

O. RICHTER.
STEAM VALVE.

(Application filed Dec. 18, 1900.)

(No Model.)

2 Sheets—Sheet 1.

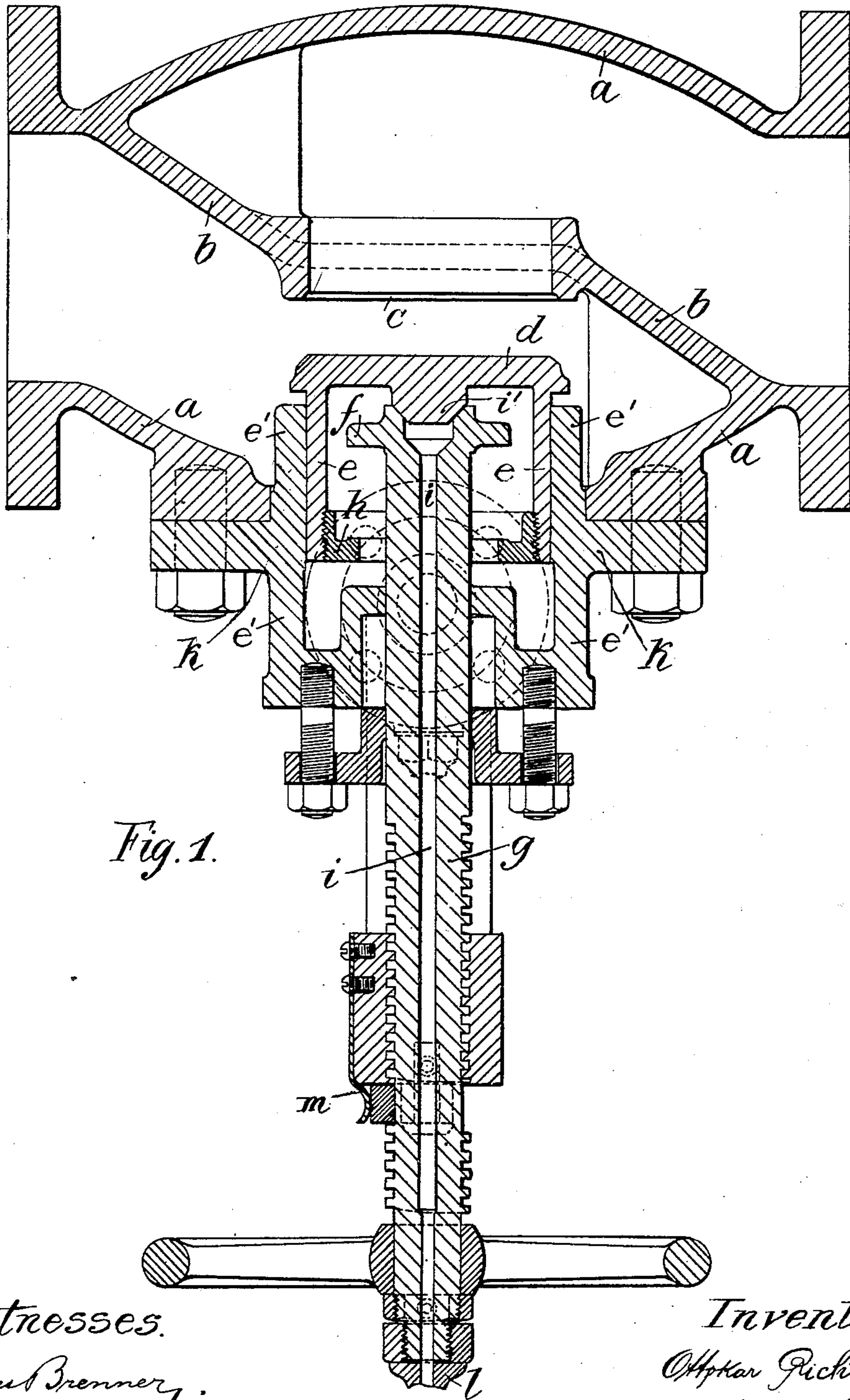


Fig. 1.

Witnesses.
Hans Brenner.
J. J. J. J.

Inventor
Ottmar Richter
per Gerson & Sachs
Attorneys

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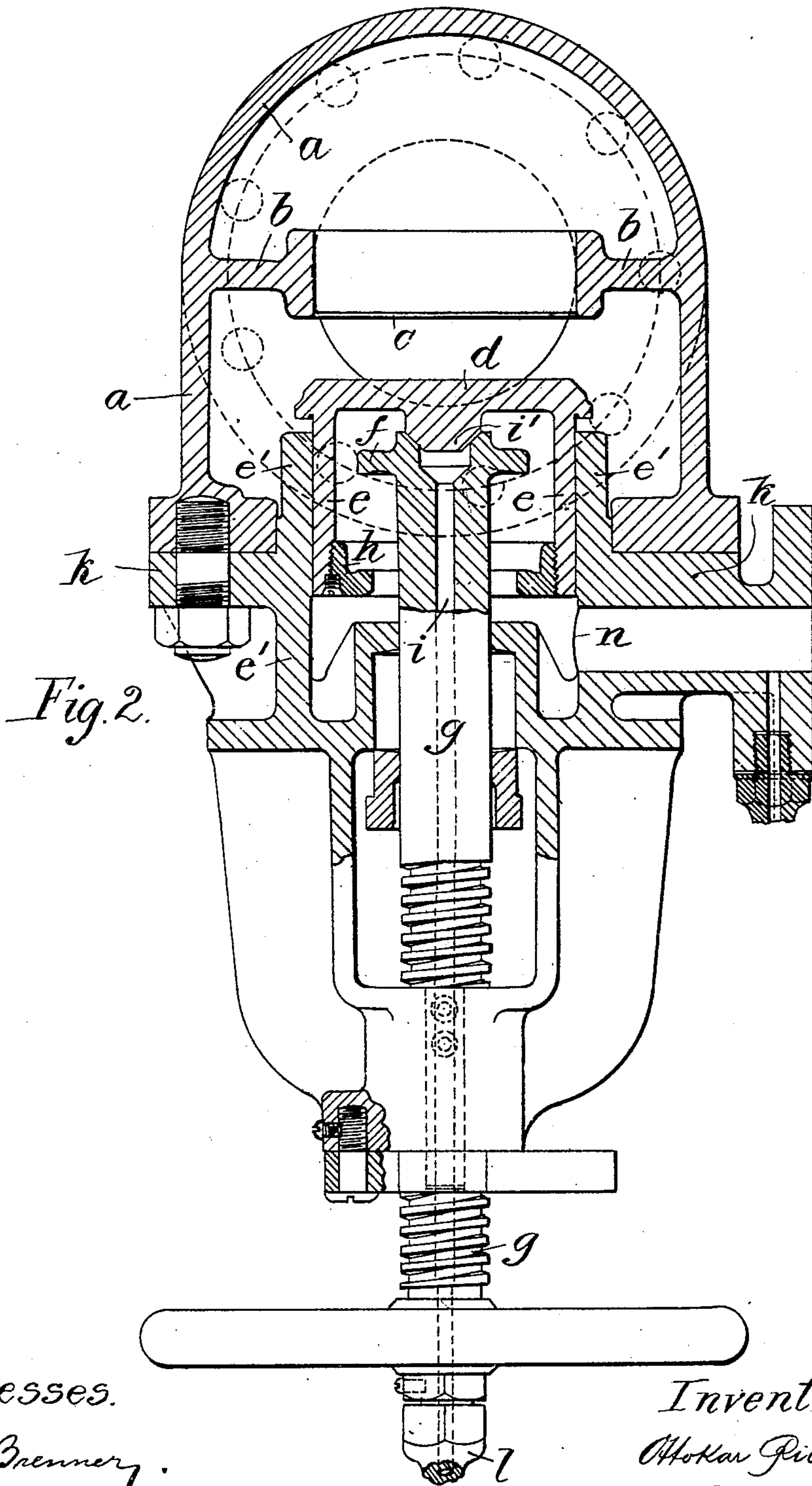


Fig. 2.

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UNITED STATES PATENT OFFICE.

OTTOKAR RICHTER, OF KIEL, GERMANY.

STEAM-VALVE.

SPECIFICATION forming part of Letters Patent No. 677,470, dated July 2, 1901.

Application filed December 18, 1900. Serial No. 40,328. (No model.)

To all whom it may concern:

Be it known that I, OTTOKAR RICHTER, a subject of the Emperor of Germany, residing at 94 Holtenauerstrasse, Kiel, German Empire, have invented a new and useful Steam-Valve, of which the following is a specification.

My invention has for its object to bring about a reliable automatic closure of a steam-pipe at the moment of a break occurring in the pipe or an explosion in the interconnected boiler or other similar mishap, even when the size of the fracture is relatively small to the diameter of this self-closing valve. Its use obviates stuffing-boxes or glands in connection with the valve-cone and deposition of boiler-scale on the working parts, and, further, special actuating-pistons, springs, or weighted levers and similar actuating devices are not required. The simple construction renders the action thoroughly reliable, as the only agent for holding open and closed the valve is the full steam-pressure. Consequently an accidental closure of the valve by a sudden removal of a large quantity of steam or of a rapid generation of steam, as is often the case in other valves already in use for this purpose, is impossible.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of the valve, and Fig. 2 a cross-sectional view of the same.

The same letters of reference refer throughout to similar parts.

According to my invention the valve-casing *a* is provided with flanged or socketed ends and contains the usual diagonal partition *b*, possessing a port or opening for the passage of the steam from one part of the valve-casing to the other, the edge of said opening forming the valve-seat *c*. The valve proper is formed by a circular plate *d*, the edge of which is conically shaped, and which plate is formed into a piston-like cylindrical extension *e* on the other side, which extension fits in a corresponding cylinder or sleeve *e'*, formed in the cover of the valve-casing. This extension *e* is made hollow and receives the flanged head *f* of a threaded spindle *g*, which is loosely attached to the valve by means of a ring *h*, screwed into the threaded free end of the cylinder *e*, so as to play freely

therein. The valve, together with its extension, can be raised or lowered by means of said spindle, which has a central channel *i*, connected with the external atmosphere. A valve-seat is formed in the upper end of said channel and a cone *i'*, secured to the under side of the valve-plate *d*, rests on this seat, which is thereby normally closed.

Out of the reach of the valve-body *e* a pipe connection *n*, conducting to the boiler, terminates in the above-mentioned sleeve *e'*, formed in the cover *k* of the valve-casing *a*.

The exit end of the channel *i* may be screw-threaded for the attachment of a pipe *l*, conducting to some convenient position for observation at any time by those in charge.

The valve-spindle *g* can be secured in position after adjustment by a spring-pawl *m*, Fig. 1.

The casing *a* is secured on the steam-dome casing of the safety-valve or any other suitable part of the steam-pipe system as near to the boiler as possible, by the flange or socket which terminates the steamway which is under the steam-port, while the opposite flange or socket is connected to the steam-pipe.

The valve works as follows: When the valve-spindle is in the raised position, the steam can pass, as usual, through the opening or port in the partition *b*. It also passes through the special pipe connection to the underneath side of the cylinder *e*, and as the pressure-surface of the valve-cone *d* is somewhat larger than the surface of the piston influenced by steam coming through the connection *n* the valve-plate *d*, with the cone *i'* on its under side, will be pressed against the valve-seat formed in the head of spindle *g* and close the connection with the external atmosphere. Should a breakage now occur in the pipe attached to the flange, the steam-pressure above the valve will be diminished, so that the undiminished pressure of the steam beneath it presents a paramount upward pressure and presses the valve tightly against the seat *c*, and consequently closes same, so that no more steam can pass to the broken pipe. The steam in the valve-casing and steam-delivery pipe passes now through the channel *i* in the spindle *g*, and by the

exit of the steam through the pipe connected thereto and gives notice of the breakage to the attendant in charge.

Having now described my invention, I
5 claim—

1. A steam-valve having a double-seated valve-body for the automatic closure of a steam-pipe on its one side and of a connection with the external atmosphere on its other
10 side, said valve-body being under the weight of the steam-pipe pressure on the one side and of the boiler-pressure on the other side substantially as set forth.

2. In a steam-valve for the automatic closure of steam-pipes the combination of a casing, a diagonal partition therein, a valve-seat
15 formed in said partition, a circular valve-plate having a conical edge fitting on said seat, a hollow cylindrical extension on the
20 other side of said valve-plate, a cover on said

casing, a sleeve formed in said cover and receiving said cylindrical extension, a screw-threaded valve - spindle mounted in said sleeve, a flanged head on said spindle within
25 said hollow extension, a ring screwed into the threaded free end of said extension so as to afford a free play of the spindle within the valve-body, a central channel formed in the spindle and having a connection with the external atmosphere, a valve-seat in the inner
30 end of said channel, a cone secured to the valve-plate and resting normally on the latter seat and a pipe connection to be connected with the boiler and entering said sleeve out of the reach of said valve extension, substantially as described and set forth.

OTTOKAR RICHTER.

Witnesses:

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