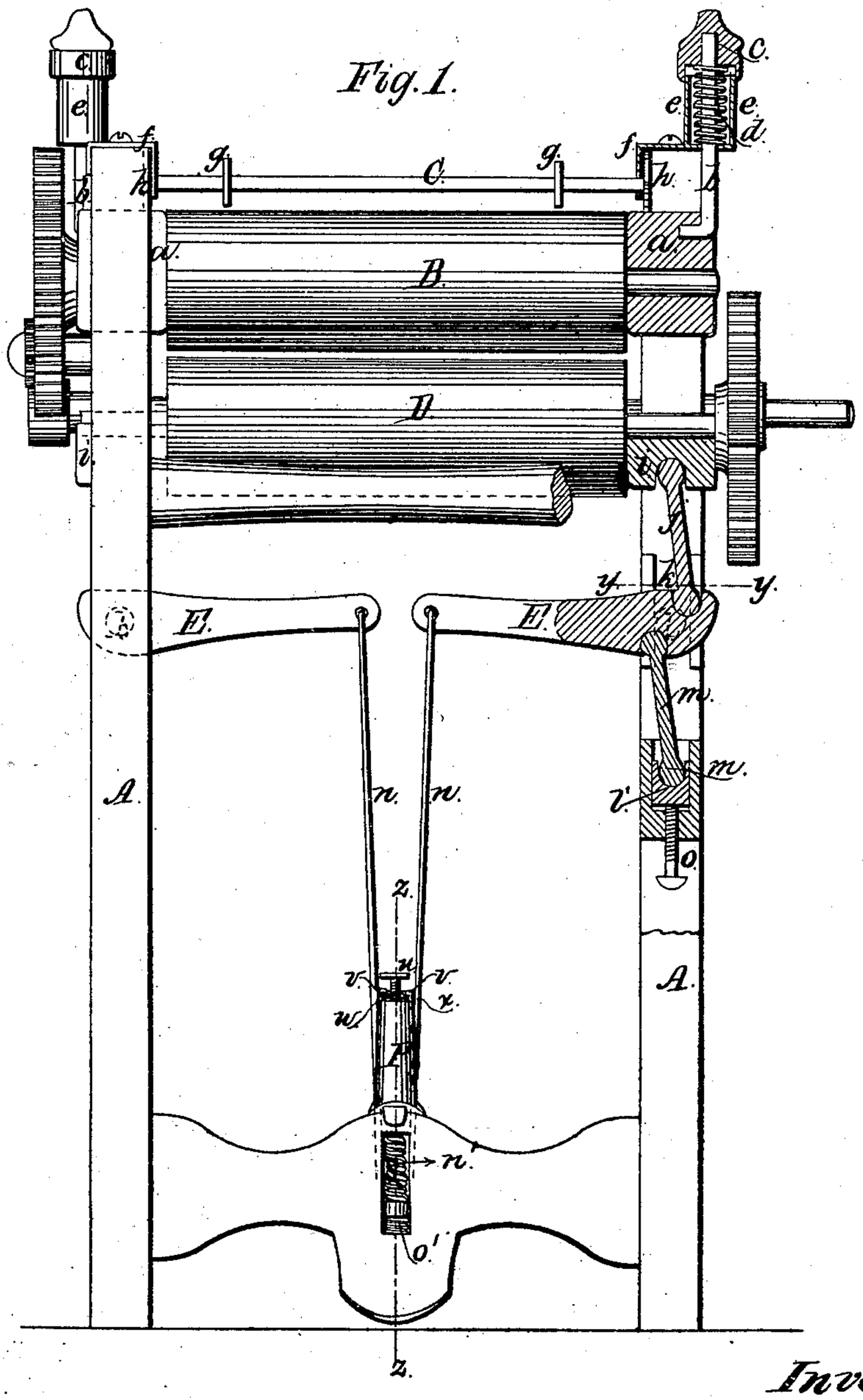
2 Sheets—Sheet 1.

J. A. SAFFORD.

ROLLING LEATHER.

No. 98,889. Patented Jan. 18, 1870.

Fig. 1.



Witnesses.

N. C. Lombard

G. E. Whitney

Inventor.

J. A. Safford

2 Sheets—Sheet 2.

J. A. SAFFORD.

ROLLING LEATHER.

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Fig. 3.

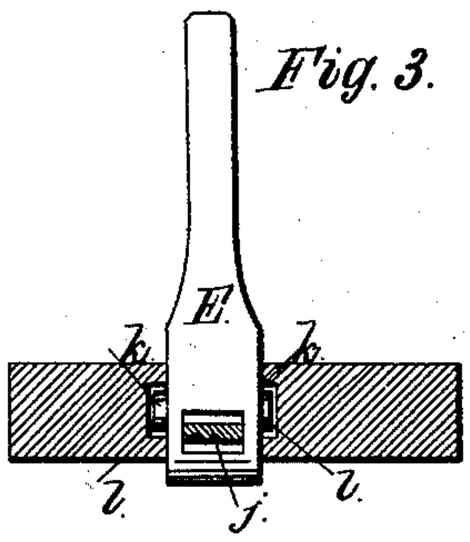
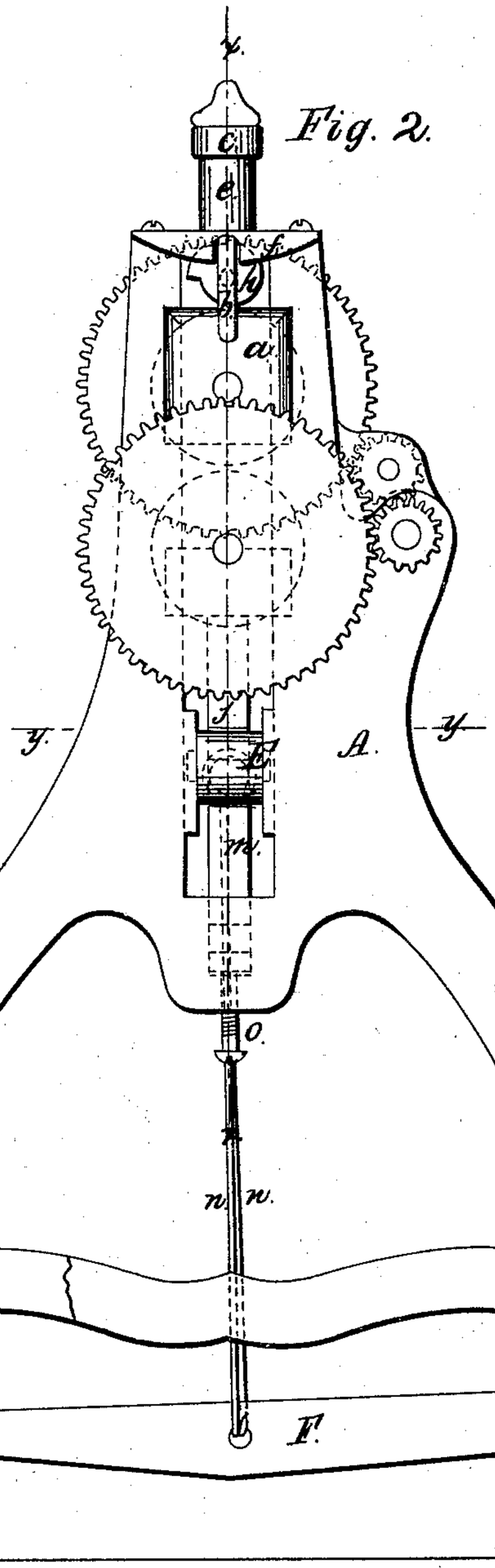


Fig. 2.



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United States Patent Office.

JOSEPH A. SAFFORD, OF WINCHESTER, MASSACHUSETTS.

Letters Patent No. 98,889, *dated January* 18, 1870.

IMPROVED MACHINE FOR ROLLING LEATHER.

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, JOSEPH A. SAFFORD, of Winchester, in the county of Middlesex, and State of Massachusetts, have invented certain new and useful Improvements in Machines for Rolling Leather; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation and partial section of my improved machine, the section being taken on line *x x*, on fig. 2.

Figure 2 is an end elevation and partial section, taken on line *z z*, on fig. 1.

Figure 3 is a section through the frame, on line *y y*, on figs. 1 and 2, and showing the toggle-lever in plan.

Heretofore, in all machines for rolling leather, so far as my knowledge extends, the upper roll has been fixed in its bearings, so that it could not be moved up or down, or toward or from the other roll, which was movable to or from its mate, to adapt the machine to thicker or thinner stock, and the pressure was applied to the same by the application of the operator's foot to a treadle-lever, provided for the purpose.

It has been found, in practice, that the application of pressure to the rolls, by the foot of the operator, is objectionable, on account of the variableness and uncertainty of the pressure, and it is very desirable that some means of applying pressure to the rolls, that shall be automatic in its action, may be provided, while, at the same time, the yielding roll may adapt itself readily to varying thickness of stock, without materially affecting the pressure.

To attain this desirable result, and to make a machine that may be readily adjusted to different thicknesses of stock, and to provide a means of applying pressure to the rolls, so that it may be readily increased or diminished, and at the same time shall not be materially affected by varying the distance between the rolls, and be constant in its action, is the object of my invention.

My invention, although represented and described as applied to a machine for rolling leather, is equally applicable to various other machines, as, for instance, all machines in which pressure-rolls are used for rolling or feeding a material that is constantly varying in thickness.

My invention relates to the adjustment and regulation of the pressure-rolls, and the manner of hanging them; and consists—

First, in hanging the upper rolls in boxes, suspended by rods, provided at their upper ends with screw-collars, resting on springs, enclosed in receptacles provided for the purpose, in the caps on the tops of the frames above the roll, said springs acting to draw the roll up or away from the lower roll, and placing, above said boxes, cams, wedges, screws, or any other suitable device, by means of which the said roll may be forced down, or toward the yielding roll, in such a manner that when the leather is introduced between the rolls, the upper roll will remain fixed, as to any upward or downward movement, while it is free to revolve upon its axis.

It consists, in the second place, in mounting the lower roll in boxes resting on the top of peculiarly-constructed double toggles, while the lower ends of said toggles rest in boxes inserted in recesses in the frame, provided for the purpose, and resting upon set-screws, so that they may be slightly adjusted, and also in connecting said toggles to a lever, hung on a fulcrum-pin, at one end, and resting against a spring at the other, said spring being so arranged that it may be adjusted so as to increase or diminish the pressure.

In the drawings—

A is the frame of the machine.

B is the upper roll, which is a fixed roll, so far as any upward or downward movement is concerned, when the machine is in operation, but at the same time it is susceptible of being moved up or down at the will of the operator, for the purpose of adjusting the distance between the rolls.

The roll B is mounted in boxes *a a*, which are suspended by the rods *b b*, the upper ends of which are provided with screw-collars *c c*, which rest upon springs *d d*, enclosed in the case or cylinder *e e*, forming a part of the caps *f f*, of the frame.

C is an adjusting-shaft, mounted in bearings in the cap *f*, and provided with hand-wheels *g g*, by which it may be rotated.

h h are two cams, mounted on said shaft, and, resting upon the upper surface of the boxes *a a*, serve the purpose of forcing the roll B downward, when they are rotated, and may be of any suitable shape, to give the required movement; or instead of the cams and cam-shaft, the shaft C may be provided with right and left screws, and by the rotation of the shaft C, may move out or in two inclined planes or wedges, to force the roll B downward; or the shaft C may carry, at its ends, a pair of bevel-gears, fitted to work in other bevel-gears, mounted on vertical screws set in the top of the boxes *a a*, and serving as nuts to force the roll B downward.

D is the lower or yielding roll, and is mounted in boxes *i i*, the lower sides of which are recessed to receive the rounded ends of the links or struts *j j*.

E E are levers, fitted into a slot, *k*, in the frame, in such a manner that they cannot move in a horizontal direction at right angles to the axis of the rolls, while they are susceptible of a slight movement parallel to the axis of said roll, said movement being limited by

the comparative size of the slots *k k*, and the projections *l l*, on the sides of the levers E E, which serve as stops to prevent the levers E E from being accidentally displaced.

The levers E E have recesses formed in their upper sides, near their outer ends, and just outside of the projections *l l*, to receive the lower ends of the struts *j j*, and they also have similar recesses formed in their under sides, just inside of the projections *l l*, to receive the upper ends of the struts *m m*, and their inner ends extend toward the centre of the machine, nearly in a horizontal position, until they nearly touch, and have the links or rods *n n* attached thereto, the lower ends of both of which are connected, at the same point, to the lever F.

The lower ends of the struts *m m* are fitted to half boxes *l l*, placed in recesses in the frame, provided for the purpose, and resting on the set-screws *o*.

The lever F is attached, by its rear end, to the back girt of the machine, by means of the fulcrum-pin *m'*, and the forward end of said lever passes through a slot, *n'*, in the front girt, and rests upon the spring *o'*.

To the upper part of the front girt is attached the stand or casing *p*, enclosing the spring *s*, the lower end of which rests upon the top of the lever F, while the upper end presses against the collar *t*, on which the set-screw *w* acts.

The upper end of the casing *p* is made open, with two ears, *v v*, projecting over the opening sufficiently to hold the cap *w* in place.

The cap *w* is made with two recesses, *x x*, formed in its upper side, to correspond with the ears *v v*, so that when the cap *w* is placed in position, on the top of the casing *p*, and the set-screw *u* is inserted, the cap *w* will be lifted until the ears *v v* fit into the recesses *x x*, when the cap *w* will be held firmly in position.

The object of this arrangement is to provide an expeditious means of removing or inserting the spring *s*.

The operation of my improved machine is as follows:

To adjust the machine to the work to be done, the adjusting-shaft C must be rotated by the hand-wheels *g g*, until the upper roll B is in the right position to adapt the machine to the thickness of stock to be rolled. Then screw down the set-screw *w*, till the proper pressure is obtained, when, if the machine is set in motion, the leather may be passed through the machine, and the work completed without any labor being required of the operator, except to feed the stock.

Having thus fully described my improved machine,

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

1. Mounting the upper roll B in boxes *a a*, suspended by means of the rods *b b*, and screw-collars *c c*, upon the spring *d d*, in combination with the cams *h h*, shaft *c*, and yielding lower roll D, substantially as described.

2. In a machine for rolling leather, adjusting the rolls with relation to each other, by moving the upper roll B in such a manner that it will be held firmly in the desired position, without yielding, during the operation of rolling, when used in combination with a yielding lower roll, substantially as described.

3. In combination with a yielding lower roll, the use of the double-toggle supports, consisting of the levers E E, the struts *j j* and *m m*, arranged and operating substantially as described.

4. The half-boxes *l'* and set-screws *o*, for adjusting the position of the lower roll D, substantially as described.

5. The within described method of applying pressure to the rolls, by the use of the spring *s* and lever E, and the double toggles, arranged and operating substantially as described.

6. The combination of the spring *s*, the casing *p*, ears *v v*, cap *w*, and set-screw *a*, constructed and arranged substantially as described

Executed at Boston, this 18th day of August, A. D. 1869.

J. A. SAFFORD.

Witnesses:

N. C. LOMBARD,

G. E. WHITNEY.