

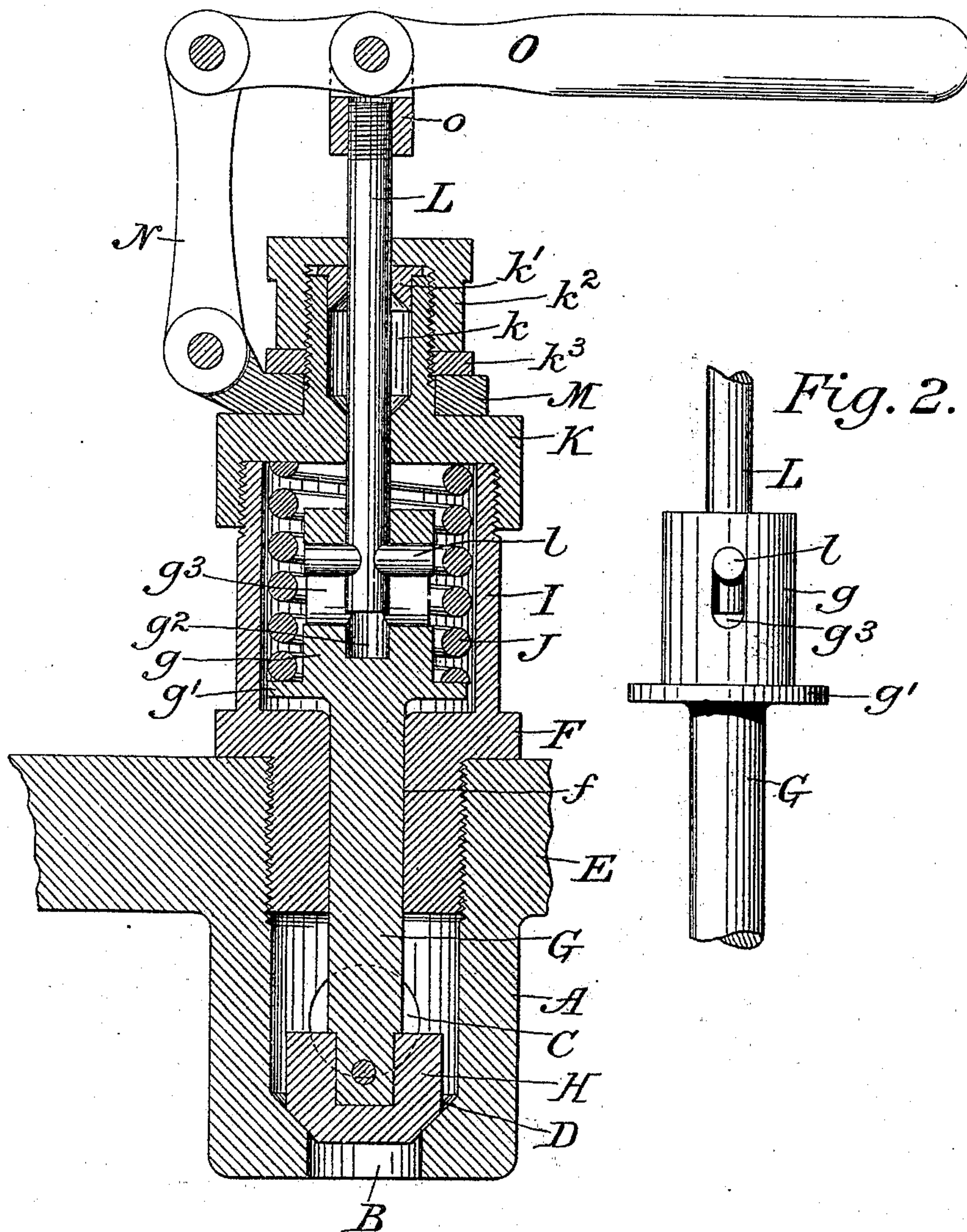
(No Model.)

W. F. WEST.  
AUTOMATIC RELIEF VALVE.

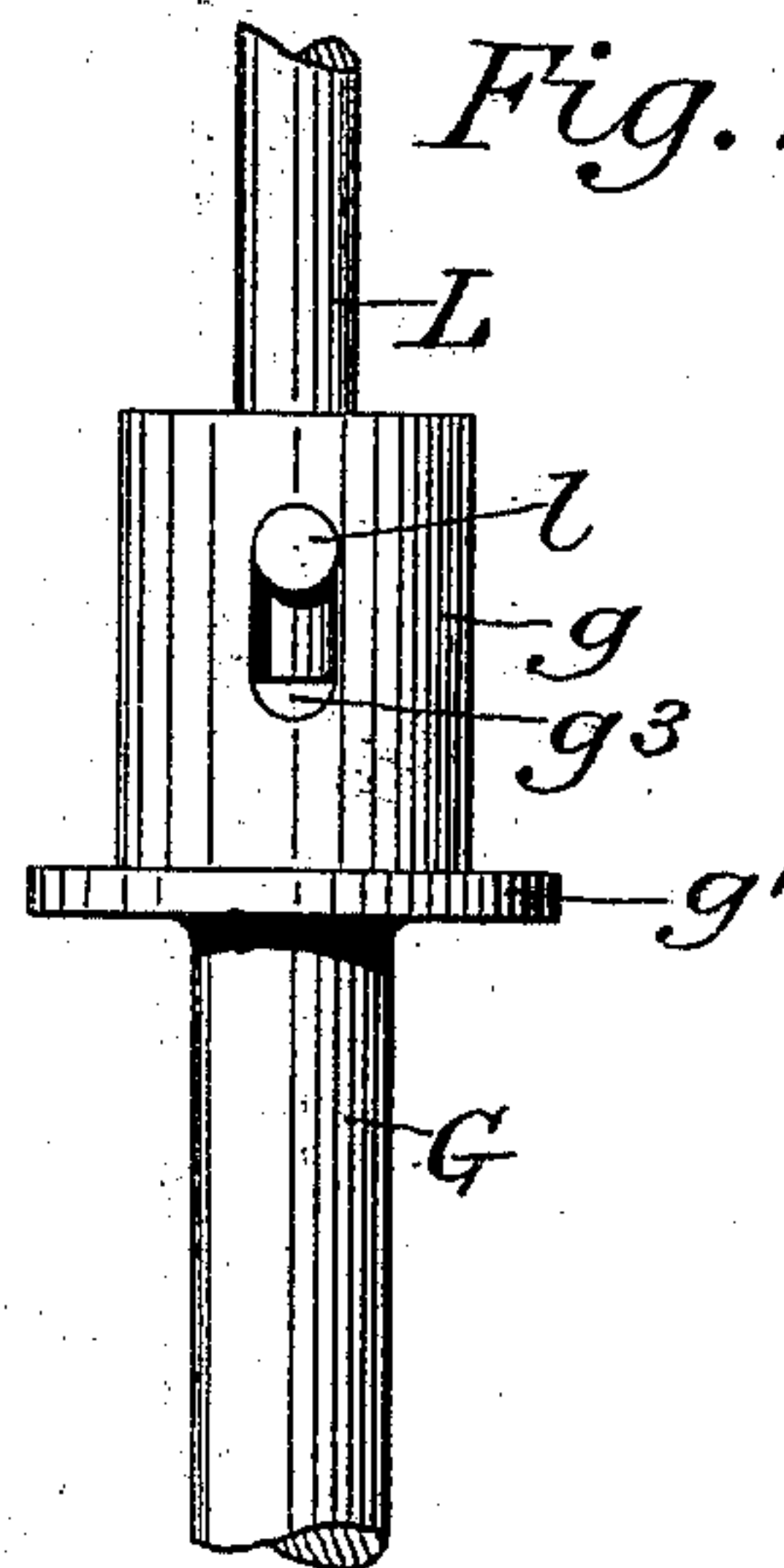
No. 500,645.

Patented July 4, 1893.

*Fig. 1.*



*Fig. 2.*



Witnesses:  
S. P. Palumbo.  
A. N. Jesbira.

Inventor:  
William Frank West  
By William B. Greeley  
Att'y.



# UNITED STATES PATENT OFFICE.

WILLIAM FRANK WEST, OF NEW YORK, N. Y., ASSIGNOR TO CLEMENT GOULD,  
OF SAME PLACE.

## AUTOMATIC RELIEF-VALVE.

SPECIFICATION forming part of Letters Patent No. 500,645, dated July 4, 1893.

Application filed February 4, 1893. Serial No. 460,987. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM FRANK WEST, of New York, in the county and State of New York, have invented certain new and useful  
5 Improvements in Automatic Relief-Valves; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon,  
10 making a part of this specification.

This invention relates particularly to relief valves for gas engines using naphtha vapor or other gas under pressure for power and for fuel. In engines of this description as  
15 well as steam engines, in order that a relief valve may be relied upon to blow within a reasonable margin of the pressure at which it is set, the stem of the valve must be free of packing of every description. On the other  
20 hand in engines of the class referred to it is especially necessary to prevent as far as possible any leakage whatever of the vapor or gas employed, on account of its highly inflammable character. It is also desirable as  
25 far as possible to prevent access of the vapor or gas to the chamber within which is seated the spring which holds down the valve.

It is the object of this invention to produce a valve which shall in some degree answer these different requirements and which  
30 may be blown by hand at any desired pressure or held down when necessary, while at the same time the valve itself under normal conditions, is entirely independent of the hand operating means.  
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The invention consists in the construction hereinafter described and claimed.

In the drawings: Figure 1 is a vertical central section of the improved valve and its  
40 connections, and Fig. 2 is a detail elevation of the connection between the two parts of the valve stem.

The valve-chamber A, with its gas inlet B, outlet C and valve-seat D, is preferably formed  
45 in or as a part of the wall E of the pressure-chamber. The outer end of the valve-chamber is closed by a plug F having an aperture *f* in which the stem G of the valve H has a snug sliding fit. The plug is formed with or  
50 may have connected thereto a shell I which forms a spring-chamber wholly independent

of the valve-chamber. Within the shell or chamber I the valve G is formed with a head *g* and a flange *g'* against which the spring J bears, the other end of the spring being confined by a screw-cap K which closes the chamber I and is perforated axially for the spindle L. The head *g* of the valve stem is recessed axially as at *g*<sup>2</sup> to receive the end of the spindle L and is slotted longitudinally, as at *g*<sup>3</sup>, to receive a cross-pin *l* which is fixed in the spindle L. The cap K is formed with a packing-box *k* and is provided with a gland *k'* and a nut *k*<sup>2</sup> threaded upon its exterior. A check-nut *k*<sup>3</sup> may also be provided and the lever-base M may be secured upon the cap K by the said nuts. A link N is connected to the lever-base M and serves as the fulcrum for the hand-lever O which is connected to the spindle L by the spindle-cap *o*. The stem G of the valve having only a loose connection with the spindle L, the valve is free to blow at the pressure determined by the tension of the spring J but may be held down to increase the pressure by depressing the hand lever O or to be lifted to reduce the pressure at any time by lifting the lever, the spindle L having at all times sufficient friction in the packing-box to sustain the weight of the spindle and lever when the latter is raised. The valve-chamber A having the inlet and outlet formed directly in its walls and being wholly independent of the spring-chamber and separated therefrom by the plug in which the valve-stem has a close, sliding fit, very little gas can at any time pass from one into the other. The packing of the spindle L still further retards the passage of gas into the spring-chamber by preventing the escape of air therefrom and it absolutely prevents the escape of gas while at the same time there is no packing about the valve-stem to render the blowing of the valve uncertain.

I claim as my invention—

1. The combination of a valve-chamber having an inlet and outlet and a valve-seat, a plug for said chamber, a valve, a valve-stem having a close, sliding fit in an aperture through said plug, an independent chamber above said plug, a spring within said chamber to press upon said valve stem, a cap closing said chamber and having a packing-box,  
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a spindle passing through said packing-box and having a loose connection with the valve-stem, whereby the latter is free to rise and fall independently of the spindle, and means  
5 to raise or depress said spindle, substantially as shown and described.

2. The combination of a valve-chamber having an inlet and outlet and a valve seat, a plug for said chamber, a valve, a valve-  
10 stem having a close, sliding fit in an aperture through said plug, an independent chamber above said plug, a head formed upon said valve stem within said last named chamber, said head being recessed axially and slotted

longitudinally, a spring to press upon said  
15 head, a cap with a packing-box to close said chamber, a spindle passing through said packing-box and entering the recess in said head with a cross-pin engaging the slot in said  
20 head, and means to raise or depress said spindle, substantially as shown and described.

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

WILLIAM FRANK WEST.

Witnesses:

A. N. JESBERA,  
A. WIDDER.