R. M. AKIN.

CASTING MACHINE.

APPLICATION FILED NOV. 14, 1908.

1,017,943. Patented Feb. 20, 1912.

Fig. 1.

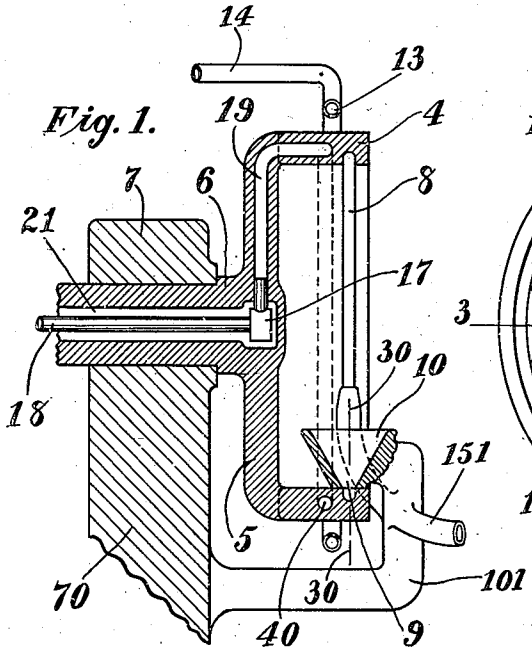


Fig. 2.

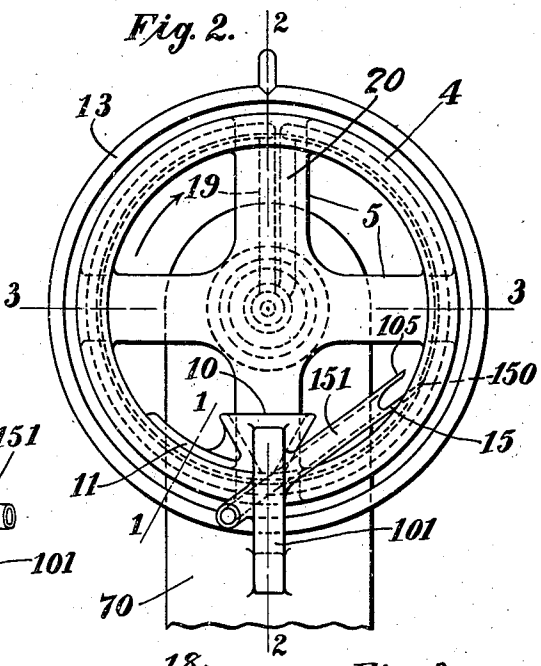


Fig. 3.

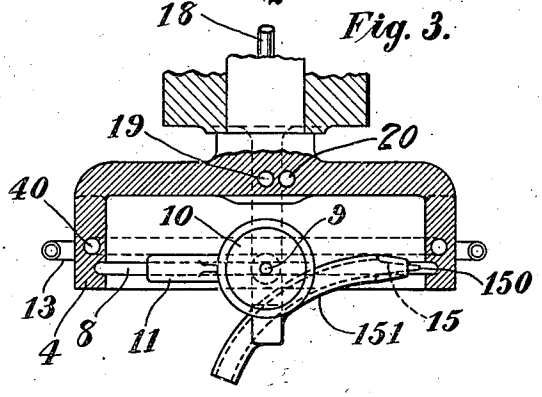


Fig. 4.

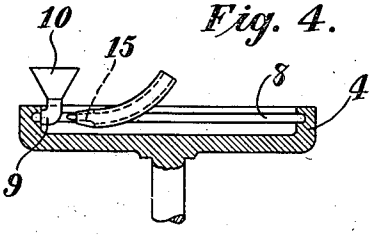


Fig. 5.

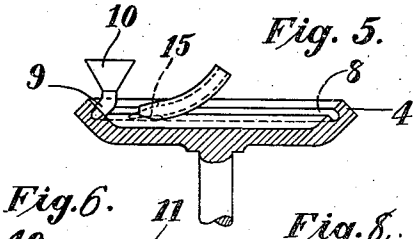


Fig. 6.

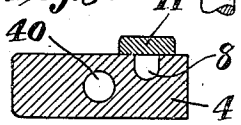


Fig. 8.

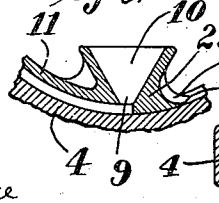
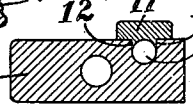


Fig. 7.



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UNITED STATES PATENT OFFICE.

ROBERT M. AKIN, OF OSSINING, NEW YORK.

CASTING-MACHINE.

1,017,943. Specification of Letters Patent. Patented Feb. 20, 19

Application filed November 14, 1908. Serial No. 462,646.

To all whom it may concern:

Be it known that I, ROBERT M. AKIN, a citizen of the United States, and a resident of Ossining, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Casting-Machines, of which the following is a specification.

This invention relates to casting machines and directly to that class thereof which comprise a mold rotatable relative to the spout through which the molten metal is supplied to said mold.

In the drawing accompanying this specification is illustrated one embodiment of my invention and which may be the preferred embodiment. Therein Figure 1 is an elevation partly in section on line 2, 2 of Fig. 2, of an apparatus embodying my improvements and Fig. 2 is a front elevation thereof. Fig. 3 is a sectional plan view on line 3, 3, of Fig. 2. Figs. 4 and 5 are modifications of my improvements which will be described more in detail later herein. Fig. 6 is a sectional view on an enlarged scale on line 1, 1 of Fig. 2. Fig. 7 is a view similar to that of Fig. 6 and showing a modification thereof. Fig. 8 is a sectional view on line 30, 30 of Fig. 1 showing a modification of a detail of the pouring means.

My improved mechanism is particularly useful for forming into a continuous ribbon or wire such metals or other materials as are too hard in their solid state to be conveniently formed into ribbon or wire by squirting through a die as is commonly done with lead, wax and other relatively plastic materials. Heretofore steel, copper, brass and other relatively hard materials have been put through a number of preliminary processes such as casting into ingots, rolling and annealing and the rolling and annealing often repeated before said material was ready for reduction to wire by drawing through dies. By means of my improvements such casting into ingots, rolling and annealing and rerolling and reannealing are done away with, and the metal or other material which it is desired to form into a continuous body is poured in its molten state directly into the form of wire or ribbon, and in one operation is completed or is ready for drawing to smaller size and different cross section if desired.

Referring more particularly to Figs. 1, 2 and 3 my improved apparatus comprises an annular member 4 normal and rigidly connected as by arms 5, 5 to spindle 6 mounted for rotation in bearing 7 of frame 70. In the inner face of annular member 4 is an annular groove 8 preferably relatively near the front edge of said member 4, so as to be readily accessible for purposes hereinafter more fully described. Said ring 4 with groove 8 therein constitutes an annular mold for the reception of the molten material which it is desired to form into a continuous body. Located over said groove and preferably at or near the lowest point thereof is spout 9 of funnel or delivery member 10. Said funnel is provided to deliver the molten metal or other material poured therein to groove 8 of ring 4. It is not necessary, however, that said spout 9 be directed to the lowest point of groove 8 as said spout is efficient for the purpose specified if directed to points in said groove materially distant from said lowest point. Funnel 10 may be supported by any convenient means such as arm 101 outstanding from frame 70, or it may be adjustably mounted if desired. Said groove 8 may be of any desired shape in cross section and I have illustrated it as of U shape that being the nearest approximation to a circle that may be had in an open sided mold that will allow the removal after solidifying of the material poured therein. Also I have found that wire of said U cross section may be readily drawn into a circular cross section in one operation. Extending rearwardly from funnel 10 in the direction of rotation of ring 4 I have shown a lip or dam 11, illustrated in cross section in Fig. 6, having its face in close proximity to the inner face of ring 4 and covering groove 8. Said dam 11 is efficient to hold the molten material in groove 8 during solidification or during the early stages thereof and also to keep the air from said molten material during solidification. Also if desired I may form said lip as illustrated in Fig. 7 with portions as 12, 12 entering groove 8 and thereby transforming said groove from a cross section of U shape to one of circular shape.

A useful modification of funnel 10 is illustrated in Fig. 8 and comprises a lip or gate 25 extending downwardly and preferably filling in cross section groove 8, and I have provided said gate with a scraper 26. Said scraper may have an upwardly turned lip 27 at one side thereof if desired. Said gate

25 is useful to prevent the molten material poured into funnel 10 from flowing backward toward plow 15 and is also useful to keep the air from the inflowing material. Scraper 26 is useful to scrape from channel 8 any residue that may be left therein by plow 15 and discharge it from said channel.

For removing after solidification the material poured into groove 8, I provide a plow or lifter 15 projecting into groove 8 and pointed in the direction of approach of said ribbon or wire of solidified material. Said lifter 15 is preferably shaped to conform more or less to the shape of groove 8 and preferably has its lip 150 located close to the bottom of said groove 8. Thereby the material in said groove is pried up and directed out therefrom in a continuous body. Plow 15 preferably has its rearward portion 151 formed into a trough or tube of any desired cross section and may be inclined outwardly so as to lead the material out of the plane of groove 8, so that said material may be conveniently coiled or otherwise disposed of. Also plow 15 is provided with a deflector 105 thereover to counteract the tendency of the material to curl upwardly as it passes over lip 150 and direct it into the channel of rearward portion 151. Lifter 15 is preferably located circumferentially remote, in the direction of travel of the material in groove 8, from spout 9 so as to allow a maximum of time for the solidification and cooling of the material before being lifted from said groove. Said lifter 15 may be adjustably mounted if desired but is herein illustrated as fixed to bracket 101.

For controlling the temperature of ring 4 I have provided a ring of gas burners 13 which may be supplied with gas through pipe 14 from any convenient source of supply. Also I have provided within ring 4 channel 40 through which water or other fluid may be circulated for cooling or otherwise. Said channel may be connected with swivel joint 17 of supply pipe 18 by means of inlet 19 in one of arms 5, and discharge from said channel may be had through outlet 20 emptying into cavity 21 of shaft 6.

In Figs. 1, 2 and 3 I have illustrated my improved mechanism arranged to have the annular mold rotate in the vertical plane but in Fig. 4 I have shown said mechanism arranged to have said mold rotate in the horizontal plane. In both these cases the molten material is entirely dependent upon centrifugal force caused by rotating ring 4 for the retention of said molten material in groove 8. In Fig. 5 I have also illustrated ring 4 as rotating in the horizontal plane but as having the inner face thereof inclined at an angle about midway between the horizontal and vertical. In this case the molten material is retained in its seat in groove 8 by the combined action of centrifugal force and gravity. With the arrangement of Fig. 5 the speed of rotation of said ring 4 can therefore be materially reduced from that required in the arrangement of Figs. 1, 2 and 3 or that of Fig. 4.

I claim:—

1. A rotating annular internal mold including in combination, centrifugal means for retaining the molten metal in said mold, a gate in said mold having a dam extending into said mold, a scraper on the heel of said dam and a lifter for guiding the solidified metal from said mold.

2. A rotating annular internal mold including in combination, centrifugal means for retaining the molten metal in said mold, a gate in said mold having a dam extending into said mold, a scraper on the heel of said dam, a lifter for guiding the solidified metal out of said mold and a deflector over said lifter.

Signed this 23 day of October, 1908, at Ossining, N. Y., before two subscribing witnesses.

ROBERT M. AKIN.

Witnesses:
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CHAS. W. LARUE.