

May 9, 1933.

J. B. FREYSINGER

1,907,778

SEPARABLE FASTENER

Filed Jan. 22, 1932

Fig. 1

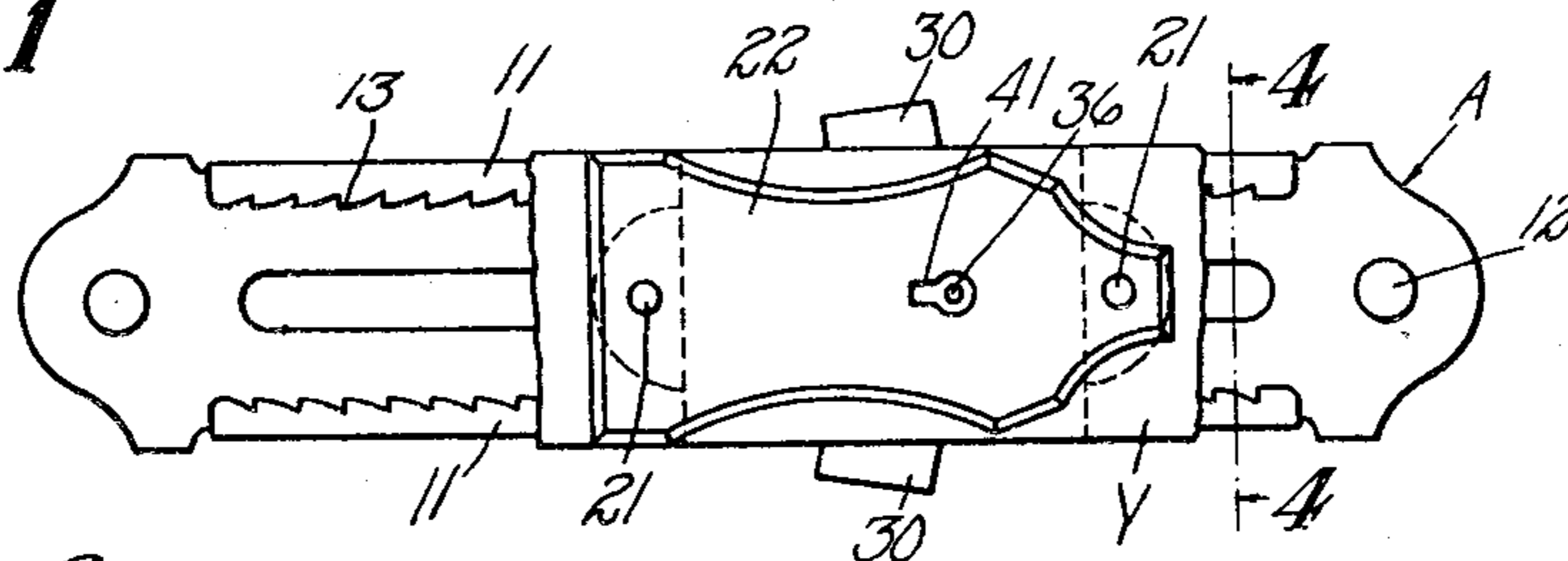


Fig. 2

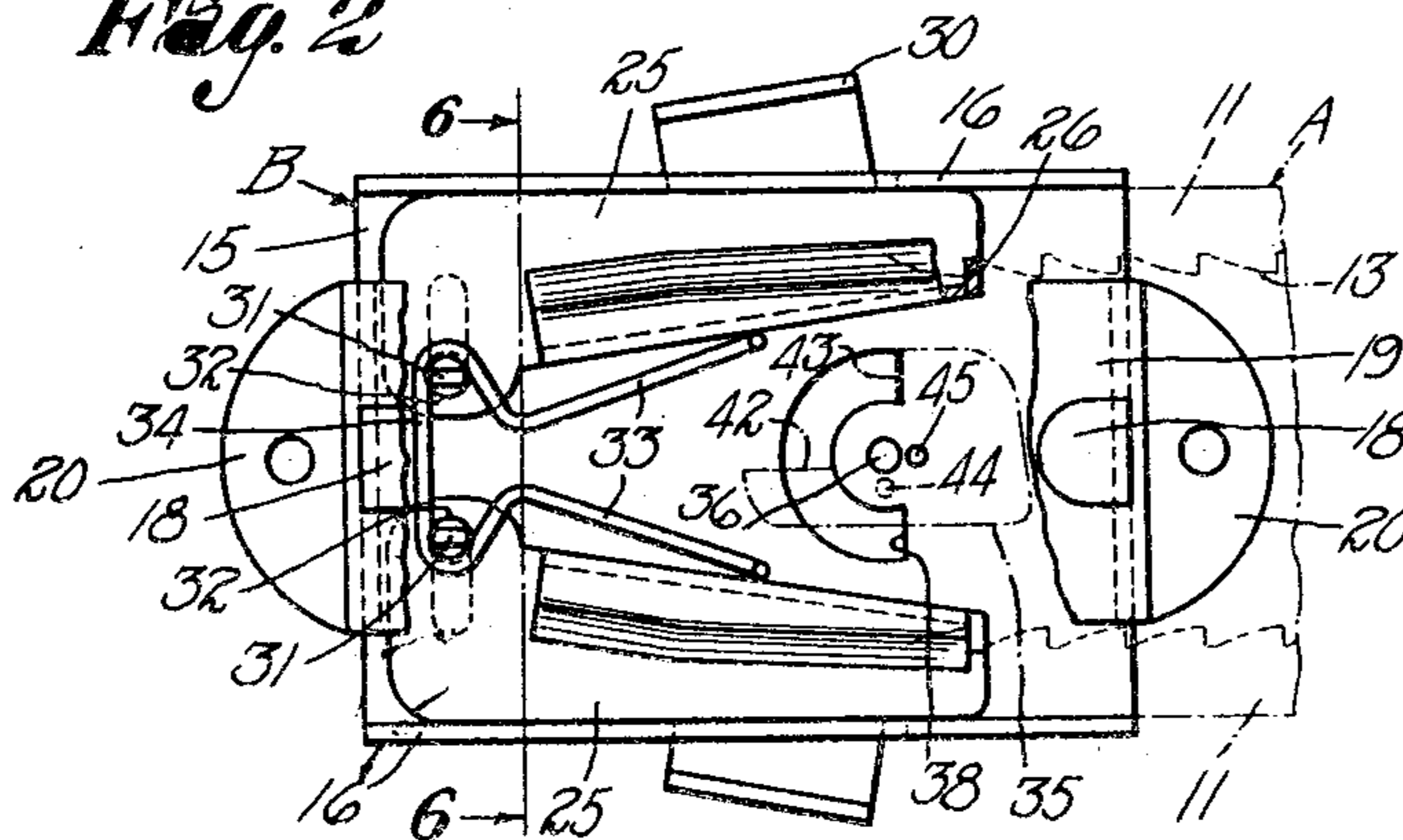


Fig. 3

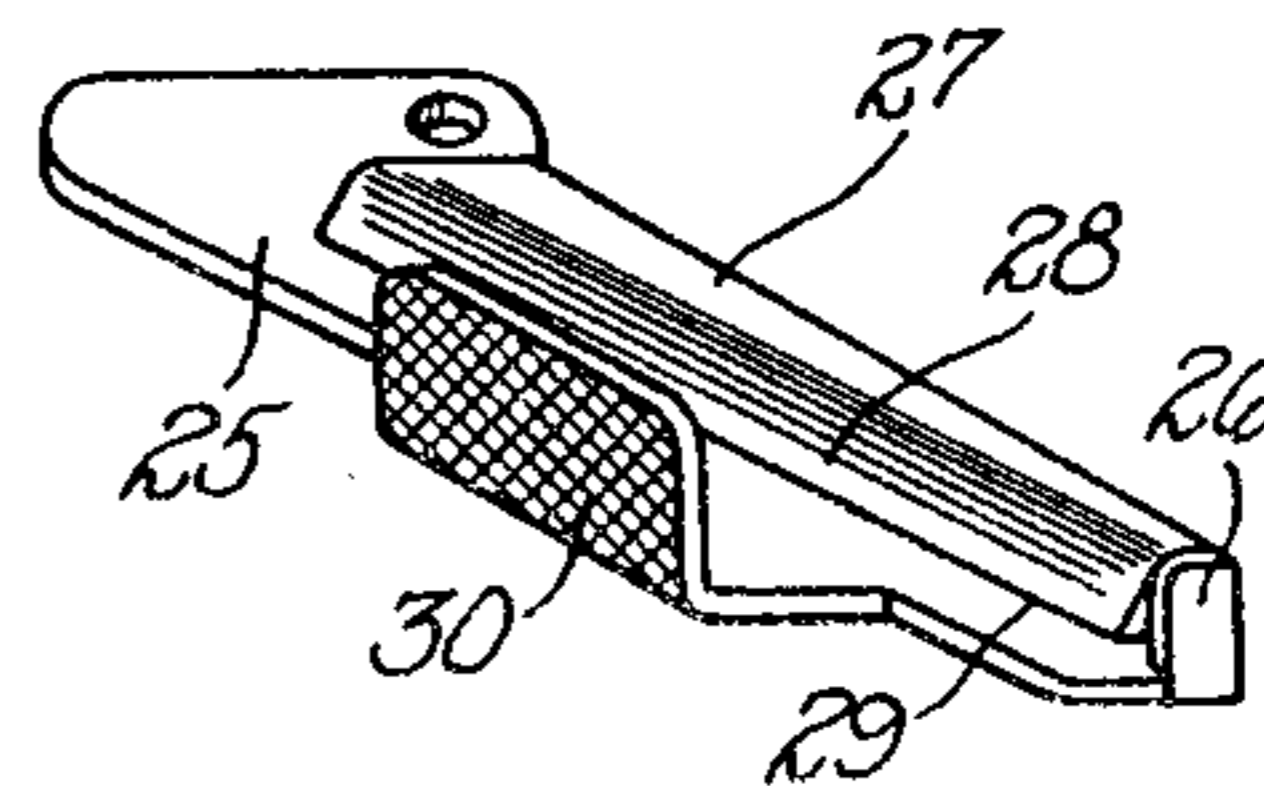


Fig. 4

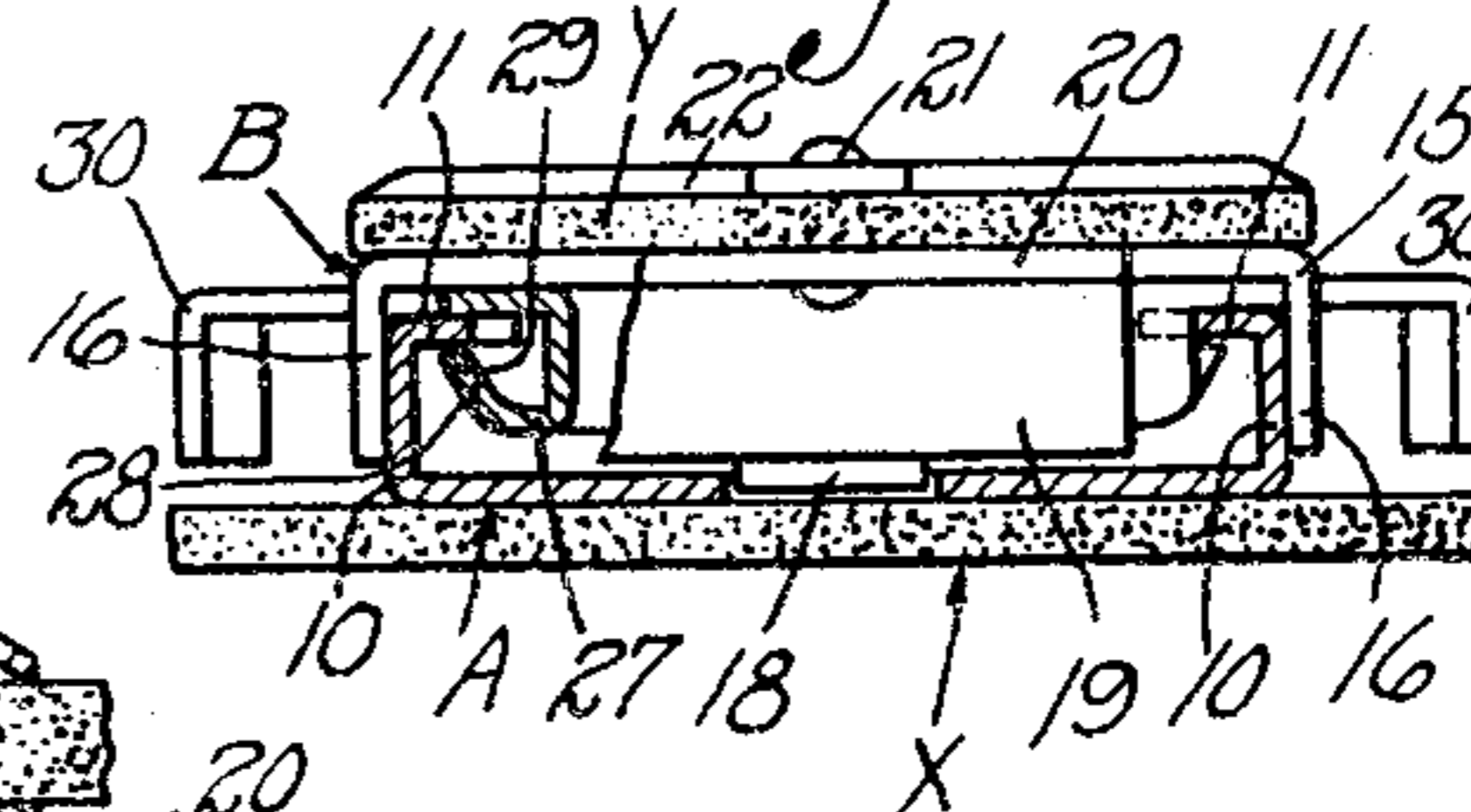


Fig. 5

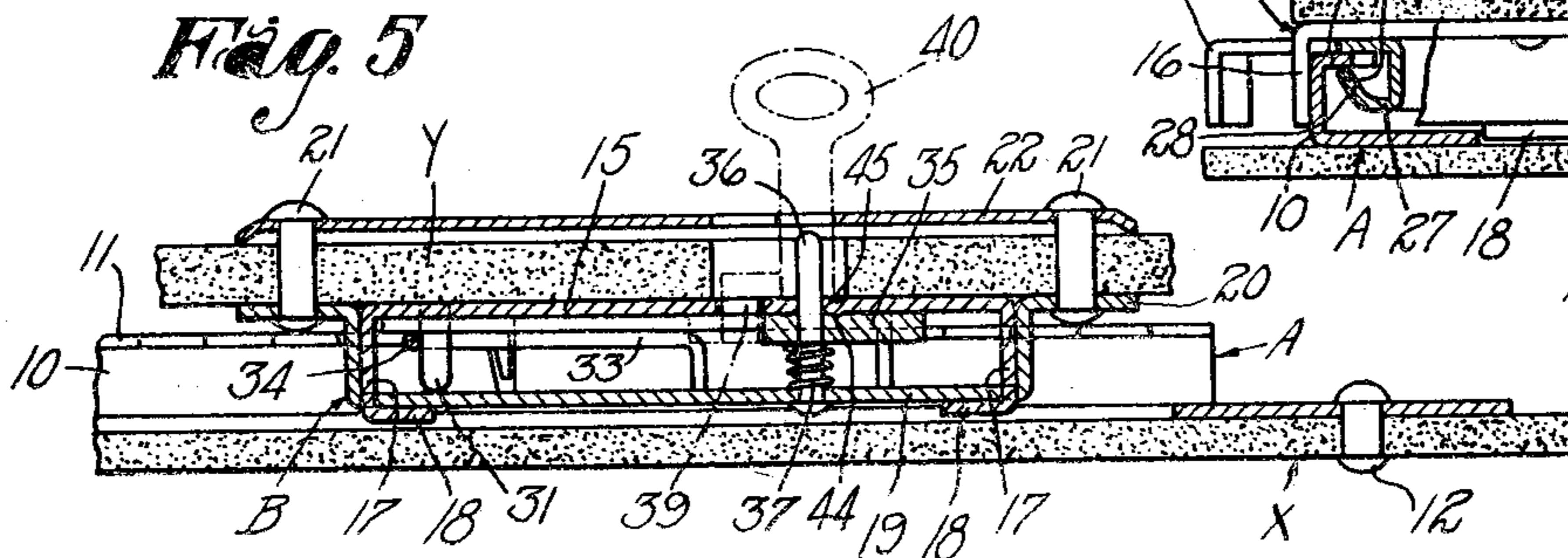
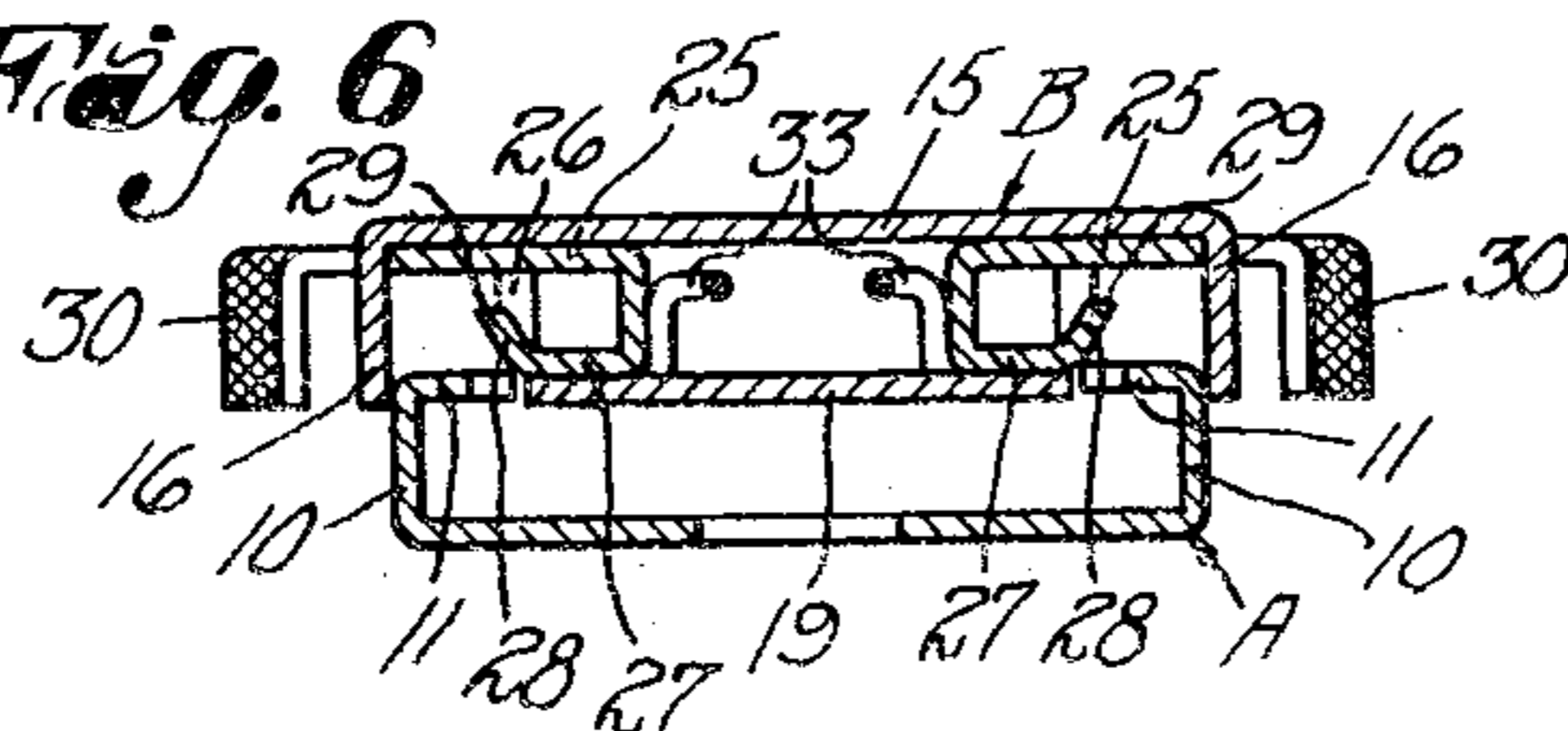


Fig. 6



Inventor
John B. Freysinger

By *H. Clay Lindsey*

Attorney

UNITED STATES PATENT OFFICE

JOHN B. FREYSINGER, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO NORTH & JUDD MANUFACTURING COMPANY, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT

SEPARABLE FASTENER

Application filed January 22, 1932. Serial No. 588,153.

This invention relates to fastening devices of the type having two general parts, one slidable relative to the other. As instances of uses to which fastening devices of the present invention may be applied, reference may be had to belts, wearing apparel, baggage, such as brief bags, et cetera.

An aim of the invention is to provide a very simple and effective fastening device, the two parts of which may be very conveniently and readily assembled at any point within the range of adjustment and then relatively adjusted after they have been assembled. The parts may also be very quickly and readily separated or dis-assembled at any point within the range of adjustment by merely disengaging suitable catches and lifting the slide member from the track member.

A further aim of the invention is to provide a compact, strong and durable structure which may be manufactured at a relatively low cost, which has a neat and pleasing appearance, and which is practical and satisfactory in operation.

A still further object of the invention is to provide a fastening device of this sort which may be locked so that it cannot be surreptitiously opened by unauthorized persons.

Other objects will be in part obvious, and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawing wherein is shown, for illustrative purposes, one embodiment which the present invention may take,

Fig. 1 is a front view of my improved fastening device;

Fig. 2 is a view looking towards the rear of the slide part, a portion of the attaching bracket or bridge being broken away;

Fig. 3 is a perspective view of one of the catches;

Fig. 4 is a transverse sectional view, the

same being taken substantially on line 4—4 of Fig. 1;

Fig. 5 is a longitudinal sectional view taken centrally through the assembly shown in Fig. 1; and

Fig. 6 is a sectional view taken on line 6—6 of Fig. 2 and showing the manner in which the catches are cammed inwardly when the slide part is pushed laterally onto the track part.

Referring to the drawing in detail, A denotes generally the track or guide member which may be in the form of an elongated plate of sheet metal, the same having its side edges bent forwardly and then inwardly towards each other so as to provide side cheeks 10 and inturned flanges 11, the latter being spaced above and substantially parallel to the base or body portion of the track. The track may be secured to an end X of a strap, for example. In the present instance, the track is shown as connected to the strap end by rivets 12. Obviously, the track may be longitudinally curved, if desired. The opposed edges of the flanges 11 (or, at least, one of them) are provided with opposed series of teeth 13 each having a squared end or abutment and an inclined side edge.

The slide part of the fastener is designated generally by the letter B. It has a slide member 15 comprising a generally square or rectangular sheet metal plate provided with parallel side flanges 16 which are spaced apart so as to receive between them the track member; that is to say, the flanges 16 slidably engage the outside surfaces of the respective cheeks 10, as shown most clearly in Fig. 4. Thus, excessive lateral play or side movement between the slide part and the track part is prevented. At the opposite ends of the slide member are backwardly turned webs 17 which terminate in ears 18 projected through openings in the attaching strip or bridge 19. The ears are turned over so as to clamp this strip to the slide member 15. The attaching strip has terminal tongues 20 lying in the plane of the body portion of the slide member 15 and adapted to be connected to the other element Y, as by means of rivets 21. The elements X and Y may be the op-

posite ends of a belt or strap; the tabs on a garment or the like; or they may be respectively the body portion of a brief bag and the strap on the flap of the brief bag; et cetera. On the outside of the element Y and secured in place by the rivets 21 is a face plate 22 which is preferably given a pleasing design.

Within the casing formed by the slidemember 15 and the strip 19 are two catches normally spring pressed apart and adapted to cooperate with the respective opposed series of teeth 13. These catches are of similar construction and one of them is most clearly shown in Fig. 3. Each catch is formed preferably from sheet metal by stamping out a blank of the desired configuration and then bending the blank to the form illustrated. As here shown, each catch has a flat body portion 25 adapted to lie flatwise against the rear face of the slide member 15. Each catch has at its free end a forwardly extending lug or tooth 26 adapted to engage the square ends of the teeth. Each catch also has a keeper portion 27 adapted to engage behind a respective flange 11. The keeper portion is in the form of a rolled or U-shaped tongue integral with the inner edge of the body portion and having a lip 28 inclined outwardly and forwardly. The edge 29 of the lip is spaced from the body portion 25 so as to permit the lip to take under or behind the flange 11, as shown most clearly in Fig. 4. Extending from the outer edges of the body portions 25 are finger pieces 30 which are accommodated by suitable slots in the side flanges 16.

The catches may be pivoted in any suitable manner but, to effect simplicity in construction and economy in manufacture, the arrangement shown in the drawing is adopted. Struck from the slide member is a pair of symmetrically positioned ears or lugs 31, and the catches have openings 32 which receive these lugs. The lugs thus act as pivots for the catches. The catches are urged apart by a suitable spring, which is here shown as being formed from a single piece of spring wire bent back generally upon itself so as to provide a pair of divergent arms 33 respectively engaging the catches. If desired, the spring may be held in place against lateral movement by providing it with a loop 34 at its closed end and positioning this loop over the pivot lugs 31. The attaching strip 19 prevents the spring from becoming displaced from the lugs.

If desired, the device may have suitable locking means for preventing any unauthorized person from surreptitiously or otherwise disengaging the two parts of the separable fastener. In the present instance, I have shown this locking means as comprising a latch 35 rotatably mounted on a pin or rivet 36 carried by the attaching strip 19.

This pin extends forwardly through the body portion of the slide 15. The latch is held against the inner face of the slide by a spring 37. The slide has a semi-circular slot 38 struck about the center of the pin 36 and adapted to accommodate the lug 39 of a key 40. The face plate 22 has a key slot 41 for accommodating the key. The latch has two angularly spaced abutments 42 and 43 against which the lug 39 of the key is adapted to engage. In order to hold the latch in locking position, the latch may have a slight depression 44 which is adapted to receive a struck-in boss 45 on the slide member.

The operation of my improved fastener will be readily understood from the foregoing description taken in connection with the accompanying drawing. It will be understood that when it is desired to connect the two parts of the fastener together, the slide part is brought into the position shown in Fig. 6 and then pushed rearwardly towards the guide or track member. When this is done, the catches, due to the engagement of the inclined lips 28 against the opposed edges of the toothed flanges 11, are cammed inwardly until the lips are behind the flanges and then the spring automatically urges the catches apart into the position shown in Fig. 4. In this latter position, the lips are behind the flanges so that accidental separation of the slide part from the track part is prevented. The tooth or lug 26 of each catch is engaged with a tooth 13 of a respective series. Therefore, the parts are held against sliding movement relative to one another in one direction when the catches are in operative position. The slide member, however, may be slid along the track member in the opposite direction, due to the fact that the tongues or teeth 26 will ratchet over the teeth of the track member. Thus the strap ends are normally held against being drawn apart but they may be readily adjusted in overlapping relation by merely gripping the slide part and moving it longitudinally in the proper direction relative to the track member. It is apparent, of course, that the slide part may be adjusted in either direction longitudinally of the track and without removing or lifting the slide part from the track by pushing in the finger pieces far enough to disengage the lugs or teeth 26 from the teeth 13 and then slide the slide part in the desired direction. In this operation, it is not necessary to push the teeth all the way in but, on the other hand, engagement of the lips 28 behind the flanges may be maintained. When it is desired to remove the slide part from the track, the catches are pushed all the way in so that the lips will clear the flanges 11 and then the slide part may be lifted off. If it is desired to lock the parts together, it is merely necessary to insert the key 40 and turn it in a direction to engage its lug against

the face or abutment 42 thereby bringing the latch 35 to a position at right angles to that shown in Fig. 2. To unlock the latch, the key is turned in the opposite direction, thereby bringing its lug 39 into engagement with the abutment 43 and moving the latch to the position shown in Fig. 2.

It is important to note that my improved latch may be assembled on the track at any point along the length of the latter by merely pushing the slide part at an angle onto the track, as previously described. Then the slide may be ratcheted along the track in order to tighten up the belt, strap, or other elements which carry the two parts of the fastener. The slide may also, as previously described, be adjusted in either direction along the track after it has been placed thereon. The slide part may be readily separated from the track by merely pushing the finger pieces towards each other to the necessary extent and then lifting the slide member away from the track member.

It will further be observed that my improved construction is a very simple one in that it comprises a relatively few number of parts each of which may be economically made, and these parts may be readily assembled. It has been found that the fastener is very serviceable and practical in operation.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

1. In a separable fastener, a guide part having a pair of trackways each having a flange, one at least of said trackways being provided with a series of abutments, a slide part having a slide member adapted to slide longitudinally on the guide part, and spring pressed catches on the slide part and having portions formed and positioned to engage behind said flanges to hold the parts together, one of said catches at least having a tooth cooperating with said abutments which are so formed and positioned as to prevent sliding movement of the slide part in one direction but permitting of sliding movement in the opposite direction, said guide part and catches having cooperating retracting means so formed and positioned as to cause the catches to move from operative position to

clear the flanges when the slide part is mounted on the track part at any point in the length of the latter by pushing the slide part laterally towards and onto the guide part.

2. In a separable fastener, a guide part having a pair of trackways each having a flange, one at least of said trackways being provided with a series of abutments, a slide part having a slide member adapted to slide longitudinally on the guide part, spring pressed catches on the slide part and having portions formed and positioned to engage behind said flanges, one of said catches at least having a tooth adapted to cooperate with said abutments which are so formed and positioned as to prevent sliding movement of the slide part in one direction but permitting of sliding movement in the opposite direction, said guide part and catches having cooperating retracting means adapted to move the catches to inoperative position when the slide part is pushed laterally towards and onto the guide part whereby said slide part may be mounted on said track part at any point in the length of the latter, and finger pieces on said catches, said catches being movable by said finger pieces to a partially open position where the tooth of said catch is disengaged from said abutments but portions of said catch still engage behind said flanges, said catches being movable to full open position when it is desired to lift the slide part from the track part.

3. In a separable fastener, a guide part having a pair of flanges one at least of which is provided with teeth, a slide part having a slide member adapted to slide longitudinally on the guide part, and spring pressed catches on the slide part and formed and positioned to engage behind the flanges, one of said catches at least having a portion formed and positioned to cooperate with the teeth on said flanges, said flanges and said catches having cooperating camming means so formed and positioned that, when the slide part is positioned on the guide part by pushing the slide part laterally towards and onto the guide part, the catches are moved to inoperative position whereby the slide part may be mounted on the guide part at any point in the length of the latter.

4. In a separable fastener, a guide part having a pair of flanges one at least of which is provided with teeth, a slide part having a slide member adapted to slide longitudinally on the guide part, and spring pressed catches on the slide part and formed and positioned to engage behind the flanges, one of said catches at least having a portion formed and positioned to cooperate with the teeth on said flange, said flanges and catches having cooperating retracting means adapted to move the catches to inoperative position when the slide part is pushed laterally towards and onto the guide part whereby said

slide part may be mounted on said guide part at any point in the length of the latter, said means being adapted to permit the slide part to be separated from the guide part at any point in the length of the latter when the catches are moved against the spring pressure and the slide part then lifted.

5. In a separable fastener, a guide part having two series of complementary ratchet teeth provided with squared ends and a slide part having spring pressed catches adapted to respectively cooperate with said series of teeth, said catches having portions formed and positioned to engage the squared ends of the teeth and also portions formed and positioned to engage behind the teeth, said catches also having cam portions positioned to contact with the teeth when the slide part is pushed laterally towards and onto the guide part, whereby the catches are cammed to a position in which they may engage the teeth.

6. In a separable fastener, a guide part having a pair of trackways one at least of which is provided with a series of teeth or abutments, and a slide part having a pair of catches formed and positioned to respectively cooperate with said trackways, one of said catches having a tooth adapted to engage said abutments which are so formed and positioned as to hold the slide part against sliding movement relative to the guide part in one direction, the cooperating teeth of said guide part and catch being so formed and positioned as to permit the teeth to ratchet on one another when the slide part is moved in the other direction, each catch also having a portion formed and positioned to engage behind a respective trackway, said catches having cam surfaces positioned to respectively engage said trackways when the slide part is pushed laterally towards and onto the guide part whereby said catches are cammed to a position where the last mentioned portions of the catches may engage behind the trackways.

7. In a separable fastener, a guide part having a pair of flanges provided with ratchet teeth having squared ends, and a slide part having a pair of catches adapted to respectively cooperate with said flanges, each catch having a portion formed and positioned to engage the squared ends of the teeth which are so formed and positioned as to hold the slide part against movement relative to the guide part in one direction, each catch also having a portion formed and positioned to engage behind a respective flange, said catches having cam surfaces adapted to respectively engage said flanges when the guide part is pushed onto the slide part whereby said catches are cammed to a position where the last mentioned portions of the catches may engage behind the flanges.

8. In a separable fastener, a guide part having a pair of flanges one of which has a

series of ratchet teeth having squared ends, a slide part having spring pressed catches adapted to respectively cooperate with said flanges, one of said catches having a tooth adapted to engage the squared ends of said teeth, each of said catches also having keeper portions formed and positioned to engage behind the respective flanges, cam portions on said catches and adapted to engage the edges of the flanges when the slide part is pushed laterally towards and onto the guide part whereby the catches are cammed to a position where the keeper portions may engage behind said flanges, and finger pieces on the catches.

9. In a separable fastener, a guide part having a pair of flanges provided on their edges with ratchet teeth having squared ends, a slide part adapted to slide on said guide part and having a slide member, a pair of catches pivoted thereto and adapted to respectively cooperate with the ratchet teeth on the flanges, a spring on said slide part urging said catches in opposite directions and towards the toothed edges of the flanges, each of said catches having an abutment formed and positioned to engage the squared ends of the teeth and each catch having a keeper portion formed and positioned to engage behind the flanges, and finger pieces carried by the catches and extending beyond the slide member for moving the catches against the pressure of the spring.

10. In a separable fastener, a guide part having a pair of flanges provided on their opposed edges with ratchet teeth having squared ends, a slide part having a slide member adapted to slide on said guide part, a pair of catches pivoted to said slide member, and a spring on said slide part for normally urging said catches apart, said catches having portions formed and positioned to engage the squared ends of the teeth, said squared ends of the teeth being so formed and positioned as to hold the slide part against sliding movement on the guide part in one direction, and said catches also having keeper portions formed and positioned to engage behind said flanges.

11. In a separable fastener, a guide part having a pair of flanges one at least of which is provided with a series of abutments, a slide member straddling said guide part, a pair of catches on said slide member and adapted to be inserted between said flanges, one of said catches having a tooth adapted to engage said abutments, each of said catches having portions formed and positioned to engage behind said flanges, a spring on said slide member for urging the catches apart, and finger pieces on the catches.

12. In a separable fastener, a guide part having a pair of opposed flanges provided on their opposed edges with ratchet teeth having squared ends, a slide member straddling said guide part, a pair of catches pivoted to

said slide member for swinging movement in a plane parallel to said flanges, said catches having portions formed and positioned to engage the squared ends of the teeth and
 5 other portions formed and positioned to engage behind said flanges, a spring on said slide member for urging the catches apart, and finger pieces on the catches.

13. In a separable fastener, a guide part
 10 having a pair of opposed flanges one at least of which is provided with ratchet teeth on its edge, a slide part having a slide member adapted to slide on said guide part and a pair of sheet metal catches pivoted to said slide
 15 member; each of said catches having a body portion formed and positioned to overlie said flanges, and a rolled keeper portion with a space between the edge thereof and said body portion for accommodating said flanges; one
 20 of said catches having a lug for engaging said teeth, and finger pieces on said catches.

14. In a separable fastener, a guide part having a pair of opposed flanges provided on their opposed edges with ratchet teeth hav-
 25 ing squared ends, a slide part having a slide member adapted to slide on said guide part and a pair of sheet metal catches pivoted to said slide member; each of said catches hav-
 30 ing a body portion formed and positioned to overlie said flanges, a lug portion formed and positioned to engage the squared ends of the teeth, a rolled keeper portion with a space be-
 35 tween the edge thereof and said body portion for accommodating said flanges, and finger pieces on said catches.

15. In a separable fastener, a guide part having a pair of opposed flanges provided on their opposed edges with ratchet teeth hav-
 40 ing squared ends, a slide plate having a pair of side flanges straddling said guide part, a pair of catches pivoted to said slide plate and having abutments adapted to engage the squared ends of the teeth, said catches hav-
 45 ing keeper portions formed and positioned to engage behind the flanges, said keeper portions having inclined cam surfaces extending forwardly and outwardly and positioned to engage the opposed edges of the flanges
 50 when the slide part is pushed laterally towards and onto the guide part, and a spring on said slide plate for urging said catches apart.

16. In a separable fastener, a guide part having a pair of opposed flanges provided
 55 on their opposed edges with ratchet teeth having squared ends, a slide plate having side flanges straddling said guide part, an attaching strip secured to and extending longitudi-
 60 nally of said slide plates, and a pair of catches pivoted between the slide plate and said attaching strip and adapted to respectively cooperate with said flanges, said catches hav-
 65 ing portions formed and positioned to engage the squared ends of the teeth, and keeper portions formed and positioned to engage be-

hind the teeth, said keeper portions having cam surfaces on opposite sides of said attach-
 ing strip and positioned to engage the op-
 posed edges of the flanges when the slide
 70 part is pushed laterally towards and onto the guide part.

17. In a separable fastener, a guide part comprising a strip of metal having up-turned side webs and inwardly turned flanges, the
 75 opposed edges of said flanges having complementary series of ratchet teeth with squared ends, a slide plate having side flanges formed and position to straddle said webs, an at-
 80 taching strip extending longitudinally of and secured to the rear side of said plate; a pair of catches each having a body portion, a lug at one end of the body portion formed and positioned to engage the squared ends
 85 of the teeth, and a rolled over keeper portion the edge of which is spaced from the body portion; rearwardly extending lugs on the plate portion, said body portions of the catches having openings receiving said lugs,
 90 a spring between said catches and held in place by said attaching strip, and finger pieces on said catches and located externally of said webs.

18. In a separable fastener, a guide part having a pair of flanges one at least of which
 95 is provided with a series of teeth, a slide part having a slide member adapted to slide lon-
 100 gitudinally on the guide part, spring pressed catches on the slide part and formed and positioned to embrace the flanges, one of said catches having a tooth cooperating with said
 105 teeth, said catches being so formed and positioned that said slide part may be mounted on the guide part at any point in the length of the latter by merely pushing the slide part
 laterally towards and onto the guide part, and means for locking said catches against
 disengagement from said flanges.

19. In a separable fastener, a guide part having a pair of flanges provided on their
 110 edges with ratchet teeth having squared ends, a slide part adapted to slide on said guide part and having a slide member, a pair of catches pivoted thereto and adapted to re-
 115 spectively cooperate with the ratchet teeth on the flanges, a spring on said slide plate urging said catches in opposite directions and towards the toothed edges of the flanges, each
 120 of said catches having an abutment adapted to engage the squared ends of the teeth and each catch having a keeper portion formed and positioned to engage behind the flanges,
 125 finger pieces carried by the catches and extending beyond the slide member for moving the catches against the pressure of the spring, and a key actuated latch between said catches
 for locking the same against actuation.

JOHN B. FREYSINGER.