

(No Model.)

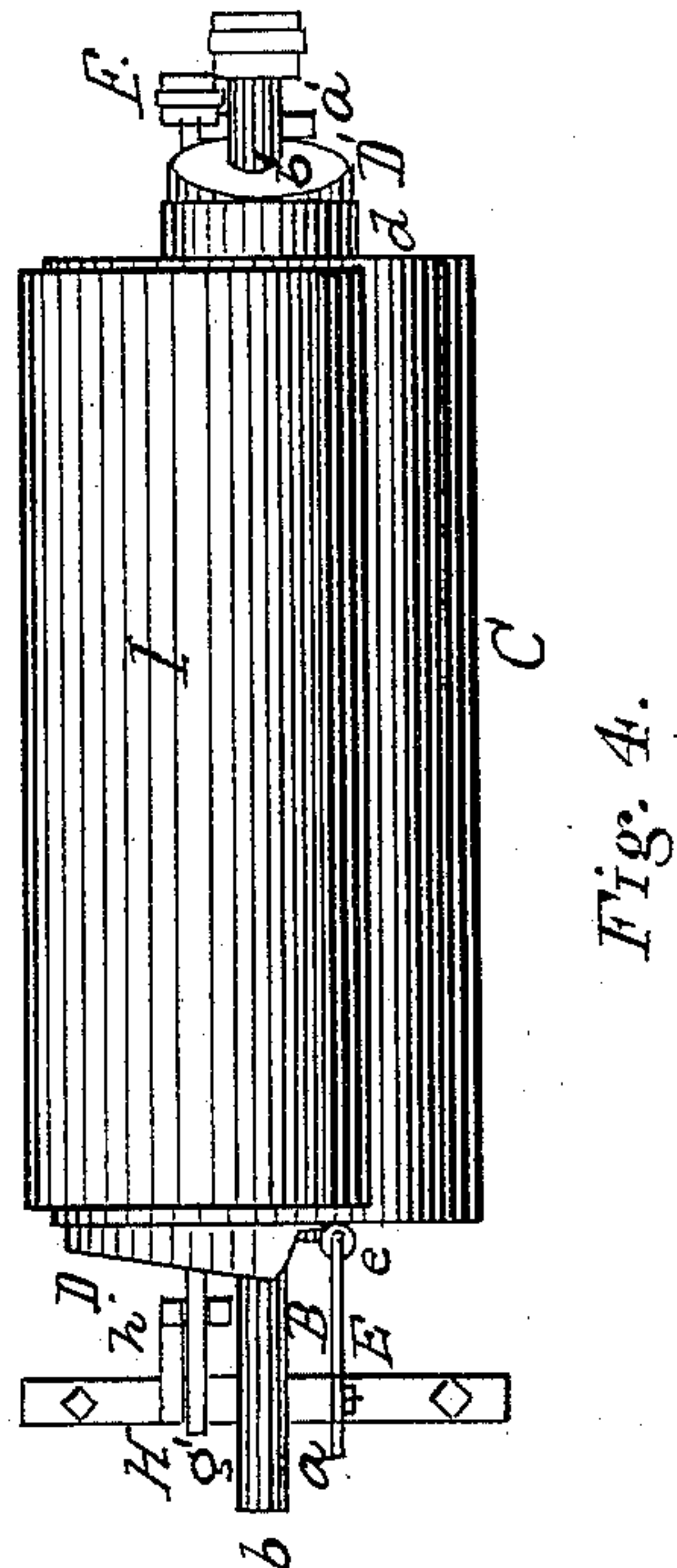
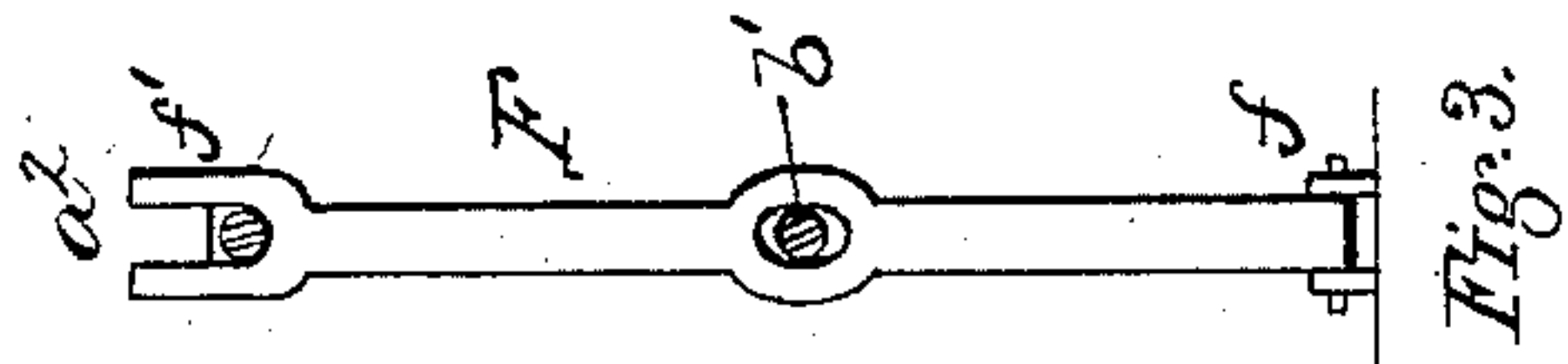
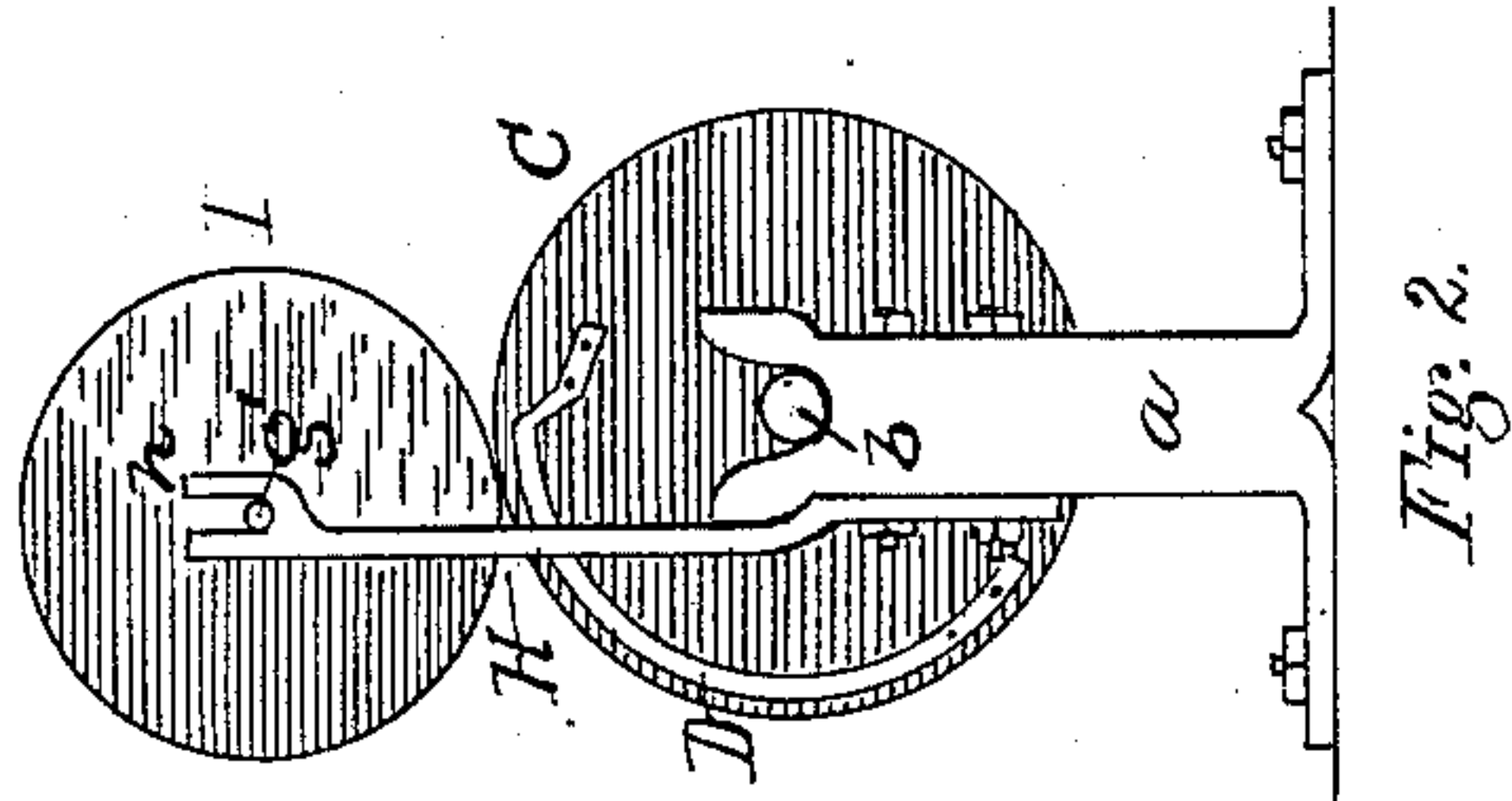
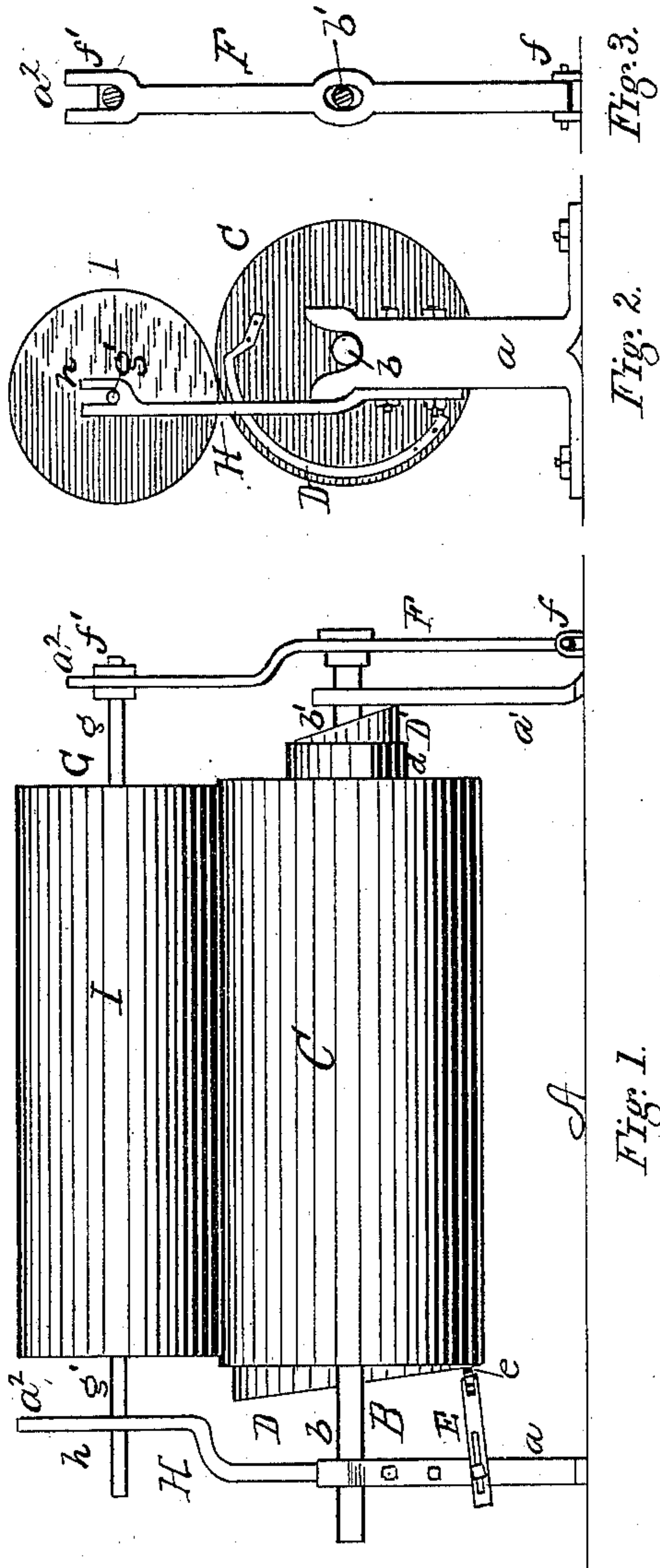
2 Sheets—Sheet 1.

A. A. HAWLEY & D. F. MESSER.

MACHINE FOR FORMING FELT BOOTS, SHOES, &c.

No. 304,726.

Patented Sept. 9, 1884.



Witnesses

*Wm. H. Coulter*  
*W. B. Lincoln*

Inventors

*Alfred A. Hawley,*  
*Daniel F. Messer,*  
per *Voorhees & Singleton*

(No Model.)

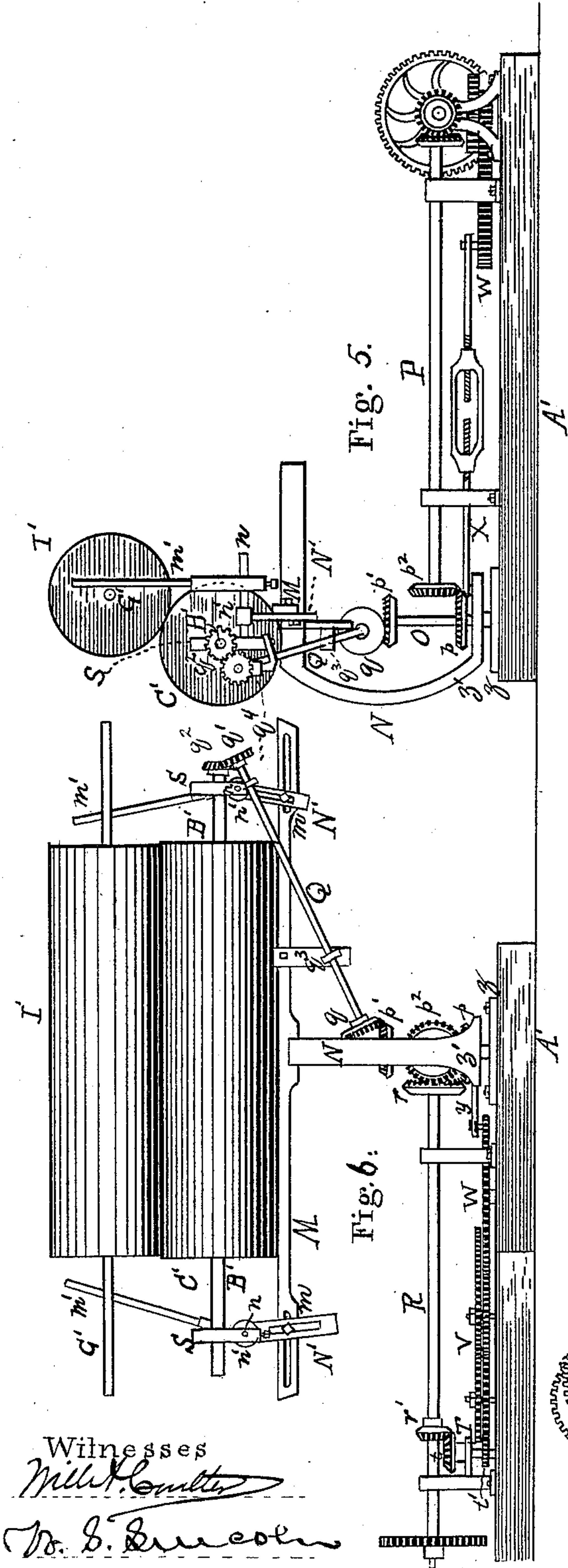
2 Sheets—Sheet 2.

A. A. HAWLEY & D. F. MESSER.

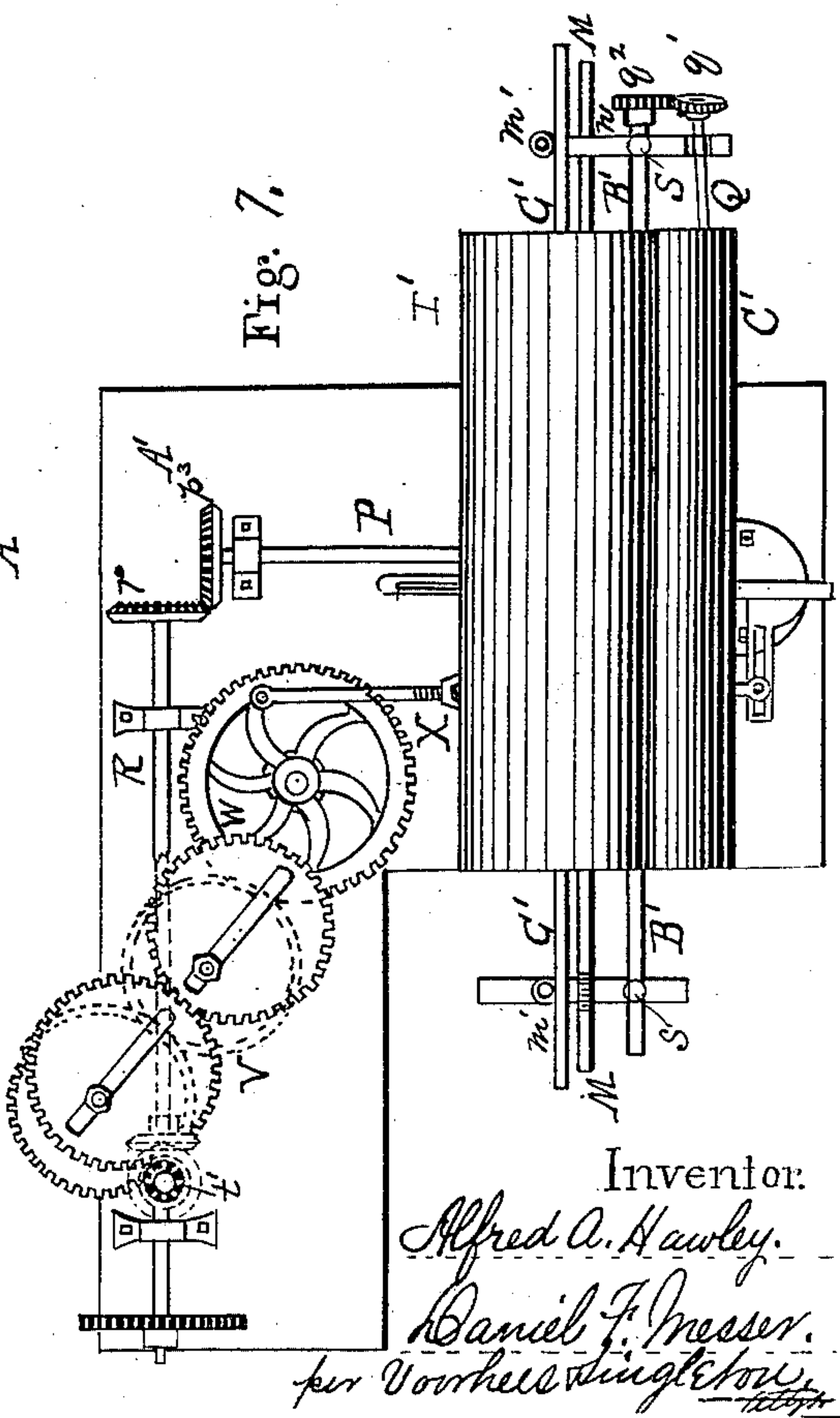
MACHINE FOR FORMING FELT BOOTS, SHOES, &c.

No. 304,726.

Patented Sept. 9, 1884.



Witnesses  
*Will. H. Smith*  
*Dr. S. S. Lincoln*



Inventor:  
*Alfred A. Hawley.*  
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# UNITED STATES PATENT OFFICE.

ALFRED A. HAWLEY AND DANIEL F. MESSER, OF BALTIMORE, MARYLAND,  
ASSIGNORS TO THE MERINO SHOE COMPANY, OF KENNEBUNK, MAINE.

## MACHINE FOR FORMING FELT BOOTS, SHOES, &c.

SPECIFICATION forming part of Letters Patent No. 304,726, dated September 9, 1884.

Application filed February 23, 1884. (No model.)

*To all whom it may concern.*

Be it known that we, ALFRED A. HAWLEY and DANIEL F. MESSER, citizens of the United States, residing at Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Machines for Forming Felt Boots, Shoes, &c.; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Figure 1 represents a side view of one kind of former; Fig. 2, an end view; Fig. 3, a detail view; Fig. 4, a plan view. Fig. 5 represents an end view of another variety of former; Fig. 6, a side view, and Fig. 7 a plan view.

This invention relates to machines in which are formed the bats from which felt boots, shoes, stockings, &c., are to be made.

The invention relates more particularly to a machine on which is made a cylindrical bat. The invention consists in the construction hereinafter set forth and explained.

In the annexed drawings, Sheet 1 represents one kind of former, and Sheet 2 another. The one on Sheet 1 will be described first. The letter A indicates flooring, to which are secured the standards  $a$   $a'$ , having at their tops the forks  $a^2$ , in which rest loosely the ends  $b$   $b'$  of the shaft B of the main roll C. At each end of this roll is placed a cam-bar. This cam-bar may be large, as shown at D, and attached to the head of the roll, or smaller, as shown at D', and attached to a projection,  $d$ , of the head of the roll. Held adjustably to the standard  $a$  is an arm, E, in the inner end of which is journaled a roller,  $e$ , as shown. The end of shaft B which rests in standard  $a'$  passes beyond said standard, and is held in an upright bar, F. This shaft B is held in such bar so that the shaft can freely turn and yet cannot move endwise independent of the bar, the latter being hinged below at  $f$ . At the top  $f'$  this bar F receives the end  $g$  of a shaft, G, such shaft being held in said bar in the same manner as shaft B. At its other end,  $g'$ , this shaft G rests loosely in the forked end  $h$  of a rod,

H, which rises from the standard. This shaft carries the former-cylinder I, resting on the roll C, the two being longitudinally in contact, as seen in the drawings. These two are not in the same vertical plane, the axis of the former-cylinder being a little to one side of that of the roll. The cylinder, however, is substantially above the roll. In use this device is placed in the usual juxtaposition with the cards from which the sliver comes. This passes under the cylinder I, between the latter and the roll C, and around the cylinder, as it does about the ordinary cone, power being applied to the roll C. As the roll C revolves, the cam-bars D and D', coming alternately in contact with the standard  $a'$  and roller  $e$ , give an endwise or vibratory motion to the said roll, its ends moving in the standards  $a$   $a'$ . At the same time the bar F moves on its lower end,  $f$ , and carries the shaft G and cylinder I synchronously with the roll C. This therefore produces a vibratory reciprocating movement to the entire former-frame. As this motion continues and the sliver winds onto the cylinder, the effect is to cause the sliver to cross on itself, and it is therefore arranged about the cylinder in layers, in which the fibers are crossed obliquely, and not straight around the cylinder. After the sliver is completely wound the cylinder I is removed from the frame and the bat withdrawn. This bat can then be cut or manipulated in any way which is desirable for forming a hat, shoe, or stocking, &c.

In Sheet 2 is shown the other kind of former. The letter A' indicates the flooring, to which is secured a bearing,  $z$ , about which is sleeved the lower end,  $z'$ , of the yoke N, and in which is stepped the vertical shaft O, having the beveled wheels  $p$   $p'$ , one at each end. The yoke N curves around and upward, and is secured to the middle of a carrier-bar, M. At the ends  $m$   $m$  of this bar are secured the supports N', these being adjustable vertically and longitudinally, as shown. These supports are furnished at their tops with boxes  $n'$   $n'$ , in which are placed the cross-pieces  $nn$ . At one end these cross-pieces carry the uprights S, in which are journaled the ends of the shaft B' of the main roll C'. At their other ends these cross-pieces carry adjustably the cylinder-holders  $m'$   $m'$ , these being rods which are either



vertical or oblique, as shown. The cylinder I' is placed loosely upon the roll C', its rods G' G' projecting out beyond the holders m' m'. As shown, the axis of cylinder I' is not vertically above that of the roll C', but to one side. The cylinder is held in this position by the rods G' G' bearing on the holders m' m', as shown. The bevel-wheel p' of vertical shaft O meshes with another, q, on oblique shaft Q, which shaft is held in suitable bearings, q<sup>3</sup> q<sup>4</sup>, and has at its upper end a gear-wheel, q', which meshes with another wheel, q<sup>2</sup>, on the projecting end of shaft B'. Engaging wheel p' of shaft O is another wheel, p<sup>2</sup>, of shaft P, which at its other end is geared by wheels p<sup>3</sup> and r with a drive-shaft, R. This shaft R is provided with a wheel, r', which meshes with another, t, on a vertical shaft, T, at the other end of which is another pinion, t', which meshes with a train of adjustable cam-gearing, V, the last wheel of which engages a toothed wheel, W, and from this wheel W runs a pitman, X, to an arm, y, secured to the foot of the yoke N. This machine is placed in position in front of the cards, with the shaft R nearest the cards. The sliver is received between the roll and cylinder and passes over the latter, similarly to the usual cone. Power is applied to the shaft R at the same time, and through the shafts P and O and Q the roll C' is turned, and by contact the cylinder I'. At the same time, through the shaft T, gearing V, wheel W, and pitman X, the yoke N is swung backward and forward about the bearing z, thus causing the former-frame to vibrate on its center while the roll and cylinder are turning. As the frame is thus vibrated and the cylinder turns, the sliver is so wound around the cylinder that the fibers of the alternate layers cross each other obliquely. When the sliver is

wound out, the cylinder I' is taken off and the bat withdrawn therefrom. This produces a cylindrical bat in which the fibers cross, similar to the one produced by the machine shown on Sheet 1, and which can be manipulated in any way desired.

The cylinders I and I', herein shown taking the place of the usual cone, may be termed "cylindrical cones."

Having described our invention, what we claim is—

1. In a machine of the kind described, a former-frame having only one roll, in combination with a cylindrical cone, as set forth.

2. In a machine of the kind described, a former-frame having only one roll, in combination with a cylindrical cone placed above such roll, as set forth.

3. In a machine of the kind described, a vibratory former-frame having only one roll, in combination with a cylindrical cone, as set forth.

4. In a machine of the kind described, a former-frame having only one roll, and a cylindrical cone placed above such roll, in combination with means such as described to vibrate such frame, as set forth.

5. In a machine of the kind described, a centrally-pivoted former-frame having only one roll, and a cylindrical cone placed above such roll, in combination with means such as described to vibrate such frame, as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

ALFRED A. HAWLEY.  
DANIEL F. MESSER.

Witnesses:

O. H. DENNIS,  
JAMES P. HAMILTON.