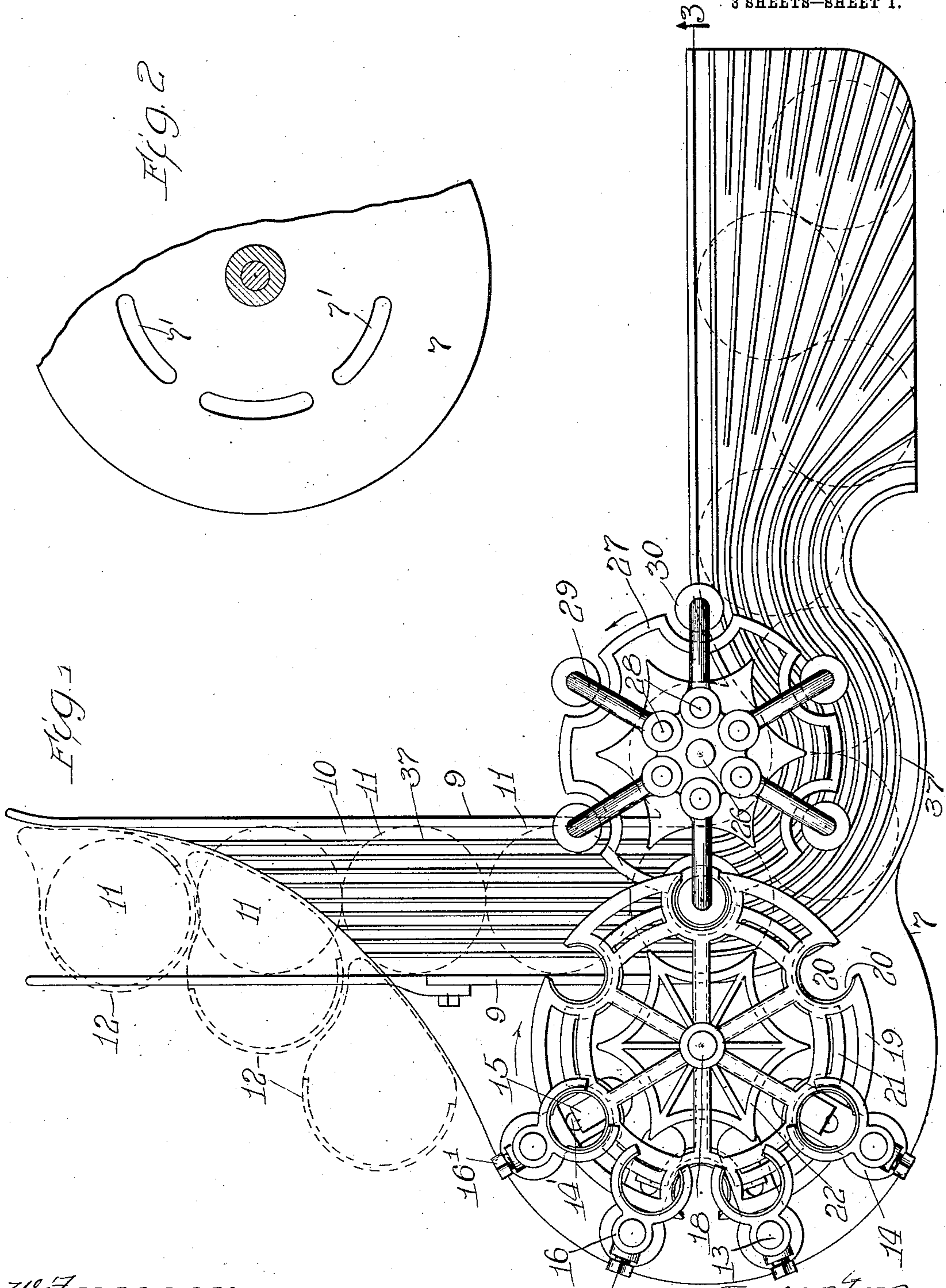


F. C. H. STRASBURGER.
BOTTLE CAPPING MACHINE.
APPLICATION FILED AUG. 21, 1908.

948,461.

Patented Feb. 8, 1910.

3 SHEETS—SHEET 1.



Witnesses:
Henry R. L. White
M. A. Kiddie

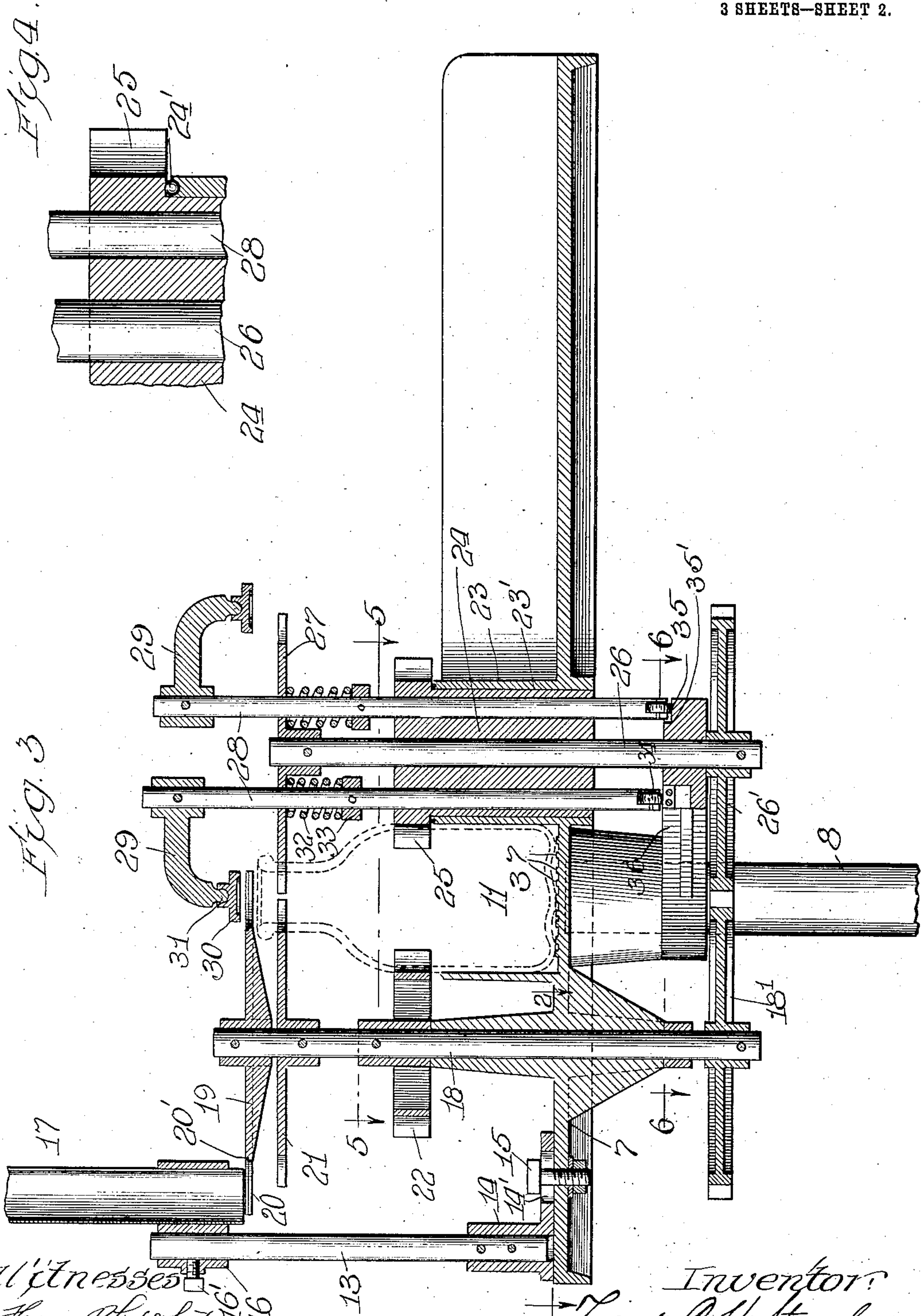
Inventor
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By Wm. M. Delh. Atty.

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3 SHEETS—SHEET 3.

Fig. 5

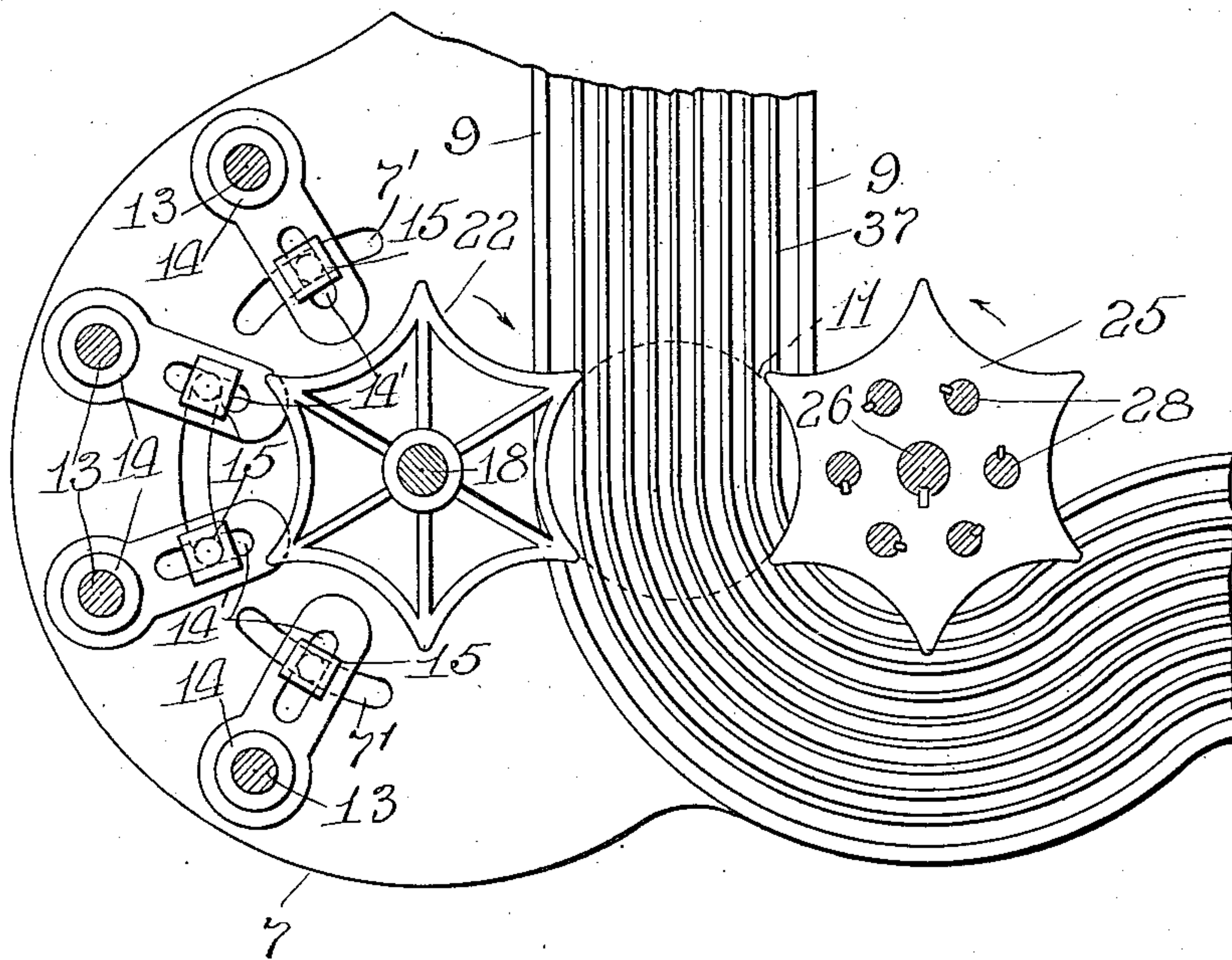
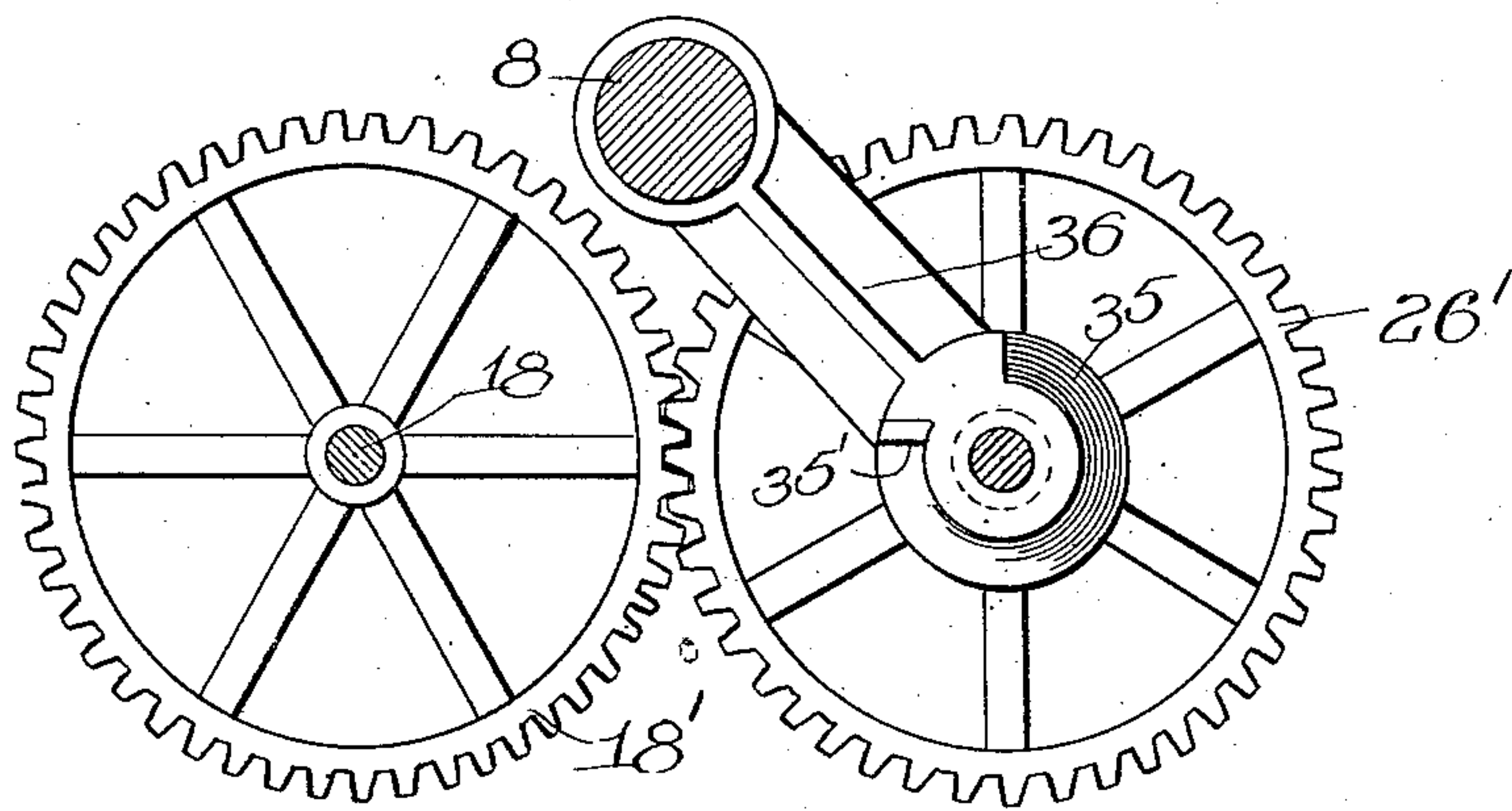


Fig. 6



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UNITED STATES PATENT OFFICE.

FRANK C. H. STRASBURGER, OF CHICAGO, ILLINOIS, ASSIGNOR TO BOTTLERS MACHINERY MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

BOTTLE-CAPPING MACHINE.

948,461.

Specification of Letters Patent.

Patented Feb. 8, 1910.

Application filed August 21, 1908. Serial No. 449,611.

To all whom it may concern:

Be it known that I, FRANK C. H. STRASBURGER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Bottle-Capping Machines, of which the following is a specification.

The primary object of this invention is to provide a rotary capping machine for rapidly and effectively applying caps to milk and cream bottles.

A further object of the invention is to provide bottle capping means adapted to be automatically operated by the bottles as they are discharged from a filling machine.

In the accompanying drawings Figure 1 is a plan view of the invention. Fig. 2 is a detail view, partly in section. Fig. 3 is a sectional view on the line 3—3 of Fig. 1. Fig. 4 is a detail enlarged sectional view. Fig. 5 is a sectional view on the line 5—5 of Fig. 3. Fig. 6 is a sectional view on the line 6—6 of Fig. 3.

Referring to the drawings, 7 is a table which is supported on a standard 8 and is located alongside of a bottle filling machine. This table constitutes the discharge table of the filling machine and it is provided with walls 9 which form a passage-way 10 to receive the bottles 11 from the bottle rests 12 on the filling machine. A plurality of posts 13 are mounted in bases 14 on the table 7 and each base is adjustably secured on the table by a bolt 15. The bases have radial slots 14' and the table has a plurality of curved slots 7' to receive the bolts 15, these slots being arranged in such relation to each other as will permit of the proper adjustment of the posts for the purpose hereafter described. A collar 16 is adjustably mounted on each post 13 and is secured in adjusted position by a set screw 16'. Each collar carries a magazine 17 which may be in the form of a cylinder, as shown, of a size adapted to receive a stack of bottle caps.

A vertical shaft 18 is revolvably mounted on the table 7 and a rotary delivery plate 19 is rigidly mounted on this shaft at the upper end thereof. This delivery plate is provided in its periphery with a plurality of openings 20 having bevel edges 20'. The magazines are arranged with their lower discharge ends just clear of the upper surface of the delivery plate and in such position

that each cap opening 20 will receive a cap from one of the magazines as the plate is revolved. It will be apparent that the delivery plate will take the caps first from the first magazine and then from the second and so on and the plurality of magazines provides for a large supply of caps so that the machine can be operated uninterruptedly until all of the caps are exhausted. The magazines can be filled while the machine is in operation and if for any reason the delivery plate fails to take a cap from one magazine it may take one from the next magazine. The stacks of caps rest upon the delivery plate and when a cap is seated in one of the openings it will lie flush with the upper surface of the plate and slide under the succeeding magazines without disturbing the caps therein. The vertical shaft 18 also carries one or more star wheels to engage the bottles. In the drawings I have shown an upper star wheel 21 to engage the neck of the bottle and a lower star wheel 22 to engage the body of the bottle, both star wheels being rigidly mounted on the shaft 18. The table is provided with a circular wall 23 forming an opening 23' to receive the revolvable block 24. This block projects laterally above the upper edge of the circular wall 23 and is provided with a ball bearing 24' on said wall. The block 24 carries a star wheel 25 which engages the body of the bottle and is located opposite the star wheel 22. A vertical shaft 26 is rigidly secured in the block 24 and it carries at its upper end a star wheel 27 which engages the neck of the bottle and is located opposite the star wheel 21. The shafts 18 and 26 carry gears 18' and 26' at their lower ends which mesh with each other so that the shafts and star wheels will operate in unison. The revolvable block 24 also carries a plurality of cappers each of which comprises a rod 28 movable vertically in the block and carrying an arm 29 to which a head 30 is secured preferably by a ball and socket joint 31. A spring 32 is arranged on each rod 28 between the star wheel 27 and a collar 33. A roller 34 is arranged at the lower end of each rod to travel on a cam track 35 provided around the shaft 26 on an arm 36 mounted on the standard 8.

The number of cappers is equal to the number of cap openings in the delivery plate and to the sockets in the star wheels and they are arranged in cooperating relation so that

when a bottle is located in capping position, a cap will be supported by the delivery plate immediately above the mouth of the bottle and a capper head will be located immediately above the cap. The cam track has an abrupt step 35' and when the bottle, cap and head are thus arranged the roller 34 will travel off of the step and the spring will move the capper rod downward with a quick motion and with sufficient force to cause the capper head to disengage the cap from the delivery plate and force it to its seat in the mouth of the bottle. This operation is repeated as fast as the bottles move into capping position and it will be observed that all of the movements are automatic and are induced by the movement of the bottles. In the modern filling machines the bottles are automatically discharged on to a table and push each other along a passage-way thereon. I arrange the table 7 so that the bottles may be discharged from the filling machine into the passage-way 10 and each bottle is pushed by the next bottle along said passage-way until it is engaged by the star wheels and registered thereby in capping position. The movement of the bottle is substantially continuous and hence I provide a step 35' on the cam and a strong spring on the capping rod to operate the capping head quickly. I prefer to provide that part of the table over which the bottles travel with ribs 37 so as to reduce the friction of the bottles on the table.

What I claim and desire to secure by Letters Patent is:

1. In a bottle capping machine, the combination of means for registering a plurality of bottles successively in capping position, means for registering a cap in capping position for each bottle, and a plurality of capping heads having a conjoint movement with the bottle registering means to register a capping head above each bottle when the latter reaches capping position and an independent movement to force the cap into its seat in the bottle.

2. In a bottle capping machine, the combination of rotary means for registering a plurality of bottles successively in capping position, rotary means for registering a cap in capping position above the bottle, a plurality of capping heads, means operating synchronously with the bottle and cap registering means for registering a capping head in capping position above the cap and bottle, and means for operating the capping head to force the cap into its seat in the bottle.

3. In a bottle capping machine, the combination of rotary means for registering a plurality of bottles successively in capping position, means connected and operating synchronously with said bottle registering means for registering a cap in capping position for each bottle, a plurality of capping

heads rotating synchronously with said bottle and cap registering means, and means for automatically moving said capping head vertically in capping position to force the cap into its seat in the bottle.

4. In a bottle capping machine, the combination of rotary means for registering a plurality of bottles successively in capping position, means connected and operating synchronously with said bottle registering means for registering a cap in capping position for each bottle, a plurality of capping heads rotating synchronously with said bottle and cap registering means, means for automatically moving each capping head to clear the cap and its registering means in capping position, and means for automatically actuating each capping head to force the cap into its seat in the bottle.

5. In a bottle capping machine, the combination of rotary means for registering a plurality of bottles successively in capping position, means connected and operated synchronously with said bottle registering means for registering a cap in capping position for each bottle, a plurality of cappers rotating synchronously with said bottle and cap registering means, each of said cappers comprising a movable rod, an arm on the rod, a head carried by said arm, a cam on which said rods travel, and springs for holding said rods against the cams.

6. In a bottle capping machine, the combination of oppositely disposed star wheels operating in unison to register a bottle in capping position, a magazine holding a stack of caps, a plate revolving beneath said magazine to receive and carry a cap therefrom into position above the bottle, a capping head, and means for moving the capping head vertically to force the cap from the plate into its seat in the mouth of the bottle.

7. In a bottle capping machine, the combination of means for registering a bottle in capping position, means for carrying a cap into position above the mouth of the bottle, a capping head, a cam, a rod engaging said cam and carrying said head, and a spring for actuating said rod to operate the head to force the cap into its seat in the mouth of the bottle.

8. In a bottle capping machine, the combination of means for registering a bottle in capping position, a magazine holding a stack of caps, a revolving plate adapted to receive and carry a cap from the magazine into position above the mouth of the bottle, a capping head, a vertically movable rod carrying said head, a cam below the rod, and a spring engaging said rod to hold it in contact with the cam and to move the rod vertically to operate the head.

9. In a bottle capping machine, the combination of a pair of oppositely disposed star wheels operating in unison to register

bottles one at a time in capping position; a magazine holding a stack of caps, a delivery plate operating in unison with the star wheels to carry caps from the magazine and
5. arrange one above each bottle as the latter is registered in capping position, a plurality of capping heads, means for arranging a capping head above each cap as the latter is car-

ried to capping position, and means for operating said head to force the cap into its seat in the mouth of the bottle.

FRANK C. H. STRASBURGER.

Witnesses:

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PAUL L. SCHMECHEL.