

(No Model.)

2 Sheets—Sheet 1.

J. A. SAFFORD.
LEATHER ROLLING MACHINE.

No. 477,460.

Patented June 21, 1892.

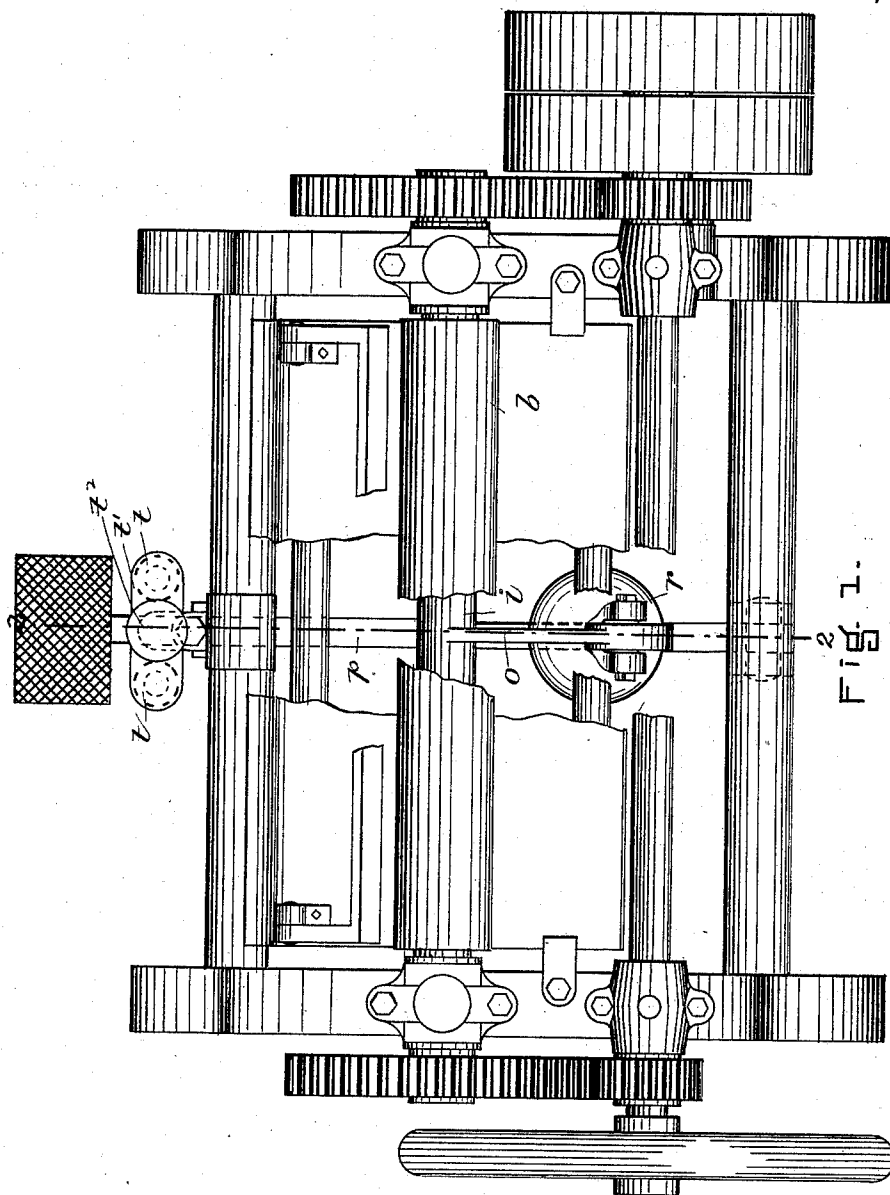
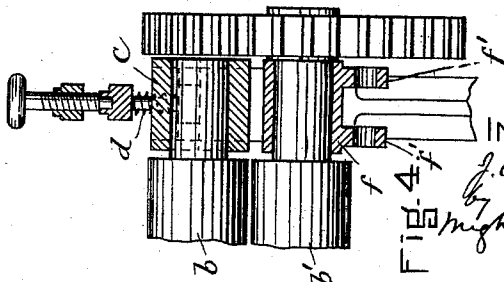


Fig. 1.



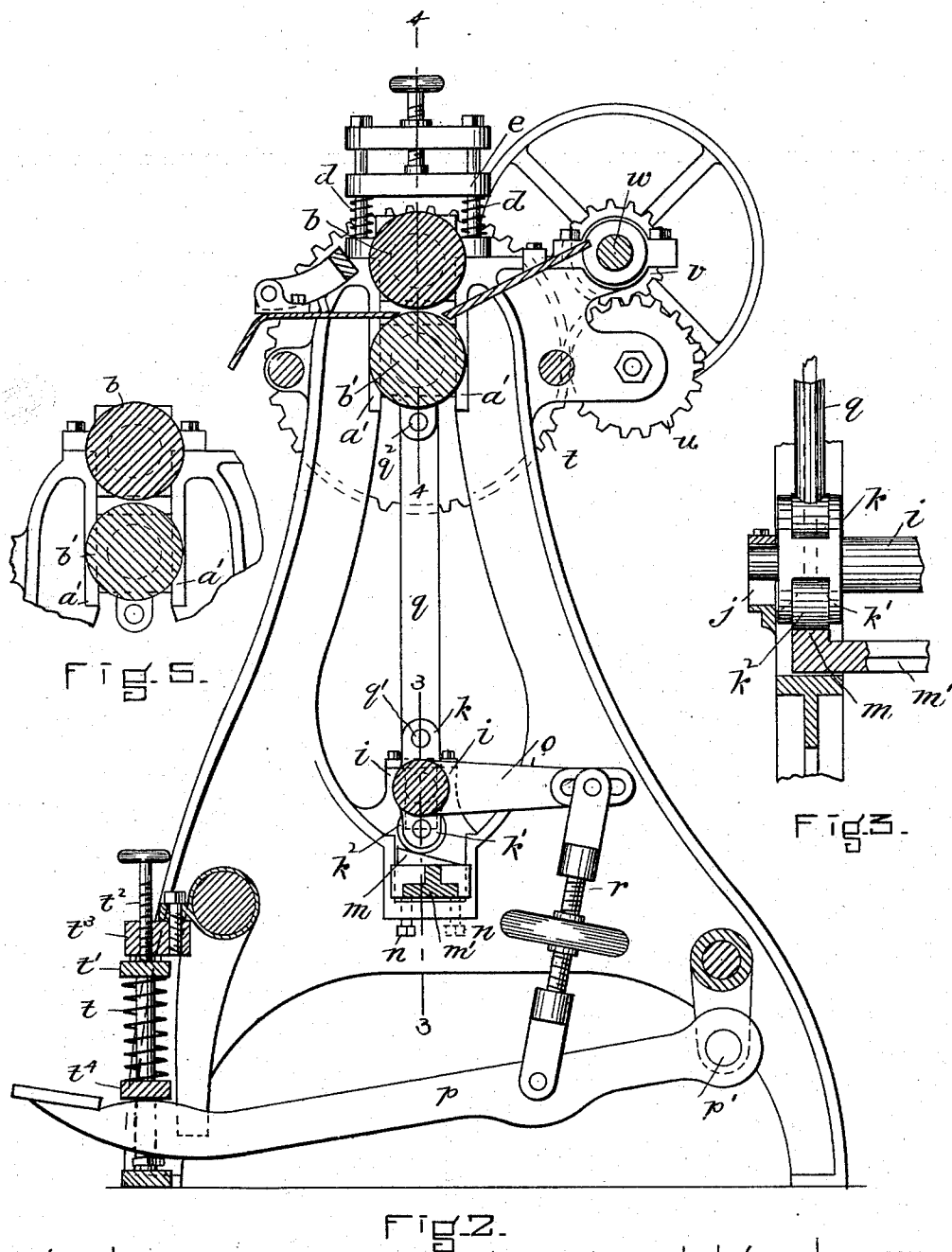
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UNITED STATES PATENT OFFICE.

JOSEPH A. SAFFORD, OF MALDEN, MASSACHUSETTS.

LEATHER-ROLLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 477,460, dated June 21, 1892.

Application filed June 6, 1891. Serial No. 395,325. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. SAFFORD, of Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Leather-Rolling Machines, of which the following is a specification.

This invention has for its chief object to provide simple and effective means whereby the pressure exerted on a treadle by a spring may be made effective to press a movable roll with sufficient force against a piece of leather interposed between it and another roll journaled to suitably compress and compact said piece.

The invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a top view of a leather-rolling machine embodying my invention. Fig. 2 represents a transverse section of the same on line 2 2, Fig. 1. Fig. 3 represents a section on line 3 3, Fig. 1. Fig. 4 represents a section on line 4 4, Fig. 1. Fig. 5 represents a sectional view of a modification.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents the supporting-frame of a leather-rolling machine, and *b* *b'* represent the rolls thereof. The upper roll *b* is journaled in bearings which, as shown in Figs. 1, 2, and 4, are boxes *c*, having ears *c'*, which are pressed downwardly upon seats on the frame *a* by springs *d* *d'*, the pressure of which is regulated by adjustable followers *e* *e'*, the object of said springs being to make the boxes practically rigid by holding them down on their seats, excepting when the thickness of the leather passed between the rolls makes it absolutely necessary that the upper roll yield.

In Fig. 5 the bearings of the roll *b* are shown as rigidly affixed to the supporting-frame and incapable of yielding.

The lower roll *b'* is journaled in boxes *f* *f'*, which are vertically movable between guides *a'* *a'* on the supporting-frame *a*, said boxes being supported and adapted to be moved vertically by the mechanism next described.

i represents a horizontal rod or shaft, the

ends of which are fitted in vertical slots *j* in the supporting-frame, so that said shaft can move sidewise in a vertical direction. Near each end of the shaft are two short arms or levers *k* *k'*, projecting in opposite directions and rigidly affixed to the shaft. Each of the lower arms *k'* is provided with a roll *k''*, which bears on an inclined abutment or step *m*. Said steps (there being, of course, two) are preferably affixed to a bar *m'*, extending across the frame *a*, and are preferably supported and rendered vertically adjustable by adjusting-screws *n* *n*.

q *q* represent toggle-links or struts, which are pivotally connected at their lower ends at *q'* with the arms *k* *k* and at their upper ends at *q''* with ears *f''* on the boxes *f*.

o represents a longer arm or lever affixed to the shaft *i*, preferably at about the center of its length, said arm projecting substantially at right angles with the shorter arms *k* *k'*.

p represents a pressure bar or lever pivoted at *p'* to the supporting-frame and connected between its pivoted and free ends with the arm *o* by a link *r*, which is preferably adjustable in length, it being shown as composed of two end-sections connected by a central section having a right-hand screw-thread engaged with one end section and a left-hand screw-thread engaged with the other section. The outer or swinging end of the pressure bar or lever *p* is pressed downwardly by a suitable spring or system of springs supported by the frame of the machine, said springs being of such power that they support the roll *b'* through the intermediate connecting devices and exert a sufficient upward pressure on said roll to enable it to co-operate with the upper roll *b* in properly rolling pieces of leather passed between said rolls. I prefer to employ two springs *t* *t*, the upper ends of which are supported by a cross-head *t'*, which is made adjustable by means of a screw *t''*, working in a threaded socket in a cross-bar *t'''*, rigidly affixed to the supporting-frame. The lower ends of said springs rest upon a movable cross-head *t''*, which bears on the outer end of the pressure bar or lever *p*. It will be seen that the tension or pressure of the springs *t* may be varied by means of the adjusting-screw *t''*, which is located about the

front of the machine and about midway between the ends thereof, so that it may be conveniently reached by the operator.

The pressure of the springs *t* upon the pressure bar or lever *p* through the link *r* and lever *o* turns the shaft *i* and throws the arms *k k'* into alignment with the strut *q*. This movement produces two results—viz., first, it causes the arms *k* and the struts to act as toggle-joints in forcing the boxes *f f* and roll *b'* upwardly, and, secondly, it causes the rolls *k²* to ride up the inclines *m*, and thus give an additional upward movement to the roll *b*.

It will be seen that by the described organization of levers and connecting devices a powerful upward pressure can be imparted to the roll *b'* by the springs *t*. It will also be seen that the location of the springs so that they bear on the outer end of the pressure bar or lever enables said springs to be quickly adjusted to produce a uniform pressure on both ends of the roll *b'*. Hence the operation of adjusting the pressure of said springs can be much more quickly and accurately performed than would be the case if the boxes supporting the bearings of the lower roll were directly supported by independent springs.

Power may be imparted to the rolls in any suitable way. I have shown the shaft of the lower roll provided with a gear *x*, meshing with an intermediate gear *u*, which meshes with a gear *v* on a driving-shaft *w*.

Important elements of this improved mechanism are, first, the shaft *i*, which is movable toward and from the rolls in guides in the supporting-frame and is provided with two pairs of arms, those of one pair resting on abutments on the supporting-frame, while those of the other pair are connected by struts with the movable bearings of the pressure-roll, and, secondly, the pressure bar or lever *p*, adapted to partly rotate said shaft. When the shaft *i* is partly rotated, the pressure-roll is given an upward movement due to two causes, viz: first, the movement of the arms *k* into alignment with the struts *q*, and, second, the lateral movement of the shaft *i* caused by the bearing of the arms *k'* on the inclined abutments *m*. The long arm *o* on the shaft *i* enables a comparatively light power to turn the shaft *i* and produce the described result.

I claim—

1. The combination, with a roll *b'*, movable bearings therefor, and a co-operating roll *b*, of a shaft having two pairs of short arms pro-

jecting in opposite directions, said shaft being adapted to move sidewise in a vertical direction toward and from the rolls and arranged substantially parallel therewith, struts connecting two of said arms with the movable bearings, inclined abutments supporting the other two short arms, a longer arm projecting from the shaft substantially at right angles with the shorter arms, a pressure bar or lever, and a connection between it and the longer arm, all arranged and operating substantially as described.

2. The combination, with a roll *b'*, movable bearings therefor, and a co-operating roll *b*, of a shaft having two pairs of short arms projecting in opposite directions, said shaft being adapted to move sidewise toward and from the rolls and arranged substantially parallel therewith, struts connecting two of said arms with the movable bearings, inclined abutments supporting the other two short arms, a longer arm projecting from the shaft substantially at right angles with the shorter arms, a pressure bar or lever, a connection between it and the longer arm, and a spring arranged to press downwardly on the swinging end of said operating-lever, and thereby exert a yielding upward pressure on the roll *b'*, as set forth.

3. The combination, with a roll *b'*, movable bearings therefor, and a co-operating roll *b*, of a shaft movable sidewise in a vertical direction and having two pairs of short arms projecting in opposite directions, said shaft being arranged substantially parallel with the rolls, struts connecting two of said arms with the movable bearings, inclined abutments supporting the other two short arms, a longer arm projecting from the shaft substantially at right angles with the shorter arms, a pressure bar or lever, a connection between it and the longer arm, a spring arranged to press downwardly on the swinging end of said operating-lever, and thereby exert a yielding upward pressure on the roll *b'*, and means for adjusting the pressure of said spring, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 22d day of May, A. D. 1891.

JOSEPH A. SAFFORD.

Witnesses:

C. F. BROWN,
A. D. HARRISON.