No. 632,031. Patented Aug. 29, 1899.

E. A. UEHLING.

APPARATUS FOR CASTING METAL.

(Application filed Feb. 12, 1898.)

(No Model.) 2 Sheets—Sheet 1.

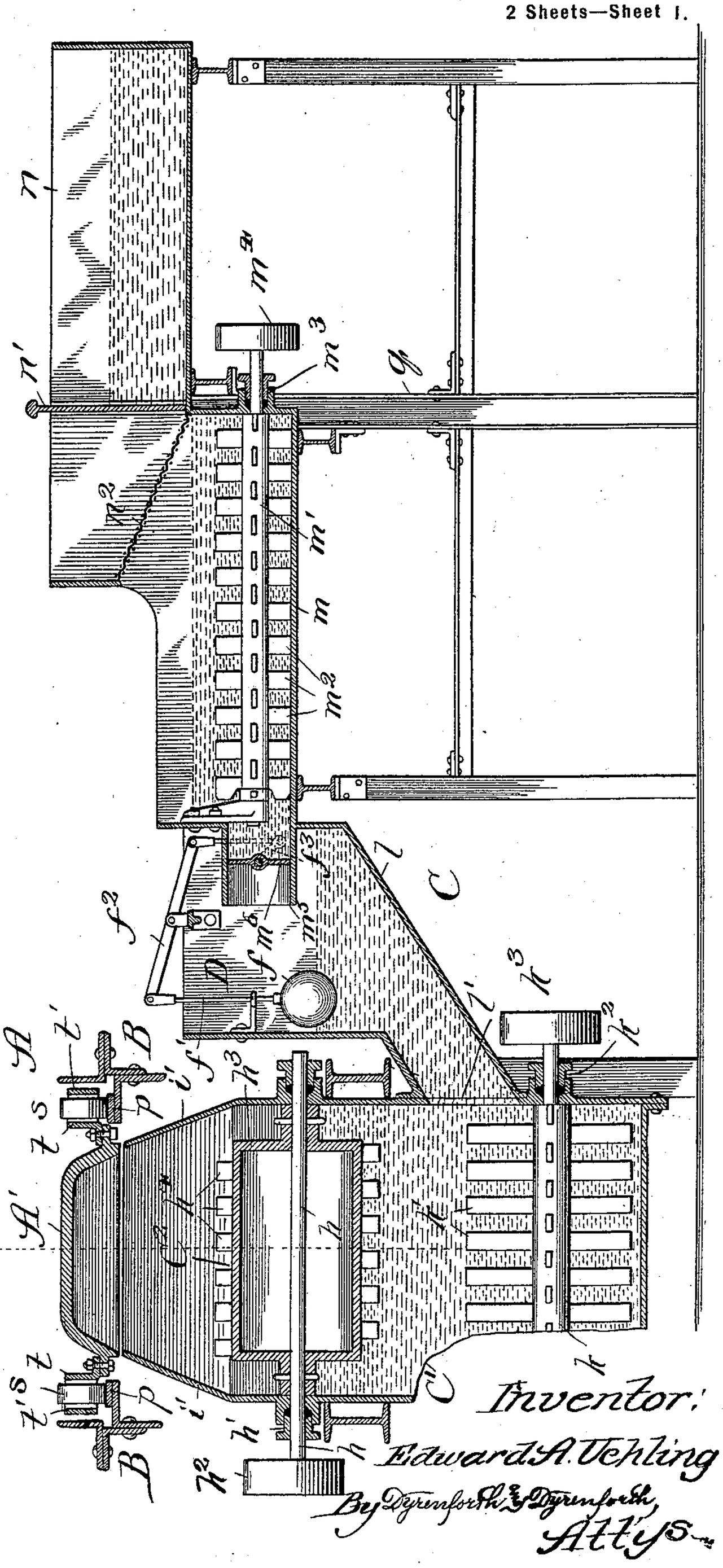

Fig. 1.

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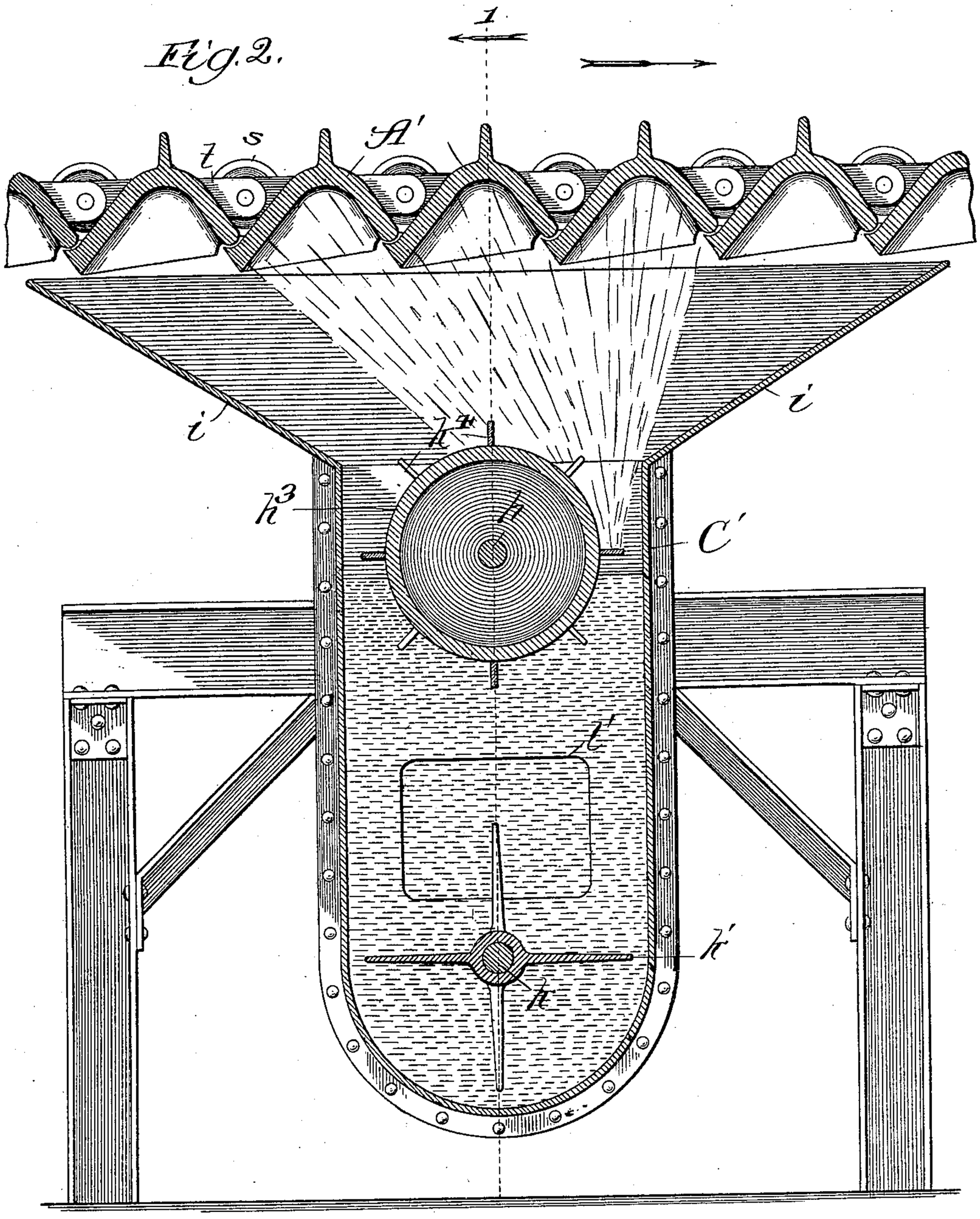
Fig. 2.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR CASTING METAL.

SPECIFICATION forming part of Letters Patent No. 632,031, dated August 29, 1899.

Application filed February 12, 1898. Serial No. 670,105. (No model.)

To all whom it may concern:

Be it known that I, EDWARD A. UEHLING, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Apparatus for Casting Metal, of which the following is a specification.

My invention is in the nature of an improvement upon the apparatus for casting metal shown and described in Letters Patent of the United States No. 548,146, granted to me October 15, 1895.

Generally stated, the apparatus involves parallel endless carrier-chains formed of wheeled links, in which are mounted an endless series of overlapping molds or buckets. The carrier, consisting of the chains and buckets, travels an extended straight-sided course along an upper track, returning upon a lower track. In their movement along the upper track the molds are upright and pass beneath the point where the metal is poured, and when they reach the outer end of the course they turn downward to the lower track, upsetting to discharge the contained casting, and return in upset condition along the lower track. In their return movement the molds are thoroughly coated on the interior with a refractory material, which prevents too great cohesion between the molds and metal poured therein.

My present invention relates especially to improved means for coating the molds with the refractory material as they return from the discharge end of the apparatus in inverted position to the receiving end thereof.

My object is to provide mold-coating apparatus beneath the carrier of improved construction which will project the refractory material against the inner faces of the molds as they pass across the apparatus and thoroughly coat the interiors of the molds.

In the drawings, Figure 1 is a broken sectional elevation taken at a right angle to the path of the carrier and showing my improved mold-coating apparatus, and Fig. 2 an enlarged section taken on line 2 of Fig. 1.

In practice I prefer to provide a lime solution for the refractory material, and the apparatus shown in the drawings is particularly adapted to such a solution. My invention is not, however, to be limited to the use of any particular refractory material nor to providing the material in the form of a solution.

A is the carrier, formed of parallel chains consisting each of inner and outer links $t\,t'$, respectively, mounted upon wheels s and holding the endless series of molds A′.

B B is the lower track-frame, provided with rails $p\,p$, upon which the wheels s travel.

C is my improved mold-coating apparatus, located below and partly to one side of the lower track B, preferably near the discharge end of the casting apparatus.

Supported upon a frame q is a slaking-tank n at one level, and at a lower level and adjacent thereto is a tempering-tank m.

C′ is a tank containing the projecting device.

Between the tanks $n\,m$ is a valve or movable door n', beyond which is a screen n^2, projecting over the tank m. In the latter tank is a mixer or agitator m', consisting of a rotary shaft provided with agitating-blades m^2. The shaft projects beyond one end of the tank m, where it passes through a stuffing-box m^3, and carries a pulley m^4, which may be belted to any suitable driving power. At the end of the tank m opposite the screen n^2 is a discharge-spout m^5, provided with a butterfly or other suitable form of valve m^6. Extending from the tank m to the lower part of the tank C′ is a chute or feed-tank l. The spout m^5 extends into the upper part of the feed-tank l, and the latter is in open communication at its lower end with the tank C′. In the lower part of the tank C′, below the inlet-opening l' from the tank l, is an agitator k, which may consist of a rotary shaft provided with radial arms k' and extending through a stuffing-box k^2, beyond which it is provided with a drive-pulley k^3. The tank C′ at its upper end is flared in the direction longitudinally of the carrier, being formed with the inclined dash-plates $i\,i$, which at their upper edges extend approximately to the plane of travel of the lower edges of the molds A′. The sides i', at the top of the tank C′, may incline inward, as shown, to present an opening approximating in width the length of the interior surfaces of the molds. C^2 is a mechanical projecting or spattering device consisting of a rotary shaft h, journaled in the tank C′ and extending toward one end through a stuffing-box h', be-

yond which it carries a drive-pulley h^2. On the shaft in the tank is a drum h^3, provided with radially-projecting blades h^4.

The lime or other refractory material may be slaked or initially mixed in the tank n, and the valve or door n' being opened the contents of the tank flow or are swept upon the screen n^2, whereby the finer particles only pass to the tank m. The agitator m' operates to maintain the solution at the right consistency by preventing precipitation of the lime or other refractory material while it remains in the tank m.

It is necessary in operation that the mechanical projector or spattering device shall be at all times partially immersed in the refractory solution, and in order that the solution in the tank C′ may be maintained automatically at the proper level I provide valve-controlling float mechanism D in the tank l, connected with the valve m^6. The float mechanism consists of the float f on a stem f', connected to one end of a lever f^2, which is fulcrumed between its ends and connected at its opposite end with an arm f^3 on the valve m^6. As the level of the solution descends the float operates to open the valve m^6 and admit solution from the tank m, and as the level of the solution rises in the tanks C′ l the float f is raised to close the inlet-valve. The stirring device k is operated to prevent precipitation in the tank C′ and maintain the solution at the desired consistency. The projector C^2 is revolved, preferably, at high speed to raise the solution in small quantities from the normal level in the tank and splash or spatter it upward against the interiors of the molds A′ as they pass across the open upper end of the tank. The dash-plates i and sides i' prevent any material quantity of the solution from being splashed from the apparatus, and the spattering is thus confined to the interiors of the molds, which become thoroughly coated with the refractory material.

Where two or more carriers extending side by side are employed, one spattering device of proper dimensions may be used to coat the molds of all the carriers.

The gist of my invention lies in the means for coating the interiors of the molds by spattering the refractory material against them. Hitherto the most approved method of coating the molds has been by spraying the material with one or a series of pneumatic sprayers.

Any suitable construction of mechanical throwing or spattering device may be employed, and my invention is therefore not in in its broadest sense to be limited to the rotary drum and spattering-blades shown and described. Thus it is to be understood that my improvements may be variously modified without departing from the spirit of my invention as defined by the claims. In the event that the refractory material should be provided in a dry pulverulent or granular state instead of in solution my improvements would be equally useful in projecting it into the molds in the manner described.

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

1. In a metal-casting apparatus, the combination with the molds and means for moving them, of a refractory-material supplier, and a moving mechanical projector operating to throw from itself the material from said supplier into the molds, substantially as and for the purpose set forth.

2. In a metal-casting apparatus, the combination with the molds and means for moving them, of a refractory-material supplier, and a rotary mechanical projector operating to throw from itself the material from said supplier into the molds, substantially as and for the purpose set forth.

3. In a metal-casting apparatus, the combination with the molds and means for moving them, of a refractory-material supplier, and a rotary mechanical projector beneath the path of the molds operating to throw from itself the material from said supplier into the molds, substantially as and for the purpose set forth.

4. In a metal-casting apparatus, the combination with the molds and means for moving them, of a refractory-solution-supplying tank beneath the path of the molds and a moving mechanical projector operating to dip into the solution and throw the solution from itself to spatter the same into the molds, substantially as and for the purpose set forth.

5. In a metal-casting apparatus, the combination with the molds and means for moving them, of a refractory-solution-supplying tank beneath the path of the molds and a rotary mechanical projector operating to dip into the solution and throw the solution from itself to spatter the same into the molds, substantially as and for the purpose set forth.

6. In a metal-casting apparatus, the combination with the molds and means for moving them, of a refractory-solution-supplying tank beneath the path of the molds, and a projector, operating to throw from itself the solution from the supplier into the molds, comprising a rotary spattering device partly immersed in the solution, substantially as and for the purpose set forth.

7. In a metal-casting apparatus, the combination with the molds and means for moving them, of a refractory-material-supplying tank having an opening in its upper side arranged to be practically closed by the passing molds, means for introducing refractory material into the tank, and a moving mechanical projector in the tank operating to lift the said material and throw it into the molds, substantially as and for the purpose set forth.

8. In a metal-casting apparatus, the combination with the molds and means for moving them, of a refractory-solution-supplying tank beneath the path of the molds and having an opening in its upper side arranged to be practically closed by the passing molds, means

for introducing refractory solution into the tank, and a projector in the tank comprising a rotary spattering device operating to lift the solution and throw it into the molds, substantially as and for the purpose set forth.

9. In a metal-casting apparatus, the combination with the molds and means for moving them, of a refractory-solution-supplying tank beneath the path of the molds and having an opening in its upper side arranged to be practically closed by the passing molds, means for introducing refractory solution into the tank and for maintaining the said solution at a desired level in the tank, and a projector in the tank comprising a rotary spattering device operating to lift the solution and throw it into the molds, substantially as and for the purpose set forth.

EDWARD A. UEHLING.

In presence of—
G. I. HOLDSHIP,
ALICE LUTHER.