Jan. 6, 1925. 1,522,159

F. VOLLMER

SAND BLAST APPARATUS

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Fig. 7.

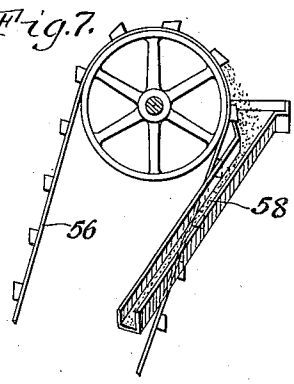


Fig. 1.

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Fig. 2.

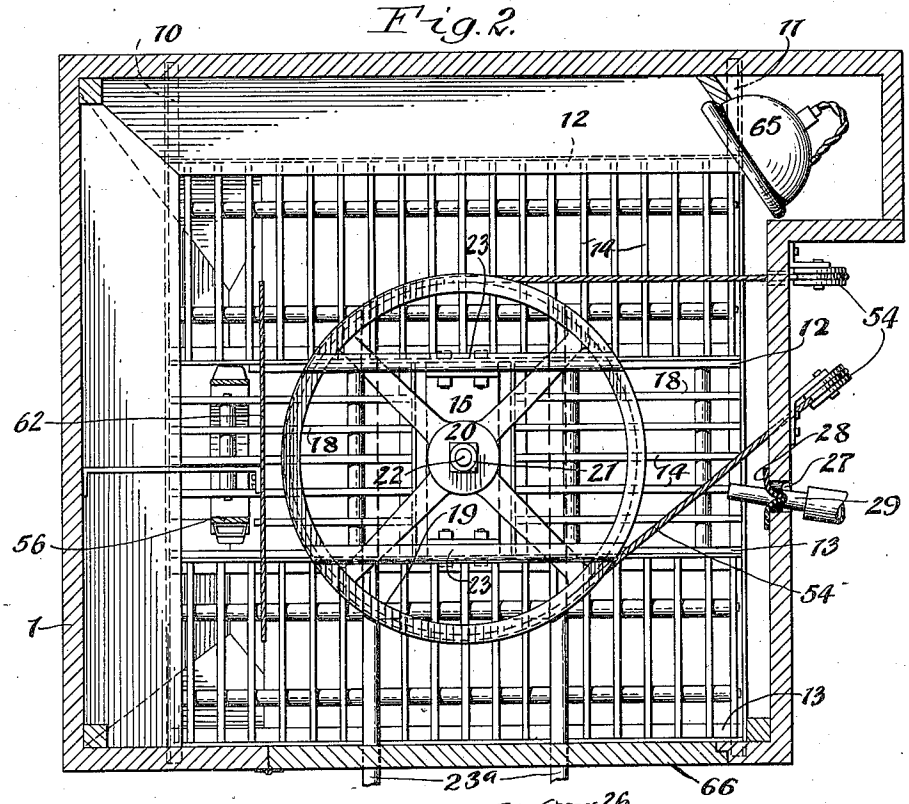
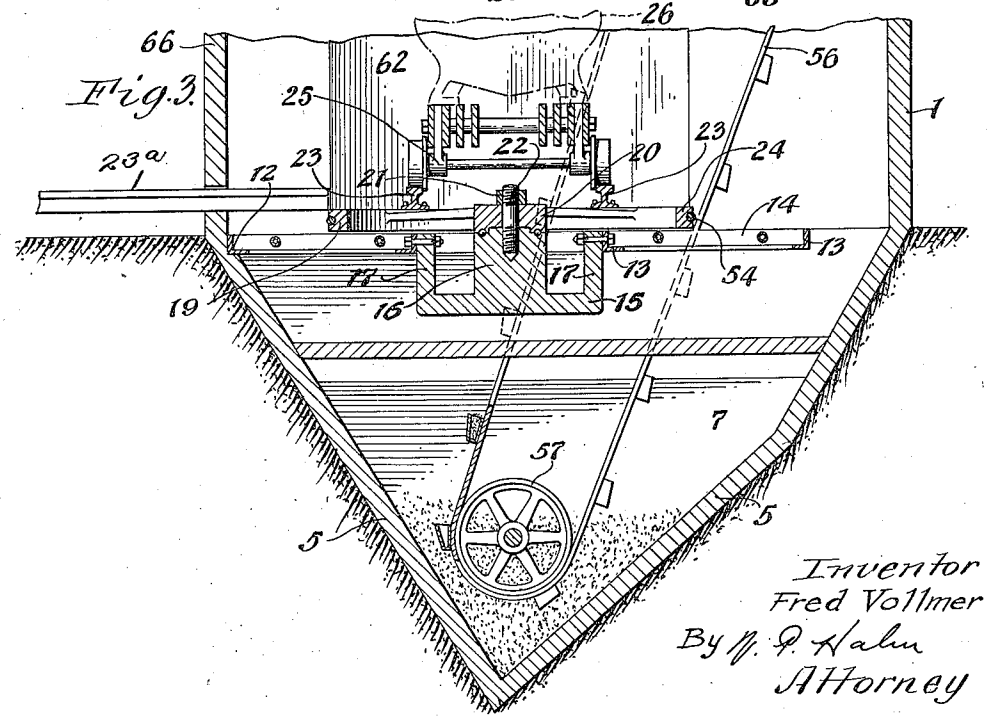


Fig. 3.



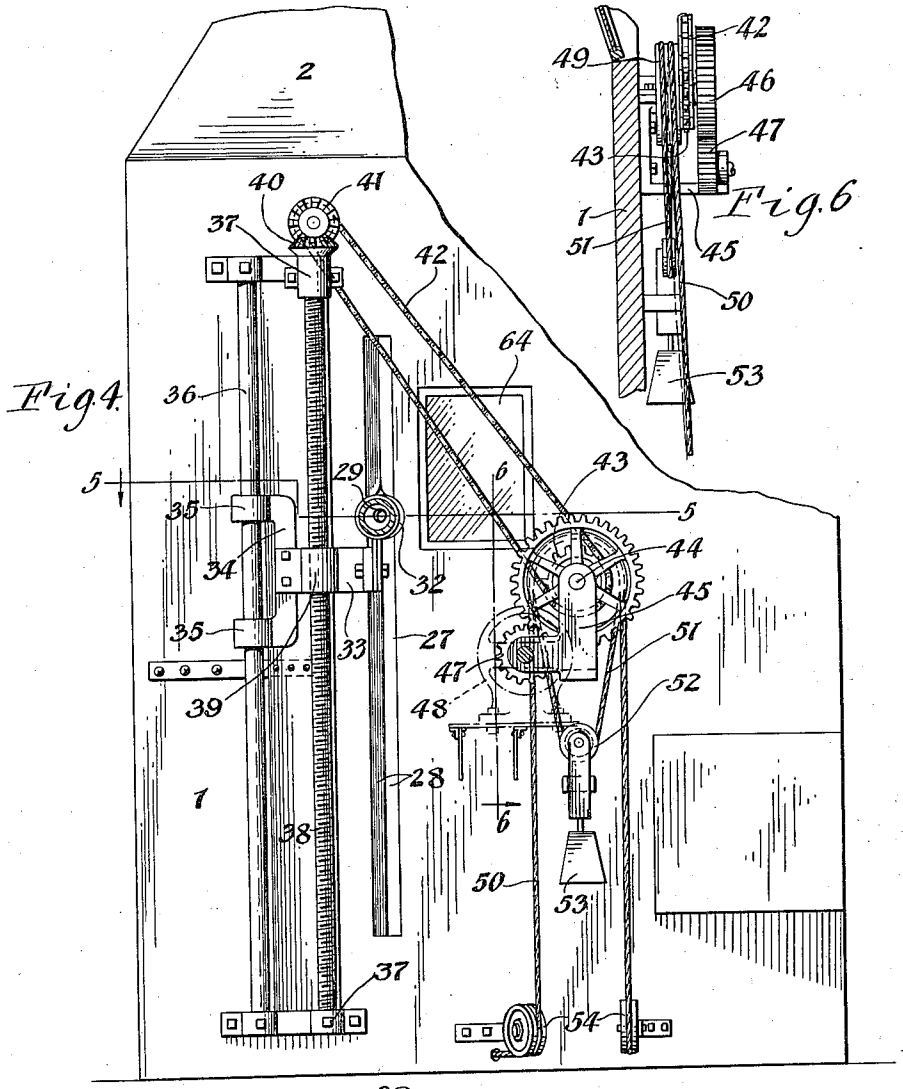
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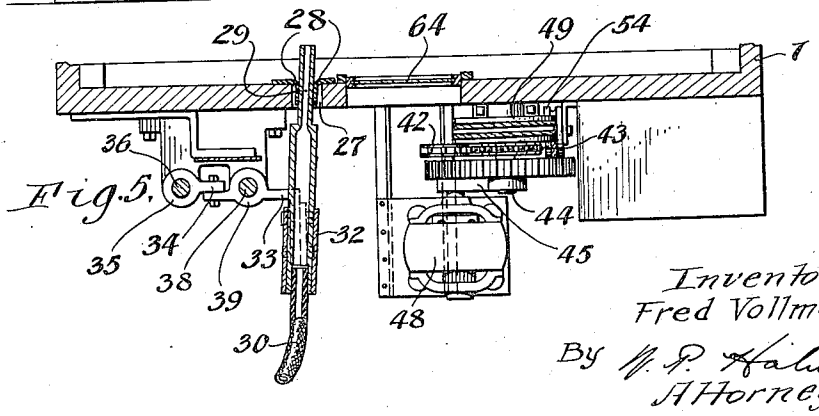
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SAND BLAST APPARATUS

Filed June 30, 1921 3 Sheets-Sheet 3





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UNITED STATES PATENT OFFICE.

FRED VOLLMER, OF BUFFALO, NEW YORK, ASSIGNOR TO AMERICAN RADIATOR COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

SAND-BLAST APPARATUS.

Application filed June 30, 1921. Serial No. 481,552.

To all whom it may concern:

Be it known that I, FRED VOLLMER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Sand-Blast Apparatus, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to improvements in apparatus for cleaning castings and is particularly designed for cleaning small assembled cast iron boilers, radiators and the like.

One of the objects of my invention is to provide an automatic apparatus for sand blasting castings which is particularly adaptable for cleaning assembled cast iron apparatus which is comparatively tall and extends considerably above the floor level.

For the purpose of disclosing my invention I have illustrated one embodiment thereof in the accompanying drawings in which:

Figure 1 is a longitudinal sectional view of my apparatus;

Fig. 2 is a transverse sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a side elevation of one side of the housing showing the operating mechanism;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is a detailed sectional view taken on the line 6—6 of Fig. 4; and

Fig. 7 is a detail of a portion of the sand elevating apparatus.

In the embodiment illustrated I provide a housing 1 which is preferably rectangular in cross section and has a cover 2, the side walls of which converge to a dust conveying spout 3. The bottom of this housing has its side walls 4 and its end walls 5 converging into a pit into which the sand is adapted to fall after it has performed its blast operation. This pit is divided into two compartments by a wall 6. One of these compartments 7 provides a receiving pit for the sand, and the sand, after being deposited in this pit, passes through an opening 8 in the wall 6 into the pit 9 in which is adapted to operate a suitable elevating mechanism.

On the ground level of the compartment I provide a grated bottom which supports a turn table adapted to receive the apparatus to be sand blasted. Extending from the front to the rear of the casing and above the pit, I provide a pair of supporting angle irons 10 and 11 the ends of which are let into the front and rear sides of the casing. Supported on these angles is a pair of gratings each comprising side angles 12 and 13 which have connected between them grating bars 14 which are preferably bolted in position to the side bars. These gratings support between them a turn table mounting 15 which comprises a casting having center support 16 for the turn table, and a pair of end flanges 17 which are adapted to be bolted to the two angles 12 and 13 of the gratings. In addition to the two side gratings there are a pair of end gratings 18 which, together with the side gratings form a grating bottom. The turn table support has mounted thereon a turn table 19, the hub 20 of which rests and rotates upon the turn table supporting hub 16, suitable roller bearings being interposed to permit the turn table to move readily, and the turn table is held in position by means of a nut 21 threading on a stud 22. This turn table is provided with a pair of tracks 23, and its outer periphery forms a pulley 24 to provide means for rotating the same.

The tracks 23 on the turn table are arranged so that they will align with the entering tracks 23^a, and a trolley 25 is adapted to roll on these tracks and support the casting 26 which is to be sand blasted. This trolley 25, as illustrated, is provided with four wheels and a supporting platform on which the casting is supported.

At one side of the housing there is provided a slotted aperture 27 closed by means of a pair of flexible lips 28. A sand blast nozzle 29 which projects through this opening 27 is connected by a flexible hose 30 with the pressure mechanism 31. The nozzle 29 is gripped in a two-part nozzle support 32 extending from a support 33. The rear end of this support is clamped upon a bracket 34 having arms 35 travelling on a vertically extending rod 36 secured on the side of the casing. Mounted in suitable journals 37, and parallel with the rod 36, I provide a screw 38 which is threaded through a nut portion 39 on the support 33 and at its top

is provided with a bevel gear 40 meshing with a second bevel gear 41 mounted in a journal secured on the side of the casing. This second bevel gear 41 is provided with a spur adapted to be driven by a chain 42 so that as the same operates the gear 41 the screw 38 will be rotated to move the sand blast nozzle vertically in either direction, depending upon the direction in which the screw is rotated.

The chain 42 is driven by a sprocket wheel 43 mounted on a shaft 44 journalled in a supporting bracket 45 secured in the side of the frame, and this shaft is provided with a gear 46 meshing with the driving pinion 47 secured on the shaft of a driving motor 48. A drum 49 is mounted on the shaft 44 and this drum has passing over it an endless driving rope 50, the rope being wound a few times around the drum and provided with a loop 51 in which is mounted a pulley 52 supporting a tension weight 53. This driving rope 50 passes over a pair of idler pulleys 54, and through the side of the casing, and around the pulley 24, to rotate the turn table at the same time that the blast nozzle moves vertically in its slot.

For the purpose of removing the sand from the casing and using it again I provide an endless bucket elevator 56 the lower end of which passes over a pulley 57 mounted in the pit 9, and the upper end of which discharges into a chute 58 leading into a storage receptacle 59 from which extends a conduit 60 into the pressure device 31.

That portion of the elevator which travels opposite the blast nozzle 29 is protected against the sand blast by means of a shield 62 placed in front of the conveyor and supported in position by suitable brackets 63.

In order that the interior of the housing may be observed during the sand blasting operation I provide an observing opening 64, and in one corner of the housing an illuminator 65.

The operation of the device is readily understood. The casting 26 is placed on the trolley 25 which is run in through a door 66 on the tracks 23^a to the tracks on the turn table, and after the door has been closed the motor 48 is started. With the sand blast nozzle 29 at the limit of its travel, either up or down, as the nozzle moves vertically the turn table is automaticaly revolved and by the time the nozzle has reached the opposite limit of its travel a sand blast has been directed on all parts of the casting after which the sand blast may be cut off and the casting removed.

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

1. A sand blast apparatus comprising a casing, a horizontal rotatable support therein, tracks thereon, stationary tracks in said casing adapted to align with the tracks on said support, a car for supporting the article to be treated adapted to travel over said tracks to position on said support, a receptacle below said support for the projected sand, a sand blast nozzle extending into said casing and movable vertically with respect to said article to be treated, means for conveying sand from said receptacle to said nozzle, and means for simultaneously rotating said support and vertically moving said nozzle, substantially as specified.

2. A sand blast apparatus comprising a casing, a movable support therein for the article to be treated, a receptacle for the projected sand below said support; said casing having a slot therein, a sand storage receptacle, a vertical member, a traveling support on said vertical member, a sand blast nozzle carried by said traveling support and extending into the slot in said casing, a guide for said traveling support, a conveyor extending into the sand receptacle below said support, a chute extending from the outer end of said conveyor to said sand storage receptacle, means for conducting sand from said storage receptacle to said nozzle, and projecting the sand against said article, and a motor for moving said article support and said nozzle, substantially as specified.

3. A sand blast apparatus comprising a casing, a movable support therein for the article to be treated, a receptacle below said support for the projected sand; said casing having a slot therein, a sand storage receptacle, a vertical member, a traveling support on said vertical member, a sand blast nozzle carried by said traveling support and extending into the slot in said casing, a guide for said traveling support, a conveyor extending into the sand receptacle below said support, a chute extending from the upper end of said conveyor to said sand storage receptacle, an air pressure tank, a pipe connecting said air pressure tank with said sand storage receptacle, a pipe extending from said air pressure tank to said sand blast nozzle, and a motor for simultaneously operating said article support and said nozzle support, substantially as specified.

4. A sand blast apparatus comprising a casing, a rotatable support for the article to be treated, a pulley on said rotatable support; said casing having a slot therein, a receptacle for the projected sand below said support, a sand storage receptacle, means for conducting sand from said first named receptacle to said storage receptacle, a screw, a bevel gear thereon, a driven shaft, a sprocket wheel and a bevel gear on said shaft meshing with the bevel gear on said screw, a member working upon said screw, a sand blast nozzle mounted upon said member and extending into the slot in said casing, a

guide parallel to said screw slidably engaged by said member, an air tank, a pipe connecting said sand storage receptacle with said tank, a pipe extending from said tank to said nozzle, a motor, a pinion on the shaft of said motor, a second driven shaft, a gear thereon meshing with the pinion on said motor shaft, a sprocket wheel on said second driven shaft, a belt connecting said sprocket wheel with the sprocket wheel on said first-named driven shaft, a drum in said second driven shaft, a belt passing over said drum and the pulley on said rotatable support, and a tension device for said belt, substantially as specified.

5. A sand blast apparatus comprising a casing, a horizontal rotatable table therein for supporting the article to be treated, a receptacle for the projected sand below said table, a vertically arranged rotatable screw, a supporting member working on said screw, a sand blast nozzle mounted on said member and extending into said casing, a guide parallel to said screw slidably engaged by said member, means for conveying sand from said receptacle to said nozzle, and means for simultaneously rotating said table and said screw, substantially as specified.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

FRED VOLLMER.

Witnesses:
FRANK R. DALY,
NICHOLAS J. MALTER.