J. HODSKINSON.

MACHINE FOR SPLITTING LEATHER.

No. 191,855. Patented June 12, 1877.

Fig. 1.

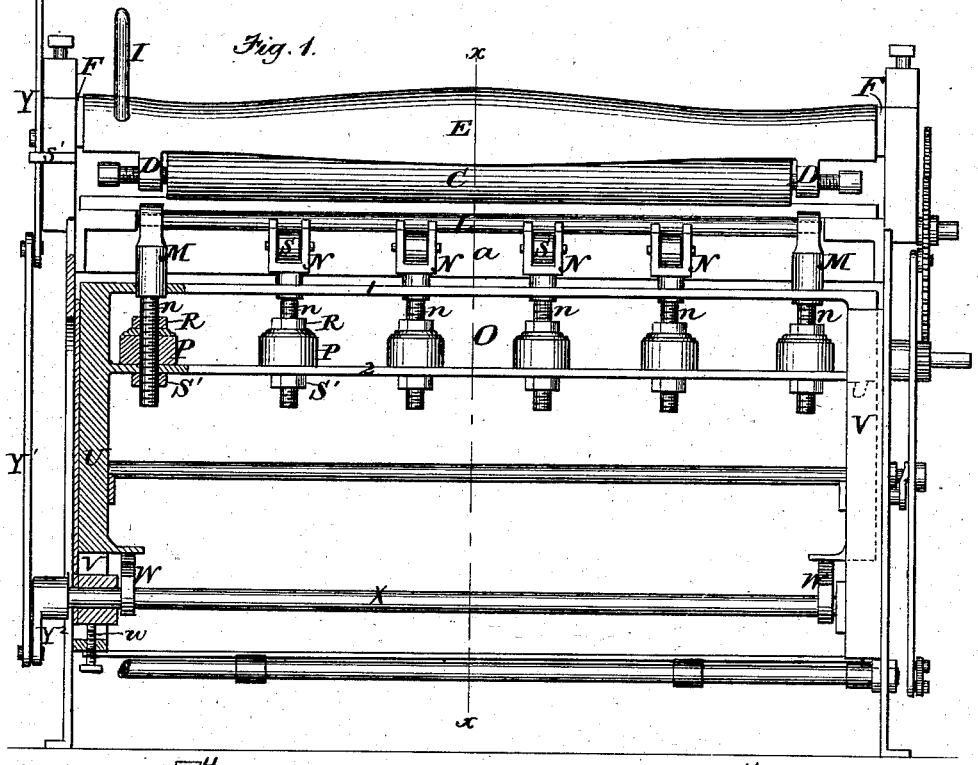


Fig. 2.

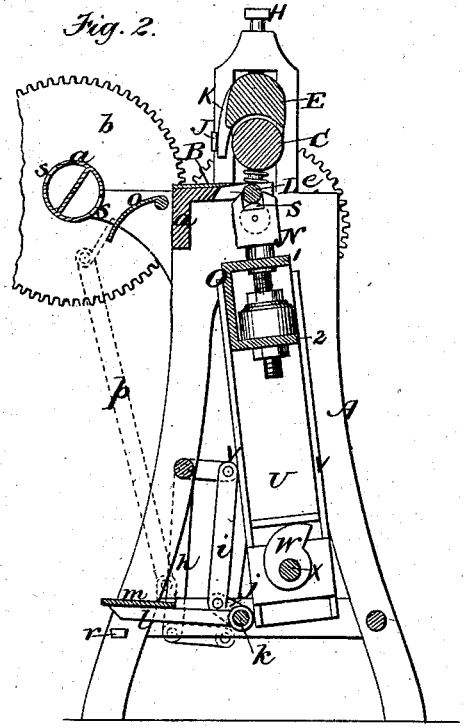
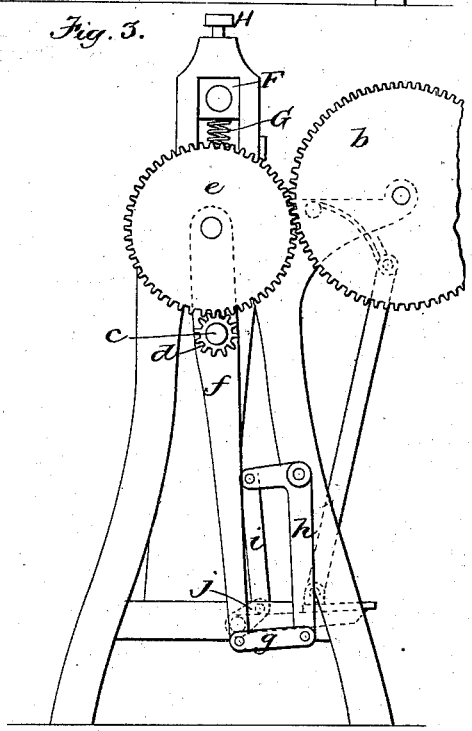


Fig. 3.



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UNITED STATES PATENT OFFICE.

JABEZ HODSKINSON, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR SPLITTING LEATHER.

Specification forming part of Letters Patent No. **191,855**, dated June 12, 1877; application filed April 27, 1877.

To all whom it may concern:

Be it known that I, JABEZ HODSKINSON, of Salem, in the county of Essex and State of Massachusetts, have invented certain Improvements in Leather-Splitting Machines, of which the following is a specification:

In the accompanying drawing, forming a part of this specification, Figure 1 represents a side elevation of a leather-splitting machine embodying my improvements. Fig. 2 represents a sectional elevation of the same, on the plane of line *x x*. Fig. 3 represents an end elevation.

The first part of my invention relates to leather-splitting machines employing a stationary splitting-knife, and two parallel rolls for guiding the leather and presenting it to the knife.

Heretofore one of these rolls (the upper one) has been located in vertically-adjustable bearings, and the other in fixed bearings, the space between the rolls being graduated to correspond with the thickness of the leather by raising or lowering the upper roll, the bearings of which are held upwardly with a yielding pressure by springs against vertically-adjustable screws or stops.

This arrangement of the rolls prevents either of them from yielding to inequalities in the thickness of the leather passing between them, so that when protuberances or portions of extra thickness occur in the leather they have to be compressed in their passage between the rolls, and the leather, being split in this compressed condition, has the same inequalities after splitting as before.

The first part of my invention has for its object to enable a piece of leather of varying thickness to be split or shaved, so that the body of the piece will be of uniform thickness after the operation; and to this end it consists in making the lower pressure or guide roll somewhat elastic, and mounting said roll upon a series of independently-yielding or elastic bearings or supports adapted to be adjusted both independently and simultaneously in a substantially vertical direction.

The second part of my invention has for its object to obviate the danger to the arms and hands of the operator or attendant, resulting from the liability of the fingers being caught in the slotted hollow drum or winding roll usually employed in leather-splitting machines to draw the leather against and over the knife. This part of my invention consists in the provision of means for automatically disconnecting the winding-drum from its motor, or for causing the operator to effect such disconnection without effort of will when his arms or fingers become accidentally caught in the drum, all of which I will now proceed to describe.

In the drawings, A represents the supporting-frame of the operative parts, the same consisting of end pieces or supports connected by suitable brace-rods and a knife-supporting plate or bar, *a*.

B represents the knife, which is attached to the bar *a*, and is of the usual or any suitable form for splitting or shaving leather.

C represents the upper pressure-roll, which is adapted to be adjusted vertically in any desired manner. I prefer at present to locate the bearings of the roll C in bearings D, depending from a swinging bar, E, which is journaled in bearing-blocks F, these blocks being adapted to slide in slots in the frame A, and being held upwardly by springs G against adjustable screws or stops H. The bar E is provided with a lever or handle, I, and by swinging said bar the roll C is adapted to be swung away from or toward the knife, stops J being provided on the frame which form abutments for projections K on the bar E, and limit the swinging of the roll C toward the knife. The roll is adapted to be raised and lowered by adjusting the bearing-blocks F vertically, and when in its normal position it is parallel with and slightly in advance of the edge of the knife.

The parts thus far described are well known, and do not of themselves constitute any part of my invention.

L represents the lower pressure-roll, which is located under the roll C in the proper relation to the knife B. Instead of making this roll rigid in construction and locating it in fixed bearings, I make it of such diameter as to render it somewhat elastic, (it being preferably composed of steel, about three fourths of an inch in diameter,) and locate it in end bearings M M, which are adapted to yield inde-

pendently to downward pressure, and provide it with intermediate supports N, which are also adapted to yield independently. The end bearings M and supports N are composed of posts or rods *n*, supported by a rigid bar or frame, O, through the intermediary of springs P, which may be of any suitable construction and material, rubber tubes being preferable, the same inclosing the posts or rods, and resting on a bearing-surface of the bar or frame O, and supporting adjustable nuts or collars R on the posts or rods, the latter being suitably threaded. The bar O is preferably provided with two parallel flanges, 1 2, through which the posts or rods are adapted to slide freely, the said flanges constituting guides for the posts or rods, the flange 2 constituting also the support or bearing for the springs P, as shown in Fig. 2. The bearings M are provided with sockets, which receive the journals of the roll L, and the supports N are provided with friction-rollers S, on which the roll L rests. The posts *n* are provided with nuts S′, on their lower ends, below the bar O, and by means of these nuts and the nuts R the posts may be raised and lowered independently, and the springs P may be compressed or relaxed.

I prefer to adapt the bar O to be raised and lowered bodily, and for this purpose I provide it at its ends with downwardly-projecting extensions U, which are adapted to slide in guides or ways V attached to the end pieces of the frame A. The extensions U rest upon cams W, which are located on a shaft, X, lolated in fixed bearings, and adapted to be partially rotated. The rotation of the shaft is effected by a lever, Y, which is pivoted to one end of the frame A, and is connected by a rod, Y^1, with a crank, Y^2, on one end of the shaft X. When the lever Y is turned in one direction it rotates the shaft, so that its cams are depressed and allow the bar O to descend, and when the lever is turned in the opposite direction the cams are raised so that the bar O is elevated. The friction between the cams and the surfaces of the extensions bearing thereon prevents the cams W from being depressed by the weight of the bar O. Suitable stops *s′* are provided for limiting the movements of the lever Y. *a* represents the ordinary slotted hollow drum, which draws the leather between the rolls C L and over the knife.

The operation of this part of my invention is as follows: The rolls C and L are first adjusted properly with relation to the knife and to each other, the roll C being above and parallel with the knife, and the roll L being adjusted so as to bear against the under side of and hold the leather against the roll C with a yielding pressure, in a line that is close to and parallel with the edge of the knife. The sheet of leather to be shaved or split is passed between the rolls C L and engaged with the drum *a*, and the latter is set in motion, winding the leather upon itself and drawiag it over the knife in the usual manner, this operation causing the thickness of the leather in excess of the vertical space between the edge of the knife and the roll C to be removed by the knife.

It will be seen that the lower roll L, in consequence of its elasticity and its independently-yielding supports M N, is enabled to yield at any point to inequalities in the leather being split without yielding along its entire length, so that when a projection or portion of unusual thickness occurs in the leather it will cause the displacement of the roll L at the point immediately under such projection, and at no other point; hence undue compression of the leather at the point where it is presented to the knive is avoided, the upper surface of the leather is held in contact with the upper roll, and the leather, passing between the upper roll and the knife, is preserved in a condition of uniform thickness and density. The rigid bar O constitutes a firm and substantial bearing or primary pressure-bar, the roll L being in substance a secondary or intermediate pressure-bar. The adaptability of the bar O to be raised and lowered enables the roll L to be adjusted quickly when occasion requires, and the adjustability of the posts *n* and springs P, by means of the nuts R S′, enables the roll to be adjusted at any desired point and with any desired degree of precision. If desired, the bearings of the shaft X may be made vertically adjustable, and may be raised and lowered independently by means of screws *w*, thus enabling the roll L to be raised or lowered at either end without interfering with the bearings M and supports N.

The winding-drum *a* of many leather-splitting machines is hollow, and is provided with longitudinal slots, *s s*, into which the edge of a sheet of leather is introduced in such manner as to cause the drum to engage with the leather and draw it over the knife, the leather being accumulated on the drum after being split or shaved. The drum is usually geared to a driving-shaft, and is in constant operation, unless the operator stops to throw it out of gear. There is great liability of the operator's fingers being caught in the slots of the drum when he is introducing the sheet of leather into the same and manipulating the leather, so as to make it wind smoothly on the drum. When such an accident occurs the operator usually has not sufficient presence of mind to throw the drum out of gear, and consequently his arms are carried over the drum in its rotation, and he is badly injured. To obviate this danger, I have provided means for causing the operator to throw the drum out of gear passively when an accident occurs like that above mentioned, which means will now be described.

b represents a cog-wheel on the end of the drum *a*. *c* represents the shaft which communicates motion to the drum, this shaft being provided with a pinion or cog-wheel, *d*.

e represents an idle or intermediate cog wheel, which meshes with the wheel *d*, and is adapted to mesh with and be disconnected from the wheel *b*. The wheel *e* is journaled in the upper end of a lever, *f*, which is pivoted to the shaft *c*. The lower end of the lever *f* is connected by a link, *g*, with a bell-crank lever, *h*, and the latter is connected by a link, *i*, with a crank, *j*, which is rigidly attached to a shaft, *k*. This shaft is journaled so as to partially revolve in the side pieces of the frame A near the lower ends of the side pieces, and is provided with rigid arms *l*, to which are attached a weighted strip, *m*. When the strip *m* is in its normal condition, it acts as a weight to hold the idle-wheel *e* out of connection with the wheel *b* of the drum, and when raised it will partially rotate the shaft *k*, and through the crank *j*, lever *f*, and intermediate connections, will move the idle-wheel into connection with the wheel *b*, as shown in Fig. 3. It will be seen therefore that whenever the operator desires to set the drum in motion, he must raise the strip *m*, which he accomplishes by placing his foot under it. So long as the strip *m* is held up by the operator the rotation of the drum will continue; but the moment that the strip *m* is allowed to drop the drum will be disconnected from its motor and stopped. In case of the accidental catching of the operator's hands in the slots of the drum, he will naturally be impelled to remove his foot from under the strip *m*; hence the danger of breaking his arms will be averted. As an additional measure of safety, and for the purpose of stopping the rotation of the drum when a sufficient quantity of leather is accumulated upon it, I provide a pivoted guard or curved flange, *o*, pivoted to the frame A parallel with the drum *a*. This guard is connected by a rod, *p*, with the strip *m*, and when pressure is exerted against its outer side, as by the arms of the operator being drawn over the drum, or by the accumulation of leather on the drum, it will be swung downwardly, and will depress the strip *m*, a stop, *r*, being attached to the frame A, to prevent the strip *m* from being depressed too far.

If desired, the strip *m* may be supported or held upwardly with a yielding pressure by a spring, and depressed only through the medium of the guard *o* and rod *p*.

I claim as my invention—

1. In a leather-splitting machine, an elastic metal roll, L, supported by end bearings M, and intermediate supports N, which bearings and supports are adapted to yield independently, as set forth.

2. A pressure-roll, L, having an elastic metal body, combined with independently-yielding or elastic bearings and supports, and a rigid bar, adapted to support said yielding bearings and supports, as set forth.

3. An elastic metal roll, L, having independently-yielding bearings and supports, combined with a splitting-knife, B, and an upper roll, C, as set forth.

4. The combination of the rigid bar or frame O, the roll L, the posts *n*, nuts R S′, and springs P, as set forth.

5. The yielding supports N, having friction rollers S, in combination with the roll L, as set forth.

6. The rigid horizontal bar O, supporting the roll L, in combination with means, substantially as described, whereby said bar is adjusted, as set forth.

7. In a leather-splitting machine, a winding-drum, *a*, connected to the driving-shaft through an idle-wheel, *e*, located on a pivoted lever, *f*, which lever is connected to a weighted piece, *m*, in such manner as to be turned on its pivot by the downward movement of the piece *m*, and thus disconnect the wheel *e* from the drum *a*, as and for the purpose set forth.

8. The idle-wheel *e*, combined with the wheels *b c*, lever *f*, weighted piece *m*, and intermediate connections, as set forth.

9. The guard or flange *o*, combined with the connecting-rod *b* and piece *m*, as set forth.

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

JABEZ HODSKINSON.

Witnesses:

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CARROLL D. WRIGHT.