O. CURRIER.

Enameled Cloth-Polishing Machine.

No. 211,296. Patented Jan. 14, 1879.

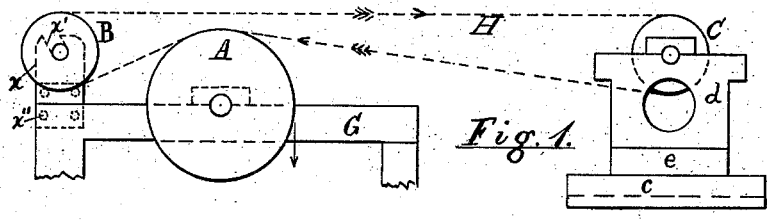


Fig. 1.

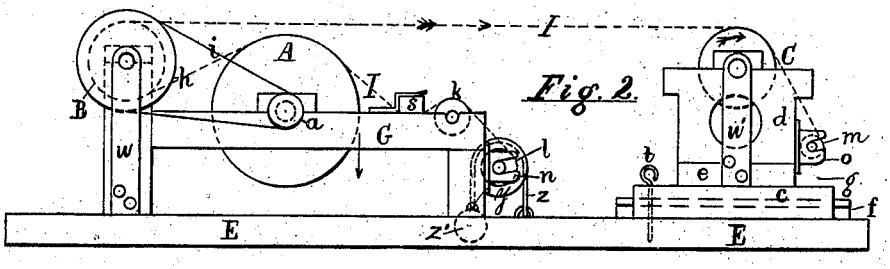


Fig. 2.

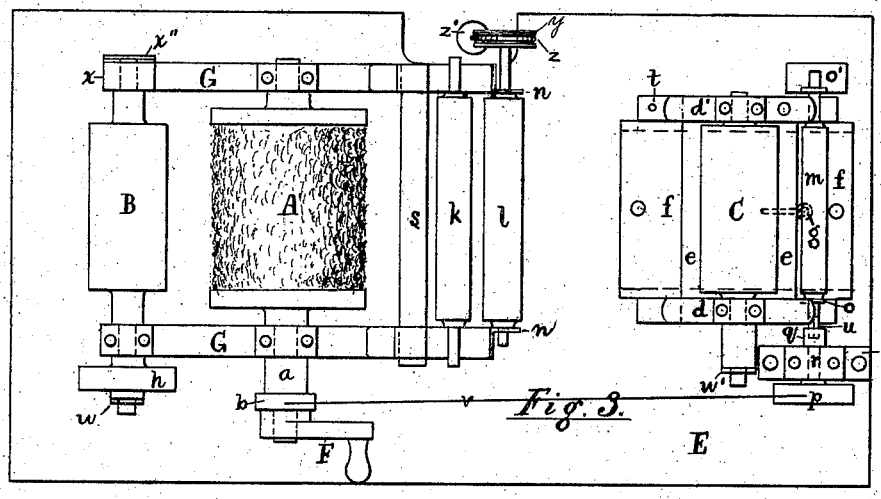


Fig. 3.

Fig. 4

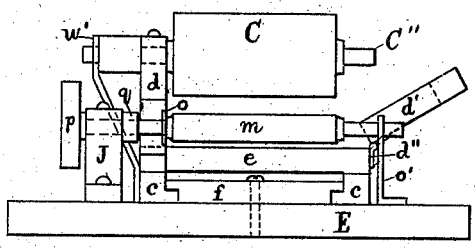
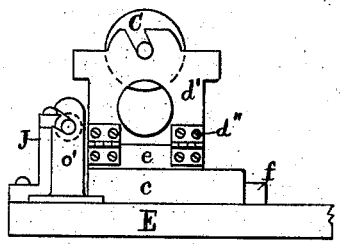


Fig. 5.



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UNITED STATES PATENT OFFICE.

OSCEOLA CURRIER, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN ENAMELED-CLOTH-POLISHING MACHINES.

Specification forming part of Letters Patent No. **211,296**, dated January 14, 1879; application filed November 7, 1878.

To all whom it may concern:

Be it known that I, OSCEOLA CURRIER, of the city of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Enameled-Cloth-Polishing Machines, which improvement is fully described in the following specification.

My invention relates to the class of rubbing-mills used in polishing enameled cloth after the preparatory coats have been applied, that they may present a suitable surface for the application of the finishing coats or the enamel; and it consists in combining into one machine the mill hitherto used separately for polishing short pieces stitched into an endless web and the mill employed to polish long pieces wound upon a roller.

It also consists in arranging the polishing-roller and the carrying-rolls which support the cloth in such a manner that the cloth shall be polished from below instead of from above, as has hitherto been done in both short and long rubbing mills, to the end that the dirt removed from the cloth may not be again deposited upon its surface.

My invention is fully shown in the accompanying drawings, in which—

Figure 1 shows the arrangement of the cloth upon the supporting-rolls C and B when the machine is used for polishing short pieces, (endless webs.) Fig. 2 is a side view of the machine, showing the arrangement of the cloth upon the carrying-rolls when polishing long pieces. Fig. 3 is a plan of the whole machine; Fig. 4, an end view of the winding apparatus, and Fig. 5 a side view of the hinged standard adjoining the same.

A is the polishing-drum, faced with pumice-stone or other suitable material. B is the carrying-roller for drawing the endless web over the drum A, and C is a carrying-roller for supporting one loop of the same and producing the necessary tension upon the web. To effect this object the roller C is hung in a movable frame, *d d'*, in the usual manner, the same consisting of standards *d d'*, connected by a tie, *e*, which is secured to bars or rails *c*, arranged to slide upon the floor E, so that the roller C may be drawn back at pleasure by a rope attached to the eye *g*, secured in the cross-bar *e*.

The rope may be operated by a windlass and pawl, in the usual manner, or by any desired means to strain the cloth passed over the roller C.

In Fig. 1 the arrangement of the endless web upon the carrying-rollers is plainly shown, and the connection for driving the roll B is seen in Figs. 2 and 3, where the drum A is shown provided with a crank, F, and pulleys *a* and *b*, the pulleys being situated outside of the fixed frame G G, carrying the drum and roll B. The roll B has a pulley, *h*, secured to its axle outside the frame G, and is driven by a belt, *i*, connecting the pulleys *a* and *h*.

The drum A may be driven by tight and loose pulleys applied to its axle at either end, and is intended to revolve in the same direction as the rolls C and B. The centers of the rolls C and B being placed above the center of drum A, the web of cloth H, supported upon them, will have its lower portion brought into contact with the top of the drum A, and the dirt removed from the surface of the cloth will be thrown down upon the floor E, in the direction of the arrow, upon the side of the drum.

In all long or short rubbing mills hitherto constructed for polishing such cloth, the fabric is applied to the bottom of the drum, and to secure a large surface of contact the tops of the carrying-rolls are located considerably above that point, whereby a pocket is formed shaped like a letter **U**, in the bottom of which the drum A revolves, and removes the roughnesses and inequalities of the fabric by abrasion of the dried paint on its surface.

The dirt thus removed remains in the pocket or loop of the cloth to a large extent, the remainder being thrown out by the rotation of the drum, and discharged upon the adjacent surfaces of the web, these being presented at the upper side of the web in a favorable position to catch every falling particle.

A revolving brush has sometimes been applied to such machines to remove this dirt from the surface of the cloth before the subsequent coats of paint should be applied; but the grit from the polishing-drum soon destroys such

brushes and renders them useless. The cloth is thus generally subjected to the subsequent painting process with a large amount of foreign or loose material adhering to its surface, and the paint being applied in a flood, and the surplus scraped off and used over again, the presence of this dirt causes a great deal of loss by rapidly fouling the paint, so that it cannot be longer used.

By the application of the cloth to the top of the drum, as described above, in my machine, the dirt removed from the cloth is all thrown away from its surface by the rotation of the drum, and a further advantage is secured in the more rapid performance of the polishing operation, which is completed in less than half the usual time by my machine, because the drum A is always free from contact with the dirt removed, and is thus never clogged by foreign particles, while the pumice-stone in machines previously used was compelled to constantly carry with it a considerable mass of sticky material, which interfered seriously with its power of polishing.

It will be further evident from the drawings, Figs. 1 and 2, that in my machine all the loose particles thrown into the air by the revolving drum could find no lodgment upon the cloth, because the said drum comes in contact solely with the cloth from beneath, and it therefore results in practice that black cloth polished by my machine will not even soil the hand, and conveys no impurities whatever to the paint subsequently applied to it.

Another advantage arising from the arrangement described is the exposure of the entire top surface of the cloth between the carrying-rolls for inspection, while in the old machines the drum A covered so much of the top surface that defects could easily escape notice. The coats subsequently laid upon the cloth also require much less rubbing when applied to the clean surface I produce, whereby the expense of finishing is still further reduced.

To adapt the machine thus described to the polishing of long cloth, I provide bearings upon each of the roll-carrying frames G and *d d'*, to support the reel or roller *l* and winding-roll *m*, the former being located at *n* upon the frame G, upon the side of the drum A opposite to roll B, and the latter being shown at *o* in Fig. 2, attached to the outer side of the frame *d d'*, carrying roll C.

When the machine is used for polishing long cloth, the belt *i* is removed, and the rolls B and C simply guide the cloth I over drum A, like the web H, before mentioned. To lead the cloth properly to the drum A, I provide a small roll, *k*, between the reel *l* and the drum, and after passing the cloth over the same I carry it under a spreader, *s*, which smooths its surface before passing over the drum. To draw the cloth from the reel and over the revolving drum, I provide a driving-pulley, *p*, and clutch *q*, secured to shaft *r* in a stand, J, at the end of the winding-roll *m*, and secure the sliding frame *d d'* to the floor E in any desired manner, as by pins *t* through rails *e*, in the required position to bring the bearings *o o'* on a line with shaft *r*. The winding-roll placed in these bearings is shaped at the end *u* to fit the clutch *q*, and thus receives the motion transmitted to pulley *p* from pulley *b* by belt *v*.

In some cases I have used a friction-clutch at *q*, to compensate for the increasing size of roll *m* as the cloth accumulates upon it; but that is not an essential part of this invention.

The machine being thus arranged, motion imparted to the drum causes the cloth to be steadily unwound from the reel *l* and wound in a polished condition upon the roll *m*, the whole upper surface of the cloth between the rolls B and C being exposed for inspection in its passage.

In Figs. 4 and 5 are shown the arrangement required for the frame *d'* to admit the web of cloth H to the end of the roll C. The frame *d'* is hinged at a point, *d''*, below the bottom of roll C, and is seen in Fig. 4 tipped away from the bearing C'' of the roll, so that an endless web of cloth can be slipped upon the roll, after which the bearing in frame *d'* is restored to its vertical position.

To avoid derangement of the bearing for roll *m* upon frame *d'*, the bearing *o'* may be attached directly to the floor E, as shown in Fig. 5, its center being placed opposite the stand J, with which it always operates when using roll *m*.

To produce a proper tension upon the long cloth I when unwound from reel *l*, I provide a friction-pulley, *y*, upon the axle of the roll at either end, and arrange a cord, belt, or strap to embrace the same and maintain a pressure thereon.

In Figs. 2 and 3 the pulley *y* is shown clamped by a cord, *z*, one end of which is secured to the floor by a staple, and the other furnished with a weight, *z'*, to produce the required pressure. By such a friction the cloth is prevented from running off from the reel loosely, and is drawn tightly as it passes over the polishing-drum.

From the description it will be seen that I adapt the short rubbing mill to the polishing of long cloth by providing the short mill frames G and *d d'* with suitable bearings, respectively, for the reel *l* and winding-roll *m*, and adding to the latter a special driving pulley and belt, *v*.

The long cloth could be wound directly upon rolls laid in the bearings of roll C were it not that both rolls B and C are provided with outside extensions of their axles and brace-bearings *w w'*, for supporting the rolls in a horizontal position when the cloth H is slipped over their ends.

In Fig. 1 is seen the outer bearing, *x*, of roll B, (the nearer frame, G, being removed to show the same clearly,) hinged to frame G at a point, *x''*, below the bottom of the roll, so that it can be tipped outward in the manner shown for tipping frame *d'* in Fig. 4. When

thus tipped the weight of roll B is supported by the brace *w*, which is secured to the bottom of the frame G, and bent outward and upward to meet the axle of the roll, like the brace *w'*. (Shown in Fig. 4.)

The rolls B and C are allowed to lie and turn freely in their bearings when polishing long cloth, the motive power for the cloth being provided by roll *m* and pulley *p*, and the machine is thus converted into either a long or short mill without loss of time or removal of needless pieces.

Having shown the advantages resulting from my method of arranging the cloth with respect to the drum and carrying-rolls, whereby the cloth is supported above the top of the drum, and kept free from grit and fibers until completely polished, and having described the great saving in time thereby, as well as the subsequent reduction in expense for applying and rubbing the later coats laid on the cloth, I desire to claim and secure the same by Letters Patent, as follows:

1. The herein-described process of rubbing or polishing enameled cloth, which consists in subjecting its enameled face to the action of a revolving frictional surface placed beneath the said cloth, whereby the dust and portions removed by said contact are prevented from lodging on the cloth or clogging the polishing-cylinder, substantially as herein set forth.

2. In combination with the stationary frame G and movable frame *d d*^{1} of a short rubbing mill, the reel *l*, winding-roller *m*, and clutch *q*, with its shaft *r* and pulley *p*, for driving the winding-roller, and the drum A, and carrying-rolls B and C, for polishing long cloth, substantially as herein set forth.

In testimony that I claim the foregoing as my own I hereunto subscribe my name in the presence of two witnesses.

O. CURRIER.

Witnesses:
JOSEPH KINGSLAND,
WM. S. D. ELLPHINSTONE.