Jan. 26, 1937. M. WINTERHALTER 2,068,939

SLIDE FASTENER

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Fig. 3.

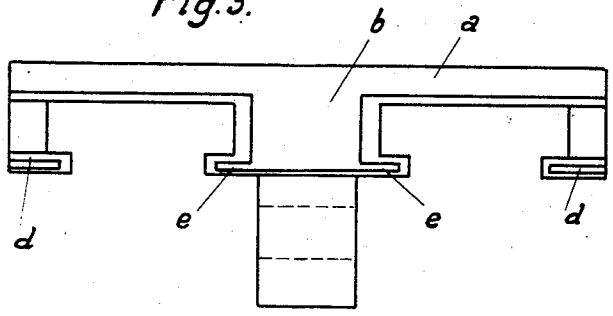


Fig. 1.

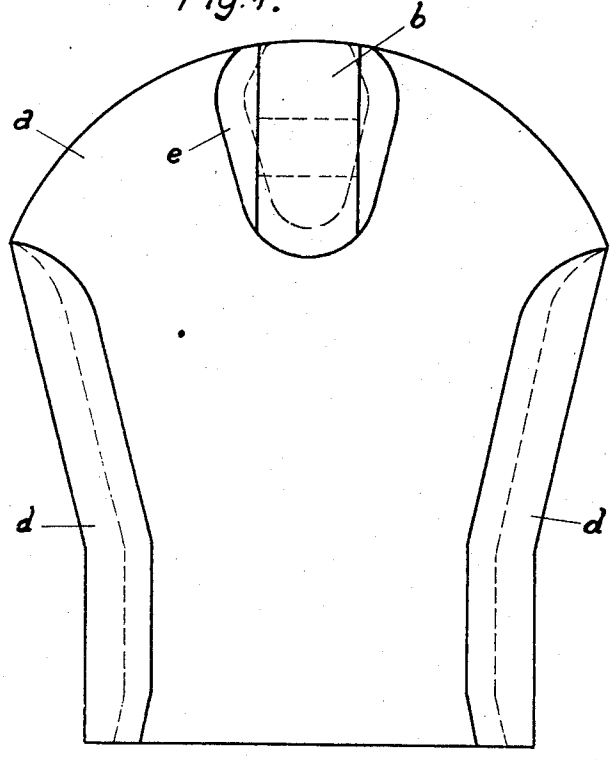
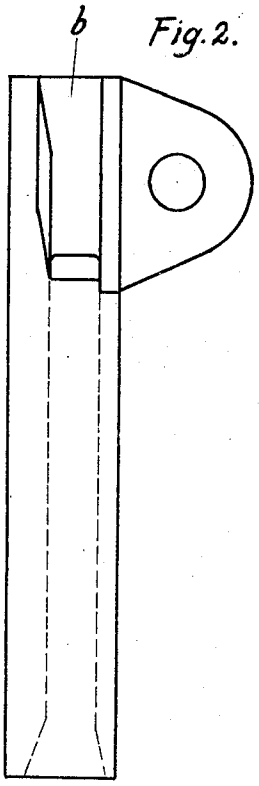


Fig. 2.



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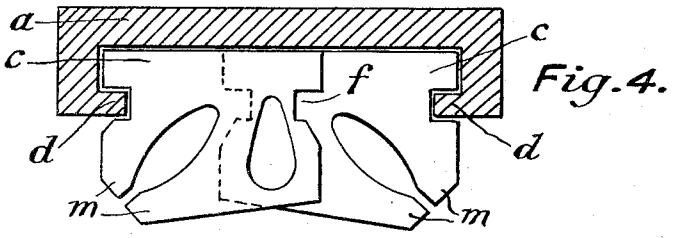


Fig. 4.

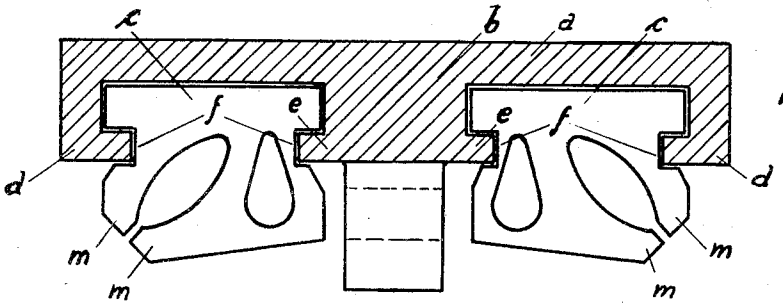


Fig. 5.

Fig. 6.

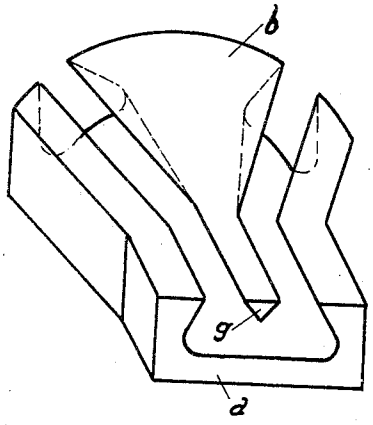


Fig. 7.

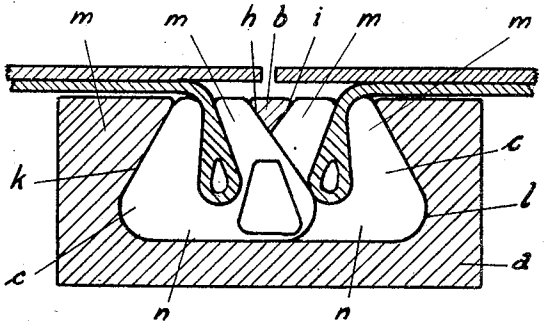
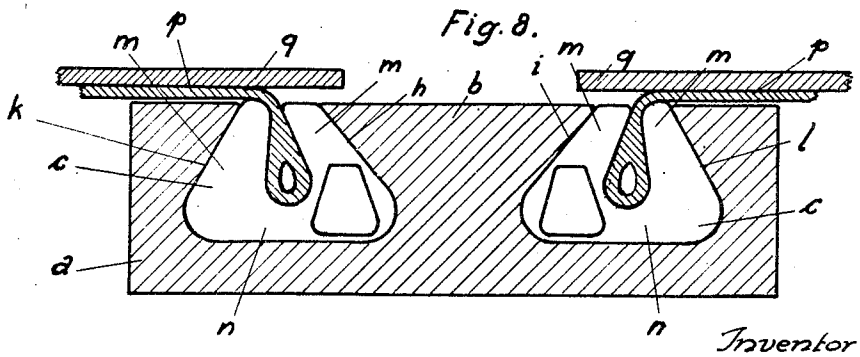


Fig. 8.



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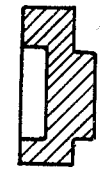


Fig. 10.

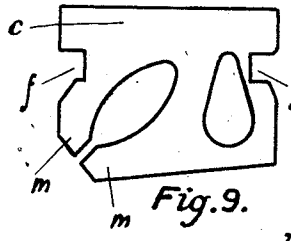


Fig. 9.

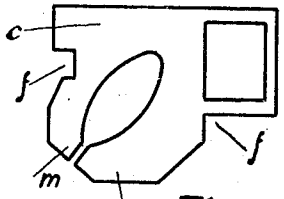


Fig. 11.

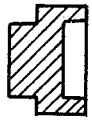


Fig. 12.

Fig. 13.

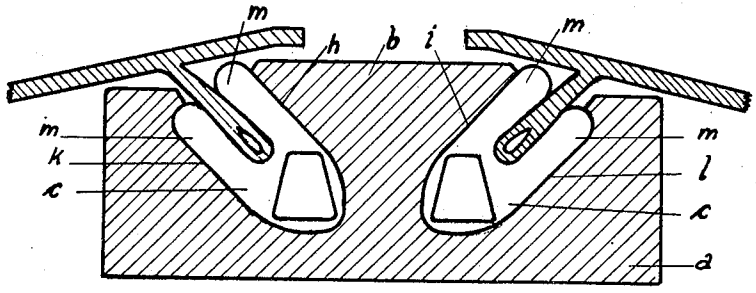


Fig. 14.

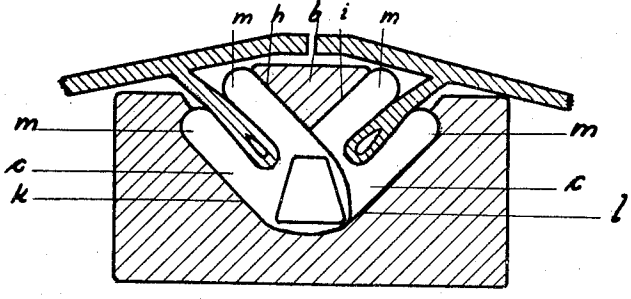


Fig. 15.

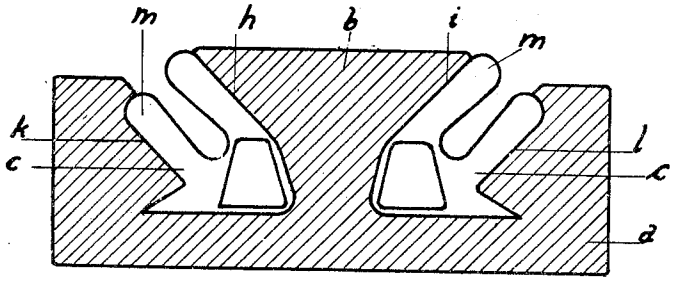
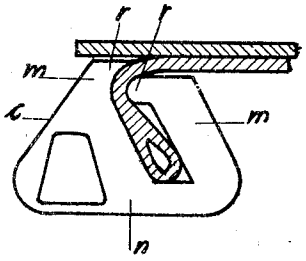


Fig. 16.



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Fig. 17.

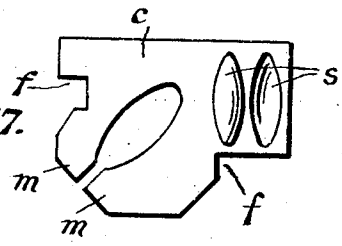


Fig. 18.

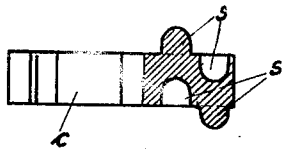


Fig. 19.

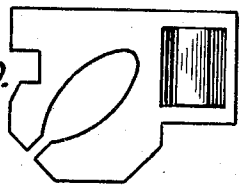


Fig. 20.

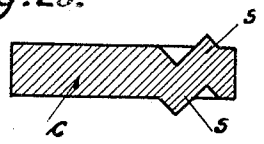


Fig. 22.

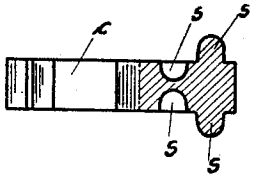


Fig. 21.

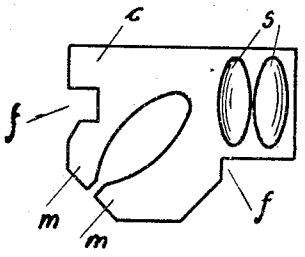


Fig. 23.

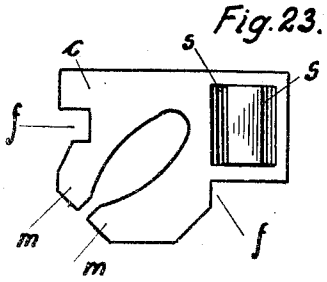
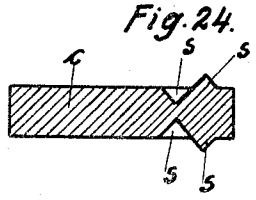


Fig. 24.



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Fig. 25.

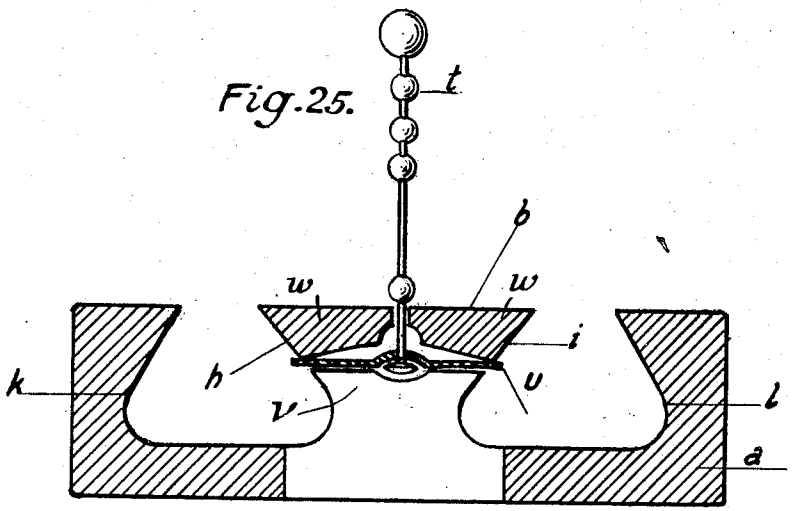
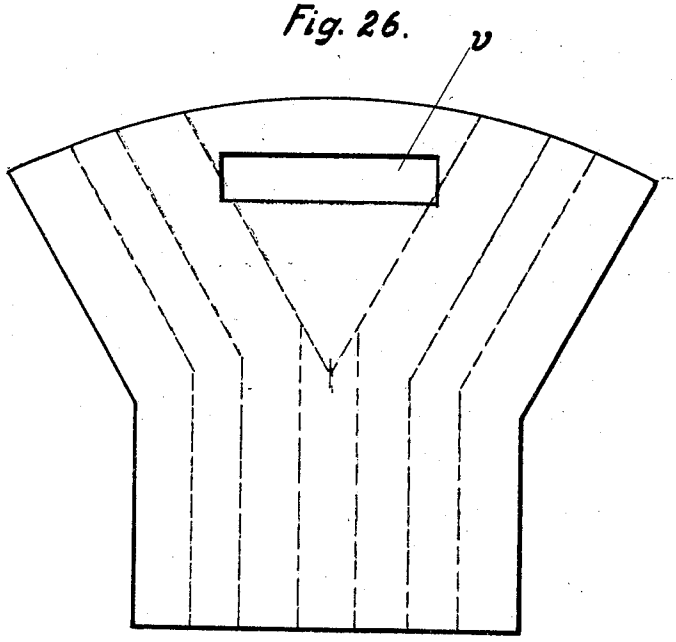


Fig. 26.



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Patented Jan. 26, 1937

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UNITED STATES PATENT OFFICE

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SLIDE FASTENER

Martin Winterhalter, Wuppertal-Barmen, Germany

Application February 10, 1934, Serial No. 710,695
In Germany February 10, 1933

4 Claims. (Cl. 24—205)

The present invention refers to a slide fastener the great advantage of which is the particular shape both of the elements and of the slider, said fastener being especially suitable when the slide fastener is covered or concealed.

In covered slide fasteners it is desirable to cover both the elements and the slider. In the prevailing types of fasteners if you eliminate the front shield of the slider entirely or for the greatest part the fastener elements will not be retained in the slider with sufficient reliableness.

This invention does away with the disadvantages of the well known guide of sliders in slide fasteners in a very simple manner by providing the elements on both cross sides or on one cross side and on the back or only on the back with grooves or projections to guide the slider, or the task will be solved so that the wedge shaped middle piece of the slider has side walls which together with the side walls of the under shield form dove tail like guides for the elements. Thus, the arrangement of a special front shield will be unnecessary.

According to this shape of the slider or to its guides the elements deviate also from the usual shape.

Another feature of the invention consists in the sloping arrangement of the strut opening of the arms of the elements.

The invention will be described in detail in connection with the enclosed drawings:

Figs. 1, 2 and 3 show front, side and top views respectively of one form of the slider.

Fig. 4 shows a cross section through such a slider where slide fastener is closed and

Fig. 5 shows a cross section of the slider where the slide fastener is open.

Fig. 6 shows another form of slider.

Fig. 7 shows a cross section of this slider where the slide fastener is closed and includes the fastener elements.

Fig. 8 shows a similar cross section of this slider where the slide fastener is open.

Figs. 9, 10, 11 and 12 show views from above and in section of elements with grooves and projections to guide the slider.

Figs. 13, 14, 15 and 16 show further shapes of elements and cross sections of sliders used therewith.

Figs. 17, 18, 19, 20, 21, 22, 23 and 24 show elements with particularly shaped coupling parts.

Figs. 25 and 26 show a slider with locking device.

In all figures the same parts are marked with the same letters, the back shield of the slider being indicated at *a*, the wedge shaped middle piece at *b*, and the fastener elements at *c*.

The slider serving for opening and closing the slide fastener (Figs. 1–3) consists only of a back shield *a* and a middle wedge shaped piece *b*, the longitudinal edges of which are shaped to provide guides *d* and *e* which engage notches *f* of the elements *c* (Figs. 4 and 5), by which a faultless guide of the slider is warranted, and the arrangement of a special front shield has become superfluous. The front side of the elements or chain of links is not touched by the slider and, therefore, can be entirely covered with extended fastener concealing edges of leather or the like, without being liable to any wear or damage in pulling the slider to and fro.

The same effect will be attained with the slider of Figs. 6–8, in which *a* is the back shield, *b* the wedge shaped middle piece which ends in a prolongation *g*. The walls *h* and *i* of the wedge shaped middle pieces *b* are not vertical to the back shield *a*, but sloping so that the walls of the wedge shaped middle piece *b* together with the back shield *a* and the inner surfaces *k* and *l* of the side walls of the back shield *a* form a dove tail like guide.

The single elements *c* are provided with grooves *f* (Figs. 9–12 and 17–20) and the clamping arms *m* end angularly to each other so that the element *c* is wider on the one side *n* (Figs. 7 and 8). In the form of the elements (Figs. 9–12 and 17–20) the slider consists only of a back shield *a* and a middle wedge shaped piece *b*, with the longitudinal edges thereof serving as guides *d* and *e* that engage in the grooves *f* of the elements *c*, whereas in the form of Figs. 7 and 8 the element *c* will be enclosed by the dove tail shaped guides of the slider (Fig. 6). Thus a safe guide and an unchecked sliding to and fro of the slider is assured whereby always one side only of the series of elements will be used as guide for the slider, and the opposite side will not be covered by the slider. Consequently it is possible to cover the exposed side of the slide fastener so that the chain of elements and the slider will be entirely or substantially concealed. This will be attained by putting angularly in the element clamping jaws *m* either the band *p* serving as carrier of the elements *c*, or using a supplementary strip of material *q* which is connected to the band *p* which serves as a carrier for the slide elements.

It would be useful to provide the clamping jaws *m* of the fastener elements *c* at their extremities with projections *r* (see Fig. 16) on the inner jaws which extend over the other, and to

bend the band *p* between the clamping jaws so that it lies round the outer clamping jaw.

In order to use uniform elements for both fastener parts, each element *c* can be provided with two reciprocally arranged elevations and depressions *s* as coupling part (Figs. 17–24).

It is useful to move the slider by means of a little chain or a pull member *t* attached to the wedge shaped piece *b* of the slider. Furthermore a brake part *u* for instance a spring can be connected to this pull member *t*, by which the slider will be secured in the neutral position against any unintentional displacement, and which will release the slider in case of a pull exercised upon the pull member *t*. A notch *v* is accordingly provided which extends transversely of the wedge shaped piece *b* and has therein the brake part or spring *u* to which the chain *t* is centrally connected. The notch *v* is closed at the front of the slider by the portions *w*, *w* which are so formed that when pull is exerted by the chain on the center of the spring *u*, the end portions of said spring engage against the outer edges of the portions *w*, *w* and the spring is bowed sufficiently to withdraw the extremities of the spring *u* from the side channels or branches of the slider. When the pull on the chain is released the spring *u* returns to the normal straight position in which the ends project into the side channels or branches of the slider so that they engage and hold the fastener elements against movement along said channels.

Figs. 25 and 26 show a useful method of execution where a canal is inserted in the middle wedge shaped piece *b* of the slider, in which the little chain *t* with the brake part *u* is led and stayed and well secured against falling out.

I claim as my invention:

1. In a fastener of the class described the combination of opposed series of fastener elements and a slider operable therealong for interlocking and releasing same, said fastener elements being separate plate like members each having an interlocking projection on one side and an interlocking recess in the other side, said slider having a central channel with divergent branches that are separated by a spreader, said channel and branches being open at the front of the slider and of a depth not exceeding the elevation of the fastener elements therein and having overhanging wall portions at opposite sides which are within the elevation of the fastener elements therein, said fastener elements having clamping jaws with a slot therebetween extending to the open front of the slider, and a mounting tape having the edge thereof extending downwardly in the open front of the slider and clamped between said jaws, said tape being held by the jaws so that it enters the slot in a direction toward the interlocking projection and recess of the fastener element.

2. In a fastener of the class described the combination of opposed series of fastener elements and a slider operable therealong for interlocking and releasing same, said slider having a central channel with divergent branches and a spreader between and separating the branches, and a releasable spring lock within the spreader for engaging the fastener elements to hold the slider against movement therealong.

3. In a fastener of the class described the combination of opposed series of fastener elements and a slider operable therealong for interlocking and releasing same, said slider having a central channel with divergent branches and a spreader, between and separating the branches and a releasable spring lock extending transversely through the spreader and having the ends projecting into said branches to hold the slider against movement along the series of fastener elements.

4. In a fastener of the class described the combination of opposed series of fastener elements and a slider operable therealong for interlocking and releasing same, said slider having a central channel with divergent branches and a spreader between and separating the branches, a spring lock extending transversely through the spreader and having the ends projecting into said branches and a pull member attached to said spring lock for retracting said ends thereof from the branches.

MARTIN WINTERHALTER.