Feb. 2, 1937. H. L. MYERS 2,069,502

SANDERPLANE

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FIG. 1.

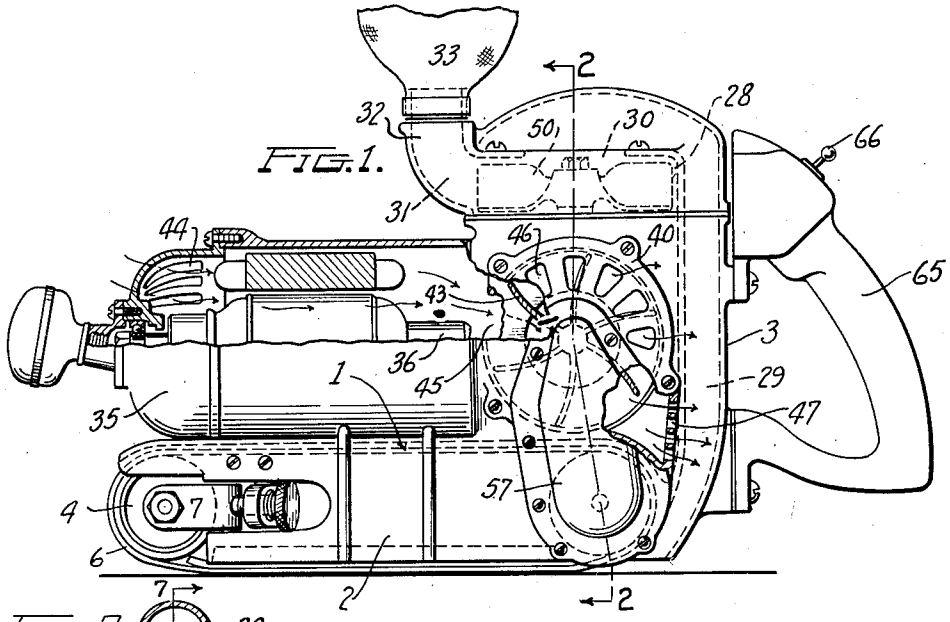


FIG. 2.

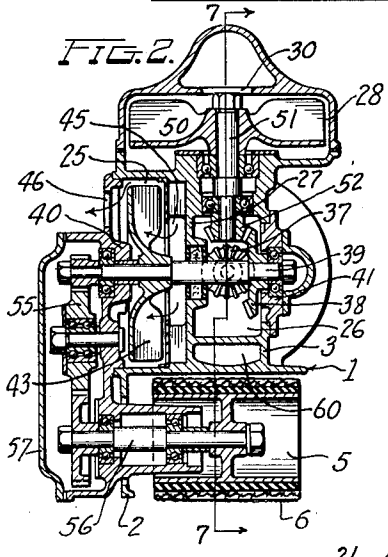


FIG. 3.

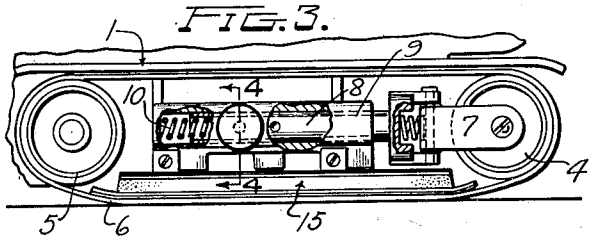


FIG. 4.

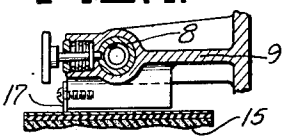


FIG. 5.

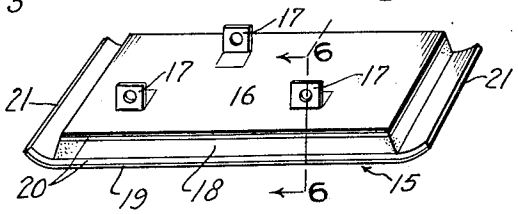
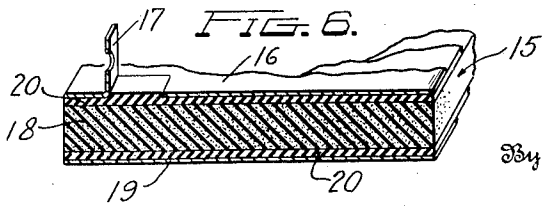


FIG. 6.



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FIG. 7.

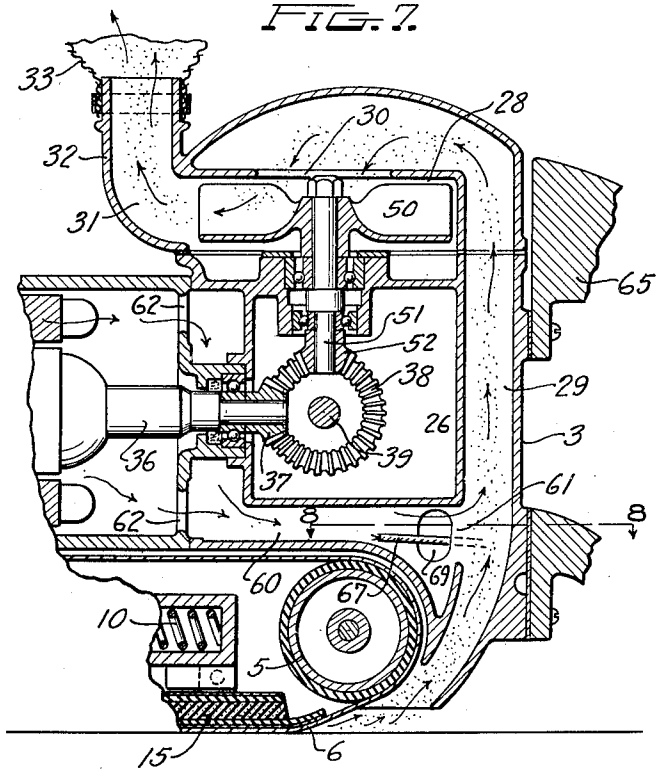


FIG. 8.

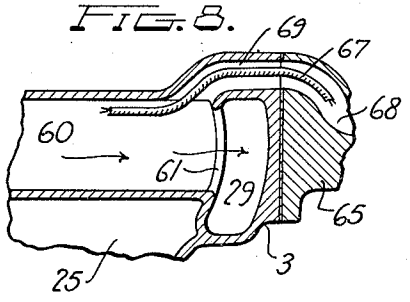
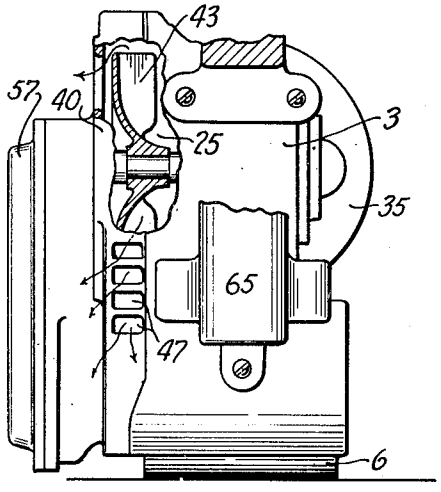


FIG. 9.



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Patented Feb. 2, 1937

2,069,502

UNITED STATES PATENT OFFICE

2,069,502

SANDERPLANE

Harry L. Myers, Toledo, Ohio, assignor to The American Floor Surfacing Machine Company, Toledo, Ohio, a corporation of Ohio

Application April 21, 1936, Serial No. 75,562

12 Claims. (Cl. 51—170)

This invention relates to sanding machines, and particularly to those of the sanderplane type.

An object of the invention is the provision in a machine of this character of a pressure foot for the working run of the sanding belt, which foot has a facing plate of thin elastic material that is backed by a cushioning material, preferably of a resilient rubber-like nature, whereby the facing plate may have a yielding pressure against the belt and flex to conform to irregular surfaces over which operating, thus preventing digging in of the sanding surface when irregularities are encountered and facilitating the production of smooth uniform work.

Further objects and advantages of the invention will be apparent from the following detailed description, and from the accompanying drawings, in which—

Figure 1 is a side elevation of a sanderplane embodying the invention, with parts broken away; Fig. 2 is a reduced cross-section thereof on the line 2—2 in Fig. 1; Fig. 3 is an opposite side view of the chassis portion of the machine from that shown in Fig. 1, with parts broken away; Fig. 4 is a section on the line 4—4 in Fig. 3; Fig. 5 is a perspective view of the pressure foot removed from the machine, and in which a part of the invention resides; Fig. 6 is an enlarged section on the line 6—6 in Fig. 5, with parts broken away; Fig. 7 is an enlarged fragmentary section on the line 7—7 in Fig. 2, with parts broken away; Fig. 8 is a fragmentary section on the line 8—8 in Fig. 7, and Fig. 9 is a fragmentary rear end elevation of the machine with parts broken away.

Referring to the drawings, 1 designates a chassis frame having at one side a depending flange 2 and on its top at one end a housing 3. The chassis 1 is provided in spaced relation lengthwise thereof at the inner side of the flange 2 with the customary front and rear rollers 4 and 5, respectively, over which a sanding belt 6 is trained. In the present instance, the rear roller 5 is the drive roller, and the other is an idler and carried by a fork 7, which in turn is carried by a stem or plunger 8 mounted for movements lengthwise of the chassis in a bracket 9 attached to the inner side of the flange 2. A spring 10 acts on the stem 8 to urge it outward and thus take up slack in the belt. This form of mounting for the belt is well understood in the art, and need not therefore be more specifically described.

A pressure foot 15, in which one feature of the invention resides, engages the lower or working run of the sanding belt 6 at its inner side and holds such run outwardly spaced from a plane tangential to the lower edges of the rollers 4 and 5. This foot is carried by the bracket 9 and is of a width corresponding to that of the belt and of a length substantially equal to that of said run, and is substantially flat at its under side to cause the engaged portion of the belt to normally present a substantially flat surface to the surface to be acted on.

It is found highly desirable for the efficient operation of a sanding machine of this type to have the pressure foot present a smooth surface to the sanding belt, which surface is of a nature to reduce to substantially a minimum the friction due to movement of the belt in contact therewith, and is also cushioned or yielding to permit such surface to accommodate itself very largely at least to the contour of the surface over which the belt is traveling and which, at the same time, exerts sufficient pressure against the belt to cause it to efficiently act on the work.

To obtain these advantages, the pressure foot includes a backing plate 16 having ears 17, in the present instance, struck upward therefrom and perforated for attaching to the bracket 9. Covering the entire bottom surface of this plate and intimately attached thereto, preferably by vulcanizing, is a cushion member 18 of rubber or other suitable material. Attached to the cushion member 18, as by vulcanizing, and forming the belt coacting face of the foot, is a plate 19 of thin elastic flexible material, such for instance as sheet steel, which presents a smooth surface to the belt, and at the same time springs under pressure to conform more or less to the form of the surface over which the belt is operating. While the plate 19 is thin, its elasticity is such as to prevent permanent denting when the tool, for instance, is set on a bench or other surface where the shoe might come in contact with screws, nails or the like, which might be lying loose thereon. This feature is important, for it is found that when a dent is formed in a pressure shoe of this character and remains permanent therein, streaks will be left in the abraded surface by reason of the presence of such dent. In the present case, should denting occur in the pressure plate, the elasticity of the material will cause the plate to resume its normal form when the denting pressure is removed.

The cushion member 18, in practice, is preferably about one-half inch in thickness but may vary considerably from this, and is of soft or sponge-like material, such for instance as rubber, to make

it easily compressible. It is also preferable to form the cushion member by facing the upper and lower sides of the sponge material with relatively thin sheets of rubber 20 of a firmer nature than that of the sponge section to facilitate vulcanizing or cementing to plates 16 and 19.

The facing member 19 preferably has its ends extended beyond the ends of the cushion member 18 to form upwardly curved lips 21, which avoid sharp end edges in contact with the sanding belt and enable the pressure foot and belt to more easily ride over irregularities in the work surface. In the present instance, the lower rubber sheet 20 extends beyond the ends of the sponge rubber section of the cushion means 18 and covers the extension lips 21.

The housing 3 is formed with a fan chamber 25 and with a gear chamber 26, both vertically disposed and arranged side by side transversely of the chassis frame 1, being separated by a partition 27, and is also formed at its top with a horizontally disposed fan chamber 28. The housing at its outer or rear sides also forms a suction conduit 29 which has its lower end extending down at the rear of the roller 5 with its inlet in close proximity to the lower rear edge portion of such roller. The upper end of the conduit 29 extends over the fan chamber 28 and opens centrally therein through a top opening 30. The discharge opening 31 from the chamber 28 is formed by a nipple 32 disposed at the forward side thereof and adapted to have a dust collecting bag 33 attached thereto.

A motor 35 is mounted in reclining position on the forward end portion of the chassis frame 1 with its enclosed rotor shaft 36 disposed lengthwise of said frame and mounted in suitable bearings in the front and rear ends thereof. The rear end of said shaft projects into the chamber 26 and carries a bevel gear 37 therein in mesh with a larger bevel gear 38 on a cross shaft 39, which is journaled at its ends in plates 40 and 41, closing openings in the outer sides of the chambers 25 and 26, respectively, and passes through a suitable packing in the partition 27 between said chambers A cooling fan 43 is mounted on the shaft 39 within the chamber 25 and operates to set up a circulation of air through the motor casing. For this purpose said casing has entrance openings 44 in its front end and has an opening 45 from its rear end into the fan chamber 25, and said chamber has outlet openings 46 in the plate 40. It is also preferable to provide outlet openings 47 in the rear side of the chamber 25.

A suction or dust fan 50 is disposed in horizontal position in the fan chamber 28, being mounted on a vertical shaft 51 which is journaled in the top portion of the housing 3 and projects down into the chamber 26 where it carries a bevel gear 52 in mesh with the gear 38.

The shaft 39 projects without its bearing in the plate 40 and carries at such end one of a train of gears 55 which drive a shaft 56 that carries and drives the rear roller 5, as well understood in the art. The gears 55 are enclosed by a plate 57.

In order to cause the dust fan 50 to assist the fan 43 in drawing cooling air through the motor housing, the housing 3 is provided below the chamber 26 with a passage 60, which opens at its rear end into the dust conduit 29 through an opening 61 in its front wall and has its forward end forming a larger passage extending around the rear bearing of the shaft 36 in advance of the chamber 26 and opening into the interior of the motor casing through a plurality of openings 62, as best shown in Fig. 7.

A handle 65 is attached to the rear side of the housing 3 and carries in its upper part a control switch for the motor, the control part of which is designated 66 (Fig. 1). A cable 67 enclosing the lead wires from the switch to the motor extends through a hollow 68 in the handle and thence through a passage 69 in the housing 3 into and through the passage 60, as best shown in Figs. 7 and 8.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, as it is capable of numerous modifications and changes without departing from the spirit of the claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent, is:

1. A pressure foot of the class described, including a backing plate, an elastic face plate, and an intermediate cushion means bonded substantially throughout its front and back surfaces to said plates.

2. A pressure foot of the class described, including a backing plate, an elastic face plate, and a cushion means of soft rubber substantially covering the face plate and bonded substantially throughout its front and back surface areas to said plates.

3. A pressure foot of the class described, comprising a backing plate, an elastic sheet metal facing plate, and a sponge rubber section of substantial thickness connecting and substantially covering the adjacent sides of said plates and vulcanized thereto.

4. A pressure foot of the class described, comprising a backing plate, a thin elastic face plate of sheet steel, and a soft rubber cushion interposed between said plates in substantial covering relation thereto and having fixed connection with the coacting surface of each as by vulcanizing.

5. A pressure foot of the class described, having a backing member, a facing member of elastic thin sheet material, and a soft rubber cushion means of substantial thickness interposed between and connecting said members, said facing member having lip extensions at its ends spaced from said backing member.

6. In a sanding machine, a chassis frame having a housing at one end, spaced rollers carried by said chassis frame, a sanding belt mounted on said rollers, an electric motor mounted on the chassis in advance of said housing, said motor having a casing with air inlet openings therein, said housing having an upright fan chamber in communication with the interior of the motor casing and with the atmosphere and also having a horizontally disposed chamber in its top part with a dust collecting inlet passage extending from adjacent to one end of said sanding belt and having an outlet passage, a fan in each of said chambers, and means for driving said fans and said belt from the motor, said housing also having a passage opening communication between the interior of the motor housing and said dust inlet passage.

7. In a sanding machine, a chassis frame having a housing at one end and an electric motor at its other end, spaced rollers carried by said chassis frame, a sanding belt mounted on said rollers, an electric motor mounted on the chassis in advance of said housing, said motor having a casing with air inlet openings therein, said frame housing having an upright fan chamber in com-

munication with the interior of the motor casing and with outlet openings, and also having at its top a second fan chamber which is horizontally disposed, a dust passage leading from adjacent to one end of said belt to said second chamber, and an outlet from said second chamber, a horizontal shaft projecting through said first chamber, a fan mounted thereon within such chamber, a vertically disposed shaft projecting into said second chamber, a fan mounted on said latter shaft within said second chamber, means for driving said shafts from said motor, means for driving said belt from said first shaft, said frame housing forming a passage lengthwise of the chassis frame and communicating at its forward end with the interior of the motor casing and at its rear end with said dust passage.

8. In a belt type sander, a chassis frame, a pair of transversely spaced rollers carried thereby, a sander belt trained thereover, a motor mounted on said frame, and having a casing open at one end to the outside, means carried by said frame and cooperating with said casing to form an air outlet passage therefrom, a fan in said passage, a shaft transversely mounted in said means and carrying said fan, said means forming a dust passage extending from near said sander belt to the top of said means and then to a point of discharge, a second fan mounted in said dust passage in reclining position over said first fan, a vertical shaft mounted in said means and carrying said second fan, geared connections between said motor and shafts, and means effecting a driving connection between one of said shafts and one of said rollers.

9. In a belt type sander, a chassis frame, a pair of transversely spaced rollers carried thereby, a sander belt trained thereover, a motor mounted on said frame and having a casing open at one end to the outside, means carried by said frame and cooperating with said casing to form an air outlet passage therefrom, a fan in said passage, a shaft transversely mounted in said means and carrying said fan, said means forming a dust passage extending from near said sander belt to the top of said means and then to a point of discharge, a second fan mounted in said dust passage in reclining position over said first fan, a vertical shaft mounted in said means and carrying said second fan, geared connections between said motor and shafts, and means effecting a driving connection between one of said shafts and one of said rollers, said means also forming an air circulating passage between said motor casing and dust passage at the inlet side of its fan.

10. In a belt type sander, a chassis frame, a pair of transversely spaced rollers carried thereby, a sander belt trained thereover, a motor mounted on said frame and having a casing open at one end to the outside, a housing rising from said frame at the opposite end of said motor and forming a fan chamber at its top, an outlet passage from said chamber and an inlet passage having communication with the interior of the motor housing and also having a dust receiving inlet opening adjacent to one end of said belt, a suction fan disposed in reclining position in said chamber, a vertical shaft mounted in said housing and carrying said fan, and driving connection between said motor and shaft within said housing.

11. A pressure foot of the class described, having a backing member of rigid material, a facing member of thin elastic sheet material, separate soft rubber sheets bonded to the adjacent face of each member substantially throughout its area, and a sponge rubber cushion disposed between and bonded to said rubber sheets.

12. A pressure foot of the class described, having a rigid backing member, a facing member of thin elastic sheet material, a soft rubber cushion bonded at its respective inner and outer surfaces to said members and effecting a cushioned spacing thereof, said facing member having its ends terminating in lip extensions which are spaced from the backing member.

HARRY L. MYERS.