No. 711,398. Patented Oct. 14, 1902.

B. M. W. HANSON.

FLUID OPERATED STOP VALVE AND ALARM.

(Application filed Oct. 23, 1901.)

(No Model.)

Fig. 1

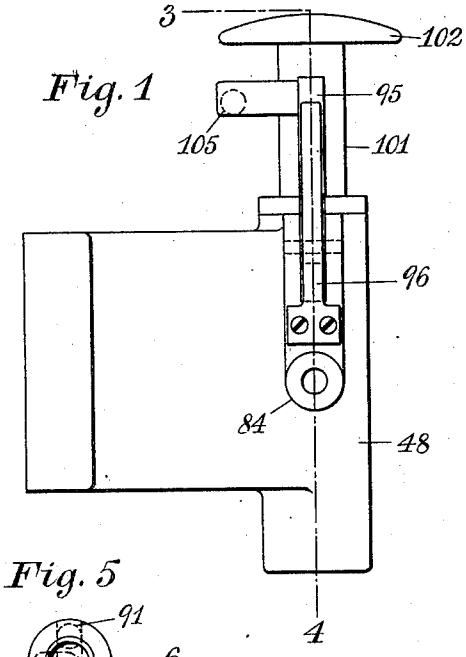


Fig. 2

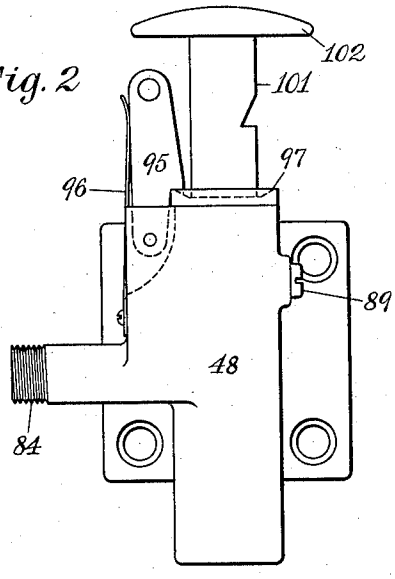


Fig. 5

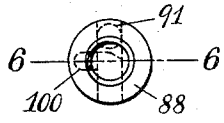


Fig. 6

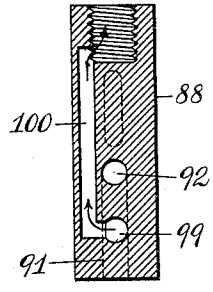
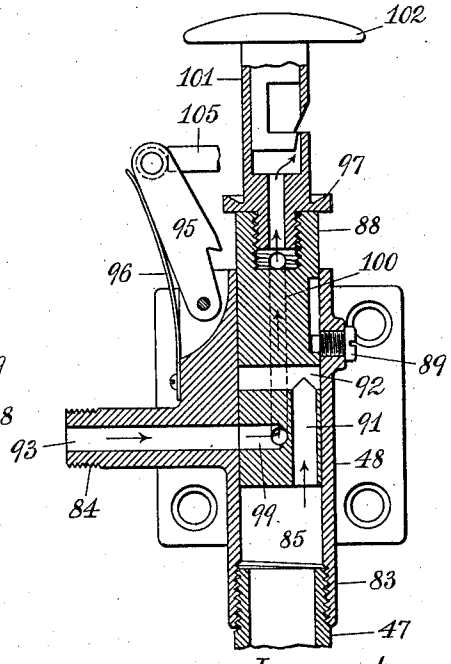


Fig. 3

Fig. 4



Witnesses:
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UNITED STATES PATENT OFFICE.

BENGT M. W. HANSON, OF HARTFORD, CONNECTICUT, ASSIGNOR TO PRATT & WHITNEY COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF NEW JERSEY.

FLUID-OPERATED STOP-VALVE AND ALARM.

SPECIFICATION forming part of Letters Patent No. 711,398, dated October 14, 1902.

Application filed October 23, 1901. Serial No. 79,666. (No model.)

To all whom it may concern:

Be it known that I, BENGT M. W. HANSON, a citizen of Sweden, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Fluid-Operated Stop-Valves and Alarms, of which the following is a specification.

This invention is an improved stop-valve and alarm adapted to be operated automatically by the fluid-pressure which it controls, the object being to provide a simple, compact, and inexpensive device for automatically stopping the flow of that pressure at the desired time and to sound an alarm to notify the attendant or operator of the stopping of the flow and the consequent stopping of the machine or apparatus which had been operated by the pressure.

The construction, arrangement, and operation of my preferred embodiment of this invention is illustrated in the accompanying drawings, in which—

Figure 1 is an end view, and Fig. 2 a front view, showing the exterior appearance of the valve and its casing. Fig. 3 is a front view showing the valve in its casing in section, taken along the line 3 4 of Fig. 1, the valve being latched in its open position for permitting the flow of the pressure. Fig. 4 is a view similar to that of Fig. 3, excepting that the valve is therein moved to its closed position, as permitted by the withdrawal of the latch. In this view also the upper or alarm portion of the device is shown in longitudinal section to illustrate the manner in which the exhaust-pressure makes its exit through and sounds the alarm whistle or reed. Fig. 5 is a plan view, and Fig. 6 a side view, of the piston-valve of Figs. 3 and 4, Fig. 6 being in section taken along the line 6 6 of Fig. 5.

The valve as herein shown is mounted in a casing 48, which may be integral with the machine or apparatus with which it is to be employed or may be removably attached thereto. The lower end 83 of the casing is threaded or otherwise adapted to receive the supply-pipe 47, and the extension or nipple 84 is adapted to receive the piping by which the valve is connected with its associated apparatus to which the pressure is to be supplied. The inlet 85 from the pipe 47 is preferably cylindrical and contains the cylindrical valve-piston 88, which is shown in Figs. 5 and 6. That valve is fitted to slide longitudinally to the extent represented by comparison of Figs. 3 and 4, its limit of movement being determined by a stop-screw 89 or in any other convenient way, which may also serve, as herein shown, to prevent the cylindrical valve from turning around. The valve is provided with the longitudinal passage 91, leading from the inlet 85 to the transverse port 92, which when the valve is in the position shown in Fig. 3 coincides with the outlet-port 93, which preferably extends, as herein shown, substantially at right angles to the direction of movement of the valve. The transverse port 92 opens with equal area upon the opposite sides of the interior wall of the cylindrical valve, so that the transverse pressure is taken by those walls, and therefore does not react upon the valve so as to interfere in the slightest degree with its sliding movement; but the upward longitudinal pressure against the lower end of the valve is not balanced by any counteracting downward pressure, so that the constant tendency of the pressure is to force that pressure upwardly to the position shown in Fig. 4, and in order to retain the valve in its lower position (shown in Fig. 3) a latch 95 is provided. That latch is pivotally mounted on the casing 48 and is pressed by means of a spring 96 into engagement with a shoulder 97 appurtenant to the valve. Therefore when it is desired to stop the flow of pressure it is only necessary to push the latch aside, as shown in Fig. 4, when the upward pressure from the inlet 85 will move the valve promptly to its closed position shown in the latter figure. The stop-valve is also provided with a lateral inlet 99, which is connected, by means of the duct 100, with a device capable of being sounded by the exhaust-pressure through the said duct. In the present instance this sounding device is represented as being a reed or whistle 101, which is screwed into the top of the valve and is pro-

vided with a knob or button 102, by means of which the operator may push down the valve to start the machine into operation. In the device as herein illustrated this whistle portion is also provided with the shoulder 97 for engaging with the latch 95. By this arrangement the pressure contained in the pipes and passages beyond the stop-valve will when the stop-valve is moved to the position shown in Fig. 4 return through the inlet 99 and the duct 100 and escape into the atmosphere through the reed or whistle, sounding that whistle until the pressure exhausts itself, thus serving as an alarm or notification to the attendant that the machine has stopped.

The machine may be stopped at any time at the will of the operator by merely pushing the latch 95 aside, or it may be automatically stopped by providing any suitable operative connection, as the rod 105, between the latch and the appropriate moving portion of the machine or apparatus with which the device is to be employed. This operative connection for withdrawing the latch at a suitable time may be readily varied in form and arrangement to suit the circumstances or particular cases in many ways that will suggest themselves to any mechanic.

The alarm device may by a suitable passage in the casing connecting the duct 100 with the inlet 85 when the valve is in its closed position shown in Fig. 4 be operated directly by the pressure-supply; but for most purposes the exhaust-pressure will be found sufficient and is preferable in such cases, for the reason that the noise of the alarm then ceases after it has served its purpose.

It will be obvious to those skilled in the mechanics' arts that many other modifications may be made in these devices to adapt them to particular purposes or to various environments.

I claim as my invention—

1. The combination of a stop-valve communicating with an alarm by its closing movement, a latch for holding the valve in open position, and means restrained by the latch and tending to close the valve when the latch is withdrawn.

2. The combination of a stop-valve, an alarm, and means for connecting the valve and the alarm, for operating the alarm, upon the closing of the valve.

3. In combination with fluid-pressure-operated devices, a stop-valve therefor operable by the pressure-supply to stop the passage of the pressure, and provided with a port for permitting the passage of the pressure at one position of the valve, and means for latching the valve in that position.

4. In combination with fluid-pressure-operated devices, a stop-valve therefor connected with the pressure-supply and operable thereby to stop the passage of the pressure, and provided with a port for permitting the passage of the pressure at one position of the valve, means for latching the valve in that position, and means for unlatching the valve by the operated devices.

5. In combination with fluid-pressure-operated devices, a stop-valve therefor located in the pressure-supply pipe, and movable by the pressure to stop the supply, the valve being provided with a port for permitting the passage of the pressure at one position of the valve, and means for latching the valve in that position against the pressure.

6. A stop-valve for fluid-pressure-operated devices, comprising an inlet and an outlet for the pressure, a reciprocating valve operable by the pressure extending into the pressure-inlet and provided with a port communicating with the pressure-inlet in one position of the valve, and a latch for holding the valve in that position against the pressure.

7. In combination with a stop-valve for fluid-pressure-operated devices, a pressure-operated alarm, and a passage leading from the valve when in its closed position, for directing the pressure to the alarm.

8. In combination with a stop-valve for fluid-pressure-operated devices, a pressure-operated alarm, and a passage leading from the valve when in its closed position for directing the exhaust-pressure to the alarm.

9. In combination with fluid-pressure-operated devices, a pressure-operated alarm therefor, and a stop-valve for shutting off the pressure-supply from the said devices, and for directing the return pressure or exhaust therefrom to the alarm.

10. In combination with fluid-pressure-operated devices, a stop-valve and alarm therefor, comprising a casing having an inlet and an outlet for the pressure, a reciprocating valve located in the pressure-inlet and provided with a port communicating with the pressure-outlet at the open position of the valve, and provided with a passage leading from the pressure-outlet to an alarm device at the closed position of the valve.

11. In combination with fluid-pressure-operated devices, a stop-valve and alarm therefor, comprising a casing having an inlet and an outlet for the pressure, a valve located in the pressure-inlet, provided with a port for the passage of the pressure at the open position of the valve, and provided with a passage leading from the outlet at the closed position of the valve, to the alarm device, and a latch for holding the valve in its open position against the pressure.

12. In combination with fluid-pressure-operated devices, a stop-valve and alarm therefor, comprising a casing having an inlet and an outlet for the pressure, a reciprocating valve located in the pressure-inlet, provided with a port for permitting the passage of the pressure at one position of the valve, and provided with an exhaust-passage leading from the outlet to a reed or whistle of the alarm, at another position of the valve.

13. In combination with fluid-pressure-operated devices, an automatic stop-valve there-

for, comprising a casing having an inlet and an outlet for the pressure, a reciprocating valve extending into the pressure-inlet and provided with a port communicating with the pressure-outlet in one position of the valve, a latch for holding the valve in that position against the pressure, and means operable with the said devices, for disconnecting the latch and permitting the valve to close at a predetermined point in the operation of the said devices.

Signed at Hartford, Connecticut, this 19th day of October, 1901.

B. M. W. HANSON.

Witnesses:
H. E. BAILEY,
WM. H. HONISS.