(No Model.)

2 Sheets—Sheet 1.

O. H. BRIGHAM.

AIR COMPRESSOR.

No. 604,717. Patented May 31, 1898.

Fig. 4.

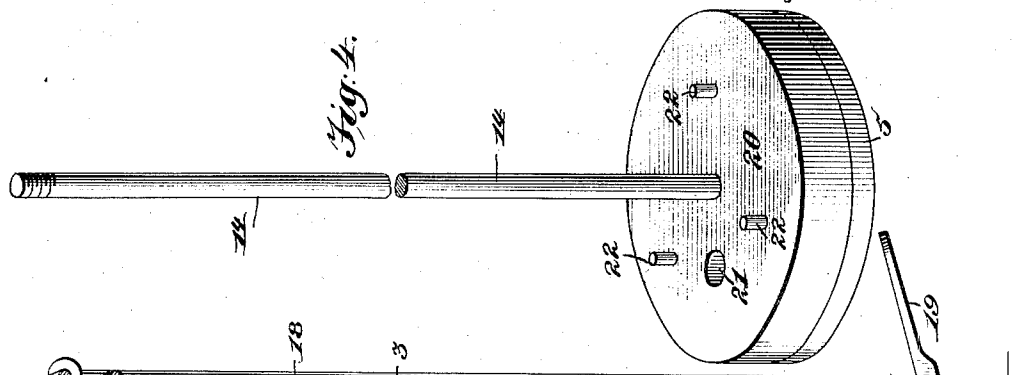


Fig. 2.

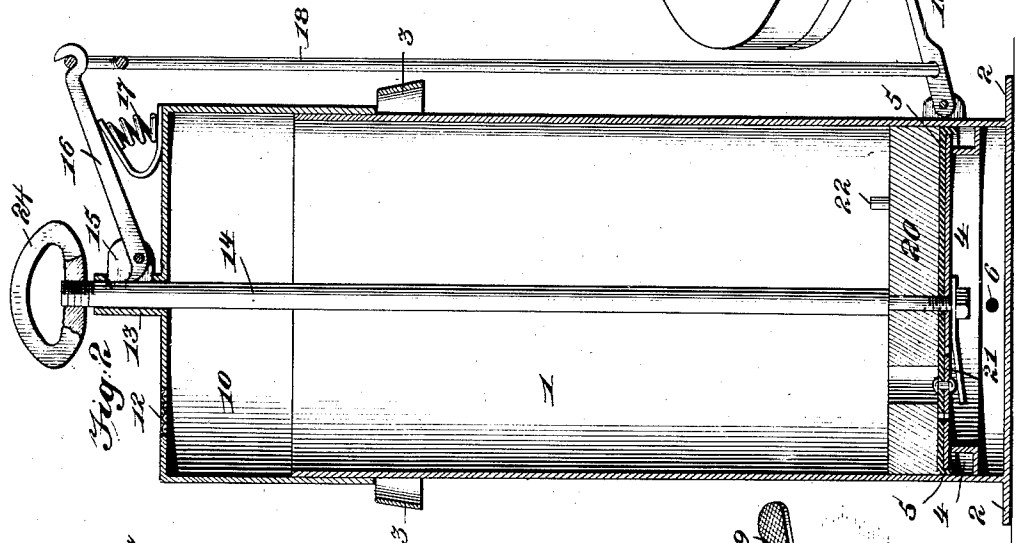
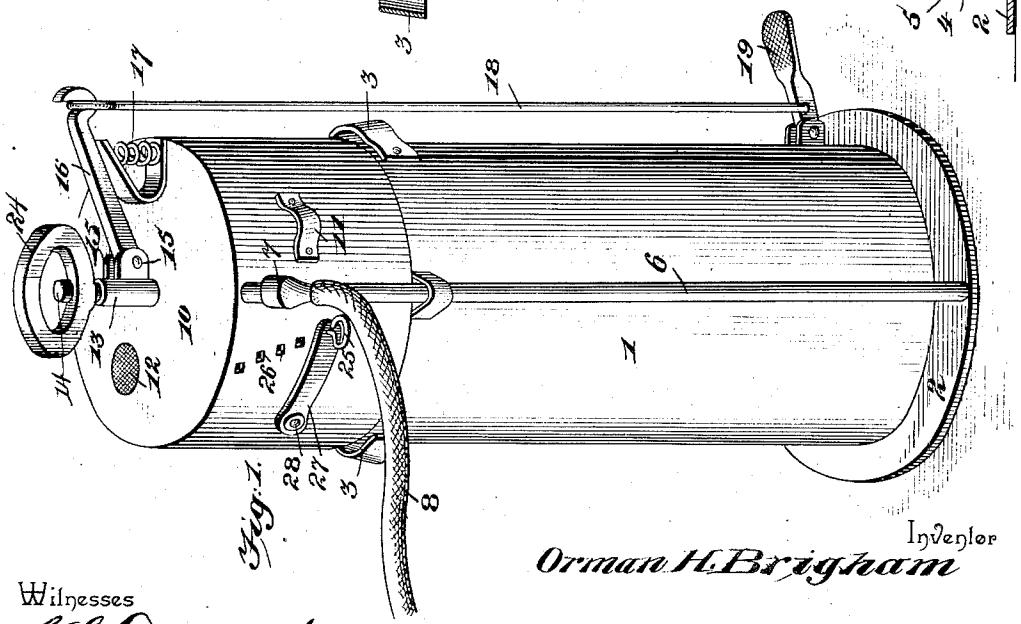


Fig. 1.



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Witnesses

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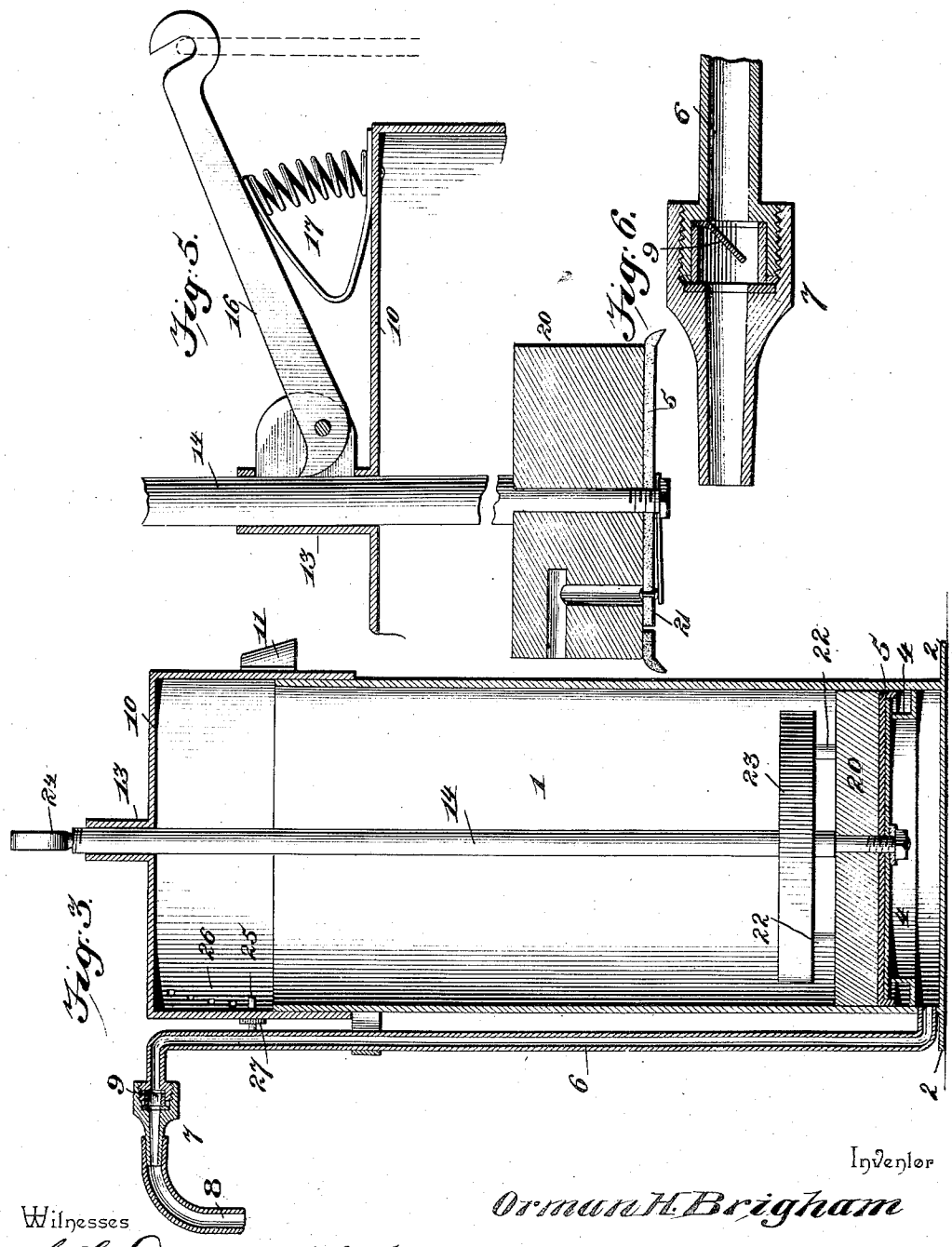
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

ORMAN H. BRIGHAM, OF CHATSWORTH, ILLINOIS.

AIR-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 604,717, dated May 31, 1898.

Application filed May 4, 1897. Serial No. 635,060. (No model.)

To all whom it may concern:

Be it known that I, ORMAN H. BRIGHAM, a citizen of the United States, residing at Chatsworth, in the county of Livingston and State of Illinois, have invented a new and useful Air-Compressor, of which the following is a specification.

This invention provides a simple and effective means for storing air under pressure to be expended in the industrial arts for mechanical and therapeutical purposes. In its organization the device comprises an air-receiver provided on its inner side and at the lower end with an annular oil-chamber, a valved discharge-pipe communicating with the receiver at a point below the oil-chamber, a weighted plunger operating in the receiver and provided with an inwardly-opening valve which automatically closes when the plunger exerts a pressure upon the air confined in the receiver, a brake mechanism under the control of the operator for regulating the descent of the plunger, and an adjustable stop applied to the cover of the receiver to engage with and prevent the plunger being withdrawn from the receiver into the cover upon elevating it when it is required to charge the receiver with air prior to utilizing the compressed air for any required purpose.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of an air-compressor especially designed for carrying into effect the objects of this invention. Fig. 2 is a vertical central section. Fig. 3 is a view similar to Fig. 2 and taken on a plane at right angles thereto. Fig. 4 is a detail view in perspective of the weighted plunger. Fig. 5 is a detail view of the brake mechanism on a larger scale and showing a modified form of plunger. Fig. 6 is a detail view of the valved portion of the discharge-pipe.

Corresponding and like parts are referred to in the following description and indicated in the several views of the accompanying drawings by the same reference characters.

The receiver 1 is of cylindrical form and is provided at its lower end with an outer flange 2, forming a base and a means to receive the feet of the operator for holding the receiver down upon the floor or support when elevating the plunger for charging it with air. For convenience in moving and handling the receiver it is provided with grips 3 at opposite sides. An annular oil-cup 4 is located upon the inner side of the receiver near its lower end and catches drippings of oil and other matter dropping from the sides of the receiver when operating the plunger, and this oil-cup forms a stop to limit the downward movement of the plunger and prevents the jamming of the leather or packing 5 between the plunger and bottom of the receiver, which would happen if no means were provided for limiting the downward movement of the plunger.

The discharge-pipe 6 is located exterior to the receiver and communicates with the bottom thereof at a point below the oil-cup 4, and its upper end has a valved coupling 7, to which a rubber or flexible tube 8 is fitted for conveying the air under pressure to the required point of use. The valve 9 in the coupling 7 opens outwardly, so as to close automatically when charging the receiver and open when releasing the plunger for forcing the air from the receiver through the pipe 6 and tube 8. The oil-cup 4, extending over the receiving end of the discharge-pipe 6 and being disposed as set forth, prevents any foreign matter from entering the discharge-pipe, and consequently choking the device to which the tube 8 is fitted for supplying air under pressure thereto.

A cover 10 closes the upper end of the receiver and is provided with handles 11 for a purpose similar to the grips or handles 3 of the receiver. A protected opening 12 is formed in the cover at a convenient point and admits air when charging the receiver and prevents the formation of a vacuum when the plunger is descending. By having the opening protected by wire, fabric or textile dust and foreign substances are prevented from entering the receiver and gumming the plun-

ger. A tubular guide 13 is located centrally of the cover, and the plunger-rod 14 is directed in its movements therethrough, and this tubular guide has an opening in one side and outwardly-extending ears 15, between which is pivoted a brake-lever 16, whose inner end operates through the opening in the side of the tubular guide, so as to bear against the plunger-rod 14 with greater or less pressure, so as to check the descent of the plunger or regulate the same, whereby the force of the air can be controlled. A spring 17 is interposed between the cover and the outer end of the brake-lever, and when the latter is released forces its inner end against the plunger-rod with sufficient pressure to hold the plunger stationary. The outer end of the brake-lever is formed with a hook which receives the upper end of a rod 18, which has connection at its lower end with a treadle 19, pivoted to a side of the receiver. The operator by pressing with his foot upon the treadle can regulate the position of the brake-lever and control the descent of the plunger as required.

The plunger 20 is a weighted disk and is connected to the lower end of the plunger-rod 14 and is provided with a leather or packing 5, whereby a tight joint is secured between it and the sides of the receiver. An opening is formed through the plunger and is closed by a valve 21, which opens inwardly, so as to admit of charging the receiver when elevating the plunger, and this valve closes automatically to prevent the escape of the air when the plunger is released from the lifting force and is supported solely by the air contained in the receiver. A series of lugs 22 are provided on the top side of the plunger to support additional weights 23 when it is required to place the latter in position to increase the weight of the plunger and the pressure of the air, thereby preventing the closing of the valved opening in the plunger. These additional weights 23 are slightly smaller in diameter than the plunger, so as to provide ample space for the passage of air around them to the valved opening of the plunger for the proper charging of the receiver when elevating the plunger, as will be readily understood. A handle or cross bar 24 is provided at the upper end of the plunger-rod and is secured thereto by a screw-thread connection, so as to be readily removed when it is required to place additional weights in position or remove them from the plunger-rod, said additional weights being centrally apertured to receive the plunger-rod when slipped thereon. The cover 10 is sufficiently high to receive the additional weights, thereby admitting of the plunger moving the entire length of the receiver, and in order that the plunger may not be withdrawn into the cover a pin or stop 25 is provided and is thrust through one of a series of openings 26, formed in a side of the cover, said pin or stop 25 being applied to the free end of a spring 27, which is made fast at the opposite end to a headed stud 28, secured to the cover, said spring being adapted to turn upon the stud 28 to admit of the pin or stop 25 being moved from one to the other of the series of openings 26, as may be required.

When the plunger is made sufficiently heavy, as shown in Fig. 5, the valved opening will extend through its edge. The parts 5 and 21 are preferably formed of a single piece of leather or other suitable material, or they may be provided in any desired way.

Having thus described the invention, what is claimed as new is—

1. In an air-compressor, the combination of a receiver having an inner annular oil-cup at its lower end, an air-discharge pipe communicating with the lower portion of the receiver at a point below the said oil-cup, and a weighted plunger operating in the receiver and serving as a means for charging the receiver and forcing the air therefrom under pressure, substantially as set forth.

2. In an air-compressor, the combination of a receiver, an air-discharge pipe communicating with the lower portion of the receiver and having a valve automatically closing when charging the receiver and opening when forcing the air from the receiver under pressure, and a weighted plunger operating in the receiver and provided with an opening controlled by an inwardly-opening valve, substantially as set forth.

3. In an air-compressor, the combination of a receiver, a weighted plunger operating therein, and a brake under the control of the operator for checking and regulating the descent of the weighted plunger, substantially as set forth for the purpose described.

4. In an air-compressor, the combination of a receiver, a weighted plunger operating therein, a brake-lever normally held in engagement with the plunger-rod to check the descent of the plunger, and a treadle under the control of the operator and connected with the brake-lever, whereby the descent of the plunger may be regulated, substantially in the manner set forth.

5. In an air-compressor, the combination of a receiver, a cover having a tubular guide, a plunger having its rod operating through the tubular guide, a brake-lever pivoted to extensions of the tubular guide and operating through an opening in the side thereof, a spring for holding the brake-lever in engagement with the plunger-rod, and means under the control of the operator for moving the brake-lever to control the descent of the plunger, substantially as and for the purpose set forth.

6. In an air-compressor, the combination of a receiver, a weighted plunger operating in the receiver and having a valve-controlled opening, and provided on its top side with lugs, and a weight slipped upon the plunger-rod and supported upon the aforesaid lugs, substantially as and for the purpose set forth.

7. In an air-compressor, the combination of

a receiver, a weighted plunger operating therein and adapted to have additional weights slipped upon the plunger-rod, a cover for closing the upper end of the receiver and provided in one side with a series of openings, and a pin or stop adapted to be thrust through any one of the said openings for limiting the upward movement of the plunger, substantially as set forth for the purpose described.

8. In an air-compressor, the combination of a receiver, a plunger operating therein and adapted to receive additional weights which are slipped upon its rod, a cover for closing the receiver and provided in a side with a series of openings, a spring pivotally mounted at one end, and a pin or stop applied to the free end of the pivoted spring and adapted to enter any one of the aforesaid openings, substantially as set forth for the purpose described.

9. In an air-compressor, a receiver having an outer flange at its lower end to receive the feet of the operator, an air-discharge pipe having connection with the lower portion of the receiver, and a weighted plunger operating in the receiver, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ORMAN H. BRIGHAM.

Witnesses:
G. W. McCABE,
J. A. CORBETT.