

Sept. 13, 1966

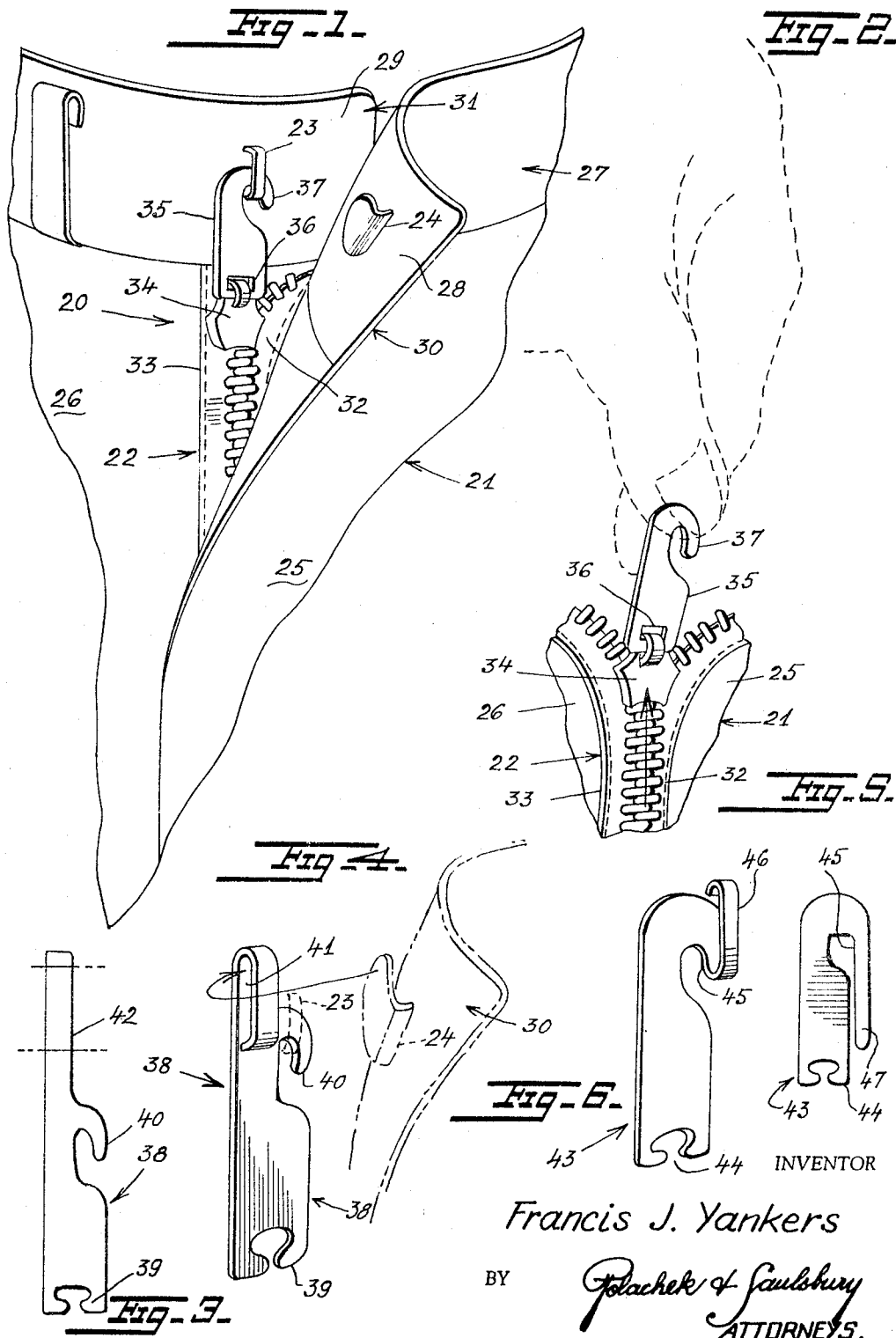
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3,271,832

LOCKING SLIDE FASTENER

Filed May 5, 1965

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Fig - 7 -

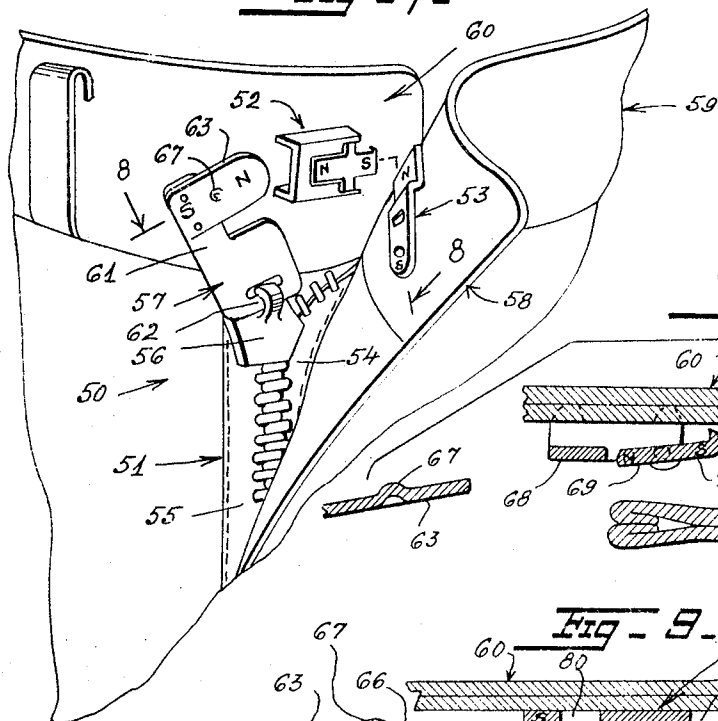


Fig - 8 -

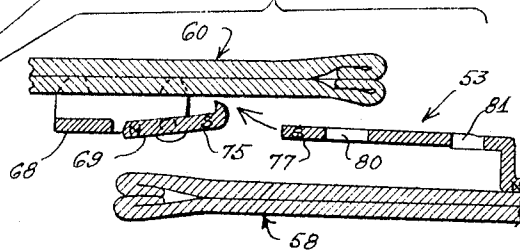


Fig - 9 -

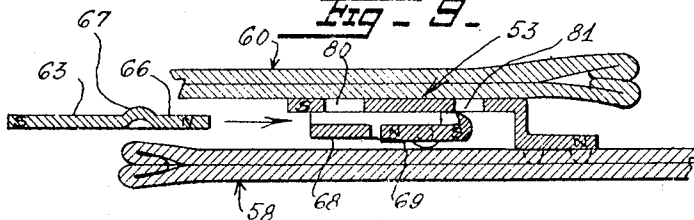


Fig - 10 -

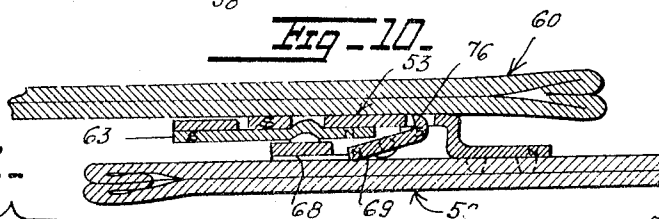
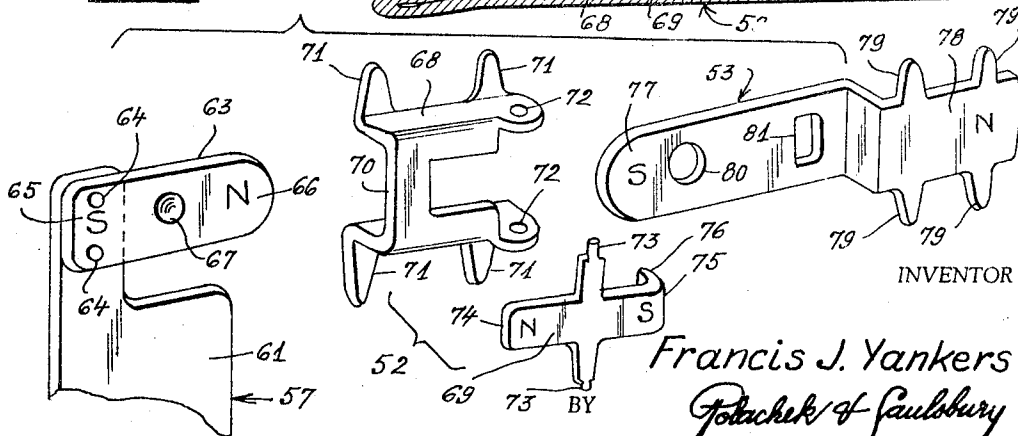


Fig - 11 -



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LOCKING SLIDE FASTENER

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10 Claims. (Cl. 24-205.11)

This invention relates generally to slide fasteners such as are employed in garments. More specifically it relates to slide fasteners incorporated in the fly of men's trousers.

It is generally well known that the slide fastener on the forepart of men's trousers sometimes gradually opens if improperly closed, or it may be inadvertently forgotten at times to be closed, thus resulting in an embarrassing situation. Accordingly there is need for a construction to prevent such possibilities.

It is a principal object of the present invention to provide a novel slide fastener assembly having self-contained means to prevent a person wearing their trousers unless the slide fastener is fully closed, thus preventing the possibility of forgetting to close the same, and wherein the slide fastener cannot be opened while being worn without placing the garment into a non-wearable condition.

It is another object of the present invention to provide a novel slide fastener assembly which incorporates additional holding elements for securing together the front flaps of the trousers, in addition to sealing the vertical opening therebetween.

It is another object to provide a novel slide fastener assembly for trousers wherein neither flaps may be secured alone without sealing the opening nor the opening may be sealed without securement of the flaps, thus providing a unitary lock incorporating all the elements to close.

It is still a further object of the invention to provide a slide fastener assembly having the above objects wherein securement is attained by magnetic means.

Other objects of the invention are to provide a slide fastener assembly that is simple in design, inexpensive to manufacture, rugged in construction, readily applicable to men's trousers, easy to use and efficient in operation.

These and other objects will be readily evident upon a study of the following specification and the accompanying drawing wherein:

FIGURE 1 is a fragmentary perspective view of the front of a gentleman's trousers shown incorporating one form of the present invention,

FIG. 2 is a fragmentary view of the slide fastener assembly shown in the act of being closed,

FIG. 3 is a view of a flat blank struck out from which the slide fastener pull tab is formed,

FIG. 4 is a perspective view of the finished pull tab formed from the blank illustrated in FIG. 3,

FIG. 5 is a view of a modified shape of flat blank from which the pull tab is formed,

FIG. 6 is a perspective view of the finished pull tab formed from the blank illustrated in FIG. 5,

FIG. 7 is a fragmentary perspective view similar to FIG. 1 showing a modified form of the present invention,

FIG. 8 is a cross sectional view taken on line 8-8 of FIG. 7 shown in open position,

FIG. 9 is a view similar to FIG. 8 showing a subsequence position of the elements during the closing process,

FIG. 10 is a view similar to FIG. 8 showing the elements thereof in fully closed and locked position, and

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FIG. 11 is a perspective exploded view of the elements used in the construction shown in FIG. 7 shown per se.

Referring now to the drawing in detail, the numeral 20 represents a novel slide fastener assembly according to the present invention which is incorporated into the forepart of a gentleman's trousers 21. The slide fastener assembly comprises a slide fastener unit 22, a loop 23 and a hook 24. The trousers include a front left panel 25 and a front right panel 26 bounded along their upper edges to a waist band 27 that encircles the upper periphery of the garment and has opposite ends 28 and 29. The corner of panel 25 adjacent waistband end 28 forms an overlap or flap 30 while the corner of panel 26 which is adjacent waistband end 29 forms an underlap or flap 31 (see FIGS. 1 and 2).

The slide fastener unit 22 is comprised of a left side element 32 secured to flap 30, a corresponding right side element 33 secured to flap 31, and a locking slide 34 having a pull tab 35. The pull tab is hingedly secured at one end in a conventional manner to the slide 34 as shown at 36. The pull tab is a flat member having a hook 37 formed therein at its free end.

The loop 23 made of rigid metal is secured to the end 29 of the waistband 27 while the hook 24 is secured to the end 28 thereof in a conventional manner whereby the hook 24 can be snapped into loop 23 when the garment is in closed position.

In operative use the hook 37 of the pull tab 35 is first attached to the loop 23 after which the hook 24 is likewise secured to the loop 23, thus securely locking the flaps together and sealing the vertical opening.

In FIGS. 3 and 4, a modified construction of the invention is shown wherein the slide pull tab 38 made of flat sheet metal has a hinge element 39 at one end and a hook 40 and loop 41 integrally formed at its opposite end, the loop being formed from a longitudinally extending tab 42 which is folded over.

In this form of the invention the hook 40 is engaged in closed position with loop 23 as above described, however the hook 24 on flap 30 is engaged into the loop 41. Thus a result is obtained wherein the slide fastener elements must be secured together before it is possible for securing flap 40, thereby providing an insurance against a partly closed garment.

In FIGS. 5 and 6, another modified construction is shown wherein the slide pull tab 43 made of flat sheet metal has a hinge element 44 at one end and a hook 45 and loop 46 at its opposite end, the loop being formed from an extension 47 on the end of the hook 45. In this form of the invention the hook 45 and loop 46 are used with loop 23 and hook 24 in similar manner as in the use of the structure shown in FIGS. 3 and 4, and having the same advantageous merit.

In FIGS. 7 through 11, another modified construction is shown wherein magnetism is incorporated to maintain all the elements in a singular locked unit. The slide fastener assembly 50 shown in FIG. 7 comprises a slide fastener unit 51, a loop 52 and hook 53. The slide fastener unit includes a left side element 54, a corresponding right side element 55, a locking slide 56 and pull tab 57. The element 54 and hook 53 are secured to a flap 58 of a pair of trousers 59, while the element 55 and loop 52 are secured to a flap 60 thereof.

The pull tab is a flat sheet metal or rigid plastic member 61 having means 62 at one end for being hingedly secured in conventional manner to the slide 56. At its

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opposite end a magnet 63 is secured by means of rivets 64 or by like means; securement being made through the south pole 65 thereof while the north pole 66 thereof extends tab-like therefrom. A rearward extending detent 67 is formed intermediate the south and north poles.

The loop 52 comprises a frame 68 made preferably from rigid plastic and a pivotable magnet 69. The frame incorporates a loop element 70 into which hook 53 and magnet 63 can be inserted, prongs 71 for securement of the loop 52 to the garment and openings 72 for receiving therein the stub pins 73 formed on magnet 69 and about which the magnet 69 is free to pivot. Magnet 69 has a north pole 74 and south pole 75 along an axis which is transverse to the axis about which the magnet may pivot. The south pole 75 has a rearwardly extending hook 76 along its edge.

The hook 53 comprises an offset shaped magnet having a south pole 77 and north pole 78. Prongs 79 at the north end provide means for securement of the magnet to flap 58 of the garment. A circular opening 80 and a rectangular opening 81 is formed intermediate the ends of the magnet 53 as shown in FIG. 11.

In operative use, to secure the trousers in closed position, the hook 53 is engaged with loop 52 by inserting the south end 77 between the magnet 69 and the garment fabric of flap 60. In doing so, the south pole 77 will repel the south pole 75 thus providing an access opening.

The slide 56 is then pulled up by the pull tab 57 to lock the elements 54 and 55. The north end 66 of magnet 63 is then inserted between the loop element 70 and the south pole 77 as shown in FIG. 9. When fully inserted, the detent 67 will lock by means of pressure within the opening 80 preventing accidental disengagement of the pull tab. In such position the north end 66 of magnet 63 will repel the north end 74 of magnet 69 causing the hook 76 on the south end 75 to engage into opening 81 intermediate the ends of magnet 53, preventing disengagement of the latter from the loop 52. Thus the parts are all securely held and no one member thereof can be parted therefrom without disengaging all the other members. Thus complete closure is assured to remain at all times. To open and unlock the device simply depress the forwardly pivoted north pole 74 of magnet 69 by bearing against the outer side of the flap 58 in the vicinity of pole 74. This unlocks hook 76 and all the parts can be pulled apart.

While the description has been confined to adaptation of the slide fastener assembly to a pair of trousers, it is understood that the same may be adapted for use on other types of garments as desired.

While various changes may be made in the detailed construction it is understood that such changes will be within the spirit and scope of the present invention as defined in the appended claims.

Having thus set forth my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a garment, the combination of a pair of flaps, an opening formed between said flaps, one of said flaps overlapping the other of said flaps to form an overlapping flap and an underlapping flap, and a slide fastener assembly secured to said flaps, said slide fastener assembly comprising a slide fastener unit, a loop and a hook, wherein said slide fastener unit comprises a pair of slide fastener elements, a locking slide for securing said slide fastener elements together, a pull tab hingedly secured at one end to said locking slide and hooking means carried by said pull tab for hooking to said loop, wherein one of said slide fastener elements and said loop are secured to the front side of said underlap and the other of said slide fastener elements and said hook are secured to the rear side of said overlap, the opening of said loop lying on an axis substantially perpendicular to the longitudinal axis of said slide fastener assembly, and said hooking means being so formed as to be moveable into said loop and engageable therein.

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2. In a garment, the combination as set forth in claim 1, wherein said hooking means on said pull tab comprises a pull tab hook.

3. In a garment, the combination as set forth in claim 1, wherein said pull tab further incorporates a loop member adjacent the pull tab hook, said loop member receiving said hook on said overlap.

4. In a garment, the combination of a pair of flaps, an opening formed between said flaps, one of said flaps overlapping the other of said flaps to form an overlapping flap and an underlapping flap, and a slide fastener assembly secured to said flaps, said slide fastener assembly comprising a slide fastener unit, a loop and a hook, wherein said slide fastener unit comprises a pair of slide fastener elements, a locking slide for securing said slide fastener elements together, a pull tab hingedly secured at one end to said locking slide and hooking means carried by said pull tab for hooking to said loop, wherein one of said slide fastener elements and said loop are secured to the front side of said underlap and the other of said slide fastener elements and said hook are secured to the rear side of said overlap, wherein said loop member is formed from a longitudinally extending tab adjacent said pull tab hook, said longitudinally extending tab extending in a direction opposite to said hingedly secured end of said pull tab, the opening of said loop lying on an axis substantially perpendicular to the longitudinal axis of said slide fastener assembly, and said hooking means being so formed as to be moveable into said loop and engageable therein.

5. In a garment, the combination of a pair of flaps, an opening formed between said flaps, one of said flaps overlapping the other of said flaps to form an overlapping flap and an underlapping flap, and a slide fastener assembly secured to said flaps, said slide fastener assembly comprising a slide fastener unit, a loop and a hook, wherein said slide fastener unit comprises a pair of slide fastener elements, a locking slide for securing said slide fastener elements together, a pull tab hingedly secured at one end to said locking slide and hooking means carried by said pull tab for hooking to said loop, wherein one of said slide fastener elements and said loop are secured to the front side of said underlap and the other of said slide fastener elements and said hook are secured to the rear side of said overlap, wherein said pull tab further incorporates a loop member adjacent the pull tab hook, said loop member receiving said hook on said overlap, wherein said loop member is formed from a longitudinally extending tab on the terminal end of said pull tab hook.

6. In a garment, the combination as set forth in claim 1, wherein said pull tab carries a magnet secured thereto at its south pole end, said pull tab magnet having a north pole end receivable with said loop on said underlap, said loop on said underlap comprising a plastic frame supporting a pivotable loop member magnet, said hook on said overlap comprising magnet secured at its north pole to said overlap and having a south pole receivable within said loop on said underlap.

7. In a garment, the combination as set forth in claim 6, wherein said loop member magnet on said underlap loop has magnetic poles on an axis which is perpendicular to an axis about which said loop member magnet freely pivots.

8. In a garment, the combination as set forth in claim 7, wherein said north pole of said hook on said overlap is receivable in a space between a rear side of said loop member magnet and the front side of said underlap and said pull tab magnet north pole is receivable between a rear side of said loop on said underlap and a front side of said south pole of said hook on said overlap.

9. In a garment, the combination as set forth in claim 8, wherein said pull tab magnet has a detent, and said overlap hook has an opening for frictionally securing

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said detent therein for securing said pull tab to said overflap hook.

10. In a garment, the combination as set forth in claim 9, wherein said loop magnet member has a rearwardly extending hook at its south end which is receivable within a second opening in said overflap hook when in a locked position, said loop member magnet having a north pole adjacent a north pole of said pull tab magnet when in fully engaged position to cause said loop member magnet to pivot and place said loop member magnet

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south pole hook into said second opening of said overflap hook.

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10 BERNARD A. GELAK, *Primary Examiner*.