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[54] **DEVICE FOR PERSONAL HYGIENE**

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[52] **U.S. Cl.** **15/29**

[51] **Int. Cl.²** **A46B 13/06**

[58] **Field of Search** 15/24, 29, 97

[56] **References Cited**

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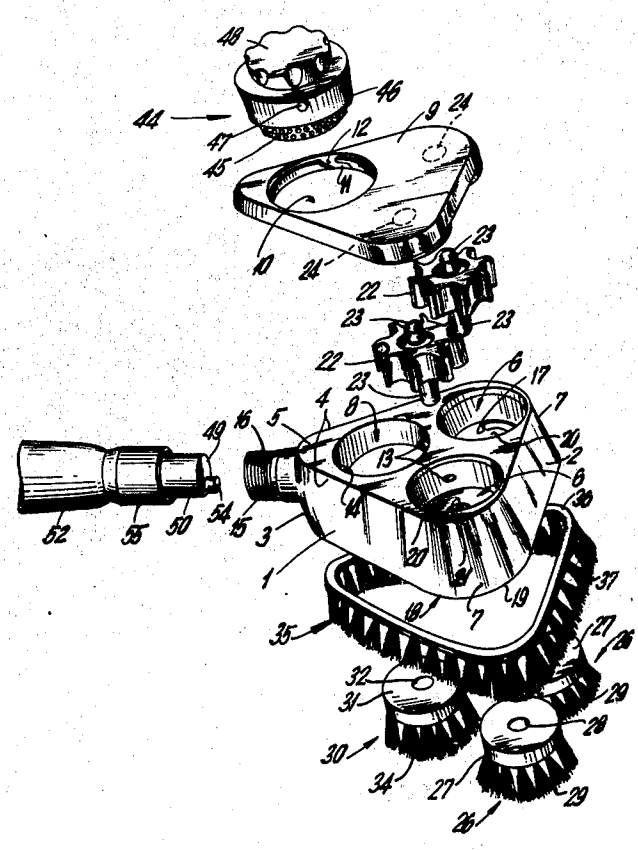
[57] **ABSTRACT**

A device for personal hygiene comprising a body having a socket connectable to a water supply source and communicating with two ducts one of which is connected to a cavity formed in the body and the other to a release chamber also formed in the body and containing a removable soap holder, said release chamber communicating with at least one recess communicating with the cavity and in which a turbine wheel is rotatably mounted and capable of being driven by the flow of liquid issuing from the release chamber, said wheel having a spindle passing through the body and extending into said cavity and carrying a brush having bristles which extend out of the body, and a flow reversing device which enables the flow of water passing through the socket to be directed to one or other of the ducts connected to said socket.

12 Claims, 4 Drawing Figures



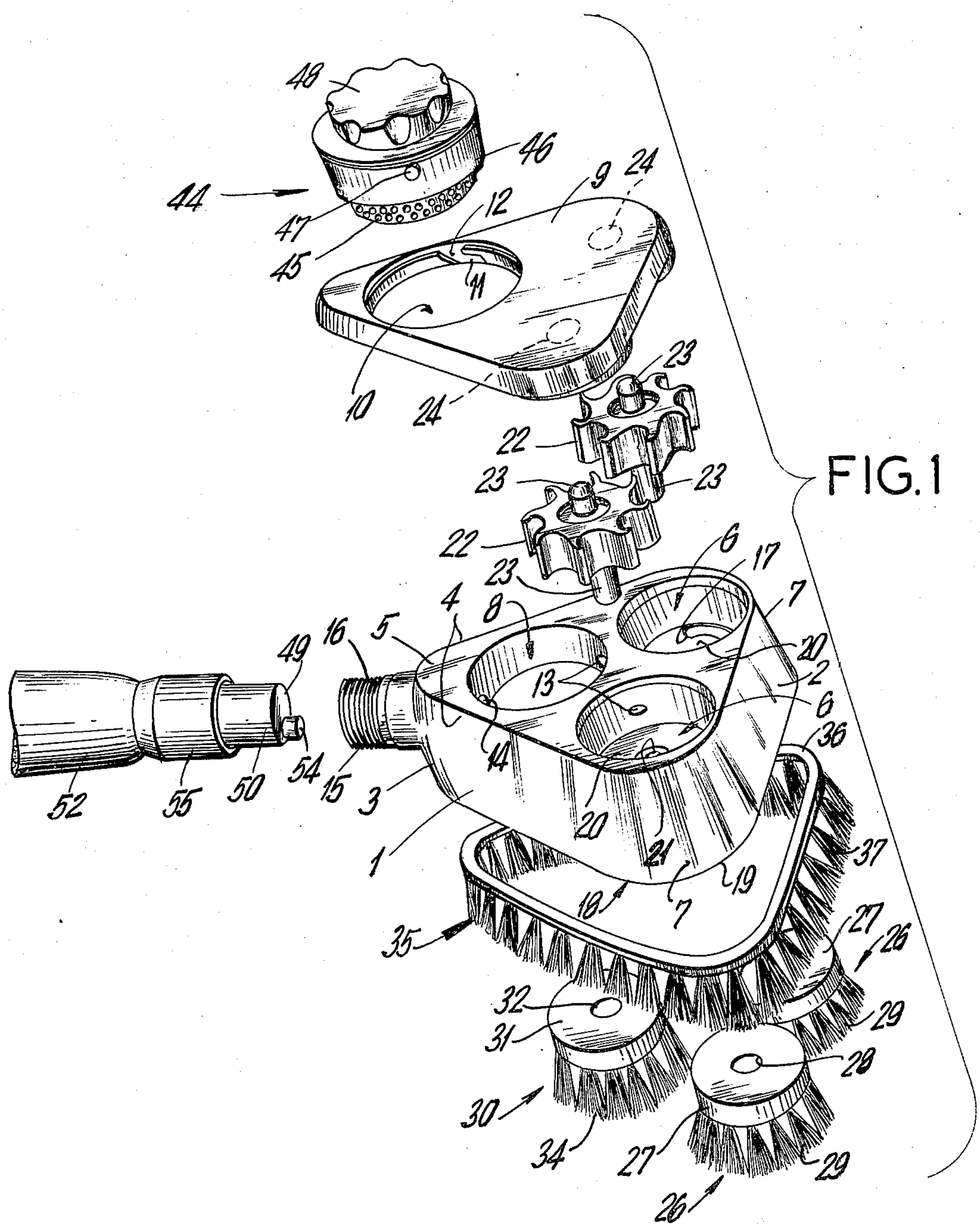

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FIG.1

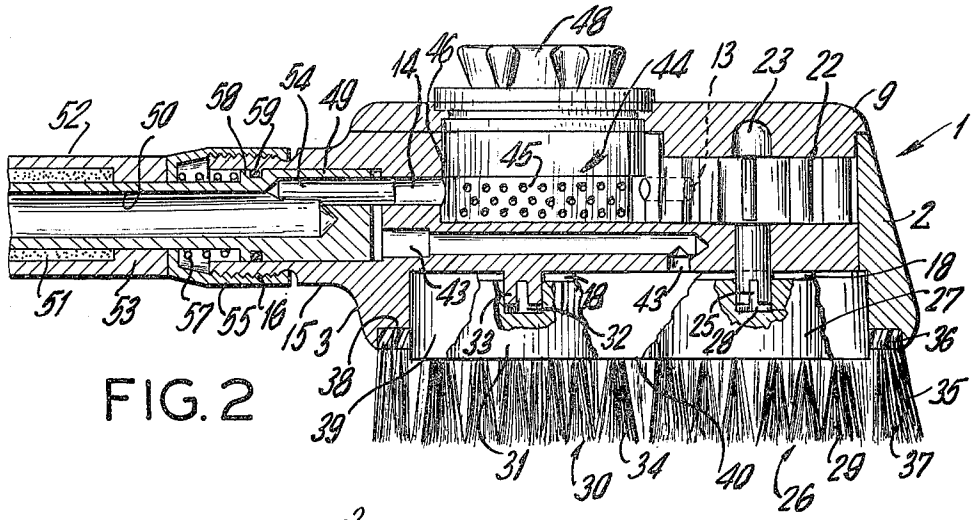

FIG. 2

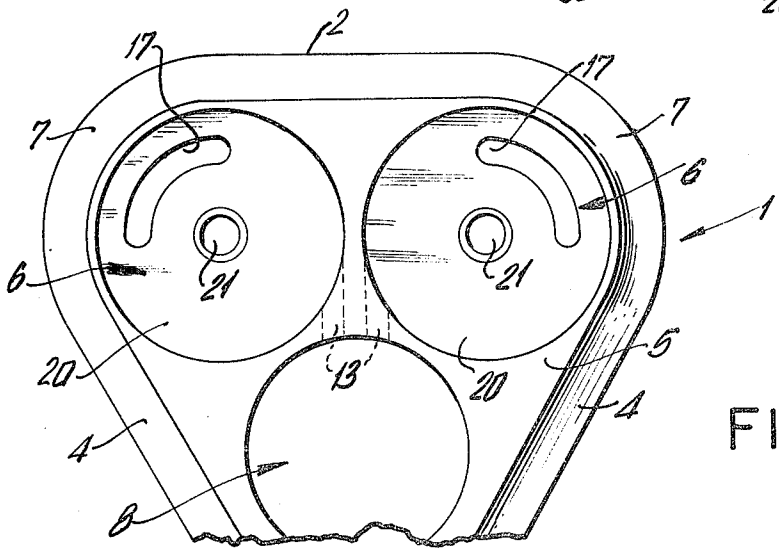

FIG. 3

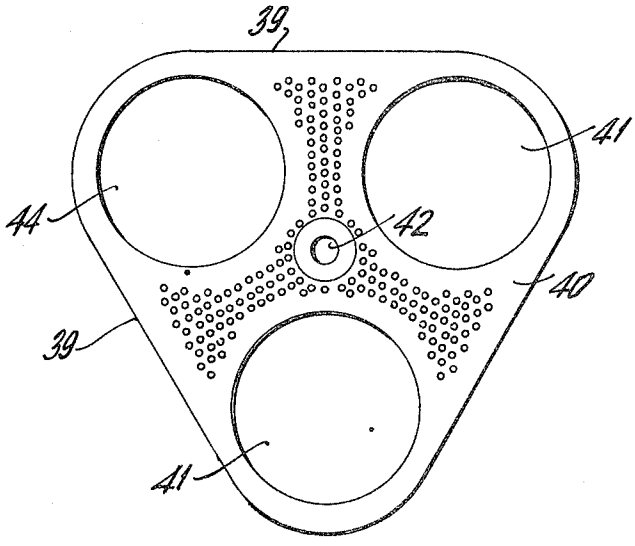

FIG. 4

DEVICE FOR PERSONAL HYGIENE

The present invention relates to a device for personal hygiene.

According to the present invention there is provided a device for personal hygiene which comprises a body having a socket connectable to a water supply source and communicating with two ducts, one of which is connected to a cavity formed in the body and the other to a mixing or release chamber also formed in the body, wherein the release chamber contains a removable soap holder having at least a portion of its wall located within the release chamber and being perforated; said release chamber communicating by means of a duct formed in the body with at least one recess communicating with the cavity and in which a turbine wheel is rotatably mounted and capable of being driven by the flow of liquid issuing from the release chamber; said wheel having a spindle which passes through the body and extends into the said cavity and carries a removable brush having bristles which extend out of the body; and a flow reversing device is provided which enables the flow of water passing through the socket to be directed to one or other of the ducts connected to the said socket.

The flow reversing device may comprise a tap fitted on the body or on the socket or comprise a tubular member displaceable within the socket having an offset passage alignable with one or other of the ducts.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:

FIG. 1 is an exploded perspective view of an embodiment of the device;

FIG. 2 is a longitudinal section through the device of FIG. 1;

FIG. 3 is a plan view showing a detail of the device; and

FIG. 4 is a plan view of another detail.

The device comprises a body 1 of generally truncated pyramid shape with one of the side faces thereof forming the front face 2 of the device. A corner or edge forms the connection for the other two side faces 4 and represents the back of the device.

An upper wall 5 of the body 1 has two front recesses 6 disposed substantially along corner or edges 7 defining the limits of the front face 2 and also has a rear recess or mixing or release chamber 8 disposed substantially along the rear edge or corner 3. Disposed on the upper wall 5 is a plate or cover 9 shutting off the front recesses 6 and having an opening 10 to overlie the chamber 8. The side wall of this opening 10 is provided with circular grooves 11 each having an inclined groove 12 opening out on the upper edge of the said opening 10. The mounting of the plate 9 on the body 1 may be effected in any suitable manner, for example, by welding or by means of screws.

The expansion chamber 8 communicates with each of the front recesses 6 by means of ducts 13 formed in the body 1. The chamber 8 also communicates by means of a duct 14 provided in the body 1 with the interior of a socket 15 disposed transversely of the edge 3 of the body 1 and provided with a thread 16. Each of the front recesses 6 communicates via a duct 17 with a cavity 18 formed in the lower wall 19 of the body 1 whilst the bottom 20 of the said recesses 6 is provided

with an axial aperture 21 opening out into the cavity 18.

A paddle wheel or turbine wheel 22 is located in each of the recesses 6 and is capable of being driven by the flow of liquid through the passage 13. The turbines 22 are mounted on spindles 23, each having one end which is rotatably mounted in a bearing 24 provided on the under face of cover 9. The other end of each of the spindles 23 passes through the axial opening 21 in the bottom 20 of each recess 6 and extends into the cavity 18 in the lower wall 19 of the body 1; axial opening 21 also acting as a bearing for the spindle 23. The end of the spindle 23 extending into the cavity 18 is cut with a resilient slit 25 and the end is detachably secured to a rotary brush 26. Brush 26 comprises a cylindrical body 27 having an upper face provided with an insert or inlet 28 force-fitted on the split end of the spindle 23, the resilience of which ensures retention of the unit whilst permitting the detachment of the two parts. The body 27 of the rotary brush 26 is located in the cavity 18 whilst the bristles 29 are disposed beyond the cavity 18 and extend out of the body 1.

Behind the brushes 26, i.e., near the edge 3 of the body 1, a non-rotatable, removable stabilising brush 30 is provided in the cavity 18. This brush 30 comprises a cylindrical body 31 in the upper face of which there is formed an inlet 32 force-fitted on a split pin 33 disposed in the cavity 18. The body of this fixed brush is located within the cavity 18 whilst the bristles 34 are disposed beyond the cavity 18 and extend out of the body 1 as is the case for the rotary brushes 26.

A triangular skirting brush 35 is arranged around brushes 26 and 30 and borders the cavity 18, and comprises a pad 36 having bristles 37 fitted thereto. The pad 36 is disposed in a groove 38 (FIG. 2) bordering the cavity 18, whilst the bristles 37 extend out of the cavity at the same level as the bristles of the brushes 26 and 30. The brush 35 is kept in position by the pad 36 being locked in the groove 38 by means of a side wall 39 (FIG. 2) of a perforated plate or grid 40 disposed in the cavity 18 and comprising three openings 41 which allow passage of the bristles of the brushes 26 and 30. The grid 40 is retained in the cavity 18 by means of a screw (not shown) engaged in a hole 42 (FIG. 4) in the centre of the grid and in a suitable thread (not shown) on the bottom of the cavity 18.

The cavity 18 communicates with the interior of the socket 15 by a duct 43 (FIG. 2) formed in the body 1 and opening out substantially between the brushes 26 and 30. The duct 43 has the same diameter as the duct 14 and is disposed symmetrically relatively to the axis of the socket 15.

The chamber 8 contains a removable soap holder 44 having a lower part which is open and comprises a perforated side wall 45 of which the lower edge is intended to be opposed against the bottom of the chamber 8. The soap container 44 has a circular joint 46 above the perforated wall 45 for ensuring the tight closure of the chamber 8, two pins 47 intended to engage in the grooves 11 in the opening 10 of the cover 9, and an operating button 48.

Slidably and rotatably engaged in the socket 15 is the closed end 49 of a tubular member 50, the other end of which is introduced into the end of a flexible water supply pipe 51. The end of pipe 51 is itself located in a handle 52 having an inner collar or flange 53 force-fitted on the member 50 so that the latter is connected

to the handle **52.** A tube **54** is fixed in the end **49** and communicates with the interior of the tubular member **50,** this tube being calibrated and located off-centre so that it can be introduced into either of the ducts **14** and **43.**

Mounted on the tubular member **50,** is a bush **55** which is tapped to engage with the thread **16** of a socket **15** and provided with a collar **56** serving as support for a compression spring **57** engaged on the tubular member **50** and abutting a shoulder **58** thereof. A circular joint **59** located in a recess of the end **49** ensures the seal between the socket **15** and the end **49** of the tubular member **50.**

The operation of the device will now be described. The water supply pipe **51** is connected by suitable means (not shown) to a conventional pressurised water distributing point, for example, as a replacement of the flexible tube of a shower forming part of a normal bathroom fitting. Before operating the device, the user withdraws the soap holder **44** after having twisted it in order to disengage the pins **47** from the grooves **11** in the cover **9.** The operator can then charge the holder **44** with soap in the form of a paste or, preferably, calibrated tablets, forming a measured quantity sufficient for an individual's personal toilet. When the soap holder **44** is charged with soap, the user inserts it in the opening **10** of the cover **9** and engages the pins **47** in the inclined grooves **12** of the said cover. Subsequent rotation of the soap container **44** causes the pins **47** to engage in the grooves **11** and the soap holder is secured, the pins **47** as well as the grooves **12** and **11** acting as a bayonet connection.

When the soap holder **47** is charged, the device is ready for use and the user can turn on the water. When the tubular member **50** and the tube **54** are in the position shown in FIG. **2,** the water flowing under pressure through the pipe **51** passes into the tubular member **50,** into the tube **54** and duct **14** and then flows into the release chamber **8** and, whereupon the water becomes charged with soap because the wall **45** of the soap container is perforated. It should be pointed out that, since the soap is in the release chamber **8,** it is continually bathed in water and mixed thereby, the water which leaves the release chamber is heavily emulsified with soap. Moreover, since the soap is contained in the soap holder, it cannot amalgamate (mix) at the inlet of the ducts **13** and possibly block them. From the release chamber **8,** the soapy water flows through the ducts **13** to issue under high pressure into the recesses **6** where it drives the wheels **22** before escaping into the ducts **17** to pass into the cavity **18.** The rotation of the wheels **22** causes rotation of the brushes **26.** The soap charged water passes from the ducts **17** and into the cavity **18** and flows out thereof through the perforations of the grid **40** whence it passes to the brushes **26** and **30.** The brushes **26** vigorously agitate the water whilst the brush **35** acts as a jet brake or skirt and acts to prevent the soapy water being projected out of the side of the brush.

An abundant lather is produced because the water passing through the duct **18** is continually stirred-up during its passage through the release chamber **8,** the ducts **13,** the wheels **22,** the ducts **17,** the brushes **26** and the grid **40.** Due to the rotation of the brushes **26** an efficient scrubbing action is readily obtained, which also produces a massage effect. The combination of the rotary brushes **26** with the fixed brush **30** enables the device to be stabilised when it is in contact with the skin since the fixed brush **30** counterbalances the effect of tangential forces due to the rotation of the brushes **26.** When the measured amount of soap in the container **44** is exhausted, the device then supplies the clear water only which rinses the entire device and the user rinses himself whilst continuing to scrub himself, if desired. Alternatively, the user has the possibility of shutting off the supply of soapy water at any moment even if the soap in the container **44** has not been exhausted. In order to do this, it is only necessary to pull the handle **52,** the effect of which is to displace simultaneously, and in the same direction, the tubular member **50** against the action of the spring **57.** The tubular member **50** involves, in its displacement, the tube **54** which is thus extracted from the duct **14.** It is then necessary to rotate the handle **52** through 180° about its axis in order to move the tubular member and to bring the tube **54** opposite the duct **43.** Release of the handle **52** at this moment causes the spring **57** pushes back the shoulder **54,** thus driving the tubular member **50,** the handle **52** and the tube **54** which is thereby introduced into the duct **43.** The water supplied by the pipe **51** and flowing through the tubular member **50** and the tube **54** is directed into the duct **43** and thus flows into the cavity **18** and out thereof through the perforations of the grid **40** whereupon it passes into the brushes **26** and **30.** In this operation, the water avoids the circuit through the duct **14,** the release chamber **8** and the soap holder **44** and the device supplies clear water. In order to have soapy water available again it is only necessary to perform the operation in reverse.

The method of attachment of the brushes **26** and **30** and the brush **35** enables such to be readily interchanged.

The device described may be made of any suitable material, and although it is shown with a body in the form of a truncated triangular pyramid, this form is not a limitation and may be modified. Moreover, the number of rotary brushes must not be considered as limited to two and it is possible to produce a device comprising only one rotary brush or more than two brushes. Moreover, the fixed brush **30** may be omitted and replaced by two or more fixed brushes. As to the brush **35,** this may be omitted, although is preferably retained in the various embodiments of the device, since it constitutes an efficient means to brake the water jet making it possible to prevent troublesome side projections of water whilst at the same time ensuring a scrubbing action.

Finally, the flow diverting system which makes it possible to change from the supply of soapy water to a supply of clear water and conversely (and comprising the assembly of tubular member **50,** spring **57** and tube **54**), may be replaced by any other flow control means, such as, for example, a cock casing, or any other type fitted on the socket **15** or on the body **1,** for example, near the release chamber **8,** and in such manner as to divert the flow to one or other of the ducts **14** and **43.** In this case, the lever or handle **52** may form an integral part of the body **1,** since it is not necessary to displace it for diverting the flow.

What I claim is:

1. A device for personal hygiene comprising:

a. a body having a socket connectable to a water supply source;

b. said body having at least one recess formed in the top thereof;

c. said body having an open cavity formed in the bottom thereof, said cavity communicating with said recess;

d. a turbine wheel rotatably mounted in said recess, said turbine wheel having a spindle which passes through the body to extend into said cavity;

e. a rotary brush removably mounted on said spindle in said cavity, said brush having bristles extending out of the body;

f. a release chamber formed in said body, said release chamber communicating with said recess by means of a channel formed in said body;

g. a soap holder removably located in said release chamber, said soap holder having within said release chamber a lateral wall at least partly perforated;

h. said body including a first duct therein, said first duct connecting said socket to said cavity;

i. said body including a second duct therein, said second duct connecting said socket to said release chamber; and

j. a flow control means to divert the flow of water passing through said socket towards said first or second duct.

2. A device according to claim **1,** further comprising at least one fixed brush removably in said cavity near the rotary brush, said fixed brush having bristles extending out of said body.

3. A device according to claim **2,** further comprising a grid located in said cavity, said grid closing said cavity at the bottom of said body, said grid comprising openings to allow passage of the bristles of said rotary bruch and of said fixed brush.

4. A device according to claim **2,** wherein said body is shaped substantially in the form of a truncated triangular pyramid.

5. A device according to claim **1,** further comprising a grid located in said cavity, said grid closing said cavity at the bottom of said body, said grid comprising an opening to allow passage of the bristles of said rotary brush.

6. A device according to claim **1,** wherein said flow control means comprises a tap fitted in said body, said tap adapted to divert the flow of water passing through said socket towards said first or second duct.

7. A device according to claim **1,** wherein said flow control means comprises a tap fitted on said socket, said tap adapted to divert the flow of water passing through said socket towards said first or second duct.

8. A device according to claim **1,** wherein said flow control means comprises a tubular member of which one end is closed and slidably and rotatably engaged in said socket, the other end of said tubular member being adapted to be connected to the water supply source, and a tube arranged in said closed end for communicating with the inside of said tubular member, said tube located and formed so that it can be introduced into said first or second duct.

9. A device according to claim **8,** wherein said closed end of the tubular member is retained in said socket by a spring.

10. A device according to claim **9,** wherein said other end of said tubular member is connected to a handle.

11. A device according to claim **8,** wherein said other end of said tubular member is connected to a handle.

12. A device according to claim **1,** wherein said body is shaped substantially in the form of a truncated triangular pyramid.

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