

No. 606,750.

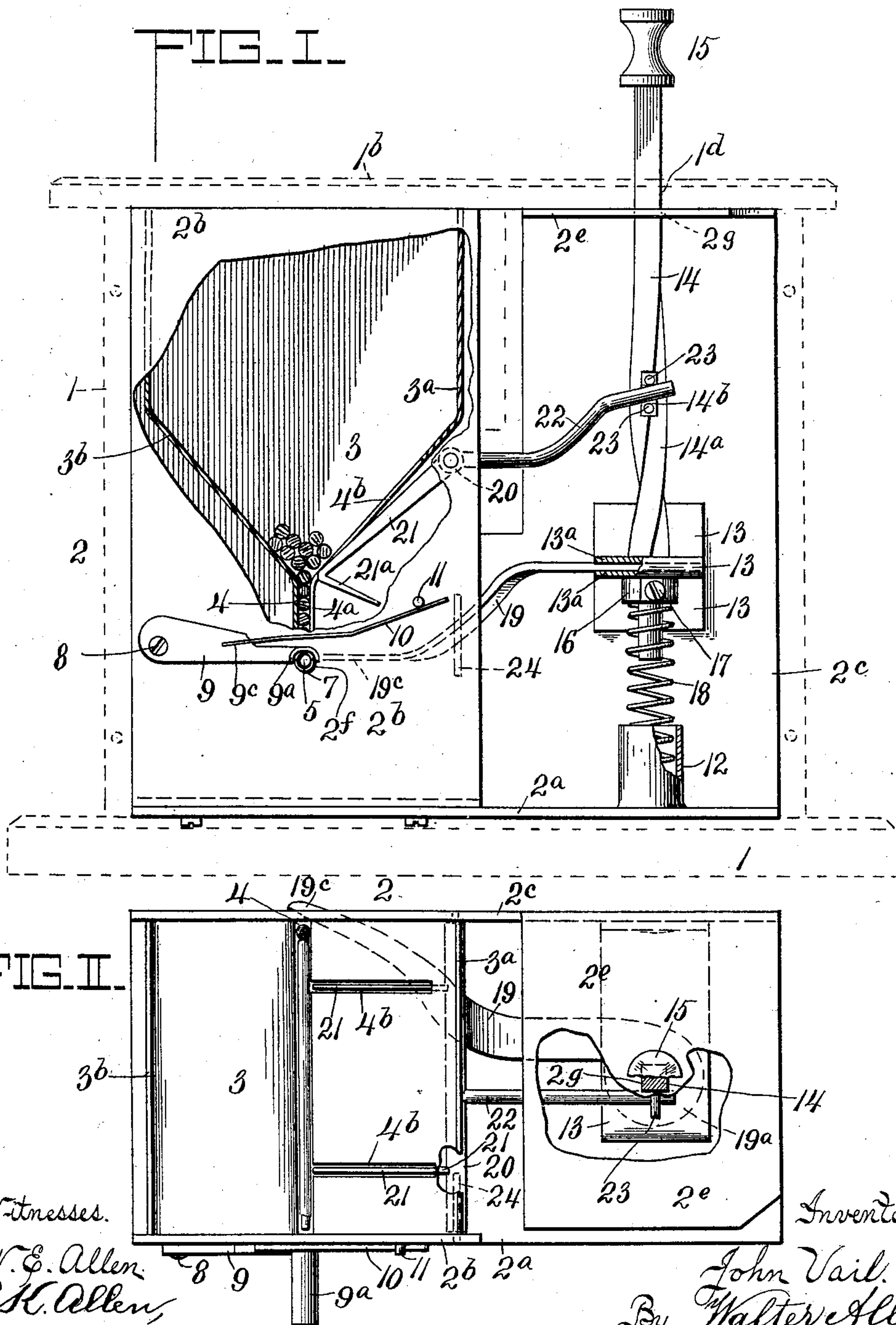
Patented July 5, 1898.

J. VAIL.  
SINGLE DELIVERY MATCH SAFE.

(Application filed Feb. 3, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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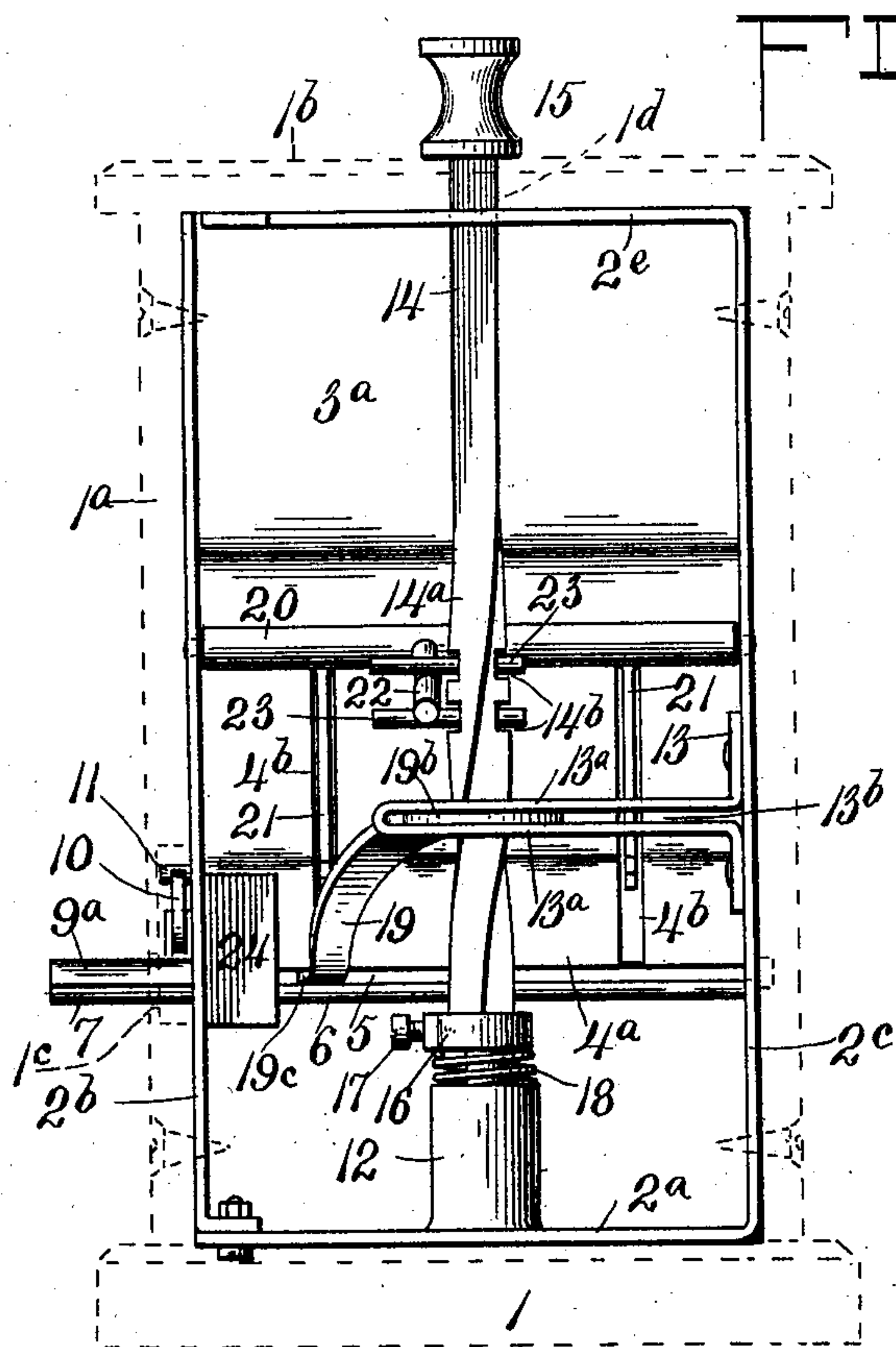


FIG. III.

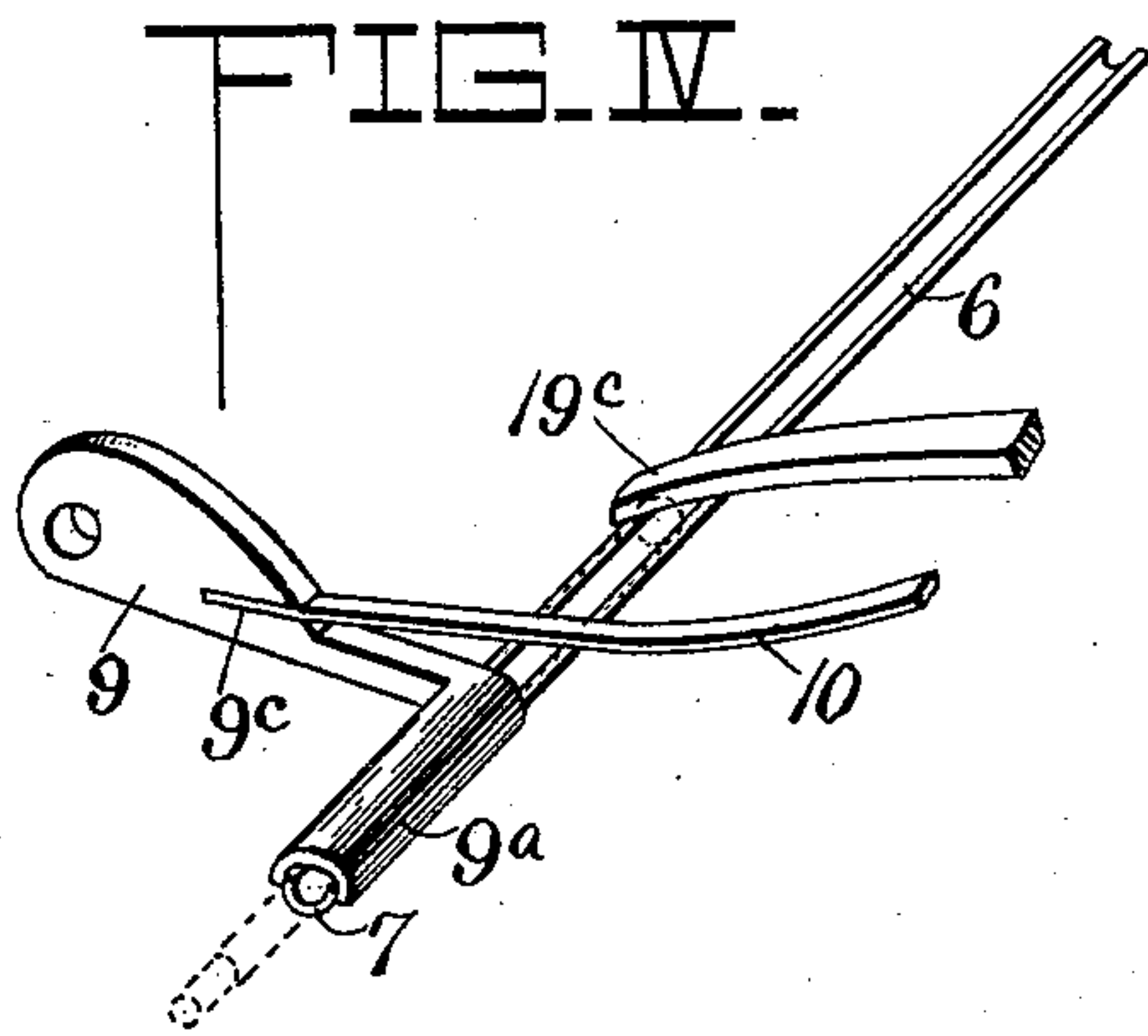


FIG. IV.

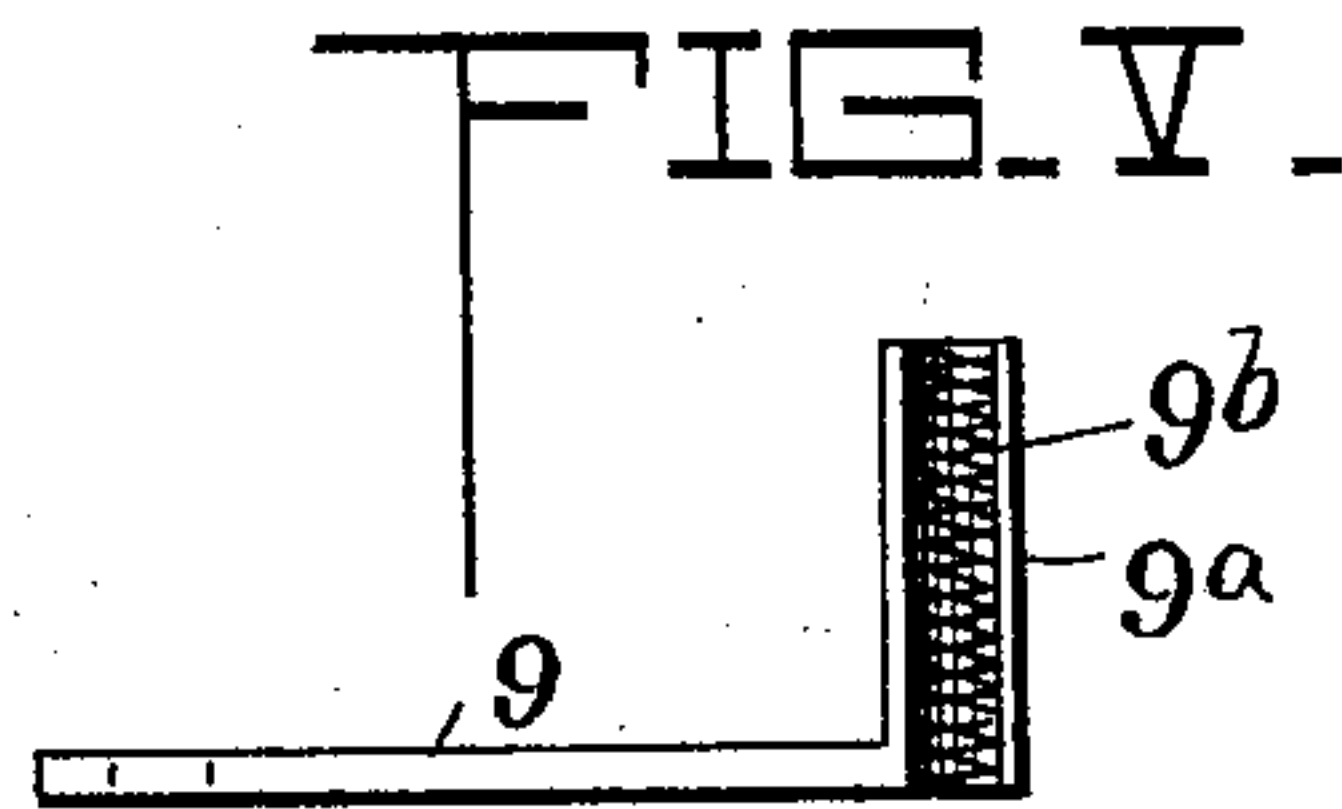


FIG. V.

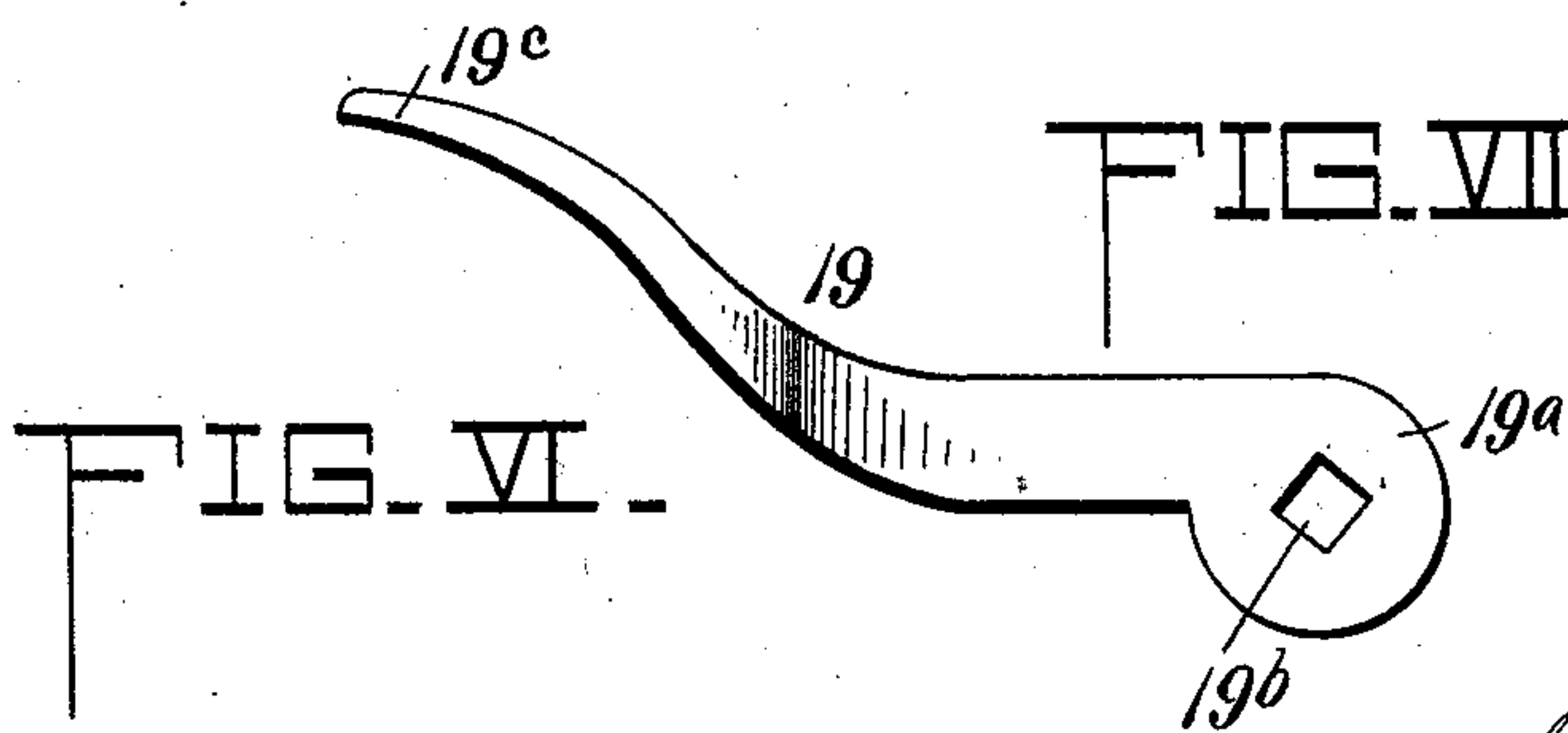
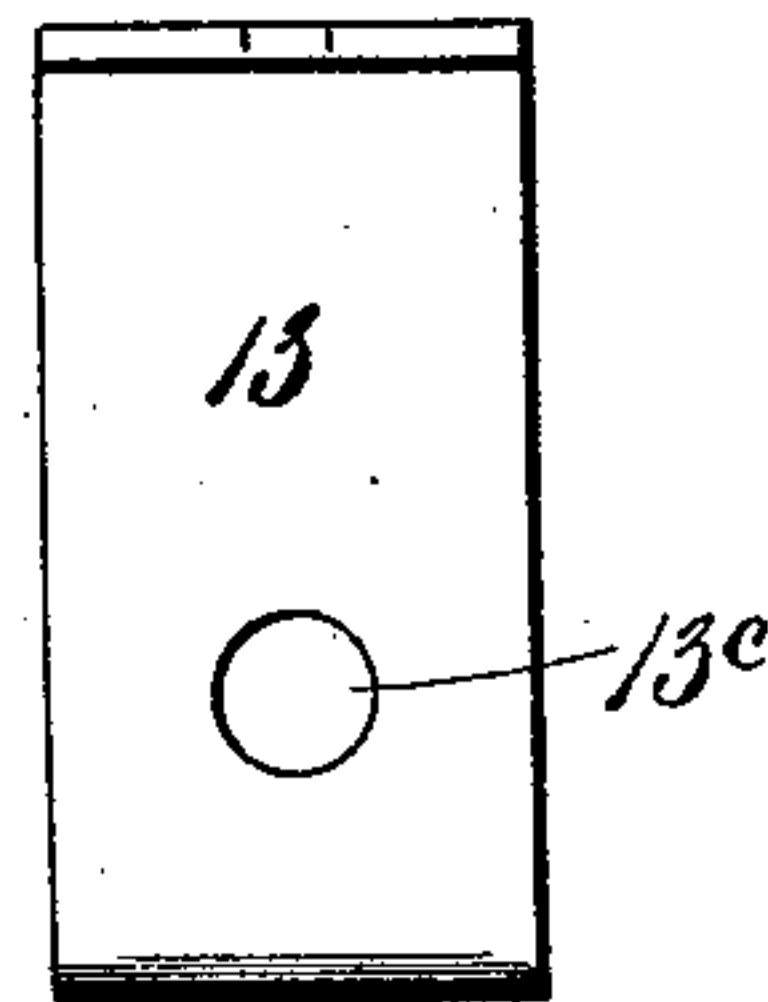


FIG. VI.

FIG. VII.



Witnesses.  
W. E. Allen,  
E. H. Allen,

Inventor.  
John Vail.  
By Walter Allen,  
Atty.



# UNITED STATES PATENT OFFICE.

JOHN VAIL, OF FROSTBURG, MARYLAND, ASSIGNOR TO SIGMUND TANZER  
AND PATRICK J. SULLIVAN, OF CUMBERLAND, MARYLAND.

## SINGLE-DELIVERY MATCH-SAFE.

SPECIFICATION forming part of Letters Patent No. 606,750, dated July 5, 1898.

Application filed February 3, 1898. Serial No. 668,974. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN VAIL, a citizen of the United States, and a resident of Frostburg, in the county of Allegany and State of Maryland, have invented new and useful Improvements in Match-Safes, of which the following is a specification.

My invention relates to improvements on those match-safes in which the matches are dropped from a hopper or magazine into a trough and placed singly by means of devices connected with a vertically-reciprocated rod or shaft into horizontal position for withdrawal.

My invention comprises a suitable inclosing stand or case of pedestal form and of suitable material; a metal shell or frame within the stand or case; a hopper or magazine for the supply of matches having sides converging downwardly to a vertical neck or chute of approximately the width and length of an ordinary match, down which the matches are dropped in a single vertical row, one side of the hopper or magazine and neck or chute being formed with upwardly-extending open slots; a trough of semicircular shape in cross-section located beneath the neck or chute for receiving the matches and projecting through an opening in the shell or frame and through an opening in the stand or case to provide a fixed lower jaw; a movable upper jaw provided with a frictional or igniting inner face and overlapping the lower jaw, having an arm pivoted at one side of the trough; a spring for holding down the upper jaw, so as to bind on the head of the match when pulled thereunder and to ignite the latter; a vertically-reciprocated rod or shaft working through the top of the stand or case, formed with a spiral or twisted body portion rectangular in cross-section; a sleeve secured to the floor of the shell or frame, forming a step for the lower end of the rod or shaft; a push-button mounted on the upper end of the rod or shaft; a double horizontal bracket having orifices through which the body of the rod or shaft is guided; an adjustable collar secured to the rod or shaft beneath the bracket to provide a stop to limit the upward movement of the rod or shaft; a spring seated in the sleeve and surrounding the lower end of the rod or shaft and bearing

upwardly against the collar to support the rod or shaft in normal position, lateral pins projecting from a vertical recess in the body portion of the rod or shaft; a match lifter or agitator consisting of a horizontal rock-shaft journaled to the shell or frame between the rod or shaft, and the hopper or magazine having forwardly-projecting arms formed with elbows which operate through the open slots of the hopper or magazine to lift or agitate the matches in the latter, and a curvilinear rearwardly-projecting arm whose outer end extends between the pins, so that the rock-shaft is oscillated when the rod or shaft is moved vertically; a swinging match-ejecting doubly-curved arm pivoted loosely at one end between the horizontal plates of the double bracket, formed with an opening fitting the spiral or twisted body portion of the rod or shaft, so as to be swung forth and back by the vertical movement of the rod or shaft, and having its outer end projecting over the trough to engage the head of the match, and a stop secured to the shell or frame to limit the forward movement of the ejecting-arm.

My invention consists in the novel features of construction hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure I is a side elevation of my improved match-safe, the stand or case being shown in dotted lines and the front wall of the hopper or magazine and neck or chute being broken away. Fig. II is a top view of the same, the stand or case being omitted and parts being broken away. Fig. III is an end elevation. Fig. IV is a detail perspective view of the trough, the movable upper jaw, and the end of the ejecting-arm. Fig. V is a bottom view of the movable upper jaw. Fig. VI is a plan view of the ejecting-arm. Fig. VII is a plan view of the double bracket.

1 is a suitable stand or case having a removable side 1<sup>a</sup> and a removable top 1<sup>b</sup>. Within this stand or case is a removable shell or frame 2, constructed with a floor 2<sup>a</sup>, a front plate 2<sup>b</sup>, a back plate 2<sup>c</sup>, and a top plate 2<sup>e</sup>. This shell or frame entirely supports my



match-safe mechanism independently of the stand or case.

3 is a hopper or magazine for the reception of a stock of matches, supported on the front and back plates at one end of the shell or frame. It is constructed with downwardly-converging sides 3<sup>a</sup> 3<sup>b</sup>, leading to neck or chute 4, adapted in width, length, and depth to contain a single vertical row of matches in loose condition. The inner side 3<sup>a</sup> of the hopper or magazine and the inner side 4<sup>a</sup> of the neck or chute are formed with upwardly-extending open slots 4<sup>b</sup>. Beneath the neck or chute, leaving a suitable space 5, is a horizontal trough 6, of semicircular shape in cross-section, also supported in the front and back plates and projecting through an orifice 2<sup>f</sup> and an orifice 1<sup>e</sup> to provide a lower fixed jaw 7 in front of the stand or case.

8 is a lateral pivot-pin secured to the front, on which is mounted movable arm 9, carrying a jaw 9<sup>a</sup>, semicircular in cross-section, provided with a roughened frictional interior face 9<sup>b</sup> and of sufficient width to overlap the lower jaw. The movable arm is provided with a slit 9<sup>c</sup> for the inner end of a plate-spring 10, whose outer end bears against lateral pin or projection 11 for seating the movable jaw.

12 is a sleeve or step secured to the floor of the shell or frame.

13 is a double angle-bracket supported on the back plate by suitable fastenings, providing two horizontal plates 13<sup>a</sup>, having a space 13<sup>b</sup> between.

14 is a vertical rod or shaft formed with a spiral or twisted body portion 14<sup>a</sup> and longitudinal recess 14<sup>b</sup>. It is provided at the top with a push-knob 15, by which it is pressed downward. This rod or shaft extends through a guide-opening 1<sup>d</sup> in the top of the stand or case, through a guide-opening 2<sup>e</sup> in the top plate of the shell or frame, and through guide-orifices 13<sup>c</sup> in the bracket and into the sleeve or step on the floor of the shell or frame. The rod or shaft is supported by means of a collar 16, secured to the body portion by means of a set-screw 17 and resting on a spring 18, surrounding the lower end of the rod or shaft within the sleeve or step.

For the purpose of placing each match singly in position for withdrawal between the jaws I provide an ejecting-arm 19 of double-curved shape having its rear end 19<sup>a</sup> formed with an opening 19<sup>b</sup> and inserted in the space between the horizontal plates of the bracket, where it is loosely secured by the spiral or twisted body portion of the shaft passed there-through. The forward end 19<sup>c</sup> of this ejecting-arm projects over the trough, so as to engage the heads of the matches.

To enable the ejecting-arm to easily operate, I provide a lifter or agitator for the stock of matches within the hopper or magazine above the neck or chute. This consists of a rock-shaft 20, journaled in the front and back plates of the shell or frame, having two inner

arms 21, formed with elbows 21<sup>a</sup>, working through the open slots of the neck or chute and hopper or magazine, and with an outer curvilinear arm 22, whose end is extended between two lateral pins or projections 23, secured in the longitudinal recess of the rod or shaft.

24 is a stop for the ejecting-arm in the form of a plate secured to the front plate of the shell or frame.

To operate the device, the rod or shaft is pressed downward against the upward pressure of the supporting-spring, thus causing the outer arm of the rock-shaft to be lowered and the inner arms thereof to be raised, which causes the elbows to lift the matches in the hopper or magazine and relieve the vertical row of matches within the neck or chute of any weight thereover, while the spiral or twisted body portion of the rod or shaft is forced through the inner end of the ejecting-arm and turns it, thus throwing its projecting forward end against the head of the match within the trough and advancing it into a position to be withdrawn between the jaws, and then by the release of the rod or shaft the spring within the sleeve or step returns the operative parts to their normal positions. As soon as the advanced match is pulled from between the jaws the match is ignited by its head striking on the frictional or roughened surface.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A match-safe comprising a shell or frame, a vertical reciprocated rod or shaft having a spiral or twisted body portion, a hopper or magazine, a horizontal trough located beneath the hopper or magazine, a bracket, and an ejecting-arm mounted loosely in the bracket by means of the said spiral or twisted body portion; substantially as described.

2. A match-safe comprising a shell or frame, a vertical reciprocated rod or shaft having lateral pins or projections, a hopper or magazine having a side and neck or chute formed with open slots, and a rock-shaft provided with inner arms having elbows working through the open slots, and an outer arm engaging the pins or projections, substantially as described.

3. A match-safe comprising a shell or frame, a magazine or hopper having a neck or chute, the trough located beneath the neck or chute and projecting through the shell or frame to provide a lower jaw, an upper jaw having a roughened interior face, overlapping the lower jaw and pivoted to the shell or frame, a spring for holding down the upper jaw, and means for ejecting the matches through the jaws; substantially as described.

4. A match-safe comprising a shell or frame, a sleeve secured to the floor of the shell or frame, a bracket, a vertical reciprocated shaft having a spiral or twisted body portion, passed through the bracket and into the sleeve, the

collar secured to the body portion beneath  
the bracket, a spring surrounding the rod or  
shaft beneath the collar, a hopper or magazine  
having a side formed with open slots, located  
5 beneath the hopper or magazine, a rock-shaft  
having inner arms formed with elbows work-  
ing through the open slots, and an outer arm  
connected with the rod or shaft, and an eject-

ing-arm loosely secured by the body portion  
within the bracket and having its forward 10  
end projecting over the trough; substantially  
as described.

JOHN VAIL.

Witnesses:

WM. D. PAISLEY,  
CLAUDE L. O'NEAL.