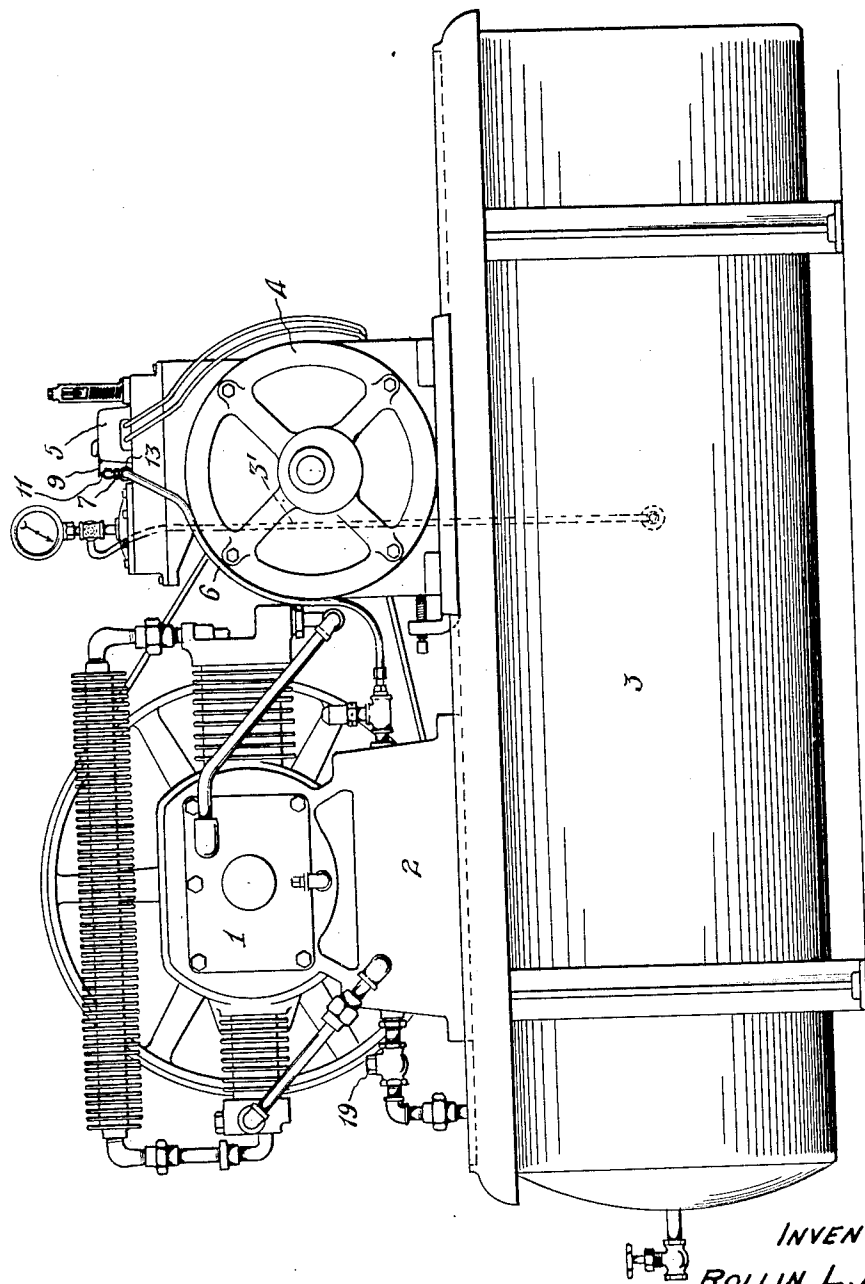


R. L. BACHER.
PRESSURE RELEASE.
APPLICATION FILED DEC. 3, 1919.

1,387,679.

Patented Aug. 16, 1921.

2 SHEETS—SHEET 1.



INVENTOR:
ROLLIN L. BACHER

BY *Fraese, Merkel and Jaywell*
ATTORNEYS

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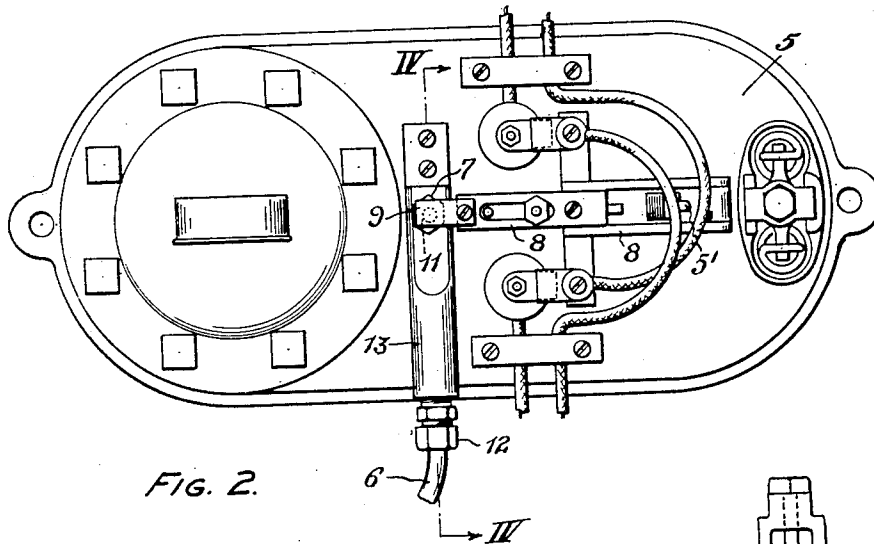


FIG. 2.

FIG. 3.

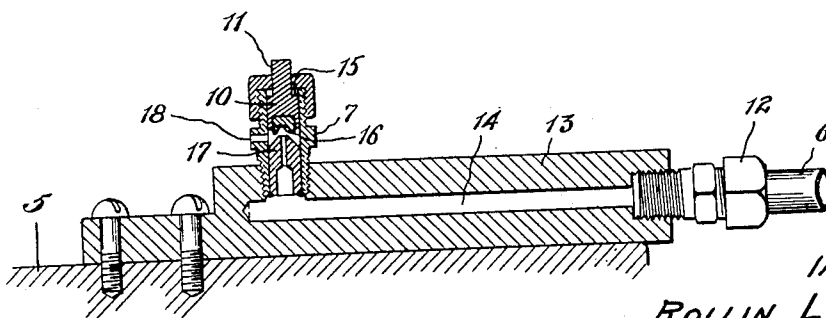
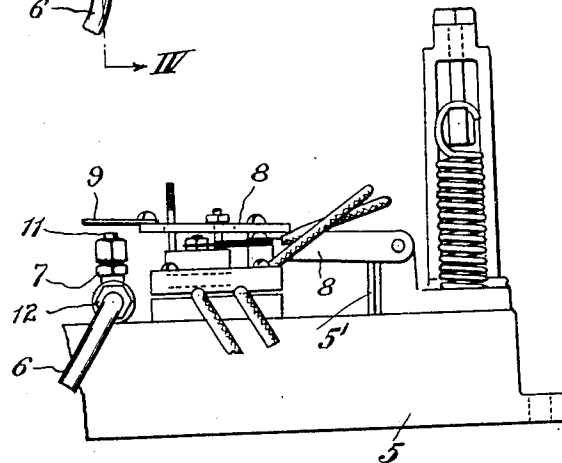


FIG. 4.

INVENTOR:
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UNITED STATES PATENT OFFICE.

ROLLIN L. BACHER, OF CLEVELAND HEIGHTS, OHIO, ASSIGNOR TO THE UNITED STATES AIR COMPRESSOR COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PRESSURE-RELEASE.

1,387,679.

Specification of Letters Patent.

Patented Aug. 16, 1921.

Application filed December 3, 1919. Serial No. 342,158.

To all whom it may concern:

Be it known that I, ROLLIN L. BACHER, a citizen of the United States, resident of Cleveland Heights, county of Cuyahoga, and State of Ohio, have invented new and useful Improvements in Pressure-Releases, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to pressure releases, and particularly to that class of such devices which is used in connection with the operation of air compressors, whereby the danger of burning out fuses or motors or the throwing off of belts, etc., may be eliminated, since by the use of my device it is not necessary for the compressor to start against the tank pressure.

My invention is designed automatically to bring the pressure in an auxiliary tank connected to the main supply tank to atmospheric pressure by certain means, herein- after to be fully described, when the compressor actuating means cease to function; and to subject the pressure release or unloading means to an imposed restraint when the compressor is again operated.

The annexed drawings and the following description set forth in detail certain means embodying my invention, the disclosed means, however, constituting but one of the various mechanical forms in which the principle of the invention may be applied.

In said annexed drawings:

Figure 1 represents a general side elevation of the means embodying my invention, together with conventional representations of standard mechanisms to whose operations the functioning of my invention is related;

Fig. 2 represents an enlarged plan view of that one of these standard mechanisms with whose operation my invention is directly related. This mechanism is a standard controller or switch for the motor, which actuates the compressor, as hereinafter fully described;

Fig. 3 represents a fragmentary side elevation of this switch and my invention; and

Fig. 4 a transverse section, taken in the plane indicated by the line IV-IV, Fig. 2.

Referring to the annexed drawings, the air compressor is represented by the ordinal 1

having a base 2 forming an auxiliary tank 55 from which is released by my improved unloading means the pressure of the main storage tank 3, when the motor 4, which actuates the compressor 1, ceases to function. The operation of the unloading mechanism is directly controlled by the switch 5 which controls the operation of the motor 4, as herein- after fully described. The auxiliary tank 2 is connected with the main supply tank 3 by a line having the usual check valve 19, as is readily understood. Air is drawn from the tank 3 for the desired purposes, and when the pressure in said tank is lowered to a predetermined point, the motor 4 is started by the automatic switch or controller 5, which is connected to the tank 3 and controlled by the pressure therein, all as is thoroughly understood by those skilled in the art. Likewise when the pressure in the tank 3 is raised to a predetermined point the motor 4 is thrown off by the switch 5 controlled by the rod 5' connected to the switch diaphragm. The pipe 3' connects the main tank 3 and the switch 5.

Describing now in detail my improved pressure release itself and its actuation, by means of which the main tank pressure is eliminated from the auxiliary tank 2, the same comprises an air conduit 6 communicating with the auxiliary tank 2 in the base of the compressor 1. A valve casing 7 is formed or supported in any suitable location, the same being shown in the accompanying drawings, for purposes of illustration, supported on the frame of the switch 5.

The arm 8 of the switch 5 is elongated, and to its outer end is secured a spring member 9 adapted to intersect the projection of the vertically extending axis of the valve casing 7. Mounted in a bore 15 formed in the valve casing 7 is a reciprocably movable plunger 10 having a reduced end portion 11 extended through and outwardly from the wall of the casing 7. The spring member 9, as hereinafter fully described, is adapted to intersect the outer end of said portion 11 of the plunger 10. The conduit 6 communicates with the bore 14 of an enlarged conduit member 13 mounted upon the frame of the switch 5, through the medium of a union 12, said bore 14 communicating with the bore 15 of the valve casing 7. The inner enlarged portion of the plunger 10 is bored

to receive fiber or other joint making material 16. A conically shaped bored member 17 extending from the member 13 into the bore 15 forms an abutment against which the joint-making material 16 contacts, said material 16 extending slightly outwardly from the plunger 10 and being slightly depressed to receive the conical extension 17, as is plainly seen in Fig. 4, when the plunger 10 is in its innermost position. An outlet to the atmosphere from the bore 15 of the valve casing 7 immediately adjacent material 16 and member 17 is indicated by the ordinal 18.

From the foregoing description and the accompanying drawings, it is evident that the stopping of the motor caused by a certain action of the switch 5, which action, in the design of switch illustrated, results in an upward movement of the extended arm 8 of the switch, Fig. 3, will relieve the extended reduced portion 11 of the plunger 10 from the pressure of the spring member 9. The impinging of the air pressure from the auxiliary tank 2 through the conduit 6 upon the fiber material 16 causes the plunger 10 to move outwardly within the bore 15, thereby permitting the air pressure to unload through the outlet 18.

It will be readily understood by those skilled in the art that when the main supply tank 3 has been drawn upon to a predetermined extent, the pressure therein has fallen to a point where the controller 5 switches on the motor to actuate the compressor. Simultaneously, my unloading mechanism is rendered inoperative, since the downward movement of the extended arm 8 of the switch 5 forces the plunger 10 inwardly to close the bore of the member 17, and the pressure commences to build up in the auxiliary tank 2. It is evident that the member 9, being comprised of spring material, will compensate for any wearing of the parts, and thus prevent any leakage.

I have shown and described the location of my unloading means upon the frame of the switch 5 merely as illustrative, because the same may be located, and I consider such other locations within the principle of my invention, in different positions upon the various mechanisms described.

What I claim is:

1. In apparatus of the character described, the combination with an air compressor, a suitable chamber for retaining the air under pressure, and means for controlling the actuation of said compressor including a motor and a switch for governing the latter; of an air conduit communicating with said chamber, an unloading valve, means for supporting the latter, said valve adapted to communicate with said conduit and provided with an outlet to the atmosphere, and means actuated by said

switch adapted to close the outlet, said means adapted to be held by the switch in outlet closing position against the pressure of air in said chamber.

2. In apparatus of the character described, the combination with an air compressor, a suitable chamber for retaining air under pressure, and means for controlling the actuation of said compressor including a motor and a switch for governing the latter; of an air conduit communicating with said chamber, an unloading valve mounted upon the frame of said switch, communicating with said conduit and provided with an outlet to the atmosphere, said valve including a movable plunger adapted to open and close said outlet, and means actuated by said switch and adapted to actuate said plunger in one direction to close the outlet and to hold the plunger in outlet closing position against the pressure of air in the chamber.

3. In apparatus of the character described, the combination with an air compressor, a suitable chamber for retaining the air under pressure, and means for controlling the actuation of said compressor including a motor, a frame, and a switch thereon for governing the motor; of an air conduit communicating with said chamber, an unloading valve mounted upon the frame of said switch, communicating with said conduit and provided with an outlet to the atmosphere, said valve including a movable plunger adapted to open or close said outlet, and means actuated by said switch and adapted to actuate said plunger to close said outlet and to hold the plunger in outlet closing position against the pressure of air in the chamber.

4. In apparatus of the character described, the combination with an air compressor, a suitable chamber for retaining the air under pressure, and means for controlling the actuation of said compressor including a motor and a switch for governing the latter; of an air conduit communicating with said chamber, an unloading valve, means for supporting the latter, said valve adapted to communicate with said conduit and provided with an outlet to the atmosphere and a movable plunger adapted to cover said outlet during its inward movement and to uncover the same during its outward movement, and resilient means mounted on said switch and adapted to actuate said plunger to cover said outlet.

5. In an apparatus of the character described, in combination, an air compressor, a motor therefor, a storage tank for compressed air, a chamber connected to said storage tank, a check valve in connection, an opening from said chamber to the atmosphere, a switch controlled valve for closing said opening, a connection to the storage tank, and a pressure controlled switch for

the motor of said compressor adapted to
turn the current off under pressure, the
switch communicating with said connection
and being arranged to be moved to permit
5 the valve to open under air pressure in the
chamber when current has been turned off
by the pressure control and to be moved to
close the valve against compressor pressure
in the chamber when the pressure is on.
10 6. In an apparatus of the character de-
scribed, in combination, an air compressor,
a tank, a chamber connected thereto, a check
valve between said tank and chamber, a mo-
tor for actuating said compressor, a switch

adapted to be controlled by pressure in the 15
tank to turn current to the motor on and
off, and a pressure actuated unloading valve,
to control discharge of air from the cham-
ber, and connections whereby the switch on
starting the motor is adapted to seat said 20
valve against air pressure in the chamber,
discharged therefrom, such pressure effect-
ing its own discharge when the switch is
moved and the motor ceases to function.

Signed by me, this 2nd day of December, 25
1919.

ROLLIN L. BACHER.