June 19, 1956 M. P. LAUGHLIN 2,751,028

LATERALLY SPACED ROLLERS SELECTIVELY ENGAGEABLE WITH AN ADJACENT WHEEL FOR FORWARD AND REVERSE VEHICLE DRIVE

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FIG. 1

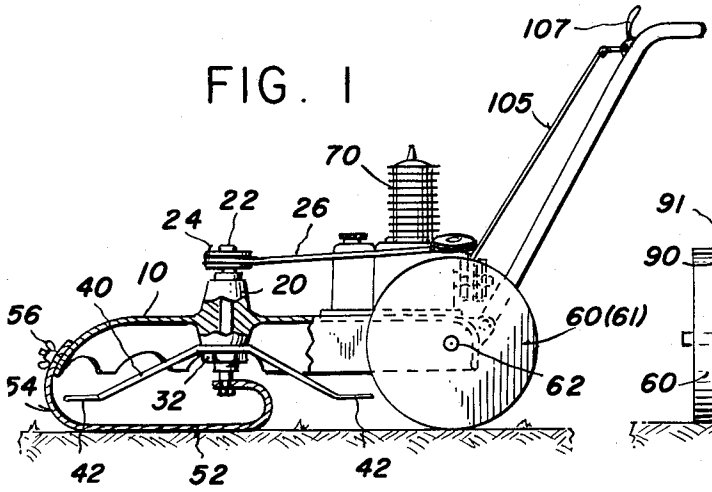


FIG. 2

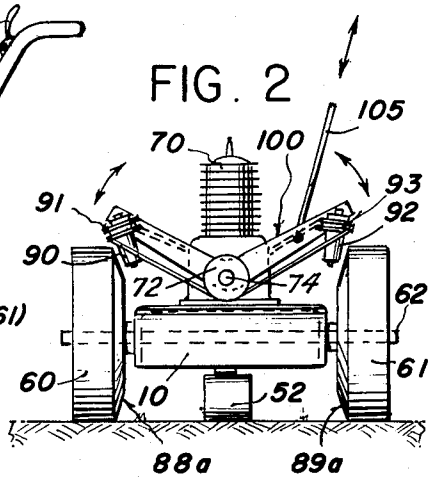


FIG. 3

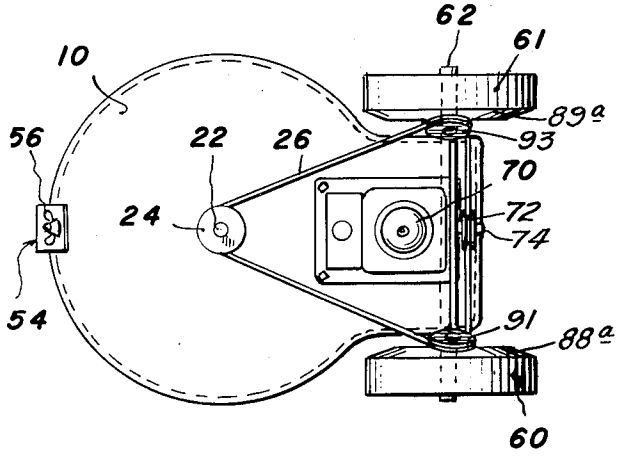
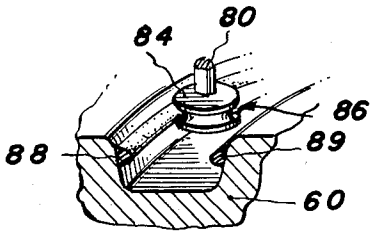


FIG. 4



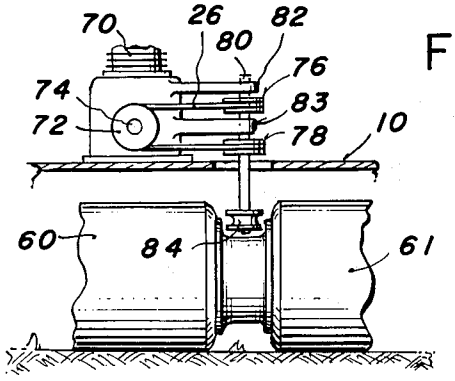


FIG. 5

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LATERALLY SPACED ROLLERS SELECTIVELY ENGAGEABLE WITH AN ADJACENT WHEEL FOR FORWARD AND REVERSE VEHICLE DRIVE

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5 Claims. (Cl. 180—19)

This invention relates to domestic appliances and more particularly to machines for cutting, clearing, scouring, polishing, waxing and the like. It is the primary purpose of this invention to provide such appliances in a form which will be simple and cheap to manufacture and which will, at the same time, provide improved results from greatly simplified mechanism.

It is a specific purpose of the herein disclosed invention to supply power-driven appliances for the purposes described which will operate at the most desirable application rates and which will not only relieve the housekeeper operator of the labor involved in pushing such devices, but will assure that such devices move at the most desirable speed so that the work will be done perfectly at each application and in no way depend upon the strength or skill of the operator.

This invention is intended to provide greatly simplified power drives for indoor and outdoor cutters, finishers and polishers; for example, lawnmowers and floor scrapers, sidewalk brushes and floor scourers, cement surface grinders and floor sanders, cement painting devices and floor waxing devices.

The use of power drives for heavy outdoor devices and particularly for lawnmowers has been well known, but has involved such complicated and costly mechanism that the use of such drives for interior household appliances is practically unknown, although manifestly such devices also have optimum speeds at which they should be moved if they are to fully perform the function for which they were designed. The minimum cost of such drives has, however, heretofore often amounted to more than the whole cost of such appliances and their provision was thus barred. The herein disclosed invention provides such drives in a novel, simplified, cheap form, readily applicable to most such appliances.

Many other advantages and improvements, including that of interchangeability of tools and of use for a single mechanism, will become clear upon inspection of the attached drawings and description.

In the drawings, Fig. 1 is an elevation in partial cross section of a lawnmower incorporating a preferred embodiment of power drive according to my invention.

Fig. 2 is a rear elevation of the device shown in Fig. 1.

Fig. 3 is a top plan view of the device shown in Figs. 1 and 2.

Fig. 4 shows a fragmentary detail of another form of power drive mechanism according to the invention; and

Fig. 5 shows the form of the drive mechanism of Fig. 4 as applied.

Referring now in particular to Figs. 1, 2 and 3, a platform type body 10 supports a spindle bearing 20 wherein revolves spindle shaft 22 having a pulley 24 thereon over which passes a belt 26 for driving purposes. The lower end of spindle shaft 22 (below body 10) mounts and secured by means of a removable lock nut 32 a tool means selected for the particular work to be performed, illustratively a cutter bar 40 bearing cutters

42 at its ends after the fashion well known to the art. The lower end of spindle shaft 22 may provide a rear point of attachment for a guide shoe 52 which turns upward at its forward end 54 to be secured in body 10 as at 56, it being understood that shoe 52 serves to guide and support part of the weight of the whole appliance. The rear end of body 10 is supported by ground-engaging roller wheels 60 and 61 journalling with a common axle 62 as shown in Fig. 2. This part of the general structure is common to all of the views with certain modification of parts as will be described.

Referring first to Figs. 4 and 5 wherein, to assist in an understanding of the present invention, is shown a simple form of drive means bearing general similarity to that disclosed in my prior Patent No. 2,549,317, dated April 17, 1951, the drive to the wheels 60 and 61 is herein from the prime mover 70 through sheave 72 upon engine shaft 74 and thence by means of belt 26*a* around freely journalled sheave 76 to spindle sheave 24 (Figs. 1 and 3); thence back around sheave 78 to the engine. Sheaves 76 and 78 are mounted upon a generally vertical shaft 80 journalling in bearings 82 and 83 secured to the engine. Shaft 80 extends downward as shown in Fig. 4 to carry a cone sheave 84 whose groove 86 engages a friction ring 88 secured to the roller wheel 60. Thus when the engine, together with shaft 80, is moved bodily to the left on platform-body 10, roller wheel 60 is driven through the belt 26*a*, sheave 78, shaft 80 and cone sheave 84. It is understood that in this modification wherein sheave 76 journals freely upon shaft 80, said sheave simply serves as a return guide and turn pulley for the belt 26*a*. It will be clear that if roller wheel 61 be provided with a second friction ring 89 and cone sheave 84 be moved to the right, roller wheel 61 will be driven, but in the opposite direction to that in which roller wheel 60 was previously rotated. Forward and reverse drive is thus provided.

Referring now to Figs. 2 and 3, it will be seen that according to the present invention it is not essential that the ground-engaging rollers 60 and 61 abut each other or be disposed so closely as has been shown in Figs. 4 and 5. Instead, they may be spaced apart a distance somewhat greater than the width of the platform or body 10, thus to support said body to the rear at its side edges, and they may also have conventional supporting wheel size and construction, subject to the formation thereon of beveled, radial face, outer-edge surfaces 88*a*, 89*a* corresponding generally to the aforesaid friction rings 88, 89. Preferred driving means according to the invention and which is adapted selectively to drive said wheels 60, 61 comprises two generally vertically disposed cone sheaves 90 and 92 cooperatively associated with the aforesaid friction surfaces 88*a*, 89*a*, said sheaves being provided with attached drive sheaves 91 and 93, respectively, which are journaled upon the ends of a transversely extending and illustratively V-shaped arm 100. Preferably, the drive selecting means comprises said arm 100, which latter may be conveniently pivoted upon the engine shaft 74 to tilt in a generally vertical plane and includes the aforesaid belt 26 which is herein led from the aforesaid engine sheave 72 over sheave 91, thence forwardly past the engine 70 to the spindle sheave 24, returning to sheave 93 and thence to the engine. It will be obvious that when so arranged, tilting of arm 100 in counterclockwise direction (Fig. 2) will cause cone 90 to contact the friction surface 88*a* upon wheel 60, and when tilted in the other direction, cone 92 will contact the friction surface 89*a* of wheel 61 and that similar forward and reverse drives to those described in connection with the modification of Figs. 4 and 5 will be obtained. To tilt arm 100, I prefer to provide a rod 105 leading upward to a pivoted handle 107 as shown

in Fig. 1 and it will be obvious that when handle **105** is pressed forward, arm **100** will be tilted and the machine driven forward, and that when handle **107** is pulled backward, arm **100** will be tilted in the opposite direction and the machine will be driven backward, spindle **22** and its attached tool means meanwhile performing the tasks for which they were designed.

While the invention has been disclosed in the form of an appliance for cutting grass, such is of course exemplary since it is obvious that tool means other than the rotary grass cutter **40**, **42**, including those conventionally used indoors, such as a rotary waxing tool or pad, may be substituted therefor. It will also be clear that since the forward drive of the machine is not a function of the mechanism which has been described, the whole effective application of the particular tool means selected for use will be at a predetermined speed and the instinctive temptation for an operator to "dwell" and so overtreat a given spot will be removed.

Those skilled in the various arts of cutting, polishing, scouring and waxing will recognize the advantages hereabove set forth and many others which space prohibits detailing at this time, but all of which are well within the scope of this invention.

What I claim is:

1. In apparatus of the character described, the combination of a platform, a power unit mounted on said platform and supported thereby, spaced ground-engaging wheels mounted on a common axle so as to turn in unison and being disposed to provide at least partial support for said platform, said wheels having friction surfaces on corresponding radial faces thereof, rollers operatively related to and mounted to turn on axes disposed generally normal to the turning axis of said wheels and having friction surfaces complemental to the friction surfaces of the wheels, tiltable roller mounting means extending generally between said wheels and normally disposing said rollers with their friction surfaces out of engagement with the associated friction surfaces of the wheels, means for selectively tilting said last-named means in direction as to engage one or the other of the roller friction surfaces with its associated wheel-friction surface, and drive transmission means operative between said power unit and both said rollers for driving the latter from the power unit.

2. The combination as set forth in claim 1, wherein said drive transmission means includes sheaves operatively associated wih the power unit and each of said rollers, respectively, and a single driving belt extending to the roller sheaves from the power-unit sheave.

3. The combination as set forth in claim 1, wherein said tiltable means includes an arm mounted for tilting movement about an axis extending longitudinally of the platform, the arm mounting said rollers at the ends thereof.

4. The combination as set forth in claim 3, wherein means for manually operating said arm are provided.

5. The combination as set forth in claim 1, wherein the platform journals the upper end of a tool spindle and said drive transmission means is also operative to transmit drive from the power unit to the spindle.

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