

J. K. GUNN.
 PIPE CASTING MACHINE.
 APPLICATION FILED MAY 6, 1907.

933,434.

Patented Sept. 7, 1909.

3 SHEETS—SHEET 1.

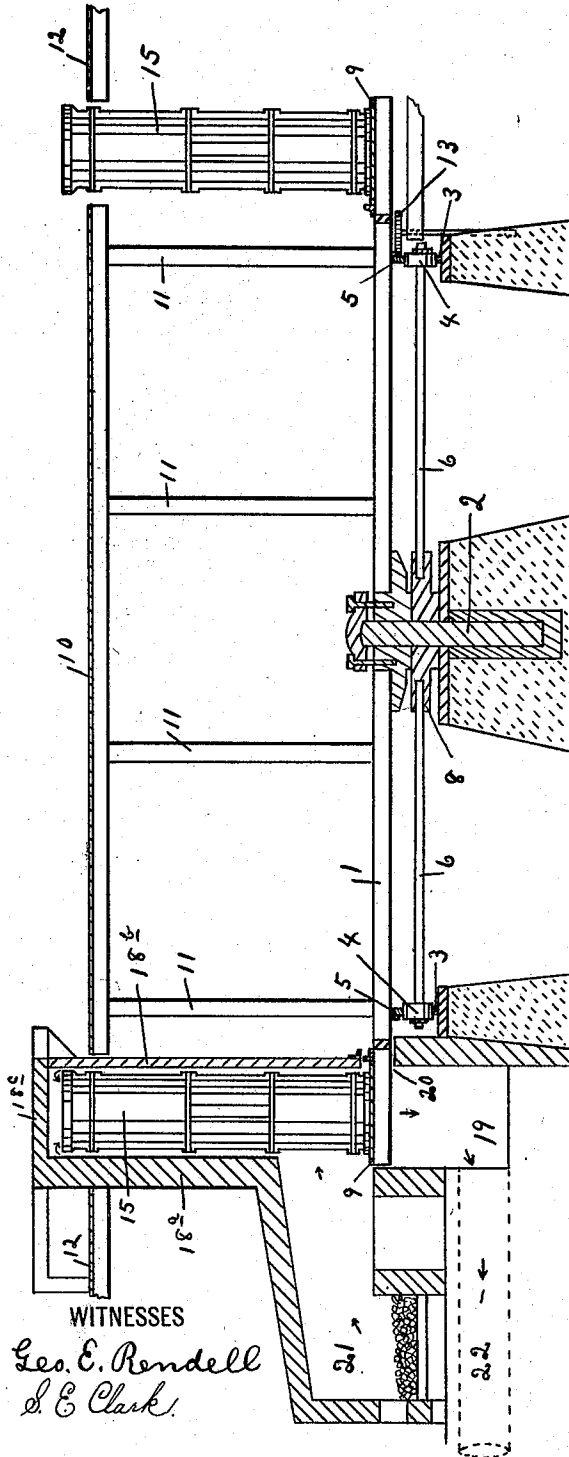


Fig. 1.

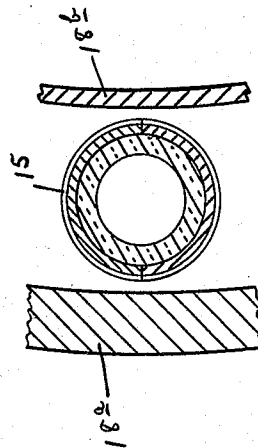


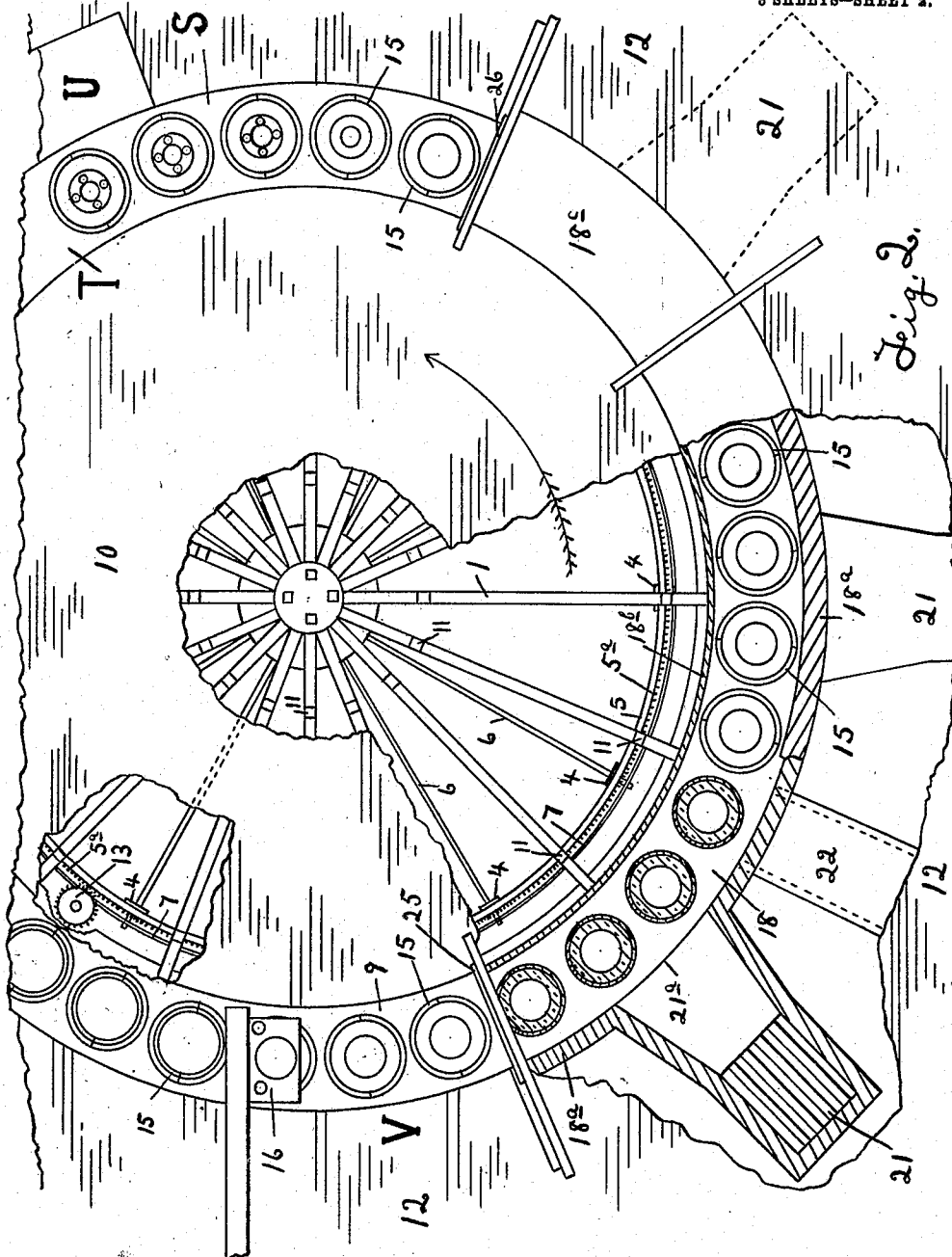
Fig. 5.

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3 SHEETS--SHEET 2.



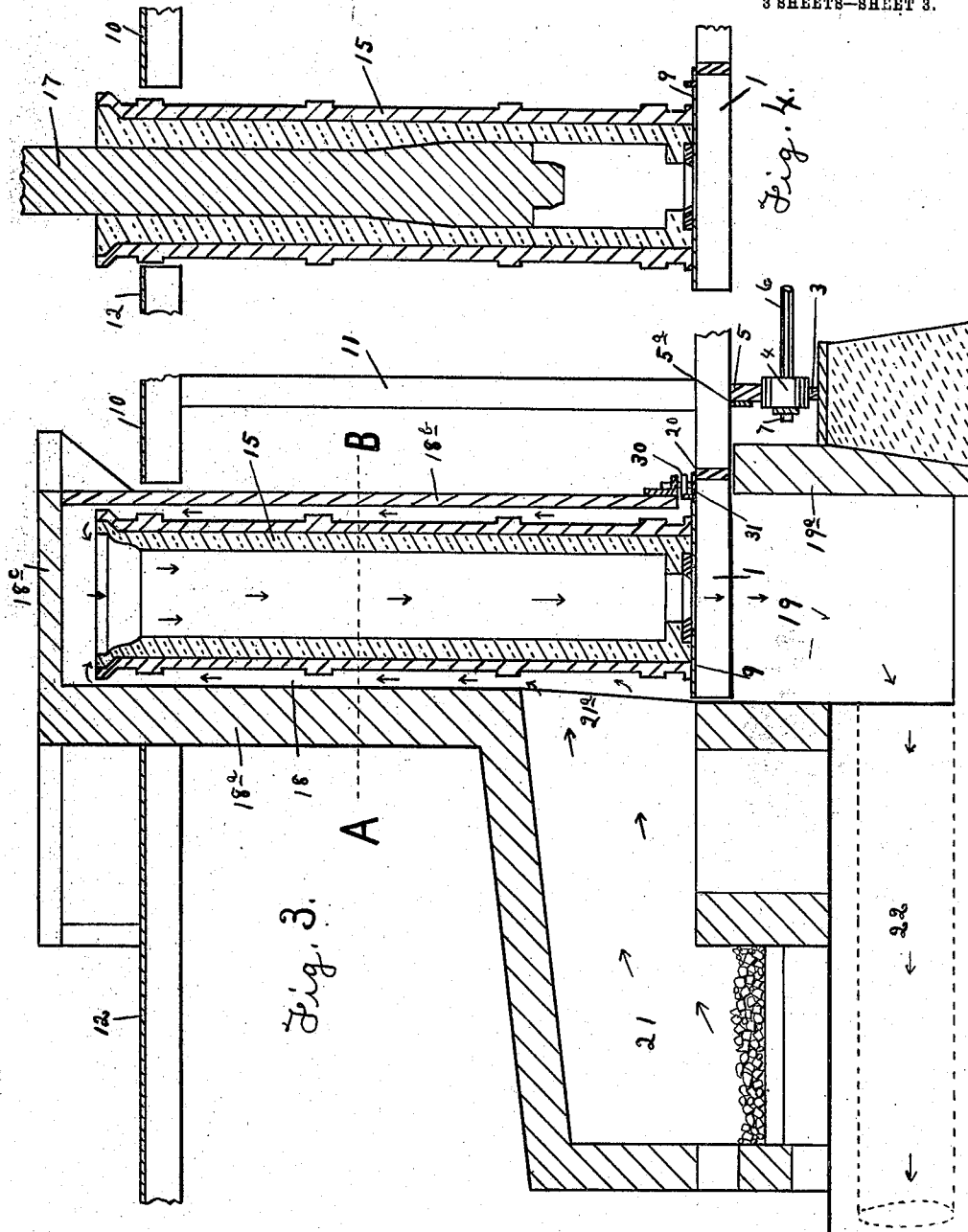
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UNITED STATES PATENT OFFICE.

JOHN K. GUNN, OF UTICA, NEW YORK.

PIPE-CASTING MACHINE.

933,434.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed May 6, 1907. Serial No. 372,045.

To all whom it may concern:

Be it known that I, JOHN K. GUNN, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Pipe-Casting Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form part of this specification.

The object of my present invention is to provide an improved machine for casting pipe, which may be said to operate by continuous process.

Briefly described the machine consists of an intermittently moving turn table carrying on its outer rim in an upright position the flasks. These flasks are passed under a molding machine, where the sand is introduced and formed to size; and after being internally coated are passed into a drying oven having an induced draft through the mold. After passing through the oven the cores are set, the metal poured, the flasks removed from the turn table, shook out and replaced thereon, when they again pass to the molding machine.

Figure 1 shows a vertical section of the machine. Fig. 2 is a partial plan view in which sections are broken out and shown in horizontal section to better illustrate the construction. Fig. 3 is a partial vertical sectional view of the machine and a flask on an enlarged scale from that employed in Figs. 1 and 2. Fig. 4 is a vertical section of a flask and the rammer in connection with small portions of the machine. Fig. 5 is a horizontal section on line A—B of Fig. 3.

Referring to the reference letters and figures in a more particular description of the device, 1 indicates a turn table or carrier turning on a fixed pivot 2 in a suitable base or foundation and supported on a circular track 3 provided on a suitable base or foundation by rollers 4 interposed between said track 3 and an inverted circular track 5 provided on the underside of the turn table. The rollers 4 are maintained in position by being mounted on the radial shafts 6, which are held together at their outer ends by

spacing strip or band 7, and at their inner ends find a bearing in an independently rotating disk 8.

Around the periphery the turn table is provided with a circular platform 9. This platform might be carried entirely over the turn table beam construction, but being practically useless otherwise than around the periphery is omitted. The turn table is provided with an elevated platform 10, which is supported by posts or uprights 11. This platform 10 of course rotates with the turn table, and is arranged substantially in the same plane as the fixed floor 12 surrounding the pit in which the machine is erected. The circular track 5 is provided on the outer side with a face of gear teeth 5^a, with which is adapted to mesh a pinion 13 for applying power to rotate the turn table. The diameter of the platform 9 of the turn table is greater than that of the elevated platform 10 thereof, and occupies the space directly below in a vertical line, the circular opening or space between the edge of the floor 12 and the edge of the platform 10. The platform 9 of the turn table is provided with a series of openings over which are set the flasks 15, so that the openings in the turn table will register with the openings through the flask. At a suitable point on the periphery of the machine is erected the mold forming or ramming machine, indicated roughly by 16, the essential feature of which is the rammer 17. As various forms of mold forming or ramming machines may be employed, details of this construction are omitted. On another section of the periphery of the machine is provided the drying oven 18, which for advantageous operation will preferably receive about one-third of the periphery of the turn table. This drying oven 18 is formed by the outer curved wall 18^a, the inner suspended curved wall 18^b, the top or cover 18^c and walls inclosing the lower part 19 under the space between the walls 18^a and 18^b. The peripheral edge of the turn table 1 projects into the oven through a slotted opening at 20 between the suspended wall 18^b and the top of the fixed wall 19^a, and divides the upper portion of the oven from the lower portion 19 by the circular platform 9 thereof.

For supplying heat or hot gases to the oven, there is provided a suitable number of

turnaces 21 which communicate with the oven chamber through openings 21^a at a point substantially at the bottom of the flasks. By means of a suitable suction blower or fan attached to flue 22, which connects with the lower part 19, a draft is induced through the furnaces, and the oven chamber, and when flasks are in position in the oven also downward through the flasks. At each end the oven 18 is provided with sliding gates or doors 25 and 26 adapted to close the inlet and outlet openings of the oven, except when temporarily opened to shift the flasks into and out of the oven. After passing through the oven there is a section of the turn table devoted to the work of setting the cores and making ready the head of the mold and pouring the metal. This section is indicated on the drawing by S. Following this is a section devoted to removing the flasks, opening and shaking out and replacing them on the turn table. This section is indicated generally by T and opposite this section the floor 12 will be preferably cut out as indicated at U in order to facilitate the removal and replacing of the flasks.

The flasks 15 are of the ordinary longitudinal divided class which are adapted to be opened to discharge the casting and the inclosing sand. The two sections, however, are preferably hinged together. When replaced on the turn table the flasks are returned to the molding or ramming machine. Provision will ordinarily be made between the position of the molding machine and the intake end of the oven for one or two flasks, as indicated at V, at which point the wash or inner coating may be applied to the mold. In operation the turn table is intermittently moved to bring one of the flasks in position under the molding machine when the mold will be made. When made the turn table will be moved ahead one position bringing another flask under the machine. At the time of these movements the gates or doors 25 and 26 will be opened to let one flask pass into the oven and one flask pass out from the oven. These doors may be arranged to be operated automatically and, of course, are arranged to slide in through the spaces between the flasks on the turn table, the flasks being suitably spaced to permit so doing. It will be observed that the hot gases directly from the furnaces come first in contact with the outer surface of the flask heating the same, while they make their passage vertically up the spaces between the flasks and walls of the oven to the top and then pass downwardly through the mold drying out and removing the moisture from the same in the most effective manner. Also that at the time the heated gases reach the point where they come in contact with the freshly

molded sand with its wash or inner coating they have lost a part of their heat to the flask body. The combined heat and circulation serve to rapidly dry the molds without injury to the molds or their inner coatings, and the fact that provision is made in the length of the oven for receiving at one time a considerable number of flasks affords sufficient time to dry the mold without interrupting the continuous operation of the machine.

It is evident that numerous changes and modifications may be made in the construction without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent is:

1. In a pipe casting machine, the combination of an oven adapted to receive a number of tubular flasks in upright position over openings in the bottom thereof, a furnace having its combustion chamber opening into the lower portion of the oven, and means for exhausting the oven through said openings and the flask extensions thereof to the upper part of the oven, substantially as set forth.

2. In a casting machine, a flask carrier, an oven through which the flasks are passed by said carrier, means for supplying heat to the oven, and means for inducing a draft from said oven to the exterior of the flasks and thence through the interior of the molds therein, substantially as set forth.

3. The combination in a machine of the character described of a flask carrier adapted to carry tubular flasks in upright position, a molding machine arranged adjacent to the carrier and adapted to operate in the flasks mounted thereon, and an oven through which the flasks are passed by the carrier and means for inducing a draft through the flasks while in the oven, substantially as set forth.

4. The combination in a machine of the character described of a flask carrier adapted to carry tubular flasks in an upright position, a molding machine arranged adjacent to the carrier and adapted to operate on the flasks mounted thereon, an oven through which the flasks are passed on the carrier adapted to receive a plurality of flasks and means for inducing a downward draft out of the oven through a series of the flasks in the oven, substantially as set forth.

5. The combination in a casting machine of a flask carrier, a molding machine arranged adjacent to the carrier, a drying oven through which the flasks are passed on the carrier, and means for heating the oven and inducing a draft through the flasks in the oven, substantially as set forth.

6. The combination in a continuous process pipe casting machine of a flask carrier, a molding machine adjacent to which the carrier passes, and an oven through which

the flasks are passed, and means for ventilating the oven through the flasks, substantially as set forth.

- 5 7. In a pipe casting machine, the combination of an oven adapted to receive a number of tubular flasks in an upright position, a carrier supporting the flasks, a furnace delivering heated gases into the oven adjacent to the bottom, an exhaust flue in communication with the lower ends of the flasks and means for inducing a draft from the furnace into the oven and exhausting the oven by a downward draft through the flasks and said exhaust flue, substantially as set forth.
- 15 8. The combination in a continuous process pipe casting machine of a flask carrier having a circular perforated platform on which the flasks stand in upright position, an oven through which the platform passes
- 20 dividing the same into upper and lower chambers, means for supplying heated gases to the upper chamber, and means for withdrawing the gases from the lower chamber, substantially as set forth.
- 25 9. The combination in a continuous process pipe casting machine of a flask carrier adapted to carry flasks in upright position in a circular row and located in a pit in such manner as to provide for the flasks projecting above the surface surrounding the pit, an upper carrier platform occupying the space within the circle of the row of flasks and located substantially in the plane of the surrounding surface of the pit, substantially
- 30 as set forth.
- 35 10. The combination in a continuous process pipe casting machine of a flask carrier

having a circular platform perforated at suitable intervals to receive the flasks standing on and over said perforations, and a curved oven receiving a section of the circular platform, doors at the ends of the oven arranged to pass across the platform and between the flasks arranged thereon, and means for heating the oven, substantially as set forth.

11. In a pipe casting machine, the combination of an oven adapted to receive a number of tubular flasks in upright position, a carrier passing the flasks through the oven, a furnace delivering heated gases into the oven adjacent to one end of the flask, and means for applying a suction to the ends of the flasks next the furnace to induce a draft from the furnace into the oven and exhausting the oven through the flasks, substantially as set forth.

12. In a pipe casting machine, the combination of an oven adapted to receive a number of tubular flasks in upright position, a carrier platform providing a bottom for the oven and having openings over which the flasks are placed, a furnace delivering gases into the bottom of the oven, means for exhausting the oven through the flasks and openings in the platform, substantially as set forth.

In witness whereof, I have affixed my signature, in presence of two witnesses, this 29th day of April 1907.

JOHN K. GUNN.

Witnesses:

E. S. HESSE,

JAMES H. MERWIN.