

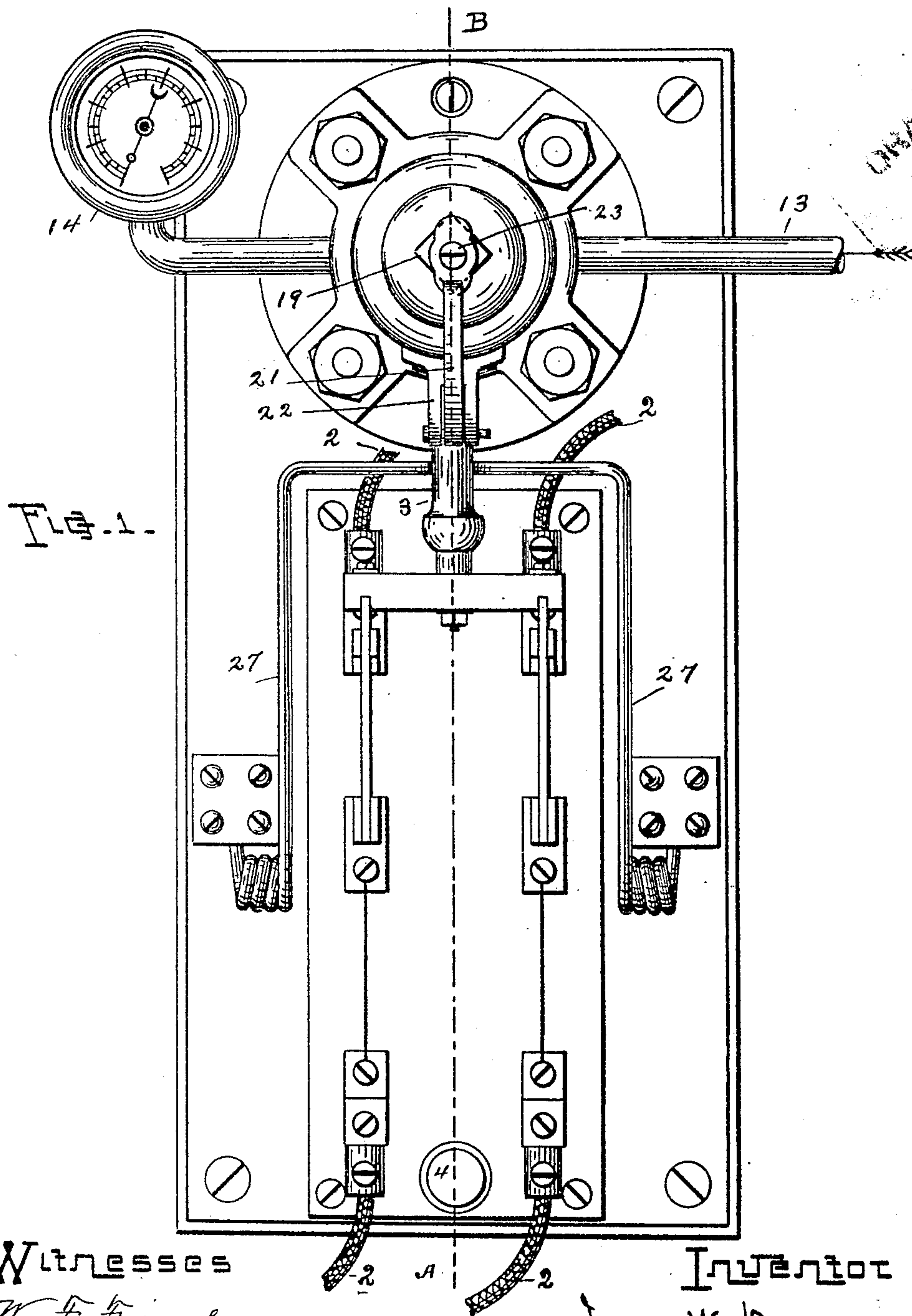
No. 827,060.

PATENTED JULY 24, 1906.

J. W. DAWSON.
AUTOMATIC SAFETY DEVICE FOR FLUID COMPRESSORS.

APPLICATION FILED DEC. 31, 1904.

2 SHEETS—SHEET 1.



Witnesses

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E. H. Currier

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DRAFTSMAN.

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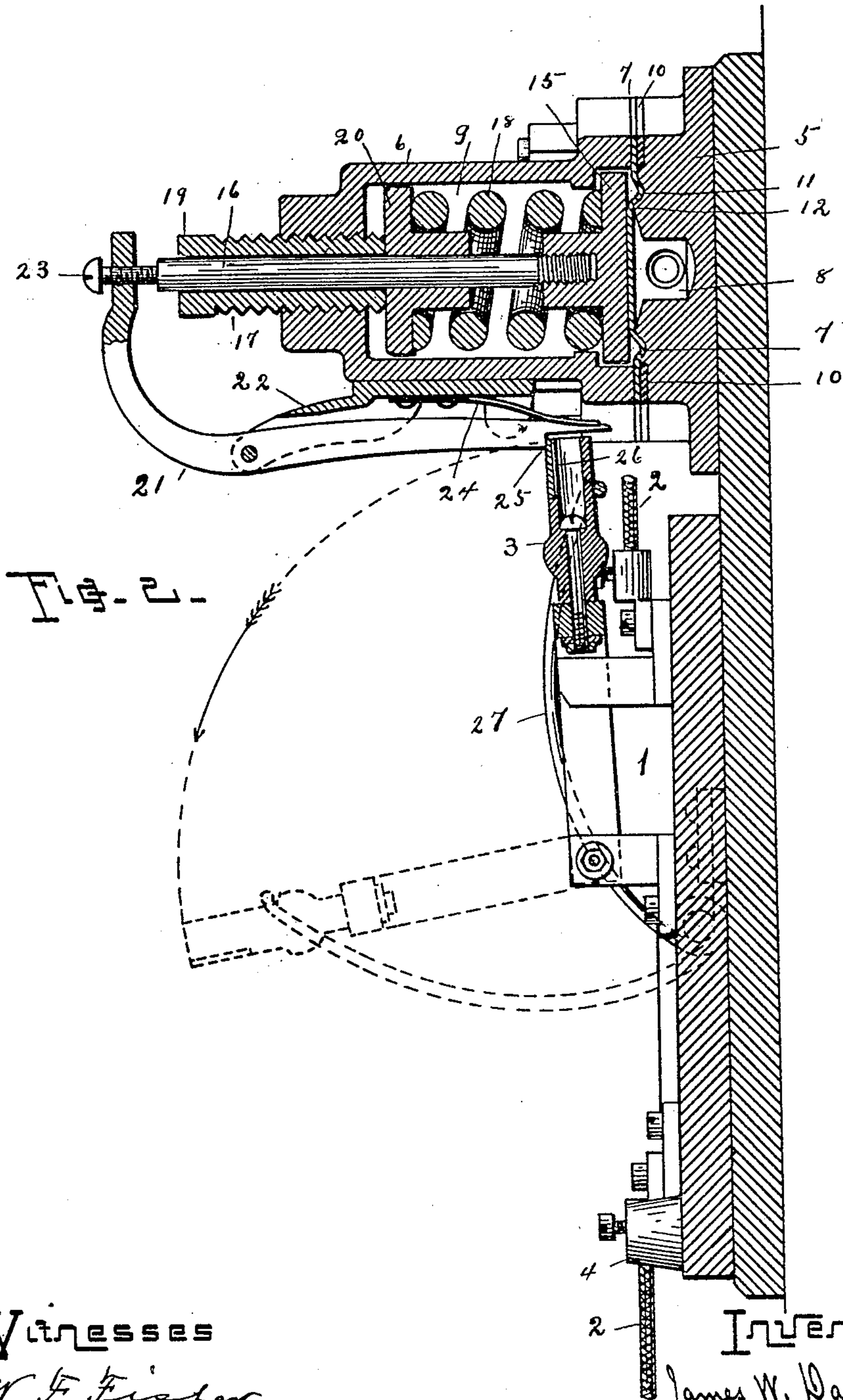
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UNITED STATES PATENT OFFICE.

JAMES W. DAWSON, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF
TWO-TWELFTHS TO GEORGE BEAGLEY, OF SAN FRANCISCO, CALI-
FORNIA.

AUTOMATIC SAFETY DEVICE FOR FLUID-COMPRESSORS.

No. 827,960.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed December 31, 1904. Serial No. 239,254.

To all whom it may concern:

Be it known that I, JAMES W. DAWSON, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Automatic Safety Devices for Fluid-Compressors, of which the following is a specification.

This invention relates to a safety device for use in connection with compressors and particularly to automatic safety devices used with gas-compressors operated for any purpose whatsoever and driven by any suitable power.

The object of this invention is the production of a safety device of this sort that will be easy of operation, accurate, and durable.

To this end the device embodying the invention is by suitable mechanism connected to the receptacle containing the fluid under compression and is so constructed that upon an excess of pressure in said receptacle it will act upon an electric circuit through whose agency the motive power driving the compressor is controlled.

The invention therefore consists in an automatic safety device for compressors substantially as hereinafter described and claimed.

In the accompanying drawings, which form a part of this specification, Figure 1 represents the safety device in elevation; and Fig. 2 represents a section thereof, taken in the plane indicated by the line A B in Fig. 1.

The several parts of the automatic safety device are preferably mounted together upon a backboard, foundation, or base, by means of which it may be secured in place wherever most convenient. These parts comprise the fluid-pressure chamber 8, the cylinder 6, its piston, the catch-lever 21, and the electric knife-switch 1.

The fluid-pressure chamber consists of a cavity in the middle of the base 5, which cavity is covered by the plate 7, which forms one wall thereof. This plate is preferably corrugated, as at 11, and in the surfaces of the lateral walls of the cavity 8 contiguous to said plate is formed a channel corresponding to the corrugation of said plate, and the inner edges of these walls are sloped toward the cavity, thereby extending the area of the wall formed by said plate. The cylinder 6 is

flanged at its base, and between this flange and the base 5 the edge of the plate 7 is firmly secured, being hermetically sealed to the base 5 by means of the gasket 10. The piston in cylinder 6 consists of the head 15 and the rod 16. Said head is of such extent as to cover the entire area of the plate-wall of the cavity 8 and preferably extends over the corrugated surface of said plate, thereby reaching beyond the edge 12 of the lateral walls of chamber 8. By this construction said walls normally support the piston and relieve the flexible wall or diaphragm from the pressure of the piston when the fluid in the chamber is under normal tension.

Upon the piston-rod is movably located a collar 20, between which and the piston-head is confined a spiral spring 18, which resists the pressure of the fluid in the chamber 8. The tension of this spring may be varied by means of an exteriorly-screw-threaded sleeve 17, seated in the outer end of cylinder 6 and forming an abutment for said collar. The outer end of the sleeve is preferably squared for the application thereto of a wrench by which to turn it in adjusting the tension of spring 18.

To the side of cylinder 6 a catch-lever 21 is pivoted—as, for instance, by means of the bracket 22, attached to or formed integral with said cylinder. Through the outer end of the catch-lever there is passed a screw 23, which engages the outer end of the piston-rod, and to the bracket 22 is secured a plate-spring 24, which presses upon the other end of the lever 21. This spring-pressed end of the lever 21 is preferably notched, as at 25, for engagement with the movable part of the electric switch 1. This switch may be of any desired form, but by preference a double-pole knife-switch is used. The handle of this switch is indicated at 3 and has let into it a plate, as 26, to take the wear incident to the engagement of the catch-lever with said handle. A looped spiral spring 27 is secured to the backboard and engages by the middle of its loop with the rear side of the switch-handle, so that when said handle is released from the catch the switch will be immediately thrown open by this spring. The electric conductors leading to and from the switch are indicated at 2, and the buffer for the switch when thrown open is indicated at 4.

To the fluid-pressure chamber is connected a pressure-gage, as indicated at 14. The connection of said chamber with the compressor or the reservoir of compressed fluid is indicated at 13.

By the proper adjustment of the tension of spring 18 by means of the sleeve 17 and the swing of catch-lever 21 by means of the screw 23 the switch 1 may be operated to stop further compression of the fluid at any desired degree of compression indicated by the pressure-gage 14. Obviously the switch 1 may control an electric motor used in driving the compressor, or it may control an electric device for disconnecting the compressor from any other sort of motor.

Changes in the form, construction, and location of the several parts embodying my invention may be made without departing from the spirit thereof.

The invention claimed is—

1. In an automatic safety device for compressors, the combination of a chamber for reception of fluid under pressure, a spring-pressed piston movable by the pressure in said chamber, a cylinder in which said piston and spring are confined, a catch-lever pivoted to said cylinder, an adjusting-screw interposed between said lever and the rod of the piston, an electric switch, a spring for throwing the movable member of the switch, a handle on said switch with which said catch engages to hold the switch against the action of the spring, and a spring for holding the catch-lever in engagement with said handle and with the piston-rod.

2. An automatic safety device for compressors, consisting of a back or foundation, a combined fluid-pressure chamber and cylinder mounted thereon, a spring-pressed piston within the cylinder and movable by the pressure in said chamber, a gage connected to said chamber, an electric knife-switch mounted on said foundation, a spring-pressed pivoted catch for engaging with the handle of the switch and with the rod of the piston, and a spiral looped spring attached to the founda-

tion and pressing against said handle to throw the switch open when released from the catch by the movement of the piston.

3. An automatic safety device for compressors, consisting of a back or foundation, a combined fluid-pressure chamber and cylinder mounted thereon, one wall of which chamber is a corrugated plate and the lateral walls of which conform to the corrugations of said plate, a piston covering the entire area of said corrugated wall, a device for applying to said piston a determinate pressure, an electric switch mounted on said foundation, a spring-pressed pivoted catch for engaging with the handle of the switch and with the rod of the piston, and a spring attached to the foundation and pressing against the handle of the switch to throw the switch open when released from the catch by the movement of the piston.

4. An automatic safety device for compressors, consisting of a back or foundation, a combined fluid-pressure chamber and cylinder mounted thereon, a piston within the cylinder and movable by the pressure in said chamber, a collar movable upon the rod of the piston, a spring between the piston-head and the collar, an externally-threaded sleeve upon the rod and seated in the end of the cylinder and forming an abutment for the said collar whereby the desired tension may be given to said spring, an electric switch mounted on said foundation, a spring-pressed pivoted catch for engaging with the movable member of the switch and with the rod of the piston, and a spring attached to the foundation and pressing against said movable member of the switch to throw the switch open when released from the catch by the movement of the piston.

In testimony whereof I have affixed my signature, in presence of subscribing witnesses, this 18th day of August, 1904.

JAMES W. DAWSON.

Witnesses:

O. A. EGGERS,
E. W. CURRIER