May 6, 1958 H. S. NONAKA 2,833,013

SAFETY PIN

Filed July 1, 1957

Fig. 1

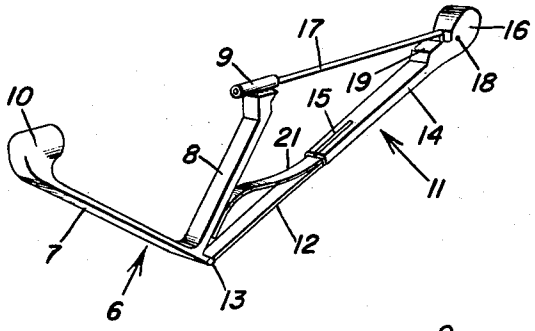


Fig. 4

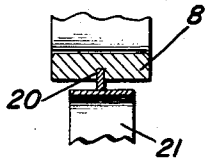


Fig. 2

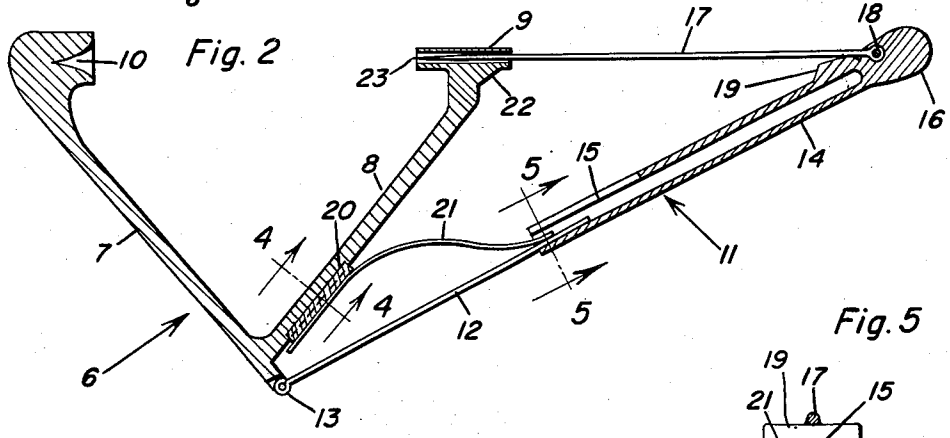


Fig. 5

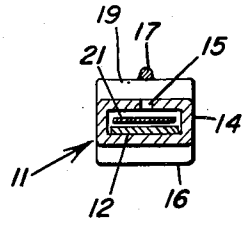
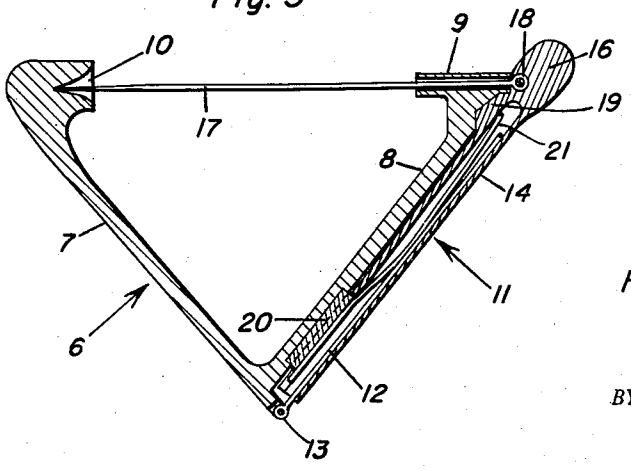


Fig. 3



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SAFETY PIN

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Application July 1, 1957, Serial No. 669,071

4 Claims. (Cl. 24—156)

The present invention relates to new and useful improvements in safety pins and has for one of its important objects to provide, in a manner as hereinafter set forth, an article of this character which may be expeditiously inserted with one hand with a minimum of effort.

Another very important object of the invention is to provide an improved fastener of the aforementioned character comprising novel means for frictionally securing the pin in either closed or open position.

Other objects of the invention are to provide an improved safety pin of the character described which will be comparatively simple in construction, strong, durable, compact, of light weight, attractive in appearance and which may be manufactured at low cost.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of an improved safety pin constructed in accordance with the present invention;

Figure 2 is an enlarged view in vertical longitudinal section through the article;

Figure 3 is a vertical longitudinal sectional view, showing the pin closed;

Figure 4 is a detail view in transverse section, taken substantially on the line 4—4 of Figure 2; and

Figure 5 is a view in transverse section, taken substantially on the line 5—5 of Figure 2.

Referring now to the drawing in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a substantially V-shaped bar of suitable material, preferably plastic, which is designated generally by reference character 6. The bar 6, which may also be of any desired dimensions, comprises a pair of integral divergent arms 7 and 8. Formed integrally with the outer or free end of the arm 8 is a horizontal tubular guide 9. Formed integrally with the outer or free end of the arm 7 is a substantially conical socket or keeper 10 which is aligned with the guide 9.

Mounted for swinging movement on the angle or bight portion of the bar 6 is a telescopic bar 11. The bar 11 comprises a metallic strip or strap 12 having one end pivotally secured, as at 13, to the angle or bight portion of the substantially V-shaped bar 6. The bar 11 further includes a metallic female member 14 in the form of a tube of rectangular cross-section which is slidable on the male member 12. The inner end portion of the female member 14 has formed longitudinally therein a slot 15 the purpose of which will be presently set forth.

The tubular female member 14 of the telescopic bar 11 is closed at its outer end and terminates in a head or the like 16 in which one end portion of a pin 17 is pivotally connected at 18 for swinging movement in a vertical plane. The pin 17 is slidable through the guide 9 for engagement in the socket 10 when said pin is in closed position. The head 16 is recessed to accommodate

the pivoted end of the pin 17. The head 16 is further provided with a raised shoulder portion 19 which is engageable beneath the pivoted end portion of the pin 17 to function as a stop for limiting the opening movement of said pin and preventing its withdrawal from the guide 9. This is shown to advantage in Figure 2 of the drawing.

Fixed longitudinally beneath the inner end portion of the arm 8 is a rib 20. One end portion of a bowed or humped flat spring 21 is fixed longitudinally on the rib 20. The free end portion of the spring 21 rests on the strap or male member 12 of the telescopic bar 11 and is frictionally engageable under tension in the tubular female member 14 when the safety pin is closed, at which time the slot 15 frictionally receives the rib 20.

It is thought that the operation of the device will be readily apparent from a consideration of the foregoing. Briefly, to close the fastener it is held in one hand with the thumb and index finger of that hand engaged, respectively, with the socket or keeper 10 and the head 16. The arm 11 is then forced inwardly for sliding the pin 17 through the guide 9 into the socket 10 to its closed position as seen in Figure 3 of the drawing. Of course, during this operation the bar 11 swings on its pivot 13 and contracts, the female member 14 telescoping on the male member 12. Thus, the pin 17 is permitted to travel in a true horizontal plane, said pin swinging relative to the arm 11 on the pivot 18. The outer end portion of the arm 8 is recessed, as at 22 to accommodate the stop shoulder 19. As the bar 11 telescopes and swings inwardly toward the arm 8 the bowed or humped spring 21 is forced to enter the tubular female member 14 and, being thus straightened out, is tensioned for frictionally securing the pin in closed position. This frictional retention is increased by the engagement of the rib 20 in the slot 15. Of course, to open the device the foregoing procedure is substantially reversed. The stop shoulder 19 engages and arrests the pin 17 when the point 23 thereof enters the tubular guide 9. The construction and arrangement of parts is such that the pin 19 is also retained in open position by friction.

Since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. An improved safety pin of the character described comprising: a substantially V-shaped bar, a tubular guide on one end of the bar, a socket on the other end of said bar aligned with said guide, a telescopic bar pivotally mounted on the V-shaped bar, a pin having one end pivotally secured to the free end portion of the telescopic bar, said pin being slidable in the guide and engageable in the socket when in closed position, and means for securing the pin in the socket.

2. An improved safety pin of the character described comprising: a substantially V-shaped bar, a tubular guide on one end of the bar, a socket on the other end of said bar aligned with said guide, a telescopic bar pivotally mounted on the V-shaped bar, a pin having one end pivotally secured to the free end portion of the telescopic bar, said pin being slidable in the guide and engageable in the socket when in closed position, and means for securing the pin in the socket, said telescopic bar including a tubular female member and a male member slidably engaged therein, said means comprising an arcuate spring fixed on the V-shaped bar and frictionally engageable in said female member.

3. An improved safety pin of the character described comprising: a substantially V-shaped bar, a tubular guide on one end of the bar, a socket on the other end of said

bar aligned with said guide, a telescopic bar pivotally mounted on the V-shaped bar, a pin having one end pivotally secured to the free end portion of the telescopic bar, said pin being slidable in the guide and engageable in the socket when in closed position, and means for securing the pin in the socket, said telescopic bar including a tubular female member and a male member slidably engaged therein, said means comprising an arcuate spring fixed on the V-shaped bar and frictionally engageable in said female member, said female member having a longitudinal slot therein, said means further including a longitudinal rib on the V-shaped bar frictionally engageable in the slot.

4. An improved safety pin of the character described comprising: a substantially V-shaped bar including a pair of integral, divergent arms, a tubular guide on the free end of one of the arms, a substantially conical socket on the free end of the other of said arms aligned with said guide, a longitudinal rib on the inner end portion

of said one arm, a telescopic bar including a male member having one end pivotally secured to the V-shaped bar at the juncture of the arms, said telescopic bar further including a tubular female member slidable on said male member, a pin slidable through the guide for engagement in the socket and having one end connected to the free end portion of the telescopic bar, said female member having a longitudinal slot in its inner end portion for frictionally receiving the rib when the pin is in closed position, an arcuate spring mounted longitudinally on the rib and engageable under tension with the male member in the female member for frictionally resisting sliding movement of the latter, and a stop shoulder on the free end portion of the telescopic arm engageable with the pin for positively limiting sliding movement thereof toward open position through the guide.

No references cited.