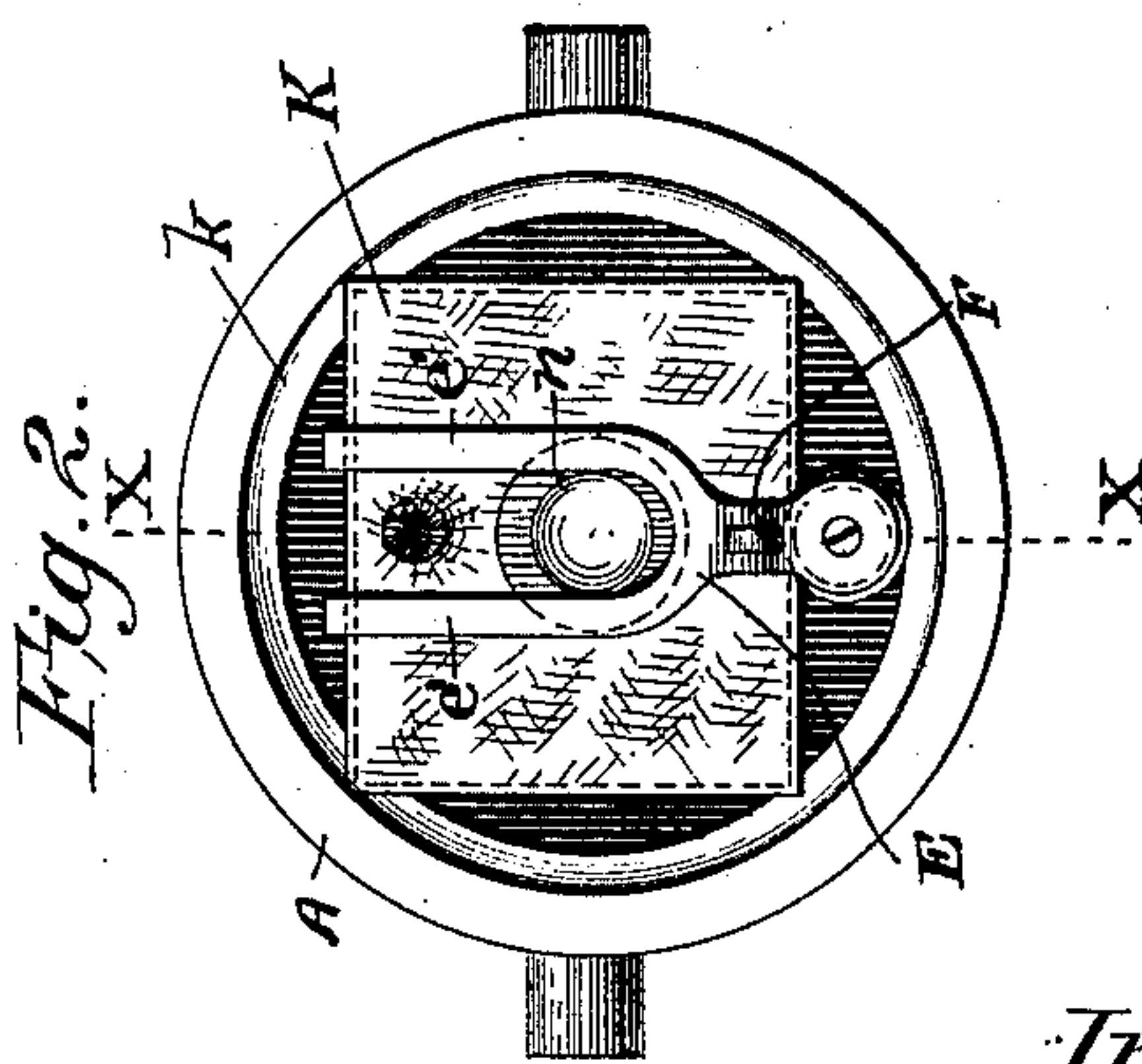
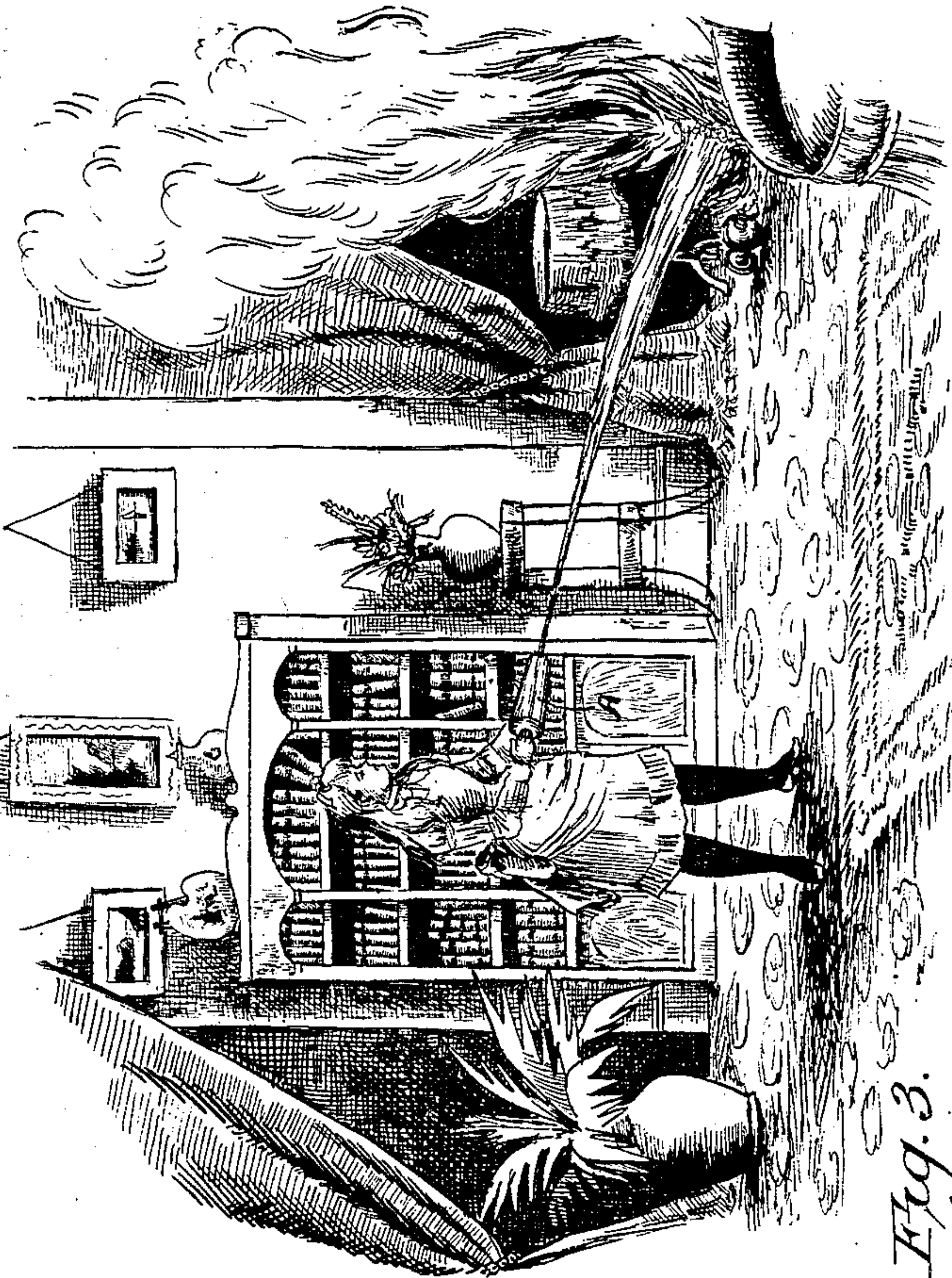
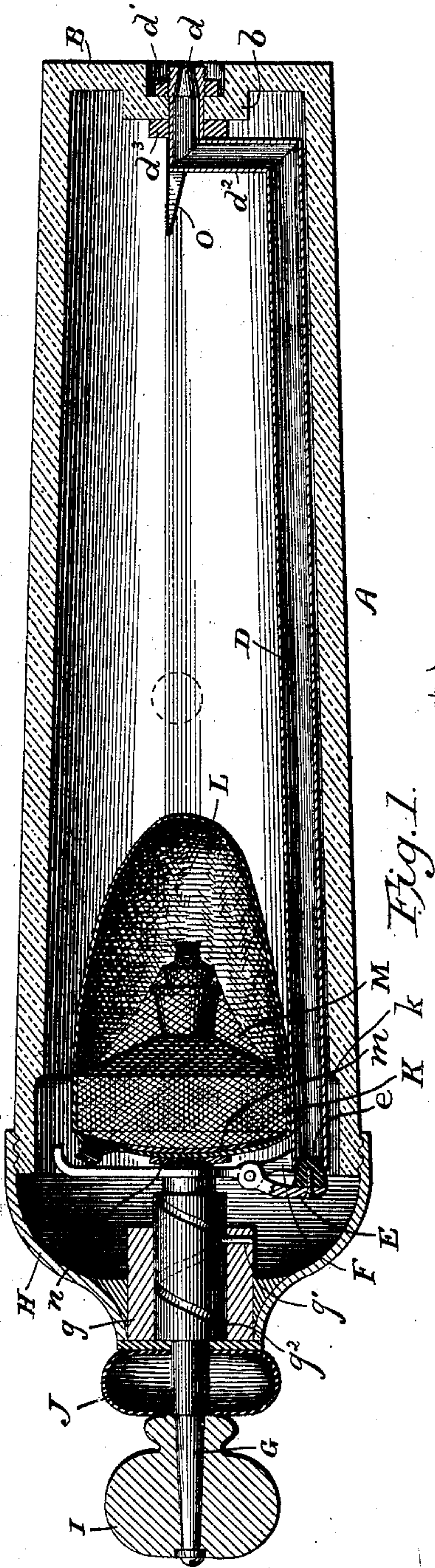


(No Model.)

A. DURAND.  
FIRE EXTINGUISHER.

No. 432,481.

Patented July 15, 1890.



Witnesses:  
Van Burgh Hillyard  
W. H. Lydick

Inventor.  
Arthur Durand.  
By R. S. P. Lacy.  
his atty's



# UNITED STATES PATENT OFFICE.

ARTHUR DURAND, OF ALEXANDRIA, VIRGINIA, ASSIGNOR TO JAMES M. TINKER, OF WASHINGTON, DISTRICT OF COLUMBIA, AND THOMAS B. EDLIN, OF BROOKLYN, NEW YORK.

## FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 432,481, dated July 15, 1890.

Application filed October 18, 1889. Serial No. 327,406. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR DURAND, a citizen of the Republic of France, residing at Alexandria, in the county of Alexandria and State of Virginia, United States of America, have invented certain new and useful Improvements in Fire-Extinguishers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to portable chemical fire-extinguishers, and has for its object to provide a device that will be simple, cheap, convenient of operation, and not liable to get out of order, and which can be easily manipulated by a man, woman, or child, requiring very little force to turn the plunger, which liberates the chemical reagent and opens the discharge-pipe.

A further object of the invention is to prevent the fragments of the crushed vessel from mingling with the extinguishing-fluid and to keep the chemical reagents from immediate admixture with the said extinguishing-fluid, and this principally to prevent the pulverization effect, which takes place when the liquid escapes mixed with gas—in my case, the gas being inclosed the liquid escapes in a solid stream.

In order to utilize the fluid-expelling gas, (which is an extinguishing agent and absolutely non-injurious to the person or textile fabrics,) the bag (balloon) containing the said gas comes in contact when nearly or entirely expanded with a pin which breaks it, thus permitting the gas to escape with the liquid remaining in the vessel.

The improvement consists of the novel features which hereinafter will be more fully described and claimed, and which are shown in the annexed drawings, in which—

Figure 1 is a vertical central sectional view of an extinguisher embodying my invention about on the line X X, Fig. 2. Fig. 2 is a top plan view, the cap being removed, of the ex-

tinguisher. Fig. 3 is a perspective view showing the application of the invention.

The case A is of proper size and material and of desired form, being a tube, glass or metal, cylindrical in form, and closed at each end. The lower end B of the case is centrally depressed at *b*, and this depressed portion is apertured to receive the nozzle *d* of the discharge-pipe D and the jam-nut *d'*, which is screwed on the threaded end of the said nozzle. The washer *d*<sup>3</sup> is placed on the nozzle within the case between the depressed portion *b* and the offset *d*<sup>2</sup>, and limits the downward movement of the said discharge-pipe, which extends up along one side of the case, as shown, to within a short distance of the upper end of the said case, and is closed by the valve *e* on the end of the horizontal lever E, that is pivoted between its ends to the bracket F, which springs from the side of the said discharge-pipe. The inner end of the lever E is bifurcated to form the two parallel arms *e' e'*, which embrace the sides of the reduced end of the operating stem or plunger G, that passes through the upper closed end H of the case, said end being closed by a cap, which is screwed on the end of the case, as shown. The opening in the cap through which the stem G is inserted is reinforced by a collar *g*, which is secured to the cap, and which is provided with a pin *g'*, that enters a spiral groove *g*<sup>2</sup> in the said stem or plunger. The outer end of the stem is reduced and provided with a knob I, and between this knob and the end of the cap is placed the packing J, which is a hollow gas-ket of rubber or equivalent material that is readily compressible, and which will prevent leakage. The inner or lower end of the stem is reduced to form the shoulder or stop *e*<sup>2</sup>, which engages with the arms *e' e'* of the lever E and effects an opening of the discharge-pipe D.

The bottle or other vessel K for receiving a chemical reagent is supported near the top of the case on an annular shoulder *k*, which is formed by enlarging the upper end of the case, and is enveloped in a wire cage or network M, which will hold the fragments of said



bottle when it is crushed. The net-work or cage M and the bottle K are inclosed in a sack or bag L of elastic material, and in this bag or sack is placed a chemical agent 5 which, when acted on by the chemical reagent in the bottle K, will evolve gas and effect a discharge of the fire-extinguishing fluid from the case A through the discharge-spout D and nozzle *d*. A plate *m* is placed between 10 the bottle and the sack, and a corresponding plate *n* is arranged opposite plate *m*, between the end of the stem and the said sack, to prevent injury to the said sack when crushing the bottle K. The plate *n* is centrally de- 15 pressed to receive and center the end of the stem, so that there can be no possible slipping.

The operation of the invention is manifest from the foregoing detailed description, reference being had to the accompanying draw- 20 ings. However, it may be well to state that in practice the stem G is turned, and by reason of the pin *g'* and spiral grooves *g''* receives an inward movement which at first effects a crushing of the bottle K, whereby 25 the chemical reagent contained therein is liberated, and, mixing with the chemical agent in the bag or sack L, evolves gas, which causes an expansion of the said sack. A continued movement of the stem depresses the bifur- 30 cated end of the lever E and unseats the valve *e*, when the fire-extinguishing fluid contained in the case will be forced out through pipe D and nozzle *d*, as will be readily appreciated.

35 The end of the case opposite that containing the bag or sack is provided with a pin O, which penetrates the bag or sack when nearly or entirely expanded and effects a rupture thereof, thereby liberating the gas, which 40 rushes out the discharge-pipe, carrying with it the remaining liquid in the case.

Having fully described my invention, what I claim, and desire to secure by Letters Pat- 45 ent, is—

1. In a chemical fire-extinguisher, the com-

bination, with the case and the discharge-pipe, of the lever E, placed wholly within the case and having a valve which closes the inner end of said discharge-pipe, and the threaded stem for operating said lever, sub- 50 stantially as and for the purpose described.

2. In a chemical fire-extinguisher, the combination, with the case having its upper end reduced to form shoulder *k*, of the vessel K 55 for receiving a chemical reagent supported on the said shoulder *k*, the elastic bag enveloping the said vessel and holding a gas-producing substance, and adapted to contain the broken particles of vessel K, the valve, and the threaded stem for crushing vessel K and 60 unseating the said valve, substantially as described.

3. In a chemical fire-extinguisher, the combination, with the case having recess *b*, of the discharge-pipe D, located within said case 65 and having its end *d* threaded and extending through opening in recessed end B, the washer *d'*, screwed on the said threaded end and located in the said recess *b*, the lever E, located wholly within the case and pivoted to pipe D 70 and having valve for closing said pipe, and the threaded stem for operating lever E, substantially as and for the purpose described.

4. In a chemical fire-extinguisher, the combination, with the case and the discharge- 75 pipe, of the lever pivoted between its ends, the valve at one end of the lever, and the other end of the lever being bifurcated, and the stem having a threaded connection in the closed end of the case, and having a stop to 80 engage with the arms forming the bifurcated end of the lever, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHIUR DURAND.

Witnesses:

VAN BUREN HILLYARD,  
W. H. LYDICK.