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Patented Jan. 8, 1901.

G. G. PLACE & F. P. ROSBACK.
MANGLE.

(Application filed Aug. 12, 1899.)

(No Model.)

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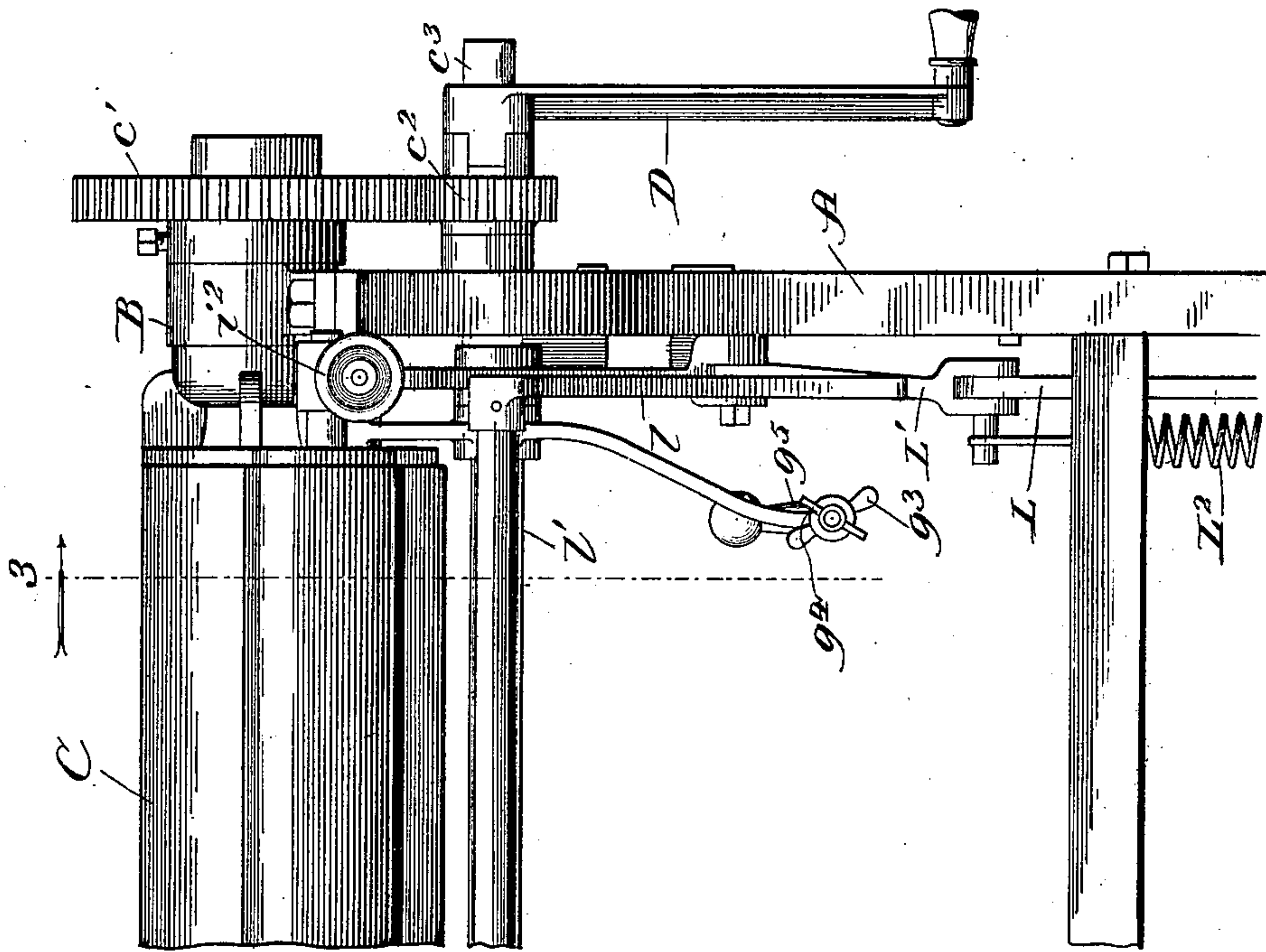
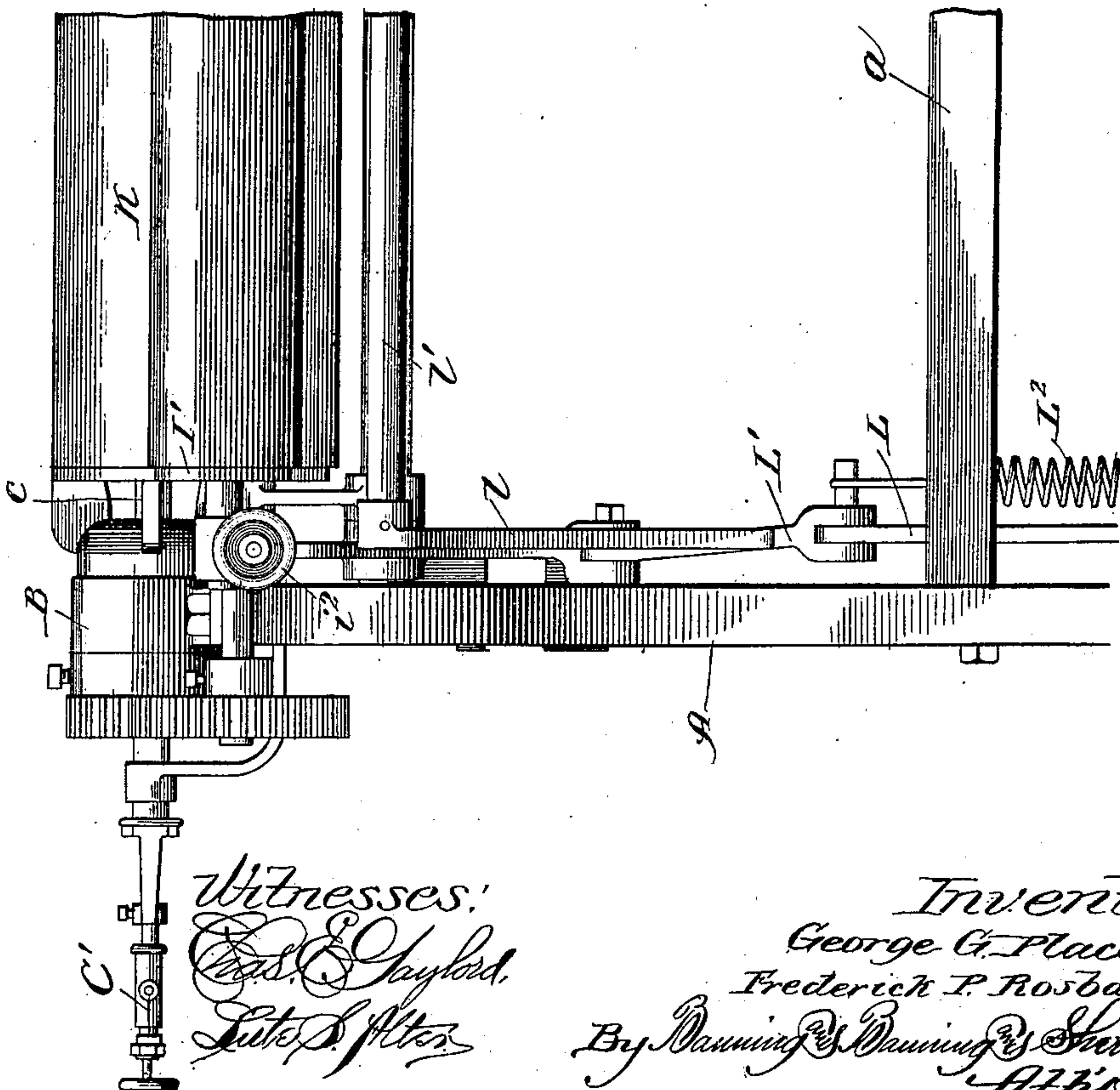


Fig. 1



Witnesses:
E. C. Gaylord,
Lute S. Altman

Inventors
George G. Place &
Frederick P. Rosback,
By Manning & Manning & Sheridan,
Attorneys

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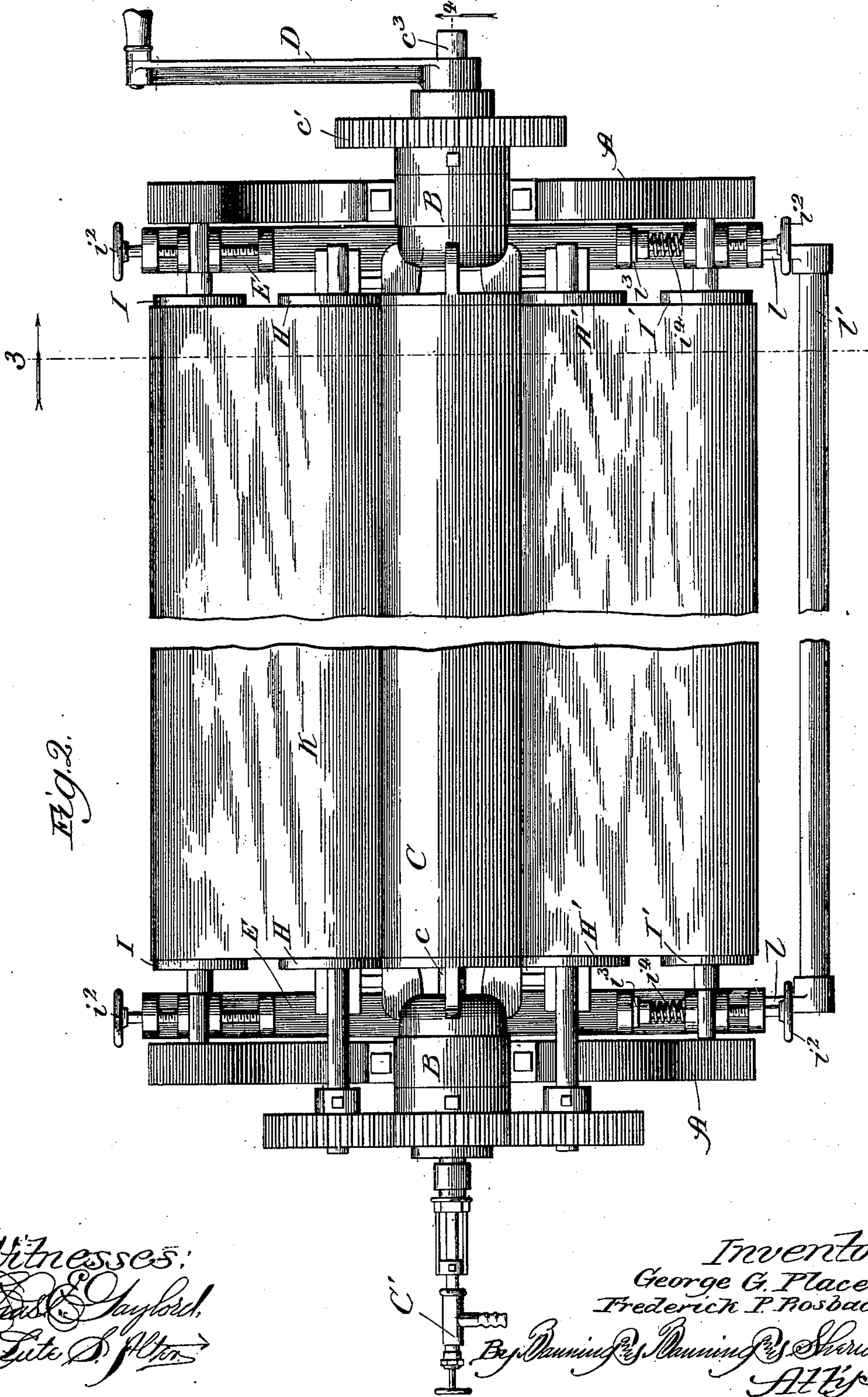
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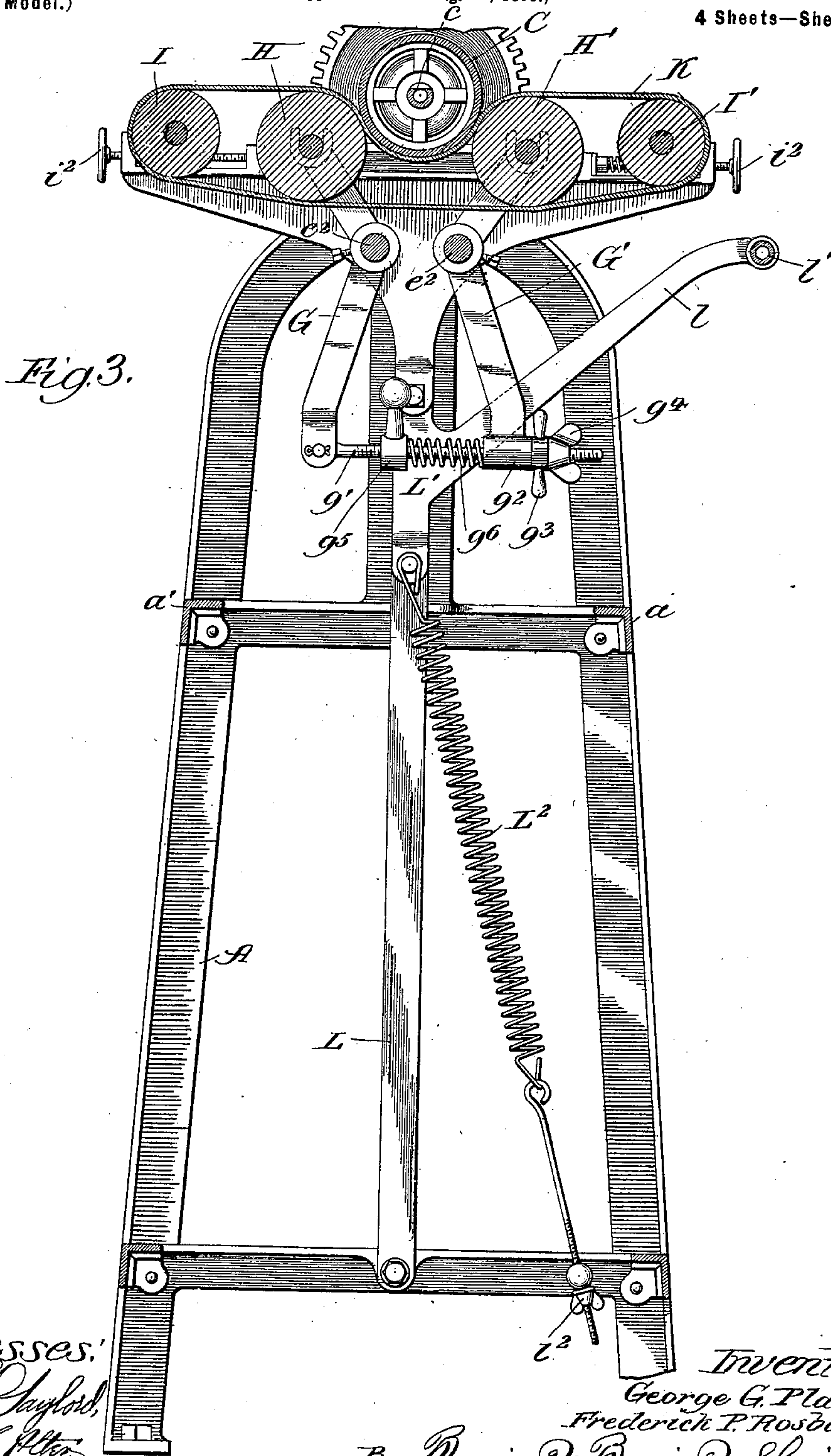
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MANGLE.

(No Model.)

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Witnesses:
Edw. S. Chyford,
John S. Platter

Inventors
George G. Place &
Frederick P. Rosback,
By *Dunning & Dunning* & *Sheridan*,
Attys.

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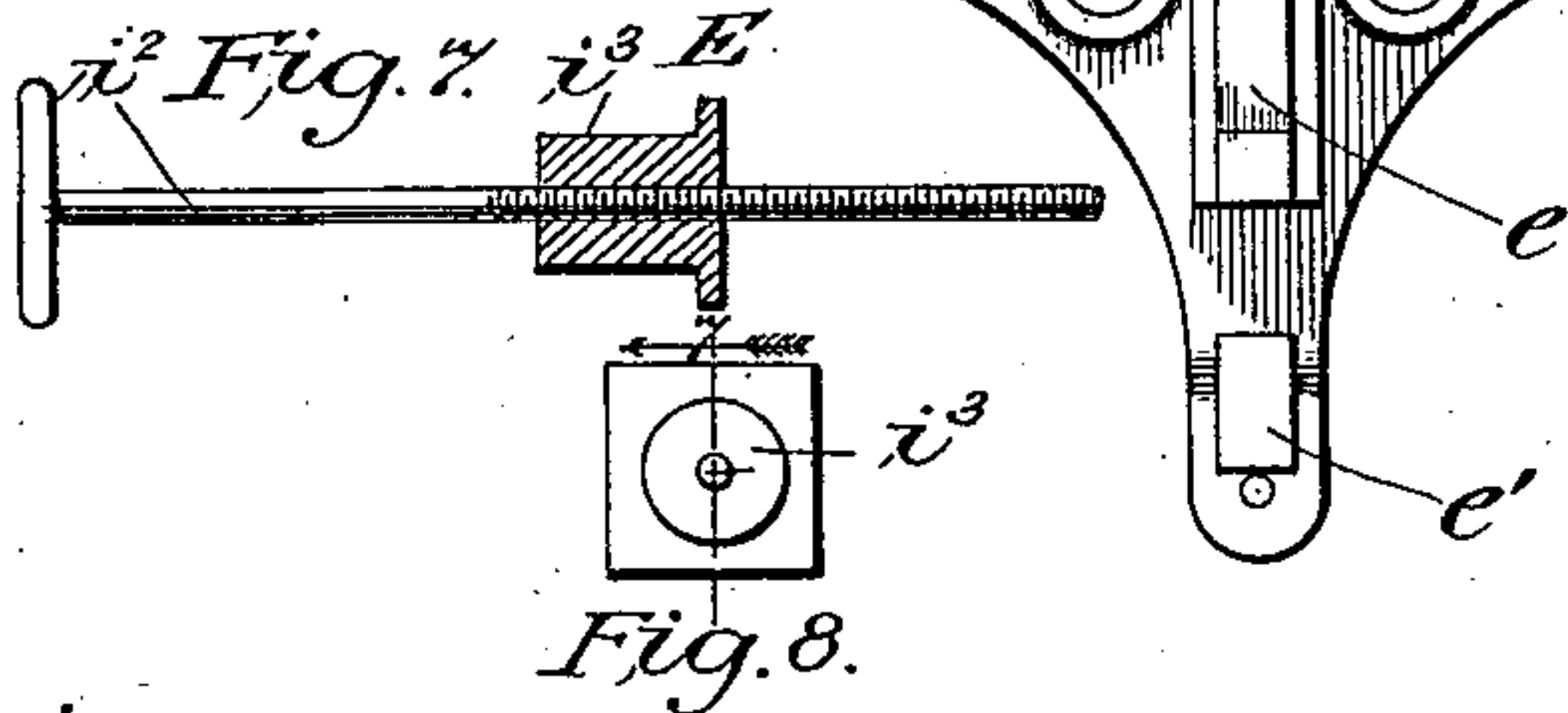
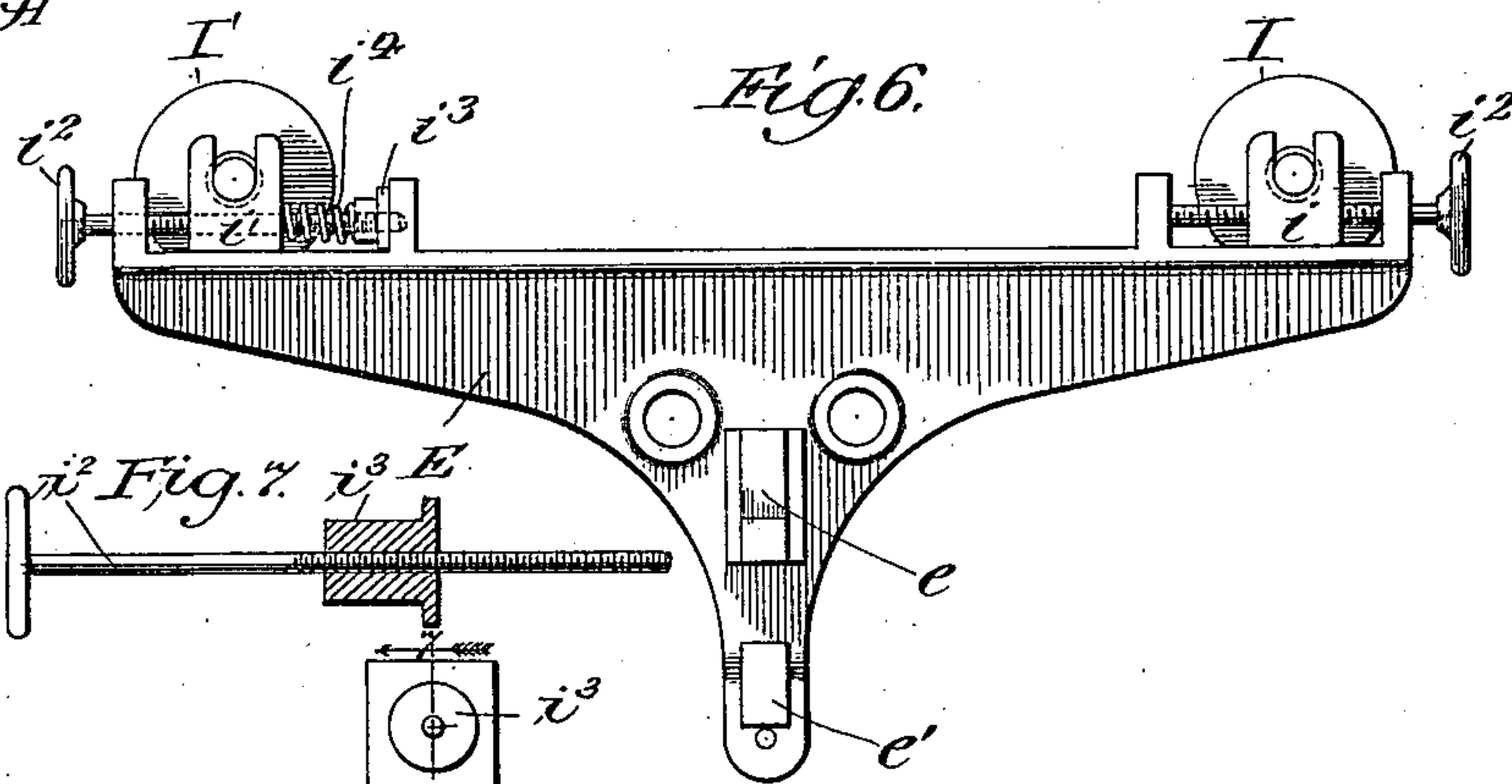
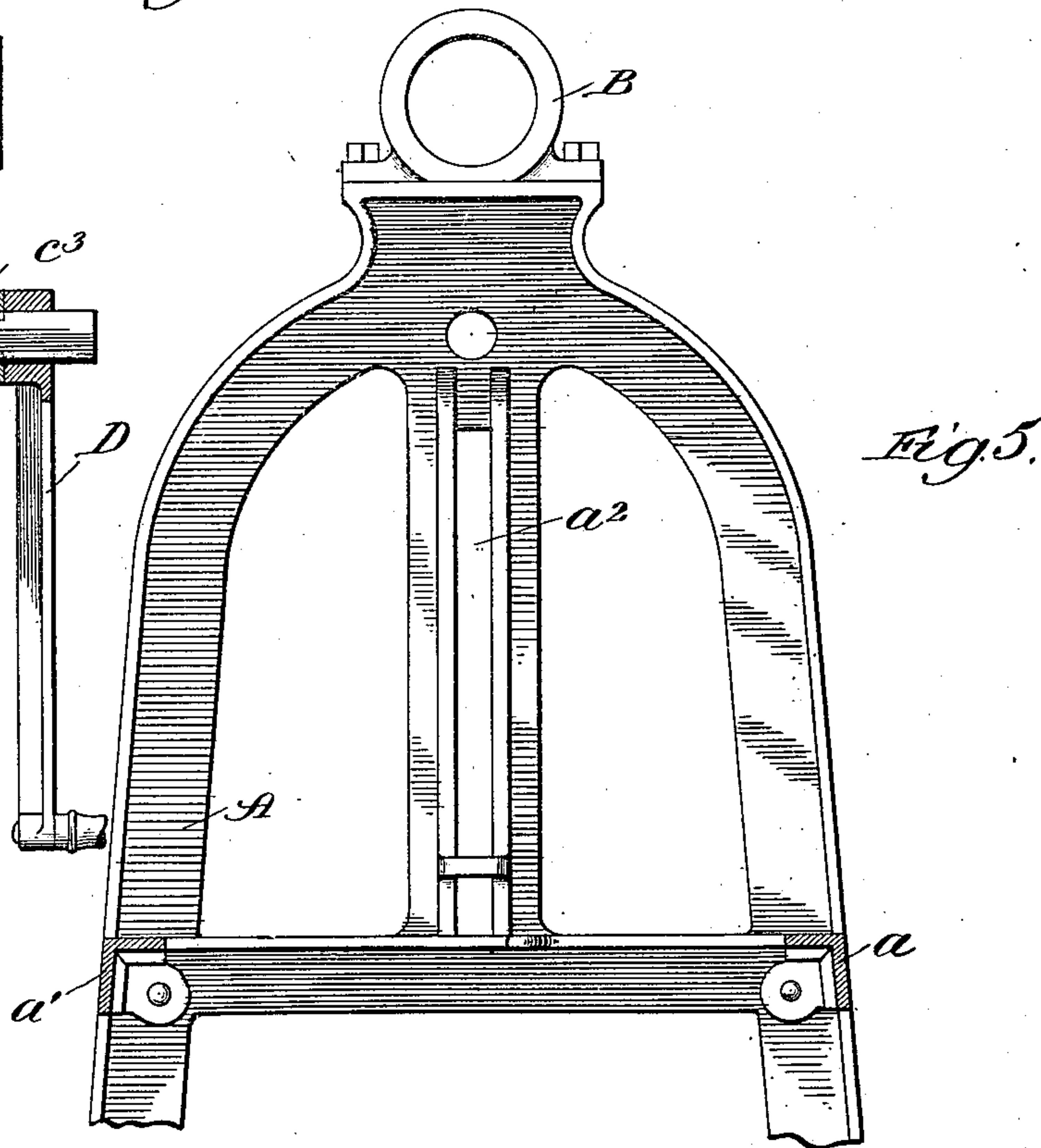
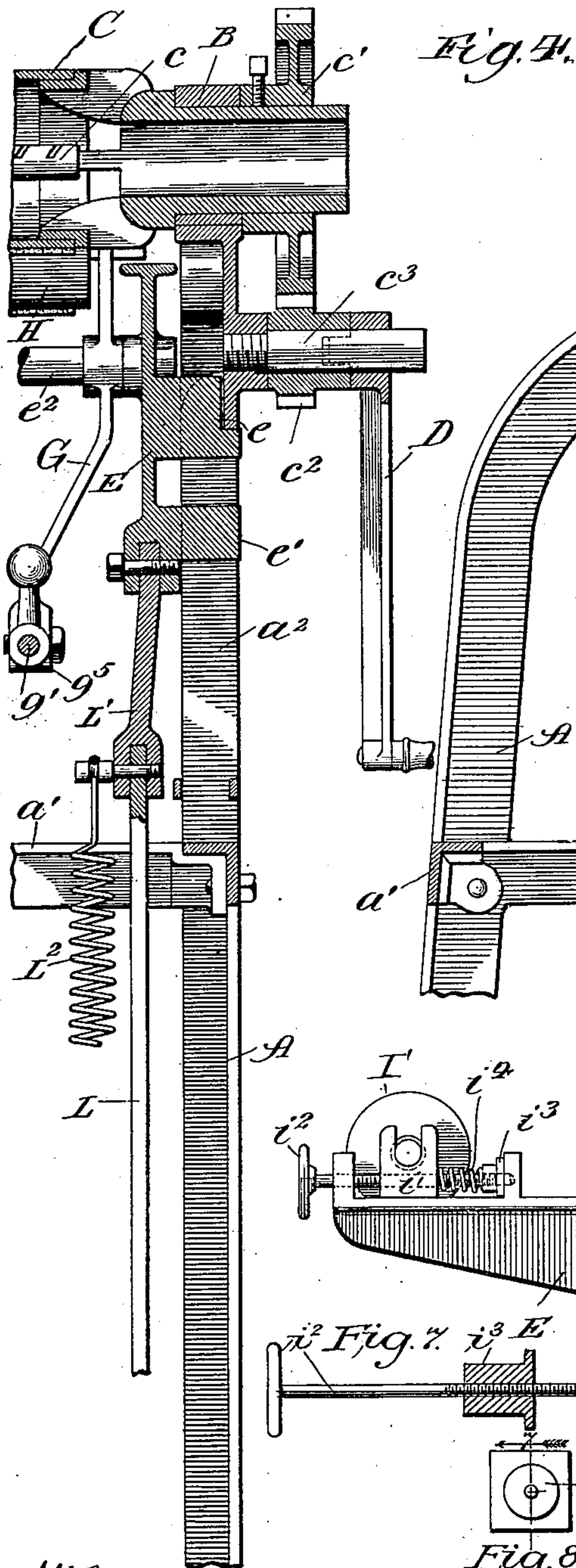


Fig. 8.

Witnesses:
C. S. Gaylord,
J. L. S. P. L. S.

Inventors
George G. Place &
Frederick P. Rosback.
By *Banning & Banning*, Attorneys,
Sheridan,

UNITED STATES PATENT OFFICE.

GEORGE G. PLACE AND FREDERICK P. ROSBACK, OF CHICAGO, ILLINOIS,
ASSIGNORS TO THE STEEL ROLL MANGLE COMPANY, OF SAME PLACE.

MANGLE.

SPECIFICATION forming part of Letters Patent No. 665,545, dated January 8, 1901.

Application filed August 12, 1899. Serial No. 727,003. (No model.)

To all whom it may concern:

Be it known that we, GEORGE G. PLACE and FREDERICK P. ROSBACK, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mangles, of which the following is a specification.

Our invention relates to that class of mangles known as "steel-roll" mangles, in which there is a main hollow metal roll adapted to be heated by means of gas or steam and a set of supplementary and idler rolls carrying an endless apron or aprons provided with mechanism for moving one or more sets of these rolls toward and away from each other and the main roll, so as to facilitate the operation of ironing.

The present invention relates particularly to the mechanism by which the supplementary and idler rolls are moved toward and away from each other and the main heating-roll, as will hereinafter more fully appear.

The principal object of the invention is to provide a simple, economical, and efficient mangle; and the invention consists in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a broken front elevation of a mangle constructed in accordance with our improvements; Fig. 2, a plan view of the same looking at it from above; Fig. 3, a sectional elevation taken on lines 3 of Figs. 1 and 2 looking in the direction of the arrows; Fig. 4, a longitudinal sectional elevation of a portion of the machine, taken on line 4 of Fig. 2 looking in the direction of the arrow; Fig. 5, an end elevation of a portion of one of the standards; Fig. 6, an end view of one portion of the carriage for the supplementary and idler rolls; Fig. 7, an enlarged view of an adjusting-screw with the tension-spring removed, showing a sectional view of the sliding nut, taken on line 7 of Fig. 8; and Fig. 8, an enlarged end view of the sliding nut shown in Fig. 7.

In constructing our improvements we make a main frame portion, which comprises two standards or leg portions A, tied together by means of the cross-bars a and a' . Upon this frame portion are mounted the journal boxes

or blocks B, which form the bearings in which the journals of the heating-roll C are rotatably mounted. This heating-roll, as shown particularly in Fig. 4, is made hollow, and extending axially through it is a burner c of the gas or gasoline type, the valve C' of which is shown on the outside of Figs. 1 and 2. To rotate this heating-roll, one of its journals is provided with a spur-gear c' , engaging with a spur-pinion c^2 , mounted upon a stud c^3 affixed to the frame of the machine. This pinion is arranged to be engaged by a crank-handle D, as shown particularly in Figs. 1 and 4, and by which the pinion and through it the intermediate gear and the heating-roll are rotated. As above suggested, this heating or main roll is made of metal in the form of a tube and hollow. The outer surface of this metal roll, which is preferably cast metal or steel, is finely dressed, or, in other words, turned and finished to a high degree of polish and smoothness, so that in ironing clothes or other desired articles a good finish may be given to the same.

It is highly desirable that the supplementary and idler rolls, which carry an endless apron, be mounted in such a way as to be moved toward or from each other and the main and heating roll as simply as possible, with the least expenditure of power, and so as to accomplish the work as economically and efficiently as possible. In our structure the supplementary and idler rolls are arranged under and adjacent to the heating-roll so as to be raised and lowered, and in order to accomplish the raising and lowering in as quick, easy, and efficient manner as possible a carriage for the rolls is provided, formed of two brackets E, having tongues e and e' arranged to slide in vertical grooves a^2 in the standards and directly underneath and in line with the axis of the main heating-roll. These "bracket portions," as I prefer to term them, are tied together by means of two rods e^2 , which form rock-shafts and which unite both brackets together in one substantial frame, which we will term a "carriage." A lever G is mounted on and fixedly secured to one of the rods or rock-shafts e^2 , at each end thereof, and a lever G' , corresponding to the lever G, is mounted on and fixedly secured

to the other rod or rock-shaft c^2 , at each end thereof. These levers G and G' are secured to their respective rock-shafts by set-screws or otherwise, so that each pair of levers can
 5 be properly set or adjusted on its shaft and be locked to the shaft to rock therewith. Each lever extends above its rod or rock-shaft and has on its upper end a half-box or journal-bearing for the reception of the two
 10 supplementary rolls H and H' , one of which is mounted in the half-boxes of the levers G and the other in the half-boxes of the levers G' . The supplementary rolls are pivotally secured to the movable frame or carriage by
 15 the supporting-levers and their rock-shafts, and the levers permit the rolls to be properly adjusted in relation to the heating-roll. The two rolls may be held with the required force or tension against the main heating-roll by
 20 the means hereinafter described.

The idler-rolls I and I' are rotatably mounted in the sliding blocks i and i' , which blocks are slidingly mounted on the upper surface of the carriage. Around these idler-rolls and
 25 a portion of the supplementary rolls is passed, belt-like, an endless "apron" K , of a width nearly equal to the length of the idler-rolls. To hold this apron under the desired tension when in operation, the idler-rolls are rotatably
 30 mounted in sliding blocks i and i' on the carriage, and headed adjusting-screws i^2 are provided, (see Figs. 2 and 6,) one for each sliding block. Each of the adjusting-screws is supported near its extremities by uprights
 35 on the carriage and rotatably mounted therein above and parallel with the surface of the carriage. Each adjusting-screw for the idler-roll I' is preferably passed loosely through a smooth perforation or hole in its respective
 40 sliding block i' to allow the block to slide upon the screw and the surface of the carriage.

One of the idler-rolls, preferably the roll I' , is provided with two adjusting-screws i^2 , which
 45 pass loosely through smooth perforations in the sliding blocks i' , in which the idler-roll is mounted, so as to permit the blocks to slide back and forth over the threads of the screws. These adjusting-screws i^2 , used and shown in
 50 connection with the roll I' in Figs. 2 and 6, are in every respect identical with those used in connection with the roll I and are threaded in exactly the same manner. (See Figs. 2, 3, and 6.) With this explanation and by an inspection of the drawings it will be readily understood that the threads shown on the adjusting-screw i^2 , near the roll I' at the left side of Fig. 6, extend to the end of the screw through the sliding block i' . These adjusting-screws, used in connection with the roll
 60 I' and block i' , have no threaded connection with the blocks through which they pass, but each has threaded connection with the nut i^3 , through which it passes. The nuts i^3 are
 65 provided with shoulders of the ordinary kind, which are in sliding contact with the surface of the carriage. They prevent the nut from

turning when the screw is turned within it and cause it to move axially along the stem of the screw in response to the turning of the
 70 screw. These are simply machine-nuts of the ordinary and well-known type, being perforated and screw-threaded to fit the screw and threads on which they are mounted and having shoulders on the peripheries to prevent
 75 the nut from turning with the screw. These nuts do not differ materially from the ordinary machine-nut except in the use to which they are applied. Around the stem of each of these two screws between the nut and the
 80 sliding block is mounted a compressible helical spring i^4 , (see Figs. 2 and 6,) one end in contact with the sliding block and the other end in contact with the non-rotatable sliding nut, causing the tension of the spring to in-
 85 crease as the nut is moved toward the sliding block and to decrease as it is moved away from the block, thus holding the sliding block, with its roll I' and the apron, yieldingly under tension, a very desirable provision in this
 90 class of machines.

The stems of the two adjusting-screws for the idler-roll I are each preferably passed through a respective sliding block i , in which that roll is mounted, and have threaded en-
 95 gagement therewith, so that as the screw is turned in one direction the sliding block is caused to move toward the head of the screw. The turning of the adjusting-screw in the other direction permits the tension of the
 100 endless apron to move the sliding block in the opposite direction, thus permitting the adjustment of the idler-roll I to any desired position within the path of the sliding block.

When the carriage is moved upwardly, so
 105 as to have the apron contact the main heating-roll, it is desirable that such apron and supplementary rolls be yieldingly held against the heating-roll, so that different thicknesses of work may be passed between the heating-
 110 roll and apron without injuring the machine or work and so as to provide a substantially uniform tension. In order to accomplish this result, one of the swinging levers—preferably
 115 G —is provided with a threaded rod g' , to which it is pivotally connected, and the rod is passed through a smooth bore in the end g^2 of the other swinging lever. The outer end of this threaded rod is provided with an adjusting-
 120 nut g^3 and a lock-nut g^4 to hold the nut g^3 in position, while between the nut g^5 on the threaded rod and the end g^2 of the second swinging lever is inserted a tension-spring g^6 . It will thus be seen that when the parts are
 125 in the position shown in Fig. 3 any downward pressure between the main heating-roll and apron tends to spread the supplementary rolls apart and against the tension of the intermediate tension-spring g^6 . For varying thick-
 130 nesses of work the tension is practically uniform.

It is desirable that some simple and economical means be provided for raising and lowering the carriage, with the supplemen-

tary and idler rolls, toward and away from the main heating-roll and to provide spring mechanism which will in a measure counter-balance the weight of the carriage. To accomplish this result, a pair of toggle-levers L and L' is provided for and arranged at or near each end of the carriage, the lower ends of which are pivoted to the frame portion and the upper ends to the carriage. Both of these upper members are provided with extending arms l , connected together by means of a rod or handle l' . Two counterbalancing-springs L^2 are provided and connected to the toggle-levers at their common fulcrum-point and with the lower part of the machine at l^2 , at a point to one side of and out of line with the pivotal points of the toggle-lever. By this arrangement it will be seen that when the handle of the toggle-lever is pressed downwardly to move the carriage away from the main heating-roll the common fulcrum-point is moved backwardly. This stretches the counterbalancing-springs and serves to let down the carriage easily and without any shock. At the same time when it is desired to raise the carriage the counterbalancing-springs are under their greatest tension and assist the operator so much that but a very small amount of energy or power is necessary to raise the carriage.

We claim—

1. In a mangle of the class described, the combination of a main frame, a main heating-roll rotatably mounted in such frame, a carriage slidingly mounted in such frame and provided with supplementary and idler rolls and an endless apron passed around such rolls and arranged to carry such apron and toggle-lever mechanism pivotally secured to the carriage and to the frame at or near its lower portion, and counterbalancing-spring mechanism secured to the toggle-levers and to the frame at a point away from and out of line with the pivotal points of the toggle-levers, substantially as described.

2. In a mangle of the class described, the combination of a frame portion, a main heating-roll rotatably mounted in the frame portion, a carriage slidingly mounted in the frame portion under the heating-roll so as to have vertical movements, a pair of swinging levers pivotally mounted on the carriage and carrying supplementary rolls at their upper ends, tension-spring mechanism for yieldingly holding the swinging levers in operative position, idler-rolls mounted on such carriage,

and an endless apron passed around the idler and supplementary rolls, substantially as described.

3. In a mangle of the class described, the combination of a frame portion, a main heating-roll rotatably mounted in such frame portion, a carriage slidingly mounted in the frame underneath the heating-roll so as to have vertical movements, a pair of swinging levers at each end of the carriage carrying supplementary rolls at their upper ends, a threaded rod pivotally secured to the lower free end of one swinging lever and passed through a smooth opening in the end of the other swinging lever, nut mechanism for regulating the distance between such swinging levers, a nut on the threaded rod between the swinging levers, a tension-spring between the nut and one of the swinging levers to yieldingly hold the supplemental rolls in position, idler-rolls on the carriage, and an endless apron passed around the idler and supplementary rolls, substantially as described.

4. In a mangle of the class described, the combination of a frame, a main heating-roll rotatably mounted in such frame, a carriage mounted in the frame underneath the heating-roll to slide vertically, two swinging levers at each end of the carriage having their swinging ends on opposite sides of the main roll, two supplementary rolls rotatably mounted on the swinging ends of the levers parallel with and adjacent to the main roll, a threaded rod pivotally secured to the lower free end of one swinging lever and passed through a smooth opening in the end of the other swinging lever, an adjusting-nut on the outer end of the threaded rod for regulating the distance between such swinging levers, a tension-spring and adjusting-nut on the rod between the free ends of the swinging levers for yieldingly holding the supplemental rolls in position, idler-rolls mounted on the carriage, an endless apron passed around the idler and supplementary rolls, sliding blocks on the carriage in which the idler-rolls have their bearings, adjusting-screws for moving the sliding blocks, and springs on the adjusting-screws for one roll to hold the sliding blocks of that roll yieldingly in position, substantially as described.

GEORGE G. PLACE.

FREDERICK P. ROSBACK.

Witnesses:

THOMAS F. SHERIDAN,

THOMAS B. MCGREGOR.