Feb. 13, 1962 R. DESCARRIES 3,020,573

TOOL HARNESS

Filed May 26, 1959

3 Sheets-Sheet 1

FIG. 1

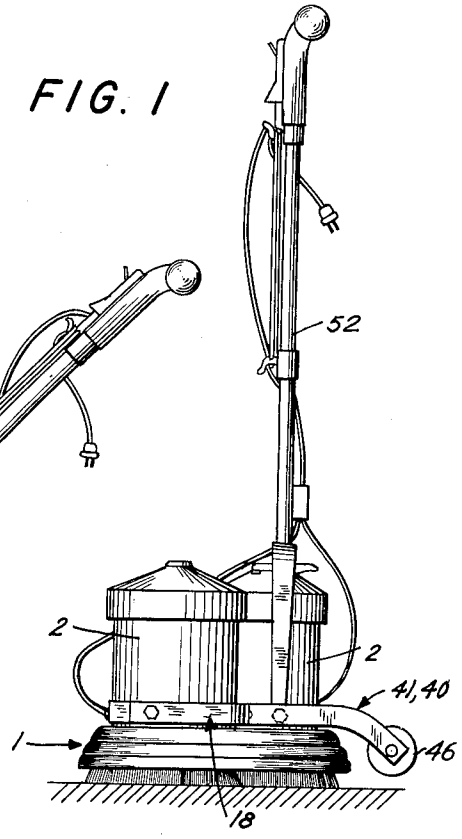


FIG. 2

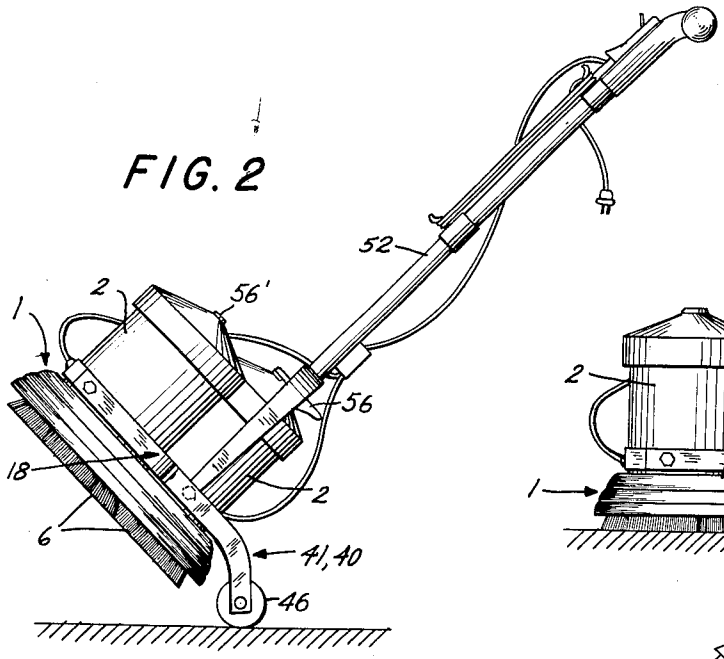
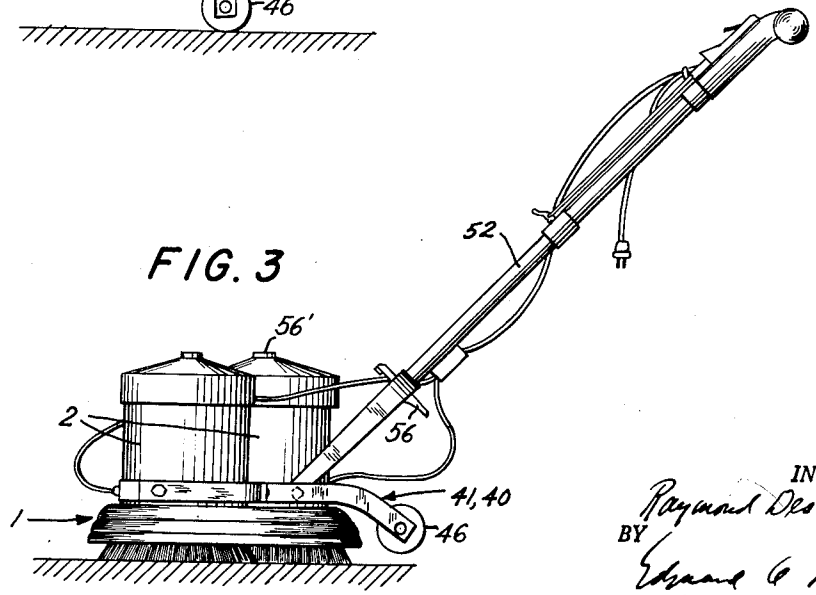


FIG. 3



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TOOL HARNESS

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FIG. 4

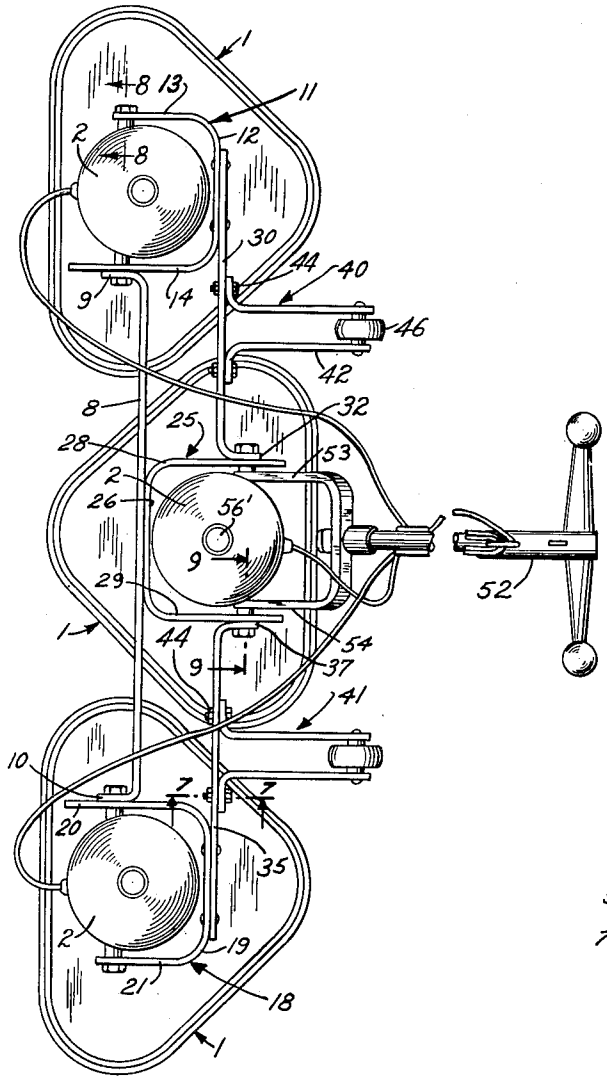
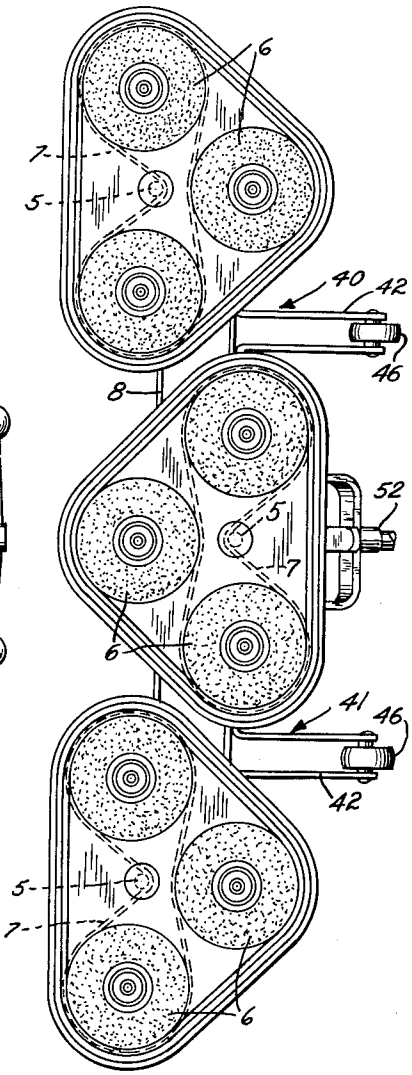


FIG. 5



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TOOL HARNESS

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FIG. 6

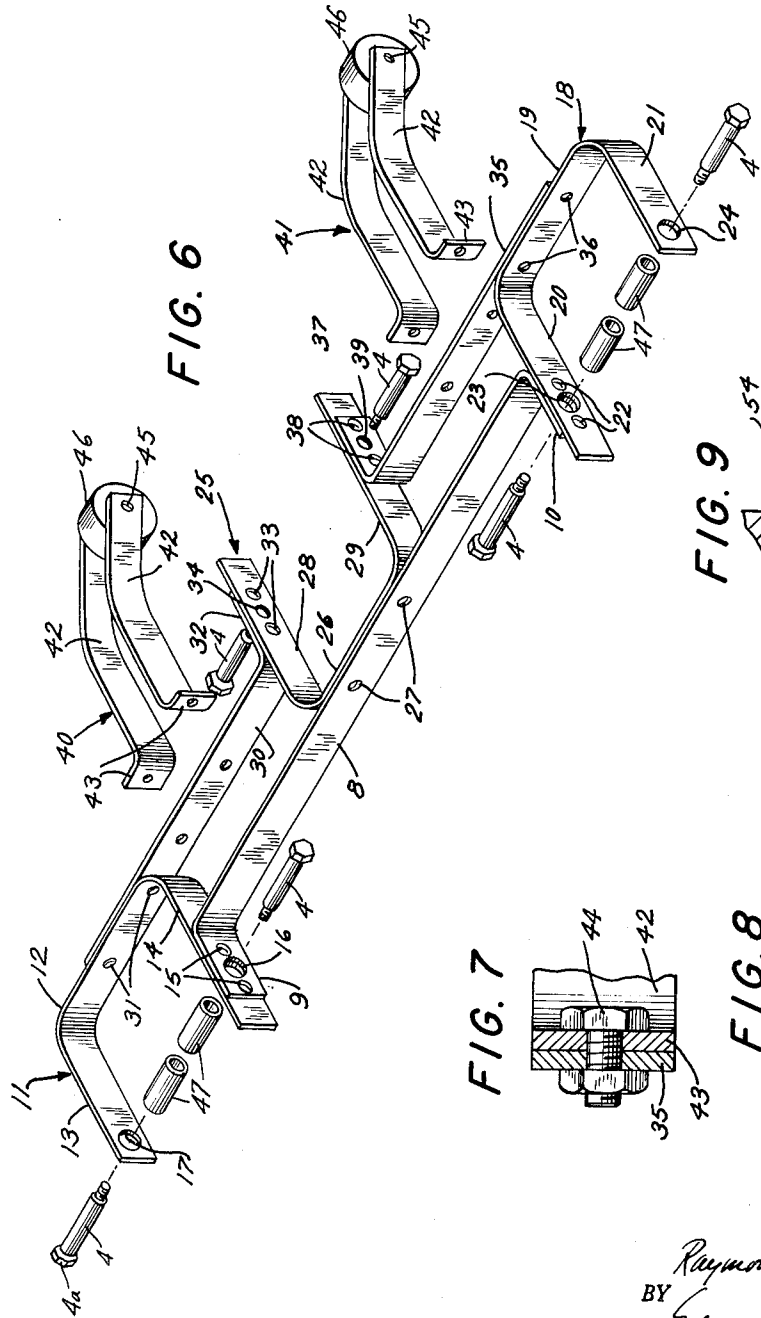


FIG. 9

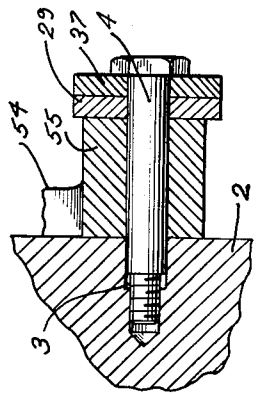
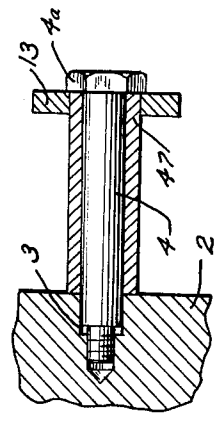


FIG. 7

FIG. 8



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United States Patent Office 3,020,573 Patented Feb. 13, 1962

3,020,573

TOOL HARNESS

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1 Claim. (Cl. 15—49)

This invention relates to devices for harnessing a plurality of tools in order that they can be moved as a unit relative to a work surface. The invention is particularly advantageous when used in connection with motorized floor machines, such as are employed for waxing, polishing and scrubbing, and when the term "tool" is employed hereinafter, this term is meant to embrace appliances of this general type.

An object of the invention is to provide an improved device for harnessing a plurality of tools in such fashion that the tools can be moved as a unit relative to a work surface.

Another object is to provide such a device which is of simple and inexpensive construction and which affords ample strength to allow the same to be used with relatively heavy, high-powered appliances.

In order that the manner in which these and other objects are attained in accordance with the invention can be understood in detail, reference is had to the accompanying drawings, which form a part of this specification, and wherein:

FIG. 1 is a side elevational view of a device constructed in accordance with this embodiment of the invention for harnessing a plurality of floor machines;

FIG. 2 is a side elevational view of the device of FIG. 1 in position such that the running gear is engaged with the work surface in order that the device can be wheeled from place to place;

FIG. 3 is a side elevational view of the device of FIG. 1 in working position with the handle thereof in its normal position of use;

FIG. 4 is a top plan view of the device of FIG. 1;

FIG. 5 is a bottom plan view of the device of FIG. 1;

FIG. 6 is an exploded perspective view of the harnessing device of FIG. 1, with the floor machines and handle structure omitted; and

FIGS. 7, 8 and 9 are fragmentary vertical sectional views taken on the lines 7—7, 8—8 and 9—9, respectively, of FIG. 4.

Referring to the drawings, it will be seen that the embodiment of the invention illustrated is adapted to harness three floor machines 1, each machine comprising a motorized head 2 provided, as will be clear from FIGS. 4 and 8, with a pair of opposed laterally directed bores 3 threaded at their inner ends for engagement with the threaded tips of studs 4. The floor machines 1 are of conventional construction, the head 2 of each machine housing an electrical motor with a vertical, downwardly projecting drive shaft, as indicated at 5 in FIG. 5. Each machine 1 embodies three brushes or other work elements 6 mounted to rotate about vertical axes and driven from drive shaft 5, as by a belt 7.

The harness device of the invention includes an elongated first U-shaped frame member 8 extending transversely of the intended direction of travel of the device and provided at its ends with forward extending projections 9 and 10. At one end of the device, a first floor machine holder 11 is rigidly secured to projection 9 of frame member 8. Holder 11 comprises a U-shaped metal strip, the base 12 of the U being disposed rearward of and parallel to member 8, and the legs 13 and 14 of the U extending forward of the harness device. Leg 14 extends in face-to-face contact with the outer surface of

projection 9, and leg 14 and projection 9 are secured rigidly together by two spaced rivets or other fasteners 15. Between rivets 15, leg 14 of the holder 11 and projection 9 of the frame member 8 are provided with coaxial circular openings 16. Leg 13 is provided with a circular opening 17 aligned axially with openings 16.

At the opposite end of the device, a second floor machine holder 18 is rigidly secured to projection 10 of frame member 8. Holder 18 is identical to holder 11, comprising a U-shaped metal strip, the base 19 being aligned with base 12 of the U of holder 11 and legs 20 and 21 extending forward, leg 20 being in face-to-face contact with projection 10 and rigidly secured thereto by spaced rivets 22. Between rivets 22, projection 10 and leg 20 are provided with coaxial circular openings 23 which are aligned axially with openings 16 and 17. Leg 21 has a circular opening 24 aligned axially with respect to openings 23.

A third floor machine holder 25, identical with holders 11 and 18, is secured to the center portion of frame member 8. Holder 25 is formed by a U-shaped metal strip, with the base 26 of the U lying in face-to-face contact with the rearward facing side of member 8 and secured thereto by spaced rivets 27. Legs 28, 29 of holder 25 project rearward of the device, being of such length as to extend well beyond the line defined by bases 12 and 19 of holders 11, 19.

A second frame member 30 is disposed rearward of member 8, extending between and being rigidly connected to holders 11 and 25. Member 30 has a main straight portion, one end of which extends in face-to-face contact with the rearward facing side of base 12 of holder 11, being secured thereto by rivets 31. At holder 25, member 30 has a rearward extending projection 32 extending along the outer side of leg 28 and secured thereto by spaced rivets 33. Between rivets 33, projection 32 and leg 28 are provided with coaxial openings 34.

A third frame member 35 extends between and is rigidly connected to holders 18 and 25. Identical with member 30, member 35 has a main straight portion, one end of which extends along the rearward facing side of base 19 of holder 18, being secured thereto by rivets 36. At holder 25, frame member 35 has a rearward extending projection 37 secured to leg 29 of the holder by spaced rivets 38. Between rivets 38, leg 29 and projection 37 are provided with coaxial circular openings 39 aligned axially with openings 34.

Because of the configuration of holders 11, 18, and 25, the disposition of frame members 8, 30 and 35, and the manner in which the frame members and holders are secured together, the harness structure is provided with an excellent degree of overall rigidity.

The device is provided with running gear means comprising two rearward extending leg structures 40, 41 disposed on sides 28 and 29, respectively, of holder 25. Leg structure 40 comprises a pair of parallel, spaced metal strips 42 each provided with a laterally projecting ear 43 disposed in face-to-face contact with the rearward facing side of frame member 30 and secured thereto by bolts 44, FIGS. 4 and 7. At their free ends, strips 42 are provided with coaxial openings in which is secured axle 45 of wheel 46. Leg structure 41 is identical to leg structure 40, but is secured to frame member 35. As seen in FIGS. 1–3, the two leg structures curve downwardly, so that the wheels 46 are spaced only slightly above the floor or other work surface when the brushes 6 engage such surface in normal working fashion.

The three floor machines 1 are all mounted on the harness device by studs 4 extending through the appropriate openings in the legs of the holders. The legs of each holder are spaced apart by a distance greater

than the width, at bores 3, of the floor machine heads 2, so that the holder can be placed easily about the head. Considering mounting of a floor machine 1 in holder 11, the holder is positioned with its legs 13, 14 disposed to bring openings 17 and 16 into approximate alignment with the bores 3 in the head 2 of the floor machine. With a plain cylindrical spacer tube 47, FIG. 6, held between leg 13 and the head, a stud 4 is then inserted through opening 17 and spacer 47 and threaded into the corresponding bore of the head. The operation is then repeated at the opposite side of the head, with a second stud 4 extending through openings 16 and a second spacer tube 47 and threaded into the appropriate bore 3. As seen in FIG. 8, opening 17 is made large enough to receive the end of spacer tube 47, and the head 4*a* of stud 4 is made sufficiently large to bear against the face of leg 13 as well as against the end of the spacer tube. Similarly, the outer end of the second spacer tube 47 extends through openings 16 and the head of the second stud 4 bears against the face of projection 9 as well as against the end of the spacer tube. It will thus be seen that, when so mounted, the floor machine 1 is adequately supported by the holder 11 but is free to pivot about the common axis of the bores 3, so that the working elements of the machine can properly engage the work surface even though the same be somewhat irregular.

The second floor machine 1 is mounted on holder 18 in precisely the same manner that the first floor machine 1 is mounted on holder 11.

As will be clear from FIGS. 4, 6 and 9, the third floor machine is mounted on central holder 25 in a similar fashion, but with the spacer tubes omitted, the mounting studs 4 being engaged directly in openings 34 and 39 of the U-shaped holder 25, so that openings 34 and 39 thus constitute bearings for the studs. The device is provided with a handle 52, FIGS. 1–5, which can be the handle of one of the individual floor machines. Handle 52 includes a bifurcated lower end portion, leg 53 thereof being disposed between the middle floor machine 1 and leg 28 of holder 25, and leg 54 thereof being disposed between the middle floor machine and leg 29 of the holder. As will be clear from FIG. 9, each leg of the bifurcated portion of the handle is provided at 55 with a portion having a plain cylindrical bearing receiving the plain cylindrical portion of the corresponding stud 4. Thus, the handle 52 can be pivotally adjusted between the vertical position seen in FIGS. 1 and 2 and the slanting position shown in FIG. 3. Advantageously, handle 52 is provided with a pivoted latch 56, constructed to detachably engage a projection 56′ on the top central portion of the head of the floor machine mounted on holder 25, latch 56 being operative to lock the handle in vertical position in order that the operator can then use the handle to pivot the harness device, and the floor machines mounted thereon, to bring wheels 46 into engagement with the floor, as seen in FIG. 2, so that the device can be rolled from place to place.

I claim:

In surface treating apparatus of the class described including an odd number of units each having independent motor-driven rotatable means adapted to be positioned on and moved over a surface to be treated, means providing a housing for each unit, an elongated frame, means for mounting the housings of the units on the frame essentially in a single row lengthwise thereof with the rotatable means of adjacent units overlapping one another lengthwise of the frame, the frame normally being horizontal and movable back and forth over the surface in a direction perpendicular to its length when the rotatable means are positioned on the surface during such movement, the unit mounting means including structure for individually mounting the housing of each unit on the frame for pivotal movement about an axis perpendicular to the direction of the normal back and forth movement of the frame on the surface, an elongated rod having a bifurcated end including a pair of spaced arms, the structure for mounting the housing of the middle unit in said row for pivotal movement on the frame including provisions for mounting the ends of the arms on the housing of the middle unit for pivotal movement about an axis coinciding with the axis about which the housing of the middle unit is pivotally movable on the frame, the rod normally being inclined rearward of the frame and angularly movable on the axis about which the housing of the middle unit is pivotally movable on the frame when its outer free end is grasped by an operator for manipulating the frame and units mounted thereon on the surface, releasable means for holding the rod in a fixed upward extending position with respect to the frame, a pair of spaced members extending rearward from the frame and forming a unitary part thereof, the spaced members being disposed at opposite sides of the middle unit and removed from the ends of the frame by at least the end units in said row of units, the spaced members extending rearward of the housing of the middle unit and overhanging the rear of the last-mentioned housing, roller means rotatably mounted on the overhanging ends of the spaced members, the roller means being spaced from the surface when the rotatable means is positioned on the surface, and means comprising the frame and the rod in its fixed upward extending position for tilting the apparatus to move the rotatable means to a position at an acute angle to the surface and bring the roller means in contact with the surface to facilitate movement of the apparatus on the surface with the aid of the roller means.

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