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Wolfertz et al.

[11] **3,872,554**

[45] **Mar. 25, 1975**

[54] **CLOSURE FOR ARTICLES OF CLOTHING, VALISES, POCKETS OR THE LIKE WITH OVERLAPPING CLOSURE PARTS**

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Oct. 24, 1972	Germany	2252052
Oct. 28, 1972	Germany	2252950
Dec. 15, 1972	Germany	7245841

[52] **U.S. Cl.** ..... **24/206 B,** 24/191

[51] **Int. Cl.** **A44b 11/00**

[58] **Field of Search** ..... 24/206 R, 206 B, 230 A, 24/230 NP, 178, 188, 191; 292/267

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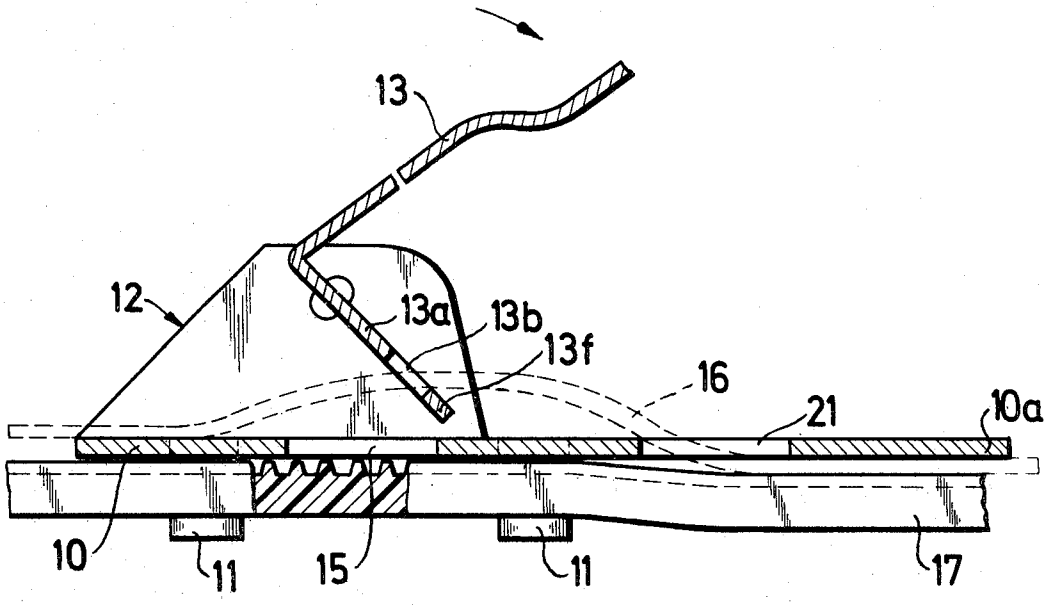
Assistant Examiner—Darrell Marquette
Attorney, Agent, or Firm—Ernest G. Montague; Karl F. Ross; Herbert Dubno

[57] **ABSTRACT**

A closure for clothing, valises, pockets or the like comprising overlapping closure parts and a rail. A slide is provided which has a bottom part and side parts. The bottom part slides on the rail, and the side parts support an angular closing flap, having at least two arms. The rail is rigidly connected with one of the closure parts, and the slide is rigidly connected with another of the closure parts. A cover strip passes through the slide and the slide runs on the rail as well as on the cover strip. A rest nose is disposed between the rail and the cover strip and enters into engaging position with the rest of the rail by the swinging movement of the closure flap.

6 Claims, 15 Drawing Figures



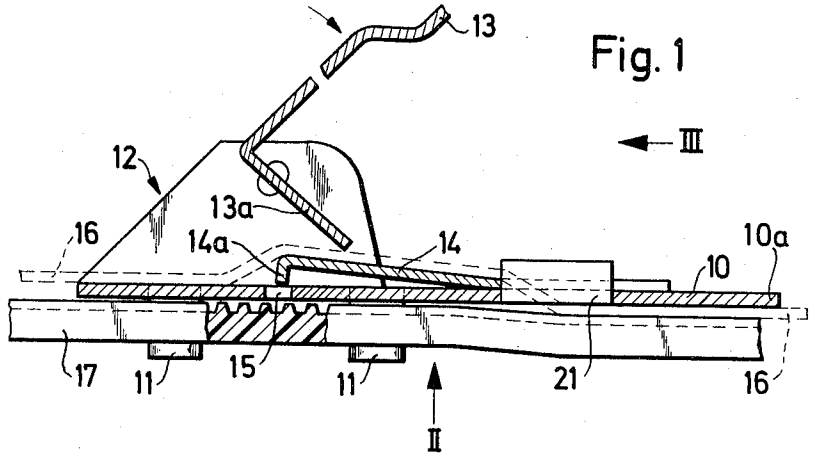


Fig. 1

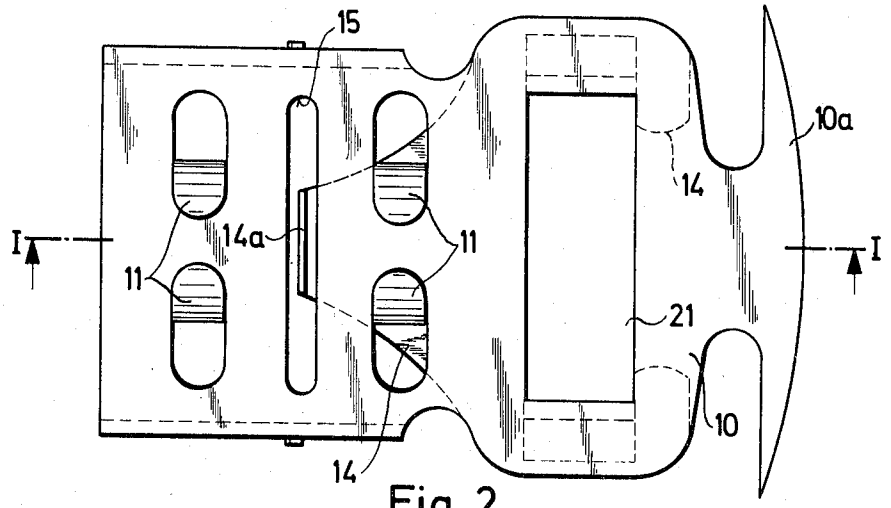


Fig. 2

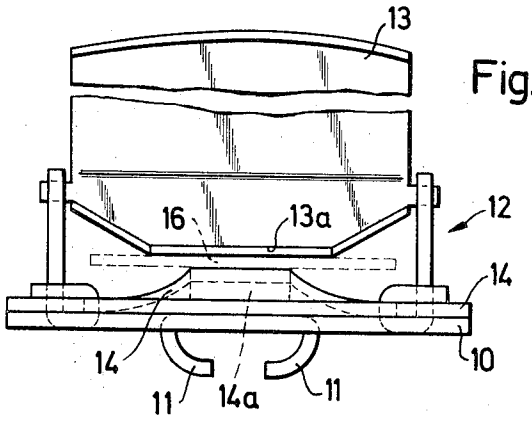


Fig. 3

Fig. 4

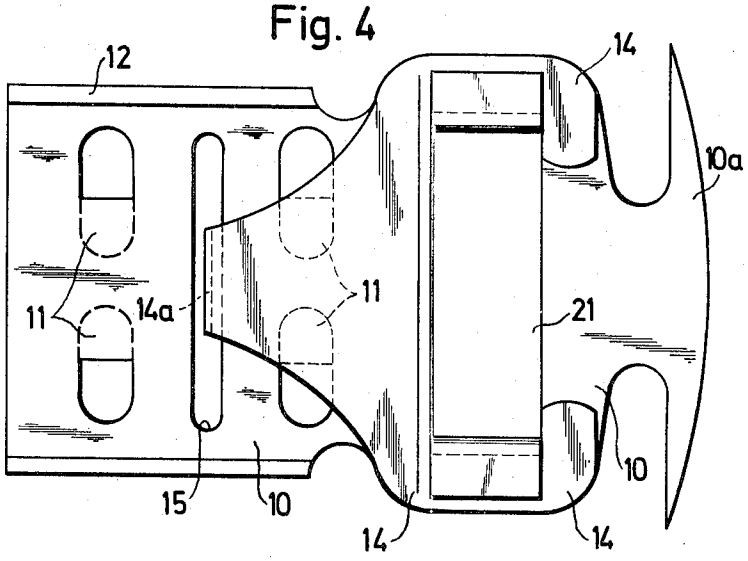


Fig. 5

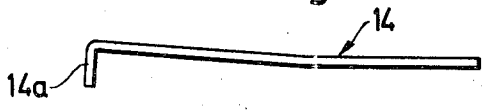
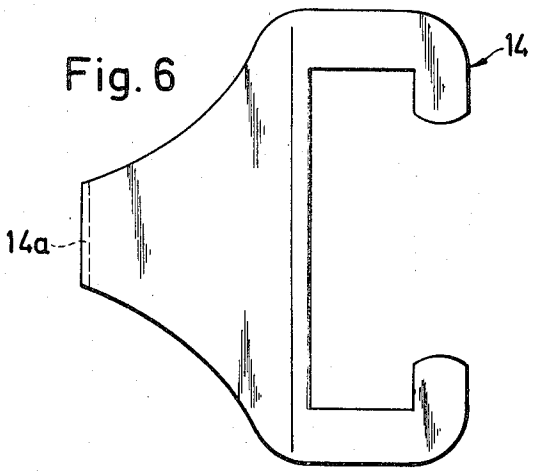


Fig. 6



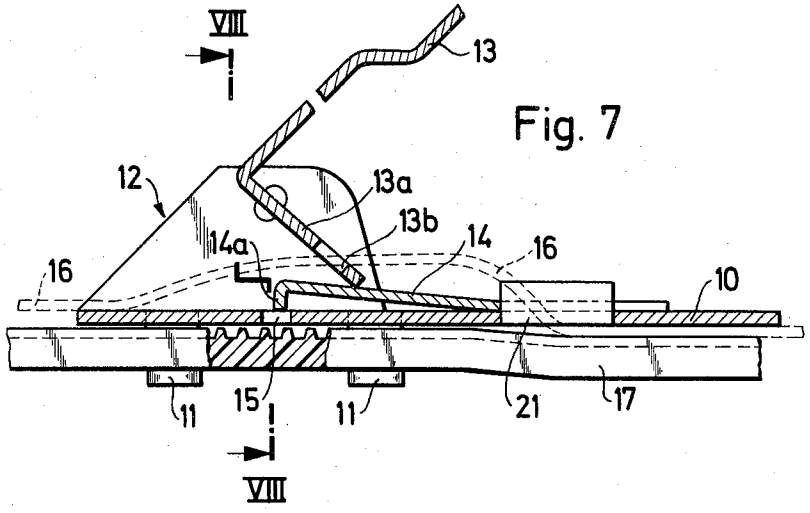
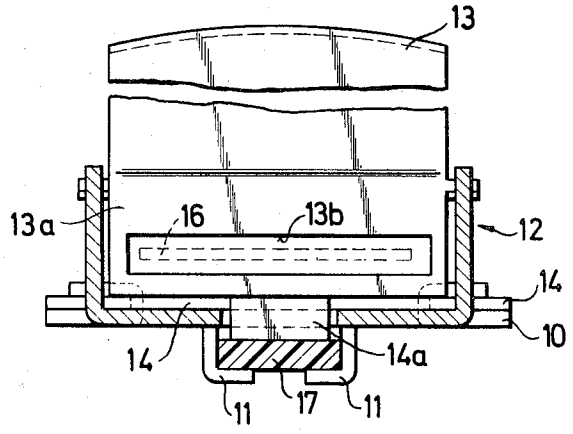

VIII
13
12
13a
13b
14
16
14a
16
10
11
15
11
21
17
VIII

Fig. 7

Fig. 8


13
13a
16
13b
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14a
11
17
11

Fig. 9

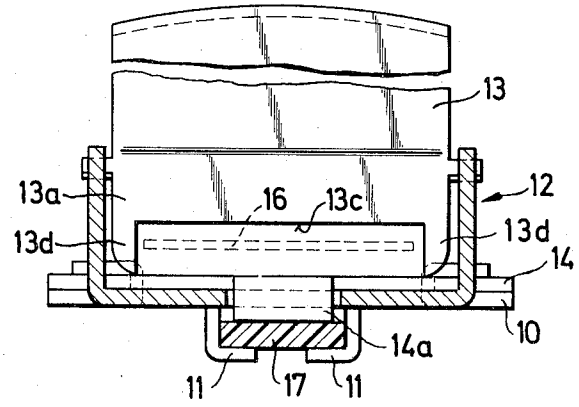
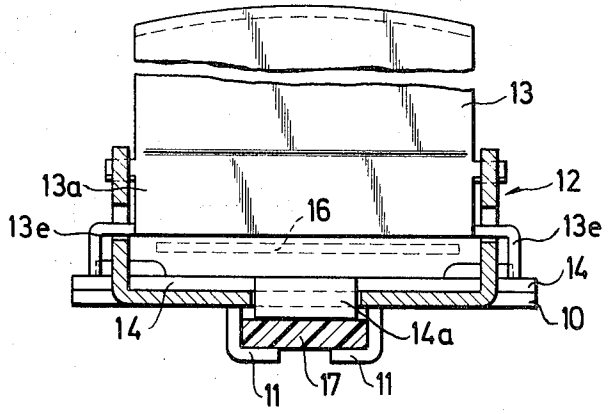

13
13a
16
13c
12
13d
13d
14
10
14a
11
17
11

Fig. 10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13a
12
16
13e
13e
14
14
10
14a
11
17
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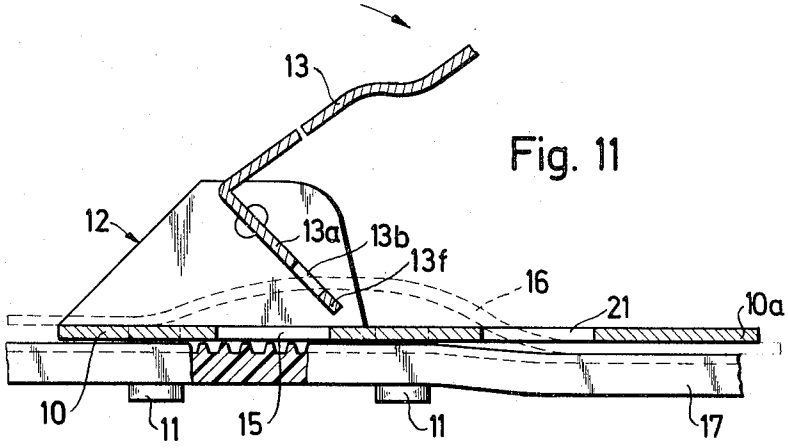

13
12
13a
13b
13f
16
21
10a
10
11
15
11
17

Fig. 11

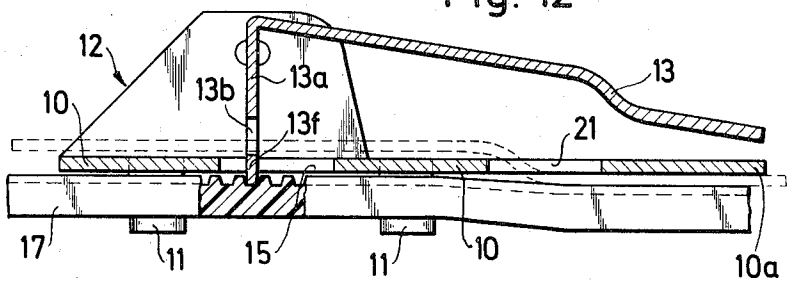

12
13a
13b
13
10
13f
21
17
11
15
11
10
10a

Fig. 12

Fig. 13

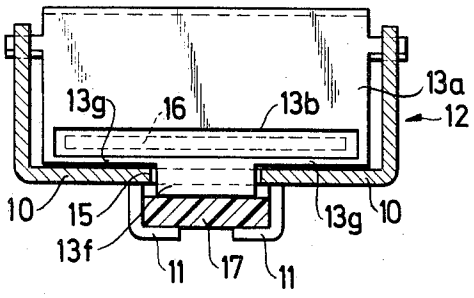
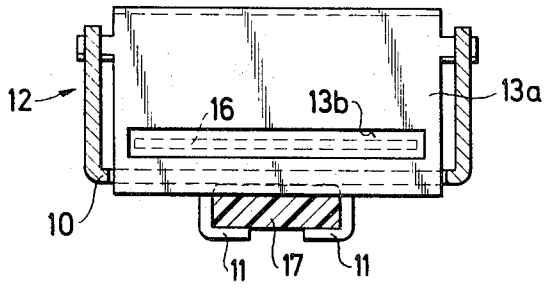


Fig. 14



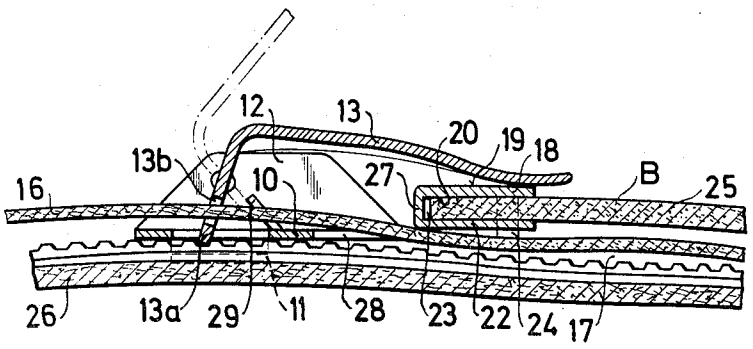


Fig. 15

CLOSURE FOR ARTICLES OF CLOTHING, VALISES, POCKETS OR THE LIKE WITH OVERLAPPING CLOSURE PARTS

The present invention relates to a closure adapted for overlapping closure parts of articles of clothing, valises, pockets or the like, which comprises a rail equipped with formation of synthetic material, metal or the like and a slide, the bottom part of which slides on the rail, and the side parts of which support an angularly bent closing flap. The rail is rigidly connected with the one closure part and the slide with the other closure part.

Such closures for adjustment of a waistband, for example of pants, without requiring supplemental, time-consuming sewing quickly and unproblematically. They are used also to a great extent on so-called automobile-driver pants. Corresponding closures are provided at overlapping zones of the waist, whereby the one side of pants waist (the one closure part) has a rail fixedly connected therewith, while a slide is secured on the other side of the overlapping zone (the other closure part). By displacing the slide on the rail the waist can be varied. The securing of the known slide takes place in such manner that a nose during folding over of the closure flap engages cavities of the rails and are retained therein.

In this known structural embodiment it is a disadvantage, that with exception of the narrowest set waist width, the rail lies free in all intermediate positions of the closure. The outside of the clothing piece is thereby not unessentially impaired. A further expansion of the application of such closures, for example to garments for women, encounters difficulties. Since a toothed rail is used, friction forces are created, which lead under certain circumstances, to early wear or under other unfavorable circumstances to damage to sections entering into engagement with the article of clothing lying thereover, for example the inner lining of tailor-made jackets or the like. Also, auto seat covers can be damaged, if one deals with so-called bucket seats adjusted to the shape of the body.

Known is also a closure, which cooperates with a textile strip as a protection cover. The slide is rigidly connected with the one side of the article of clothing, while on the other side of the garment the textile strip is fixed. This strip is guided by the slide, which is formed, on the one hand, as a clamping member and is engageable over a closing flap on the textile strip, whereby an arm of the closure flap clamps the textile strip on the slide or presses the strip into the cavities of the rail. The strips are subjected to appreciable mechanical strain. Such closures have therefore the serious drawback, that the textile strip is worn even after a short period of use. Also the slide can not be secured in position. Furthermore considerations relative to the material thickness must be considered. Even textile strips, which were equipped with inserts of synthetic material, did not have the desired stability and holding power.

It is an object of the present invention to provide a closure which is readily produced, easily serviceable, and reliable. This object is achieved by providing a cover arrangement between the slide and an operating means and affording elastic insertion whereby the corresponding insertion force is obtained exclusively by the material of the rail and the compression of the cover strip and without the cover strip itself entering into engagement with the rest of the rail.

In this closure, the slide runs on the rail, as well as on a cover strip passing through the slide and made of textile, leather or the like. Between the rail and the cover strip is disposed a resting nose entering by the swinging movement of the closing flap into engagement with the rests of the rail.

The cover strip guided by the slide externally protects the rail completely, so that a visually and aestehetically satisfying impression is created, and the rail is precluded from becoming a source of damage. The cover strip itself is supportingly guided independently from the locking of the closure. This means that during locking no wear of the strip will occur.

Exclusively, the closure flap and rail, can come into engagement, so that the locking can be brought about by sharp-edged engaging parts in very fine steps, which is not possible with a locking, in which the cover strip directly participates and the cover strip is forced into the rests of the rail. The cover strip can then consist also of a stiff material or can be equipped with a stiffening insert, whereby running characteristics of the slide are improved. By the use of a resiliently elastic rest nose, a soft closing procedure is realized. The closing position is no longer exclusively secured by the reaction force obtained by the compression of the cover strip and/or the rail.

The closure proposed in accordance with the present invention can be designed with advantage such that at the bottom of the slide below the cover strip a blade spring mounted at one side is equipped with an engagement nose or projection directed towards the rail and operable by means of the closing flap against its spring force, which projection engages in the closing position of the closing flap through a recess in the bottom of the slide and interlocks on the rail. In this embodiment the slide runs over the rail and over the cover strip covering the rail. Upon operation of the closing flap the cover strip is only slightly pressed towards the slide but is not forced into the resting cavities. Rather the blade spring is moved over the cover strip with its projection in the direction towards the rail, in the cavities of which the projection of the blade spring locks. This is an embodiment of the closure which does not damage the cover strip, yet provides extremely slide-fast formation of the closure. The required snap effect for obtaining the closure position is supplied by the restoring force of the spring.

A further advantageous closure embodiment has one arm of the closure flap provided with a break-through or opening through which the cover strip extends the lower frame-arm of this opening engaging the blade spring.

In a closure embodiment with blade spring and a break-through in the one arm of the closure flap the cover strip is not strained at all, since it is merely loosely guided through the break-through in the arm of the closing flap. The locking effect is obtained by the pressure of the arm of the closure flap towards the blade spring directly without interposition of the strip, by interlocking the projection of the blade spring with the cavities of the rail and thus assures a good lock.

One arm of the closure flap stands in direct contact with the blade spring such that in this arm of the closure flap a recess is provided, which is open towards the bottom side, that means open at the bottom of a width narrower than that of the blade spring for the passing through of the cover strip. Alternatively the projections

of the one arm of the closing flap grip through lateral side parts of the slide and stand in direct contact outside of the cover strip with the blade strip.

In another embodiment, eliminating the blade spring, the arm of the closure flap, equipped with the break-through for passing through the cover strip, engages directly the rests of the rail.

In such a closure the closing force is transmitted directly from the closure flap over its angularly bent arm towards the rest rail, in the rests of which the projection of the closing flap locks. The break-through in the one arm assures, that the cover strip guided through the latter is not exposed to any clamping or pressure loads, yet nevertheless protects the rail over its full length and width completely towards the outside.

In this closure without the blade spring, the projection of the closure flap can be formed however also by a wing projecting from the lower frame arm. This closure flap is easily operable and provides, brings, however, a safe elastic engagement because the engaging end possesses a spring action due to the window-like opening. The corresponding lower, narrow frame arm of the one arm of the closing flap yields during the passage of the projection over the dead point position for a short time into the break-through. A comparatively soft snap locking of the closing flap is obtained and, because of the return force of the lower frame arm, a high holding force is generated. The elastic holding or locking force thus does not derive from the material of the rail.

An abutment limiting the largest opening angle of the closure flap is provided. By the limitation of the swing or opening, only very slight oblique position of the break-through in the one arm of the closing flap so that the cover strip during the displacement procedure is not bent over and can also not be clamped on the break-through.

Advantageously the longer arm of the closing flap serves as an operating handle and abuts a tongue set off forwardly stepwise opposite the bottom of the slide, on the inner face of the tongue disposed opposite the abutting face the one securing end of the closing part engages, whereby the tongue jointly with a flap disposed opposite a passage opening in the bottom of the slide forms a U-shaped securing space for the one securing end of the closure part.

This structure provides measure, on the one hand, a safe securing of this closing part and the advantage that the cover strip is extended.

A the bottom or the section of the bottom side of the side parts of the slide bearing eyes can be provided. The low arrangement of the bearing position brings about the advantage of a low structure height of the closure. Furthermore, only a small lever arm is present between the bearing position of the rest element on the side of the closing flap, whereby during the resting procedure only a very small forced relative displacement between the two rest elements occurs.

These and other objects will become more readily apparent from the following description, reference being made to the accompanying drawing, in which:

FIG. **1** is a section through the opened closure slide;

FIG. **2** is a bottom plan view of the slide;

FIG. **3** is a side elevation of the slide;

FIG. **4** is a top plan view of the partly shown slide;

FIG. **5** is a slide elevation of the blade spring;

FIG. **6** is a top plan view thereof;

FIG. **7** is a longitudinal section through the closure of another embodiment in the freeing position;

FIG. **8** is a cross section through the closure of FIG. **7** in the resting position;

FIG. **9** is a cross section through a closure in accordance with a further embodiment with the closure in the resting position;

FIG. **10** is a cross section through a closure in accordance with a third embodiment with the closure in a locking position;

FIG. **11** is a longitudinal section through the slide in the freeing position in accordance with a further embodiment and in particular without a blade spring;

FIG. **12** is a view corresponding to FIG. **11** in the locking position;

FIG. **13** is a cross section through the closure of FIGS. **11** and **12**, again in the resting position;

FIG. **14** is a cross section corresponding to FIG. **13**, however with a differently designed closing flap; and

FIG. **15** is a longitudinal section of a closure embodiment with reception means for the one securing end of the closure part.

As shown in FIGS. **1–6**, the slide of the closure has at its bottom plate **10**, inwardly bent guide members or eyes **11** with the help of which it can slidably receive a rail **17** equipped with resting elements or indexing formations.

Between the upstanding slide side parts **12** of this plate **10**, a closure flap **13** is swingably mounted. Closure flap **13** has an angularly bent short arm **13***a*. At the bottom **10** of the slide is in accordance with FIGS. **1 – 10** a cantilevered blade spring **14** is provided, which has a projection **14***a* bent in the direction of the bottom **10**.

The bottom **10** of the slide **17** is formed with a recess window **15**, through which the projection **14***a* of the blade spring **14** can extend.

The closure-slide is arranged in relation to a cover strip **16** (FIG. **7**) covering the rail **17** in such manner, that the rail **17** and the blade spring **14** are covered up by the cover strip **16**; that means, that the latter, namely the cover strip **16**, extends between the closure flap **13** and the blade spring **14** in longitudinal direction through the slide, so that only the side parts **12** of the slide and the closing flap **13** with the arm **13***a* are visible.

The operation of this embodiment is explained in connection with FIG. **1**, in which the freeing- or displacement-position of the slide is illustrated. If one presses the longer arm of the closure flap **13**, serving as operating handle, in the indicated arrow direction downwardly, the one shorter arm **13***a* of the closure flap **13** presses at first onto the cover strip **16** indicated in point dotted lines in FIG. **1**. The pressure is transmitted to the blade spring **14**, which accordingly is moved downwardly in the direction towards the rail **17** extending between the extensions **11** downwardly, whereby its projection **14***a* passes through the recess **15** in the bottom **10** of the slide and can engage the formations of the rail **17**.

The bottom end **10***a* of the slide is rigidly connected with the one closing part, for example a waist band of pants, while the rail and the cover strip are secured at the other closure part of the waist band, so that a relative displacement between slide and rail causes a variation of the width of the waist band of the corresponding article of clothing.

In further embodiments in accordance with FIGS. 7 – 15, the one, shorter arm 13*a* of the closure flap 13 has a break-through or opening 13*b*, which serves the purpose of guiding the cover strip 16 through the slide, without getting into engagement with the lower clamping edge of the one arm 13*a* of the closure flap 13.

For the same purpose, in the embodiment in accordance with FIG. 9, the one arm 13*a* of the closure flap 13 is equipped with a recess 13*c* through which the cover strip 16 passes. The blade spring 14 is here operated by the projections 13*d* of arm 13*a* of the closure flap 13 flanking the strip 16.

In accordance with another embodiment (FIG. 10), the side parts 12 of the slide parts 12 of the slide are passed through by laterally disposed projections 13*e* of the arm 13*a* of the closure flap, so that the operation of the blade spring 14 takes place laterally next to the slide from the outside, whereby here also the cover strip 16 is no more strained by one arm 13*a* of the closure flap 13, so that also a greater independence from the thickness is given.

The operation of this closure with additional perforations 13*e* is likewise explained below in connection with FIG. 7, in which the freeing- or displacement-position of this slide is explained. If one presses the longer arm of the closure flap 13 in the indicated arrow direction downwardly, which serves as an operational handle, so presses the one shorter arm 13*a* of the flap 13 onto the blade spring 14, which accordingly is moved downwardly in the direction to the rail 17 extending between slide members 11, whereby its rest nose 14*a* passes through the recess 15 in the bottom 10 and can reach the rests of the rail.

In the bottom 10 of the slide in accordance with FIGS. 11 – 15, the recess 15 serves the purpose that the arm 13*a* of the closing flap 13 can reach directly through the bottom 10, in order to arrive at a forced connection with the rail 17. In one arm 13*a* of the closure flap 13 is there again a window-like break-through 13*b* for guiding through the closure strip 16. This break-through 13*b* is limited on the underside by a frame arm 13*g*, which can form simultaneously the bearing axis for the closure flap 13, whereby then from the bottom 10 or the bottom side section of the side parts 12 of the slide the bearing eyes can be formed therefor.

This window-like break-through 13*b* is in case of FIGS. 13 and 15 as much as possible in the vicinity of the bottom face. The comparatively low arm cross section obtained thereby provides for the frame-arm 13*g* a certain capability of resiliency, so that the latter, upon overstepping the shorter arm 13*a* over the dead point line (vertical to rail 16) yields for a short time period into the free space formed by the break-through opening. By this arrangement a soft closing process is realized. On the other hand, the return spring of this frame arm 13*g* brings about a safe permanently effecting resting engagement with the rail 1.

In the freeing position of the closure shown in FIG. 11, the cover strip 16 runs slightly lifted through the breakthrough 13*b* of the closure flap arm 13*a*. During the transfer from the freeing position into the locking position shown in FIG. 12 the cover strip is lowered toward the bottom 10 of the slide and simultaneously the arm 13*a*, that means, its lower edge enters with a section between two rests of the rail 16 forcibly and safe against displacement. The angularly bent arm can enter with its lower edge directly into the rests of the rail (compare FIG. 14), however, in accordance with the embodiment shown in FIG. 13 it can also be equipped with a wing as a rest nose 13*f*, which has a correspondingly lesser width corresponding with the rail. This rest nose can thereby be formed from the working material of the closure flap 13 and can be integrally connected therewith. It can, however, also be made by example of spring steel and can be riveted to one arm 13*a* or secured in a similar manner.

In an advantageous formation of one slide the longer arm of the closure flap 13 abuts against an abutting face 19. The latter is formed by a tongue-shaped formation 18 of the same material as the bottom 10 of the slide and stepped set off forwardly. On the inner face 20 opposite the abutment face is disposed the end B of a closure part 25 or the waistband. It is retained by members 24. The latter are formed on the tongue-shaped formation 18 and angularly bent angularly in the direction of the other closure part 26 or the waistband. They project through the material of the closure part 25 and enter on the back side over a projecting member 22 of the bottom 10. The latter extends parallel to the bottom 10, lifts itself however for about the material thickness of the sheet metal cut forwardly. Instead of an outside gripping of the members 24, the latter can also project oppositely disposed breakthroughs of the member 22 and then be turned over.

The tongue 18 and the member 22 form jointly with the forwardly angularly bent stay 27 a U-shaped securing space 23 for the securing end of the closure part 25.

As can be readily recognized from FIG. 15, the tongue 22 is freely cut of the material of the bottom 10 and is bent in opposite direction. By this arrangement a window 28 is created in the slide bottom 10 for the free passage of the cover strip 16, which thereby also overcathes the rail section disposed behind the closure part 25. The corresponding window is indicated with the numeral 21 in the remaining embodiments.

As furthermore can be recognized from FIG. 15, in the bottom 10 of the slide, an abutment 29 is provided for the swinging movement of the closure flap 13. By this arrangement a favorable only slight oblique position of the break-through 13*b* is created so that the slide can easily be moved over the cover strip 16, without subjecting the cover strip to loads or strains or bendings.

In valises, pockets or the like articles the rail and the cover strips are suitably secured on the front side of the pocket, while the closure slide would be provided on the pocket overthrow, on which in known closures are provided the locks.

While we have disclosed several embodiments of the present invention, it is to be understood that these embodiments are given by example only and not in a limiting sense.

We claim:

1. A closure for a pair of overlapping members comprising:

a longitudinally-extending rail secured to one of said members and provided with a row of indexing formations;

a slide longitudinally shiftable along said rail and secured to the other of said members, said slide having a pair of codirectionally projecting lateral supports and a bottom interconnecting said supports,

said bottom being provided with an opening affording access to said formations;

a closure flap pivotally mounted between said supports and comprising a pair of angularly bent arms including a relatively short arm provided with a projection for locking said slide to said rail at one of said formations, and a manually actuatable relatively long arm for displacement of said flap, said short arm being provided with a window over a major part of the width of said slide between said supports; and

a cover strip overlying said rail and said bottom of said slide and concealing same while passing through said window in said short arm.

2. The closure defined in claim **1** wherein said projection is resilient and directly engages said formations.

3. The closure defined in claim **2** wherein said window is completely framed.

4. The closure defined in claim **2,** further comprising abutment means limiting the angular displacement of said flap.

5. The closure defined in claim **2** wherein said slide is formed with a stepped formation, said flap being engageable with said formation.

6. The closure defined in claim **1,** further comprising a cantilevered spring on said slide having an angular projection extending through said opening, said short arm bearing on said spring.

* * * * *