(No Model.) 2 Sheets—Sheet 1.

J. F. BALDWIN.

MANGLE.

No. 253,661. Patented Feb. 14, 1882.

Fig. 1.

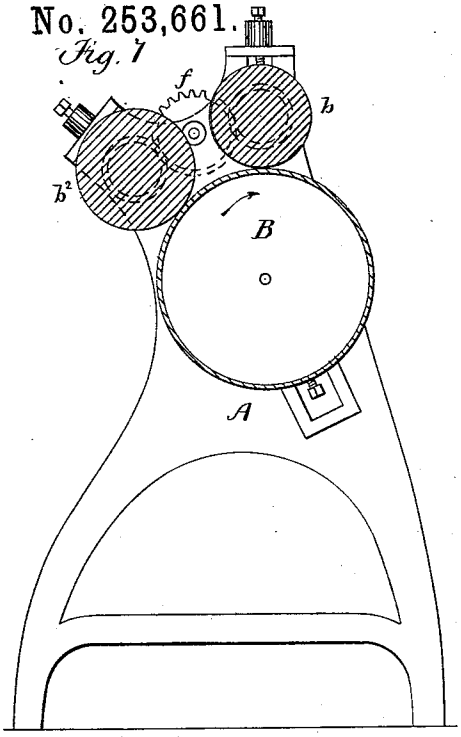


Fig. 2.

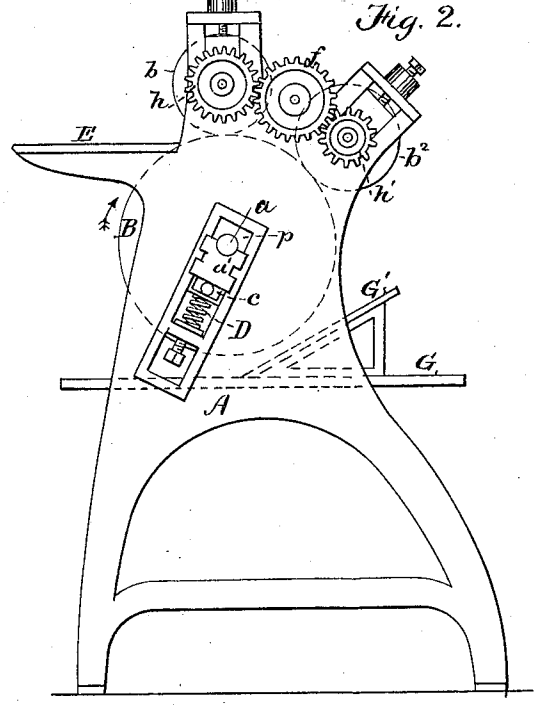


Fig. 3.

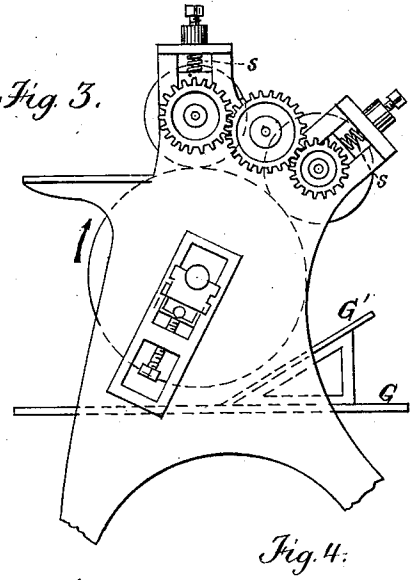


Fig. 5.

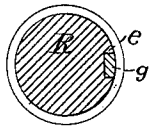
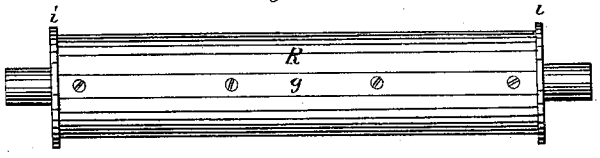


Fig. 4.



Witnesses.
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(No Model.) 2 Sheets—Sheet 2.

J. F. BALDWIN.

MANGLE.

No. 253,661. Patented Feb. 14, 1882.

Fig. 6.

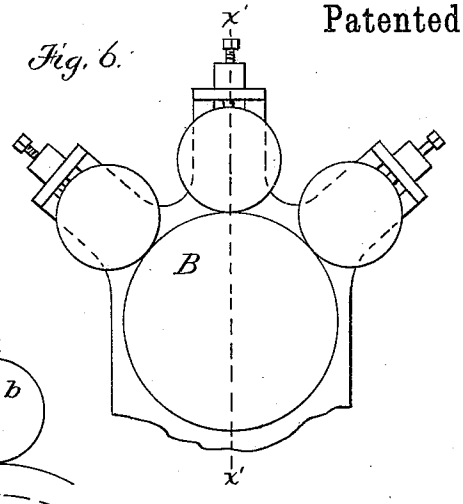


Fig. 9.

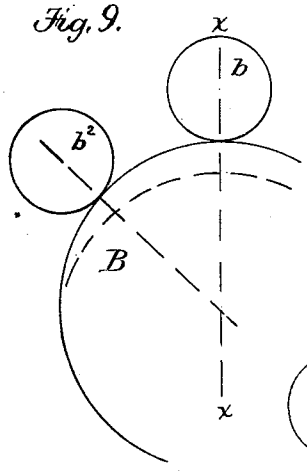


Fig. 8.

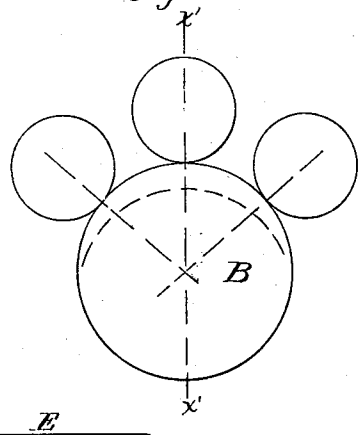


Fig. 7.

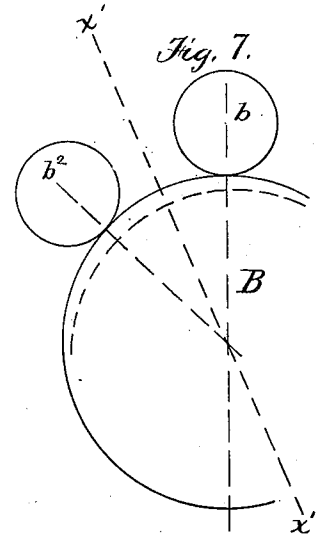


Fig. 10.

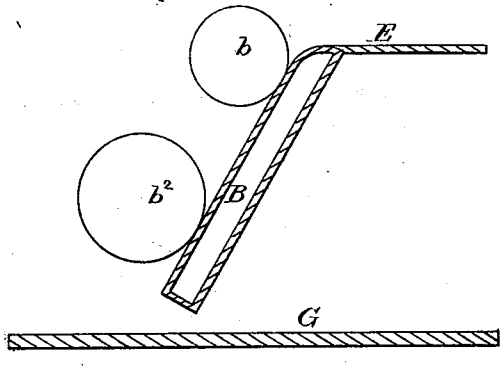
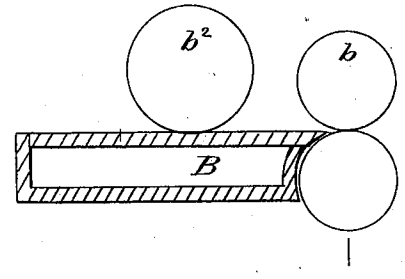


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOSEPH F. BALDWIN, OF CAMBRIDGE, MASSACHUSETTS.

MANGLE.

SPECIFICATION forming part of Letters Patent No. 253,661, dated February 14, 1882.

Application filed April 15, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH F. BALDWIN, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Mangles, of which the following is a specification.

My invention relates to that class of mangles or ironing-machines in which the fabrics to be ironed are subjected to pressure upon a heated polishing-surface by passing them between said surface and the face of elastic pressure-rolls; and it consists, first, in the combination of two or more elastic-faced pressure-rolls with a heated polishing-surface in such manner that the second pressure-roll has a greater surface-velocity than the first, and the third a greater surface-velocity than the second when more than two are employed, and so on.

The invention also consists in an arrangement of feeding and arresting tables, in combination with the rolls, for the purpose of conveniently operating the mangle.

These improvements are all designed to facilitate the operation of ironing by the aid of a machine, and to perform such work more efficiently than it can be done by any mangle now in use. In carrying them into effect I make use of an improved mangle having its parts so adjusted as to accomplish the desired end, and this I will now proceed to more specifically describe and claim.

My invention is fully set forth in the accompanying drawings, referred to hereinafter in this specification, of which they form a part, Figure 1 being a vertical transverse section, and Fig. 2 an end elevation, of a mangle embodying my invention. Fig. 3 is an end elevation, showing a modified form of construction. Fig. 4 is an elevation, and Fig. 5 a transverse section, of a pressure-roll. Figs. 6, 7, 8, and 9 exhibit the effect of different adjustments of the polishing-roll, and Figs. 10 and 11 modifications of my invention, hereinafter explained.

In these figures the same letters refer to the same parts.

A represents the main supporting-frame of the mangle, B being the polishing-roll adapted to be heated, preferably by steam, as is usual in such machines. This roll is of metal having a polished exterior surface, and is journaled in bearings at *a*, and adapted to be rotated in the direction indicated by the arrows by any suitable prime motor.

b b^2 are the pressure-rolls—in this case two in number—arranged to bear against the periphery of the polishing-roll with even pressure throughout its entire length. The rolls are preferably of metal, of the construction hereinafter set forth, and covered on their exterior surface with suitable textile material of considerable thickness, so as to render them elastic under pressure. They are adapted to be rotated by the system of gearing shown in Fig. 2, power being applied to either of the pressure-rolls in any suitable manner and transmitted to the other roll by the intermediate cog-wheel, *f*, and the cog-wheels *h* *h'*, attached respectively to the rolls *b* and b^2, the wheel *h'* being less in diameter than the wheel *h*, so that a greater surface-velocity is imparted to the roll b^2, for the purpose hereinafter explained. Or the roll b^2 may be larger in diameter than the roll *b*, as shown in Fig. 1, and the rolls rotated by the action of the cog *f* on cogs of equal diameter, the desired greater surface-velocity of the roll b^2 being also attainable by this method of construction.

In Fig. 2 the rolls *b* b^2 are journaled in fixed bearings, while the boxes *a'*, forming the bearings of the polishing-roll B, are yielding, being adapted to be raised or lowered by the action of a wedge-bar, *c*. The extremities of this wedge-bar rest upon spiral or other suitable springs, D, which regulate the pressure of the polishing-roll upon the pressure-rolls. The boxes *a'* move in slots *p* in the frame of the machine, said slots being so arranged that the boxes *a'* and the polishing-roll B are movable only in a plane which is practically equidistant from the centers of the first and last pressure-rolls, whereby the pressure of said first and last pressure-rolls is equalized under different adjustments of the polishing-roll.

If desired, the wedge-bar *c* may be supported rigidly by a set-screw, so that the polishing-roll will not yield, as shown in Fig. 3, and in this case the pressure-rolls will be pressed by springs *s* against the polishing-roll.

In Fig. 9 is shown an adjustment of the polishing-roll heretofore employed in machines of

this class. The roll B being movable in the line $x\ x$ toward and from the axis of the roll b only, in mangles so constructed the pressure of each pressure-roll varies. It is, however, very desirable that this pressure should be equalized as nearly as possible at all times; and this result is accomplished by my method of adjustment just explained and further illustrated in Figs. 6, 7, and 8, the polishing-roll being movable in the line $x'\ x'$, which is equidistant from the centers of the first and last pressure-rolls, and the pressure of said rolls is therefore equalized. The rolls $b\ b^2$ are also arranged at different levels upon the polishing-roll B, so that the movement of articles from b to b^2 will be assisted and facilitated by gravity, the surface of the polishing-roll forming an incline along which the articles gravitate or slide in their passage through the mangle.

E represents a feeding-table for receiving the articles to be ironed before introducing them between the rolls, while G is an arresting-table to receive them after their delivery by the roll b^2. The table G is provided with an inclined plane, G', to deflect the articles toward the front.

My improved construction of the elastic pressure-rolls is shown in Figs. 4 and 5. The roll R has flanges $i\ i$ at each extremity, and is provided with a longitudinal groove, e, having a rod or bar, g, fitted in the same for the purpose of confining the scarfed end of a strip of textile material of considerable thickness which is wound about the roll, forming an elastic surface yielding under pressure and readily expanding after the pressure is removed.

The foregoing description will render the operation of my invention readily apparent. The polishing-roll B being heated in the usual manner, it, together with the pressure-rolls $b\ b^2$, is rotated. The articles are passed between the rolls $b\ b^2$ and B from the feeding-table E, and are caught upon the arresting-table G within easy reach of the operator standing in front, and the operation may be repeated as many times as desired.

In machines of this description having two or more pressure-rolls rotating with uniform velocity, the articles are apt to bulge away from the polishing-surface in their passage from roll to roll. The friction of the articles upon the polishing-roll also operates to produce this effect. In my improved mangle, herein described, this friction is overcome by the varying heights of the pressure-rolls before described, while by my device of causing each pressure-roll to rotate with greater surface-velocity than the one next preceding it this difficulty is further overcome; for the articles are held in tension or stretched by the action of the rolls in their passage from one roll to the next, and so kept perfectly smooth and flat upon the heated polishing-surface, thus rendering it possible also to utilize the entire intermediate surface during the operation.

I do not limit myself to the form of polishing-surface previously referred to, as the leading principles of my invention are equally as applicable to a mangle in which the polishing-surface is level and fixed, or inclined and fixed, as to those in which the polishing-surface is a rotary cylinder or roll.

Modifications of my invention are shown in Figs. 10 and 11. In Fig. 10 the articles are passed between the inclined fixed and heated polishing-surface B and the elastic pressure-rolls $b\ b^2$. The roll b^2 is given a greater surface-velocity than the roll b, exactly as in the form of my invention previously described. In this modification the feeding-table E and the arresting-table G are both level. The inclined surface B assists the passage of the articles from roll to roll by the aid of gravity. In Fig. 11 is shown another arrangement of the rolls, the polishing-surface in this case being level. The advantages of my invention, so far as relates to the use of successive pressure-rolls each having greater surface-velocity than the one next preceding, may be secured under either of these forms as well as under the form first described. The form of apparatus shown in Fig. 11 is better adapted for starched goods having sufficient stiffness to enable them to be propelled over the flat surface between the rolls b and b^2.

It will be seen that my invention, so far as it relates to the different surface-velocities of the pressure-rolls, is not limited to the employment of two pressure-rolls, as any desired number may be employed, each after the first having a slightly-increased surface-velocity over the one next preceding. By my invention the feed-rolls have increasing velocities and work against a metallic heated polishing-surface. By the friction of these feed-rolls on the goods the goods are kept stretched and under tension against the heated polishing-surface, whereby there is insured the uniform polishing and heating of all parts of the article. Heretofore mangles have had polishing-rolls run with increasing velocities and working against a cloth-covered large feed-roll; but in such construction there is no extended polishing-surface, and the polishing, on the contrary, is done at the successive lines of contact of the polishing-rolls with the feed-roll. The metal polishing-rolls cannot grasp and stretch the fabric over a large cloth-covered feed-roll, and they are powerless to prevent the cloth from bunching up between the rolls, as long experience has fully demonstrated to me. The great point of practical difference between my invention and what has preceded it is that by my machine the goods are stretched over a heated polishing-surface by cloth-covered feed-rolls having varying velocities, the polishing-surface being of large unbroken extent, the goods being stretched and polished evenly and uniformly. Heretofore it has been impossible to stretch the goods between the rolls or over the surface of the lower roll, each polishing-surface after the first in former machines slipping on the goods without stretching, and so polishing by such slipping,

while by my invention the polishing is done by stretching the goods over a heated polishing-surface.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a mangle, the smooth-faced heated metallic surface B, combined with the elastic-faced pressure-rolls *b* b^2, having successively greater surface-velocities, whereby the fabrics are stretched over and held closely against the heated polishing-surface, the elastic facings of the pressure-rolls facilitating the grasping and feeding of the fabrics, as set forth.

2. In a mangle, the combination of the polishing-surface, the pressure-rolls, a feeding-table to receive the articles to be ironed, the table G to arrest the ironed articles, and the inclined plane G′ on said table to deflect the articles to the front, all constructed and arranged as shown.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 10th day of April, A. D. 1880.

JOSEPH F. BALDWIN.

Witnesses:
H. G. WADLIN,
C. F. BROWN.