

F. A. FIELD.
 APPARATUS FOR MAKING CAST IRON PIPE.
 APPLICATION FILED DEC. 9, 1905.

952,893.

Patented Mar. 22, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

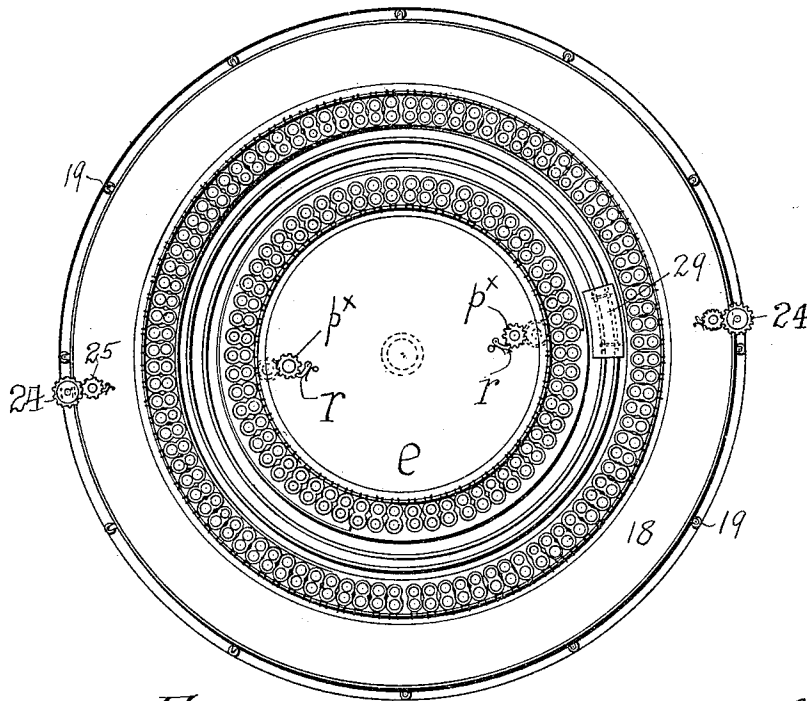
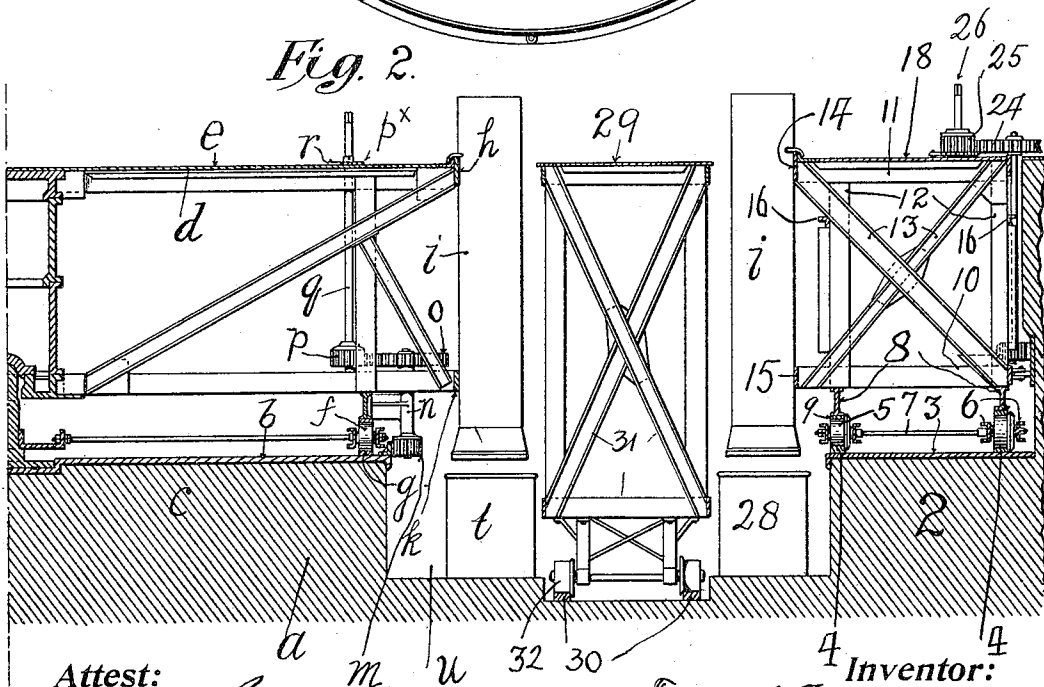


Fig. 2.



Attest:

James H. [Signature]
Charles F. [Signature]

Freeman A. Field,

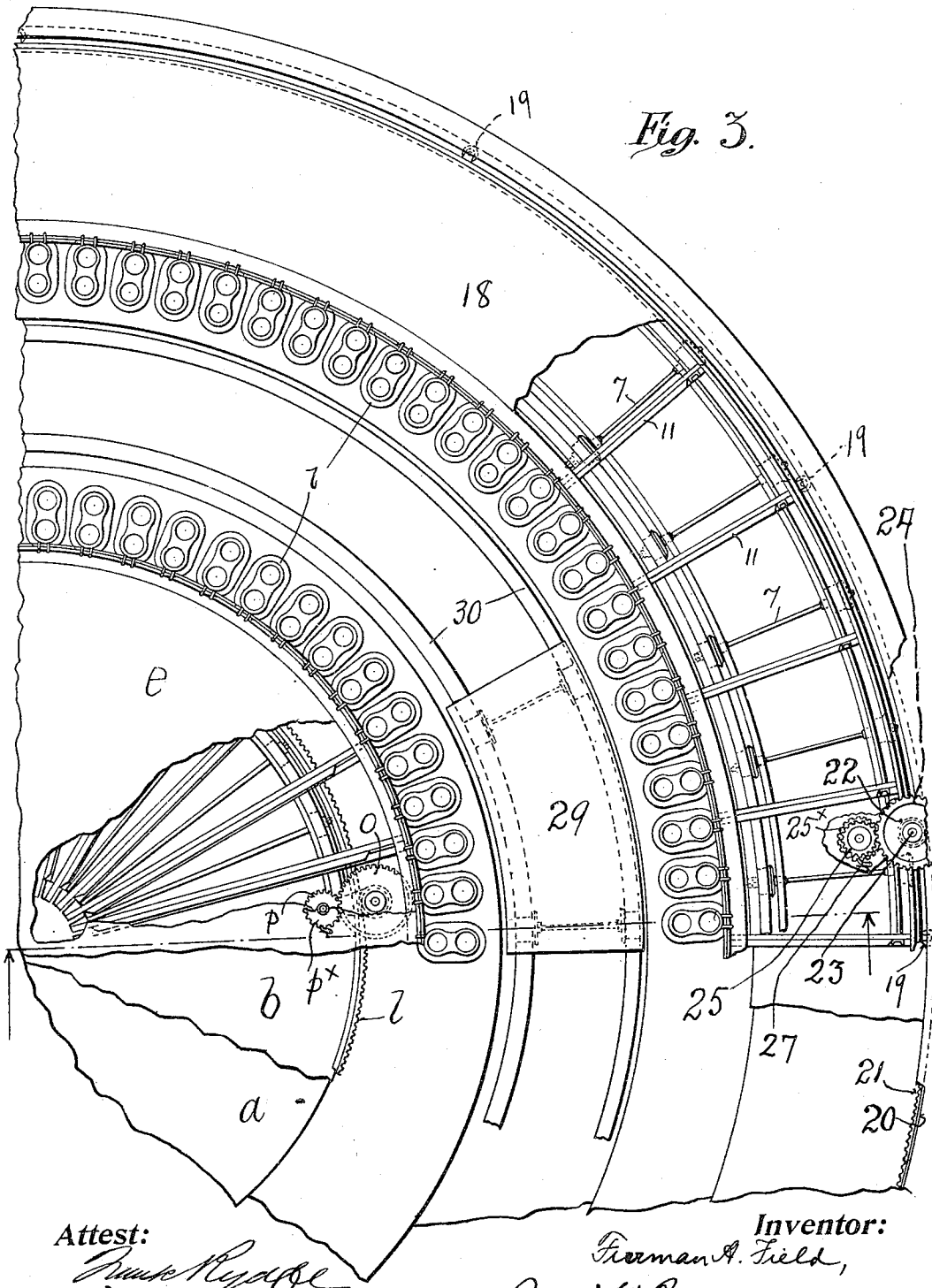
by *Richard W. Parkley,* his Atty.

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2 SHEETS—SHEET 2.



Attest:

Frank H. Hodge
Charles H. Hodge

Inventor:

Freeman A. Field,
 by *Richard W. Parkley,* his Atty.

UNITED STATES PATENT OFFICE.

FURMAN A. FIELD, OF SCOTTTDALE, PENNSYLVANIA, ASSIGNOR TO UNITED STATES CAST IRON PIPE AND FOUNDRY COMPANY, A CORPORATION OF NEW JERSEY.

APPARATUS FOR MAKING CAST-IRON PIPE.

952,893.

Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed December 9, 1905. Serial No. 291,020.

To all whom it may concern:

Be it known that I, FURMAN A. FIELD, a citizen of the United States, and a resident of Scottdale, in the county of Westmoreland and State of Pennsylvania, have invented a certain new and useful Improvement in Apparatus for Making Cast-Iron Pipe, of which the following is a specification.

This invention relates to means for producing cast-metal pipes in an economical and rapid manner, and it has for its main object the production of a greater number of pipe at one pit than has heretofore been possible.

The invention consists in features of construction or arrangements, and combinations of devices hereinafter described and more particularly pointed out in the appended claims, whereby the work of forming the molds, removing the pattern, pouring, cooling, removing the cores, shaking out, and replacing the flasks for further use, is so greatly facilitated that the output of pipe, without material increase in the number of workmen, is largely increased.

The invention is embodied in the arrangements and mechanisms illustrated in the accompanying drawing, forming part hereof, in which—

Figure 1 is a plan view of the complete pit and outfit, except derricks or cranes and automatic rammers (where the latter are used); Fig. 2 is a transverse vertical section, on a scale larger than in Fig. 1, of one side of the pit; and Fig. 3 is a plan, on a different scale, of part of the pit etc. shown in Fig. 1.

In the drawings, the reference letter *a* designates the bottom of a circular pit, usually made of masonry, and *b* denotes metal plates capping the usual raised central portion *c*, and *d* is the usual circular turn-table or platform mounted on said part *c*.

e marks the metal top of the table *d*, and *f* are rollers on which the table *d* runs and which themselves run on the rail *g*. The table *d* has a flange *h* from which the flasks *i* are suspended by hooks, and also a vertically grooved circular bar *k* for retaining said flasks upright. At the rim of the plates *b* is an annular rack *l* which engages with a pinion *m* fast on a vertical shaft *n*. At the upper end of the shaft *n* is a gear *o*, with

which meshes a pinion *p* which is fast on a shaft *q*. The shafts *n* and *q* are suitably journaled in the turn table *d*, and the shaft *q* may be operated by hand, or by an electric or other motor, to move the turn-table *d* in a step by step manner. A dog *r* may be, and preferably is, employed in conjunction with the pinion *p* to prevent undesired motion of the table, and also to serve as an "index" as heretofore. By the use of two or more drives, similar to that above described, at opposite sides, or at other symmetrically disposed points about the table *d*, the said table may be given a smooth motion about its pivot.

The drying stoves *t* are placed in the deep pit *u* so as to dry the molds suspended from the table *d*, as these pass or are moved over them, said molds being directly above the flues of the stoves when the table is at rest, as will be understood.

According to the present invention, the main pit is made of greater diameter than heretofore, and outside of the annular pit *u* is placed or left a berm or ledge 2, which is also provided with metal cap plates 3. Secured to the plates 3 are annular rails 4 for the coned rollers 5 of an annular car. The car is formed of circular channel or other bars 6, between pairs of which the rollers 5 are mounted on the radially disposed rods 7, which are held in place by nuts or other fastening devices.

Above the carriage or annular car just described is an annular platform or turn-table whose sills 8 have shoes 9 for coaction with the coned rollers 5. Resting on and fastened to the sills 8 are radially disposed bars 10, above which are like bars 11 connected thereto by the vertical posts 12 and the diagonals 13, and the whole united to and by the circular bars 14, 15, 16 and 17. Plates 18, fastened to the bars 11, provide a circular platform for the workmen. The bar 14 projects above the platform 18 and flasks *i* are hung therefrom at the inner side of the annular turn-table, while the bar 15 is grooved vertically to receive the lower parts of the flasks and hold the same upright. The coned rollers 5 may have flanges at either or both sides, and the annular turn-table may have distance rollers 19 mounted thereon for coaction with a plate 20 fixed to the vertical side of the pit to prevent

the turntable from having lateral motion. Or the positions of the rollers 19 and plate 20 may be inverted.

Above the rollers 19, the plate 20 has a circular rack 21 thereon, with which meshes a pinion 22, said pinion being fast on a shaft 23 which is journaled in the table and which has a gear 24 fast to its upper end. A driving pinion 25 meshes with the gear 24, and the shaft 26 of the pinion 25 is suitably journaled in the framework of the annular table, and may be operated by hand, or by an electric or other motor. A dog 27 coacts with the pinion 25, and may serve as an "index" to indicate the positions of the flasks with relation to the flues of the stoves 28 in the deep pit *u*. Two or more drivers may be placed at opposite sides of, or be disposed symmetrically about the annular table.

The wall of the pit may be undercut to receive the plate 18 and to protect the rack 21 from falling articles, dirt or sand. A platform 29, on the arc of the deep pit *u*, is placed between the inner circular and the outer annular turntables to afford a bridge to cross the chasm and standing room for workmen. By preference, this platform 29 is movable, and is also mounted on rollers which run on rails 30, whereby the platform may be moved to any desired place or out of way, should occasion arise. The platform 29 is at the top of a truss 31 on which the wheels or rollers 32 are journaled.

Two adjacent pits of the nature of that above described may be served by one and the same crane or derrick (not shown), and one crane serves both rows of flasks shown and above described.

The ramming may be by hand, or by automatic means, and the operations of forming the molds, black-washing them, drying, placing the cores in the molds, pouring the molten metal, drawing the cores, cooling, shaking out, and delivering the pipes are carried out at various points about the pit, as in Letters Patent of the United States, dated April 6, 1886, and bearing number 339,402.

The described arrangements concentrate the work, permit of better supervision, and enable the same number of workmen to turn out a much greater amount of pipe in a given time, thus conducing to greater efficiency and economy in the cost of the product.

It will be noted that the outer row of flasks greatly outnumbers the inner row, so

that, with one large pit such as above described, the output is much greater than with two pits having circular turntables only, and when the longer stretch of drying stoves is taken into consideration, the outer row of flasks gives a yet larger increase in output.

While I have described a car intermediate the annular turntable and the rails 4, it must not be understood that such an arrangement is essential to this invention, though such an arrangement is greatly to be preferred to mounting wheels on the annular turntable itself to run upon said rails 4, on account of the avoidance of journal bearing and oiling.

What I claim as new and desire to secure by Letters Patent of the United States is—

1. The improved apparatus for making cast-metal pipes, consisting of a circular turn-table arranged to carry removable flasks at its periphery, and an exterior annular turn-table arranged to carry flasks at its inner side.

2. The improved apparatus for making cast-metal pipes consisting of a circular turn-table arranged to carry flasks at its periphery, an exterior annular turn-table arranged to carry flasks at its inner side, and a movable platform intermediate said tables.

3. In a plant for the production of cast-metal pipes, a circular pit, an annular platform therein close against the periphery of said pit and leaving a space inside of said platform and said platform having its top practically flush with the floor or surface of the ground and arranged to carry removable flasks at its inner side, a circular track located between said platform and its center of motion, and a movable platform for workmen to stand upon on said track.

4. In a plant for the production of cast-metal pipes, a circular table, an annular pit thereabout, and an annular turntable or platform in said pit and separated by a space from said circular table and close against the periphery of said pit with its top substantially flush with the ground or floor and arranged to carry removable flasks at its inner side and said circular table being arranged to carry flasks at its periphery.

Signed at Scottdale in the county of Westmoreland and State of Pennsylvania this 31st day of October A. D. 1905.

FURMAN A. FIELD.

Witnesses:

E. L. RUTHERFORD,
KATHERINE QUIGLEY.