June 27, 1950 H. L. GILMORE 2,512,930

AIR PURIFIER

Filed Jan. 25, 1947

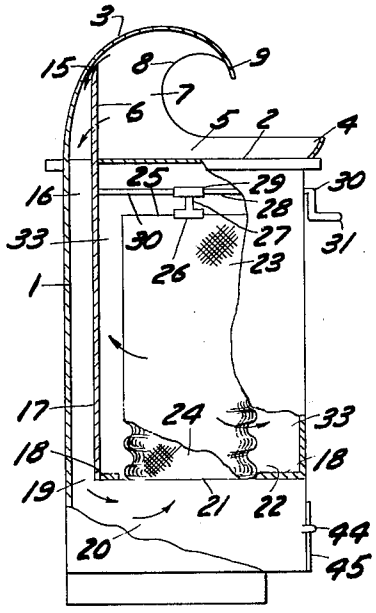


Fig. 2

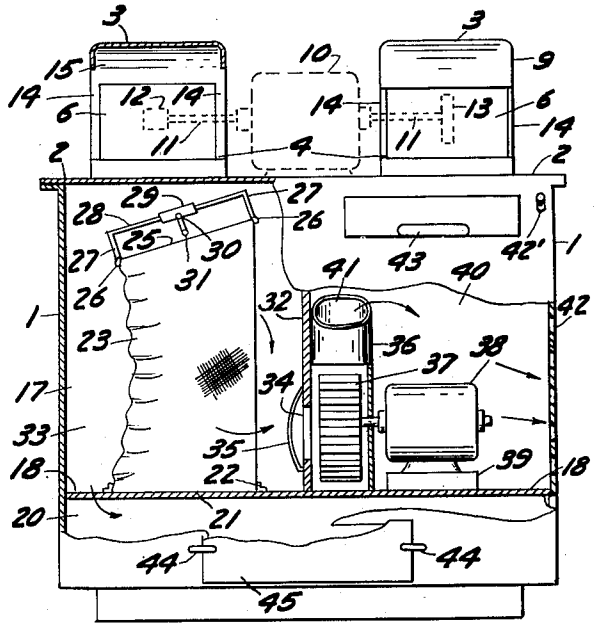


Fig. 1

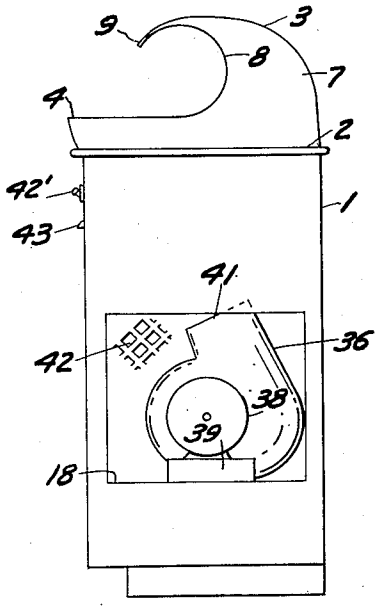


Fig. 3

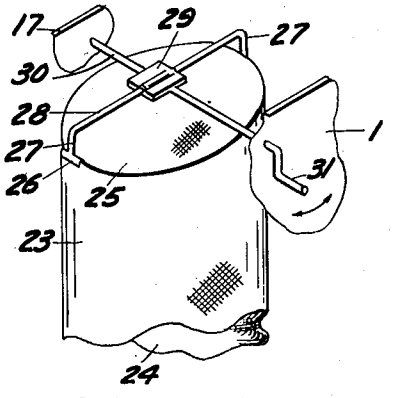


Fig. 4

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AIR PURIFIER

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1 Claim. (Cl. 51—273)

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This invention relates to the direct removal of air from tools acting to remove particles from the work, as in dental laboratories, and such abrading, dressing, polishing and analogous grinding operations.

This invention has utility when incorporated in a bench-providing unit having a particle intake down passage to a chamber with an updraft from the chamber to a filter bag. A suction fan acts upon the exterior of the bag.

Referring to the drawings:

Fig. 1 is a front view, with portions broken away, of an embodiment of the invention in a dental laboratory bench unit;

Fig. 2 is a view from the left of Fig. 1, with parts removed to show the general air flow directions;

Fig. 3 is an end elevation from the right of Fig. 1, with the screened air-spill outlet sufficiently cleared to show the fan operating motor and centrifugal fan housing and Fig. 4 is a fragmentary view in perspective of the top of the bag filter.

A main cabinet or housing 1, has a top deck or support 2, upon which is located a pair of hoods 3. A rim 4 provides a rim or pan region for a coarser particle receiver 5 with the deck 2 as its floor extending back under the hood 3 to a baffle 6. Ends 7 support the arch top hood 3 therebetween with an arc clearance 8 back from a shield extension 9 forward and downward from the hood 3. On the support 2 between the hoods 3, may be a motor 10 having a shaft 11, extending into the clearance 8 to carry grinding wheels or the like 12, 13, under the respective hoods 3. The baffle 6 has narrow clearance sides 14 upward from the support 2, with a connecting narrow clearance 15 across the top of the baffle 6.

The restricted intakes 14, 15, under the hoods 3, have therefrom downward in the back of the housing 1 a passage 16 formed between the housing 1 back wall and an inner parallel partition 17 extending vertically upward from a lower horizontal partition or deck 18 to the support or upper deck 2. The down passage 16 has an opening 19 thru the deck 18 to a settling chamber 20 in the housing 1 below the deck 18. The down passage 16 is the full extent of the back length of the housing 1, so that from each hood 3 there is suction draft to the chamber 20.

The deck 18 has an opening 21 bounded by a rim 22 anchoring an upwardly extending warp and woof fabric bag or foraminous flexible wall filter 23 forming a chamber 24 having a top 25,

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diametrically engaged by clips 26 from depending end arms 27 of a cross bar 28. The cross-bar 28, medially of its extent has a connection 29 to an actuator shaft 30 mounted at one end in the partition 17 and at its other end protruding thru the front wall of the housing 1 with a depending handle or rocker crank 31. The clearance downward from the underside of the support or upper deck 2 is sufficient for but a slight angle of rock for the shaft 30, so that the lifting of one end of the bar 28 may not pull the filter or bag loose from the rim 22. Snap or quick pulls in the rocking of the shaft 30, stretches taut one side of the filter 23, and slacks the opposite side. A repetition of this teeter-tottering operation of the bar 28 brings about a rather vigorous shaking of the filter 23. The fine particle laden air rises from the settling chamber 20 into the chamber 24. The air escapes thru the filter wall 23, where these fine particles or dust accumulate on the inner side of the filter wall 23. Upon oscillation of the crank handle 31, this dust is shaken off the filter inner wall side to drop into the settling chamber 20. A means is thus provided for quickly and easily retaining filter air flow capacity against particle clogging.

A chamber 33 is in the housing 1 surrounding the filter bag 23. The partition 32, between the decks 2, 18, has an opening 34 therein, with a bowed bar means 35 as an openwork to prevent any slackening of the filter 23 of an extent for such to be drawn into the opening 34 to a housing 36 for a centrifugal fan 37 directly connected to a motor 38 on a base 39 mounted on the partition 18. The fan and motor unit are in a plenum chamber or muffler section 40 as a portion of the housing 1 provided at the opposite side of the partition 32 from the chamber 33. The scroll housing 36 for the suction fan 37 has a discharge 41 into the chamber 40. The housing 1 oppositely from the partition 32 has a screen section 42 as a spill opening for the purified air to escape from the chamber 40.

Conveniently for the operator of this bench unit, the front wall of the housing 1, just beneath the deck 2 and at the upper region of the chamber 33 has a switch 42' for cutting the motor 38 in and out. Adjacent the switch 42' is a drawer 43, which may provide means for placing work to receive attention, as well as upkeep items for the equipment.

The suction fan 37 when operated to draw in air at a velocity of 2000 ft. per minute thru the inverted U-shaped intake 14, 15, 14, under

the hood 3, may have the pull or suction outside the filter 23 in the chamber 33 in the range of 1.2 inches of water below atmospheric pressure.

The down pitch forward end of the pan or receiver 5 is of advantage, for the operator may readily scoop or brush out particles which have accumulated therein. The deposit of particles in the settling chamber 20, may be removed by releasing clips 44 and taking off a door 45, from its sealed assembly. The air flow thru the chamber 40 provides a cooling draft for the motor 38.

What is claimed and it is desired to secure by Letters Patent is:

An air purifier bench unit comprising a support having a down-draft take-off passage therefrom, a rotary grinding wheel tool carried by the support, a hood rising from the support, said hood having an extension including an overhang for the tool, there being a receiver on the support below the overhang, said hood having a back wall continuous from the overhang

to the support, and a baffle rising from the support and spaced from the back, with edge clearance from the top and sides of the hood inner side to form an inverted U-shaped entrance to the down-draft take-off passage in the support, there being above the receiver and in front of the baffle an eddy region formed by the baffle from which region there may be initial particle accumulation into the receiver from the work.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,062,248	Mueller	May 20, 1913
1,177,342	Leiman	Mar. 28, 1916
1,528,439	Leiman	Mar. 3, 1925
1,941,988	Krag	Jan. 2, 1934
2,384,414	Antrim	Sept. 4, 1945