Sept. 30, 1941. A. D. McDONELL 2,257,391

WINDOW CLEANER OR WASHER

Filed July 10, 1940 3 Sheets-Sheet 1

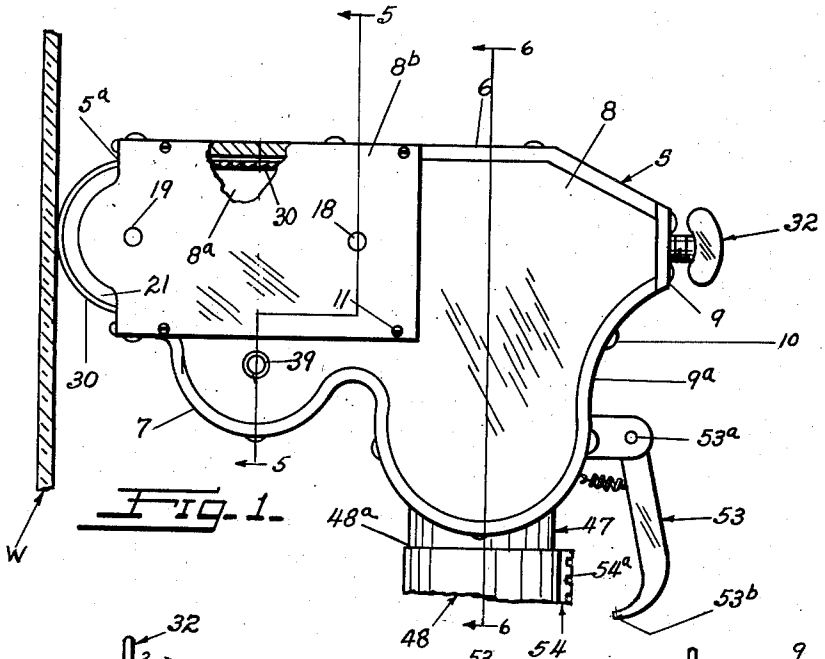


Fig. 1.

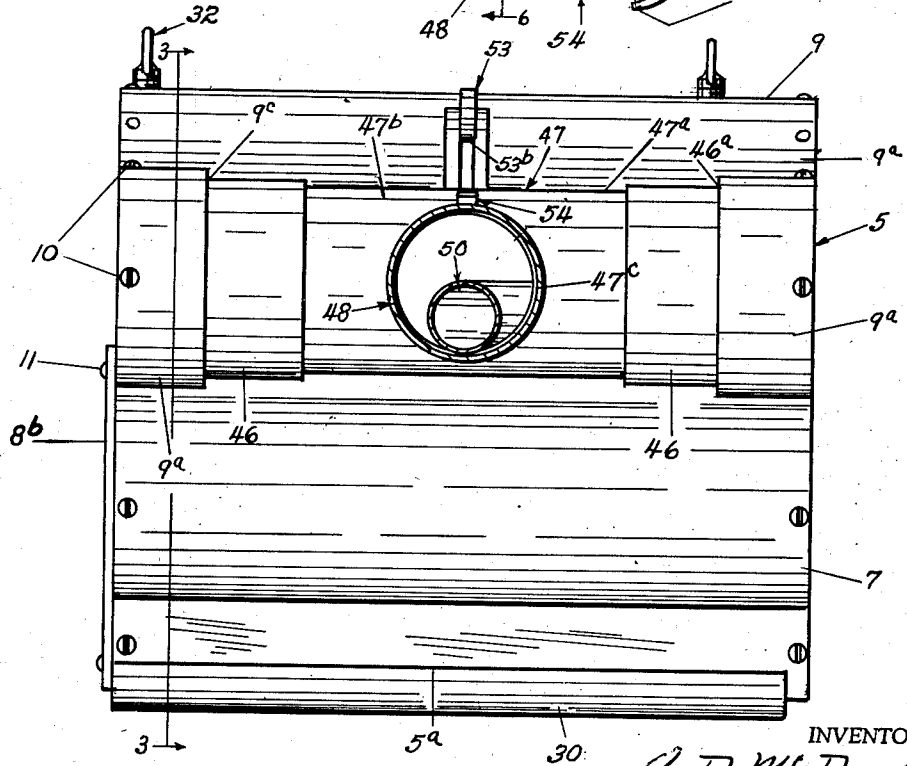


Fig. 2.

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WINDOW CLEANER OR WASHER

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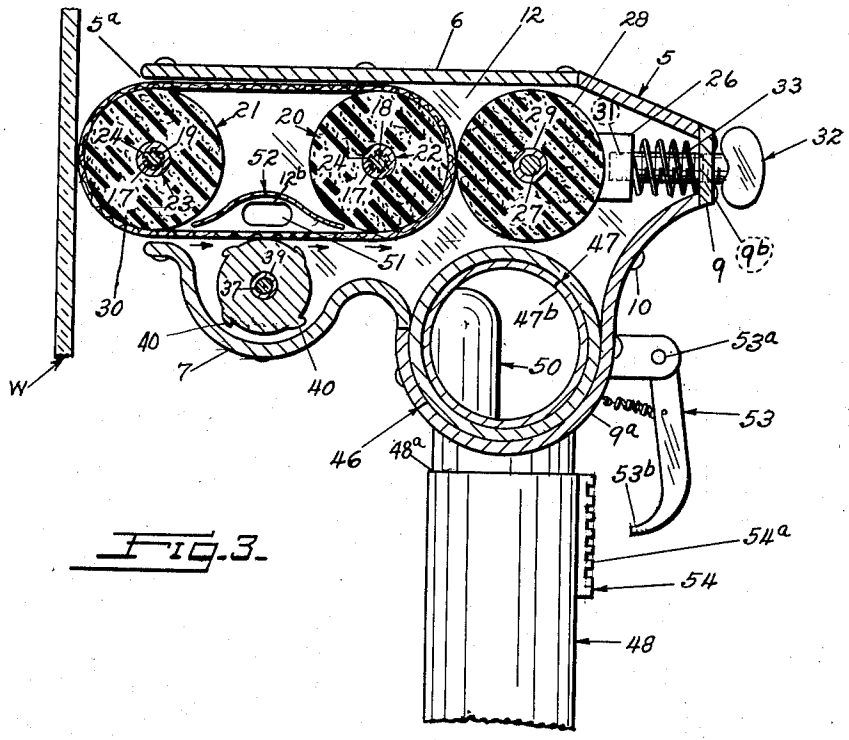


Fig. 3.

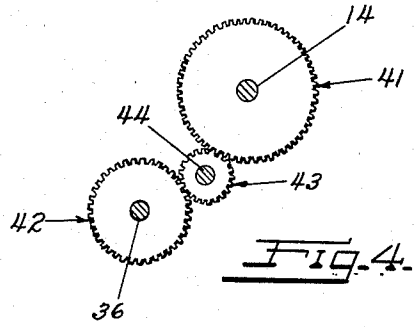


Fig. 4.

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WINDOW CLEANER OR WASHER

Filed July 10, 1940 3 Sheets-Sheet 3

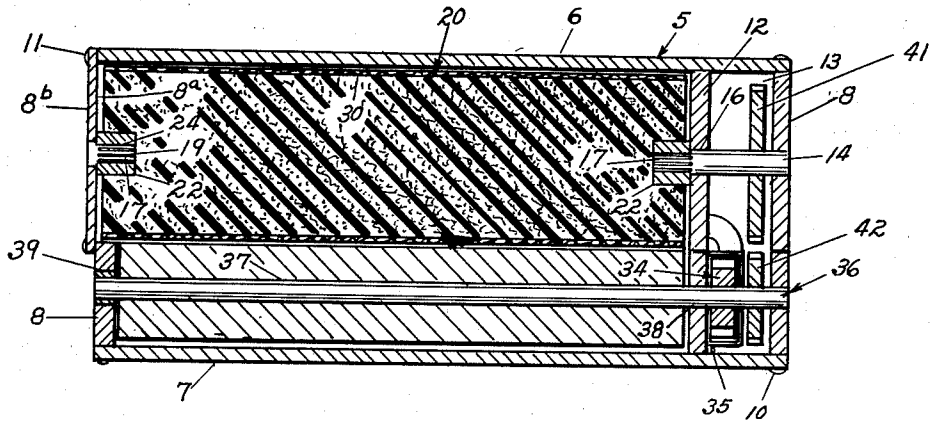


Fig. 5.

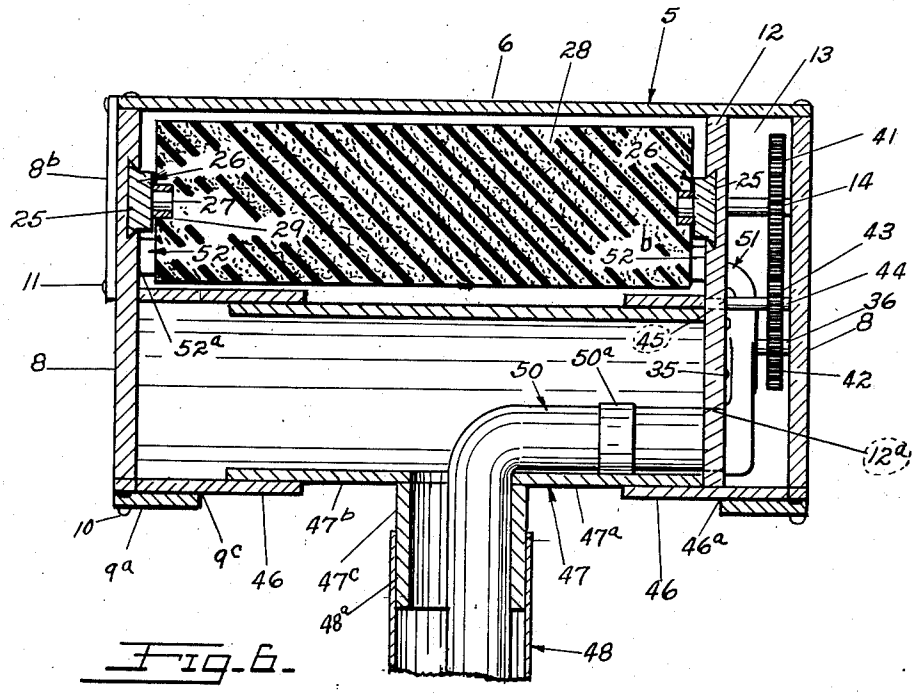


Fig. 6.

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Patented Sept. 30, 1941

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UNITED STATES PATENT OFFICE

2,257,391

WINDOW CLEANER OR WASHER

Alexander D. McDonell, Vancouver, British Columbia, Canada

Application July 10, 1940, Serial No. 344,626

2 Claims. (Cl. 15—99)

This invention relates to window cleaners or washers, and particularly to devices of this kind designed for large scale operations such as window washing as an occupation, or for washing store windows and the like.

The main object of the invention is to provide a window cleaner including a housing, a pair of spaced belt-carrying rollers journaled in the housing, one of the rollers being a window contact roller and being partially protruded from the housing for that purpose, the other or inner roller being a belt carrying and wringer roller, a complemental wringer roller adjustably spring-pressed against the other wringer roller, an endless cleansing or wash belt mounted on the belt carrying rollers and between the inner wringer rollers, a rotary beater journaled in the housing and adapted to contact the outer side of the belt, a water motor in the housing, gear connections for operating the rollers and beater from the water motor, a hollow handle for the housing, the same serving also as a drain pipe for water used, a relatively small feed water pipe or hose extended up through the hollow handle for feeding water under pressure through the water motor for operating the same and for supplying water to the wash belt.

With the foregoing objects in view, together with such other objects and advantages as may appear from the specification, a preferred embodiment of the invention is shown in the accompanying drawings, wherein:

Figure 1 is a side elevation of the invention as enclosed in its housing, a portion of the housing being broken out to show the interior arrangements. The handle is here shown as broken off.

Figure 2 is a rear elevation of the device.

Figure 3 is a vertical cross-section on the line 3—3 of Figure 2.

Figure 4 is a diagrammatic view of the gear assembly and drive for the upper roller and wash belt beater, as driven by the water motor.

Figure 5 is a longitudinal cross-section on the line 5—5 of Figure 1, sections being broken out at each end.

Figure 6 is a longitudinal section on the line 6—6 of Figure 1.

In constructing a window washer or cleanser in accordance with this invention, I provide a suitable elongated housing of light metal, represented generally at 5, and which is roughly triangular on an end view. The housing includes an oblong top-plate 6, an irregularly corrugated bottom plate 7, angularly formed end plates 8, and rear plates 9, 9a, secured to the end plates by screws 10. The frontal side of the housing is left open as indicated at 5a, and a rectangular opening 8a is formed in the left end plate and adapted to be closed by a closure plate 8b secured in place by screws 11.

A partition 12 is rigidly mounted in the housing 5, in slightly spaced relation to the right end 8, to form a gear housing 13 and roller stub-shafts 14 are journaled at 16 through this partition, in a spaced relation adjacent the top plate 6, the inner ends of these shafts being splined as shown at 17. Bearing studs or pintles 18, 19 are rigidly set in spaced relation on the inner side of the closure plate 8b, these pintles being arranged for transverse alignment with the stub shafts 14, when the plate 8b is properly secured in place over the opening 8a of the end plate 8. A pair of belt supporting rollers 20, 21, formed with soft rubber peripheries and having bearing thimbles or sleeves 22, 23 set axially in their ends, are provided for mounting upon the stub-shafts 14, and pintles 18, 19. The thimbles 22, 23 designed for positioning over the splined shafts 14, are slotted longitudinally as at 24 for engaging the splines 17, whereby the rollers are rotated with the said stub shafts.

Undercut mortises 25 are formed on the inner sides of the left end plate 8 and the partition 12 in alignment with the rollers 20, 21, these mortises opening out rearwardly, and a pair of bearing blocks 26 are slidably mounted in these mortises, the blocks having aligned bearing pintles 27 set onto their inner sides. A wringer roller 28, similar to the rollers 20, 21, and having the bearing thimbles 29 set axially into its ends, is journaled by said thimbles upon the pintles 27, and adapted to peripherally contact the inner roller 20 which in this relation acts as a complemental wringer roller.

An endless cleanser belt 30, of suitably soft and porous fabric, is trained over the rollers 20, 21 for travel between the wringer rollers 20, 28. The roller 28 may be adjustably set against the roller 20 by forming sockets 31 in the blocks 26 and passing thumb-screws 32 through threaded bores 9b in the plate 9 and then setting coil springs 33 over the screws between the blocks 26 and plate 9. The casing of a suitable water motor 34 is bolted at 35 to the outer side of the partition 12, spaced below the rollers 20, 21, with the left end 37 of the motor shaft 36 journaled through the partition 12 as shown at 38 and extended through the housing 5 and journaled in the left end plate 8, as shown at 39.

The shaft 37 constitutes a beater shaft, and a number of beater blades 40 are rigidly mounted on the shaft beater 37 and adapted to beat upon the belt 30 as the shaft 37 rotates. Spur gears 41, 42 are keyed in operative alignment on the right ends of the roller shaft 14 and motor shaft 36 respectively, within the gear housing 13, and are operatively connected by an idle gear 43 journaled on a stub-shaft 44 seated at 45 through the partition 12.

An opening 9c is formed medially through the rear housing plate 9a, short sleeves 46 are rigidly mounted in transverse alignment at either side of this opening. A tubular T-joint 47 has its branches 47a, 47b snugly but rotatably pivoted at either side, in the sleeves 46, the hollow stem 47c extending outwardly. The sleeves 46 open at their outer ends into the housing 5, and the joint 46a is so formed and rounded at either side and fitted so snugly to the contacting margins of the plate 9a, that water cannot pass from the housing 5 outwardly of the joint 46a, but must flow through said joint. A hollow or tubular handle 48 is snugly slip-jointed at 48a to the stem 47c of the T-joint 47, and additional tubular lengths of handle (not shown) may be similarly connected, as required. A valve controlled water feed pipe or hose 50, (the valve not shown) of substantially smaller exterior diameter than the interior diameter of the handle 48, is passed up through the handle 48, through the right branch 47a of the T-joint 47 and is connected at its end by the joint 50a through an opening 12a in the partition 12 with the intake side of the water motor 34. A water discharge pipe 51 is connected to the discharge side of the motor, and thence turned inwardly and extended through an opening 12b in the partition 12 between the rollers 20, 21 and within the belt 30, for discharging water upon the lower side of said belt. If desired a curved water shield 52 may be installed over the discharge extension pipe 51, the ends of this shield being attached at its left end 52a to the end plate 8 and at its right end to the partition 12.

A handle adjustment bar 53 may be pivotally mounted at one end as indicated at 53a, to the plate 9, the free end carrying a pawl 53b, adapted to engage any one of a series of ratchet notches 54a on the plate 54 mounted at 55 to the outer side of the T-joint 47. By this arrangement the angular extension of the handle 48 relative to the housing 5 may be regulated to suit.

In operation water or any cleansing solution is fed through the feed pipe or hose 50, to and through the motor 34, and thence is discharged upon the lower side of the belt 30, through which it passes and then flows down the branches of the T-joint 47 and out through the hollow handle 48 alongside the feed-pipe 50, the waste water being taken care of in any convenient manner. The motor is arranged to traverse the belt 30 inwardly at its lower side, as indicated by the arrows. The motor operates the inner roller 20, which being in frictional contact with the wringer roller 28, with the belt 30 running between, the water is squeezed from the belt continuously as it enters between these rollers. The motor also simultaneously operates the beater blades 40, for beating and jarring dirt from the cleansing belt 30. The implement is held up vertically by the handle, and the exposed peripheral portion of the window contact roller 21, as exposed through the open frontal side 5a of the housing 5, is positioned upwardly on the window W, and then is drawn downwardly. The traveling cleansing belt 30 picks up the dirt from the window and carries it inside the housing and there discharges it in the manner pointed out above. The window is thoroughly cleaned and left comparatively dry, with no surplus liquid left to run down over the window frame and discolor same. The rollers 20, 21 may be removed through the end opening 8a, for renewal of the belt 30.

While I have here shown and described a specific embodiment of the invention and certain structural features thereof, the same may be changed or modified in details within the scope of the claims.

I claim:

1. A window cleaner comprising a housing open at one side, a pair of belt rollers journaled in the housing in spaced, parallel alignment, one of the rollers protruding at its periphery partially through the open side of the housing, the inner roller serving also as a wringer roller, an endless cleansing belt mounted over the rollers, another wringer roller journaled in the housing outwardly of and in contact with the inner wringer roller and cleansing belt thereon, a water motor mounted in the housing, gear connections between the motor and the rollers for operating the latter, a hollow, drained handle for the housing, a relatively small feed pipe extended up through the handle into the housing and operatively connected with the intake side of the motor, a discharge pipe connected with the discharge side of the motor and extended between the belt rollers within the belt thereon.

2. In the structure as defined in claim 1, a belt beater rotatably mounted in the housing and operatively geared to the water motor.

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