

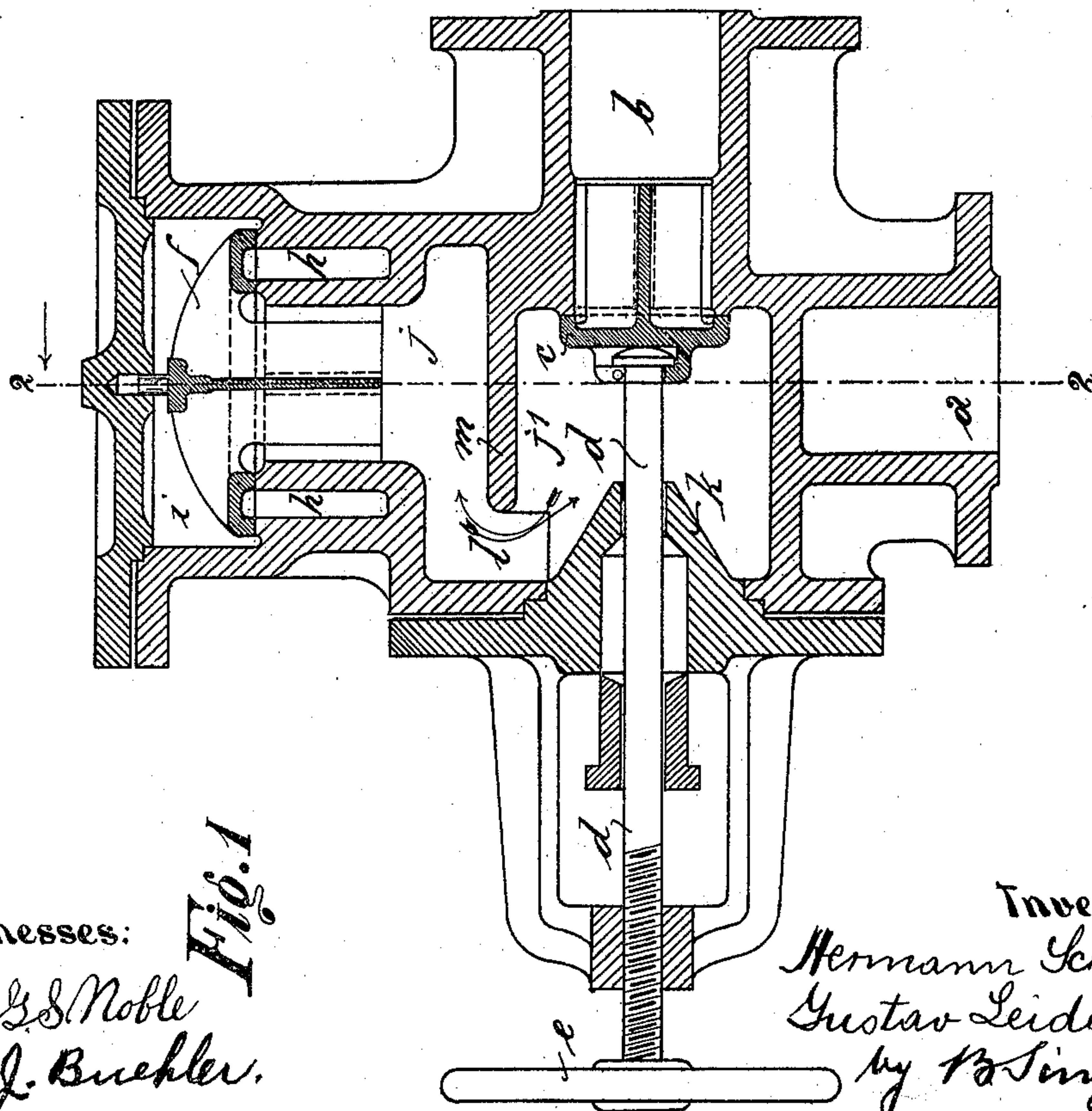
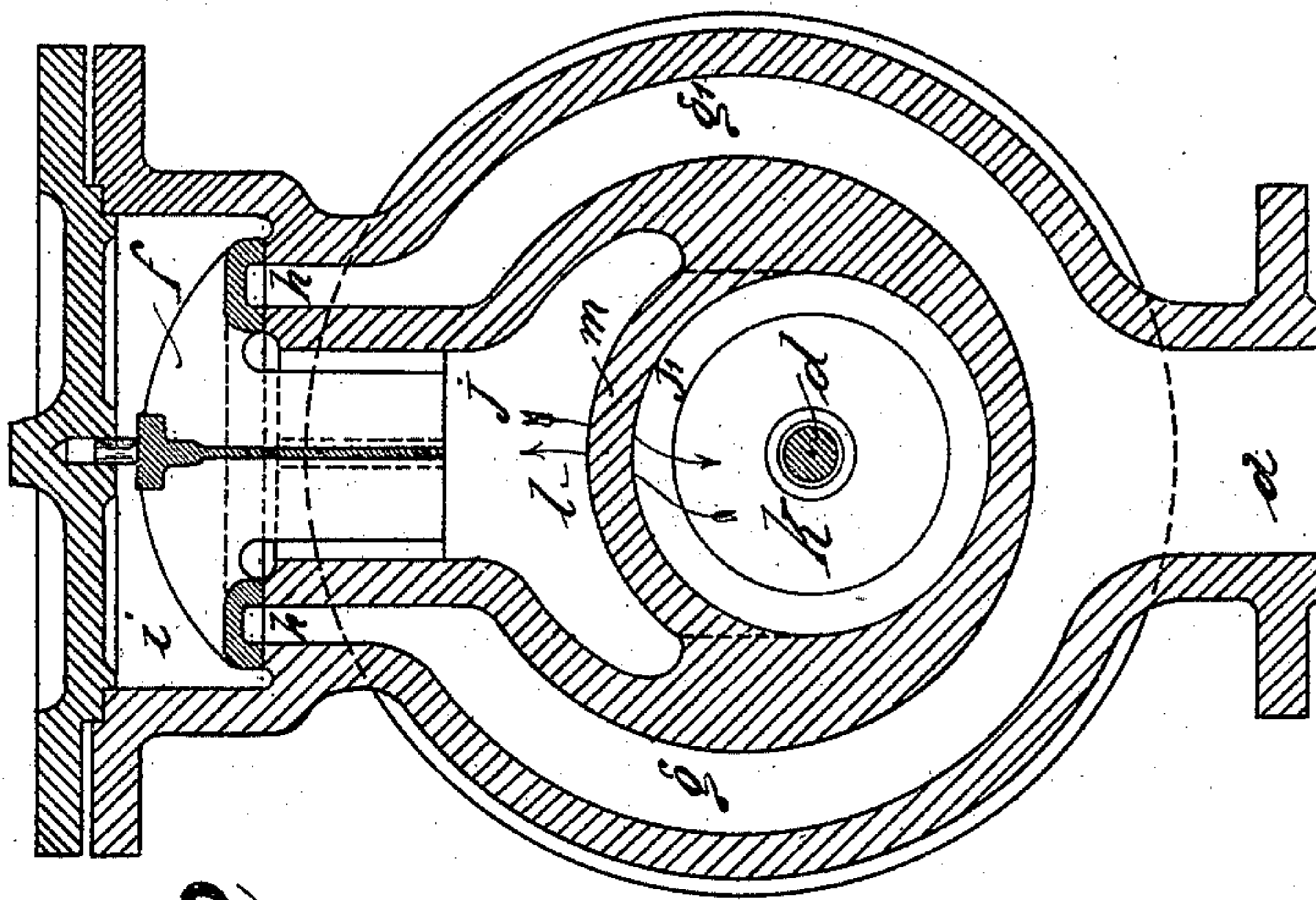
**No. 635,148.**

**Patented Oct. 17, 1899.**

**H. SCHMIDT & G. LEIDENROTH.**  
**COMBINED FEED AND STOP VALVE, &c.**

(Application filed July 20, 1899.)

(No Model.)



**Witnesses:**

G. S. Noble  
J. Buehler.

Inventors  
Hermann Schmidt.  
Gustav Leidenroth  
by R. Singer  
Att'y.



# UNITED STATES PATENT OFFICE.

HERMANN SCHMIDT AND GUSTAV LEIDENROTH, OF HAMBURG, GERMANY.

## COMBINED FEED AND STOP VALVE, &c.

SPECIFICATION forming part of Letters Patent No. 635,148, dated October 17, 1899.

Application filed July 20, 1899. Serial No. 724,501. (No model.)

*To all whom it may concern:*

Be it known that we, HERMANN SCHMIDT, manufacturer, residing at 62 Herderstrasse, and GUSTAV LEIDENROTH, engineer, residing at 22 Admiralitätsstrasse, Hamburg, in the German Empire, subjects of the Emperor of Germany, have invented new and useful Improvements in a Combined Feed and Stop Valve with a Guide for the Return-Water Current, of which the following is a specification.

As is well known, in the feed-water supply for steam-boilers there is always a non-return valve, (feed-valve,) and between this valve and the boiler there is arranged a stop or cut-off valve, which can be closed for the purpose of enabling the non-return valve to be inspected when required to remedy any irregularity in the working. In connection with this arrangement there is, however, the objectionable feature that at the moment when the forcing action of the feed-pump is reversed into suction the column of water between the boiler and non-return valve is thrown against the valve owing to the action of the higher pressure in the boiler. These blows given by the water occur continuously during the working of the feed-pump, and they are the stronger the higher the steam-pressure in the boiler, and they not only cause a speedy deterioration of the valve and its seat, but they are also responsible for the imperfect working of the valve, the disadvantageous effect increasing directly with higher boiler-pressure and with the quantity of water thrown back during the change of the stroke of the pump-plunger.

According to this invention the aforementioned disadvantages are obviated in the improved combination-valve by reducing the space between the stop-valve and the non-return valve to a minimum owing to the latter valve being arranged in the casing of the stop-valve. Furthermore, the blow from the reduced quantity of water is avoided by causing the return-current to flow in a direction along a guide-wall exactly central, but oppo-

site that of the closing of the valve. In this manner the working of the valve is noiseless and greater durability is insured.

Our improved combination feed and stop valve, with the guide-wall for the return-current, is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of the valve, and Fig. 2 is a cross-section along the line 2 2 in Fig. 1.

In carrying our invention into effect the part *a* is connected with the feed-pipe and the end *b* with the steam-boiler. The valve *c* of the stop-valve is adapted to be pressed upon its seat by means of the spindle *d* and hand-wheel *e* or to be lifted off its seat by the same to open the valve. The non-return valve *f* is guided from below and above, as shown, and is formed with a double contact-surface, so as to reduce its stroke, this having been found to be of particular advantage with regard to the motion of the returning water relatively to the downstroke of the non-return valve, as has already before been mentioned.

The water from the feed-pipe enters the valve-casing at *a* and flows through the side passages *g g'*, Fig. 1, into the annular space *h* and after lifting the valve *f* passes into the spaces *i* and *j*, Fig. 1, and thence through the passage *l* into the boring *j'*, the open stop-valve *c*, and space *b* into the boiler. The volume of water between the boiler and non-return valve thrown back at the commencement of the suction-stroke cannot strike against the valve, but its line force is directed along the guide-wall *m*, formed by the central space *j'* of the valve-casing, onto the cover *k*, while the waves which travel upward through the passage *l* in opposition to the downward motion of the valve *f* allow this latter to close gradually and without noise.

What we claim as our invention, and desire to secure by Letters Patent, is—

A combined feed and stop valve in connection with a guide-wall for the return-current, characterized by the arrangement of the feed

and the stop valve in a single casing for the purpose of reducing the volume of water between the boiler and feed-valve at the commencement of the suction-stroke, the arrangement being such that the line force of the returning water is directed onto the cover  $k$  by a guide, formed by the upper wall part  $m$  of the space  $j'$  while the waves, which travel upward through the passage  $l$  flow in the

opposite direction to the downwardly-moving feed-valve.

In testimony whereof we affix our signatures in presence of two witnesses.

HERMANN SCHMIDT.

GUSTAV LEIDENROTH.

Witnesses:

E. H. L. MÜMMENHOFF,  
OTTO W. HELLMINK.