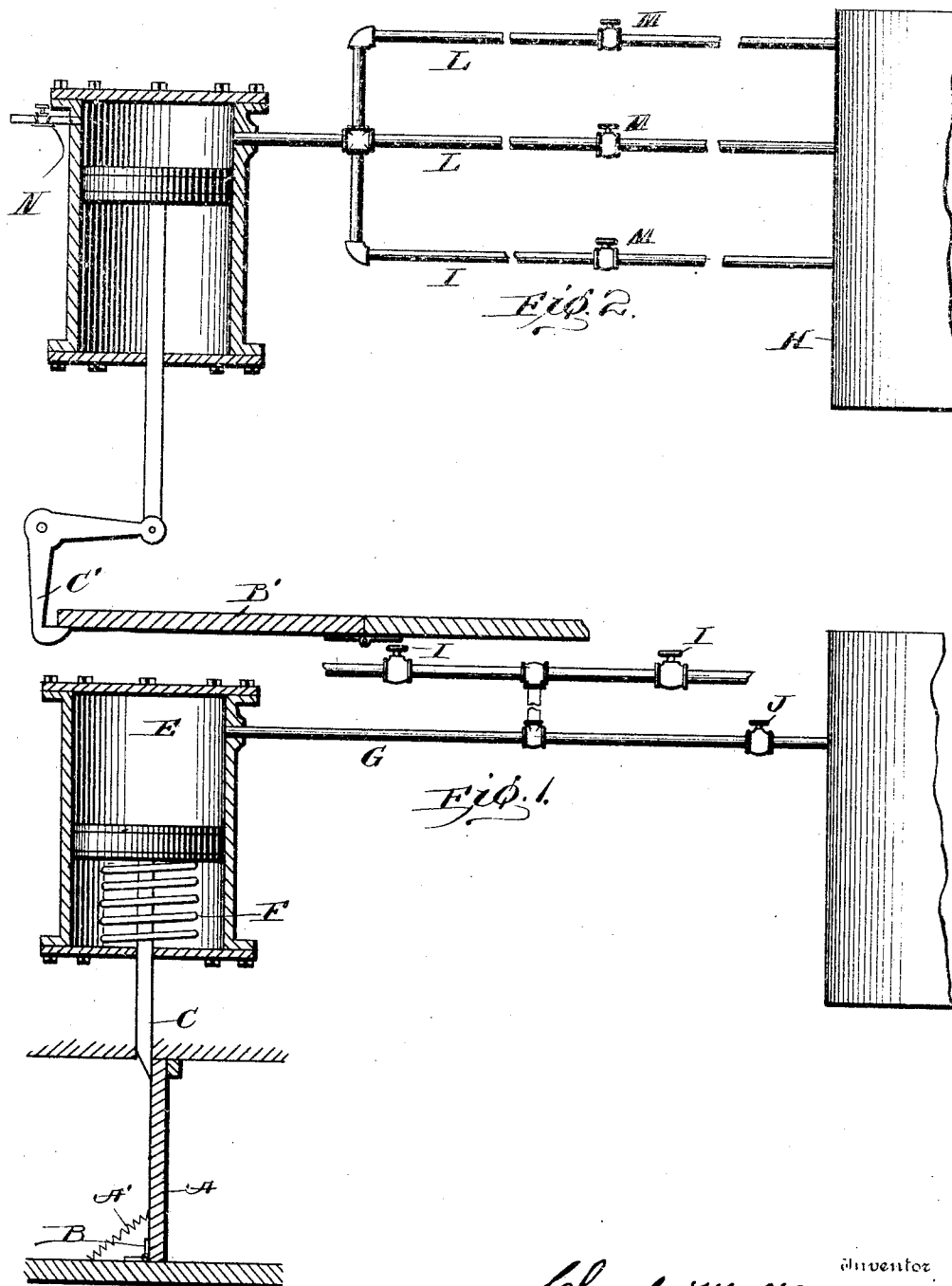


No. 784,644.

PATENTED MAR. 14, 1905.

C. M. WARNER.
PNEUMATIC CONTROL OF DOORS.
APPLICATION FILED MAR. 7, 1904.



Witnesses
J. N. Fowler
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PNEUMATIC CONTROL OF DOORS.

SPECIFICATION forming part of Letters Patent No. 784,644, dated March 14, 1905.

Application filed March 7, 1904. Serial No. 196,873.

To all whom it may concern:

Be it known that I, CHARLES M. WARNER, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented new and useful Improvements in Pneumatic Control of Doors and the Like, of which the following is a specification.

One of the principal objects of this invention is to secure fire protection in theaters and elsewhere through providing means whereby any desired passages may be instantly opened or closed by persons at any of many distant points. To this end the passages to be controlled are provided with doors or other suitable closures which may be normally open or normally closed and which instantly pass from normal position whenever the pressure in certain compressed-air conduits is changed, as it may be by valves or the like located at such points as may be thought best. By this means any one of many persons scattered throughout a building—for example, at various points about a stage, in the auditorium, or in lobbies or offices—may quickly open air-shafts, all fire-exits, and the like, and, if desired, may at the same time close other passages.

In the accompanying drawings, Figure 1 is a sectional view of apparatus arranged to retain a door in position by means of air normally under pressure. Fig. 2 shows a slightly-modified arrangement.

In Fig. 1, A represents a door, which may be the opening of an air-shaft or other passage, hinged at B and normally held closed by a catch C. As shown, this catch is the outer end of a piston-rod connected with a piston D, working in a pneumatic cylinder E. A spring F tends constantly to throw the piston to the upper part of the cylinder, and thus release the door. The door is preferably so pivoted or hinged that when released it will be opened by the action of gravity, aided by the pressure of the air; but a spring or the like may be arranged to aid or to replace gravity. From the upper part of the cylinder a conduit or pipe G leads to any suitable source H of compressed air and also leads, by as many branches as may be necessary, to each of the points from which it is desirable to have the door controlled. At each such point

the conduit is provided with a discharge-valve I. Often, as in theaters, there will be many passages to be controlled, and in such cases there will be a pneumatic cylinder for each, and each cylinder may be connected with the same reservoir or other source of compressed air and with the same branch pipes, having discharge-valves. Normally all the pneumatic cylinders are in communication with the source of compressed air, a valve J in the conduit being slightly open, so that the pressure may be kept up in the whole system, yet without admitting air rapidly enough to keep up the pressure whenever any discharge-valve is opened. This pressure of air in the system holds all the pistons down, keeping all the springs compressed and keeping all the catches in normal positions; but whenever any valve I is opened the pressure falls and every spring throws its piston upward, and thus releases the corresponding valve. The apparatus may be said to have a bias toward safety, for the doors are held closed only so long as there is a positive air-pressure. Obviously it is not material to the action if one or more doors be held open by their catches and are arranged to close when the air-pressure falls.

In the apparatus shown in Fig. 2 the spring is omitted and there is normally no pressure in the pneumatic cylinder, the catch C^s normally engaging the closed door B' by gravity. In this case distinct pipes L lead from the source of compressed air to the distant operating-points, respectively, and to each pneumatic cylinder. At the operating-points each pipe is provided with a valve M, and if any one of these be opened air passes to the cylinder and at once compels movement of the piston, and thus releases the catch. The pressure may be cut off at any time by closing the opened valve M and then opening any discharge-valve N, which may be provided in each cylinder.

What I claim is—

1. The combination with a normally closed door, of a device for holding the door closed, a cylinder, a piston in the cylinder, connections whereby the movement of the piston may withdraw the door-holding device and release the door, a source of compressed air, a

conduit leading from said source to said cylinder and having branches reaching various distant points, and independent hand-operated closures for the conduit located at said points, 5 respectively.

2. The combination with a closure for any passage, of a spring tending to open the same, means whereby a body of compressed air resists such action of the spring, a conduit leading 10 from said body to various distant points, and a hand-operated conduit-opening device at each of said points, whereby one at any of said points may instantly remove said resistance.

3. The combination with a door, of devices normally holding the door closed, a cylinder, a piston in the cylinder operatively connected with said devices, a source of compressed air, a conduit extending from said cylinder to various 20 distant points and communicating with said source, and hand-operated means at each

of said distant points for opening and closing the passage in said conduit, whereby the pressure in the cylinder may be instantly changed by a person at any of the distant points. 25

4. The combination with a closure for any passage, of a spring tending to open said closure, means whereby a body of compressed air prevents such action of the spring, conduits leading from said body to distant points, 30 and a hand-operated conduit-opening device at said points; whereby a distant person may instantly bring said spring into action from any of several distant points.

In testimony whereof I have signed my name 35 to this specification in the presence of two subscribing witnesses.

CHARLES M. WARNER.

Witnesses:

H. J. PIEPER,
A. LEWIN.