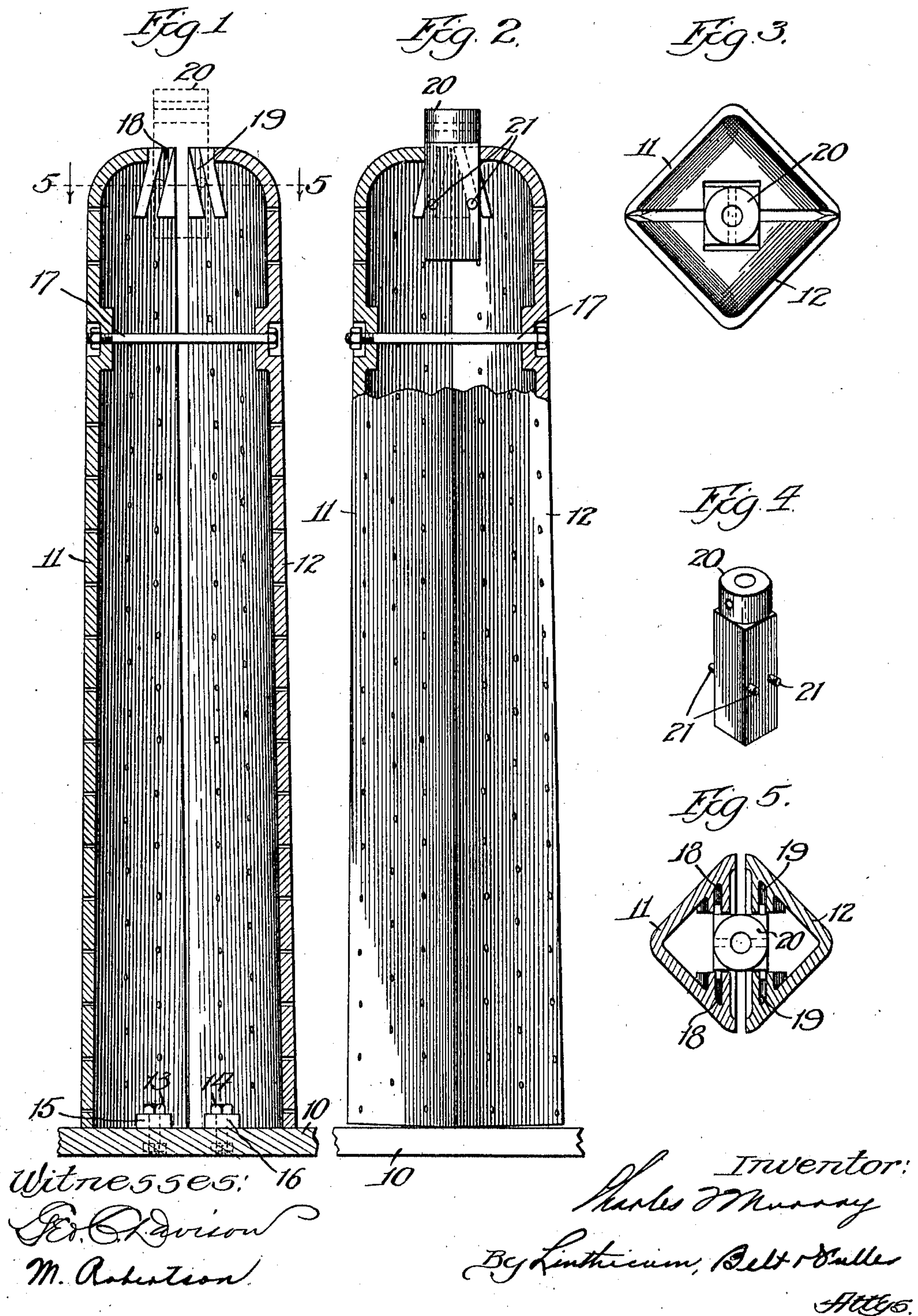


C. F. MURRAY.
 CONTRACTIBLE AND EXPANSIBLE CORE BARREL.
 APPLICATION FILED AUG. 8, 1910.

990,287.

Patented Apr. 25, 1911.



UNITED STATES PATENT OFFICE.

CHARLES F. MURRAY, OF EVANSTON, ILLINOIS.

CONTRACTIBLE AND EXPANSIBLE CORE-BARREL.

990,287.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed August 8, 1910. Serial No. 576,207.

To all whom it may concern:

Be it known that I, CHARLES F. MURRAY, of Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Contractible and Expansible Core-Barrels, of which the following is a specification.

My invention relates to core barrels for use in casting molds for ingots, and has reference to devices of this character which are capable of positive contraction and expansion.

The device described herein is of a character similar to that described in my co-pending application, Serial No. 573,145, filed July 21st, 1910.

As will be readily understood by those skilled in the art, the production of steel ingots is accomplished by casting the fluid metal in molds. The molds in which this metal is cast are also formed of cast metal and are very heavy. These molds are usually about six feet in height and of varying rectangular cross section. The practice in the production of these ingot molds is to employ a core of the proper dimensions, coating this core with sand, then drying the same until the sand coating is rigid and hard, then surrounding the said core with a properly equipped flask, then pouring the molten metal around the core in the opening between the flask and the said core. When the fluid metal has set, the core is removed, and it is to this step of removing the core from the casting that my invention relates.

As will be understood, the metal in cooling contracts and binds itself tightly upon the core, and in order to free the same from the casting, it has been found necessary to employ a great deal of force by the use of dolly bars, electric extractors and other means, all of which require considerable labor and consumption of power. I have therefore devised a core or core barrel composed of sections which are adapted to be wedged apart as the core is lifted and which sections are forcibly contracted when the core is to be removed from the casting.

Referring to the drawings: Figure 1 is a sectional elevation of a device constructed in accordance with my invention showing the two sections wedged apart. Fig. 2 is a similar view showing the parts contracted. Fig. 3 is a plan view. Fig. 4 is a perspective view of the central stem. Fig. 5 is a horizontal section on the line 5—5 of Fig. 1.

Referring more particularly to the drawing it will be seen that the base, 10, which corresponds to the drag of the mold, has secured thereto two triangular sections, 11—12, these sections when united forming a rectangular core. These sections are united to the base by means of the bolts 13—14 through integral lugs 15—16, as best shown in Fig. 1. As shown these sections are slightly tapered toward their upper extremities and provide what is known as the "closed top" core. Near the upper end of the sections a through bolt 17 is provided for limiting the separation of the parts. Near the top of the sections is provided a plurality of inclined slots or ways, 18—18 and 19—19, there being two of said slots in each section, as shown in Fig. 5. The central stem 20, provided with lugs or projections 21, on the sides thereof, is adapted for vertical movement within the sections, the projections 21 coöperating with and sliding in the inclined slots 18—18 and 19—19. When the stem 20 is in its raised or elevated position, as shown by the dotted line in Fig. 1, the parts are expanded as shown in that figure. The depression of the stem 20 forcibly contracts the sections as shown in Fig. 2.

The inclines of the slots and the extent to which the parts separate is considerably exaggerated in the drawings in order to make the construction clear. In order to free the casting it is only necessary to provide a very slight amount of contraction, a quarter of an inch being ample in practically every instance. It has been found in practice that the slight amount of contraction necessary makes it possible to secure the sections rigidly to the base, there being sufficient resiliency in the metal to provide the necessary contraction.

The operation of my device may be described as follows: Assuming the parts in the position shown in Fig. 2, it is lifted by a crane or otherwise, through the central stem 20. The projections on the stem sliding in the inclined slots on the interior of the sections, forcibly expands said sections to the limit allowed by the bolt 17. The core is then placed where a coating of sand is applied, then baked, then the casting formed around it. When the metal is sufficiently set and it is desired to remove the core from the casting, the central stem is given one or more blows with a heavy hammer which drives it downward and the co-

operation of the projections thereon with the inclined slots forcibly contract the sections and leaves the casting free therefrom.

It will be understood that although I have shown the device as formed of two halves or sections it may be as well constructed of a larger number of sections. Also that it may be of the open top variety instead of closed, as shown in the drawings, and that various other modifications may be made without departing from the spirit of my invention.

I claim:

1. A contractible and expansible ingot mold core, comprising, in combination, a plurality of sections rigidly secured to a base and having inclined slots on the interior thereof, a central stem and means on

said stem cooperating with said slots adapted to cause the forcible contraction and expansion of said sections, substantially as described.

2. A contractible and expansible ingot mold core, comprising, in combination, a plurality of sections rigidly secured to a base and having inclined slots on the interior thereof, a central stem and means on said stem cooperating with said slot adapted to cause forcible contraction and expansion of said sections, and means for limiting the expansion of said sections, substantially as described.

CHARLES F. MURRAY.

Witnesses:

M. ROBERTSON,
HENRY M. HUXLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
