

April 4, 1944.

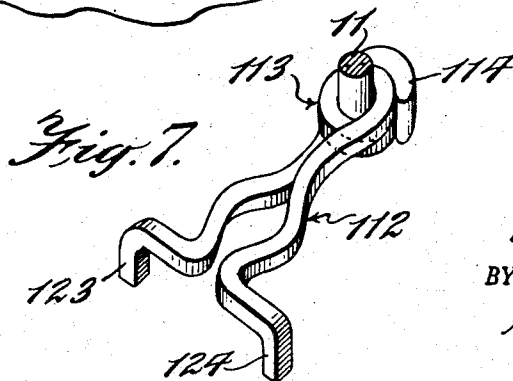
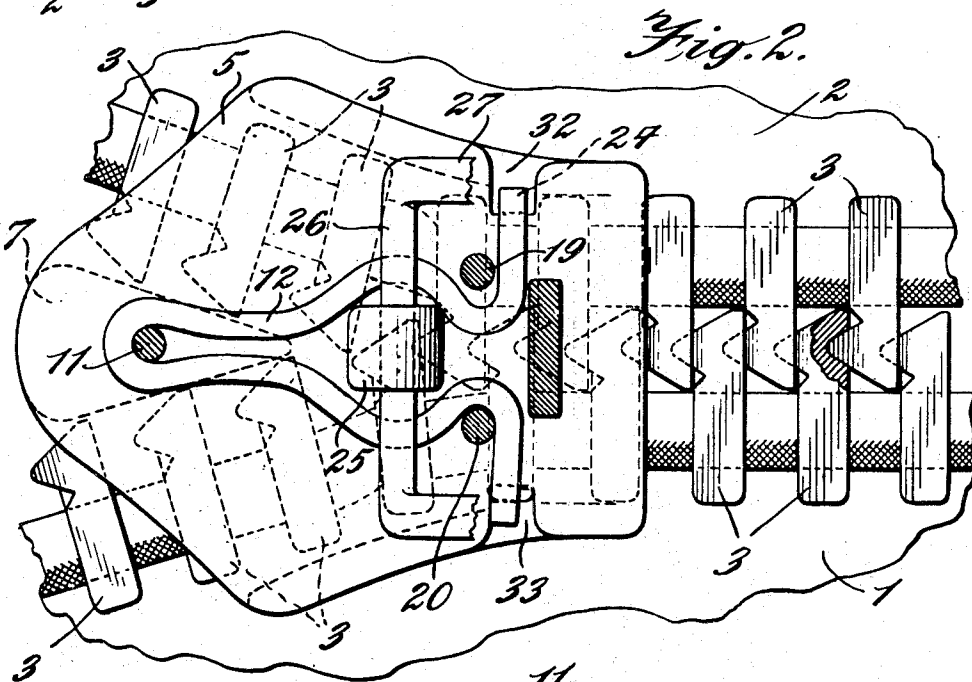
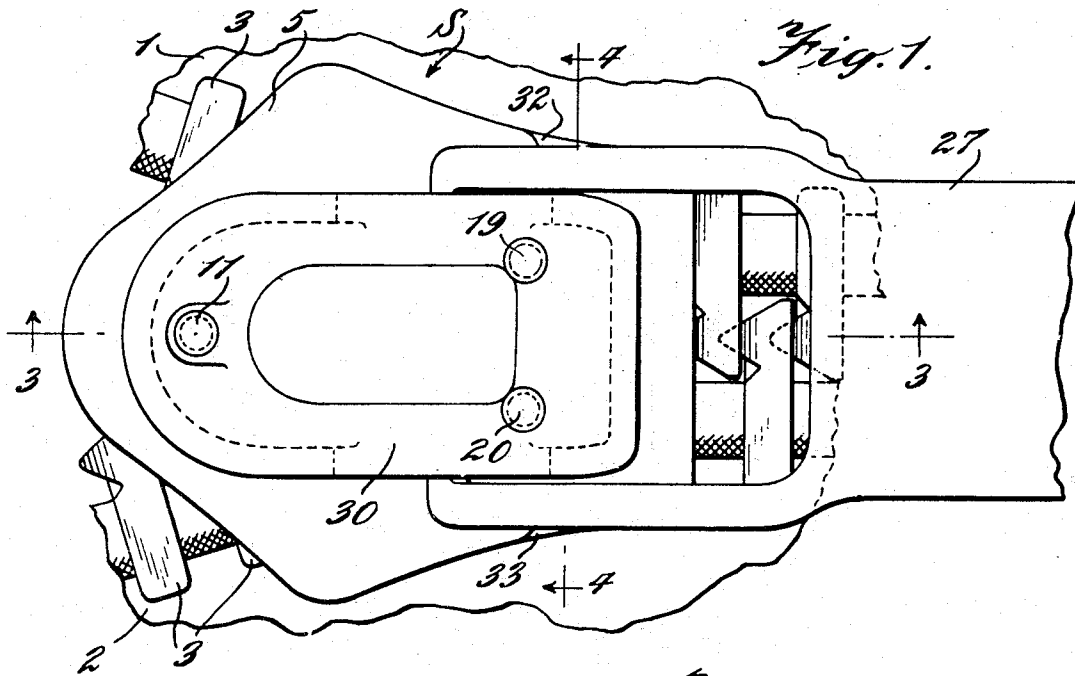
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2,345,883

AUTOMATIC LOCK SLIDER

Filed Feb. 12, 1942

2 Sheets-Sheet 1



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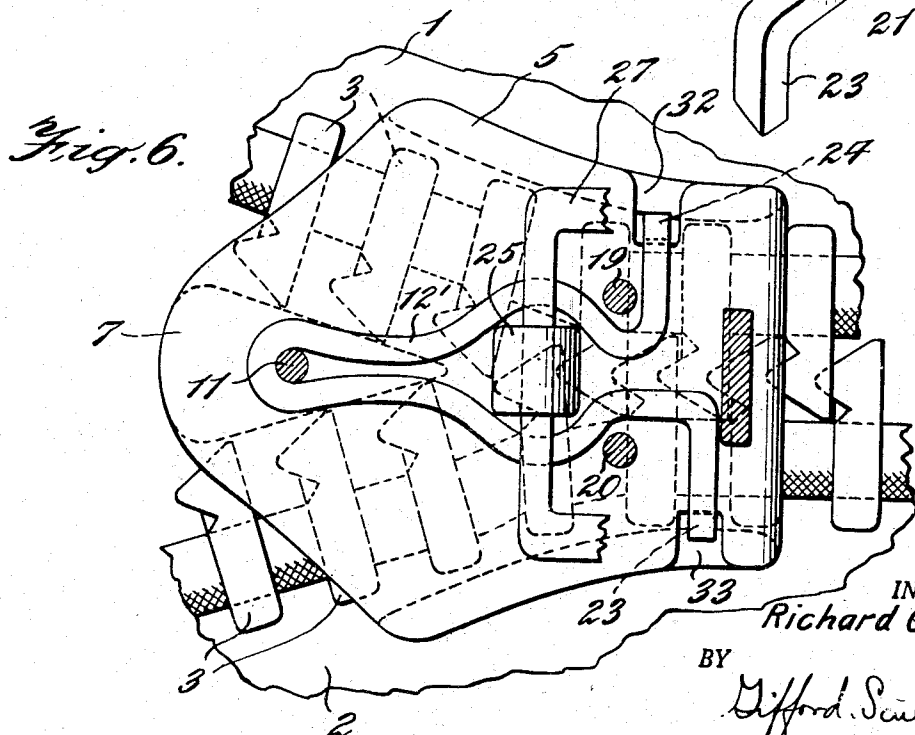
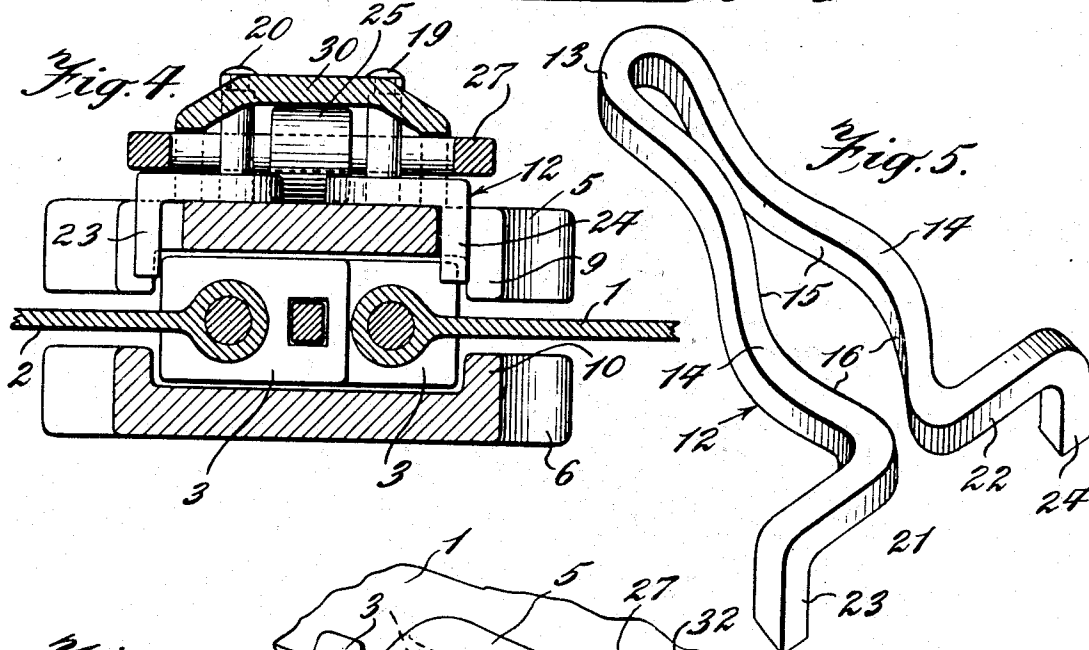
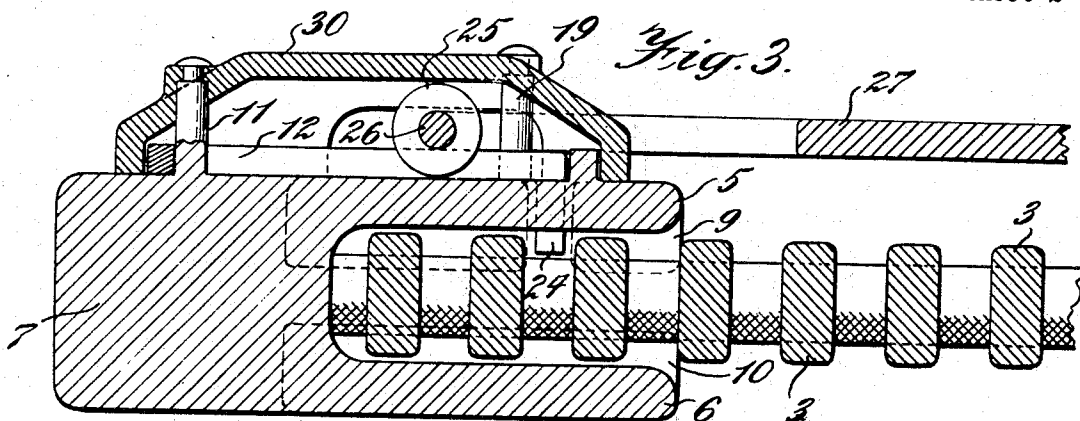
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AUTOMATIC LOCK SLIDER

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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,345,883

## AUTOMATIC LOCK SLIDER

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to Crown Fastener Corporation, Warren, R. I.,  
a corporation of Delaware

Application February 12, 1942, Serial No. 430,523

9 Claims. (Cl. 24-205.5)

This invention relates to a lock for a separable fastener slider. An object of the invention is to produce a lock which will permit the slider to be locked to the fastener elements in any position of the slider on the string of elements. Another object is to produce such a lock which will operate to lock the slider automatically. A still further object is to produce an automatic lock which is unlocked by the pull on the pull tab in the operation of moving the slider and preferably so that such unlocking occurs whether the slider is moved to engage or disengage the fastener elements.

Looking at the drawings:

Fig. 1 is a plan view of the device;

Fig. 2 is a plan view of the device with the cover removed;

Fig. 3 is a section through 3-3 of Fig. 1;

Fig. 4 is a section through 4-4 of Fig. 1;

Fig. 5 is a perspective view of the spring locking member;

Fig. 6 is a plan view of a modification of the device;

Fig. 7 is a perspective view of a modified form of spring engaging member.

Looking at the figures, 1 and 2 are a pair of tapes upon which the fastener elements 3 are mounted in the usual way. These elements may be made of metal or plastic, as is well known in the art.

The slider S is designed to move up and down along the rows of fastener elements to engage and disengage them in the usual way. Slider S comprises an upper wing portion 5 and a lower wing portion 6 connected by a wedge portion 7. The upper wing portion 5 is equipped with downwardly turned guide edges 9, and the lower wing portion with upwardly turned guide edges 10. All of these elements of the slider are well known in the prior art.

Secured to the upper surface of the wing 5 by means of a rivet 11 is a spring locking member 12 bent into the shape of a modified V. The apex of the member 12 shown at 13 (Fig. 5) is designed to receive the rivet 11. The two arms of the member 12 are bent out or away from each other at a point intermediate their length, as shown at 14. This curve forms double cam surfaces on each arm shown at 15 and 16. The arms of the member 12 curve toward each other and around rivets 19 and 20 (Figs. 1 and 2), which are arranged to act as stops, and then bend outwardly at right angles toward the outer edges of the wing 5, as shown at 21 and 22 of

Fig. 5. The ends are bent downwardly to form locking pins 23 and 24.

To provide for the separation of the arms of the member 12 upon actuation of the slider, cam block 25, which may be formed as an enlarged portion of the cross bar 26 of the pull tab 27, is positioned between the arms at the portions 14 thereof. This enlarged portion 25 may be formed as a block cast integral with cross bar 26, or it may be a roller adapted to rotate on the cross bar as an axle. Cross bar 26 projects outwardly from the cam block or roller far enough to clear the locking mechanism and permit the tab 27 to be rotated 180° counterclockwise from the position shown in Fig. 3, so that with this construction the tab can swing freely to permit the slider to be moved to engage or disengage the fastener elements.

A cover plate 30 held in place by the rivets 11, 19, and 20 is designed to cover the various moving parts of the locking mechanism and at the same time hold the cam block 25 in place on top of the wing 5 and to form with the wing 5 and the portions 14 of the engaging member 12 a track to guide the cam block 25 as it moves along its limited path of movement. As will be seen in Fig. 3, the cover plate 30 also serves to hold down the apex end of member 12. The rivets 19 and 20 serve to limit the outward movement of the arms of the locking member and therefore the horizontal motion of the pull tab toward the right in Figs. 1, 2, and 6.

The wing member 5 has two cutout portions or notches on the edges thereof, as shown at 32 and 33. These are so positioned in relation to the locking member 12 that the locking pins 23 and 24 of that member pass downwardly through the notches 32 and 33 to engage the fastener elements 3.

The modification shown in Fig. 6 is like that form of the invention shown in Figs. 1 to 5, inclusive, except that the notches 32' and 33' are staggered in relation to each other as are the free ends of the locking member 12'. This permits both locking pins at the ends of the arms of the member 12' to simultaneously engage between fastener elements on each tape. The remainder of the construction of the device is the same as that which has already been described, and corresponding numbers for corresponding parts are used, as shown.

The modified form of spring locking member shown in Fig. 7 and marked 112 is like that shown in Fig. 5 except that the spring wire is carried around the rivet 11 nearly twice, as shown at 113,

to provide additional resiliency for this spring. A backing-up lug 113 is supplied to cooperate with the rivet 11 to hold the member 112 in place. The pins 123 and 124 on the member 112 are like the pins on the free end of the member 12 and function the same way.

In operation, this slider lock normally locks the slider on the rows of fastener elements because of the tendency of the spring member 12 to urge the locking pins 23 and 24 toward each other and in between a pair of fastener elements. In Figs. 1 to 5, the cam block 25 is shown in the neutral or at rest position. In such position, the slider is locked. When the tab 27 is pulled in either direction so as to engage or disengage the fastener elements, it will first move relative to the slider and in so doing the cam block 25 will operate upon the cam surfaces 15 or 16 of the member 12 to separate the pins 23 and 24 and thus disengage them from the fastener elements.

If the pull tab 27 is moved to the right as viewed in Fig. 3, the cam block 25 will engage the cam surfaces 16 (Fig. 5) of the member 12 and separate the free ends of the arms. This motion is limited by the rivets 19 and 20, but is sufficient to permit the locking pins 23 and 24 to be disengaged from the fastener elements 3 and thus permit the slider to move to the right. Upon release of the pull tab, the free ends of the spring locking member 12 will tend to move toward each other and in so doing will move the cam 25 back to its neutral or at rest position and at the same time permit one of the locking pins 23 and 24 to engage between a pair of fastener elements. In the operation of moving the slider to engage the fastener elements, the operation is substantially the same except that the block 25 cooperates with cam surfaces 15 to disengage the lock.

In the modification shown in Fig. 6, because of the staggered arrangement of the locking pins on the spring locking member 12', both pins can simultaneously engage between pairs of locking elements, as shown in this figure. With the modification illustrated in Figs. 1 to 5, probably only one locking pin would engage between a pair of fastening elements and the other one would engage the end of a fastening element, as illustrated in Fig. 2, but in either event the slider would be locked automatically to the fastener elements upon release of the pull tab 27.

While I have shown the invention as embodied in a specific form, it is to be understood that various changes in details may be made without departing from the scope of the invention as defined by the appended claims.

#### I claim:

1. In a lock for a separable fastener slider, means for locking said slider to the fastener elements, said means including a locking element carried by the slider and guided for movement only in a plane parallel to the plane of said slider and transversely toward and away from said fastener elements to selectively lock and unlock the slider on said fastener elements, a pull tab carried by the slider, means for guiding said tab, for movement only longitudinally in relation to said slider, and cooperating, inter-engaging cam surfaces on said locking element and pull tab, respectively, adapted to force said locking means transversely to release position merely by the longitudinal movement of said tab relative to said slider.

2. In a lock for a separable fastener slider, fastener engaging means carried by the slider and guided for movement only in the plane of

one wing of the slider in a path substantially at right angles to the line of movement of the slider as it separates and connects said fastener elements, said fastener engaging means including spring means normally urging the same into an engagement with the fastener elements and having a cam surface formed thereon, a pull tab carried by the slider, means connected to the pull tab and movable thereby having a cam surface position to engage the cam surface on the spring means for urging the fastener engaging means laterally to disengage the same from the fastener elements against the action of said spring means.

3. In a lock for a separable fastener slider, a pin carried on said slider and adapted to move laterally of said slider in the plane of one wing of said slider to engage or disengage the fastener elements to lock said slider to said elements, spring means for urging said pin into engagement with said fastener elements, a pull tab on said slider, cooperating cam surfaces, one of which is connected to said pull tab and the other to said pin and arranged to cause said pin to disengage from said fastener elements when said tab is pulled to move said slider.

4. In a lock for a separable fastener slider, a substantially V-shaped wire spring fastened at the apex thereof to said slider and with both ends free to move toward and away from each other laterally of the direction of movement of said slider and in the plane of one wing thereof, said spring being biased to urge the free ends thereof into engagement with the fastener elements, wedging means between the arms of said spring adapted to move longitudinally of said slider to move the arms of said spring apart and disengage the ends thereof from said fastener elements, and a pull tab operably connected to said wedging means.

5. In a lock for a separable fastener slider, a modified V-shaped wire spring secured on top of one wing of said slider with its free ends disposed near the edges of said slider and adapted to engage the fastener elements and thus lock said slider and fastener elements together, a double cam surface formed on each arm of said V-shaped spring intermediate the ends thereof, a cam positioned between said arms and adapted to cooperate with said double cam surfaces so that upon movement thereof in either direction said arms will be forced apart to release said slider from engagement with said fastener elements, and a pull tab attached to said cam.

6. In a lock for a separable fastener slider, a pin carried on said slider and guided to move laterally of the slider in the plane of one wing of said slider to engage or disengage the fastener elements to lock said slider to said elements, spring means for normally urging said pin into engagement with said fastener elements, a pull tab connected to said slider and having an actuating element mounted for limited longitudinal movement relative to said slider and in a plane substantially parallel to said wing, cooperating cam surfaces on said spring means and said actuating element, respectively, and positioned to transmit force to said spring means upon movement of said actuating element to cause said pin to disengage from said fastener elements when said tab is pulled to move said slider.

7. In a separable fastener slider the improved locking structure which comprises a lock element carried by the slider and guided for move-

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ment laterally of the slider in the plane of one wing thereof to engage and disengage the fastener elements, resilient means normally urging the element in the fastener engaging direction and having a cam surface associated therewith, 5 and a pull tab including an actuating element mounted on the slider for limited movement longitudinally thereof in a plane parallel to said wing and having means engaging said cam surface to cause lateral movement of said locking 10 elements upon a said longitudinal movement of said actuating element.

8. In a separable fastener slider the improved locking structure which comprises a lock element carried by the slider and guided for movement laterally of the slider in the plane of one wing thereof to engage and disengage the fastener elements, a spring biased arm connected with said element, said arm being mounted on the slider substantially parallel to said wing and extending in a direction angularly disposed in 15 relation to the longitudinal axis of said slider, and a pull tab connected to the slider and including an actuating element mounted for limited 20

movement longitudinally thereof in a plane parallel to said wing and having means engaging said angularly disposed arm to cause lateral movement thereof and of said locking element upon longitudinal movement of said actuating element under the influence of said pull tab.

9. In a separable fastener slider the improved locking structure which comprises a lock element carried by the slider and guided for movement laterally of the slider in the plane of one wing thereof to engage and disengage the fastener elements, resilient means normally urging said lock element into engagement with said fastener elements, said resilient means having a cam surface thereon, and pull tab means mounted on the slider for limited longitudinal movement with respect thereto in a plane parallel to said wing and including a part movable into engagement with said cam surface and adapted simultaneously to release said lock element from engagement with said fastener elements and move the slider along said elements.

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