*, by which the roller *g* is attached to the jaw D, the pin *i* pressing against the outer face, as the roller *g* does against the inner face of the guide-plate *e*.

The lower forming-die E has two operative faces, one, *m*, vertical, which is curved to the required shape of the horseshoe, and the other, *n*, horizontal, surrounding the vertical part *m* as a rim or base, on which the shoe-blank N rests, when being compressed between the lower forming-die E and the upper forming-die F.

The rim or base *n* may be raised above the bed B of the machine, (as in the drawing,) or may be set down on a level with the surface of the bed, if preferred, but if set above the bed, the jaws are raised above the bed, which avoids friction.

At the forward extremity of each of the jaws D D, is a recess or step, *h*, on which notches the ends of the bar, forming the shoe-blank, rest, as seen in fig. 2, when the blank is fed into the machine.

The bottom of these steps *h* is on a level with the base or rim *n* of the lower forming-die E.

In the base of the lower forming-die E is a series of holes, *o*, (see fig. 6,) corresponding to the holes to be made in the horseshoe.

Through each of these holes projects a bit, *p*, (see fig. 3,) which, when the shoe-blank is compressed between the upper and lower dies, pierces it, thus forming the nail-holes in the shoe.

These bits *p* are operated simultaneously by means of a lever, G, seen in fig. 3, extending under the bed of the machine, pivoted at *q*, and operated by means of a roller, *r*, projecting from one side of the cam *a*, so that by the passage of the roller *r* over the end of the lever G, a sudden upward motion of the bits *p*, through the lower forming-die E, is effected, the bits immediately withdrawing by the action of the spring *t*, which depresses the forward end of the lever G.

In order to keep the shoe-blank in place on the lower forming-die, so that it may not slip up at the toe of the shoe, away from the vertical edge *m* of the die E as it is being bent around it by the jaws D D, a slide, *u*, rests in a recess on top of the lower die E, with its end projecting beyond the edge of the raised



portion *m* of the die *E*, and over the base *n* at the toe of the die, so that after the blank is fed into the machine, with its two ends in the steps *h h*, and the centre of the bar resting on the rim of the die *E* just at the toe, and before the jaws *D D* begin to move, the slide *u* is moved, by its lever *v*, until its extremity passes over the bar or shoe-blank, thus holding it in place until it is bent around the die *E* by the jaws *D D*, but just as the upper die *F* is about to press on to the shoe-blank, the end of the slide *u* is withdrawn, so as not to prevent the descent of the upper die *F* to compress the shoe-blank. This projection of the slide *u* is effected by a cam-rod, *w*, operated by a cam, *H*, on the end of the cam-shaft *O*, and its withdrawal is produced by a spring, *x*, operating on the lever *v*.

The upper forming-die *F* has a cavity, *J*, corresponding in size and shape with the raised portion *m* of the lower forming-die *E*, and of such depth that the edges or rim *y* of the die *F*, surrounding the cavity *J*, may pass down the curved face of the raised portion of the die *E*, and press upon the shoe-blank, compressing and shaping it between the under face of the rim *y* of the upper die and the base *n* of the lower die *E*.

The under face of the rim *y*, of the upper forming-die *F*, is not a plane surface, but has swellings on either side of the toe, so as to make the proper bevel on the upper face of the horseshoe.

The projecting rim *y* of the upper die *F*, fitting over the raised portion *m* of the lower die, prevents any "flash" or "fin" being formed around the edge of the horseshoe, when compressed as above described.

The upper forming-die *F* is operated by means of a lever, *K*, attached rigidly to the horizontal transverse shaft *L*, which works in bearings *M*, attached to the sides of the machine.

The long arm *K'* of this lever extends backward over the cam-shaft *O*, and is operated by a roller, *Z*, projecting from the cam *a* on the opposite side from the roller *r*, which gives motion to the lever *G*.

Other modes of operating the upper die *F* may be used, so as to secure a direct up-and-down motion, or to increase the power.

The shoe, when finished, is delivered from the lower die by means of two or more lifters *k k*, (see fig. 3,) attached to a treadle, *l*, (see fig. 2,) which is operated by foot, or by power from the machine.

The lifters are rods, which pass up through the base of the lower die, when the treadle *l* is depressed, and raise up the heels of the shoe, thus displacing it from the lower die.

To make horseshoes of different shapes or sizes, dif-

ferent dies and corresponding-shaped jaws are employed, these part of my machine being removable for the purpose of making such changes.

Having thus described the parts of my machine and their functions, I will proceed briefly to explain its operation in making horseshoes.

A bar of iron of rectangular shape, and proper width and thickness, is cut into blanks of proper length.

These blanks are first "creased," by any suitable means, and are heated before being fed into my machine.

A blank, *N*, fig. 2, is laid on the jaws *D D*, by placing its extremities in the steps *h h*. The slide *u* then advances, so as to project over the blank at its middle, where it rests on the base *n* of the lower die *E*, and thus holds it down. The jaws *D D* then advance and close around the lower die *E*, bending the blank around and against the raised surface *m* of the lower die. The upper die *F* then descends over the lower die *E*, the slide *u* now receding to let it pass, and the horseshoe is shaped on its upper and lower faces by the edge *y* and base *n* of the upper and lower dies respectively. The bits *p p* then are projected through the base of the lower die, and punch the holes for the nails. The horseshoe being thus finished, the upper die rises, and the horseshoe is delivered by means of the lifters before described.

Having thus described the construction and operation of my machine,

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

1. The jaws *D D*, constructed substantially as described, and in their operation serving to support, convey, bend, fold, and embrace the blank, in the manner described, in combination with the die *E* for bending the horseshoe-blank, substantially as described.

2. The jaws *D D*, constructed, operated, and subserving the functions, substantially as described, in combination with adjustable guides *e e*, for securing the requisite compound motion for bending the bar or blank around a former, substantially as described.

3. The slide *u*, and the mechanism for actuating the same, in combination with the lower die *E* and jaws *D D*, arranged and operated substantially as described.

In testimony whereof, I, the said WESLEY ANDERSON, have hereunto set my hand.

WESLEY ANDERSON.

Witnesses:

JOHN GLENN,

THOS. B. KERR.