A. C. KINGSBURY.

AUTOMATIC AIR PRESSURE CONTROL.

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1,336,301. Patented Apr. 6, 1920.

Fig. 1.

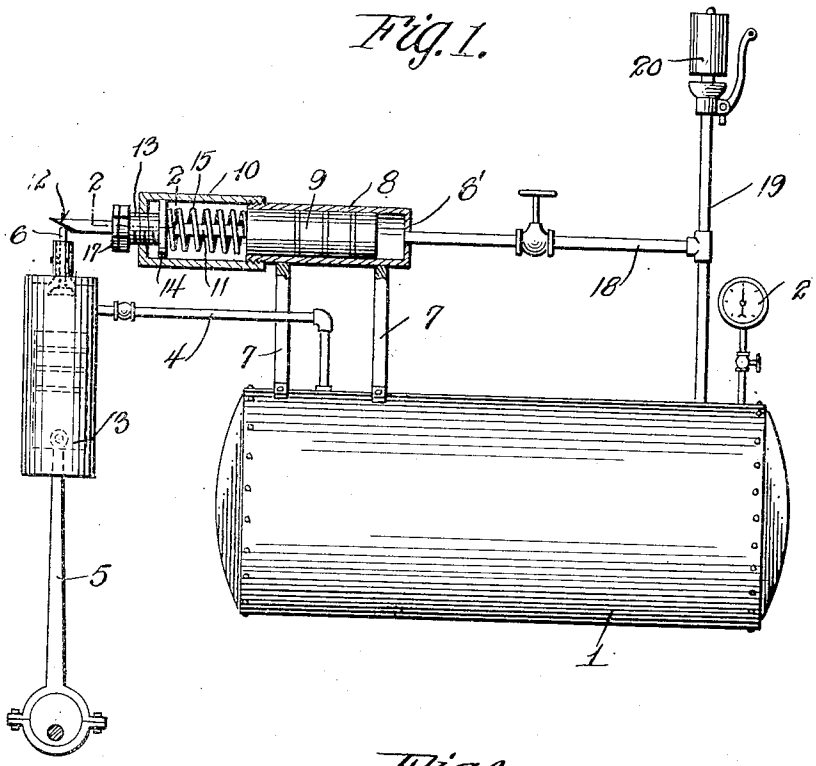
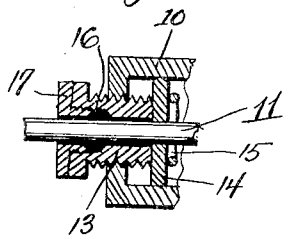


Fig. 2.



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AUTOMATIC AIR-PRESSURE CONTROL.

1,336,301. Specification of Letters Patent. Patented Apr. 6, 1920.

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To all whom it may concern:

Be it known that I, ALVIN C. KINGSBURY, a citizen of the United States, residing at Gig Harbor, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Automatic Air-Pressure Control, of which the following is a specification.

This invention relates to attachments for compressed air tanks and more particularly to a device for automatically controlling the pressure in the air tank.

One of the principal objects of the invention is to provide a device for automatically cutting off the supply of compressed air furnished by a compressed air pump to a tank, so that the pressure in the tank will be uniform at all times.

It is a further object of this invention to provide a device including an arrangement whereby the control mechanism may be adjusted to operate when the pressure in the tank reaches a predetermined number of pounds.

A further object of this invention is the provision of a device of this character which consists of comparatively few parts and is simple in construction, but durable and well adapted to withstand the rough usage to which devices of this character are ordinarily subjected.

For a full description of the invention and the advantages and merits thereof, reference is to be had to the following description and accompanying drawings, wherein is illustrated the preferred form of my invention, in which:—

Figure 1 is a side elevation of the device constructed in accordance with my invention, parts of the same being shown in section.

Fig. 2 is a detail section taken on the line 2—2 of Fig. 1.

Referring to the drawing, wherein is illustrated the preferred form of my invention, in which like numerals of reference indicate corresponding parts throughout the several views, the compressed air tank 1 is provided with a gage 2 by which the pressure in the tank may be determined. The cylinder 3 of a conveniently located air pump has a pipe connection 4 with the compressed air tank, and when the piston rod 5 is actuated for the purpose of reciprocating the piston within the cylinder 3, the air will be forced into the tank in the usual manner. The usual intake valve in the end of the cylinder 3 is provided with an extended valve pin 6, the purpose of which will be presently described.

Mounted upon suitable brackets 7 attached to the tank is a piston casing 8 within which is mounted an elongated piston 9 adapted to reciprocate within the casing 8. Screw threadedly mounted on the open end of the casing 8 is a housing 10 and the piston 9 carries a rod 11 extended longitudinally through the housing 10 and beyond the end of the housing and has its outer end provided with a beveled surface 12 adapted to engage the end of the intake valve stem 6. Mounted in a screw threaded opening in the end of the housing 10 is an adjusting nut 13 having screw threads whereby the nut may be longitudinally adjusted to extend into the housing 10. This nut embraces the rod 11 and its inner end engages a follower in the form of a disk 14 longitudinally movable in the housing and provided with a central opening through which the rod 11 is extended. Interposed between the follower 14 and the end of the piston 9 is a coil spring 15 of the expansion type and it will be noted that by adjusting the nut 13, the tension of the spring 15 may be varied as desired.

As shown in detail in Fig. 2, the nut 13 also serves as a means for receiving a packing 16 which is held in a recess in the nut by a gland 17, thus preventing the escape of air from the housing. One end of the piston casing 8 is connected by a pipe 18 to an upright pipe 19 to which an air whistle 20 is attached and adapted to be operated by compressed air from the tank 1. In this connection it should be pointed out that the pipe 19 may be connected with any other device employing compressed air for its operation.

When the tank is empty, the usual engine (not shown), is placed in operation for actuating the piston rod to reciprocate the piston within the cylinder 3. The reciprocation of the piston within the cylinder 3 causes an intermittent opening and closing of the intake air valve in the end of the cylinder 3 and air is thereby forced through the pipe 4 into the compressed air tank 1. During the time the tank is being filled, the spring 15 urges the piston 9 against the closed end 8′ of the casing 8 and, of course, the beveled surface 12 will be out of engagement with the end of the intake valve

stem 6. An excessive pressure in the tank, however, will force the piston 9 out of the open end of the casing 8 and against the action of the spring 15 thereby causing the beveled surface 12 to engage the end of the pin or valve stem 6 which will force the intake valve to open position, and thus cause the piston in the cylinder 3 to force the air out through the end of the cylinder instead of through the pipe 4. Whenever the pressure in the tank is decreased, as by operation of the whistle 20, the spring 15 will force the piston 9 back to normal position and the intake valve will immediately close whereupon the pump, still in operation, will furnish the necessary air to the tank 1 for bringing the pressure back to the desired number of pounds which will be indicated on the gage 2. The spring 15 may be slightly compressed by adjusting the nut 13 thereby causing the piston 9 to operate only when the pressure in the tank becomes excessive or in other words sufficient to force the piston 9 against the pressure exerted by the spring 15.

From the foregoing it will be observed that a very simple and durable automatic air pressure control has been provided the details of which embody the preferred form. I desire it to be understood, however, that slight changes may be made in the minor details of construction, without departing from the spirit of the invention or the scope of the claims hereunto appended.

I claim:

A pressure controlling device including the combination with a pressure tank and an air presser of means having communication with said pressure tank and associated with the intake valve of said air compressor, said means comprising a sectional housing, each section comprising a cylindrical portion having their inner open ends detachably engaged with each other and their outer closed ends provided with openings therein, one of said openings being connected to the pressure tank, the other being screw threaded, an adjusting nut having its shank engaging the screw threads of this opening, a follower in said housing and adjacent the inner projecting shank end of the adjusting nut, a plunger movably disposed in the opposite sectional housing, a coil spring disposed between said follower and said plunger, a valve regulator rod movably supported through said adjusting nut, engaged at one end to said plunger and adapted at the other end to override the valve stem of the intake compressor valve said plunger adapted, upon excess pressure in said tank to be forced against the tension of said spring for projecting said valve rod into such overriding engagement with the valve stem, whereby said valve opens to permit escape of the air from said compressor and prevent further pressure in said tank.

In testimony whereof I affix my signature in presence of two witnesses.

ALVIN C. KINGSBURY.

Witnesses:

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