GOOSENECK CONSTRUCTION OF DIE CASTING MACHINE

Louis H. Mofts, Bronx, N. Y.
Application April 6, 1951, Serial No. 219,553
11 Claims. (Cl. 22—70)

This invention relates to what are commonly referred to as goosenecks of die casting machines, wherein molten metal is pressure discharged from the gooseneck into the cavity of dies in the formation of a die casting. More particularly, the invention deals with a multiple part gooseneck which can be quickly and easily assembled and, by means of which, a material saving can be effected in repair or replacement of parts, thus eliminating the necessity of replacing a complete gooseneck structure.

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 side view of a gooseneck made according to my invention with parts of the construction broken away and in section.

Fig. 2 is a view looking in the direction of the arrow 2, Fig. 1, showing only a part of the construction; and

Fig. 3 is a section on the line 3—3 of Fig. 1.

In practice, it has been customary to construct a gooseneck structure as a unitary body. As these goosenecks are susceptible to breakage and deterioration in use by being subjected to the molten metal, and otherwise require replacement by virtue of wear on parts, I have devised a multiple part gooseneck structure, by means of which replacements can be made quickly and at a nominal cost. By reason of my improved construction, it will be apparent that the particular part of the gooseneck assembly which is broken, or requires replacement for any reason, can be quickly and easily replaced at a nominal cost without loss of the remainder of the parts of the gooseneck assembly. Further, my improved construction incorporates the use of a sealing plug at the lower end of the gooseneck, which, by compression, having a drive fit on its support, rather than by expansion, as is customary in utilizing tapered plugs.

In Fig. 1 of the drawing, 10 represents the main cylindrical or sleeve-like body of the gooseneck, to which is clamped a spout unit 11, clamped in position by U-shaped clamp bolts 12 and 13, which fit in grooves 14 and 15 in the body 10 and passed through outwardly projecting lugs 16 at side portions of the portion 17 of the unit 11. The cylinder or sleeve body 10 or the lower portion 18 thereof has a large opening 19. At the upper end of the portion 18 is an annular narrow collar 20, above which is a wider collar 21, having a semi-circular aperture 22 opened outwardly through one side thereof for reception of a key pin 23 fixed to or constituting part of an adjustable plate 24. The plate 24 is arc-shaped in form and slides around the collar 21. A clamp screw 25 is fixed to the collar 21 and operates in an elongated aperture 26 in the plate 24.

The pin 23 keys a plunger of the gooseneck, not shown, in predetermined position within the cylinder 10.

One side of the body 10 has longitudinally spaced gear rack teeth 27, by means of which the position of the gooseneck may be adjusted, and spaced with respect to the rack is an elongated keyway 28 for guidance of the gooseneck in a predetermined path. In this connection, it will be understood that my present invention is not concerned with the mounting of the gooseneck, nor the means for discharging material therefrom, as these structures are old in the art.

The spout unit 11 comprises a base portion 29 having a vertical through bore 30 and of which base portion the portion 17 forms an upwardly directed, open sided extension. The body sleeve engages the semi-cylindrical surface of extension 17. Arranged in the bore 30 of the part 29 is a piston sleeve, or bushing 31, in which the piston or plunger of the gooseneck, not shown, operates. The bushing has a collar or flange 32, at its upper end, seating in a corresponding recess in the part 29. The bushing, or sleeve, 31 projects below the cylindrical part 29, as seen at 33, and driven over the end 33 is a cap 34, which seals the lower end of the bore 35 of the bushing 31.

The part 29 has a port 36 which registers with a port 37 in the bushing 31 and another port 38 in said bushing registers with an elongated bore or discharge port 39 in the spout portion 40 of the unit 11. The spout portion 40 is braced on the curved portion 17 by a web 41. The upper end of the spout portion 40 has an enlarged coupling flange 42, with which registers a corresponding flange 43 on a spout extension or nozzle 44. The bushing bolts 45 couple the flange portions 42 and 43 together. The spout extension, or nozzle, 44 has a port 46 registering with the port 39.

As my present invention deals primarily with the gooseneck construction, the usual ported plunger for discharge of the molten metal is not shown, but, as known in the art, the plunger has grooves or passages controlling the ports 37 and 38, so as to shut-off the port 37 when the metal is pressure injected through the port 38 into the ports 39 and 46 and, in like manner, to close the port 38 as and when the port 37 is open for introducing additional molten metal into the bore 35.

By utilizing the compression cap 34 to seal the end of the bushing or sleeve 31, a strong and durable construction is provided, which avoids splitting or rupturing as and when tapered plugs are employed for a similar purpose.

From the foregoing construction, it will be understood that, in the event of wear or breakage of any one of the parts 10, 11, 31 or 44, such parts can be replaced without replacement of the other parts and, in this way, the cost of maintaining gooseneck constructions in operation is materially reduced. It will also be understood that, by the construction employed, the production of the several parts is also simplified, particularly in that operations performed on the parts can be more readily accomplished than with a unitary assemblage, such as commonly employed.

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

1. In a gooseneck of the character described, a spout unit comprising an apertured cylindrical portion, a semi-circular part extending upwardly from one side of the cylindrical portion, said side of the cylindrical portion having an upwardly and outwardly extending spout and a web bracing the spout on the semi-circular part, an apertured bushing mounted in the cylindrical part and having a lower end protruding from said cylindrical part, means detachable from said protruding end for sealing said end of the bushing, an elongated sleeve disposed on the upper end of the bushing and arranged in said semi-circular part with an upper end projecting above said semi-circular part, means detachably clamping the sleeve with the semi-circular part of said unit, and a nozzle detachable with respect to said spout.

2. In a gooseneck of the character described, a spout unit comprising an apertured cylindrical portion, a semi-circular part extending upwardly from one side of the cylindrical portion, said side of the cylindrical portion having an upwardly and outwardly extending spout and a web bracing the spout on the semi-circular part, an apertured bushing mounted in the cylindrical part and
having a lower end protruding from said cylindrical part, means detachable from said protruding end for sealing said end of the bushing, an elongated sleeve supporting said spout unit with the upper end of the bushing seating against the lower end of the sleeve and with said semi-circular part arranged about the sleeve, means detachably clamping the sleeve with the semi-circular part of the unit, and a key element circumferentially adjustable on the sleeve above said semi-circular part.

3. In a gooseneck of the character described, a spout unit comprising an apertured cylindrical portion, a semi-circular part extending upwardly from one side of the cylindrical portion, said side of the cylindrical portion having an upwardly and outwardly extending spur and a web bracing the spout on the semi-circular part, an apertured bushing mounted in the cylindrical part and having a lower end protruding from said cylindrical part, means detachable from said protruding end for sealing said end of the bushing, an elongated sleeve disposed on the upper end of the bushing and arranged in said semi-circular part with an upper end projecting above said semi-circular part, means detachably clamping the sleeve with the semi-circular part of said unit, a key element circumferentially adjustable on the sleeve above said semi-circular part, and the upper end of the sleeve having longitudinally spaced teeth on one outer surface thereof.

4. A gooseneck comprising the combination of a base portion having a vertical through bore, an upwardly directed open-sided extension having a semi-cylindrical surface coaxial with the said base portion; a cylindrical body sleeve on the base portion in lateral engagement with said semi-cylindrical surface; clamping means securing the body sleeve to the said extension of the base portion; and closure means for the lower end of said through bore; said base portion having a lateral port communicating with its said bore and said spout portion having a through bore communicating with said base portion bore.

5. A gooseneck comprising a sleeve-like body having longitudinally spaced annular grooves at one end thereof, a spout unit comprising a semi-cylindrical inner surface, a lower part having a vertical through bore, and a spout portion extending upwardly and angularly with respect to said lower part, said upper part having vertically spaced pairs of apertured lugs, said sleeve body being arranged in said upper part with the annular grooves thereof, said lugs, U-shaped bolts mounted in the lugs and grooves for clamping said sleeve body in said unit, a piston bushing mounted in the bore of said lower part, said lower part having an inlet port, said spout portion having a discharge bore, said bushing having ports registering with the inlet port of said lower part and said discharge port of the spout, said inlet port and said bushing ports being in alignment whereby an unobstructed passage is formed from the inlet port through the discharge bore, said bushing protruding below the lower end of said lower part, and means mounted on the protruding end of said bushing for sealing the lower end of said bushing.

6. A gooseneck comprising essentially a sleeve-like body and a spout unit, said spout unit comprising (1) an upper part having a semi-cylindrical inner surface, (2) a lower part and (3) a spout portion extending upwardly and angularly with respect to said lower part, means for clamping said sleeve to the upper part of said unit, a piston bushing mounted in the bore of said lower part, said bushing protruding below the lower end of said lower part, a cap encircling the protruding end of the bushing and having a collar seating in an enlarged portion of said through bore.

7. A gooseneck comprising essentially a sleeve-like body and a spout unit, said spout unit comprising (1) an upper part having a semi-cylindrical inner surface, (2) a lower part and (3) a spout portion extending upwardly and angularly with respect to said lower part, means for clamping said sleeve body in said unit, and the lower end of the sleeve body being disposed on the upper end of said lower part.

8. In a gooseneck of the character described, a spout unit comprising an apertured base part, a spout extending integrally from the base part in an upward and outward direction at one side of the base part, said side of the base part having an integral, upwardly directed extension having a semi-cylindrical inner surface, a web connecting the spout to said extension, and a detachable sleeve body in contact with said base part and in engagement with said semi-cylindrical surface of said extension.

9. A gooseneck assemblage comprising a main elongated sleeve-like body having longitudinally spaced annular grooves at one end thereof, a spout unit comprising an upper semi-cylindrical part, a lower cylindrical part and a spout portion extending upwardly and angularly with respect to said cylindrical part, said semi-cylindrical part having vertically spaced pairs of apertured lugs, the semi-cylindrical part of the spout unit being arranged around said sleeve-like body with the annular grooves thereof in alignment with said lugs, U-shaped bolts mounted in the lugs and said grooves for clamping said sleeve body in said unit, a piston bushing mounted in the cylindrical part of said unit, said cylindrical part having an inlet port, said spout portion having a discharge bore, said sleeve body being arranged in said unit, a piston bushing mounted in the bore of said lower part, said lower part having an inlet port, said spout portion having a discharge bore, said bushing having ports registering with the inlet port of said lower part and said discharge port of the spout, said inlet port and said bushing ports being in alignment whereby an unobstructed passage is formed from the inlet port through the discharge bore, said bushing protruding below the lower end of said cylindrical part, means mounted on the protruding end of said bushing for sealing the lower end of said bushing, and a detachable nozzle on the upper end of said spout portion.

10. In a gooseneck of the character described, a spout portion having an integral base portion, a vertical through bore in said base portion, a bushing in said through bore detachable with respect to the base portion, an elongated sleeve extending upwardly from said base portion, means integral with the base portion and said spout portion for engaging said sleeve, means for detachably coupling said spout portion on said last named means, and said bushing detachably coupled with said spout portion.

11. In a gooseneck of the character described, a spout portion having an integral base portion, a vertical through bore in said base portion, an elongated sleeve extending upwardly from said base portion, means integral with the base portion and said spout portion for engaging said sleeve, means for detachably coupling said sleeve on said last named means, a nozzle detachably coupled with said spout portion, a bushing in said through bore detachable with respect to the base portion, said bushing protruding below the lower surface of said base portion, and a cap having a drive fit on and encircling the protruding end of said bushing for sealing the lower end of the bushing.

References Cited in the file of this patent

UNITED STATES PATENTS

591,777 Sears Oct. 12, 1897
669,405 Wicks Mar. 5, 1901
720,714 Lightbown Feb. 17, 1903
1,964,324 Kasu Mar. 30, 1934
1,965,340 Hulme July 3, 1934
2,182,403 Lester Dec. 5, 1939
2,224,981 Morin Dec. 17, 1940
2,393,588 Cherry et al. Jan. 29, 1946
2,485,526 Bennett Oct. 18, 1949