

[54] **AUTOMOBILE BODY ROLL SANDER**

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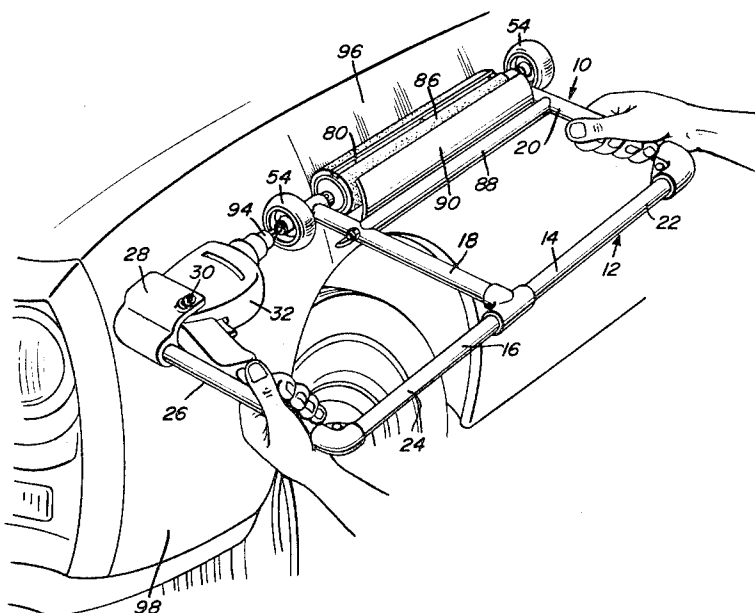
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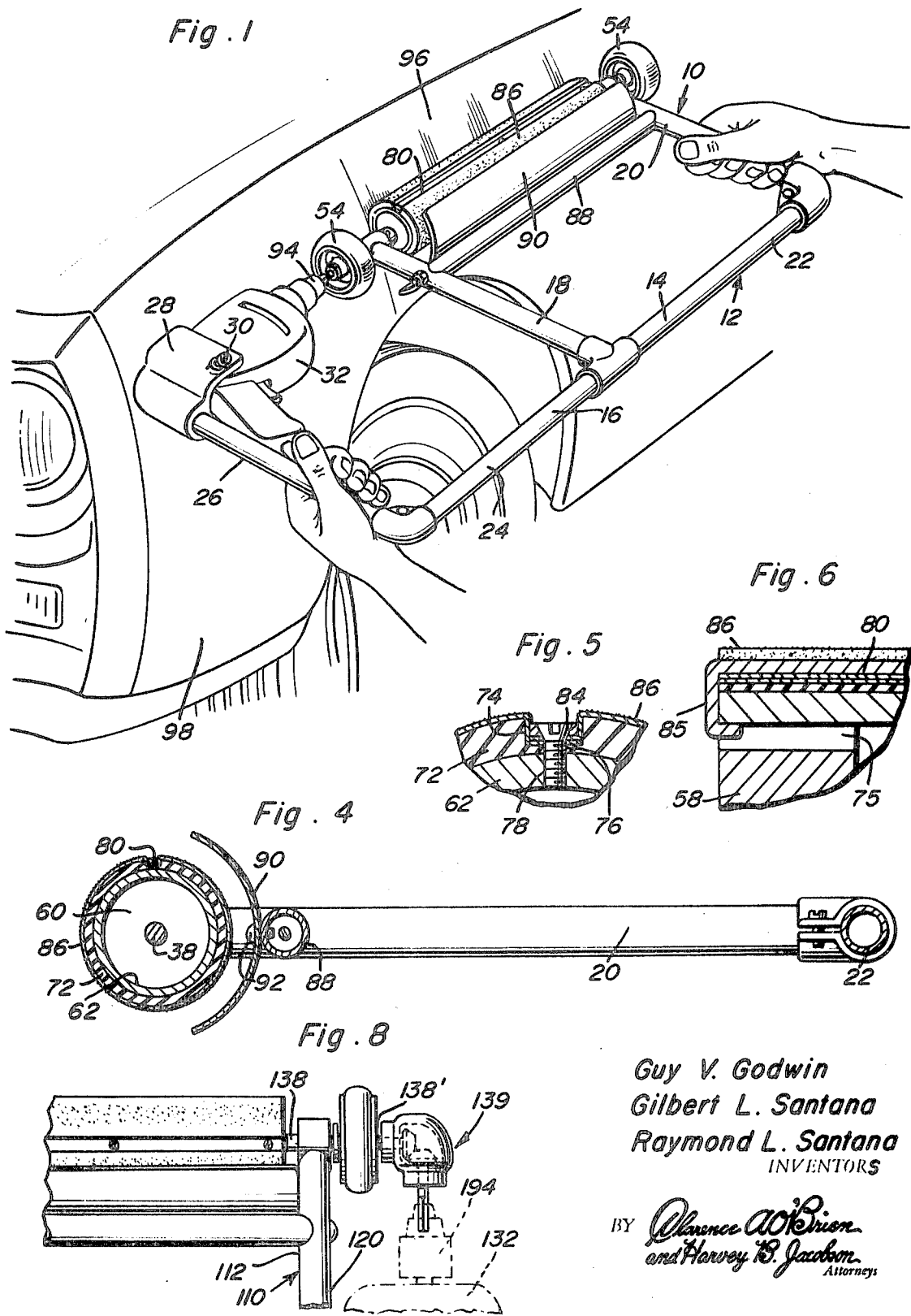
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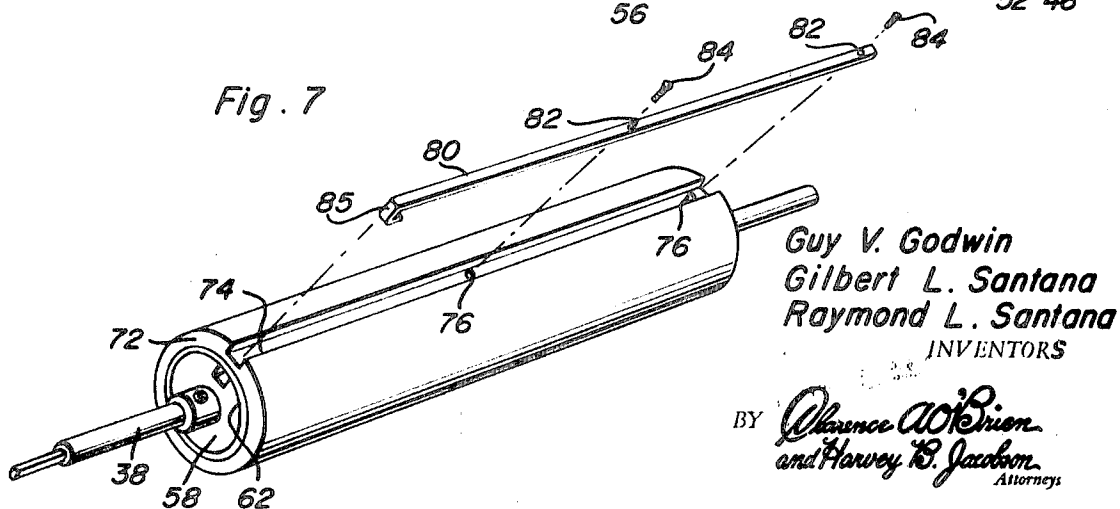
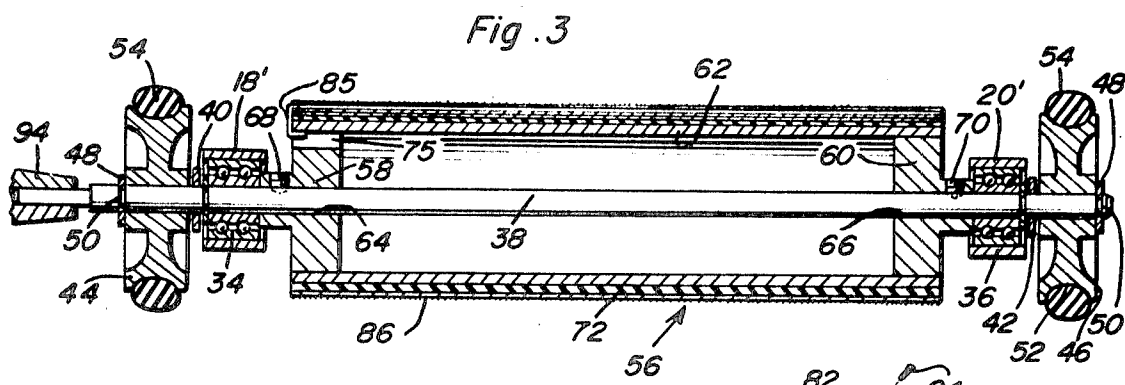
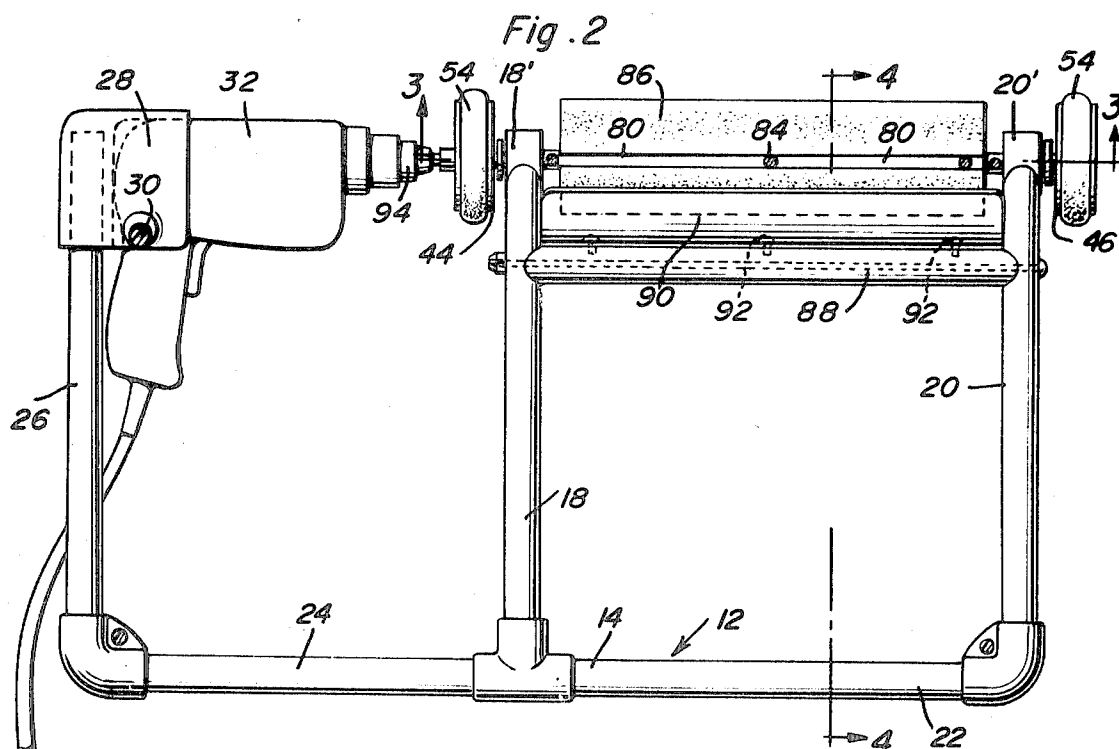
[57] **ABSTRACT**

A journaled drum having a longitudinal outer groove in which the opposite ends of a band of abrasive material encircling the drum are anchored. The drum includes opposite end rollers provided with resilient outer peripheral portions and journaled for rotation relative to the drum about axes coinciding with the axis of rotation of the drum and the diameters of the rollers are substantially equal and slightly greater than the diameter of the drum defined by the outer surfaces of the band of abrasive material disposed thereabout.

8 Claims, 8 Drawing Figures







AUTOMOBILE BODY ROLL SANDER

The automobile body roll sander has been specifically designed to provide a means whereby simple curved surfaces as well as flat surfaces of an automobile body may be accurately sanded when completing body work preparatory to repainting.

While some body panels of motor vehicles include compound curves, other body panels such as side fender panels, door panels, quarter panels, trunk panels, top panels and hood panels include simple curves defining segments of cylindrical surfaces.

While these simple curved surfaces are not as difficult to sand as compound curved surfaces when completing repair of such surfaces, considerable skill is required in order to sand even a simple curved surface so that the previously damaged portions thereof blend smoothly and conform to the adjacent undamaged portions of the repaired body panel.

While there have been no machines developed wherein compound and irregular curved surfaces of vehicle body panels may be accurately sanded, the sander of the instant invention has as its main object to provide a sanding machine which may be utilized by even less skilled persons in accurately sanding and truing plain curved body panel sections.

Another object of this invention is to provide a sander which may be powered by means of a conventional hand drill and thus which may be constructed without its own power source so that its cost of manufacture may be maintained at a minimum.

Still another object of this invention is to provide a sander in accordance with the preceding objects and constructed in a manner whereby a conventional hand drill may be readily coupled thereto for the purpose of powering the roll portion of the sander.

Another important object of this invention is to provide a roll type sander constructed in a manner whereby sheets of sandpaper may be readily mounted thereon without the roll sander being distorted from an out-of-round condition.

A final object of this invention to be specifically enumerated herein is to provide a roll sander in accordance with the preceding objects which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively trouble-free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a fragmentary perspective view of the front left hand fender of a motor vehicle and with the roll sander of the instant invention being utilized to sand and true the upstanding side portion of the fender above the front wheel well opening therein;

FIG. 2 is a plan view of the roll sander illustrated in FIG. 1;

FIG. 3 is an enlarged fragmentary vertical sectional view taken substantially upon the plane indicated by the section line 3—3 of FIG. 2;

FIG. 4 is a fragmentary enlarged vertical sectional view taken substantially upon the plane indicated by the section line 4—4 of FIG. 2;

FIG. 5 is a fragmentary vertical sectional view illustrating the manner in which one end of the sandpaper retaining bar is secured to the sander roll;

FIG. 6 is a fragmentary vertical sectional view illustrating the manner in which the other end of the sandpaper retaining bar is secured to the sander roll;

FIG. 7 is an exploded perspective view of the roll element portion of the sander with the sandpaper retaining bar illustrated in an exploded position; and

FIG. 8 is a fragmentary plan view of a modified form of roll sander utilizing a right angle drive to operatively couple a hand drill to the roll element portion of the sander.

Referring now more specifically to the drawings, the numeral 10 generally designates a first form of the roll sander. The sander 10 includes a main frame referred to in general by the reference numeral 12 consisting of a bifurcated frame portion 14 and an L-shaped frame portion 16 formed integrally with the portion 14. The bifurcated frame portion 14 includes a pair of generally parallel legs or furcations 18 and 20 interconnected at one pair of corresponding ends by means of a bight portion 22 and the frame portion 16 includes a pair of right angled legs 24 and 26 including a pair of adjacent ends joined together in any convenient manner. The leg 24 forms a continuation of the end of the bight portion 22 adjacent the leg 18 and the leg 26 projects from the end of the leg 24 remote from the leg 18 in the same direction as the leg 18 and generally parallels the latter.

The free end of the leg 26 includes a C-shaped clamp portion 28 having a clamp screw 30 and the clamp portion 28 and its clamp screw 30 may be utilized to clampingly support a conventional hand drill 32 from the free end of the leg 26 with the chuck end of the drill 32 projecting toward the free end of the leg 18.

With attention now invited more specifically to FIGS. 2 and 3 of the drawings it may be seen that the free ends of the legs 18 and 20 include aligned journal portions 18' and 20', respectively, in which ball bearing assemblies 34 and 36 are supported.

A support shaft 38 is journaled through the bearing assemblies 34 and 36 and has a pair of washers 40 and 42 disposed on its opposite ends outwardly of the bearing journals or sleeves 18' and 20'. Further, a pair of wheels or rollers 44 and 46 are journaled on the end portions of the shaft 38 outwardly of the washers 40 and 42 and retained on the end portions of the shaft 38 by means of retaining washers 48 removably seated in circumferential grooves 50 formed in the terminal ends of the shaft 38. The outer peripheral portions of the wheels or rollers 44 and 46 are provided with circumferentially extending grooves 52 in which resilient tires or annular treads 54 are seated. The tires or annular treads 54 are generally oval in cross-sectional shape and may therefore be readily compressed as the wheels 44 and 46 are urged toward a surface over which they are rolling.

A roller assembly referred to in general by the reference numeral 56 is provided and includes a pair of opposite end walls 58 and 60 secured within the opposite ends of a cylindrical body 62. The end walls 58 and 60 include aligned central bores 64 and 66 through which longitudinally spaced portions of the shaft 38 are snugly received and the walls 58 and 60 further include setscrews 68 and 70 by which they are secured in position on the shaft 38 in position disposed between but closely opposing the bearing assemblies 34 and 36.

With attention now invited more specifically to FIGS. 5 and 6 of the drawings it may be seen that the cylindrical body 62 is provided with an outer cylindrical resilient cover or coating 72 in which an outwardly opening and longitudinally extending slot 74 is formed. The slot 74 opens outwardly of the opposite ends of the coating or covering 72 and the end wall 58 has an opening 75 formed therethrough which is in radial registration with the adjacent end of the groove 74. In addition, the coating or covering 72 and the body 62 have longitudinally spaced pairs of radially aligned smooth and threaded bores 76 and 78 formed therethrough and an elongated retaining bar 80 is provided and receivable within the groove 74. The bar 80 is provided with longitudinally spaced bores 82 which are registrable with the corresponding bores 76 and 78 and headed threaded fasteners 84 are utilized to secure the bar 80 within the groove 74 by securement of the fasteners 84 through the bores 82 and 76 and threaded engagement of the fasteners 84 in the bores 78. Further, one end of the bar 80 is hooked as at 85 and this hooked end portion is engaged with the corresponding end of the body 62 and projects into opening 75.

A band 86 of flexible abrasive material such as sandpaper is tightly wound about the coating or covering 72 and has its opposite ends seated in the groove 74 in overlapped engagement

and the bar 80 serves to retain the ends of the band 86 within the groove 74, the fasteners 84 being also secured through the overlapped ends of the band 86.

With attention now invited more specifically to FIGS. 1, 2 and 4 of the drawings, it may be seen that a brace member 88 is secured between the free end portions of the legs 18 and 20 and that a partial cylindrical shield 90 is secured to the brace or brace member 88 by means of suitable fasteners 92. The shield 90 opens toward and closely embraces the adjacent side of the roller 56 and thereby prevents the operator of the sander from having bits of metal or abrasive material thrown against him.

The end of the shaft 38 remote from the leg 20 is removably chucked in the chuck 94 of the hand drill 32 and accordingly, operation of the hand drill 32 will cause the roller 56 to rotate.

In operation, when a vehicle body panel portion such as the simple curved portion 96 of a vehicle fender 98 illustrated in FIG. 1 is to be sanded, the sander 10 is positioned in the manner illustrated and the hand drill 32 is actuated. Then, the user of the sander 10 may roll the wheels 44 and 46 over the portion 96 and gradually increase the pressure urging the wheels 44 and 46 into contact with the portion 96 of the fender 98. As the pressure is increased, the treads or tires 54 will be compressed at their point of contact with the portion 96 and the outer abrasive surface of the band 86 will be brought into contact with the portion 96 so that it may be properly sanded.

With attention now invited more specifically to FIG. 8 of the drawings, there will be seen a modified form of sander referred to in general by the reference numeral 110 and which is constructed in a manner generally similar to the sander 10 with the exception that the corresponding drill 132 is supported from the leg 120 by means of a clamp portion (not shown) similar to the clamp portion 28 and supported from the leg 120 and the chuck 194 of the drill 132 is drivingly coupled to an extended end portion 138' of the shaft 138 by means of a right angle drive assembly referred to in general by the reference numeral 139. Of course, the sander 110, inasmuch as the drill 132 is supported from the leg 120, has no need for a frame portion corresponding to the frame portion 16 and accordingly, the frame 112 of the sander 110 does not include a counterpart for the frame portion 16.

Other than the above noted differences, the sander 110 is substantially identical to the sander 10 and its operation is therefore very similar to the operation of the sander 10.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A vehicle body panel sander and grinder assembly adapted to be hand held and propelled over a body panel, said

assembly including a frame, a drum assembly journaled from said frame and having an abrasive outer surface, a pair of rollers also journaled from said frame at opposite ends of said drum assembly for rotation about axes coinciding with the axis of rotation of the drum, the rollers including resilient outer peripheral portions of substantially equal diameter and slightly larger in diameter than the diameter of the drum assembly defined by said outer surface, one end portion of said drum assembly including torque receiving means adapted to have torque input drive means drivingly coupled thereto, said frame including portions outwardly of the remote sides of parallel planes in which said rollers are disposed for gripping by the two hands of the user of the assembly, said resilient outer peripheral portions being such to support said frame and drum from a vehicle body panel with said drum spaced from said panel, but sufficiently yieldable, under manual pressure, to deform at their areas of contact with said panel sufficient to enable contact of said abrasive outer surface of said drum assembly with said panel.

2. The combination of claim 1 wherein said drum assembly comprises a drum member having a sleeve secured over its outer surface, the outer surface of said sleeve comprising said abrasive outer surface.

3. The combination of claim 2 wherein said drum member includes a resilient outer coating, said sleeve being flexible and secured over said outer coating.

4. The combination of claim 3 wherein said outer coating includes a groove formed therein extending longitudinally of said drum member, said sleeve comprising a band of flexible abrasive material wrapped about said coating and including overlapped opposite end edge portions anchored in said groove.

5. The combination of claim 4 wherein said groove includes one open end, and elongated bar seated in said groove having a backturned hook formed on one end engaged with the end of said coating and drum member adjacent said open end of said groove, and threaded fastener means removably anchoring the other end of said bar in the corresponding end of said groove.

6. The combination of claim 1 wherein said frame includes a bifurcated frame portion between whose furcations said drum assembly is journaled, a motor including a rotary output shaft, said motor being supported from said frame, said torque receiving means drivingly coupling said rotary output shaft to said drum assembly.

7. The combination of claim 6 wherein said rotary output shaft is aligned with the axis of rotation of said drum assembly.

8. The combination of claim 1 wherein said frame includes a bifurcated frame portion between whose furcations said drum assembly is journaled, a motor including a rotary output shaft, said motor being supported from said frame, said torque receiving means drivingly coupling said rotary output shaft to said drum assembly, said rotary output shaft being disposed at right angles relative to the axis of rotation of said drum assembly.

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