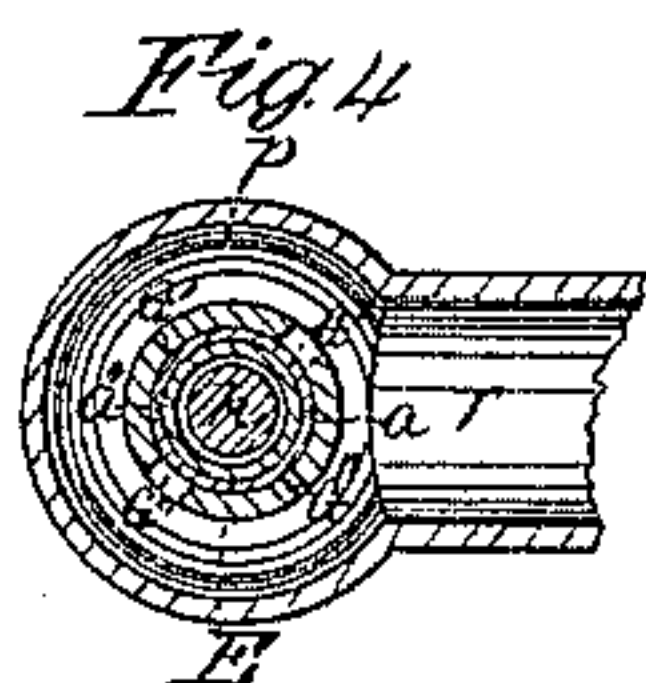
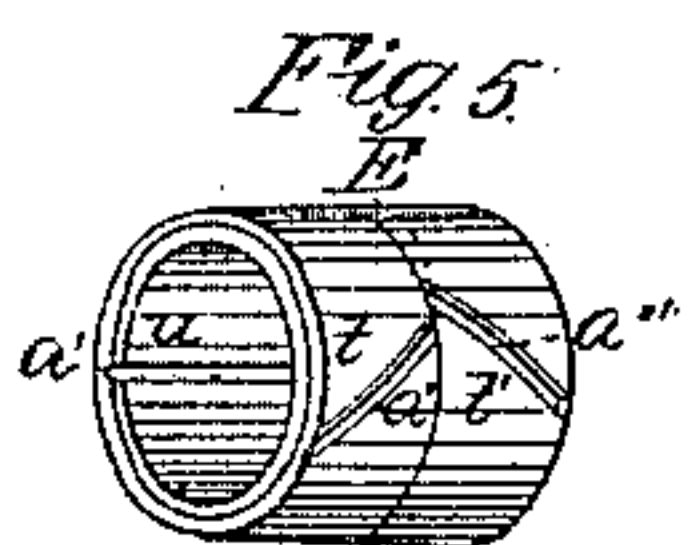
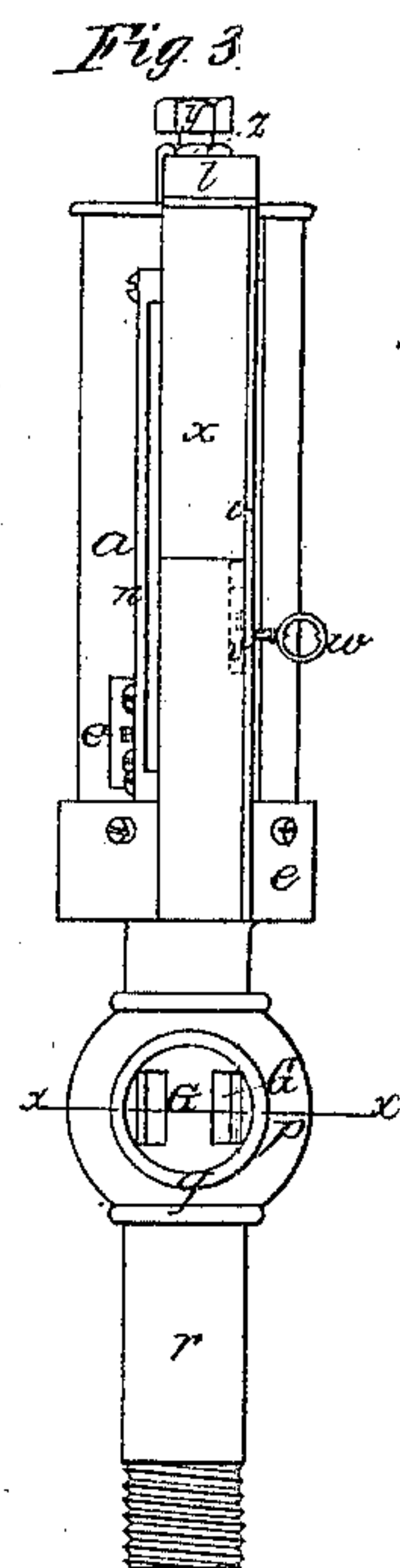
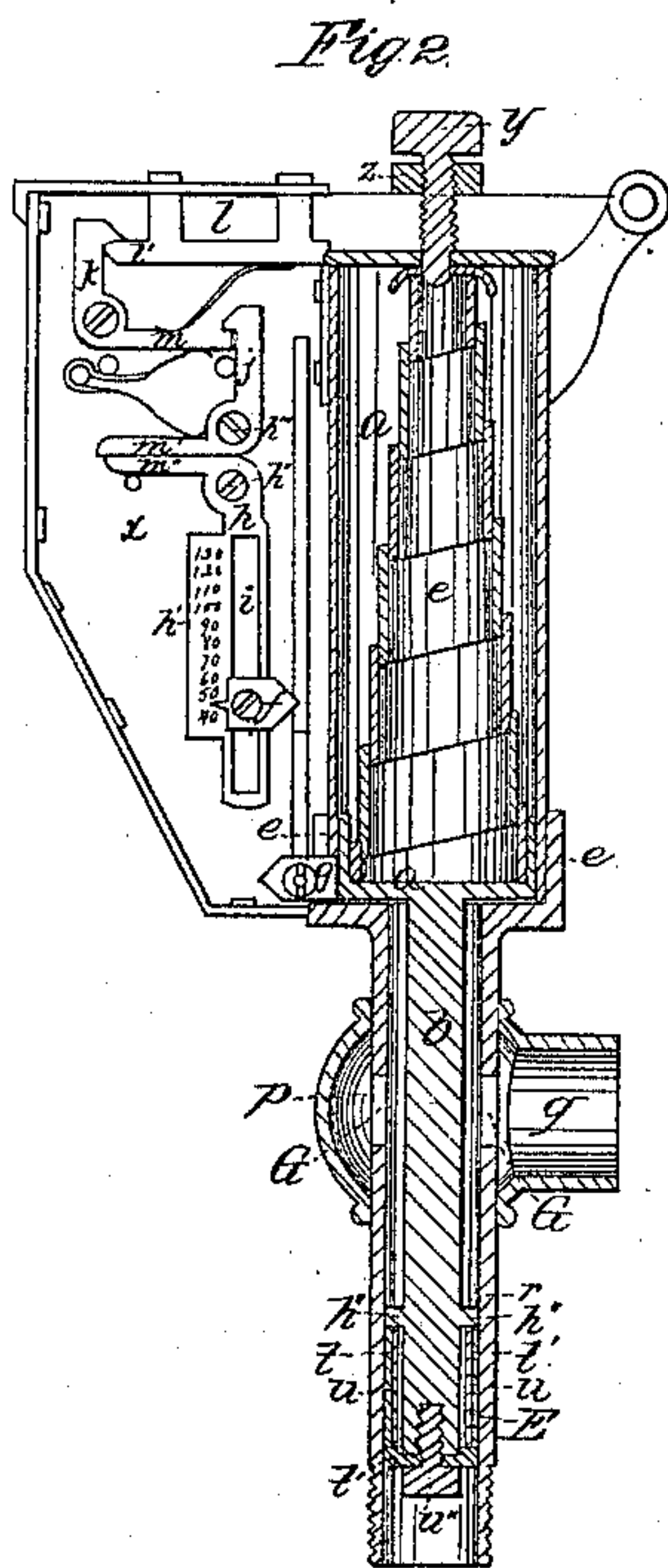
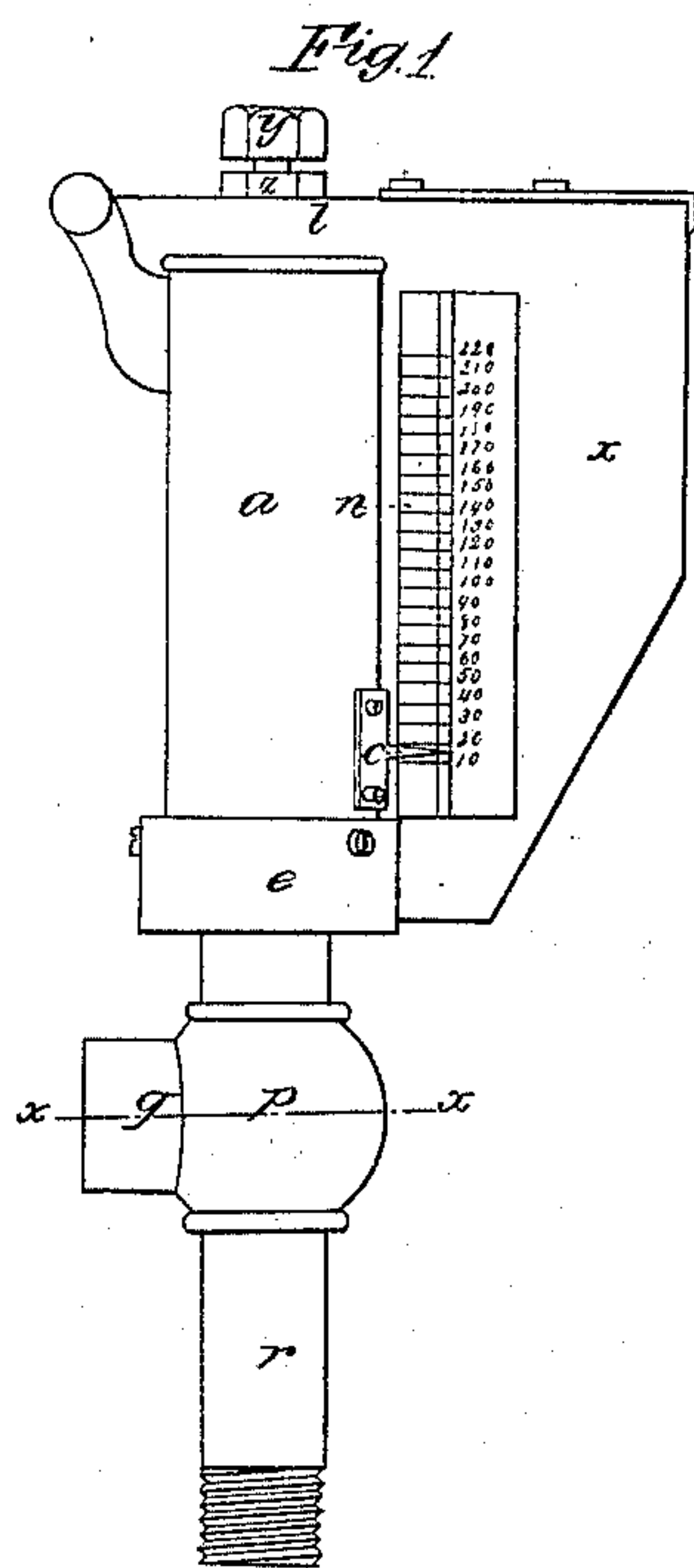


*J. Zundorff.*  
*Steam Safety Valve.*

*N<sup>o</sup> 62,722.*

*Patented Mar. 5, 1867.*



*Witnesses*  
*Chas. Merrill*  
*Stephen. Copp.*

*Inventor*  
*John Zundorff*

# United States Patent Office.

JOHN ZUNDORFF, OF NEW YORK, N. Y.

Letters Patent No. 62,722, dated March 5, 1867.

## IMPROVEMENT IN SAFETY-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN ZUNDORFF, of New York, in the county of New York, in the State of New York, have invented a "New and Improved Safety-Valve for Steam Boilers;" 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, in which—

Figure 1, is a side elevation.

Figure 2 is a longitudinal section.

Figure 3 is an edge view.

Figure 4 is section through at  $x x$ .

Figure 5 is the packing ring.

### Construction and Operation.

The cylinder  $a$  and case  $x$  are made as shown by figs. 1, 2, 3; the pipe  $r$  is then attached by the means of flange  $e$ ; the piston  $b$  and cap  $d$  are then made; the packing ring  $E$  is fitted on the lower end of the piston-rod  $b$ ; the packing ring  $E$  is made in three parts; the inside ring  $u$  is made the full length of the packing, with a longitudinal slot,  $a'$ ; the outside rings are made in two equal parts  $t t'$ , with their diagonal slots  $a'' a'''$ ; the packing is held in position on the piston by means of the flange  $h''$  at the top end of the packing; the cap and flange  $t'$  are put on at the lower end and made fast by means of screw  $u''$ ; the piston  $b$  and cap  $d$  are then fitted into the cylinder  $a$  and pipe  $r$ ; the spring  $C$  is then put into the cylinder  $a$ , the large end resting in the cap  $d$ ; the spring  $C$  is depressed by the means of the lever  $l$ ; the power of the spring is regulated by set-screw  $Y$ , which has a cup on the under side of the lever  $l$  to receive the small end of the spring  $C$ ; the set-screw  $Y$  is held firm in its position by the means of the jam-nut  $Z$ . The remainder of the works is then fitted into the case  $x$ , as shown in fig. 2; the enlarged or spherical-formed piece  $p$ , with its exhaust pipe  $q$ , is then attached; the spherical-form piece is put on to the pipe  $r$  over the steam ports  $G G' G'' G'''$ , and fastened there by soldering or brazing. All of the several parts having been put together, and the packing ring  $E$  adjusted to the proper distance in the pipe  $r$  below the ports  $G G' G'' G'''$ , the cover  $V$  closed and locked by means of lock  $V'$  and key  $W$ , the steam valve is now ready for use.

### Operation.

The steam valve, after being made and manipulated so as to work perfectly free and easy, is adjusted to the steam boiler by means of screw flange or in any other known way; the shipper  $f$  on the indicator  $h'$  is set at the desired point according to the number of pounds of steam that is desired to be carried by the boiler; the steam is then gotten up; the capacity of the pipe  $r$  is rated by square inches; the spring  $C$  is graduated accordingly; the figures on the indicator  $h'$  indicate at the point on shipper  $f'$  the number of pounds of steam. When the steam becomes higher than it is desired to be, it pushes the valve  $E$ , on the lower end of the piston-rod  $b$ , up above the ports  $G G' G'' G'''$ , and allows the steam to escape through the ports into the enlargement or spherical piece of pipe  $p$ , from thence conveys it through the waste pipe  $q$ . Should the steam become so high as to lift the valve up above the ports  $G G' G'' G'''$ , the shipper  $g$  that is attached to the cup  $d$  will pass the shipper  $f$  that is fastened and made movable to the shipper bar  $h$ , and through the shipper bar back at the lower end, or turns it on the pivot  $h''$ ; by that means the arm  $m''$  on the shipper bar is elevated; that, lifting the arm  $m'$  on the latch  $j$ , by turning on pivot  $h''$ , causes the latch  $j$  to relinquish its hold on the arm  $m$  of latch  $K$ ; latch  $K$  then lets go on the catch  $l'$  that is made a part of the lever  $l$  that depresses or keeps the spring  $C$  to its proper place. When the latch  $K$  is disengaged with the catch  $l'$ , the lever  $l$  is lifted up, and by that means the spring  $C$  and piston  $b$  are at liberty to rise up so as to let the valve come above the ports  $G G' G'' G'''$ , thereby allowing the steam to escape freely, and causing instant relief to the boilers. There may be a whistle attached to the blow-off pipe  $q$ , so as to call the attention of the engineer to the fact that he has on more steam than he is required to carry.

### Advantages.

The advantage of my invention consists in providing a neat, compact, and reliable steam safety-valve that can be applied to locomotive as well as stationary boilers, and when applied the working parts are locked up so as to prevent their being interfered with by any one, except those in charge of the boilers. At the same time, the point  $o$ , on the outside of the cylinder  $a$ , points out on the indicator  $n$  the amount of steam in the boiler.



*Claims.*

What I claim, and desire to secure by Letters Patent, is—

1. The spherical-formed pipe *p*, in combination with the ports *G G' G'' G'''*, when constructed and operated substantially as described.
2. The combination of the valve *E*, and ports *G G' G'' G'''*, for the purpose specified.
3. The spring *b*, in combination with the piston *d*, shippers *g* and *f*, when operated as above described.

JOHN ZUNDORFF.

Witnesses:

CHAS. MORRILL,  
STEPHEN COPP.