No. 885,625. PATENTED APR. 21, 1908.

C. LEFFLER.

MACHINE FOR COATING CAN COVERS.

APPLICATION FILED SEPT. 19, 1907.

3 SHEETS—SHEET 1.

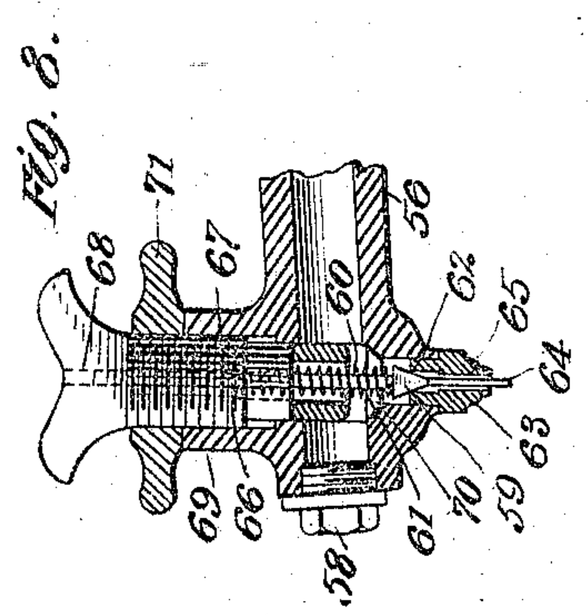

Fig. 8.

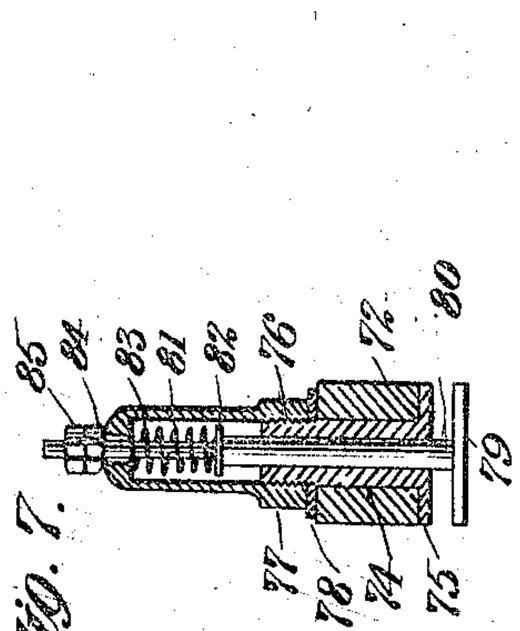

Fig. 7.

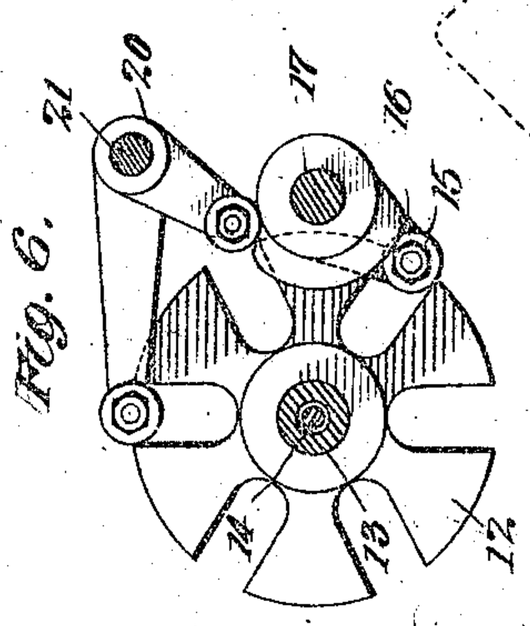

Fig. 6.

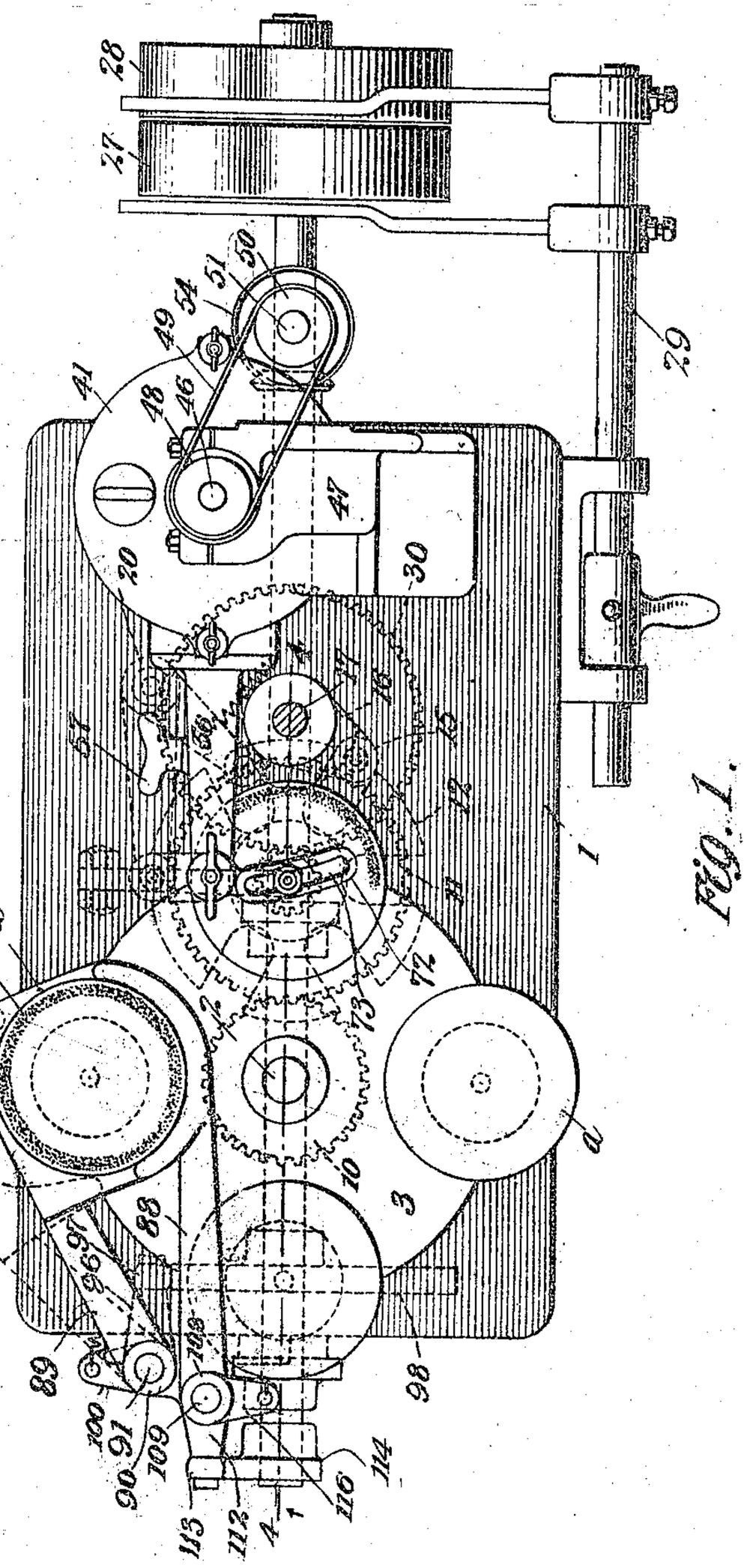

Fig. 1.

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3 SHEETS—SHEET 2.

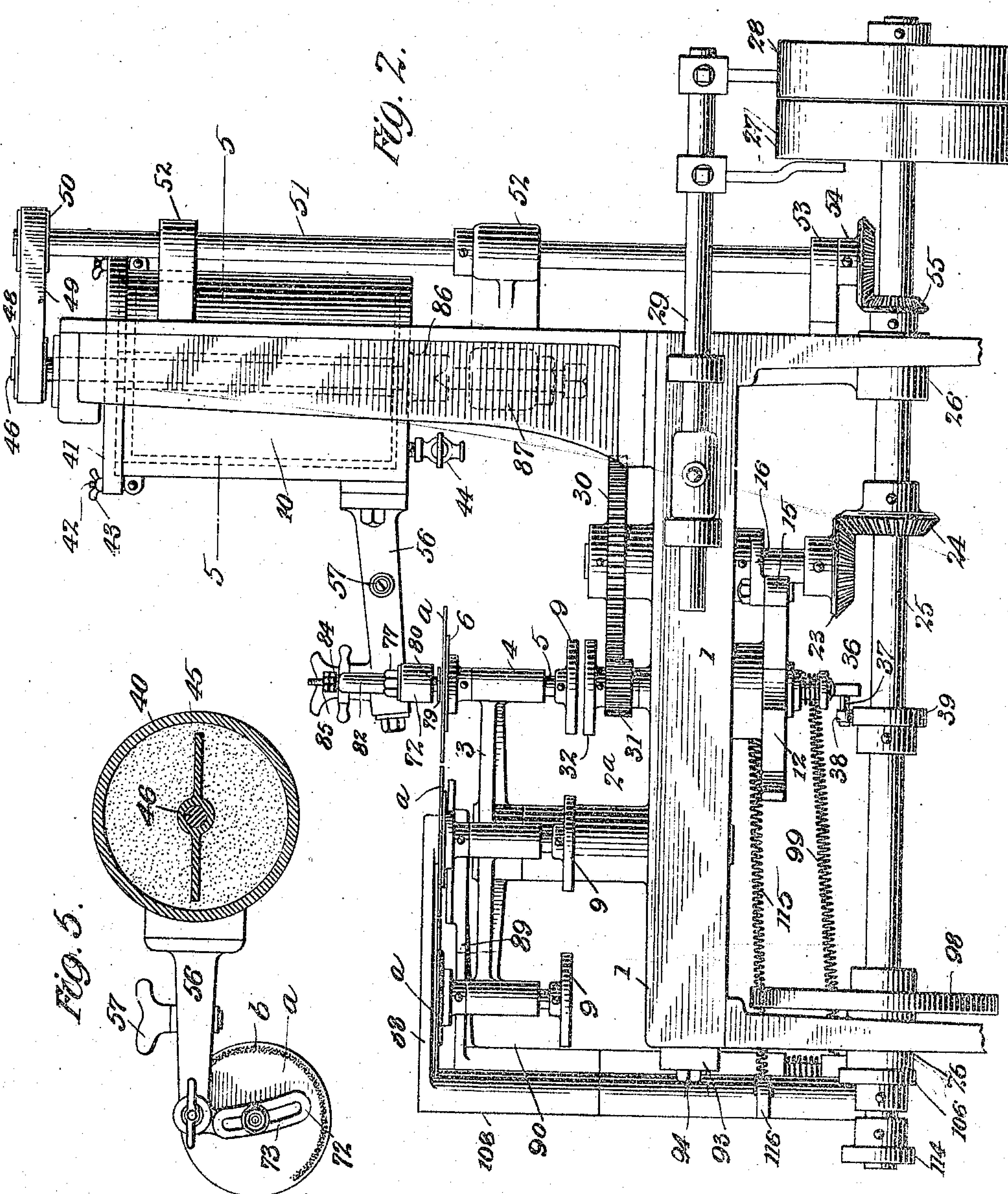

Fig. 2.

Fig. 5.

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3 SHEETS—SHEET 3

Fig. 3.

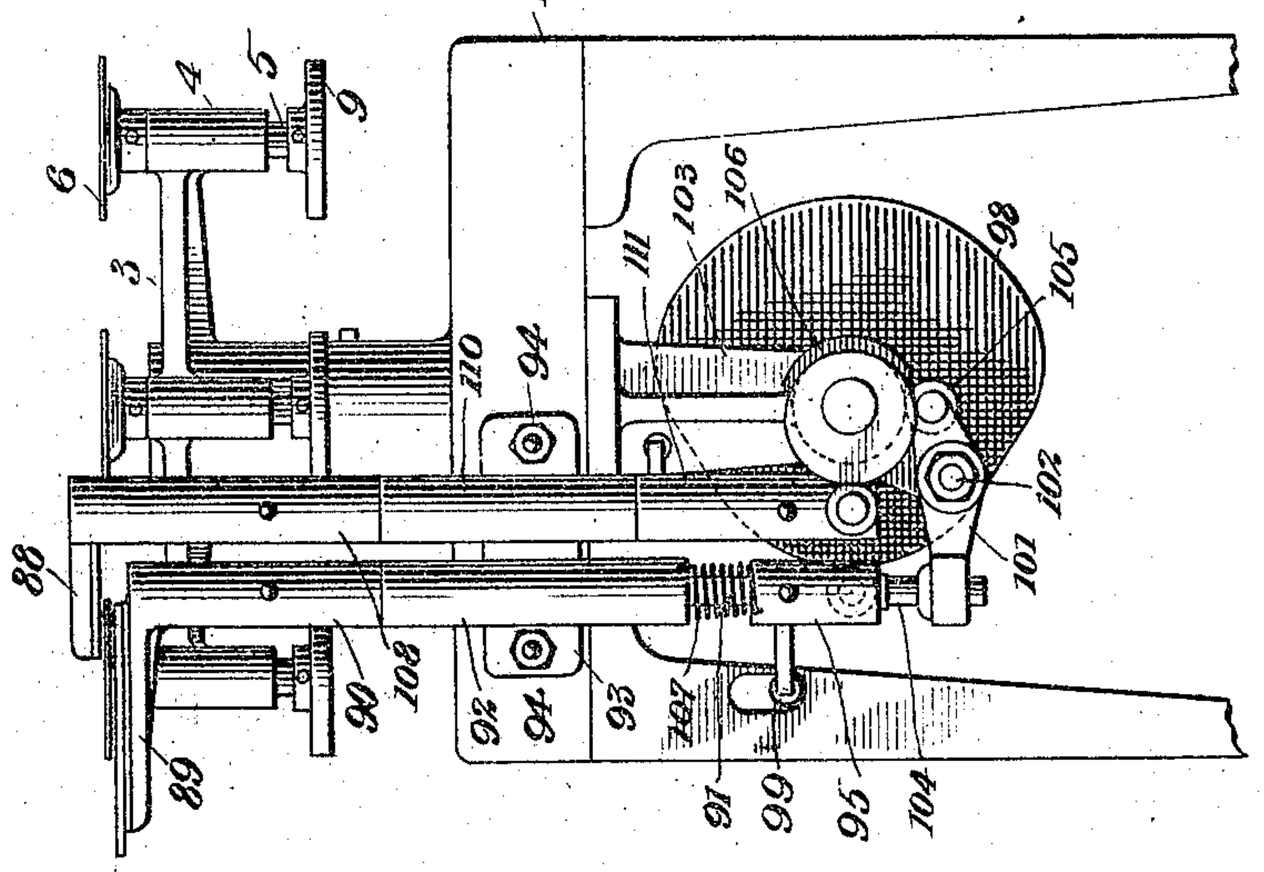
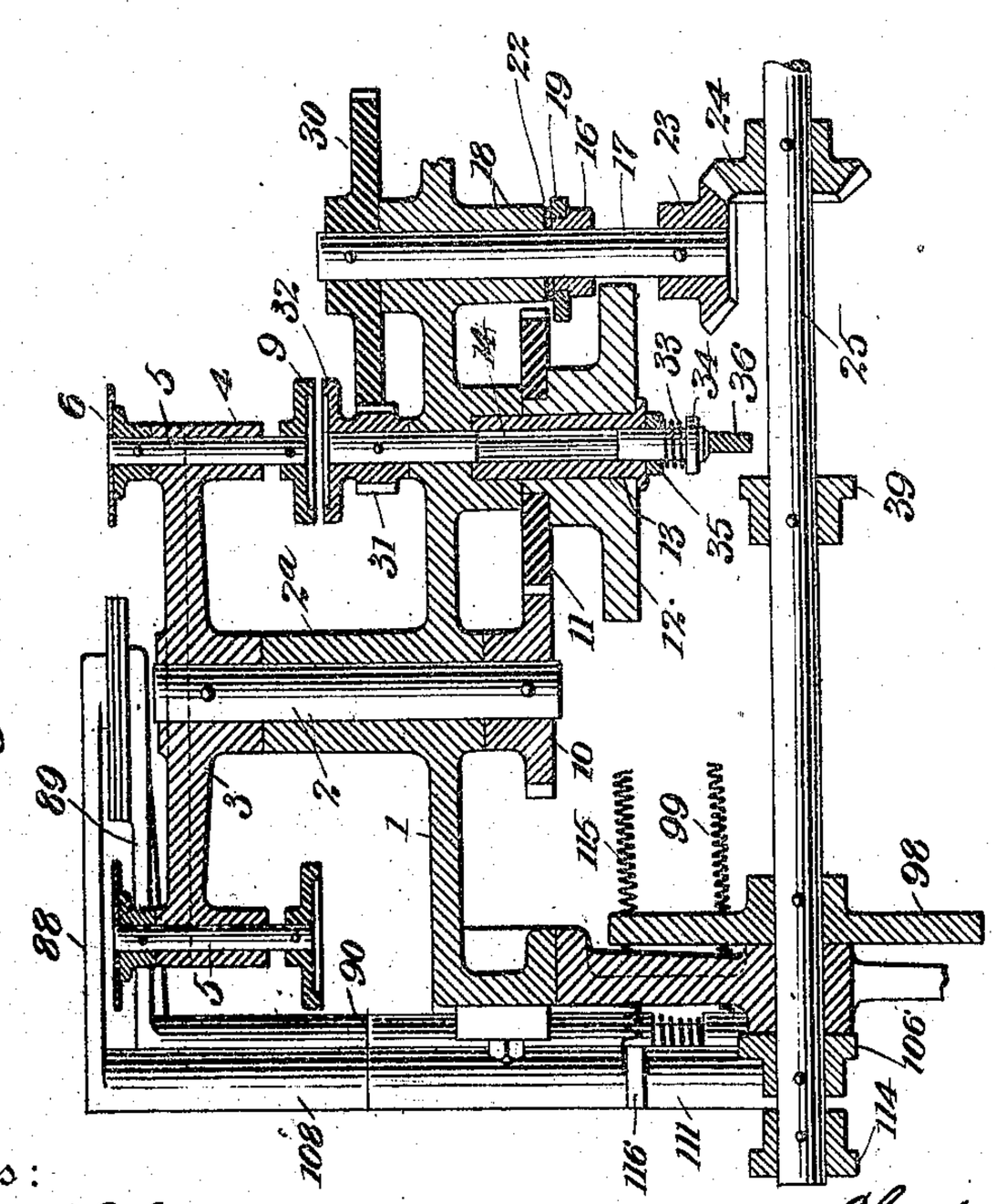


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR COATING CAN-COVERS.

No. 885,625. Specification of Letters Patent. Patented April 21, 1908.

Application filed September 19, 1907. Serial No. 393,607.

To all whom it may concern:

Be it known that I, CHARLES LEFFLER, a citizen of the United States, residing at New York city, in the borough of Brooklyn and State of New York, have invented certain new and useful Improvements in Machines for Coating Can-Covers, of which the following as a full, clear, and exact description.

My invention relates to machines for applying a coating of cement to plates which may be formed into covers for cans by being secured to the body of the can by bending the edges of the body and cover into a suitable seam or bead, the cement serving to render the joint thus formed absolutely tight.

It relates more particularly to a machine of this class in which the can cover is carried upon the upper surface of a rotary support, of which a number may be carried by a common member which may be rotated by a step by step movement to bring the rotary supports consecutively into proper position for the coating operation.

My invention has for its object the provision of improved means for holding the cement and for causing the proper flow of the same at the proper times and checking or cutting off the said flow at other times, as, for instance, when the coated cover is being moved away and a fresh cover being brought into proper position to receive its coating.

My invention also comprises improved means for causing the rotation of the rotary cover support, improved means for removing the coated cover from said support and other improved details, which will be hereafter pointed out and claimed.

Reference is hereby made to the accompanying drawing wherein the same numerals of reference are used to designate corresponding parts in the several views, of which

Figure 1 is a plan of a machine constructed in accordance with my invention. Fig. 2 is a side elevation. Fig. 3 is an end elevation. Fig. 4 is a section on line 4—4 of Fig. 1. Fig. 5 is a section on line 5—5 of Fig. 2. Fig. 6 is a detail of the mechanism for imparting a step by step movement to the member which carries the rotary supports. Fig. 7 is a sectional detail of the presser foot for engaging the center of the upper surface of the can cover when the coating is being applied and Fig. 8 is a sectional detail of the valve for regulating the flow of cement.

The machine illustrated comprises a supporting table or base 1 to which the various machine elements are applied. Within a bearing 2^a, formed integrally with the base 1, is a vertical shaft 2, which carries at its upper end a member 3 in the form of a circular plate with vertical bearings 4 for supporting a series of spindles 5. Each of these spindles carries at its upper end a circular plate 6 upon which a can cover *a* will be placed in order to receive an annular coating of cement *b*, see Fig. 1. The lower end of each of these spindles 5, is provided with a frictional clutch member 9, adapted to be driven when the can cover is receiving its coating, by mechanism which will be later described.

The lower end of the vertical shaft 2, is provided with a spur gear 10 which meshes with a similar gear 11, fixed upon the hub of the star wheel 12, which is journaled on a sleeve 13, carried by a vertical shaft 14, and the said star wheel forms one member of the well known Geneva stop movement by which a step by step movement is imparted to the spindle supporting plate 3. The rotating pin 15 which coöperates with the star wheel 12 is carried upon the end of an arm or crank 16 applied to the shaft 17 the latter being journaled in a bearing 18 formed in the base 1. The hub of the crank 16 carries a cam 19 affixed thereto and adapted to operate the lever member 20 which oscillates upon the pin or stud 21 in order to lock the star wheel in its various positions of repose. A washer 22 may be interposed between the cam 19 and bearing 18. The shaft 17 carries at its lower end a bevel gear 23 which meshes with a similar gear 24, fixed to the horizontal drive shaft 25, which is journaled in suitable bearings 26 carried by the base 1, and is provided with fixed and loose pulleys 27 and 28 for receiving driving belt in the usual manner, the belt shifter 29 being carried by the base 1. The upper end of the shaft 17 is provided with a large spur gear 30, which meshes with the pinion 31 integral with a friction clutch member 32 and fixed to the upper end of the shaft 14. The shaft 14 is capable of a vertical or longitudinal movement being normally held in the position of Fig. 4 by a spiral

spring 33 applied to the lower end thereof between the washer or head 34 and the washer 35. The longitudinal movement of the shaft 14 is brought about at the desired times by a lever 36, which is pivoted at one end and carries at its free end a pin 37 and roller 38 which bears upon the surface of a cam 39 fixed to the driving shaft 25.

The mechanism for containing and applying the cement, comprises a reservoir 40, having an air-tight cover 41, removably secured thereto by bolts 42 and wing nuts 43, said reservoir being preferably connected with means for applying air pressure to the surface of the cement within the reservoir to facilitate the flow thereof, and having a draw-off cock 44. The cement is preferably agitated continuously by a rotary beater 45 carried by a vertical shaft 46 which is journaled at its lower end in the bottom of the reservoir 4, and at its upper end in the bearing 47 carried by the base 1. The upwardly projecting end of the beater shaft 46, is provided with a pulley 48, driven by the belt 49 passing over a drive pulley 50 carried by a vertical shaft 51, journaled in the bearings 52 and 53, carried by the base 1. The lower end of the shaft 51 carries a bevel gear 54 which meshes with a similar gear 55 fixed to the main shaft 25.

A supply pipe 56 is bolted to the lower portion of the reservoir 40 and is provided with a cock 57, which may be used to regulate or cut off the flow of cement. The lower end of the supply pipe 56 is closed by a screw plug 58 and is provided with a valve mechanism shown in Fig. 8. The valve shown comprises a conical member 59 formed on the end of the pin 60 which is surrounded by a spiral spring 61, one end of which bears against the base of the cone 59 and presses it against a valve seat 62 formed at the end of the sleeve 63. A small pin 64 is integral with the pin 60 and cone 59 and extends through a bore 65 of the sleeve 63, the diameter of which is somewhat greater than that of the said pin 64 so as to permit the flow of the cement when the valve 59 is raised. The upper end of the spring 61 bears against a shoulder 66 formed within the screw plug 67 which is bored as shown at 68 to form a guide for the pin 60. The plug 67 is threaded within the boss 69 of the supply pipe 56, the lower end being preferably cone shaped as shown so as to fit against the conical surface 70 of the bore of the pipe 56. A lock nut 71 may be used for locking the plug 67 firmly in position.

Extending laterally from the free end of the supply pipe 56 and preferably integral therewith, is an arm 72 provided with a curved slot 73 within which is clamped a sleeve 74 having a flange 75 and a threaded end 76, the clamping effect being obtained by hollow nut 77 threaded upon the sleeve 74 as shown in Fig. 7, and separated from the arm 72 by a washer 78.

The presser foot 79 is carried at the lower end of the vertical pin 80 which slides longitudinally within the bore of the sleeve 74 and is normally held in a depressed position by a spiral spring 81 which bears at one end against a collar 82 which abuts against a shoulder on the pin 80. The other end of the spring 81 bears against the bottom of the socket or cavity 83 within the nut 77, the upper end of the pin 80 passes through the nut 77 and receives a pair of nuts 84 and 85 by which the normal position of the presser foot 79 may be adjusted.

The bottom of the reservoir 40 is provided with a bearing 86 which rests upon the vertically adjustable pivot pin 87, so that the reservoir may be readily detached from its support and may have an angular adjustment to vary the position of the supply pipe for covers of different sizes being clamped in any position of adjustment by an upward movement of the pin 87. The curved slot 73 of the arm 72 is concentric with the pivot pin 87 so that the presser foot may be readily adjusted to bring it exactly in line with the axis of the spindle 5 which is driven by the shaft 14 when the coating is being applied to the can cover.

The mechanism for removing the can cover from one of the supporting plates 6 comprises a pair of oscillatory arms 88 and 89. The arm 89 is integral with a vertical sleeve 90 which is fixed to the upper end of a vertical rock shaft 91, the latter being journaled in a sleeve or bearing 92 integral with the plate 93 which is bolted to one end of the body 1 by bolts 94. The lower end of the rock shaft 91 is provided with a sleeve 95 fixed thereto and having a laterally extending arm 96 which carries a roller 97 held against the edge of a cam 98 by means of a tension spring 99 secured at one end to the arm 100 extending rearwardly from the sleeve 95 and secured at the other end to any suitable portion of the base 1. The cam 98 is fixed to the main shaft 25 and serves to impart an oscillatory movement to the rock shaft 91. This shaft is also capable of longitudinal movement which is brought about by a lever 101 which is pivoted on a stud 102, carried at the lower end of a bracket 103 which is secured to, and extends downward from, the table 1. One end of the said lever 101 carries a pin 104 in alinement with the axis of the rock shaft 91 and the other end of the lever is provided with a roller 105 which is held against the edge of a cam 106 by the action of a compression spring 107 placed between the sleeve 95 and the lower end of the bearing 92. The oscillatory arm 88 is integral with a vertical sleeve 108 fixed to the upper end of a rock shaft 109 and said rock shaft is journaled within a bearing 110 in-

tegral with the plate 93. The lower end of the rock shaft 110 has affixed thereto a sleeve 111 which has at its lower end a laterally extending arm 112 which is provided with a roller 113, which is held against the edge of a cam 114 by a tension spring 115 secured at one end to an arm 116 which is integral with the sleeve 111, the opposite end of the spring 115 being suitably secured to the base 1. The cam 114 is secured upon the end of the main shaft 25.

The operation of the machine is briefly as follows:—The mechanism being set in motion by the driving belt which passes over the fixed pulley of the shaft 25, an intermittent or step by step movement is imparted to the circular plate 3 through the Geneva stop movement which has been described, the plate 3 being given a quarter turn on each movement and then locked in such a position that one of the spindles 5 which carries the plate 6 is immediately above and in line with the shaft 14. The latter shaft is continuously rotated by means of the shaft 17 and gears 30 and 31 but the clutch member 32 is normally separated from the clutch member 9 as shown in Fig. 4. As soon as the plate 3 is locked in position the mechanism is ready to perform the coating operation upon the can cover *a*, which is placed upon the plate 6 before it reaches the position above the shaft 14. The coating operation is initiated by the movement of the lever 6 which coöperates with the cam 39 and elevates the shaft 14 so as to bring the friction member 32 into engagement with the coöperating member 9 and thereby rotate the spindle 5. The raising of the shaft 14 also elevates the spindle 5 a slight distance and since the pin 64 which is applied to the valve 59 for regulating the flow of cement is immediately above the cover *a*, it will be pressed upward thereby and will open the valve and permit the cement to flow down upon the upper surface of the cover, and as the latter is being rotated by the spindle 5 the cement will be deposited in the form of a ring *b*, Fig. 1. The upward movement of the spindle 5 and plate 6 also causes the center of the cover *a* to bear against the presser foot 79 and compress the spring 81 whereby the cover *b*, is frictionally held against the plate 6 so as to be rotated thereby. The gears 30 and 31 are preferably proportioned so that the spindle 5 will be given several complete revolutions during the time the valve 59 is open so as to produce a uniform coating.

As soon as the coating has been applied the cam 39 permits the lever 36 and shaft 14, spindle 5 and plate 6 to descend into the position shown in Fig. 4. The valve 59 is thereby relieved from upward pressure and the spring 61 thereupon forces the valve against its seat and stops the flow of cement. When this stage of the operation has been reached the star wheel 12 of the Geneva movement is unlocked and rotated another step whereby the spindle 5 and support 6 and cover *a*, are carried around to the mechanism for removing the said cover from the supporting plate 6. This operation is effected by the oscillatory arms 88, 89. The latter at the time the coated cover *a* reaches the position shown in Fig. 1 is in its depressed position so that its curved portion is in the same plane as the supporting disk 6 and hence is below the cover *a*. It is however out of the path of the plate 6, as indicated by the dotted lines in Fig. 1, so that it does not interfere with the movement of the said plate 6. As soon, however, as the latter comes to rest, the arm 89 moves horizontally so that its curved edge embraces the plate 6 and is immediately below the cover *a*. The arm 89 is then given a vertical movement by the cam 106 so that it picks up the cover *a* and the cam 98 then causes the arm 89 to travel horizontally in a rearward direction carrying with it the cover *a*. About the time it reaches its extreme rearward position the cam 114 moves the arm 88 horizontally in a rearward direction so that its curved portion strikes the edge of the cover *a* and throws it off from its supporting arm 89 so that it falls into a suitable receptacle or upon a suitable conveyer not shown. The circular plate 3 is then given another step movement by the Geneva stop mechanism so as to bring a fresh cover *a* into position to be acted upon by the arms 88 and 89 and the latter are then restored by the cam movement to the positions of Fig. 1 in order to remove the said cover in the same manner as has been just described. The mechanism, therefore, operates in a continuous manner, the can covers being supplied to the rotary supports 6 in succession on one side of the machine and removed therefrom in a coated condition by the arms 88 and 89 on the other side of the machine.

What I claim, is:—

1. In a machine of the class described, the combination of a rotary support movable in the direction of its axis, and a valved supply pipe adapted to deliver material to an object carried by said support, said valve being operated by the axial movement of said rotary support.

2. In a machine of the class described, the combination of a rotary support movable in the direction of its axis, a supply pipe adapted to deliver material to an object carried by said support, and a normally closed spring pressed valve for preventing the flow of material, said valve being opened by the axial movement of said rotary support.

3. In a machine of the class described, the combination of a vertically movable rotary support, a supply pipe having a downwardly directed opening, a spring pressed valve within the supply pipe adapted to normally close

said opening and having an extension which extends through the said opening to a point below the same.

4. In a machine of the class described, a rotary support, vertically movable driving means for said support, a valved supply pipe adapted to deliver material to an object carried by said support, said valve being operated by a vertical movement of said driving means.

5. In a machine of the class described, a rotary support, vertically movable driving means for said support, a supply pipe, a normally closed spring actuated valve for preventing the flow of material therefrom, said valve being operated by a vertical movement of said driving means.

6. In a machine of the class described, a support carried on the upper end of a rotary spindle, a friction disk on the lower end thereof, a vertically movable rotary friction member for driving said friction disk and means for alternately raising and lowering said driving friction member.

7. In a machine of the class described, a support carried on the upper end of a vertically movable rotary spindle, a friction disk on the lower end thereof, a vertically movable rotary friction member for driving said friction disk and means for alternately raising and lowering said driving friction member.

8. In a machine of the class described, a rotary member carrying a plurality of rotary supports, means for imparting an intermittent movement to said rotary member, a friction disk on the lower end of each of said rotary supports, a vertically movable friction member for driving said friction disks and means for alternately raising and lowering said driving friction member.

9. In a machine of the class described, a rotary member provided with a plurality of vertically movable supports, means for imparting an intermittent movement to said rotary member, a friction disk on the lower end of each of said rotary supports, a vertically movable rotary friction member for driving said friction disks and means for alternately raising and lowering said driving friction member.

10. In a machine of the class described, the combination of a rotary support, a supply pipe adapted to deliver material to an object carried by said support, an arm rigid with said supply pipe and a spring pressed presser foot carried by said arm in alinement with the axis of said rotary support.

11. In a machine of the class described, the combination of a movable support, a reservoir and supply pipe adapted to deliver material to an object carried by said support, said reservoir being capable of angular adjustment and means for clamping said reservoir in any position of adjustment.

12. In a machine of the class described, the combination of a movable support, a reservoir and supply pipe adapted to deliver material to an object carried by said support, a base, a vertically adjustable pivot pin upon which the reservoir is mounted and clamping means for holding said reservoir in any position of angular adjustment.

13. In a machine of the class described, the combination of a movable support, a reservoir and supply pipe adapted to deliver material to an object carried by said support, a base upon which the reservoir is pivotally mounted, an arm rigid with said reservoir, and a presser foot carried by said arm and adjustable in a direction concentric with the axis of the reservoir.

14. In a machine of the class described, a presser foot comprising a spring pressed pin, a flanged sleeve within which said pin is mounted and a nut threaded on said sleeve and a support clamped between said flange and nut.

15. In a machine of the class described, the combination of a flanged sleeve, a pin movable within said sleeve, a support through which said sleeve passes, a hollow clamping nut threaded on the end of said sleeve and a spring arranged within the clamping nut for actuating the movable pin.

16. In a machine of the class described, the combination of a sleeve, a hollow nut threaded on one end thereof, a pin extending through said sleeve and nut, a spring within said nut for actuating said pin and an adjusting nut applied to the end of said pin outside of the hollow nut.

17. In a machine of the class described, the combination of a rotary member carrying a rotary support, means for imparting an intermittent movement to said rotary member, means for simultaneously elevating and rotating said rotary support and a presser foot adapted to frictionally engage an object carried on the upper surface of said rotary support when the latter is elevated.

18. In a machine of the class described, the combination of a rotary member carrying an elevated object-support 6, means for imparting an intermittent movement to said rotary member, an arm 89, and means for causing said arm to approach said object-support below the top thereof, so as to pass below the object carried by said support, and then rise so as to lift said object from said support, substantially as described.

19. In a machine of the class described, the combination of a rotary member carrying an elevated object-support 6, means for imparting an intermittent movement to said rotary member, an arm 89, means for causing said arm to approach said support below the top thereof, so as to pass below the object carried thereby, and then rise to lift said object from said support, an arm 88, and means

for causing the same to move so as to strike the object carried by said arm 89, substantially as described.

20. In a machine of the class described, a support carried on the upper end of a vertically movable rotary spindle, a drive member on the lower end thereof, a vertically movable rotary member adapted to engage said drive member, and means for alternately raising and lowering said rotary member.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

CHAS. LEFFLER.

Witnesses:

LEO J. LEFFLER,

WALDO M. CHAPIN.