

A. A. LANDON.
CASTING MACHINE.

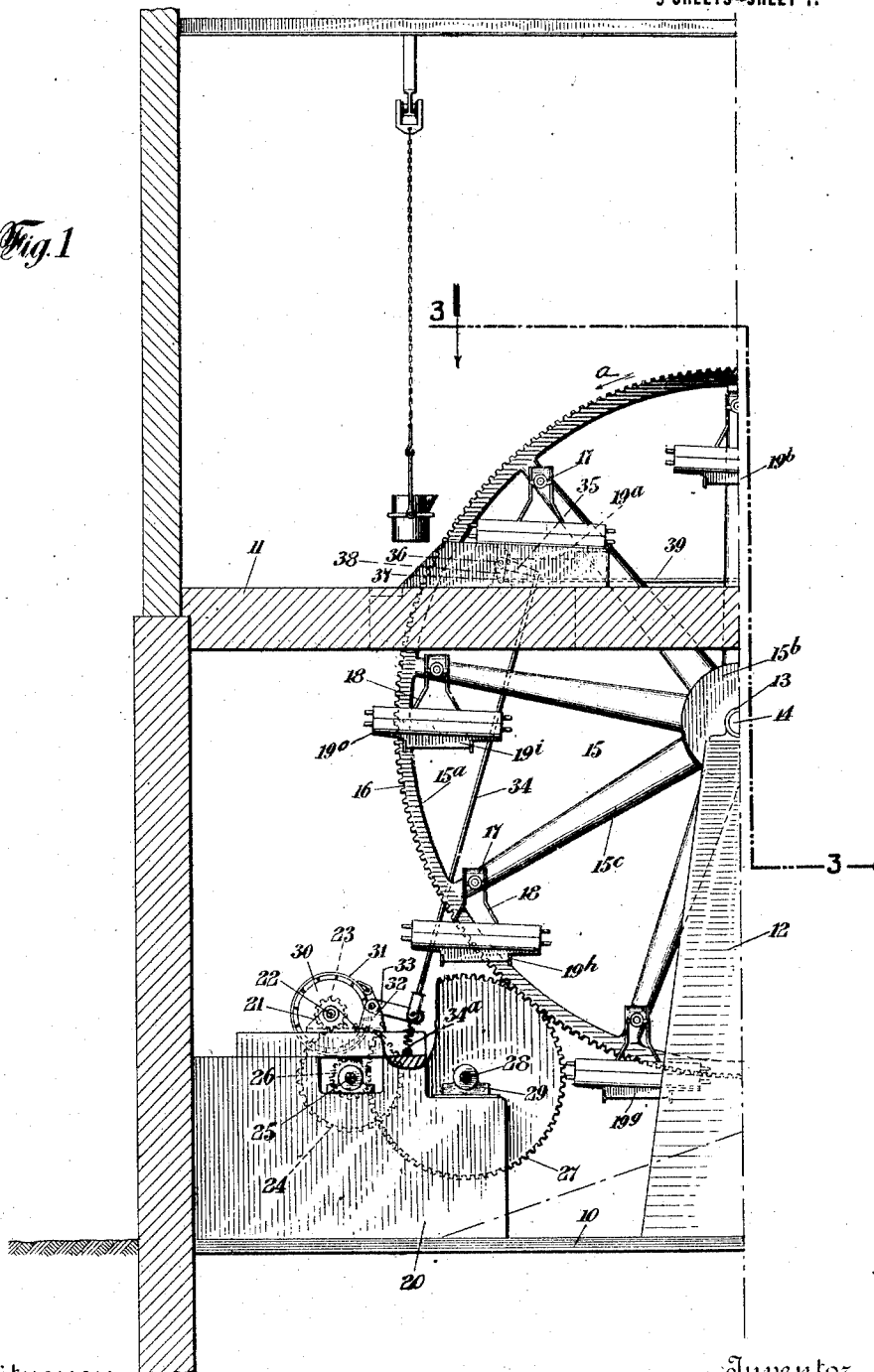
APPLICATION FILED SEPT. 4, 1913. RENEWED DEC. 14, 1916.

1,367,059.

Patented Feb. 1, 1921.

5 SHEETS—SHEET 1.

Fig. 1



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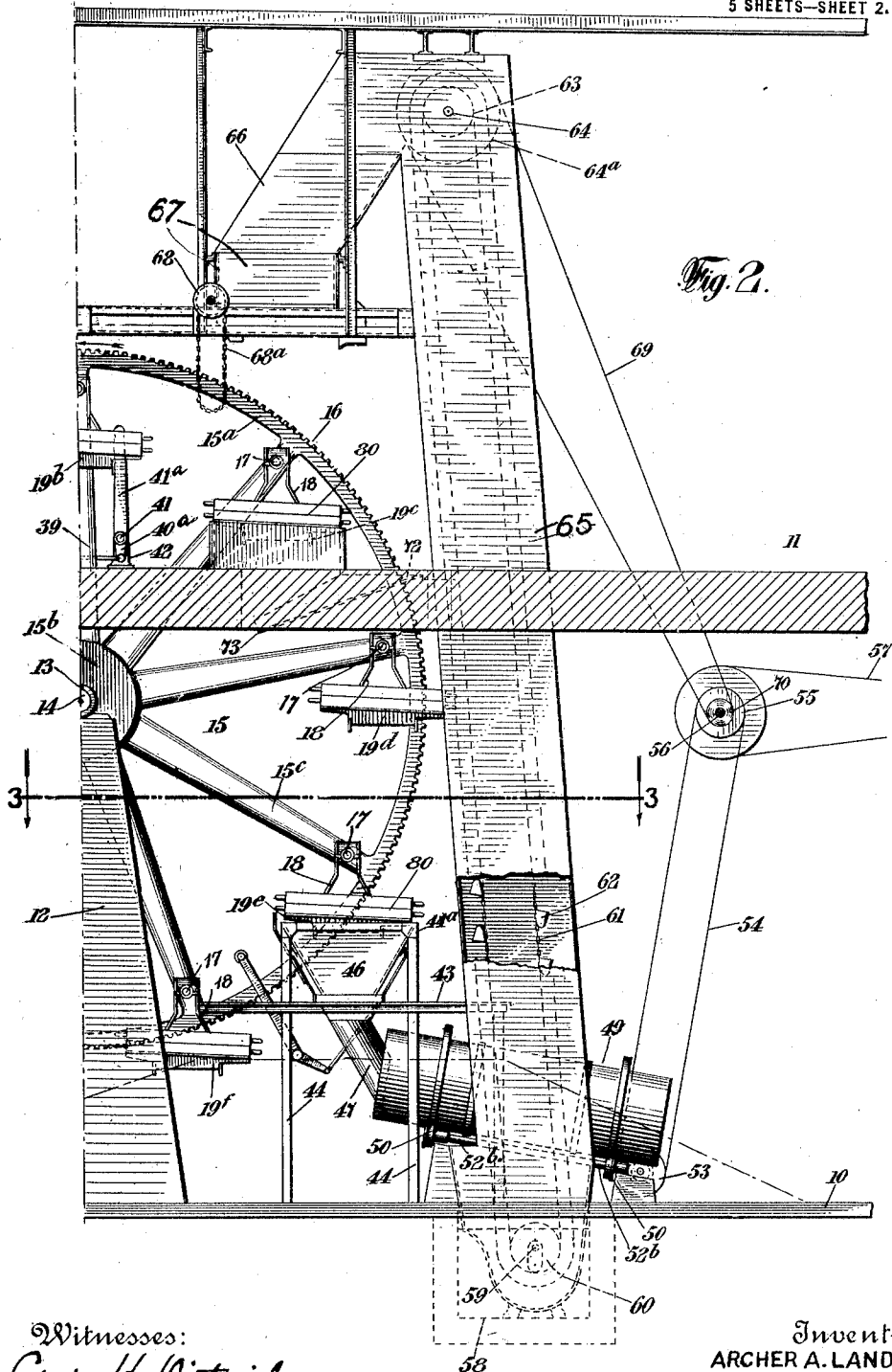
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Patented Feb. 1, 1921.

5 SHEETS—SHEET 2.



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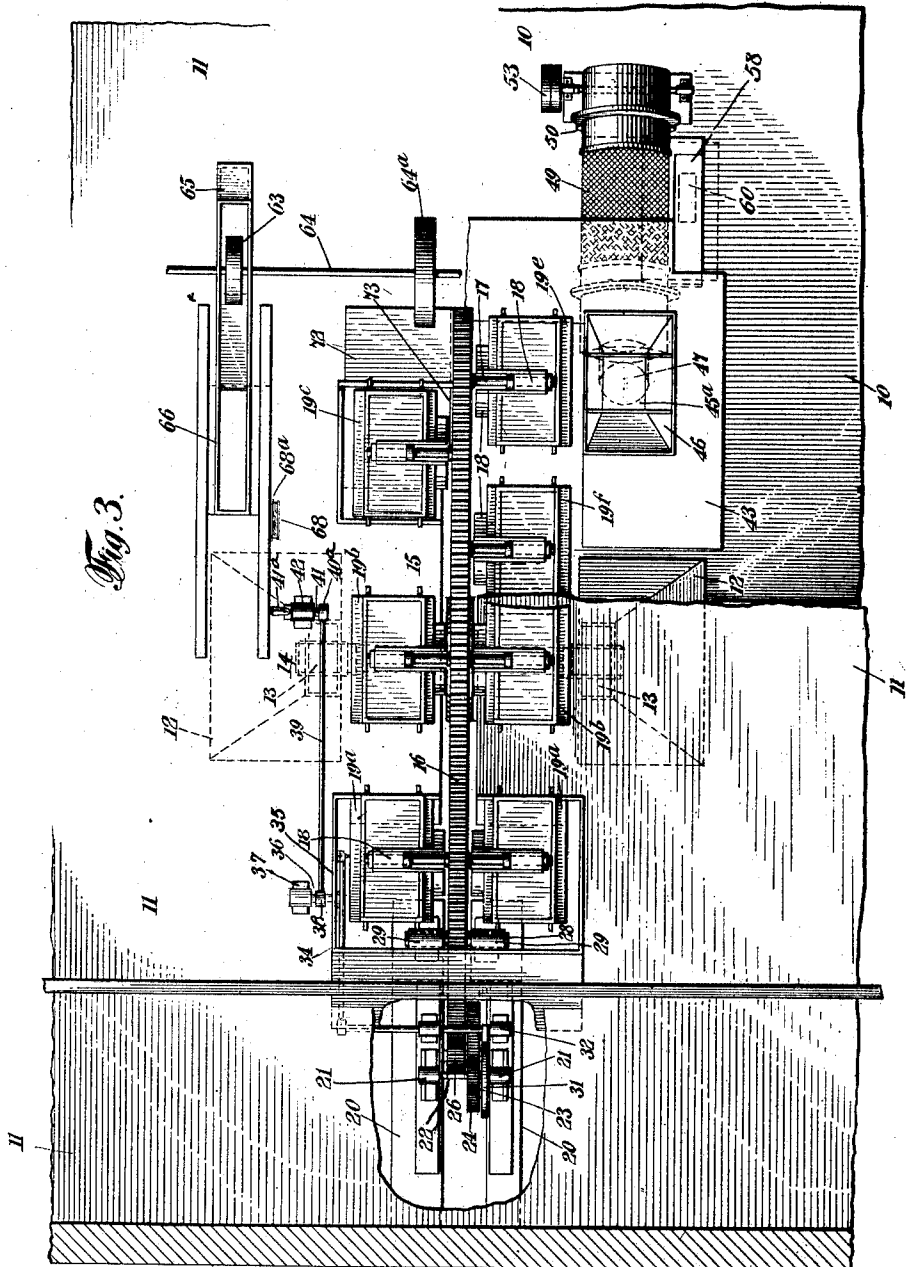
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APPLICATION FILED SEPT. 4, 1913. RENEWED DEC. 14, 1918.

1,367,059.

Patented Feb. 1, 1921.

5 SHEETS—SHEET 3.



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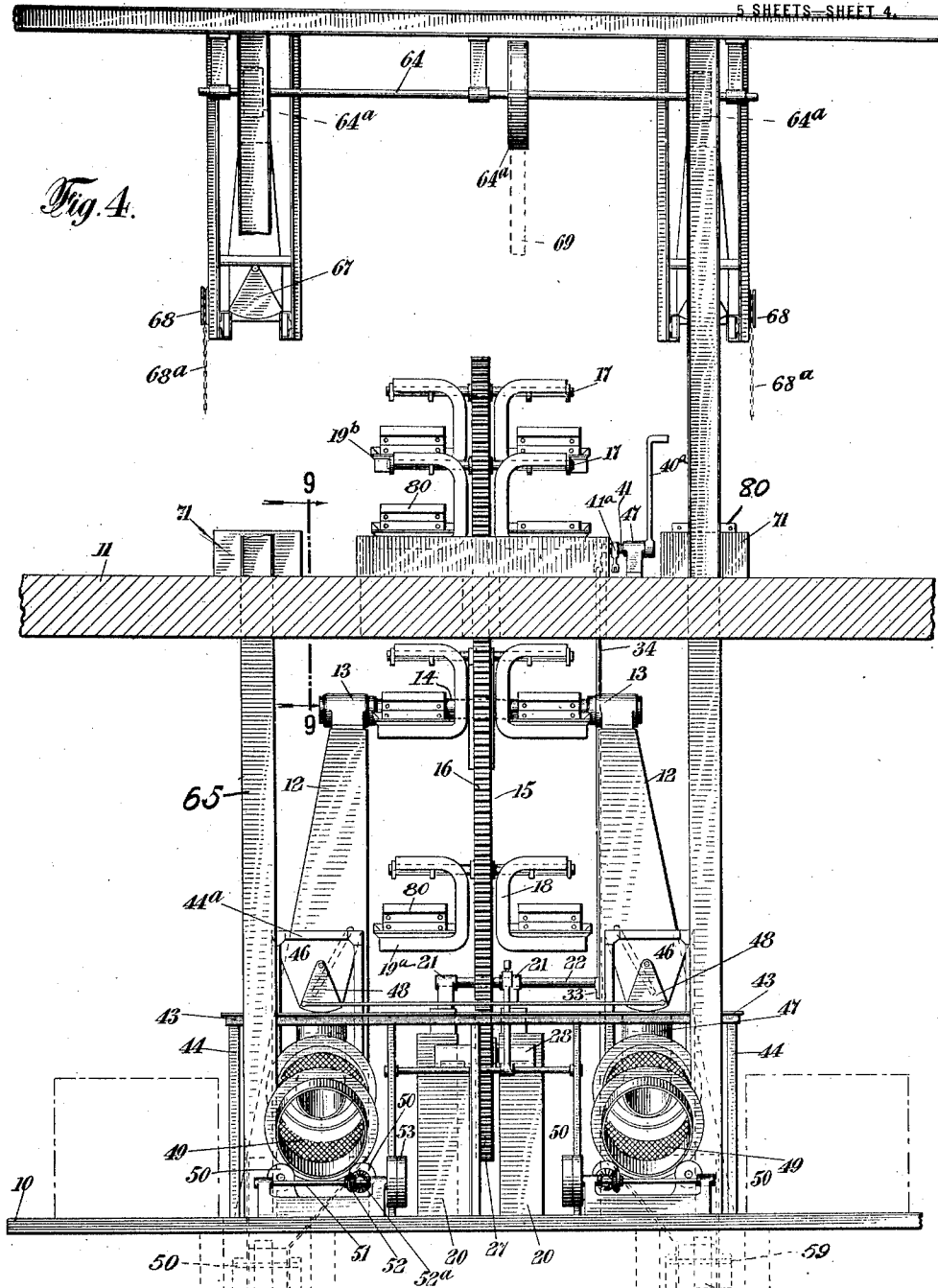
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5 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.

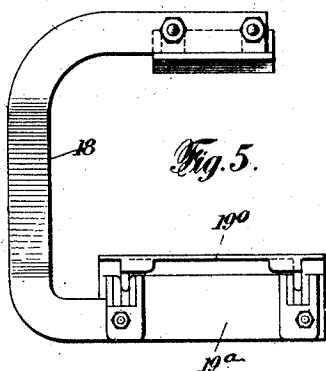


Fig. 5.

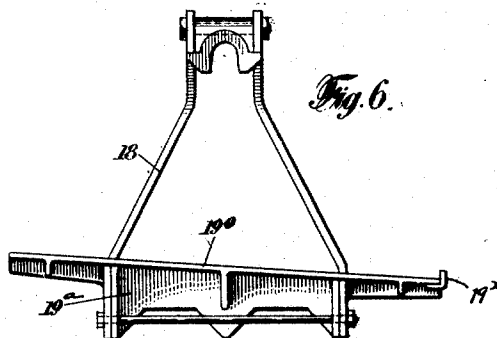


Fig. 6.

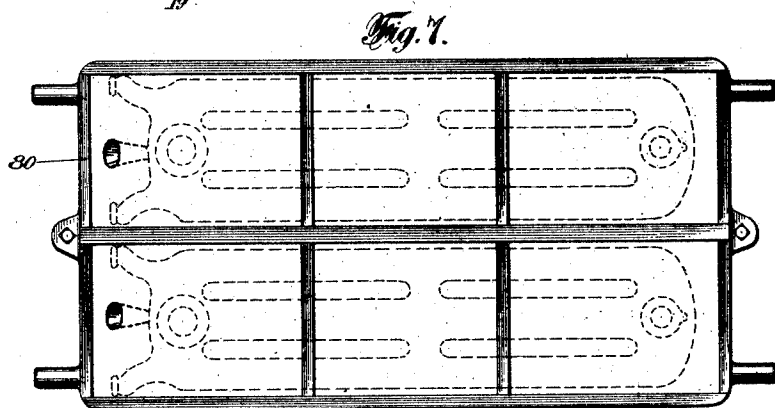


Fig. 7.

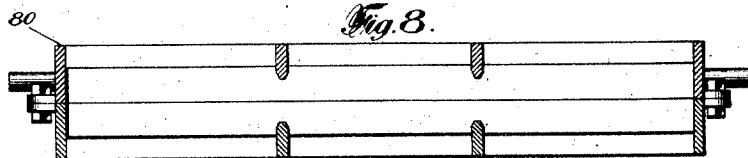


Fig. 8.

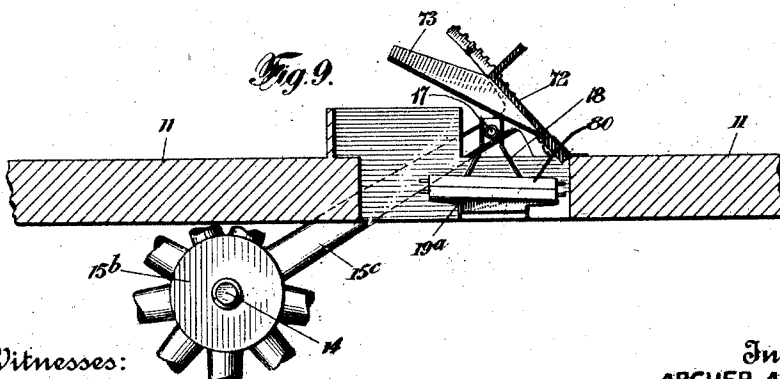


Fig. 9.

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UNITED STATES PATENT OFFICE.

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CASTING-MACHINE.

1,367,059.

Specification of Letters Patent.

Patented Feb. 1, 1921.

Application filed September 4, 1913, Serial No. 788,050. Renewed December 14, 1916. Serial No. 137,061.

To all whom it may concern:

Be it known that I, ARCHER A. LANDON, a citizen of the United States, residing at the city of Buffalo, Erie county, in the State of New York, have invented certain new and useful Improvements in Casting-Machines, of which the following is a full, clear, and exact specification.

My invention relates to improvements in casting machines, and the same has for its object more particularly to provide a machine by means of which casting operations may be performed in a substantially continuous manner.

Further said invention has for its object to provide a machine whereby great economy in floor space may be effected, and at the same time the handling of the materials, in preparation for casting as well as the completed castings, may be greatly facilitated and expedited.

Further said invention has for its object to provide a machine comprising a revoluble carrier supported in vertical position and provided with means for receiving a series of molds at one point, and for removing the same therefrom at a point adjacent to, but below the point where the same are received by said carrier.

Further said invention has for its object to provide a machine which may be operated upon from different horizontal levels or floors whereby greatly to economize floor space in a manner not heretofore possible where casting operations are performed upon one level or floor.

Further said invention has for its object to provide a machine comprising a revoluble carrier having a plurality of mold supports pivotally arranged thereon, adapted to be brought successively into position for loading and unloading.

Further said invention has for its object to provide a machine in which the molds are placed upon the mold supports on said revoluble carrier and poured at an upper level, and then are caused to descend by gravity to a lower level where said molds may be removed from said supports.

To the attainment of the aforesaid objects and ends my invention consists in the novel details of construction, and in the

combination, connection and arrangement of parts hereinafter more fully described and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, wherein like numerals of reference indicate like parts—

Figures 1 and 2 jointly constitute a side view, partly in section, showing one form of machine constructed according to and embodying my said invention;

Fig. 3 is a plan or top view partly broken away, and in section on the line 3—3 of Figs. 1 and 2;

Fig. 4 is an end view;

Fig. 5 is an enlarged detail end view showing one of the mold supports detached from the rotating carrier or support;

Fig. 6 is a side view of the mold support shown in end elevation at Fig. 5;

Fig. 7 is an enlarged detail plan or top view showing a double mold or flask;

Fig. 8 is a longitudinal sectional view of said mold or flask, and

Fig. 9 is a detail section taken on the line 9—9 of Fig. 4.

In the accompanying drawings, I have shown my invention as embodied in a machine extending through two floors of a building, and in said drawings 10 designates the ground or lower floor, and 11 the upper floor. 12, 12 denote a pair of pedestals made of masonry or other suitable material arranged side by side upon the ground floor 10, and at the upper ends of said pedestals 12, 12 are provided bearings 13, 13 in which is supported a shaft 14. 15 denotes a carrier which is revolubly supported upon the shaft 14 mounted upon the upper ends of the pedestals 12, 12.

Said revoluble carrier consists of a rim 15^a, hub 15^b and spokes 15^c connecting said hub with said rim. The outer surface of the carrier rim 15^a is provided with gear teeth 16 extending entirely around the same. 17, 17 denote a series of arms or shafts which are mounted upon the carrier 15 at regular intervals and have their opposite ends extending equally outwardly from said carrier 15. Upon said arms or shafts 17, 17 are pivotally supported U-shaped brackets or hangers 18, 18 which are provided at their lower free ends with platforms 19^a to 19^d,

inclusive, having inclined upper surfaces 19° provided at their lower, transverse edges with stops 19^a, whereby to support the molds in such position thereon as to cause the
 5 molten metal poured into the openings in said molds to flow freely within the molds and completely fill the same.

Upon the ground floor 10 adjacent to and about midway of the interval between the
 10 pedestals 12, 12 is a pedestal 20 upon which are arranged, bearings 21, 21 in which is supported a driving shaft 22. Upon said driving shaft 22 is fixed a small pinion 23 meshing with a gear wheel 24 fixed upon the
 15 shaft 25 supported in bearings arranged below the shaft 22, and upon said shaft 25 is further fixed a pinion 26 which meshes with a large gear wheel 27 fixed upon a shaft 28 supported in bearings 29, 29 arranged at the
 20 right hand end of the pedestal 20 and to the right of the shaft 25. The gear wheel 27 meshes with the gear teeth 16 provided upon the outer periphery of the carrier rim 15^a.

At the rear end of the driving shaft 22
 25 (see Fig. 1) is fixed a pulley 30 which is surrounded by a brake band 31. At one side of the pulley 30 is supported a bearing 32 in which is pivotally mounted an arm 33 having one end pivotally secured to one end of said brake band 31, and its other end secured to a rod 34. To the lower end of said arm 33 is secured one end of a spring 34^a which has its other end secured to the pedestal 20. The said spring 34^a serves to
 30 hold the brake band 31 normally in engagement with the periphery of the pulley 30. The other end of said brake band 31 is secured to the shaft upon which the arm 33 is mounted. The upper end of the rod 34 extends through a suitable opening provided in the upper floor 11 of the building, and is connected to one end of an arm 35 whose other end is fixed to a shaft 36 supported in bearings 37 arranged upon the upper floor
 40 11. 38 denotes an arm depending from the shaft 36 and secured to one end of a rod 39 whose other end is secured to a depending arm 40^a fixed upon a shaft 41 supported in bearings 42, secured upon the upper floor 11, and 41^a denotes an operating lever also fixed upon said shaft 41.

Upon the lower floor 10, and arranged at both sides of the carrier 15 is provided a platform 43 which is supported above the
 55 floor 10 upon uprights or standards 44, 44. Upon each of said platforms is supported a table 44^a provided with an opening 45^a below which is arranged a hopper 46 having a depending chute 47. Each hopper 46 is provided with a gate 48 controlling the passage
 60 of sand from the hopper 46 through the chute 47 to a sand riddle comprising a hollow cylinder 49 revolubly mounted upon rollers 50, 50, and actuated by a shaft 51 having a
 65 bevel gear 52 fixed thereon meshing with a

bevel gear 52^a provided upon roller shafts 52^b. The shaft 51 is actuated by means of a pulley 53, over which passes a belt 54 extending over a pulley 55 mounted upon a driving shaft 56 connected by a belt 57 with
 70 a suitable source of power.

Below each sand riddle 49 is arranged an elevator boot 58 to receive the sand discharged from said riddles. Within each of said boots 58 is supported a shaft 59 having
 75 a sprocket wheel 60 thereon over which passes a chain belt 61 provided with buckets 62. The upper end of the chain belt 61 extends over a sprocket wheel 63 fixed upon a shaft 64 suspended in bearings from the
 80 ceiling of the second story of the building or structure. A pulley 64^a is fixed upon the elevator head shaft 64 and connected by a belt 69 with a pulley 70 fixed upon the driving shaft 56. The chain belts 61 are in-
 85 closed by housings 65 from the upper end of each of which extends a chute 66 provided at its end with a gate 67 controlled by a wheel 68 and chain 68^a.

Upon the upper floor 11, at each side of the
 90 carrier 15, are arranged pedestals 71, 71 to support the molds 80, 80 while the patterns are being formed therein.

The upper floor 11 adjacent to the periphery of the carrier 15 is provided with a
 95 hinged platform 72 which is provided upon its under side with an inclined projecting arm 73 adapted to contact with the arms or shafts 17, 17 on the carrier 15 as said carrier rotates in order to raise said hinged
 100 platform 72 sufficiently to permit the platforms 19^a, 19^b, etc. and the molds thereon to pass upwardly through the floor 11 when the machine is in operation.

The operation of the machine is as follows:
 105

The first molds which are prepared upon the support 71 arranged upon the upper floor 11 are placed upon the inclined tops 19°, 19° of the platforms 19^a, 19^a, and there-
 110 upon the operating lever 41^a is drawn toward the right (see Fig. 2) which will release the brake band 31 from its engagement with the pulley 30 through the medium of the arm 33, rod 34, arms 35, 38, and rod 39.
 115 The weight of the molds together with the metal therein supported upon the platforms 19^a, 19^a is sufficient to overbalance the revoluble carrier 15 and cause the same to descend in the direction of the arrow *a* Fig. 1, as soon as the brake band 31 is released of its engagement with the pulley 30. As soon as the brake band 31 has been so released, the gear wheel 27, meshing with the gear teeth 16 upon the outer surface of the rim 15^a
 120 of the carrier 15, will be caused to rotate and impart rotation to the pinion 26, shaft 25, gear wheel 24, which latter meshing with the pinion 23 upon the shaft 22, will impart rotation to the brake pulley 30.
 130

As soon as the carrier 15 has completed one ninth of a revolution, the lever 41^a is again moved toward the left (Fig. 2) whereby the rods 39, 34, and connected parts will be caused to resume their initial positions, and the brake band 31 to engage with the surface of the brake pulley 30 under the action of the spring 34^a provided upon the lower end of the rod 34, and thereby hold the carrier 15 to its adjusted position. In this position the platforms 19^b, 19^b will have assumed the positions previously occupied by the platforms 19^a, 19^a. At the same time the platforms 19^d, 19^d, will have been brought into position for loading at the opposite side of the carrier 15. As the carrier 15 is again caused to move one ninth of a revolution, the platforms 19^c, 19^c may be loaded and metal poured into the molds thereon at the point where the platforms 19^a, 19^a are shown at Fig. 1 of the drawings. Thereupon the platforms 19^e, 19^e, 19^b, 19^b will be successively brought into position for loading at the point indicated by the position of the platforms 19^c, 19^c, and thereupon the molten metal poured into the molds on said platforms as the same are caused to assume the positions occupied by the platforms 19^a, 19^a. As soon as the platforms 19^e, 19^e have assumed the positions previously occupied by the platforms 19^a, 19^a, the latter will have come opposite to the tables 44^a, 44^a provided upon the platforms 43, 43 whereupon the molds may be removed from said platforms and the castings taken therefrom. The sand from the molds is then permitted to fall into the hoppers 46, 46, from which it is conducted through the chutes extending therefrom, and delivered to the riddles 49, 49 where the same is worked over and discharged into the boots 58, 58 of the elevators from which it is thereupon conducted upwardly to the chutes 66, 66, and is ready to be used again in preparing the new molds.

In view of the time required in filling the molds as they successively come into position at the point where the platforms 19^a, 19^a are shown, the castings in passing from the position 19^a to 19^e, will have sufficient time to cool and to permit of their removal from the molds and the handling thereof, as may be required.

It will be noted, that as my machine is simple in construction, and actuated solely by gravity, the operation thereof is easily controlled by means of a single brake mechanism, and operating lever therefor.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A casting machine comprising a revoluble member, a series of mold supports arranged thereon, a brake serving to control the speed of the movement of said revoluble member and to hold the same to its adjusted

position, and means for actuating said brake whereby to arrest the movement of said revoluble member to permit of the loading of said supports and the removal of the completed castings therefrom, substantially as specified.

2. A casting machine comprising a revoluble carrier, a series of mold supports arranged thereon, a brake mechanism, a transmission mechanism interposed between said brake mechanism and said revoluble carrier, and means for actuating said brake mechanism to control the speed of the movement of said revoluble member and to hold the same to its adjusted position whereby to permit of the simultaneous loading of said supports and the removal of the completed castings therefrom, substantially as specified.

3. A casting machine comprising a revoluble member, a series of mold supports pivotally supported thereon, and means for controlling the movement of said revoluble member whereby to permit of the loading of said supports at one side thereof and at one horizontal level, and the removal of the completed castings at another side thereof and at a different horizontal level, substantially as specified.

4. A casting machine comprising a revoluble member, a series of mold supports pivotally mounted thereon, a brake mechanism serving to control the speed of rotation of said revoluble member, and to hold the same to its adjusted position, means arranged upon the periphery of said revoluble member adapted for engagement with said brake mechanism, and means for operating said brake mechanism whereby to render the same operative to control the movement of said revoluble member, and to secure the same in position to permit of the loading and unloading of said supports, substantially as specified.

5. A casting machine comprising a revoluble member, a series of transverse supporting members arranged thereon adjacent to the edge thereof and extending outwardly therefrom in opposite directions, a series of mold supports arranged at each side of said revoluble member and suspended from said supporting members, a brake serving to control the speed of the movement of said revoluble member and to hold the same to its adjusted position, and means for actuating said brake whereby to arrest the movement of said revoluble member to permit of the loading of said supports and the removal of the completed castings therefrom, substantially as specified.

6. A casting machine comprising a revoluble member, a series of transverse supporting members arranged thereon adjacent to the edge thereof and extending outwardly therefrom in opposite directions, a series of

mold supports arranged at each side of said revoluble member and suspended from said supporting members, each of said supports having an inclined supporting surface, a gear provided upon the periphery of said revoluble member, a brake mechanism to control the speed of rotation of said revoluble member and to hold the same to its adjusted position, means for actuating said brake, and a train of gearing arranged intermediate of said brake and the gear arranged upon said revoluble member, substantially as specified.

7. A casting machine comprising a support, a shaft mounted thereon, a revoluble member supported upon said shaft, a gear upon the periphery thereof, a series of supports pivotally mounted upon said revoluble member adjacent to the periphery thereof and provided with inclined supporting surfaces, a shaft, a brake comprising a movable member arranged upon said second named shaft and a fixed member supported adjacent to and coöperating with said movable member, means for actuating said brake to cause said fixed member to engage with said movable member, a pinion on said brake shaft, and a train of gearing interposed between said pinion and the gear upon the

periphery of said revoluble member, substantially as specified.

8. In a casting machine, a revoluble member, a series of shafts thereon, a series of supports pivotally arranged upon said shafts, means for supporting molds normally in inclined positions upon said supports, and means arranged upon said first mentioned means for maintaining said molds in position thereon, substantially as specified.

9. In a casting machine, a revoluble member, a series of shafts thereon, a series of supports pivotally arranged upon said shafts, means for supporting molds normally in inclined positions upon said support, and means arranged upon said first mentioned means adapted to engage with one edge of each of said molds for maintaining the same in position upon said first mentioned means, substantially as specified.

Signed at the city of Buffalo, Erie county, in the State of New York, this 7th day of Aug. one thousand nine hundred and thirteen.

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