Nov. 15, 1932. S. V. BOWLBY 1,887,620

SANDER

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FIG. 1

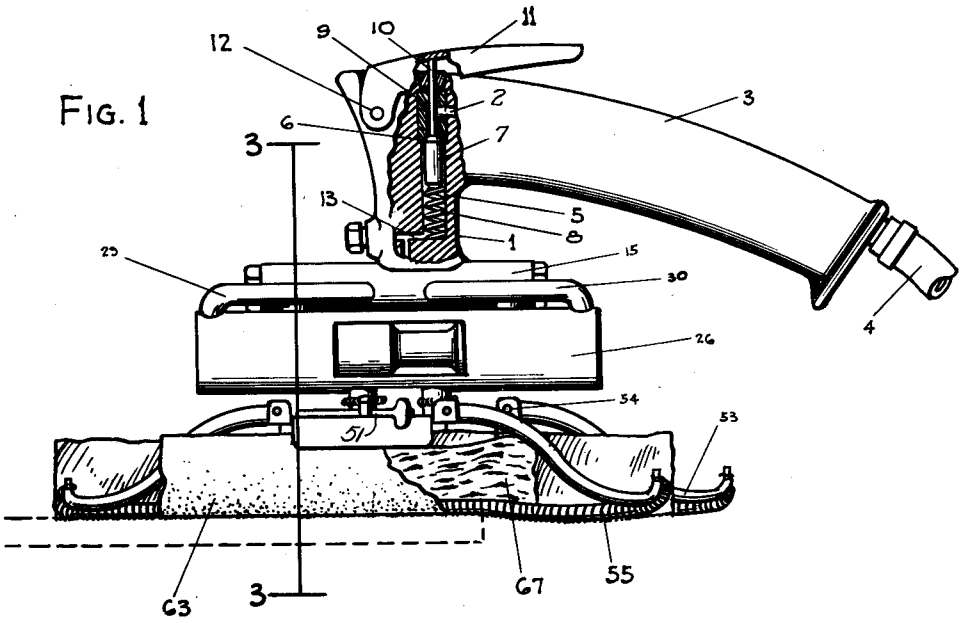
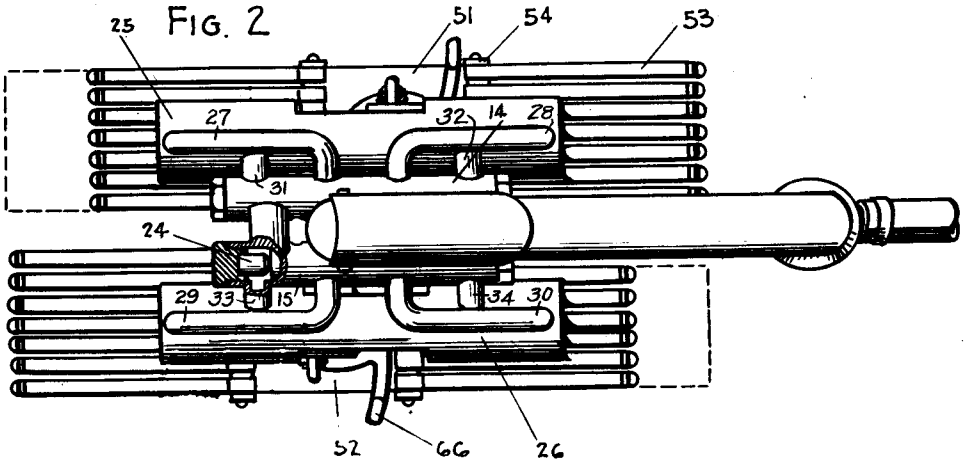


FIG. 2



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FIG. 3

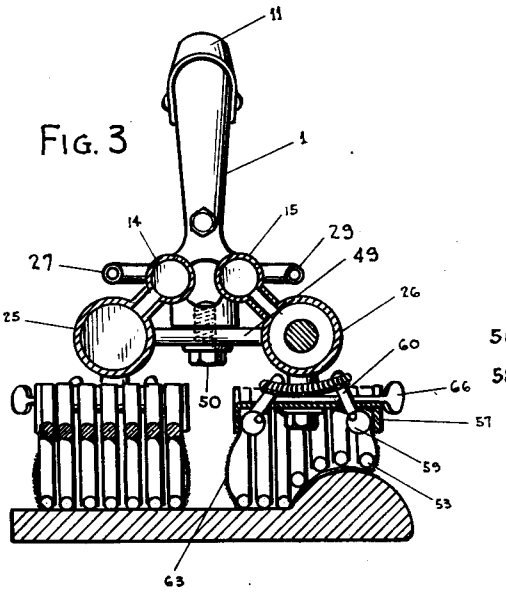


FIG. 4

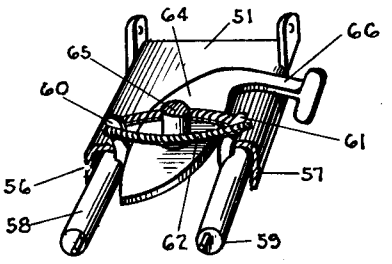
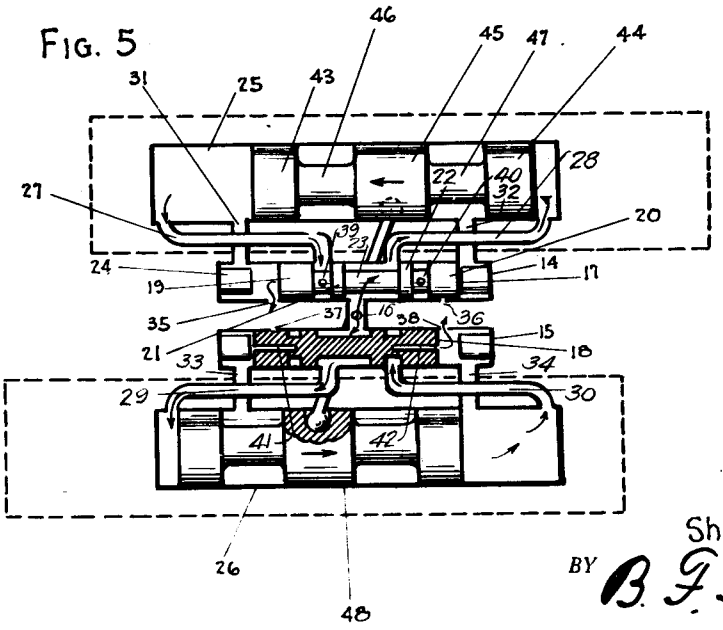


FIG. 5



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UNITED STATES PATENT OFFICE

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SANDER

Application filed October 2, 1930. Serial No. 485,852.

This invention relates to sanding devices, that is, to a machine for sanding surfaces. The device is adapted to be operated by motive fluid, preferably, air and it is capable of holding sheets of sand-paper and move them over the surface to be abraided.

The invention consists in certain parts and combination of parts, all of which will be specifically described hereinafter, reference being had to the accompanying drawings in which:

Fig. 1 is a side elevational view of a device constructed in accordance with my invention, the fluid-admitting chest being shown in section.

Fig. 2 is a top plan view of the device.

Fig. 3 is a cross-sectional view on the line 3—3 of Figure 1.

Fig. 4 is a detailed perspective view of one of the sand-paper-holding clamps and

Fig. 5 is a diagrammatical view of the piston and valve arrangement.

Referring now to the drawings by numerals of reference, 1 designates a head forming a fluid-admitting chest. The head is provided with an inlet port 2 connected to a hollow handle 3 supplied with air or other motive fluid through a hose connection 4. The inlet 2 discharges into the fluid chest 5 at the upper end of which is a valve seat 6 adapted to be closed by a valve 7 normally urged on its seat by a spring 8, one end of which bears against the valve and the other against the bottom of the chest. Projecting through the gland 9 in the top of the chest is a valve stem 10 connected to an operating handle 11 pivoted at 12 to the head. At the bottom of the chest is an outlet port 13 adapted to communicate with two valve-containing cylinders 14 and 15 through a cross port 16.

Two valve members 17 and 18 are adapted to reciprocate in the cylinders 14 and 15 as will be clearly seen by reference to Figure 5. Each valve member is provided with two end heads 19 and 20, spaced from collars 21 and 22 to provide spaces between the collars and the respective heads and a space 23 between the respective collars.

The ends of the cylinders 14 and 15 are provided with stops 24, projecting inwardly from their ends and of less diameter than the diameters of the cylinders. The valve cylinders 14 and 15 are connected to piston cylinders 25 and 26 by conduits or pipes 27 and 28, connected to the valve cylinder 14 near its center and to the piston 25 at its respective ends. Similar conduits or pipes 29 and 30 connect the valve cylinder 15 with the piston cylinder 26. The ends of cylinder 14 are connected to the cylinder 25 by conduits or passage-ways 31 and 32. Similar conduits 33 and 34 connect the valve cylinder 15 with the piston cylinder 26. The cylinder 14 has exhaust ports 35 and 36 near its respective ends and similar exhaust ports 37 and 38 are provided for the cylinder 15. 39 and 40 are ports in the ends of the valve member 17 and similar ports 41 and 42 are in the ends of the valve member 18.

In the piston cylinder 25 is a freely movable piston member having end-heads 43 and 44 and an intermediate head 45 spaced from the end-heads by constricted portions 46 and 47. A similar piston member 48 is in cylinder 26.

The two pistons are connected by a cross-link 49 pivoted to the bottom of the head at 50 and having ball and socket connections at its ends with the intermediate heads of the pistons.

Each piston carries a plate. These are designated 51 and 52. On the respective ends of the plates are longitudinally disposed downwardly and upwardly curved fingers 53 having their inner ends pivoted to the plates at 54. The fingers on one plate are connected to the fingers on the opposite plate by the coil springs 55. Each plate has downwardly projecting edge flanges 56 and 57 in the angles of which are clamping bars 58 and 59, having upstanding fingers 60 and 61 which project through openings in the plate having their upper ends connected by coil springs 62 so that the fingers are rocked inwardly by the action of the springs to urge the clamping bars or rods against the flanges to clamp sand-paper 63 between them. The fingers can be urged outwardly by a double cam 64 pivoted at 65 to each plate and each cam has a handle 66 by means of which the cam can be

rocked about its pivot to move the free ends of the fingers 60 and 61 outwardly to thereby move the clamping bars away from the flanges 56 and 57 to release the sand-paper. If preferred, yielding blocks of rubber or similar material may be placed between the springs 55 and the plates 51 and 52 to hold the intermediate portions of the springs against bowing too much as the sander passes over the surface to be treated.

It will be noted that the stops 24 limit the longitudinal movements of the valve members so that the inports 27, 28, 33 and 34 will not be closed off by the ends of the valve members.

When the parts are assembled, motive fluid such as air can be admitted through the head 1 (by unseating the valve 7) into both of the valve cylinders and from the valve cylinders to the piston cylinders, for example, through ports 28 and 29 (see Figure 5), while air or other motive fluid is exhausting out of the opposite ends of the cylinders, for example, through ports 27 and 30 and out through the outlet ports 35 and 38. When the pistons reach the ends of their strokes in one direction, the ports 31 and 34 will open to the valve cylinders to shift the valves to the positions shown in Figure 5 so that air now enters the opposite ends of the piston cylinders to reverse the pistons and this alternate action continues as long as motive fluid is supplied.

Inasmuch as the pistons are connected by the cross-bar, it will be obvious that they must move in opposite directions to shift the sand-paper-carrying plates and sets of fingers in opposite directions. Therefore, there will be a constant reciprocation of the sand-paper applicators (consisting of the fingers and their appurtenances) and it will be obvious that the fingers are yielding enough so that some of them may move over irregular surfaces while others remain on the flat surface.

I may not employ the pads 67 under all conditions but where a straight flat surface is to be sanded, I find the pads to be advantageously used.

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

1. A sanding machine comprising a head, a pair of power pistons carried by the head, a pivoted cross-bar connecting the pistons, sand-paper holders actuated by the pistons to reciprocate in alternate directions, said sand-paper holders comprising plates having pivoted fingers at their respective ends and flexible connections between the ends of the fingers in spaced relation to the plates.

2. A sanding machine comprising a head, a pair of power pistons carried by the head, a pivoted cross-bar connecting the pistons, sand-paper holders actuated by the pistons to reciprocate in alternate directions and sand-paper clamps carried by the holders consisting of plates having flanges, clamping bars cooperating with the flanges, fingers on the clamping bars, springs connecting the fingers to force the bars toward the flanges and a cam for spreading the fingers to move the bars away from the flanges.

In testimony whereof I affix my signature.

SHERRY V. BOWLBY.