

(Model.)

2 Sheets—Sheet 1.

I. LIVINGSTON, A. BLUM, A. WOLLENWEBER,
L. WESTHEIMER & H. COHN.

COMBINATION LOCK.

No. 429,691.

Patented June 10, 1890.

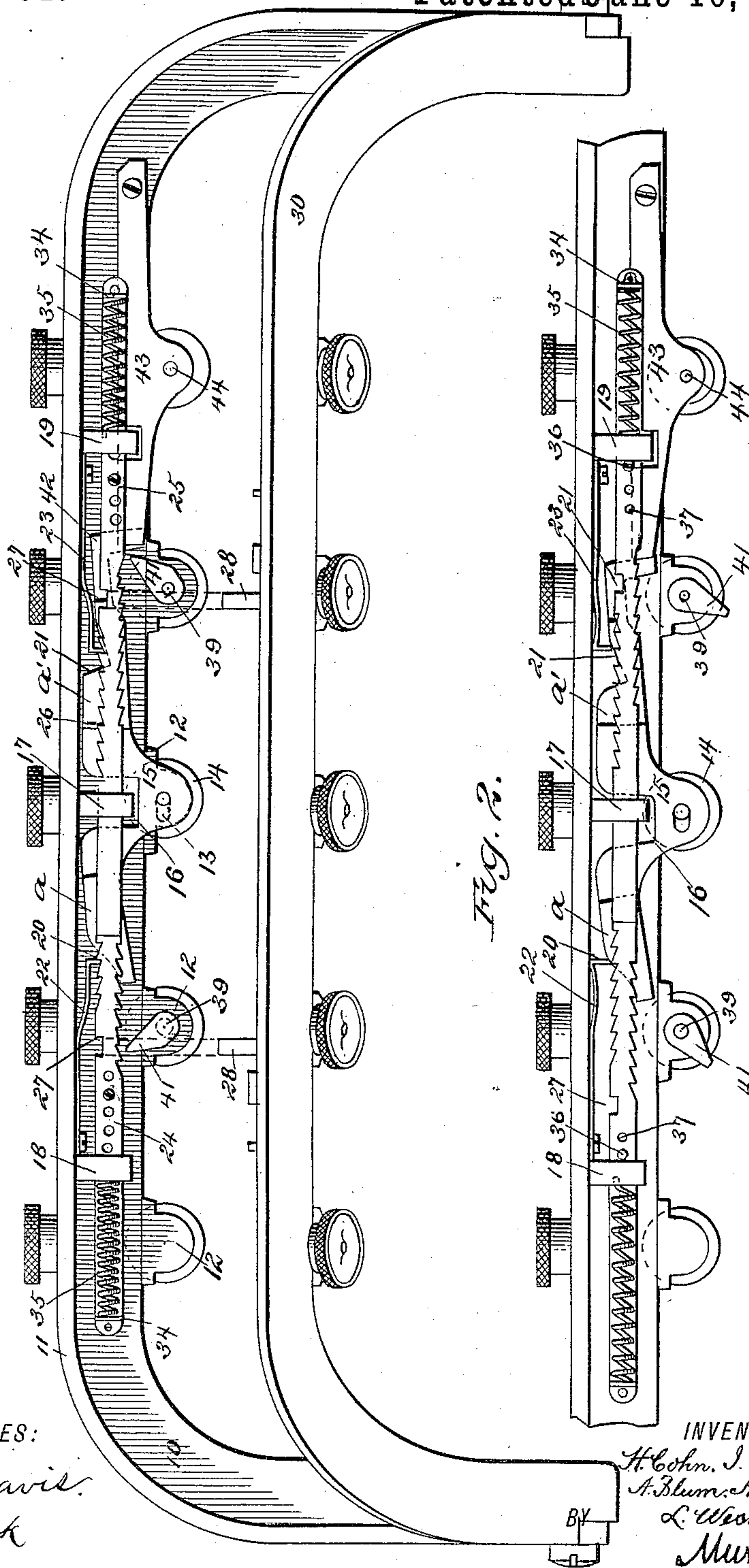


Fig. 2.

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Fig. 3.

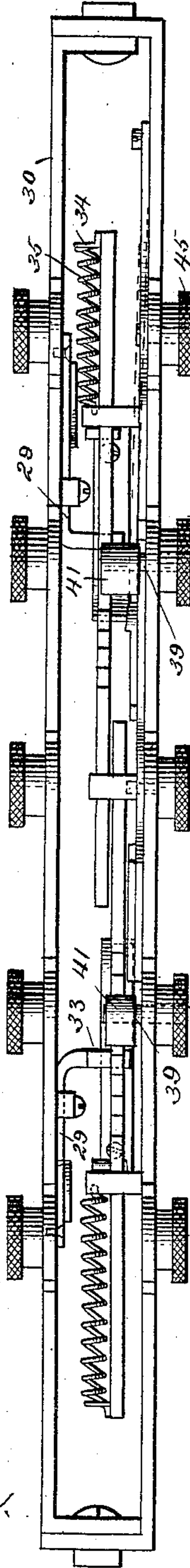


Fig. 4.

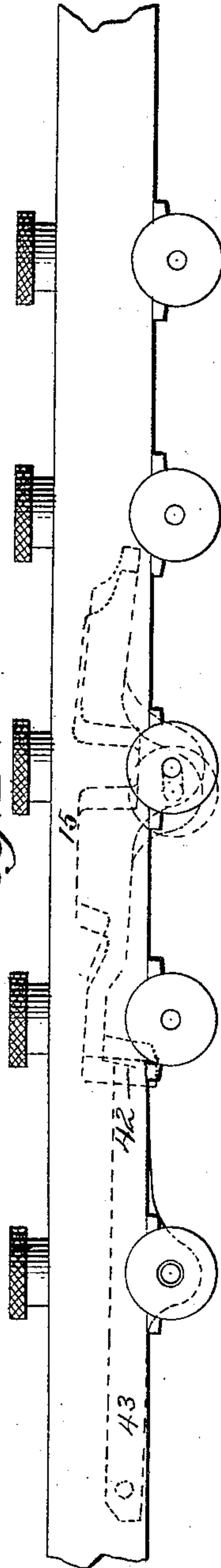
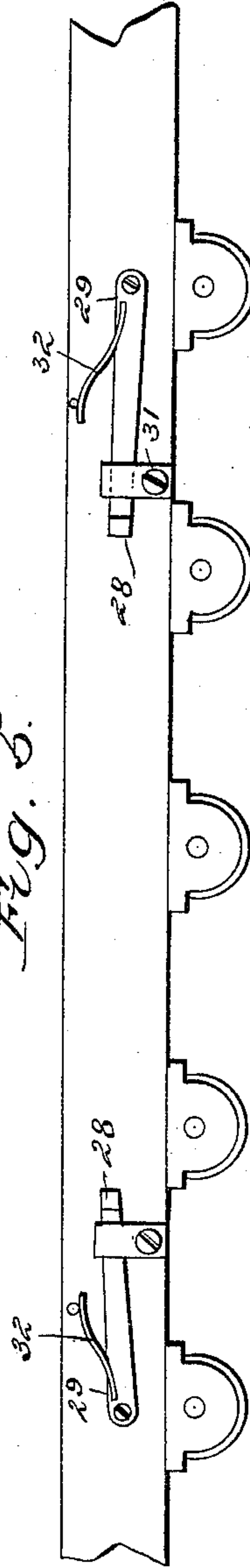


Fig. 5.



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UNITED STATES PATENT OFFICE.

ISAAC LIVINGSTON, ADOLPH BLUM, AUGUST WOLLENWEBER, LEOPOLD WESTHEIMER, AND HARRY COHN, OF NEW YORK, N. Y.; SAID WOLLENWEBER ASSIGNOR TO SAID COHN, LIVINGSTON, BLUM, AND WESTHEIMER.

COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 429,691, dated June 10, 1890.

Application filed August 1, 1889. Serial No. 319,389. (Model.)

To all whom it may concern:

Be it known that we, ISAAC LIVINGSTON, ADOLPH BLUM, AUGUST WOLLENWEBER, LEOPOLD WESTHEIMER, and HARRY COHN, all of New York city, in the county and State of New York, have invented a new and useful Improvement in Combination-Locks, of which the following is a full, clear, and exact description.

Our invention relates to an improvement in locks, and has for its object to provide a keyless lock especially adapted for use in connection with traveling-bags, chatelaine-bags, and pocket-books, but which also may be used in connection with various other articles—as, for instance, furniture, desks, trunks, &c.; and a further object of the invention is to provide, in connection with the latch or keeper of the lock, a combination capable of being variously set, and also to provide idle knobs corresponding in contour with the operative knobs, in order to puzzle a person or persons unacquainted with the lock and not authorized to open the same.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of a valise or satchel frame open, illustrating the lock applied thereto, the parts of the lock being in position to admit of one section of the frame being opened from the other. Fig. 2 is a side elevation of the flange-section of the frame, illustrating the parts of the lock as in the locked position. Fig. 3 is a bottom plan view of the frame and the parts of the lock. Fig. 4 is a side elevation of a portion of the frame, illustrating the trip-bar in dotted lines in its two positions; and Fig. 5 is an inside view of that section of the frame carrying the latches.

We have shown the invention applied to a valise-frame, the combination and principal portions of the lock being located upon the inner face of one section 10 beneath the

flanged top 11. To the edge of said frame-section 10 a series of spaced lugs 12 are secured or formed integral therewith, the center one being provided with a transverse slot 13, through which the shank of a knob or button 14 is passed to the inner side and rigidly connected with the central or lower portion of the trip-bar 15, which central portion of the bar is bowed downward to a contact with the lug, as shown in Figs. 1 and 2.

In the upper edge of the trip-bar, at its central point, a recess 16 is produced to receive a post 17, forming, essentially, an integral portion of the inner side of the frame-section 10 and its flange. The trip-bar is thus free to move a limited distance at each side of the post 17. There are two other similar posts 18 and 19 used in connection with this section of the frame, one being located at each side of the central post, as is shown in the said Figs. 1 and 2.

From the curved body of the trip-bar 15 an arm is made to extend at each side of the post 17 longitudinally of the frame-section 10, the outer extremities of which arms are thicker than their inner ends and the body, as shown at *a* and *a'*. The extremity *a* of the trip-bar is made to slightly incline downward, and the upper edge of this extremity is provided with a concavity 20, an angular recess 21 being produced in the corresponding edge of the extremity *a'*. The concaved surface 20 of the trip-bar is adapted for contact with a spring-pawl 22, secured to the flange 11 between the posts 17 and 18, and a similar pawl 23 is attached to the said flange of the frame-section between the posts 17 and 19, which latter pawl is purposed to contact with the walls of the recess 21 in the trip-bar.

In the posts 18 and 19 rack-bars 24 and 25 are respectively held to slide longitudinally of the frame-section, and the inner ends of the two bars contact and slide one upon the other in the center post 17. These bars 24 and 25 have teeth 26 produced in both the upper and the lower edge between their ends, and in the upper edge of each bar, between the outer extremity and the last or outer tooth, a recess 27 is produced, through which recesses the heads 28 of angled latches 29 pass,

which latches are pivoted to the opposed frame-section 30, as illustrated in Figs. 3 and 5.

The body of the latches is usually pivoted at one end to the frame-section 30, and extends longitudinally thereof in the direction of the center, being held in contact with a bracket 31 by a suitable form of spring 32, and the inner end of each latch is carried at a right angle to the body in the direction of the opposed frame-section, terminating in a head 28, as aforesaid, which head is formed by beveling the under surface at the extremity and producing in the said under surface a recess or groove 33.

The rack-bars 24 and 25 extend beyond the outer posts 18 and 19, and each bar at its outer extremity is provided with an ear or projection 34, and to the said ear or projection one end of a spring 35 is secured, the other ends of the said springs being attached to the posts 18 and 19, respectively, as illustrated in Figs. 1, 2, and 3. These springs normally hold the rack-bars in the locked position illustrated in Fig. 2, and the combination is controlled more or less by a pin 36 passed through one of a series of apertures 37, formed between the outer end and the first tooth of each bar, or the outer end and the recess 21.

In the lugs 12, located upon the right and upon the left of the central lug, a spindle 39 is pivoted, having attached to their outer ends a knob 40, whereby the spindles are turned, and to the inner ends a button 41 is attached, the said buttons being adapted for contact with the under set of teeth of the rack-bars.

To the extremity *a'* of the trip-bar a thin angled plate 42 is rigidly secured, the outer edge of the vertical member whereof is preferably beveled to slide beneath the inner end of a spring lock bar or plate 43, attached at its outer end only to the frame-section 10. This lock-plate 43 is manipulated by an attached stud 44, which stud projects outward through one of the lugs 12 and a knob 45, rigidly attached to the outer face of the lug, as illustrated in Fig. 3. The outer end of this stud 44 is preferably so located in the knob that it cannot be readily seen by a casual observer. In fact, it partakes of the nature of a secret spring, and no portion of the lock can be operated without the spring being first manipulated.

Buttons or knobs similar to the knobs 45, 40, and 14 are preferably placed upon the outer side of the frame-section 30 and upon the top of the flange, all the knobs appearing to be alike, the object of this being to baffle any one attempting to work out the combination and open the bag. The combination is effected by so setting the rack-bars that certain revolutions of the knobs 40 are necessary to carry the said bars inward until the recesses 27 therein are brought from the position shown in Fig. 2 to the position illustrated in Fig. 1, and when in the latter position the

recesses are immediately opposite the latch-heads 28, whereby the latter are free to be drawn outward.

In the combination illustrated, to place the rack-bars in position to permit the frame to be opened, the left-hand knob must be turned until the button 41, which acts as a dog, carries the bar 24 inward a distance of four teeth, and the knob upon the right is turned until the bar 25 has been carried inward a distance of two teeth.

The combination may be changed at any time by placing the pins 36 in different apertures 37 in the rack-bars. For instance, if the left-hand bar is to be thrown inward five teeth to open the lock and the right-hand bar three teeth, the pin 36 is placed in the sixth aperture from the end of the bar 24 and the pin of the bar 25 is placed in the fourth aperture from its end. The distance between the apertures equals, essentially, the distance between the teeth, and when the bars are in the locked position the pins 36 bear, respectively, against the posts 18 and 19.

When the frame is locked, the upper edges of the rack-bars are located in the bottom recess 33 of the latches. To open the frame, the stud 44 is first pressed inward, and this forces inward the locking-plate 43. The central knob 14 is then slid to the right, whereupon the thin angled appendage 42 of the trip-bar passes between the free end of the locking-plate and the frame, and this movement of the trip-bar permits the pawls 22 and 23 to ride down the walls of the recess 21 and concavity 20 of the trip-bar to engage the upper teeth of the rack-bars, as shown in Fig. 1. The knobs 40 are now manipulated to carry the rack-bars to their proper position for unlocking, which is when their recesses 27 are opposite the latch-heads. When the rack-bars are so located, the two frame-sections may be separated or opened.

As the springs 35 have been compressed by the inward movement of the rack-bars to lock the frame or place the parts in the proper locked position, the trip-bar is simply moved to the left through the medium of the knob 14, as with this movement the pawls are carried out of contact with the rack-bars, and the springs 35, acting automatically, draw the said bars to their normal position. If the frame-section 30 is now closed upon the section 10, the latch-heads spring over the rack-bars to an engagement therewith, and if the two sections have been closed prior to moving the trip-bar to the left the rack-bars slide inward in the grooves 33 of the latch-heads 28. (See Fig. 3.) It is impossible to turn the buttons 41 but slightly in the proper direction to open the frame when the frame-sections are locked together and the trip-bar has not been moved to the right, as the revolution of one button is decidedly limited by contacting with the extremity of the member *a* of the trip-bar, and the movement of the other button is likewise limited by con-

tacting with the lower end of the angled-arm attachment or appendage 42 of the said trip-bar.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a lock, the combination, with a lock-bar and a sliding trip-bar, of a keeper-bar whose movements are controlled by the trip-bar, substantially as shown and described.

2. The combination, with a spring lock-bar and a sliding trip-bar, of a spring-actuated keeper-bar, and a dog adapted for contact with the said keeper-bar, substantially as shown and described.

3. The combination, with a spring lock-bar and a sliding trip-bar, of a spring-actuated toothed and recessed keeper-bar, and a dog adapted for contact with the toothed surface of the said keeper-bar, substantially as shown and described.

4. The combination, with a spring lock-bar, a sliding trip-bar, and spring-actuated keeper-bars, of spring-pawls capable of contacting with the trip-bar and keeper-bars, and revoluble dogs capable of contacting with the said keeper-bars, substantially as and for the purpose specified.

5. The combination, with a spring lock bar or plate capable of lateral movement at one end, a sliding trip-bar having an indented

upper edge, and spring-actuated keeper-bars having a recess in the upper edge and teeth integral with the lower edge, of spring-pawls contacting with the keeper-bars and the indented surface of the trip-bar, and revoluble dogs contacting with the toothed surface of the said keeper-bars, substantially as and for the purpose specified.

6. The combination, with a spring lock bar or plate capable of lateral movement at one end, a sliding trip-bar having an indented upper surface, and spring-actuated keeper-bars having a recess in the upper edge and teeth integral with the lower edge, of spring-pawls contacting with the keeper-bars and the indented surface of the trip-bar, adjusting-pins located in the keeper-bars, whereby their movement in one direction is limited, and revoluble dogs contacting with the toothed surfaces of the keeper-bars, all combined for operation substantially as shown and described.

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