

April 12, 1949.

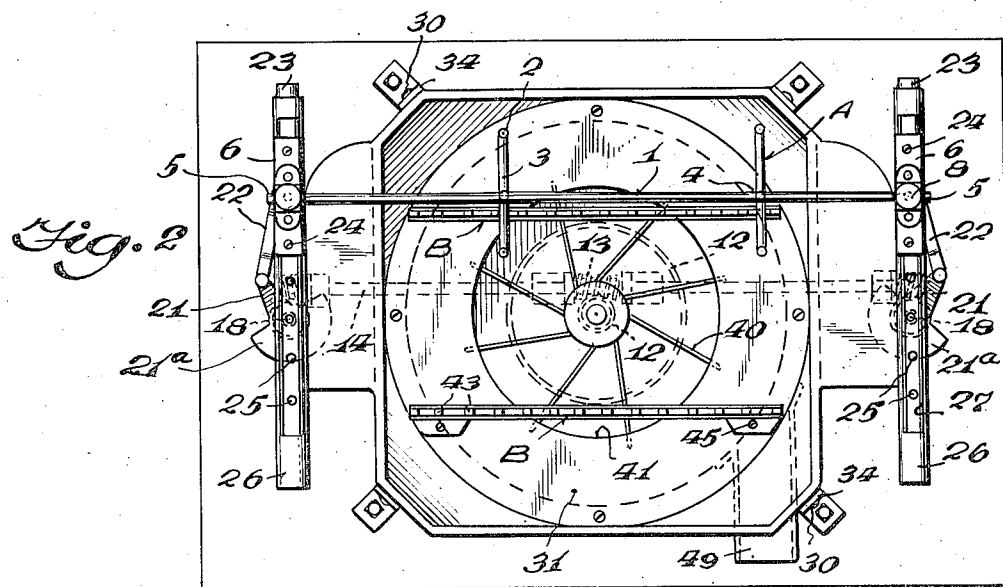
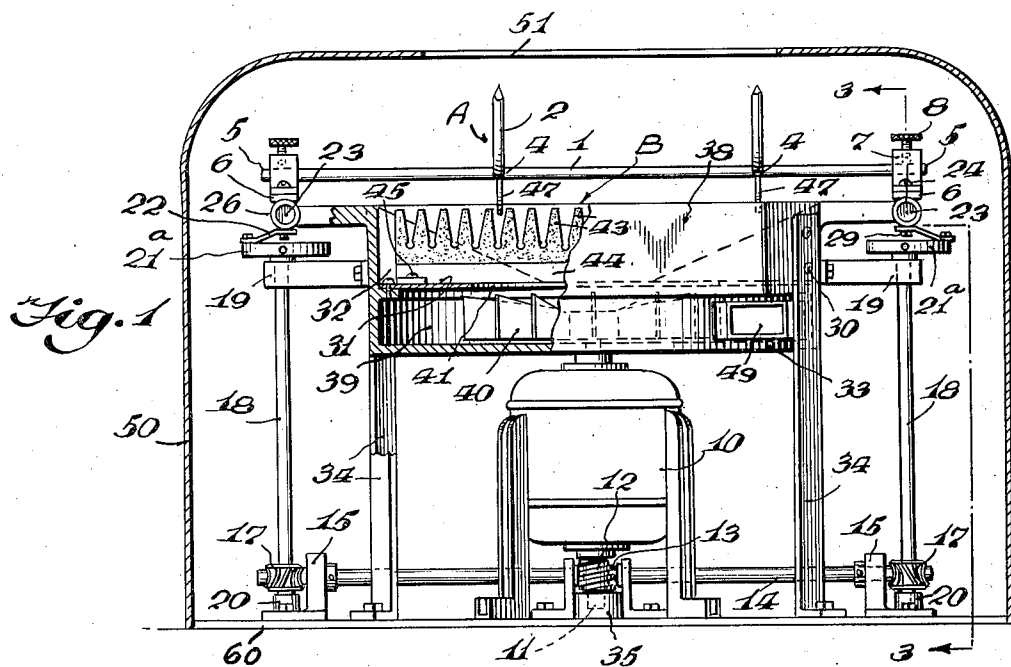
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2,466,771

DUST MOP CLEANER

Filed Feb. 22, 1944

3 Sheets-Sheet 1



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Fig. 3

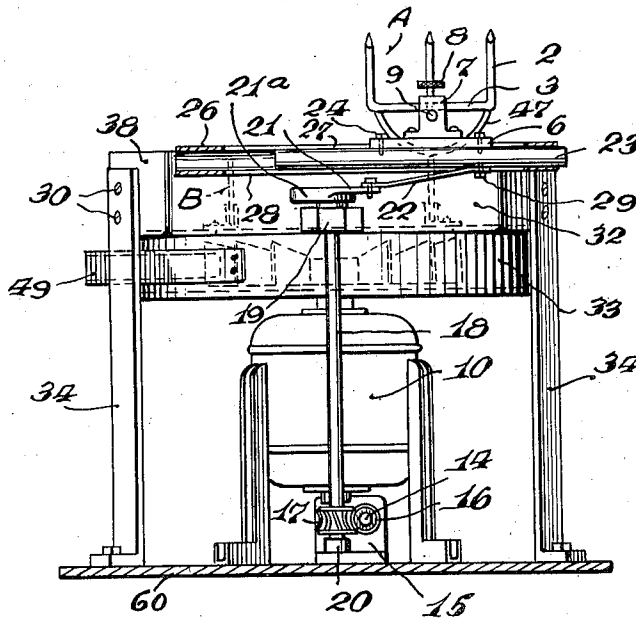
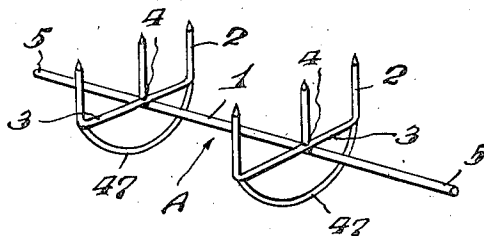


Fig. 4



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Fig. 5

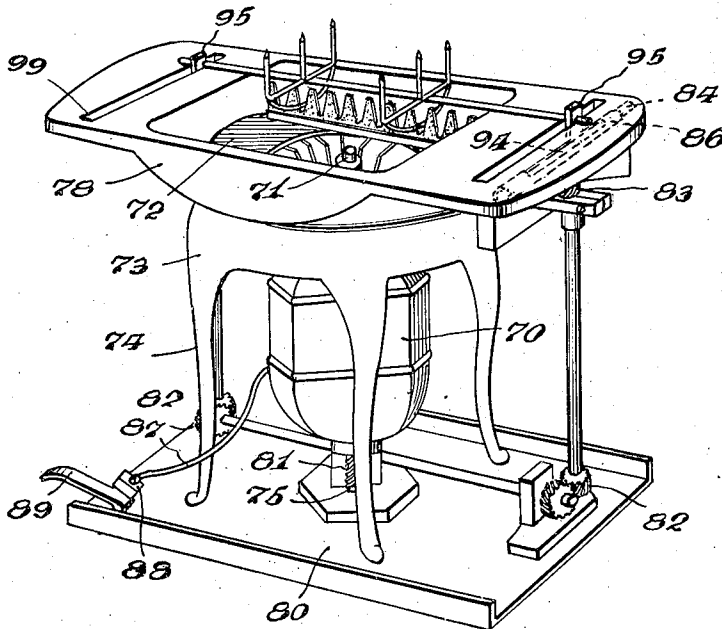
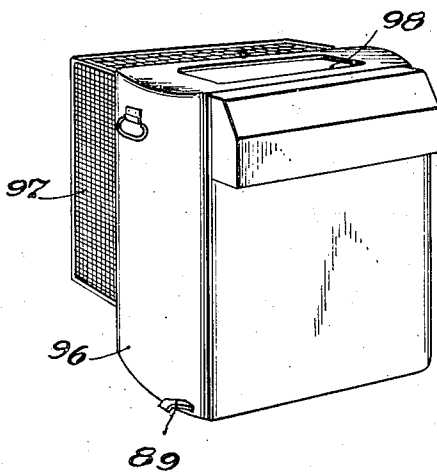


Fig. 6



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UNITED STATES PATENT OFFICE

2,466,771

DUST MOP CLEANER

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Application February 22, 1944, Serial No. 523,442

3 Claims. (Cl. 15—4)

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This invention relates to dust mop cleaners and particularly to devices of the same general character as that described and claimed in my Patent No. 2,261,738, issued November 4, 1941, wherein a mop holder comprising a rigid frame provided with spaced rigid projections is reciprocated to shake or agitate the mop and remove dust and dirt therefrom. Like the cleaner of that patent, my improved cleaner which forms the subject-matter of this application may be used enclosed or unenclosed and with or without a suction fan or other suitable means for creating a current of air for withdrawing the dirt and dust freed from the mop being cleaned.

The most important differences between the apparatus of this application and that of my above-mentioned patent are in the design and construction of the mop holder and the nature of the agitating means. In my improved holder the frame or support which carries the mop-piercing projections takes the form of a single rod supported at each end portion and having rigid upstanding projections secured thereto at one or more intermediate points. My improved agitating means comprises one or more combs, preferably resilient, cooperatively associated with the reciprocable holder and positioned in the path of travel of the mop thereon. Freedom of movement of the mop across the comb means is facilitated by the provision of means for guarding the portion of the mop which is engaged by the comb means.

My invention resides in a device which includes combined means for subjecting the mop to be cleaned to vibratory or reciprocatory shaking and combing simultaneously.

The principal objects of my present invention are to provide a dust mop cleaner which is simple in construction and easily and economically manufactured, but which has a high degree of cleaning efficiency; to increase the agitation of the mop being cleaned by subjecting it to a combing operation during and as an adjunct to its agitation by reciprocation, thus intensifying the cleaning effect by simultaneous combing and shaking; to provide an efficient comb means in cooperative relation to the reciprocating mop holder which will perform its mop-combing function without injury to the mop being cleaned; to facilitate and insure the proper positioning of the mop in its reciprocatory movement by providing guard means for the mop for preventing the tangling of the fabric of the mop with the reciprocating mop holder; and to simplify the construction of the apparatus by forming the mop holder as a

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single rigid rod, bar or like member having substantially rigid mop-piercing projections secured thereto and preferably combined with the mop guard in a single unitary reciprocable element.

Other objects and advantages of my improved apparatus will be apparent from the following description and drawings, wherein:

Figure 1 is a vertical side elevational view, partly broken away, of the preferred form of my present invention;

Figure 2 is a top plan view of the apparatus illustrated in Fig. 1, with the housing or casing removed;

Figure 3 is a view similar to that of Fig. 1, taken on line 3—3 of Fig. 1;

Figure 4 is a perspective view of the combined mop holder and guard shown in Figs. 1, 2 and 3;

Figure 5 is a perspective view of a modified form of construction of my improved mop-cleaner, without a casing or housing; and

Figure 6 is a perspective view, on a reduced scale, of the mop cleaner casing or housing with dust bag attached, as applied to the form of construction illustrated in Fig. 5.

In its essentials my improved mop holder A comprises a rigid rod 1 of any suitable dimensions and cross-sectional shape and a plurality of spaced upstanding rigid projections 2 supported on rod 1, preferably by means of a rigid arm 3 soldered or otherwise rigidly secured to projections 2 and rod 1. One or more such arms 3, carrying projections 2 upstanding therefrom, may be thus secured to rod 1 at a suitable point or points 4 intermediate the end portions 5 of the rod, which end portions 5 are secured, preferably removably by set screws 8, in the bores 9 of posts 7 mounted on reciprocable supports 6, which may be of any suitable construction and reciprocably mounted in any suitable manner. In the specific form of embodiment illustrated support 6 is mounted on a bar 23, to which it is removably secured by set-screws 24 engaging in a selected pair of screw-threaded sockets 25, bar 23 being reciprocably positioned in a tubular guide 26 which has a slot 27 in its upper face to permit the attachment of support 6 to bar 23 and reciprocation of bar 23 with support 6 mounted upon it.

Any suitable means for imparting reciprocatory movement to the supports 6 and to rod 1, arm or arms 3 and projections 2 carried thereby may be employed, the means illustrated by way of example comprising an electric motor 10 provided with the usual wires and plug for connection to a source of electric current and suitable connections for translating the rotary motion of motor

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shaft 11 to reciprocatory movement of supports 6. The motor shaft 11 is set in a step bearing 35 and connected, through worm-gearing 12, 13 with a drive shaft 14 supported in bearing blocks 15 and rotatably connected at each end, through worm-gearing 16, 17 with a pair of vertical shafts 18 mounted in upper and lower bearings 19 and 20, respectively. Each shaft 18 has fixedly secured thereto a crank arm 21 which is pivotally connected, through arm 22, to a bar 23, the pivotal connection 29 of arm 22 to bar 23 passing through a slot 28 in the tubular guide 26, the pin and slot connection being provided to permit the reciprocation of bar 23 while arm 22 is connected to it.

The hollow guides 26 are fixedly secured to a frame 38 open at its top and bottom and seated, preferably removably, upon a suitable base 33, which may be removably connected with and supported on legs 34 in any suitable manner, for example by screws 30 or by means of the engagement of bolts on base 33 or frame 38 in open-ended slots in the top portions of legs 34. The base 33, which preferably carries the bearings 19 for shafts 18, is preferably hollow, to form a chamber 39 within which some suitable device for creating a current of air, such as a suction fan 40 secured upon the upper end of motor shaft 11, may be positioned. The removable top 31 of chamber 39 separates the fan chamber 39 from the cleaning chamber 32 and has an opening 41 to provide a passageway for dust and dirt from the mop on mop holder A through chamber 32 into chamber 39. The fan chamber 39 may be provided with a suitable outlet 49 for connection with a discharge pipe or receptacle for dust and dirt; this outlet 49 may be placed at any desired point in the side or bottom of base 33.

My comb means comprises one or more combs B, each preferably consisting of a row of teeth 43 of rubber or other suitable resilient or semi-resilient material secured to and supported in upright position or substantially upright position by a base bar 44 of metal, wood or other rigid material fixedly mounted by rivets, or by screws or other removable means 45, upon a ring supported upon and preferably secured to the top of the base 33 with the opening of the ring registering with the opening in the top of base 33. The ring upon which bar or bars 44 are mounted may be integral with the top 31 of chamber 39 or may be separately secured thereto in any suitable manner.

The comb or combs B within frame 38 are preferably so positioned as to extend across the opening 41, with each row of teeth 43 substantially parallel with rod 1 and extending beneath or behind rod 1 and sufficiently close to it to permit the portions of the mop which depend from mop holder A to be engaged by and pass between adjacent teeth 43 of comb B, and also to permit the passage between adjacent teeth 43 of a mop-guarding means which, in its preferred form, comprises an open bow or loop 47 fixedly secured at each end, by soldering or in any other suitable manner, to arm 3 of mop holder A. Bow 47 depends from arm 3 in such manner and to such extent as to be capable of guarding the fabric of the mop during the travel of the mop across the comb or combs B, bow 47 passing between the teeth 43 of comb means B during and as a consequence of the reciprocatory movement of mop holder A.

As shown in Fig. 1, my entire mop cleaner, in its preferred form, may be enclosed in a housing 50 having an opening 51 for insertion of the

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mop to be cleaned, but the housing may be omitted, if desired.

In the operation of my invention the mop is placed on the mop holder A with the fabric material of the mop pierced by projections 2 to hold the mop in position during its agitation. When so placed in position a portion or portions of the mop material depend below rod 1, and brush back and forth across the comb or combs B as the mop holder is reciprocated.

Reciprocation of mop holder A is preferably effected by an electric motor 10, through its shaft 11, worm-gearing 12, 13, drive shaft 14, worm-gearing 16, 17, vertical shafts 18, crank arms 21 with counterweights 21a, arms 22, bars 23 and supports 6 for rod 1. The reciprocation of mop holder A gives a whipping action to the mop which effectively shakes, vibrates or agitates it to remove dust and dirt therefrom.

The shaking agitation of the mop by its reciprocation is supplemented and increased in severity by the combing of the mop material by comb means B during the shaking operation. The presence of the curved bow 47 in the depending mop material serves to guard or align the mop material and prevent the whipping action given the mop from snarling the mop material or entangling it with the reciprocating mop holder, particularly the straight bars 3, thus aiding in effecting the proper presentation of the mop fabric to the comb means B.

My invention is designed and adapted for the cleaning of mops of the cord or fringe types. In many of these mops the fringe consists of depending endless cords or loops. When a mop of this construction rests upon the mop holder A the free ends or loops of the mop, as the result of the rapid reciprocation of the holder on which the mop is carried, at each end of the stroke or path of movements are thrown against the comb B with considerable force, in a whip-cracker action, effecting a thorough cleaning of the mop. Without the aid of my guard means (bow 47) which extends to a point below the loop ends of the mop fringe, this action would cause the looped fringes to swing under and be caught beneath the arm 3 and consequently this would prevent the mop from being lifted up off of the mop holder. By actual tests in the cleaning of different makes of loop or endless fringe types, the guard member (bow 47) has been found to be important and vital in cleaning mops of this character.

Alteration of the position of the mop holders A relative to the comb or combs B, their replacement by other mop holders or the addition of one or more other sets of mop holders A may be effected by appropriate positioning of supports 6 on their respective bars 23, secured by screws 24 in the proper sockets 25 of bars 23.

Although my improved mop cleaner is illustrated as a vertical device adapted to be supported in upright position on a floor or other substantially horizontal base 60 and is preferably intended to be so used, my invention, both as to apparatus and as to method, is not restricted to use in a vertically-positioned machine, but is adapted to be used as well in apparatus or machines secured to a wall, post or other vertical or inclined surface. In whichever of these positions of the apparatus, whether vertical, horizontal or inclined, the comb means B is behind the mop holder A, even though it may not be, in some positions of use, strictly below the mop holder as in a vertically-positioned machine such as is illustrated.

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It is also to be understood that my invention is not restricted to the specific forms of embodiment of the mop holder A or of the comb means B, since other forms of construction of mop holder or comb means, or both, may be employed within the scope of my invention.

Other forms of means for reciprocating the mop holder A and for supporting the frame 38 and mop holder may also be substituted for those shown and described in connection with my preferred form of invention illustrated in Figs. 1, 2, 3 and 4. For example, the comb means M may be positioned in a chamber 72 within a frame 78 mounted on a base 73 supported by legs 74 on a stand 80. In this alternative or modified form of construction (shown in Figs. 5 and 6) the stand 80 is shown as carrying a step bearing 75 for shaft 71 of an electric motor 70, the motor shaft 71 being operatively connected, preferably by suitable worm-gearing 81, 82, 83 and suitable crank means, with a bar 84 (similar to the means for reciprocating the bar 24; Figs. 1 and 2) which is reciprocable within a hollow guide 86 secured to the underside of support 78. The mop holder A, in this form of the invention, may be adjustably secured (in the same manner as in Fig. 2) to the reciprocable bar 84 by means of its posts 95 passing through slots 99 in support 78. If desired, the motor 70 may be controlled by a switch 88 connected with wires 87 and operable by a pedal 89. A convenient manner of assemblage of the mop cleaner, housing 96 with mop inlet 98, and dust bag 97 is shown in Fig. 6, the dust bag 97 being secured to a dust pipe (not shown) projecting from a dust outlet similar to outlet 49 in the preferred form of the invention shown in Fig. 1.

I claim:

1. In a device of the character described, a mop holder comprising a rigid rod, means for supporting the opposite ends of said rod, means for reciprocating said supporting means to reciprocate said rod in a substantially horizontal plane and transversely of its length, spaced combs substantially parallel with said rod and located below said plane of travel of said rod, each of said combs having a row of upstanding teeth extending across and adjacent to the path of travel of said rod, and a plurality of combined mop-supporting and mop-guarding means rigidly secured in spaced relation on said rod and each arranged in a plane transversely of the length of said rod and above said combs, each of said last-named means comprising a row of spaced upstanding rigid mop-piercing projections for engaging and holding a mop and extending away from said combs and a depending rigid bow secured to said rod in the same plane as said row of projections and below the same and extending towards said combs to a point below the ends of the mop fringe when a mop is positioned upon said projections and extending from end to end of said mop-holding means so as to prevent tangling of the mop loops.

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2. In a device of the character described, a mop holder comprising a rigid rod, means for supporting said rod for reciprocation transversely of its length and in a substantially horizontal plane, means for affecting such reciprocation, and a combined mop-support and mop-guard rigidly secured to said rod and arranged in a plane transversely of the length of said rod and comprising a downwardly extending rigid bow-shaped member and spaced upstanding rigid mop-piercing projections extending from the ends of said bow-shaped member, one of said projections being at each end of said bow-shaped member, and said bow-shaped member extending downwardly to a point beyond the ends of the mop fringe when a mop is positioned upon said mop-piercing projections and extending from end to end of said mop-holding means so as to prevent tangling of the mop fringe.

3. In a device of the character described, a mop holder comprising a rigid rod, means for supporting the opposite ends of said rod, means for reciprocating said supporting means to reciprocate said rod in a substantially horizontal plane and transversely of its length, comb means substantially parallel with said rod and located below said plane of travel of said rod, said comb means having upstanding resilient teeth extending across and adjacent to the path of travel of said rod, and a plurality of combined mop-supporting and mop-guarding means rigidly secured in spaced relation on said rod and each arranged in a plane transversely of the length of said rod and above said comb means, each of said mop-supporting and mop-guarding means comprising a row of spaced upstanding rigid mop-piercing projections for engaging and holding a mop and extending away from said comb means and a depending rigid bow secured to said rod in the same plane as said row of projections and below the same and extending towards said comb means to a point below the ends of the mop fringe when a mop is positioned upon said projections and extending from end to end of said mop-holding means so as to prevent tangling of the mop loops, and said comb means being arranged intermediate the ends of the path of movement of said mop holder and in the path of travel of the depending portion of the mop during reciprocation of the mop holder.

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