Dec. 7, 1954 F. H. RICHTERKESSING 2,696,014

BRUSHING MACHINE

Filed Feb. 12, 1949 3 Sheets-Sheet 1

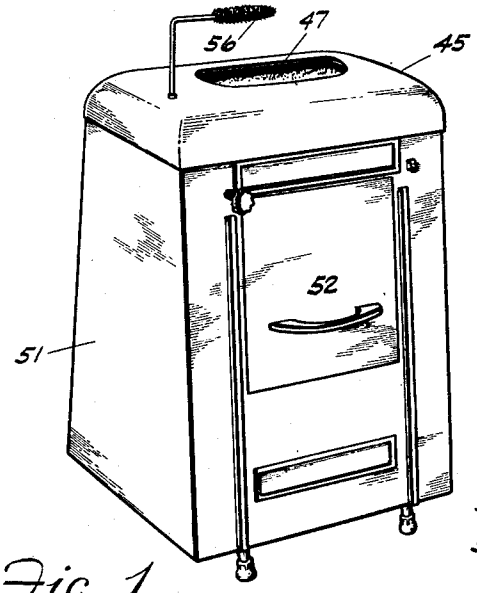


Fig. 1

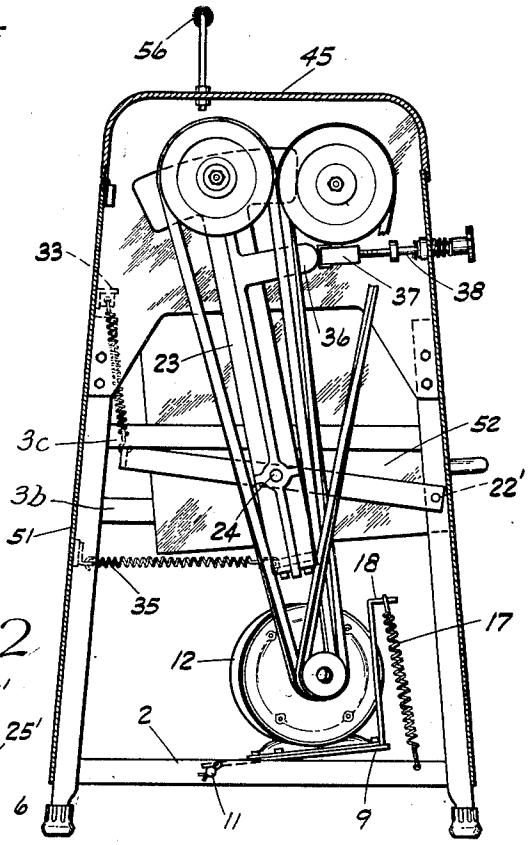


Fig. 2

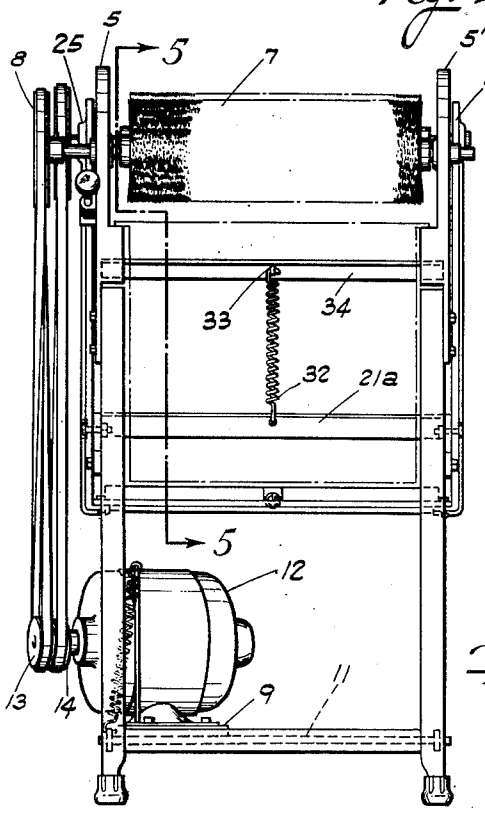


Fig. 4

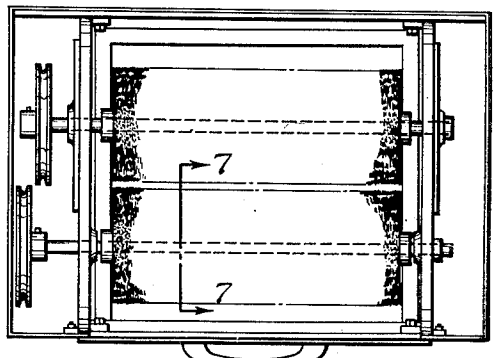


Fig. 3

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BRUSHING MACHINE

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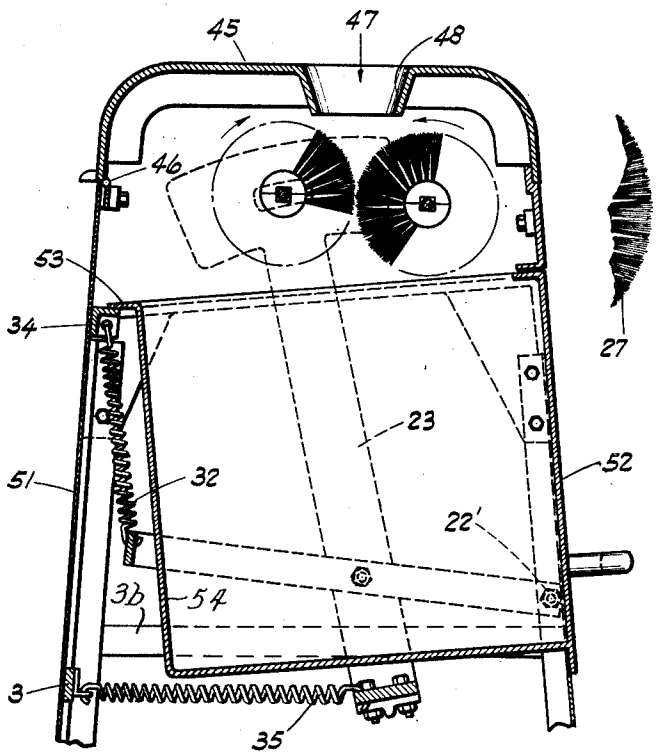


Fig. 5

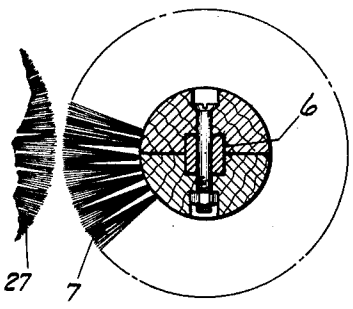


Fig. 7

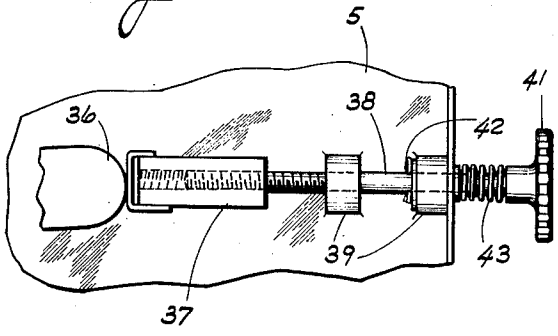


Fig. 6

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BRUSHING MACHINE

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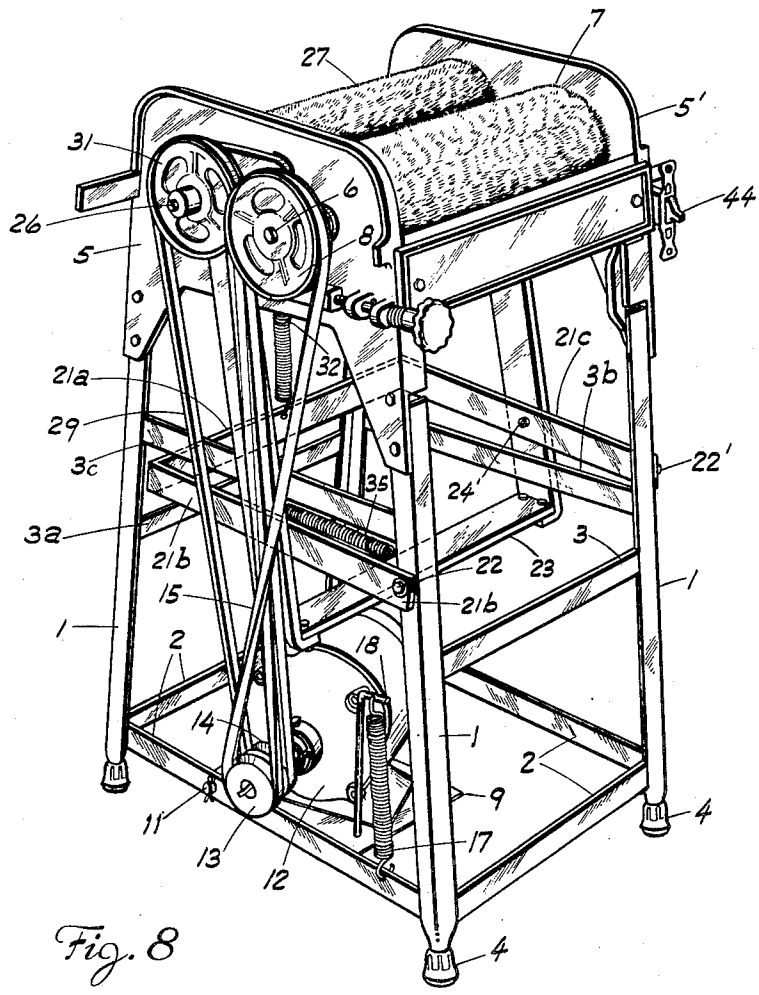


Fig. 8

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BRUSHING MACHINE

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Application February 12, 1949, Serial No. 76,127

11 Claims. (Cl. 15—40)

This invention relates to an improved cuff brushing machine for use in dry cleaning establishments, especially organized for cleaning the cuffs of trousers, also for removing foreign matter from the entire outer surface and pockets of trousers.

It is an object of the present invention to provide a novel belt drive arrangement in a brushing machine for driving a pair of relatively adjustable brushes in opposite directions from a single drive motor and automatically maintaining the required tension on the drive belts.

A further object is the provision of a simple, easy to use brushing machine for cleaning a whole cuff, or a number of cuffs in one operation and which confines and collects the dust removed from the cuffs.

Another object is the provision of a simple and conveniently arranged double acting cuff brushing machine, which is adjustable for wear and embodies an automatically adjustable drive.

In accordance with the present invention there is provided a housing in which a pair of brushes are rotatably journalled, there being a shielded opening between the brushes for insertion of an entire pair of trousers or merely the cuffs to be cleaned, and a removable compartment below the brushes to receive the dust, lint, etc. removed from the cuffs. One of said brushes is adjustable relative to the other, and both brushes are driven in opposite directions by endless band drive means from a common drive motor, the drive means embodying provision for automatically and independently maintaining the required tension of the driving belts. For this purpose, the movable brush is mounted on a floating support with provision for biasing this brush toward the other, and means for biasing the brush away from the motor.

The invention will be described in greater detail in connection with the accompanying drawings illustrating a preferred embodiment of the invention by way of example, and wherein:

Figure 1 is a perspective view of the invention,

Figure 2 is a side view as seen from the left of Figure 1 with the housing in section,

Figure 3 is a plan view of the top portion of Figure 2 with the top cover of the housing removed,

Figure 4 is a front elevation of Figure 1 with the housing removed,

Figure 5 is a section taken on line 5—5 of Figure 4,

Figure 6 is a side view of a detail on an enlarged scale,

Figure 7 is a section taken on line 7—7 of Figure 3, and

Figure 8 is a perspective view with the housing removed.

Referring to the drawing (Fig. 8), there is provided a rigid base or pedestal comprising four angle iron legs 1 secured together in any suitable manner by rails 2, 3, 3*a*, 3*b* and 3*c*. The legs may receive rubber cushions 4 at the bottom to absorb vibration and prevent creeping of the machine. A pair of cast plates 5, 5′ are suitably secured to the top portions of the legs by bolts, and a shaft 6 is rotatably journalled in bearings fixed in the plates. Shaft 6 may be square, except for the journals and carries a cylindrical brush 7 of a split construction (Fig. 7) to allow for easy manufacture, repair or replacement. A pulley 8 is fastened to one end of the shaft. A platform 9 is suitably hinged on a rod 11 (Fig. 4) extending between opposed bottom rails 2, and carries a driving electric motor 12 with a pair of pulleys 13 and 14 (Fig. 8) secured on the motor shaft. A crossed belt 15 passing around pulleys 13 and 8 drives the brush 7 in counterclockwise direction. The weight of the motor and spring 17 keep the belts tight. This spring 17 is stretched between rail 2 and the bent end of a post 18 mounted on the motor platform. The motor, and consequently the pulleys mounted in its shaft, are cocked at an angle so as to prevent the twisted runs of the belt rubbing each other.

A carriage comprises a horizontally disposed rigid yoke formed of a back member 21*a* and side members 21*b* and 21*c* pivoted to the legs 1 at 22, 22′, and a second rigid yoke 23 is pivoted to the yoke 21 at 24, 24′ (Figs. 2 and 8). It should be noted that since members 21*b* and 21*c* are located on the outside of their correlated legs 1, the left end portion of back member 21*a* (as seen in Fig. 8), on an unrestricted upward movement of the yoke would contact rail 3 while the right end of 21*a*, in an unrestricted downward movement of the yoke would contact bar 3*b*, thus providing definite stops to limit the movement of the first mentioned yoke in case of breakage of belt 29 or spring 32. The second yoke provides aligned bearings 25, 25′ at its upper ends in which is journalled a shaft 26 carrying a cooperating cylindrical brush 27. Brush 27 is driven in clockwise direction (as viewed in Fig. 8) by a belt 29 passing around motor pulley 14 and pulley 31 on shaft 26, pulley 31 being offset from pulley 8 so as to allow the brushes to come together. The tension on belt 29 is maintained by a tension spring 32 stretched between the horizontally disposed yoke, members 21, 21*a*, 21*b* and an anchor 33 (Fig. 2) on a bar 34 connecting the side plates 5, 5′. The yoke 23 which carries brush 27 being pivoted to the horizontally disposed yoke at the horizontal pivots 24, 24′, brush 27 can move toward or away from brush 7 by a tension spring 35 stretched between the bottom bar of yoke 23 and an anchor on rear cross bar 3*a*.

A lug 36 projects laterally from the yoke or carriage 23 and is located to engage a stop block 37 (Figs. 2 and 6) to limit movement of brush 27 toward brush 7. Block 37 (Fig. 6) is adjustable by means of a rod 38 threaded therein and journalled in lugs 39 on the side of casting 5, the rod being operated by means of a knob or handwheel 41 on its end. A cotter pin 42 limits outward movement of the rod, and a compression spring 43 abutting the wall of the casting and knob 41 applies sufficient frictional resistance to turning of the knob to prevent accidental turning thereof. It is to be observed that the pivot points 24, 24′ of the carriage 23 on the horizontal yoke lie substantially in the plane passing through the centers of pulleys 13 and 31 so that the upward thrust of belt tightening spring 32 is substantially in said plane and is in the contrary direction to the thrust exerted by the belt. A suitable electrical switch 44 may be mounted on the housing 51 for starting or stopping the motor. Since the movable support for the brush 27 is formed of two rigid yokes or frames arranged substantially at right-angles to each other, these two frames permit the rotary axis of brush 27 to move in any direction in a plane at right-angles to the axes of the two rotary brushes while maintaining the two brushes in parallel relation. The biasing spring 32 which acts upon the first rigid frame tends to move the brush 27 upwardly, and this upward movement is limited by the driving belt 29. The biasing spring 35 acts upon the second rigid frame in a direction tending to move brush 27 towards brush 7, and this movement is limited by the adjustable stop 37.

The housing is covered by a hood 45 hinged at 46 and having an opening 47 in the top, the opening being surrounded by an inturned flange 48 which closely approaches the brushes. The legs of the stand are surrounded by a housing 51 providing an opening in front for reception of a drawer 52. The drawer has a flange 53 at the top of its rear wall 54 which rests on the cross rail 34 to provide a more or less close fit, and the drawer may be supported for sliding movement in any suitable manner. A pointed brush 56 may be mounted on the top for cleaning the cuffs at the points where they are tacked.

The operation of the apparatus now will be described. The motor (Fig. 8) through pulleys 13, 8 and belt 15 drive the brush 7 counterclockwise, while pulleys 14, 31 and belt 29 drive brush 27 clockwise, the weight of the motor 12 serving to keep tension on the belts. Brush

27 is biased toward brush 7 by spring 35, and upon insertion of a cuff through opening 47 between the brushes, the brush 27 is pushed away from brush 7 against the bias of spring 35. However, spring 32 maintains the belt 29 at the proper tension for driving brush 27 regardless of the position of the brush or of the tension on belt 15. The dust and debris removed from the cuff is deposited in drawer 52, the flange 48 acting to prevent the dust being carried to the exterior of the machine.

I claim as my invention:

1. In a brushing machine having two rotary brushes arranged for rotation in opposite directions about parallel axes, one of said brushes being mounted upon a supporting base for rotation about a fixed axis, the combination of means including a movable support for mounting said other brush for a predetermined range of unrestrained floating movement of its rotary axis in any direction in a plane at right-angles to its axis, a driving motor mounted within said base below said other brush, driving means including a driving belt connecting said motor with said other brush, and means including a biasing spring acting upon said movable support and urging said other brush in an upward direction to maintain said belt under constant tension while permitting movement of said other brush toward said one brush, said driving belt constituting the sole means for limiting the upward movement of said other brush.

2. A brushing machine according to claim 1 and including a second driving belt connecting said motor with said one brush, and means mounting said motor for movement under a yielding force in a direction to maintain said second driving belt under tension.

3. In combination, a supporting base, a shaft journaled upon said base for rotation about a fixed axis and having an operating pulley, a second shaft having an operating pulley, means including a movable support for mounting said second shaft for rotation about an axis parallel with said first shaft and for a predetermined range of unrestrained floating movement in any direction in a plane at right-angles to said shafts, a driving motor having a pair of driving pulleys, means supporting said driving motor within said supporting base below said shafts so that said motor may move in a vertical direction, a drive belt connecting one of said motor pulleys with the pulley on said first shaft, resilient means acting on the motor mounting means for maintaining said belt under tension, a second drive belt connecting the other motor pulley with the pulley on said second shaft, and resilient means acting on the mounting means of said second shaft for urging said second shaft in an upward direction to maintain said second belt under constant tension while permitting movement of said second shaft toward said first shaft, said second drive belt comprising the sole means for limiting the upward movement of said second shaft.

4. A combination according to claim 3 and including resilient means acting on said movable support independently of said first mentioned resilient means and tending to move said second shaft towards said first shaft.

5. In a brushing machine having two rotary brushes arranged for rotation in opposite directions about parallel axes, one of said brushes being mounted upon a supporting base for rotation about a fixed axis, the combination of a movable support for mounting said other brush for movement of its rotary axis in any direction in a plane at right-angles to said brush axes while maintaining said parallel relation, said movable support comprising a flat rigid frame arranged in a substantially horizontal plane below said brushes, means pivotally connecting said frame to said base on an axis parallel with said brush axes, a second rigid frame arranged in a substantially vertical plane and having said other brush journaled on the upper part thereof, and means pivotally connecting the lower part of said second frame to said first frame on an axis parallel with said brush axes and spaced from said first pivotal axis, a driving motor mounted within said base below said brushes, driving means including a driving belt connecting said motor with said other brush, and means including a biasing spring acting upon said first rigid frame and urging said other brush in a direction to maintain said belt under tension.

6. A brushing machine according to claim 5 and including a biasing spring acting upon said second rigid frame in a direction urging said other brush toward said one brush.

7. A brushing machine according to claim 6 and including adjustable stop means for limiting the movement of said other brush towards said one brush.

8. A brushing machine according to claim 5 and including stops for limiting the pivotal movement of said first rigid frame about its pivotal axis.

9. In combination, a supporting base, a shaft journaled upon said base for rotation about a fixed axis and having an operating pulley, a second shaft having an operating pulley, a movable support for mounting said second shaft for rotation about an axis parallel with said first shaft and for movement in any direction in a plane at right-angles to said shafts while maintaining said shafts in parallel relation, said movable support comprising a flat rigid frame arranged in a substantially horizontal plane below said shafts, means pivotally connecting said frame to said base on an axis parallel with said shafts, a second rigid frame arranged in a substantially vertical plane and having said second shaft journaled on the upper part thereof, and means pivotally connecting the lower part of said second frame to said first frame on an axis parallel with said shafts and spaced from said first pivotal axis, a driving motor having a pair of driving pulleys, means supporting said driving motor within said supporting base below said shafts, a drive belt connecting one of said motor pulleys with the pulley on said first shaft, a second drive belt connecting the other motor pulley with the pulley on said second shaft, and yieldable biasing means acting on said first rigid frame for urging said second shaft in a direction to maintain said second belt under tension.

10. A combination according to claim 9 and including yieldable biasing means acting on said second rigid frame tending to move said second shaft towards said first shaft.

11. In a brushing machine having two rotary brushes arranged for rotation in opposite directions about parallel axes, one of said brushes being mounted upon a supporting base for rotation about a fixed axis, the combination of a movable support for mounting said other brush for movement of its rotary axis in any direction in a plane at right-angles to said brush axes while maintaining said parallel relation, said movable support comprising a flat rigid frame arranged in a substantially horizontal plane below said brushes, means pivotally connecting said frame to said base on an axis parallel with said brush axes, a second rigid frame arranged in a substantially vertical plane and having said other brush journaled on the upper part thereof, and means pivotally connecting the lower part of said second frame to said first frame on an axis parallel with said brush axes and spaced from said first pivotal axis, a driving motor mounted within said base below said brushes, driving means including a driving belt connecting said motor with said other brush, means including a biasing spring acting upon said first rigid frame and urging said other brush in a direction to maintain said belt under tension, a second driving belt connecting said motor with said one brush, and means mounting said motor for movement under yielding force in a direction to maintain said second driving belt under tension.

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