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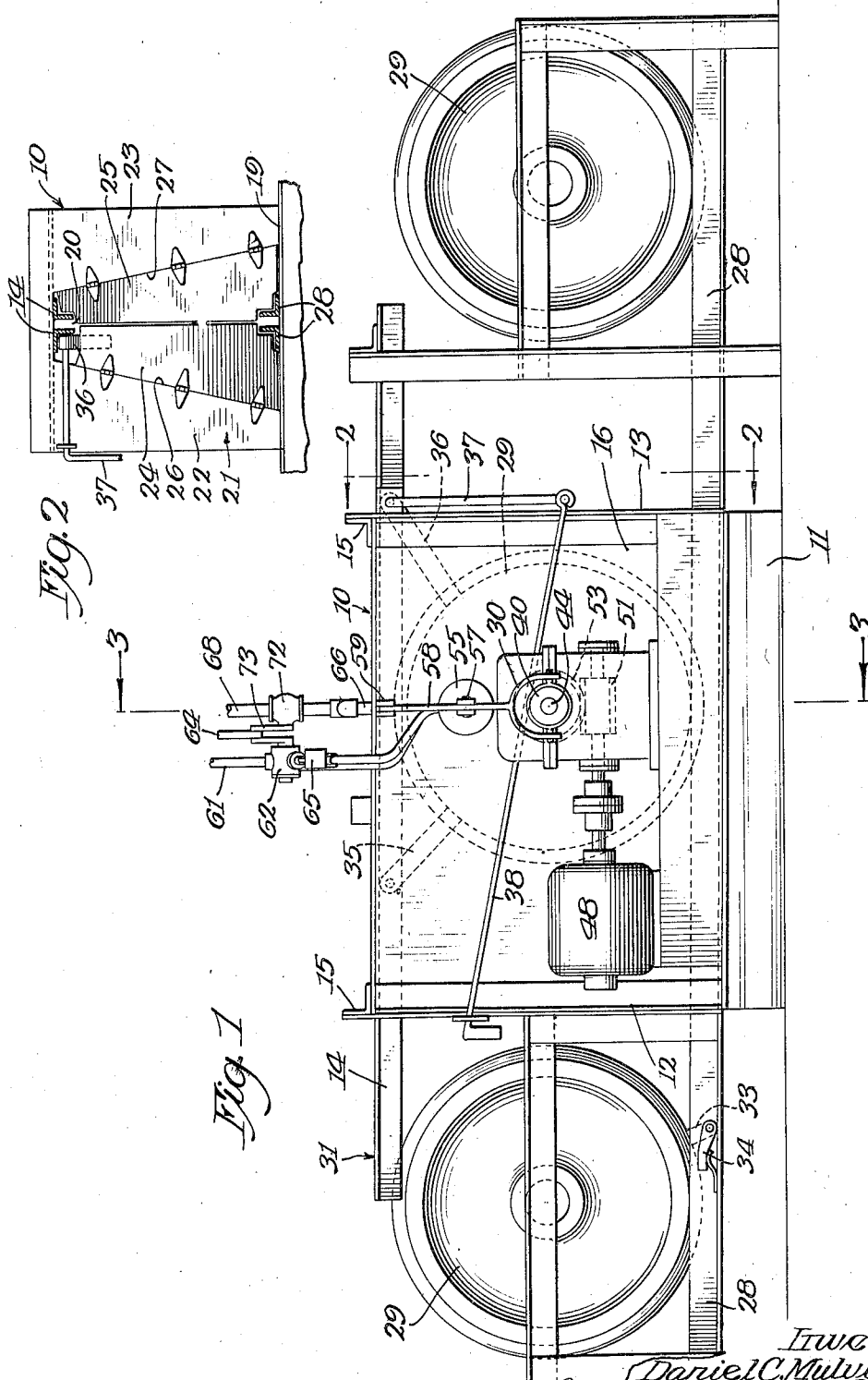
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2,129,019

WHEEL CLEANING AND DUST ALLAYING DEVICE

Filed Aug. 2, 1934

2 Sheets-Sheet 1



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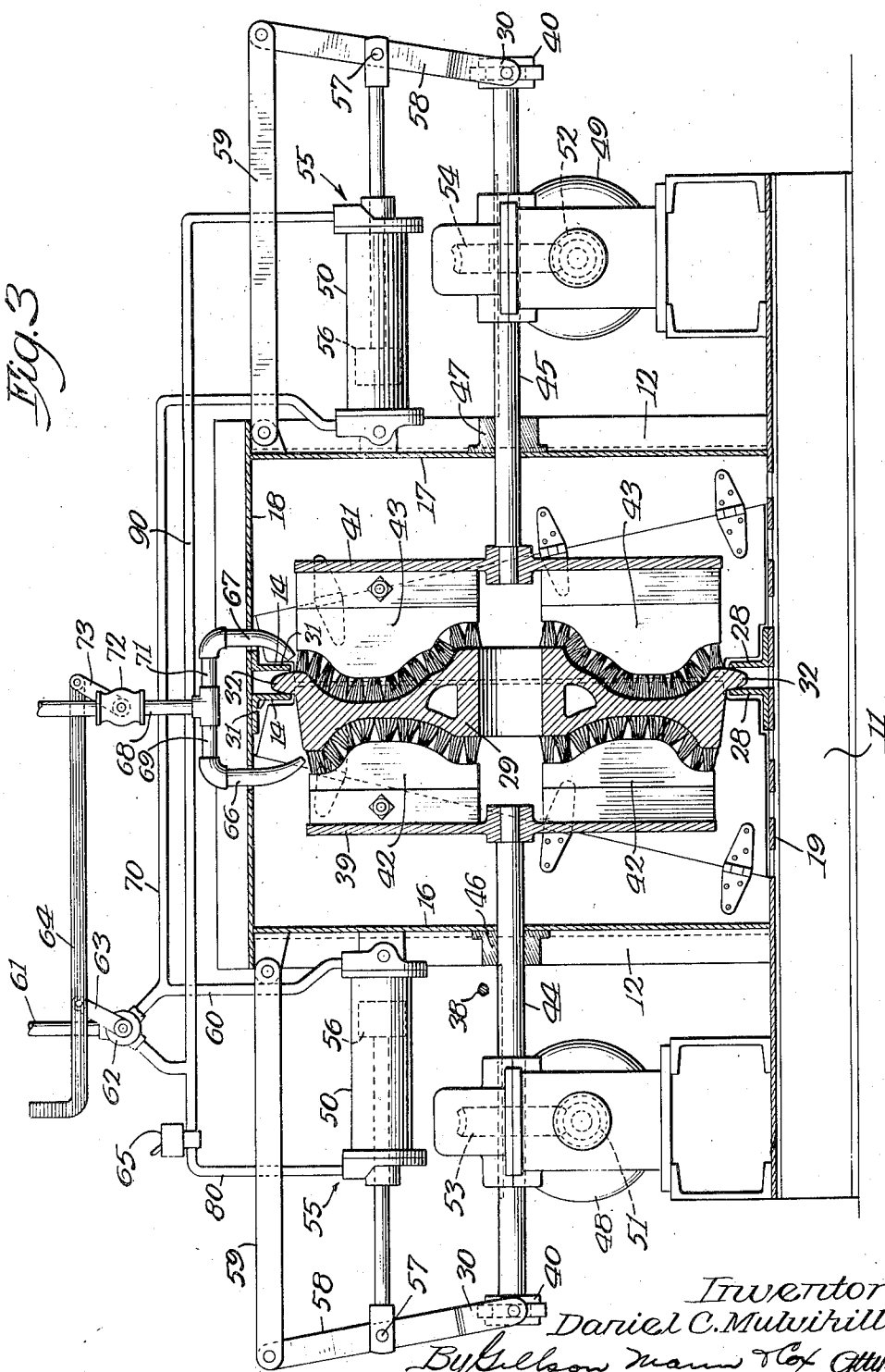
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Fig. 3



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UNITED STATES PATENT OFFICE

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WHEEL CLEANING AND DUST ALLAYING
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Application August 2, 1934, Serial No. 738,037

3 Claims. (Cl. 15—21)

This invention relates to devices for removing extraneous matter from the surfaces of castings and the like.

One of the principal objects of the invention is the provision of a new and improved device for brushing castings, and simultaneously preventing the dissemination of dust, dirt, sand or other foreign matter in the air during the cleaning operation.

Another object of the invention is the provision of a new and improved cleaning device having novel means for preventing overheating of the brush tips while the device is in use.

A still further object of the invention is the provision of new and improved means for settling dust and other fine particles of matter during the operation of mechanically removing the same from an object.

A further object of the invention is the provision of new and improved means for discharging a spray of water onto an object during the time it is being operated upon for the purpose of assisting the operation and for preventing the detached particles from becoming diffused in the surrounding atmosphere.

A still further object of the invention is the provision of new and improved mechanism for removing sand and other foreign matter from castings by means of brushes and simultaneously maintaining said brushes in a moist condition together with novel means for simultaneously controlling the operation of the brushes and the supply of moisture thereto.

Another object of the invention is the provision of a new and improved mechanism for cleaning castings and preventing the dispersion of dust in the atmosphere which is simple in construction, efficient in operation, composed of the minimum number of moving parts, and that is relatively inexpensive to manufacture and install.

Other and further objects and advantages of the invention will appear from the following description, taken in connection with the accompanying drawings, in which:—

Fig. 1 is a side elevation of a wheel cleaning apparatus showing the spray device in position thereon;

Fig. 2 is a section on the line 2—2 of Fig. 1 with parts broken away; and

Fig. 3 is a vertical section on the line 3—3 of Fig. 1.

Referring now to the drawings, the reference character 10 designates a wheel cleaning device similar to that shown in Patent No. 1,625,137

granted to me on April 19, 1927, and comprises a base 11 on which is mounted the bottom wall 19 and the framework of the apparatus. This framework comprises the uprights 12 and 13 arranged in pairs at each end of the device. These uprights are connected together by longitudinal bars 14 which form a wheel guide, as will presently appear, and with the transverse bars 15. Attached to the framework are the side walls 16 and 17 and the top wall 18 forming what, for convenience of description, will be termed the dust chamber within which the sand and other foreign matter are removed from the castings. The floor 19 of this chamber is supported by the base 11. The front and rear walls of the device are similar and only one need be described.

The rear wall 21 is shown in Fig. 2 and comprises the rigid sections 22 and 23 which have their adjacent edges inclined downwardly and outwardly to form a substantially triangular opening 20 which is adapted to be closed by the door sections 24 and 25 which are hinged to the sections 22 and 23. The doors being hinged to the inclined edges 26 and 27 of the wall sections 22 and 23, will be automatically closed by gravity when the same are opened by the movement of the wheel when it moves along the track 28.

The track 28 is arranged on an incline and extends longitudinally through the dust chamber whereby the wheels 29 when placed on the track will roll by gravity along the same. The doors in the front wall in the dust chamber open inwardly, and those at the rear open outwardly, whereby they will be opened by the wheel as it rolls along the track and will be automatically closed by gravity after the wheel passes therethrough.

Suitable means are provided for holding the wheel in upright position as it rolls along the track 28. A guide 31 is employed for this purpose. This guide is formed by the bars 14 which engage both sides of the flange 32 of the wheel 29. The wheel is temporarily held on the track in position to enter the dust chamber by a latch 33 which is adapted to be operated by a lever 34 attached to the latch.

Suitable means are provided for holding the wheel in position within the dust chamber during the brushing operation. As shown, a pair of pivoted latch members 35 and 36 are employed for this purpose. The latch member 35 is free to pivot upwardly but is limited in its downward movement. The latch 36 is connected to a cranking shaft 37 having an operating handle 38 for elevating the latch for releasing the wheel. The latches 35 and 36 engage the tread of the wheel

when the wheel is in the position shown in Fig. 1. The mechanism thus far described is similar to that disclosed in the prior patent referred to above, and need not be further described.

5 The means for rotating the brushes and for advancing and retracting the same are different from the patented structure, and will now be described.

10 The brushes, of which there are two sets for each wheel—one set for each side of the wheel—comprise the supports 39 and 41 (see Fig. 3) to which the wires or bristle elements and bristle supports 42 and 43 are rigidly attached. The brush supports 39 and 41 are rigidly secured to
15 shafts 44 and 45 which are supported in journal bearings 46, 47 carried by the side walls of the chamber. The shafts are rotated by electric motors 48 and 49, one being located at each side of the dust chamber. The shafts are driven
20 through a worm gear drive 51 and 52. The gears 53 and 54 are slidably keyed to the shafts 44 and 45, respectively. Suitable means are provided at each side of the wheel for advancing and retracting the brushes, and since they are similar, only
25 one will be described.

This mechanism comprises a motor 55 (see Fig. 3) having a cylinder 50 rigidly attached to the side wall of the dust chamber and a piston 56 operating within the cylinder and having a piston
30 rod pivotally connected as at 57 to a link 58. The link 58 is connected to a shaft 45 by having a fork 30 on its lower end provided with pins engaging a grooved wheel 40 fixed on the shaft 45. This connection permits the link 58 to move the shaft
35 45 longitudinally without interfering with its rotation.

The upper end of the link 58 is pivotally connected to a bar 59 which in turn is pivotally connected to the side of the dust chamber. The
40 motors 55 are adapted to be operated by compressed air which is supplied through the trunk line 61 and controlled by valve 62. The valve 62 has a crank arm 63 which is connected to a hand lever 64.

45 The brushes are shown in contact with the wheel 29 to be cleaned, having been advanced to such positions by the admission of air to the outer ends of the cylinders 50, 50, through the pipes 80, 90. To withdraw the brushes from the wheel, the
50 valve 62 is shifted to admit air to the inner ends of the cylinders 50, 50, through the pipes 60, 70. The electric motors 48 and 49 are adapted to be controlled by a conventional switch 65 which is desirably located adjacent the hand lever 64.

55 The device thus far described is intended to remove the sand and other foreign matter from car wheels after the casting operation. In removing this sand and foreign matter, an enormous amount of dust is produced, and, since a great
60 amount thereof is finely ground silica, it is extremely detrimental to the health of the operators. Furthermore, the friction of the brushes against the wheel causes the wires of the brushes to become highly heated unless means are provided for cooling the same.

65 Suitable means are provided for supplying a spray of water to the brushes and wheel during the cleaning operation. The water will not only settle the dust and cool the brushes, but will also assist in loosening the sand and dirt and other
70 foreign matter on the wheel while it is being cleaned, thereby assisting in the cleaning operation.

In the form of the device selected to illustrate
75 one embodiment of the invention, means are pro-

vided for supplying a spray to both sides of the wheel. As shown a pair of nozzles 66 and 67 are employed for this purpose. These nozzles extend
downwardly and are bent inwardly to deliver the
5 spray onto the brush and wheel at opposite sides of the wheel, the water being supplied to the nozzles 66 and 67 by the pipe 68 and the branches 69 and 71. The supply of water is controlled by a valve 72 which is operated by an arm 73 which
10 in turn is pivotally connected to the hand lever 64. The parts are so constructed that when the lever 64 is operated to cause the brushes to advance toward the wheel, the water will be turned on, and when moved away from the wheel, the
15 water will be turned off.

In the operation of the device, the wheel to be cleaned is placed on the track 28, the lever
64 is moved to inoperative position and the latches 34 and 35 are then released which permits the two wheels (see Fig. 1) to move by gravity
20 down the track 28. The forward one moves out of the chamber 20, and the following wheel will roll into position within the dust chamber where it is stopped by the latch 36 and held by said latch, and the latch 35.
25

The lever 64 may then be moved to operative position which will cause the mechanism to advance the brushes into contact with the sides
of the wheel and automatically turn the water on for spraying the brushes and the wheel. The
30 switch 65 is operated to stop and start the motors 48 and 49 when it is desired to stop or to rotate the brushes.

While I have shown sprays as being used in connection with cleaning cast car wheels, it is understood that the same may be used in connection with any mechanism adapted to remove
35 finely divided particles of material from an article for preventing said particles, after being removed, from escaping into the air.

It is thought from the foregoing taken in connection with the accompanying drawings that the construction and operation of my device will be apparent to those skilled in the art, and that
40 minor changes in size, shape, proportion and details of construction may be made without departing from the spirit and scope of the appended claims.

I claim as my invention:

1. In an apparatus for removing material in the form of finely divided particles from an
50 article, the combination of a chamber, means for retaining an article within said chamber, means engaging said article for removing finely divided particles therefrom, mechanism for operating said removing means, means independent
55 of said mechanism for spraying a liquid onto said particles for settling the same, and means for automatically controlling the operation of said spraying means when said removing means is operated.
60

2. In an apparatus for removing sand from a cast wheel comprising a chamber, an inclined track extending through said chamber, doors at each end of said chamber through which said
65 track extends, the hinged edges of said doors being inclined downwardly and outwardly, said doors all opening in the direction of the downward inclination of the track, whereby the doors will be opened by a wheel moving down the track and will automatically close as it passes beyond them.
70

3. In a device of the class described, means for automatically positioning and holding an article while the same is being operated upon, means
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for operating on said article, said latter means normally causing siliceous material to be projected into the air from said article while operating on the same, a control for said latter means, means for spraying water onto said material for preventing its diffusion in the surrounding atmosphere during said operation, a control independent of the operation of said first-named control for said last-named means, and means for simultaneously operating said controls.

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