

No. 779,806.

PATENTED JAN. 10, 1905.

A. P. SCHMUCKER.

PNEUMATICALLY ACTUATED CLUTCH OPERATING DEVICE.

APPLICATION FILED DEC. 2, 1903.

2 SHEETS—SHEET 1.

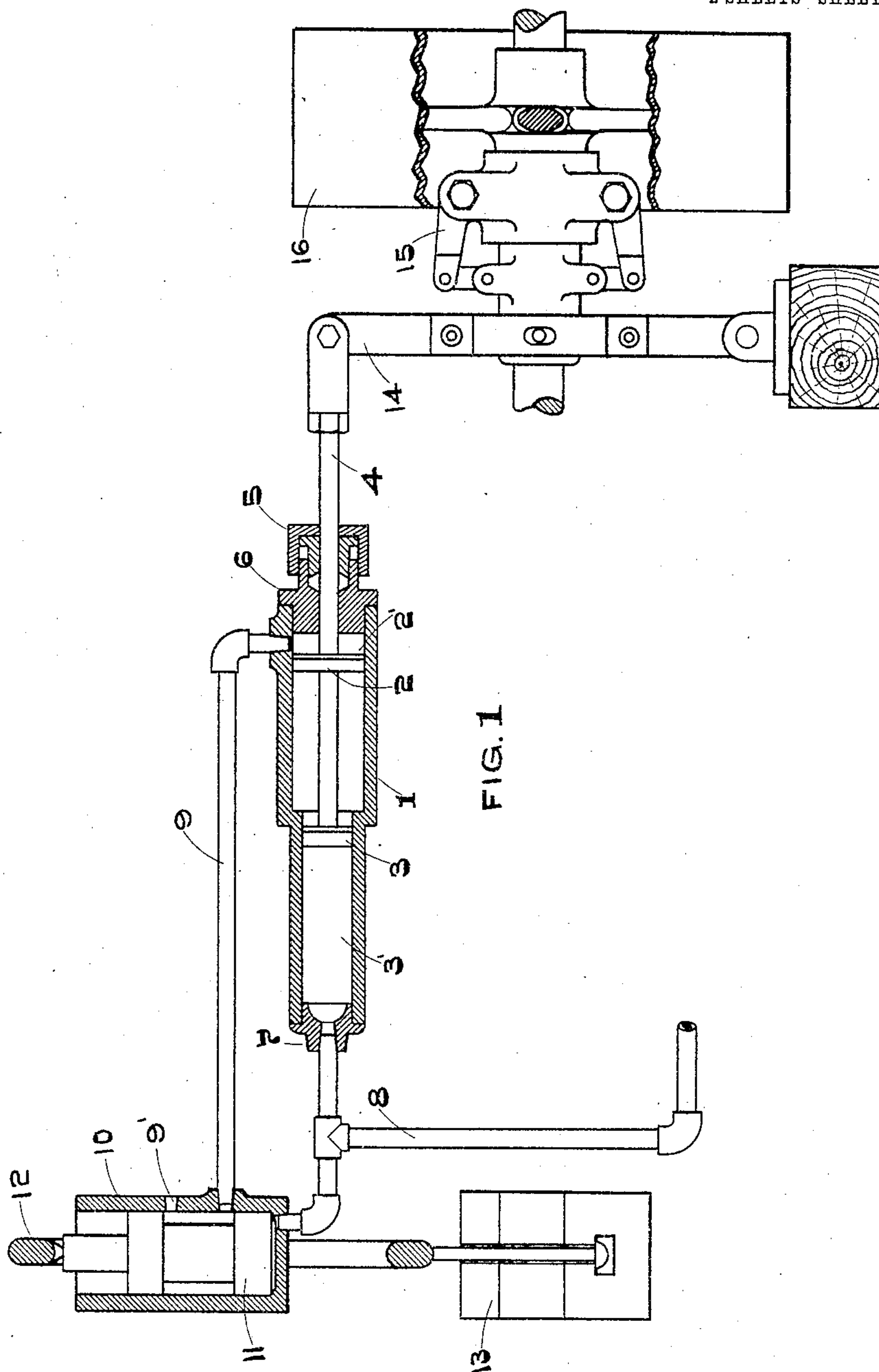


FIG. 1

WITNESSES

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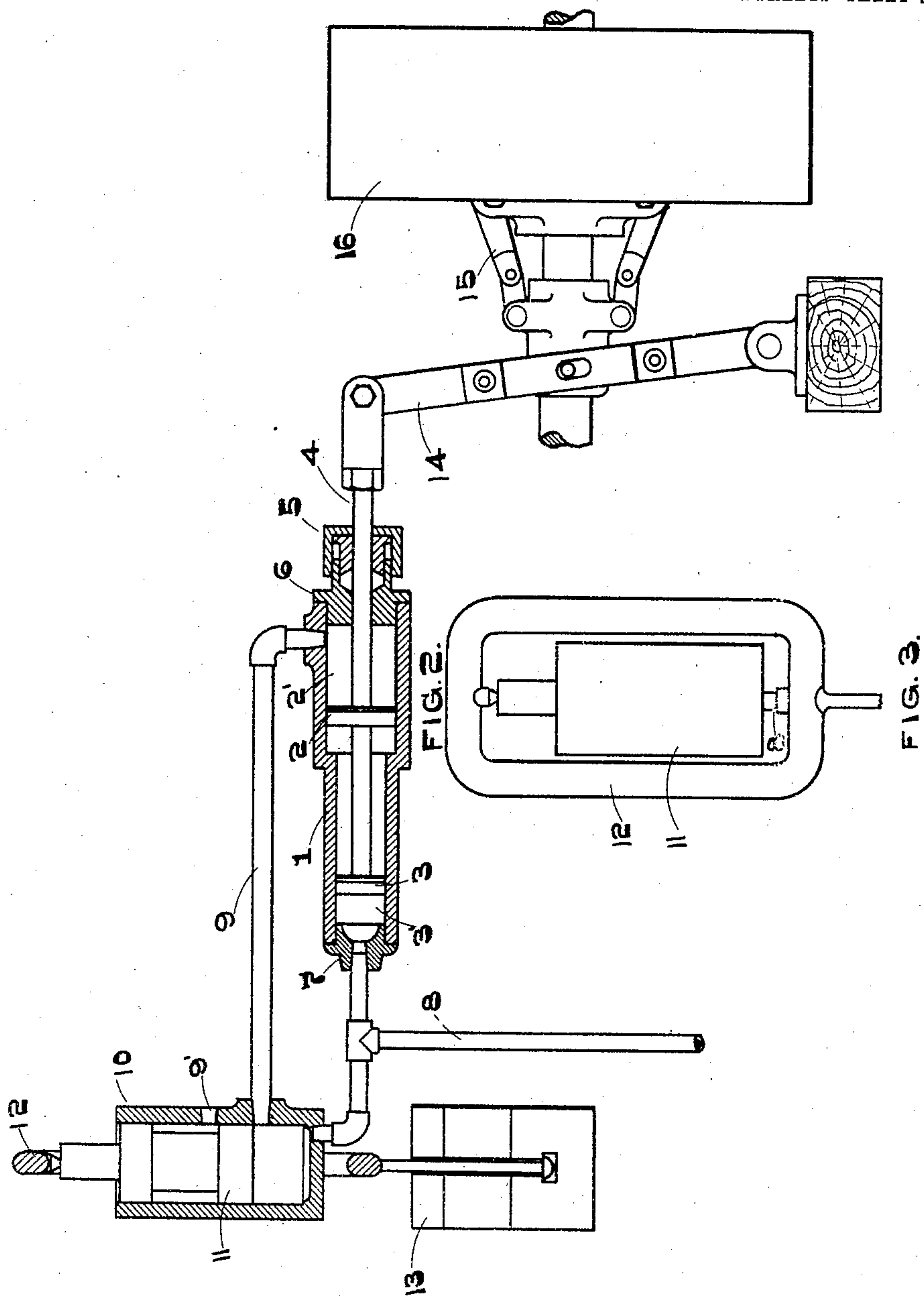
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UNITED STATES PATENT OFFICE.

ALFRED P. SCHMUCKER, OF FRANKLIN, PENNSYLVANIA, ASSIGNOR OF
ONE-THIRD TO JOHN PLAYER, OF RIVER FOREST, ILLINOIS.

PNEUMATICALLY-ACTUATED CLUTCH-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 779,806, dated January 10, 1905.

Application filed December 2, 1903. Serial No. 183,527.

To all whom it may concern:

Be it known that I, ALFRED P. SCHMUCKER, a citizen of the United States, residing at Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Pneumatically-Actuated Clutch-Operating Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improved pneumatically-actuated clutch-operating device and will be fully understood by a reference to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is an elevation, partly in section, of my complete device, showing the various details of the same in the position which they occupy when the clutch is thrown in or operative. Fig. 2 is an elevation, partly in section, of my complete device, showing the various details in the position which they occupy when the clutch is thrown out or disengaged. Fig. 3 is a side view of the valve and yoke.

The same reference-figures indicate identical parts in the several views.

The object of my invention is to provide an automatic clutch-operating device which is especially adapted to be applied to a belt-driven air-compressor for the purpose of stopping the same when a predetermined maximum pressure of air has been attained and again starting said compressor when a predetermined minimum pressure has been reached.

The construction of my device is substantially as follows: A cylinder 1 is bored at one end for the reception of a large piston 2 and at the other end for the reception of a smaller piston 3, the respective large and small bores or piston-seats occupying about equal portions of the length of the cylinder 1. Pistons 1 and 2 are rigidly attached to a rod 4, which projects out through the stuffing-box 5 in the head 6 of the large end of the cylinder 1, the said pistons being operably seated within the respective chambers. In the smaller end of cylinder 1 is secured a head 7, through which communication is established with an air-re-

ceiver by means of a pipe 8. Into the larger end of cylinder 1, in close proximity to head 6, is introduced a pipe 9, by means of which communication is established through the medium of a valve with the air-receiver aforesaid. Said valve consists of a case or cylinder 10, in which is operably seated a piston 11, which is adapted to have suspended therefrom by means of a yoke 12 the weights 13, which may be increased or diminished, as desired. Piston 11 is relieved at the center for the purpose of causing communication to be established between the chamber 2' and the atmosphere through pipe 9 and port 9'. Pipe 8 leads into the bottom of case 10, whereby the receiver-pressure in said pipe 8 is communicated to the bottom of valve 11.

The operation of my device is substantially as follows: The piston-rod 4 is attached to the lever 14 of the clutch 15, which clutch is connected to the belt-pulley 16, and said pulley will for the purposes of this application be considered as the driving-pulley of a belt-driven air-compressor. In Fig. 1 the clutch is shown in engagement or thrown in by reason of the pressure of air in chamber 3', which is constant-acting on piston 3, and when the clutch is in this position the piston 11 is at its lowest point, being held down by the gravity of the weights 13, and chamber 2' of cylinder 1 is in communication with the atmosphere by the means aforesaid. When the clutch is thus thrown in, the air-compressor would be working and charging the receiver with compressed air, with which pipe 8 communicates. When the pressure in said receiver becomes great enough, valve 11 is caused to rise to the position shown in Fig. 2, and communication is thus established through pipes 8 and 9, and the pressure in pipe 8 is transmitted to chamber 2', and the pistons 2 and 3 are driven back to the position shown in Fig. 2, because the area of piston 2 is considerably greater than the area of piston 3. The clutch is thus disengaged or thrown out and the air-compressor disconnected from its driving-pulley and ceases to work. When the pressure in the receiver diminishes to such an amount that the weight 13 will overcome the pressure

upon the bottom of piston 11, said piston will be again carried down to the position shown in Fig. 1 and the clutch will be thrown in.

Be it understood that the weight 13 may be increased or diminished, as desired.

I do not wish to be understood as confining the adaptation of my device to belt-driven air-compressors merely, because with slight modifications the same could be adapted to various uses—as, for instance, valve 11 could be actuated by some other means, and the clutch could be one of numerous clutches upon the line-shafting of a mill, shop, or factory, and by a suitable system of piping (modifications of pipes 8 and 9) said clutches could all be operated from one central station and the machinery in the various sections of the factory be stopped and started as desired.

Having thus described my device, what I claim as new, and desire to secure by Letters Patent, is—

1. A pneumatically-actuated clutch-operating device, consisting of a cylinder having two pistons of different areas, operably seated therein, a piston-rod rigidly connecting said pistons, one end of said rod being extended through the head of the larger cylinder, and adapted to be attached to a clutch-lever, a pipe communication entering the chamber of the larger cylinder between the piston and the head thereof, a pipe entering the head of the smaller cylinder and establishing communication between the same and an air-receiver, means of opening communication between said pipes and between said first-mentioned pipe and the atmosphere, in combination with the lever of a clutch.

2. A pneumatically-actuated clutch-operating device, consisting of a cylinder having a bore of different areas at each end thereof, pistons operably seated therein, a piston-rod

rigidly connecting said pistons, said piston-rod being extended through the head at the larger end of the cylinder, and adapted to be attached to a clutch-lever, pipes communicating with the chambers at the extreme sides of the pistons, one of said pipes communicating with an air-receiver and adapted to maintain a constant pressure upon said side of the smaller piston, means of establishing communication between said pipes at a determined maximum pressure, means of closing said communication at a determined minimum pressure, and opening communication between said chamber of the larger piston and the atmosphere, in combination with a clutch, substantially as specified.

3. In a pneumatically-actuated clutch-operating device, a cylinder adapted to the reception of pistons of different diameters, two pistons of different diameters operably seated therein, and adapted to receive pneumatic pressure upon their extreme sides, a rod connecting said pistons and extending through the head at the larger end of the cylinder, and being adapted to connect to the lever of a clutch the clutch-lever aforesaid, a pipe adapted to communicate constant pressure to said extreme side of the smaller piston, a pipe adapted to communicate pressure to and relieve pressure from said extreme side of the larger piston, means of opening communication between the pipes aforesaid, and of closing such communication and simultaneously relieving the pressure upon the larger piston, for the purpose specified.

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

ALFRED P. SCHMUCKER.

Witnesses:

SAMUEL T. CALLAWAY,
BRUNO A. KRENZ.