July 15, 1952 W. O. VEDDER 2,603,351

DUST COLLECTOR

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Fig. 1.

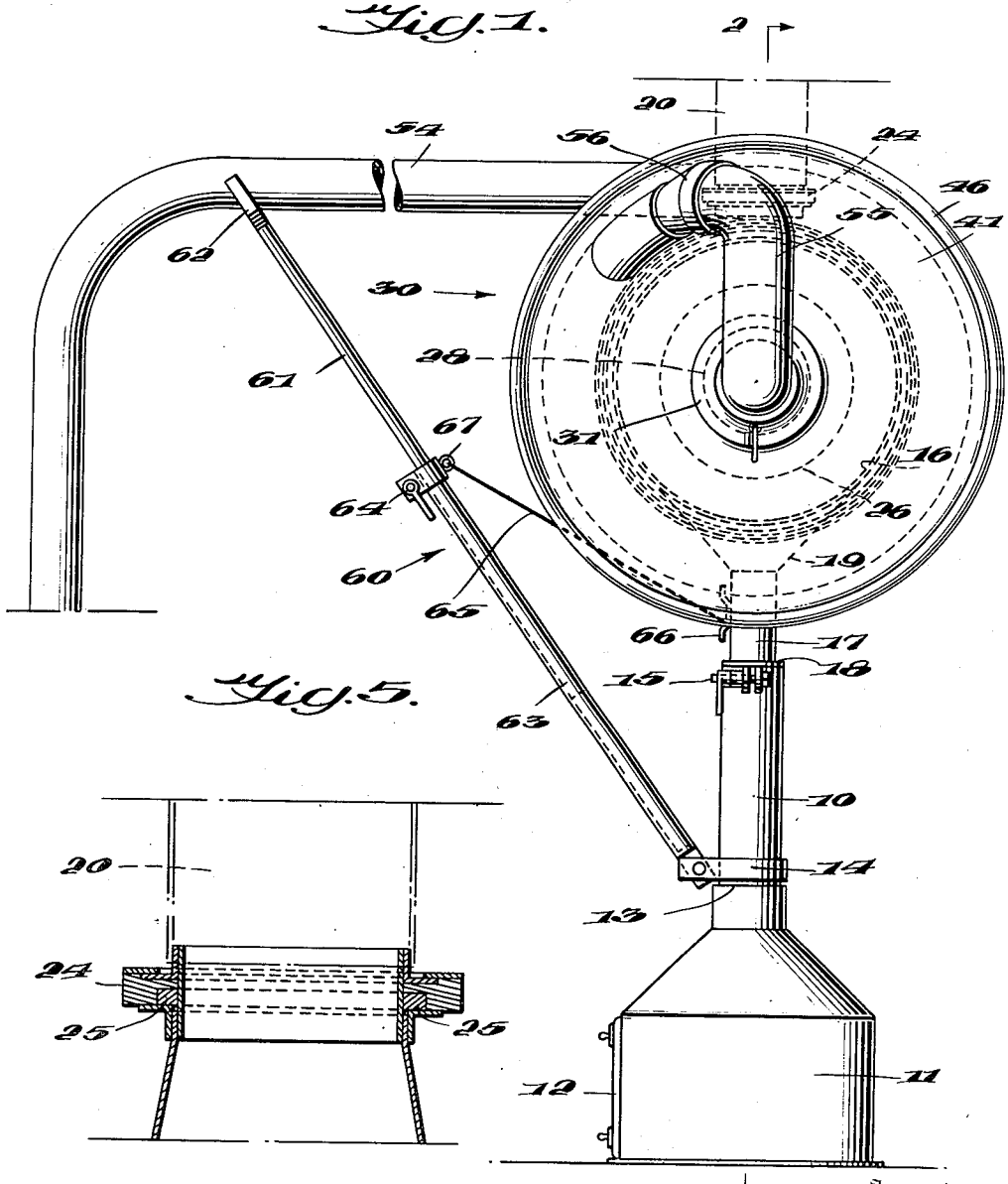


Fig. 5.

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Fig. 2.

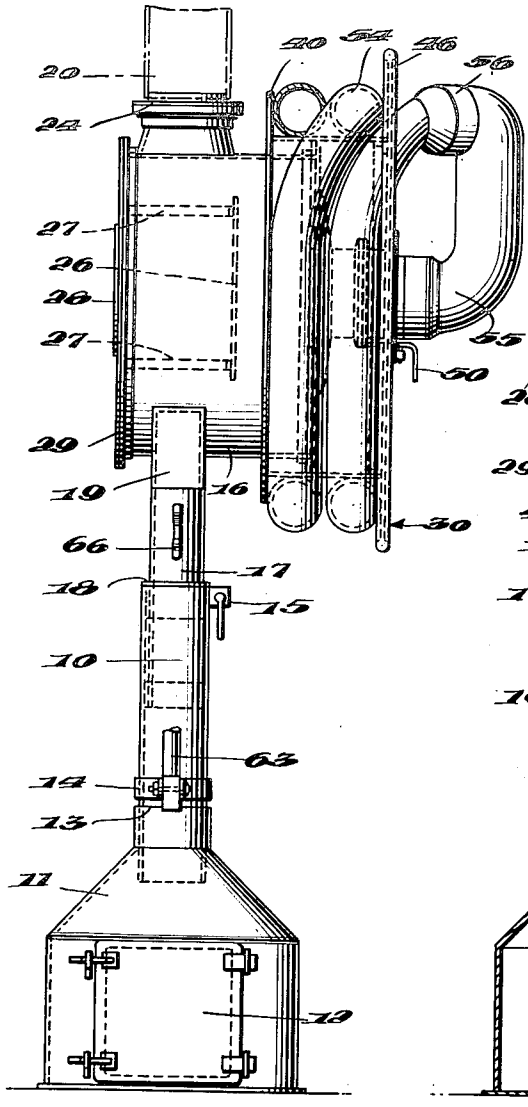
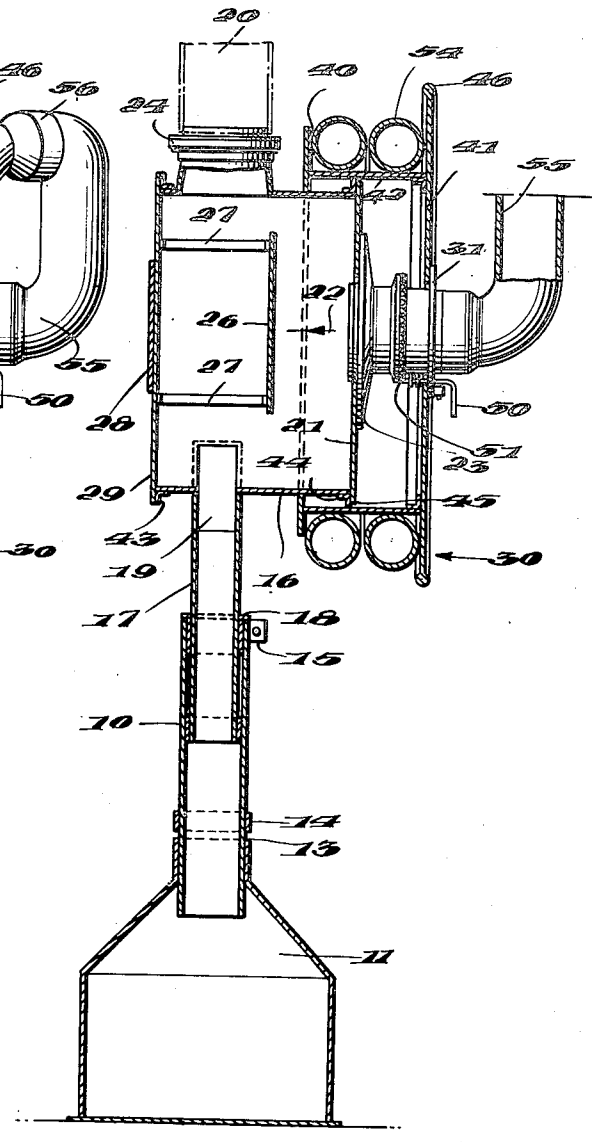


Fig. 3.



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Fig. 4.

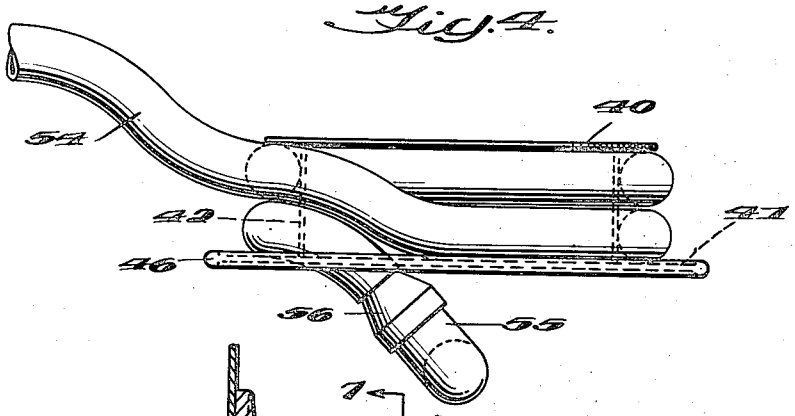


Fig. 6.

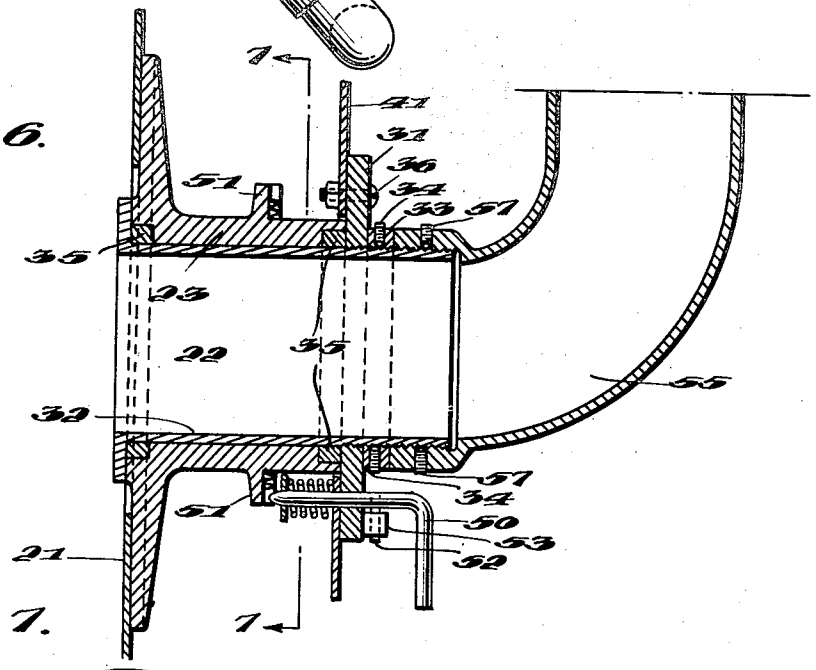
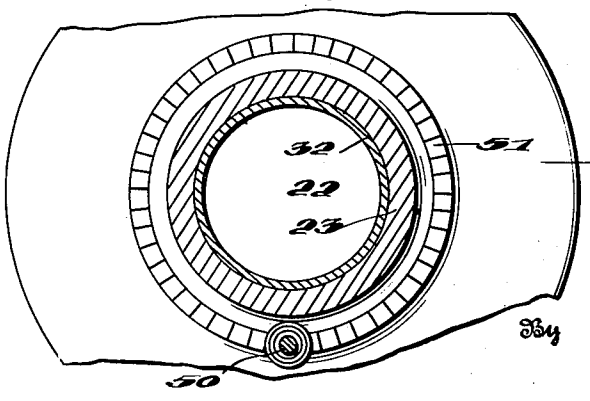


Fig. 7.



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Patented July 15, 1952

2,603,351

UNITED STATES PATENT OFFICE

2,603,351

DUST COLLECTOR

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Application July 16, 1946, Serial No. 683,880

8 Claims. (Cl. 209—147)

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This invention relates to dust collecting apparatus such as that used in stone working and the like, and has for its object the provision of an efficient collector of simple and convenient construction and arrangement of parts.

The invention consists in the combinations and arrangements hereinafter described and claimed.

In the accompanying drawings of a device according to the invention

Fig. 1 is a side elevation.

Fig. 2 is a front elevation.

Fig. 3 is a vertical section viewed from the line 2—2 of Fig. 1 in the direction of the arrows.

Figs. 4, 5, 6 and 7 are details on an enlarged scale, Fig. 7 being a section from the line 7—7 of Fig. 6 in the direction of the arrows.

In the embodiment of the invention shown in the drawings, and more fully described hereinafter, the dust collector comprises a vertical support or standard standpipe, and a suction off-take preferably overlying and axially aligned therewith. A chip separator is rotatably mounted on the standard and communicates with the off-take. The chip separator has a lateral inlet in one of its ends. A hose reel lies in surrounding relation to this end of the separator, and is rotatably mounted on a hollow bearing coaxial with the inlet. A dust collecting hose is carried by the hose reel, and has at its inner end a rotatable connection with the inlet by way of the hollow bearing.

Means is provided for releasably holding the separator and reel in adjusted positions of rotation, and means is provided for adjustably supporting that portion of the hose extending from the hose reel. This last means in the illustrated form comprises an extensible swingable boom, rotatably supported on the standard and guyed to the rotatable separator. A chip trap is provided communicating with the lower part of the separator. In the form shown the lower part of the standard is enlarged to form the chip trap, and the separator is provided with a hopper-like portion disposed for discharging separated chips through the standard and into the chip trap. A baffle within the separator lies between the inlet and the chip and suction outlets, and an access door is also provided.

In more detail, as shown in Figs. 1 to 3, the standard 10 has an enlarged bottom portion 11 serving as a chip trap and provided with a clean-out door 12. An upwardly facing shoulder 13 is provided on the standard 10 which constitutes means for rotatably supporting a collar 14 in which is mounted the hose support 60 hereinafter

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described. The standard 10, extending above the enlarged base 11, has a circular cross section provided with a clamp 15 which may be contracted to lock the separator in an adjusted position of rotation. The separator 16 is provided with a depending tubular portion 17 having a flanged collar 18 intermediate its length by which it is rotatably supported in the standard. The tubular portion 17 is connected to the separator body by a hopper-like portion 19 facilitating discharge of the separated chips to the chip trap.

The main body of the separator 16 in the form shown is generally cylindrical and has its cylindrical axis extending horizontally, its axis of rotation being vertical and located coaxially of the tubular portion 17 and the aligned suction off-take 20, which are arranged near one end of the cylindrical body. The end of the body 16 remote from its axis of rotation is closed by a head 21 (Figs. 3 and 6) having an axial inlet 22 surrounded by an inlet bearing 23.

The separator body 16 is rotatably connected to the suction off-take 20 by a swivel joint 24 shown in detail in Fig. 5 which is preferably provided with a packed seal 25 for suction efficiency. The inlet from the separator to the suction off-take is preferably flared as shown (Figs. 2, 3 and 5).

The separator 16 is thus supported for coaxial rotation in underlying relation to the overhead suction off-take 20, and may be locked in any position of rotation with relation thereto.

Within the body of the separator 16 there is positioned a baffle plate 26. As best shown in Fig. 3 the plate 26 is supported, as by brackets 27, between the inlet 22 and the chip and suction off-takes 19 and 20. The dust and chip carrying suction stream entering the separator through the inlet 22 impinges on this plate, which may be a replaceable element. At the same time the velocity of the stream is reduced within the enlarged chamber of the separator 16. The chips and other heavy particles are thus caused to drop out of the suction stream and fall by gravity through the chip discharge hopper 19 into the chip trap 11. The wear resulting from the impingement is restricted to the baffle 26. As best shown in Figs. 2 and 3, the separator 16 is provided with an inspection door 28, located, in the form shown, in the end 29 of the separator remote from its inlet, and behind the baffle 26.

The suction hose reel 30, in the form shown, is concentric with the cylindrical end of the separator casing 16, and lies in surrounding relation thereto. The reel is carried by a hub 31,

best shown in Figs. 3 and 6, which is mounted on a flanged sleeve 32 rotatably supported in the inlet bearing 23, and is thus rotatably mounted on the separator in coaxial relation to its inlet 22. As shown in detail in Fig. 6, this mounting may be effected by assembling the flanged sleeve 32 with the bearing 23 from the inside thereof, threading the hub 31 on the sleeve, and locking the hub in place by a threaded locking collar 33, in turn secured by one or more set screws 34, if desired. Packing 35 is preferably employed between sleeve 32 and bearing 23. The hub 31, to which reel 30 is secured, as by bolts 36, is thus rotatably mounted on the separator inlet head 21.

The reel 30, as is best shown in Figs. 2, 3, and 4, in the illustrative embodiment comprises two reel ends 40 and 41 which, with the intervening reel-drum 42, define the hose receiving space of the reel. In the form shown, the reel end 40 is annular, and it and a portion of the drum 42 lie in surrounding concentric relation to the cylindrical end of the separator body 16. The separator heads 21 and 29 in the illustrative arrangement are secured to annular flanges 43 and 44 at the respective ends of the cylindrical wall of the separator. The inlet end of this assembly provides an outwardly faced annular reel guiding shoulder 45. Straining of the reel bearing is thus avoided.

A reel operating hand-wheel 46 is desirably provided, preferably by extension of the diameter of one of the reel ends, herein the outer reel end 41. Means is also provided for locking the reel in a desired position. As best shown in Fig. 6, this means may comprise a spring pressed bolt or detent member 50, conveniently carried by the reel-hub 31, and adapted to engage the teeth of a toothed sector 51, suitably supported, as on the head and inlet bearing assembly 21, 23. As shown in Figs. 6 and 7, the teeth of this sector 51 are preferably inclined so that by exerting turning force on the hand wheel 46 with the bolt 50 acting as a spring-detent, the reel may be turned. The bolt 50 is also preferably provided with a tang 52 engageable with a keeper 53 to prevent retraction of the bolt member when it is desired to fully secure the reel against rotation.

The dust hose 54, which may be a flexible hose of say 4-inch inside diameter, is coilable on and uncoilable from reel 30, and has its inner end extended through the outer end 41 of the reel and connected to an inlet casting 55, preferably by a detachable hose connector 56. As is best shown in Fig. 6, the inlet casting 55 is rotatably connected to the separator 16 by securing said casting to the inlet sleeve 32, as by the screw threaded connection shown, which may be firmly anchored against loosening, as by one or more set screws 57. The inlet casting 55 is thus arranged to rotate with reel 30, while maintaining continuous communication of the hose 54 thereon with the inlet to the separator 16.

As is best shown in Figs. 1 and 4, the hose 54 is preferably paid out in an overhand manner from the top surface of the reel 30, which in the usual installation will be at a height of seven feet or so above the floor. This also is preferred as it facilitates reeling of the hose.

The payed out end of the hose, as is usual in such installations, is preferably provided with a collecting nozzle (not shown), which may have a rotatable connection with the hose end and be provided with a cut-off damper and other accessories, as is well known to the art.

As is clearly shown in Fig. 1, means is provided to support the payed out portion of the hose, to aid in positioning its collecting end, preferably in the form of an adjustable boom 60. This boom preferably comprises two telescoping sections, the upper section 61 being rod-like and terminating in a U-shaped fork or guide 62 in which the hose is supported, and the lower section 63 being tubular and pivotally mounted in the rotatable collar 14 carried by the standard 10, as above described. An extensible pivoted and rotatable boom is thus provided. An adjusting clamp 64 is provided for maintaining the desired extension of the boom. This clamp 64, in the form shown, is welded or otherwise secured to the boom section 63, and is arranged to be contracted to grip the upper section 61 of the boom. Means is also provided to adjust the inclination of the pivoted boom 60, herein in the form of a flexible guy wire or the like 65 having one end secured to the boom, and adapted to be snubbed on a two-pronged cleat 66 carried by the rotatable separator assembly. Conveniently the guy 65 is secured to the boom by attachment to a ring 67 which may be carried by the clamp 64 as shown.

In the usual installation a reel having a diameter of about two and two-thirds feet may be employed to releasably store in excess of six feet of hose per turn. With such capacity the adjustable boom conveniently may be arranged to afford support for the hose substantially in line with the upper surface of the reel, at distances of from three to eight feet from the reel axis, for example.

With the arrangement shown in the drawings, the unneeded portions of the bulky dust hose are conveniently and compactly stored, in an out-of-the-way and protected manner, without disconnection from the separator. When the extension of the hose is desired the operator may release bolt 50. Preferably he turns the reel with the bolt tang 52 simply freed from its keeper 53. The spring pressed detent effect then obtained facilitates the unreeling of exactly the amount of hose desired, and prevents "running away" of the reel. In re-reeling, the detent effect of the spring pressed round-nosed bolt 50 in the bevelled teeth of the sector 51 may also be employed, since it may be arranged to offer but little resistance to the turning of the reel by the hand wheel, while preventing backing up of the reel if the operator releases the hand wheel. Turning of the tang 52 into its keeper 53 locks the reel firmly in any desired position, and may conveniently be employed when it is desired to adjust the length and angularity of the boom 60. The overhand reeling and unreeling of the hose preferably employed assures tight wrapping thereof on the reel drum, and insures paying-out as opposed to turn-loosening in the unreeling of the hose. When it is desired to change the direction of extension of the dust collecting hose from the vertical axis of the collector, the clamp 15 may be released and the hose, separator, reel, and boom may then be swung as a unit to any desired position about this axis.

The scope of the invention appears from the attached claims, and is not limited to the illustrative embodiment shown.

What I claim is:

1. In a dust collector, a support, an elongated generally cylindrical chip separator rotatably mounted thereon for rotation thereabout with the axis of the cylinder substantially perpen-

dicular to the support, a suction conduit communicating with said separator through a swivelled connection and extending axially out from the separator, a reel encircling said separator and conduit and rotatably carried by them, and a suction hose carried by said reel and communicating with said conduit.

2. In a dust collector, in combination, a hollow vertical standard, a suction off-take above the standard and aligned therewith, a generally cylindrical chip separator rotatably mounted therebetween rotatable relative thereto and communicating therewith, said chip separator having its axis horizontal and having an axially projecting inlet, a reel rotatably mounted on and encircling said separator and inlet, a suction hose carried by said reel, and a swivelled connection from said hose to said inlet.

3. The combination as defined by claim 2 in which the reel coaxially encircles one side of the chip separator and the rotation axis of the separator is on its other side.

4. The combination as defined by claim 1 in which the support is hollow, at one end holds the chip separator and at the other end is connected to an enlarged chip collector.

5. In a dust collector a vertically extending enlongated hollow support, a generally cylindrical chip separator journalled on the support with its cylindrical axis horizontal for rotation about the support, a suction off-take connected to the separator for applying suction thereto, a suction conduit swivelled to the separator in projecting axial relation, a hose-receiving reel fixed to the suction conduit and coaxially encircling at least one end of the separator to rotatably carry a suction hose connected to the inlet for

adjustable positioning about and at selectable distances from the support.

6. The combination as defined by claim 5 and further including hose-supporting elements of extensible length adjustably secured to the lower portion of the support and directed upwardly for engagement with the lower surface of a hose carried by and unreeled from the reel at a point spaced from the reel.

7. The combination as defined by claim 5 in which the reel has a hub and two side walls and one of the side walls has a larger radius than the other and projects out as a hand wheel for the reel.

8. The combination as defined by claim 5 and further including restraining structure connected to the reel for adjustably holding the reel in selectable conditions of rotation.

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