

(No Model.)

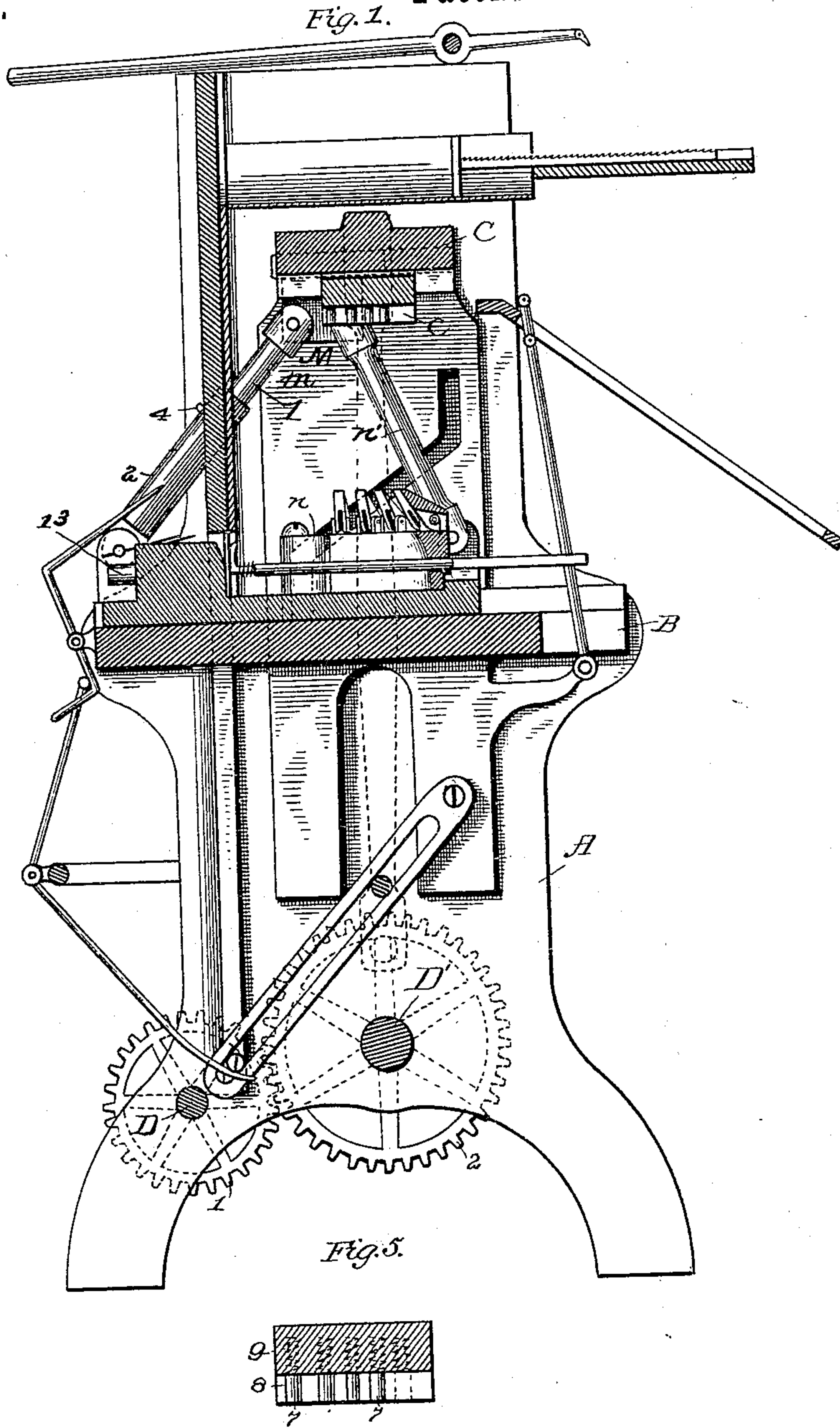
2 Sheets—Sheet 1.

E. S. MANSELL.

MACHINE FOR FORMING HEEL STIFFENERS.

No. 267,438.

Patented Nov. 14, 1882.



Attest:

Walter Donaldson
J. L. Middleton

Inventor
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 6

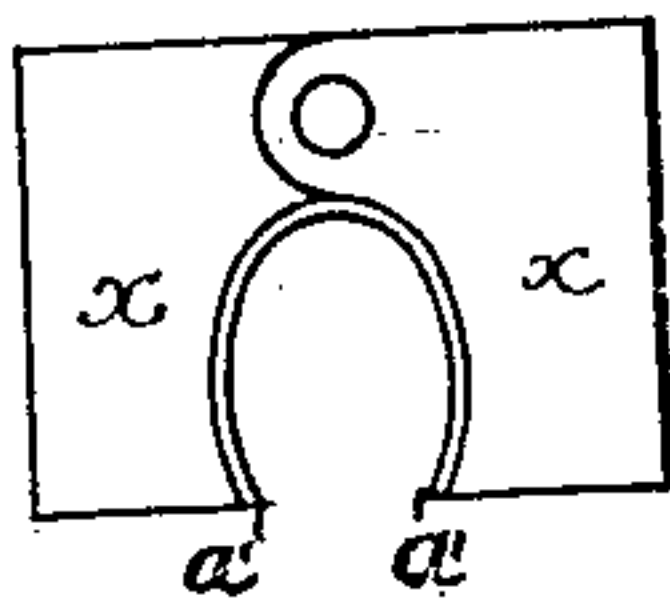


Fig. 7

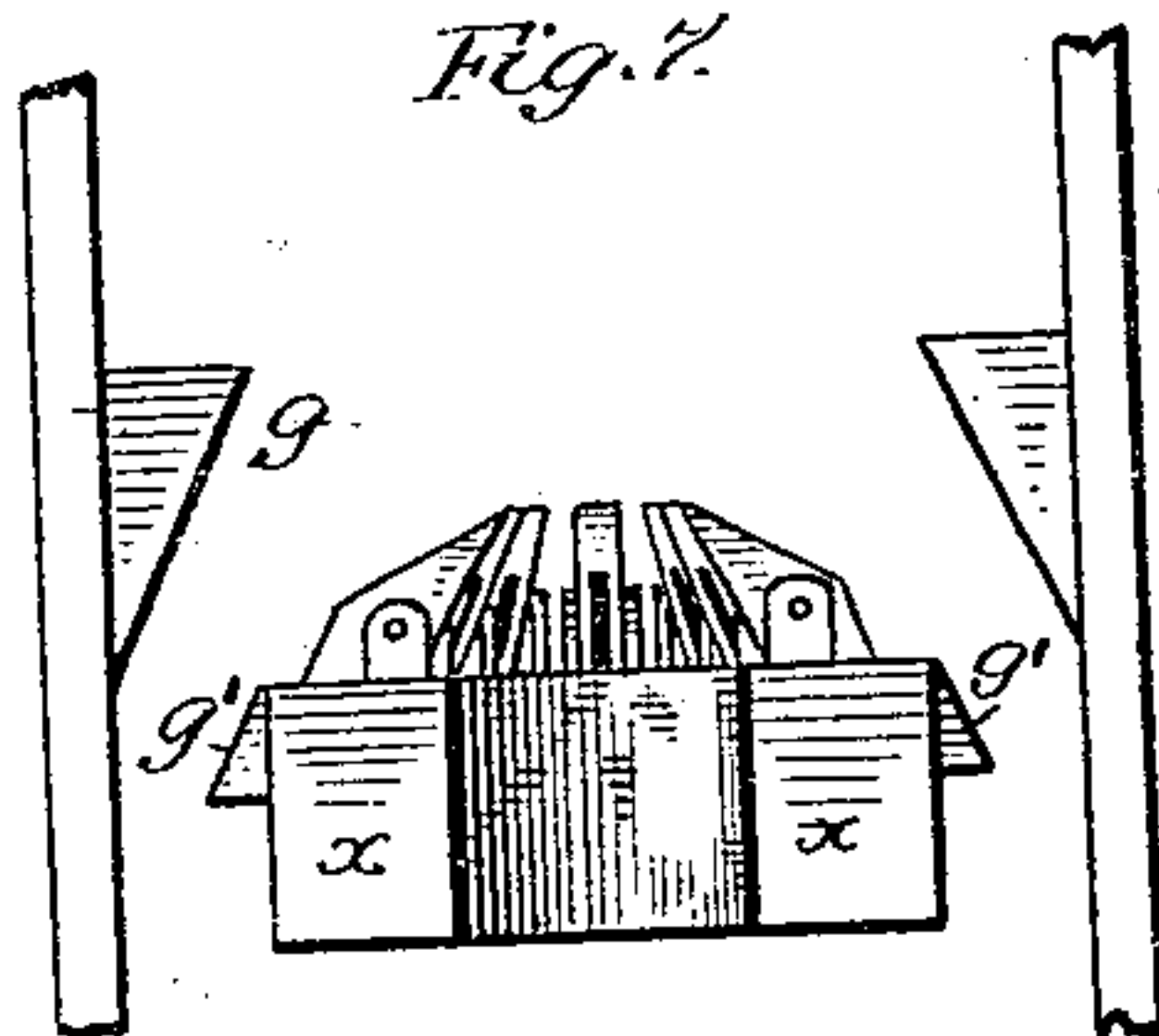


Fig. 2

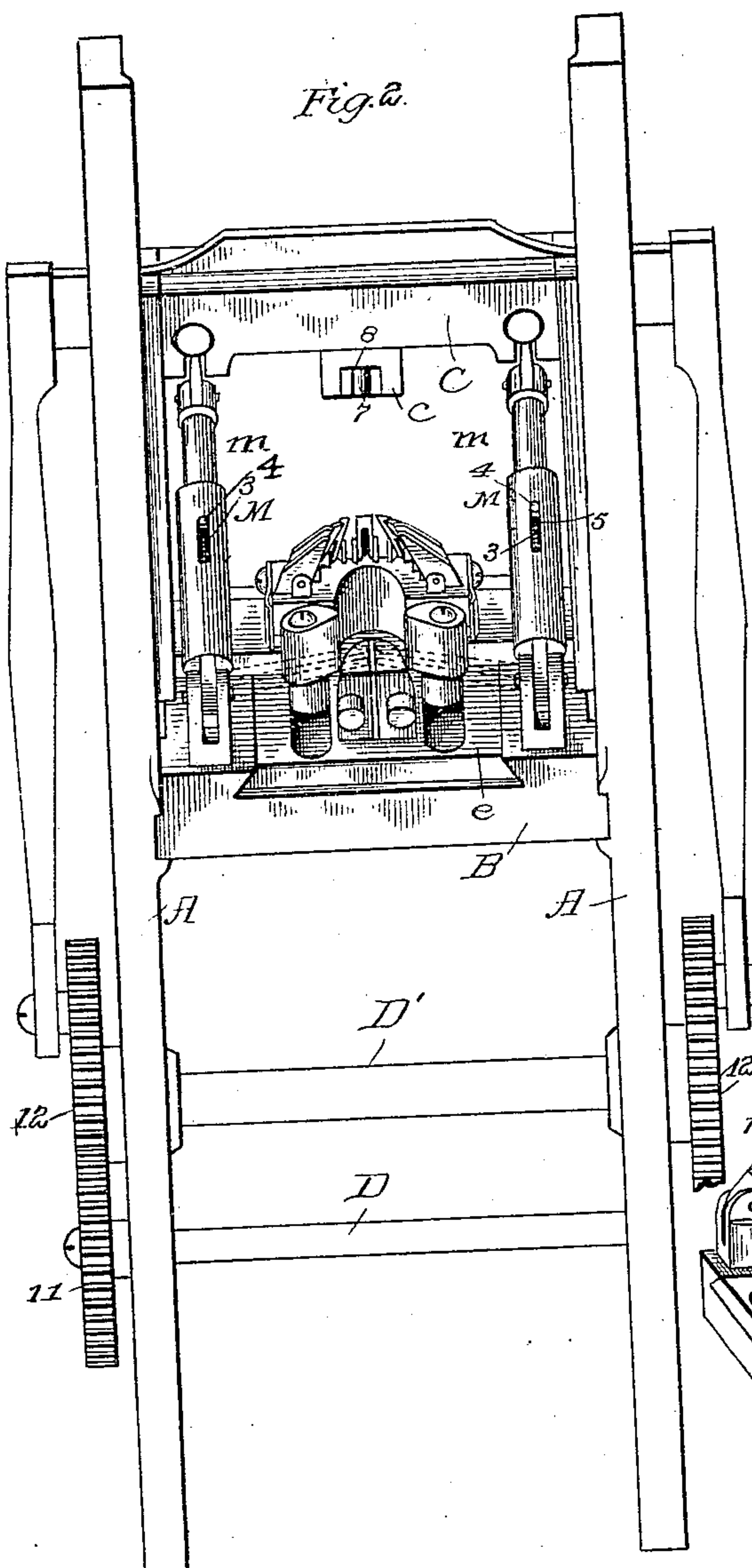


Fig. 3

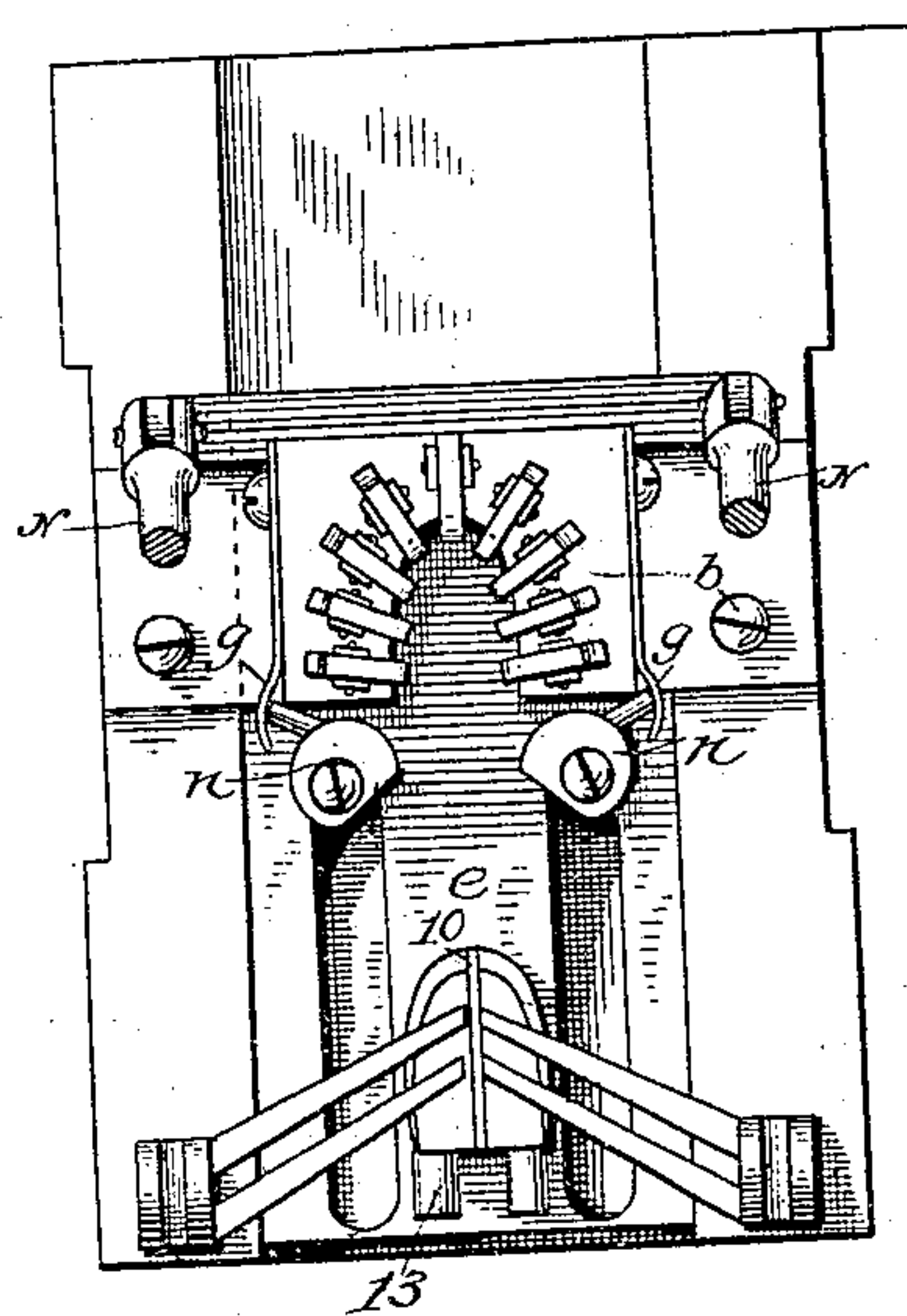
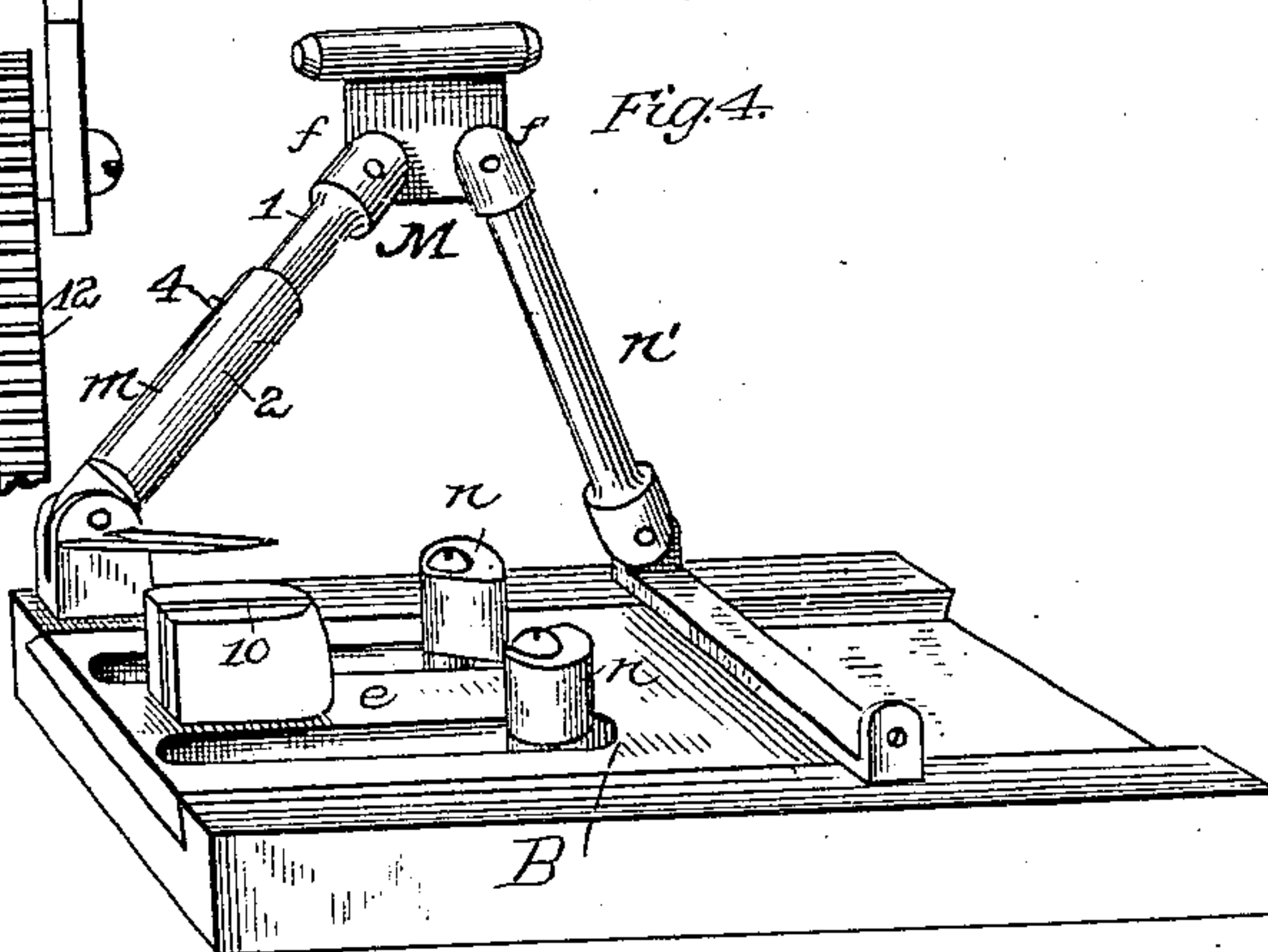


Fig. 4



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UNITED STATES PATENT OFFICE.

ELBRIDGE S. MANSELL, OF LYNN, MASSACHUSETTS.

MACHINE FOR FORMING HEEL-STIFFENERS.

SPECIFICATION forming part of Letters Patent No. 267,438, dated November 14, 1882.

Application filed August 21, 1882. (No model.)

To all whom it may concern:

Be it known that I, ELBRIDGE S. MANSELL, of Lynn, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Machines for Forming Heel-Stiffeners; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention is an improvement upon the machine for forming heel-stiffeners shown in an application filed by me in the United States Patent Office on the 20th day of April, 1882. Parts of the said improvement are applicable to other machines of like general organization, as hereinafter explained.

I have hereinafter described the various points of my improvement in connection with parts fully set forth in my aforesaid application.

In the accompanying drawings, Figure 1 is a central vertical longitudinal section, with some of the parts represented in dotted lines. Fig. 2 is a front perspective view of the machine with some of the parts omitted. Fig. 3 shows a plan view of the bed of the machine; Fig. 4, a perspective view of the bed-plate, representing the arrangement of the toggles; Fig. 5, a detail view of the vertical plunger. Figs. 6 and 7 represent modifications of the die.

The machine shown in these drawings has side pieces, A A, driving-shaft D, provided with suitable pinions, 11 11, which mesh into cogged wheels 12 12 on a counter-shaft, D', these wheels 12 12 being connected by means of wrist-pins and pitman to pins on a cross-head, C, all as in my said application. This cross-head also carries the vertically-moving plunger e, which comes down into the die and forms the crimped portion of the finished stiffeners. The bed or table of the machine is shown at B. The die which receives the blank from the horizontal plunger is fitted to this table, as is indicated at b. In the top of the table is the slide e, running in a dovetail groove and carrying the horizontal plunger, which brings the unformed blank into the die and there presses it into shape conformed to the heel for which it is intended. The slide e is slotted to admit the supports of the rollers n, which are fixed to the table, the horizontal plunger being on the central part of the slide, in line with the die. The devices for moving this die are dif-

ferent from those shown in my said application, and are capable of applying greater force to the horizontal plunger. These devices consist mainly of two toggle-levers, M M, one on each side. They are composed of rods m n' m n', respectively. The rods m are pivoted to the top of the table, and the other rods, n', are pivoted to the sliding plate e. The upper ends of these rods are connected by links f, which have bolts on their upper edge, sliding in round slots in the cross-head. This is required in order to allow the movable ends of the toggle, which are pivoted to the side, to move forward, the other ends not being permitted to move by reason of their attachment to the table. Obviously the descent of the cross-head will extend the toggles and push the slide.

The parts are so adjusted that the required movement is given to the horizontal plunger and the required pressure on the blank. It is necessary, however, that the horizontal plunger should be in its place in the slide before the vertical plunger bears upon its upper surface. This was accomplished in the former machine by means of the inclined and straight slots in the vertical sliding pieces which carried the cross-head. In this machine I accomplish this result by forming one of the rods of the toggles in two parts. The double rods are shown at m m. These consist of two parts, 1 2, of which part 2 is made tubular and part 1 fitted therein, bearing against a spring, 3. The parts are held together by means of a pin, 4, in a slot, 5. These springs are under tension when the cross-head descends; but they are made strong enough to carry forward the slide e without compulsion till it reaches its place in the die. This occurs before the toggles and the upper plunger are quite down. Further movement of the cross-head downward compresses the springs and gives the required first pressure on the blank, at the same time permitting the completion of the movement of the vertical plunger.

As before stated, the bolts sliding in the round slots of the cross-head, while holding the toggles, thereby permit all necessary movement of the toggles. I may use the inclined and straight slots described in former application in connection with this device, if I choose.

I have modified somewhat the shape of the crimped levers on the top of the die; but their

action is the same. In order to start them sooner and prevent the faces of the vertical plunger from striking the edge of the blank before the crimping-lever, I place pieces 7 7 in the recesses 8 in the face of this plunger, said pieces resting in holes on springs 9. They project, when not under pressure, to the line of the face of plunger; but as the plunger descends and bends down the crimping-levers the pins yield and let the levers into the recesses. The pins therefore start the levers. In all other respects the construction and operation of these parts are the same as in my aforesaid application. The cam-shaped pressure-rollers *n n* in front of the horizontal plunger operate on the plunger in the way described in my said application, but are moved by different mechanism. Instead of the slots and worms, I press the cams inwardly by springs *g g* and prolong the rear of the horizontal plunger, as shown at 13, so that when in the die its rear part shall still be between the cams and hold them apart. The front of this plunger, being moved, opens of itself the cams as it advances. This is much simpler and more effective than the former construction. The spring should give a suitable pressure upon the cam-rollers to press the leather upon the plunger.

As the leather will vary somewhat in thickness, I have divided the horizontal plunger longitudinally and interposed a thin sheet of rubber, 10, which allows slight compression of the plunger when in the die. The plunger is let into the slide, so as to be held with slight possible lateral movement under compression.

The construction of the toggle-levers and their relations to the cross-head and horizontal plunger are such that they may be used in other forms of machines. The toggle-rods *M* may be rigid, and the ears by means of which they are attached to the table made movable against springs with the same effect as in the construction shown.

In Fig. 7 I have shown a device for giving lateral pressure to the blank upon the horizontal plunger for the purpose of more effectually forming the forward part of the stiffener. In this I make the die in two parts and hinge them, as shown in Fig. 6, so as to permit slight inward and outward movement of the jaws *x x*. The inner face of the die formed by these jaws I line with a rubber packing to compensate for the varying thickness of the blanks. This die is held in the slide in the same manner as that

heretofore described. The rear part of the die at points *a' a'* is drawn in slightly. The plunger enters it, as heretofore described, and carries in the blank at the same time that the longitudinal pressure is applied. Wedges carried by the vertical sliding frame press against inclines *g' g'* on the jaws and press them together, giving lateral pressure and bending in the blank at the points *a' a'*. The plunger, as it retreats, opens the jaws of the die. This form of die may be used without the cam-rollers, if desired.

All the other parts of the machine not herein described are the same as those in my aforesaid application.

What I claim is—

1. The combination of the vertically-sliding cross-head and plunger, mechanism for moving the same reciprocally, a horizontal sliding plate and plunger, a fixed die, and toggles having yielding connections between the cross-head and the plate, whereby the cross-head is made to operate the horizontally-sliding plate, substantially as described.

2. The combination of the cross-head with its plungers, the plate, carrying horizontal plunger, the toggles having rods *n' n'*, attached to the plate, and yielding rods *m m*, attached to the table, with operating mechanism, substantially as described.

3. The vertical plunger provided with recesses and spring-pins, in combination with the die and crimping-levers, and with the longitudinal plungers and operating mechanism.

4. The combination of the die, horizontal plunger, cam-rolls and springs, and rear extension of horizontal plunger 13, whereby said plunger holds the rolls open, substantially as described.

5. The fixed die having the hinged jaws *x x*, in combination with the horizontal plunger acting in the described relation to the said fixed die, and with a vertical plunger having mechanism, substantially as described, whereby in its descent it forces the jaws together, all as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELBRIDGE S. MANSELL.

Witnesses:

F. L. MIDDLETON,
WALTER DONALDSON.