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2,351,198

MACHINE FOR CLEANING FUR

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2 Sheets-Sheet 1

Fig. 2

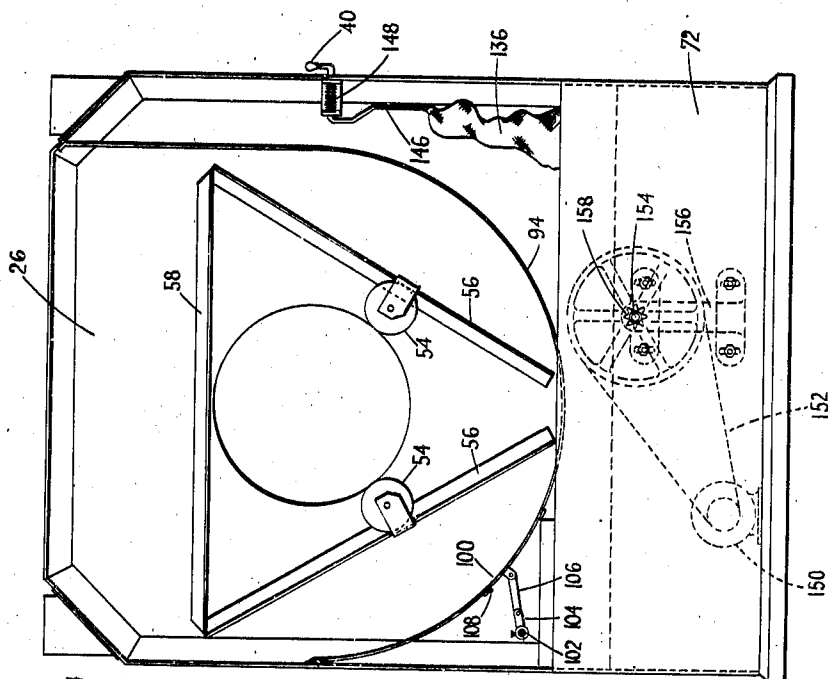
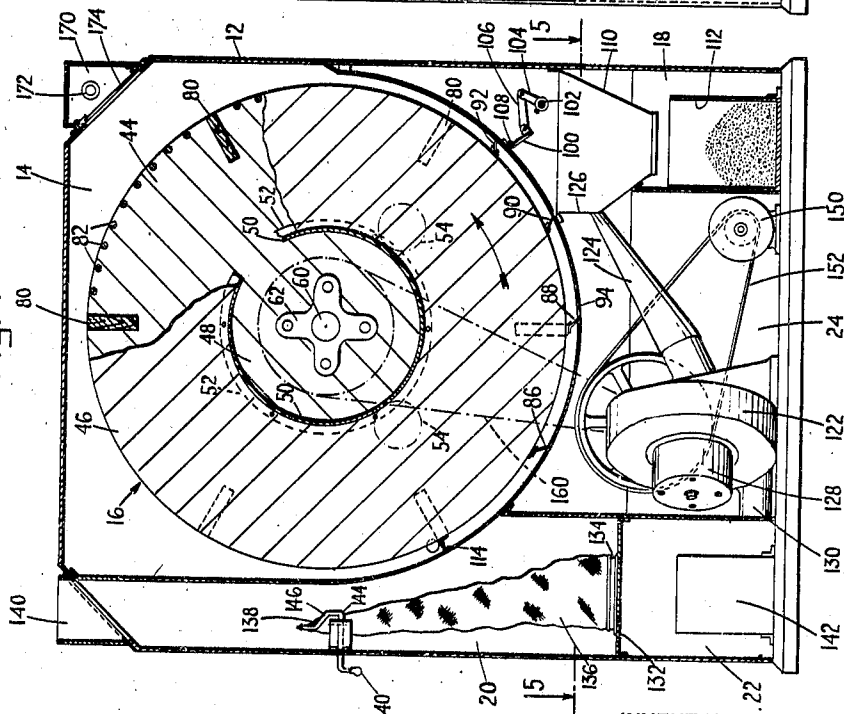


Fig. 1



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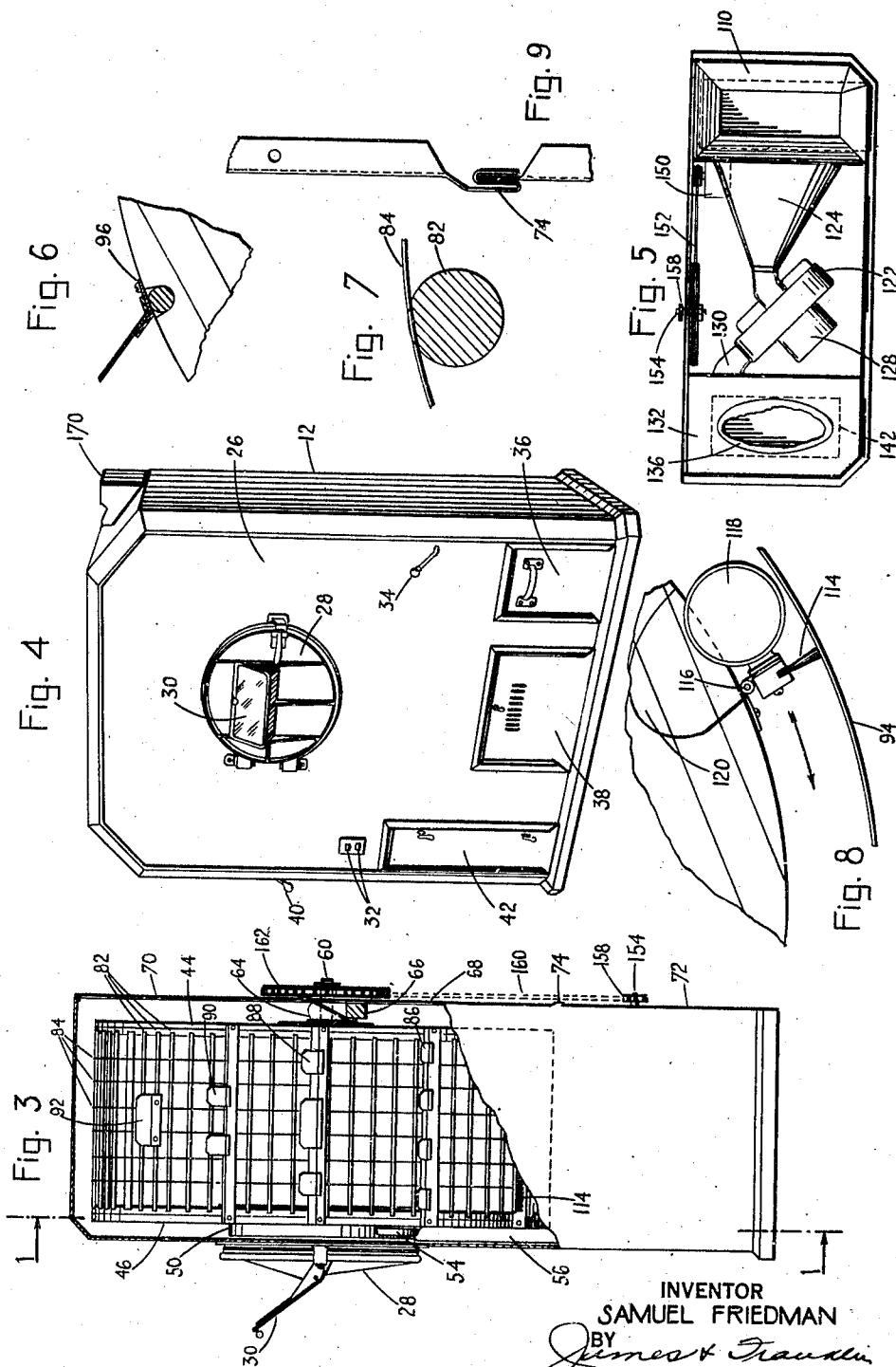
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MACHINE FOR CLEANING FUR

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8 Claims. (Cl. 15—12)

This invention relates to machinery for cleaning fur.

The primary object of my invention is to generally improve fur cleaning machinery, particularly of the type using a single tumbler for both "drumming" and "caging."

More specific objects of my invention are to thoroughly rid the tumbler of all sawdust when caging the fur; to provide a brush for brushing the sawdust out of the tumbler compartment; to mount said brush yieldably to prevent packing of sawdust by the brush during drumming; and to suitably space and distribute the blades on the tumbler to prevent packing of the sawdust by the blades.

Still another object of the invention is to provide the peripheral surface of the tumbler with means to exert a desired amount of friction and something akin to a "washboard effect" on the fur, this being most simply done by the use of wood dowels extending in axial direction around the tumbler and forming a direct part of the cage-like periphery of the tumbler. Still another object is to provide a casing for the machine which is divided into a plurality of mutually sealed compartments arranged in a most convenient way for relative disposition and accessibility to the parts of the machine.

To the accomplishment of the foregoing, and such other objects as will hereinafter appear, my invention consists in the fur cleaning elements and their relation one to the other, as hereinafter are more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by drawings, in which:

Fig. 1 is a vertical section taken through the machine immediately behind the front wall of the machine, as is indicated by the line 1—1 in Fig. 3;

Fig. 2 is a rear elevation of the machine with a part of the back wall of the casing and the tumbler removed;

Fig. 3 is a partially sectioned side elevation of the machine;

Fig. 4 is a perspective view of the machine;

Fig. 5 is a horizontal section taken in the plane of the line 5—5 of Fig. 1;

Figs. 6 and 7 are fragmentary sections through the periphery of the tumbler and illustrate details of the construction;

Fig. 8 is an end elevation of the brush carried by the tumbler, drawn to enlarged scale, and

Fig. 9 is explanatory of the method of assembly of the parts of the back plate of the machine.

Referring to the drawings, and more particularly to Fig. 1, the fur cleaning machine comprises a casing 12 divided by suitable partitions into a tumbler compartment 14 carrying a tumbler 16, a sawdust-receiving compartment 18, air-filtering and dust-collecting compartments 20 and 22, and a motor compartment 24. The latter is centrally located at the base of the machine.

Referring now to Fig. 4, the front wall 26 of the machine has a main door 28, preferably provided with a subordinate door or vent 30 which may be opened during caging. This is preferably made transparent so that the contents of the tumbler may be observed when drumming. Appropriate control switches are provided at 32 so that the tumbler motor may be run without the fan during drumming, and both motors operated during caging. A handle 34 controls a door between the tumbler compartment and the sawdust-receiving compartment. Access to the sawdust for removal and reuse is obtained at 36 which may, if desired, be the front wall of the sawdust-collecting drawer. The motors are accessible for lubrication and servicing by means of a suitable door 38. The air-filtering compartment need not be opened to shake dust from the dust-bag downwardly into the dust-collecting drawer, for this may be done by means of a handle 40 at the side of the machine. Door 42 may be opened to expose this compartment of the machine, and for removal and emptying of the dust drawer.

Considering the arrangement in greater detail, and referring now to Figs. 1 and 3, the tumbler 16 comprises a circular rear wall 44, and a circular front wall 46, the latter having a large opening 48 therein defined by a ring-like or cylindrical bearing 50. This is flanged at its inner end at 52 and secured to the front wall 46 of the drum. It is rotatably supported on wheels 54. These are best shown in Fig. 2 in which it will be seen that the wheels 54 are carried by angle irons 56 connected at 58 and all mounted on the inside of the front wall 26 of the casing.

The back wall 44 of the drum carries a rearwardly projecting shaft or spindle 60 which is rigidly connected to a plate 62 (Fig. 1) fixed on the drum wall. In Fig. 3 it will be seen that the shaft 60 is rotatably supported in a bearing 64 carried on a member 66 secured to the rear plate 68 of the casing. It may be pointed out that the rear wall of the casing is made up of three plates 68, 70 and 72, these being joined in edge to edge relation by joints, such as that illustrated at 74 in Fig. 9. The tumbler may be

removed from the machine by removing the rear plates 68 and 70, as is shown in Fig. 2.

The front and rear walls 46 and 44 of the tumbler are connected together and spaced apart by a series of spacer members 80 (Fig. 1). The periphery of the drum is cage-like, the mesh being, say, two inches. It is made up of a series of wood dowels 82 extending in axial direction between the front and rear walls, and a series of binding wires 84 extending peripherally around the dowels 82. Referring to Fig. 7, it will be seen that dowel 82 is recessed slightly to receive wire 84, thus guarding against sideward displacement of the wires.

In Figs. 1 and 3 it will be seen that the periphery of the tumbler is provided with a series of blades 86, 88, 90 and 92. These cooperate with a curved plate 94 disposed beneath the tumbler and carry the sawdust around during drumming, so that the sawdust falls through the upper part of the tumbler and through the fur, and again reaches the plate 94 to be again scooped up. In Fig. 3, it will be seen that the blades 96 through 92 are short in length and are relatively different in length and location. This staggered relation prevents excessive packing of the sawdust as it is carried around plate 94, and greatly reduces the amount of power needed to drive the machine.

The construction of the blades is illustrated in Fig. 6, it being seen that each blade is carried by a channel member 96 extending between the end walls of the tumbler.

After the drumming operation the sawdust may be removed by opening a long, narrow door 100 (Fig. 1) located at one side of plate 94. This door is opened by turning handle 34 (Fig. 4) connected to shaft 102 (Fig. 1) carrying arm 104 connected by link 106 to door 100, the latter being hinged at 108. The relative position of the parts when the door 100 is closed is shown in Fig. 2. When the door 100 is opened, as shown in Fig. 1, the blades move the sawdust through the open door and it falls downwardly into a funnel or hopper 110, the open lower end of which is disposed over a sawdust-collecting box or drawer 112. In order to insure complete and thorough removal of the sawdust from plate 94, preparatory to caging, the tumbler is provided with a brush 114, best shown in Fig. 8. This brush extends all the way from one side of the tumbler to the other and is pivotally mounted at 116, so that it may be yieldably urged against plate 94, as by means of a gravity operated weight 118. Weight 118 is receivable into a recess 120 formed on the outside of the drum wall. A weight of this character may be provided at either or both ends of the brush. The main reason for the yieldable mounting of the brush is to prevent excessive packing of the sawdust by the brush during the drumming operation when all of the sawdust is being handled. At this time the brush readily folds rearwardly and creates no excessive resistance to turning of the tumbler. When, however, the door 100 is opened and most of the sawdust has been discharged into the sawdust box, the brush comes into full effect in thoroughly sweeping out all remaining sawdust particles from the tumbler compartment.

After the sawdust has been transferred from the tumbler compartment to the sawdust-receiving compartment the fan or blower 122 may be started for the caging operation. At the same time the vent 30 on main door 28 is opened. Thus there is a direct suction of air through the

tumbling fur, and dust, loose hair, and dirt is carried with the stream of air through the open door 100 to the upper part of the sawdust-receiving compartment. The air is then sucked through a suction conduit 124, best shown in Figs. 1 and 5, the entrant end of this compartment being preferably connected to the vertical wall 126 of hopper 110, so that there will be little or no tendency for sawdust to fall into conduit 124 when the sawdust is being transferred to drawer 112. At the same time the connection of conduit 124 to the sawdust compartment is at such a high and offset point that there is no danger of sawdust being drawn upwardly from box 112.

Fan 122 is driven by a motor 128, and the fan and motor combination may be of conventional character. However, it is preferably mounted at an angle, as shown at Fig. 5, so that neither the suction conduit 124 or the discharge conduit 130 will include any sharp bends. The discharge conduit 130 leads directly into the compartment 22.

The air-filtering and dust-collecting compartment comprises the two parts 20 and 22 previously referred to, these parts being divided by a horizontal partition 132, which is largely cut away and provided with a ring 134, to which is connected the open lower end of a dustbag 136. The upper end 138 of bag 136 is closed. A flue 140 leads from the upper end of compartment 20, and it will be observed that the tumbler is offset somewhat from the center of the casing in order to permit compartment 20 to extend all the way to the top of the casing.

It will be understood that the dust-laden air flows into compartment 22 and then upwardly into bag 136. The filtered air flows through the bag and out of flue 140. Because of the inverted position of the bag, there is a natural tendency for the collected dirt to fall downwardly where it is caught in box or drawer 142. However, it is preferable, at intervals, to shake the bag 136 in order to rid it of most of the dirt. This may be conveniently done from the outside of the machine by oscillating a handle 40, the shaft 144 of which oscillates an arm 146 connected to the upper end 138 of bag 136. In Fig. 2, the arm 146 is shown in down position, and bag 136 is collapsed. A torsion spring 148 normally turns the arm 146 to uppermost position, thereby stretching out the bag 136 to its full extent. By oscillating handle 40 several times the bag 136 is effectively shaken, and substantially all of the dirt is discharged therefrom into the box 142.

The tumbler is driven by a suitable motor 150, best shown in Figs. 1 and 5. This is connected through appropriate pulleys and a belt 152 to a shaft 154 which projects through the rear wall of the casing, it being carried by a bearing plate 156, best shown in Fig. 2. The outside end of shaft 154 carries a sprocket pinion 158 (Figs. 2, 3 and 5), and this drives a chain 160 (Figs. 1 and 3), which in turn meshes with the sprocket gear 162 carried at the outer end of tumbler shaft 60, previously referred to.

The corner of the casing opposite the flue 140 may be provided with a dummy flue or closed part 170 (Fig. 1) for ornamentation and symmetry in appearance. A lamp 172 is located at this point, and is protected from any dust circulating in the tumbler compartment by a suitable glass 174. Lamp 172 illuminates the interior of the tumbler compartment, so that the action of the fur in the tumbler may be better seen when looking through the front door or vent of the casing.

It is believed that the construction and operation, as well as the many advantages of my improved fur cleaning machine, will be apparent from the foregoing detailed description thereof. The fur is cleaned in two stages; first, a drumming stage in which it is repeatedly tumbled in a closed compartment carrying a charge of sawdust saturated with appropriate chemicals, or cleaning materials. Then the sawdust is transferred from the tumbling compartment to a sawdust-receiving compartment where it is available for reuse. To then cage the fur it is merely necessary to open the vent at the front of the machine and to start the fan motor.

The tumbling compartment is readily accessible by means of the large front door for loading and unloading the tumbler with fur. The sawdust compartment is readily accessible for removal and reuse of the sawdust. The dust-collecting compartment is readily accessible for removal of the collected dirt. The dustbag or filter is readily cleared from time to time without opening the casing of the machine at all, there being an outside handle for this purpose. The motors are fully accessible for servicing and are protected against dirt because they are located in a sealed motor compartment fully separated from the other compartments of the machine. For more extensive servicing of the machine the entire back wall of the casing may be removed in sections.

It will be apparent that while I have shown and described my invention in a preferred form, many changes and modifications may be made in the structure disclosed without departing from the spirit of the invention, as sought to be defined in the following claims.

I claim:

1. A fur cleaning machine comprising a rotatably mounted cage-like tumbler, a curved plate disposed therebeneath and spaced slightly therefrom, blades on the outside of said tumbler adapted to scoop sawdust from said plate so as to circulate the same through the tumbler for "drumming," said blades being comparatively short in axial direction and being located in staggered relation to one another in order to avoid excessive packing of the sawdust on the plate.

2. A fur cleaning machine comprising a rotatably mounted cage-like tumbler, a curved plate disposed therebeneath and spaced slightly therefrom, blades on the outside of said tumbler adapted to scoop sawdust from said plate so as to circulate the same through the tumbler for "drumming," said blades being comparatively short in axial direction and being located in staggered relation to one another in order to avoid excessive packing of the sawdust on the plate, an openable door on said plate at a point substantially offset sidewardly from the vertical plane passing through the axis of the tumbler, and a receptacle to receive the sawdust discharged through said door.

3. A fur cleaning machine comprising a rotatably mounted cage-like tumbler, a curved plate disposed therebeneath and spaced slightly therefrom, blades on the outside of said tumbler adapted to scoop sawdust from said plate so as to circulate the same through the tumbler for "drumming," an openable door on said plate at a point substantially offset sidewardly from the vertical plane passing through the axis of the tumbler, a brush on the outside of said tumbler for sweeping all of the sawdust through the door preparatory to "caging," and means pivotally

yieldably mounting said brush to avoid excessive packing of the sawdust.

4. A fur cleaning machine comprising a rotatably mounted cage-like tumbler, a curved plate disposed therebeneath and spaced slightly therefrom, blades on the outside of said tumbler adapted to scoop sawdust from said plate so as to circulate the same through the tumbler for "drumming," said blades being comparatively short in axial direction and being located in staggered relation to one another in order to avoid excessive packing of the sawdust on the plate during "drumming," an openable door on said plate at a point substantially offset sidewardly from the vertical plane passing through the axis of the tumbler, a brush on the outside of said tumbler for sweeping all of the sawdust through the door preparatory to "caging," and means pivotally yieldably mounting said brush to avoid excessive packing of the sawdust by the brush during "drumming."

5. A fur cleaning machine comprising a casing with suitable partitions dividing same into four main compartments sealed from one another, one of said compartments receiving a rotatable tumbler, another compartment including a hopper located generally below the tumbler compartment and leading downwardly to a sawdust receptacle, an air filtering and dust collecting compartment, and a motor compartment, said motor compartment containing a driving motor for rotating the drum and a fan and fan motor, the intake side of the fan being connected to the aforesaid sawdust hopper and the discharge side of the fan being connected to the air filtering and dust collecting compartment.

6. A fur cleaning machine comprising a casing with suitable partitions dividing same into four main compartments sealed from one another, one of said compartments receiving a rotatable tumbler and having a curved bottom plate for collecting sawdust beneath the tumbler, said tumbler having means to engage and move sawdust collected between said tumbler and said bottom plate, another compartment being located at one side of said casing beneath said plate and including a hopper leading downwardly to a sawdust receptacle, a door on said sawdust collecting plate above said hopper, an air filtering and dust collecting compartment at the opposite side of said casing, and a motor compartment at the bottom of said casing in the center region thereof, said motor compartment containing a driving motor for rotating the drum and a fan and fan motor, the intake side of the fan being connected to the aforesaid sawdust hopper and the discharge side of the fan being connected to the air filtering and dust collecting compartment.

7. A fur cleaning machine comprising a casing with suitable partitions dividing same into four main compartments sealed from one another, one of said compartments receiving a rotatable tumbler and having a curved bottom plate for collecting sawdust beneath the tumbler, said tumbler having means to engage and move sawdust collected between said tumbler and said bottom plate, another compartment being located at one side of said casing beneath said plate and including a hopper leading downwardly to a sawdust receptacle, a door on said sawdust collecting plate above said hopper, a vertically elongated air-filtering and dust-collecting compartment extending from top to bottom at the opposite side of said casing, and a motor compartment at the bottom of said casing in the center region

thereof, said motor compartment containing a driving motor for rotating the drum and a fan and fan motor, the intake side of the fan being connected to the aforesaid sawdust hopper and the discharge side of the fan being connected to the air-filtering and dust-collecting compartment.

8. A fur cleaning machine comprising a rotatably mounted cage-like tumbler, a curved plate disposed therebeneath and spaced slightly therefrom, blades on the outside of said tumbler

adapted to scoop sawdust from said plate so as to circulate the same through the tumbler for "drumming," said blades being comparatively short in axial direction and being located in staggered relation to one another in order to avoid excessive packing of the sawdust on the plate, a downwardly openable door on said plate, and a receptacle beneath said door to receive the sawdust discharged through said door.

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