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D. J. CAMPBELL.

PASTING APPARATUS FOR CIGARETTE MACHINES.

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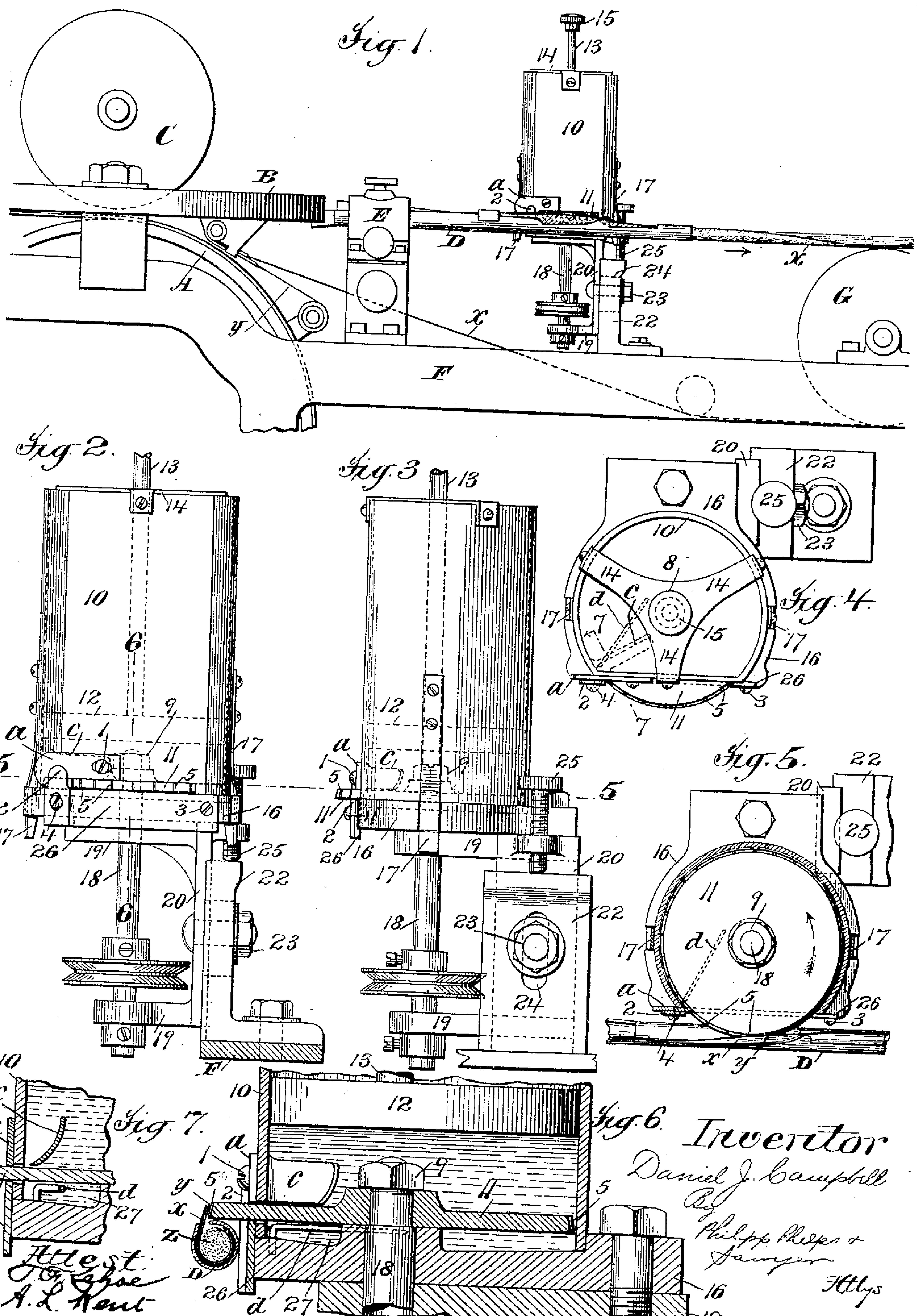

UNITED STATES PATENT OFFICE.

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PASTING APPARATUS FOR CIGARETTE-MACHINES.

No. 803,986. Specification of Letters Patent. Patented Nov. 7, 1905.

Application filed September 7, 1897. Serial No. 650,724.

To all whom it may concern:

Be it known that I, DANIEL J. CAMPBELL, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Pasting Apparatus for Cigarette-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of the present invention is to provide an improved pasting apparatus adapted especially for cigarette-machines of that class known as "continuous-cigarette machines" in which the tobacco and wrapper are fed forward together and the wrapper folded about the tobacco to form a continuous-cigarette rod, which is then cut into cigarette lengths. While, however, the invention is especially designed for use in connection with such cigarette-machines, it may be applied also to cigarette-machines of other classes and generally wherever it is desired to apply paste in a similar manner to paper or other material.

Great difficulty has heretofore been found in applying the paste for securing the wrapper in cigarette-machines, especially at the high speed now required in commercial use, on account of the necessity for applying a very small amount of paste to the edge of the wrapper with great accuracy and uniformity, so as to secure the wrapper strongly at all points with a minimum quantity of paste and on account of the necessity for maintaining exactly the proper condition of the paste so as to avoid injury to the thin paper of which the cigarette-wrapper is formed. The present invention avoids these difficulties and provides a pasting apparatus by which the paste may be applied properly and with certainty at the highest rate of speed so as to secure the wrapper strongly and uniformly with the least possible amount of paste and avoid injury to the wrapper or interference with the operation of the machine.

As a full understanding of the invention can best be given by a detailed description of a construction embodying the same, all further preliminary description will be omitted and a detailed description of a construction embodying all the features of the invention as applied in their preferred form to a continuous-cigaratte machine will now be given in connection with the accompanying drawings, forming a part of this specification, and the features forming the invention then specifically pointed out in the claims.

In the drawings, Figure 1 is a diagrammatic side elevation of so much of the wrapping portion of a continuous-cigarette machine as is necessary for illustration of the invention. Fig. 2 is an enlarged side elevation of the pasting apparatus looking in the same direction as Fig. 1. Fig. 3 is an enlarged elevation of the pasting apparatus looking to the left in Fig. 1. Fig. 4 is a plan view of the same. Fig. 5 is a horizontal section on the line 5 of Figs. 2 and 3. Fig. 6 is a central vertical section looking to the left on the line 6 of Fig. 2. Fig. 7 is a detail section on the line 7 of Fig. 4.

Referring to said drawings, A is the bottom belt-wheel, B the side belt-wheels, and C the presser-wheel constituting the filler forming and feeding devices, D the wrapping-tube adjustably supported by the bracket E on the frame F and through which passes belt x, which returns around the front belt-pulley G and upon which belt passes through the wrapping-tube the strip of paper y, which forms the wrapper inclosing the tobacco z to form the continuous-cigarette rod, which passes from the wrapping-tube to the usual cutter for severing into cigarette lengths. All these parts are shown as of a well-known construction, and it will be understood that the pasting apparatus may be applied in connection with wrapping-tubes and filler forming and feeding devices of other suitable forms or with cigarette-machines of other classes not employing a wrapping-tube.

Referring now to the pasting apparatus, the paste-reservoir 10, mounted above and at one side of the wrapping-tube D, and, as shown, is of cylindrical form except at the side next the wrapping-tube, where it is flattened for the projection therefrom of the paste-wheel 11, which runs through the paste at the lower end of the paste-reservoir. Within the paste-reservoir 10 is the plunger 12, resting upon the top of the paste, so as to press the latter downward, and the stem 13 of this plunger passes through a central guide 8, shown as a central opening formed in or carried by arms

14, extending over the top of the paste-reservoir, so that the plunger is thus held and guided in central position. The plunger-stem 13 is provided at its upper end with a thumb-piece 15, by which the plunger may be raised and lowered by hand. This plunger may press upon the paste solely by its weight and move freely up and down in the guide 8, as shown, or may be screw-threaded in the guide for adjustment to secure a positive pressure upon the paste and rotated by hand for such adjustment or automatically, as is common in connection with pasting apparatus now in general use on cigarette-machines. The paste-reservoir 10 rests upon a support 16, which forms the bottom of the reservoir, and to which it is removably secured by spring-catches 17, entering side notches in the edge of the support, the proper position of the reservoir in attaching it to the support being thus secured, while the reservoir with the paste-wheel 11 is readily removable from the support by throwing out the catches 17.

The paste-wheel 11 is carried by vertical shaft 18, mounted in the paste-reservoir support 16 and in arms 19 on the vertical bar 20, which carries the support 16, the paste-wheel being secured to the top of the shaft 18 by nut 9, so that by removing this nut the reservoir and paste-wheel may be lifted off the support 16. Suitable means are provided for driving the shaft 18, a belt-pulley 21 thereon being shown for this purpose, which will be driven from any convenient part of the machine.

The paste-wheel 11 must be adjusted with great accuracy and held firmly in adjusted position, so as to apply the paste to the wrapper on exactly the proper line, and for this purpose the paste-wheel and reservoir are preferably made adjustable vertically. Any suitable construction may be used for this purpose, but, as shown, the vertical bar 20, carrying the reservoir-support 16 and shaft-bearing arms 19, is secured to its vertical supporting-bracket 22 on the frame F by a bolt 23, passing through a vertical slot 24 in the bracket 22, so that the bar 20 may be adjusted vertically on the bracket by loosening the bolt and again secured rigidly in position thereon by tightening the bolt, and the bar 20 is adjusted vertically on the bracket 22 by a screw 25, passing through an arm on the bar 20 and engaging the top of the bracket 22, so that by turning this screw the bar 20 is raised or lowered exactly as desired and a fine adjustment of the position of the paste-wheel secured, while a positive support for the bar 20 is secured while the bolt 23 is loosened.

The devices for securing the proper distribution of the paste upon the edge of the paste-wheel 11 are as follows: As above stated and as shown in the drawings, the paste-wheel 11 runs outside the periphery of the reservoir where the latter is flattened next the wrapping-tube, and during the time that this pasting-wheel thus runs outside the reservoir the paste is applied to the wrapper y on belt x by the edge of the paste-wheel. As the paste-wheel leaves the reservoir the edge passes a doctor a, which is adjustably secured to the paste-reservoir 10 by a screw 1 passing through a longitudinal slot in the shank of the doctor so that the latter may be adjusted toward and from the edge of the paste-wheel and into exactly the position required to secure the thin uniform layer of paste desired upon the edge of the paste-wheel for application to the wrapper.

The doctor a acts not only upon the edge of the paste-wheel 11, but also upon the top of the paste-wheel, so as to prevent paste being carried out of the reservoir upon the top surface of the latter as it rotates out of the paste-reservoir, and it is supported against the tension exerted upon it by the paste-wheel by a vertical lug or arm 2 on a plate 26, which extends beneath the paste-wheel and serves as a scraper or doctor to remove paste from the under side of the wheel as the latter rotates out of the paste-reservoir. This bottom scraper 26 is pivoted on the paste-fountain at 3 and is secured to the support 16 at its other end, which carries the lug 2, by a screw 4 passing through a vertical slot in the scraper, so that the latter may thus be adjusted vertically on its pivot 3 for proper action with the bottom of the paste-wheel 11 and to compensate for wear.

Inside the paste-reservoir, and preferably extending, as shown, in approximately a radial direction relatively to the axis of the paste-wheel, is a plate c, curved or inclined forward at its lower edge in the direction of movement of the paste-wheel and extending so close to the top of the paste-wheel as to permit only a thin line of paste to pass beneath it, this curved or inclined plate thus forming a doctor which serves to spread the paste in a thin layer on the paste-wheel and smooth it out, and at the same time by its longitudinal direction acts as a guide to force the paste to the outer edge of the paste-wheel, so as to assure the proper application of the paste to this edge of the wheel.

I preferably provide also a chamber 27 in the paste-reservoir below the paste-wheel 11 and between it and the support 16, into which chamber the paste flows around the edge of the paste-wheel 11. Within this chamber and extending from the wall of the reservoir at a point just oppposite where the edge of the paste-wheel leaves the reservoir and opposite the outer end of the plate c on the other side of the paste-wheel I arrange a small rod or plate d, which may conveniently be a small wire, as shown, this rod or wire forming a paste-guide and being set at such an angle as to back up the paste in the chamber 27 at the point at which it meets the wall of the reser-

voir, thus preventing the paste being forced downward past the edge of the paste-wheel and into the chamber at this point, and compelling the application of paste to the entire edge of the wheel. I find in practice that this aids materially in securing the uniform application of the paste to the edge of the paste-wheel 11 in the very thin layer which is desirable in the action of this apparatus.

While a smooth-edged paste-wheel may be used in connection with the other features of the invention, I preferably use a paste-wheel which is provided at intervals with small transverse grooves 5, as shown, or otherwise suitably grooved or roughened, the object of this feature being to secure the cutting up or removal from the edge of the paste-wheel of any thin pieces of paper, shreds of tobacco, or other material which may adhere to the edge of the paste-wheel. I have found in practice that with the edge of the paste-wheel thus grooved or roughened such material will be cut up or otherwise removed from the edge of the paste-wheel, so as not to interfere with the operation of the apparatus or proper application of paste in the continuous thin line which is necessary in cigarette-machines for the proper securing of the wrapper. A paste-wheel of this special construction may be used in apparatus not embodying the other features of the invention and is thus claimed; but preferably this feature is combined with the other features of the invention, the most efficient apparatus being thus secured.

It will be understood that the invention is not to be limited to the exact arrangement or details of the construction shown, but that many modifications may be made therein by those skilled in the art without departing from the invention.

What I claim is—

1. The combination of a paste-reservoir, a paste-applying wheel rotating therein and projecting through an opening in the side thereof and having its axis located within the reservoir, means for feeding material to be pasted past the edge of the paste-applying wheel to receive paste therefrom, and doctors mounted to coact with the edge and side of the wheel as it emerges from the opening for controlling the amount of paste thereon, substantially as described.

2. The combination of a paste-reservoir, a paste-applying wheel rotating therein and projecting through an opening in the side thereof and having its axis located within the reservoir, means for feeding material to be pasted past the edge of the paste-applying wheel to receive paste therefrom, and doctors mounted to coact with the edge and sides of the wheel as it emerges from the opening for controlling the amount of paste thereon, substantially as described.

3. The combination of a paste-reservoir, a horizontally-arranged paste-applying wheel rotating in the reservoir and projecting through an opening in the side thereof and having its axis located within the reservoir, means for feeding material to be pasted past the edge of the paste-applying wheel to receive paste therefrom, and doctors mounted to coact with the edge and side of the wheel as it emerges from the opening for controlling the amount of paste thereon, substantially as described.

4. The combination of a paste-reservoir, a paste-wheel rotating therein and projecting through an opening in the side thereof, means for feeding material to be pasted past the edge of the wheel, means inside the reservoir for backing up the paste upon the wheel as it nears the opening, and suitable doctors engaging the wheel as it emerges from the opening, substantially as described.

5. The combination of a paste-reservoir, a paste-wheel rotating therein and projecting through an opening in the side thereof, means for feeding material to be pasted past the edge of the wheel, means inside the reservoir for backing up the paste upon opposite sides of the wheel as it nears the opening, and suitable doctors engaging the wheel as it emerges from the opening, substantially as described.

6. The combination of a paste-reservoir, a paste-wheel rotating therein and projecting through an opening in the side thereof, means for feeding material to be pasted past the edge of the wheel, means inside the reservoir for backing up the paste upon opposite sides of the wheel as it nears the opening, and doctors engaging the edge and sides of the wheel as it emerges from the opening, substantially as described.

7. The combination of a paste-reservoir, a paste-wheel rotating therein and projecting through an opening in the side thereof, means for feeding material to be pasted past the edge of the wheel, and a doctor inside the reservoir coacting with the side of the wheel and backing up the paste as it nears the opening, substantially as described.

8. The combination of a paste-reservoir, a paste-wheel rotating therein and projecting through an opening in the side thereof, means for feeding material to be pasted past the edge of the wheel, means inside the reservoir for backing up the paste upon the wheel as it nears the opening and a vertically-moving piston adapted to rest upon the body of paste and press it downwardly in the reservoir, substantially as described.

9. The combination of a paste-reservoir, a paste-wheel rotating therein and projecting through an opening in the side thereof, means for feeding material to be pasted past the edge of the wheel, a doctor inside the reservoir coacting with the upper side of the wheel and backing up the paste as it nears the opening, and a vertically-moving piston

adapted to rest upon the body of paste and press it downwardly in the reservoir, substantially as described.

10. The combination of a paste-reservoir, a paste-wheel rotating therein and projecting through an opening in the side thereof, means for feeding material to be pasted past the edge of the wheel, means inside the reservoir for backing up the paste upon opposite sides of the wheel as it nears the opening, and a vertically-moving plunger adapted to rest upon the body of paste and press it downwardly in the reservoir, substantially as described.

11. The combination of a paste-reservoir, a paste-applying wheel rotating therein and projecting through an opening in the side thereof and having its axis located within the reservoir, means for feeding material to be pasted past the edge of the paste-applying wheel to receive paste therefrom, doctors mounted to coact with the edge and sides of the wheel as it emerges from the opening for controlling the amount of paste thereon, and a vertically-moving piston adapted to rest upon the body of paste and press it downwardly in the reservoir, substantially as described.

12. The combination of a paste-reservoir, a paste-wheel having a roughened pasting edge and rotating in the reservoir and projecting through an opening in the side thereof, means inside the reservoir for backing up the paste upon the wheel as it nears the opening, and a doctor engaging the edge of the wheel as it emerges from the opening, substantially as described.

13. The combination of a paste-reservoir, a paste-wheel having a transversely-grooved pasting edge and rotating in the reservoir and projecting through an opening in the side thereof, means inside the reservoir for backing up the paste upon the wheel as it nears the opening, and doctors engaging the edge and sides of the wheel as it emerges from the opening, substantially as described.

14. The combination of a paste-reservoir, a paste-wheel rotating therein and projecting through an opening in the side thereof, and a doctor above the wheel within the paste-reservoir extending inwardly from the wall of the reservoir near the opening, and acting on the side of the wheel substantially as described.

15. The combination of a paste-reservoir, a paste-wheel rotating therein and projecting through an opening in the side thereof, and a plate above the wheel within the paste-reservoir extending inwardly from the wall of the reservoir near the opening and having its lower edge inclined in the direction of movement of the wheel, substantially as described.

16. The combination of a paste-reservoir, a paste-wheel rotating therein and projecting through an opening in the side thereof, a doctor above the wheel within the paste-reservoir and a paste-guide below the wheel extending inwardly from the wall of the reservoir near the opening, substantially as described.

17. The combination of a paste-reservoir, a paste-wheel rotating therein and projecting through an opening in the side thereof, a plate above the wheel within the paste-reservoir extending inwardly in substantially a radial direction from the wall of the reservoir near the opening, and a paste-guide below the wheel extending inwardly from near the opening, substantially as described.

18. The combination of paste-reservoir 10, paste-wheel 11 and plate *c*, within the reservoir and acting on the side of the wheel substantially as described.

19. The combination of paste-reservoir 10, paste-wheel 11, plate *c*, within the reservoir and acting on the side of the wheel and a doctor for the edge of the wheel, substantially as described.

20. The combination of paste-reservoir 10, paste-wheel 11, plate *c*, within the reservoir and acting on the side of the wheel and doctors for the edge and sides of the wheel, substantially as described.

21. The combination of reservoir 10, paste-wheel 11, plate *c* within the reservoir and acting on the side of the wheel and a backing-up device *d*, substantially as described.

22. The combination of reservoir 10, paste-wheel 11, and independently-adjustable plates *a* and 26 located above and below the wheel and coacting therewith, substantially as described.

23. The combination of reservoir 10, paste-wheel 11, plates *a* and 26, located above and below the wheel and coacting therewith, plate *c* located in the reservoir above the wheel and a backing-up device *d* located within the reservoir and beneath the wheel, substantially as described.

24. The combination of reservoir 10, paste-wheel 11, plate *c*, within the reservoir and acting on the side of the wheel, a backing-up device *d* and piston 12, substantially as described.

25. The combination of reservoir 10, paste-wheel 11, plates *a* and 26, located above and below the wheel and coacting therewith, plate *c* and backing-up device *d* located within the reservoir and coöperating with the wheel and piston 12, substantially as described.

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

DANIEL J. CAMPBELL.

Witnesses:

J. J. KENNEDY,

T. F. KEHOE.