

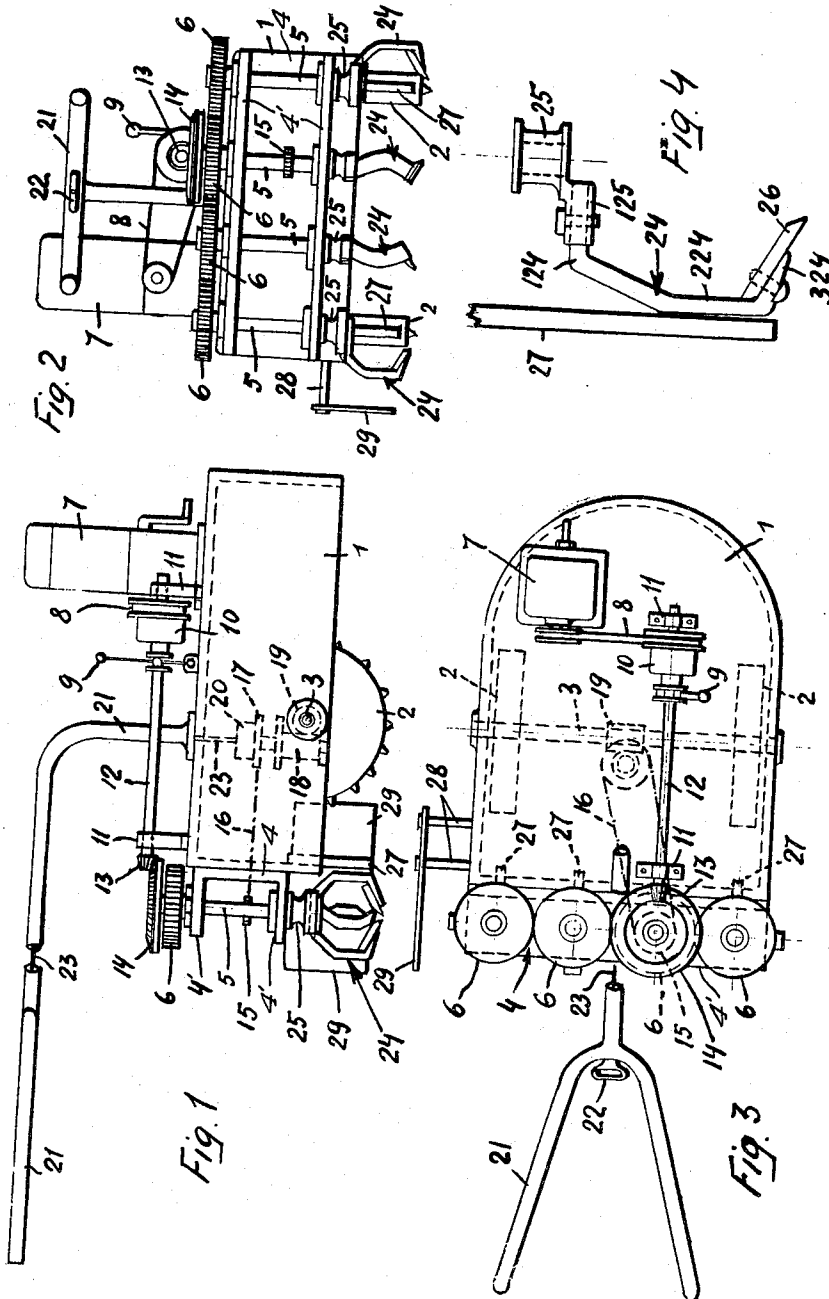
June 25, 1963

L. BOLDRIN
MOTOR WEEDER, PARTICULARLY FOR WEEDING
ROAD SIDES AND THE LIKE

3,094,831

Filed Sept. 2, 1960

2 Sheets-Sheet 1



INVENTOR
LUIGI BOLDRIN
Imrie & Smiley
ATTORNEYS

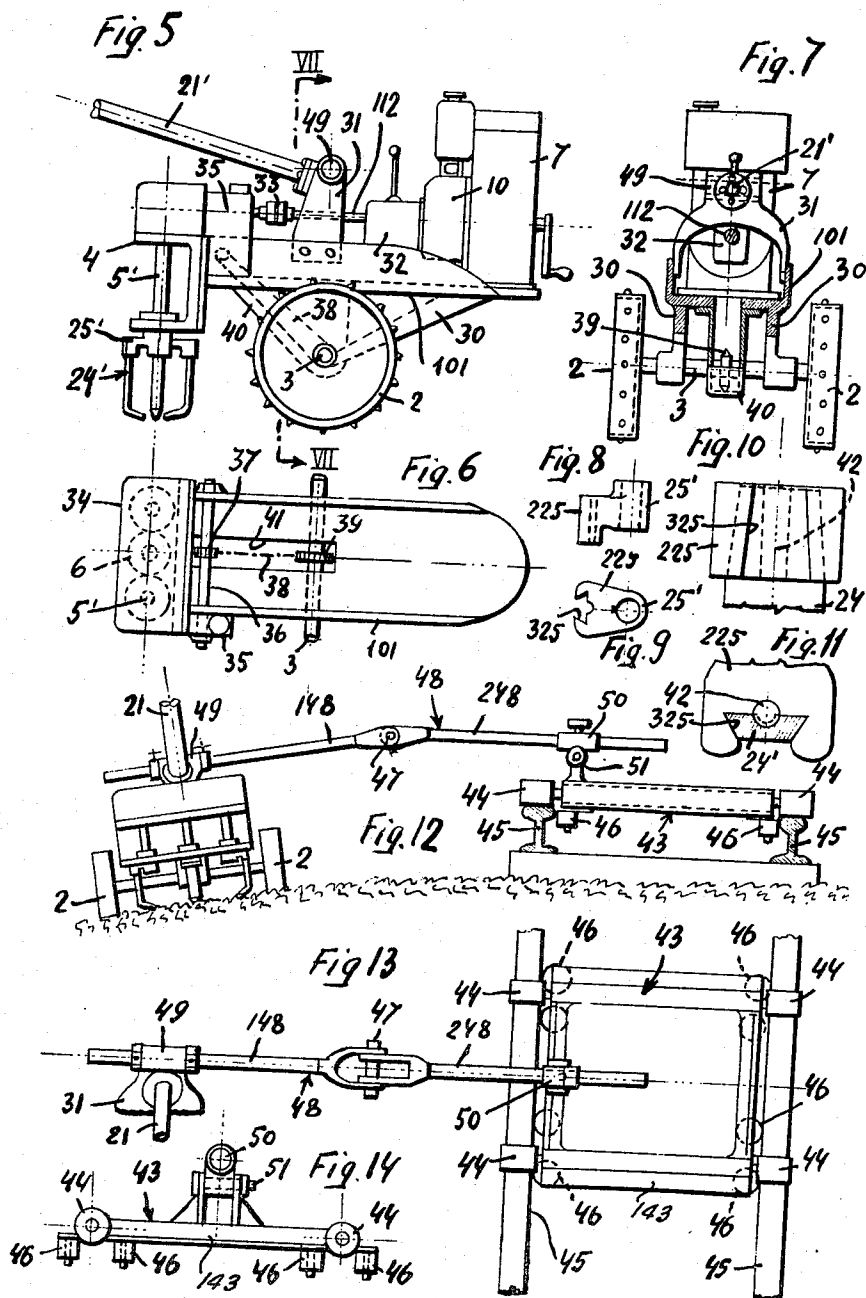
June 25, 1963

L. BOLDRIN
MOTOR WEEDER, PARTICULARLY FOR WEEDING
ROAD SIDES AND THE LIKE

3,094,831

Filed Sept. 2, 1960

2 Sheets-Sheet 2



INVENTOR

LUIGI BOLDRIN

BY

Imrie & Smiley
ATTORNEYS

1

3,094,831

MOTOR WEEDER, PARTICULARLY FOR WEEDING ROAD SIDES AND THE LIKE

Luigi Boldrin, 35 Via Piave, Mestre, Italy

Filed Sept. 2, 1960; Ser. No. 53,760

Claims priority, application Italy Sept. 3, 1959

7 Claims. (Cl. 56—25.4)

This invention relates to motor weeders particularly adapted for use in cutting weeds from road sides, sporting places, airports and other places where a thoroughly mechanical weeding is necessary.

The object of the invention is to provide a motor weeder of the above kind by which the operator's task is only that of steering the machine along the places to be weeded, the driving and weeding work being done totally by the machine which is provided with revolving weeder cutters and means for causing the machine to advance slowly while the cutters are in action.

The particular features and advantages of the motor weeder according to the invention will be apparent from the following specification, made with reference to the attached drawings in which:

FIG. 1 is a side elevation of a first embodiment of a motor weeder according to the invention, and particularly adapted for use on substantially flat surface;

FIG. 2 is a rear elevation and FIG. 3 is a plan view of the weeder shown in FIGURE 1;

FIG. 4 shows in a larger scale a weeder cutter;

FIG. 5 is a side elevation of a second embodiment of motor weeder, adapted to be connected to a railroad truck, for weeding the sloping sides of a railroad ballast;

FIG. 6 shows in plan view a diagram of the driving arrangement in the weeder shown in FIGURE 5;

FIG. 7 is a vertical section on line VII—VII of FIGURE 5;

FIGS. 8 and 9 are enlarged side and plan views of a member for attaching the cutters to the vertical shafts in the weeder shown in FIGURES 5 through 7;

FIGS. 10 and 11 are enlarged fragmentary front and plan views of the member shown in FIGURE 8;

FIG. 12 is a view in elevation of a weeder coupled to a railway truck;

FIG. 13 is a plan view of the railway truck and of means for attaching thereto the weeder, these latter being somewhat enlarged, and

FIG. 14 is a side elevation of the railway truck shown in FIGURES 12 and 13, the rails having been omitted for clarity.

In the embodiment as shown in FIGURES 1 through 4, the weeder comprises a downwardly open hood-like frame 1 provided with a pair of wheels 2 mounted on the same transversal shaft 3.

At the back of the frame 1 a channel beam 4 is fastened, with the two flanges 4' lying horizontally, through which four suitably spaced cutter shafts 5 are rotatably mounted.

Each cutter shaft 5 is provided at its top end with a large gear 6 which meshes with like gears of adjoining shafts so that adjacent cutter shafts 5 revolve in opposite directions. At the bottom end of each shaft 5 a cutter holder is fastened which comprises a bushing 25 provided with at least one side extension or crank arm 125 to each of which a horizontal extension 124 of a weed cutter 24 may be removably fastened as by bolts or the like.

In the embodiment as shown, the cutter 24 comprises the said horizontal extension 124, an intermediate substantially vertical section 224 and a lower section 324, slightly inclined with respect to the horizontal, to which cutter blade 26 may be fastened. The circles described by each cutter blade 26 intersect the circles described by adjacent cutter blades. The blades 26, by revolving, pass

2

very near vertical strippers 27 which serve for stripping off from the cutters any weed entangled thereon. For simplification of illustration in FIGURE 2, only the outer cutters have been shown provided with such strippers, but each of the cutters is provided with a stripper as shown in FIGURE 3.

Upon the frame 1 a combustion engine 7 is mounted which through a belt or chain drive 8 and a friction coupling 10 controlled by lever 9, drives a shaft 12 mounted in bearings 11 and provided at its rear end with a mitre pinion 13 meshing with a mitre gear 14 fastened onto one of the cutter shafts 5 and which thus drives the whole set of cutters.

The weeder wheels 2 are driven very slowly by the same motor by keying on one of the cutter shafts 5 a chain sprocket 15 which through a chain 16, a sprocket 17, a friction coupling 20 and a step-down worm and worm gear 18, 19 drives the wheel shaft 3. The coupling 20 may be controlled by a Bowden wire 23 passed into the tubular central section of the steering shaft 21 and operated by a control handle 22, FIG. 3, at reach of the operator's hands which steers the weeder by gripping the forked end of said steering shaft 21.

In the embodiment as shown in FIGURES 5 to 11, which is particularly designed for serving as railroad weeder, the frame 101 is provided with a pair of rugged depending triangular supporting members 30 provided with bearings in which the wheel shaft 3 is mounted. The weeder is provided with a steering shaft 21 attached to a large stirrup 31 fastened transversally of the frame 101. The motor 7 is also fitted on this frame and drives through shaft 112, a change-speed gear 32 and a slipping safety coupling 33 one of the cutter shafts 5', which are coupled together in like manner as in the first embodiment.

Also in the same manner as in the first embodiment the wheels 2 are driven from one of the cutter shafts 5', which, through a suitable transmission, drives a worm—and worm-gear drive 35, which in its turn, through a chain transmission 37, 38, 39 drives the wheel shaft 3. The chain 38 of this transmission passes through an opening 41 of the frame and is preferably enclosed in a case 40.

In this embodiment, the cutter holders comprise a sleeve-like portion 25', FIGURES 8 and 9, to be fastened to the end of the shafts 5', and a crank arm ending with a non-circular slotted hollow 325 in which the correspondingly formed cutter bars 24' may be fastened, for example, by providing a screw-tapped bore 42, FIG. 11, formed in part in the cutter holder 225 and in part in the corresponding cutter bar 24', the fastening of the two parts being effected, for example, by means of a screw bolt (not shown) screwed in said bore 42.

The machine thus described may be steered like that of the first embodiment by an operator gripping the steering shaft 21. When however the weeder is employed for weeding the sloping sides of a railroad, in order to render the steering easy and to avoid overturning of the machine, the machine is connected with a truck 43 rolling on the railways 45, as shown in FIGURES 12 and 13, by means of a transversal bar 48 made of two sections 148 and 248 hinged at 47, one of the sections 148 being attached, as by means of a collar 49, to the lower end of the steering shaft 21' while the other section 248 is connected by means of another collar or sleeve 50 and a clamping screw or the like (see FIG. 12) to one side of the truck 43, the pivot of the hinge 47 between the sections 148—248 being horizontal, as shown in FIG. 12.

Anyway, the attachment of the bar sections 148, 248 to the machine stirrup 31 and to the truck 43 must be such as to permit adjustment of the useful length of the

bar 48, by clamping the part 248 in the sleeve 50 in a suitable position to suit to the road conditions.

The truck 43 rolls on the rails 45 by means of the rollers 44 and in order to resist powerful side pullings while rolling on the rails, it is maintained in position by vertical thrust rollers 46 rotatably depending from the truck frame 143, FIGURES 13 and 14.

I claim:

1. In a motor weeder of the character described comprising a frame provided with a pair of transversally arranged downwardly depending supporting members, a transversal horizontal shaft rotatably mounted in said supporting members, two vehicle wheels fastened to the ends of said shaft, a plurality of parallel vertical shafts rotatably mounted on said frame and each carrying at its lower end a revolving weed cutter, an engine mounted on said frame and having a drive shaft, transmission means connecting said motor drive shaft with said vehicle wheels and parallel vertical shafts, control means for driving at appropriate speeds the said wheels and vertical shafts, a steering shaft attached to said frame, said transmission means including a coupling, a flexible Bowden wire connected to said coupling and passed along said steering shaft, and control means attached to the end of said Bowden wire and mounted in a position on said steering shaft within reach of the operator's hands.

2. A motor weeder according to claim 1, in which the weed cutters are so shaped as to be provided with a blade slightly inclined with respect to the horizontal fastened to a cutter holder mounted on the lower end of one of the vertical shafts; a fixed weed stripping member being mounted in proximity of the path described by each of the cutters, so as to strip off any weed entangled in the said cutters.

3. A motor weeder according to claim 1, in which to the lower ends of said cutter shafts, cutter holders are fastened which comprises a sleeve for fastening the holder to each of said vertical shafts and at least one crank arm-like holder for removably attaching a weeding cutter, each weeding cutter comprising a substantially vertical section

and an inwardly slightly sloping section provided with a removable cutter blade.

4. A motor weeder according to claim 1 in which to the top of one of the said vertical cutter shafts a mitre gear is fastened, said mitre gear meshing with a pinion fastened to the end of a substantially horizontal shaft connected to the said motor shaft through a step-down gear and coupling, a transmission being provided for connecting one of said vertical cutter shafts through a step-down gear to the said vehicle wheels-carrying horizontal shaft.

5. A motor weeder according to claim 1, comprising a holding means for adjustably and removably securing thereto a transversal bar which is adjustably and removably secured to a holding and guide truck.

6. A motor weeder according to claim 1, comprising a holding means for adjustably and removably securing thereto a transversal bar which is adjustably and removably secured to a holding and guide truck, said transversal bar being formed of two sections hinged together by means of a horizontal axis hinge.

7. A motor weeder according to claim 1, comprising a holding means for adjustably and removably securing thereto a transversal bar which is adjustably and removably secured to a holding and guide truck, said transversal bar being formed of two sections hinged together by means of a horizontal axis hinge and said truck being a railway truck provided with horizontal axis rollers adapted to roll on rails and adjoining vertical axis rollers acting as truck-holding rollers adapted to roll on the rail head sides so as to act as thrust rollers.

References Cited in the file of this patent

UNITED STATES PATENTS

1,289,989	White	Dec. 31, 1918
1,656,105	Durkee	Jan. 10, 1928
2,582,364	Tice	Jan. 15, 1952
2,753,674	Cunningham et al.	July 10, 1956
2,786,320	Larson	Mar. 26, 1957
2,983,322	Heeren	May 9, 1961