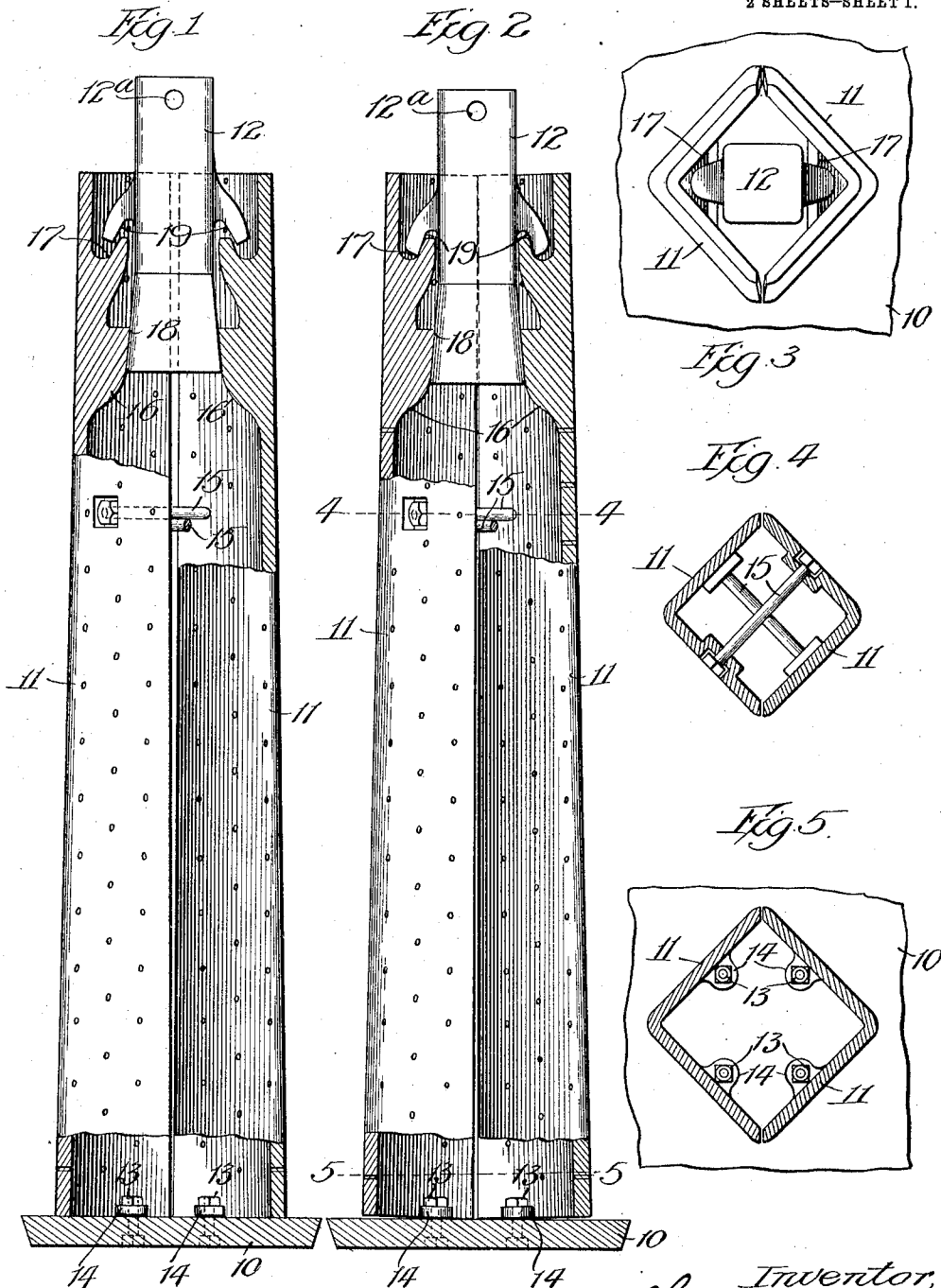


C. F. MURRAY.
 CONTRACTIBLE CORE BARREL.
 APPLICATION FILED JULY 21, 1910.

1,005,062.

Patented Oct. 3, 1911.

2 SHEETS—SHEET 1.



Witnesses:
Ed. C. Davison
T. D. Butler

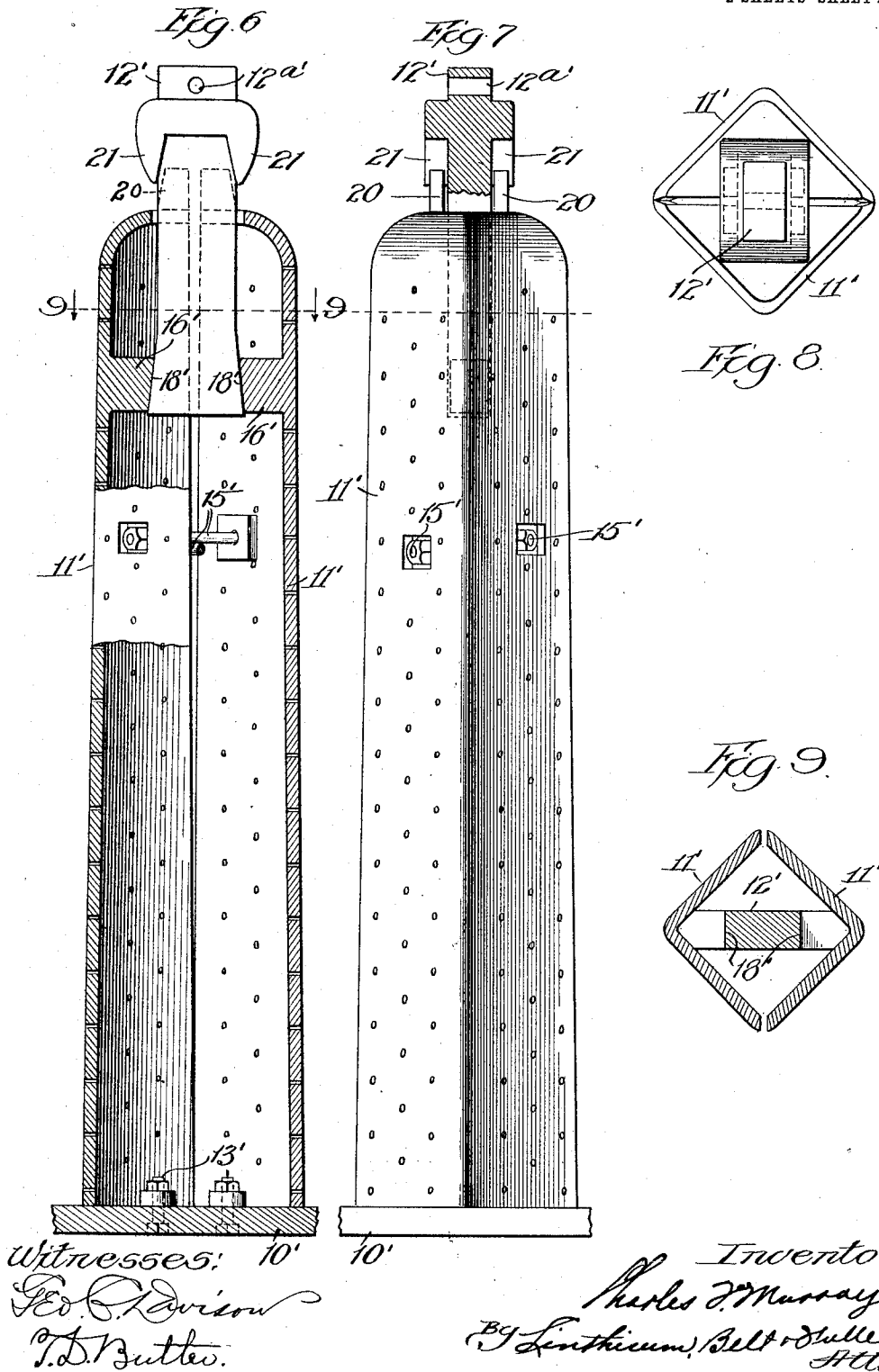
Inventor,
Charles F. Murray
 By *Linthicum, Belt & Fuller*
 Attys.

C. F. MURRAY.
CONTRACTIBLE CORE BARREL.
APPLICATION FILED JULY 21, 1910.

1,005,062.

Patented Oct. 3, 1911.

2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

CHARLES F. MURRAY, OF EVANSTON, ILLINOIS.

CONTRACTIBLE CORE-BARREL.

1,005,062.

Specification of Letters Patent.

Patented Oct. 3, 1911.

Application filed July 21, 1910. Serial No. 573,145.

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 Core-Barrels, of which the following is a specification.

My invention relates to core barrels for use in casting molds for ingots, and particularly to sectional core barrels which are capable of being positively or forcibly contracted to free the same from the casting formed around it.

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. I have illustrated my invention as applied both to open and closed top core barrels.

Referring to the drawings; Figure 1 is a side elevation of my invention, parts thereof being broken away and showing the sections in expanded relation; Fig. 2 is a similar view showing the two sections contracted; Fig. 3 is a top plan of the construction shown in the previous views; Fig. 4 is a section on the line 4—4 of Fig. 2; Fig. 5 is a section on the line 5—5 of Fig. 2, showing

the means of attaching the two sections to the base of the core; Fig. 6 is a sectional elevation of a similar form of core barrel having what is called a closed top; Fig. 7 is a side elevation thereof; Fig. 8 is a plan view, and Fig. 9 is a section on the line 9—9, of Fig. 6.

Referring more particularly to the drawings, it will be seen that the core barrel of my invention is composed of a base, two sections or halves, and a central stem or wedge portion. The two halves are secured to the base portion by means of the bolts, passing through the lugs, formed integral with the lower portion of the sections of the core barrel. The upper portions of the sections are restrained from separation by means of the through bolts, countersunk as shown. On the interior of the V-shaped sections of the core barrel, I form inclines or wedges, one above the other. Corresponding inclines or wedge surfaces, are formed on the stem, and as will be seen, these are adapted to cooperate with the wedge portions, tending to separate the two halves upon the vertical movement of the stem, and the inclines, to draw the two halves together upon the descent of the said stem. As will be understood, the contraction or inward movement of the two sections of the core need be but very slight in order to free the same from the casting, and for this reason I have found it desirable to rigidly secure the lower ends of the two sections to the base portion, the resiliency of the metal and of the connecting parts being sufficient to give the necessary expansion and contraction.

The core barrel shown in Figs. 6 to 9 inclusive, is much the same as that heretofore described except that the principle is applied to a closed top core. As will be seen, the parts are similar except that the contracting means comprise lugs, cast integral with the tops of the halves and having a wedge surface or incline upon their reverse sides. This wedge cooperates with similar wedge surfaces, formed integral with the stem.

The use of my improved core barrel may be described as follows; Assume the device in the position of Fig. 1, it is lifted by a crane by means of the opening, in the stem. This lifting action causes the wedge surfaces, to cooperate with

the surfaces, 16—16, and expand the two sections to the extent allowed by the bolts, 15. The device is then carried to the point where sand is applied to the outer surfaces, then is removed to a core baking oven, then when properly dried, is removed therefrom and the flask placed over it. The metal is then poured around the core and allowed to cool or set. When the casting has cooled sufficiently, the stem, 12, is given a number of blows with a sledge which drives it downward, causing the surfaces, 17, 19, to co-act and forcibly contract the two halves. The flask, together with the casting, is then lifted from the core, the operation above described being repeated as often as desired.

As will be seen, my invention comprises a device of an exceedingly limited number of parts or pieces, none of which are loose, or which are fragile or easily broken. In order to accomplish this, I have formed the core in two halves instead of four side plates, as has been the custom, although it will be understood that the principles of the device shown herein could be as easily applied to a core having four side plates instead of two halves, and inasmuch as various other modifications will readily suggest themselves to those skilled in the art, I do not limit myself to the precise construction herein shown and described.

I claim:

1. A contractible and expansible ingot mold core comprising, in combination, a plurality of sections, a central stem, two sets of oppositely inclined integral wedge surfaces on said sections and said stem, said wedge surfaces co-acting to cause the contraction of said sections on the downward thrust of said stem and the expansion of said sections on the upward pull of said stem, substantially as described.

2. A contractible and expansible ingot mold core comprising, in combination, a plurality of sections rigidly secured to a drag,

a central stem, two sets of oppositely inclined integral wedge surfaces on said sections and said stem, said wedge surfaces co-acting to cause the contraction of said sections on the downward thrust of said stem and the expansion of the sections on the upward pull of said stem, substantially as described.

3. A contractible and expansible ingot mold core comprising, in combination, two sections, a central stem, two sets of oppositely inclined integral wedge surfaces on said sections and said stem, said wedge surfaces co-acting to cause the contraction of said sections on the downward thrust of said stem and the expansion of said sections on the upward pull of said stem, substantially as described.

4. A contractible and expansible ingot mold core, comprising, in combination, two core sections rigidly secured to a drag, a central stem, two sets of oppositely inclined integral wedge surfaces on said sections and said stem, said wedge surfaces co-acting to cause the contraction of said sections on the downward thrust of said stem and the expansion of said sections on the upward pull of said stem, substantially as described.

5. A contractible core barrel, comprising in combination, two sections rigidly secured to a base and having two sets of inclined surfaces thereon, means limiting the separation of said sections, a central stem having two sets of wedge surfaces, the wedge surfaces of said sections and said stem being adapted to coöperate and one of said sets of surfaces being adapted to cause the expansion of said sections and the other of said sets of surfaces being adapted to cause the contraction of said sections, substantially as described.

CHARLES F. MURRAY.

Witnesses:

T. D. BUTLER,
M. ROBERTSON.