W. F. BUTLER.

MACHINE FOR APPLYING CEMENT TO CAN CAPS.

APPLICATION FILED MAR. 23, 1908.

938,460. Patented Nov. 2, 1909.

4 SHEETS—SHEET 1.

Fig. 1.

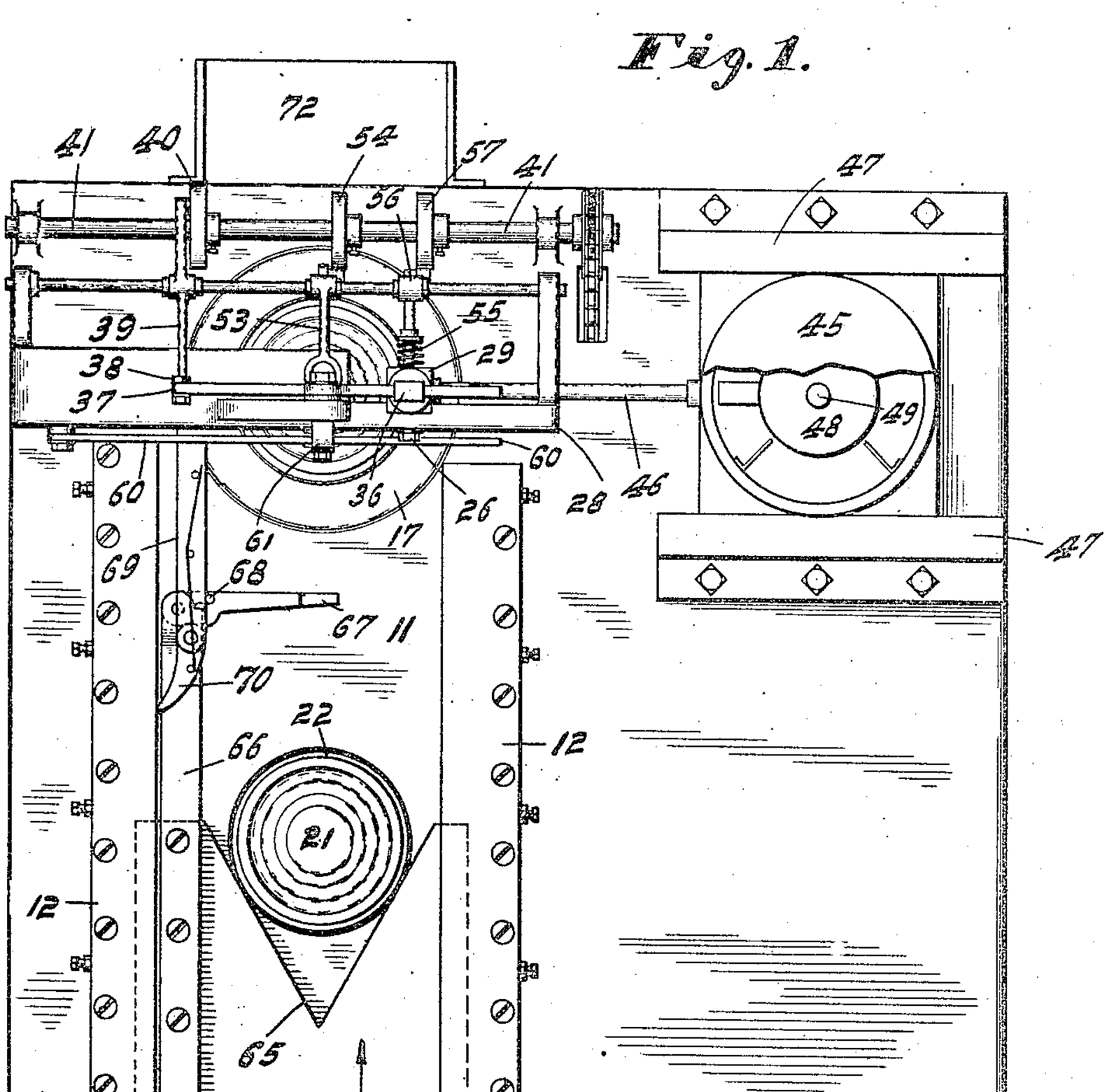


Fig. 2.

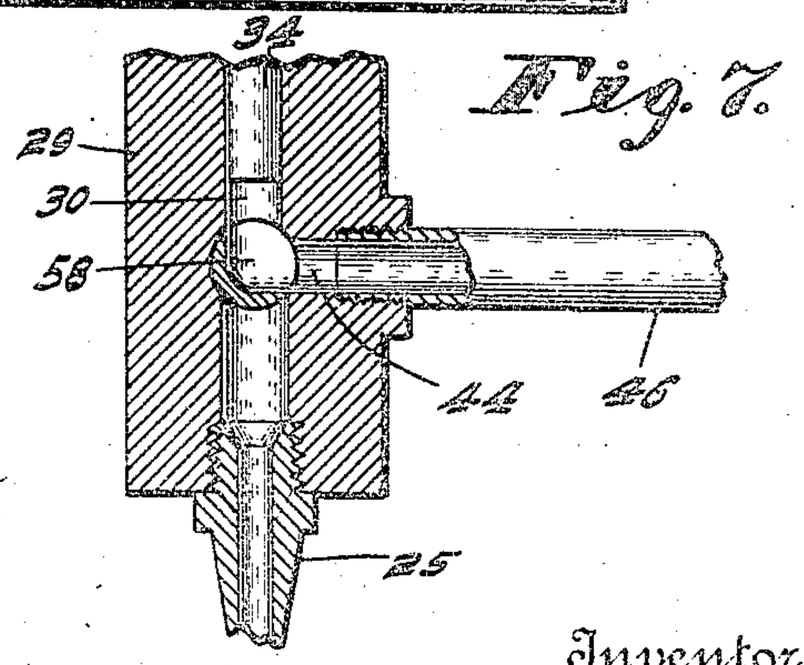
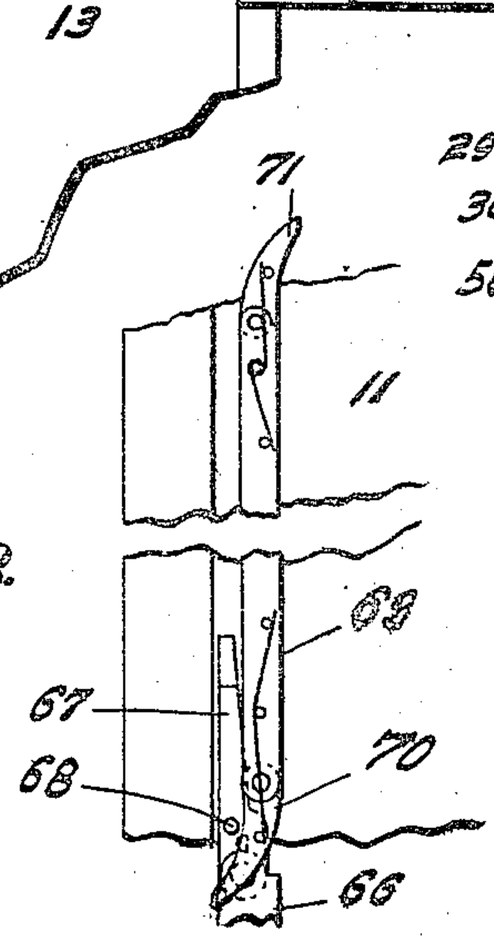


Fig. 8.



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4 SHEETS—SHEET 2.

Fig. 2.

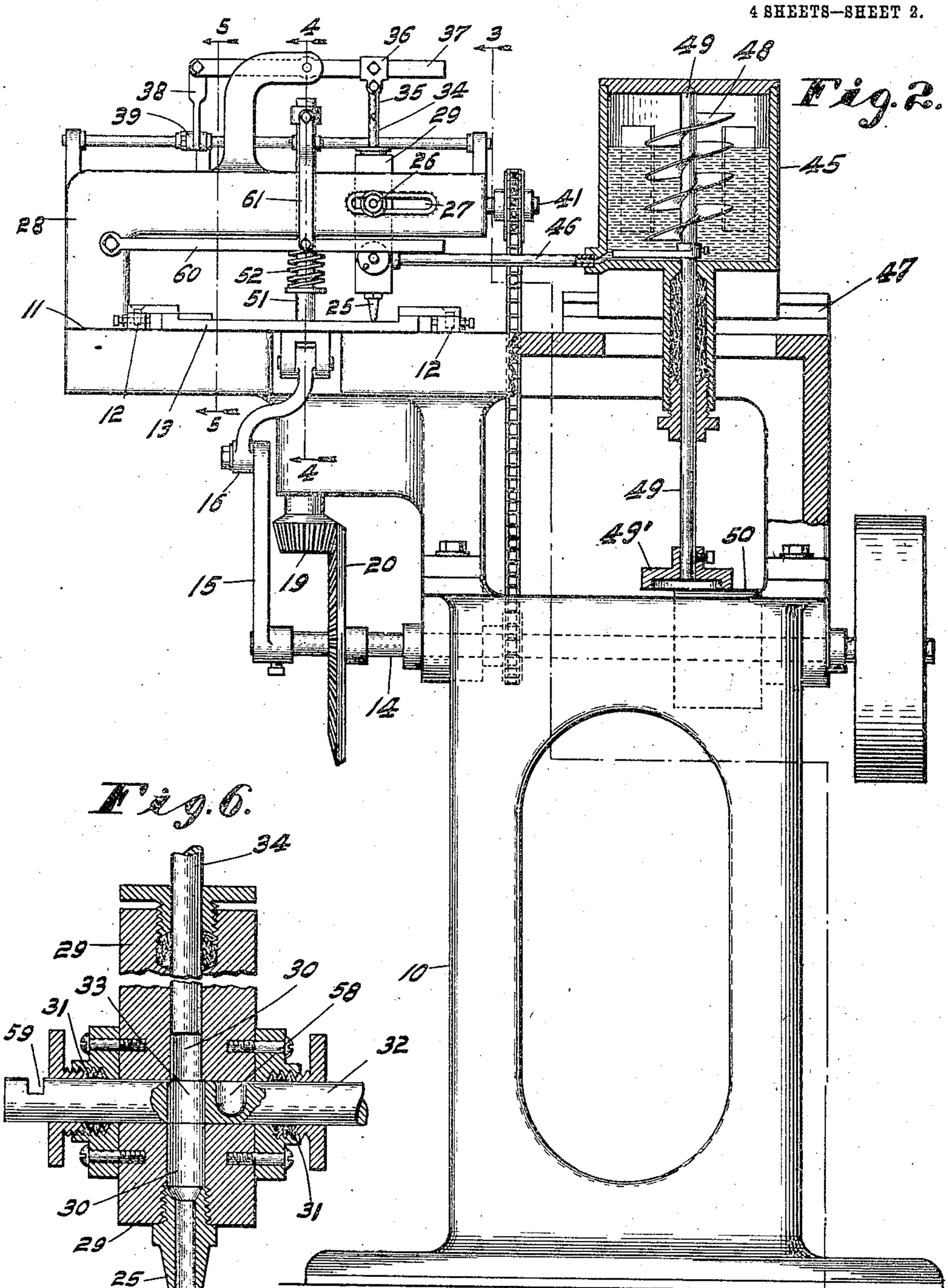

Fig. 6.

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4 SHEETS—SHEET 3.

Fig. 3.

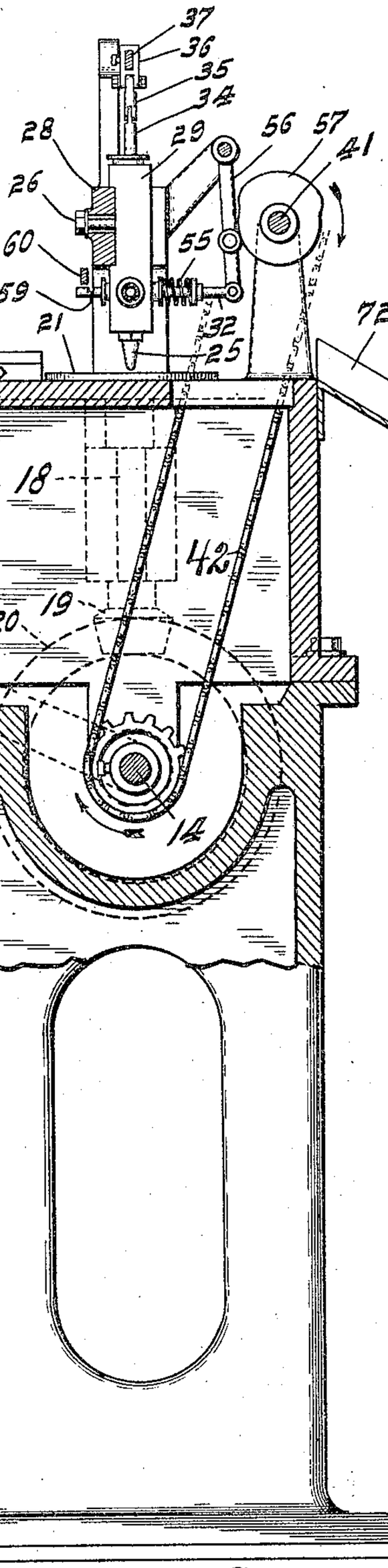


Fig. 4.

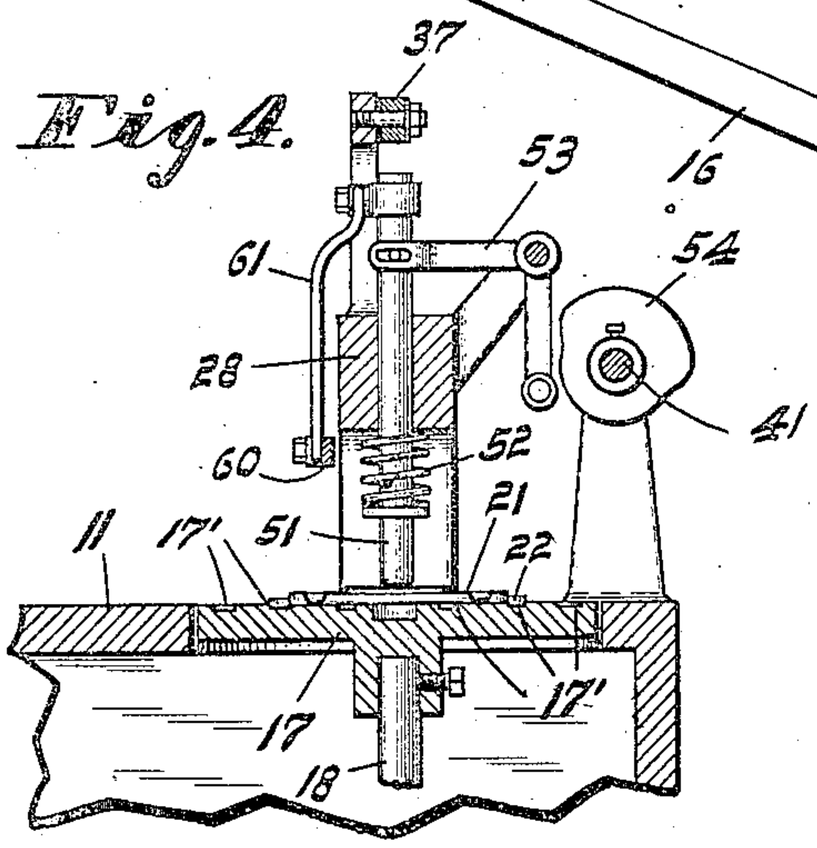
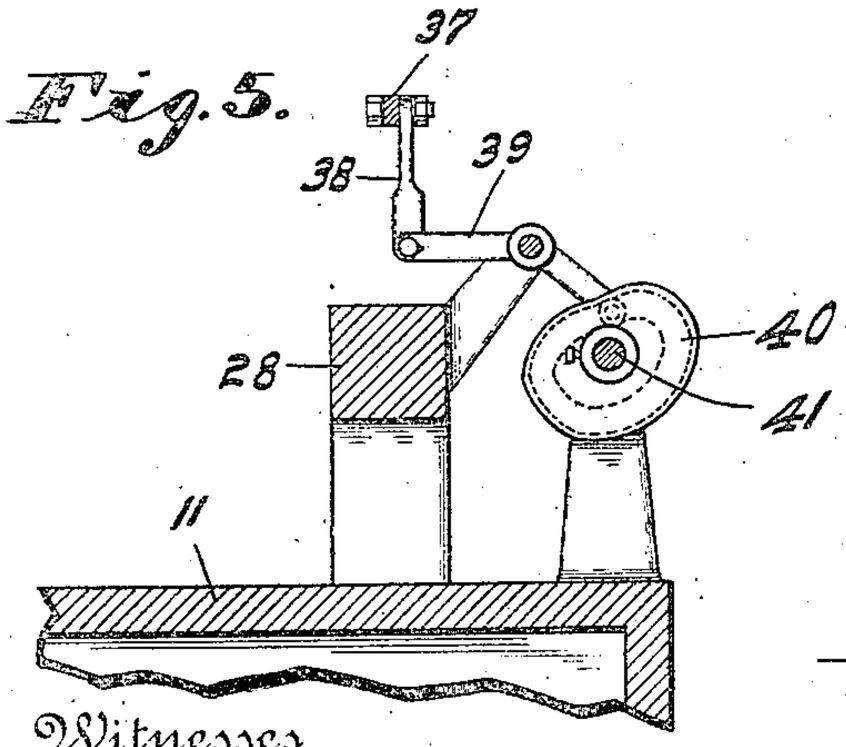


Fig. 5.



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4 SHEETS—SHEET 4.

Fig. 9.

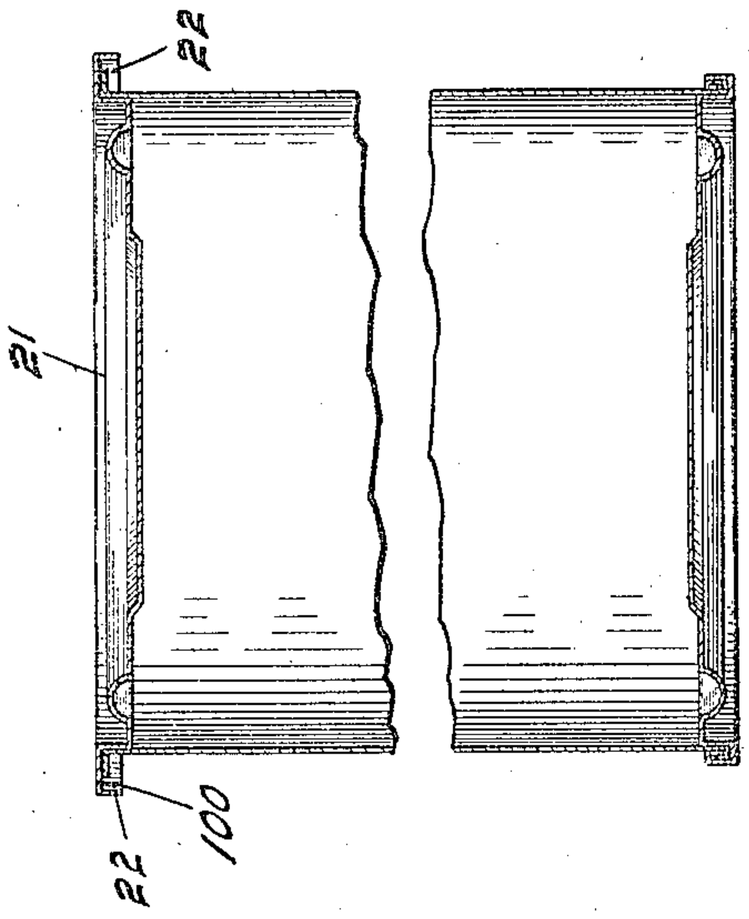
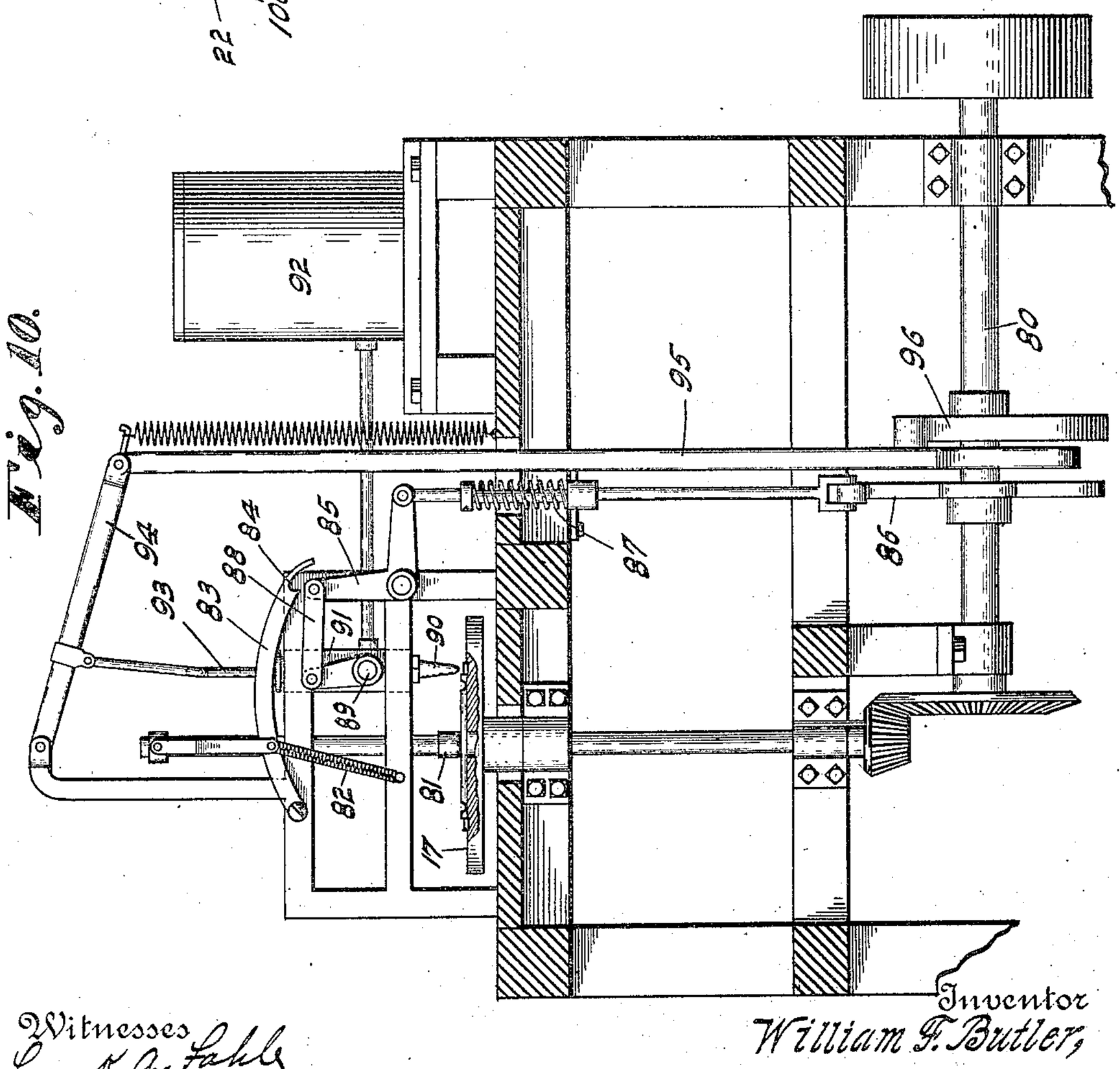


Fig. 10.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR APPLYING CEMENT TO CAN-CAPS.

938,460. Specification of Letters Patent. **Patented Nov. 2, 1909.**

Application filed March 23, 1908. Serial No. 422,647.

To all whom it may concern:

Be it known that I, WILLIAM F. BUTLER, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Machines for Applying Cement to Can-Caps, of which the following is a specification.

In the use of cans or packages of a certain type, a liquid or viscous cement is placed between a portion of the main body of the can or package and a portion of the cover before the cover is arranged in final position.

The object of my invention is to produce an efficient apparatus to automatically apply such cement or sealing material.

The accompanying drawings illustrate my invention.

Figure 1 is a plan of a machine embodying my invention; Fig. 2 an elevation in partial vertical section; Fig. 3 a section on line 3—3 of Fig. 2; Fig. 4 a detail section on line 4—4 of Fig. 2; Fig. 5 a similar section on line 5—5 of Fig. 2; Fig. 6 an enlarged sectional detail of an effective form of delivering means for the cement; Fig. 7 a similar section at right angles to Fig. 6; Fig. 8 a detail of a part of the cap feeder; Fig. 9 a section of a can or package of the character referred to, and Fig. 10 an elevation, in partial vertical section, of a modified form of machine embodying my invention.

In the drawings, Figs. 1 to 8 inclusive, 10 indicates a suitable main frame comprising a feed table 11, in which, between suitable guides 12, is arranged a feed-slide 13. Journaled in frame 10 is a main drive shaft 14 provided with a crank 15 connected to the feed slide by a link 16. Arranged in the delivery end of table 11 is a rotary table 17 carried at the upper end of a shaft 18 connected by a pinion 19 and a gear 20 with shaft 14, the gears being so proportioned that table 17 will be turned comparatively rapidly and preferably at least three complete rotations each actuation, for a purpose which will appear. The upper face of the table 17 is even with the face of table 11 and is provided with several concentric grooves 17′ to facilitate the centering of caps 21 of different sizes each of said caps having an annular groove 22 for the reception of a thin layer of cement 100.

Arranged above table 17 is a cement delivering spout 25 which may be adjusted toward and from the axis of table 17, so as to aline with the cement-receiving grooves of caps of various sizes, such adjustment being accomplished, in the present machine, by bolt 26 passed through slot 27 of the supporting arm 28. Spout 25 is carried by a pump body 29 having a chamber 30 communicating with the interior of the spout. Intersecting chamber 30 is a passage protected at each end by a packing gland 31, and in which is mounted a valve 32 having a passage 33 adapted to aline with chamber 30. Mounted in the pump body 29, and alined with chamber 30, is a pump piston 34 connected by a link 35 with a block 36 adjustably mounted on a lever 37 parallel with the line of adjustment of the spout 25. Lever 37 is connected by a link 38 with a lever 39 actuated in both directions by a cam 40 carried by a shaft 41 connected by a suitable driving chain 42 with shaft 14, so as to be rotated in unison with shaft 14.

Leading into the side of the passage in which valve 32 is mounted is an inlet passage 44 which communicates with a cement reservoir 45 through a tube 46 the arrangement being such that cement may flow freely from the reservoir into the pump cylinder. Reservoir 45 is mounted in suitable ways 47 so that it may partake of the adjustment of the spout and pump and, in order to keep the cement in good condition, I provide a stirrer 48 carried by a shaft 49 having a crown-friction wheel 49′ on its lower end adapted to be engaged by a cylindrical friction wheel 50 carried by shaft 14.

In order to prevent waste of cement, and to keep table 17 clean, when no cap is in proper position to receive the cement I provide, centrally above table 17, a plunger or holder 51 normally urged downward toward the table 17 by means of a spring 52. Connected to plunger 51 is a lever 53 by means of which the plunger may be lifted against the action of spring 52, the said lever having one end arranged in the path of movement of a cam 54 carried by shaft 41. Valve 32 is urged to the position shown in Fig. 6 by means of a spring 55 and is connected to a lever 56 which may be engaged by a cam 57 so as to be shifted enough to throw passage 33 out of alinement with chamber 30 and bring the L-shaped passage 58 of the

valve into alinement with the pump cylinder and the inlet 44 (Fig. 7). When the valve is in the position just mentioned, a notch 59, in the outer end of valve 32 lies in alinement with a locking bar 60 connected by a link 61 with the upper end of plunger 51.

In order to feed the caps to the table 17 and remove the same therefrom after the cement has been applied, I provide the following mechanism. Slide 13 is provided with a cap-receiving notch 65 at its forward end, to which the caps may be successively fed through the common feed chute (not shown) and the stroke of the slide is sufficient to carry each cap from such chute to the table 17. In order to prevent tilting of the caps I deem it advisable to displace a treated cap by means other than the oncoming caps and for this purpose provide slide 13 with a forwardly extending arm 66 which, at its forward end carries a pivoted pusher finger 67 adapted to lie projected into the path of movement of the oncoming caps or to lie retracted therefrom. Finger 67 carries a pin 68 adapted to engage a stationary cam or guide 69 arranged along its path of movement. At the forward end of cam 69 is a pivoted spring-pressed guide finger 70 and at the rear end of said cam is a guide finger 71 similar to finger 70 but reversely positioned.

With the parts in the positions shown in the drawings one rotation of shaft 14 in the direction indicated in Fig. 3 will cause three complete rotations of table 17 and a down-stroke of piston 34 so as to force a stream of cement into the groove 22 of cap 21. Piston 34 and plunger 51 then move upward and slide 13 moves forward bringing finger 67 into engagement with the cap on table 17 and carrying it over into the discharge chute 72, a new cap being, at the same time, driven forward by slide 13 and deposited on the table 17 where it is readily centered by the appropriate groove 17'. Cam 54 now permits plunger 51 to descend upon the freshly placed cap on table 17 and said plunger, resting on the cap, prevents the lock-bar 60 from descending low enough to enter notch 59, valve 32 being at this moment held in the position shown in Fig. 7, by cam 57 but quickly returned to the position shown in Fig. 6. Slide 13 thereupon returns and, pin 68 engaging finger 71, the finger 67 is swung into line with arm 66 (see Fig. 8) so as not to engage or interfere with the newly placed cap on table 17. At the same time table 17 is rotated by gears 19 and 20, and pump plunger 34 driven downward by cam 40 so as to deliver a stream of cement into the channel 22 of the cap. By rotating table 17 several revolutions during the time of delivery of the cement an adequate distribution of the cement is insured. When slide 13 reaches the end of its return movement pin 68 of finger 67 has passed finger 70 so that, at the beginning of the next forward movement of the slide, finger 67 is thrown into cap-engaging position. If, by any chance, no cap should be delivered to table 17, plunger 51 will descend far enough to permit the locking bar 60 to enter notch 59 of valve 32 and hold the valve in the position shown in Fig. 7 until after the pump piston has descended. In this position communication between the pump and nozzle 25 is cut off by valve 32 and the passage 58 forms a communication between the pump and tube 46 so that any cement in the pump above valve 32 may pass freely back into tube 46, thus preventing any material pressure in the pump which might tend to cause the imprisoned cement to be forced out through the various packing glands or to cause a straining of the pump-actuating parts.

By connecting the reservoir 45 with the pump body 29 and providing the cylinder-and-crown friction drive 49'—50 for the stirrer 48 only a single fastening is necessary for enabling proper adjustment of all the cement delivering mechanism.

In the form shown in Fig. 10, the rotary table 17 is driven from a main shaft 80, the can caps being placed on the table 17 in the same manner as in the other machine, and held thereon by a plunger 81, normally urged downward by a spring 82. Connected to plunger 81 is a lever 83 having a notch 84 adapted to engage one arm of a bell-crank-lever 85 whenever plunger 81 descends as low as is possible when no cap is on the table. Lever 85 is actuated in one direction by a cam 86 and in the other by a spring 87. Connected to lever 85, by a link 88, is a valve 89 which controls outflow from a nozzle 90 like nozzle 25. Nozzle 90 is the outlet of a pump 91 connected to the cement reservoir 92 and provided with a piston 93 connected to a lever 94 actuated by a cam-rod 95 and cam 96.

I claim as my invention:—

1. In a machine of the class described, the combination of a cap-support, cement measuring and positive ejecting means arranged eccentric to the cap-support, and means for causing a relative annular movement between the cap-support and cement ejecting means.

2. In a machine of the class described, the combination of a cap-support, cement measuring and positive ejecting means arranged eccentric to the cap-support, means for causing a relative annular movement between the cap-support and cement ejecting means, and means dependent upon proper positioning of a cap on the cap-support for controlling flow from the cement ejecting means.

3. In a machine of the class described, the combination of means for rotating a cap,

cement measuring and positive ejecting means arranged eccentric to the axis of rotation of such cap.

4. In a machine of the class described, the combination of means for rotating a cap, cement feeding means arranged eccentric to the axis of rotation of such cap, and means for adjusting the eccentricity of the feeding means.

5. In a machine of the class described, the combination of means for rotating a cap, cement measuring and positive ejecting means arranged eccentric to the axis of rotation of such cap, and means dependent upon proper positioning of a cap for controlling flow from the cement ejecting means.

6. In a machine of the class described, the combination of means for rotating a cap, cement measuring and positive ejecting means arranged eccentric to the axis of rotation of such cap, means for adjusting the eccentricity of the feeding means, and means dependent upon proper positioning of a cap for controlling flow from the cement feeding means.

7. In a machine of the class described, the combination of a rotary cap-receiving table, a cement measuring and ejecting pump arranged eccentrically over said table to discharge toward the same, and means for intermittently operating said pump.

8. In a machine of the class described, the combination of a rotary cap-receiving table, a cement measuring pump arranged eccentrically over said table to discharge toward the same, means for intermittently operating said pump, and means dependent upon proper positioning of a cap on the rotary table for controlling the discharging operation of the pump.

9. In a machine of the class described, the combination of a rotary cap-receiving table, a cement measuring and ejecting pump arranged eccentrically over said table to discharge toward the same, a plunger arranged over the table and adapted to engage a cap positioned thereon.

10. In a machine of the class described, the combination of a rotary cap-receiving table, a cement measuring pump arranged eccentrically over said table to discharge toward the same, means for adjusting the discharge outlet of said pump toward or from the axis of the table, a plunger arranged over the table and adapted to engage a cap positioned thereon.

11. In a machine of the class described, the combination of a rotary cap-receiving table, a cement measuring pump arranged eccentrically over said table to discharge toward the same, a cement reservoir connected to said pump, a stirrer arranged therein, and means for driving said stirrer, a plunger arranged over the table and adapted to engage a cap positioned thereon.

12. In a machine of the class described, the combination of a rotary cap-receiving table, a cement measuring pump arranged eccentrically over said table to discharge toward the same, means for adjusting the discharge outlet of said pump toward or from the axis of the table, a cement reservoir connected to said pump, a stirrer arranged therein, and means for driving said stirrer, a plunger arranged over the table and adapted to engage a cap positioned thereon.

13. In a machine of the class described, the combination of a rotary cap-receiving table, a cement-pump arranged eccentrically over said table to discharge toward the same, means for adjusting the discharge outlet of said pump toward or from the axis of the table, a cement reservoir connected to said pump, a stirrer arranged therein, and means for driving said stirrer, and driving means comprising a crown-and-cylinder friction.

14. In a machine of the class described, the combination of a rotary cap-receiving table, a cement-pump arranged eccentrically over said table to discharge toward the same, a plunger arranged over the table and adapted to engage a cap positioned thereon, a valve controlling flow from the pump, means controlled by the plunger for holding the valve closed in the absence of a cap on the receiving table, and means for automatically actuating the plunger and valve.

15. In a machine of the class described, the combination of a rotary cap-receiving table, a cement-pump arranged eccentrically over said table to discharge toward the same, means for adjusting the discharge outlet of said pump toward or from the axis of the table, a plunger arranged over the table and adapted to engage a cap positioned thereon, a valve controlling flow from the pump, means controlled by the plunger for holding the valve closed in the absence of a cap on the receiving-table, and means for automatically actuating the plunger and valve.

16. In a machine of the class described, the combination of a rotary cap-receiving table, a cement-pump arranged eccentrically over said table to discharge toward the same, a cement reservoir connected to said pump, a stirrer arranged therein, means for driving said stirrer, a plunger arranged over the table and adapted to engage a cap positioned thereon, a valve controlling flow from the pump, means controlled by the plunger for holding the valve closed in the absence of a cap on the receiving table, and means for automatically actuating the plunger and valve.

17. In a machine of the class described, the combination of a rotary cap-receiving table, a cement-pump arranged eccentrically over said table to discharge toward the same, means for adjusting the discharge outlet of

said pump toward or from the axis of the table, a cement reservoir connected to said pump, a stirrer arranged therein, and means for driving said stirrer, a plunger arranged over the table and adapted to engage a cap positioned thereon, a valve controlling flow from the pump, means controlled by the plunger for holding the valve closed in the absence of a cap on the receiving table, and means for automatically actuating the plunger and valve.

18. In a machine of the class described, the combination of a rotary cap-receiving table, a cement-pump arranged eccentrically over said table to discharge toward the same, means for adjusting the discharge outlet of said pump toward or from the axis of the table, a cement reservoir connected to said pump, a stirrer arranged therein, and means for driving said stirrer, said driving means comprising a crown-and-cylinder friction, a valve controlling flow from the pump, means controlled by the plunger for holding the valve closed in the absence of a cap on the receiving table, and means for automatically actuating the plunger and valve.

In witness whereof, I, have hereunto set my hand and seal at Indianapolis, Indiana, this seventh day of March, A. D. one thousand nine hundred and eight.

WILLIAM F. BUTLER. [L. S.]

Witnesses:

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THOMAS W. MCMEANS.