No. 751,783. PATENTED FEB. 9, 1904.

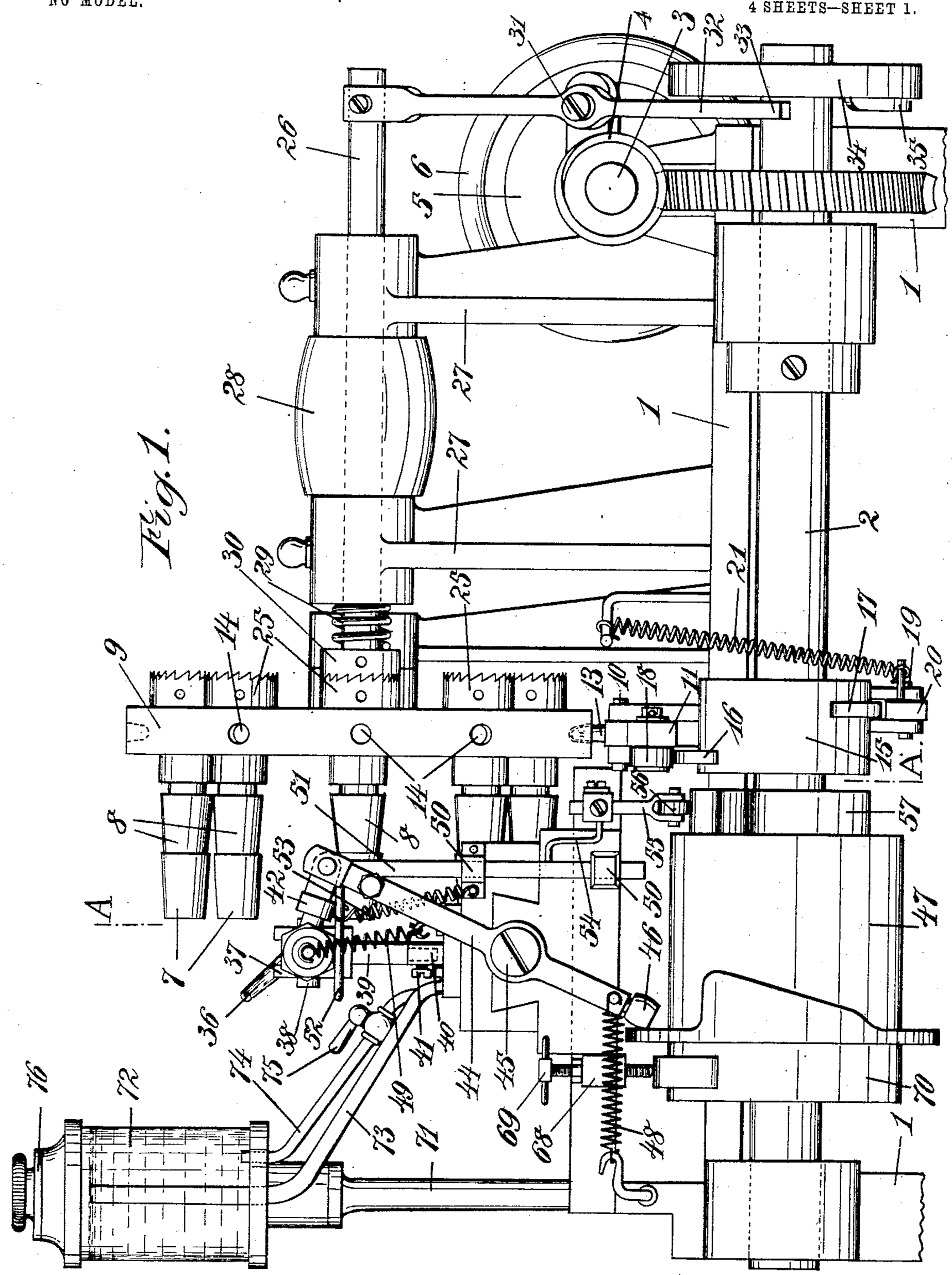
C. COLLIN.

APPARATUS FOR LACQUERING BOTTLE CAPSULES OR SIMILAR OBJECTS.

APPLICATION FILED NOV. 19, 1903.

NO MODEL. 4 SHEETS—SHEET 1.

Fig. 1.



Witnesses.
Julius H. Lutz.
John Lotka

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NO MODEL.

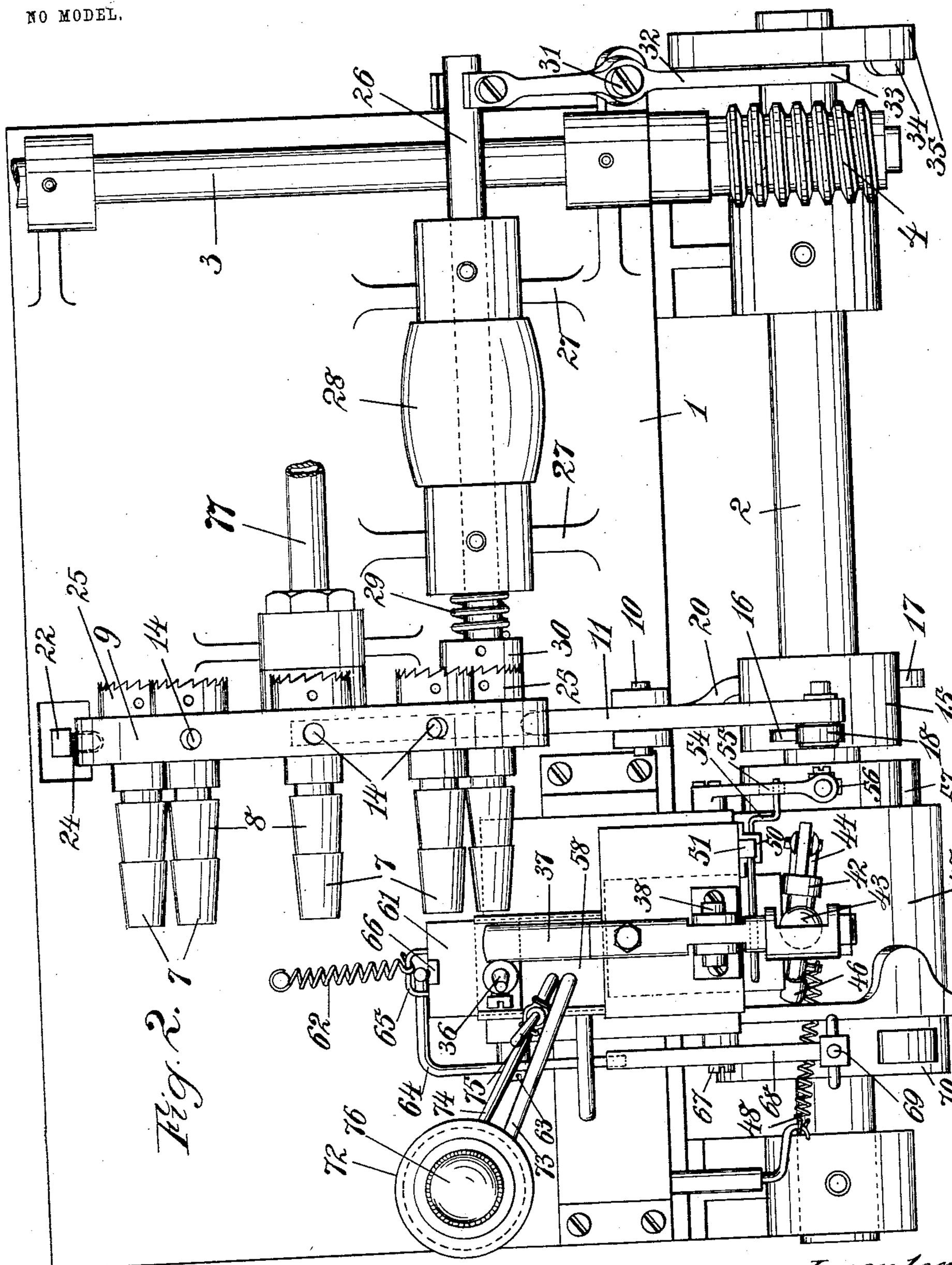

Fig. 2.

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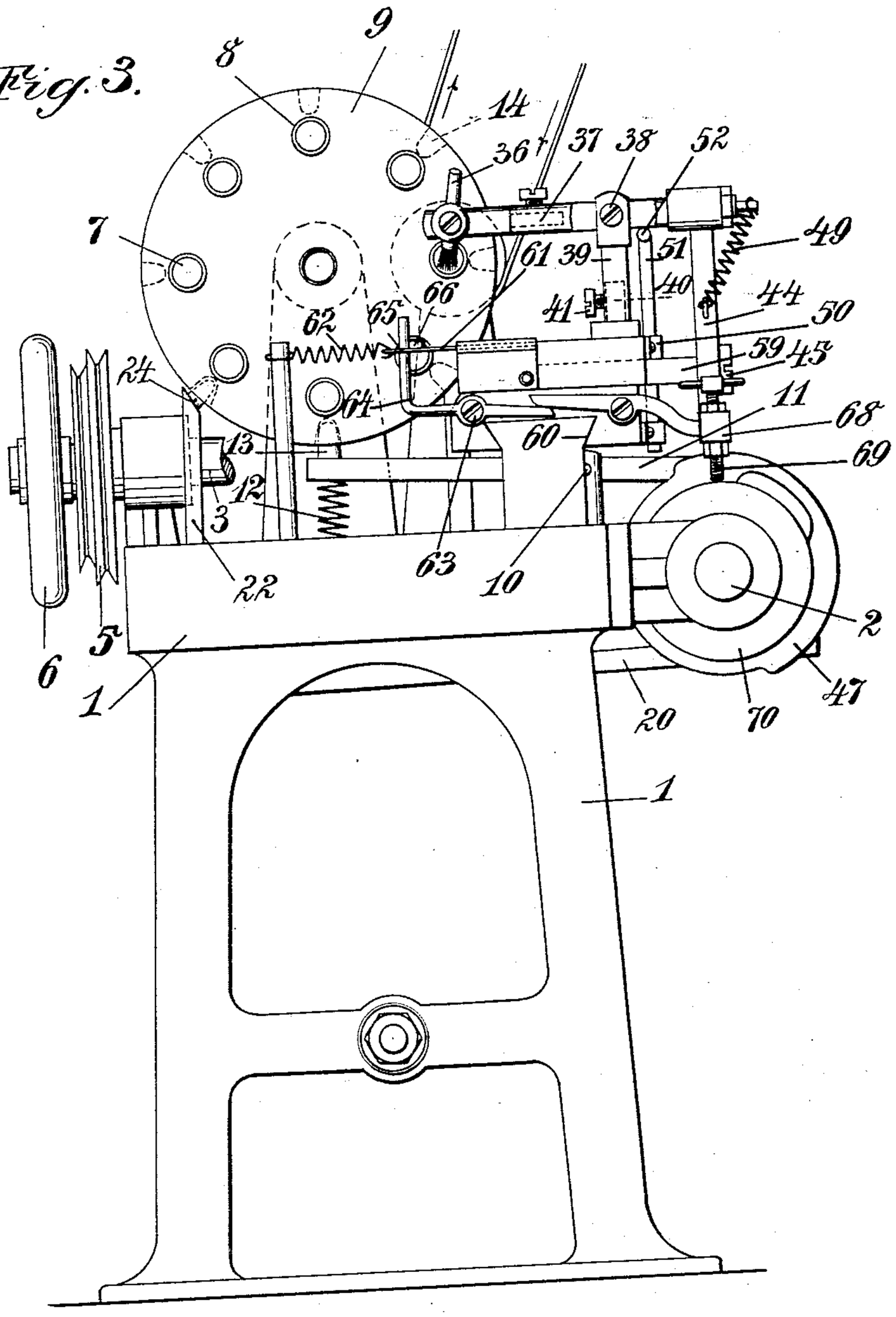
APPLICATION FILED NOV. 19, 1903. 4 SHEETS—SHEET 3.

NO MODEL.

Fig. 3.



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APPLICATION FILED NOV. 19, 1903. 4 SHEETS—SHEET 4.

NO MODEL.

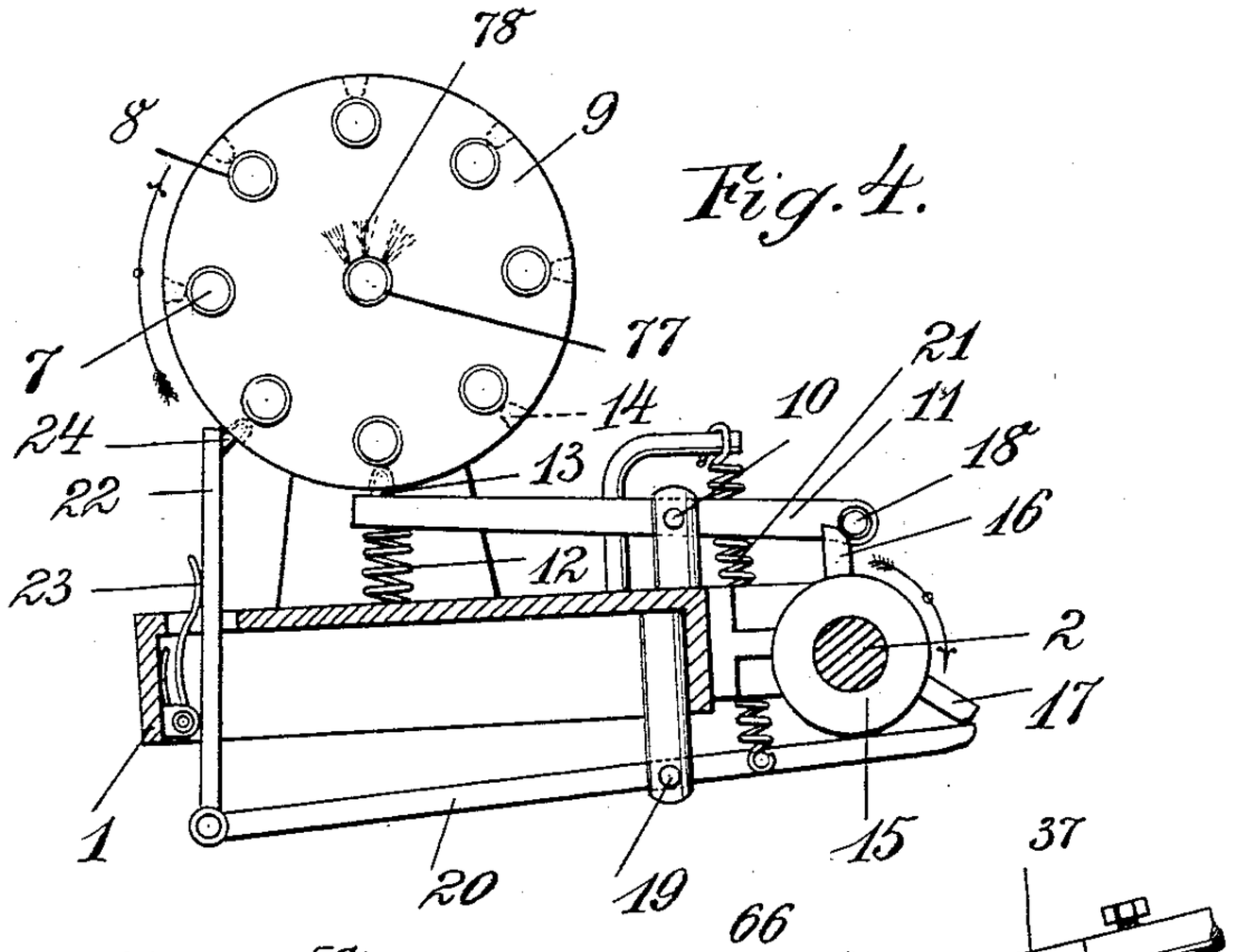

Fig. 4.

Fig. 5.

Fig. 6.

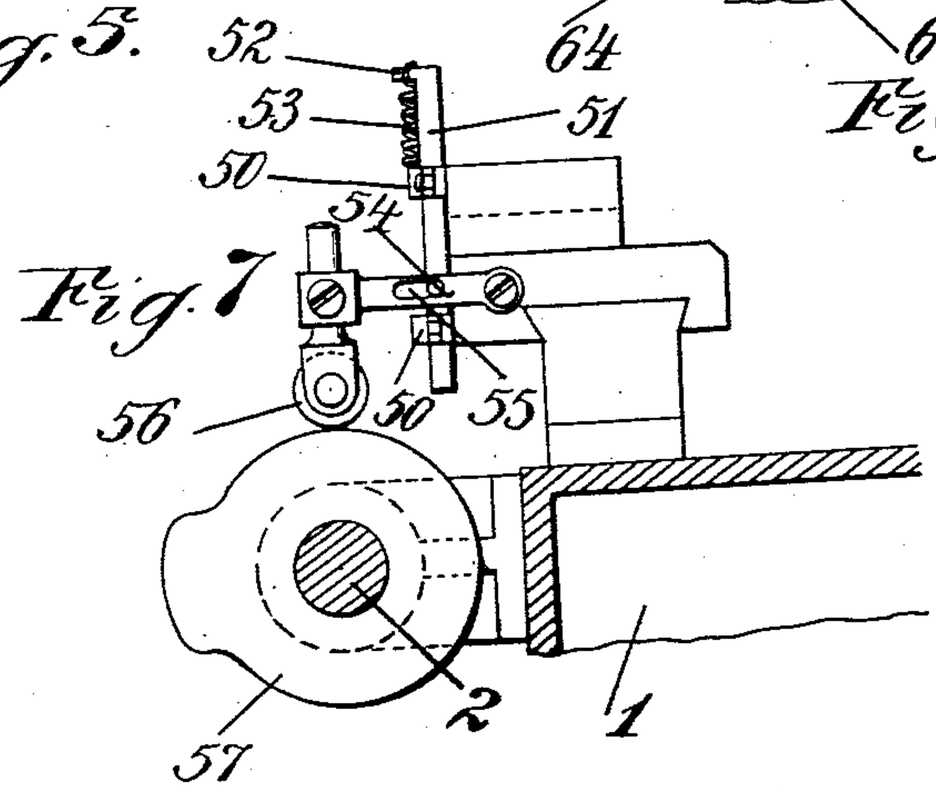

Fig. 7

Witnesses.
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No. 751,783. Patented February 9, 1904.

UNITED STATES PATENT OFFICE.

CARL COLLIN, OF OFFENBACH, GERMANY.

APPARATUS FOR LACQUERING BOTTLE-CAPSULES OR SIMILAR OBJECTS.

SPECIFICATION forming part of Letters Patent No. 751,783, dated February 9, 1904.

Application filed November 19, 1903. Serial No. 181,810. (No model.)

To all whom it may concern:

Be it known that I, CARL COLLIN, metal-worker, residing at 1 Alicenplatz, Offenbach-on-the-Main, in the Grand Duchy of Hesse, Germany, have invented new and useful Improvements in Apparatus for Lacquering Bottle-Capsules or Similar Objects, of which the following is a specification.

This invention relates to an apparatus for lacquering bottle-capsules and similar objects, and in particular upon a machine of the kind in which the capsules are coated with lacquer solution by means of brushes.

While in existing machines separate brushes are required for coating, respectively, the top surface and the sides of the capsule, according to the present invention the apparatus is so arranged that only one brush is required for effecting all the operations automatically, whereby the construction of the machine is considerably simplified.

I will describe my said invention with reference to the accompanying drawings, in which—

Figure 1 shows a side view of the machine; Fig. 2, a plan; Fig. 3, a front view; and Fig. 4, a section on line A A, Fig. 1, of a device for holding and moving the disk carrying the capsules. Figs. 5 and 6 are respectively a plan and sectional elevation of the device for discharging the lacquer from the brush. Fig. 7 is a separate view of the mechanism for effecting the vertical motion of the brush-carrier.

The machine, mounted on a fixed base 1, carries on one side the main driving-shaft 2, on which are mounted the several cams for actuating the several mechanisms. Shaft 2 is driven by a shaft 3 with worm 4 and cord-pulley 5, a hand crank-wheel 6 being provided for starting. The capsules 7 to be lacquered are mounted on pins 8 of a revolving disk 9, which is held in the working position and after the lacquering of a capsule is turned to such an extent as to bring the next capsule into position, this being effected by the following means: A lever 11, pivotally mounted at 10, Fig. 4, is pressed by a spring 12 against the disk 9 and engages, by means of a stud 13, in one of the holes 14, arranged around the periphery of 9, whereby the disk is held stationary in the working position.

On the shaft 2 is fixed a disk 15 with two wipers 16 and 17, of which the one 16 can come in contact with a roller 18 on the end of the lever 11, while the other, 17, can actuate the end of a lever 20, pivotally mounted at 19. The lever 20 is acted upon by a spring 21 and is connected with a second lever 22, acted upon by a spring 23, a pin 24 at the end of lever 22 being engaged with the holes 14 of the disk 9. The action of this device is such that the lever 11 holds the disk 9 in its working position until the wiper 16, by contact with the roller 18, lifts the lever 11 on the right-hand side, whereby the stud 13 releases the disk 9. At the same time the wiper 17 also comes in contact with the lever 20 and presses this down on the right-hand side, whereby the lever 22 is caused to rise and effects the turning of the disk 9 in the direction of the arrow by means of its pin 24. As the wipers 16 and 17 pass beyond their actuating positions the levers 11 and 20 will move back into their original positions, so that disk 9 is again held stationary.

During the lacquering process the capsules must be rotated, and this is effected in the following manner: The pins 8 are mounted loose in the disk 9 and carry at their back end the one part 25 of a claw-clutch, Figs. 1, 2, and 3. The other part 30 of the clutch is mounted on a shaft 26, carried in bearings 27, and rapidly rotated by means of a belt-pulley 28. A spring 29 insures the engagement of the clutch parts 25 and 30. To the free end of shaft 26 is connected a lever 32, pivotally mounted at 31, and whose free end 33 is situated in the path of a cam-disk 34, fixed on shaft 2. By means of the cam 35 of this disk the lever 32 and clutch-shaft 26 is at the proper moment so actuated that the clutch parts 25 and 30 are moved out of engagement, while when the clutch is engaged the pin 8 receives a rapid rotation. The time of rotation of one of the pins 8 coincides with the time during which the disk 9 is stationary, while, on the other hand, during the still-standing of the disk and the rotation of a pin the lacquer-

brush receives its motion for operating in the following manner: The brush 36 is attached to a horizontal arm 37, that is pivotally mounted upon a stud 38 on a vertical arm 39. The arm 39 fits with its lower end as a journal in a recess in a short vertical arm 40 in such a manner that 39 can be turned upon its axis. For securing the arm 39 its journal is formed with a circular groove, as shown, with which engages a screw 41, screwing through 40. At the end of brush-arm 37 a short arm 42 is connected by means of a ball-and-socket joint 43. This arm is in connection with a lever 44, that is rotatably mounted on the framing at 45. The free end of this lever carries a roller 46, that is engaged with a cam 47, fixed on the shaft 2. A spring 48 tends to draw the free arm of lever 44 to the left hand, Fig. 1. Another spring 49 connects the lever-arms 44 and 37. The object of the lever 44 is, as will be presently shown, to effect a horizontal movement of the brush and brush-carrier 37. In order that the brush can also effect a vertical motion, the following arrangement is made: In suitable guides 50 on the machine-frame is mounted a rod 51, with a horizontal projection 52, Figs. 1 and 2. The spring 53 tends to hold the rod and projection in the lower position. A lateral projection 54 of rod 51 engages in a slot in a rocking lever 55. This lever carries at its lower end a roller 56, that engages with a cam 57, fixed on shaft 2. The lateral projection 52 of rod 51 engages under the arm 37, so that when the rod moves upward it lifts the arm 37, so as to lower the brush.

The action of this arrangement is as follows: When the cam 57 raises the rod 51, the brush-arm 37 is raised at the back by the projection 52. Consequently the brush is lowered and is thereby made to dip into a pan 58, filled with lacquer solution. The rod then moves downward again under the tension of the spring 53, so that the brush is caused by spring 49 to ascend. In the meantime the clutch 25 and 30 has come into engagement, so that the pin 8, situated immediately before the brush, is rotated, thereby rotating the capsule 7 upon it. During the upward motion of the brush the cam 47 also comes in contact with the roller 46 of lever 44; but the cam-surface is so shaped that it only effects a slight shift of the brush in the horizontal direction, the brush moving to one side sufficiently for it to come in contact with the head of the capsule. Only when the brush has reached its highest position the cam 48 effects a further horizontal motion thereof. The brush then slides over the lateral surfaces of the capsule and coats these with lacquer. When this operation is finished, the brush is moved by spring 48 back into its original position and the action above described is repeated, the disk 9 having meanwhile moved sufficiently to bring another capsule into position. For adjusting the brush device correctly in position it is mounted on dovetail guides 59 and 60, arranged at right angles to each other. A device is furthermore provided that serves for removing the superfluous lacquer solution from the brush before it begins to operate. This device is shown at Figs. 3, 5, and 6. On the lacquer-pan 58 is a sliding cover 61, that is acted upon by a spring 62, tending to open the cover. A lever 64, formed with a double rectangular bend and pivotally mounted at 63, engages with a loop 65 on the cover 61. On the cover is provided an abutment 66, against which the lever 64 bears. The lever-arm 68, pivotally mounted at 67, bears with its one end upon the free end of lever 64 and has on its other end an adjustable pin or screw 69, that engages with a cam 70, fixed on shaft 2. This arrangement operates as follows: Normally the spring 62 holds the cover 61 open. At the moment, however, when the brush is raised out of the pan the cam 70 operates in such a manner that by means of levers 68 and 64 and the abutment 66 the cover is moved toward the brush, so that the excess of lacquer is pressed out of the brush by the cover, as shown at Fig. 6. The spring 62 then draws the cover back into its normal position.

In order that the lacquer fluid may always be maintained at the same level in the pan 58, the following arrangement is provided: A receptacle for the lacquer fluid 72, mounted on a rod 71, Fig. 1, is connected, by means of two pipes 73 and 74, with the pan 58. The larger of these pipes, 73, extends almost to the upper end of the receptacle 72, while the narrower one, 74, having a cock 75 for regulating the flow of liquid, only extends slightly above the bottom of the receptacle. The latter is closed air-tight by means of a cover 76. As soon as the lower opening of the larger pipe 73 dips into the liquid in the pan fresh liquid cannot flow from the receptacle into the pan, and it is only when the liquid-level has sunk below the opening of the pipe 73 that liquid will flow into the pan.

In order to effect the rapid drying of the capsules after the lacquering, the shaft 77 of the disk 9 is made hollow, as shown in Fig. 4, and either steam is introduced into the shaft or illuminating-gas, which is ignited at small openings of the tubular shaft, so that the lacquered capsules will be dried by means of small flames 78.

As will be seen from the above description, the machine operates perfectly automatically. The operator only requires to remove the capsules from the pins and replace them by fresh ones.

It is to be observed that the machine can also be employed for polishing bottle-capsules if the brush be replaced by a polishing-disk, which might be rotated by a gut-pulley. It will be also understood that the machine can be employed for lacquering other objects than

bottle-capsules so long as these can be mounted upon a conical or cylindrical pin.

Now what I claim, and desire to secure by Letters Patent, is the following:

1. In a machine for lacquering bottle-capsules and similar objects the combination of a revolving disk provided with pins on which are mounted the capsules with a single brush and means for moving the latter for lacquering both the top surface and the sides of the capsules substantially as described.

2. In a machine for lacquering bottle-capsules and similar objects the combination of a revolving disk provided with pins on which are mounted the capsules with a single brush and means for moving the latter vertically and horizontally for lacquering both the top surface and the sides of the capsules substantially as described.

3. In a machine for lacquering bottle-capsules and similar objects the combination of a revolving disk provided with pins on which are mounted the capsules with a single brush and means for moving the brush first in a practically vertical and upward direction for lacquering the top surface of a capsule and then in a practically horizontal position from the top of the capsule to the base of the same for lacquering the side of the capsule, the latter being rotated while in contact with the brush, substantially as described.

4. In a machine for lacquering bottle-capsules and similar objects the combination of a brush with a brush-supporting arm 37 which can be rotated horizontally by means of a lever 44 acted upon by a cam 47 and which can be rotated vertically by means of a rod 51 and horizontal projection 52 acted upon by a cam 57, substantially as described.

5. In a machine for lacquering bottle-capsules and similar objects the combination of a brush with a brush-supporting arm 37 pivotally mounted upon a stud 38 on a vertical arm 39 fitting with its lower end as a journal in a recess in a short vertical arm 40, the brush-supporting arm 37 being connected by means of ball-and-socket joint 43 and a short arm 42 with the lever 44, pivoted on the framing at 45, substantially as described.

6. In a machine for lacquering bottle-capsules and similar objects the combination of a brush with a brush-supporting arm and means for moving the latter vertically and horizontally with a spring 48 connected to the free arm of lever 44 and to a fixed point of the machine-frame which spring tends to draw the lever to its normal position, substantially as described.

7. In a machine for lacquering bottle-capsules and similar objects the combination of a brush with a brush-supporting arm and means for moving the latter vertically and horizontally with a spring 49 connected to the brush-supporting arm 37 and to a fixed part of the machine-frame, which spring tends to draw the brush-supporting arm to its normal position, substantially as described.

8. In a machine for lacquering bottle-capsules and similar objects the combination of a brush with a brush-supporting arm and means for moving the latter vertically and horizontally with a spring 53 connected to the horizontal projection 52 and to a fixed point of the machine-frame, which spring tends to draw the projection to its normal position, substantially as described.

9. In a machine for lacquering bottle-capsules and similar objects the combination of a movable brush and a receptacle for the lacquer fluid with a sliding cover 61 acted upon by a spring 62 tending normally to hold open the cover of the receptacle 58, while a cam 70 serves for moving the cover toward the brush by means of a plurality of levers 64, 68, 69 for pressing out the excess of lacquer of the brush, substantially as described.

10. In a machine for lacquering bottle-capsules and similar objects the combination of a revolving disk provided with pins for the reception of the capsules and a movable brush for lacquering the latter with means for holding the revolving disk in the working position and afterward turning it to such an extent as to bring the next capsule into the working position substantially as described.

11. In a machine for lacquering bottle-capsules and similar objects the combination of a revolving disk provided with pins for the reception of the capsules with a lever 11 pivotally mounted at a fixed point 10 and pressed by means of a spring 12 against the disk 9 and engaging by means of a stud 13 one of a series of holes 14 on the periphery of the disk 9 and a second lever 20 pivotally mounted at a fixed point 19 and acted upon by a spring 21, this lever being in connection with a further lever 22, acted upon by a spring 23, the levers 11 and 20 being operated by two cams 16 and 17 respectively, substantially as described.

12. In a machine for lacquering bottle-capsules and similar objects the combination of a revolving disk provided with pins for the reception of the capsules with a hollow shaft 77 for the introduction of a medium for the purpose of drying the capsules by heat, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CARL COLLIN.

Witnesses:

HERMANN WEIL,

OSKAR STANDHARDT.