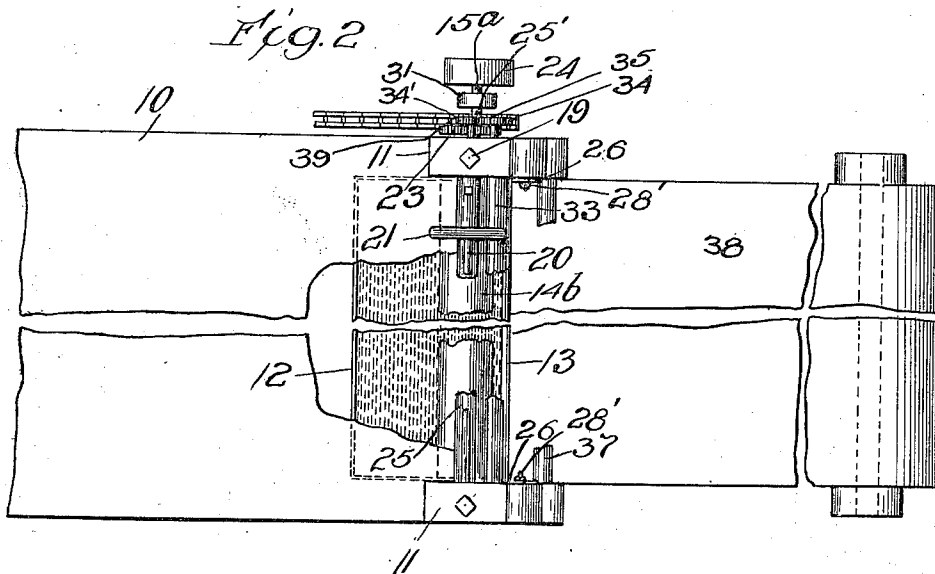
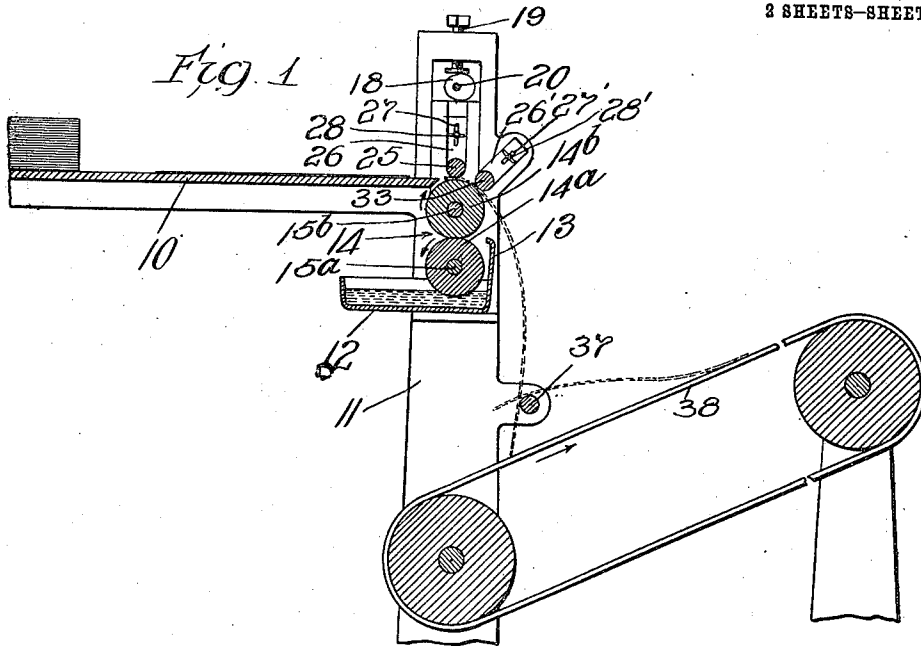


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 APPLICATION FILED MAY 4, 1909.

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2 SHEETS-SHEET 1.

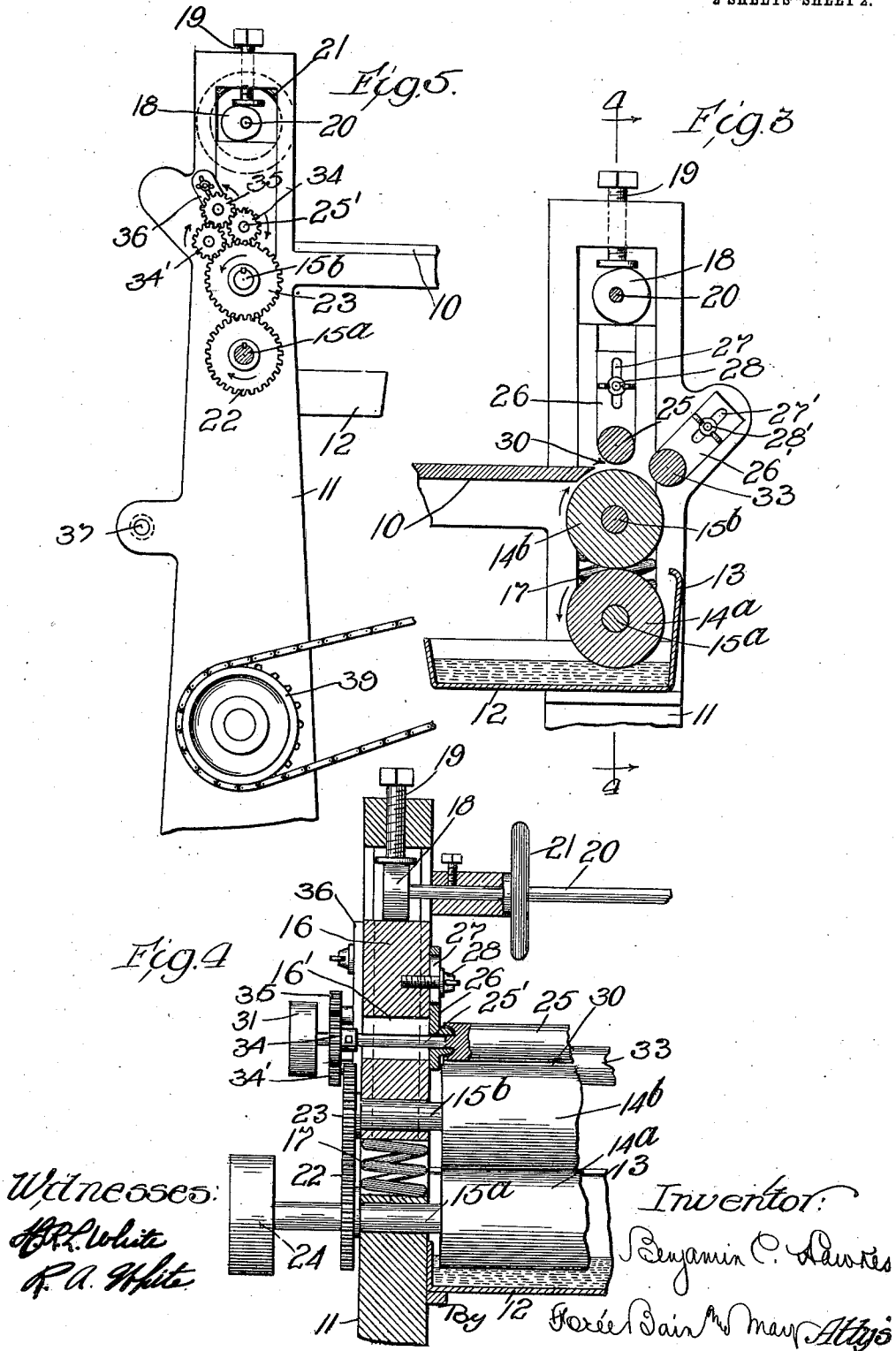


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UNITED STATES PATENT OFFICE.

BENJAMIN C. HAWKES, OF CHICAGO, ILLINOIS.

CARDBOARD-ENAMELING MACHINE.

997,672.

Specification of Letters Patent. Patented July 11, 1911.

Application filed May 4, 1909. Serial No. 493,896.

To all whom it may concern:

Be it known that I, BENJAMIN C. HAWKES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cardboard-Enameling Machines, of which the following is a specification.

My invention relates to improvements in card board enameling machines, and in the particular embodiment shown, has especial reference to machines for enameling separate sheets of post-cards.

In the enameling, varnishing, or finishing of post-cards after they are printed, it is of great importance that the finishing material, or enamel as I shall generally term it, shall be applied uniformly and smoothly all over the pictorial surface thereof, but shall not be applied to any material portion of the back or address side of the card. This for the reason, among others, that a finishing material or enamel which will adequately fix the colors or ink upon the pictorial surface of the card against blurring in handling, and protect the surface from soiling due to the moisture of the hands, and which will otherwise satisfy the demands of the trade, is inherently of a character which will not afford a good writing surface, and if applied in whole or in part to the address side of the card, will seriously interfere with the ink receptive character of the surface and so depreciate the market value of the card. Further the cost of enameling is minimized by coating the one side only, as the pictorial surface is usually less absorbent than the address side.

In the accompanying drawings I have illustrated a machine providing for the satisfactory enameling or glazing of one surface of each sheet passed therethrough, without the imposition of the enamel or other finishing material upon the other surface, and which uniformly and evenly distributes the finishing material to the pictorial side of the sheet and, if desired, delivers the sheet for further treatment in such position that the enameled side is not marred before drying.

In the drawings: Figure 1 is a central vertical section, taken longitudinally through a machine embodying my invention; Fig. 2 is a plan view of the same part; Fig. 3 is an enlarged detail of some of the parts shown in Fig. 1; Fig. 4 is a vertical section on line

4-4 of Fig. 3; and, Fig. 5 is an elevation of a portion of the machine, showing the gearing arrangement.

In general, I contemplate the provision of a machine involving a table for the support of the sheets of card-board to be enameled, such as for example the large uncut sheets of post-cards, a source of enamel supply, a train of enamel-carrying rolls, transferring enamel upon their surfaces from the source of supply to a delivery roll located appropriately to receive the sheets from the table, and a guiding pressure roll, preferably of small diameter, arranged in constantly non-contacting relation to the enamel-delivery roll for the passage of the card board sheet through the space therebetween, so that the enamel is applied to one surface only of the card. Further, the machine preferably has a plurality of such pressure rolls disposed to direct the sheet in transit therethrough out of its initial path for delivery to a suitable carrier in reverse position, with its enameled side upward.

In the embodiment of my invention shown, 10 indicates a work table at one end supported upon a frame comprising two vertical side standards 11 and 11' which also afford bearing and support to the several operating parts. At a suitable level below the forward end of the table 10, I provide an enamel bath or source of enamel supply preferably in the form of a shallow pan 12, provided with a splash wall 13, along its forward side. Between the enamel bath and the table level, I arrange a train of enamel-carrying rolls, made of relatively hard rubber or the like, disposed with the lower or primary roll dipping into the enamel within the enamel bath 12 and with the upper or delivery roll having its top edge substantially in line with the surface of the table. In the construction illustrated, 14 indicates in general such a train of rolls, here shown as two in number, 14^a being the lower or primary roll and 14^b indicating the upper or delivery roll. Obviously, the primary roll, dipping into the liquid, will deliver a part thereof to the succeeding roll of the series through surface contact therewith, and the rolls will be arranged, as to number and adjustment, to produce upon the delivery roll a proper film of the enameling material evenly distributed over its surface. For varying the intimacy of contact between the rolls, thereby to regulate to a degree the quantity of

material which one roll will deliver to the next, any suitable variable tension means may be employed, and in the specific construction shown a well known arrangement is illustrated, involving sliding bearing blocks 16, in each of the standards 11 and 11', to carry the shaft for the upper roll 14^b, each such slide bearing at its lower end upon a spring 17, and being vertically adjustable against the spring tension by a cam 18 which bears on one side against the slide 16, and at its other side against an adjusting screw 19 in the top of the standard. The two cams 18 are mounted for synchronous movement upon a cross shaft 20, rotatable by a hand wheel 21. Any other suitable adjusting construction may obviously be employed, however.

The shafts 15^a and 15^b for the two enamel rolls may be geared together as by gears 22, 23, and a suitable pulley 24 is provided upon the shaft 15^a for driving the enamel carrying train.

Above the delivery roll 14, I arrange a pressure roll 25, preferably a polished metal roll of small diameter and mounted for adjustment relative to the roll 14^b but preferably for movement therewith in its adjusted relation. To this end the shaft 15' of the roll 25 is mounted in brackets 26, each having therein a slot 27 engaged by a set screw 28 secured in the slide block 16, which has therein an aperture 16' of sufficient size to permit necessary play of the shaft 25' for desired adjustment of the roll 25. The roll 25 is normally adjusted to leave a clearance 30 between it and the delivery roll, which constitutes the paper passage, preferably slightly variable in size, in practice, through the yielding nature of the roll 14^b. The shaft 25' is provided with a pulley 31, or other suitable driving means, and the pulleys 24 and 31 may be so belted that the peripheral speed of the pressure roll 25 is equal to that of the enamel delivery roll 14^b.

The roll 25 in its normal adjustment, out of contact with the delivery roll 14^b, receives no enamel therefrom, as the enamel conveying train is properly proportioned and adjusted, according to the viscosity of the material, in order that the final delivery roll may not splash or throw enamel particles from its surface.

As a refinement of my invention, which may be employed or not as desired, I provide one or more additional pressure rolls 33, mounted in brackets 26' similar to the brackets 26 but secured upon the frame 11, 11', such roll or rolls 33 having shaft extensions through the frame and being geared as by spur wheels 34, 34' and an idler 35 to the driven-roll shaft 25'. The idler 35 is preferably mounted upon a bracket 36, and adjustably secured to the exterior of the

frame by a set screw. Thus, the supplemental pressure roll 33 may be adjusted to compensate for adjustments of the delivery roll, and to accommodate different thicknesses of card board stock, and such auxiliary roll or rolls serve as a means for maintaining the stock in contact with the enamel delivery roll through an arc of its periphery and for directing the stock from the enamel delivery roll in a downward direction. Below the stock handling rolls above described, the frame may be provided with a cross bar or roller 37, arranged to receive in rear thereof the stock as it comes from the enameling roll and below such rod is provided a belt conveyer 38 suitably driven as by mechanical means 39, so that its upper or receiving course runs in a forward direction.

In the operation of the machine, the parts are properly adjusted so that the space between the pressure and delivery rolls will just receive the stock. The stock is fed, by hand, sheet by sheet from the table 10 to the pressure and enameling roll and each sheet passes around an arc of the delivery roll 14^b under the pressure imposed by the coaction with said roll of the pressure rolls 25 and 33. The enameling roll 14^b, constantly receiving enamel through the operation of the enamel delivery train, applies the enamel to the lower surface of the stock, which in general is the pictorial surface of the post-card sheet, but the pressure rolls, being constantly free from contact with the enameling roll, receive no enamel during the intervals between sheets, and the machine leaves bare the upper or addressing surface of the sheet. Should the pressure roll, by faulty adjustment or otherwise, come in contact with the enamel roll, its small size makes it impossible for it to transfer any very material quantity of enamel to the sheet next fed to the machine. As the sheet is delivered from the roll, its lower edge passes down in rear of the rod 37 so that when it contacts with the moving belt 38 it cannot advance beyond a certain position, and consequently as its upper edge is pushed outward by the enameling roll 14^b, it topples over and falls in its inverted position or with its enameled side up upon the conveyer 38, which may be conveniently geared to run at about the same surface speed as the stock itself. The further handling of the enameled stock may be provided for in any suitable manner, and constitutes no part of the present invention.

While I have herein described in some detail a particular construction embodying my invention, it will be apparent to those skilled in the art that numerous changes in the structural details might be made without departure from the spirit of my invention, and I do not desire to be understood to limit myself to the particular details of construction.

tion shown in the broader aspects of my invention.

What I claim is:

1. In a sheet enameling machine, the combination of an enameling roll, a source of enamel therefor, a pressure roll positively maintained out of contact with the enameling roll to provide a path for the sheet between said rolls, a roll for deflecting said sheet downwardly to cause it to droop, and a stationary rest extending across the path of the free drooping end of the sheet below said rolls, which engages and arrests said sheet before it is released at its upper end, to reverse the sheet in falling.

2. In an enameling machine, a train of enamel-conveying rolls, one of which has its upper surface substantially flush with a feed table whereby to enamel a sheet on its lower surface, means for supplying enamel to the primary roll of said train, to be carried by said train to the delivery roll thereof, a pressure roll positively maintained out of contact with the said delivery roll, a feed table from which to feed the sheets to said rolls, a conveyer for the sheets, and a transverse rod below the rolls for engaging the free end of the sheet to reverse said sheet and to deliver same thereon enamel side up.

3. In a sheet enameling machine, a pair of opposed rolls normally spaced apart for reception of a sheet to be enameled therebe-

tween, one of said rolls being yieldingly supported relative to the other, means for driving both rolls oppositely, means for delivering enamel to one of said rolls, a supplementary roll for deflecting said sheet downwardly and causing its free end to droop by effect of gravity, a rest below said rolls for the free end of said sheet, which said sheet engages before it is released by said rolls, whereby said sheet is reversed so as to be with enamel side up.

4. In a sheet enameling machine, a train of enamel-carrying rolls, means for delivering enamel to the primary roll of said train for conveyance to the delivery roll thereof, a delivery roll, and a pressure roll, in fixed separated relation thereto, means for yieldingly supporting both said rolls relatively to the primary roll, means for positively adjusting said pressure roll with reference to the delivery roll, a supplementary adjustable pressure roll the lower face of which is below the upper face of said delivery roll, a conveyer and a sheet turning means arranged to engage only the unenameled surface of the free end of the sheet.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

BENJAMIN C. HAWKES.

In the presence of—

W. LINN ALLEN,

MARY F. ALLEN.