Sept. 7, 1937. J. J. BRELL 2,092,570

MOP SHAKING DEVICE

Filed June 5, 1936

Fig. 1.

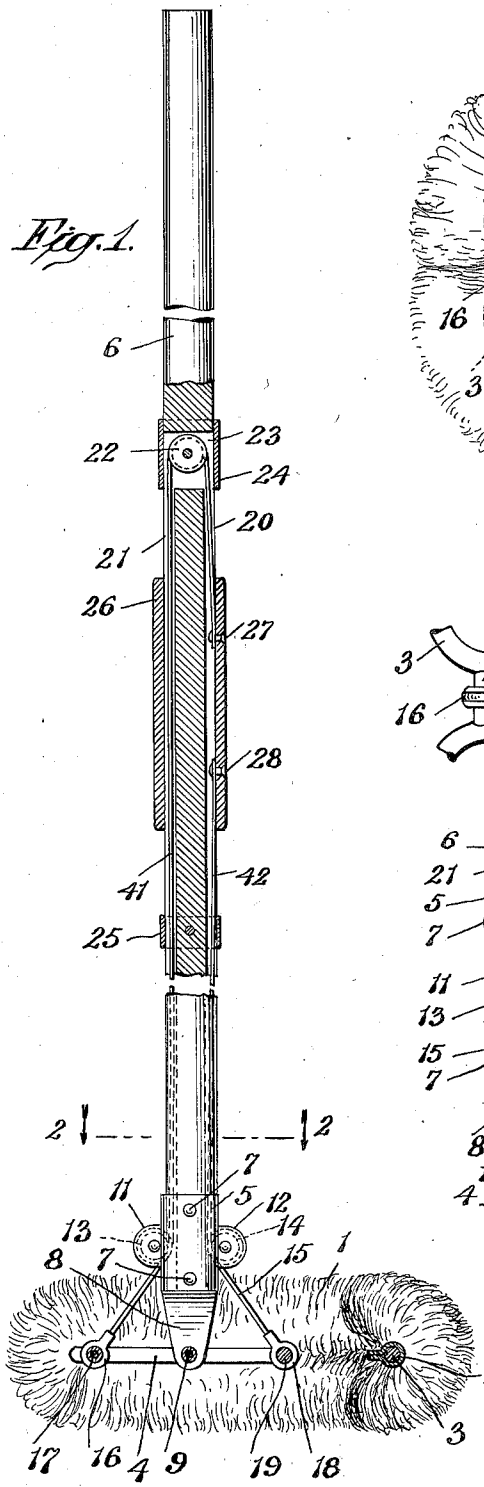


Fig. 2.

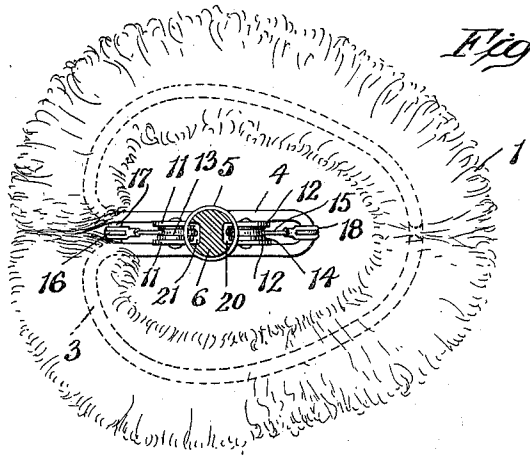
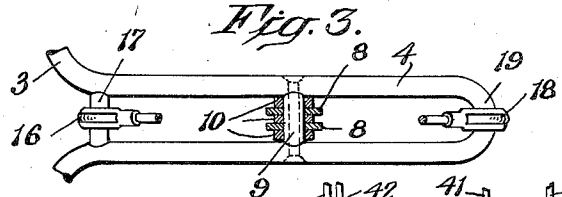


Fig. 3.



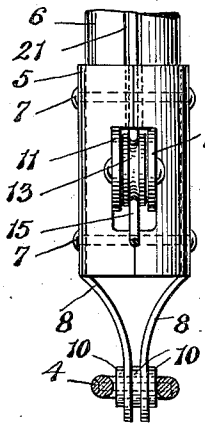


Fig. 4.

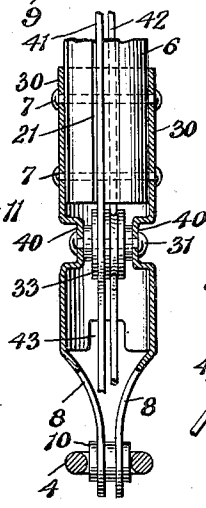


Fig. 5.

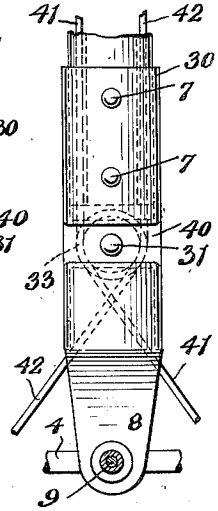


Fig. 6.

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UNITED STATES PATENT OFFICE

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MOP SHAKING DEVICE

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Application June 5, 1936, Serial No. 83,684

6 Claims. (Cl. 15—118)

This invention relates to an improvement in dust mops or similar articles of the character shown in my U. S. Patents Nos. 1,993,336 and 1,996,056, and relates particularly to a means by which the mop may be vigorously shaken or vibrated to cause the accumulated dust and dirt to be dislodged and if desired, directed into a receptacle or onto a paper.

The object of the invention is to provide a mechanism of simplified construction and of few parts whereby a rapid, vigorous vibrating movement may be imparted to the mop head causing it to effectively shake the dust and dirt from the mop strands.

A further object of the invention is to provide a mechanism of the character described having no projecting parts or elements likely to come in contact with furniture and do damage to the same.

Another object of the invention is to provide a shaking mechanism composed of relatively few parts unlikely to become injured or damaged by the shaking operation, and also unlikely to become worn during the normal use of the mop.

In the accompanying drawing wherein several embodiments of the invention are shown, Fig. 1 is a side elevation of the mop with parts in section showing the improved shaking mechanism; Fig. 2 is a sectional view on the line 2—2 of Fig. 1, looking in the direction of the arrows; Fig. 3 is a plan view of the center portions or yoke of the mop head frame or rocking member showing the connections for the mop shaking mechanism; Fig. 4 is a front view of the lower end of the mop stick showing the guide pulleys and mounting therefor; Fig. 5 is a sectional view of the lower end of the mop stick showing a modified form of housing for the guide pulleys; and Fig. 6 is a view of the structure shown in Fig. 5 taken at right angles thereto.

The mop body or head consists of the strands 1 held together in the conventional manner by the stitched fabric binding 2 of tubular construction, which fits over a substantially triangular or "heart-shaped" frame 3, composed of wire, metal rod, or of sheet or strip metal. The frame 3 is provided with an inwardly bent centrally disposed narrow loop or yoke portion 4 to parts of which the various operating elements of the shaking device as well as the lower end of the mop stick housing 5 attaches. The housing 5 shown in detail in Figs. 1 and 4, is composed of two like halves which when placed together form a tubular socket member into which the lower end of the mop stick 6 is fitted. The two halves of the housing 5 are held together by bolts or rivets 7 which also pass through the stick near its lower end and also secure the stick in the housing. At its lower end each of the halves of the housing 5 is provided with a downwardly projecting lug or ear 8, the two lugs being pivotally mounted on a cross-bar 9 extending between the sides of the yoke 4 of mop frame 3. Suitable washers or spacing members 10 hold the lugs properly spaced on the cross-bar 9 and enable the mop frame to be freely pivotal in the lugs 8. The housing 5 is also provided with two pairs of projecting ears 11 and 12 constituting pulley bearings. In the pair of ears designated at 11 a pulley 13 is rotatably mounted, while between the two ears 12 a similar pulley 14 is mounted.

A flexible two-part cable or cord 15 has its lower end 16 connected to a cross-bar 17 at one end of the yoke 4, and its other end 18 secured to the end 19 of the yoke 4. Said cable has one side or leg 41 extending upwardly behind the pulley 13 and it is guided in a longitudinal groove 21 in the stick 5. Cable 15 passes around a pulley 22 rotatably mounted in a recess 23 located in the handle 5 at the upper end of groove 21 and is attached at 27 to sleeve 26. The side or leg 42 of the cable extends upwardly behind pulley 14 and is movable in groove 20 located diametrically opposite groove 21 in stick 6. At its upper end leg 42 of the cable is secured at 28 to the sliding sleeve or actuating member 26. Pulley 22 is covered and thereby concealed by a tubular bumper 24 (preferably of rubber) and a similar bumper 25 also surrounds the stick and is secured thereto at a distance from that shown at 24. The tubular sleeve 26, constituting an actuating member surrounds the stick and is manually slidable thereon and has its sliding movement limited by the bumpers 24 and 25.

To operate the mop, it is merely necessary to hold the stick in one hand and grasp the actuating member 26 with the other, moving the actuating member or sleeve vigorously back and forth between the spaced bumpers 24 and 25. As the actuating member 26 is thus reciprocated, it moves the two-part cable 15 back and forth over pulleys 13, 14 and 22, thus rapidly and noiselessly vibrating the mop and dislodging the accumulated dust and dirt therefrom.

In the structure shown in Figs. 5 and 6 is shown a two-part housing composed of the halves 30 united by rivets 7 which also hold the end of stick 6 in the housing. The halves 30 of the housing are each recessed or depressed as at 40, a rivet 31 connecting said depressed portions and

constituting a bearing on which a double-grooved pulley 33 is rotatably mounted. The side or leg 41 of the cable 15 extends in groove 21 and rides in one groove of the pulley 33, passing under the pulley and extending to the right (when viewed as in Fig. 6) and connects at 18 to the frame portion 19 of the mop head. The other side or leg 42 of the cable engages the second groove in the pulley and extends under said pulley to the left (Fig. 6) and connects at 16 to cross-bar 17 of the mop head frame. The halves 30 of the housing are recessed or cut away at 43 to avoid interference with the cable as it moves back and forth over the pulley.

The structure of Figs. 5 and 6 operates similarly to that of Figs. 1 to 3 inclusive. That is to say, by rapid reciprocation of the actuating member 26, the cable 15 moving over pulleys 22 and 33, smoothly and noiselessly rocks the mop head back and forth with a rapid vibratory motion, causing the dust and dirt to be shaken from the strands 1. Pulleys 13, 14 and 33 and their respective pivot pins are always available for occasional oiling to insure smooth, noiseless operation of the shaking device.

One of the objections often urged against mops provided with shaking devices is that such shaking devices add considerable weight to the mop thereby fatiguing the user. By the construction herein disclosed this objection is obviated since the relatively simple arrangement and light weight of the few parts employed produces a shaking device without adding noticeable weight to the mop. The operating cord or cable 15 is, in the disclosed construction, visible and accessible at all times thereby enabling it to be easily inspected for signs of wear and speedily replaced when necessary without requiring dismantling of the pulley housing. The exposed end portions 16 and 18 of the cord enable any slight slackness which may occur in the cord after considerable use, to be taken up. Pulleys 13, 14 and 33 are exposed and available for easy oiling and replacement when wear occurs. Additionally, the simplicity of the construction employed permits the shaking device to be incorporated in a mop structure at relatively slight expense thereby enabling the improved mop to be sold at a price attractive to purchasers.

What I claim is:

1. A device of the character described comprising, a mop having a frame, a housing pivotally mounted thereon, a mop handle secured in and projecting from the upper end of said housing, pulley guide-means supported by the housing, a pulley rotatably mounted in the handle, flexible means extending over the pulley and over the pulley guide means, said flexible means having ends extending out of the housing and engaging the frame at spaced points outside of the housing and on opposite sides of the point of pivotal connection of the housing with the frame, and an actuating member mounted and manually reciprocable on the handle and connected to said flexible means whereby reciprocation of the member will oscillate the mop frame on its pivot.

2. A device of the character described comprising, a mop having a frame, a housing pivotally mounted thereon, a mop handle secured in and projecting from said housing, a pulley rotatably mounted in the handle, the housing having two laterally extending pairs of lugs, a pulley mounted in each pair of lugs and accessible externally of the housing, flexible means extending over the pulleys, said flexible means having ends secured to the frame at spaced points outside of the housing and on opposite sides of the point of pivotal connection of the housing with the frame, and an actuating member surrounding the handle and manually reciprocable thereon and connected to said flexible means, whereby reciprocation of the member will oscillate the mop frame on its pivot.

3. A device of the character described comprising, a mop handle, a mop frame formed with a centrally disposed narrow loop portion having its sides connected by cross-bars, one end of said handle being pivotally attached to one of said cross-bars, a flexible cord having a lower end projecting laterally from the lower end of the handle, said lower end of the cord being attached to one end of the loop portion of the frame, a second cord having a lower end attached to a second cross-bar on said loop portion, the connection of the handle to its cross bar being at a point situated between the points of connection of the cords with the frame, a pulley mounted in the upper portion of the handle, one of said cords being movable over said pulley, pulley guide-means located adjacent the point of pivotal connection of the handle with the frame over which said cords are guided, and an actuating member mounted and manually reciprocable on the handle and connected to said cords whereby reciprocation of said member will oscillate the mop frame on its pivot.

4. A device of the character described comprising, a mop handle having a housing at one end, a mop frame pivoted in said housing, a flexible mop-shaking means having two ends attached to the frame externally of and on opposite sides of the housing, the points of attachment of said ends being exposed outside of the housing and accessible without dismantling the housing, pulley guide-means carried by the housing and over which the flexible means extends, a pulley mounted in the handle and also receiving the flexible means, and a manually-operated sliding member mounted on the handle and connected to the flexible means.

5. A device of the character described comprising, a mop handle in which a pulley is rotatably mounted, a sleeve member slidably mounted on said handle, a housing mounted on one end of the handle, pulley guide means supported by said housing, a mop frame pivoted in said housing, an operating cord means having one leg portion attached to a part of the mop frame externally of the housing and at one side of the same, the other end of said cord leg portion riding against the pulley guide means and being attached to one end of the sleeve, said cord means having another leg portion attached to the frame at the opposite side of the housing and externally of said housing, said last mentioned cord leg portion riding against the pulley guide means and extending over the pulley in the handle and being attached to the opposite end of the sleeve, and grooves in the handle in which the two leg portions of the cord means are guided, the connection of the cord ends to the frame being wholly outside of the housing and accessible without dismantling the housing.

6. A device of the character described comprising, a mop having a frame, a housing pivotally connected to said frame, a mop handle secured in and projecting from said housing, a pulley rotatably mounted in the handle, a double-grooved pulley rotatably mounted in the housing,

flexible means extending over the pulley in the handle and having an end portion riding in each of the grooves of the double-grooved pulley, the housing having apertures through which the said end portions of the flexible means project after leaving the grooves in the double-grooved pulley, said end portions of the flexible means being attached to the frame on opposite sides of the housing and externally of the same, and an actuating member movable on the handle and attached to said flexible means.

JULES J. BRELL.