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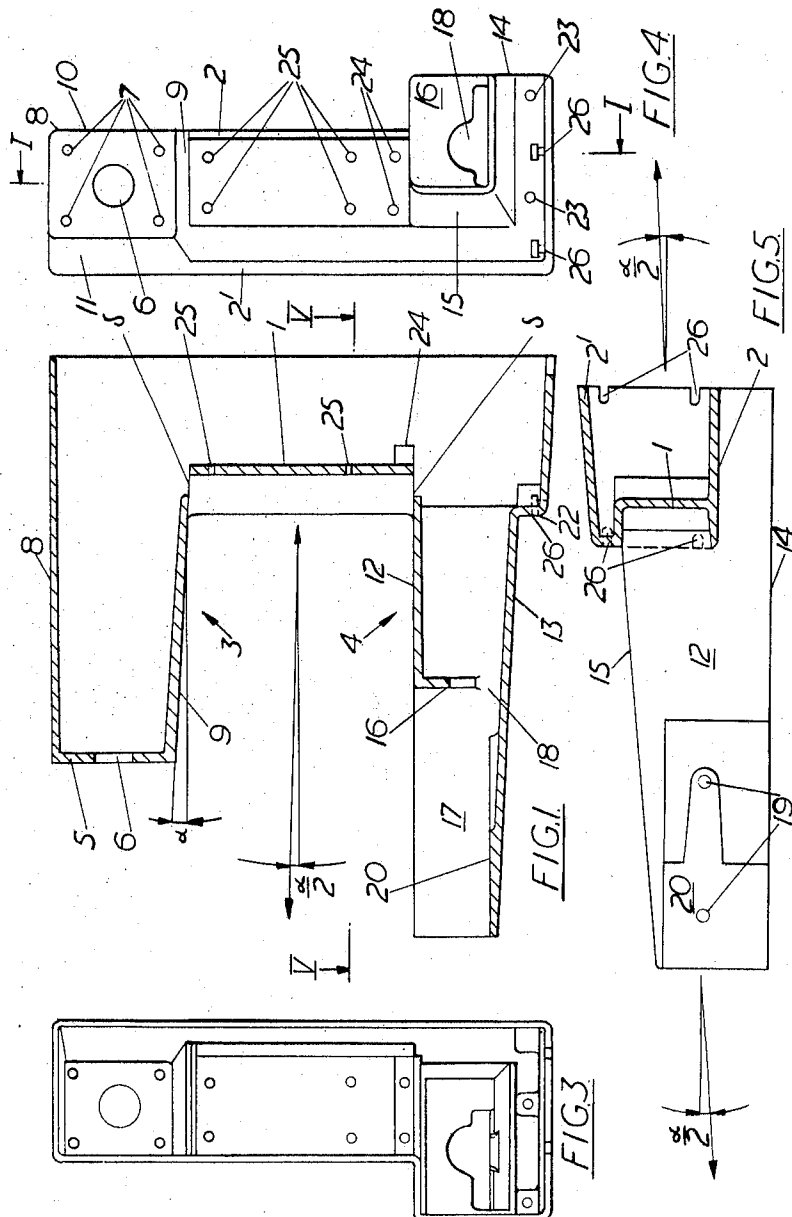
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3,253,564

CASING FOR SEWING MACHINE

Filed July 12, 1963

4 Sheets-Sheet 1



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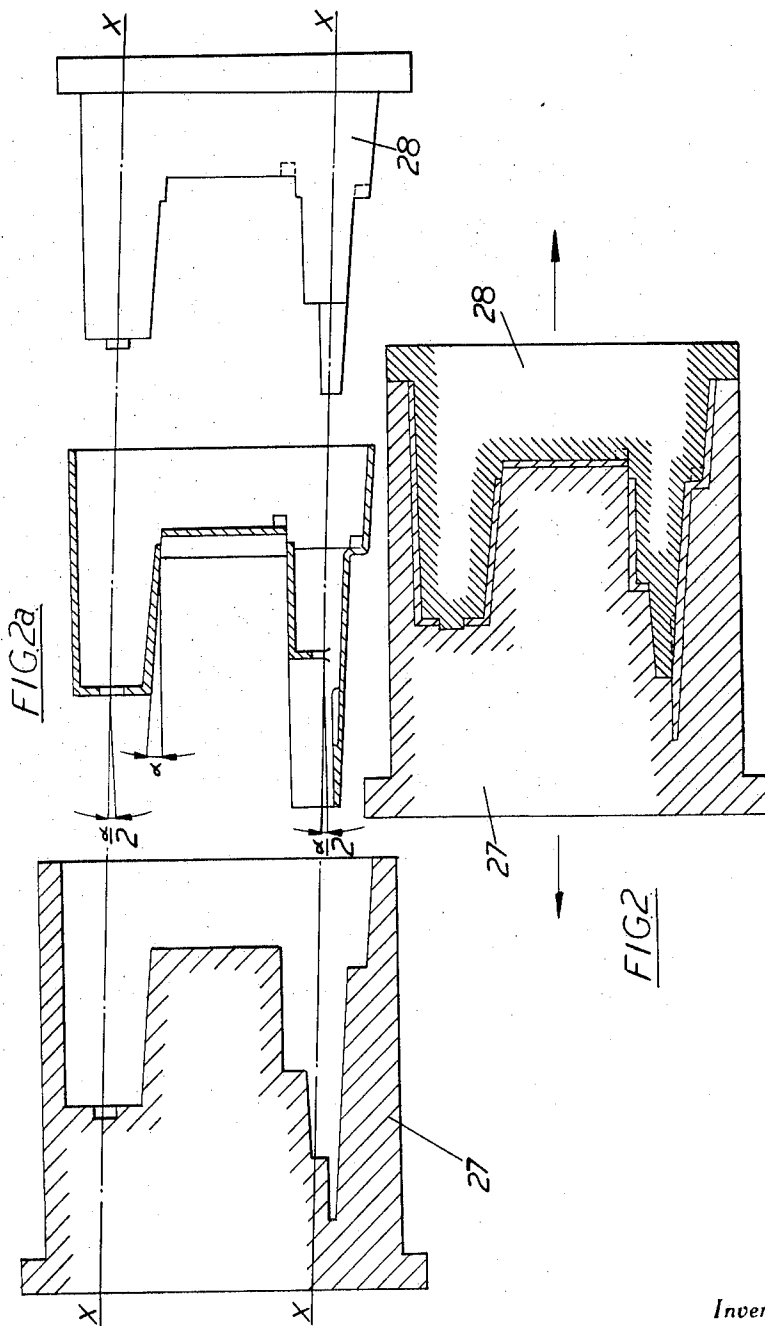
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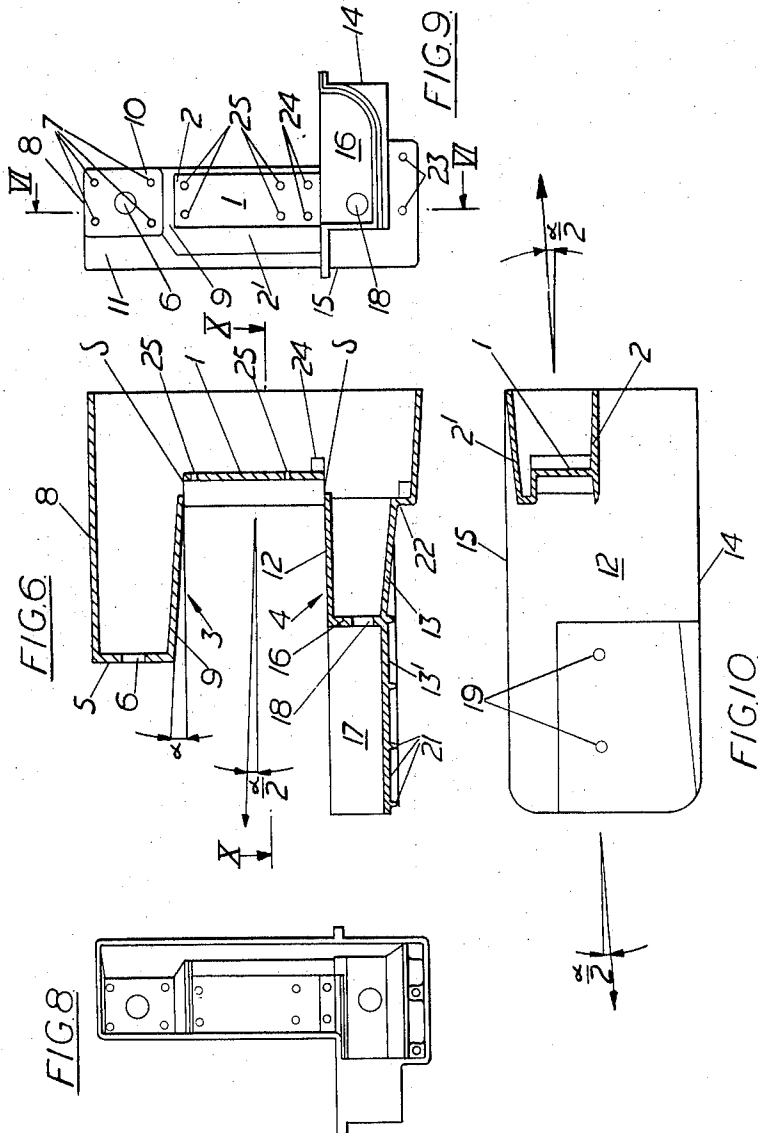
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4 Sheets-Sheet 3



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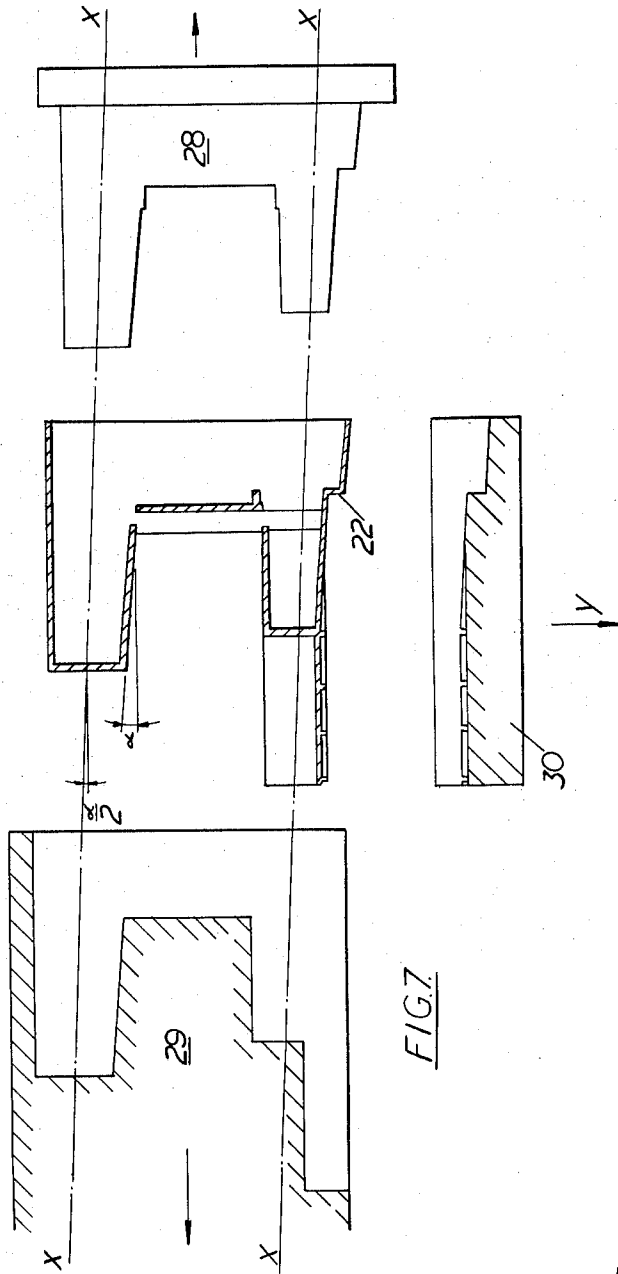
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4 Sheets-Sheet 4



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3,253,564

CASING FOR SEWING MACHINE

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6 Claims. (Cl. 112-258)

This invention relates to casings for sewing machines and presses for use in making such casings.

The casings of sewing machines are, as is known, made in a single-piece casting, the molten material from which the casing is to be made being teemed into a mold formed from two mold halves interconnected along the medial longitudinal plane of the casing, with an internal core which reproduces the cavity of the casing. This mode of procedure gives rise to the formation on the molded surfaces of lines of burring which need to be removed by accurate and expensive finishing operations before the casing is given a finishing treatment such as enamelling or varnishing. In accordance with known technique, these casings are also subjected to precise machining at some points in their interior, to provide pivots for bearings for elements of the mechanism of the sewing machine intended to be mounted within the casing. This treatment varies in accordance with the type of mechanism adopted.

All of this has an appreciable effect on the cost of the casing, and amongst other things it is an obstacle to the mass production of casings suitable for any type of mechanism, which reflects unfavorably on the cost of the sewing machine as a whole. The object of the present invention is to provide a casing that serves exclusively to support and interconnect the actual supports of various portions of the mechanism, eliminating any necessity for internal treatment, and, owing to the use of a special press in its manufacture, also eliminating the necessity for external finishing operations. Thus, the casing can be passed direct to the finishing stage, e.g. for enamelling or varnishing, as soon as it has been made.

The casing according to the invention is characterised by the features that it comprises a pillar which is substantially of double T-form with the upright disposed transversely to the medial longitudinal plane and the arms diverging slightly from one another in the direction of the hand-wheel, the mounting being connected at its lower part with a base and at its upper part with an arm having at least one pair of adjacent surfaces which diverge only slightly in the direction of the hand-wheel with respect to the associated longitudinal axes, in such manner as to form two conical members projecting from the mounting and tapering towards their free ends.

According to a further feature of the invention the base terminates at its free end in a locating seat for the assembly comprising the feeding and hook mechanism, whilst the upper arm terminates at its free end in a flange for the attachment of the head of the needle bar.

For casting a casing according to the invention there is used, in accordance with a further feature of the invention, a mold constituted essentially by two parts that can inter-penetrate along the longitudinal axis of the casing and which define respectively the external and internal configurations of the casing. There will thus be a single line of burring along the opening of the casing on the hand-wheel side, which can be removed without the need for careful treatment since it will be covered over by the cover eventually applied to the said opening.

In particular instances the part of the mold that defines the external configuration of the casing may comprise an element separable therefrom towards the base in a direction perpendicular to the longitudinal axis for the

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formation of the lower surface of the base. This arrangement is necessary when at least one part of the lower surface of the base has to be parallel to the horizontal working plane. Also, by adopting this arrangement no lines of burring appear on the surfaces of the casting that can be seen because to the above-mentioned line of burring on the opening on the hand-wheel side there is joined only one other, along the edge of the plane of attachment of the base, which can be removed without specially careful treatment since it is not seen.

With the object of maintaining horizontal both the plane of working and the upper edge of the machine, withdrawal is effected by withdrawing in opposite senses the two principal parts of the press along a line that forms both with the horizontal working plane and with the medial longitudinal plane an angle half of that which is formed between the two facing, divergent and corresponding surfaces of the base and of the arm.

The invention will now be described in more detail with reference to the accompanying drawings, which illustrate by way of example two distinct embodiments of the invention, and in which:

FIG. 1 is a longitudinal section of a casing according to the invention of the type having a cylindrical base, along the line I—I of FIG. 4;

FIG. 2 is a similar section of the said casing contained within the mold, prior to withdrawal;

FIG. 2a illustrates the same parts of FIG. 2 after withdrawal, with the mold open;

FIG. 3 is a view of the head of the casing from the handwheel side;

FIG. 4 is another view of the head from the opposite side;

FIG. 5 is a sectional view of the casing on the line V—V of FIG. 1; and

FIGS. 6 to 10 are similar views corresponding respectively to FIGS. 1, 2a and 3 to 5, of a modified form of casing with a flat base, FIG. 10 being a sectional view of the casing on the line X—X of FIG. 6.

In both embodiments illustrated the pillar of the casing is substantially of double T section, the upright of which is constituted by a flat web 1 disposed transversely to the longitudinal axis of the casing and the two arms of which are asymmetrical with respect to the upright and constitute the two flat sides 2, 2' of the pillar, these diverging slightly from one another towards the side where the hand-wheel is intended to be arranged. The sides 2, 2', extend upwardly and downwardly from the web 1 for connection respectively to the upper arm 3 and the base 4, constituted within certain limits by lateral extensions.

The upper arm 3 terminates in a flange 5 provided with a central aperture 6 for the passage of the control members of the needle bar and with four holes 7 for the attachment of the upper head. Its upper surface 8 is horizontal, whilst its lower surface 9 is inclined at an angle α so as to converge towards the upper surface in the direction of the flange 5. The two lateral faces 10 and 11 also converge towards one another in the direction of the flange 5, but whilst the rear face 11 (relative to the operator of the sewing machine) is oblique relative to a perpendicular to the flange 5, the front face 10 is perpendicular to the flange 5. The said faces are parallel respectively to the sides 2' and 2 of the pillar.

Similarly, the base 4 has an upper face 12 or working surface which is horizontal and a lower face 13 at least a part of which is oblique and converges towards the upper face in the direction of the free end of the base, whilst of the lateral faces 14 and 15 which converge towards one another in the case of FIGS. 1 to 5 in the direction of the said free end, one of them, viz. the front face 14 is parallel and the other, viz. the rear face 15, is inclined so that they are parallel respectively to the sides 2, 2' of the

pillar, whereas they are substantially parallel to each other in the case of FIGS. 6 to 10.

In both cases however the casing comprises in its general configuration tapered portions, an upper one 3 and a lower one 4, connected together by two sides 2, 2' which with the web 1 associated with them constitute the pillar of the machine.

The web 1 has an extension which is reduced in height relative to the sides 2, 2' and limited to the interval between the lower face 9 of the arm 3 and the upper face 12 of the base 4. These two faces terminate in their turn at a certain distance δ from the web 1 so as to leave between them and the diaphragm two passages for the connecting members of the mechanisms situated respectively in the base 4 and in the upper arm 3.

The working surface 12 is interrupted towards the free end of the arm 4 by a vertical wall 16 which delimits, with the lateral faces and the floor of the base, a seating 17 open at the free end of the arm and intended for the reception of the assembly associated with the feeding mechanism and the hook, the control members of which pass through the aperture 18 provided in the wall 16. In order to fix this assembly in the recess 17, in the floor of the recess there are provided two suitable holes 19; the said floor is formed, in the case of FIGS. 1 to 5, by a part 20 which is level internally so as to be horizontal, of the lower inclined face 13 of the base, whilst in the case of FIGS. 6 to 10 it is formed by a horizontal portion 13' of the lower face, which is provided externally with reinforcing ribs 21. In each case the face 13 has, substantially beneath the web 1, a step 22 provided with holes 23 which together with perforated bosses 24 on the web 1 serve for the fixing of the driving members in the casing, whilst the holes 25 in the web 1 serve for the fixing of the automatic control members and for supporting the members that connect the mechanisms of the arms to those of the base. The embodiment of FIGS. 1 to 5 also comprises four holes 26 for the attachment of a lower supporting plate (not illustrated) for the machine.

The holes 26, like the holes 7, 19, 23, 25, the perforated bosses 24 and the apertures 6 and 18 are formed in the casting operation and do not require any special manufacturing step.

For the casting of a casing according to FIGS. 1 to 5 there is used a mold constituted by two parts only (FIGS. 2 and 2a) viz. a part 27 on which are reproduced all the external contours of the casting and the external fixing surfaces, and a part 28 which defines the whole of the internal cavity of the casting and the inner fixing surfaces. Withdrawal for the purpose of separating these two parts takes place in a longitudinal direction $x-x$ which is inclined at an angle $\alpha/2$ both in a vertical plane and in a horizontal plane relative to the longitudinal axis of the casing.

For the casting of a casing in accordance with FIGS. 6 to 10 there is used, by contrast, a mold in which in addition to the part 28 (FIG. 7) that defines the internal cavity and the internal fixing surfaces, there are provided two parts 29 and 30 of which the first part 29 defines the whole of the external configuration and the external fixing surfaces situated above the lower face of the base, and the other part 30 defines the lower face of the base with the ribs 21 and the step 22.

Withdrawal for the mutual separation of the parts 28, 29 again takes place in a direction $x-x$ corresponding to that of the preceding embodiment, and the part 30 is withdrawn in a direction y perpendicular to the longitudinal axis of the casing.

The lines of joining of the two parts 27, 28 of the mold in the case of FIGS. 2, 2a and of the two parts 29, 30

with the part 28 in the case of FIG. 7 coincide with the edge of the opening of the casing on the hand-wheel side, which will be masked by a cover member (not illustrated) applied thereto. The lines of joining of the two parts 29, 30 of the mold shown in FIG. 7 coincide, by contrast, with the line of contact with the support or plinth of the working surface and consequently will not be visible.

It will be seen that in neither of the two cases illustrated are there interruptions in the continuity of the external surface of the casing by burrs that may require the performance of finishing operations on the casing, and hence the surface to be enamelled or varnished is perfectly finished in the casting operation. Thus, the formation of the casting is effected in an extremely simple manner and it lends itself to easy mounting of the various assemblies intended to be arranged in its interior.

What I claim is:

1. A casing for a sewing machine comprising a base, a pillar extending vertically from the right-hand side of the base, the pillar having a cross section in a horizontal plane which is substantially of I shape, an upper arm projecting laterally from the left-hand side of the pillar and overlying the base, the I section of the pillar comprising a web and two flanges, the web transecting a medial longitudinal vertical plane of the casing and said flanges being disposed on opposite sides of said plane and diverging from one another toward the right-hand side of the pillar, said base and said upper arm having opposite faces that diverge from each other toward the right-hand side of the pillar whereby said base and said upper arm taper toward the left toward their free ends, the divergent outer surfaces of said flanges and opposite faces having bisecting lines that are substantially parallel to each other.

2. A casing as claimed in claim 1, said base and said upper arm being substantially tetrahedral in transverse cross section.

3. A casing as claimed in claim 1, the angles by which said flanges and opposite faces diverge from each other being substantially equal to each other.

4. A casing as claimed in claim 1, in which the base terminates at its free end in a locating seat adapted to locate a feeding and hook mechanism of a sewing machine, said upper arm terminating at its free end in a flange adapted for the attachment of the head of a needle bar of a sewing machine.

5. A casing as claimed in claim 1, in which the upper surface of the base and the upper surface of said upper arm are parallel to each other and perpendicular to said web.

6. A casing as claimed in claim 1, in which the plane of the web transects intermediate portions of both flanges.

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