

[54] COMBINATION ROTARY BRUSH, DETERGENT DISPENSER AND DRIER

[72] Inventor: Frank Roosevelt Walton, 7939 Dellwood Ave., Lanham, Md. 20801

[22] Filed: Mar. 20, 1970

[21] Appl. No.: 21,389

1,764,462	6/1930	Mosier34/90 X
2,230,404	2/1941	Healey15/4
2,659,915	11/1953	Sears15/29
3,060,472	10/1962	Horton15/29 X
3,387,312	6/1968	Westphal15/97 X

Primary Examiner—Daniel Blum
Attorney—Frank P. Cyr

[52] U.S. Cl.15/4, 15/29, 34/90, 34/243

[51] Int. Cl.A46b 13/04, F26b 19/00

[58] Field of Search15/4, 24, 29, 50 R, 52, 97 R; 34/90, 97

[57] ABSTRACT

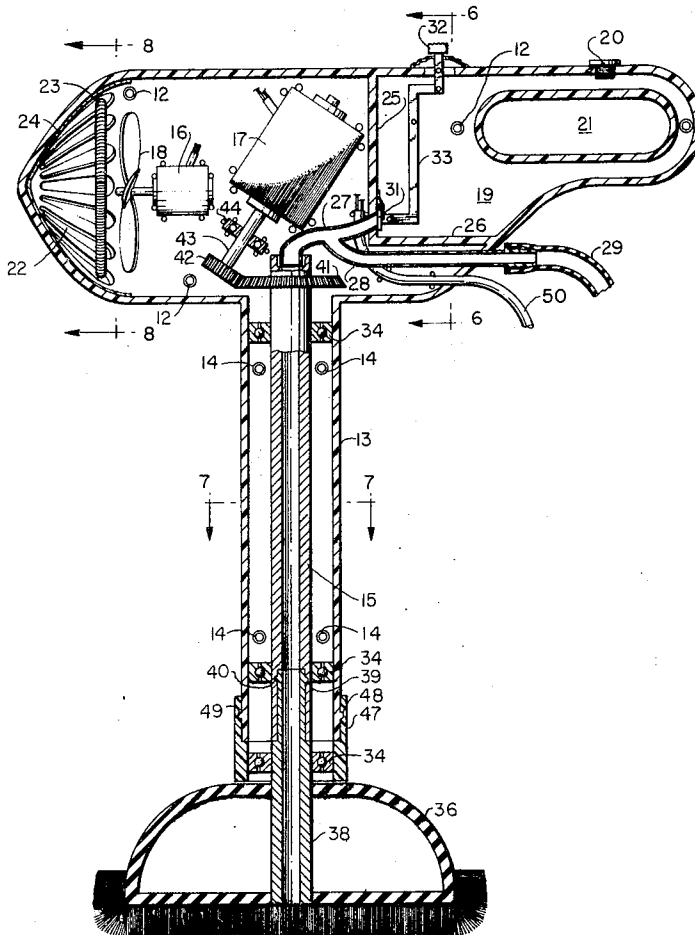
A portable implement combining therein a powered brush element, a detergent chamber capable of releasing a brushing agent and directing the same to a point of discharge adjacent the brush element together with a drying means, all operative parts for the aforesaid assembly being wholly contained within a single casing, thus enabling the implement to be efficiently employed in the washing and drying of objects to be cleaned and subsequently dried.

[56] References Cited

UNITED STATES PATENTS

1,578,013 3/1926 Case15/29

4 Claims, 11 Drawing Figures



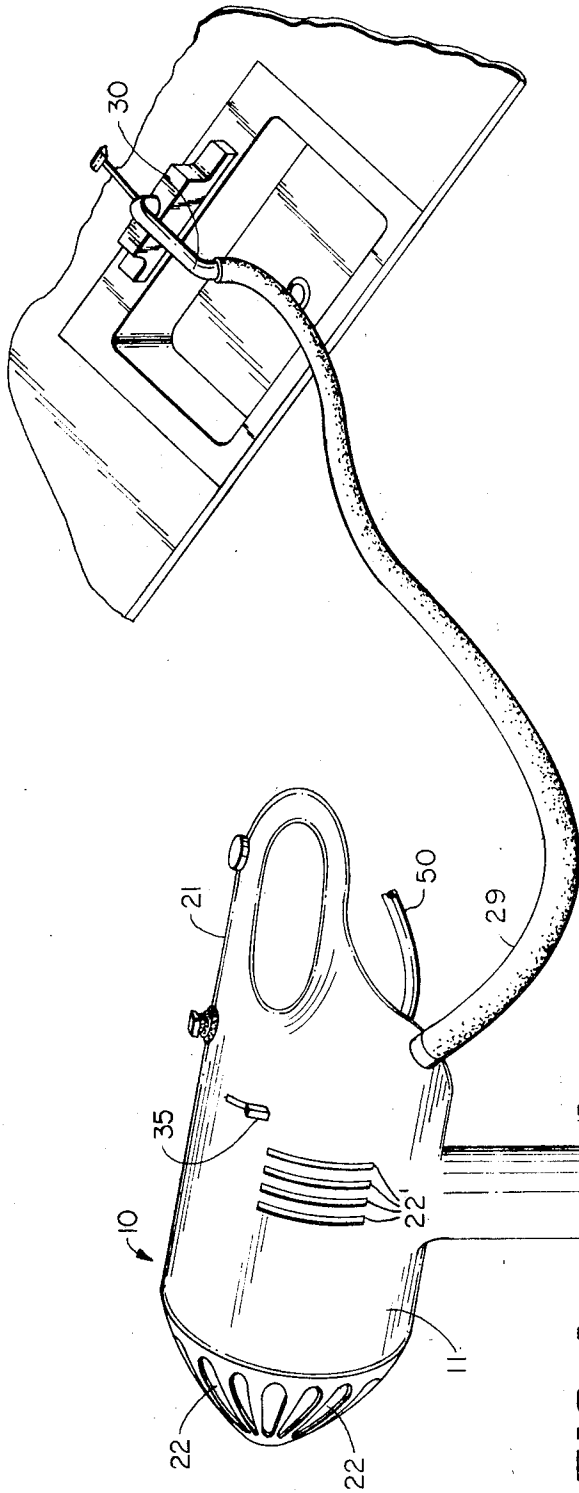


FIG. 1

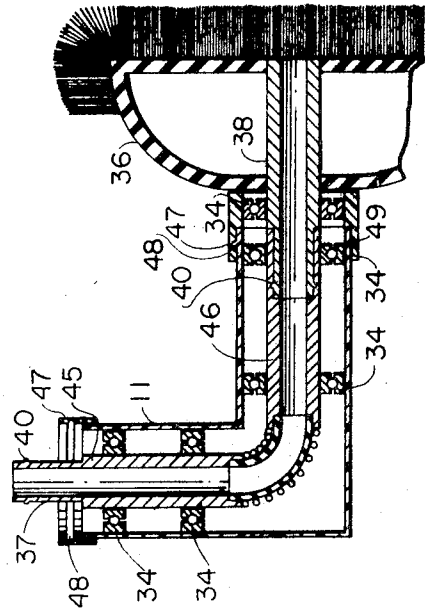


FIG. 10

INVENTOR.
FRANK R. WALTON

BY

ATTORNEYS

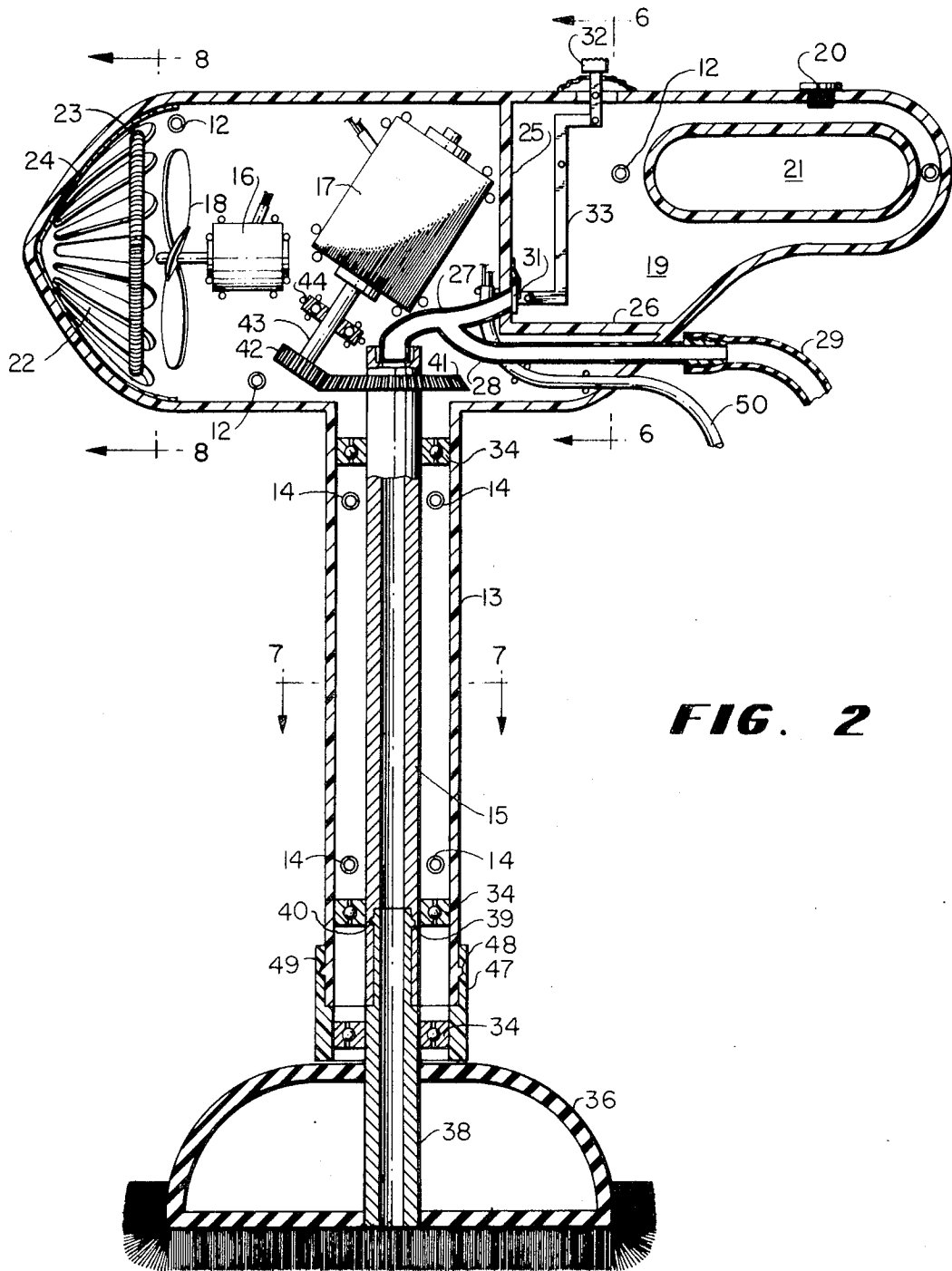


FIG. 2

INVENTOR.
FRANK R. WALTON

BY

Frank R. Walton
ATTORNEYS

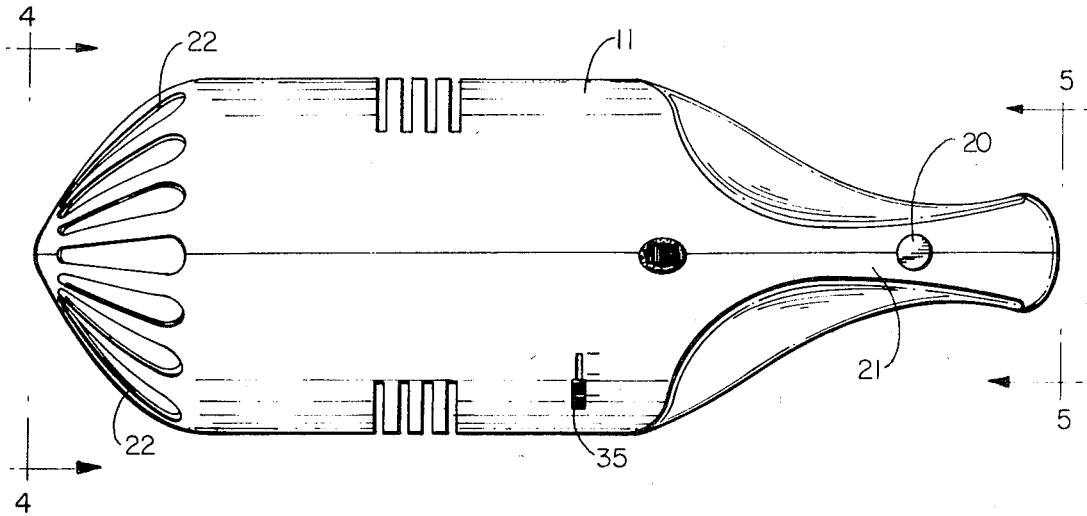


FIG. 3

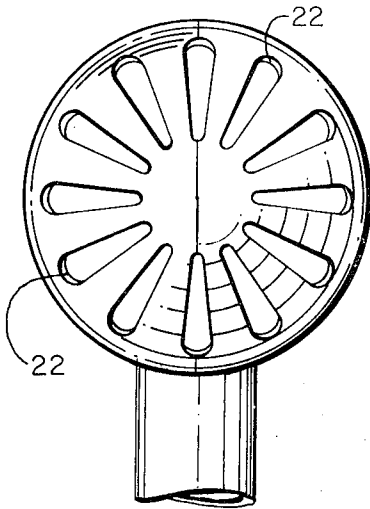


FIG. 4

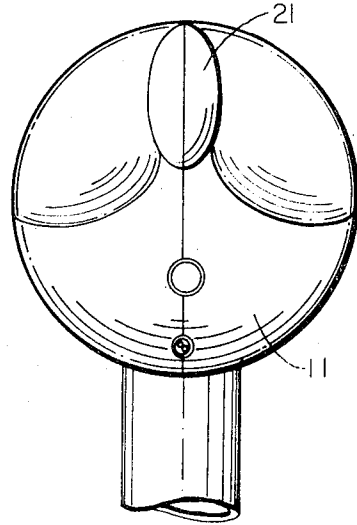


FIG. 5

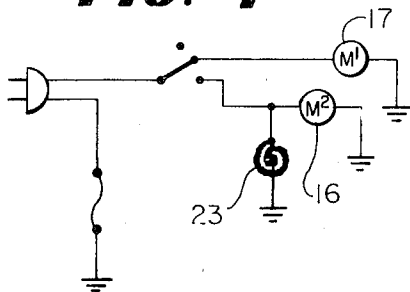


FIG. 11

INVENTOR.
FRANK R. WALTON

BY

Frank Pope

ATTORNEYS

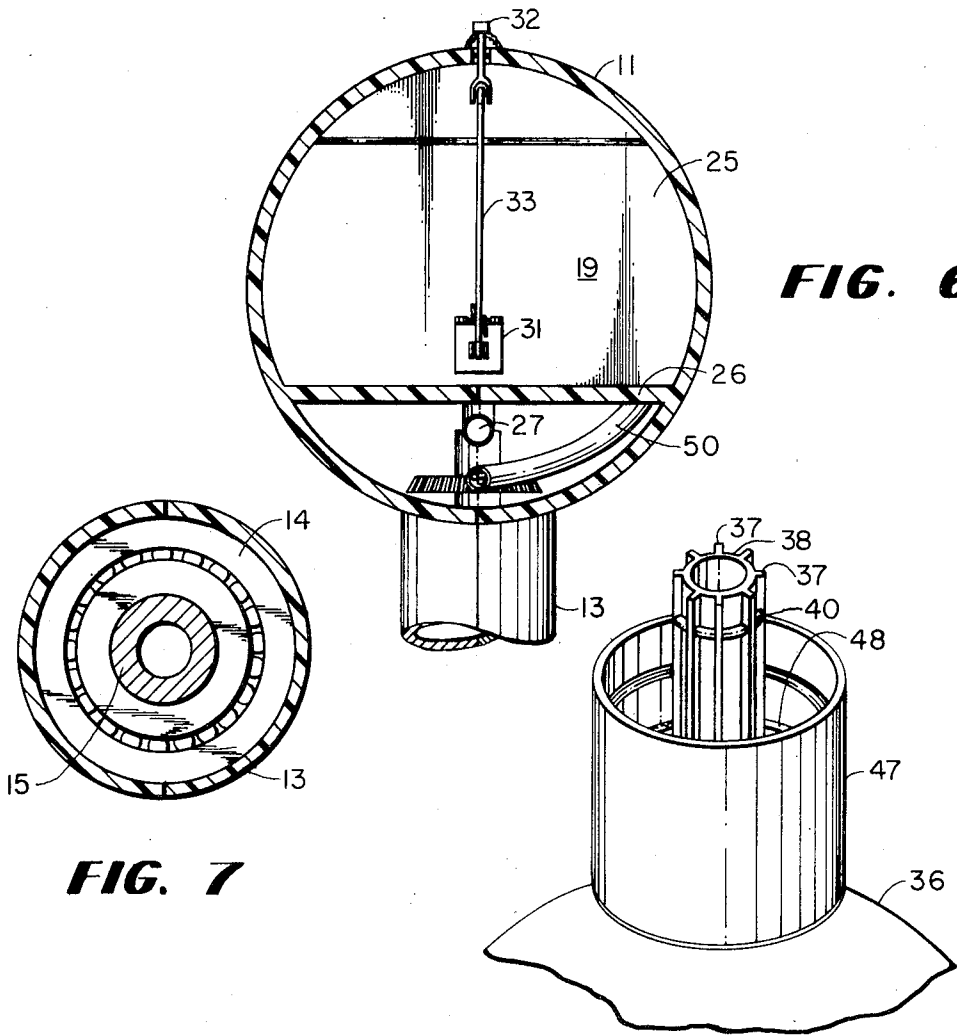


FIG. 6

FIG. 7

FIG. 9

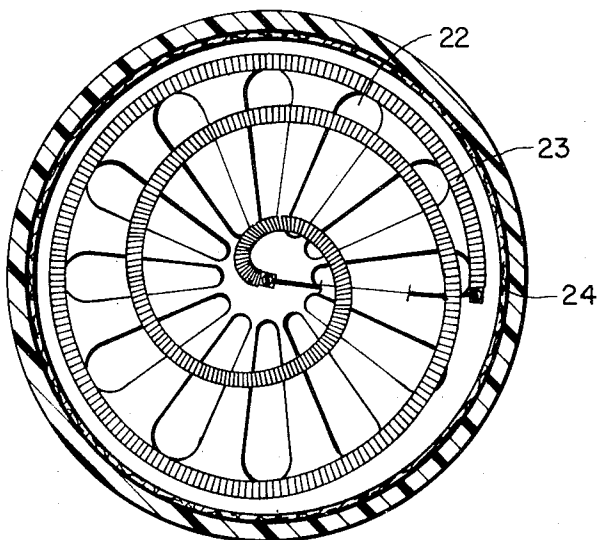


FIG. 8

INVENTOR.
FRANK R. WALTON

BY

Frank R. Walton
ATTORNEYS

COMBINATION ROTARY BRUSH, DETERGENT DISPENSER AND DRIER

BACKGROUND OF THE INVENTION

Numerous attempts have been made in the past to provide a simple yet efficient implement whereby the user thereof can accomplish a washing operation with minimum effort on the part of the user. However, such prior attempts have fallen short of attaining the desired results as these prior implements did not permit for the single implement to combine therein a means for washing with a detergent supply capable of being fed to the brushing implement and following the cleaning of an object, the same may be conveniently dried by means of a warm current of air directed thereagainst, the implement aforesaid also housing the means for heating air and to force the same against the cleaned object in order to dry the same in a minimum of time.

A primary object of the present invention is to combine in a single implement an efficient means for washing an object and following the washing thereof the same implement can then be employed for drying the object and to do so in a sanitary manner without the use of any wiping implement or cloth as is customarily employed for the wiping operation of an object which has been washed.

Another object of the invention is to provide a reservoir in an implement which will contain a cleansing agent therein and wherein the agent can be fed from the reservoir by means of a Venturi action formed by water flowing from a suitable source through a tubing leading to the implement.

Another object of the invention is to provide an implement combining therewith a washing and drying facility and wherein through a suitable electric switching arrangement, either the washing or the drying operation can be performed.

Another object of the invention is to provide a combined cleaning and drying implement with a means whereby the brushing element employed for the washing operation can be interchanged with a brush which is adapted to be disposed at right angles to the implement, thus enabling the implement to be employed more efficiently to wash objects having certain configurations.

Another object of the invention is to provide a casing or housing for a combined washer, detergent dispenser and drier which may be easily dismantled so as to afford easy access to the interior of the casing thereby facilitating the repair and/or replacement of parts housed within the said casing.

Another object of the invention is to provide a device of the character described, wherein the holder for the brushing agent may be of substantial capacity, yet allowing the device as a whole to be of a compact nature which lends itself to easy manipulation in use.

A still further object of the invention is the provision of a device of the character described comprising few and simple parts, which will be inexpensive to manufacture, strong and durable, neat in appearance, and practical and efficient to a high degree for the purposes described.

Other objects of this invention will in part be obvious and in part are hereinafter pointed out.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of my improved washing and drying implement shown in association with a conventional water supply.

FIG. 2 is an enlarged sectional view with one portion of the casing removed to show the operative parts of the combined washer, detergent feeder and drying facilities housed within the casing.

FIG. 3 is a top plan view of the casing employed for housing the elements of the present invention.

FIG. 4 is a view taken on line 4—4 of FIG. 3, looking in the direction of the arrows.

FIG. 5 is a view taken on line 5—5 of FIG. 3 looking in the direction of the arrows.

FIG. 6 is a section taken on line 6—6 of FIG. 2 looking in the direction of the arrows.

FIG. 7 is a section taken on line 7—7 of FIG. 2 looking in the direction of the arrows.

FIG. 8 is a section taken on line 8—8 of FIG. 2 looking in the direction of the arrows.

FIG. 9 is an enlarged view showing the structure of the upper portion of the brushing element detached from the casing or housing for the combined implement.

FIG. 10 is a sectional view showing a modified form of the invention, and

FIG. 11 is a diagrammatic view of the electrical circuit employed with the present invention.

PREFERRED EMBODIMENTS OF THE INVENTION

Referring now to the drawings, there is disclosed at FIG. 1 thereof the combined implement of the present invention indicated generally at 10. The implement comprises a split casing 11, the casings being held in operative association with one another as by fasteners 12. Formed integral with the split casing 11 are a pair of depending semicircular housing members 13. Again, the housing members are retained in their operative association as by fasteners 14. Housed within the housing 13 is a rotating hollow shaft 15 which is designed to operate in a manner to be more fully described hereinafter. All of the foregoing parts may be made of any suitable material such as metal, plastic, etc.

Mounted in any suitable manner within the casing 11 are a pair of electric motors 16 and 17. Motor 16 is designed to operate a fan 18 associated with a shaft extending from the motor, and motor 17, when energized, will operate to revolve the hollow shaft 15 in a manner to be more fully described hereinafter. Suitable electric wires extend from a suitable source of power to operate both of the aforesaid motors. Also mounted within the casing 11 is a reservoir 19 which is adapted to house a suitable detergent therein which is to be supplied to a stream of water issuing from the aforementioned hollow shaft 15 in a manner to be later described. A suitable filler cap 20 is provided in the casing 11 so as to enable the supply of detergent within the aforesaid reservoir to be replenished from time to time. For ease in handling the implement, a handle 21 is formed at the rearward section of the implement.

The front portion of the casing 11 is formed with a plurality of openings 22 in the form of slots, and positioned in close proximity to the said openings 22 is a heater element 23 shown more particularly in FIGS. 2 and 8 of the drawings. Elongated slots 22' are formed in the casing 11 for admitting air therein. The heater element 23 is mounted in any suitable manner within the casing 11 and suitable electric wiring extends to a source of electric power to supply the electric energy to the heater element when the appropriate switch element is actuated to supply the electrical energy to the heater. A suitable insulating member 24 is arranged within the casing 11 and the same is held therein through any suitable means. As can be appreciated, the insulating member will prevent the heat emanating from the heater element to adversely affect the material of the casing, particularly if such casing be made of a plastic material.

Referring now more particularly to FIGS. 2 and 6 of the drawings, it will be seen that the reservoir 19 is divided from the remainder of the casing 11 by means of a transverse wall 25 and horizontally extending wall 26. An opening is formed in wall 25 and a conduit 27 extends from the opening and leads to the upper portion of the hollow shaft 15 and is secured thereto in a nonrotative manner. A branch line 28 extends from conduit 27 and leads outwardly of the casing 11 to a hose line 29 which can in turn be connected to a source of water supply such as an ordinary faucet 30 commonly found in any ordinary sink installation. Thus, with the hose line 29 being connected to a suitable source of water supply, water can be directed into the conduit 28 and thence into conduit 27 and into the hollow shaft 15 for a purpose to be more fully described hereinafter.

A spring-pressed valve 31 is mounted interiorly of the reservoir 19 and functions to shut off the flow of the detergent from within the reservoir and into the conduit 27 until such time as it is desired to add a detergent to the stream of water issuing from the branch line 28. When the detergent within the reservoir 19 is to be added to the flow of water being fed to the hollow shaft 15, a pivoted detent 32 is actuated whereby through a suitable pivoted lever arrangement shown generally at 33, the valve 31 is caused to be opened, thereby permitting the passage of the detergent from within the reservoir 19 into the conduit 27. As clearly shown in FIG. 2 of the drawings, water issuing from branch line 28 will have a Venturi action on entering conduit 27, thus assisting in the flow of the detergent from within the reservoir 19 and cause the same to be mixed with the incoming water from the hose and branch line when the detent aforesaid has been actuated to open the valve 31.

Referring now more particularly to FIG. 2 of the drawings, the shaft 15 is mounted for rotation within the casing 13. Suitable bearings, such as roller bearings 34 are arranged within the housing for centering the shaft within the housing and to likewise permit the rotation thereof when the motor 17 is energized as by actuation of a switch member 35 mounted in a convenient location outwardly of the casing.

Rotatable shaft 15 has detachably secured at one end thereof a brush element 36. The brush 36 may be any number of different kinds of brushes found to be most efficient in the cleaning of various-type articles or surfaces. The lower end of the rotatable shaft 15 is formed with a plurality of spline receiving openings (not shown). Also, a groove 39 is formed interiorly of the rotatable shaft 15 as shown more particularly at FIG. 2 of the drawings. Splines 37 are formed on the upper end of a hollow-rotating shaft 38 and also projection 40 extends outwardly of the hollow shaft 38. Thus, with the spline-receiving openings formed at the lower end of hollow shaft 15 along with the groove 39 formed therein, the shaft 38, to which is fixedly secured the brush element 36, can be detachably secured to the lower end of shaft 15 and the groove 39 and projection 40 will retain the parts in their assembled relationship. When it is desired to change the type of brush employed with the implement, one need only exert a downward force on the brush 36 and its associated parts, whereupon the projection 40 will disengage with the groove 39, thus permitting the removal of the brush element for replacement or for repair. As can be seen in FIG. 2 of the drawings, the shaft 38 is mounted for rotation on roller bearings 34 mounted within the housing 13.

Rotation of the shaft 15 is imparted by means of a bevel gear 41 meshing with gear 42 which is fixed for rotation on shaft 43 extending from the motor 17. The shaft 43 extends through a roller bearing 44 secured to the casing 11 in any known manner. As can be appreciated, both motors 16 and 17 are suitably secured within the casing 11 in any known manner and suitable electric wires lead from a source of electrical power to operate the motors in response to the actuation of the switch 35.

Referring now to FIG. 10 of the drawings, there is shown therein a modification of the structure previously described, although like reference characters are employed for designating like parts described. The structure shown in FIG. 10 illustrates the manner in which the brushing element 36 may be disposed at an angle with respect to the housing and shaft 13 and 15 described with reference to FIG. 2 of the drawings. To dispose the brush 36 as shown in FIG. 10 of the drawings, the split casing 11 comprises a substantially L-shaped structure housing therein the roller bearings 34 designed to permit rotation of hollow shafts 45 and 46. Shaft 38 which is provided with the splines and projection 37 and 40 aforesaid, is caused to engage with shaft 46 in the manner described previously and likewise the splines and groove 37 and 39 formed on the shaft 45 are intended to be operatively connected to the lower end of the hollow shaft 15 in the same manner as that previously described. In this respect, it will be seen that a sleeve 47 extends outwardly of the brush 36 and is provided interiorly

thereof with a groove 48 which cooperates with a projection 49 formed at the lower end of the housing 13 to detachably secure the sleeve 47 and associated parts to the housing. To convert the brush assembly such as shown in FIG. 1 of the drawings to the assembly shown in FIG. 10, one need only detach the sleeve 47 and hollow shaft 38 of FIG. 1 in the manner aforesaid and to replace the same with the unit shown in FIG. 10, the interchangeability of the parts being effected in the manner aforesaid.

As can be appreciated, a source of electric current is made available for the equipment within the casing by means of a lead 50 extending to an external source of electrical energy such as a normal house outlet.

In operation, the device of the present invention is designed to operate in the following manner. With the apparatus connected to a water supply as shown in FIG. 1 of the drawings, and the source of electrical power also connected to the apparatus, the operator will actuate the switch which will energize motor 17, thus causing the hollow shaft 15 to rotate as described previously. Of course, the brush assembly which is splined to the shaft 15 will likewise be caused to rotate and to engage with the surface or object to be cleaned. In the meantime, of course, water is being constantly fed through the hose 29, branch line 18 and through the hollow shaft whereupon it will exit at the brush end of the shaft. The rotating brush and water supply may be sufficient to effectively clean the surface or object. However, in instances where it is desirable to add a detergent to the water supply, the detent 32 will be actuated so as to allow some of the detergent from within the reservoir to mix with the incoming water, thus increasing the efficiency of the washing implement. Following the cleaning of the surface or object as aforesaid, the supply of detergent may then be cut off and clear water directed against the article which has been cleaned and then the supply of water may be shut off and the motor 17 deenergized whereupon the rotation of the brush is stopped. When this has been accomplished, the forward or heater element end of the implement is then directed toward the cleaned surface or object and the switch member actuated to energize motor 16 and the heating element 23 positioned in close proximity to the motor. The heating element will supply the necessary heat to cause a warm or hot stream of air to be issued through the openings 22 at the forward end of the casing and to impinge against the cleaned surface to effect a quick drying thereof. Upon completion of the washing and drying operation the implement may be readily stored for future use.

It will thus be seen that there is provided an apparatus or implement in which the several objects of the invention are achieved and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made to the above invention and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense except as to such limits imposed by the scope of the claims.

I claim:

1. A combined washing and drying machine comprising a rotary brush, a detergent reservoir and an air heating means, said reservoir and said heating means contained within a housing having air inlet and outlet openings, a hollow rotary shaft extending from said housing and having said rotary brush mounted at one end and a gear mounted at the opposite end thereof, a conduit extending between said reservoir and said hollow rotary shaft, a hand-manipulated valve means mounted within said reservoir and adapted to regulate the flow of a detergent from within said reservoir to said conduit, a branch line communicating with said conduit and leading to a source of water supply, an impeller rotatably mounted adjacent said heating means and adapted to direct a stream of air outwardly of said housing through the outlet openings and power means mounted within said housing coupled to said gear for rotation

5

6

of said brush and coupled to said rotary impeller to effect a washing operation and subsequent drying of a cleansed surface.

2. The structure recited in claim 1 wherein said rotary brush is removably mounted for rotation on said hollow shaft.

3. The structure recited in claim 1 wherein a slotted asbestos shield is mounted within said housing adjacent said

heating means.

4. The structure recited in claim 1 wherein said housing comprises a pair of complimentary sections detachably secured to one another, thus providing access to the interior of the said housing.

* * * * *

10

15

20

25

30

35

40

45

50

55

60

65

70

75