No. 762,627.

PATENTED JUNE 14, 1904.

F. FINK.

FLUID PRESSURE MOTOR.

APPLICATION FILED JAN. 21, 1904.

NO MODEL.

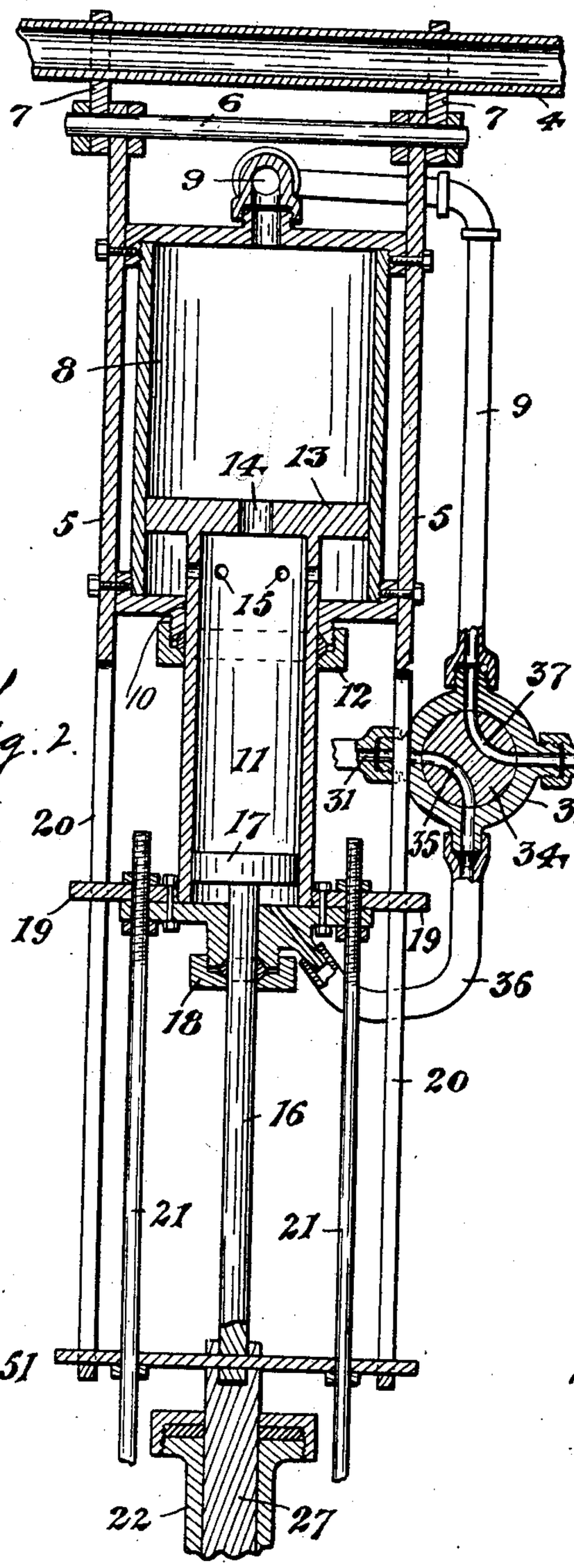

Fig. 2.

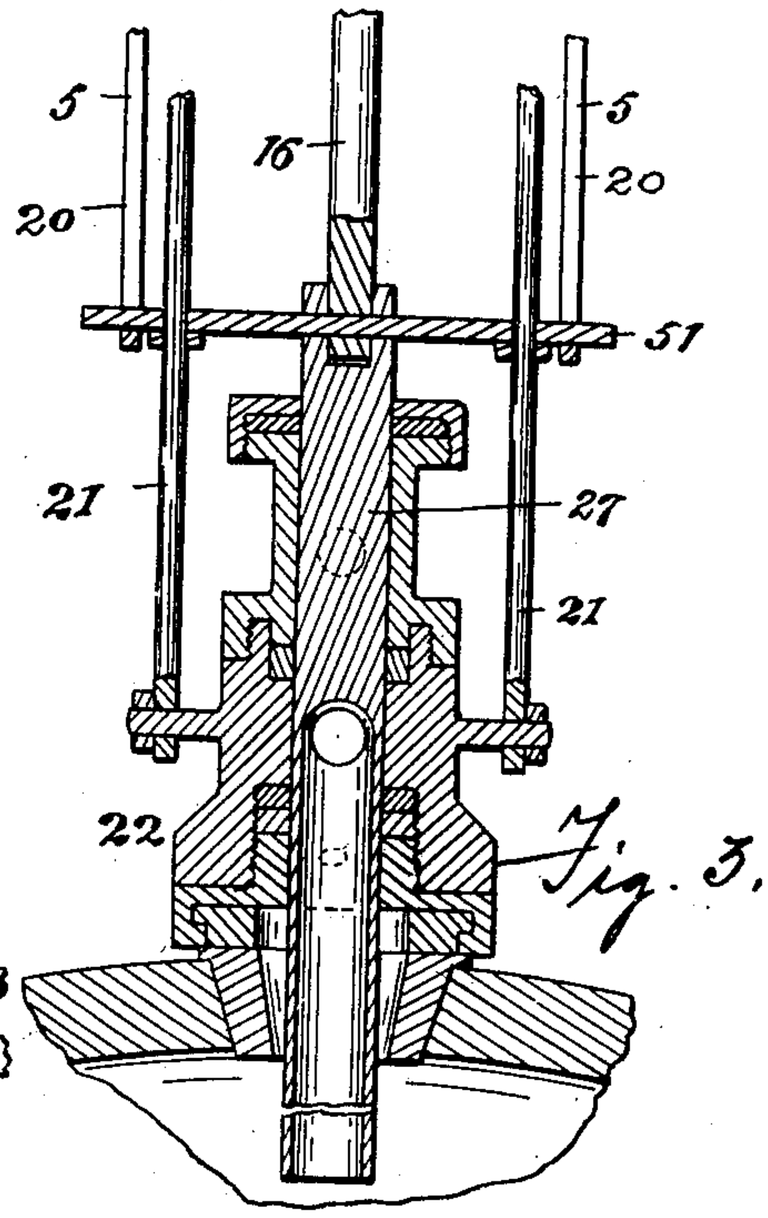

Fig. 3.

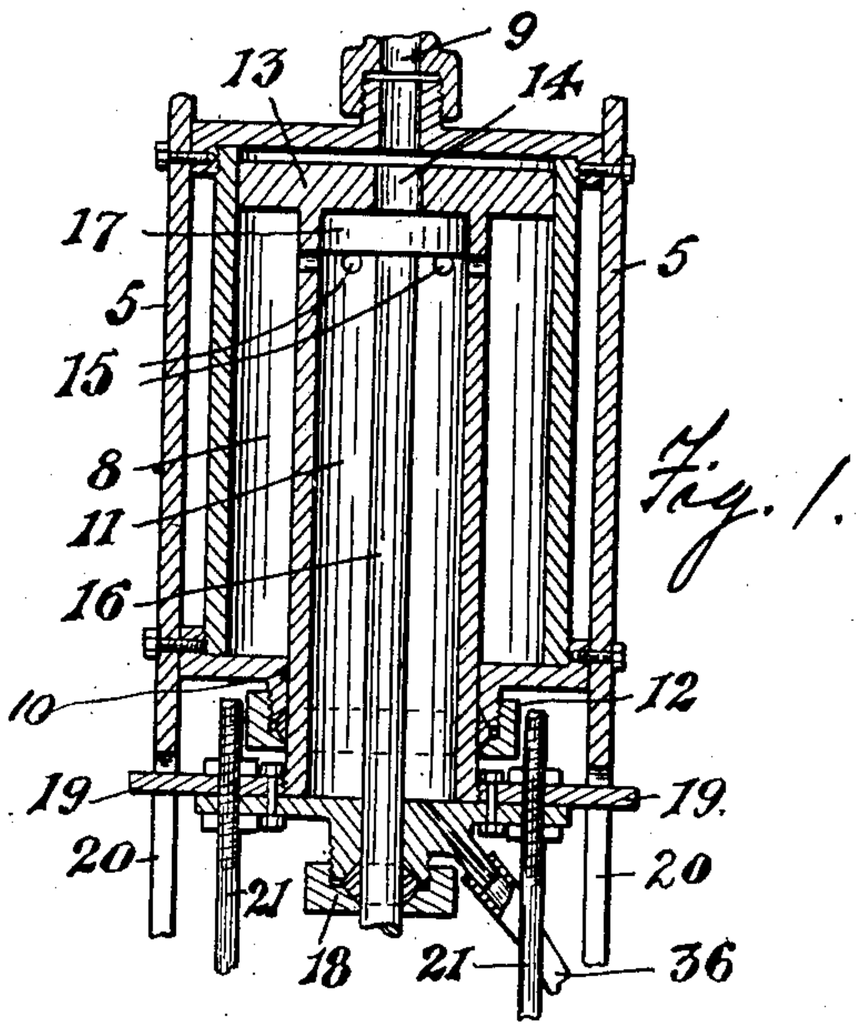

Fig. 1.

WITNESSES:

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No. 762,627. Patented June 14, 1904.

UNITED STATES PATENT OFFICE.

FERDINAND FINK, OF NEWARK, NEW JERSEY.

FLUID-PRESSURE MOTOR.

SPECIFICATION forming part of Letters Patent No. 762,627, dated June 14, 1904.

Application filed January 21, 1904. Serial No. 190,017. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND FINK, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Fluid-Pressure Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to numerals of reference marked thereon, which form a part of this specification.

The objects of this invention are to secure in a motor of the extension-piston type an improved construction, to secure such a motor especially adapted to raising and lowering a body, to further adapt the construction to securing coöperating independent movements of two different bodies, and to obtain other advantages and results, some of which may be hereinafter referred to in connection with the description of the working parts.

The invention consists in the improved fluid-pressure motor and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like numerals of reference indicate corresponding parts in each of the several figures, Figure 1 is a central longitudinal section of my improved motor with its parts in closed relation. Fig. 2 is a similar sectional view showing the parts in extended position; and Fig. 3 is a continuation of Fig. 2, said figures showing the motor as applied to a barrel-filling device or racker.

In said drawings I have shown my improved motor for purposes of illustration as applied to a racking or barrel-filling device of the type shown in my copending application, Serial No. 144,586, filed February 24, 1903, and adapted to secure the two independent but coöperating movements of the filling-head and filling-tube. It will be understood, however, that I herein claim the motor *per se* and irrespective of any particular kind of work, the racker parts being referred to only as necessary to illustrate the operation of the motor and reference being made to said copending application for description of the racker. The motor then is shown as supported between the side pieces 5 5 of a racker filling-arm, said side pieces being hung in any suitable manner from a support 4. Between said side pieces 5 5 at an upper point is mounted a cylinder 8, entered at its top by a duct 9 and having at its lower end an aperture 10, in which a smaller cylinder 11 is adapted to slide as a piston, a suitable stuffing-box 12 surrounding said aperture. The said smaller cylinder 11 has at its end within the large cylinder 8 a peripheral flange or head 13, fitting against the walls of said cylinder 8. At the center of this end of the smaller cylinder is an opening 14, and through the walls of this cylinder adjacent to said flange 13 is a series of smaller perforations 15. The said smaller cylinder 11 is in turn apertured at its lower end to receive the rod 16 of a piston, whose head 17 lies within the cylinder, a suitable stuffing-box 18 surrounding said rod 16. The lower end of the smaller cylinder 11 is also provided at its opposite sides with arms 19 19, adapted to project into longitudinal slots 20, formed in the supporting-strips 5 5, before described, the said arms serving to hold the parts in alinement as they slide. Rods 21 21 extend downward from the lower end of the smaller cylinder 11, preferably in the plane of the supporting-strips 5, and are at their lower ends connected to a packing-head 22.

Action of the cylinder and piston described is secured by means of compressed air or other suitable fluid under pressure, which is led from its source of supply through a pipe 31 to a controlling-valve 32, adapted to be turned by a handle. Said controlling-valve has in its rotatable portion 34 one curved passage 35, adapted to connect the supply-pipe 31 with a pipe or duct 36, leading from said valve-body and opening through the floor or bottom of the smaller cylinder 11. A similar curved passage 37 in the valve 34 is adapted to connect the duct 9, leading from the top of the larger cylinder, with an exhaust-pipe 38, all as shown in Fig. 2 more particularly. When

the valve is in position to make the connection thus described, compressed air will enter the smaller cylinder 11 below the piston 17 and force the same upward, exhaust taking place through the opening 14 and duct 9. This raises the filling-rod 27 out of the package and cuts off the flow of liquid. When the piston-head 17 has passed the perforations 15 near the top of the smaller cylinder 11, the pressure fluid will pass through said perforations and act upon the head 13 of said small cylinder 11 to push the same upward into the larger cylinder, the large exhaust-opening 14 being now closed by the piston-head 17. This action raises the filling-head away from the package and permits the latter to be bunged and removed. When a new or empty package is brought into place beneath the filling-arm, the valve 34 is turned to connect the pressure-supply with the duct 9, the curved passage 37 at the same time opening communication between the pipe 36 and exhaust 38. A reversal of the movements above described then takes place, the smaller cylinder 11 being first driven down to apply the packing-head to the package and then the piston being projected from said smaller cylinder to insert the filling-rod into the package and open up the flow. It will be noticed that the exhaust of the larger cylinder now passes through the perforations 15 of the smaller cylinder, and this aids in holding up the piston 17 until the smaller cylinder 11 comes to a stop. Pressure then acts through the aperture 14 onto the said piston-head, as will be understood.

Obviously when used in other connections than with a racker other supporting means and guides for the cylinders and pistons may be employed as are found desirable.

A cross-piece 51 is preferably carried by the piston-rod 16 and at its opposite extremities enters the slots 20 of the supporting-strips 5 and back from said ends receives the rods 21. Any other equivalent means for guiding the said parts and preserving their proper relations may, however, be employed.

Having thus described the invention, what I claim as new is—

1. The combination with a large cylinder, having an opening at its bottom, a small cylinder sliding through said opening and having a head fitting in said large cylinder, said head having an aperture and the walls of the small cylinder having lateral perforations near said head, a piston fitting in said small cylinder and adapted to lie at its inner limit of movement between the said lateral perforation thereof and the said aperture of the head, pipes opening into the opposite ends of said cylinders, and means for alternately connecting each pipe with a source of pressure and an exhaust-exit.

2. The combination of a large cylinder having an opening at one end, a small cylinder adapted to slide in said opening and having at its inner end a head filling said large cylinder, means for providing communication between the small cylinder and that portion of the large cylinder on the opposite side of the head, means providing communication between the small cylinder and that portion of the large cylinder lying on the same side of the head, a piston in said small cylinder adapted to lie between the said means of communication with the ends of the large cylinder, and means for admitting and exhausting pressure fluid at the opposite ends of the cylinders.

3. The combination of a large cylinder apertured at one end, a small cylinder sliding in said aperture and having a head fitting the interior of the large cylinder, said head being apertured to afford communication between the small cylinder and that portion of the large cylinder above its head, and the small cylinder having a lateral perforation to afford communication below its head with the large cylinder, a piston in said small cylinder adapted to lie between its head and said lateral perforation, and pressure-fluid ducts communicating with the opposite ends of the said cylinders.

4. The combination with a large cylinder having an opening at its end, a small cylinder sliding in said opening of the large cylinder and having a head lying in said large cylinder, said head being apertured to provide communication between the small cylinder and opposite side of the head and the walls of the small cylinder being perforated adjacent to the head to afford communication to the other side of said head, a piston in said small cylinder having its rod projecting therefrom, and ducts opening into the opposite ends of the said cylinders and each being adapted to alternately serve as an inlet and as an exhaust.

5. The combination with strips hinged at their upper ends to a suitable support and being slotted at their lower portions, of a large cylinder mounted in fixed position between said strips, a small cylinder adapted to slide telescopically in said large cylinder and having a head lying in said large cylinder, said head being apertured to provide communication between the small cylinder and opposite side of the head and the walls of the small cylinder being perforated adjacent to the head to afford communication to the other side of said head, a piston in said small cylinder having its rod projecting therefrom, arms adapted to enter said slots in the supporting-strips and guide said small cylinder, means for guiding said piston-rod, and ducts opening into the top of the large cylinder and the bottom of the lower cylinder, respectively, and being adapted to alternately admit and discharge fluid.

6. The combination with a large cylinder apertured at its lower end, a small cylinder adapted to slide in said aperture and having a head

fitting the interior of said large cylinder, said head being apertured to afford communication of the small cylinder with the upper portion of the large cylinder and the walls of the small cylinder being perforated adjacent to the head to afford communication with the other side of said head, a piston in said small cylinder, means communicating with the opposite ends of said cylinders for admitting and exhausting a pressure fluid, and means for supporting and guiding said cylinders and piston.

7. The combination with a large cylinder apertured at its lower end, a small cylinder adapted to slide in said aperture and having a head fitting the interior of said large cylinder, said head being apertured to afford communication of the small cylinder with the upper portion of the large cylinder and the walls of the small cylinder being perforated adjacent to the head to afford communication with the other side of said head, a piston in said small cylinder, means communicating with the opposite ends of said cylinders for admitting and exhausting a pressure fluid, supporting-strips fixed to the large cylinder, arms upon the small cylinder engaging said strips as guides, and a cross-piece affording a guide for the rod of the piston.

In testimony that I claim the foregoing I have hereunto set my hand this 31st day of December, 1903.

FERDINAND FINK.

Witnesses:
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