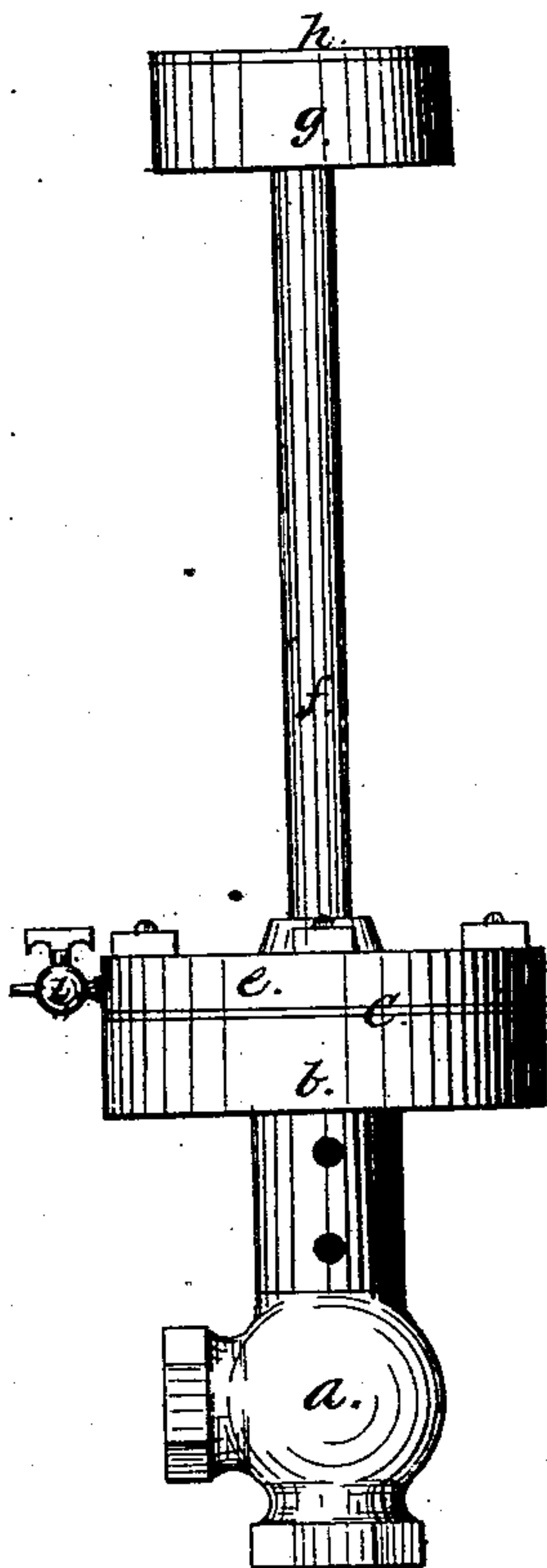


T. WALKER.  
Safety-Valve.

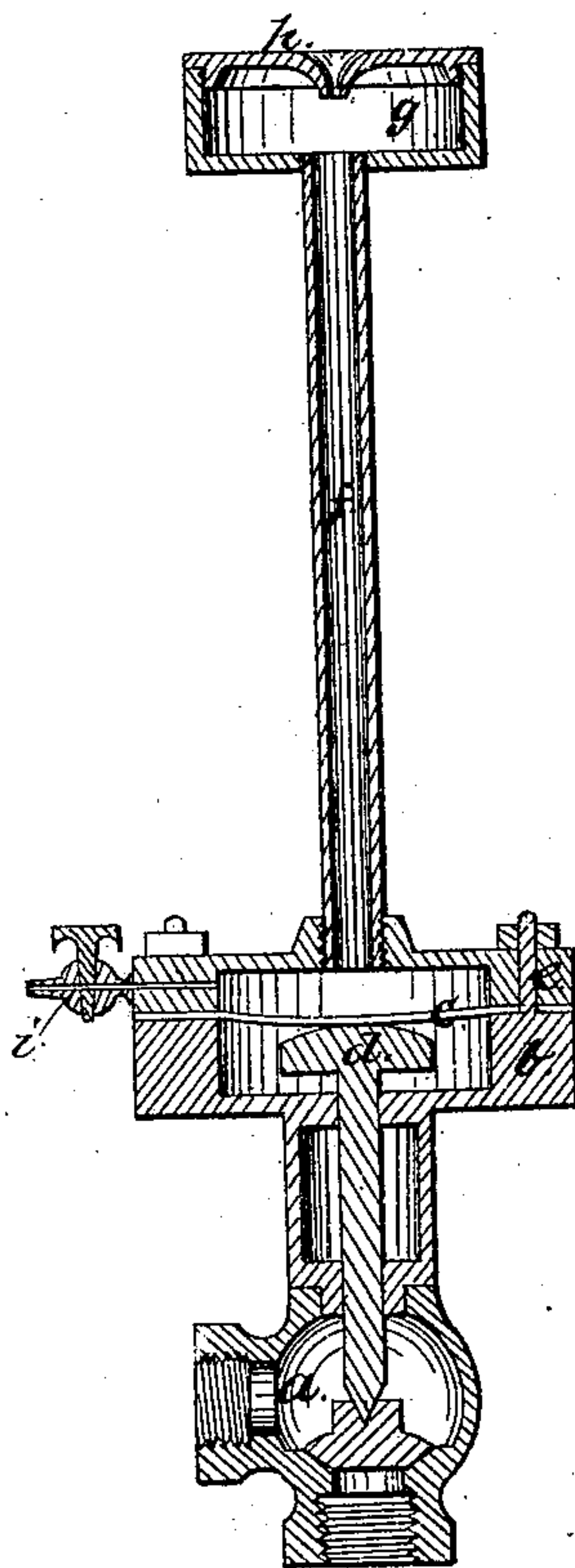
No. 163,618.

Patented May 25, 1875.

*Fig 1.*



*Fig 2.*



*Witnesses:*

*J. Fletcher Budd  
Joseph Heginbotham*

*Inventor:*

*Thomas Walker*

# UNITED STATES PATENT OFFICE.

THOMAS WALKER, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN SAFETY-VALVES.

Specification forming part of Letters Patent No. **163,618**, dated May 25, 1875; application filed February 9, 1875.

*To all whom it may concern:*

Be it known that I, THOMAS WALKER, of Philadelphia, Pennsylvania, have invented an Improvement in Safety-Valves, of which the following is a specification:

My invention relates to the mode of applying weight or resistance, by the use of mercury, water, or other similar bodies, to safety-valves for steam-boilers or other apparatus which require the pressure to be relieved at any given point.

Figure 1 is a side elevation of the valve embodying my invention. Fig. 2 is a vertical section, showing the arrangement of the several parts.

*a* is an ordinary valve, constructed so as to prevent the escape of steam from the boiler until the pressure has attained the required force. *b* is the lower half of chamber, securely fastened to the body of the valve *a* by a perforated pipe, as shown in the drawings. This can also be accomplished by the use of pillars or studs, or equivalent devices, for the purpose of allowing the free escape of the steam, thus preventing its accumulating, and causing a pressure against the disk *c* on its lower side. *c* is a disk made of rubber or other flexible material, for the purpose of allowing motion to the valve. *d* is a bolster or piston passing through the lower half of chamber *b*. The lower point rests upon the valve, and the upper end against the disk *c*. *e* is the upper half of chamber, which is secured to the lower half by screws or bolts, holding in position the disk *c*. *f* is a hollow column or pipe, which connects the chamber with the receiver *g*. *g* is a receiver secured to the col-

umn or pipe *f*, and constructed so as to receive the mercury forced up the pipe *f*. *h* is a cover for the receiver *g*. *i* is a cock for the purpose of drawing off the mercury at any time.

The principle on which my valve works is known as the dead-weight principle. The column *f* and upper part of chamber *e* is filled with mercury or other fluid, which creates a pressure on the disk *c*, bolster or piston *d*, and valve, in the same ratio that the chamber *e* is to the column-*f*, so that when the pressure increases on the valve the mercury is forced up through the pipe *f*, and into the receiver *g*, thus allowing the steam to escape until the pressure is decreased, when the mercury flows instantly down the pipe and closes the valve. The receiver is so proportioned that if more mercury is applied the lifting of the valve will cause it to overflow, thus securing a safety-valve with a minimum amount of friction, which cannot be overloaded after once being placed in position.

I make no claim to the valve-body or valve, for I am aware they are not new; but

I do claim as my invention—

The combination of the chamber *b* *e*, perforated pipe-disk *c*, bolster or piston *d*, hollow column or pipe *f*, receiver *g*, cover *h*, and cock *i* with the valve *a*, substantially as and for the purpose set forth in the annexed specification.

THOMAS WALKER.

Witnesses:

JOSEPH HEGINBOTHOM,  
GEORGE SCOTT.