

Sept. 2, 1958

A. F. HAYTER
CLEANING MACHINE

2,849,746

Filed Feb. 18, 1955

2 Sheets-Sheet 1

FIG. 2

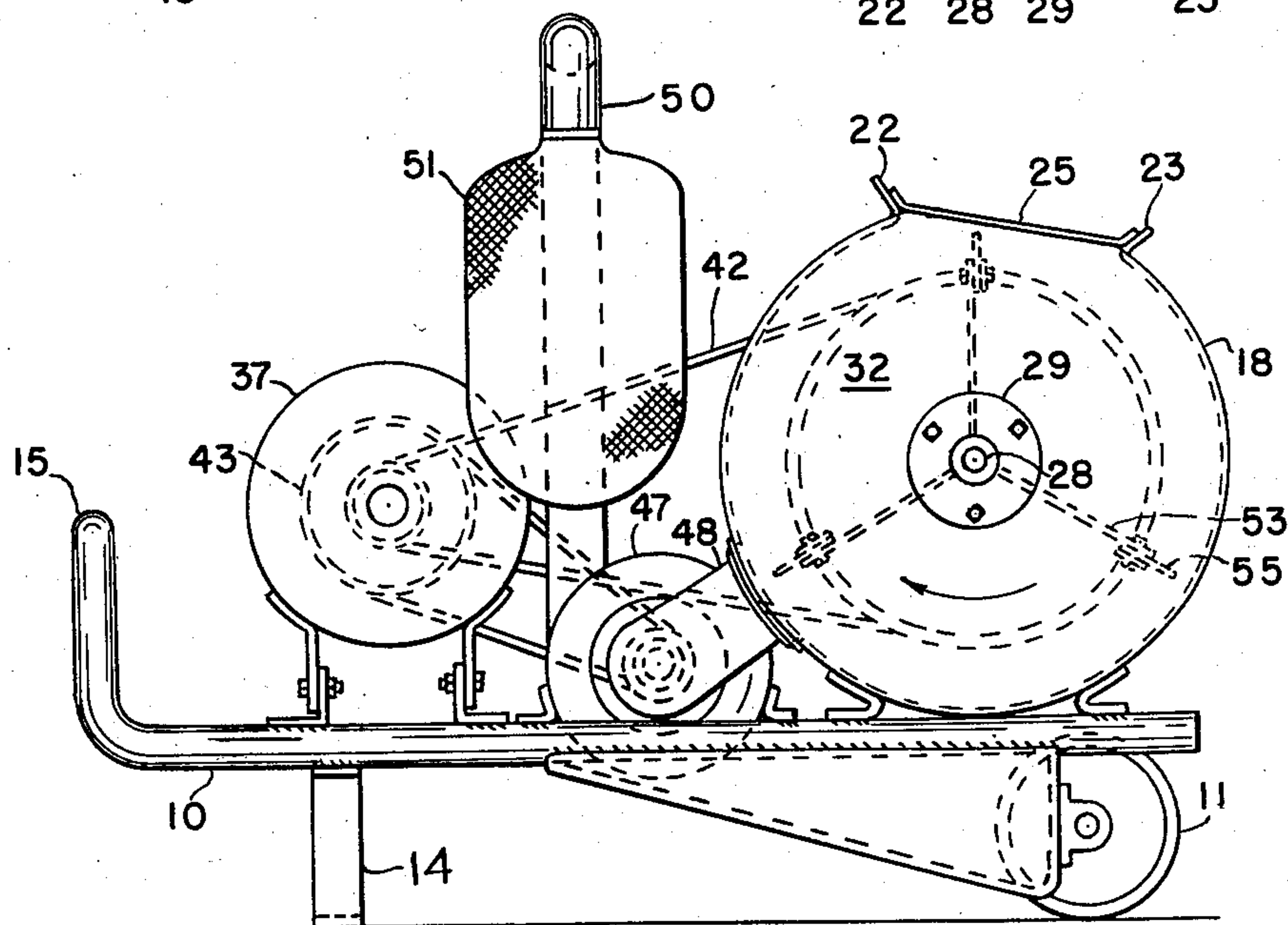
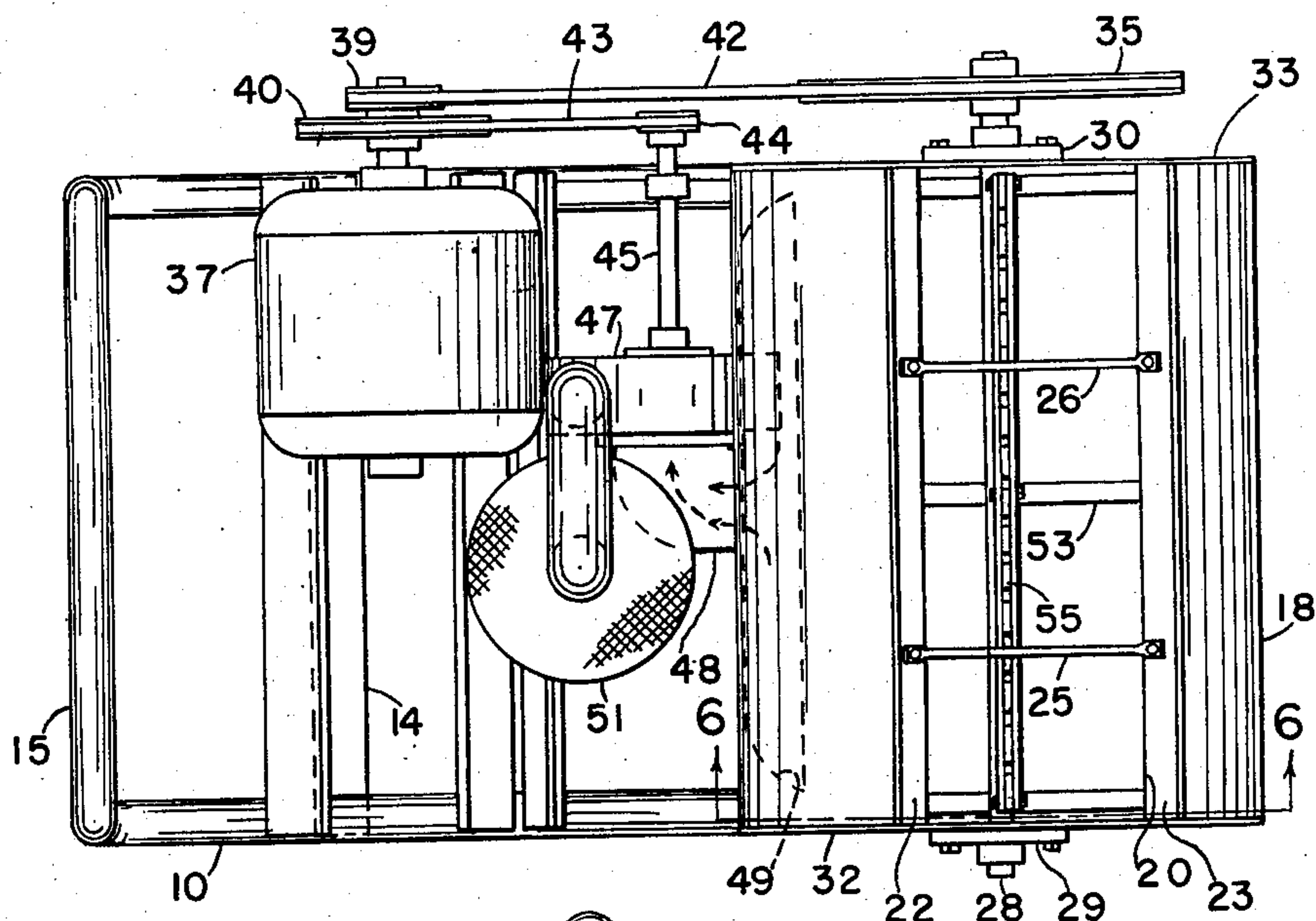


FIG. 1

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FIG. 3

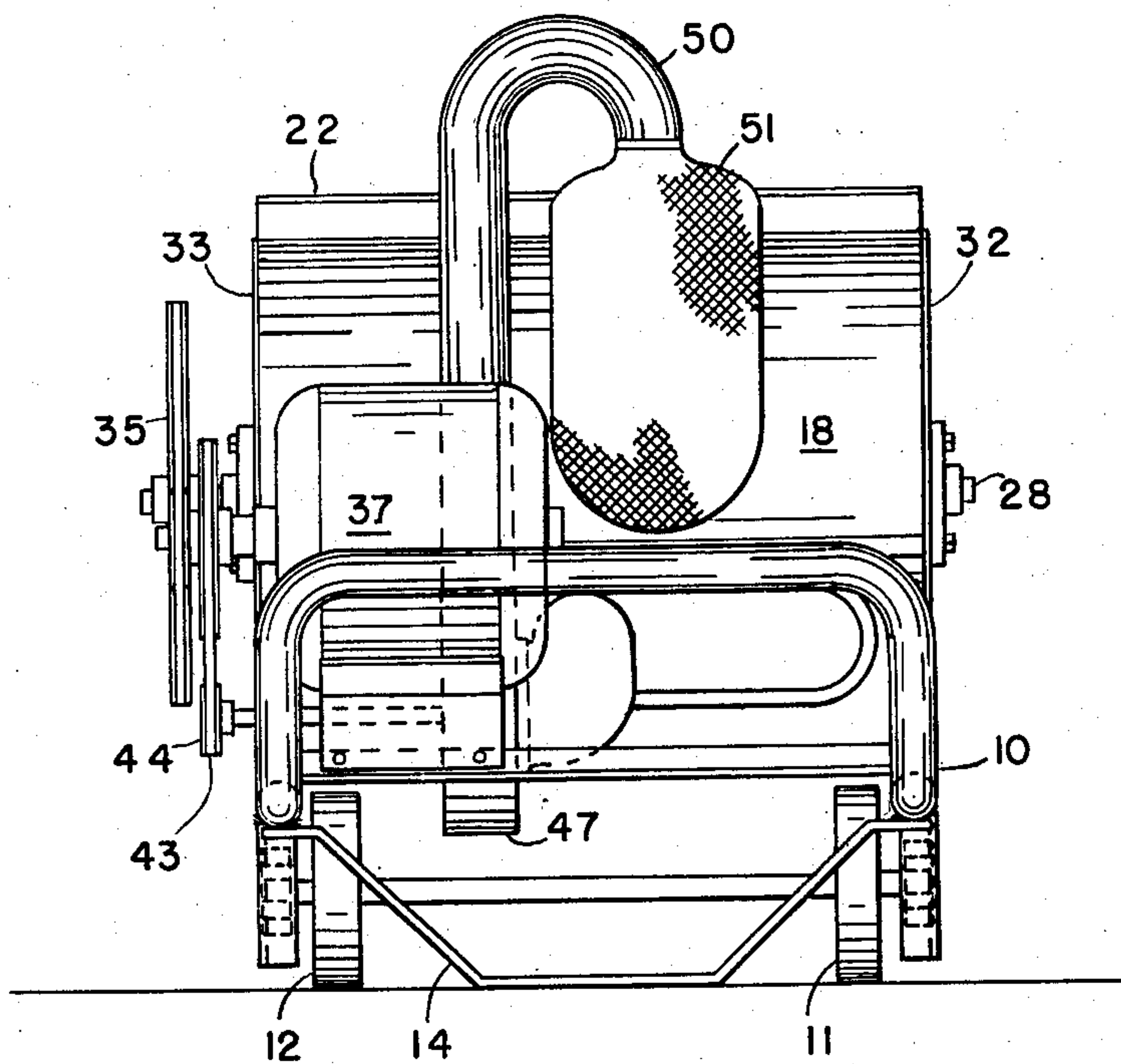


FIG. 7

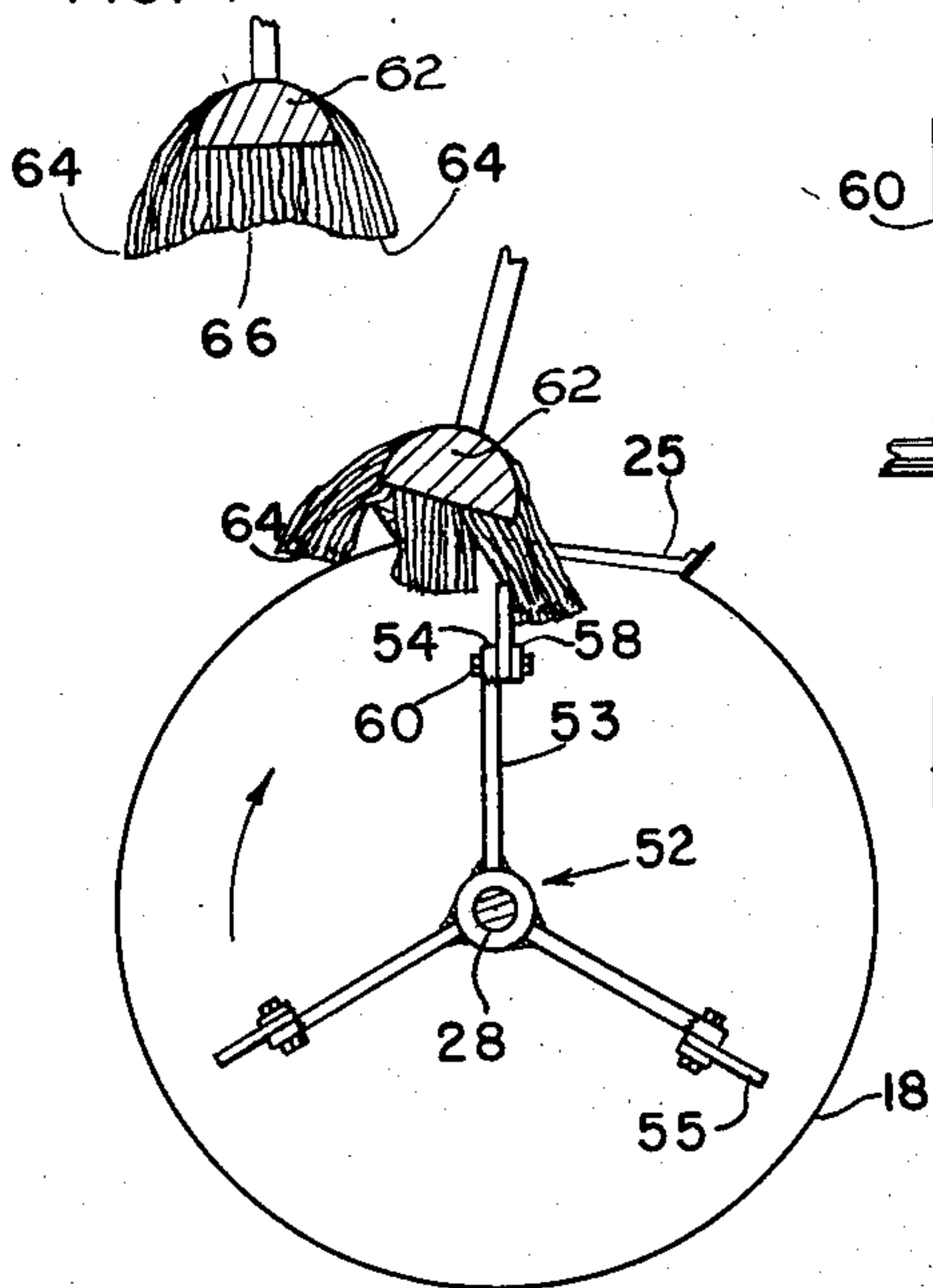


FIG. 6

FIG. 4

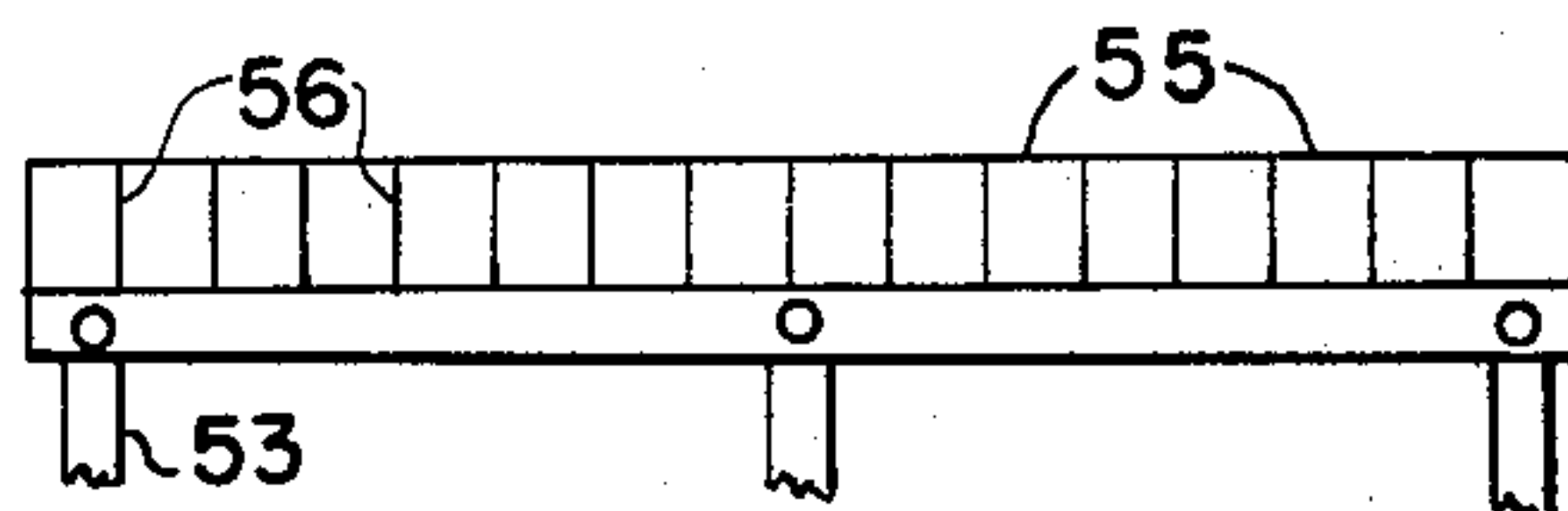
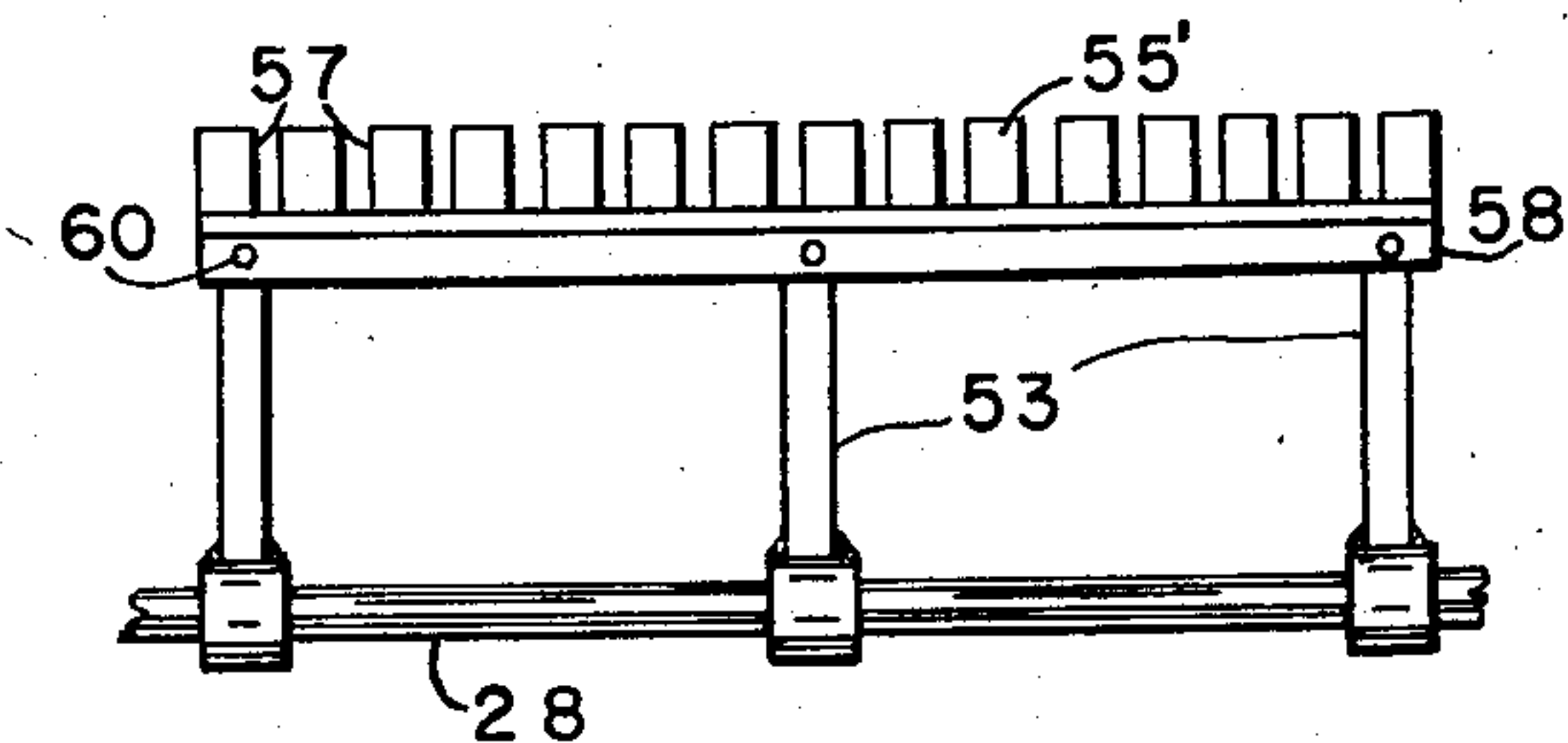


FIG. 5

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2,849,746

CLEANING MACHINE

Archie F. Hayter, South Beloit, Ill.

Application February 18, 1955, Serial No. 489,115

1 Claim. (Cl. 15—311)

This invention relates to cleaning machines and finds particular utility in cleaning dust mops or similar articles.

This is a continuation-in-part of my co-pending application, Serial Number 438,669 filed June 23, 1954, entitled "Dust Mop Cleaner," now abandoned.

The type of dust mop that is frequently used in the maintenance of schools, hospitals, industrial buildings, etc., is of considerable length. In use, these mops require frequent cleaning and to do so conveniently, and without disseminating the dirt back into the air, has been a troublesome problem in the past. Furthermore, the frequent cleaning required of these mops is a major factor in shortening the life of the mop and, more specifically, the life of the fabrics of which the mop is composed.

It is therefore an object of this invention to provide an improved cleaning machine which cleans in a highly efficient manner and without excessive beating of the article to be cleaned.

It is another object of this invention to provide a cleaning machine which is capable of cleaning a mop, beginning at one of its sides, progressively across its width so as to expose each of the fabrics individually to the cleaning action and thereby preclude the dirt from being trapped in any pockets that may otherwise be formed by the fabric.

It is an object of this invention to provide a cleaning machine having means which will clean a mop, or similar articles, with only the necessary amount of fabric agitation or beating and which will also cause an air blast to pass through the fabric concurrently to insure a thorough cleaning job.

It is another object of the invention to provide a cleaning machine which will quickly, easily, and efficiently clean mops of various lengths and which is simple in construction and economical to manufacture.

It is still another object of this invention to provide a cleaning machine in which the fabrics of the article to be cleaned are fed to the cleaning beater by the action of gravity, and progressively from one of its sides to the other.

Other objects and advantages will become more apparent as this disclosure progresses, reference being had to the accompanying drawing, in which:

Figure 1 is an elevational view of a machine embodying this invention.

Figure 2 is a plan view of the machine shown in Figure 1.

Figure 3 is an end elevational view of the machine shown in Figures 1 and 2.

Figure 4 is a fragmentary view, on an enlarged scale, of the beater.

Figure 5 is a modification of the beater paddle shown in Figure 4.

Figure 6 is an end view, in section, taken on line 6—6 of Figure 1, showing a mop, in relation to the beater, while it is being cleaned.

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Figure 7 is a cross sectional view of a typical mop.

Referring more particularly to the drawings, a mobile support frame 10 is provided having a pair of transport wheels 11, 12, a stand 14 and a handle portion 15. The entire machine is comparatively small and light in weight and can easily be moved about.

A cylindrical casing 18 is secured to the frame 10 and has an opening 20 across its entire length defined by the edges of the casing 18 which terminate in flanges 22, 23. The opening 20 is located on the top side of the casing 18 and flanges 22, 23, are spaced apart a distance sufficient to accommodate the entire width of a mop as shown best in Figure 6. Guard bars 25, 26 are secured at spaced locations between flanges 22, 23 and serve to prevent the mop from being inserted too far within the casing 18.

The beater shaft 28 is rotatably mounted in bearings 29, 30 which are secured to end walls 32, 33 respectively of the casing 18. A pulley 35 is secured to shaft 28 and is driven by an electric motor 37 which is rigidly mounted on frame 10. A pair of driver pulleys 39, 40 transmit power through flexible belts 42, 43 to beater pulley 35 and the pulley 44 of suction fan shaft 45, respectively. Suction fan 47 is in communication with the interior of casing 18 through the duct 48 and acts to suck the debris-laden air from an outlet passageway in the form of a manifold 49 in the casing 18 and then blow it through the conduit 50 into bag 51 which is detachably secured thereto.

The beater, indicated generally by numeral 52, comprises a plurality of circumferentially spaced spokes 53 secured to shaft 28 and extending radially therefrom. Each set of axially aligned spokes is connected together at their outer ends by a paddle support member in the form of bar 54 which are coextensive in length with the entire beater assembly. The shaft 28, spokes 53 and bars 54 all form a rigid, integral, rotary structure. Secured to each member 54 and extending outwardly therefrom along their entire length are flexible plates or paddles 55 or 55'. I have found sheet rubber material to be very satisfactory and, as shown in Figures 4 and 5, these paddles 55 and 55' have radially extending slits 56 or notches 57 respectively. Paddles of various forms and width are interchangeable depending on the nature of the article to be cleaned and may be readily replaced when worn. For this purpose the paddles are detachably secured to paddle support members 54 by means of backing strips 58 and bolt and nut means 60, which extend through registering apertures in the member 54, flexible plates 55 or 55' and backing strips 58.

Obviously the flexible paddle material is subjected to a slapping action as beating takes place and, with the construction and mounting above described, it is securely gripped and supported along its entire length. This beater is light in weight and simple in construction, yet highly efficient as will appear more fully hereinafter.

As best shown in Figure 6, the peripheral edge of the entire beater assembly comes to a predetermined distance from the guards 25, 26 and this distance remains the same, for any given set of flexible material 55, regardless of the speed at which the beater is driven. In other words, centrifugal force has nothing to do with the beating action of the paddles. The paddles, because of their width in a radial direction, act also as a fan or blower. In the process of loosening the dust from the hanging fabric ropes by a gentle, steady and even beating action, an airstream or air blast is forced through and around the fabric ropes to carry the loosened dust away from the mop and into proximity with the manifold 49.

A typical construction of many mops is shown in Figure 7, and they are usually comprised of relatively

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long fabric ropes or strands 64 along either outer side while the center fabric strands 66 are shorter. If the mop were cleaned from both sides simultaneously, as in many prior art structures, the longer ropes at either side are brought together at their free ends during the cleaning process and actually enclose the shorter center ropes. It is impossible, under these circumstances, to thoroughly loosen and remove dust from the center ropes which are enclosed by the pockets so formed by the longer outer ropes.

In the device forming the subject matter of this invention, the opening 20 is located directly above the beater and a distance away from it, and, as shown in Figure 6, the mop, or at least a portion of it, is first laid across the edge of opening 20, i. e., the flange 22. The mop is then moved to the right, as viewed in Figure 6, the main body 62 of the mop being supported by guards 25, 26.

The beater 52 rotates in the direction shown by the curvilinear arrow in Figures 1 and 6. When the cleaning action commences, the long ropes at the right edge of the mop come into contact with the paddles first and then as the mop is moved to the right it is cleaned progressively across its width. The individual ropes fall into contact with the beater paddles and are individually and thoroughly agitated as they hang freely in the path of the beater. By slitting the flexible sheets, as previously described, more thorough contact with the rope fabric is assured.

The speed of the beater may be varied by conventional means but the cleaning action of the beater remains the same, except, of course, as to intensity of beating and amount of air blast. Only a beating action of sufficient vigorousness is used and an increased mop life of about 30 percent has been enjoyed by the use of this machine. The machine is compact, the diameter of the beater being approximately 10 inches. With such a beater, speeds of 100 R. P. M. have proven very satisfactory for the average large mop.

The beater 52 and opening 20 both extend for the full width of the casing 18 and the ends 32, 33 of the casing are vertically positioned and free of projections. Thus a mop of considerable length, often on the order of four feet, may be cleaned by inserting it into the hopper in successive steps across its length.

Having thus shown and described the invention, what is desired to be secured by Letters Patent is:

For use in cleaning and beating dust mops having

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an elongated head including flexible depending elongated plural parallel rows of fabric strands including a pair of outer rows of greater length than an inner row; a mobile cleaning machine comprising a support frame including an elongated horizontally disposed closed cylindrical casing including a longitudinal slot extending the length of said casing and chordally through the upper surface of said casing and of a width sufficient to accommodate the width of a mop being cleaned, a rotor assembly journaled axially of said casing and including a plurality of circumferentially spaced and radially extending flexible resilient detachable paddles each extending longitudinally of the casing and terminating adjacent but spaced from the inner periphery of said casing, each of said paddles including longitudinally spaced radial slots extending into the longitudinal edges of said paddles for combing the mop strands, suction means communicating with the interior of said casing for collecting debris from a dust mop being cleaned, and power means operatively connected to said suction means and rotor assembly for simultaneously operating the same, said casing including guard bar means extending transversely of said longitudinal opening for supporting a mop head in movement transversely of said longitudinal slot for progressively orienting the strands of the lower face of the mop head in chordal relation in the path of rotation of said flexible paddles whereby the paddles progressively force air through said strands and knock debris therefrom, the casing including upwardly extending flanges at the longitudinal edges of the slot in the casing for guiding the brush in its movement transversely of said slot and the ends of the slot being free of projections permitting a mop being cleaned to be moved longitudinally of said slot past the ends of the casing without obstruction.

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