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L. M. YOERG.

MACHINE FOR SURFACE FINISHING PAPER.

APPLICATION FILED FEB. 14, 1907.

Fig. 1.

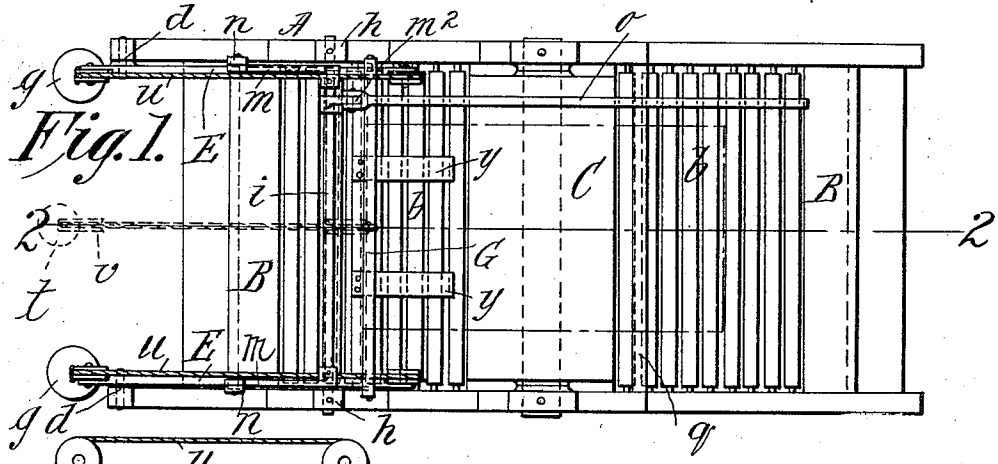


Fig. 2.

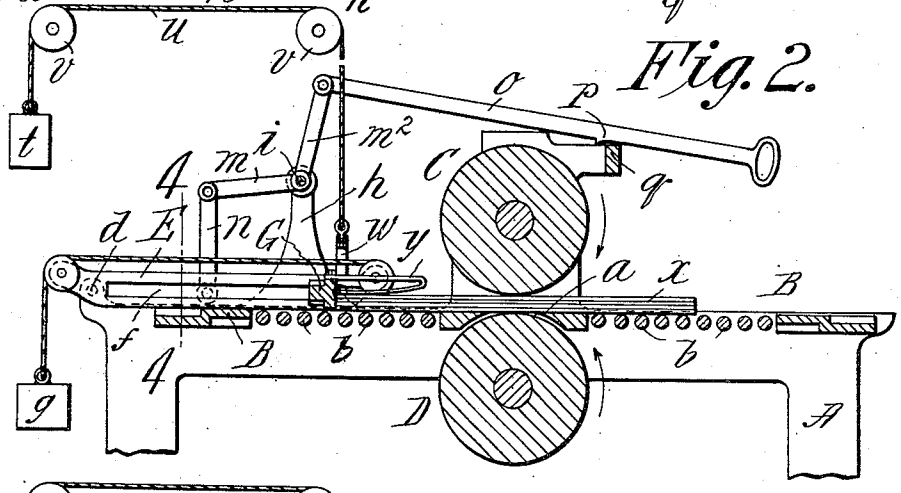


Fig. 3.

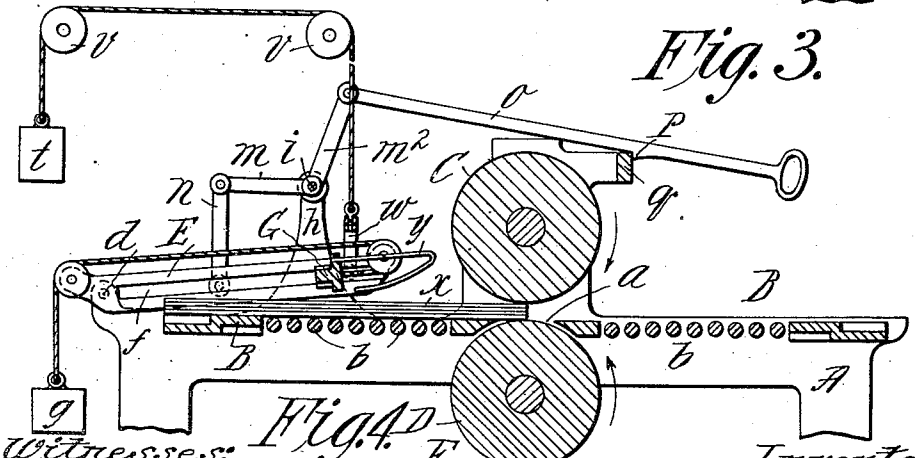
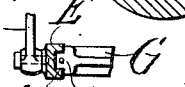


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR SURFACE-FINISHING PAPER.

No. 849,181. Specification of Letters Patent. Patented April 2, 1907.

Application filed February 14, 1907. Serial No. 357,333.

To all whom it may concern:

Be it known that I, LEON M. YOERG, a citizen of the United States of America, and a resident of South Hadley Falls, in the county of Hampshire and State of Massachusetts, have invented certain new and useful Improvements in Machines for Surface-Finishing Paper, of which the following is a full, clear, and exact description.

This invention relates to improvements in machines for surface-finishing paper, and more particularly fine writing-paper, and particularly pertains to improvements in the kind of a machine employing a pair of pressure or squeeze rolls in conjunction with a table and operative for imparting a succession of pressures on a plurality of sheets of paper interleaved with zinc or other metallic plates in conjunction with which are commonly employed sheets of cloth placed against the surface or surfaces of the sheets of paper and between the plates for imparting a cloth-like finish to the paper, and in the machine of the kind to which this invention pertains a follower-bar is provided at one side of the pair of pressure-rolls combined with which is a means of yielding resistance, so that after the plates and paper therebetween have made a pass in one direction through and beyond the pressure-rolls the follower-bar will automatically force the "plate-stack" back again to the action of the rolls, to which reversed rotation is in proper time imparted.

The object of this invention is to so mount the normally horizontally-guided follower-bar as to render it capable of a bodily elevating movement and to provide elevating means therefor, so that at the pleasure of the machine-tender the follower-bar may have a position removed from the path of the plate-stack on the table, leaving the latter free to be rolled or slid off from the rear portion of the table as well as from the front portion after the surface-finishing or plating action to a given plurality of sheets has been accomplished. As a result of the capability for the displacement of the follower-bar, as above referred to, the amount of surface-finishing work on paper which a machine-tender or the machine-tender and his helper may accomplish in a given time is materially increased.

The invention consists in the combination with a table and a pair of pressure-rolls, having adjacent peripheral portions thereof substantially at the table-level, of a bar or follower at one side of the rolls movable horizontally along the table toward and away from the rolls, a means of yielding resistance for forcing the bar toward the rolls, and means for bodily moving the bar to a position suitably remote from the path of the plate-stack, and the invention furthermore and otherwise consists in constructions of parts and combinations and arrangements of parts as hereinafter described in substance and set forth in the claims.

In the accompanying drawings sufficient of an ordinary paper-plating machine is illustrated together with the parts and devices constituting this invention in operative arrangement thereon; and in said drawings, Figure 1 is a plan view. Fig. 2 is a sectional elevation as taken along the length of the machine on line 2 2, Fig. 1, the novel devices being shown as in their working positions or relations. Fig. 3 is a view like Fig. 2 with the exception that the new devices are shown as in their moved positions. Fig. 4 is a view of parts in detail hereinafter referred to.

In the drawings, A represents the machine-frame, comprising a table B, having a transverse aperture *a* intermediately thereof and having bed-rollers *b b* at opposite sides of said aperture, and C and D represent the pressure or squeezing rollers mounted in parallelism at the apertured portion of and above and below the table and having the adjacent peripheral portions thereof at or suitably near the table-level.

The parts above referred to are formed and arranged as usual in paper-plating machines, and it may be added that rotary movements are imparted to the pressure-roller successively and alternately first in the direction of the arrows in Fig. 2 and then in the reverse direction to carry the plate-stack first to the left through and beyond the rollers and then to the right, these operations being repeated as many times as necessary until the paper shall be properly or sufficiently plated or surface-finished.

I will now describe my improvements.

E E represent oppositely-located guide members pivotally mounted at *d* and near the ends of such members on the table or machine-frame at one side of the pressure-rolls. These guide members have horizontal guide grooves *f* along the inner sides thereof in which the suitably-formed end portions of the follower-bar G engage. The follower-

bar G is by the sheave-guided weight g maintained yieldingly toward the pressure-rolls, receding therefrom as the stack x is by the roll forced against it horizontally away from the roll and against the resistance of the weights g. The action of receding of the follower-bar and its returning toward the pressure-rolls is not in itself a new characteristic of the present apparatus.

On opposite standards h h a rock-shaft i is supported in a transverse position somewhat above the level of the table, and duplicated levers m are affixed on this rock-shaft at opposite sides of the machine. To each lever m a link n is connected, said link being also connected to an intermediate part of the respectively adjacent side member E. To the upstanding arm m^2, also affixed on the rock-shaft i, an operating-rod o is pivotally connected, the same extending over the pressure-rolls toward the opposite end of the machine. This operating-rod o has a catch-shoulder or abutment p adjacent an elevated cross-bar q or fixture of the machine-frame.

By drawing the operating-rod o forwardly from its normal position (shown in Fig. 2) to the position shown in Fig. 3 and permitting the shoulder p to engage the cross-bar q, as seen in the latter figure, the opposite side guide members E E will be swung to their elevated positions and there retained, correspondingly carrying the follower-bar G to the position above the horizontal path of the plate-stack.

In order to render the movements of the last-mentioned parts conveniently sensitive, the counterweights t are provided, the same being suspended on cords, chains, or other flexible connections u, guided over the sheaves v and having connections with upstanding lugs or posts w, formed on or affixed to the guide members F.

Flat springs y y are affixed on and forwardly extended toward the pressure-roll from the follower-bar, the same having their extremities depending and return-bent, and these springs serve to hold the edge portions of the plates and material therebetween from separating or "cocking up," especially at times when the roll-pressure is on the middle or far-distant portions of the plate.

In the utilization of the present improved machine the skilled operator or machine-tender stands at the forward end of the machine and has a helper at the rear end of the machine, and from nine to twelve girls are usually employed in making up plate-stacks, some of which stacks as made up are readily at the hand of the machine-tender, while others are readily at the hand of the helper. The time consumed for removing one comparatively heavy stack from the machine and bringing another to the action of the latter relatively to the time consumed in the back-and-forth runs of the stack between the pressure-rolls is proportionately considerable. Now the machine-tender in addition to controlling the pressure-roll-reverse mechanism (which is not shown or necessary to an understanding of this invention) will at times bring plate-stacks onto the forward portion of the table and run them between the rolls and he will at times also remove some of the plated stacks at his end of the machine, and the helper will also at times bring stacks onto his end of the machine and also will remove some of the plated stacks. In the utilization of the present improved machine the skilled operator or machine-tender stands at the forward end of the machine and has a helper at the rear end of the machine, and while, as heretofore, nine to twelve girls have been usually employed in making up and taking care of finished plate-stacks near the front end of machine only, under the present improvements eighteen to twenty-four girls can be employed—half thereof near the front end and the others near the rear end—whereby some of the stacks as made up are readily at the hand of the machine-tender, while others are readily at the hand of the helper.

It is of course possible for the machine-tender to remove the plated stack at the front end of the machine, or by elevating the follower-bar the machine-tender can run the already-finished stack to the helper for removal at the rear end of the machine, and the helper can then introduce a fresh stack at his end of the machine. The machine-tender can then lower the follower-bar to position and finish this stack in the regular way, and if at this particular period the girls working on the machine-tender's end of the machine require a finished stack to open and to remove therefrom the plated sheets the machine-tender can give it to them and take from them a fresh stack and plate the same, or if at that moment the girls at the helper's end of the machine require a stack the machine-tender, by elevating the follower-bar, can run the finished stack back to the helper, for it is to be understood that whenever the operating-rod o is brought to the position shown in Fig. 3, it is entirely easy to run the already plated stack off at the rear end of machine, leaving an opportunity for the helper to introduce a fresh stack at this end. Thus it becomes apparent that the production of the machine will be double what it would be were it possible, as heretofore, by reason of the presence of the follower-bar always at the level of the table, to introduce and withdraw the stacks only at the forward end of the machine.

I claim—

1. In a machine of the character described, the combination with a table and a pair of pressure-rolls having adjacent peripheral portions thereof substantially at the table-level, of a bar at one side of the rolls, movable along

the table, a means of yielding resistance for forcing the bar toward the rolls, and means for bodily moving the bar to a position above, and separated from, the table.

2. In a machine of the character described, the combination with a table and a pair of pressure-rolls operative for a squeezing action at the table-level, of oppositely-located side members at one side of said rolls, a bar movably guided in said side members, along, and at the level of, the table, means of yielding resistance for forcing the bar toward the rolls, and means for moving the side members, and the bar, having a guiding engagement therein, for the elevation of the bar above the table.

3. In a machine of the character described, the combination with a table and a pair of pressure-rolls operative for a squeezing action at the table-level, of oppositely-located guide members pivotally mounted at one side of said rolls, a bar movably guided in said side members, along, and at the level of, the table, means of yielding resistance for forcing the bar toward the rolls, and a lever having a connection with and operative to elevate the paired members and bar engaged therewith above the table.

4. In a machine of the character described, the combination with the table and the intermediately-located pressure-rolls, of opposite, vertically-movable, guide members having normally horizontal positions and having horizontal longitudinal guideways therein, a follower-bar extending between and having by end portions thereof guiding engagements in said ways and means for elevating said guide members and bar.

5. In a machine of the character described, the combination with the table and the intermediately-located pressure-rolls, of a horizontally-movable follower-bar and vertically-movable opposed side members, with which said bar has engagements, means for elevating said side members and the bar engaged therewith, and one or more flat springs extended from the follower-bar toward the pressure-rolls and having their extremities depending and return-bent.

6. In a machine of the character described, the combination with the table and pressure-rolls, of opposite normally horizontal guide members, pivotally mounted on the table and having horizontal longitudinal guideways therein, a follower-bar endwise engaged with, and to be guided in, said ways, a lever, a link connecting said lever with one of said side members and a rod operatively connected with said lever.

7. In a machine of the character described, the combination with the machine-frame comprising a table and pressure-rolls, of oppositely-arranged normally horizontal guide members pivotally mounted and having horizontally-longitudinal guideways therein, and a follower-bar having guiding engagements in said ways, a rock-shaft having lever-arms linked to said guide members, and said rock-shaft having a further lever affixed thereto, an operating-rod pivoted to the last-named lever and extending longitudinally forwardly and having an abutment-shoulder adapted for engagement with a fixed part of the machine-frame.

8. In a machine of the character described, the combination with a table and an intermediately-located pair of pressure-rolls, of oppositely-located guide members at one side of said rolls, a bar having a guiding engagement with said side members, and yielding pressure means for forcing the bar toward the rolls, means for elevating said guide members and bar above the level of the table, a counterweight and flexible sheave-guided connections between the same and the combined guide members and bar.

Signed by me at Springfield, Massachusetts, in presence of two subscribing witnesses.

LEON M. YOERG.

Witnesses:
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