

No. 645,685.

Patented Mar. 20, 1900.

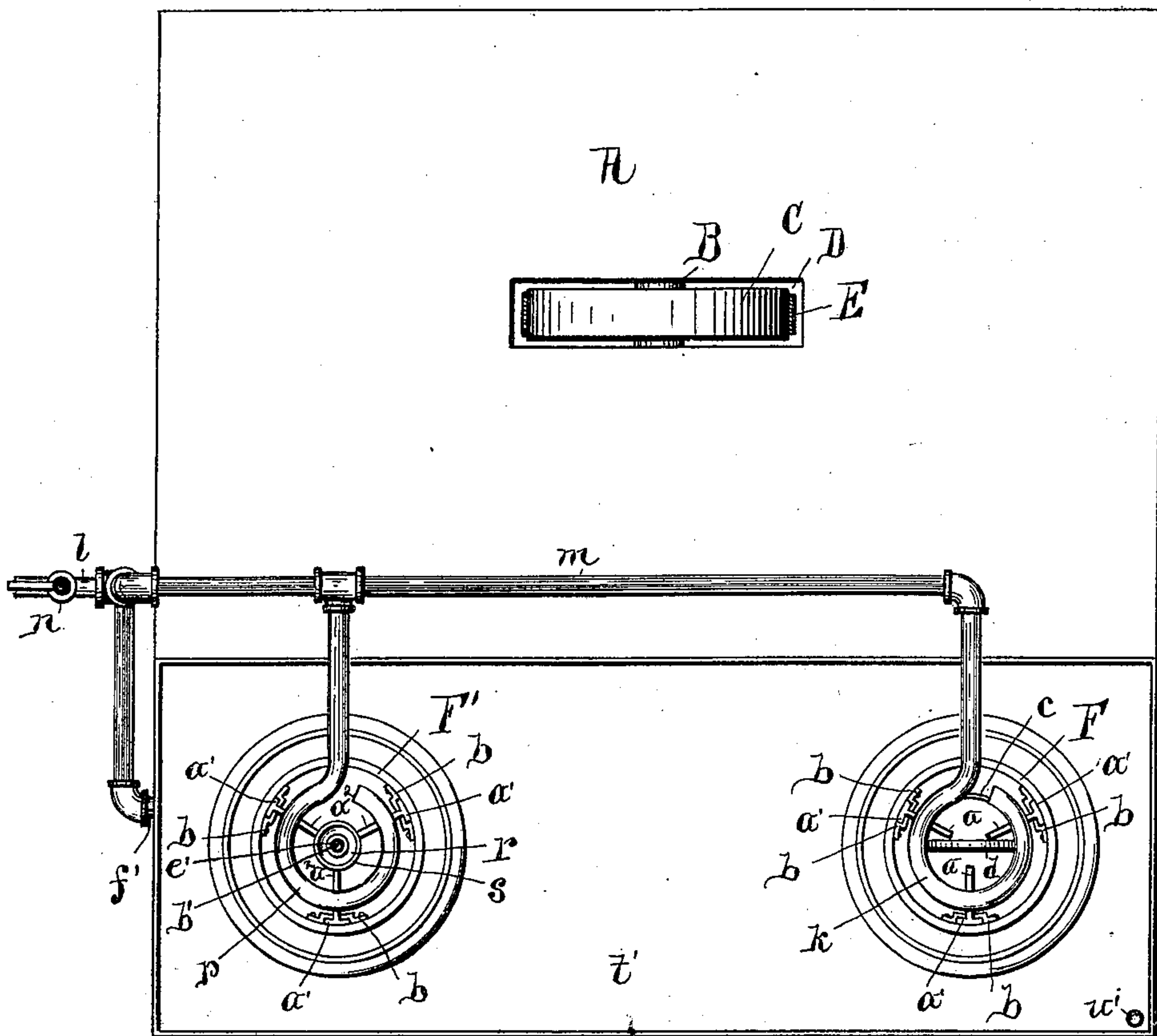
L. HOUSE.  
BOTTLE WASHING MACHINE.

(Application filed May 20, 1899.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1



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Fig. 2

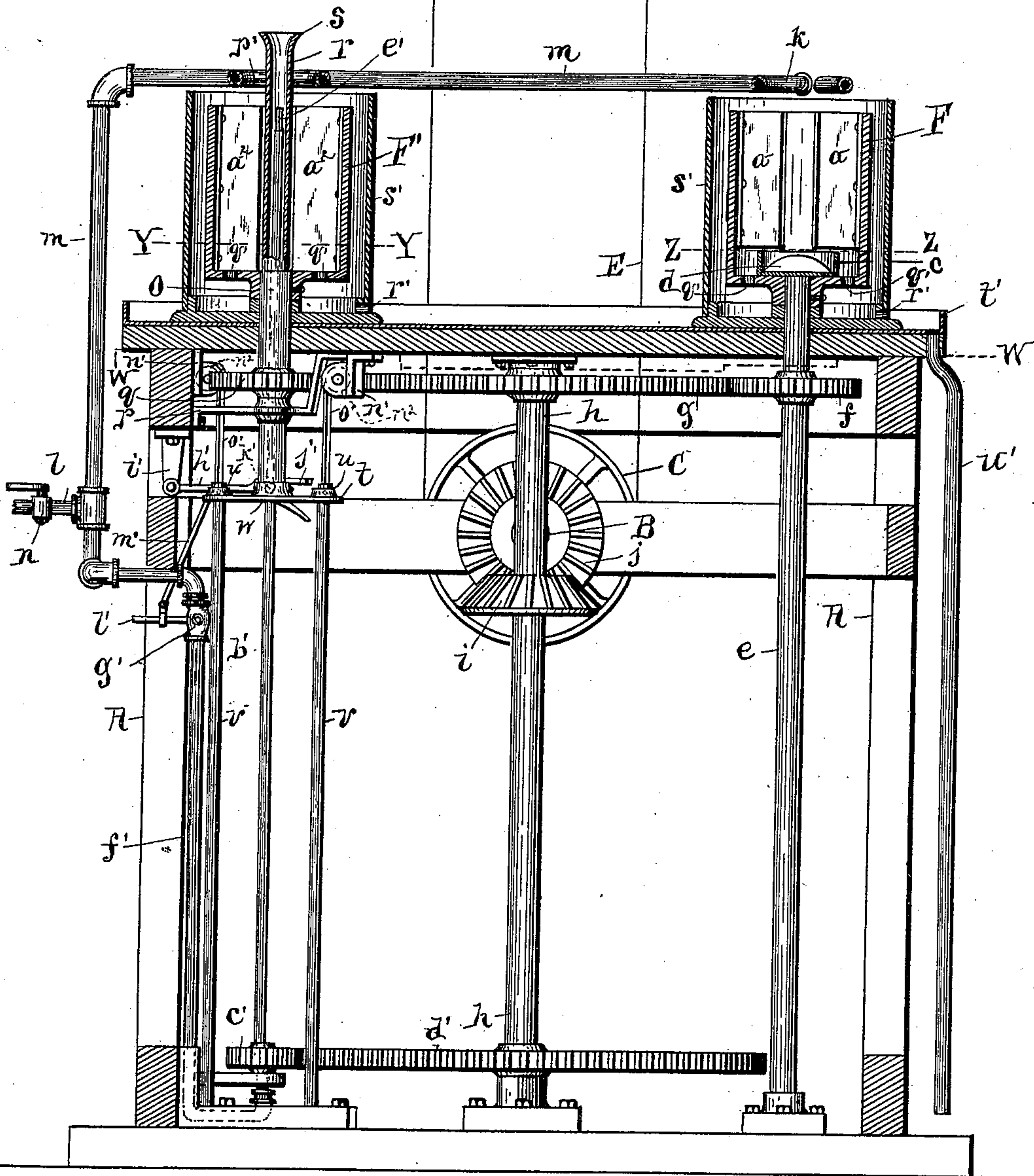
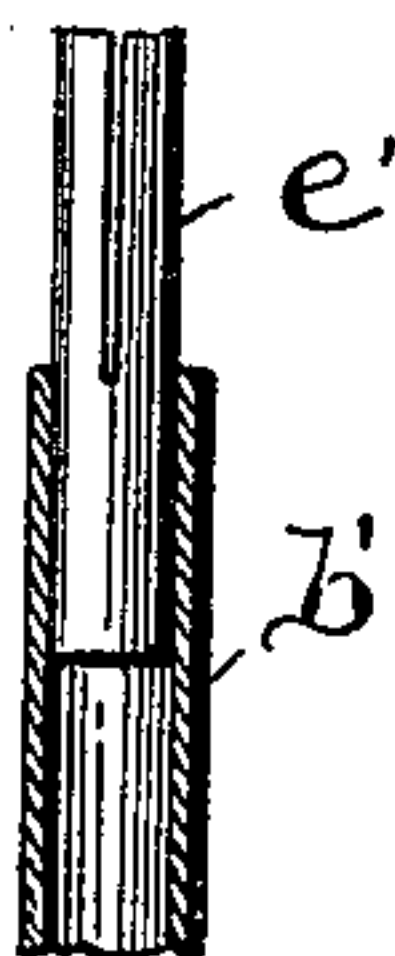


Fig. 7



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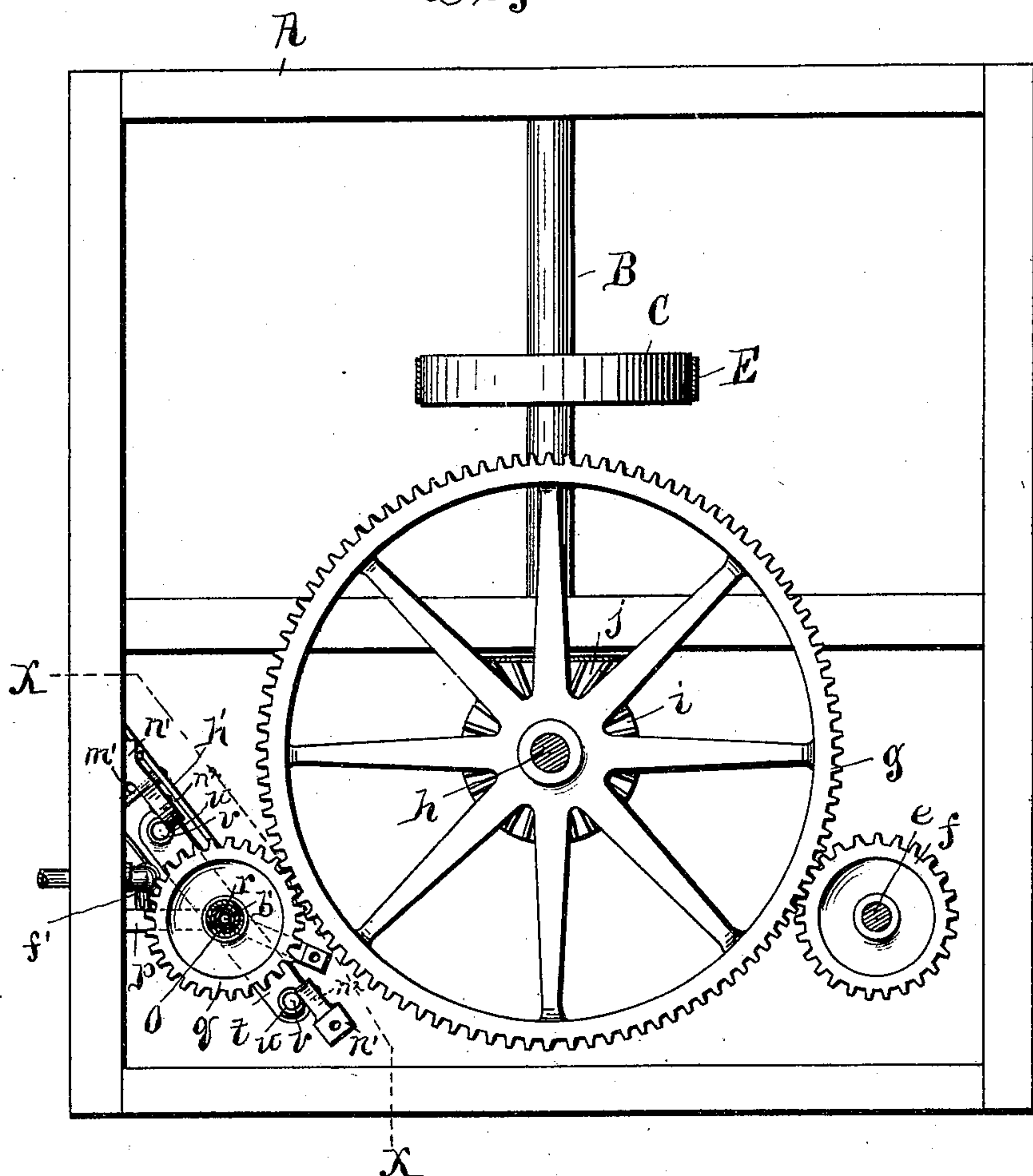
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4 Sheets—Sheet 3.

*Fig. 3*



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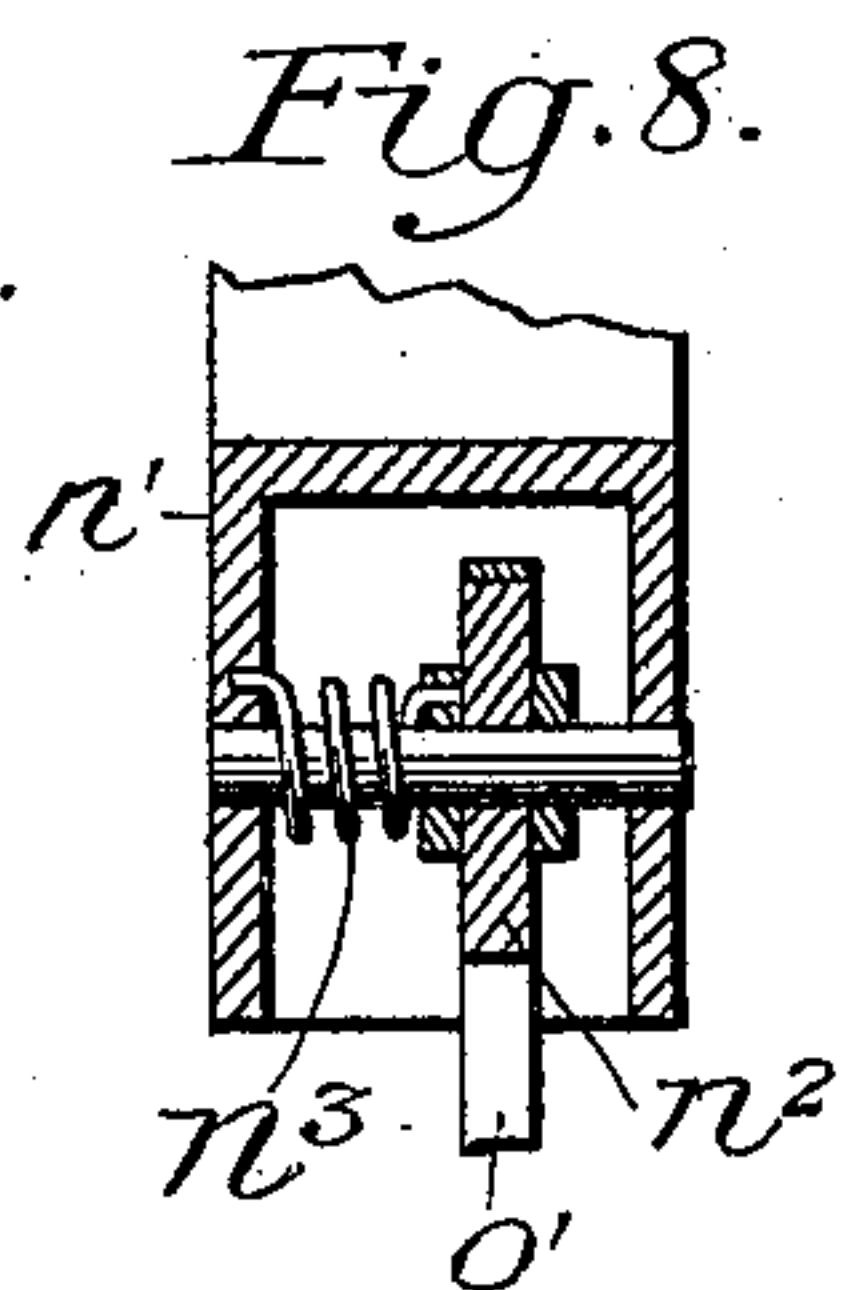
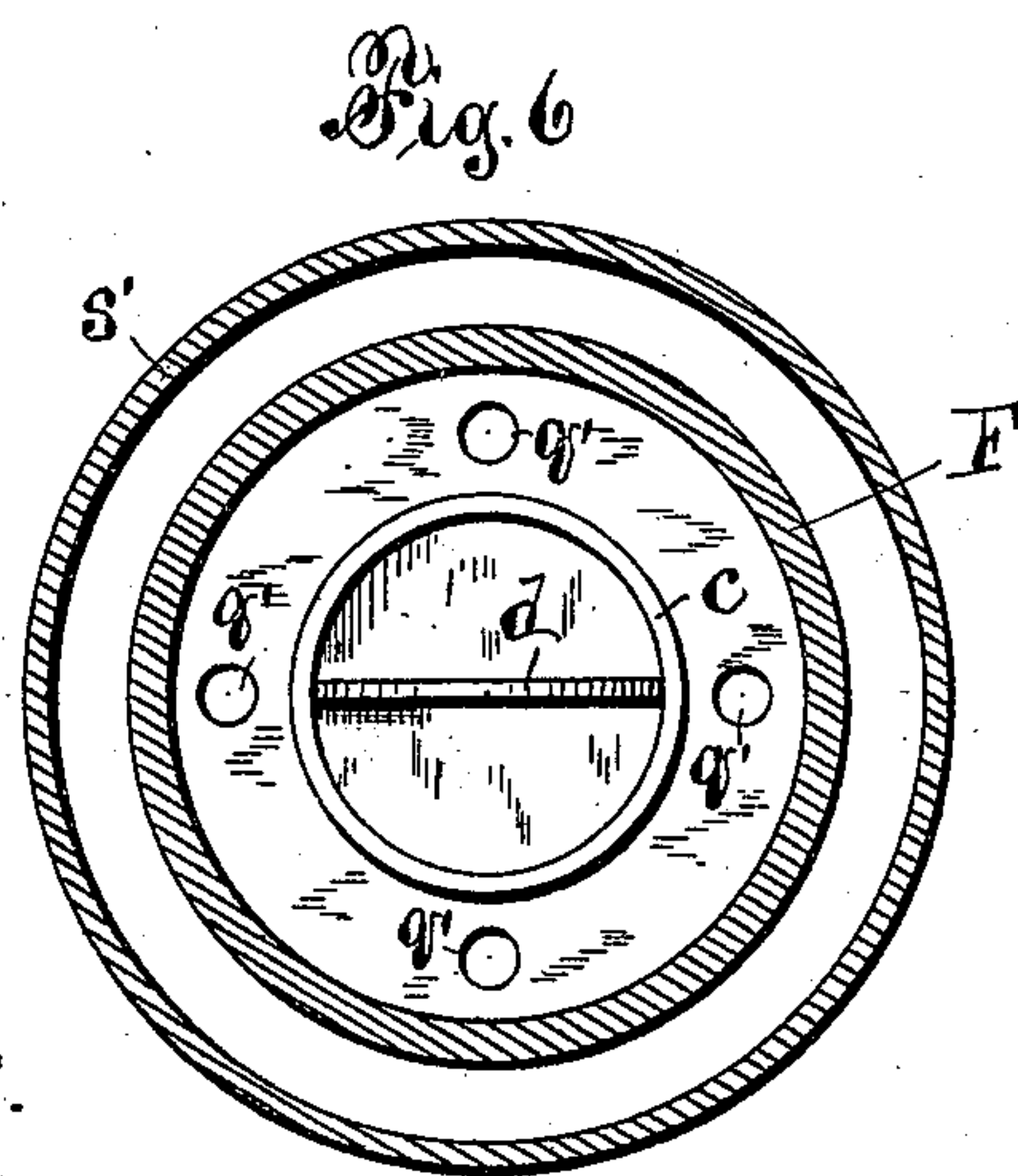
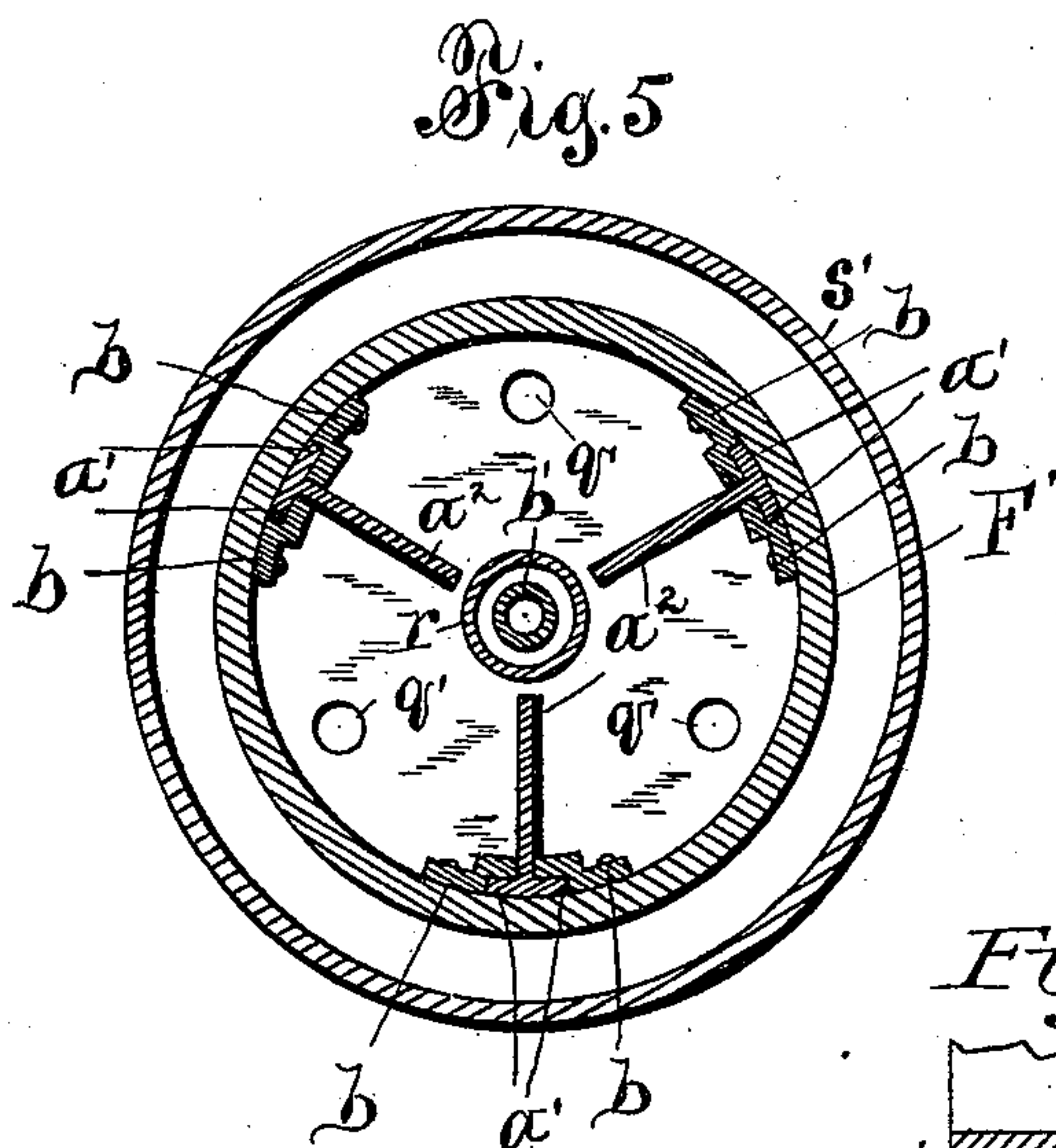
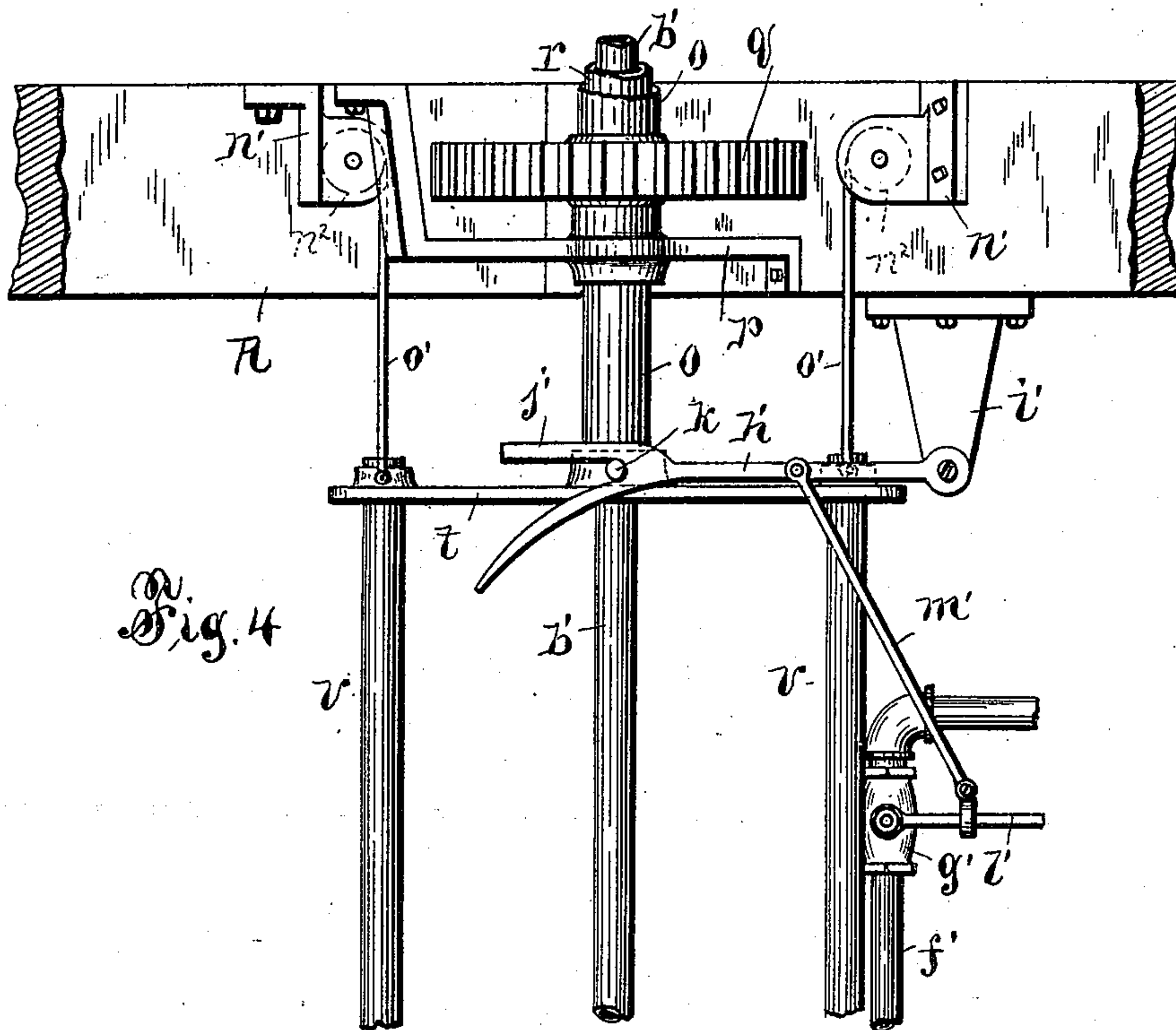
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L. HOUSE.  
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(Application filed May 20, 1899.)

(No Model.)

4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

LOUIS HOUSE, OF SYRACUSE, NEW YORK.

## BOTTLE-WASHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 645,685, dated March 20, 1900.

Application filed May 20, 1899. Serial No. 717,561. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS HOUSE, a citizen of the United States, and a resident of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Bottle-Washing Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

10 This invention relates to a machine for washing bottles.

The main object of the invention is to provide a machine which will effectually clean both the interior and exterior of the bottle.

15 The object is also to produce a machine which will be efficient in its operation, simple in construction, and also inexpensive in its manufacture.

20 To these ends the invention consists in the novel construction and combination of the component parts of the bottle-washing machine, as hereinafter fully described, and set forth in the claims.

25 In the annexed drawings, Figure 1 is a plan view of my improved bottle-washing machine. Fig. 2 is a transverse section of the same, taken through the cylinders. Fig. 3 is a longitudinal section on line W W in Fig. 2. Fig. 4 is an enlarged transverse section on line X X in Fig. 3. Figs. 5 and 6 are enlarged transverse sections on lines Y Y and Z Z, respectively, in Fig. 2. Fig. 7 is an enlarged longitudinal section of the upper end portion of the hollow shaft on which is supported the brush for cleaning the interior of the bottle, and Fig. 8 is an enlarged detail vertical section of one of the spring-actuated pulleys.

35 Referring to the drawings, A represents the main frame of the machine, and B the main driving-shaft, provided with the usual driving-pulley C.

The top of the machine is provided with an opening D to accommodate the belt E.

45 F and F' represent two rotary upright cylinders, which I designate "primary" and "secondary" cylinders, respectively. Said cylinders are provided internally with a series of radial brushes  $a$   $a^2$ , respectively secured to the inner peripheries thereof and which extend to within a short distance from the center of the cylinders. Said brushes consist, preferably, of sheets or strips of rubber or

other flexible material formed with flanges  $a'$  at the attaching edges, which are secured to said cylinders by means of metallic strips  $b$ , as clearly shown in Figs. 1 and 3 of the drawings.

The primary cylinder F has its brushes terminating some distance from its bottom to accommodate a cup  $c$ , secured to said bottom, 60 in which cup is provided a transverse brush  $d$ , of suitable shape, which is employed for cleaning the bottom of the bottle, the brushes  $aa$  in said cylinder being employed for cleaning the lower portions of the exterior or outer 65 sides of the bottle, which operations are effected by inserting the bottle and holding the same rigidly upright and centrally in the cylinder, whereby the flexible brushes  $a$   $a$  press against the sides of the bottle and the transverse brush  $d$  is made to bear against the bottom, and by the rotation of said brushes the dirt, grit, &c., is effectually removed from the bottle, water being supplied to the brushes, as hereinafter described. 75

The cylinder F is rigidly supported on an upright shaft  $e$ , suitably journaled on the main frame, which shaft is provided with a pinion  $f$ , said pinion meshing with the gear-wheel  $g$ , rigidly secured to a vertical shaft  $h$ , 80 journaled on the aforesaid frame, which latter shaft is provided with a bevel-gear  $i$ , which meshes with a corresponding gear  $j$ , which is rigidly secured to the main driving-shaft B, by which mechanism rotary motion 85 is imparted to the aforesaid cylinder F.

Above the cylinder F is located a perforated coil of pipe  $k$ , which communicates with a feed-pipe  $l$  by means of a pipe  $m$ , whereby water is supplied to the aforesaid brushes  $aa$  90 and the cup  $c$ , in which is located the transverse brush  $d$ , as aforesaid, the flow of water to said coil to be controlled by means of a suitable valve  $n$ , provided in the feed-pipe  $l$ .

The secondary cylinder F' is designed for 95 cleaning the upper portion of the exterior or outer sides of the bottle, which bottle is inserted in a reverse manner in the cylinder. Said cylinder is rigidly secured to a rotary sleeve  $o$ , suitably journaled on the frame and 100 preferably supported by a bracket  $p$ , to which sleeve is rigidly secured a pinion  $q$ , which meshes with the aforesaid gear-wheel  $g$ , whereby rotary motion is imparted to the cylinder



F'. Extending through said cylinder and sleeve and independent thereof is a vertically-movable hollow plunger *r*, having its upper end flared, as indicated at *s*, for the reception of the neck of the bottle, as herein-  
 5 after described. Said plunger is rigidly secured at its lower end to a plate *t*, formed with openings *u u* near its ends, by which it slides on two upright or vertical guide-rods  
 10 *v v*, secured at their lower ends to the main frame A. The plate *t* is provided with an opening *w* at its intermediate portion, through which passes a rotary hollow shaft *b'*, which  
 15 shaft extends through the aforesaid plunger *r* and is journaled at its lower end on the main frame A, whereat it is provided with a pinion *c'*, rigidly secured thereto, which pinion meshes with a gear-wheel *d'*, rigidly secured to the aforesaid shaft *h*, whereby rotary  
 20 motion is imparted to said hollow shaft *b'*, to the upper end of which latter shaft is secured a brush *e'*, which consists, preferably, of a split rubber or other flexible tube, which is caused to fly apart by centrifugal force caused  
 25 by the rapid rotation of the shaft *b'*, which latter brush is adapted to enter the bottle for cleaning the interior thereof, water being supplied to said brush through a pipe *f'*, communicating with the bottom of the hollow  
 30 shaft *b'* and connected with the feed-pipe *l*, the flow of water to said brush being controlled by means of a valve *g'*, provided in the pipe *f'*. The means for operating said valve will now be described.

35 To the frame A is pivoted one end of a bar *h'*, preferably by means of a bracket *i'*, the opposite end of which bar is formed with a fork *j'*, which embraces a pin *k'*, projecting horizontally from the vertically-movable plate  
 40 *t*. The valve *g'* is provided with a lever *l'*, which is connected to the aforesaid bar *h'* by means of an arm *m'*.

*n' n'* denote two brackets, to which are pivoted two spring-controlled pulleys *n<sup>2</sup> n<sup>2</sup>*, on  
 45 which run two flexible bands or chains *o' o'*, which bands are connected at one end to the aforesaid plate *t*. The coil-springs *n<sup>3</sup> n<sup>3</sup>*, which actuate the pulleys *n<sup>2</sup> n<sup>2</sup>* to lift the plate *t*, surround the shafts of the pulleys and are secured at one end to said pulleys and at their  
 50 other ends to the brackets *n' n'*, as clearly shown in Fig. 8 of the drawings. Located above the cylinder F' is another perforated coil of pipe *p'*, which communicates with the  
 55 feed-pipe *l* by means of the pipe *m*, whereby water is supplied to the brushes *a<sup>2</sup> a<sup>2</sup>*, provided in the latter cylinder, the flow of water being controlled by the valve *n*, hereinbefore referred to.

60 It will be seen that in inserting the bottle in the cylinder F' the neck of the bottle is placed in the flared end of the hollow plunger *r* to force the same downward, whereby the upper portion of the exterior or outer sides of  
 65 the bottle is brought in contact with the brushes *a<sup>2</sup> a<sup>2</sup>* at the same time the brush *e'* on the hollow shaft *b'* is caused to enter the bot-

tle. By forcing the plunger *r* down, as aforesaid, the bar *h'* is actuated, and the lever *l'*, connected to said bar by the arm *m'*, is operated, thereby opening the valve *g'*, allowing the water to flow through the hollow shaft *b'*, and consequently to the brush *e'*, whereby the interior of the bottle is cleaned. By withdrawing the bottle from the plunger the plate  
 75 is allowed to be drawn upward by the aforesaid bands and spring-actuated pulleys, whereby the forked bar is lifted, and thus the valve *g'* is closed.

The bottoms of the cylinders are provided  
 80 with openings *q' q'*, serving as passages for the water, which is carried off through an opening *r'*, provided in the lower end of annular jackets *s'*, surrounding the cylinders, which jackets are provided for the purpose of pre-  
 85 venting a person in charge of the machine coming in contact with the cylinders.

I preferably provide the top of the machine with a flat basin *l'*, provided with a pipe *u'* to carry off the water.

What I claim as my invention is—

1. A bottle-washing machine comprising an upright cylinder provided with a series of radial brushes extending part way lengthwise  
 95 the cylinder for cleaning the lower portion of the exterior of the bottle, a cup located within the cylinder and secured to the bottom thereof, and provided with a transverse curved brush for cleaning the bottom of the bottle,  
 100 a perforated coil of pipe located above the cylinder to supply water to said radial brushes and cup, and mechanism rotating said cylinder substantially as described.

2. In a bottle-washing machine, the combination of the main frame and main driving-  
 105 shaft, of an upright rotary shaft journaled on the main frame, a primary cylinder connected to said latter shaft and provided with brushes for cleaning the lower portion of the outer  
 110 sides of the bottle, and with a transverse brush in its bottom for cleaning the bottom of the bottle, a secondary cylinder provided with brushes for cleaning the upper portion of the outer sides of the bottle, a sleeve jour-  
 115 naled on the main frame and connected to the latter cylinder, pinions secured to said sleeve and upright shaft, a gear-wheel connecting said pinions and receiving motion from the main driving-shaft, a hollow rotary shaft ex-  
 120 tending independently through said sleeve and secondary cylinder and provided at its upper end with a brush adapted to enter the bottle for cleaning the interior thereof, a pinion secured to said hollow shaft, a gear-wheel connected to said latter pinion and receiving  
 125 motion from said main driving-shaft, and means for supplying the water to the cylinders, brushes and hollow shaft substantially as described.

3. In a bottle-washing machine, the combination with the main frame of an upright rotary cylinder supported thereon and provided  
 130 with radial brushes for cleaning the exterior of the bottle, a suitably-journaled hollow ro-



tary shaft extending centrally and longitudinally through the cylinder and provided at its upper end with a brush adapted to enter the bottle to clean the interior thereof, means for  
 5 supplying water to the cylinder-brushes, a pipe communicating with the lower end of the hollow shaft for supplying water to its brush, a valve connected to said pipe means for operating said valve and mechanism rotating  
 10 the aforesaid hollow shaft and cylinder substantially as described.

4. In a bottle-washing machine, the combination with the main frame of a vertical rotary sleeve journaled on the frame, a cylinder secured to said sleeve and provided internally with radial brushes, a hollow flaring plunger extending through said sleeve and cylinder, a hollow rotary shaft extending through said plunger and provided at its upper end with a brush, a pipe communicating with the lower end of the hollow shaft and supplying its brush with water, a valve connected to said pipe, suitable connections between said plunger and valve, a perforated  
 20 coil of pipe above the cylinder supplying water to the aforesaid radial brushes, a second valve controlling the flow to said coil, and mechanism rotating the aforesaid cylinder and hollow shaft substantially as described.

30 5. In a bottle-washing machine, the combination with the main frame, and main driving-shaft, a vertical rotary sleeve journaled on the main frame, an upright cylinder connected to said sleeve and provided internally with radial brushes, vertical stationary guide-rods supported on said frame below the sleeve, a horizontal plate movable vertically on said rods, a hollow plunger connected to the central portion of said plate and passing through  
 35 the aforesaid sleeve, a hollow shaft extending through said plunger and provided at its upper end with a brush, a horizontal pin projecting from said plate, a bar pivoted at one end to the main frame and formed at its opposite  
 40 end with a fork engaging the aforesaid pin, a water-pipe communicating with the bottom of the hollow shaft and provided with a valve, a lever attached to said valve, an arm con-

necting said bar and lever, spring-actuated pulleys supported on the main frame, bands  
 50 running on said pulleys and connected to the aforesaid plate, pinions secured to the aforesaid sleeve and hollow shaft and gears meshing with said pinions and deriving motion from the main driving-shaft substantially as  
 55 described.

6. In the herein-described bottle-washing machine, the combination, of a vertically-movable hollow plunger, a horizontal plate connected to the lower end of said plunger, guide-  
 60 rods for said plate, a hollow rotary shaft extending through said plunger and provided at its upper end with a brush adapted to enter the bottle, a water-pipe communicating with the lower end of said shaft, and provided  
 65 with a valve, spring-actuated bands drawing said plate upward, a bar pivoted at one end to the main frame and formed at its opposite end with a fork engaging a pin projecting from said plate, a lever connected to said  
 70 valve, an arm connecting said bar and lever, and means to rotate said hollow shaft substantially as described.

7. In a bottle-washing machine, the combination with the main frame and main driving-  
 75 shaft, of a vertical rotary sleeve journaled on the main frame, an upright cylinder secured to said sleeve and provided internally with radial brushes, a hollow vertical plunger extending through said sleeve and cylinder, and  
 80 having its upper end flared to receive the neck of the bottle, a hollow rotary shaft extending through said plunger and provided at its upper end with a brush to enter the bottle, a water-pipe communicating with the  
 85 lower end of the hollow shaft, a valve connected to said pipe, suitable connections between said plunger and valve, mechanism rotating said sleeve and hollow shaft, and deriving motion from the main driving-shaft, and means  
 90 automatically raising the plunger substantially as described.

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