Dec. 4, 1928. 1,694,355

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MACHINE FOR PREPARATION OF MOLDER'S SAND

Filed Sept. 3, 1925 3 Sheets-Sheet 1

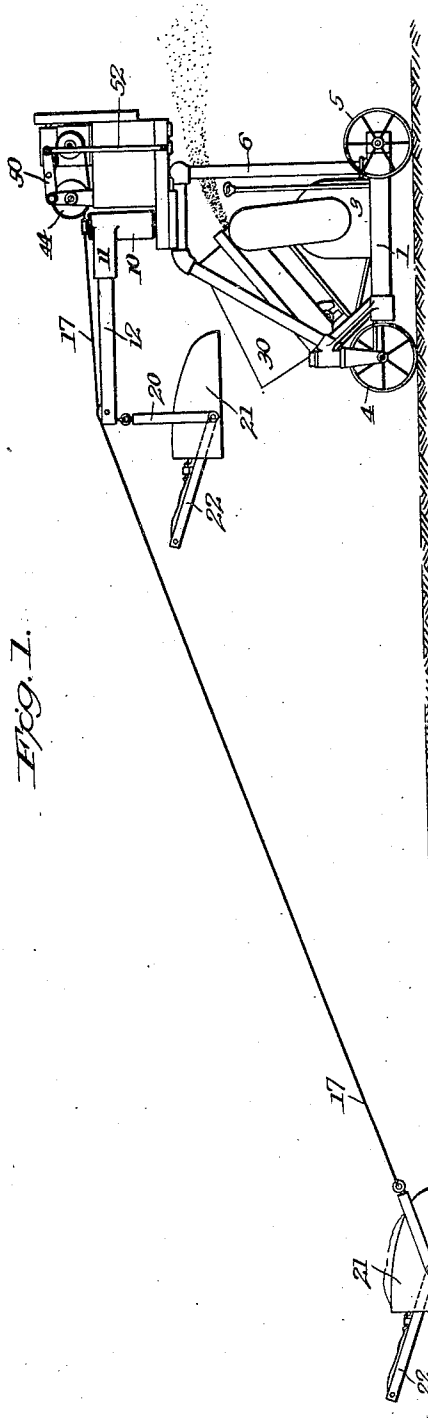


Fig. 1.

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Filed Sept. 3, 1925 3 Sheets-Sheet 2

Fig. 3.

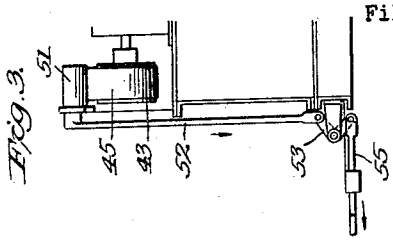
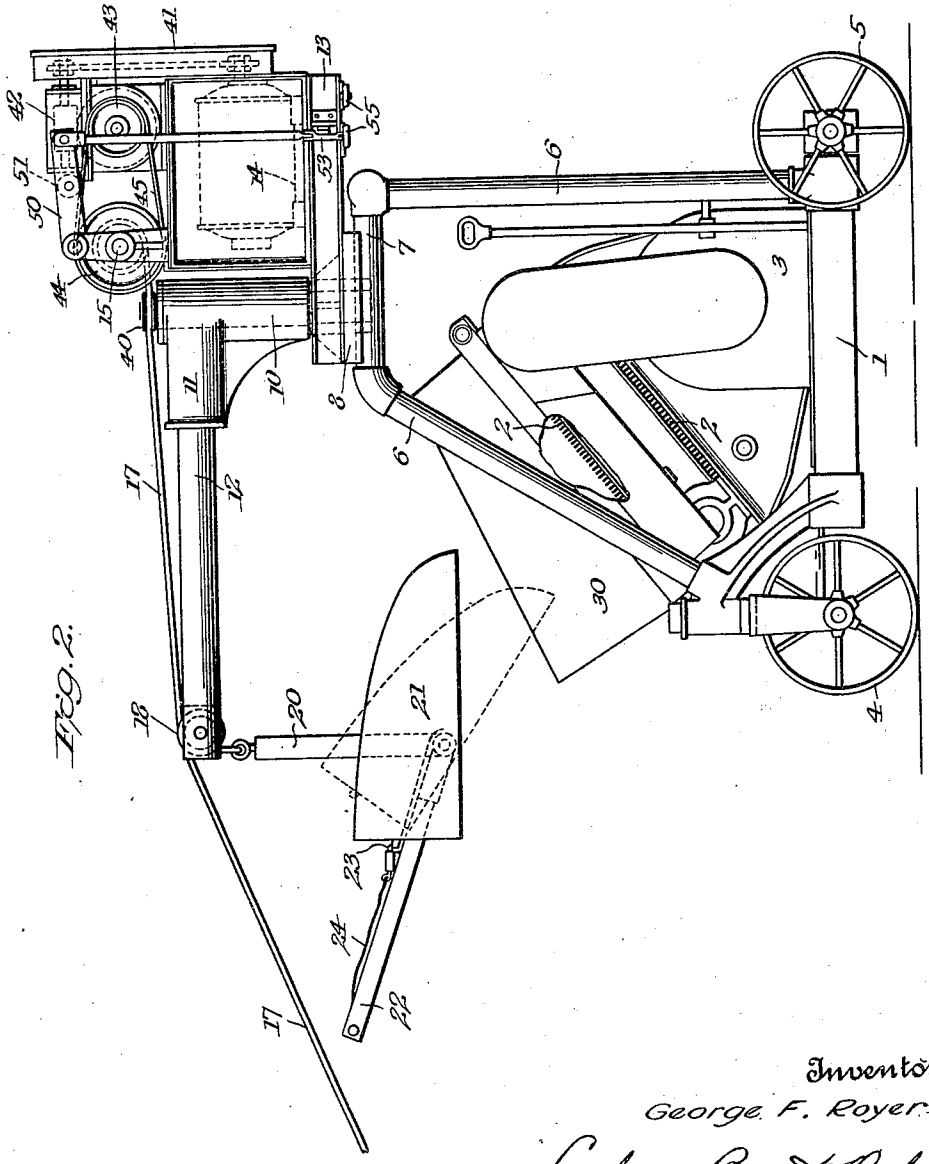


Fig. 2.



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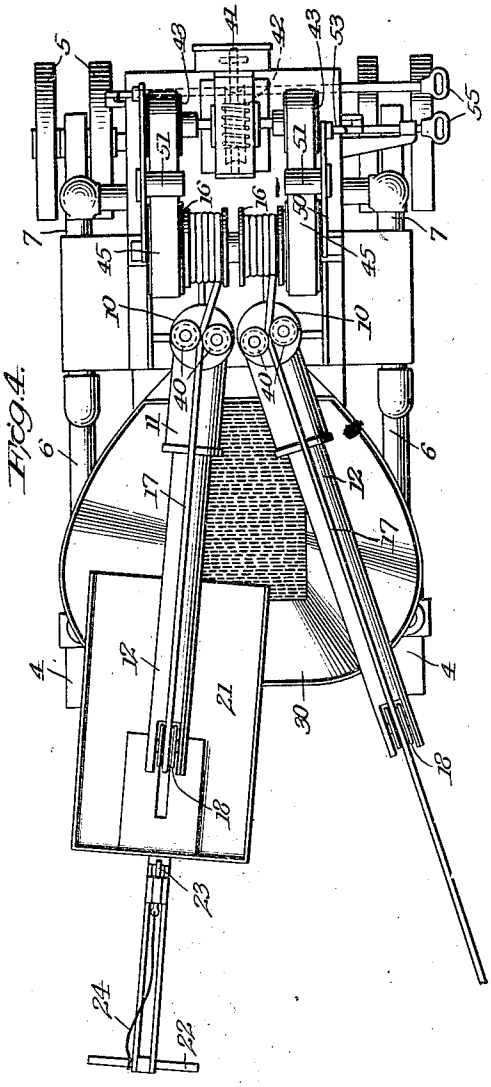


Fig. 4.

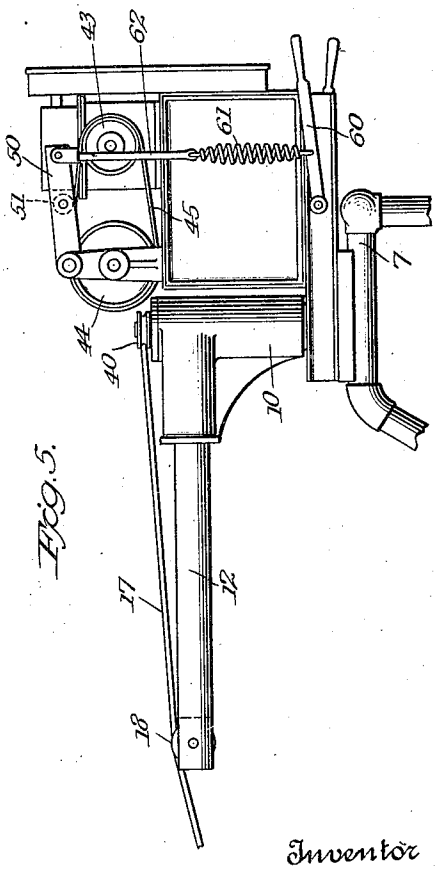


Fig. 5.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR PREPARATION OF MOLDER'S SAND.

Application filed September 3, 1925. Serial No. 54,304.

The present invention relates to improvements in means for preparing or treating sand or material from which molds for shaping fluid metal are formed.

In an earlier Patent No. 1,559,915 there is disclosed a machine by which the particles of the mold forming material are thoroughly disintegrated, separated from undesirable substances, and aerated, by being projected to a considerable distance from the discharge end of a separating belt.

The present invention relates particularly to means for loading or conveying the materials to be treated to the machine which forms the subject matter of said prior application.

In large foundries the piles of sand to be treated often cover a considerable area, and are frequently situated at some distance from the preferred location of the blending or treating machine. Also frequently such sources of supply are located at points relatively distant from the location of the machine in different directions, and considerable delay results from it being necessary to shift the separating and blending machine from place to place.

By the present invention means are provided whereby such a machine as that of the aforesaid earlier patent may be supplied with material from sources of supply at points relatively distant from the machine, and in different directions therefrom with a minimum amount of care and attention on the part of the workmen. The invention also comprises means by which, when desired, the separating or blending machine may be readily shifted from place to place with little exertion on the part of the attendants.

In the accompanying drawings:—

Figure 1 is an elevation of an embodiment of the present invention.

Figure 2 is an elevation, on a slightly enlarged scale, of the separating or blending machine, and the parts embodying the present invention immediately adjacent thereto.

Figure 3 is a detail, end, view of a portion of the parts shown in Figure 2.

Figure 4 is a plan of the parts shown in Figure 2.

Figure 5 illustrates a slight modification.

Referring to the drawing, in the several views of which like reference characters designate corresponding parts, 1 designates the base or support of the sand separating or blending machine, which, as shown, is of the same type or character as that of the aforesaid earlier Patent 1,559,915, comprising an inclined endless belt 2, mounted on suitable rolls or pulleys and driven at a high speed by motor mechanism contained within a casing 3.

The belt 2 is provided on its outer surface with projecting metal sprigs which exert a combing action on the body of material deposited upon the upper run of the belt, and the particles separated from such mass and collected in the spaces between the sprigs are discharged in a stream from the upper end of the separating belt. The speed at which the belt is driven is such that the separated particles are projected through the air for a considerable distance beyond the end of the separating belt and thus said particles are thoroughly aerated, which is very desirable, as explained in the earlier patent above referred to.

According to the present invention, the frame 1 is supported on ground wheels 4, 5. The front wheels 4 are connected with the frame by suitable swivel joints so that the direction of movement of the machine from place to place may be controlled by suitable steering devices. As any suitable form of steering means may be provided, and as this does not constitute an essential element of the invention hereinafter claimed, no specific form is illustrated. As shown, the rear ground or supporting wheels 5 are preferably arranged in pairs, two at each side of the machine.

From the base 1 of the machine frame rise suitable uprights 6, shown as being formed of rods or tubes, and as being connected at their upper ends by members 7. It will be understood that the frame includes members 6, 7, at each side of the base 1 and the members 7 are connected by a transversely extending bed or plate 8.

It will be seen that the frame members 6

are of sufficient height to extend above the horizontal plane of the upper end of the separating belt 2 and the path of the material discharged therefrom.

On the bed plate or transverse connecting member 8 are supported the power devices and guiding parts of the loading means constituting the present invention by which material to be treated is supplied to the separator belt 2.

On the bed plate 8 are mounted, so as to rotate about vertical axes, two masts or supports 10, each having a laterally extending socket 11, in which is secured a guide arm 12 that extends horizontally forward. The members 10 may be mounted in any suitable bearings formed in or secured to the plate 8, and they constitute supports for the guide arms 12, which permit said arms to be turned about the vertical axes of the members 10 to direct the forward ends of said arms in any desired direction from the machine.

On the plate 8 are also secured suitable angle iron frame members 13, which extend rearward and form a support for a motor 14 and uprights in which are mounted bearings for a shaft 15. On this shaft are loosely mounted two winding drums 16 and one end of a cable 17 is connected to each of said drums, said cables extending forward over the guide arms 12 and a guide pulley 18, shown as being mounted in the bifurcated free end of each of the guide arms.

To the other end of each cable 17 is connected a suspension member or supporting link 20, which is pivotally connected to the frame of a scoop or loading device 21. It will be evident that by winding either cable upon its associated drum 16 the attached scoop or shovel member 21 will be drawn toward the machine and at the same time lifted from the ground to a position where it may discharge its load onto the separating belt 2 of the blending machine.

Preferably the machine is provided with a suitable hopper 30, which is relatively wide at its upper end, and which serves to guide any material deposited therein by the shovel or scoop member 21 onto the separating belt 2.

To enable the shovel member or scoop 21 to be readily guided, it is shown as provided with a suitable handle 22 pivotally connected with the body, and a suitable spring pressed latch 23 is mounted on said handle and adapted to engage with a stop on the body of a scoop so that the body of the scoop and the suspension bar or link 20 will normally be retained in the position shown in full lines in Figure 1, in which the bottom of the scoop is substantially horizontal. A small cable 24 connected with the latch 23 extends to the outer end of the handle 22, so that it may be readily grasped by the workman who is controlling movement of the scoop 21 by the handle 22, and when pull is exerted on this cable the latch 23 will be released and the scoop body permitted to rotate about the axis connecting it with the supporting bar or link 20, so that the contents thereof will be discharged into the hopper 30 and onto the separating belt.

It will be understood that the height of the several parts is such that a workman can readily retain his hold on the handle 22 throughout all of the movements of the scoop, and when the same has been lifted to a position above the hopper 30, the releasing of the latch, as described, will permit the material previously contained in the scoop to be discharged onto the separating belt.

As the guide arms 12 are connected with the machine frame by means permitting turning movement thereof about vertical axes, it will be seen that without shifting the position of the machine the scoops 21 may be positioned to gather material located at various points in different directions from the machine, and, depending on the length of the cables 17, such scoops may be operated over a considerable area.

While many of the advantages of the present invention might be attained by employing only a single scoop, it is preferred to provide each machine with a pair of scoops, as thereby, if desired, materials of different character may be practically simultaneously deposited upon the separating belt. In the preparation of molder's sand, it is frequently desired to blend or mix granular material of different natures, and this can be very effectively accomplished by the loading means of the present application.

As shown, each mast or vertical member 10 is provided at its upper end with two rotatable guides 40, between which the cable 17 extends, said guides serving to maintain the cable at all times in direct vertical alignment with the axis of the support 10 about which the guide arm 17 is adapted to swing.

Any suitable form of gearing may be employed for transmitting power from the motor 14 to the winding drums 16, the connections being of such character that the drums may be independently rotated.

As shown, the motor is geared through suitable gearing contained within a casing 41 to a shaft mounted in bearings above the motor and a worm 42 on this shaft engages a suitable worm wheel on a horizontal shaft, which at its ends is provided with driving pulleys 43. Each winding drum 16 is similarly provided at one end with a pulley 44, and friction drive bands 45 connect the aligned pulleys 43, 44, at opposite sides of the machine.

Normally the drive bands 45 will not engage the pulleys 43, 44, with sufficient force to effect rotation of the drums 16, but manually controlled means are provided by which said driving bands may be caused to closely

embrace the pulleys and transmit motion from the motor to either or both of the winding drums.

As shown in Figures 1 to 3, the means for thus actuating each of the driving bands 45 comprises a lever 50 pivotally mounted at its forward end and provided at an intermediate point in its length with a lateral roller arm 51, which extends over and rides upon the upper face of the adjacent driving band 45. A rod 52 depends from the free end of the lever 50, and is connected, through the medium of a bell crank lever 53, with a handle or manually movable member 55. By drawing outward on the handle 55, the lever 50 will be rocked downward and the roller 51 thereon caused to effect such pressure on the driving belt 45 that the associated winding drum will be connected with the motor and actuated to wind the cable 17 thereon.

It will be seen that the driving connections 50 to 55 inclusive, are duplicated at opposite sides of the machine, both of the handles 55, however, being arranged at one side of the machine so that a single operative may control both of the winding drums.

In Figure 5 is illustrated a slight modification of the means for controlling rotation of the drums. In this form the handle or manually controlled members is a lever 60, and this is connected by a suitable spring 61 with the rod 62, which depends from the rear end of the lever 50. In this arrangement the control levers 60 are at opposite sides of the machine, but both extend rearward therefrom so that a single attendant may readily manipulate either of them as desired.

It is believed that the operation and advantages of the mechanism illustrated will be readily understood from the foregoing description and the drawing.

It will be seen that the scoop or loading device 21 is normally maintained with its bottom in a substantially horizontal position and may, therefore, be readily guided through a pile of granular material to be loaded. The receptacle 21 will be maintained in this position, with its bottom substantially horizontal, until the latch 23 is released, when it will automatically tilt and discharge its contents into the hopper 30, assuming that the drum 16 has been actuated to wind the cable 17 thereon and elevate said scoop as well as move it from its position of loading to a position beneath the free end of the guide arm 12.

It will be evident that there can be considerable variation in the form of the scoop, and this term, therefore, is intended to comprise any suitable container for the material to be transported.

The particular form of scoop illustrated is, however, of considerable importance, as it may be loaded by being guided through a pile of sand, for example, thus avoiding the manual labor incident to shovelling or otherwise handling the material from the pile on the floor into the receptacle.

The supporting mast 10 being readily rotatable, the attendant may easily position the scoop at points at various directions from the machine, and, according to the length of the cable employed the material to be collected may be located at a considerable distance from the machine.

The loading devices also provide a ready means by which the position of the blending machine may be shifted from place to place, as desired. By unwinding either of the cables and retaining the scoop at the outer end thereof stationary, rotation of the drum to wind the cable thereon will act to move the entire machine over the floor, such movement being assisted by the steering devices before referred to.

It will be understood that in the drawing some of the parts are shown more or less conventionally and diagrammatically, and there can, of course, be considerable modification from many of the details shown without departing from the spirit or scope of the invention.

I claim:—

1. A machine of the class specified comprising a wheeled vehicle, a travelling material treating belt supported on the vehicle and operative to project the material to a distance from its rear end, and means supported on the vehicle at points entirely above the horizontal planes in which the belt operates for lifting material to be treated to the belt from the floor on which the vehicle travels.

2. A machine of the class specified comprising a wheeled vehicle, a travelling material treating belt supported on the vehicle and operative to project the material to a distance from its rear end, and means on the vehicle and displaceable laterally relative thereto for lifting material to be treated to the belt from the floor on which the vehicle travels, comprising a scoop, a drum supported on the vehicle, a cable connecting the drum and scoop, and a guide for the cable rotatably mounted on the vehicle whereby the material may be taken from widely separated points on the floor without changing the position of the vehicle.

3. A machine of the class specified comprising a wheeled vehicle, a travelling material treating belt supported on the vehicle and operative to project the material to a distance from its rear end, and means for lifting material to be treated to the belt from the floor on which the vehicle travels, comprising a scoop, a drum supported on the vehicle, a cable connecting the drum and scoop, and a guide for the cable mounted on the vehicle so as to be laterally displaceable relative thereto whereby the material may be taken from widely separated points on the

floor without changing the position of the vehicle, said means effecting a shifting of the vehicle by maintaining the scoop stationary at a distance from the vehicle and rotating the drum.

4. A machine of the class specified comprising a wheeled vehicle, a travelling material treating belt supported on the vehicle and operative to project the material to a distance from its rear end, and means for simultaneously lifting and conveying material to be treated to the belt from the two piles on the floor on which the vehicle travels, and separated a distance greater than the width of the machine, comprising two scoops, two drums supported on the vehicle, cables connecting the drums and scoops, and guides for the cables supported by and laterally displaceable on the vehicle.

5. A machine of the class specified comprising a wheeled vehicle, a travelling material treating belt supported on the vehicle and operative to project the material to a distance from its rear end, means on the vehicle and laterally displaceable relative thereto for lifting material to be treated to the belt from the floor on which the vehicle travels including a scoop, a drum mounted on the vehicle, a cable connecting the scoop and drum and guiding devices for the cable rotatably supported on the vehicle and permitting the scoop to be extended from the vehicle in various directions, a pulley connected with the drum, a motor on the vehicle, a driving pulley actuated by the motor, a friction belt connecting said pulleys, and means for exerting pressure on said belt to cause it to closely grip the pulleys and effect rotation of the drum.

6. A machine of the class specified comprising a wheeled vehicle, a travelling material treating belt supported on the vehicle and operative to project the material to a distance from its rear end, means for simultaneously lifting material to the belt from two different points on the floor on which the vehicle travels, and both the lines of the sides of the machine comprising two drums mounted on the vehicle, a cable attached to each drum at one end, a scoop secured to the other end of each cable, cable guiding means on the vehicle, a motor on the vehicle, and independently controlled means for connecting each drum with the motor.

7. A machine of the class specified comprising a wheeled vehicle, a travelling material treating belt supported on the vehicle and operative to project material to a distance from its rear end, laterally displaceable lifting and conveying means for simultaneously lifting material from two piles on the floor on which the vehicle travels comprising two drums mounted on the vehicle, a cable having one end attached to each drum, a scoop attached to the other end of each cable guiding means on the vehicle and movable laterally thereof, a pulley connected with each drum, two driving pulleys positioned, respectively, in alignment with the drum pulleys, a motor on the vehicle adapted to rotate the driving pulleys, two friction bands each connecting one of the drum pulleys with the aligned driving pulley, two levers each provided with a lateral arm that extends over the adjacent friction band between the drum and driving pulleys, and means for independently rocking said levers to connect either drum to the motor.

8. A machine of the class specified, comprising a wheeled vehicle, a travelling material treating belt mounted on the vehicle and operative to project material to a distance from its rear end, and lifting and conveying means mounted on the vehicle for transferring material to be treated to the belt from points on the floor on which the vehicle travels and laterally outside the side lines of the vehicle.

9. A machine of the class specified, comprising a wheeled vehicle, a travelling material treating belt mounted on the vehicle and operative to project material to a distance from its rear end, and lifting and conveying means mounted on the vehicle and displaceable laterally relative thereto for transferring material to be treated to the belt from the floor on which the machine travels.

10. A machine of the class specified, comprising a wheeled vehicle, a travelling material treating belt mounted on the vehicle and operative to project material to a distance from its rear end, and lifting and conveying means mounted on the vehicle for simultaneously transferring to the belt material from a plurality of piles on the floor on which the vehicle travels and spaced apart a distance greater than the width of the machine.

In testimony whereof I have hereunto set my hand.

GEORGE F. ROYER.