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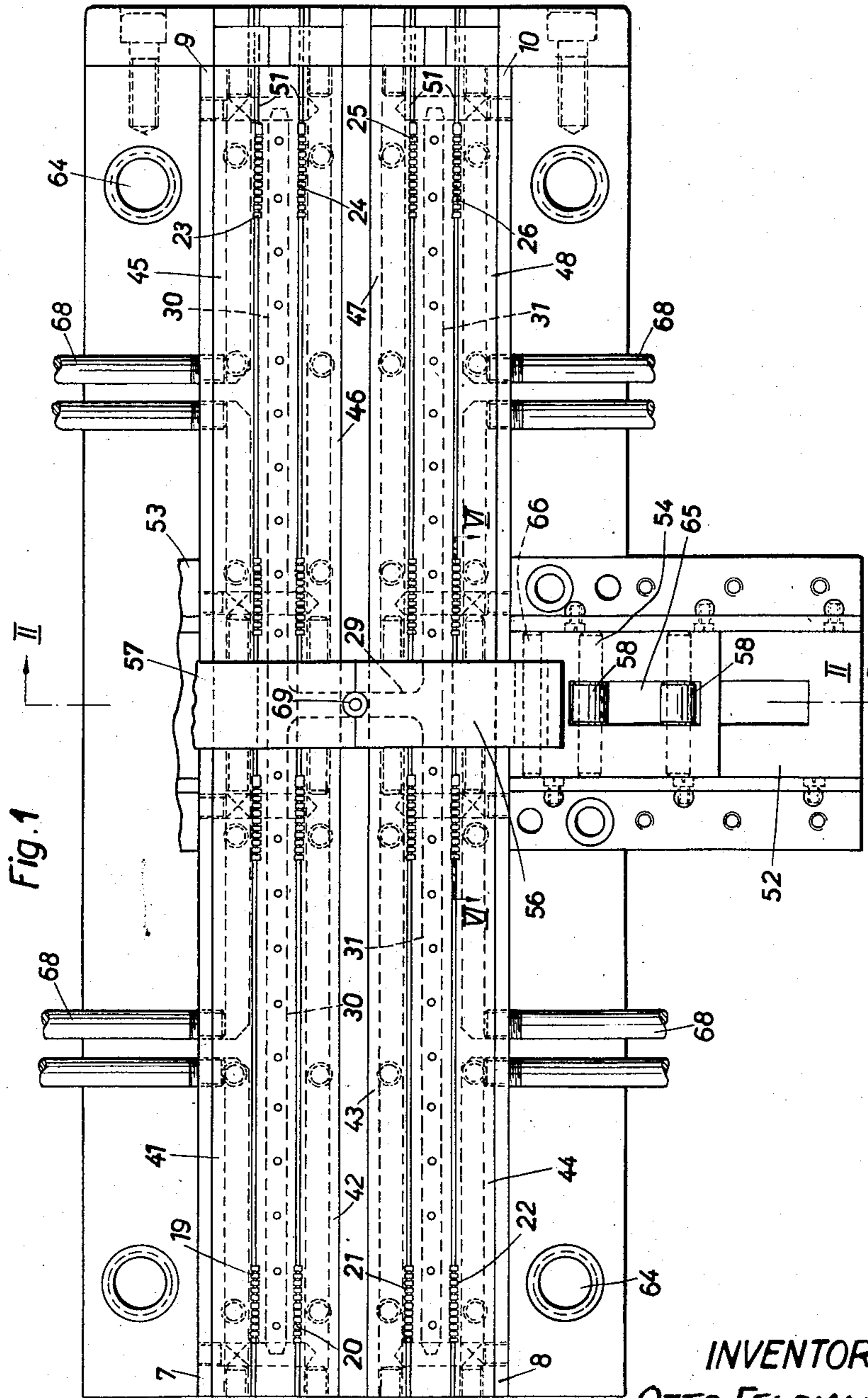
O. FELDMANN

2,849,753

APPARATUS FOR THE MANUFACTURE OF SLIDING CLASP FASTENERS

Filed Aug. 13, 1954

3 Sheets-Sheet 1



INVENTOR:

OTTO FELDMANN

By *Emery Booth Townsend Miller & Weidner*  
ATTY'S

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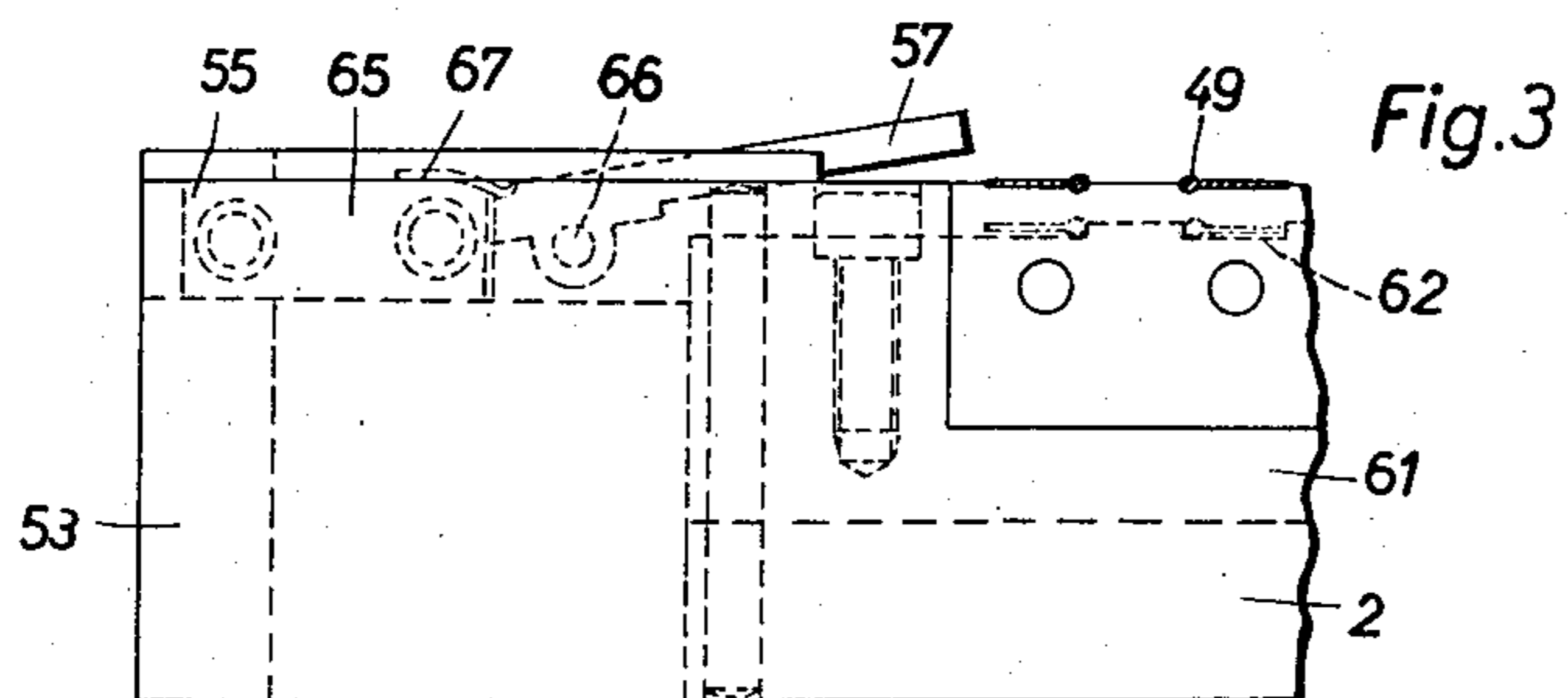
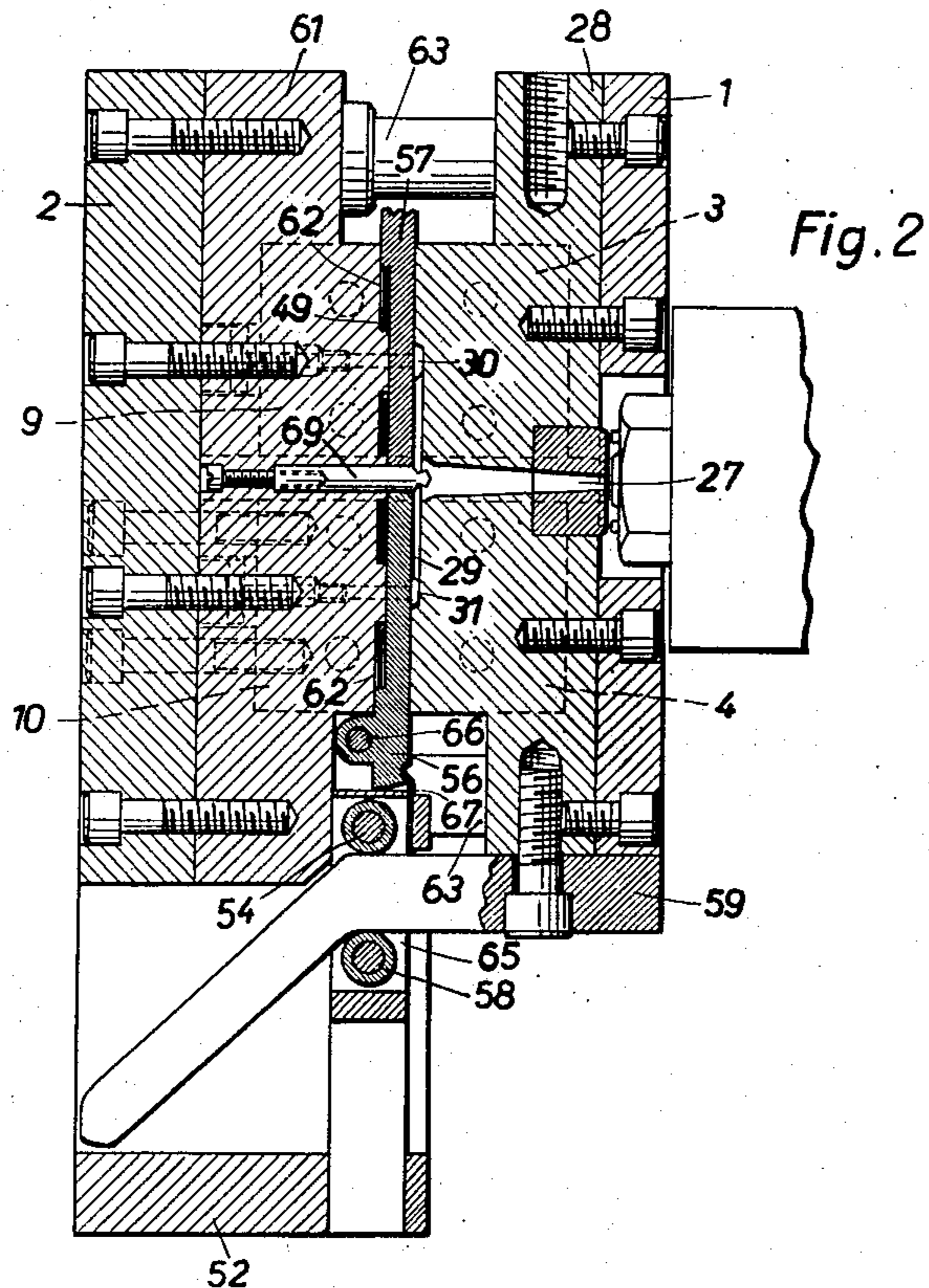
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INVENTOR:  
OTTO FELDMANN  
By Emory Booth Townsend Miller &  
Weidner  
ATTY'S

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Fig. 4

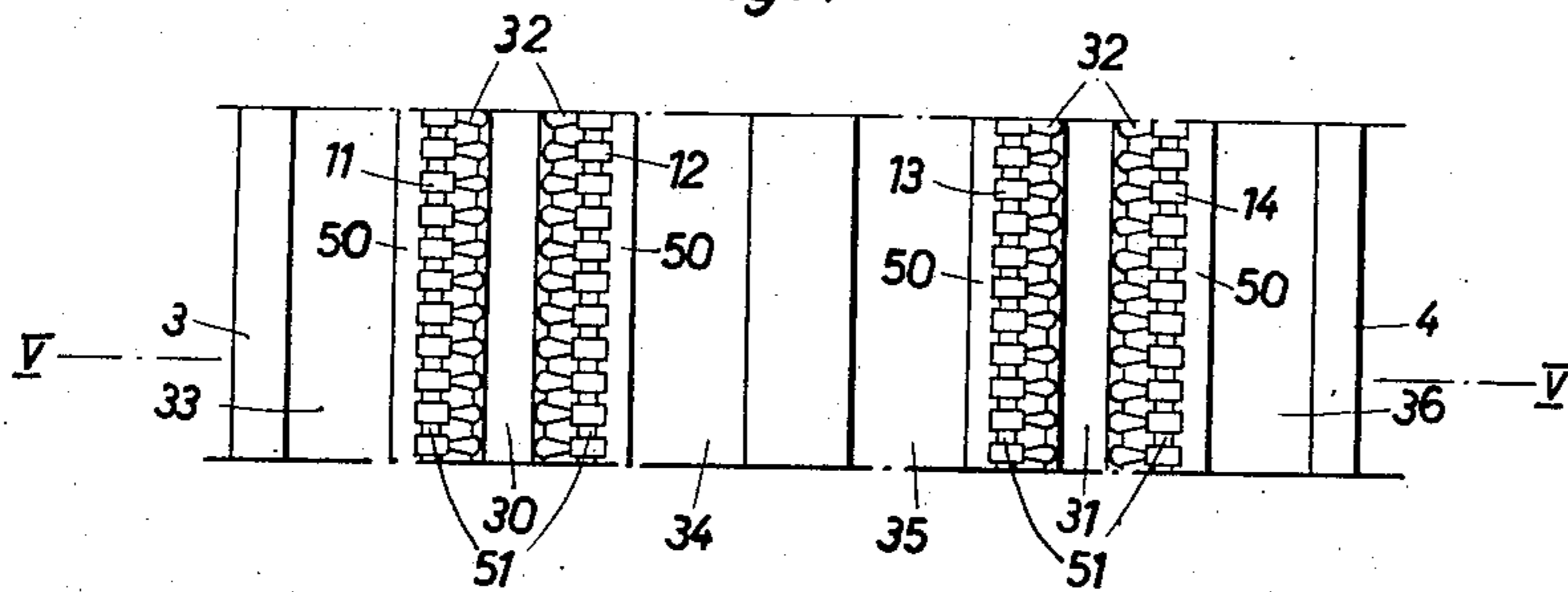


Fig. 5

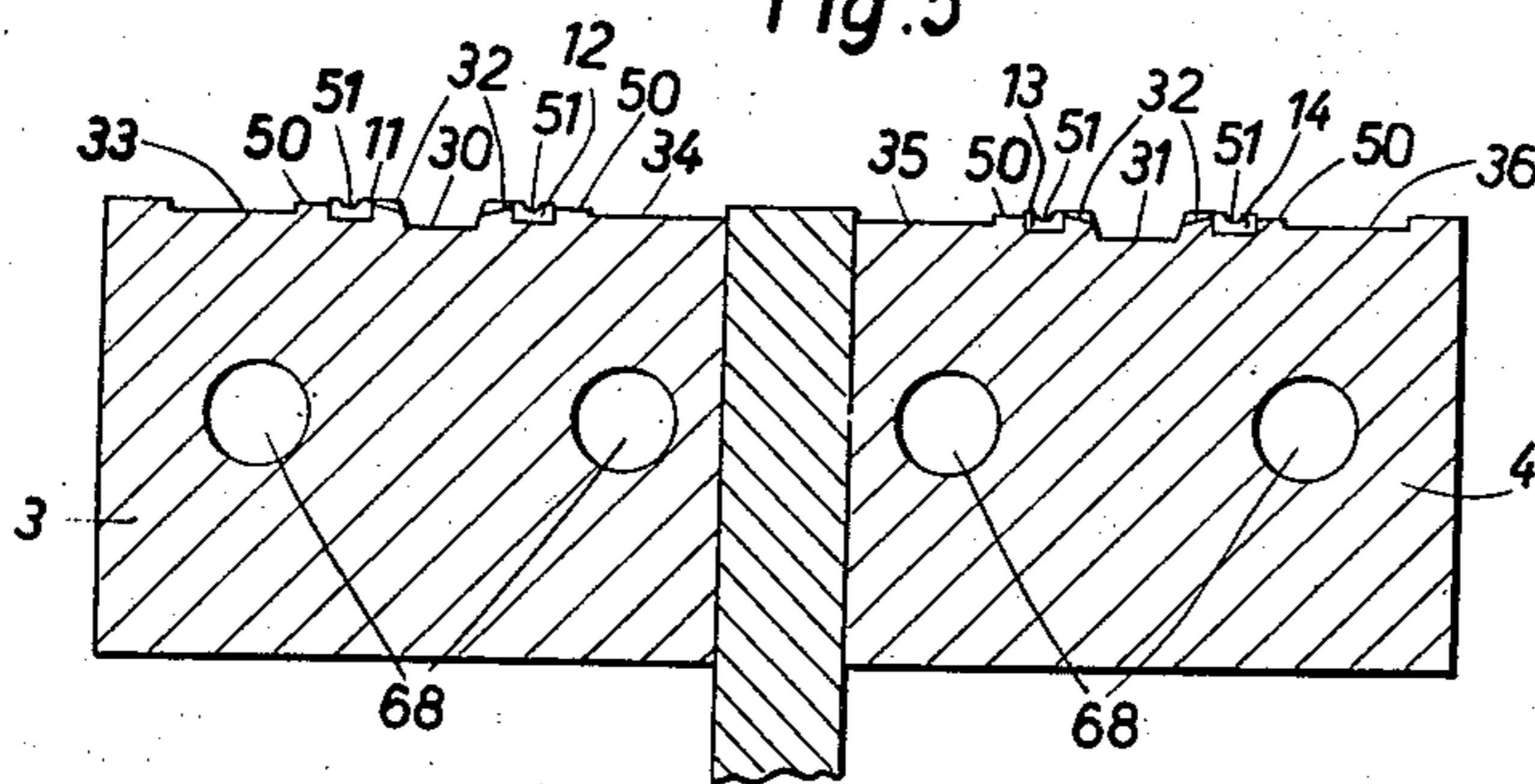
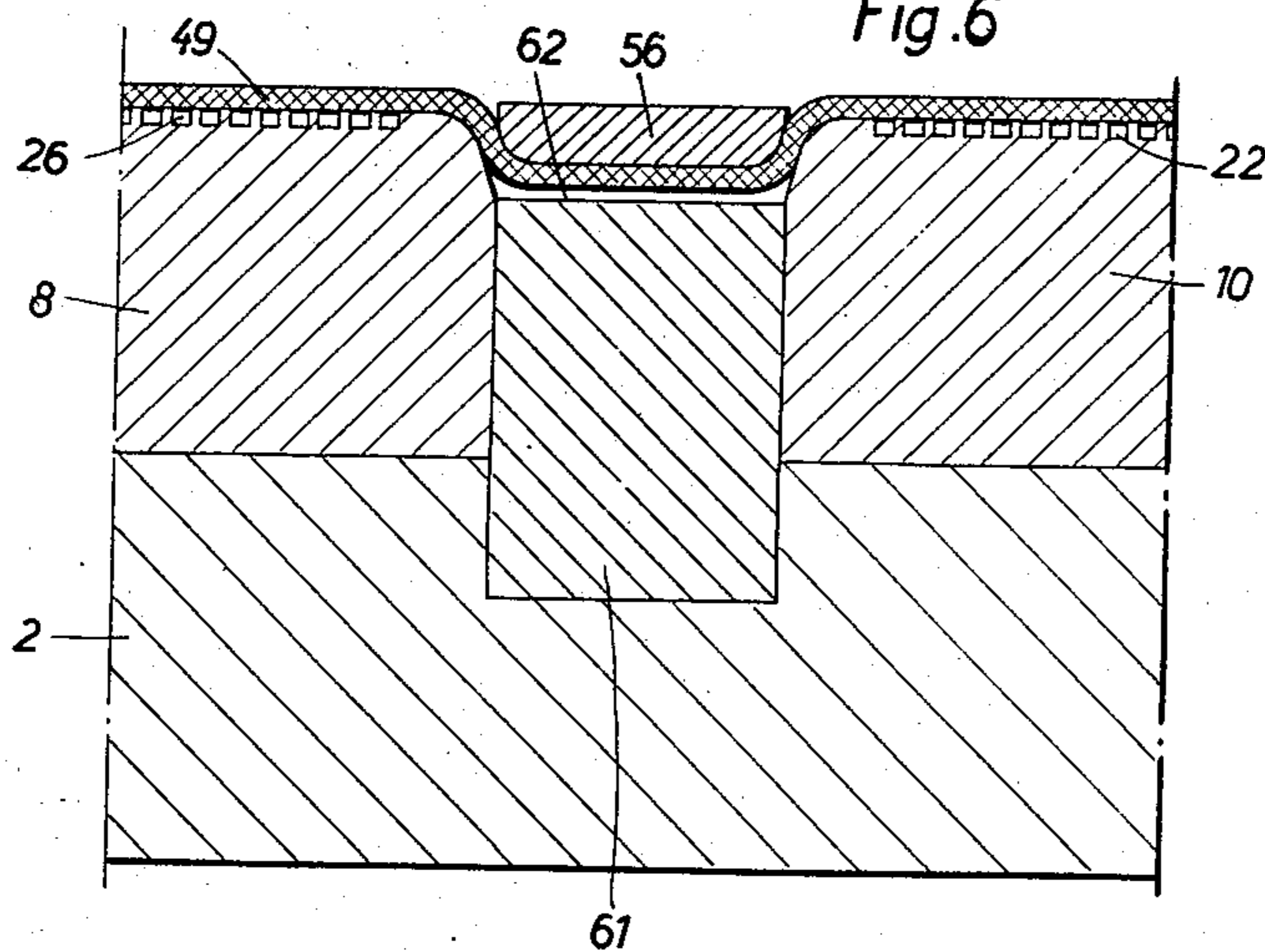


Fig. 6



INVENTOR:  
OTTO FELDMANN  
By Emory Booth Townsend Miller & Weidner  
ATTY'S

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## APPARATUS FOR THE MANUFACTURE OF SLIDING CLASP FASTENERS

Otto Feldmann, Mendrisio, Switzerland, assignor to Ri-Ri-Werke A. G., Mendrisio, Switzerland

Application August 13, 1954, Serial No. 449,567

Claims priority, application Switzerland August 13, 1953

1 Claim. (Cl. 18—42)

The present invention relates to an apparatus for the manufacture of sliding clasp fasteners of the type in which the interlocking members are produced by die-casting directly on the stringers in rows. According to the invention each of the two halves of a two-part mould comprises at least four rows of recesses for the simultaneous production of interlocking members on at least four stringers, the middle portion of the mould comprising the casting channel and cover means for the stringers. This central arrangement of the casting element and of the cover means permits simultaneous manufacture of at least eight rows of interlocking members one half of each being located on both sides of the middle portion of the mould.

Preferably the middle portion of the lower part of the mould is provided with a recess into which the stringers are pressed by the cover means. The latter may be transversely slidable and controlled so as to press the stringers into the recess when the mould is closed and to be laterally displaced out of the zone of the stringers when the mould is opened. Thus nothing hinders the further conveyance of the sprayed fasteners when the mould is open.

Other features and advantages of the invention will become apparent from the description now to follow, of a preferred embodiment thereof, and in which reference will be made to the accompanying drawings, in which:

Fig. 1 is a plan view of the lower part of the casting mould;

Fig. 2 is a section, along the line II—II of Fig. 1, through the two halves of the mould;

Fig. 3 illustrates the position of the cover means when the mould is in opened state;

Fig. 4 represents in detail a plan view of the recesses for producing the interlocking members, in the upper part of the mould;

Fig. 5 is a section taken along the line V—V of a Fig. 4;

Fig. 6 is a section taken along the line VI—VI of Fig. 1;

Fig. 2 shows the upper mould part 1 and the lower mould part 2 adapted to be inserted into a die-casting machine. The upper mould part 1 carries four actual mould portions for the interlocking members of which two mould portions 3, 4 are visible in Figs. 2, 4 and 5. The lower mould part 2 comprises four interlocking member moulds 7, 8, 9 and 10. Each of these mould portions comprises two rows of recesses designated by 11, 12 in the portion 3, by 13, 14 in the portion 4, by 19, 20 in the portion 7, by 21, 22 in the portion 8, by 23, 24 in the portion 9 and by 25, 26 in the portion 10. These recesses form, in the closed position of the mould the individual moulds for the interlocking members. The casting channel 27 provided in the upper mould part 2 is arranged in a middle piece 28 extending transversely over the whole upper mould part and connected on one side with the interlocking member moulds 3 and 4 and

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on the other side with two other interlocking member moulds not represented. The channel 27 opens into a transverse gutter 29 connecting the two casting gutters 30 and 31. The latter, indicated in broken lines in Fig. 1, extend in the upper mould part over the whole length of the rows of recesses 11, 12, 13, 14. Small conduits 32 (Figs. 4 and 5) connect the recesses for the interlocking members with the gutters 30, 31. Flat recesses 33, 34 and 35, 36 in the upper part and 41, 42, 43, 44, 45, 46, 47 and 48 in the lower part are provided for the stringers 49 at the outside of the two rows of recesses. Projecting ledges 50 of the upper and lower mould part bear against the stringers 49 in order to tighten the recesses. Small grooves 21 provided along the rows of recesses are adapted to receive the rim beads of the stringers 49. The lower mould part 2 carries in its middle portion on each side a guiding block 52 in Figs. 1 and 2, and 53 in Fig. 3, respectively, in each of which is slidably arranged a slide 54, 55 respectively, having covering levers 56 and 57, respectively. Upon opening and closing of the mould both slides are moved over the rollers 58 by a control finger 59 fixed to the upper mould part 1. In the middle part 61 (Figs. 2 and 6) extending transversely over the lower mould part 2, recesses 62 are provided, which are of such dimensions as to permit free passage of the stringer when it is covered by the covering levers 56, 57. A cooling system 68 prevents excessive heating of the mould.

For the manufacture of a sliding clasp fastener in the described mould the stringers 49 are disposed into the recesses 41—48 of the lower mould part whereupon the upper mould part 1 is adapted onto the lower mould part 2 in such a way that the pins 63 of the upper mould part 1 engage the corresponding borings 64 of the lower mould part. The two mould parts are then pressed together, this operation being preferably effected hydraulically in a die-casting machine. As soon as in the closing process the control fingers 59 enter the space 65 between the rollers 58 the slides 54, 55 are shifted with their levers 56, 57 over the stringers 49. The levers are pivotally mounted about an axle 66 on the slides, and when the mould is in opened state, are held by a leaf spring 67 acting upon the rear end of the levers in a slightly upwardly inclined position towards the middle with respect to the plane of the mould. This arrangement has the advantage that the levers may easily be lowered onto the stringers without displacement of the latter. Upon subsequent closing of the mould the inclined levers 56, 57 contact the upper mould part and are slowly lowered thereby pressing the stringers into the recess 62.

The heated liquid or plastic material is then pressed through the casting channel 27 into the transverse gutter 29 and the two gutters 30, 31 from where it enters the individual moulds through the conduits 32. After the hardening of the material the mould parts are separated whereby the stringers with the interlocking members moulded to them as well as the dead heads and the material hardened in the casting channel remain on the lower mould part. This adherence is partly obtained by the pin 69. As the mould is opened the control fingers 59 pull the slides 54, 55 with the levers 56, 57 out wardly so that the stringers 49 are liberated and the moulded fastener may be drawn laterally out of the mould.

What I claim is:

Apparatus for the manufacture of slide fastener stringers by die casting the fastener elements on the stringer tapes, comprising a two part mold having upper and lower portions, the mold at its parting face being formed with parallel recesses adapted to receive stringer tapes and with rows of cavities for casting the fastener

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elements on said tapes, the lower portion having a pair of guide blocks extending transversely thereof at its mid portion, a pair of levers pivotally attached one to each of the guide blocks and extending across the recesses and the stringer tapes therein, means for supplying molten material to said cavities comprising an opening formed in the upper portion extending therethrough and open sided grooves formed in said upper portion at the sides of said levers opposite said recesses and extending over said recesses and the tapes received therein, which grooves communicate with said opening and the open sides of which are adapted to be closed by said levers when the mold is closed, fingers attached to the upper portion of the mold and engageable with means on the guide blocks operable to move the guide blocks laterally outwardly

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of the mold upon moving the upper portion of the mold from the lower portion, and means for pivotally swinging the levers off the recesses as the guide blocks are moved laterally outwardly of the mold.

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