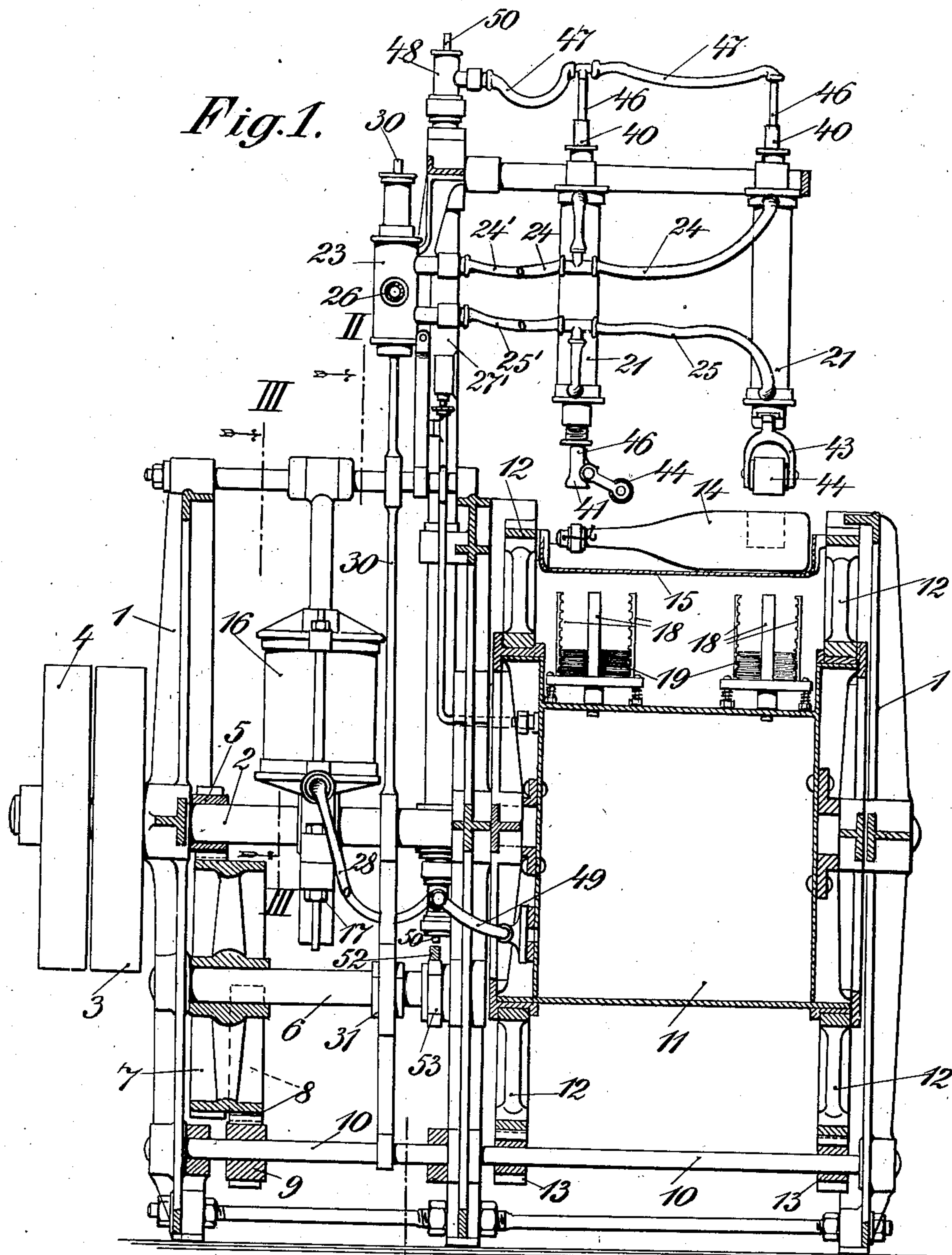


No. 891,747.

PATENTED JUNE 23, 1908.

F. SZLUBIS.
LABELING MACHINE.
APPLICATION FILED AUG. 23, 1907.

5 SHEETS—SHEET 1.



Witnesses:
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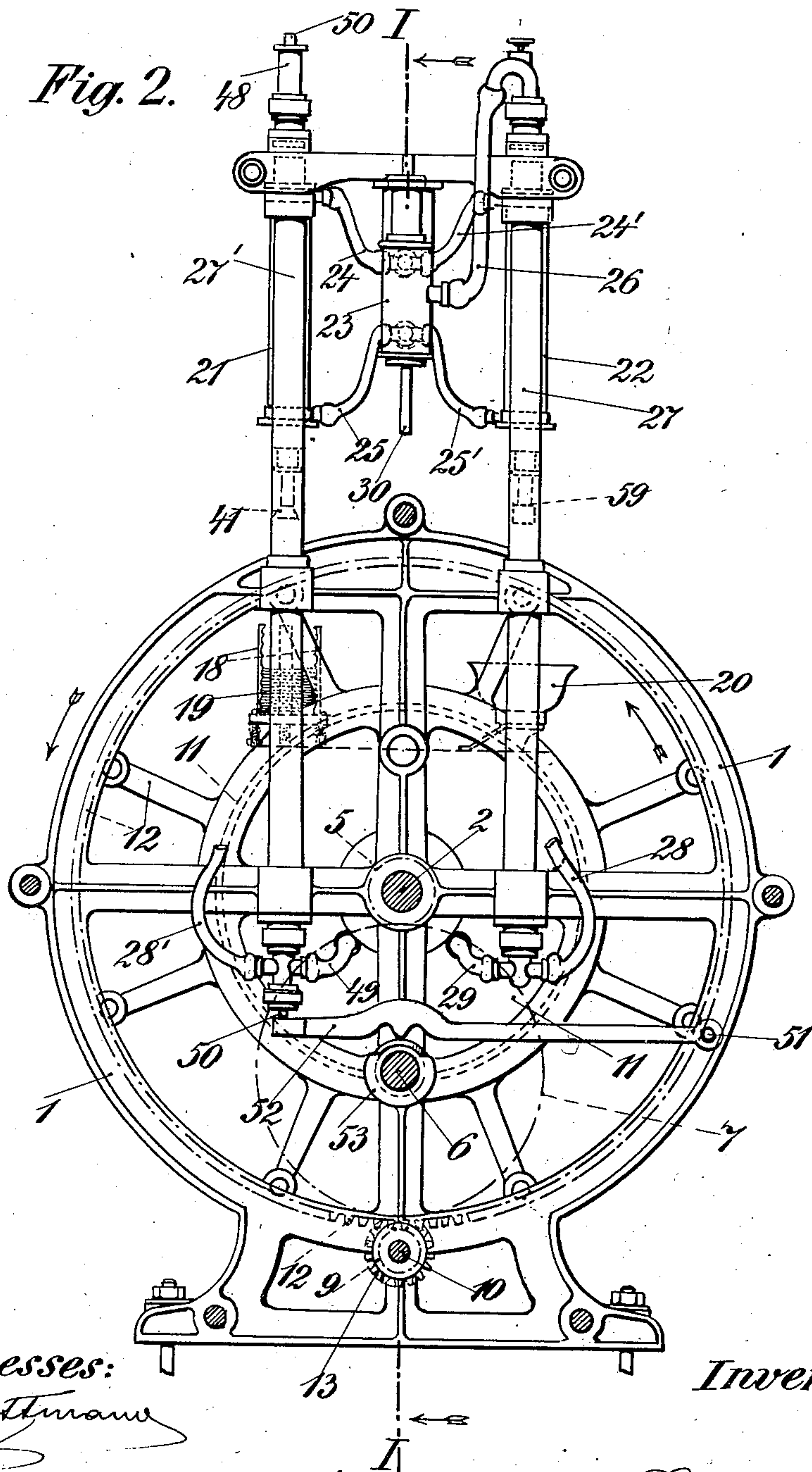
Inventor:
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5 SHEETS—SHEET 2.



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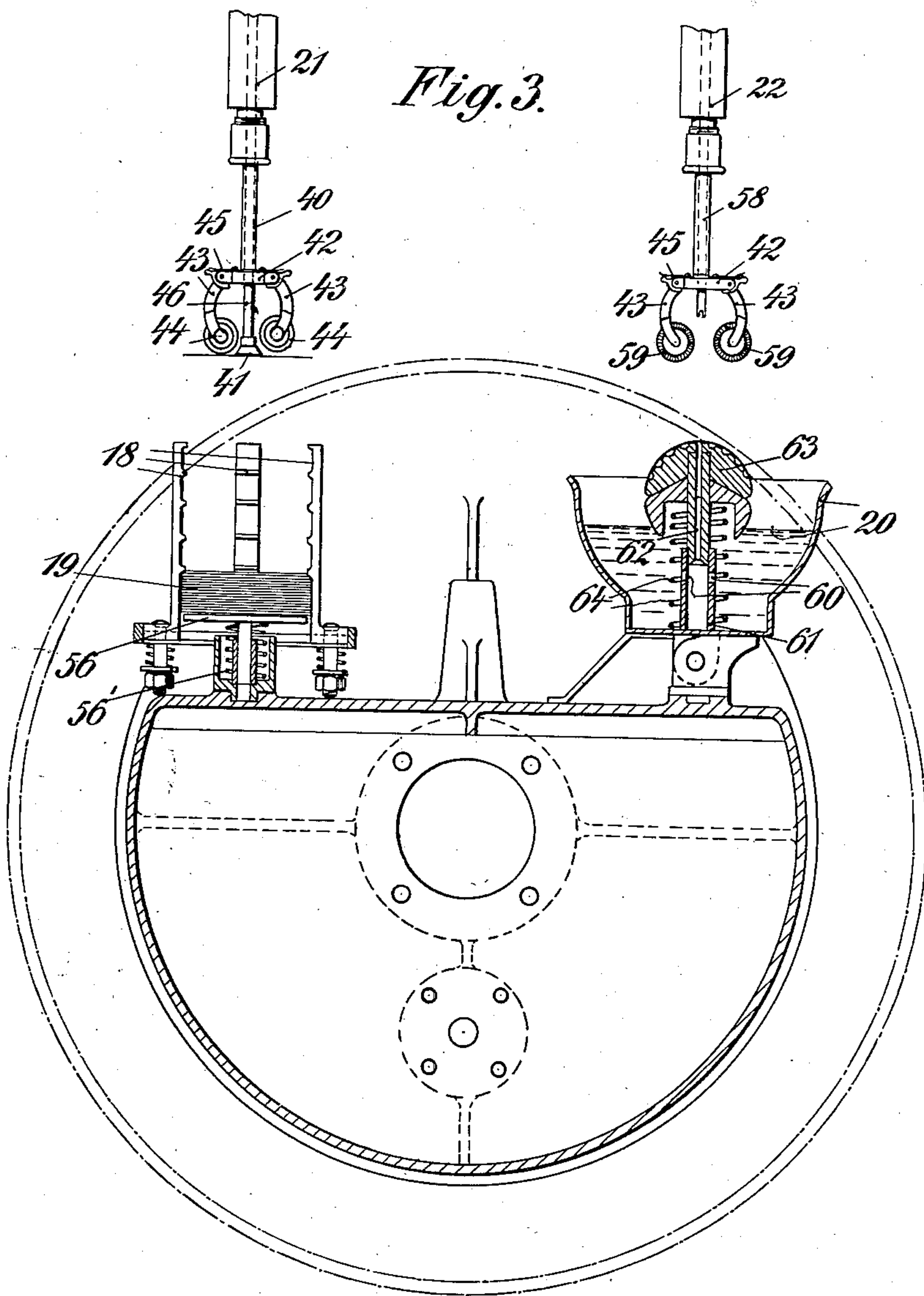
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5 SHEETS—SHEET 3.



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6 SHEETS—SHEET 4.

Fig. 4.

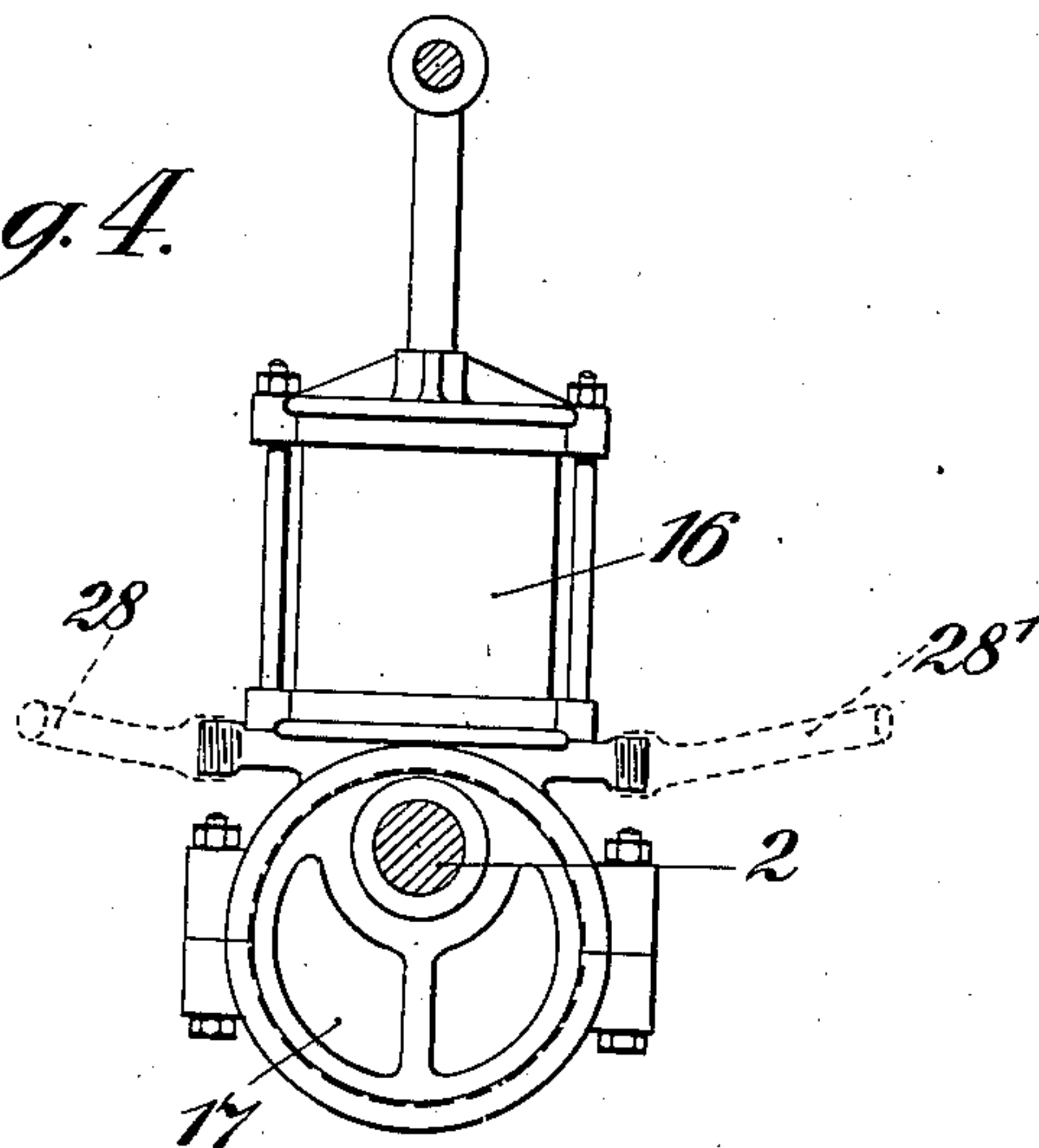
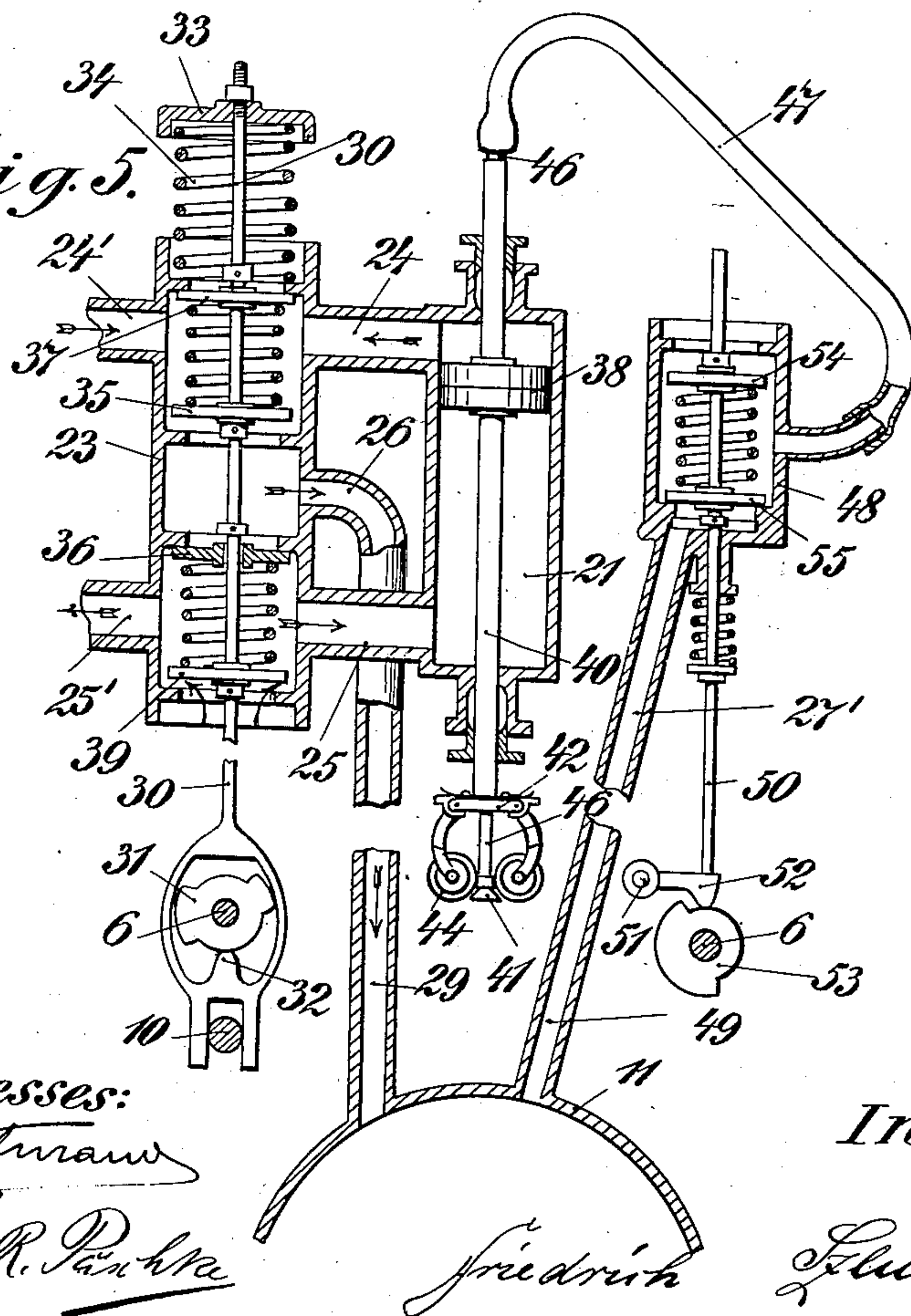


Fig. 5.



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6 SHEETS—SHEET 5.

Fig. 6.

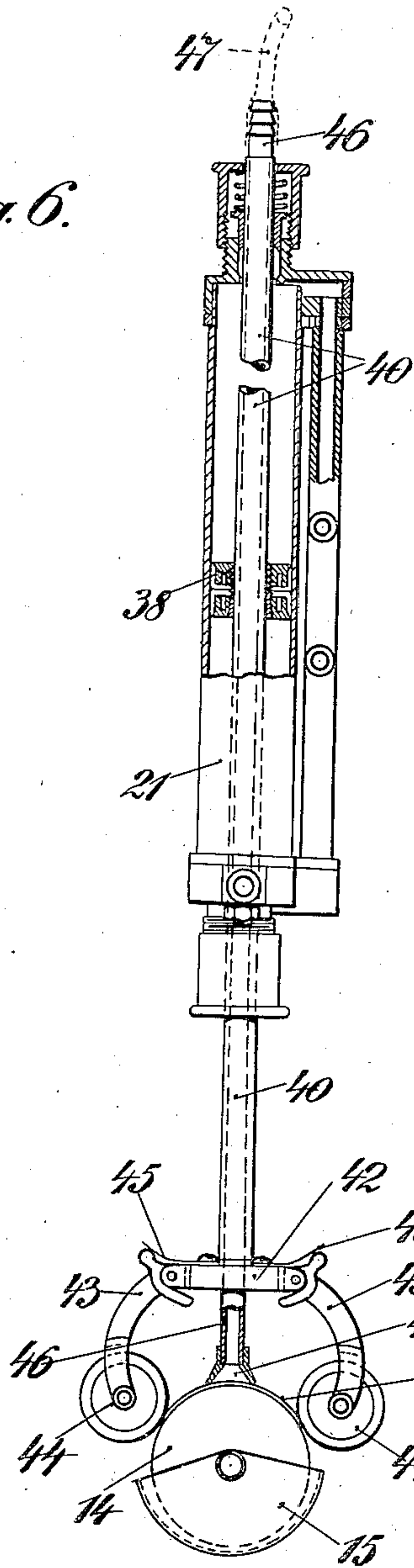
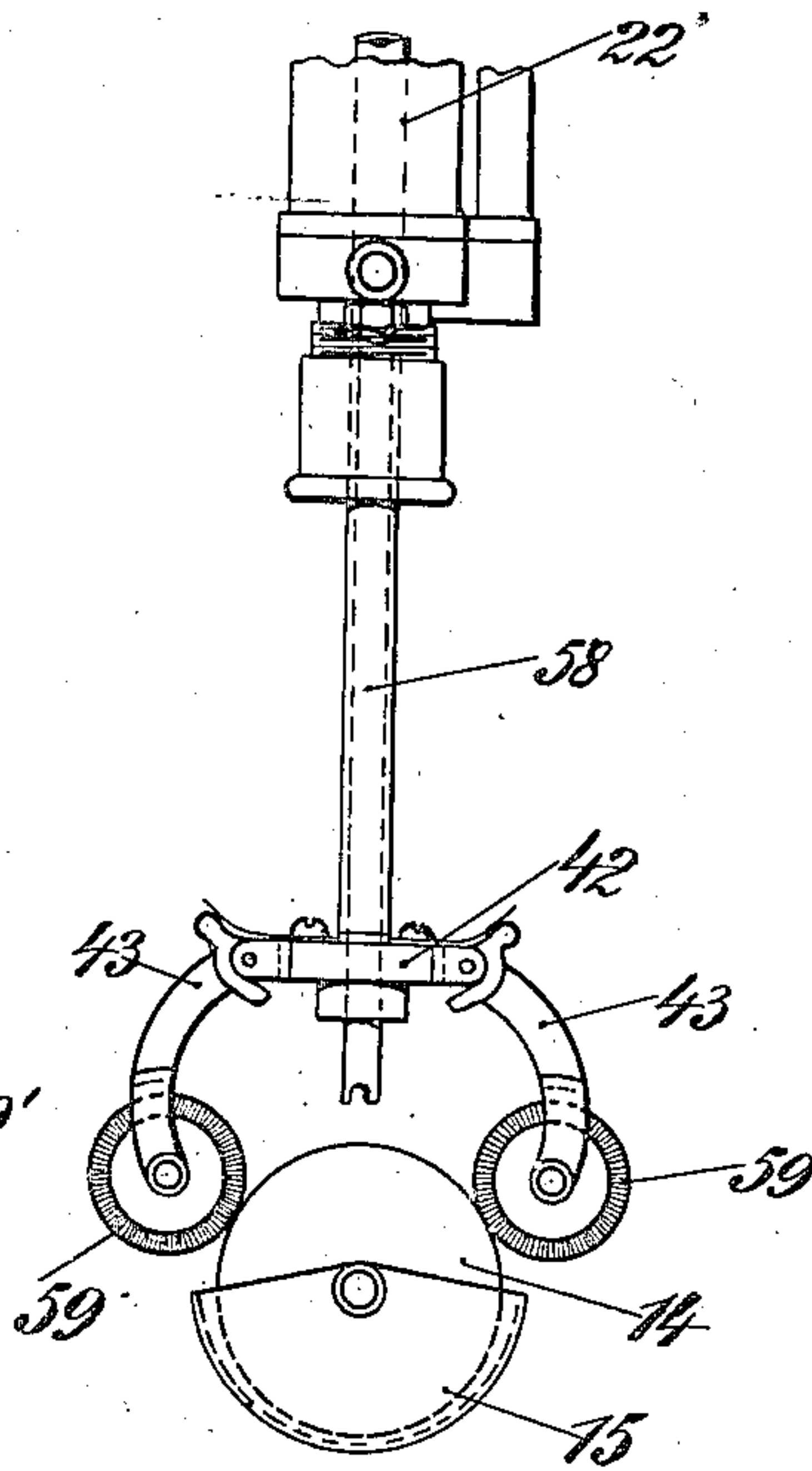


Fig. 7.



Witnesses:
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Benjamin R. Fowler

Inventor:
Friedrich Szlubis

UNITED STATES PATENT OFFICE.

FRIEDRICH SZLUBIS, OF BERLIN, GERMANY.

LABELING-MACHINE.

No. 891,747.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed August 23, 1907. Serial No. 389,800.

To all whom it may concern:

Be it known that I, FRIEDRICH SZLUBIS, a subject of the German Emperor, and resident of Berlin, Kreuzbergstrasse 12, Germany, have invented certain new and useful Improvements in Labeling-Machines, of which the following is a specification.

The subject of this invention is an automatically and continuously working machine for pasting labels on receptacles of any description.

The essential feature of the invention is that the devices used for putting on paste as well as affixing labels, are moved by a vacuum, or a pressing medium (for instance air under pressure).

The invention is illustrated on the accompanying drawings, where

Figure 1 shows a vertical section through the machine on the line I—I of Fig. 2. Fig. 2 a vertical section through the same on line II—II of Fig. 1, Fig. 3 a vertical section through the vacuum-cylinder arranged in the machine frame, on a larger scale, Figs. 4-7 show detail views: Fig. 4 is a side-view of the air-pump driven by the machine, according to section on line III—III of Fig. 1. Fig. 5 a diagrammatic view of the means employed for operating the devices for putting on paste as well as affixing labels, while Figs. 6 and 7 show in a side view and partly in section the devices for putting on the labels and paste, with the corresponding cylinders, on an enlarged scale.

In the frame 1 of the machine is journaled the main shaft 2, on which are fastened the pulleys for driving the machine, the fixed pulley 3 as well as the loose pulley 4. On the shaft 2 there is further arranged a small toothed wheel 5 which engages a larger toothed wheel 7 fixed on the shaft 6. Besides these teeth of the wheel 7 there is provided on the broad rim of the same a second row of teeth 8 but which only extends over a part of the circumference of the rim. With this second row of teeth 8 engages a toothed wheel 9 which is fastened on a shaft 10 journaled in the frame of the machine. In the frame of the machine there is further journaled a hollow cylinder 11 serving as a bearing to the two toothed wheels 12, which turn around the same. The two toothed wheels 12 engage with the small toothed wheels 13 fastened on the shaft 10 and are driven by

the same. Between the two toothed wheels 12 are pivotally arranged in the rim of the same the moulds or trays 15 for holding the vessels to be labeled, in the sample shown in drawings the bottles 14. An air pump 16 (Figs. 1 and 4) arranged in the frame of the machine, is driven by an eccentric 17 fastened on the main shaft 2 and serves in the manner described further on to produce a vacuum in the hollow cylinder 11. On the hollow cylinder 11, which is flat at the top, are arranged the two frames serving to hold the labels and consisting of the angular supports 18, which can be shifted corresponding to the size of the labels to be used, in which frames the labels 19 are piled up (Figs. 1 and 3). In the process of rotation of the toothed wheels 12 the vessels to be labeled before reaching these label frames pass the receptacles 20 containing the paste also arranged in the hollow cylinder 11 (Figs. 2 and 3). Above each label frame there is arranged in the frame of the machine a cylinder 21 and above each paste receptacle 20 a cylinder 22. In the cylinders 21 the devices move which take the labels out of the label frame and put them on the bottles 14, while in the cylinders 22 the devices move taking up the paste and putting it on the bottles.

In the drawings (Fig. 1) there are arranged two label affixers provided with suction heads for putting on two labels, as well as two devices for putting on the paste. Of course only one of such label affixers and paste applicers may also be provided. These label affixers and paste applicers are worked by the following devices. In the frame of the machine is arranged a cylinder 23 which is connected through the tubes 24, 25 and 24', 25' with the cylinders 21 and 22 respectively. The cylinder 23 is divided into three chambers (Fig. 5) which can be shut off one from the other by valves and of which the one in the middle is connected through a tube 26 with a hollow column 27, which serves at the same time as a support for the cylinders and which stands through a tube 29 in communication with the vacuum cylinder 11 and the latter through a tube 28 with the air pump 16. In the cylinder 23 a valve rod 30 moves up and down which is actuated by a cam disk 31 fastened on the shaft 6, which acts on a projection 32 at the lower end of the valve-rod 30. At the upper end of the valve rod

30 is arranged a plate 33 against which rests a spring 34 tending to keep the valve rod always in its highest position. The central chamber of the cylinder 23 which stands in communication with the vacuum cylinder 11 can be shut off through the valves 35 and 36 on the rod 30 against the two adjoining chambers by the up and down motion of this rod. If for instance, the valve rod 30 moves upwards the lower chamber is shut off through the valve 36 from the central chamber while the upper chamber is put into communication with the middle chamber through opening the valve 35. (Fig. 5). There is therefore formed in the upper chamber, which is shut off against the outside air, likewise through a valve 37 worked by the valve-rod 30, a vacuum, which, of course, exists also in the space above the pistons 38 which move in the cylinders 21 and 22, as this space is connected with the upper chamber through the tubes 24 and 24' respectively. The lower chamber has during the upward movement of the valve-rod 30 been put into communication with the outside air through opening the valve 39 also actuated by the valve rod 30 with which then of course the space below the pistons 38 stands in communication. The pistons therefore move upwards. If the upper chamber is put into communication with the atmosphere, and the lower chamber with the vacuum cylinder, the pistons in the cylinder 21 and 22 move downwards. The rods 40 of the pistons moving in the cylinders 21 are hollow (Fig. 6) and carry at their lower ends a cross arm 42 on which are journaled in the arms 43 the rollers 44 and are held by springs 45 in the position shown in Fig. 3. In the hollow piston-rod 40 is arranged a tube 46 which can be moved up and down in the piston rod 40 and carries at its lower end a suction head 41 and stands at its upper end through a tube 47 in communication with a cylinder 48 in the frame of the machine, which in its turn, communicates through a hollow column 27' of the machine frame and a tube 49 with the vacuum cylinder. The column 27' in its turn communicates through the tube 28' with the air-pump 16. In the cylinder 48 a valve-rod 50 moves up and down whose lower end rests on a lever 52 turning on a pivot 51, which is moved by a cam disk 53 fastened on the shaft 6. Through this up and down motion of the valve-rod 50 the valves 54 and 55 on the same are moved in a manner that the interior of the cylinder 48 and, as a result the interior of the suction tube 46 are alternately put into communication with the atmosphere and the vacuum cylinder 11.

If now the piston-rods 40 and with the same the tubes 46 carrying the suction-heads 41 are moved downwards they strike

against the label piles 19 below the same. Each one of the latter is arranged between the supports 18 on a resiliently arranged plate 56 (Fig. 3) and is on the suction head 41 and the rollers 44 coming into contact with the same moved a little downwards. On the supports 18 are provided small ribs 57 through which the labels are during this downward movement and the succeeding upward movement produced by a spring 56' arranged under the plate 56 moved and separated in a manner to prevent them from sticking together on being taken off. Immediately when the suction-head 41 touches the pile of labels there is produced in the tube 46 a vacuum and thereupon the piston 38 is moved upwards, while the suction head 41 takes one label off the pile.

The pistons moving in the cylinders 22 carry at the bottom ends of their rods 58 the pivotably journaled brush-rollers 59 (Figs. 3 and 7) which are arranged in the same manner as the rollers 44. At the bottom of each paste-receptacle 20 there is arranged a tube 61 provided with lateral openings 60 in which tube moves the piston 62 provided with a longitudinal bore, which has a cylindrical head 63 provided with grooves. During the descent of the pistons in the cylinders 22 the brushes 59 touch this cylindrical head 63 and press the same and the piston 62 downwards. The piston then closes the openings 60 and the paste in the cylinder 61 is pressed out through the bore of the piston 62 and is then distributed in the grooves of the head 63. As the brush-rollers 59 during their downward movement roll over the circumference of the head 63, they are coated on their whole surface with paste. When the piston-rod 58 ascends, the brush rollers 59 standing under the action of the springs 45 are moved back into their initial positions (Fig. 3) and at the same time the head 63, and with it the piston 62, are pressed upwards again by a spring 64, so that the paste can stream again into the cylinder 61.

The machine works as follows: Supposing that the toothed wheels 12 carrying the receptacles or trays 15 which are turned intermittently in consequence of there being only a row of teeth 8 on a part of the circumference of the wheel 7 are in such a position that there is no tray under the cylinders 21 and 22. The pistons now move in all these cylinders at the same time downwards, whereby the suction heads 41 strike in the already described manner the pile of labels and the brush rollers 59 roll over the head 63 carrying the paste and are covered with paste. The pistons thereupon move in all cylinders upwards again while the suction-heads 41 by the vacuum produced in the same lift a label 19 from the pile and take it up with them, (Fig. 3). As the shaft 6 ro-

tates uninterruptedly the row of teeth 8 now again engages with the small toothed wheel 9, whereby the toothed wheels 12 carrying the trays are turned so much further that there is a tray under each of the cylinders 21 and 22. The pistons in all these cylinders now move again at the same time downwards, while the brush rollers 59 come into contact with the bottle 14 lying in the respective tray (Fig. 7) and are spread out and rolled over the circumference of the bottle. The place on which the label is to be pasted is during this process covered with paste. The suction heads 41 however press the label 19' they have raised upon a spot of the bottle underneath the same already previously covered with paste while the rollers 44 are likewise spread out and by rolling over the circumference of the bottle press the label upon it, (Fig. 6). As the label to be pasted on is held fast on the bottle by the suction head 41 it cannot shift about on the bottle during the working-process. This is of great importance for the reliable and accurate pasting on of the label.

The label affixers and paste appliers (suction-heads and brush rollers) are now moved altogether upwards again, while the toothed wheels 12 are moved on so much that such label affixers and paste appliers meet again on their descent the pile of labels or the receptacles for the paste, and the above described process is repeated.

By the above described device for putting on the paste it is possible, by changing the brush-rollers, to paste on the labels entirely or only partially on the respective bottles, by which latter method a very economical use of the paste is attained.

The described arrangements may also vary and the single parts be replaced by others of a similar kind without departing from the essential characteristics of the invention.

I claim:—

1. In a labeling machine, in combination, a machine frame, a receptacle for the paste arranged in the latter, a cylinder situated above the said paste-receptacle, a device movable in the said cylinder and adapted to take up the paste from the said receptacle and apply same to the vessels to be labeled, and a means to move up and down the said device in the said cylinder, a frame for holding a pile of label arranged in the machine frame, a cylinder situated above the said label-frame, a device movable in the last said cylinder and adapted to lift a label from the pile and affix the same to the vessels to be labeled, a means to move up and down the last said device in the said cylinder and means to move the vessels to be labeled successively under the said devices for applying the paste and affixing the labels, substantially as set forth.

2. In a labeling machine, in combination, a machine frame, a receptacle for the paste arranged in the latter, a cylinder situated above the said paste-receptacle, a device movable in the said cylinder and adapted to take up the paste from the said receptacle and apply same to the vessels to be labeled, and a means to move up and down the said device in the said cylinder, a frame for holding a pile of labels arranged in the machine frame, a cylinder situated above the said label-frame, a device movable in the last said cylinder and adapted to lift a label from the pile and affix the same to the vessels to be labeled, a means to move up and down the last said device in the last said cylinder, a number of molds or trays movably arranged in the machine frame and adapted for holding the vessels to be labeled, and means to move the said molds or trays successively under the said devices for applying the paste and affixing the labels, substantially as set forth.

3. In a labeling machine, in combination, a machine frame, a receptacle for the paste arranged in the latter, a cylinder situated above the said paste-receptacle, a device movable in the said cylinder and adapted to take up the paste from the said receptacle and apply same to the vessels to be labeled, and a means to move up and down the said device in the said cylinder, a frame for holding a pile of labels arranged in the machine frame, a cylinder situated above the said label-frame a device movable in the last said cylinder and adapted to lift a label from the pile and affix the same on the vessels to be labeled, a means to move up and down the last said device in the last said cylinder, a frame movably journaled in the machine frame, a number of mold or trays arranged in the said frame and adapted for holding the vessels to be labeled, and means to intermittently move the said frame with the trays for successively bringing the latter under the said devices for applying the paste and affixing the labels, substantially as set forth.

4. In a labeling machine, in combination, a machine frame, a device for the delivery of paste comprising a receptacle containing the paste, a small cylinder at the bottom of this receptacle and having lateral openings, a spring-governed plunger movable in the said cylinder and provided with a longitudinal bore and carrying a cylindrical head, a cylinder situated above the said paste discharger, a device movable in this last said cylinder and arranged to depress the said plunger in the paste-receptacle and adapted to take up the paste from the said receptacle and apply same to the vessels to be labeled, and a means to move up and down the last said device in its cylinder, a frame for holding

a pile of labels arranged in the machine frame, a cylinder situated above the said label-frame, a device movable in the last said cylinder and adapted to lift a label from the pile and affix the same on the vessels to be labeled, a means to move up and down the last said device in the last said cylinder, a number of molds or trays movably arranged in the machine frame and adapted to hold the vessels to be labeled, and means for successively moving the said molds or trays under the said devices for applying the paste and affixing the labels, substantially as set forth.

5. In a labeling machine, in combination, a machine-frame, a receptacle for the paste arranged in the latter, a cylinder situated above the said paste-receptacle, a device movable in the said cylinder and adapted to take up the paste from the said receptacle and apply same to the vessels to be labeled, and a means to move up and down the said device in the said cylinder, a frame for holding a pile of labels arranged in the machine frame and consisting of shiftable angular supports provided with small ribs, and of a resiliently arranged plate between the last said supports for carrying the pile of labels, a cylinder above the said label-frame arranged in the machine frame, a device in the last said cylinder and arranged to depress the said plate carrying the labels and adapted to lift a label from the pile and affix same on the vessels to be labeled, a means to move up and down the last said device in the last said cylinder, a number of molds or trays movably arranged in the machine frame and adapted to hold the vessels to be labeled, and means for successively moving the said molds or trays under the said devices for applying the paste and affixing the labels, substantially as set forth.

6. In a labeling machine, in combination, a machine-frame, a receptacle for the paste arranged in the latter, a cylinder situated above the said paste-receptacle, a device movable in the said cylinder and adapted to take up the paste from the said receptacle and apply same to the vessels to be labeled, a frame for holding a pile of labels arranged in the machine frame, a cylinder situated above the said label-frame, a device movable in the last said cylinder and adapted to lift a label from the pile and affix same to the vessels to be labeled, a closed receptacle arranged in the machine frame, means for producing a vacuum in the latter, and means of alternately bringing the upper and lower space of the interior of the said two cylinders into connection with the said vacuum receptacle, a frame movably journaled in the machine frame, a number of molds or trays arranged in the said frame and adapted to hold the vessels to be labeled, and means to inter-

mittently move the said frame holding the trays for successively bringing the latter under the said devices for applying the paste and affixing the labels, substantially as set forth.

7. In a labeling machine, in combination, a machine frame, a receptacle for the paste arranged in the latter, a cylinder situated above the said paste-receptacle, a device movable in the said cylinder and adapted to take up the paste from the said receptacle and apply same to the vessels to be labeled, a frame for holding a pile of labels arranged in the machine frame, a cylinder situated above the said label-frame, a device movable in the last said cylinder and adapted to lift a label from the pile and to affix same to the vessels to be labeled, a closed receptacle arranged in the machine frame, the main shaft also arranged in the machine frame, means for rotating the said main shaft, an air-pump driven by the latter and arranged to produce a vacuum in the last said receptacle, and means of alternately bringing the upper and lower space of the interior of the said two cylinders into connection with the said vacuum-receptacle, a frame movably journaled in the machine frame, a number of molds or trays arranged in the said frame and adapted to hold the vessels to be labeled, and means in connection with the said main shaft to intermittently rotate the last said frame for successively bringing the molds or trays under the said devices for applying the paste and affixing the labels, substantially as set forth.

8. In a labeling machine, in combination, a machine frame, a device for the delivery of paste comprising a receptacle containing the paste, a small cylinder at the bottom of this receptacle and having lateral openings, a spring-governed plunger movable in the said cylinder and provided with a longitudinal bore and carrying a cylindrical head, a cylinder situated above the said paste discharger, a device movable in the last said cylinder and adapted to take up the paste from the said receptacle and arranged to depress the said plunger in the said paste-receptacle, and a means of moving up and down the last said device in its cylinder, a frame for holding a pile of labels arranged in the machine frame, a cylinder situated above the said label-frame, a device movable in the last said cylinder and adapted to lift a label from the pile and affix same to the vessels to be labeled, a closed receptacle arranged in the machine frame, the main shaft also arranged in the machine frame, means of rotating the main shaft, an air-pump driven by the latter and provided to produce a vacuum in the last said receptacle, and means to alternately bring the upper and lower space of the interior of the said two cylinders into connec-

tion with the said vacuum receptacle, a frame movably arranged on the said vacuum-receptacle, a number of molds or trays arranged in the said frame adapted to hold the vessels to be labeled, and means in connection with the said main shaft to intermittently rotate the said frame for successively bringing the said molds or trays under the said devices for applying the paste and affixing the labels, substantially as set forth.

9. In a labeling machine, in combination, a machine frame, a receptacle for the paste arranged in the latter, a cylinder situated above the said paste-receptacle, a device movable in the said cylinder and adapted to take up the paste from the said receptacle and apply same to the vessels to be labeled, a frame for holding a pile of labels arranged in the machine frame, a cylinder situated above the said label-frame, a device movable in the last said cylinder and adapted to lift a label from the pile and affix same to the vessels to be labeled, a closed receptacle arranged in the machine frame, the main shaft also arranged in the machine frame, means to rotate the said main shaft, an air-pump driven by the latter and provided to produce a vacuum in the said receptacle, a cylinder arranged in the machine frame and divided into three chambers, of which the one in the middle is connected to the said vacuum-receptacle, while the other ones are connected to the first said two cylinders, valves in the said divided cylinder, the valve rod for operating the said valves, and means in connection with the said main shaft for moving the said valve rod, a frame movably arranged on the said vacuum-receptacle, a number of molds or trays arranged in the said frame and adapted to hold the vessels to be labeled, and means in connection with the said main shaft to intermittently rotate the said frame for successively bringing the said molds or trays under the said devices for applying the paste and affixing the labels, substantially as set forth.

10. In a labeling machine, in combination, a machine frame, a device for the delivery of paste comprising a receptacle containing the paste, a small cylinder at the bottom of this receptacle and having lateral openings, a spring-governed plunger movable in the said cylinder and provided with a longitudinal bore and carrying a cylindrical head, a cylinder situated above the said paste-discharger, a device movable in this last said cylinder and arranged to depress the said plunger in the paste receptacle and adapted to take up the paste and apply same to the vessels to be labeled, a frame for holding a pile of labels arranged in the machine frame and consisting of shiftable angular supports provided with small ribs, and of a resiliently arranged

plate between the last said supports for carrying the pile of labels, a cylinder above the said label-frame arranged in the machine frame, a hollow device movable in the said cylinder and arranged to depress the said plate carrying the labels and adapted to lift a label from the pile and affix same on the vessels to be labeled, a closed receptacle arranged in the machine frame, the main shaft also arranged in the machine frame, means of rotating the said main shaft, an air-pump driven by the latter and provided to produce a vacuum in the last said receptacle, a cylinder arranged in the machine frame and divided into three chambers, of which the one in the middle is connected to the said vacuum receptacle, the other ones being connected to the first said two cylinders holding the devices for applying the paste and affixing the labels, valves in the said divided cylinder, a valve rod for operating the said valves, and means in connection with the said main shaft for moving the said valve rod, a frame turnably arranged on the said vacuum receptacle, a number of molds or trays pivotally arranged in the last said frame and adapted to hold the vessels to be labeled, and means in connection with the said main shaft for intermittently rotating the last said frame for successively bringing the molds or trays under the said devices for applying the paste and affixing the labels, substantially as set forth.

11. In a labeling machine, in combination, a machine frame, a device for the delivery of paste comprising a receptacle containing the paste, a small cylinder at the bottom of this receptacle and having lateral openings, a spring-governed plunger movable in the said cylinder and provided with a longitudinal bore and carrying a cylindrical head, a cylinder situated above the said paste-discharger, a device movable in this last said cylinder and arranged to depress the said plunger in the said paste receptacle, two spring-governed arms pivotally fastened to the bottom end of the last said device, two brush-rollers turnably fastened to the free ends of the said spring-governed arms, and a means to move up and down the last said device in the last said cylinder, a frame for holding a pile of labels arranged in the machine frame and consisting of shiftable angular supports provided with small ribs, and of a resiliently arranged plate between the last said supports for carrying the pile of labels, a cylinder above the said label frame arranged in the machine frame, a device movable in the last said cylinder and arranged to depress the said plate carrying the labels and adapted to lift a label from the pile and affix same on the vessels to be labeled, two spring-governed arms pivotally fastened to the bottom end of the last said device two press-rollers turnably

fastened to the free ends of the last said
spring-governed arms and adapted to roll
over the circumference of the vessel to be
labeled, a means to move up and down the
5 last said device in the last said cylinder, a
number of molds or trays movably arranged
in the machine frame and adapted for holding
the vessels to be labeled, and means to suc-
cessively move the said molds or trays under

the said devices for applying the paste and 10
affixing the labels, substantially as set forth.

In testimony whereof I have hereunto
signed my name this 9th day of August 1907,
in the presence of two subscribing witnesses.

FRIEDRICH SZLUBIS.

Witnesses:

WOLDEMAR HAUPT,
WILLIAM MAYNER.