Oct. 13, 1925. 1,557,382

G. SUNDBACK

MULTIPLE SLIDE CLOSURE

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Fig 1

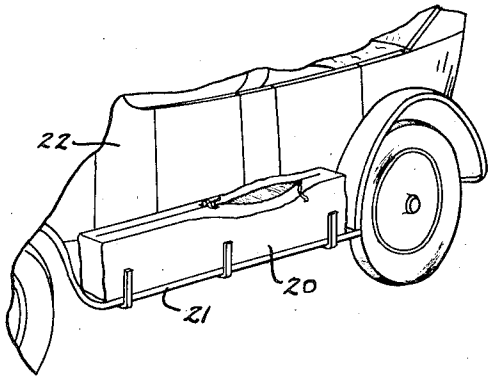


Fig 2.

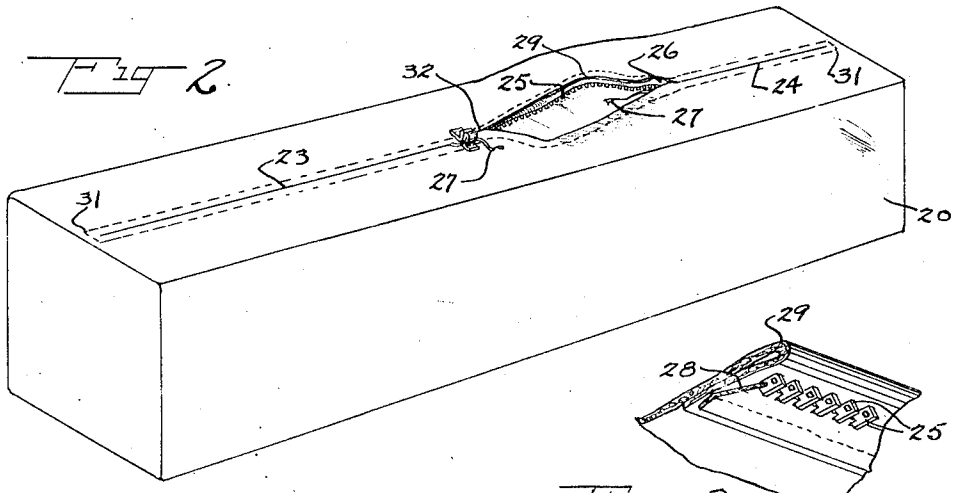
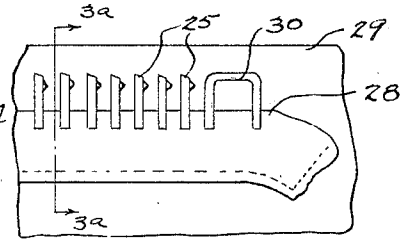


Fig 3

Fig 4



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ATTORNEY

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G. SUNDBACK

MULTIPLE SLIDE CLOSURE

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Fig 5

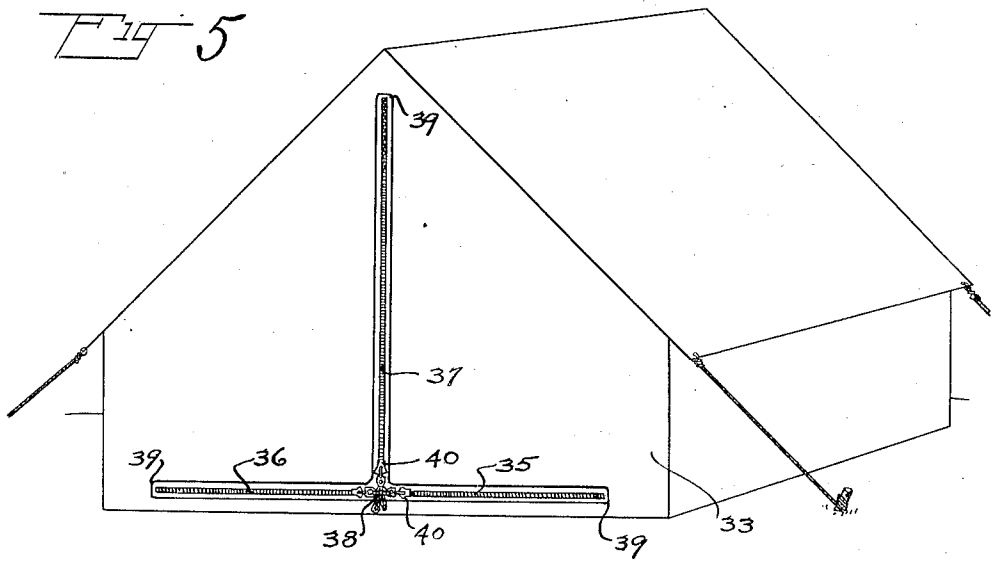
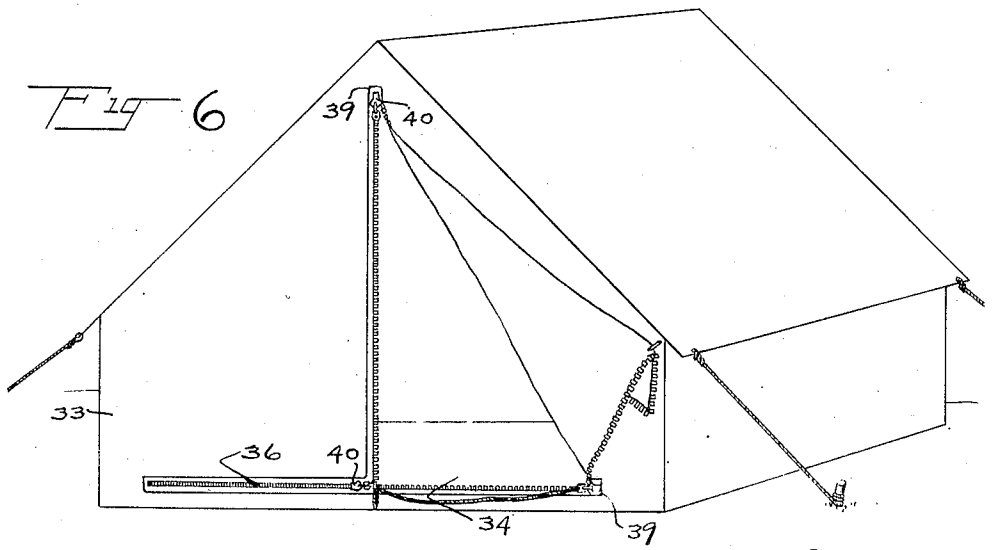


Fig 6



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J. D. Foster

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G. SUNDBACK

MULTIPLE SLIDE CLOSURE

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Fig 7

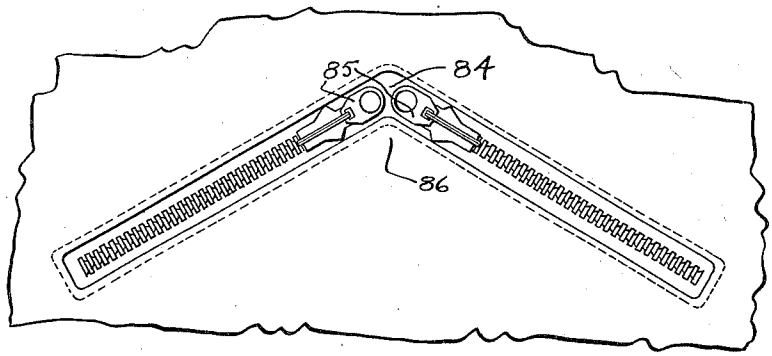
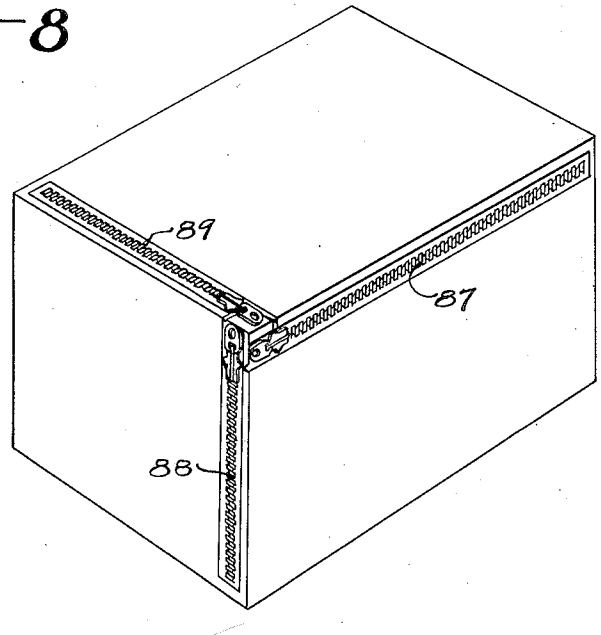


Fig 8



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G. SUNDBACK

MULTIPLE SLIDE CLOSURE

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Fig 10

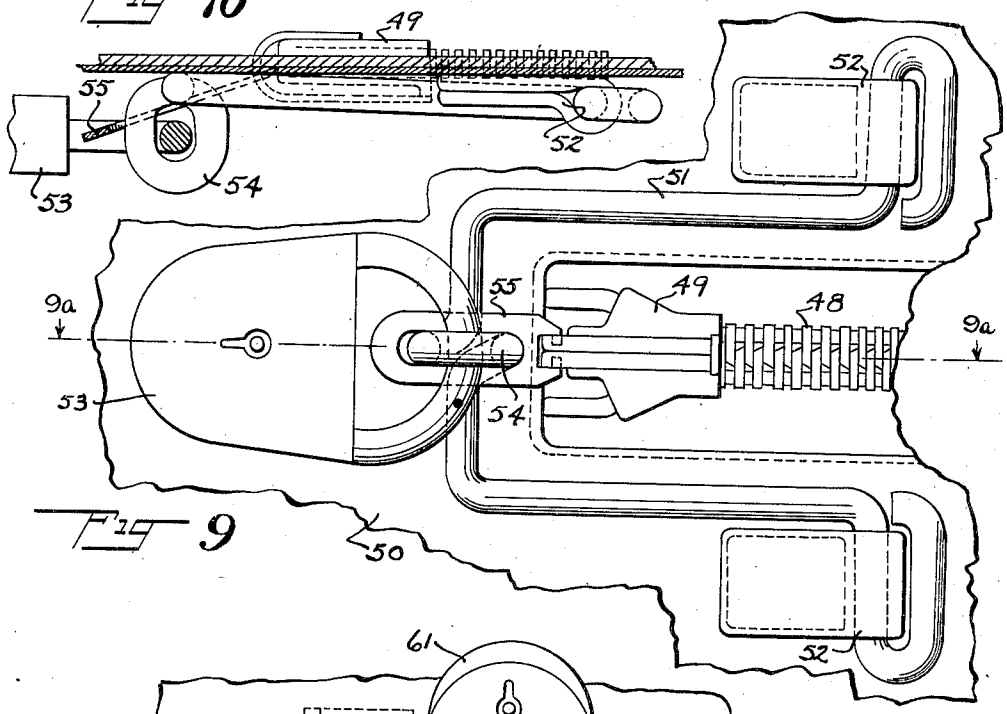


Fig 9

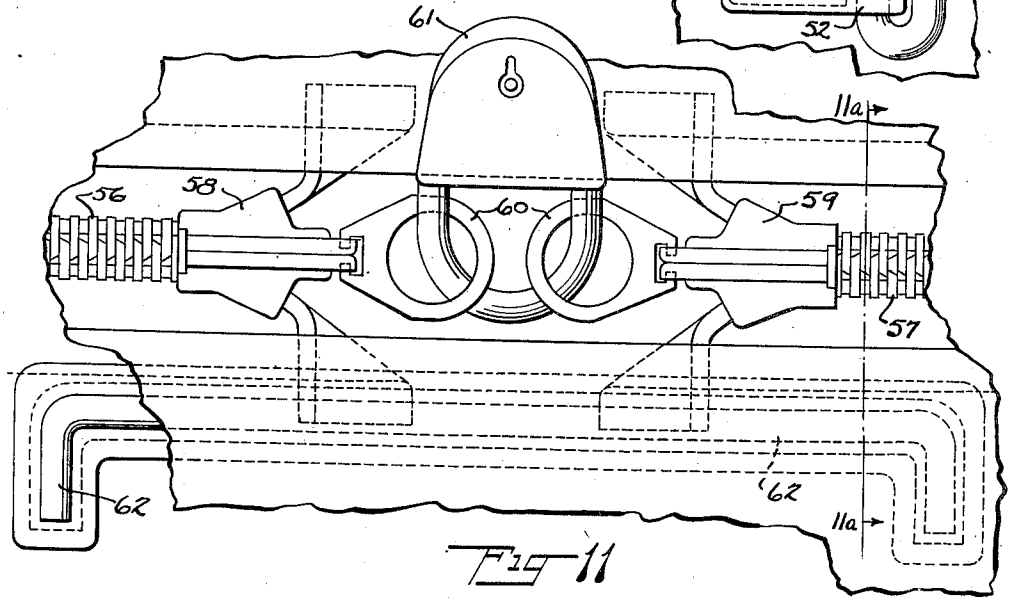


Fig 11



Fig 12

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BY J. D. Brooks

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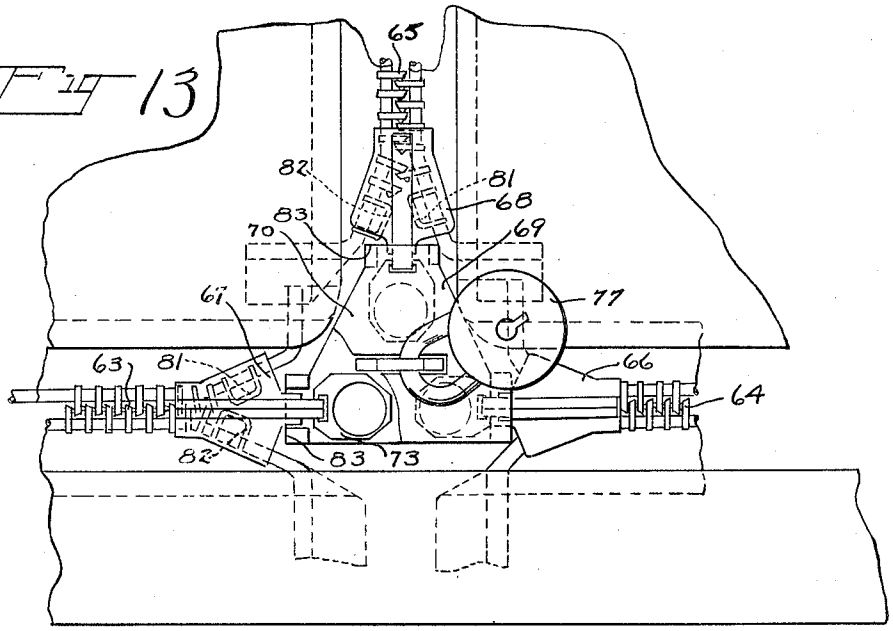
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G. SUNDBACK

MULTIPLE SLIDE CLOSURE

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Fig 13



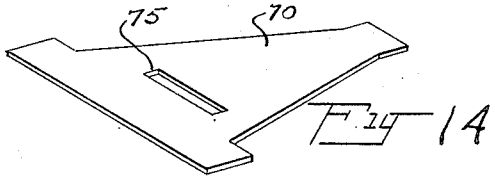


Fig 14

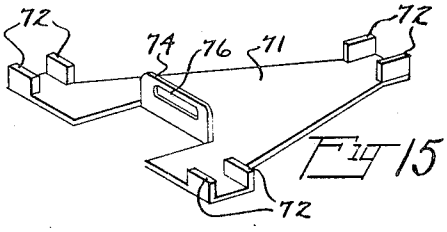


Fig 15

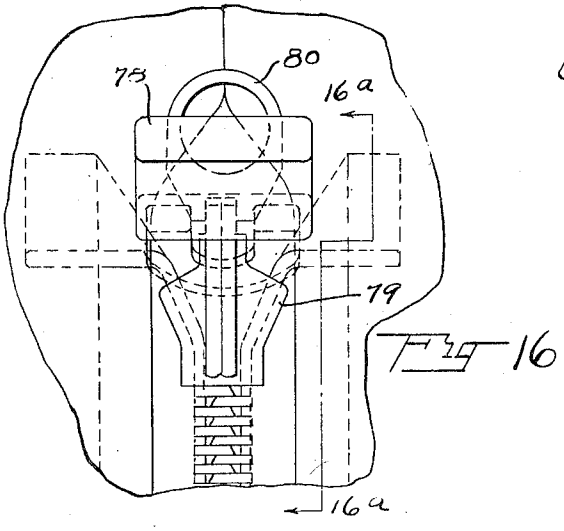


Fig 16

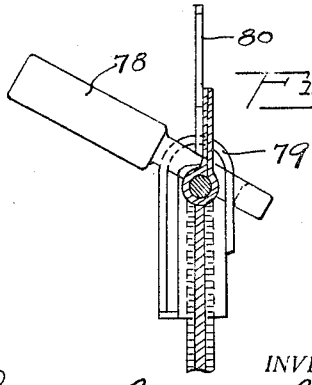


Fig 17

INVENTOR

BY Gideon Sundback

ATTORNEY

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MULTIPLE SLIDE CLOSURE

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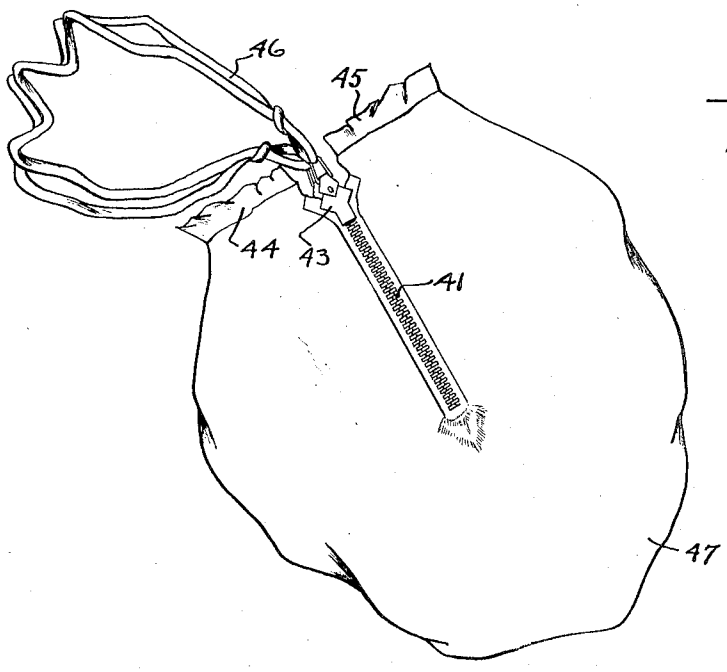


Fig 18

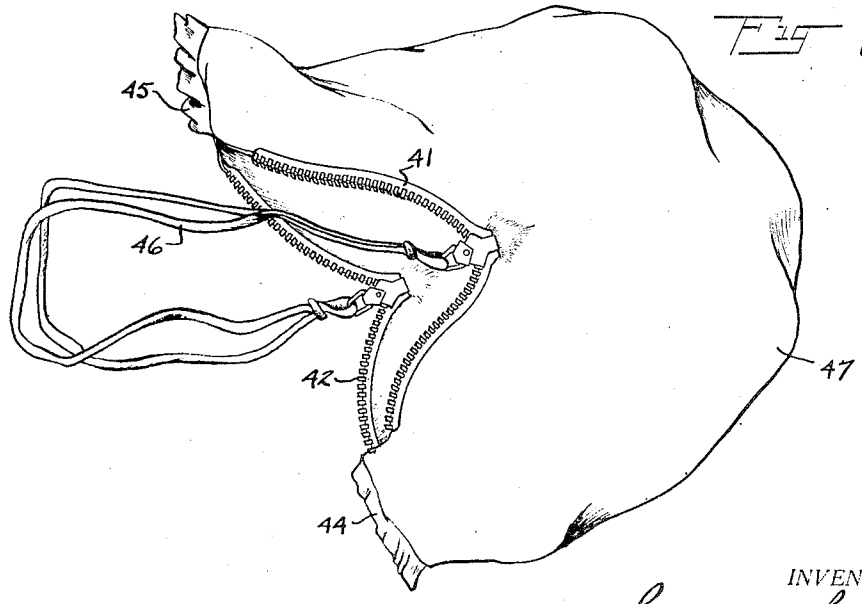


Fig 19

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R. Wooster
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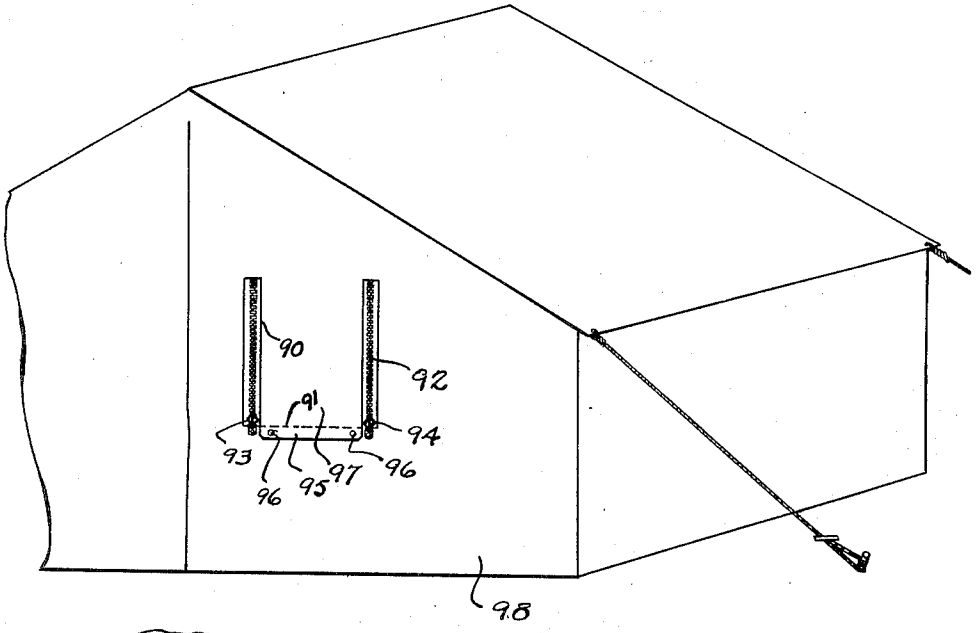
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G. SUNDBACK

MULTIPLE SLIDE CLOSURE

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Fig 20



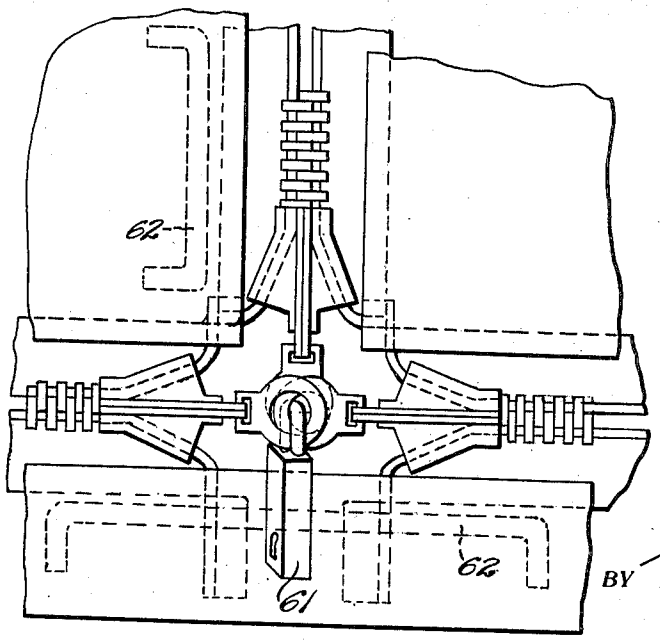


Fig. 21.

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Patented Oct. 13, 1925. 1,557,382

UNITED STATES PATENT OFFICE.

GIDEON SUNDBACK, OF MEADVILLE, PENNSYLVANIA, ASSIGNOR TO HOOKLESS FASTENER COMPANY, A CORPORATION OF PENNSYLVANIA.

MULTIPLE-SLIDE CLOSURE.

Application filed January 20, 1923. Serial No. 613,825.

To all whom it may concern:

Be it known that I, GIDEON SUNDBACK, a subject of the King of Sweden, and a resident of Meadville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Multiple-Slide Closures, of which the following is a specification.

This invention relates to receptacles having multiple closures and has for its object to provide an improvement on the single slide closure receptacle disclosed in my previous Patent 1,322,650, November 25, 1919, whereby opening is effected without excessive movement of any slider, to permit a desired portion of a receptacle or container to be accessible without opening the entire closure, and to readily lock such closures.

The arrangement of a single slit closure on a body as described in the aforementioned patent has gone into wide use where relatively short openings are used, particularly in tobacco pouches and money belts, but where much longer openings are desired and where access is desired to only one part of the container a single closure device is inconvenient. I have, therefore, devised the multiple closure of this invention adapted to the body portion on diverse articles generally as containers, receptacles, covers, and the like, including tents, bags, wardrobes, containers for tires, musical instruments, athletic goods, game balls, and others. A preferred form of this invention comprises a covering or receptacle having a plurality of openings extending toward the same point each controlled by a sliding closure and adapted to be moved toward said point in closing its opening where a single lock may secure the several openings.

In addition to convenience of access to desired portions of the interior attained by multiple closure devices on one or more openings it is frequently desirable to provide locking devices according to the use to which the article is to be put. Where stringers carrying the slider are flexible it is frequently possible to open the closure by pushing the stringer through the stationary slider, so that where valuables are to be carried the lock must prevent dishonest and unintentional manipulation of the closure. A preferred embodiment of the locking device includes means for locking the several sliders together and having the covering material either pulled tight or stiffened to prevent relative movement of the stringers with respect to the sliders. A further means for preventing this last mentioned relative movement includes the arrangement of the locking device so as to block the mouth of each diverging channel of the slider and prevent the end members on the stringers being pulled out.

Referring to the drawings:

Fig. 1 shows the invention embodied in a bag for an automobile.

Fig. 2 is an enlarged view of the bag shown in Fig. 1.

Fig. 3 is a section on the line 3^a—3^a of Fig. 4.

Fig. 4 is another detail showing the end members and interlocking members beneath the flap.

Fig. 5 shows the invention embodied in a tent.

Fig. 6 is a view similar to Fig. 5 with the tent partly opened.

Fig. 7 illustrates a slit formed by two openings disposed at an angle to each other.

Fig. 8 shows the openings arranged in different planes on a box covering.

Fig. 9 shows a locking means secured to the material away from the end of the slit.

Fig. 10 is a section on the line 9^a—9^a of Fig. 9.

Fig. 11 illustrates another form of locking means with the stiffening element located within the material.

Fig. 12 is a section on the line 11^a—11^a of Fig. 11.

Fig. 13 shows another form of locking device.

Figs. 14 and 15 show the plates making up the locking device and stiffening element.

Fig. 16 shows a means of locking the slider without the use of a stiffening element.

Fig. 17 is a section on the line 16^a—16^a of Fig. 16.

Fig. 18 illustrates the invention embodied in a lady's wrist bag.

Fig. 19 is a view similar to Fig. 18 with the bag opened.

Fig. 20 shows the invention applied to a slit of another shape.

Fig. 21 shows the stiffening means of Fig. 11 applied to a construction like Fig. 5.

For purposes of illustration, this inven-

tion is shown in Fig. 1 as being applied to a bag 20 arranged on the running board 21 of the automobile 22. Referring to Fig. 2, a side or the top of the body is provided with a slit comprising two substantially aligned portions 23 and 24, each of which is provided with a sliding fastener movable towards a common point to close the slit, each fastener being preferably but not necessarily made up of the elements described in the patent referred to. Such fastener comprises the interlocking connecting members 25 arranged along the edge of a stringer 28 on one side of the slit for cooperation with corresponding connecting members on the opposite edge of the slit. A flap 29 extends over the connecting members to cover them when the slit is closed. A slider 26 controls the interlocking connecting members 25 in each portion of the slit and may be provided with a pull cord 27 to facilitate manipulation of the slider positively in each direction. To limit the movement of the slider upon closing, each of the stringers 28 is provided with an end stop member 30, which two members jam in the slider. The closed ends of the slit 31 preferably have the stringers permanently connected.

As shown in Fig. 2, if access is desired to only a part of the elongated bag, the entire slit need not be opened, but only one slider, 26, need be moved to gain access to the desired part.

In Figs. 5 and 6 the invention is embodied in a receptacle or tent wall 33 wherein the substantially aligned openings 35 and 36 are each closed by a slide fastener comprising connecting means or locking members and a slider located adjacent the floor 34 of the tent. A third opening 37 controlled by another fastener whose slider has its diverging channels disposed at an angle sufficiently large to permit its sliding back to unlock the connecting members when the opposite edges of the slit are pulled apart. The slider 40 for each opening moves toward a point 38, common to each opening and adjacent the sliders when in closed position, enabling a single lock to secure all of the sliders. The opposite ends 39 of each opening are also preferably arranged within the material with the ends of the stringers permanently secured. While any type of slider desired may be used, the three communicating openings may be opened with ease with a single movement, if each slider controlling an opening has its diverging channels arranged at a wide angle. In a tent the use of such a sliding fastener is considerably simpler and easier of operation than a number of snap fasteners or ties, now commonly used in tents. Such closures are tight and bug proof, and when located above the canvas or board floor of the tent are more dry. If desired, overlapping flaps may also be provided to cover the slide fasteners, as is shown in Fig. 2, thus making the end closure more nearly waterproof. Although only shown at the ends, the slide fasteners may also be used around the sides when the sides of the tent are to be rolled up for ventilation. Locking means, such as that described in Fig. 13 may be used on the tent shown in Figs. 5 and 6. Ordinarily no additional stiffening element is necessary since the tent pegs function to tighten or stiffen the material sufficiently to prevent its being unintentionally opened, but if desired one or more additional stiffening elements of the kinds described in the following figures may be used. As a modification the slide fasteners may be on only the opening 37 and not put on the aligned openings 35 and 36.

In Fig. 7 is shown a cover provided with a single slit comprising openings disposed at an angle to each other, but in which the sliders 85 are movable toward substantially the same point 84. Such an arrangement of openings is of particular advantage as a handhold when sliders having wide diverging channels are used so that by grasping the portion 86, it may be pulled downward and both sliders simultaneously moved away in a single movement to open the slits.

In Fig. 8 the invention is applied to a box cover having a plurality of openings 87, 88 and 89, each extending toward substantially the same point although arranged in different planes. When the sliders are moved back the openings are unfastened when the cover may be conveniently taken off the frame. By the use of a specially shaped hasp the three sliders may, in Fig. 8, be locked together.

In Fig. 9 the slider controlling the interlocking members 48 is securely locked in position to the material at the end of a slit by means of the lock 53 and U-shaped stiffening element 51, pivotally secured to the goods at 52. The stiffening element 51 prevents the stringers and interlocking members being drawn through the slider when in its locked position, and yet by reason of being secured to the material remote from the end of the slit enables the material around the slit to be sufficiently flexible when the stiffening element is unlocked. The members 52 securing the ends of the stiffening element to the material are preferably formed of folded goods stitched to the material 50 in the manner illustrated in Figs. 9 and 10. The slider 49 is provided with a pull lug, or hasp 55 having a perforation therein, through which extends the loop 54 in the stiffening element and the lock 53 passes through the loop 54 to retain the hasp and slider in the position shown in Fig. 10. While the stiffening element of the form shown in Figs. 9

and 10 is illustrated as being used with only a single slide operating device, it is obvious that such a locking device may be used to retain two sliders in closed position to permit the loop 54 to cooperate with the hasp 55 of an oppositely disposed slider.

The interlocking members 56 and 57, controlled by the sliders 58 and 59, respectively, may have both fasteners locked in the closed position by means of the lock 61 passing through the pull lugs or hasps 60 of the oppositely arranged sliders 58 and 59, as shown in Fig. 11. Such a locking device is applicable to the bag of Figs. 1 and 2, the tent of Figs. 5 and 6, and may even be applied to the hand bag of Figs. 18 and 19. The stiffening element necessary to prevent the interlocking members being moved through the slider while held in its locked position comprises the U-shaped member 62, which in this embodiment is secured within the material and bridges the gap between the sliders when locked. By locating the stiffening element 62 as near to the stringers or the edge of one slit as may be desired, varying degrees of stiffness may be imparted to the material around the sliders in locked position. To still further stiffen the material another stiffening element similar to 62, but oppositely arranged along the other edge of the slit may be embedded within the material. By the use of one or two such stiffeners the slide operating devices 58 and 59 may be difficultly movable and require each slider having diverging channels forming an acute angle for the less flexible material, as described in my Patent No. 1,302,606, May 6, 1919.

The locking device shown in Fig. 13 is applicable to fasteners having only two sliders as in Fig. 2 as well as in locations such as those illustrated in Figs. 5 and 6 where three sliders are used. In Fig. 13 interlocking connecting members 63, 64 and 65 are controlled by the slidable operating devices 67, 66 and 68, respectively. The three sliders are located adjacent one another by the locking means 69, which comprises upper and lower plates 70 and 71, respectively, as shown in Figs. 14 and 15. One of these plates is provided with upturned tongues 72, adapted to retain the pull lug or hasp 73 of each slider between the plates. Upstanding lug 74 is adapted to be inserted through the slot 75 in the opposite plate with the perforation 76 in the lug 74 extending above the plate 70 and the lock 77 being inserted through perforation 76 retain the two plates together with the several pull lugs 73 caught between the plates and held by the tongues 72. The end members 81 and 82 of each slide fastener are locked within the diverging channels of the slider by the portions 83 of the locking device, which block the mouth of the diverging curves to prevent withdrawal of the end members 81 and 82.

In Fig. 16 is shown the lock 78 cooperating with the slider 79, and the pull lug 80 in such a manner as to block the mouth of the diverging channels of the slider and prevent withdrawal of the end members 81 and 82. The locking means shown in Figs. 16 and 17 is, therefore, effective to prevent movement of the interlocking members through the slider while the slider is held in locked position, and this is possible without the use of stiffening members of the kind illustrated in Figs. 9 to 12, inclusive.

The invention is also shown embodied in a lady's wrist bag in Figs. 18 and 19, wherein the bag 47 is provided with openings 41 and 42 on opposite sides meeting at a common point but not in a common plane, as in Figs. 2, 5 and 6. These openings are substantially parallel and practically in alignment, except that the material between the fasteners when in closed position is folded to make the slits come on opposite sides. In this embodiment the diverging channels of each slider 43 are at a wide angle, so that the application of a force tending to separate the sides 44 and 45, simultaneously opens both fasteners. A supporting cord for carrying the bag joins each slider enabling both fasteners to be simultaneously closed by pulling the cord. This novel form of hand or other bag is manipulated for either opening or closing with greater ease and facility than is the usual bag having a gathered mouth with pull strings inserted around the edge of the mouth.

In Fig. 20 is illustrated how the invention may be applied to a slit having three sides 90, 91 and 92 with fastening means along the sides 90 and 92 controlled by the sliders 93 and 94, respectively. The side 91 of the slit is not provided with any slidable operated fastening means, but if desired may have an overlapping flap 95 to keep out moisture and this flap may be provided with snap or other fasteners 96. When the openings 90 and 92 are unfastened the material 97 between them may be rolled or folded to form a window or other large opening in the wall of the material 98. The sliders 93 and 94 may be of any type and the connecting members along the openings 90 and 92 may be provided with overlapping flaps if desired as was illustrated in connection with the fasteners shown in Fig. 2.

As was said above the stiffening means of Fig. 11 is applicable to a construction such as shown in Fig. 5 and Fig. 21 illustrates such an embodiment of the invention.

From the foregoing description it will be seen that this invention may be applied to devices having more than three openings if desired. While the drawing shows only the construction in which the several sliders are

moved toward a point common to each opening, these sliders may still operate in the same way without the openings being connected, or, if desired, each opening may be arranged with its closed end adjacent the point towards which the slider is moved. Also the invention is not limited to stiffening devices of the type illustrated since other forms and shapes of stiffening elements may be used to accomplish the same purpose, and in those constructions where a stiff framework is used to support the material the supporting frame may be sufficiently rigid to serve the purpose of a stiffening element and do away with an additional stiffener at the locked end of the slit.

Among the advantages of the present invention may be enumerated the increased convenience of operation of slidable fasteners closing a long slit, whereby a portion of the same may be opened without the entire length being unfastened. Increased facility of movement whereby at least two slidable operating devices may be manipulated to either open or close a slit in a single movement is another noteworthy feature. By means of the locking device described above a slit may be securely locked by a slide fastener and the interlocking members prevented from moving through the slider while such slider is still retained in its locked position. The material around the locked end of the slit may be stiffened to any desired degree. Economy of material and labor in production is another desirable feature since these slide fasteners may be sewed directly to the material and do away with the need for overlapping portions such as is necessary when snap fasteners are used. A further advantage includes the facility of manipulation when the material of the container or cover is rather tight and under tension, which would make the use of snap fasteners or ties too difficult of operation as these particular fasteners with the acute angled slider can be operated positively in either direction against very considerable lateral tension of the material, and stay in any position without tending to unlock.

While the invention has been illustrated in containers having substantially straight openings, it will be understood that this invention may also be applied in cases where the opening may be curved. The use of protective flaps to keep out the rain and weather, such as illustrated in Figs. 2, 3 and 4 might also be applied to any of the other embodiments of the invention. Pull cords may be attached to each slider and they may pass through a ring as shown in Fig. 6 at about the point 38 to facilitate closing all openings in a single movement.

The invention is applicable in its various forms shown to bags for various purposes such as bowling balls, bats, hooded golf bags, etc., and also to wardrobes, instrument and implement cases, etc., too numerous to mention, or wherever multiple closures are desired, and I do not restrict myself to any specified structure of fastener or use except as required by the appended claims.

I claim:

1. A body provided with a plurality of openings, connecting means for the sides of said openings and a plurality of movable devices for closing said openings by moving said devices toward a common point.

2. A body provided with a slit, a closure therefor comprising connecting means and a plurality of devices movable in different directions to close said slit.

3. A body provided with a slit, a closure therefor comprising connecting means and a plurality of devices movable in different converging directions to close said slit.

4. A body of flexible material having therein a pair of openings in substantial alignment, separable fasteners having elements slidable toward each other for closing said openings and means for locking said slidable elements together while said fasteners are in closed position.

5. A body of material having an opening therein, another opening in substantial alignment with the first opening, connecting means for closing each opening, sliders controlling said connecting means and slidable to a position closely adjacent to each other in the act of closing said openings, means to lock said elements together and means to prevent relative movement between said material and at least one of said sliders.

6. A receptacle body provided with elongated openings extending toward a common point, said openings being permanently closed at the extreme ends, slide operated fastening means for each opening, and a slider mounted on each opening and so arranged with the fastening means as to close its respective opening when moved toward the common point.

7. A receptacle body provided with elongated slits extending toward a common point, said slits being permanently closed at the extreme ends, slide operated fastening means for each slit, a slider mounted on each slit and so arranged with the fastening means as to close its respective slit when moved toward the common point, and means for locking said sliders to prevent opening either slit.

8. A receptacle body provided with elongated openings extending toward a common point, said openings being permanently closed at the extreme ends, slide operated fastening means for each opening, a slider mounted on each opening and so arranged with the fastening means as to close its respective opening when moved toward the

common point, and a single means for locking said sliders to prevent opening either opening.

9. A body having a plurality of connected openings therein at an angle to each other, connecting means and a slider for each opening, said sliders being movable away from substantially the same point to unfasten both openings to form a bendable flap.

10. The combination with a body portion of material having a plurality of openings therein and extending toward substantially the same point, of connecting means and a slider for each opening movable along the material adjacent the edges of its opening, and a locking means for said sliders adapted to prevent movement of each device relative to the material.

11. A body having a slit, connecting means therefor and a plurality of slidable operating means controlling said connecting means and said slit to open and close it, each of said slidable operating means being movable toward the other means in closing said slit.

12. A body provided with a slit, connecting means therefor, a pair of slidable operating means controlling said connecting means and the opening and closing of said slit, said operating means being constructed to be simultaneously movable away from a point between them in one movement.

13. The combination with a body of flexible material having a plurality of communicating openings, connecting means for closing said openings, a plurality of slidable operating means controlling said connecting means, said operating means being shaped to be simultaneously moved to unfasten said openings on pulling apart the opposite edges of the material between said operating means.

14. The combination with a body of material having a slit therein, of means for closing the slit, a slider for controlling the closing means, means to which a slider may be secured, a lock for securing said slider to said securing means, and stiffening means for preventing the material being pulled through the slider and bent under the lock to open the slit with the lock in cooperation with the slider and securing means.

15. The combination with a body of material having an opening therein, of connecting means for closing the opening, a slider for controlling said connecting means, means to which said slider may be secured, a lock for securing said slider to said securing means, and means for stiffening at least one edge of the material adjacent the lock.

16. A body of flexible material having a slit therein, connecting means for the opposite edges of the slit, sliders controlling said connecting means in different portions of the slit, and movable toward the portion of the slit between them to actuate said connecting means and close the slit.

17. The combination with a body of material having an opening therein, of connecting means for closing the opening, a slider controlling said connecting means, means to which the slider may be secured, a lock for fastening the slider to said securing means, and means for stiffening at least one edge of the material adjacent the lock sufficiently to prevent passage of enough material through the slider when locked to gain access through said opening.

18. A body of material provided with communicating openings arranged at an angle less than 180 degrees connecting means for said openings, and a slider controlling the connecting means of each opening, each slider comprising diverging channels through which said connecting means pass, said channels being arranged at a sufficiently large angle to each other in each slider to permit simultaneous movement of said sliders to unfasten the connecting means of said openings on pulling at least one side of the material between said openings.

19. A body of flexible material provided with more than two openings leading away from a common point, connecting means for each opening, a slidable operating device controlling said connecting means for each opening, said devices being movable toward said common point in closing said openings, means for locking said sliders together, and means for stiffening said material around the locking means.

20. A body having a slit, interlocking fastening devices for closing said slit, at least two slidable operating means controlling said fastening devices and movable toward a point between them in closing, each of said slidable operating means comprising diverging channel portions disposed at such angle as to open the slit when its opposite sides are pulled apart between said slidable means.

21. A body of material having therein a slit, connecting means for closing the slit, a plurality of sliders controlling said connecting means, and means to confine each slider to a portion of said slit.

22. A body having a slit, connecting members, a plurality of slidable operating means controlling said members, said means being movable toward a common point in closing, a lock adapted to secure said slidable operating means in closed position, and a stiffening element in cooperation with said body adjacent the lock.

23. The combination with a body of flexible material having an opening therein, of connecting means for closing the opening, a slider controlling said connecting means, means to which the slider may be secured, a

lock for fastening the slider to said securing means, and a longitudinal stiffening member secured to the flexible material adjacent said securing means and near enough to the edge of said opening to prevent substantial movement between said material and slider when locked, but far enough from said connecting means to allow their passage through the slider when unlocked.

24. A body provided with an opening, connecting means for closing the opening, a slidable operating means controlling said connecting means, means to which said slidable means may be secured and means for locking said slidable operating means to said securing means and a U-shaped stiffening element adjacent and along a portion of said opening occupied by said slidable operating means in locked position.

25. A body having a slit, a slide operated interlocking fastener for said slit, means for locking the fastener in closed position, and means for stiffening the material adjacent the locked end of said fastener.

26. A body of material provided with a slit, a slidable fastener for closing the slit, means for locking the fastener in closed position, and a stiffening element adjacent and extending along at least one side of the slit near its locked end.

Signed at Meadville in the county of Crawford and State of Pennsylvania this 16th day of January A. D. 1923.

GIDEON SUNDBACK.