

(No Model.)

G. GROSSMANN.

AUTOMATIC CUT-OFF VALVE FOR STEAM BOILERS.

No. 538,731.

Patented May 7, 1895.

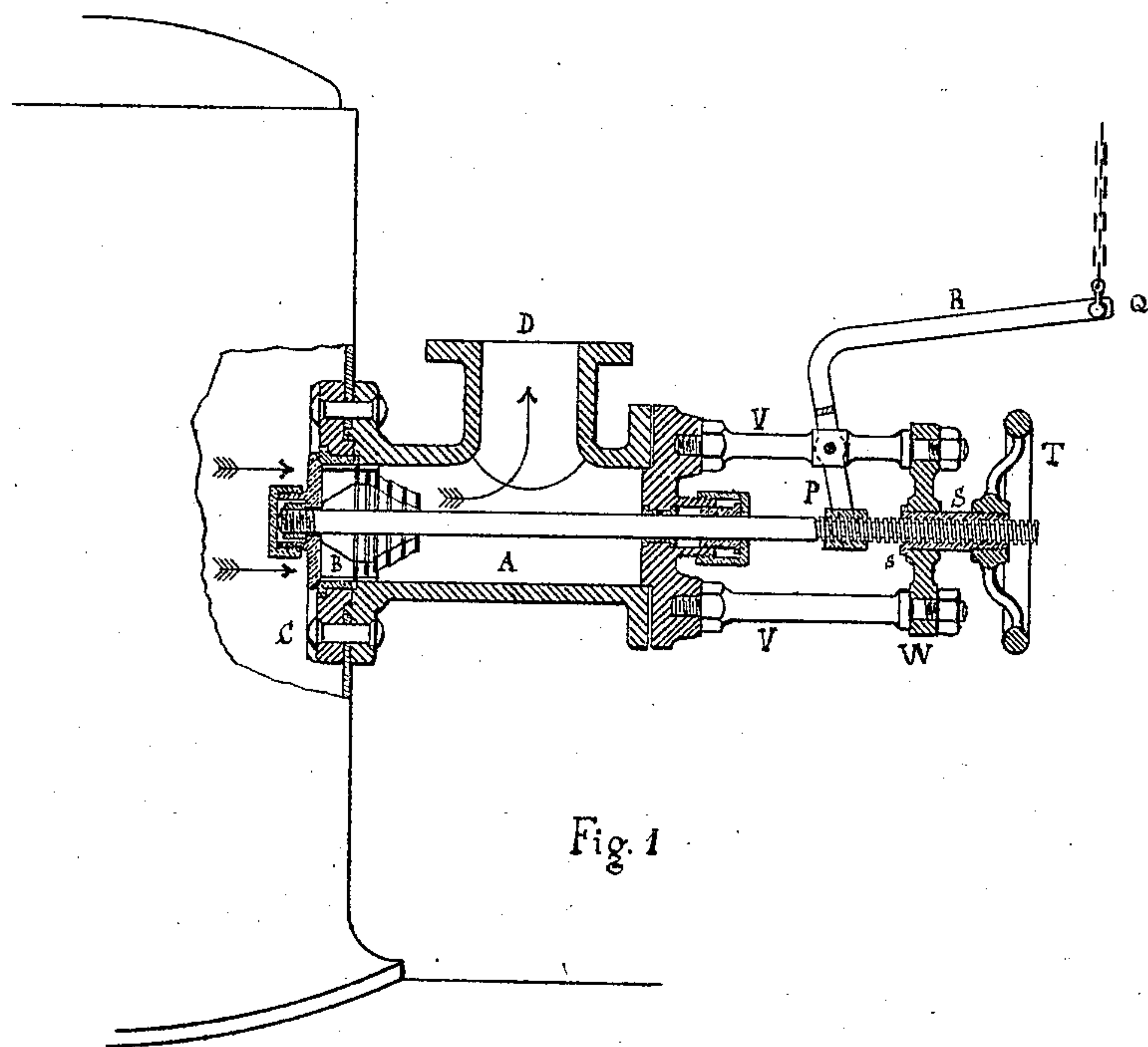


Fig. 1

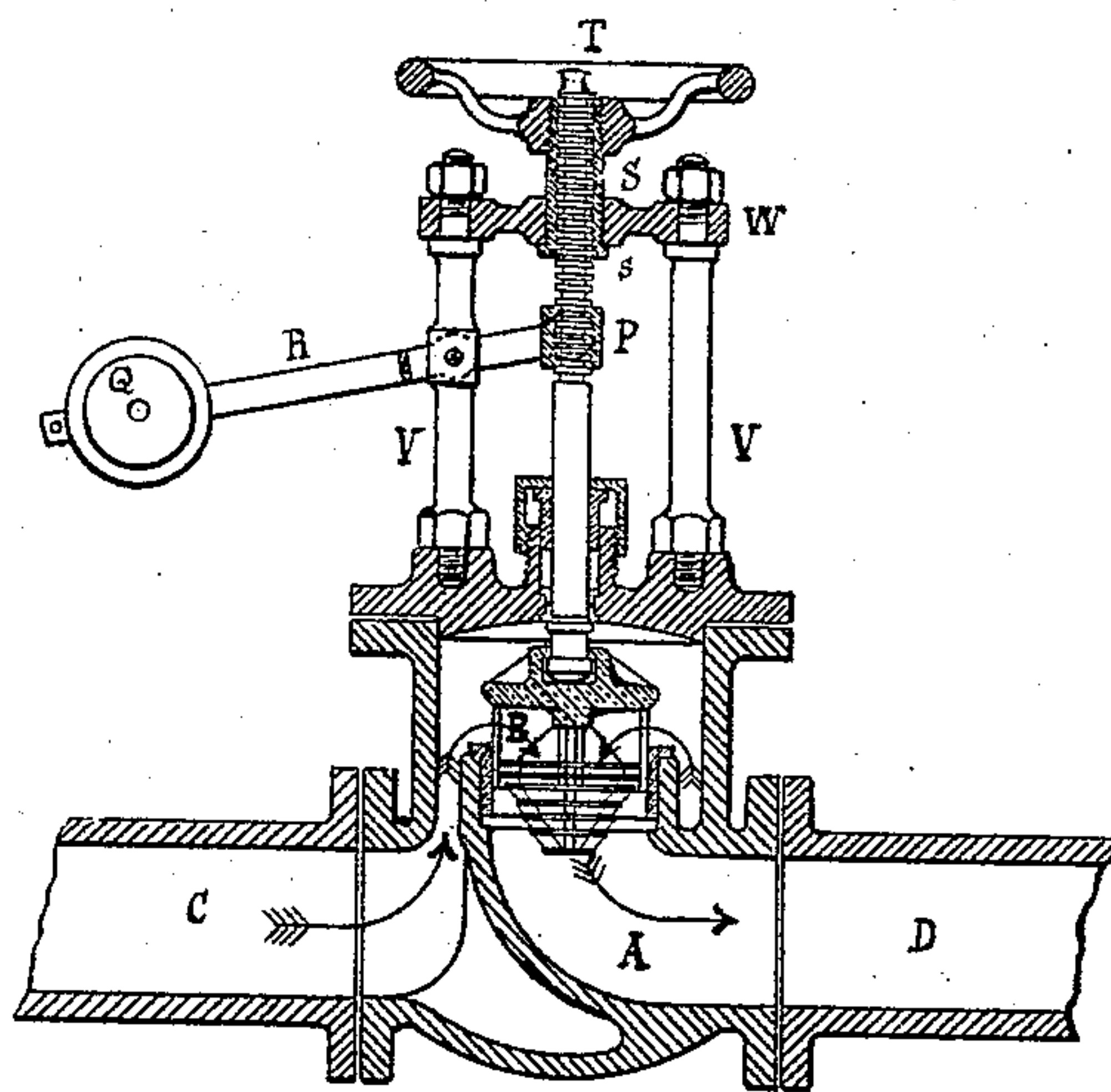


Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

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AUTOMATIC CUT-OFF VALVE FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 538,731, dated May 7, 1895.

Application filed August 25, 1894. Serial No. 521,304. (No model.)

To all whom it may concern:

Be it known that I, GOTTFRIED GROSSMANN, a subject of the King of Prussia, German Emperor, and a resident of Dortmund, in the Kingdom of Prussia and German Empire, have invented certain new and useful Improvements in Automatic Cut-Off Valves for Steam-Boilers, Steam-Pipes, &c., of which the following is a specification.

This invention relates to an improved automatic cut-off valve for steam-boilers and for steam or other pipes, in which steam, water or gas is conducted under pressure; and the invention has for its object to insure the safety of boiler-plants in case of the bursting of steam-pipes, by preventing the burning of the plates of the boiler in cases when the water is carried along with the escaping steam, as in most of these cases it is impossible, owing to the presence of the escaping steam, to close the valves at the proper time. The improved cut-off valve further prevents, when the steam-pipes are conducted through closed or narrow spaces, as in steam-ships, the scalding of persons who may be in these spaces by the escaping steam.

My improved valve can be arranged at the inside of the boiler, or at any suitable point on the outside of the same, or at any point in the steam-pipe connections which may be subjected to special strain.

The apparatus consists of the special construction of the valve proper, and of means for closing the same when the bursting of the steam or other pipe takes place.

In the accompanying drawings, Figure 1 represents a vertical longitudinal section of my improved automatic cut-off valve, showing the same applied to a boiler; and Fig. 2 is a vertical longitudinal section of the same, showing the same arranged in connection with a steam or other pipe.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents the valve-casing; B, a cone-valve in the same, said valve being applied to a suitable spindle P; V, the supporting pillars; T, a hand-wheel, which is attached to an interiorly-threaded sleeve S that is supported by a cross-piece W connecting the pillars V, and R a fulcrumed lever, the outer end of which is provided with a

balance-weight Q. By means of the hand-wheel T, the valve B can be set either in open or closed position. When the valve is opened by the screwing down of the hand-wheel T, the latter is screwed back again, so that the valve moves freely in the sleeve S, and is then prevented from being returned or closed again by the balance-weight Q. In place of the balance-weight Q a spring can be used.

The valve B is guided in the valve-casing, its lower part being provided with outlet passages, which together are equal to the cross-section of the conducting-pipe, so that when the valve is open, steam, water or gas can pass without obstruction through the same. The lower part of the valve B can be made step-shaped or in any other suitable form, as shown in the drawings. In case the steam escapes, either directly at the boiler or at any point in the steam- or pressure-conducting pipe, in consequence of the bursting or leakage of the pipe D back of the valve, then a difference of pressure arises between the pressure in the boiler or the pressure in the pipe C at one side of the valve and the pressure in the pipe D at the other side of the valve, so that said valve is instantly and automatically closed. At specially dangerous parts of pipe-connections, as, for instance, in underground steam-pipes, it is advisable to insert a number of such automatic cut-off valves for the greater safety of the pipe-system and for the purpose of preventing the escape of steam from the pipes after a break has taken place.

The end of the lever R can be connected with a chain or wire operating-device, which is conducted to one or more different places at some distance from the valve, so that it is possible for any person, even from a distant point, as for instance in vessels from a point near the steering-wheel, or in stationary boilers from the usual position of the fireman or engineer, to operate the valve, whereby a second the steam can be cut off by hand when any accident occurs which would render it necessary.

By the use of my improved valve, a great number of the frequently-occurring and hitherto unavoidable accidents to life and limb and damage to and destruction of the surroundings of steam-boilers and pipes may be effectually prevented.

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

1. An automatic cut-off valve for steam and
5 other pipes subjected to pressure, which consists of a valve provided with a step-shaped bottom-part said bottom-part having passages, a valve-spindle adapted to move loosely in a suitable sleeve, and a weight lever for
10 said valve, whereby in case of the bursting of the pipe the valve is automatically closed owing to the difference in pressure at opposite sides of the valve and thereby the escape of steam cut off, substantially as set forth.
- 15 2. An automatic cut-off valve for steam and other pipes subjected to pressure, consisting

of a valve-casing located on the boiler or in the pipe-connection, a valve having a step-shaped lower part, provided with passages, a spindle connected with said valve and adapted
20 to move loosely in a suitable sleeve, a counter-weighted lever connected with said valve-spindle, and means connected with said lever for operating and closing the valve from a suitable distance from the same, substantially
25 as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

GOTTFRIED GROSSMANN.

Witnesses:

PAUL FISCHER,

W. HAUPT.