April 10, 1951 H. L. LIGHT 2,547,952

MACHINE FOR REMOVING DUST FROM FABRICS

Filed May 26, 1945

Fig. 1

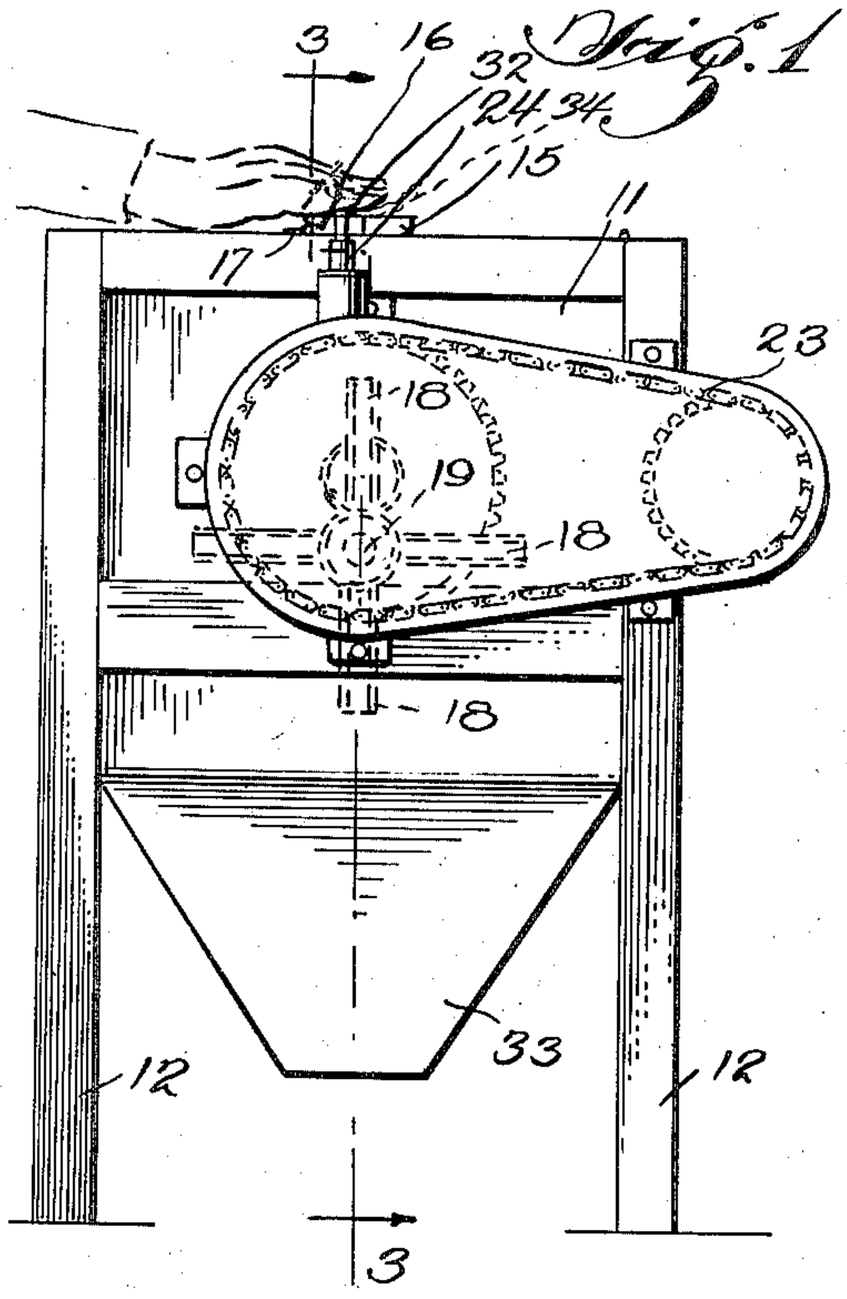
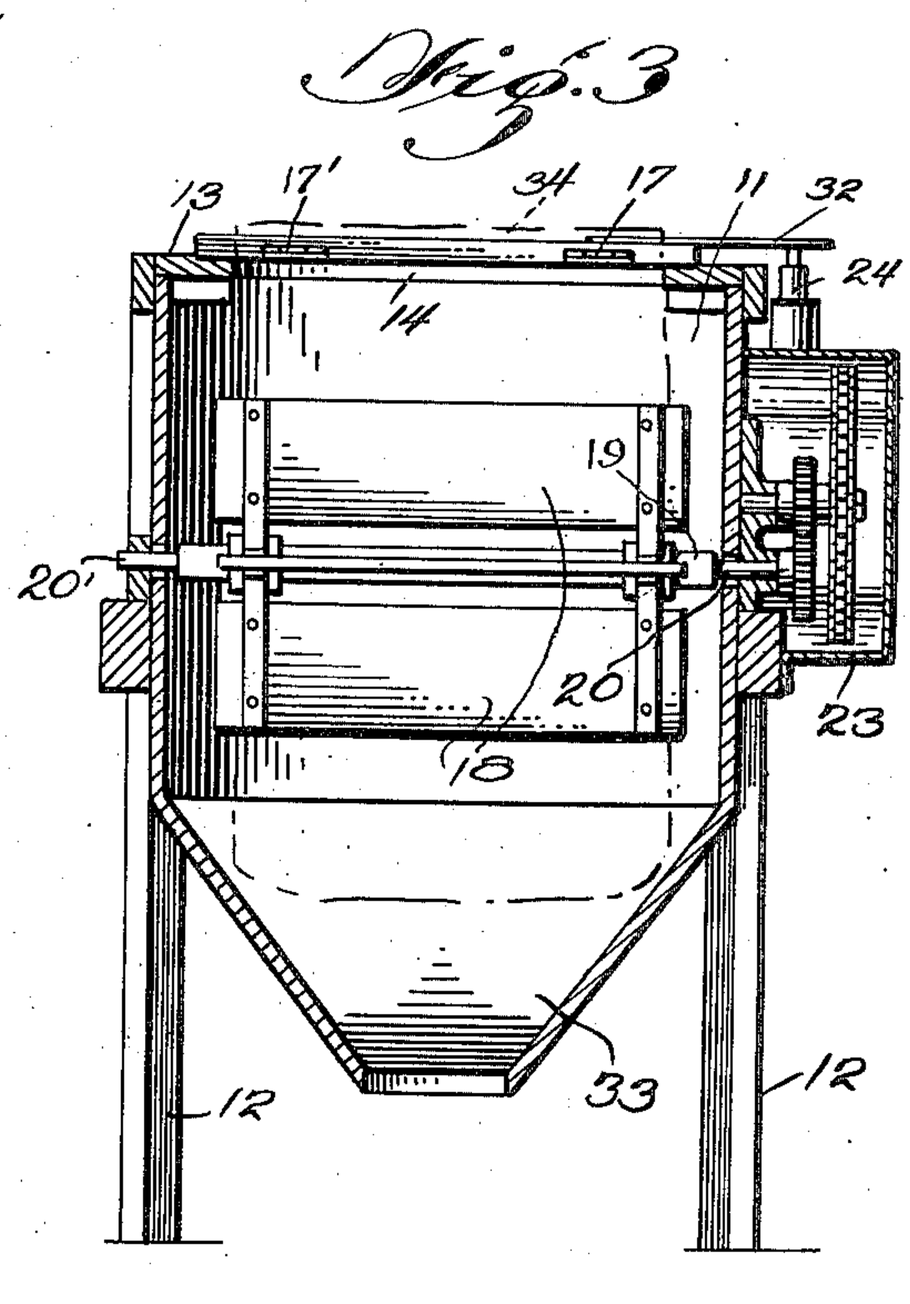


Fig. 3



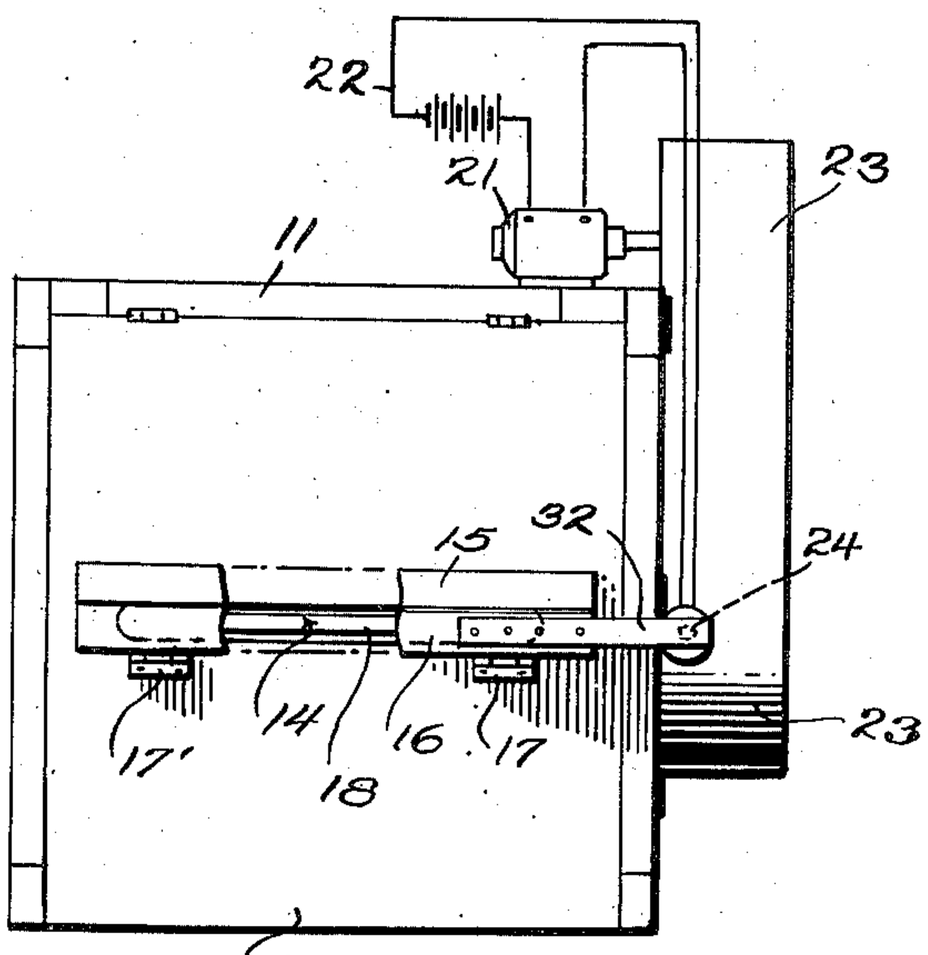
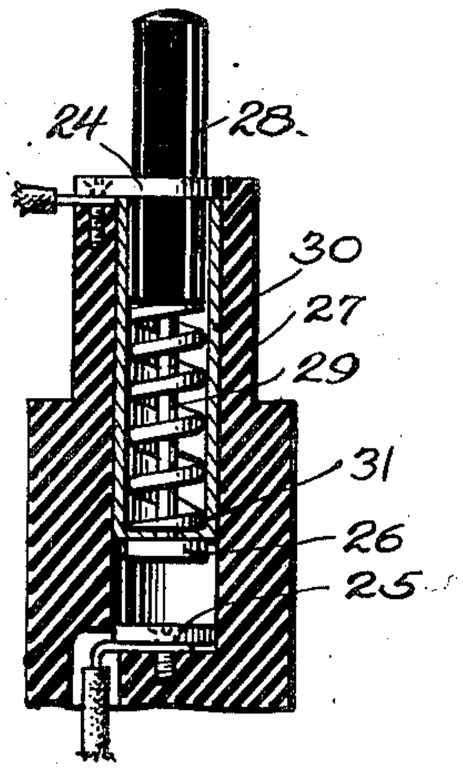


Fig. 2

Fig. 4



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MACHINE FOR REMOVING DUST FROM FABRICS

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2 Claims. (Cl. 15—89)

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The invention described herein, if patented may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to a machine for removing dust from fabrics, and more particularly to a machine for removing flour dust from bags by means of a rotating bag beater provided with an automatic starting and stopping device.

Before a flour bag can be reused, the dust adhering to the fabric must be removed. If the dust removal is carried out by beating the bag manually, clouds of flour dust are raised which settle on the operator and on all objects in the room, including the bag; this is injurious to the health of the operator, necessitates tedious cleanups, and prevents a thorough removal of the flour from the bag. Several devices for mechanical removal of the dust from a bag have been proposed, but have not met with success because of their complicated construction and slow operation speed.

According to the present invention, the bag-beating mechanism consists of a box in which is mounted a rotating paddle driven by an electric motor. The bag is inserted in the box through a slot in the lid of the box and clamped into position by a hinged bar paralleling the slot, which the operator swings down and presses down on the bag, thereby effectively closing the slot. When the bar is first swung down and pressed down, an extension on said bar actuates a plunger switch which in turn starts the electric motor driving the set of paddles. When the operator releases his manual pressure on the bar, the plunger switch automatically opens the current, thereby stopping the paddles, and the bag is withdrawn from the apparatus.

An object of this invention is a machine which will quickly remove dust from flour bag or other flexible material.

Another object is a bag dusting machine with a beating mechanism which starts automatically when the bag is clamped in the machine, and stops when the bag is withdrawn.

A further object of this invention is a means for cleaning a flour bag or other dust covered flexible material, without exposing the operator and the working place to clouds of dust.

It is an additional object of the present invention to speed the work of bag dusting.

It is another object of the invention to provide a bag dusting machine which, with the exception of an electric motor and switch therefor, can be inexpensively and sturdily constructed from scrap material.

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Still other objects of the invention will readily be apparent from the detailed description of a preferred form of the invention, as illustrated in the appended drawings.

While the principal use of a machine in accordance with my invention consists in the removal of dust from bags, particularly flour dust from flour bags, the uses to which the machine may be put are not limited thereto, but extend to the entire field of removing dust from flexible fabrics.

The appended drawings illustrate a preferred embodiment of my invention.

Figure 1 is a side elevation of a dust removing machine in accordance with my invention.

Figure 2 is a top view corresponding to Figure 1.

Figure 3 is a section through the embodiment shown in Figures 1 and 2, along lines 3—3 of Figure 1.

Figure 4 shows, in longitudinal section, a preferred form of a plunger switch, mounted on the dust removing machine illustrated in Figures 1 to 3.

In the following detailed description of the drawings, 11 denotes a box supported by legs 12 and closed by hinged lid 13. A long slot 14 is cut in lid 13 at or near the center line of the latter. Strip 15 of at least the same length as slot 14 is rigidly fastened to lid 13 parallel to and immediately adjacent slot 14. A bar 16, corresponding in length to strip 15, is secured to lid 13 by hinges 17, 17' in such a position that, when tilted down, it covers slot 14 and lies side to side with strip 15.

Inside box 11, paddles 18 or other fabric beating means are mounted on rotatable shaft 19 which rests in bearings 20, 20' at opposite sides of box 11. Electric motor 21, connected to circuit 22, drives shaft 19 through transmission and gear means in housing 23.

A preferred means for automatically starting and stopping the rotation of paddles 18 is an automatic switch 24 for closing and opening circuit 22. I prefer to use a switch of the plunger type which consists of a fixed lower terminal 25 and a movable upper terminal 26 inside a block of insulating material 27; upper terminal 26 is secured to plunger 28 by rod 29 which is surrounded by helical spring 30 resting on flange 31 above upper terminal 26. Spring 30 urges plunger 28 to protrude above block 27 and thus separates terminals 25 and 26, which causes circuit 22 to remain open. Switch 24 is mounted to a side wall of box 11 near one end of hinged bar 16. Bar 16 is provided with a rigid extension 32, such as a

rigid strip, protruding beyond the side wall of box 11. When bar 16 is lowered, its extension 32 depresses plunger 28, which compresses spring 30 and causes terminals 25 and 26 to come in contact with each other; this closes circuit 22 and starts electric motor 21 which in turn rotates shaft 19 and paddles 18. When bar 16 is raised, plunger 28 is released, and spring 30 urges terminals 25 and 26 apart, thereby opening circuit 22 and stopping motor 21.

To prevent accumulation of dust inside box 11 I prefer to have in place of its bottom an open hopper 33 below which a dust receptacle (not shown) is placed. In lieu of the open hopper 33 may be substituted a hopper closed by a trap door (not shown) which is periodically opened for the removal of accumulated dust.

In operation, the operator grasps bag 34 (or other piece of fabric) with both hands at one end and inserts about three-quarters of it into box 11 through slot 14. While stretching bag 34 to its full width, he closes bar 16 with the palms of both hands. This clamps the end of bag 34 in position between bar 16 and strip 15; at the same time, the extension 32 depresses plunger 28, which starts motor 21 and paddles 19. While the bag 34 is beaten by paddles 18, the operator retains his hold on the end of bag 34 and continues to press down on bar 16. After a short time (about ten seconds) the portion of bag 34 which has been inserted in box 11 has been thoroughly dusted. The operator thereupon removes bag 34 by pulling it up and out; this motion causes bar 16 to tilt upwardly, which automatically releases the pressure on plunger 28 and stops motor 21 and paddles 18. The operation is then repeated by inserting the other end of bag 34 in box 11. In the case of flour bags, where the flour dust accumulates on the inside of the bag, the bag is turned inside out prior to the beating operation.

When it is desired to clean paddles 18 and the inside of box 11, the entire lid 13 is raised for easy access.

It will be understood that the foregoing description of a preferred embodiment of my invention is in the nature of an illustration, and that other modifications and substitutions of equivalent parts without departing from the principle of my invention will readily occur to the expert. I therefore desire to limit the scope of my invention by the appended claims only.

I claim:

1. A machine for removing dust from a fabric, comprising a box, a movable lid being provided with a narrow elongated slot for the insertion of said fabric into said box, means rotatably mounted in said box for beating said fabric, an electric motor for rotating said beating means, a narrow elongated bar hinged to said lid adjacent said slot, said bar being at least as long as said slot for completely covering said slot to prevent escape of dust and for clamping said fabric in position for dust removal, a lateral extension on said bar, and a switch electrically connected with said motor, said switch being positioned in the line of travel of said extension; whereby said extension is swingable into operative engagement with said switch synchronously with the downward travel of said bar and said motor is automatically started when said bar is lowered into fabric-clamping position, and whereby said switch is released and said motor is automatically stopped when said bar is raised into fabric-releasing position.

2. A machine for removing dust from a fabric, comprising a box, a lid hinged to said box, said lid being provided with a narrow elongated slot for the insertion of said fabric into said box, means rotatably mounted in said box for beating said fabric, an electric motor for rotating said beating means, a narrow elongated bar hinged to said lid adjacent said slot, said bar being at least as long as said slot for completely covering said slot to prevent escape of dust and for clamping said fabric in position for dust removal, a lateral extension on said bar, and a switch electrically connected with said motor, said switch being positioned in the line of travel of said extension whereby said extension is swingable into operative engagement with said switch synchronously with the downward travel of said bar when said lid is in closed position and said motor is automatically started when said bar is lowered into fabric-clamping position, and whereby said switch is released and said motor is automatically stopped when said bar is raised into fabric-releasing position.

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