C. W. SMITH.

VARNISHING MACHINE.

APPLICATION FILED MAY 20, 1915.

1,164,023.

Patented Dec. 14, 1915.

3 SHEETS—SHEET 1.

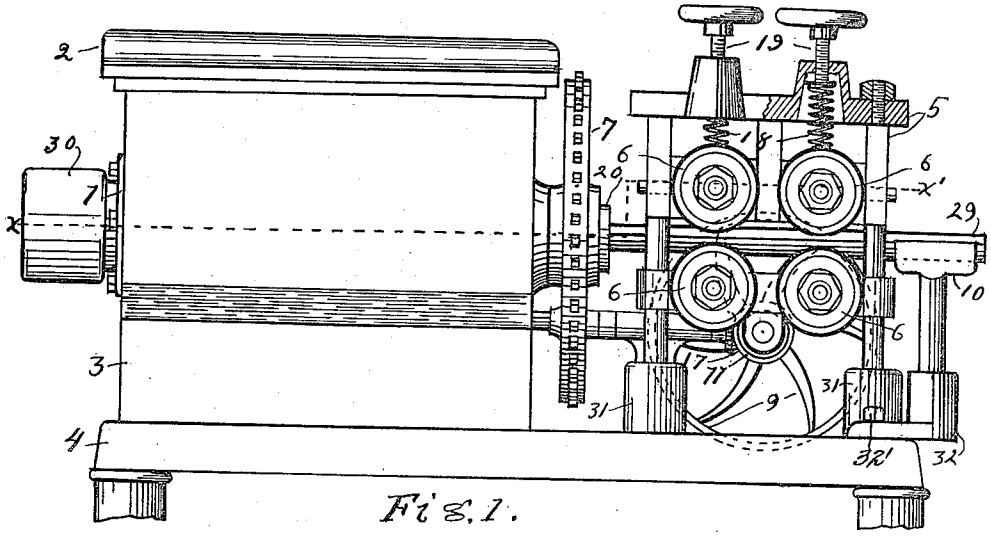
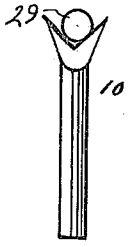


Fig. 1.

Fig. 10.



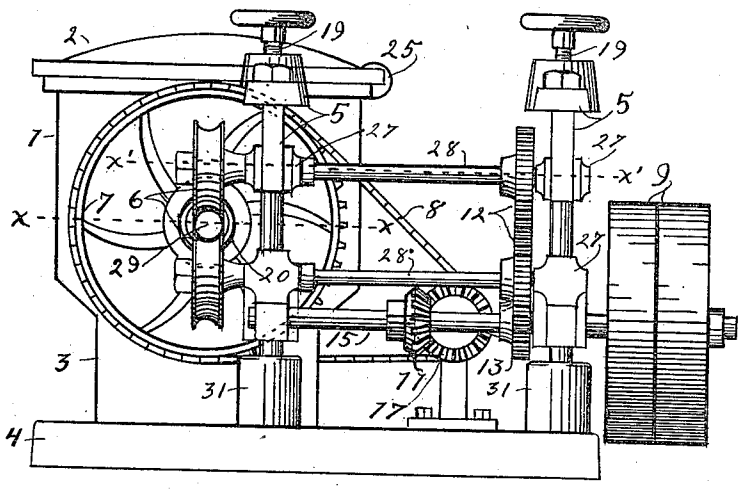


Fig. 2.

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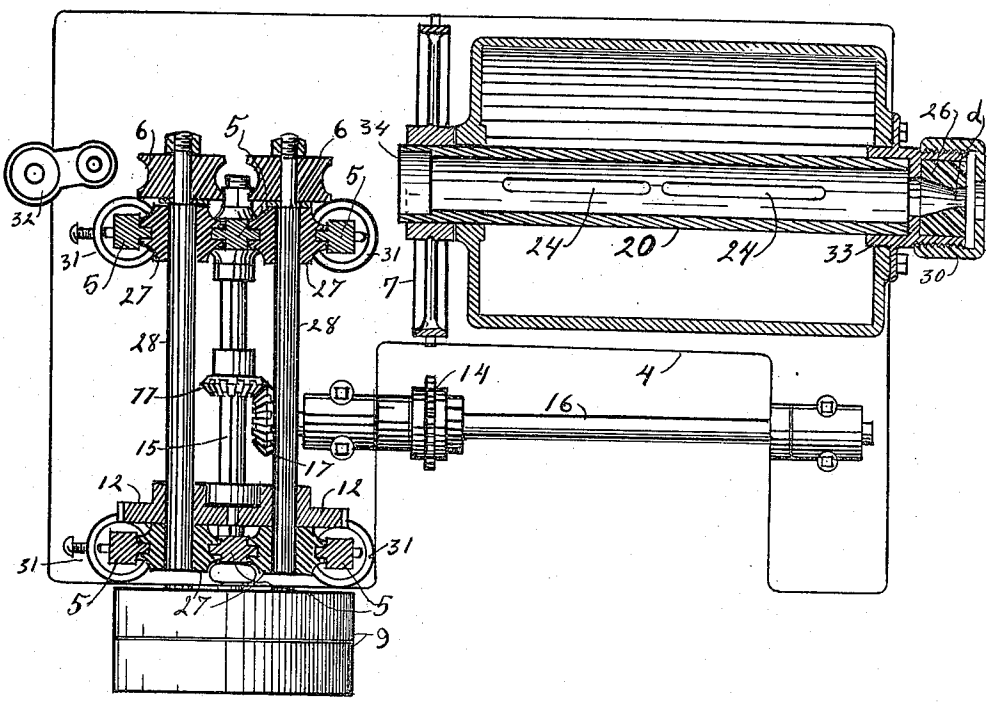
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3 SHEETS—SHEET 2.

Fig. 3.



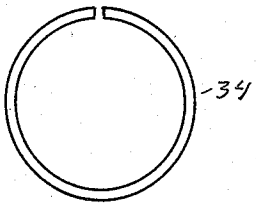


Fig. 6.

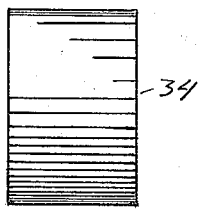


Fig. 7.

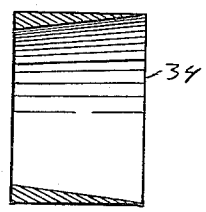


Fig. 8.

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3 SHEETS—SHEET 3.

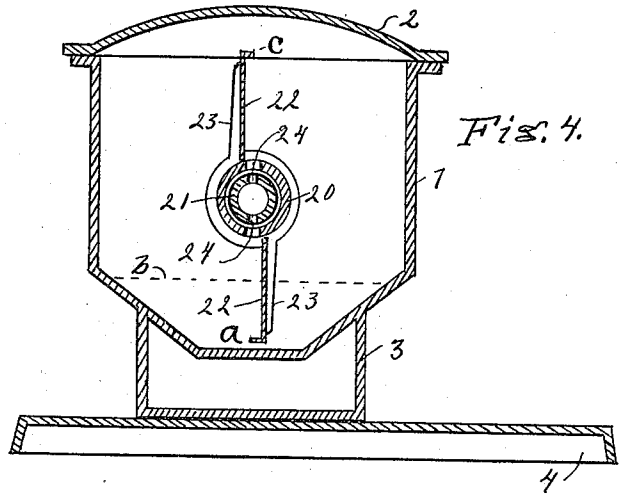


Fig. 4.

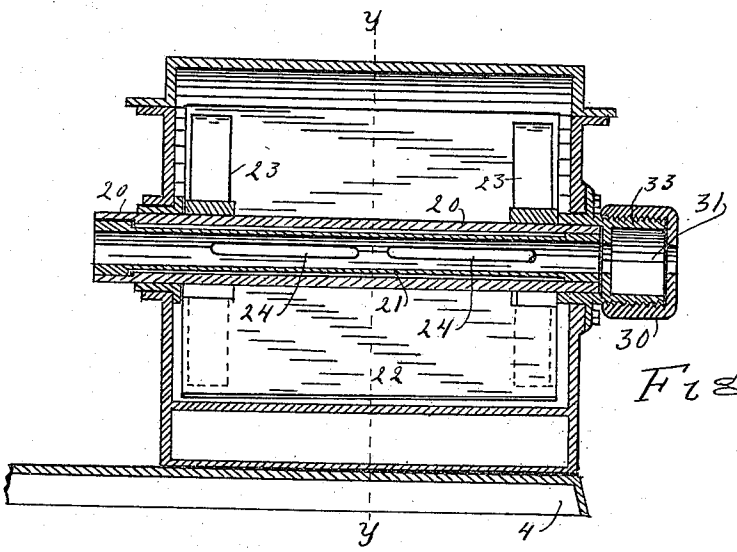


Fig. 5.

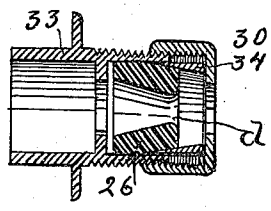


Fig. 9.

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VARNISHING-MACHINE.

1,164,023. Specification of Letters Patent. Patented Dec. 14, 1915.

Application filed May 20, 1915. Serial No. 29,934.

To all whom it may concern:

Be it known that I, CHARLES W. SMITH, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Varnishing-Machines, of which the following is a specification.

My invention relates to improvements in machines for filling, painting and varnishing rods, broom handles, carpet sweeper handles, moldings and kindred articles, and its objects are: first, to provide a machine for the purposes stated that will distribute the filling or finishing material evenly and thoroughly over the entire surface of the article; second, to provide a means whereby the filler or finishing material may be so perfectly distributed as to preclude the possibility of any of said material dripping or dropping from or forming rough spots on the articles being treated; third, to provide a machine with which the element that spreads and polishes the filling, finishing or polishing material being spread upon the article being treated may be readily adjusted to the diameter or size of the article being treated.

I attain these objects by the mechanism illustrated in the accompanying drawing, in which—

Figure 1 is a side elevation of the machine complete with the cap of the roller frame shown in section at the end to disclose the position and action of the springs that adjust the feed rollers to the varying forms of the articles being treated; Fig. 2 is an end elevation of the same, Fig. 3 is a sectional plan of the machine on the line x, x' of Figs. 1 and 2; Fig. 4 is a transverse section of the vat and distributing wings on the line y, y of Fig. 5; Fig. 5 is a longitudinal section of the vat and the hub, showing the mixing plates in elevation; Figs. 6, 7 and 8 are an end elevation, a side elevation and a longitudinal section of the adjusting sleeve to regulate the size of the opening in the polishing washer; Fig. 9 is a longitudinal section of the head that holds the polishing washer, showing how the sleeve is manipulated to adjust the opening in the polishing washer, and, Fig. 10 is an elevation of the handle guide or rest, showing the manner of placing the handle to properly guide it through between the feed rollers.

Similar numerals and characters refer to similar parts throughout the several views.

This machine is made up of a vat 1 for containing the filler, varnish, paint or other material for treating the article to be treated in the machine. This vat is provided with a cover 2 that may be hinged to the vat, as indicated at 25 on Fig. 2, or may be simply placed over the vat to close it, with no hinge connection, as indicated in Figs. 1, 4 and 5, and with a base 3 and foundation 4. The base of the vat is made hollow, as indicated in Figs. 4 and 5, for the passage of steam, hot or cold air as may be desired to hold the filler, paint, varnish or other material in the vat at the proper temperature to assure the desired results.

The machinery in this machine by which the filling, painting or varnishing is done consists of a tube 20 which is made revoluble therein and is so arranged that a smaller tube 21 may be inserted therein, which inner tube is removable, so that, when a handle of different size is to be treated a tube of corresponding diameter may be inserted. This is for the purpose of averting the danger of one handle lapping by the other in the tube and becoming clogged or wedged so they cannot be forced or fed through the tube. Both these tubes are provided with slots or elongated openings 24 through their opposite side walls, and wings or arms 23 are secured to the outer tube and have plates 22 secured thereon with one surface of these plates so registering with the openings 24 in the tubes that any material that may be carried up by the plates as they are made to revolve with the tubes will, when in the position indicated at c, discharge into the said openings and through onto the surface of any handle or other article that may be passing through the tubes. Thus we will presume the material to be applied to the article passing through the tube, fills the vat up to the dotted line b, the plates 22, when passing from a to b will carry an amount of the material up with them, and when at c the material will be discharged through the openings, as hereinbefore stated, and any surplus material that may drip, or be forced off of the article being treated will pass through the lower opening back into the vat. As the object being treated is forced forward through the tube the forward end of the article will be forced through the opening d, in the rubber

gasket or washer 26 and will force this opening to expand sufficiently to allow the article to pass through, but the surface of the washer will press upon the surface of the article with sufficient force to remove all surplus material therefrom and give the surface a very smooth, polished appearance when the handle emerges from the tube. It is evident that with long and constant use the opening *d* in the washer 26 will become worn and enlarged to such an extent as to become useless for the purpose for which it is designed. To avert this difficulty I insert a wedging collar, as 34, into the end of the supporting thimble 33, so arranged that when the opening is found to be too large the cap 30 may be screwed upon the end of the thimble 33 and force the collar 34 between the washer and the inner surface of the thimble, thus forcing the end of the washer to contact sufficiently to again become operative for the purpose for which it is designed, as hereinbefore explained. The thimble 33 is firmly bolted to the end of the vat frame 1 as indicated in Figs. 1, 3 and 5, and acts as a bearing for one end of the tube 20 to revolve in.

The tube 20 is made to revolve by means of a sprocket wheel 7, secured to one end thereof, and driven by a sprocket chain 8 from the small sprocket wheel 14, mounted on the shaft 16. The shaft 16 is driven from the shaft 15 by means of the gear wheels 11 and 17, and the shaft 15 is driven from any available source of power by means of properly placed pulleys, as indicated at 9.

To force the handle 29, or other article being treated in the machine, through the tubes 20—21, I provide a set of feed rollers, 6, 6, which are mounted on the shafts 28, 28 and are driven from the shaft 15 through the gear wheels 13, 12, as indicated in Fig. 2. The lower shaft, 28, is made stationary, so far as vertical movement is concerned, but the upper shaft is made adjustable vertically and its pressure downward is controlled by means of adjusting springs 18 and hand screws 19. These shafts and rollers are supported in the frame 5, which is secured to the foundation 4, as indicated at 31, and the guide 10 is also secured to the foundation so it may be adjusted vertically by sliding it up and down in its base 32′ and laterally, by turning the base laterally on its securing bolt 32′.

To feed a handle, or other article through the machine it is placed in the guide 10, as indicated in Figs. 1 and 2, and passed between the rollers 6, 6 and carried by said rollers into and through the tube 21, with the results hereinbefore stated. The shafts 28, 28 are mounted in boxes or bearings 27, which, in turn, are mounted on the frame 5, as indicated in Figs. 2 and 3, and the shaft 16 is revolubly mounted in the boxes or bearings 25 on the foundation 4, as shown in Fig. 3 and indicated in Fig. 2.

I make interchangeable feed rollers for this machine, so arranged that one set may be removed and another applied to correspond with the form or size of any article that it is desired to pass through the machine.

What I claim as new, and desire to secure by Letters Patent of the United States, is:

1. In a machine for spreading filling, varnish or paint upon long, slim articles, as handles, &c., a containing vat, a revoluble tube centrally located longitudinally of the vat and having elongated openings through opposite sides for the passage of varnish, &c., two plates extending radially from opposite sides of the tube adjacent to the elongated openings, means for revolving the tube, and means for forcing the handles longitudinally through the tube.

2. In a machine for spreading filling, varnish or paint upon long, slim articles, as handles, &c., a containing vat, a tube centrally mounted longitudinally of the vat and having elongated openings through opposite sides, a pliable adjustable washer in one end of the tube for wiping surplus material from the articles being treated, plates radiating from opposite sides of the tube adjacent to the openings through the tube, means for revolving the tube, and means for forcing the articles longitudinally through the tube.

3. In a machine for filling, painting or varnishing long, slim articles as broom handles, a containing vat, a revoluble tube mounted centrally of said vat and longitudinally thereof, a smaller tube mounted inside of the main tube, said tubes having elongated openings through opposite sides, plates radiating from opposite sides of the main tube adjacent to the openings, a thimble securely attached to one end of the vat forming a bearing for one end of the tube, a flexible washer mounted in said thimble, a wedging collar inserted in the end of the thimble outside of the washer, a cap made to screw onto the end of the thimble and force the wedging collar back between the inner surface of the thimble and the outer surface of the washer to screw up and force the collar into the thimble to contract the opening in the washer, feed rollers for forcing articles through the tube, and means for adjusting the pressure of the feed rolls upon the articles being passed through the tubes.

4. In a machine for filling, painting or varnishing long slim articles, as broom handles, a containing vat, a tube revolubly mounted in the vat and longitudinally thereof, a smaller tube mounted inside of the revoluble tube, said tubes having registering elongated openings through opposite sides, radiating plates secured to opposite sides of

the tubes adjacent to the openings, a thimble secured in one end of the vat in position to form a bearing for one end of the tube, a flexible washer having a conical opening therethrough, mounted in one end of the thimble, means for contracting or enlarging said opening when the washer is in position, sprocket wheels and chains for revolving the tubes, adjustable feed rolls for forcing articles longitudinally through the tubes, and means for adjusting the pressure of the feed rolls on the article being fed through the tubes.

5. In a machine for varnishing, painting or filling long slim articles, a containing vat, revoluble tubes mounted in the vat, a thimble connected with the end of the vat forming a bearing for one end of the tubes, means for transferring material from the vat into the tubes, a washer in the end of the thimble having a conical opening longitudinally thereof, means for forcing articles through the revolving tubes, a heating chamber below the vat, and means for forcing a heat producing element through said chamber and heating the contents of the vat.

6. In a machine for varnishing, painting or filling long slim articles, a containing vat, a revoluble tube centrally mounted longitudinally of the vat, means for passing material from the vat into the tube, a washer mounted at the end of the tube for wiping surplus material from the surface of the object being operated upon, a chamber adjacent to the vat, and means for regulating the temperature of the material in the vat.

7. In a machine for filling, painting or varnishing broom and other handles, a containing vat, means for regulating the temperature in the vat, revoluble tubes mounted in said vat, adjustable feed rolls mounted at one end of said vat and a flexible wiping element mounted in the other end of the vat, both in alinement with the tubes, means for adjusting the internal diameter of the wiping element, and means for transferring material from the vat into the tubes and draining it from the tubes, substantially as, and for the purpose set forth.

Signed at Grand Rapids, Michigan, May 12th, 1915.

CHARLES W. SMITH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."