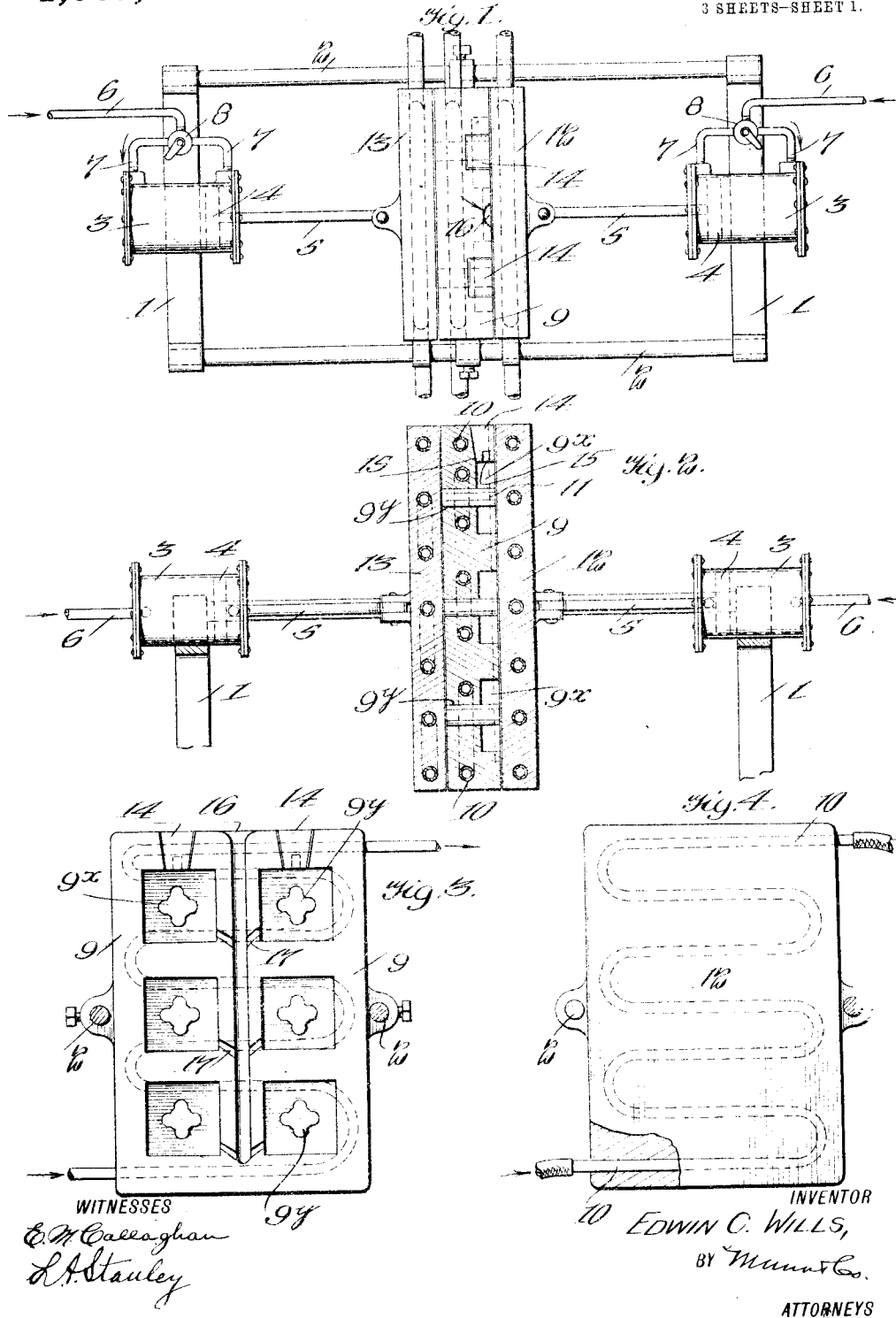


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1,064,949.

Patented June 17, 1913.

3 SHEETS—SHEET 1.

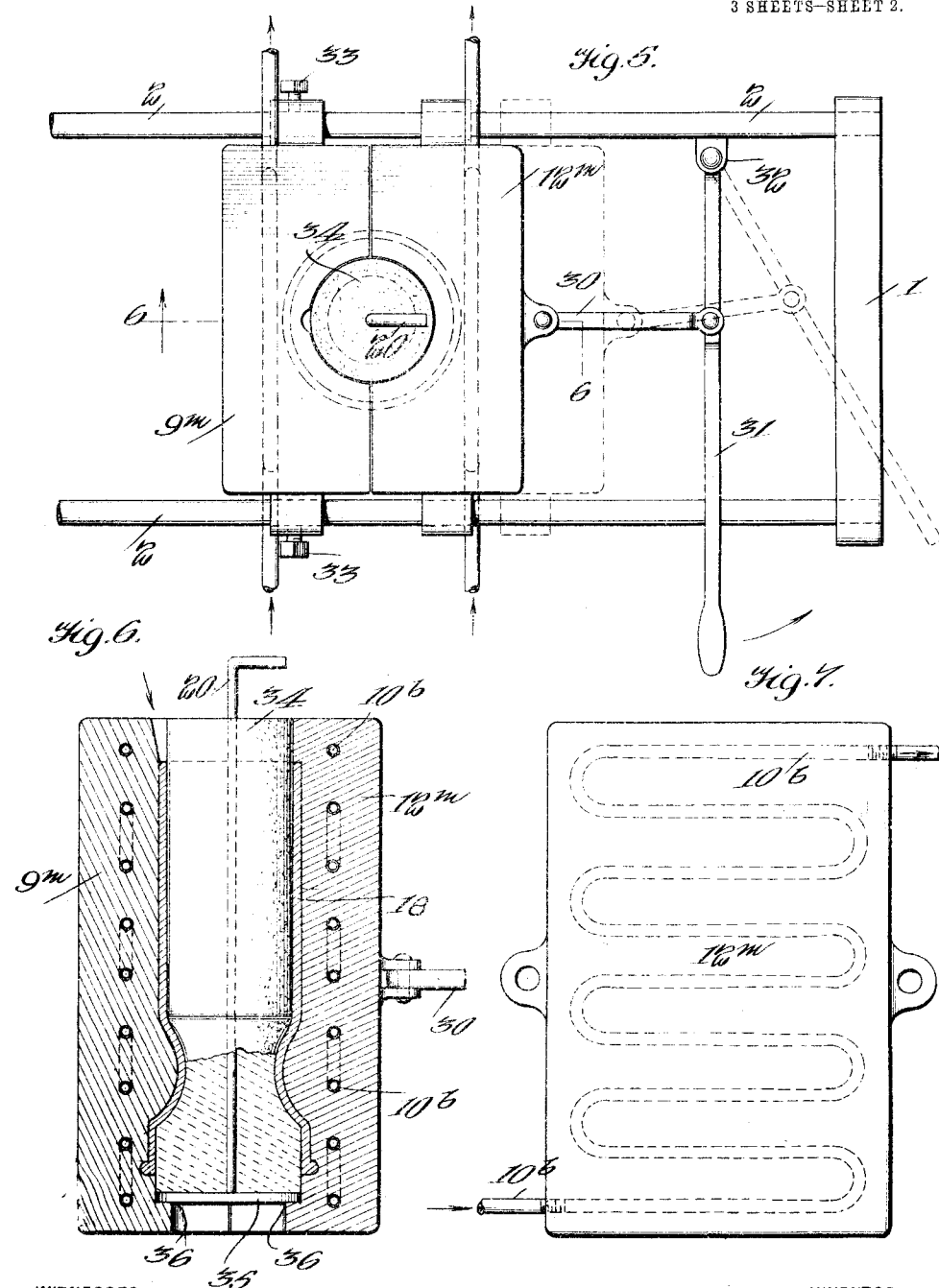


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WITNESSES
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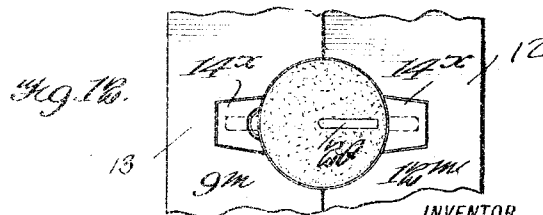
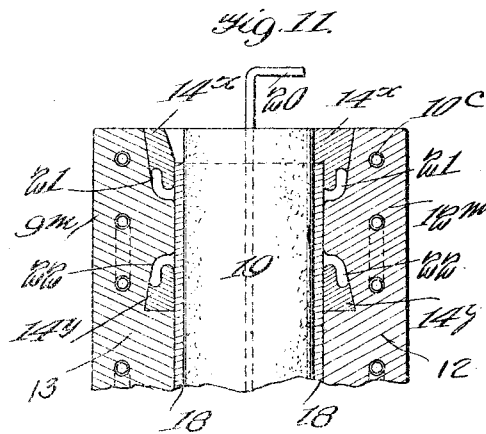
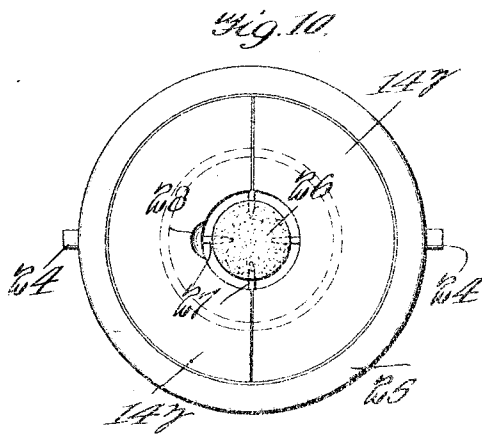
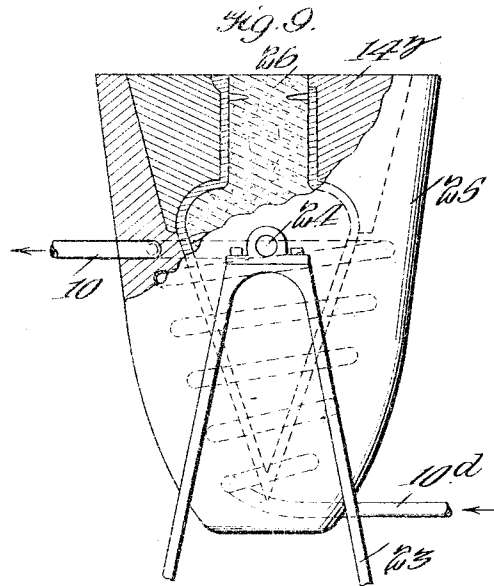
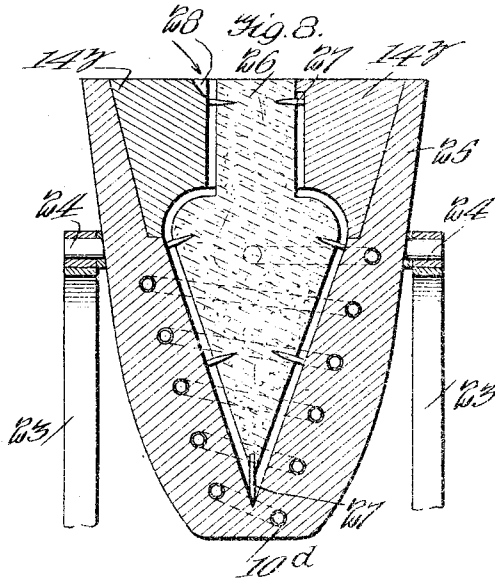
ATTORNEYS

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UNITED STATES PATENT OFFICE.

EDWIN COOPER WILLS, OF FREDERICK, MARYLAND.

CASTING APPARATUS.

1,064,949.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed February 4, 1913. Serial No. 746,102

To all whom it may concern:

Be it known that I, EDWIN COOPER WILLS, a citizen of the United States, and a resident of Frederick, in the county of Frederick and State of Maryland, have made certain new and useful Improvements in Casting Apparatus, of which the following is a specification.

My invention relates to improvements in casting apparatuses, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of my invention is to provide an improved casting apparatus in which objects may be molded with great rapidity and at small cost.

A further object of my invention is to provide an improved mold construction in which there are slidable and removable mold sections to permit the casting of objects of irregular shape.

A further object of my invention is to provide a device arranged so as to permit the ready removal of the article and the reassembling of the parts of the mold.

Other objects and advantages will appear in the following specification and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming part of this application in which—

Figure 1 is a plan view of the device, Fig. 2 is a vertical section through the mold, Fig. 3 is a face view of the central mold section, Fig. 4 is a face view of one of the movable mold sections, Fig. 5 is a plan view of a modified form of the device, Fig. 6 is a section through the mold along the line 6—6 of Fig. 5, Fig. 7 is a face view of one of the movable mold sections shown in Fig. 5, Fig. 8 is a vertical section through a modified form of mold, Fig. 9 is a side view of the mold shown in Fig. 8, certain portions being shown in section, Fig. 10 is a plan view of the mold shown in Fig. 8, Fig. 11 is a sectional view of another modified form of the mold, and Fig. 12 is a plan view of the mold sections shown in Fig. 8.

Referring now to Fig. 1, I have shown therein a main frame consisting of the end members 1 and the longitudinal rods 2 connecting them. Each of the end members

bears a cylinder such as that shown at 3 having a piston 4 and a piston rod 5. Inlet pipes 6 for motive fluid are connected by branch pipes 7 to each end of the cylinders 3, the three-way cocks 8 being provided for admitting the motive fluid into either end of the cylinder so as to move the piston 4 in either direction. Carried by the rods 2 is a central mold section 9. This mold section is made of suitable refractory material and has a series of pipes 10 embedded therein for the purpose of cooling the section. In the drawings I have illustrated this central section as having recesses 9^a for receiving the metal. The body portion of the mold section 9 is also provided with a series of openings 9^b arranged to receive cores 11 which project into the recesses 9^a as shown in Fig. 2. Arranged to be brought into close proximity to the mold section 9 are the movable mold members 12 and 13 respectively. In Fig. 4 I have shown a face view of one of these movable members. It will be seen that it is provided with a cooling pipe 10 of the same nature as that already described in connection with the central mold member. Both the mold members 12 and 13 are movable along the guide rods 2. It will be seen that at the upper end of the mold members there is a space left for a removable section 14. This section is provided with a recess 15 which is contiguous to the recess 9^a, and which receives metal. In this instance a lug is to be cast on the plate which is to be molded.

From the foregoing description of the various parts of the device the operation thereof may be readily understood. The cores 11 are inserted in the central mold member. The removable sections 14 are placed in position and since they are beveled in two directions they will remain in this position. The cocks 8 are now turned so as to cause the movable mold sections 12 and 13 to abut the outer sides of the central mold section. The mold is now ready for casting. The metal is poured in at the gate 16 and runs by the branches 17 into the recesses 9^a and 15. The water which is flowing through the cooling pipes 10 causes the mold to cool rapidly and when it has sufficiently cooled the stop cocks 8 may be turned so as to force the pistons in the opposite direction, there-

by withdrawing the movable mold sections. The sections 14 may now be removed and when the casting has sufficiently cooled it may be also removed. As soon as the mold has cooled sufficiently other cores may be inserted and the mold may be closed for casting duplicates of the original casting. It is obvious that this may be done very rapidly and at a minimum cost.

In Figs. 5, 6 and 7 I have shown a modified form of the device in which there is one stationary mold member and one movable mold member. The stationary mold member is shown at 9^m and the movable mold member at 12^m. The latter is connected by means of a link 30 with a lever 31 pivoted at 32 on the rod 2. The stationary mold member 9^m is arranged to be adjusted at various positions along the rods 2 by means of the set screws 33. Both sections are water cooled by means of the pipes 10^b. This form of the device is designed to cast soil pipes. The core 34 is supported upon a plate 35 resting on the shoulders 36 of the mold sections. This core is carried by means of the rod 20. The mold member 12^m may be moved toward and away from the mold member 9^m so that when the pipe is cast it may be taken out of the mold as soon as the latter is cool enough to permit it to be removed.

In Figs. 11 and 12 I have shown the mold members 12^m and 9^m as being provided with additional removable sections such as those shown at 14^x and 14^y. In this instance a pipe 18 is being cast. The core 19 is carried by the rod 20. In casting lugs such as those shown at 21 and 22 on the pipe 18 I make use of the lower removable mold members 14^y and the upper removable mold members 14^x. It will be obvious that when the mold members 12 and 13 are moved laterally, *i. e.*, in a direction at right angles to the axis of the pipe the removable mold members 14^y will drop downwardly as soon as they have cleared the edges of the mold members 12 and 13. The upper mold members 14^x are now removed and the pipe with its core may be taken off. In Fig. 12 I have shown a plan view of the mold members 14^x. It will be seen that these members can be placed in the movable members 12 and 13, and that they will stay in place owing to their beveled sides.

In Figs. 8, 9 and 10 I have shown another modified form of the device. In this instance the supports 23 carry the trunnions 24 of the main mold member 25, this main mold member being provided with cooling pipes 10 similar to those already shown. The removable mold sections are shown at 14^x. In this instance they are semicircular in shape, as shown in Fig. 10.

The device to be cast in this instance is a conical-shaped hollow member which may be used as a cap piece for a signal post. The core 26 is provided with a series of pins or nails 27, which are forced into the core by means of a device which properly gauges the distance so as to leave a space between the core and the mold which is substantially uniform around the inner surface of the mold. The core is inserted in position and rests on these pins. The mold members 14^x are then placed in position and the casting is done at the gate 28. In this instance when the casting has cooled sufficiently it is only necessary to swing the mold on its trunnions when the mold members 14^x will fall downwardly together with the casting. The molten metal fuses the nails so as to render them an integral part of the casting and if by any chance a portion of the nail may be unfused and stick above the surface of the casting it may be ground off.

It will be seen that by providing removable mold sections the parts may be cast rapidly and the castings may be readily removed. The cooling of the different mold sections greatly facilitates the rapidity with which the castings may be made.

I claim:—

1. A casting apparatus comprising a core supporting section, and removable sections carried by said core supporting section and arranged to be removed for permitting the withdrawal of the casting.

2. A casting apparatus comprising a core supporting section, and wedge-shaped removable sections carried by said core supporting section and arranged to be removed for permitting the withdrawal of the casting.

3. In a casting apparatus, a stationary mold section, means for supporting a core on said stationary mold section, a movable section adapted to abut said stationary mold section, and a wedge-shaped removable section carried by said stationary mold section.

4. In a casting apparatus, a stationary mold section, means for supporting a core on said mold section, a movable section adapted to abut said stationary mold section, a wedge-shaped removable section carried by said main section, and means for cooling said main section and said movable section.

5. In a casting apparatus, a main mold section, cores carried by said main mold section, a plurality of movable mold sections arranged to abut said mold section, means for moving said movable sections toward and away from said main mold section, and a plurality of wedge-shaped removable sections carried by said main mold section.

6. In a casting apparatus, a main mold

section, cores carried by said main mold section, a plurality of movable mold sections arranged to abut said main mold section, means for moving said movable sections toward and away from said main mold section, and for holding said movable mold sections firmly against said main mold section, and a plurality of wedge-shaped removable sections carried by said main mold section.

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Witnesses:

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CHAS. A. FEAGA.