Nov. 6, 1956 A. F. BECKER 2,769,626

FLOOR COVERING REMOVING MACHINE HAVING YIELDABLE FLARED CUTTERS

Filed Aug. 30, 1954 2 Sheets-Sheet 1

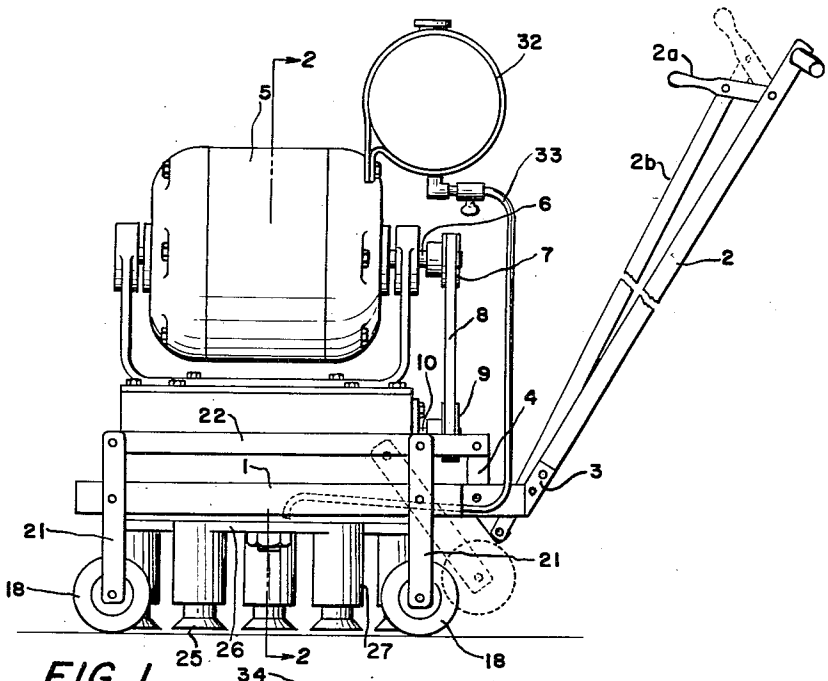


FIG. 1

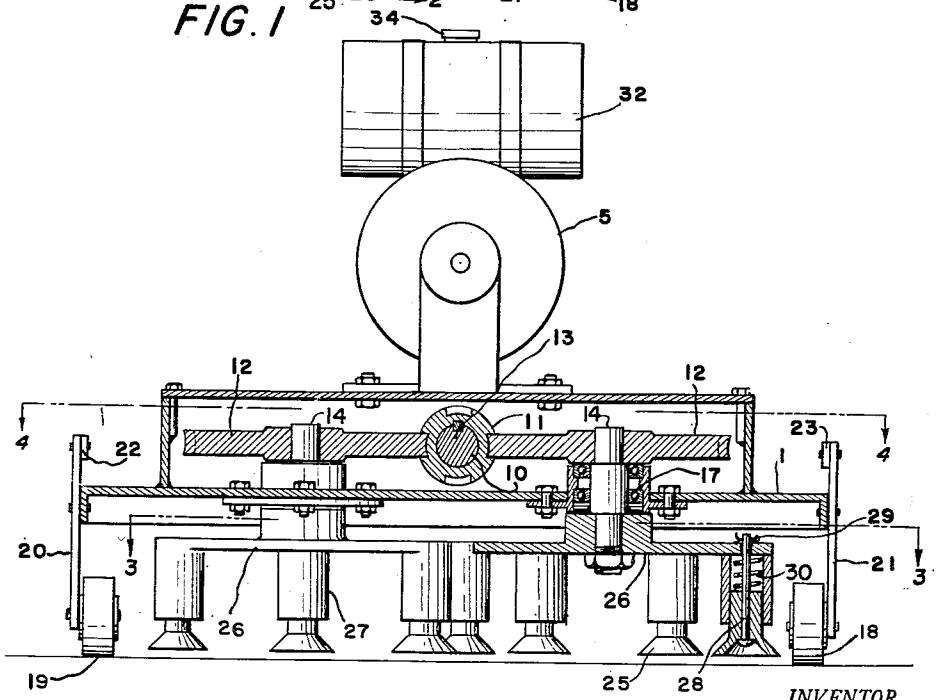


FIG. 2

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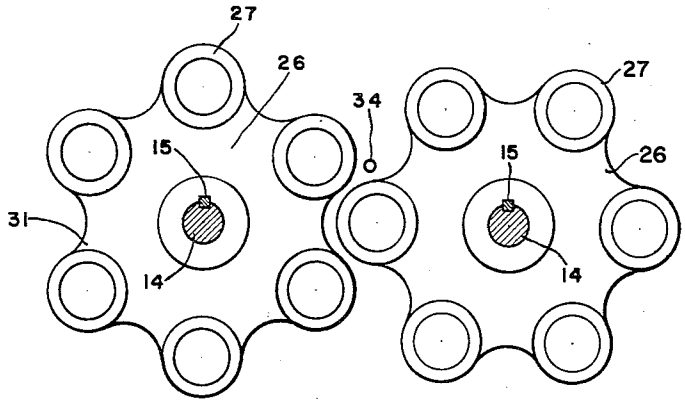


FIG. 3

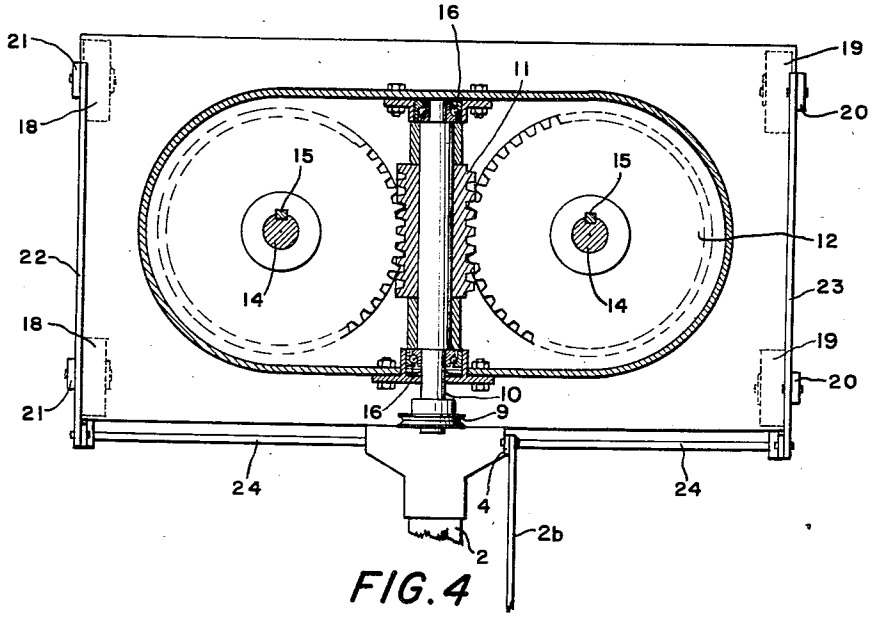


FIG. 4

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2,769,626

Patented Nov. 6, 1956

2,769,626

FLOOR COVERING REMOVING MACHINE HAVING YIELDABLE FLARED CUTTERS

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Application August 30, 1954, Serial No. 453,004

6 Claims. (Cl. 262—19)

This invention relates to new and useful improvements in a floor cover removing machine.

It is an object of this invention to provide a device for removing tile, linoleum, and similar coverings from floors. It is another object of the invention to provide a device for removing surface covering such as tile, roofing and the like, without danger of damage to the permanent surface.

It is still another object of the invention to provide a floor cover removing device having tubular cutting means, providing a self-dressing cutting edge.

It is still another object of the invention to provide a floor cover removing device having novel cutter means and having novel means for engaging and disengaging said cutter means with the work.

It is still another object of the invention to provide a floor cover removing device having novel cutter means that will follow the contour of the floor in removing the cover.

With the above and other objects in view, the invention has relation to certain novel features of construction and operation more particularly defined in the following specifications and illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevational view of the device.

Figure 2 is a front elevational view, partly in section.

Figure 3 is a top plan view of the cutter heads taken on the line 3—3 of Figure 2, and

Figure 4 is a top plan view taken on the line 4—4 of Figure 2, illustrating the gear connections.

Referring now more particularly to the drawings, the numeral 1 designates a framework of any suitable structure such as sheet metal, and on which is mounted a guide handle 2 of any conventional construction. This guide handle is suitably attached to the rear end of the frame 1 and carries a control for raising and lowering the frame, as hereinafter described.

A suitable motor as 5 is mounted on the framework, and has a drive shaft 6 extending therefrom on which is mounted a pulley as 7, on which the belt 8 is mounted, said belt driving the pulley 9 which is in operating connection with and rotates the shaft 10.

A worm gear 11, having preferably four lead in grooves, is mounted on the shaft 10, and the spur gears 12, 12 are mounted one on each side of and are in geared relation with the worm gear 11. The worm gear 11 is preferably keyed on the shaft 10 as by the key 13, and the spur gears 12, 12 are mounted on the shafts 14, 14 as by the keys 15, 15. The spur gears 12, 12, which are preferably on twelve inch centers, and have sixty teeth on each gear and mesh with the worm gear, provide a ratio of fifteen revolutions of the worm gear to one revolution of each spur gear. The shaft 11 may be mounted in suitable bearings, as 16, 16, and the spur gear shafts 14, 14 may be mounted in suitable bearings as 17.

The framework 1 is supported by the wheels 18, 18 and 19, 19, which are mounted on pivotal arms 20, 20 and 21, 21. The upper ends of the arms 20, 20 are secured to

the cross arm 22, and the upper ends of the arms 21, 21 are secured to the cross arm 23, in pivotal relation.

The control on the handle 2 comprises a hand lever 2*a* connected by a link 2*b* to the lower arm of a bell crank lever 4 that is pivotally mounted on the rear end portion of the frame 1. The upper arm of the lever 4 is connected to a cross-rod 24 that attaches at one end to the rear of the cross-arm 22 and at its other end to the rear end of the cross-arm 23. This control connection with the cross-arms 22 and 23 is of such a nature that a downward movement of the hand lever 2*a* will move said cross-arms rearwardly and the attached wheel-carrying arms 20 and 21 to upright or vertical position while a movement of the hand lever in the opposite direction will move the cross-arms 22 and 23 forwardly and swing the wheel arms 20 and 21 rearwardly to non-supporting position. This action permits the cutter disks 25 hereinafter described to rest by gravity on the floor over which operating.

Secured to the lower ends of the shafts 14, 14 are the cutter heads 26, 26 on the under side of each of which a circular series of downwardly extended sleeves 27 is provided. Guide pins, as 28, extend axially through each of the cutters 25 and project through respective openings in the heads 26, and these pins are maintained on the head 26 by means of suitable stops, such as cotter pins 29. A yieldable means for maintaining a downward pressure on each cutter, such as a coiled spring 30, is mounted in each sleeve 27 and bears against the associated head 26 and the upper hub end of the cutter 25. Each cutter 25 is of outwardly and downwardly flared conical form with its outer end face flat with relation to the horizontal plane. Walls of the lower ends of the cutters are of a thickness sufficient to provide strength to the cutter to maintain its rigidity and to provide a sharp cutting edge. Each cutter 25 has an upwardly extending cylindrical hub portion which is free to rotate and move axially in its sleeve 27.

The cutter heads 26, 26 are rotated by the gears 12, 12 in opposite directions, and are synchronized so that the sleeves 27 of the two heads will pass over substantially the same area at their juncture point, the sleeves 27 being mounted on outwardly extending lobes 31 of the heads 26 and these lobes intermesh as the heads rotate.

When it is desired to remove a floor covering, the removal is usually started by hand, and the device then wheeled into position over the area where the removal has been started. The hand lever 2*a* is then tilted forwardly, moving the wheels out of contact with the floor and resting the machine on the cutters 25. The weight of the machine will determine the strength of the springs 30 employed in the sleeves 27, so that the cutter heads 25 will be allowed sufficient vertical movement in the sleeves 27 to perform their work. As the heads 26 are rotated, the cutters 25 will move along the floor surface, contacting the floor covering at their outer edges, which are sharp, and which, by friction with the floor surface, will tend to maintain a sharp cutting edge, and which may be resharpened by rotation on a concrete surface if, for any reason, they lose their cutting edge. The hubs of the cutters 25 will rotate within the sleeves 27 as the work progresses, the heavier the work, the more they will rotate, and as they rotate, cut the floor covering from the floor, the cutting edge of the cutter being in constant contact with the covering at its point of bond with he floor. When warped or uneven flooring is encountered, the cutters 26 will move upwardly in the sleeves 27 as raised portions are encountered and will move downwardly as the lowered portions are encountered, following the floor contour.

If desired, a suitable cooling means may be employed, as the tank 32, having a feed line 33 extending from the tank to the point of discharge 34, which will direct a

stream of coolant on the cutters as they rotate, thus preventing sticking of the mastic or binding agent of the floor cover to the cutters 25.

While the foregoing is considered a preferred form of the invention, it is by way of illustration only, the broad principle of the invention being defined by the appended claims.

What I claim is:

1. In a floor cover removing machine, a framework, a driving gear, a pair of driven gears in operative connection with said driving gear, a pair of heads on parallel axes and a common horizontal plane rotated by said driven gears, depending sleeves on said heads, tubular cutters mounted in said sleeves, means for yieldably maintaining said cutters in downwardly extended position, and means for limiting the vertical movement of said cutters, said cutters being outwardly flared at their lower ends forming an annular cutting edge and being rotatable and vertically movable in said sleeves.

2. In a floor covering removing machine, a framework, wheels on and supporting said framework, a rotating head on said framework and means on said framework for imparting rotation thereto, depending sleeves on the periphery of said head and freely rotatable cylindrical cutters yieldably mounted in said sleeves and yieldable vertically thereon and having their lower ends outwardly flared.

3. In a floor covering removing machine, a framework, wheels mounted on and supporting said framework, rotatable heads having peripheral indentations on said framework and means for imparting rotation thereto, depending sleeves on said heads, vertically movable tubular cutters, having their lower ends outwardly flared and being yieldably mounted in said sleeves and yieldable vertically therein said heads being mounted on parallel axes and on a common horizontal plane and forming an overlapping cutting path.

4. In a floor covering removing machine, a framework, wheels mounted on and supporting said framework, a rotatable head on said framework and means for imparting rotation thereto, depending sleeves on said head, and axial shaft in each sleeve vertically movable therein, tubular cutters loosely mounted on each shaft, the lower end of said cutters being outwardly flared, a spring means in each sleeve urging said cutters outward.

5. In a floor covering removing machine, a vertically adjustable, movable framework, a plurality of rotatable discs on said framework, mounted on parallel axes and on a common horizontal plane, each disc having peripheral indentations and intermeshing with the abutting discs a plurality of depending sleeves on each disc formed at the peripheral margins thereof at the outermost point of said indentations forming an overlapping cutting path, tubular cutters vertically movable and freely rotatable in said sleeves having means for yieldably urging said cutters downwardly, the lower ends of said cutters being outwardly flared forming annular cutting edges.

6. In a floor covering removing machine, a framework, wheels mounted on and supporting said framework, a rotatable head on said framework and means for imparting rotation thereto, a depending sleeve on said head, an axial shaft in said sleeve vertically movable therein, a tubular cutter loosely mounted on said shaft, the lower end of said cutter being outwardly flared, and spring means in said sleeve urging said cutter outwardly.

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