

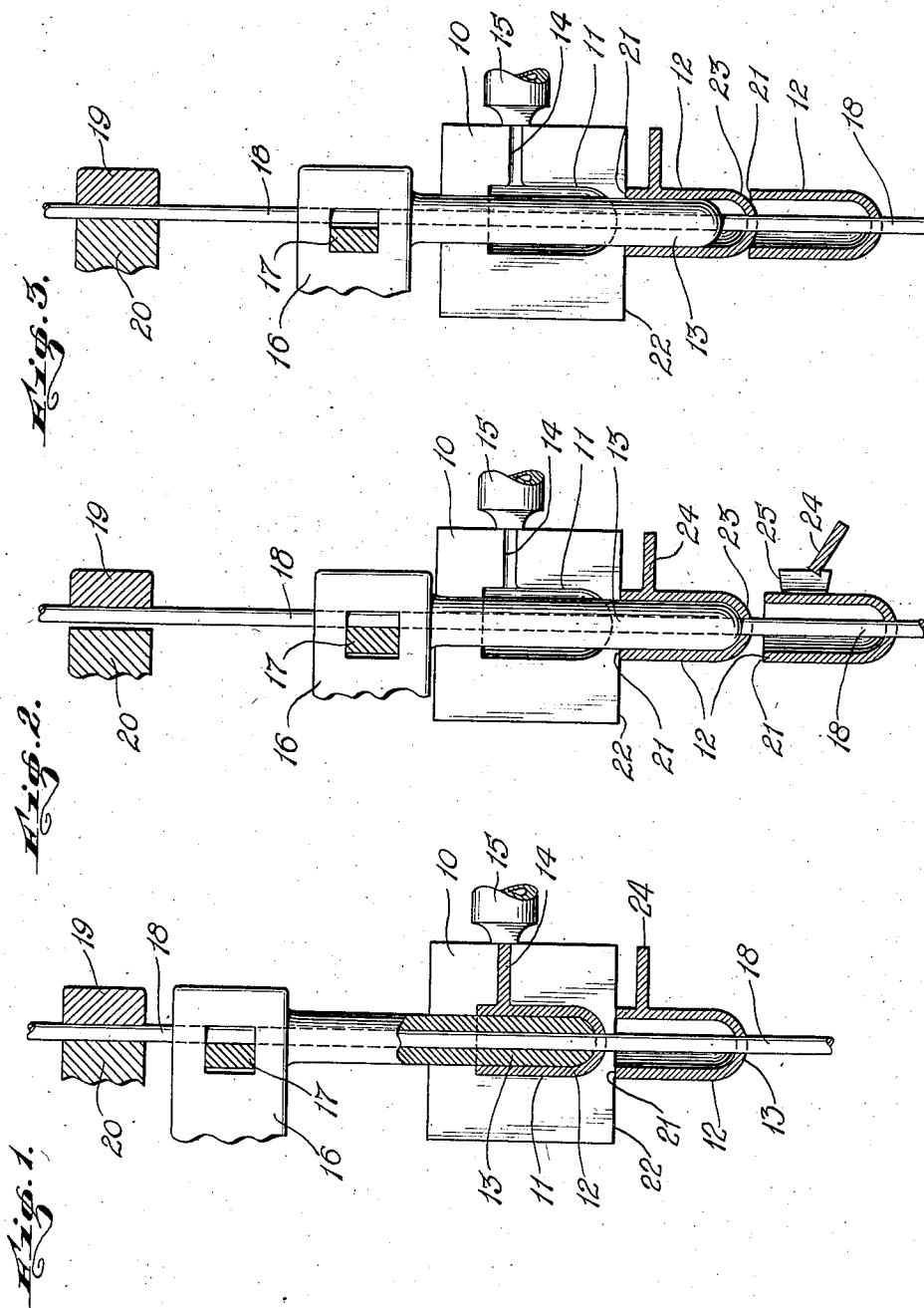
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L. H. MORIN

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METHOD OF FORMING AND ARRANGING CASTINGS ON AN ELONGATED MOUNTING

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INVENTOR
LOUIS H. MORIN

BY
Howard E. Thompson
ATTORNEY

UNITED STATES PATENT OFFICE

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METHOD OF FORMING AND ARRANGING
CASTINGS ON ELONGATED MOUNTINGSLouis H. Morin, Bronx, N. Y., assignor of one-half
to Davis Marinsky, Bronx, N. Y.

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This invention relates to the formation and arrangement of castings on an elongated mounting member, such as a wire or strand. More particularly, the invention comprises a method of feeding a mounting member and core relatively to each other and together with respect to dies movable toward and from the core and mounting member in forming successive die cast devices longitudinally of the mounting member, and in controlling the spacing of said devices on the mounting member. 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 a diagrammatic sectional view showing the step of forming a casting on a mounting member and core.

Fig. 2 is a view similar to Fig. 1, showing the dies in open position and the first step of feeding a formed casting out of alignment with the dies, as well as the feed of the mounting member relatively to the dies; and

Fig. 3 is a view similar to Figs. 1 and 2, showing the step of spacing the cast devices on the mounting member.

In the production of articles of manufacture comprising elongated mounting members with cast devices arranged longitudinally thereof, I provide a method wherein successive cast devices may be formed on the mounting member, and then in the step of feeding the cast devices, including the mounting member relatively to the die, means is provided to feed or draw the mounting member through the last cast device to space said device with respect to an adjacent device on the mounting member, and in the operation of withdrawing the core from the last casting and returning the same into position between the dies to receive the next successive casting to be formed. This method can be applied to making articles of manufacture of various kinds and classes, including elongated mounting members, such as electric conductors or strands of any type and kind.

In dealing with electric conductors, the cast devices may be in the form of insulators, particularly in producing what is known as coaxial cable, where the insulator devices are employed to arrange the conductors within outer tubular conductors or jackets.

In the drawing is shown a face view of one of

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the dies 10 of a pair of relatively movable dies of a die casting machine. At 11 is indicated the cavity or impression of the die. The cavity 11, in conjunction with a tubular core 13 arranged within the cavity in the casting operation, as seen in Fig. 1 of the drawing, serves to produce a thimble shaped cast device 12. At 14 is represented the gate on the parting line of the dies, extending into the cavity 11, and exposed to a suitable nozzle 15 for the injection of heated casting material into the cavity 11, as is commonly known in the die casting art.

The tubular core 13 is mounted on an arm 16, in which is arranged a gripper bar 17, adapted to grip the strandlike mounting member 18, in the form of a conductor strand or other mounting. The arm 16 is movable toward and from the die 10 in the manner illustrated diagrammatically in Figs. 2 and 3, and above this arm is a stationary arm 19, having a movable gripper 20, the purpose of which is to engage the mounting member to hold the same against movement in certain steps of the method, as more fully herein-after described.

In carrying out my method, metal or plastic castings may be formed. However, for purposes of illustration, the present description will deal primarily with the formation of plastic castings 12. Starting with the illustration of Fig. 1, the first step would be in forming the cast device 12 on the mounting 18 with the core 13 arranged in the cavity 11, as seen in this figure, the arm 16 being in its raised position. Immediately after the formation of the casting, the dies will be separated, the gripper 20 will be freed from the member 18 and the gripper 17 still engaging the member 18 is moved downwardly to feed the casting together with the member 18 to the position illustrated in Fig. 2. At the end of this downward movement, the upper open end 21 of the casting will be arranged at the lower surface 22 of the die 10, and the rounded end 23 of the last casting 12 will be spaced from the end 21 of the previously formed casting, as seen in said figure. The dies are then moved into a partially closed position, sufficiently to bring the lower surface 22 of the dies into engagement with the upper edge 21 of the last casting 12, and with the gripper 17 still in firm engagement with the member 18. The member 18, together with the core 13 is moved upwardly to a slight extent to the position indicated in Fig. 3, to bring the lower domed surface 23 of the last casting into engagement with or into close proximity to the upper end 21 of a

previous casting, in which operation the gripper 20 is out of engagement with the member 18.

At the end of this slight upward movement which controls the spacing of the cast devices on the member 18, the gripper 17 is released from the member 18 and the gripper 20 during this upward movement has been free from the member 18. However, when the upward movement is terminated, and the gripper 17 is moved into position, shown in Fig. 3, then the gripper 20 engages the member 18, which is the position shown in Fig. 3, and holds the member 18 stationary while the arm 16 continues on its upward movement until it reaches the position shown in Fig. 1, after which the gripper 17 again engages the member 18 in preparation for the downward feed of the member 18 and the casting, as shown in Fig. 2 of the drawing. The above cycle of operation is again repeated in forming the next successive casting, and this operation will continue until all of the required castings have been formed on the elongated mounting member 18.

Each casting will have a gate 24 thereon and suitable trimming tools, one of which is diagrammatically illustrated at 25 in Fig. 2 of the drawing, which will be employed to remove the gate, as indicated.

It will be understood that my invention is not limited to any particular shape or form of cast device. Furthermore, the invention is not limited to the particular spacing of the devices on the mounting member, as these spacings may be controlled by the upward movement of the arm 16, and the period of releasing the gripper 17 from the mounting member 18 in this upward movement. In other words, the basis of my present invention resides in a method which controls spacing of castings formed on a mounting member by a feed of the castings after being formed on the mounting member longitudinally thereof to control the spacing of castings along the mounting member. In some instances, this spacing may be varied to produce on the finished product predetermined arrangement of the castings on the mounting member. This would be accomplished in controlling and varying the feed movement of the arm 16, as illustrated in Fig. 3, or the time at which the gripper 17 is released from the mounting member in the upward movement of the arm and the corresponding change in time of moving the gripper 20 into operative position.

In connection with this last method of procedure, it will also be apparent that in these instances, the castings may be spaced apart on the mounting member so that the mounting member becomes accessible, thus in using mounting members of flexible material, grippers similar to the gripper 20 could be used below the dies rather than above the dies, during the free movement of the core along the mounting member.

It will also be apparent that in some instances, groups of castings or cast devices may be arranged in close proximity to each other, whereas other castings or cast devices may be spaced apart on a mounting member or respective groups may be spaced apart, particularly in producing predetermined lengths of castings on the mounting member.

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

1. The method of forming articles of manufacture of the character described, comprising arranging an elongated mounting member between relatively movable dies and extending through a

tubular core arranged between and movable relatively to said dies, gripping said mounting member, forming a casting on the mounting member and around said core, separating the dies, then moving the core and mounting member with the casting thereon to a position out of the path of movement of said dies, with a surface of the casting arranged adjacent an outer surface of the dies, then partially closing the dies to bring said surface of the dies into contact with the surface of the casting, then moving the core and the mounting member in the opposite direction while maintaining the casting in stationary position by abutment of the casting with said outer surface of the dies, then releasing the mounting member and gripping the same to check further movement thereof relatively to the casting, continuing the movement of the core to remove the same from the casting and reposition the same between the dies, and then again closing the dies preparatory to forming the next successive casting on said mounting member.

2. The method of forming articles of manufacture of the character described, comprising arranging an elongated mounting member between relatively movable dies and extending through a tubular core arranged between and movable relatively to said dies, gripping said mounting member, forming a casting on the mounting member and around said core, separating the dies, then moving the core and mounting member with the casting thereon to a position out of the path of movement of said dies, with a surface of the casting arranged adjacent an outer surface of the dies, then partially closing the dies to bring said surface of the dies into contact with the surface of the casting, then moving the core and the mounting member in the opposite direction while maintaining the casting in stationary position by abutment of the casting with said outer surface of the dies, then releasing the mounting member and gripping the same to check further movement thereof relatively to the casting, continuing the movement of the core to remove the same from the casting and reposition the same between the dies, then again closing the dies preparatory to forming the next successive casting on said mounting member, and trimming gate portions from the castings after removal from said dies.

3. The method of forming and arranging die castings on an elongated mounting, which comprises first forming a casting on the mounting and on a core arranged longitudinally of the mounting, then moving the casting, mounting and core in one direction, then engaging the casting to hold the same stationary while moving the mounting and core in the opposite direction to position the casting on said mounting member, then gripping the mounting member and continuing to move the core relatively to said member and casting, and finally positioning the core on the mounting member for the reception of the next successive casting to be formed and positioned on said mounting member.

4. The method of forming and spacing castings on an elongated mounting member, comprising the steps of first arranging a mounting member and a core including a gripper for engaging said member between relatively movable dies, forming a casting on the member and core, then separating the dies and moving the formed casting by said core out of the path of movement of the dies with the mounting member gripped in the core to move with said casting, then engaging the casting to support the same in stationary

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position, then moving the core and the member gripped therein relatively to the casting, then releasing the gripping means to free said member from the core and position the casting on said member, then gripping the member in continued movement of the core relatively to the casting and member to reposition the core between said dies, and then closing the dies preparatory to the formation of the next successive casting on said member.

5. The method of forming and positioning castings longitudinally of an elongated mounting member, which comprises forming a casting on said member in a pair of relatively movable dies, moving the member and the casting relatively to the dies to free the dies for a succeeding casting, then moving the member and the casting relatively to each other by gripping the casting while the member is drawn through it to space the casting on the member, and then repeating the foregoing operations to form a mounting member having spaced castings mounted thereon.

6. The method of forming thimble-shaped plastic castings on a metallic strand, which comprises die casting a thimble-shaped plastic body on the strand with the cross head of the body engaging said strand and the walls of the body spaced from and encircling the strand; moving the strand together with said body thereon so that another body may be cast on the strand; then moving said first body relatively to the strand to bring it in close proximity to a previously formed body longitudinally of the strand; casting another body on the strand adjacent said first body; and alternately continuing to move the strand together with each newly cast body thereon, to move the newly cast body relatively to the strand, and to cast successive bodies on the strand in the manner set forth.

7. The method of forming and spacing castings on an elongated mounting, which comprises forming a casting on the mounting and on a

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core embracing the mounting, then moving the mounting relatively to the casting while the casting is still in contact with the core in order to space the casting on said mounting, the spacing of the casting being controlled by limiting the relative movement between the casting and mounting to a selected distance which is equal to the distance separating the casting from a previously formed casting.

8. The method of forming and spacing castings on an elongated mounting, which comprises forming a casting on the mounting and on a core embracing the mounting, then moving the mounting relatively to the casting while holding said casting in stationary position and in contact with said core, and limiting the movement of the mounting relatively to the casting to a distance which is equal to the distance separating the casting from a previously formed casting in order to control the spacing of successive castings on said mounting.

9. The method of forming and positioning castings longitudinally of an elongated mounting member, which comprises forming a casting on said member, moving the member and the casting relatively to each other to space the casting on said member, forming a second casting on the member, then moving the member and said second casting relatively to each other to space the casting on said member, said second casting being in engagement with the first casting.

LOUIS H. MORIN.

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