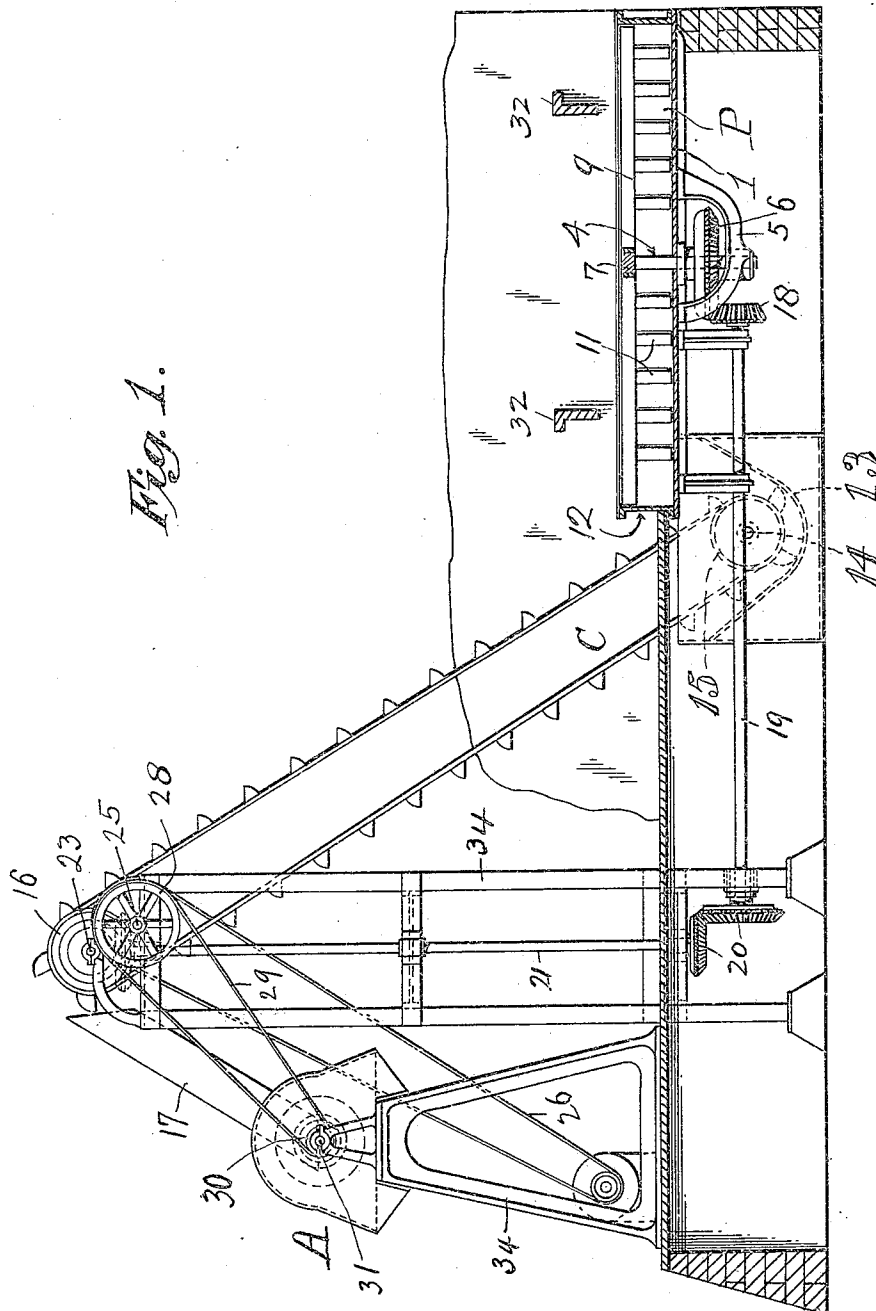


952,897.

3 SHEETS--SHEET 1.



Attest:
W. M. Ginn
Archibald Prehn

Inventor:
by *David Giles,*
P. W. Barkley,
his Att'y.

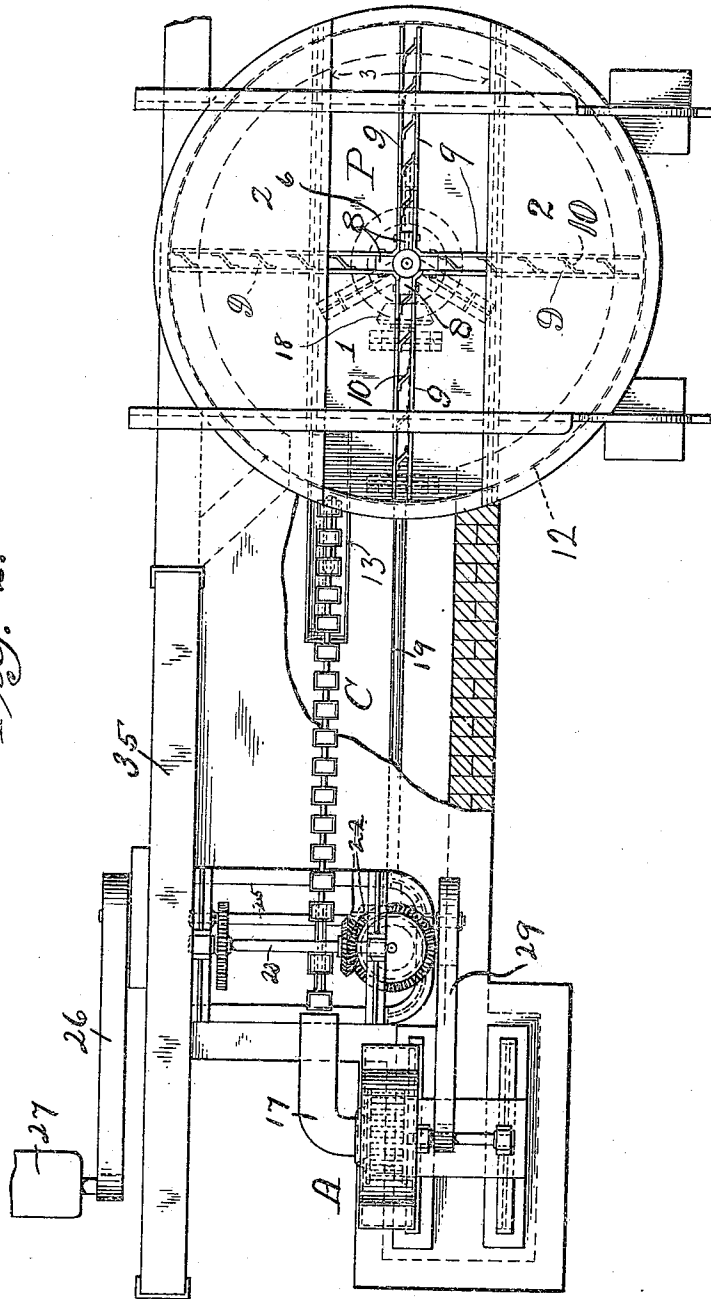
D. GILES.
SAND COOLING AND TEMPERING APPARATUS.
APPLICATION FILED SEPT. 5, 1908.

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Patented Mar. 22, 1910.

3 SHEETS—SHEET 2.

Fig. 2.



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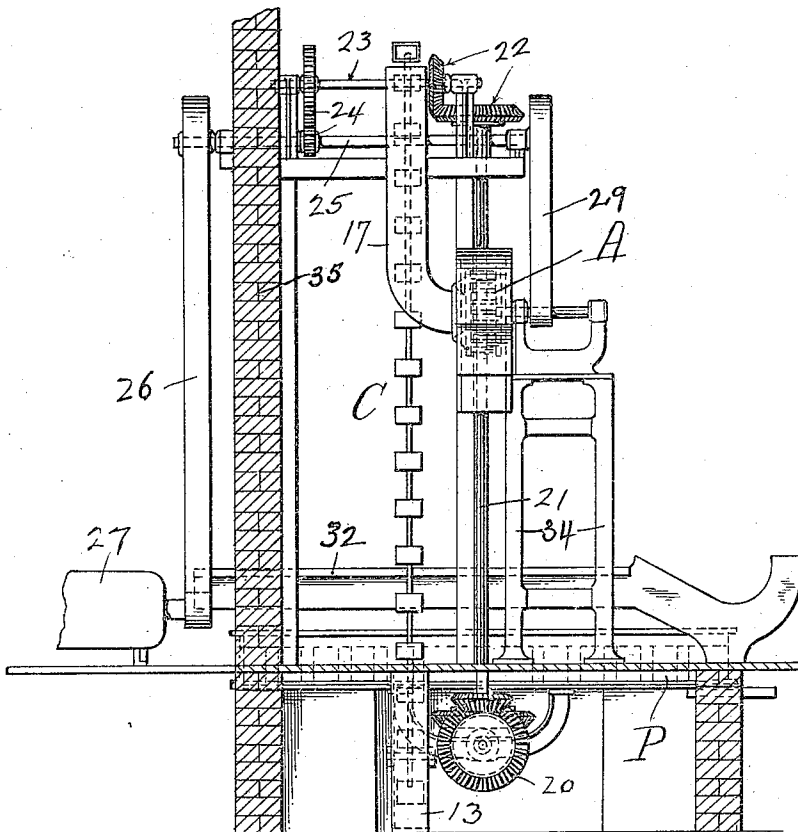
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3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

DAVID GILES, OF CHATTANOOGA, TENNESSEE, ASSIGNOR TO UNITED STATES CAST IRON PIPE & FOUNDRY COMPANY, A CORPORATION OF NEW JERSEY.

SAND COOLING AND TEMPERING APPARATUS.

952,897.

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

Application filed September 5, 1908. Serial No. 451,778.

To all whom it may concern:

Be it known that I, DAVID GILES, a citizen of the United States, and a resident of Chattanooga, in the county of Hamilton and State of Tennessee, have invented a certain new and useful Improvement in Sand Cooling and Tempering Apparatus, of which the following is a specification.

This invention pertains to apparatus for mixing granular material, as in tempering molder's sand for use in foundries, the primary object of the invention being to secure an even mixture, or a perfect tempering, of the various ingredients employed.

Other objects will appear hereinafter.

The invention consists of features of construction, arrangements and combinations of devices hereinafter described and more particularly pointed out in the appended claims.

The invention is embodied in the apparatus illustrated in the accompanying drawings, forming part hereof, in which—

Figure 1 is a longitudinal sectional elevation; Fig. 2 is a plan view, partly broken away; and Fig. 3 is a transverse sectional elevation.

The reference symbol P designates a pit or circular metal box having a flat bottom 1 and segmental partial covers 2 which leave a central zone 3 uncovered. Located centrally of this box P is a vertical shaft 4, which is suitably journaled in bearings 5, and which has a bevel gear 6 fast thereon. This shaft projects into the box P from underneath, as shown, and is provided with a head 7 consisting, in the particular instance illustrated, of four radial arms 8 which have parallel vertical sides. Plates 9 are bent to fit against these arms in pairs, as shown in Fig. 2, and are there firmly attached or secured to said arms 8. The plates 9 form arms beyond the arms 8, the members 9 being parallel to each other and having a free space between them, as shown. Between each pair of plates 9 are fixed Z-shaped heads 10, whose planes are oblique to the planes of the plates 9; below the heads 10 are extensions 11 thereof, lying in the planes of their respective heads, which extensions 11 form plows or mixers reaching nearly to the bottom 1 aforesaid. The mixers 11 on the four arms shown are so placed and arranged that they move in different

circles, and practically cover the whole area of the box P during one revolution of the shaft 4. As shown, the apparatus described rotates from right to left, which, coupled with the illustrated arrangement of the plows 11, causes the plows to force the granular material gradually toward the rim 12 of the box P, at the same time mixing it by the continual stirring operation of the plows. The bottom of the box is provided with an opening over the receiver 13, into which the mixed materials drop. A conveyor C has its lower shaft 14 and pulley 15 journaled in said receiver 13, the other pulley being, by preference, at a level higher than that of the pulley 15, see reference 16 in Fig. 1. The buckets of the conveyor C take the mixed material from the receiver 13 and discharge it into a chute 17, which again discharges the same into the amalgamator A, where it receives a thorough mixing and tempering, after which it is discharged from the amalgamator and used as occasion may determine.

The shaft 4 is driven, in the instance shown, by bevel gears 6, 18, shaft 19, bevel gears 20, shaft 21, bevel gears 22, shaft 23, gears 24, shaft 25, belt and pulleys 26, and a suitable motor 27, as an electric motor. Or the shaft 4 may be driven otherwise. The pulley 16 is on the shaft 23, and the shaft 25 has a pulley 28 fast thereon, which pulley is connected by a belt 29 with a pulley 30 on the shaft 31 of the amalgamator A.

The reference 32 marks two skids extending over the pit or pan P, transverse to the zone 3 aforesaid. In foundry use, the flasks are run out on the skids 32 and are opened to allow their contents to fall into the pan P. The mixer is then started, the plows mix the sand and clay-wash water with which it is wet down before the plows are started, and the sand is mixed, moved outward in the pan, and is dropped down through the opening 33 into the boot or receiver 13, and is thence carried by the conveyor to the amalgamator as aforesaid.

The reference 34 marks suitable supports for the parts named. It is preferred to have a wall 35 between the motor and the mixing machinery, in order to avoid dust as far as possible.

The invention is not limited to the precise details or arrangements shown in the

drawing and above described, but may be otherwise embodied without departing from the spirit or the scope of the claims herein.

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

1. A cooling-apparatus for mold-sand consisting of a circular pan or pit, a vertical journaled shaft at the center thereof, a series of radial plow-carriers fast on said shaft and consisting each of a pair of horizontal radial arms arranged in parallel vertical planes, and mixing-plows extending between and each fast to a pair of said parallel arms.

2. A cooling-apparatus for mold-sand consisting of a circular pan, a central journaled shaft therein, pairs of horizontal radial arms arranged in parallel vertical planes and secured to and operated by said shaft, and vertical mixing-plows each secured between a pair of said vertical arms at other than a right angle to the same.

3. A cooling-apparatus for mold-sand consisting of a pan, a central journaled shaft therein, pairs of horizontal radial arms arranged in parallel vertical planes and fast to and operated by said shaft, and vertical mixers secured each to a pair of said parallel arms oblique thereto, the mixers secured to any pair of arms following individual paths in the rotation of the shaft.

4. A cooling-apparatus for mold-sand apparatus consisting of a circular pan, a journaled central vertical shaft therein, arms

radiating from said shaft, and obliquely placed mixers or plows secured to said arms, combined with a conveyer, and a rotary amalgamator to which said conveyer delivers material taken from said pan.

5. A cooling-apparatus for mold-sand consisting of a circular pan, segment covers therefor leaving a central uncovered zone, a journaled shaft central in said pan, horizontal radial arms arranged in parallel vertical planes and attached to said shaft, and vertical mixers or plows secured to said arms and placed obliquely with respect thereto, the plows on the different arms following individual paths.

6. A cooling-apparatus for mold-sand consisting of a circular pit, segment covers therefor leaving a central uncovered zone, a journaled central vertical shaft in said pit, radial arms attached to said shaft, and vertical mixers or scrapers secured to said arms and placed obliquely with respect thereto, the mixers attached to the different arms following individual paths, combined with a conveyer, and an amalgamator to which said conveyer delivers material from said pit or pan.

Signed at New York in the county of New York and State of New York.

DAVID GILES.

Witnesses:

GEO. B. HAYES,
BESSIE NATKINS.