April 24, 1945. J. KUNA 2,374,292

MOLD FOR SLIDING CLASP FASTENERS

Filed Feb. 28, 1942

FIG. 1.

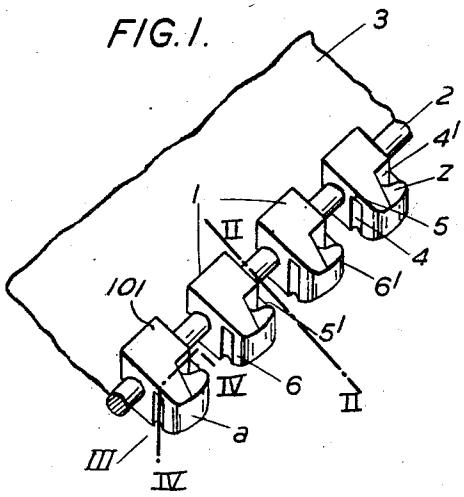


FIG. 2.

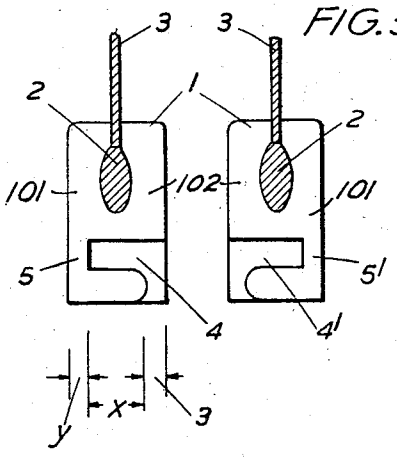


FIG. 3.

FIG. 4.

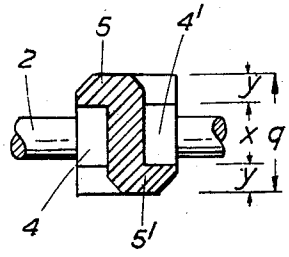


FIG. 5.

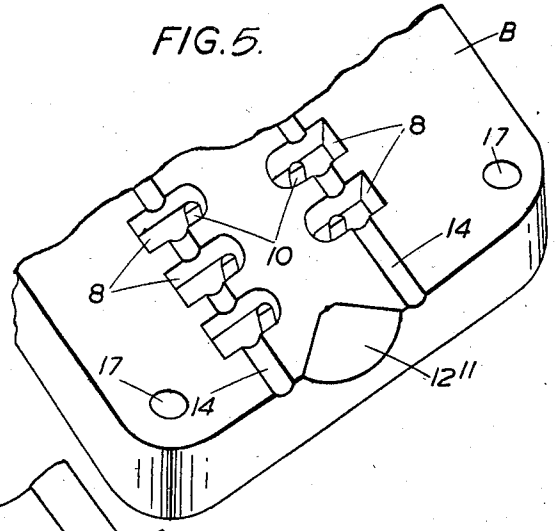


FIG. 6.

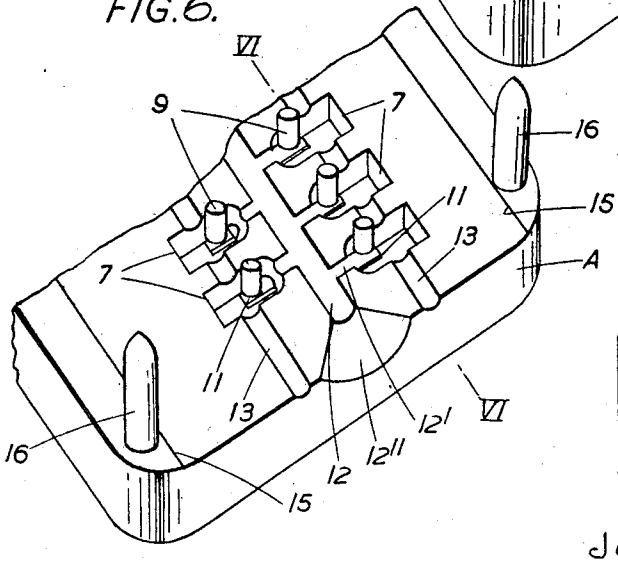
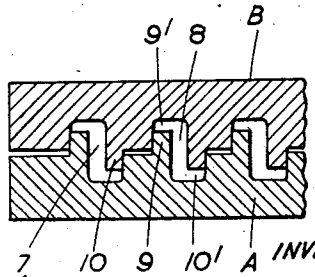


FIG. 7.



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MOLD FOR SLIDING CLASP FASTENERS

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Application February 28, 1942, Serial No. 432,871
In Great Britain March 20, 1941

1 Claim. (Cl. 18—36)

This invention relates to molds for producing sliding clasp fasteners of the kind in which the fastener members are made of artificial resin and produced in such a way that they are molded directly to the carrying tapes or stringers. It is known that for sliding clasp fastener members which by their production are molded directly to the carrying tape and thus become fixed to it, the most suitable is a simple production mold consisting of two parts which can be opened and closed by means of one operation only, and which makes the production of members in rows possible. Not every shape of member is suitable for such production, but a special shape of member must be chosen, for instance, in one case a sliding clasp fastener has been proposed in which the members are formed with transversely interlocking parts in the form of ridge-like projections and open-ended groove like recesses lying wholly only on one side of the casting seam, that is the interlocking members molded directly to the stringers engage the edges of the stringers with two shanks, and their coupling parts lie only on one side of the plane of the stringer. The recesses are open ended on one side of the fastener and should the fastener be bent so that the open-ended recesses come to the top a pressure arises on the projections from the sides, and consequently the latter are forced out of the recesses.

It has also been proposed to use members where each of the members is provided on the upper and lower faces with at least one projection which extends through half the width of the member, and is flush with one side face of the latter, each projection on the upper face of the member being staggered transversely of the member relative to a projection on the lower face. A fastener with these members is stiff, when in a closed state, thus lacking the necessary flexibility, and the projections, therefore, are likely to break.

The object of the present invention is to make possible with a simple two-part mold the production of interlocking members in rows whereby when the fastener is in the closed state the recesses are closed from both sides, the coupling parts therein lie between the upper and lower faces of the member regularly divided from the centre of the member.

According to this invention, a sliding clasp fastener in which the interlocking members are molded directly to the carrying tape or stringer, and in which the said members are formed with transversely interlocking members in the form of recesses and projections, each member has a recess on one side edge closed at the upper end by a wall, and a recess on the other side edge closed by a wall on the under side, the walls having the same thickness and each forming approximately one fifth of the whole height of the member, the outer wall of each recess being set back at the open end of the recess, and the portion between the end walls and the set back parts of the outer walls forming the projections, whereby the recesses and projections lie in the centre of the member equally divided on both sides of the central plane of the member or casting seam.

The invention also contemplates the provision of a simple two-part casting or press mold in which the members of the fastener can be constructed with half a member on each side of the casting seam.

In order to indicate clearly the manner in which the invention is to be performed there will now be described by way of example only with relation to the accompanying drawing the construction of a sliding clasp fastener and a mold for producing same.

In the accompanying drawing—

Figure 1 shows several members of the fastener in perspective view.

Figures 2 and 3 show side views of the member from the left and from the right respectively, taken in section at line II—II of Fig. 1.

Figure 4 is a cross section of the member on line IV—IV of Figure 1.

Figures 5 and 6 show in perspective a portion of the upper and lower parts of a mold for producing the fastener, and

Figure 7 is a cross-section of the complete mold taken on the line VI—VI of Fig. 5.

In the drawing, Figures 1 to 3, the interlocking members each consisting of a molded block formed with jaws 1 are secured to the edge 2 of a carrying tape 3 or stringer by molding directly onto the tape 3 during manufacture. Each member has a recess 4 on its right side (Fig. 2), and a recess 4' on its left side said recesses being adjacent to the edge of the tape 3. The recesses 4, 4' extend transversely to the upper and lower faces 101, 102 of the member with the mouth of the recess 4 in the face 101 and the mouth of the recess 4' in the face 102 and the bottoms of the recesses inwards from the opposite faces. The recess 4 is thus closed at the upper face 101 by a wall 5, and the recess 4' is similarly closed on the lower face 102 by a wall 5', the walls 5, 5' having the same thickness y, and forming approximately one-fifth of the whole height of the member. The outer walls of the recesses 4, 4'

form the rear faces of projections 6, 6' for engaging in the recesses 4, 4' of the adjoining members when the fastener is closed, the front faces *a* of which projections constitute the ends of the members away from the jaws. The projections 6, 6' extend in height for a distance *x* from the end wall 5 (5') to a short distance from the opposite face 101 or 102 of the member, where said faces of the member are bevelled as at *z*, whereby the projections 6, 6' lie along the middle of the member with the height of the projections bisected by a central plane parallel to and midway between the faces 101, 102. The front faces of the projections 6, 6' are angled or curved as at *a*, Figure 1.

Such members possess the great advantage that when the fastener is closed every recess 4, 4' is closed at top and bottom which ensures that the projections 6, 6' cannot be forced out of the recesses 4, 4'. A further advantage lies in the fact that the series of projections 6, 6' and recesses 4, 4' lies in a zone at the centre of the members between the faces 101, 102, thus are symmetrically bisected in height by the plane of the carrying tape 3. Therefore in the closed state of the fastener, the members remain with the zone of engagement aligned with the plane of the carrying tapes 3 when a lateral pull is exerted, which is particularly important if the fastener is to function well.

Also as the coupling parts of the members are situated in the centre of the members the necessary flexibility of the fastener is ensured.

These members can be produced in the simple casting or press mold shown in Figures 4 to 6 of the accompanying drawing. In this example the mold comprises two parts, i. e., a lower part A and an upper part B, each of which is provided with two rows of molding cavities 7 and 8 at suitable distances apart. The cavities are each shaped to define half a member, so that when the mold is closed the cavities in one part register with the cavities in the other part, and each pair of registering cavities forms a complete molding cavity for a single interlocking member. Each one of the cavities 7 in the lower part A of the mold is provided with a core 9 or pin, and a similar core 10 or pin is provided in each of the cavities 8 in the upper part B of the mold. The cores 9, 10 are all of the same shape and size, and a portion of each core 9, 10 projects from the face of the parts A and B of the mold, so that when the parts A, B of the mold are closed the projecting parts of the cores project into the co-acting cavity at opposite sides, that is the cores 9 project into the cavities 8, and the cores 10 project into the cavities 7. The cores form the recesses 4, 4' during the molding, and are suitably located in the mold for this purpose, and the projecting portions of the cores 9, 10 are of less length than the depth of the co-acting cavities 7, 8 so that when the mold is closed a gap 9', 10' or space is left between the free end of each core 9, 10 and the bottom of each cavity 7, 8 equal to the thickness of the wall 5, 5' of the member (Figure 6). The cores are preferably slightly tapered to assist in withdrawing the molded members from the mold. The bottom of each cavity 7, 8 is provided with a block 11 for forming the bevelled portions *z* in the members.

The lower part A of the mold is provided with a trough 12 and short channels 12' leading from the trough 12 into the cavities 7, so that when the parts of the mold are closed together, the trough 12 and channel 12' form a casting conduit for the material, the parts may each be formed with a half-conical shaped mouth 12'' leading to the trough 12 to form a funnel shaped pouring hole. Grooves 13 are formed on part A and coinciding grooves 14 on part B of the mold extending across the cavities 7 to receive the edges of the carrying tapes 3, which are secured between the parts A, B before the casting material is introduced into the mold. The lower part A of the mold may also be provided with steps 15 along the side edges to accommodate the carrying tapes 3.

The cores 9, 10 may be formed with the mold or made separately and secured in the cavities 7, 8 so as to be replaceable in case of damage, or the part of the core within the cavity may be formed with the mold and the projecting portion formed separately and secured in place by any suitable means, or the projecting part of each core could be made separately and be secured or formed in the appropriate registering cavity.

The lower part A of the mold is provided with locating pins 16 and the upper part B with holes 17 adapted to engage and slide on the pins 16 so as to enact alignment of the cavities and ensure the easy and exact closing and opening of the mold. Any suitable number of pins 16 and holes 17 may be provided, and the pins 16 should be advisably so long that when the upper part B of the mold is lifted in order to remove the completed fastener from the lower part A of the mold, the upper part A can remain on the pins 16.

The mold may also be constructed with a single row of cavities, or for a single member in which case only one cavity would be provided in each half of the mold.

Each half of the mold may be constructed from a solid block or metal, or each half may be constructed or built-up from parts or sections.

Various detail alterations or modifications may be made.

What I do claim as my invention and desire to secure by Letters Patent is:

A two-part mold for making sliding clasp fastener members wherein each mold part has a molding cavity portion corresponding to a half of the member to be formed and registering with the cavity portion in the other mold part when said parts are superposed to form the complete member molding cavity, means in said mold parts for holding a fastener tape with its fastener member receiving edge projecting into the molding cavity, wherein the formations of the mold cavity portions for producing recesses and projections of the fastener member are substantially symmetrically arranged on opposite sides of the plane of contact of the mold parts at the cavity, and wherein the cavity portion in the lower part of the mold is provided with a core for forming one of the recesses in the fastener members to be cast, and a similar core is provided in the cavity in the upper part of the mold to form the other recess, said cores projecting beyond the plane of contact into the opposite cavity portion to a length less than the depth of the cavity portions whereby when the two parts of the mold are superposed a gap is left between the free ends of each core and the bottom of each cavity portion equal to the thickness of the end walls of the recesses to be formed in the fastener member.

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