June 3, 1941. E. WITT 2,244,439

MOP CLEANER

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Fig. 1.

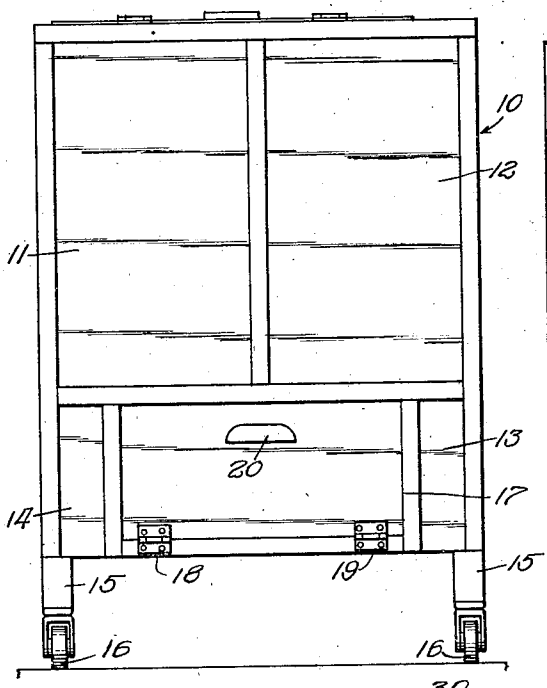


Fig. 2.

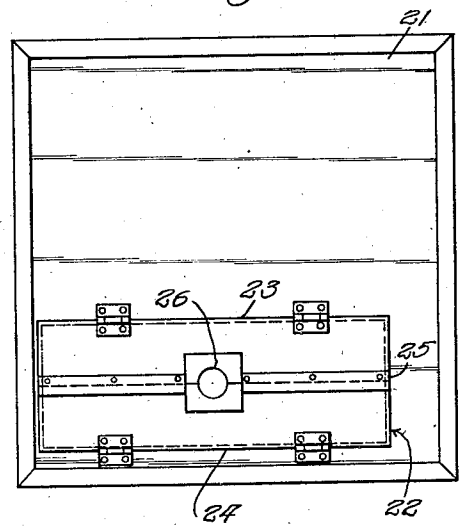


Fig. 6.

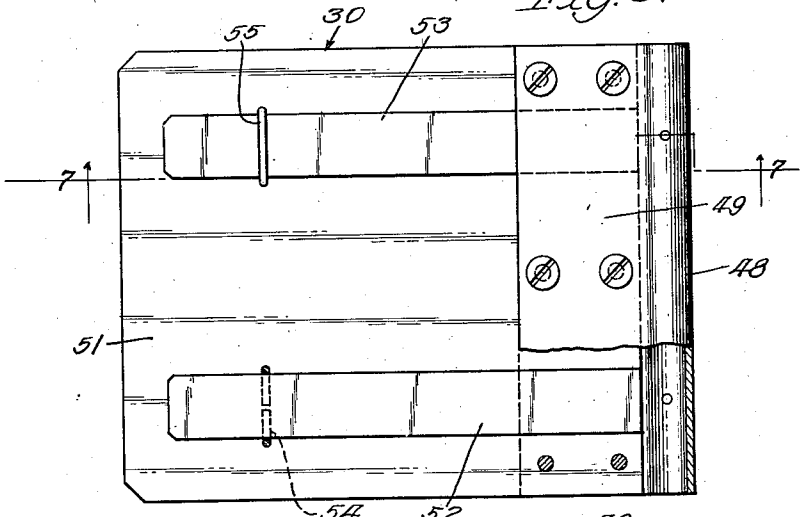
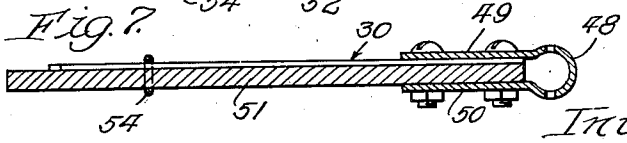


Fig. 7.



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Fig. 3.

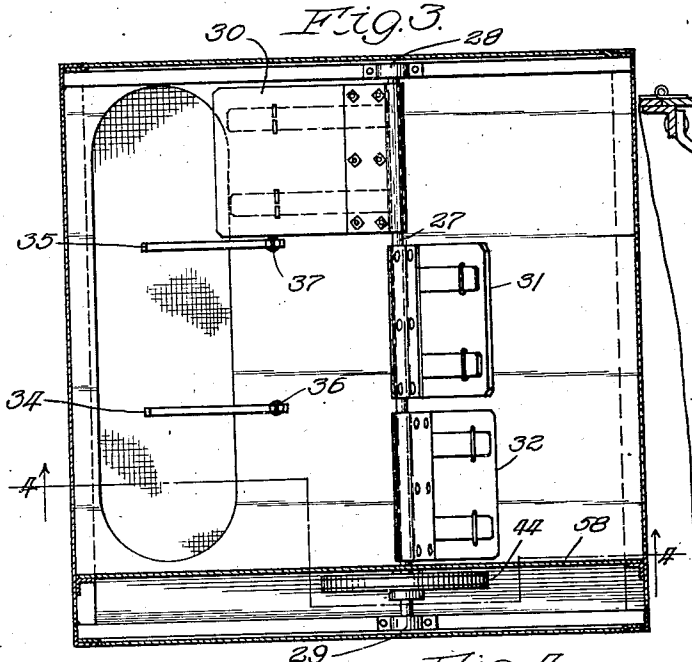


Fig. 5.

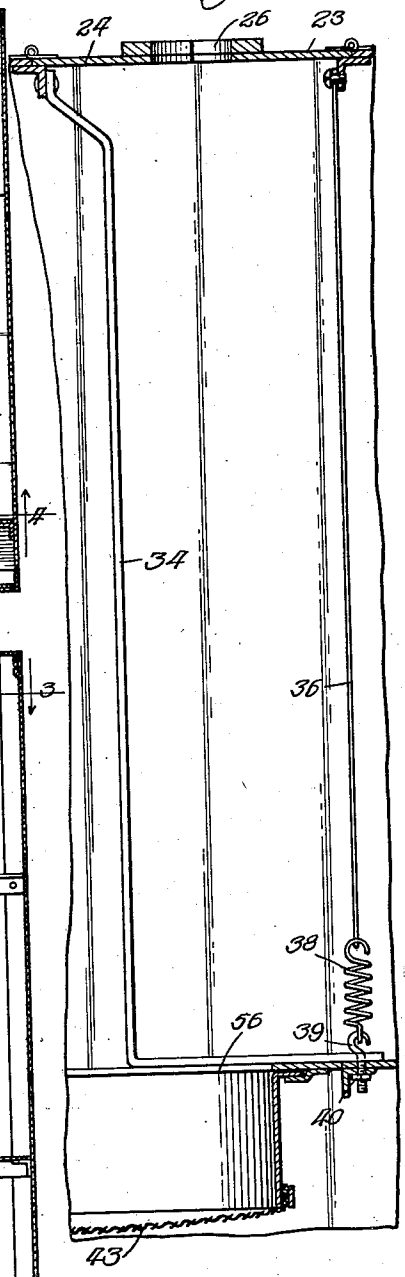
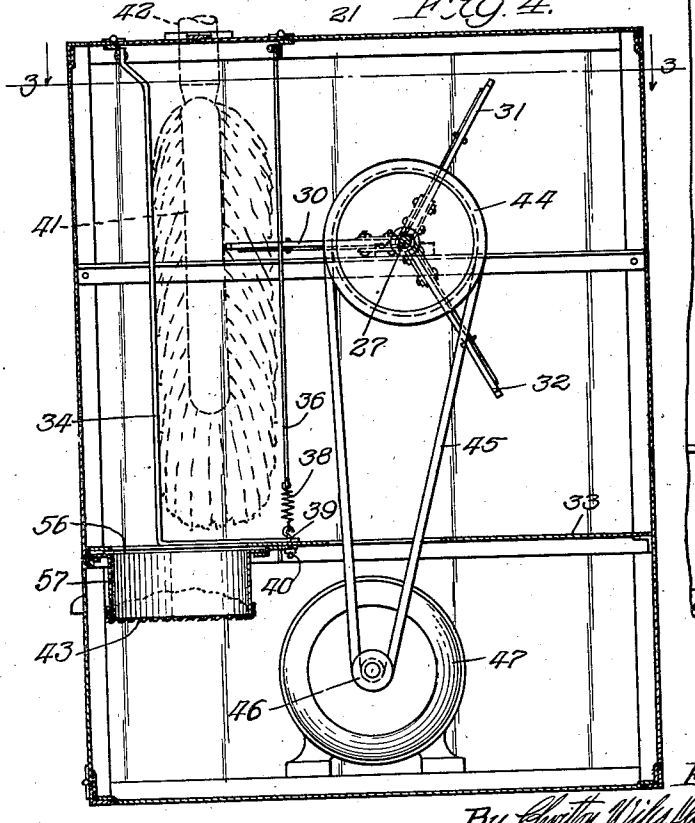


Fig. 4.



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UNITED STATES PATENT OFFICE

2,244,439

MOP CLEANER

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Application March 9, 1940, Serial No. 323,175

8 Claims. (Cl. 15—89)

This invention relates to a mop cleaner and more particularly to a cleaner for removing the dust collected by dust mops.

One object of the invention is to provide a simple structure in which dust may be efficiently removed from the mop without scattering or distributing the dust throughout the vicinity of the cleaning operation. Another object is to provide in a mop cleaner a gentle beating action for removing dust. A further object is to produce flexible resilient beating blades for removing the dust without injuring the mop. Yet another object is to provide a supporting structure for the blades whereby a proper resiliency is obtained for the gentle beating action desired. Still another object is to produce a motor-operated mop cleaner. Other objects and advantages will appear from the following specification and drawings, in which—

Fig. 1 is a side elevational view of the cleaner; Fig. 2 is a plan view; Fig. 3 is a sectional view taken along the line 3—3 of Fig. 4 and showing the cleaner with the top panel removed; Fig. 4 is a view taken along the line 4—4 of Fig. 3; Fig. 5 is a fragmentary detail view, partly in section, showing the guide members which receive the mop; Fig. 6 is a plan view, partly broken away, of one of the beating blades; and Fig. 7 is a view along the line 7—7 of Fig. 6.

One of the chief difficulties in a construction of a dust mop cleaner lies in attempting to provide efficient means for removing the dust from the mop without injuring the same. Structures have heretofore been provided in which movable flaps or blades within a closed casing serve to strike the mop and remove the dust therefrom. However, in such structures the action of the blades or flaps has been extremely harmful to the mop. In the case of mops provided with cotton strands or fabric such cleaners have been entirely useless, since the mop would withstand only one or two cleaning operations. On the other hand, structures in which the mop is placed within a casing and shaken are unsatisfactory because the mop is not properly cleaned.

In my improved structure a dust mop may be cleaned by placing it in the casing and subjecting it to the gentle beating action of resilient blades. Such action efficiently removes the dust from the mop without injury to the fabric thereof. At the same time a casing is provided which prevents the scattering or distribution of the dust throughout the vicinity of the cleaning operation.

In the specific embodiment of my invention described and shown herein, a casing 10 may be constructed of a number of panels 11, 12, 13 and 14 to form a container of any suitable size and shape. As shown, the casing is substantially rectangular. If desired, the casing may be equipped with legs 15 which may be mounted on rollers 16. A door 17, mounted on the casing 10 by means of hinges 18 and 19, may be provided in the lower portion of the casing in order to permit the removal of dust therefrom. The door 17 may be provided with a handle 20.

The top panel of the casing 10 may be provided with an opening 22, preferably at one side of the panel. A pair of doors 23 and 24 may be hingedly mounted on the panel 21 and arranged to close the opening 22. One of the doors 23 may be equipped with a strip or beading 25 extending along the edge of the door 23 and covering the adjacent edge of the door 24. The doors 23 and 24 are so constructed as to provide an aperture 26 in the center thereof, whereby the handle of a mop may project through the doors when the mop is received within the opening 22.

Referring particularly to Figs. 3 and 4, a shaft 27 may be rotatably mounted in the bearings 28 and 29 carried by the casing 10. The shaft 27 in turn carries three flexible resilient blades 30, 31 and 32, which are fixedly secured to the shaft.

A horizontal panel 33 separates the casing into upper and lower compartments. At one side of the casing the panel is provided with an elongated opening 56, through which dust may pass from the upper to the lower compartment.

A pair of rigid guide rods 34 and 35 extend downwardly from the top panel 21 of the casing 10 to the bottom of the lower compartment, terminating in laterally extending straps which are mounted on the panel 33. The upper portions of the rods 34 and 35 preferably extend inwardly and downwardly in order to provide a sloping surface to engage the mop upon its introduction to the casing. Spaced away from the rods 34 and 35 towards the center of the upper compartment are a pair of yieldable guide wires 36 and 37, the upper ends of which are also secured to the top panel 21. Springs 38 are attached to the lower ends of the guide wires 36 and 37 in order to permit substantial yieldability in said wires. The springs 38 may be secured to said panel 33 by a threaded rod 39 and nut 40 or other suitable adjustable means.

The guide rods 34 and 35 and wires 36 and 37 form a pocket for receiving the mop, the mop being engaged on opposite sides by the rods and wires. Thus as seen particularly in Fig. 4, when

the mop 41 is received within the casing 10, the guide rods and guide wires serve to maintain it in a substantially fixed position. The handle 42 of the mop is permitted to project from the aperture 26 formed by the closed doors 23 and 24.

The panel 33 also supports a collar 57, preferably made of metal, to which is attached a dust bag 43. The dust bag 43 may be composed of cloth or other suitable soft material to which dust particles will cling.

On one end of the shaft 27 is mounted a pulley 44 which is engaged by the belt 45 connected to the pulley 46 on the motor 47. By means of this pulley structure, it is possible to rotate the shaft 27 and blades 30, 31 and 32 by means of the operation of the motor 47. The motor and pulley structure may be separated from the dust compartments by a vertical partition 58 provided with a small aperture through which the shaft 27 passes.

Referring particularly to Figs. 6 and 7, the flexible blades 30, 31 and 32, being of the same construction, are illustrated by the detail views of the blade 30.

The blade 30 is fixedly attached to the shaft 27 by means of the clamp 48, which extends around the shaft and is provided with ends 49 and 50 which may be bolted together through the rubber flap 51, as shown. The clamp 48 may be of metal or other rigid material, while the flap 51, being flexible and resilient, is preferably formed of rubber. The flap 51 is preferably made of a sufficiently soft rubber that it may be readily distorted under pressure and readily yields when brought into engagement with the mop.

In order to provide sufficient sturdiness for the beating blade 30, the rubber flap 51 may be supported with suitable spring steel supports 52 and 53, which may, if desired, be placed on the rubber flap 51 and secured in position by the end 49 of the clamp 48. The supports should be resilient and somewhat yieldable so that the resiliency of the blade 30 is not destroyed, and may, if desired, be further secured to the flap 51 by staples 54 and 55.

The blades 30, 31 and 32 may be of any suitable size or shape and preferably extend from the shaft 27 a sufficient distance to permit the ends of the blades to pass between the flexible guide wires 36 and 37 and engage the mop held in the pocket formed by the guide wires and the guide rods. In other words, the blades are preferably of a greater length than the distance between the shaft 27 and the adjacent guide wires 36 and 37.

The supporting members 52 and 53 preferably do not extend to the ends of the blades, but terminate adjacent the ends thereof. The supporting members 52 and 53 are also mounted on the sides of the blades opposite to those which come in contact with the mop 41. Thus the metal supporting members are at no time brought into engagement with the mop 41.

Similarly, the staples 54 and 55 are attached to the rubber flap 51 at a point adjacent the end of the flap, but spaced a sufficient distance from the end of the flap so that the staples 54 and 55 do not pass between the guide wires 36 and 37. In other words, the staples 54 and 55 are spaced away from the shaft 27 a distance less than the distance between the shaft and the guide wires 36 and 37.

The blades 30, 31 and 32 are preferably mounted at angles of 120° with respect to each other. In this manner, only one of the blades is brought into engagement with the mop at any one time. The blades are successively brought into engagement with the mop at slightly spaced intervals of time.

In operation, the dust mop is placed in the casing 10 through the opening 22. The doors 23 and 24 are closed to provide a substantially air-tight chamber for the mop, with the handle 42 projecting outwardly through the aperture 26. The body of the mop is received within the pocket formed by the guide wires 36 and 37 and guide rods 34 and 35, with the frame of the mop extending in a substantially vertical frame. The yieldability of the guide wires 36 and 37 permits a small amount of movement within the pocket so formed.

When the motor is set in operation, the movement of the belt on the pulleys 46 and 44 serves to rotate the shaft 27. The rotation of the shaft 27 in turn causes the rotation of the blades 30, 31 and 32, which are successively brought into engagement with the frame of the mop 41.

Because of the flexible resilient structure of the blades, the engagement of the same with the frame of the mop produces only a gentle shaking or beating action, by means of which the dust is readily and efficiently removed from the mop. Upon removal from the mop the dust falls into the dust container, whence it may be removed from the casing 10 through the door 17.

If the mop is provided with fabric strands on both sides of the frame, it may be removed from the casing after being subjected to the beating action, turned around, and again inserted into the casing, this time with the opposite side of the frame adjacent the blades 30, 31, 32. The motor may then be started and the device operated to complete the cleaning of the mop.

While there are shown and described certain embodiments of the invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims.

I claim:

1. A mop cleaner of the character described comprising a casing provided with an opening for receiving a mop, means for substantially closing said opening when said mop has been received within said casing, spaced guide members within said casing forming a pocket for receiving said mop and retaining the same in a substantially fixed position within said casing, the guide members on one side of said mop being yieldable and adjustable, a rotatable shaft mounted within said casing outside said pocket but adjacent said guide members, a plurality of flexible blades carried by said shaft and extending therefrom a distance greater than the distance between said shaft and said adjacent guide members, whereby upon rotation of said shaft the ends of said blades pass into said pocket adjacent said guide members to engage said mop, said blades being equipped with resilient spring steel supports attached to said shaft and extending therefrom a distance less than the distance between said shaft and said adjacent guide members, a motor for rotating said shaft to bring said blades into engagement with said mop, removing the dust therefrom, and a container within said casing for receiving the dust removed from said mop.

2. A mop cleaner of the character described comprising a casing provided with an opening for receiving a mop, a door in said casing for substantially closing said opening, a rotatable shaft mounted in said casing, at least one flexible resilient blade carried by said shaft and so arranged that one side of said blade may be brought into engagement with the mop in the casing, a resilient reinforcing member mounted on said shaft, and secured to the other side of said blade, said member extending from said shaft a lesser distance than said blade, and means for rotating said shaft.

3. A mop cleaner of the character described comprising a casing provided with an opening for receiving a mop, a door in said casing for substantially closing said opening, a rotatable shaft mounted in said casing, at least one flat, flexible, resilient blade carried by said shaft and extending therefrom, one side of said blade being adapted to be brought into engagement with the mop and casing upon rotation of the shaft, a resilient reinforcing member mounted on said shaft and secured to said blade, said member being narrower and shorter than said blade whereby the blade extends beyond the ends and sides of the member to prevent engagement of the member with said mop, and means for rotating said shaft.

4. A mop cleaner of the character described comprising a casing provided with an opening for receiving a mop, a door in said casing for substantially closing said opening, a rotatable shaft mounted in said casing, a plurality of flat, flexible, resilient blades carried by said shaft and extending therefrom, said blades being so arranged that one side of each is adapted to be brought into engagement with said mop upon the rotation of said shaft, a flat resilient reinforcing member secured to said shaft and extending therefrom, said member being attached to the other side of said blade and covered thereby, and means for rotating said shaft.

5. A mop cleaner of the character described comprising a casing provided with an opening for receiving a mop, means for substantially closing said opening when said mop has been received within said casing, spaced guide members within said casing forming a pocket for receiving said mop and retaining the same in a substantially fixed position within said casing, the guide members on one side of said mop being yieldable, at least one flexible blade movably mounted within said casing, and means for moving said blade to bring the same into engagement with said mop within said casing.

6. A mop cleaner of the character described comprising a casing provided with an opening for receiving a mop, means for substantially closing said opening when said mop has been received within said casing, spaced guide members within said casing forming a pocket for receiving said mop and retaining the same in a substantially fixed position within said casing, the guide members on one side of said mop being yieldable, a rotatable shaft mounted within said casing for uni-directional movement therein, said shaft being outside said pocket but adjacent said guide members, at least one flexible, resilient blade carried by said shaft and extending therefrom a greater distance than the distance between said shaft and said adjacent guide members, whereby upon rotation of the shaft the end of the blade passes into said pocket adjacent said guide members, and one side of said blade engages said mop, a resilient reinforcing member mounted on said shaft and secured to said blade on the other side thereof, and means for rotating said shaft in one direction.

7. A mop cleaner of the character described comprising a casing provided with an opening for receiving a mop, means for substantially closing said opening when said mop has been received within said casing, spaced guide members within said casing forming a pocket for receiving said mop and retaining the same in a substantially fixed position within said casing, the guide members on one side of said mop being yieldable, a rotatable shaft mounted within said casing for uni-directional movement therein, said shaft being outside said pocket but adjacent said guide members, a plurality of flexible blades carried by said shaft and extending therefrom a distance greater than the distance between said shaft and said adjacent guide members, whereby upon rotation of the shaft the ends of the blades pass into said pocket adjacent the guide members and one side of each of the blades engages said mop, resilient spring steel supports attached to said shaft and extending therefrom a distance less than that of said blades, said supports being attached to the other sides of said blades and being narrower and shorter than the blades, whereby the blades extend beyond the ends and sides of the supports to prevent engagement of the supports with the mop.

8. A mop cleaner of the character described comprising a casing provided with an opening for receiving a mop, means for substantially closing said opening when said mop has been received within the casing, guide members in said casing for engaging the mop therein, a rotatable shaft mounted in said casing, at least one flexible blade carried by said shaft and extending therefrom a sufficient distance to engage the mop with one side of the blade in the cycle of rotation, a resilient reinforcing member mounted on said shaft, means for securing said reinforcing member to the other side of said blade, said last mentioned means being spaced from said shaft a distance less than the distance between said shaft and said guide members, and means for rotating said shaft.

EDWARD WITT.