Feb. 4, 1964 A. W. SCRIBNER 3,120,037

CONTINUOUS CASTING

Filed Nov. 1, 1961

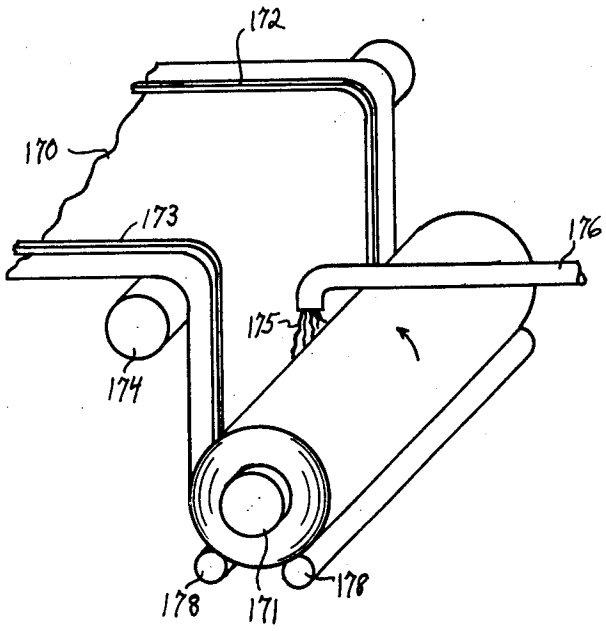


Fig. 1

INVENTOR.

Albert W. Scribner

United States Patent Office

3,120,037
Patented Feb. 4, 1964

3,120,037

CONTINUOUS CASTING

Albert W. Scribner, 6 Country Club Road, Darien, Conn.

Filed Nov. 1, 1961, Ser. No. 149,378
6 Claims. (Cl. 22—57.3)

This invention relates to a simplified and inexpensive type of method and apparatus for continuously casting metal and the like.

The primary object of the invention is to provide an improved technique and arrangement for casting work material whereby a spiral mold cavity is continuously developed and filled so that the work material therein may thereafter harden in ribbon or strip configuration; the cast strip then being progressively unwound from the mold.

Many other objects of the invention will become apparent as the disclosure progresses.

In the drawings:

FIG. 1 is a perspective view illustrating one embodiment of the instant casting process and apparatus.

Referring to FIG. 1 there is shown a casting technique wherein a flexible mold forming strip **170** is adapted to be wound onto a core **171** together with the end retaining stringers **172** and **173**. The inner end of the strip **170** and stringers are releasably secured to said core and as the strip and stringers pass over the guide roll **174** and are wound onto said core with the successive convolutions in predetermined spaced relation a continuous rectangularly cross sectioned spiral mold cavity is progressively formed. As the spiral cavity is thus being formed molten metal **175** is simultaneously supplied through a pipe **176** to fill said cavity. The coil of strip and the contained molten metal may be rotatably supported by cooling rolls **178**. After the strip **170** has been coiled up and the said spiral cavity is filled the outer end of the cavity is plugged by any suitable means and the unit is strapped or otherwise bound so that the molten metal may be set aside to cool and solidify. Thereafter the strip, stringers and solidified spiral of work metal are unwound and separated, the casting work metal then being reduced, straightened and/or finished by a suitable rolling operation. As will be apparent the thickness of stringers and their distance apart determine the size of the cast strip of metal. In this type arrangement the mold for casting the molten metal is comprised of a flexible coilable means. If desired the coiling of strip **170** may be completed first and then the spiral cavity may thereafter be filled by admitting molten metal through suitable apertures in stringer **172** when the bound unit is axially standing up with stringer **173** in the lower position.

As will be apparent powdered metal or other forms of work material may be operated on in the manner above described.

While only one embodiment of the invention has been shown and described, it will be apparent to those skilled in the art that numerous variations and modifications may be made in the particular construction or process without departing from the underlying principles of the invention. It is therefore desired by the following claims to include within the scope of the invention all such variations and modifications whereby substantially the results of the invention may be obtained by the use of substantially the same or equivalent means.

The invention claimed is:

1. A method of casting molten metal; comprising the steps of winding up flexible molding strip into a coil having a continuous gap between the successive convolutions of the strip so that a continuous spiral mold cavity is formed, filling said spiral mold cavity with molten metal, cooling the molten metal to a frozen state, and unwinding and separating said coil of flexible molding strip and the spiral casting of work metal.

2. The method defined by claim 1 wherein said winding and filling steps progressively occur simultaneously.

3. The method defined by claim 1 wherein said winding and filling steps occur serially.

4. Apparatus for casting metal; comprising a core, means for rotatably supporting said core, a flexible mold forming strip adapted to be wound and unwound onto and from said core in successive convolutions, guide means for guiding said mold forming strip onto and off of said core, flexible edge defining stringer means adapted to be wound with and between the convolutions so that the latter are maintained in uniform spaced relation so as to thereby define a continuous spiral mold cavity, and means for feeding molten metal to said cavity during the forming of said spiral cavity.

5. Apparatus as defined by claim 4 wherein the spiral mold cavity and the molten metal supply means are arranged so that molten metal may be supplied to said cavity after the latter is formed.

6. Apparatus as defined by claim 4 wherein at least one cooling roller is provided which engages and cools the outer surface of the outer convolution of the mold forming strip.

References Cited in the file of this patent

UNITED STATES PATENTS

1,838,792	Stacey	Dec. 29, 1931
2,501,536	Orr	Mar. 21, 1950
2,768,413	Alexanderson	Oct. 30, 1956
2,790,216	Hunter	Apr. 30, 1957