

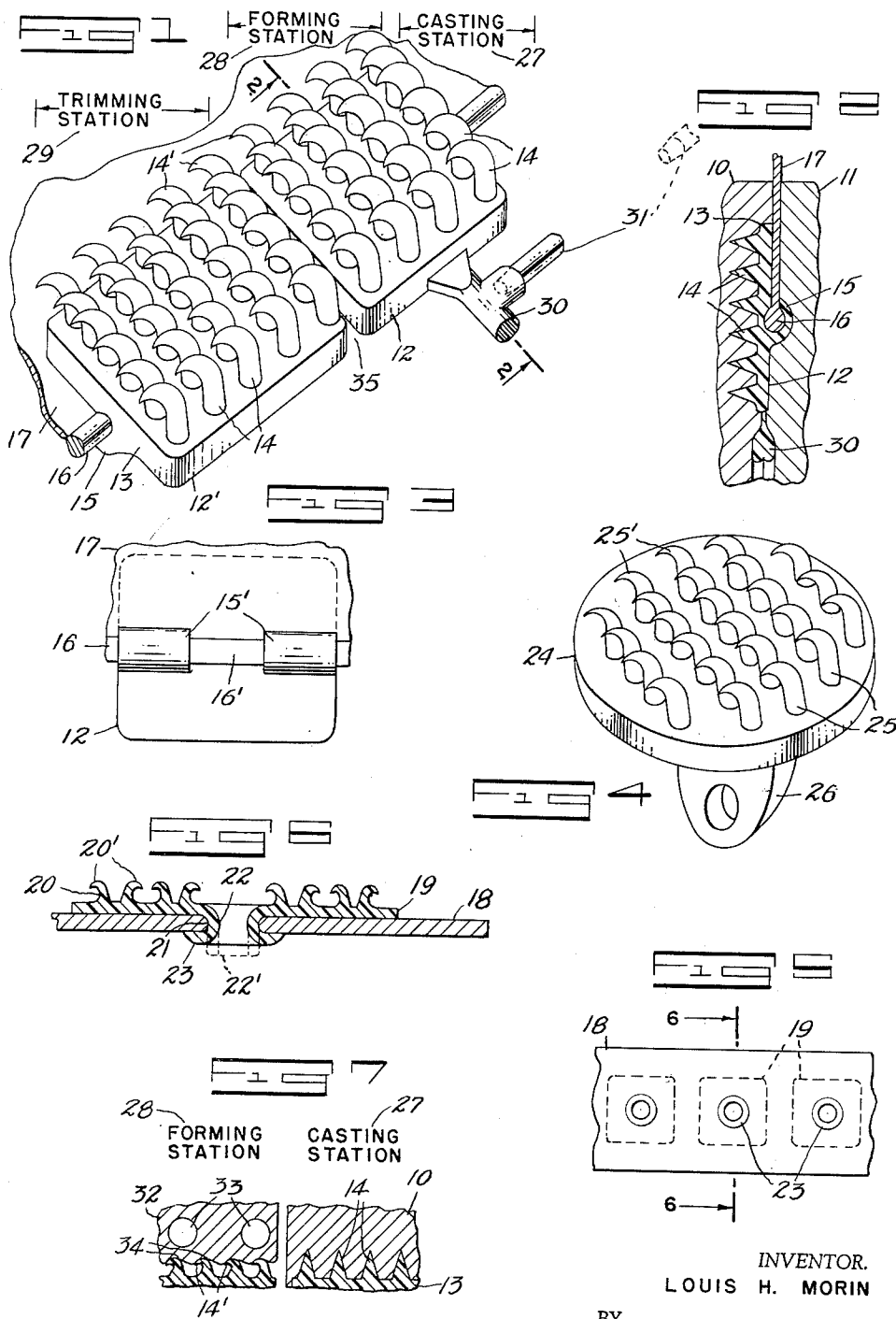
May 1, 1962

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3,031,730

Burr-Type Closure or Coupling Element

Filed Sept. 26, 1958



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1

3,031,730

BURR-TYPE CLOSURE OR COUPLING ELEMENT

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Filed Sept. 26, 1958, Ser. No. 763,510

8 Claims. (Cl. 24-204)

This invention relates to a closure or coupling element, wherein a surface of the element includes a multiplicity of burrs extending transversely and longitudinally of the element and means is provided for attachment of the element to a support, with the burrs of the element exposed on a surface of the support, whereby a companion fabric support may be positively coupled with the first support by engagement of the burrs with the fabric of said second support in establishing a coupling between the two supports.

More particularly, the invention deals with an element of the character described, wherein the burrs are in the form of cast or moulded flexible or plastic hook-like members arranged upon a surface of the mounting means of said element.

Further, the invention deals with a device of the character described made in accordance with the method more fully hereinafter described and claimed.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

FIG. 1 is an enlarged diagrammatic perspective view of a small portion of a mounting, upon one edge portion of which is arranged a multiplicity of burrs formed in cast or moulded sections, each section comprising a multiplicity of burrs and diagrammatically illustrating the method of first forming a section at a casting station, then moving the same to a forming station and finally to a trimming station.

FIG. 2 is a longitudinal sectional view on the line 2-2 of FIG. 1 and illustrating parts of the dies for initially forming each of the sections illustrated in FIG. 1.

FIG. 3 is a bottom plan view of one of the sections, as seen in FIG. 1 of the drawing, and illustrating a slight modification.

FIG. 4 is an enlarged perspective view diagrammatically illustrating a button-type of member which can be employed in forming a burred closure and coupling.

FIG. 5 is a bottom plan view of a modified form of mounting showing a plurality of burred sections attached thereto.

FIG. 6 is an enlarged section on the line 6-6 of FIG. 5, diagrammatically illustrating part of the burrs and omitting background showing and also indicating, in dotted lines, a modified method of producing the end product; and

FIG. 7 is a detailed view of a portion of one die and one forming tool, diagrammatically illustrating the casting and forming stations for production of members or devices as illustrated in the other figures and only portions of each of the burred members are illustrated.

In illustrating one adaptation and use of my invention and method of procedure, I have shown, in FIG. 2 of the drawing, portions of two dies 10 and 11, the die 10 being fashioned to form one of the burred sections 12 shown in FIG. 1 of the drawing, a similar section being indicated at 12' in FIG. 1. The section comprises a mounting plate or base portion 13, on one surface of which are a plurality of projecting burrs 14. The burrs 14 are initially formed as pointed cones or tooth-like burr forming members, as clearly illustrated in FIG. 2 and integral with the plate or base 13 is a more or less

2

hook-shaped portion 15, which envelopes the beaded edge 16 of a mounting tape or similar member 17 used for attachment of the resulting end product, namely the closure or coupling element to a support.

In FIG. 3 of the drawing is illustrated a bottom plan view of a portion of the tape 17, with one of the sections 12 thereon to indicate that, instead of the portion 15, two members 15' can be employed, it being understood that the pressure engagement of the material formed on the bead 16 compresses this bead, thus establishing, between the members 15', an anchorage portion 16' assisting in maintaining the section 12 in definite position on the mounting 17.

The mounting 17 can be in the form of an elongated tape, which extends and projects beyond one side edge of the multiplicity of sections, such as 12, 12', arranged up the beaded edge 16. It will be understood that the sections will extend along the mounting 17 in close proximity to each other to form what may be regarded as a long tape-like element. When it is desirable to provide predetermined lengths of the mounting, a wide spacing can be provided between the arrangement of adjacent end sections, where the mounting can be severed in forming products of predetermined lengths in having a predetermined number of the sections thereon, thus adapting the same for attachment to supports of predetermined lengths.

Turning now to the showing in FIGS. 5 and 6 of the drawing, here is illustrated at 18 a modified form of mounting in the form of a tape or ribbon without the inclusion of any beaded edge. In this construction, a series of burred sections are arranged in a wider spaced relationship along the mounting 18, as indicated at 19, part of the burrs of one of sections 19 being noted in section in FIG. 6 of the drawing.

With the structure of FIGS. 5 and 6, the sections can be directly cast or moulded upon the mounting 18 by providing in the mounting spaced apertures, as at 21, note FIG. 6, to receive eyelet portions 22, including the turned-over rims 23. Instead of forming the sections 19 directly upon the mounting 18, it is also possible to form these sections as button-like members, including central tubular portions, as indicated in dotted lines at 22' which would project sufficiently to permit the same to be formed, similar to the rim 23, in attachment of the buttons to the mounting 18, this result being accomplished by the use of a heated forming tool in accordance with the principles of turning-over the pointed ends of the members 14, as later described in connection with the showing in FIG. 7 of the drawing.

With the structure as noted in FIG. 5 of the drawing, the mounting 18 can be attached to a support by stitchings or the like engaging side edge portions of the mounting beyond the limits of the sections 19 attached thereto.

In FIG. 4 of the drawing is shown another button-type section 24, which can be used and attached either directly to a support or to a mounting, similar to 17 or 18, the section 24, as diagrammatically illustrated, being in the form of a round-type button member having the burrs 25 on one surface thereof and a projecting apertured lug or eye 26 centrally of the opposed surface thereof, the latter being used for attaching the buttons to a support or mounting.

Considering FIG. 7 of the drawing in conjunction with FIG. 1, it will appear that, in FIG. 1, I have indicated at 27 a space, representing a casting station, the latter being shown in part in FIG. 7 of the drawing.

In FIGS. 1 and 7, I have indicated at 28 a forming station and at 29, of FIG. 1, I have shown a trimming station.

Considering now FIG. 7 of the drawing, it will appear that, at 10, I have shown part of the die, similar

3

to the die 10 of FIG. 2, with a few of the initially formed conical members 14 on a part of the plate or backing 13.

Now, considering FIG. 1, it will appear that the section 12 is first formed at the casting station 27 and, in FIG. 1, 30 represents the sprue or gate for admission of plastic material into the die cavities and this sprue or gate is formed on a transfer pin or rod 31, shown in part in FIG. 1, and its position at the casting station is indicated in dotted lines in FIG. 1.

After the casting has been formed, the pin 31 moves the cast section to the forming station, at which there is a forming tool 32, note FIG. 7, suitably heated, as diagrammatically indicated at 33, the tool having a multiplicity of rounded forming surfaces 34 in position to engage the pointed ends of the initially formed members 14, so as to form, at their free ends, the hook-shaped members, such as 14' of FIGS. 1 and 7, or in forming the hook-shaped members 25' of the burrs 25 of FIG. 4 and corresponding forming tools can be utilized in forming the hook-shaped members 20' on the burrs 20 of FIG. 6, it being noted, in this figure, however, that the forming tool will be so fashioned as to turn the hook-shaped members 20' in different directions and, in some instances, would be directed toward adjacent burrs, as is clearly illustrated. This latter principle would be applicable to elements of the types and kinds illustrated in FIGS. 1 and 4 of the drawing. Burrs of the type and kind illustrated in FIG. 6 of the drawing would establish more secure attachment of the elements to the companion support, as will be apparent.

It will be understood that, after the transfer pin 31 has moved the section to the forming station, the pin is removed from the section and is returned to its dotted position at the casting station, preparatory to formation of the next successive cast section. It will further appear that, as the sections are advanced, a section at the forming station is moved to the trimming station, at which station the gate is removed from the cast section by suitable trimming tools, which are not shown, as such trimming operations are well-known in the art.

At this time, it is also pointed out that, in some instances, the transfer pin 31 can be dispensed with and means can be employed for feeding the tape or mounting the desired increments for properly positioning the cast sections on the mounting. This type of feed, which is known in the art, will also be utilized in the feed of the mounting shown in FIGS. 5 and 6 in spacing the button-like sections on the mounting.

It will be apparent that the base of each of the sections definitely maintains the spacing of the burrs as well as alinement of the hook end portions of the burrs on the mounting and on the support to which the mounting is attached.

With my improved closure, it will be apparent that the burr coupling elements are suitably fixed and arranged longitudinally of a surface of a support adjacent one edge thereof and, in establishing an engagement with a companion support, said companion support is arranged upon the projecting burr elements of the first support and pressure is then applied between the supports so that the burr elements engage a fabric of the second support in establishing coupling engagement therewith in retaining the supports in coupled relationship. In referring to a fabric support, it will be understood that reference is made to any type and kind of an openwork or piled element which constitutes the structure of the second support or fixed thereto. In this connection, it must be kept in mind that, where the supports have a relatively smooth and substantially non-porous or non-open texture, ribbon-like closure elements suitable for engagement with the burrs can be adhesively or otherwise fixed to the second support in providing the desired coupling engagement between the two supports.

Any type and kind of plastic material having resilient

4

or springy properties can be utilized in forming the respective burrs or the sections on which the burrs are arranged and, in some instances, materials such as nylon and Delrin can be used by way of example.

By providing spacing between the sections, such for example as the spacing at 35, FIG. 1, or the spacing between the button-like sections 19 of FIG. 5, the closure or coupling element becomes flexible thus facilitating flexure of the support to which the element is attached, here keeping in mind that devices of the type and kind under consideration are suitable for mounting on jackets of various types and kinds in establishing a coupling or closure between the open fronts of the jacket, the element being secured to the undersurface of one front of the jacket and the burrs will operatively engage the outer exposed surface of the fabric of the jacket, the only requirement being that the fabric of the jacket be of a characteristic facilitating engagement of the burrs therewith. This illustration with respect to jackets, sweaters or the like is only by way of example, as elements of the type and kind can be utilized for securing two supports of any type or kind together in establishing a coupling engagement with the supports. It will also be understood that, while the coupling engagement is established from a standpoint of pull-apart separation transversely with respect to the longitudinal plane of the element, the element of one support can be removed from the companion support by forcible stripping along a line longitudinal with respect to the element, whenever it is desired to separate the supports one from the other.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A burred member for a closure fastener of the type in which two companion members are coupled by merely bringing them together face to face and are separated by merely pulling them apart independently of any slider, said burred member constituting one of said companion members and being elongated in shape, said burred member comprising a coupling element having a continuous sheet-like base portion of plastic material and a multiplicity of burrs of the same material integral with said base portion and projecting from one surface thereof, the outer extremity of each of said burrs terminating in offset ends forming hooks for coupling engagement with the other companion member, each of said burrs having only one offset end and having sufficient resiliency to cause said burr to flex out of engagement with a coupling component of said other companion member caught on said burr when said burr is pulled away from said component by a pull-apart manipulation independently of any slider, and a mounting for said coupling element comprising a flexible strip, said coupling element comprising a plurality of separate spaced sections arranged in a row along said strip and fastened to said strip, the sections of the flexible mounting strip between the sections of the coupling element being free enough from said coupling element to permit said strip sections to flex independently of said coupling element.

2. A burred member for a closure fastener as described in claim 1, wherein said mounting strip has a beaded edge, and the base portion of each of said coupling sections has integral means embracing said beaded edge with hook engagement.

3. A burred member for a closure fastener as described in claim 1, wherein said mounting strip has a beaded edge, and the base portion of each of said coupling sections has spaced integral means embracing said beaded edge with hook engagement.

4. A burred member for a closure fastener as described in claim 1, wherein said coupling sections constitute a series of button-like members spaced along said mounting strip.

5. A burred member for a closure fastener as described in claim 1, wherein said coupling sections constitute a row of moulded plastic button-like members spaced along and secured to said strip.

5

6. A burred member for a closure fastener as described in claim 1, wherein said mounting strip has a series of holes spaced therealong, and said coupling sections constitute a row of button-like members each having a projection on its base portion extending in a corresponding hole in said mounting strip and upset against the mounting for securing said button-like member in position.

7. A burred member for a closure fastener as described in claim 1, wherein the offset ends extend in the same direction.

8. A burred member for a closure fastener as described in claim 1, wherein the offset ends extend in different directions.

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