

(No Model.)

E. C. FASOLDT.

PRESSURE REGULATOR FOR COMPRESSED AIR MACHINES.

No. 485,578.

Patented Nov. 1, 1892.

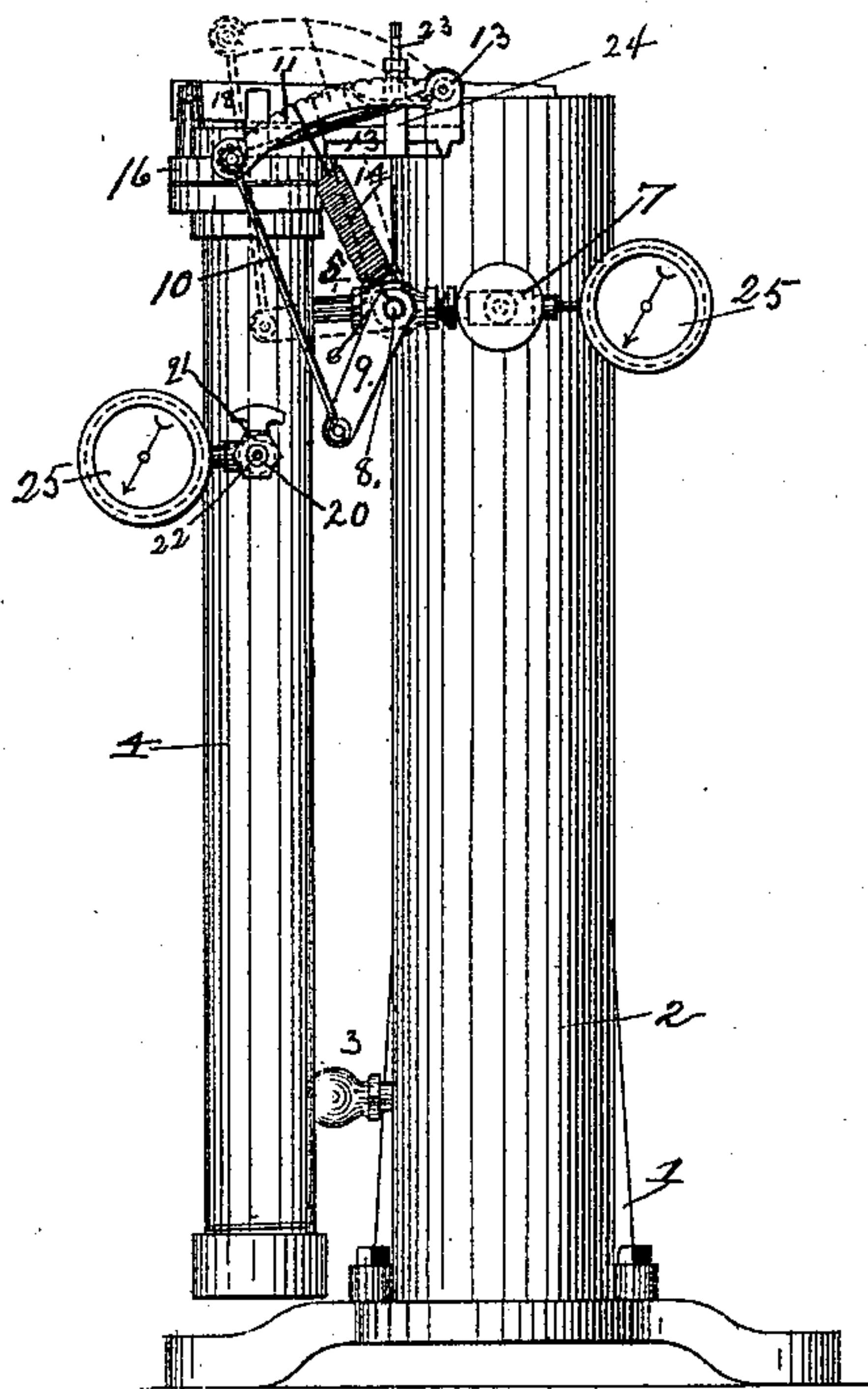


Fig. 1.

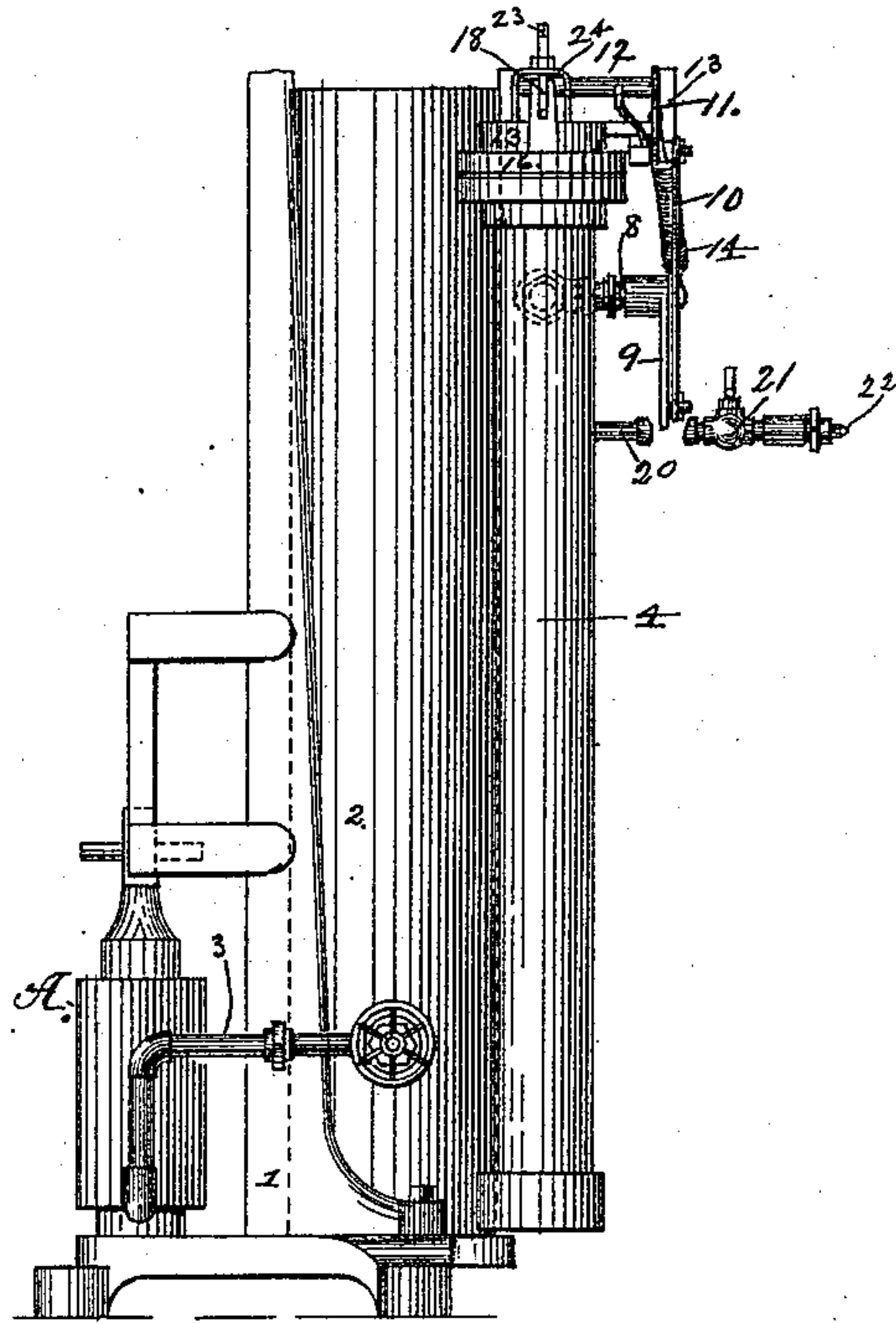


Fig. 2.

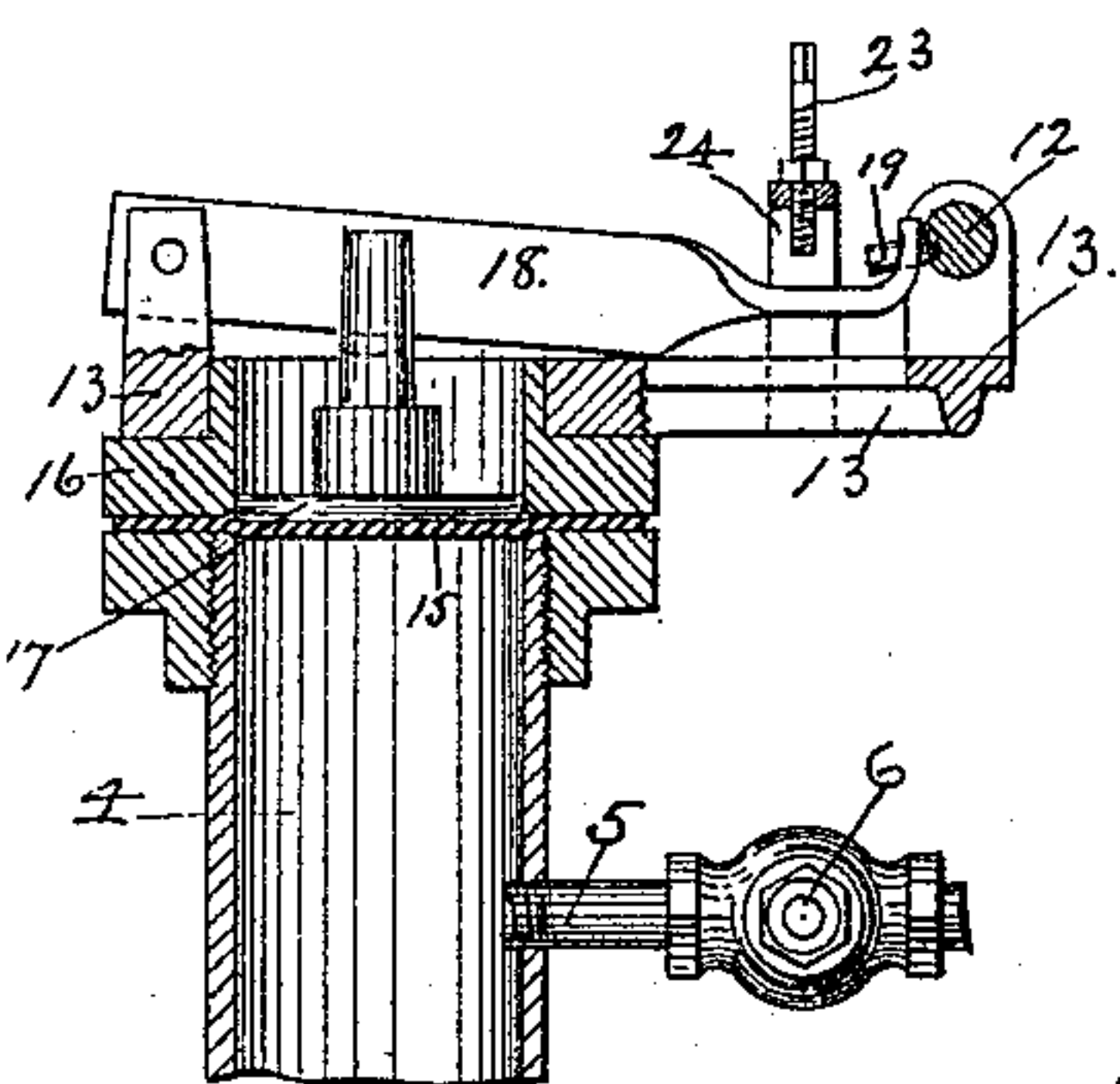


Fig. 4.

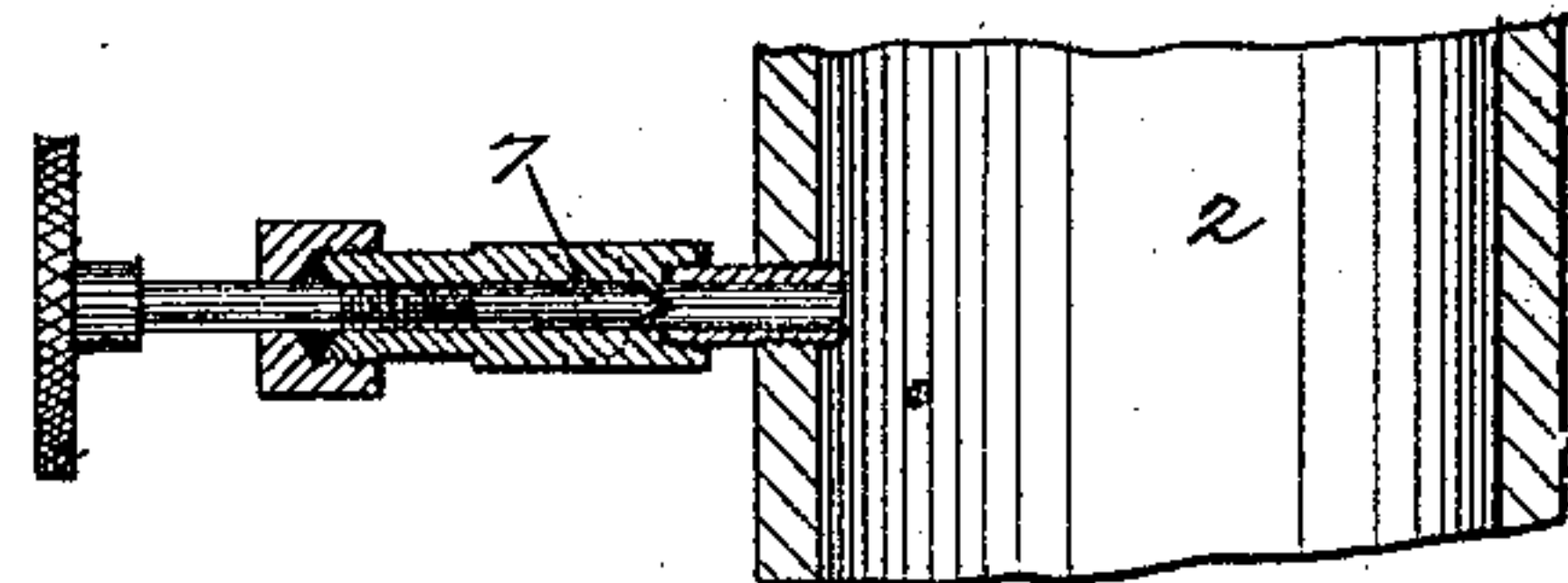


Fig. 5.

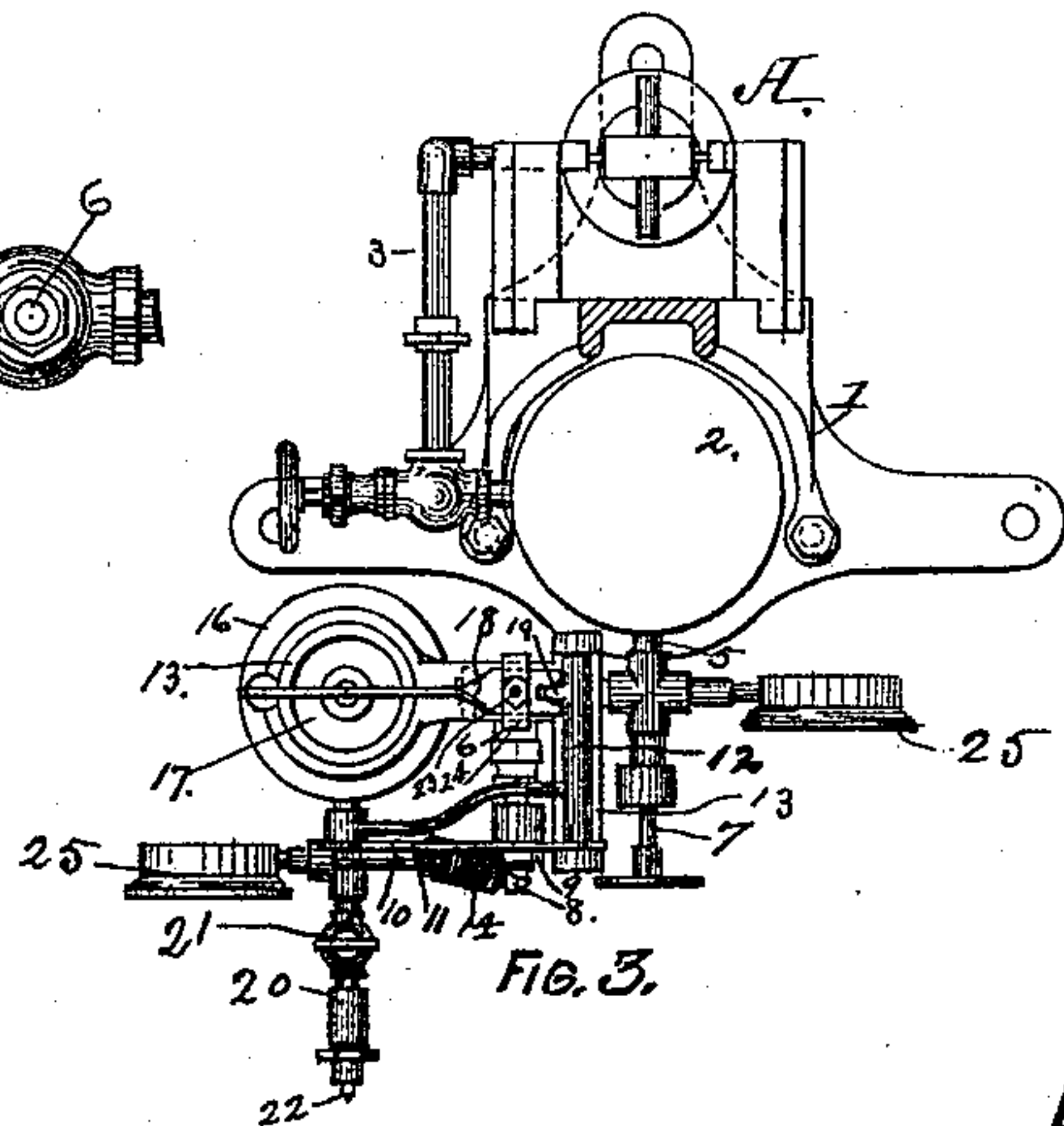


Fig. 3.



Fig. 6.

Witnesses:

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UNITED STATES PATENT OFFICE.

ERNEST C. FASOLDT, OF ALBANY, NEW YORK, ASSIGNOR OF ONE-HALF TO
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PRESSURE-REGULATOR FOR COMPRESSED-AIR MACHINES.

SPECIFICATION forming part of Letters Patent No. 485,578, dated November 1, 1892.

Application filed May 5, 1890. Serial No. 350,600. (No model.)

To all whom it may concern:

Be it known that I, ERNEST C. FASOLDT, of the city and county of Albany, in the State of New York, have invented a new and useful
5 Pressure-Regulator for Compressed-Air Machines, of which the following is a specification.

My invention relates to a device for automatically regulating the flow of compressed
10 air from a principal receiver, wherein air under a high degree of pressure is contained, into an auxiliary receiver, wherein it is desirable to maintain a lower degree of pressure with a certain uniformity; and the object of
15 my invention is to provide an apparatus for scientific and other purposes where a steady flow of air or other fluid is required to be maintained at a constant degree of pressure, the degree of pressure being adjustable to
20 suit the purpose for which it may be required. This object I attain by the mechanism illustrated in the accompanying drawings, which are herein referred to and form part of this specification, and in which—

25 Figure 1 is a front elevation of my apparatus with a portion of the air-compressing mechanism removed therefrom. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view. Fig. 4 is an enlarged vertical section
30 of the upper part of the auxiliary receiver. Fig. 5 is a like section of part of the principal receiver, and Fig. 6 is an enlarged horizontal section of the automatic stop-valve between the receivers.

35 As represented in the drawings, A designates an air-compressing pump, which may be made in any preferred form, whose piston is operated by means of a crank and pitman, which are omitted from the drawings as not
40 forming part of this invention. Said pump is attached to a frame 1, which also serves as a base for a principal receiver 2, which is connected to said air-pump by means of a pipe 3 for conveying the air from said pump into
45 said receiver. The latter is intended for the purpose of holding and retaining a volume of air in a highly-compressed condition, so as to operate as a feeder for the auxiliary receiver. The latter, which is designated by the reference-figure 4 in the drawings, is connected to
50 the principal receiver 2 by means of a pipe 5,

which is provided with an automatic stop-valve 6, intermediately located between the two receivers. The pipe 5 is also provided with a stop-valve 7, which is manipulated by
55 hand, and which is usually kept closed while the principal receiver is being charged and while the apparatus is not in active use.

The automatic stop-valve is provided with a stem 8, on which a quick-threaded screw is
60 formed, so as to produce the opening and closing movements of the valve by a slight rotative movement of said stem. On the outer end of the latter an arm 9 is secured, and said
65 arm is connected by a rod 10 to a segmental arm 11, which is attached to a rock-shaft 12, journaled in a bracket 13, secured to the upper end of the auxiliary receiver. Said segmental arm is graduated on its upper edge to
70 receive one end of a coiled spring 14, which is adapted to be shifted from one of said graduations to another, according to the pressure required to be maintained in the auxiliary receiver. The opposite end of the spring 14 is
75 attached to the projecting end of the stem 8 or other fixed point, and said spring is provided for the purpose of operating the segmental arm 11 to effect the opening movement of the stop-valve 6, and it is obvious
80 that the effect of said spring upon the segmental arm can be relatively increased and diminished by changing the point of connection of said spring on said arm farther from and nearer to the center of the rock-shaft 12.

A flexible diaphragm 15 covers the upper
85 end of the auxiliary receiver 4 and is there retained by a flange 16, to which the bracket 13 is attached, and said flange is bored to receive a loosely-fitted piston 17, which bears upon the diaphragm 15. Said piston connects
90 with a lever 18, fulcrumed to the bracket 13 and whose opposite end takes under a spur or arm 19 on the rock-shaft 12, so as to impart a rocking motion to said shaft in one direction in opposition to the strain of the
95 spring 14. A pipe 20 is inserted in the auxiliary receiver for the purpose of conducting the air from the latter to the place where it is required for use. Said pipe is provided with a stop-cock 21 for the purpose of shut-
100 ting off the flow of air from the auxiliary receiver, and said pipe is also provided with a

nipple 22 for the purpose of attaching thereto a flexible tubing, by which the air from the apparatus may be conducted to any point where it is required to be used.

5 An adjustable check-screw 23 is fitted in a yoke 24, which spans over the lever 18, and is secured to the bracket 13. Said check-screw is provided for the purpose of limiting the rising movement of said lever, and thereby
10 the valve 6 is prevented from being jammed on its seat in such manner that the spring 14 will be insufficient to effect the opening movement of said valve.

Pressure-gages 25 are attached to the re-
15 ceivers 2 and 4 for the purpose of indicating the pressure carried in said receivers.

My apparatus operates in the following manner: A supply of air is compressed into the principal receiver 2 until a high degree of
20 pressure is obtained therein, and this compression is preferably produced while the stop-valve 7 is closed. The spring 14 is inserted in the graduation of the segmental arm 11 corresponding to the pressure that is re-
25 quired for use. Then the stop-valve 7 is opened to allow the air to flow from the principal receiver 2 into the auxiliary receiver 4. The air enters the latter in an expanded state, and consequently at a lower pressure than is
30 maintained in the principal receiver. When the air in the auxiliary receiver has attained the required pressure, the diaphragm 15 will be bulged outwardly. Thereby the piston 17 is raised to push up the free end of the lever 18,
35 whereby the rock-shaft 12 is partially rotated to cause the segmental arm 11 to swing upwardly, and the arm 9 will thereby be moved to effect the closing of the stop-valve 6, so as to stop the flow of air from the principal re-
40 ceiver to the auxiliary receiver. The apparatus is then ready for performing its functions automatically. As the air from the auxiliary receiver becomes attenuated by discharges therefrom, the diaphragm 15 will return to its
45 depressed position, and thereby permit the spring 14 to effect the reopening of the stop-valve 6 to accomplish the recharging of the auxiliary receiver with air of the required pressure. This operation can be continued
50 while the principal receiver contains suffi-

cient air in a compressed condition to supply the auxiliary receiver with air at the reduced pressure required, after which the principal receiver must again be charged with the highly-compressed air.

This apparatus may remain charged with air for a long time and be in condition for immediate use when occasion requires.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a regulator for air-compressing machines, the combination, with a principal receiver 2 and an auxiliary receiver 4, which are connected by a pipe 5, provided with an automatic stop-valve 8, said auxiliary receiver 65 having a flexible diaphragm 15 fixed therein, an arm 9, attached to said stop-valve and connected to an arm 11, having a graduated upper edge, the arm 11 being secured to a rocker-shaft 12, the latter being connected with a lever 18, which is fulcrumed to a fixture at the upper end of said auxiliary receiver, and a loosely-fitted piston 17, connected to said lever and fitted to bear upon said diaphragm, of a spring 14, fitted to be adjustably connected to the arm 11, and an adjustable set-screw 23, fitted to take against the lever 18, whereby the rising movement of the latter may be limited, as and for the purpose herein specified.

2. In a receiver for air-compressing machines, the combination, with a principal receiver 2, an auxiliary receiver 4, a pipe 5, which connects said receivers together, an automatic stop-valve 8, fixed in said pipe, an arm 9, secured to the stem of said valve and connected to an arm 11, having graduations in its upper edge, a rocker-shaft 12, to which the arm 11 is secured, a lever 18, connected with said rocker-shaft and fulcrumed to a fixture at the upper part of said auxiliary receiver, and a loosely-fitted piston 17, connected to said lever and fitted to bear upon a flexible diaphragm 15, fixed in said auxiliary receiver, of a spring 14, adjustably attachable to said graduated arm, as and for the purpose herein specified.

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Witnesses:

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