Feb. 5, 1952 T. A. WEBBER 2,584,647

SAND BLASTING MACHINE FOR CLEANING INLAYS OR THE LIKE

Filed May 24, 1950

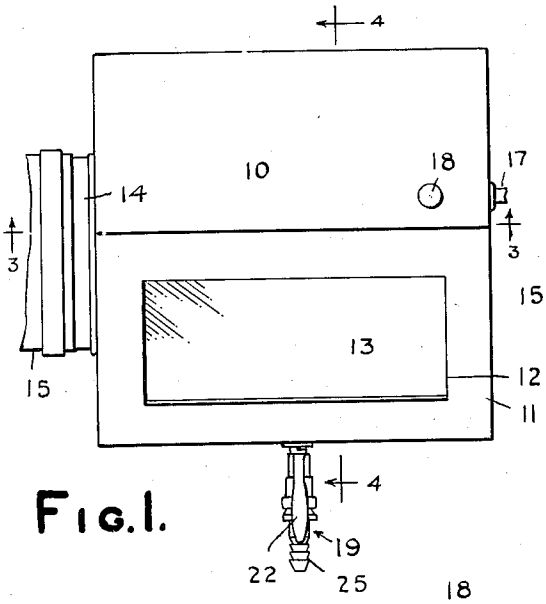


FIG. 1.

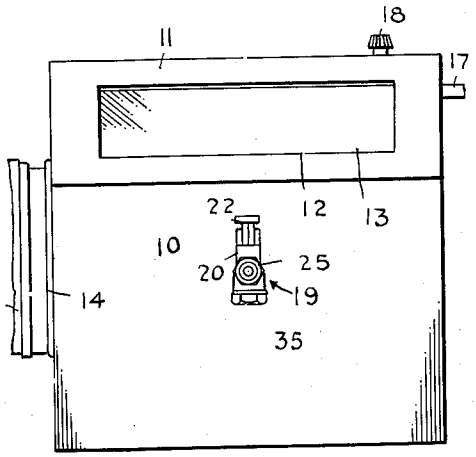


FIG. 2.

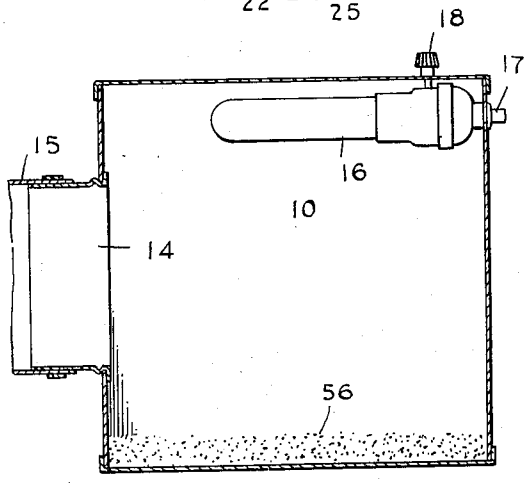


FIG. 3.

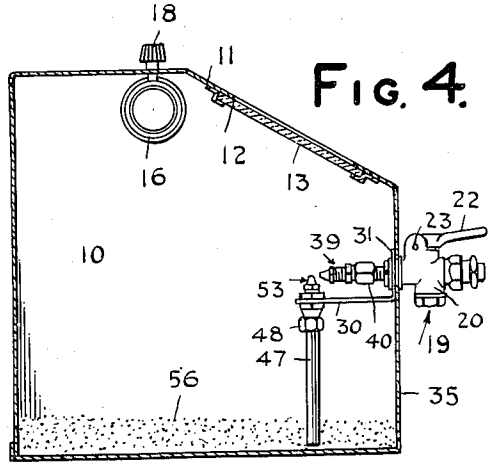


FIG. 4.

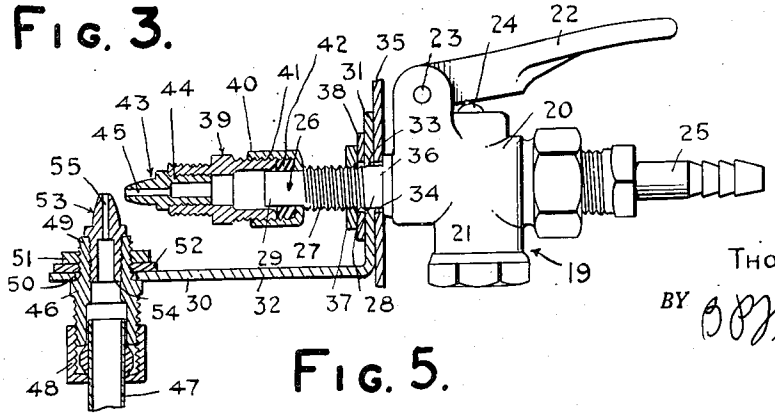


FIG. 5.

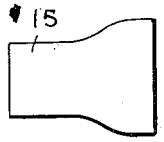


FIG. 6.

INVENTOR.
THOMAS A. WEBBER

BY

ATTORNEY

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SANDBLASTING MACHINE FOR CLEANING INLAYS OR THE LIKE

Thomas Angus Webber, Hyattsville, Md.

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4 Claims. (Cl. 51—8)

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My invention relates to a sand blasting machine for use in cleaning small articles, such as dental inlays or crowns, diamonds, articles of jewelry and the like.

An important object of the invention is to provide a machine of the above mentioned character which is small, compact, portable and is adapted for use upon a table or the like.

A further object of the invention is to provide simple and reliable means for mounting the air blast assembly upon the casing.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout same:

Figure 1 is a plan view of an air blast machine embodying my invention,

Figure 2 is a front elevation of the same,

Figure 3 is a longitudinal vertical section taken on line 3—3 of Figure 1,

Figure 4 is a transverse vertical section taken on line 4—4 of Figure 1,

Figure 5 is a central vertical longitudinal section through the sand blasting assembly, parts in elevation, and,

Figure 6 is a side elevation of the elastic sleeve.

The machine comprises a casing 10, which is rectangular in longitudinal vertical section and in transverse vertical section, except for an inclined front portion 11. This casing may be formed of metal or any other suitable material and is preferably sand or dust proof. The inclined front portion 11 is provided with an elongated window 12, covered by glass 13 or other transparent material. A sleeve 14 is attached to one end of the casing 11 and leads into the casing for the passage of the hand. An elastic sleeve 15 is secured to the sleeve 14, and tapers toward its outer end so that it will snugly engage the arm of the operator. Suitably mounted upon the end of the casing 11 remote from the sleeve 14 is an electrical bulb 16, receiving current from a cable 17 and having a nob 18 included in a switch to open and close the circuit to the filament of the bulb. This nob is arranged exteriorly of and near the top of the casing. The bulb is arranged near and beneath the top of the casing.

The numeral 19 designates a sand blasting assembly, comprising a valve 20 which is biased closed. The valve includes a casing 21, and the valve element of the valve 20 is opened by a lever

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22, pivoted at 23 to the casing 21. This lever is arranged to engage a stem 24 of the valve element. The valve casing 21 is arranged exteriorly of the front 35 of the casing 10 near its transverse and longitudinal centers and has a tube 25 secured to the intake side of the casing 21, and this tube is adapted for connection with a hose which leads to a source of air pressure. Formed integral with the casing 21 and leading into the outlet side of the same is a horizontal tube 26, having a screw-threaded portion 27 slightly smaller in diameter than the end portion 28 and a smooth portion 29 of smaller diameter than the screw-threaded portion 27.

The numeral 30 designates an L-shaped bracket having a vertical arm 31 and a horizontal arm 32. The vertical arm has an opening 33, to receive the smooth portion 28 and the smooth portion 28 also passes through an opening 34 formed in the front face 35 of the casing. The tube 29 has a shoulder 36 which engages the front face 35. The tube 26 is clamped to the front face 35 by a nut 37, engaging the screw-threaded portion 27 and bearing against a washer 38.

The numeral 39 designates a tubular coupling which is slidably mounted upon the smooth portion 29 and carries a sleeve 40 having screw-threaded engagement with the coupling 39 at 41, and the sleeve receives therein a rubber or graphite packing 42. This rubber or graphite packing engages the smooth portion 29 and is pressed against the smooth portion when the sleeve 40 is screwed up. The arrangement permits of a limited horizontal adjustment of the coupling 39 and the rubber or graphite packing 42 has sufficient frictional engagement with the smooth portion 29 to hold the tubular coupling upon the smooth portion, in the selected adjusted position, against accidental displacement. A horizontal air nozzle 43 has a rear extension 44, having screw-threaded engagement within the forward end of the coupling. The nozzle 42 has a horizontal discharge opening or bore 45.

The numeral 46 designates a vertically arranged tubular coupling, the lower end of which is connected with a vertical sand pipe 47, through the medium of a sleeve 48, having a screw-threaded engagement therewith, as shown. The vertical tubular coupling has an upper reduced extension 49 passing through an opening 50 in the horizontal arm 30, but having no screw-threaded engagement therewith. The tubular coupling is clamped to the arm 30 by a nut 51, engaging a washer 52. A vertical sand nozzle

53 is provided having a depending extension 54, having screw-threaded engagement within the reduced extension 49. The nozzle 53 has a vertical bore 55.

The vertical nozzle 53 has its upper end in alignment with the central horizontal axis of the bore 45 of the nozzle 43 and the forward end of the nozzle 43 is horizontally spaced from the upper end of the nozzle 53. This distance may vary but I have found satisfactory results have been obtained by having the discharge end of the nozzle 43 spaced for one to one and one-half millimeters from the central vertical axis of the bore 55. The sand pipe 47 is vertically disposed and its lower end is spaced from the bottom of the casing for about one-fourth of an inch although this distance may be varied. The casing 10 holds fine sand 56, which covers the lower end of the sand pipe 47 and may extend to any suitable level above its lower end, beneath the nozzles.

In the use of the machine, the electric bulb is turned on to illuminate the interior of the casing, and the article to be cleaned, such as a dental gold inlay, crown, diamond, article of jewelry, is held in one hand and the hand inserted into the casing through the sleeves 15 and 14. The article to be cleaned is held near the upper end of the verticla nozzle 53, at the elevation of the upper end of the nozzle 53, and upon that side thereof remote from the nozzle 43. Lever 22 is now depressed and the valve element of the valve 20 unsettled, and the air pressure passes through the valve and through the tube 26. This air pressure discharges through the bore 45 of the nozzle 43, and the stream of compressed air passes over the upper end of the vertical nozzle 53, extending above and below such upper end for a short distance. The compressed air travels at a high velocity and creates a suction in the vertical nozzle 53 which is transmitted to the vertical sand pipe 47 and the fine sand is drawn up through the pipe 47 and discharges through the bore 55 of the nozzle into the path of travel of the horizontally moving compressed air stream. A horizontally moving sand blast is therefore provided which impinges against the article to be cleaned. The operator may observe the cleaning action through the window 13 and when it is desired to cut off the sand blast, the lever 22 is released and the valve element automatically closes. The pipe 47 produces a well in the fine sand 56 and the sand may be shifted toward the pipe 47 by the hand within the casing. The air may be supplied at a pressure of from fifteen to forty pounds.

It is thus seen that I have provided an extremely simple sand blasting machine, having the parts arranged in a highly compact manner. The sand blasting assembly is bodily mounted upon the casing, and preferably upon the front side of the casing, so that the casing may be arranged upon a table, dispensing with legs for supporting the casing, which are employed when the air pressure is brought in from the bottom.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A sand-blast device comprising a generally rectanguar casing including a bottom adapted to rest on a table, pairs of opposed upstanding sides and a top, one pair of upstanding sides being arranged substantially at right angles to the other pair of sides, the top of the casing having a window through which the interior of the casing may be viewed, the casing being provided in one upstanding side with an opening through which the hand may be inserted into the casing horizontally to hold work therein, an upstanding side of the casing which is substantially at right angles to the side having the opening being provided with a second opening arranged substantially at the elevation of the first-named opening, a sand-blast nozzle projecting through the second opening and having its longitudinal axis arranged substantially horizontally and substantially at right angles to the axis of the first-named opening, a substantially L-shaped bracket including substantially horizontal and upstanding arms having openings, the opening of the upstanding arm receiving the sand-blast nozzle, means engaging the sand-blast nozzle and upstanding arm and securing the nozzle and upstanding arm to the side having the second opening, a generally vertical sand tube engaging in the opening of the substantially horizontal arm and extending below the same and having its lower end terminating near the bottom of the casing, the upper discharge end of the sand tube being arranged near the discharge end of the nozzle, and means engaging the sand tube and substantially horizontal arm for securing the sand tube thereto.

2. A sand-blast device comprising a casing adapted to hold a finely divided abrasive and having a window through which the interior of the casing may be viewed and an opening through which the hand may be inserted to hold work within the casing, the casing having an upstanding side provided with an opening, an air nozzle extending through the opening of the upstanding side and having its longitudinal axis arranged substantially horizontally and its discharge end terminating within the casing, a substantially L-shaped bracket including substantially vertical and horizontal arms having openings, the opening of the substantially vertical arm receiving the air nozzle, means engaging the air nozzle and substantially vertical arm for securing them to the upstanding side, a substantially vertical sand nozzle engaging in the opening of the substantially horizontal arm and having its discharge end directed upwardly and arranged near the discharge end of the air nozzle, means engaging the sand nozzle for securing it to the substantially horizontal arm, and a depending tube secured to the sand nozzle and having its lower end terminating near the bottom of the casing.

3. A sand-blast device comprising a casing adapted to hold a finely divided abrasive and into which work is introduced to be polished, the casing having an upstanding side provided with an opening, a substantially horizontal tube extending through the opening of the side and having a screw-threaded portion disposed inwardly of the side, a substantially L-shaped bracket including substantially vertical and horizontal arms having openings, the opening of the substantially vertical arm receiving the tube, nut means mounted upon the screw-threaded portion of the tube and engaging the substantially vertical arm and serving to clamp the substantially vertical arm against the upstanding side and securing the tube to such side, an air nozzle secured to the inner end of the tube and having its bore arranged substantially horizontally and its discharge end terminating within the casing, a unit comprising a substantially vertical sand tube and an upwardly directed sand nozzle, the sand nozzle having its dis-

charge end arranged near the discharge end of the air nozzle, the unit engaging in the opening of the substantially horizontal arm and having a screw-threaded part, nut means engaging the screw-threaded part of the unit and securing the unit to the substantially horizontal arm, and compressed air supply means connected with said tube and arranged exteriorly of the casing.

4. A sand-blast device comprising a casing adapted to hold a finely divided abrasive and into which work may be introduced to be polished, the casing having an upstanding side provided with an opening, a substantially horizontal tube engaging in the opening and having a screw-threaded portion extending inwardly of the upstanding side, a substantially L-shaped bracket including substantially vertical and horizontal arms having openings, the opening of the substantially vertical arm receiving the tube, the substantially vertical arm engaging the inner face of the upstanding side, nut means mounted upon the screw-threaded portion of the tube and engaging the substantially vertical arm and serving to clamp the substantially vertical arm and tube to the upstanding side, an air nozzle secured to the tube and having its bore arranged substantially horizontally and its discharge end terminating within the casing, the air nozzle being adjustable longitudinally of the tube, a unit comprising a substantially vertical sand tube and an upwardly directed sand nozzle, the sand nozzle having its discharge end in substantial alignment with the central longitudinal axis of the bore of the air nozzle, the unit engaging in the opening of the substantially horizontal arm and having a screw-threaded part, and nut means engaging the screw-threaded part of the unit and securing the unit to the substantially horizontal arm, the substantially vertical sand tube extending below the substantially horizontal arm, the substantially horizontal arm being disposed beneath the substantially horizontal tube and air nozzle.

THOMAS ANGUS WEBBER.

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