Sept. 20, 1966 L. E. LEVINSON ET AL 3,273,189

CLEANING APPARATUS

Filed June 22, 1965 3 Sheets-Sheet 1

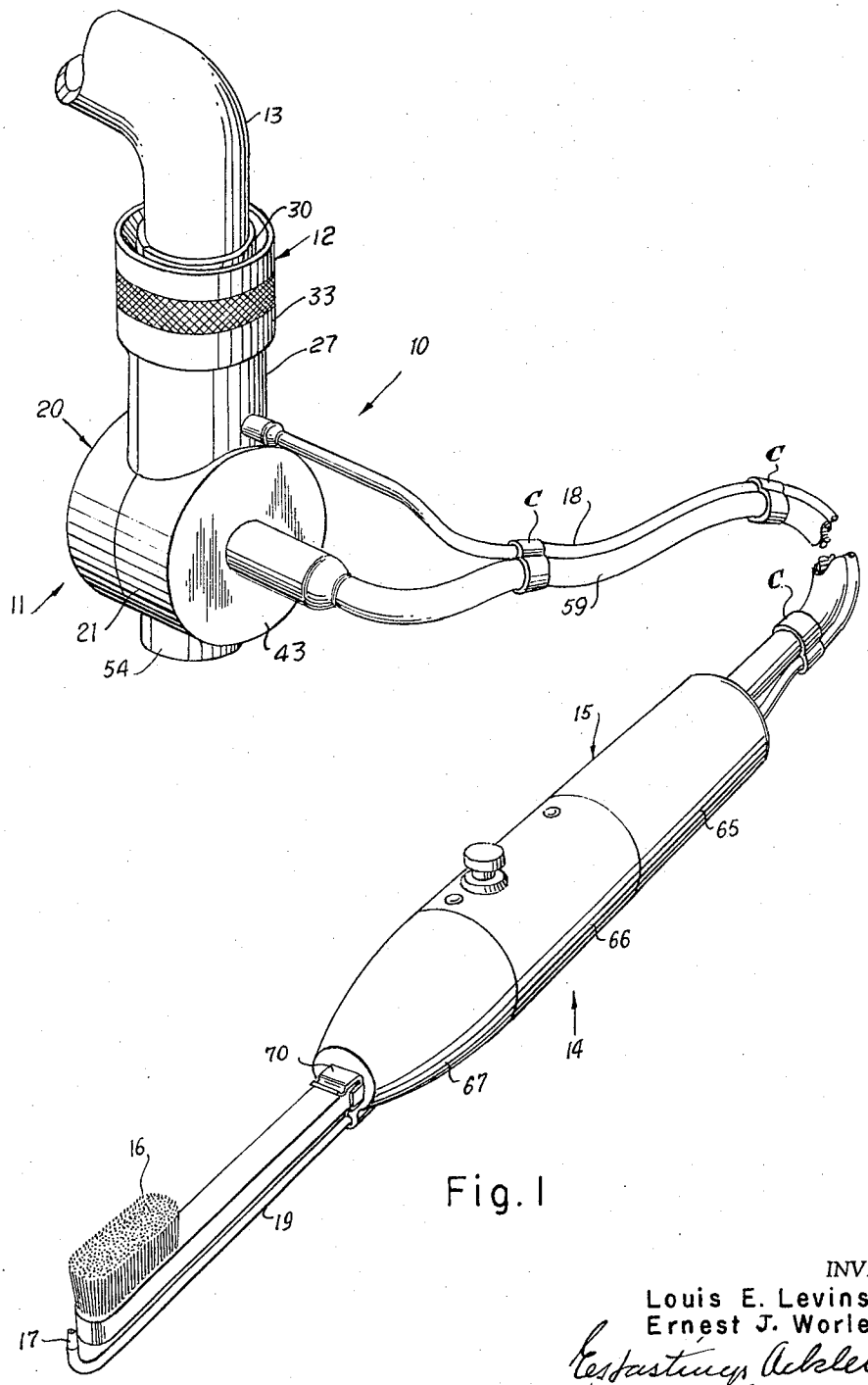


Fig. 1

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Sept. 20, 1966 L. E. LEVINSON ET AL 3,273,189

CLEANING APPARATUS

Filed June 22, 1965 3 Sheets-Sheet 2

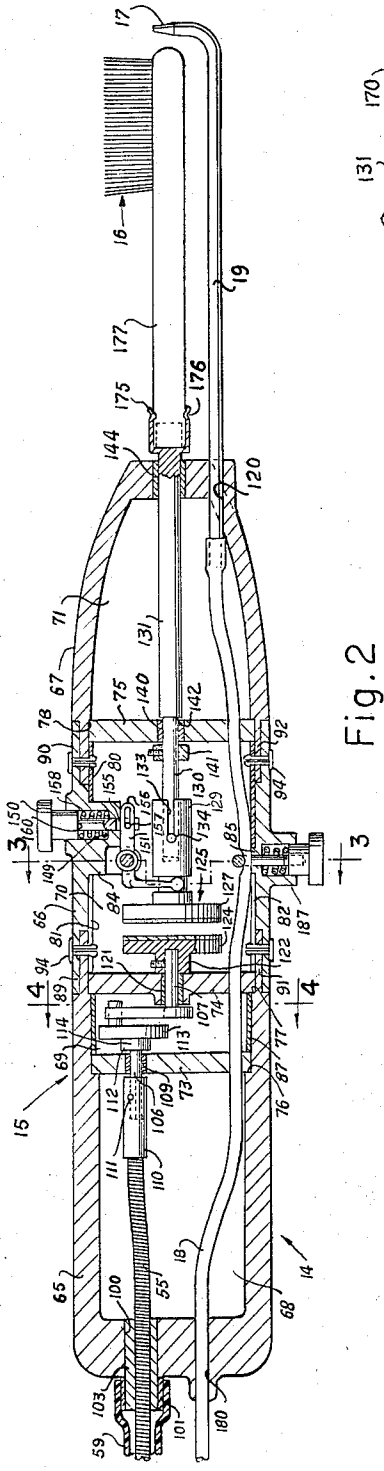


Fig. 2

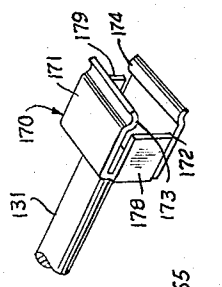


Fig. 5

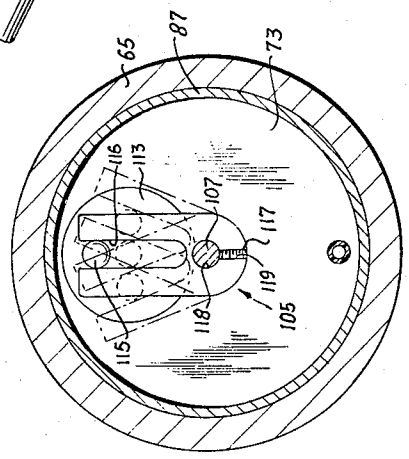


Fig. 4

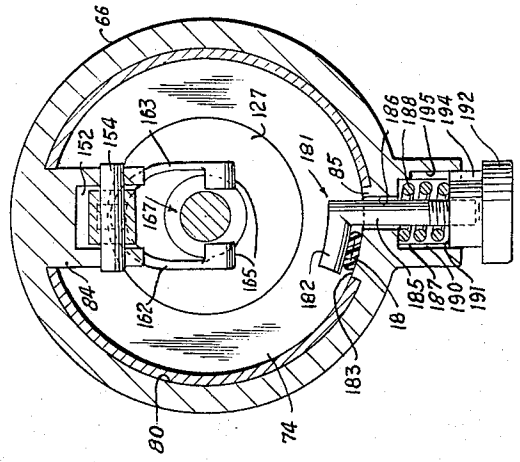


Fig. 3

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CLEANING APPARATUS

Filed June 22, 1965 3 Sheets-Sheet 3

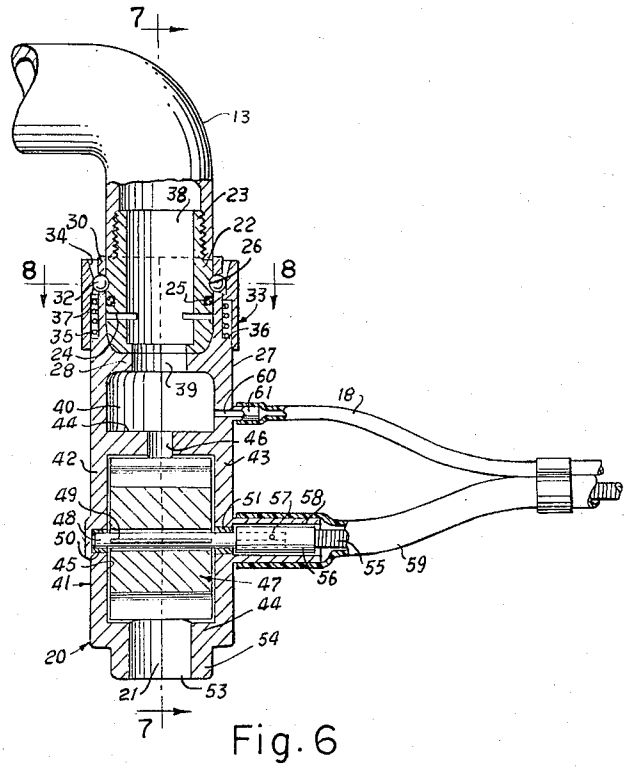


Fig. 6

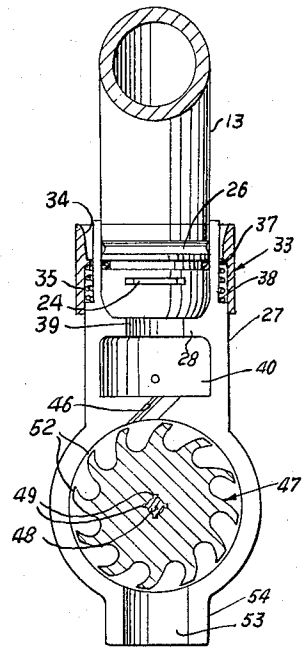


Fig. 7

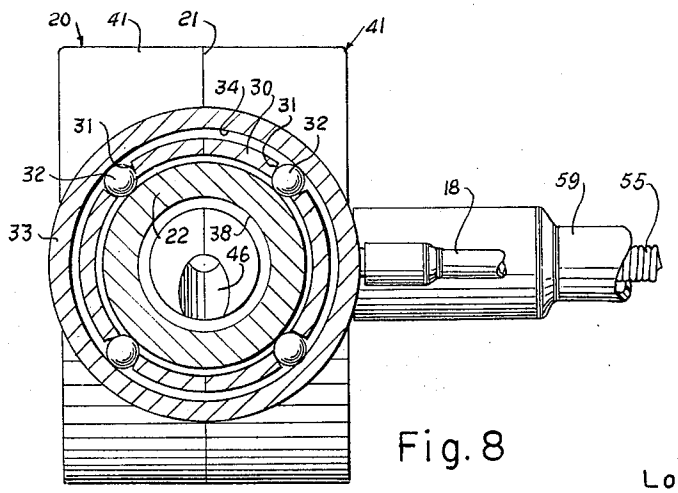


Fig. 8

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United States Patent Office 3,273,189 Patented Sept. 20, 1966

3,273,189

CLEANING APPARATUS

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Filed June 22, 1965, Ser. No. 465,992
15 Claims. Cl. 15—22)

This invention relates to cleaning aparatus and more particularly to a hydraulically driven device for cleaning teeth.

An object of this invention is to provide a new and improved cleaning device for teeth which may be powered by water under pressure from any suitable source such as an ordinary faucet.

Another object is to provide a hydraulically driven cleaning device which has means for delivering a relatively high velocity jet of water at the teeth and the interstices between the teeth to wash out any debris.

Still another object is to provide a hydraulically driven cleaning device having means for oscillating a brush about a horizontal axis.

A further object is to provide a cleaning apparatus for teeth which includes a driver unit having quick release means for attaching it to a faucet and means operable by water flowing from the faucet for rotating a flexible shaft, and a hand unit having means for translating the rotary movement of the flexible shaft into oscillatory movement of a tooth brush connected thereto.

A still further object is to provide a cleaning apparatus having clutch means for selectively connecting a tooth brush shaft to the output shaft of the motion translating means.

Another object is to provide means in the head unit for controlling flow of water from the driver unit to a jet nozzle carried by the head unit.

Additional objects and advantages of the invention will be readily apparent from the reading of the following description of a device construction in accordance with the invention, and reference to the accompanying drawings thereof, wherein:

FIGURE 1 is a perspective view of the cleaning device embodying the invention;

FIGURE 2 is a sectional view of the hand unit of the apparatus;

FIGURE 3 is a sectional view taken on the line 3—3 of FIGURE 2;

FIGURE 4 is a sectional view taken on line 4—4 of FIGURE 2;

FIGURE 5 is a fragmentary perspective view showing a holder for the brush;

FIGURE 6 is a vertically partly sectional view of the hydraulic drive unit attached to the faucet;

FIGURE 7 is a sectional view taken on line 7—7 of FIGURE 6; and,

FIGURE 8 is a sectional view taken on line 8—8 of FIGURE 6.

Referring now to the drawings, the teeth cleaning apparatus **10** includes a hydraulic drive unit **11** which is attachable by quick release assembly **12** to a faucet **13**, to which water under pressure is delivered to any suitable source of water under pressure such as the water main system of a city, and a hand unit **14** having a handle **15** carrying a tooth brush **16** and a nozzle **17** to which water under relatively high pressure is conducted from the faucet through the driver unit, a flexible resilient conduit **18** and a relatively rigid conduit **19**.

The drive unit **11** includes a housing **20** formed of a suitable high impact plastic which may be formed of two molded sections which are then bonded by suitable bonding agent along the vertical central longitudinal line **21** to form a single piece housing. The quick release

assembly **21** by which the housing is attachable to a faucet includes a tubular adapter **22** whose externally threaded reduced upper end portion **23** is threaded into the faucet. The adapter may be provided with a plurality of slots **24** adjacent its lower end through which air is drawn, when the housing is not secured thereto, to aerate the water being discharged from the faucet. The adapter has an external annular recess above aerator slots in which an O-ring **25** or other suitable sealing means is disposed and an external annular latch recess **26** above the O-ring.

The drive unit housing has an upper tubular section **27** telescopable over the adapter and provided with an internal annular flange **28** whose top annular surface engages the bottom annular surface of the adapter to limit upward movement of the housing on the adapter. A tubular externally reduced latch extension **30** of the upper tubular housing section is provided with a plurality of lateral apertures **31** in which the latch balls **32** are movably positioned.

The latch balls are of greater diameter than the inner portions of the apertures so that while the latch balls may move inwardly through the apertures to positions wherein their inner portions may protrude inwardly of the latch extension, they are held against inward movement out of the apertures by engagement with the surfaces of the latch extension defining the inner portions of the apertures. The diameter of the latch balls is also greater than the thickness of the latch extension so that both their inner and outer portions extend inwardly and outwardly of the latch extension whereby their inner portions are movable into the annular latch recess of the adapter by a latch sleeve **33**, movably mounted on the upper tubular housing section by the engagement of their outer portions by the downwardly and inwardly arcuate internal annular cam surface **34** of the latch sleeve.

The latch sleeve is biased upwardly to operative or latching position by a spring **35** whose lower end portion engages the annular upwardly facing annular shoulder **36** of the upper housing section and whose upper end portion engages the downwardly facing internal shoulder **37** of the latch sleeve. Upward movement of the latch sleeve on the housing is limited due to the engagement of its internal cam surface with the latch balls when their inward movement is arrested either due to their engagement with the surfaces of the latch extension defining the inner portions of the apertures **31** or due to their enaggement with surface of the adapter defining the latch recess **26**.

The latch balls may be inserted into the latch apertures after the latch sleeve is moved to a lowermost position on the housing against resistance of the spring **35**. This latch sleeve will then move upwardly on the latch extension and thereafter hold the balls against outward displacements.

When the housing is secured to the adapter, the O-ring **25** seals between the adapter and the latch extension above the aerator slots **24** thus insuring that no air is drawn into the water flowing through the passage **38** of the adapter and the passage **39** of the housing defined by the flange **28** into the chamber **40** in the lower portion of the tubular upper housing section.

The housing has a middle circular section **41** which includes vertical side walls **42** and **43** and a substantially circular wall **44** having a horizontal central axis which provides a circular water wheel chamber **45**. The circular wall **44** has an upwardly opening passage **46** of smaller orifice than the passage **39** which opens to the bottom of the chamber **40**.

A water wheel **47** is rotatably mounted in the wheel chamber **45** by means of a shaft **48** which extends through

a central passage of the water wheel and is provided with a plurality of longitudinal ribs or tongues **49** which are received in slots of the wheel which opens to the central passage of the water wheel. One end portion of the shaft is supported by a bearing **50** received in an inwardly opening bore or recess of the planar wall **42** while its other end portion extends outwardly through a bearing **51** in a passage or aperture in the other planar wall **43**.

The passage **46** is inclined angularly downwardly in the direction of rotation of the water wheel to eject a jet stream of water against the usual peripheral vanes or blades **52** of the water wheel to cause rotation of the water wheel. The spent water from the wheel chamber is discharged to the exterior of the housing, and into the sink below the faucet, through the discharge passage **53** provided by the lower housing section **54**.

The wheel shaft is connected to a flexible drive shaft **55** by means of a tubular connector socket **56**, secured to one end of the flexible shaft in any suitable manner, which telescopes over the outer end portion of the wheel shaft and is rigidly secured thereto by a set screw **57**. The connector socket is disposed in a tubular boss or extension **58** of the side wall **43**. The flexible shaft rotates within a tugular sheath **59** one end portion of which is telescoped over the tubular extension **58** and is rigidly secured thereto in any suitable manner as by an adhesive bonding agent or the like.

The upper tubular section **27** of the housing has a passage **60** which opens to the interior of the chamber **40** above the circular wall **44** and extends through a tubular boss **61** of the upper tubular housing extension. One end of the flexible water resilient water conduit **18** is telescoped over the tubular boss and secured thereto in seal tight relation in any suitable manner as by an adhesive or bonding agent, so that water from the chamber **40** may flow from the chamber **40** into the water conduit.

The hollow handle **15** of the hand unit **14** is elongate in shape and may be formed of a rear section **65**, a middle section **66** and a forward section **67** and its interior is divided into a rear compartment **68**, a transmission compartment **69**, a clutch compartment **70** and a forward compartment **71** by three discs or walls **73**, **74**, and **75**. The interior of the rear handle section **65** is enlarged to provide a forwardly facing annular shoulder **76** which limits rearward movement of the rear disc **73** therein and a similar shoulder **77** formed by another enlargement thereof limits rearward movement of the middle wall **74** therein. The forward handle section similarly is internally enlarged to provide a rearwardly facing annular shoulder **78** which limits rearward movement of the front wall **75**.

The walls **74** and **75** are held against movement toward one another by an internal tubular spacer member **80** whose forward annular edge bears against the outer edges of the front wall **75** and whose rear edge bear against the outer forward surfaces of the middle wall **74**. The spacer member **80** is provided with rearwardly opening longitudinally extending slots **81** and **82** which receive the internal bosses **84** and **85** of the middle handle section. The rear wall is held against forward movement in the handle by a tubular spacer **87** which abuts the outer front and rear surfaces of the rear and middle walls, respectively.

The middle handle section has outer end portions **89** and **90** of enlarged internal bores which telescope over the reduced end portions **91** and **92** of the rear and front handle sections. The middle sections are rigidly and releasably secured to one another by suitable expansion or snap fasteners **94** which extend through suitable aligned apertures in the overlapped portions of the middle section and the rear and forward sections of the handle.

The rear wall of the rear section has a rearwardly opening passage **100** which communicates with the rear compartment **68** and extends through the rear tubular extension **101** of the rear handle section. The flexible drive shaft **55** extends into the rear compartment through a bearing **103** secured in the passage **100** and the end of its protective sheath **59** is telescoped over the tubular extension **101** and rigidly secured thereto in any suitable manner as by bonding, adhesive or the like.

A transmission or motion translating assembly **105** disposed in the transmission compartment **66** translates the rotary motion of its input shaft **106** into oscillatory movement of its output shaft **107** about its longitudinal axis. The input shaft **106** extends rearwardly through a suitable bearing **109** in an aperture of the rear wall and is connected to the flexible shaft by a tubular coupling or socket **110** which is telescoped over its rear end portion and is rigidly secured thereto by the set screw **111**. The forward end of the input shaft is received in the hub **112** of a circular plate **113** and is rigidly secured to the hub in any suitable manner as by a set screw **114**. The plate **113** has a forwardly extending pin **115**, spaced radially outwardly of the longitudinal axis of the input shaft, which is received in the radially outwardly extending slot **116** of the lever **117** rigidly secured to the output shaft **107** of the transmission. The output shaft extends through the passage **118** of the lever and is secured thereto by a set screw **119**. During each complete revolution of the input shaft **106** the output shaft is oscillated through an angle of approximately 30°.

The output shaft extends forwardly through a suitable bearing **121** in the middle wall **74** into the tub **122** of the longitudinally stationary cluch plate **124** of a clutch **125** and is secured rigidly to the hub by a set screw. Rearward movement of the clutch disc or plate **124** is limited by the engagement of the rear surface of its hub with the front surface of the middle wall and its forward movement is limited by the engagement of the lever **117** with a rearwardly extending boss of the middle wall. The longitudinally movable plate **127** of the clutch has a hub **129** provided with a rearwardly opening longitudinal bore in which is received the reduced forward end portion **130** of a tooth brush shaft **131**. The hub has longitudinally opposed slots **133** in which are received the outwardly extending portions of a pin **134** which extend through a suitable transverse aperture in the tooth brush shaft. The hub **129** and therefore the clutch plate **127** is thus longitudinally movable relative to the tooth brush shaft but oscillates the tooth brush shaft due to the provision of the slots **133** and the pin **134**.

Forward movement of the tooth brush shaft which extends through a suitable bearing **130** in the front wall **75** is limited by the engagement of the stop collar **141** on the reduced portion **130** of the tooth brush shaft with the rear surface of the front wall. The stop collar is rigidly secured to the toothbrush shaft by a suitable set screw. Readward movement of the tooth brush shaft is limited by the engagement of its rearwardly facing annular shoulder **142** with the front surface of the wall or of the bearing. The forward end of the tooth brush shaft extends outwardly through a bearing **144** suitably mounted in an appropriate passage or bore of the front handle section.

The clutch plate **127** is movable rearwardly to cause its rear surface to engage the front surface of the longitudinally stationary clutch plate **124**. The opposing surfaces of the clutch plates are roughened or provided with a layer of a suitable friction material so that when the clutch plates are moved into engagement with one another, the clutch plate **124** imparts its oscillatory movement to the clutch plate **127** and thus to the tooth brush shaft. The longitudinally movable clutch plate **127** is moved forwardly into engagement with the clutch plate **124**, when a button **150** mounted for limited radial movement on the middle handle section is depressed, by means of a lever **151**. The lever extends through a downwardly opening slot **155** in the stem of the button and has a slot **156**. A pin **157** secured to the stem extends through the slots **155** and **156** so that the engagement of the pin with

the surfaces of the lever defining the slot **156** cause the lever to be pivoted in a clockwise direction about the pin **154** when the button **150** is depressed and to pivot in a counterclockwise device when the button is moved upwardly by a spring **158**. The lower end portion of the spring engages an upwardly facing annular shoulder **149** of the middle handle section and its upper end portion engages a downwardly facing annular shoulder **160** of the button. The rear end of the lever is provided with a pair of transversely spaced downwardly extending arms **162** and **163** whose lower ends are provided with circular enlargements of bosses **165** which are received in an annular external recess **167** of the hub of the clutch plate **127**. Engagement of the inwardly extending bosses **165** with the radially outwardly extending surfaces defining the sides of the slot **167** causes forward rearward longitudinal movement of the slidable clutch plates **127**.

The front end of the tooth brush shaft is provided with a clamp socket **170** formed by horizontal resilient upper and lower members **171** and **172** whose front forward edges are bent inwardly to form transversely extending latch portions **173** and **174**, respectively, which are receivable in upper and lower transverse recesses **175** and **176**, respectively, of the rectangular rod **177** of the tooth brush **16**. Transverse movement of the brush rod in the socket is limited by the vertical side plates **178** and **179** thereof.

The water conduit extends inwardly into the rear compartment through a passage **180** of the rear handle section and into the forward compartment **71** through suitable apertures in the rear, middle and front walls. Its forward end portion is telescoped over the rear end of the conduit **19** which extends rearwardly into the forward compartment through a suitable passage **120**. The rigid conduit may be secured to the front handle section by a bonding agent, adhesive or the like. Similarly the telescoped portion of the water conduit **18** may be similarly secured to the rear end portion of the rigid conduit over which it is telescoped.

Flow of water through the flexible resilient water conduit **18** to the rigid conduit **19** and therefore to the jet nozzle **17** is controlled by a closure member **181** whose transversely extending clamp portion **182** is adapted to occlude or collapse the portion of the water conduit disposed between the clamp portion and the internal surface **183** of the boss **85**. The closure member **182** has a stem **185** which extends outwardly of the handle through a radial passage **186** of the middle handle section and its radially downwardly extending boss **187**. The closure member is biased toward closed position by a spring **188** whose upper end bears against the downwardly facing annular shoulder **190** provided by an enlargement of the passage **186** and whose lower end portion bears against the annular shoulder **191** of a button **192** threaded on the lower end of the stem. The stem may be provided with a longitudinal rib or tongue **194** which is slidable in an internal radial recess **195** of the boss **187**. The button may be rotated relative to the stem to thread on the stem prior to the insertion of the flexible water conduit between its clamp portion **182** and the surface **183** of the internal boss of the middle handle section.

In use, the adapter **22** is connected to the faucet and thereafter whenever it is desired to use the teeth cleaning apparatus **10**, the driver unit is quickly connected to the faucet by moving its latch sleeve **33** downwardly to permit outward movement of the latch balls carried by the latch extension **30**. The latch extension is then telescoped upwardly on the adapter until upward movement of the housing of the driver unit is arrested by the engagement of the top surface of the internal flange **28** of the upper housing extension **27** with the downwardly facing surface of the adapter, at this time the latch sleeve is released for upward movement and during such upward movement the latch balls **32** are cammed inwardly in the recesses of the apertures **31** and into the annular external

latch recess **26** of the adapter. The driver unit **11** is now secured to the faucet against displacement therefrom and the O-ring **25** seals between the latch extension and the adapter so that when the faucet is opened all water flowing therefrom must flow through the passage **38** of the adapter and the passage **39** of the upper housing extension **27** into the chamber **40**. The water flows angularly outwardly from the passage **46** against the vanes **52** of the water wheel and causes it to rotate. Such rotation of the water wheel of course results in the rotation of the flexible shaft **55** and the transmission **105** translates this rotary movement of the flexible shaft into oscillatory movement of the clutch plate **124** through a predetermined angle about the longitudinal axis of its shaft **122**. If it is then desired to brush the teeth, the button **150** is depressed to move the clutch plate **127** into operative engagement with the longitudinally stationary clutch plate **124**. The tooth brush is now oscillated about the longitudinal axis of its rod **177** so that when the handle is held in a horizontal position, the brush oscillates about a horizontal axis to provide an up and down brushing of the teeth which is especially effective in removing debris from between the teeth. When it is thereafter desired to use a jet of water to wash out any debris between the teeth, the button **192** is depressed to permit the flow of water from the chamber **40** and the water conduit to the nozzle **17**. The relatively small orifice of the passage **46** relative to the passages **38** and **39** of the adapter and of the upper tubular extension **27** of the driver unit housing ensure the creation of a back pressure within the chamber **40** which causes relatively high velocity jet of water to flow from the jet nozzle **17**. If desired, of course, the brush may be oscillated and the jet of water may be directed at the teeth at the same time. The spent water flowing from the water wheel chamber flows directly into the sink below the faucet.

If the brush is inadvertently held with a great force against oscillatory movement, the clutch plate **124** will oscillate about its axis of its shaft **107** and relative to the clutch **127** thus overcoming the frictional engagement between the facing surfaces of the two clutch plates. The clutch thus also functions as an overload release device.

After the cleaning device has been used, the driver unit is easily disconnected from the faucet merely by pushing down on the latch sleeve **33** and moving the driver unit housing downwardly and out of engagement with the adapter **22**.

It will now be seen that a new and improved cleaning device **10** has been illustrated and described which provides the desired oscillatory movement of a tooth brush about a horizontal axis and that the cleaning apparatus is driven by the force of water flowing from a faucet.

It will further be seen that the cleaning apparatus includes a quick release assembly for securing the driver unit of the apparatus to a faucet.

It will further be seen that the drive unit includes a housing having a water wheel or turbine rotatably mounted therein for rotating a flexible shaft, and a hand unit having a hollow elongate handle in which are mounted a motion translation device which translates the rotary motion of the water wheel and flexible shaft into oscillatory movement of an output shaft, and a clutch for selectively connecting a tooth brush shaft to the output shaft imparting an oscillatory movement to the tooth brush shaft through a predetermined angle about a horizontal axis.

It will further be seen that the housing has means providing a chamber through which the water from the faucet flows and means such as a flexible conduit means for conducting fluid from the chamber to the jet nozzle mounted on the handle to provide a jet of water for washing or cleansing teeth, and that the handle is provided with means for selectively stopping and permitting flow of water from the chamber to the jet nozzle.

It will further be seen that the driver unit housing is provided with means such as the relatively small orifice **46** to ensure that the water supplied to the nozzle is under desired pressure to provide a jet of desired high velocity.

It will further be seen that the handle is formed of a plurality of sections to permit easy assembly and disassembly of the head unit and that, if desired, the middle and forward sections may be made of a single piece and the spacer members **80** and **87** omitted if the walls are secured by a bonding agent or adhesive to the handle sections.

The foregoing description of the invention is explanatory only, and changes in the details of the construction illustrated may be made by those skilled in the art, within the scope of the appended claims, without departing from the spirit of the invention.

What is claimed and desired to be secured by Letters Patent is:

1. A cleaning apparatus including: a driver unit having a housing releasably connectable to a faucet through which water from the faucet may flow; a water wheel rotatably mounted in said housing and rotated by water flowing therethrough; a flexible shaft driven by said driver unit; and a hand unit including a hollow elongate handle, a motion translating device for translating rotary movement having an input shaft and an output shaft, said flexible shaft extending into said handle and being connected to said input shaft, said motion translating device translating rotary motion of said input shaft into oscillatory motion of said output shaft about a predetermined angle about the longitudinal axis of said output shaft; a tooth brush shaft rotatably mounted in said housing; and clutch means for selectively connecting said tooth brush shaft to said output shaft.

2. The cleaning apparatus of claim **1** wherein said clutch means comprises a clutch plate rigidly secured to said output shaft, a second clutch plate mounted on said tooth brush shaft for longitudinal non-rotatable movement relative thereto, and means operable from the exterior of said handle for moving said second clutch plate into engagement with said first clutch plate.

3. The cleaning apparatus of claim **2**, wherein said driver unit has a chamber upstream of said water wheel and said hand unit has nozzle means including a rigid conduit extending forwardly of the forward end of said handle, a flexible conduit having one end communicating with said chamber and having its other end connected to said rigid conduit; and means carried by said handle and operable to control flow through said flexible conduit to said nozzle means.

4. The cleaning apparatus of claim **1**, wherein said driver unit has a chamber upstream of said water wheel and said hand unit has nozzle means including a rigid conduit extending forwardly of the forward end of said handle, a flexible conduit having one end communicating with said chamber and having its other end connected to said rigid conduit; and means carried by said handle and operable to control flow through said flexible conduit to said nozzle means.

5. A cleaning apparatus connectable to a faucet having a quick release adapter connected thereto, said cleaning apparatus including: a driver unit having a housing; connector means on said housing releasably connectable to said adapter, said adapter and said connector means permitting flow of water from the faucet to said housing; a water wheel rotatably mounted in said housing and rotated by water flowing therethrough; a flexible shaft driven by said driver unit; and a hand unit including a hollow elongate handle, a motion translating device having an input shaft and an output shaft, said flexible shaft extending into said handle and being connected to said input shaft, said motion translating device translating rotary motion of said input shaft into oscillatory motion of said output shaft through a predetermined angle about the longitudinal axis of said output shaft; a tooth brush shaft rotatably mounted in said housing and extending forwardly therefrom, said brush shaft having means exteriorly of said housing for securing a toothbrush thereto; and clutch means for selectively connecting said tooth brush shaft to said output shaft.

6. The cleaning apparatus of claim **5**, wherein said clutch means comprises a clutch plate rigidly secured to said output shaft, a second clutch plate mounted on said tooth brush shaft for longitudinal non-rotatable movement relative thereto, and means operable from the exterior of said handle for moving said second clutch plate into engagement with said first clutch plate.

7. The cleaning apparatus of claim **6** wherein said driver unit has a chamber upstream of said water wheel and said unit has nozzle means including a rigid conduit extending forwardly of the forward end of said handle; a flexible conduit having one end communicating with said chamber and extending into said handle and having its other end connected to said rigid conduit; and means carried by said handle and operable to control flow through said flexible conduit to said nozzle means.

8. The cleaning apparatus of claim **5** wherein said driver unit has a chamber upstream of said water wheel and said unit has nozzle means including a rigid conduit extending forwardly of the forward end of said handle; a flexible conduit having one end communicating with said chamber and extending into said handle and having its other end connected to said rigid conduit; and means carried by said handle and operable to control flow through said flexible conduit to said nozzle means.

9. A hand unit including: a hollow elongate handle, a motion translating device having an input shaft and an output shaft, said input shaft being rotatable by a flexible shaft adapted to be connected to said input shaft, said motion translating device translating rotary motion of said input shaft into oscillatory motion of said output shaft through a predetermined angle about the longitudinal axis of said output shaft; a tooth brush shaft rotatably mounted in said housing and extending forwardly therefrom, said brush shaft having means exteriorly of said housing for connecting a tooth brush thereto; and clutch means for selectively connecting said tooth brush shaft to said output shaft.

10. The cleaning apparatus of claim **9** wherein said clutch means comprises a clutch plate rigidly secured to said input shaft, a second clutch plate mounted on said brush shaft for longitudinal non-rotational movement relative thereto, and means operable from the exterior of said handle for moving said second clutch plate into engagement with said first clutch plate.

11. The hand unit of claim **9**, and nozzle means disposed forwardly of said handle and including a rigid conduit extending rearwardly into said handle; a flexible conduit having one end extending forwardly into said handle and connected to said rigid conduit; and means carried by said handle and operable to control flow through said flexible conduit to said nozzle.

12. A cleaning apparatus including: a tubular adapter adapted to be connected to a faucet; a tubular housing having its upper end telescopical over said adapter; latch means carried by said housing for releasably securing said housing to said adapter, seal means for sealing between said housing and said adapter to cause water from the faucet to flow through said adapter to said housing; a water wheel rotatably mounted in said housing and rotated by water flowing therethrough; a flexible shaft driven by said driver unit; and a hand unit including a hollow elongate handle, a motion translating device having an input shaft and an output shaft, said flexible shaft extending into said handle and being connected to said input shaft, said motion translating device translating rotary motion of said input shaft into oscillatory motion of said output shaft through a predetermined angle about the longitudinal axis of said output shaft; a tooth brush shaft rotatably mounted in said housing, and extending

forwardly therefrom, said brush shaft having means exteriorly of said housing for securing a toothbrush thereto; and clutch means for selectively connecting said tooth brush shaft to said output shaft.

13. The cleaning apparatus of claim **12** wherein said clutch means comprises a clutch plate rigidly secured to said output shaft, a second clutch plate mounted on said tooth brush shaft for longitudinal non-rotatable movement relative thereto, and means operable from the exterior of said handle for moving said second clutch plate into engagement with said first clutch plate.

14. The cleaning apparatus of claim **13** wherein said driver unit has a chamber upstream of said water wheel and said unit has nozzle means including a rigid conduit extending forwardly of the forward end of said handle; a flexible conduit having one end communicating with said chamber and extending into said handle and having its other end connected to said rigid conduit; and means carried by said handle and operable to control flow through said flexible conduit to said nozzle means.

15. The cleaning apparatus of claim **12** wherein said driver unit has a chamber upstream of said water wheel and said unit has nozzle means including a rigid conduit

extending forwardly of the forward end of said handle; a flexible conduit having one end communicating with said chamber and extending into said handle and having its other end connected to said rigid conduit; and means carried by said handle and operable to control flow through said flexible conduit to said nozzle means.

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