Jan. 30, 1934. A. G. DECKER 1,945,031

PORTABLE SANDER DUST HOOD

Filed Aug. 13, 1931

Fig. 2.

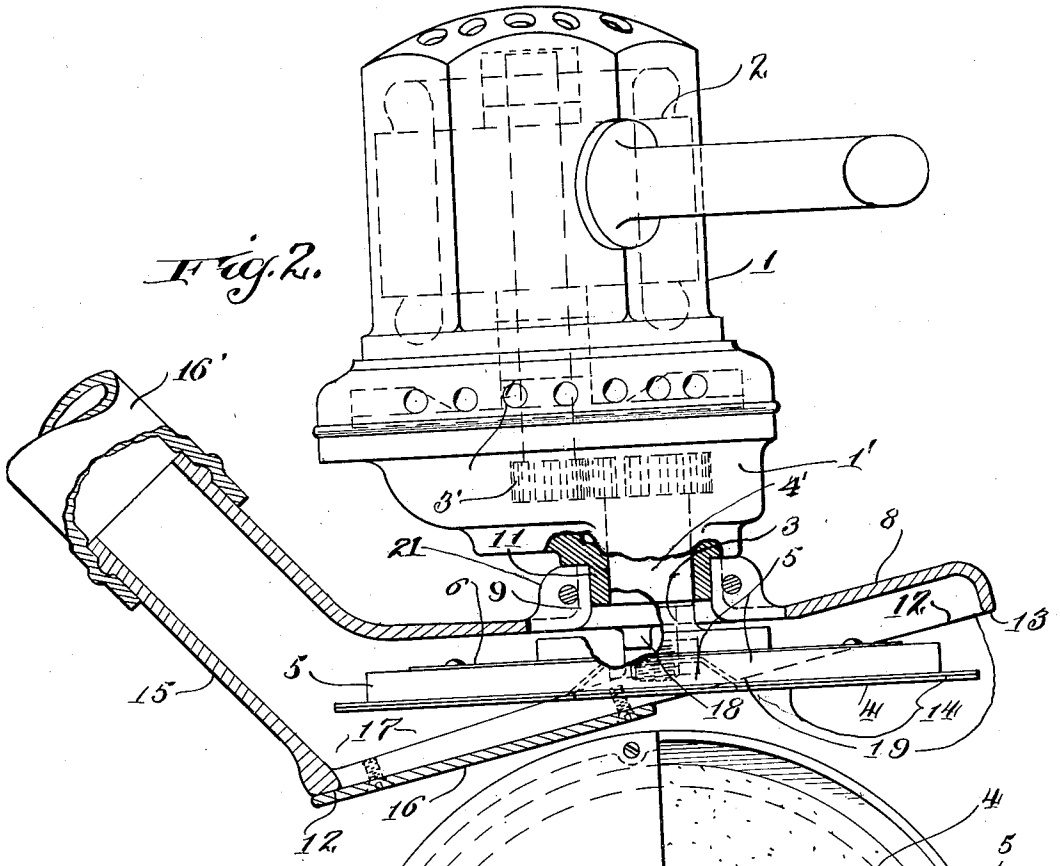
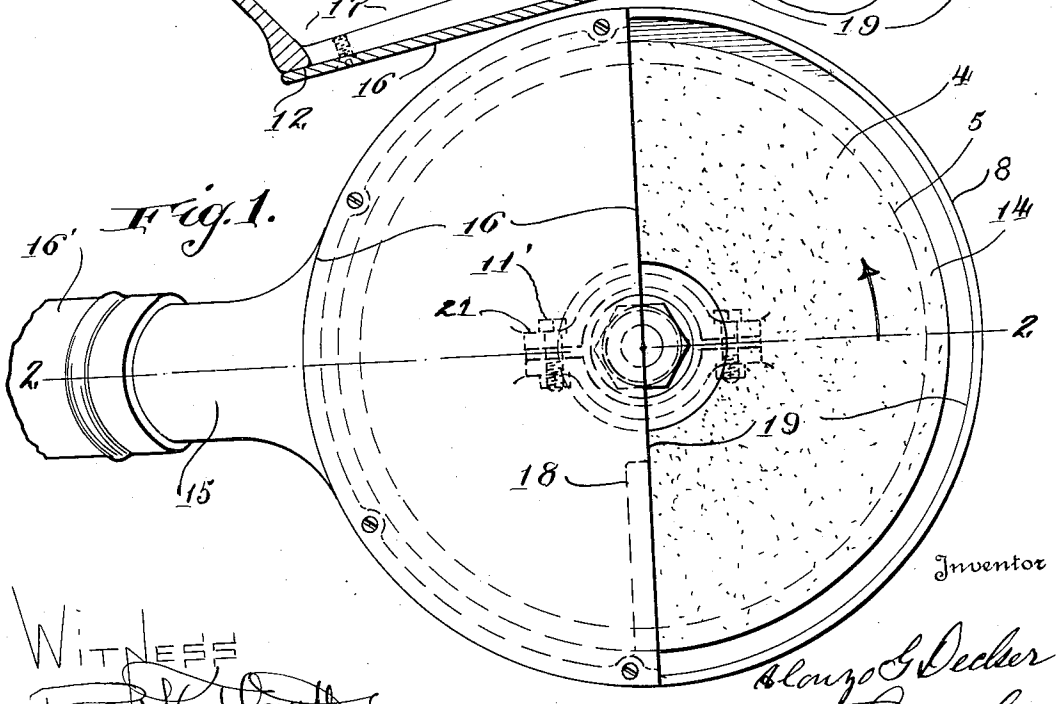


Fig. 1.



Witness

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PORTABLE SANDER DUST HOOD

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8 Claims. (Cl. 51—170)

The invention relates to a dust collector for a portable sander or surfacing machine. Such machines are provided with a flexible support on which a sheet of abrasive material is mounted, both the support shown in the form of a pad, and the abrasive sheet being circular or disklike in form. The pad and the abrasive sheet combined are driven rotatively about their common axis by a portable motor or other portable rotary driving means as a flexible shaft so that the abrasive sheet may be applied to the surface of the work and rotate in contact therewith, the abrasive sheet and pad or other support being sufficiently flexible to permit them to yield and become flexed in contact with the work conforming approximately to the surface of the work when held at the proper angle.

The inventive idea provides a dust collecting hood surrounding the sanding disk, which term may be used in a general way, to include both the abrasive sheet and the flexible support or pad. The hood is particularly adapted to use in connection with a flexibly supported abrasive surface, it being understood that in operating this type of sander in accordance with the standard practice, approximately one third of the surface of the disk contacts the surface being treated tending to flex this portion of the disk, bending it backward at an angle to the plane of rotation. The hood is so made in accordance with the invention that the plane of the opening therein or the edges of the opening are closely adjacent the plane of the operative surface of the disk in working position, and the hood, in fact, so encloses the pad and disk that the latter is exposed only as to an area slightly in excess of that which contacts the work. This portion normally projects from the opening in the hood and is deflected by contact with the work almost into the plane of the opening in the hood.

In the use of such sanders or surfacing machines, the abrasive disk grinds off and removes fine particles of material, either old paint, rust, scale, wood or steel, and by centrifugal action of the revolving sanding disk these particles are projected into the air and drawn into the sanding unit motor by the air circulation set up by the ventilating fan, which cools the motor, also these particles are drawn into the operator's lungs to an extent which is injurious. In either event the particles are apt to be strongly abrasive in character and are harmful in their effect.

The purpose of the device of the invention is to collect and carry away the abrasive particles thus removed either from the work or the abrasive disk, and to deliver the particles thus collected to a suitable receptacle, whence they are disposed of without damage to the machine or injury to the operator.

In the accompanying drawing I have illustrated a portable sander to which is applied a dust hood embodying the features of the invention in the preferred form.

In the drawing:

Figure 1 is a bottom plan view of the sander and hood.

Figure 2 is a vertical longitudinal section on the line 2—2, Figure 1, the motor and gear casing being shown in elevation for convenience of illustration.

Referring to the drawing by numerals, each of which is used to indicate the same or similar parts in the different figures, the construction shown comprises a motor housing 1, containing a motor, the outline of which is shown at 2 in broken lines. Mounted on the shaft 3 driven by the motor through gear train 3' contained in gear casing 1' is a sheet of abrasive material 4 of circular, disklike outline, the same being supported upon a flexible pad 5, which is preferably also circular, the pad being in turn supported by the shaft by means of a thin, flexible metal plate 6. The flexibility of the abrasive sheet 4 as thus supported is such that by tipping the machine so that the plane of rotation of the disk is at an angle of fifteen or twenty degrees to the surface being treated and pressing the edge portion of the bottom surface of the disk against the work, this edge portion is deflected into the plane of the work so that approximately one third of the abrasive sheet or disk is in contact with the surface being sanded. The portion thus deflected is bent at an angle to the remainder of the abrasive disk pad of fifteen to twenty degrees or more, depending upon conditions. In this way the tool is so controlled that the abrasive particles on the disk are passed over the work on a path the general direction of which approaches a straight line avoiding the complete rotation of the abrasive member in contact with the work which is not considered desirable in surfacing.

In addition to the motor and sanding disk construction combined in the operative relation described, the illustration includes a dust hood 8, to which in its novel form and in its manner of cooperation with the flexible sanding disk, the invention particularly relates. The hood 8 as shown may be supported in any suitable manner. As shown, it is formed with a split neck portion at 9. The neck portion having flanges 21 on each

side of the split which flanges are drawn together by bolts 11' to clamp the hood to the boss 11 projecting from the gear casing and surrounding the shaft bearing or bushing 4'.

The hood 8, as shown, is somewhat in the form of an inverted dish or saucer overlying the abrasive disk, the open side or face of this saucer-like hood or casing 8 indicated by reference character 12, is turned downwardly, the edges of said opening 12 being inclined to the plane of rotation of the disk 4 at an angle which is substantially equal to the angle of deflection of the operative portion of the disk when it is in contact with the work in operation. When the disk is not in contact with the work, the operative portion of the disk indicated by reference character 14 projects from the hood at an angle thereto corresponding to the angle of deflection as aforesaid.

The hood 8 is preferably provided with means for disposing of the dust and grit collected or confined within the hood, the same being shown in the form of a nipple 15 leading rearwardly from the machine and upwardly from the plane of work, which nipple is adapted to be connected to a flexible hose 16' which may, in turn, be connected to a vacuum system.

Referring again to the operative segment of the abrasive disk indicated at 14 as projecting from the hood in the normal position of the disk, it will be noted that the opening 12 in the hood is partially closed by means of a cover plate 16 which normally covers approximately half of the opening. This cover plate serves to restrict the area as to which the vacuum system must work, and it tends to form a reservoir at 17 for the dust thus collected. It is removed to change the disk.

The disclosure also includes a ridge 18 depending from the hood on the side of outward rotation of the disk as indicated by the arrow, tending to stop the circulation of the air over the top of the pad and thus prevent the particles from circulating with the pad and possibly from being thrown out instead of being drawn in by the air draft.

It will, of course, be understood that the motor is energized by way of an electrical cord not shown, from a suitable source of electricity, and the nipple 15 is connected to a flexible tube 16', in which a vacuum is maintained.

Referring to the operation of the machine, the standard practice is to press the revolving disk against the work, holding the tool at an angle as indicated so that a segment of the abrasive disk, comprising about one third of the area of the disk, is in contact with the work. In this way, the disk and pad are flexed and the contacting portion is bent backwardly at an angle relative to the remainder of the pad. It will be understood that with the present construction, the portion of the pad at 14 applied to the work is that which projects from the opening 19 between the cover plate 16 and the opposite edge 13 of the opening 12 in the hood. The flexing of the operative area of the pad and abrasive sheet as described by pressing the latter into contact with the work in the sanding operation, brings the disk to a position in which the abrasive surface of the disk coincides approximately with the edge of the opening in the hood surrounding it.

The particles removed from the work by the disk tend to follow the rotation of the abrasive disk and are thus thrown back into the reservoir or chamber 17 between the plate 16 and the top wall of the hood.

While we have referred to the disk as approximately coinciding in its operative position with the edge of the opening in the hood surrounding it, it will be understood that the angle of the face of the hood or the edge portion 12, 13 surrounding the opening 19 is such that when the disk is flexed to the degree incident to normal operation, the disk will contact the work without bringing the edges of the hood or plate 16 into contact with the work so as to cause interference by the hood with the proper manipulation of the disk. The expression "deflected into the plane of the opening" is used to describe this condition.

I have thus described specifically and in detail a dust collector for a sanding disk machine of the flexible disk type embodying the features of the invention, the description being specific and in detail in order that the manner of constructing, operating, applying and using the same may be fully understood, however, the specific terms herein are used descriptively rather than in a limiting sense, the scope of the invention being defined in the claims.

What I claim as new and desire to secure by Letters Patent is:

1. The combination with a portable sander comprising a flexible abrasive disk approximately one third of the area of which engages the work in normal operation, and means for rotating the disk, a hood enclosing the disk and having an opening with its edges substantially in a rectilinear plane inclined to the plane of rotation, the opening being formed and arranged to expose approximately half the disk including the operative portion of the disk, said operative portion of the disk normally projecting from the opening, contact of the disk with the work serving to deflect said portion of the disk into the plane of the opening and means for creating a vacuum in the hood.

2. The combination with a portable sander comprising a flexible abrasive disk, a segment only of the disk on one side of its center being adapted to engage the work, and a motor for rotating the disk, a hood enclosing the disk and having an opening exposing the operative portion of the disk with a sufficient margin to avoid harmful contact of the hood with the work and being otherwise closed, the edges of the opening being in a plane inclined to the plane of rotation, said portion of the disk normally projecting from the opening, the contact of this portion of the disk with the work serving to deflect it into the opening, so that the working surface of the disk approaches the plane of the edge of the hood surrounding the opening.

3. The combination in a portable sanding disk machine of a flexible abrasive disk, a hood enclosing the disk and having an opening through which a limited portion of the disk on one side only of the center of the disk normally projects, the remainder of the hood being closed, the opening being of similar outline to and slightly larger than the flat side of the exposed portion of the disk, and means supporting the disk so it projects at an angle which permits it to be deflected into said opening by contact with the work.

4. The combination in a portable sanding disk machine of a flexible abrasive disk, a hood enclosing the disk and having an opening through which a limited portion of the flat side of the disk on one side only of the center of the disk normally projects, the remainder of the hood being closed, the opening being of similar outline to and slightly larger than the flat side of the exposed portion of the disk, and means support-

ing the disk so it projects at an angle which permits it to be deflected into said opening by contact with the work, and means for creating a vacuum in said hood causing an inward draft along the entire periphery of the exposed area of the disk.

5. The combination with a portable sander comprising a flexible abrasive disk and a motor for rotating the disk, a hood enclosing the disk and having an opening slightly larger than the disk, the edges of the opening being substantially in a plane inclined to the plane of rotation, a cover plate closing a portion of said opening, a portion of the disk normally projecting from the opening beyond the cover plate, the contact of the disk with the work serving to deflect the projecting portion of the disk substantially into the plane of the opening.

6. The combination with a portable sander comprising a flexible abrasive disk and a motor for rotating the disk, a hood enclosing the disk and having an opening slightly larger than the disk, the edges of the opening being substantially in a plane inclined to the plane of rotation, a cover plate closing a portion of said opening, the operative portion of the disk normally projecting from the opening beyond the cover plate, the contact of the disk with the work serving to deflect the projecting portion of the disk substantially into the plane of the opening, the hood having a projecting ridge over the disk on the outwardly rotating side of the disk to prevent outward projection of the particles.

7. The combination in a portable sanding disk machine of a flexible abrasive disk, means for rotating the disk, a limited portion of the disk on one side only of the center engaging the work, a hood enclosing the disk and having an opening from which said portion of the disk normally projects and into which it is deflected by contact with the work, the remainder of the hood being closed, and means for creating a vacuum in said hood, the hood having an abutment over the disk projecting toward the disk transversely to the direction of rotation to stop the particles and prevent them from being projected out of the hood.

8. The combination in a portable sanding disk machine of a flexible abrasive disk, means for rotating the disk, a limited portion of the disk on one side only of the center engaging the work, a hood enclosing the disk and having an opening from which said portion of the disk normally projects and into which it is deflected by contact with the work, the remainder of the hood being closed, and means for creating a vacuum in said hood, the hood having an abutment over the disk projecting toward the disk transversely to the direction of rotation to stop the particles and prevent them from being projected out of the hood on the outwardly rotating side of the upper surface of the disk.

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