

No. 839,172.

PATENTED DEC. 25, 1906.

A. S. MILLER.
CYLINDER RELIEF VALVE.
APPLICATION FILED MAY 18, 1906.

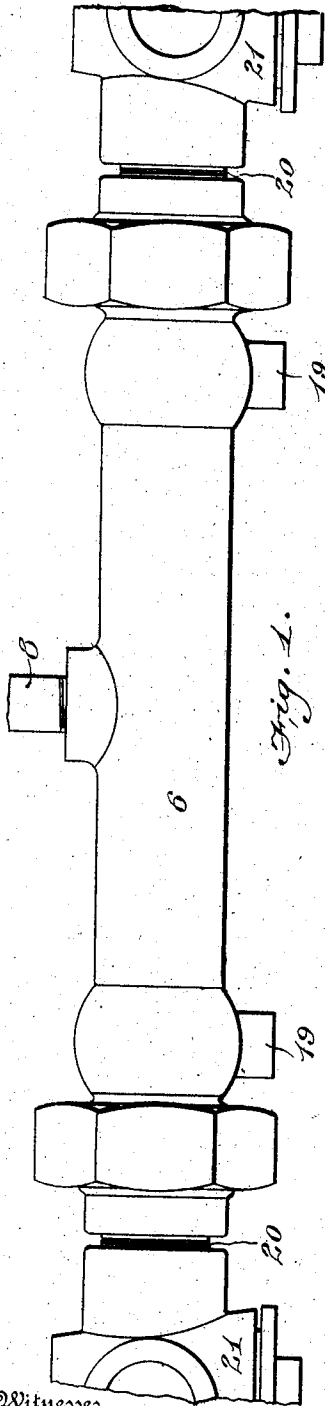


Fig. 1.

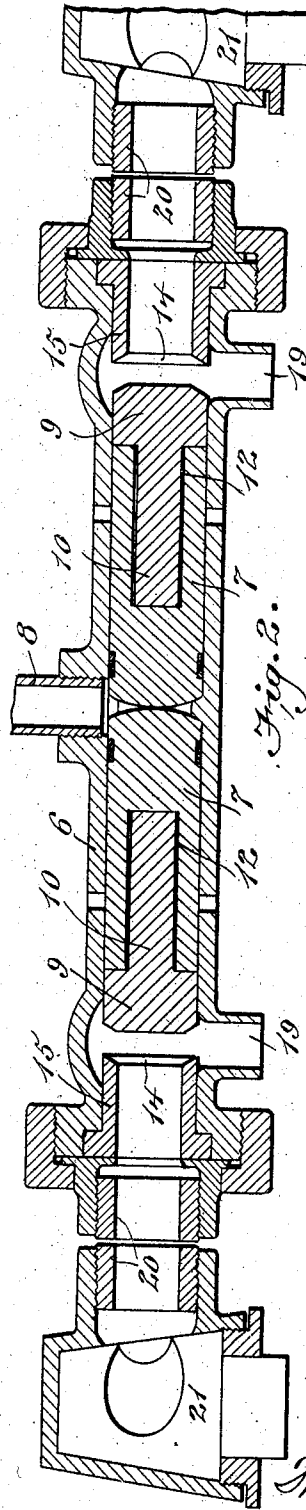


Fig. 2.

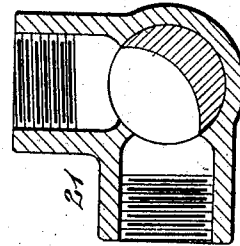


Fig. 3.

Witnesses

Maximilian
Geo. E. Tew

Inventor

Arthur S. Miller,

by

Mils B. Stevens & Co.

Attorneys

UNITED STATES PATENT OFFICE.

ARTHUR SNOWDEN MILLER, OF BIRMINGHAM, ALABAMA.

CYLINDER RELIEF-VALVE.

No. 839,172.

Specification of Letters Patent.

Patented Dec. 25, 1906.

Application filed May 18, 1906. Serial No. 317,528.

To all whom it may concern:

Be it known that I, ARTHUR SNOWDEN MILLER, a citizen of the United States, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented new and useful Improvements in Cylinder Relief-Valves, of which the following is a specification.

This invention is a cylinder relief-cock, and has for its object to provide an improved cylinder-cock operated by compressed air instead of by the usual mechanical devices employed for that purpose. This is desirable, because a governing-valve can be placed within easy reach of the engineer, who can operate the cocks in a shorter time and with less expense of strength than with the ordinary rigging, and he can also be sure that the cocks will remain as placed without further attention.

In the present device a common three-way governing-valve is used, and the device is so constructed that by manipulation of the valve the cylinder-cocks can be opened or closed and will also automatically relieve excessive compression in the cylinders, and, furthermore, the cylinder-cocks may be kept open while the engine is at a standstill, as in the roundhouse, (with throttle leaking, as usual,) thereby preventing any accidental movement of the engine.

In the accompanying drawings, Figure 1 is a plan view of the device. Fig. 2 is a central horizontal section. Fig. 3 is a detail in central vertical section, showing a cut-out cock between the cylinder and the relief-valve.

Referring specifically to the drawings, 6 indicates a double cylinder in which operate, in opposite directions, two pistons 7, which are actuated, primarily, by compressed air which enters through a pipe 8 into the space between the piston-heads. The flow of air through the pipe 8 is controlled by any suitable three-way valve, (not shown,) which will be located in the cab in convenient position to be operated by the engineer. The rod of each piston 7 terminates in a valve-head consisting, preferably, of a detachable disk 9, having a stem 10 fitting loosely in a bore 12 in the end of the piston. This holds the valve loosely, so that it will accommodate itself to the valve-seat 14, formed at the end of a bushing 15. The valve-head and

bushing are contained within casings formed by continuations of the cylinder 6, and at 19 are indicated the relief-ports at the valve. The cylinder 6 is connected by pipes 20 to opposite ends of the engine-cylinder, and these pipes are provided with cut-out cocks 21, whereby the communication with the cylinder may be opened or closed.

The differential areas of the piston 7 and the valve-heads 9 (pipes 15) may be varied as necessary according to the pressure under which it is desirable that the relief shall act. When the air-pressure is admitted through the pipe 8, the pistons 7 are forced outwardly and the valves 9 at the ends of the piston-rods are brought in contact with the valve-seats 14, thereby closing the relief, which is thus held closed as long as the air is on or until the compression in the cylinder exceeds the differential pressure of the air, when the piston will be forced back, providing automatic relief for the cylinder. When the air is exhausted from the space between the pistons, they are forced back, and the cylinder has full relief through the valves and the ports 19. When the engine is standing hot in the roundhouse, for example, with the air-pump not working, the cylinder-cocks in case of any leakage through the throttle will be forced open and cannot be closed through lack of care, and thus the possibility of any accident by an unintentional starting of the engine is avoided. The relief-cocks may be cut out by turning the cocks 21. This is sometimes desirable, as in hydraulic tests or for emergency use, as when there is no air.

The invention is characterized by simplicity and by an unobstructed steam-passage and by ease of disconnection for repairs or otherwise.

I claim—

1. In a cylinder relief-valve, in combination, an air-pressure cylinder having a pair of oppositely-acting pistons therein, valve-casings having relief-ports, connected to the ends of the cylinder, and valves in the casings, connected to and operated by the pistons and controlling said ports.

2. In a cylinder relief-valve, in combination, a cylinder having pistons in each end thereof and an air-pressure inlet therebetween, valve-casings connected to the ends of the cylinder and having relief-ports connected to the ends of the steam-cylinder, and

valve-heads slidable in the valve-casings and connected respectively to the pistons and controlling said ports.

3. In a cylinder relief-valve, the combination with an air-pressure cylinder having oppositely-acting pistons in each end thereof and an air-inlet between said pistons, valve-casings joined at one end to the ends of said cylinder and at the other end to the ends of
10 the steam-cylinder and having relief-ports,

and valve-heads carried at the outer ends of said pistons and arranged to open and close the relief-ports by movement thereof.

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

ARTHUR SNOWDEN MILLER.

Witnesses:

S. M. FUNDERBROWK,
GEO. WHITFIELD.