F. A. BELT.

SACK CLEANING MACHINE.

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1,039,082.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 1.

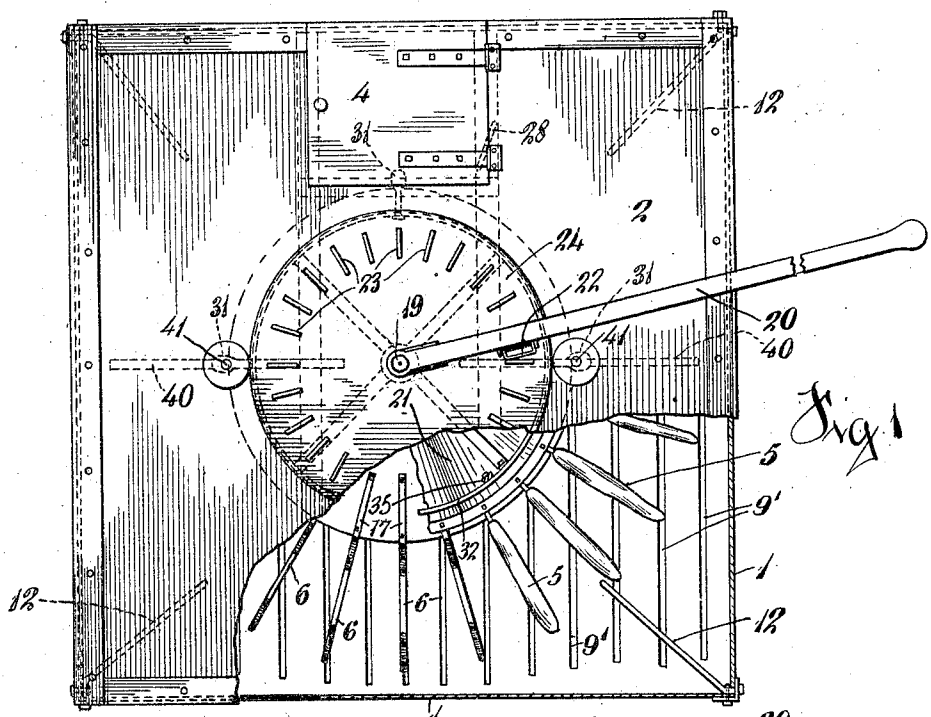

Fig. 1

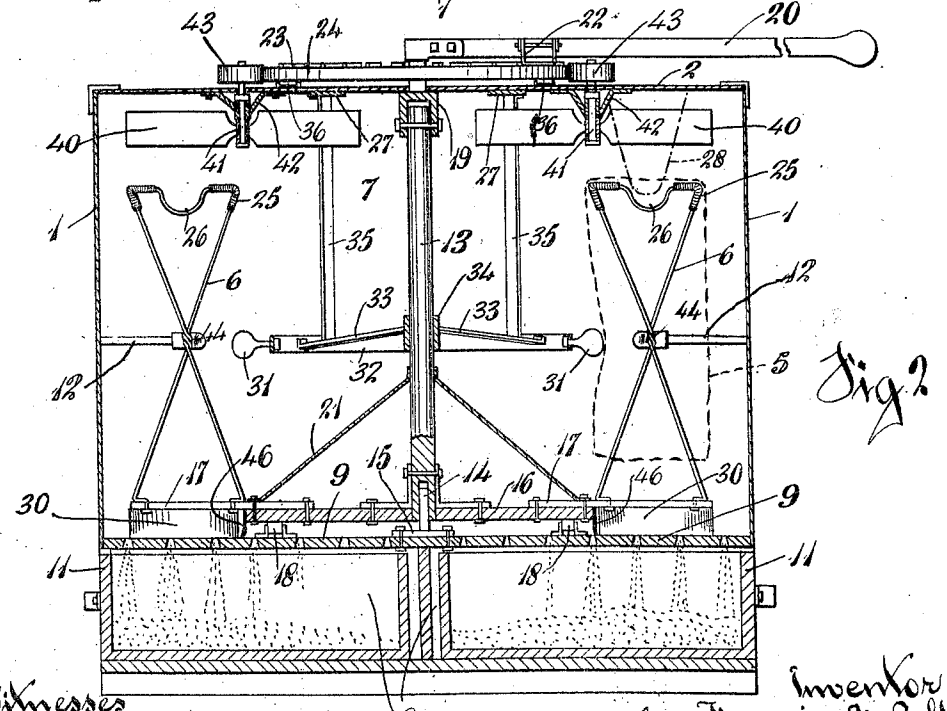

Fig. 2

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Fig. 3

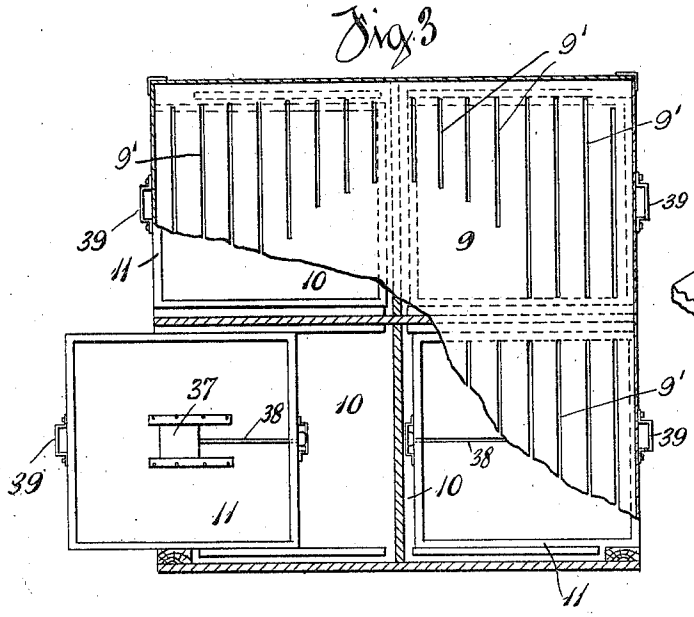


Fig. 5

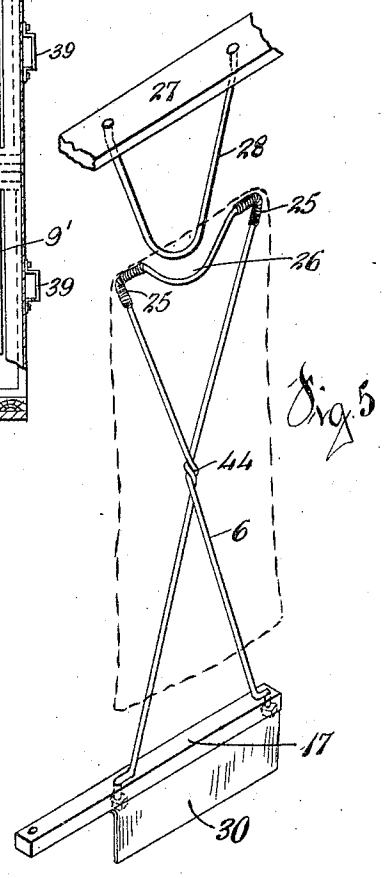
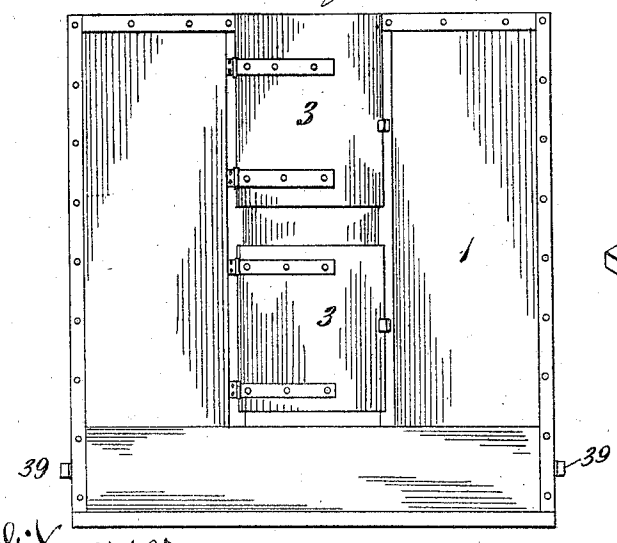


Fig. 4



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UNITED STATES PATENT OFFICE.

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SACK-CLEANING MACHINE.

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To all whom it may concern:

Be it known that I, FRANCIS A. BELT, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Sack-Cleaning Machines, of which the following is a specification.

My invention relates to sack cleaning machines for cleaning cement sacks.

The object of my invention is to provide an inexpensive, efficient and durable machine for thoroughly cleaning cement sacks and which collects the cement obtained therefrom so that it can readily be obtained for use.

Another object of my invention is to provide a mechanical means for cleaning cement sacks which can be easily operated by one man without the liability of his being affected by the injurious cement dust coming from the sacks.

Still another object of my invention is to provide a machine which will accommodate a large number of cement sacks at one time and thoroughly empty, and clean them and collect the dust coming therefrom, thereby greatly facilitating the operation of cleaning them and saving a great deal of time and expense.

My invention consists broadly in a machine for cleaning cement sacks comprising two chambers, a rotatable table adapted to carry a plurality of vertically disposed wire bracket supports, each of which is adapted to carry a cement sack, agitators or strikers adapted to engage said sacks, fans above said sacks, passages between said chambers, sweepers carried by said table adapted to sweep the cement dust into said passages, and operating means whereby said table is rotated.

My invention consists further in certain details of construction and combination of parts as will be hereinafter described in the following specification and pointed out in the appended claims.

In the drawings: Figure 1 is a plan view of a machine constructed in accordance with my invention, parts being broken away for the sake of clearness; Fig. 2 is a cross-sectional view taken through the center of the machine; Fig. 3 is a plan view of the floor to the upper chamber, part broken away to show the drawers thereunder inside the lower chamber; Fig. 4 is an outside elevation view showing the two doors to render the inner operating parts accessible; and Fig. 5 is a perspective detail view of one of the wire bracket supports for the sacks showing the relative position of the top agitator.

Referring more particularly to the drawings 1 represents the outside casing or sides of my improved machine and 2 the top thereof. One side is provided with doors 3 to allow easy access to the operating parts in the chamber 7. The top is also provided with a door 4 to allow the cement sacks 5 to be placed upon the wire supporting brackets 6 or removed therefrom. The upper door 3 on the side fits flush at the top with the door 4 on the top and the angle iron which fastens the top and sides together is cut away so that when both doors are open a large open space is provided both on top and at the side of the machine without any intervening frame work to interfere with one filling the machine.

A chamber 8 is provided under the floor 9 of the upper chamber and is preferably divided into four compartments 10 in which drawers 11 are adapted to slide. The floor 9 is provided with passages or slots 9^1 through which the cement dust is adapted to fall from the chamber 7.

The entire casing or shell of the machine may be made of sheet metal and portable to allow it to be moved about readily. The casing is provided with a plurality of agitators or bumpers 12, one extending horizontally from each corner of the casing and located in the chamber 7 about halfway between top and bottom as shown in Fig. 1 and in dotted lines in Fig. 2 to show the point at which they strike the sack.

Mounted in the chamber 7 and disposed vertically from the floor 9 is a shaft 13 which fits over a pin 14 on a plate 15 mounted on the floor 9. A disk or table 16 is fastened to the shaft at the bottom thereof which carries a plurality of radially extending supporting arms 17 each of which is adapted to support a wire sack support or bracket 6. This table 16 is adapted to rotate with the shaft 13 upon rollers 18 mounted on the floor 9. The shaft is preferably provided with an extension 19 coupled to it at the top which extends through the lid and has the operating handle 20 loosely fastened to its outer end. The operating ratchet wheel or gear wheel 21, as the case

may be, is tightly mounted on the extension 19 and thereby rotates the shaft therewith. The operating wheel 24 is adapted to rest upon rollers 36 mounted on the top 2 of the machine. The operating handle is provided with a pawl 22 pivoted thereto which is adapted to engage teeth or projections 23 on the wheel 24 and thereby drive the wheel 24 which in turn drives the shaft 13.

The wire bracket supports 6 are securely fastened to the supporting arms 17 of the rotatable table 16 and are preferably constructed of wire twisted at the center 44 as shown in Fig. 5. The top corners may be bound at 25 with wire on other suitable material to protect the sack when it is placed thereon. The wire bracket is formed with a recess 26 at the top thereof so that when a sack is placed thereon it will be free to be engaged or struck by the agitators 28 at that point.

Fastened to two support beams or straps 27 which extend across the top 2 of the casing, I provide two agitators or strikers 28 diametrically opposite each other consisting of wires as best shown in Fig. 5. The agitator or striker extends downwardly far enough to engage the sack where it extends across the recess 26 of the bracket 6.

A conical shaped shield 21 or fender is provided over the table 16 being fastened above the supporting arms 17 and fitting around the shaft 13 to prevent the dust from settling on the table and to cause it to fall on the floor 9 beyond the periphery of the table 16.

The table is provided with a flexible shield 46 made of leather, carpet or other suitable material at the outer edge thereof which is adapted to cover the space between the table and the floor and prevent dust from getting under the table and interfering with the rollers.

Two or more of the arms 17 which support the wire brackets 6 are provided with a rubber sweeper 30, which is fastened to the bottom thereof and which is adapted to sweep the dust into the passages or slots as the table is rotated.

The stationary strikers or agitators 12 are so mounted as to engage the outside edge of the sacks. I also provide strikers or agitators 31 to strike the inside of the sacks. These agitators 31 are mounted on a ring or hoop 32 provided with spokes 33 fastened to a hub 34 which fits around the shaft 13. The hoop or ring is held in its vertical position by means of rods 35 extending down from the cross straps 27. The strikers or agitators 31, 12 and 28 are arranged alternately so that all will not strike the sacks at the same time. Thus I have provided strikers or agitators for striking the sides and the inverted bottom of the sacks thereby assuring that the cement will be freed from all the seams and crevices in the sacks thereby thoroughly cleansing them.

Mounted above the wire support brackets I provide two fans 40 which are suitably mounted on a shank or shaft 41 which is mounted in a bracket 42 fastened to the top 2 of the machine. The shaft 41 is provided at the upper end with a pinion wheel or gear 43 tightly mounted thereon which is adapted to be driven by frictional engagement with the drive wheel 24. The purpose of these fans is to assist in collecting the cement by settling the cement dust on the floor so that it can be brushed through the slots in the floor by the sweeper and thereby be deposited in the lower chamber. The fans are adapted to generate a current of air and thereby direct the cement dust to the floor and also prevent the dust from escaping from the chamber when the top door is opened.

The fans 40 greatly facilitate the rapidity of the machine's operation by quickly clearing the atmosphere of the upper chamber of the dense cement dust when the sacks are being cleaned, and which would require a comparatively long time to settle without their use. By using the fans the operator can collect the cleaned sacks immediately without liability of inhaling the injurious cement dust as soon as he opens the door. The pinion wheels 43 together with the drive wheel 24 may be regulated in size to drive the shaft 41 the proper speed.

The operation of the device is as follows: The doors are opened and the cement sacks are placed upon the wire supports 6. When the sacks are all placed upon the supports by drawing the mouth of the sack down over said support, the doors are closed and the handle then operates the rotating table carrying the sacks and the sacks engage the agitators or strikers. This loosens all the cement which happens to be in the sacks and allows it to fall upon the floor 9. The cement dust is assisted to the bottom of the machine by the fans which do not stir the air enough to raise that dust which has settled on the floor. These fans are of course properly regulated to cause just enough air motion to settle the dust in the air. The dust as it settles on the floor 9 is swept over the passages 9' by the sweepers 30 through which passages it falls to the drawers 11. The drawers are provided for the easy handling of the cement, and may be provided with a slide or valve 37 having a handle 38 for letting the cement out into a sack or other receptacle and emptying the drawer. The drawers are suitably guided in the lower chamber so as to slide readily and are provided with the handles 39 on the outside.

Many modifications of my invention might be made without departing from its spirit and scope and I do not wish to be confined to the exact details shown.

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

1. A device of the character described having an upper and lower chamber separated by a floor having passages therethrough, a circular rotatable table in said upper chamber, supporting arms extending radially from the periphery of said table, a wire support bracket fastened to each supporting arm, and adapted to carry sacks, stationary agitators extending into the path of the sacks, a sweeper on the bottom of one of said supporting arms adapted to brush over said passages in the floor of said upper chamber, a drawer in the lower chamber and operating mechanism for rotating the table.

2. In a device of the character described, a table rotatably mounted, a series of wire bracket supports thereon each adapted to carry a sack, rotating means therefor, fans above the bracket supports, agitators adapted to strike sacks when they are placed on said bracket supports and the table rotated and a chamber adapted to receive the contents of the sacks.

3. In a device of the character described, the combination with a rotatable table having operating means, of a series of wire bracket supports mounted thereon and adapted to carry sacks, a chamber underneath said table and separated therefrom by means of a slotted floor, agitators adapted to engage the sacks when the table is rotated, and a drawer in said chamber adapted to receive the contents of said sacks.

4. In a device of the character described, a casing, a table rotatably mounted therein, a series of supports thereon each adapted to carry a sack, rotating means for said table, agitators for said sacks, and a chamber adapted to receive the contents of said sacks.

5. In a device of the character described the combination with a rotatable table, of a series of wire bracket supports arranged radially thereon each adapted to carry a sack, means for agitating the sacks, fans above said supports operated in connection with said table, a slotted floor under said table and a chamber under said table adapted to receive the contents of the sacks through the said slotted floor, substantially as set forth.

6. In combination an outer casing, doors in the sides and top thereof, said casing comprising an upper and a lower chamber separated by a slotted floor, a table rotatably mounted in the upper chamber, sweepers under said table brushing on said slotted floor, vertical wire bracket supports mounted on the top of said table and adapted to carry sacks, fans above said bracket supports, drawers in the lower chamber adapted to receive the contents of said sacks through the slotted floor and operating means whereby said fans and table are rotated, substantially as and for the purposes set forth.

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Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."