

No. 623,121.

Patented Apr. 11, 1899.

F. T. MAYNARD.
LAWN MOWER.

(Application filed June 6, 1896.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 6.

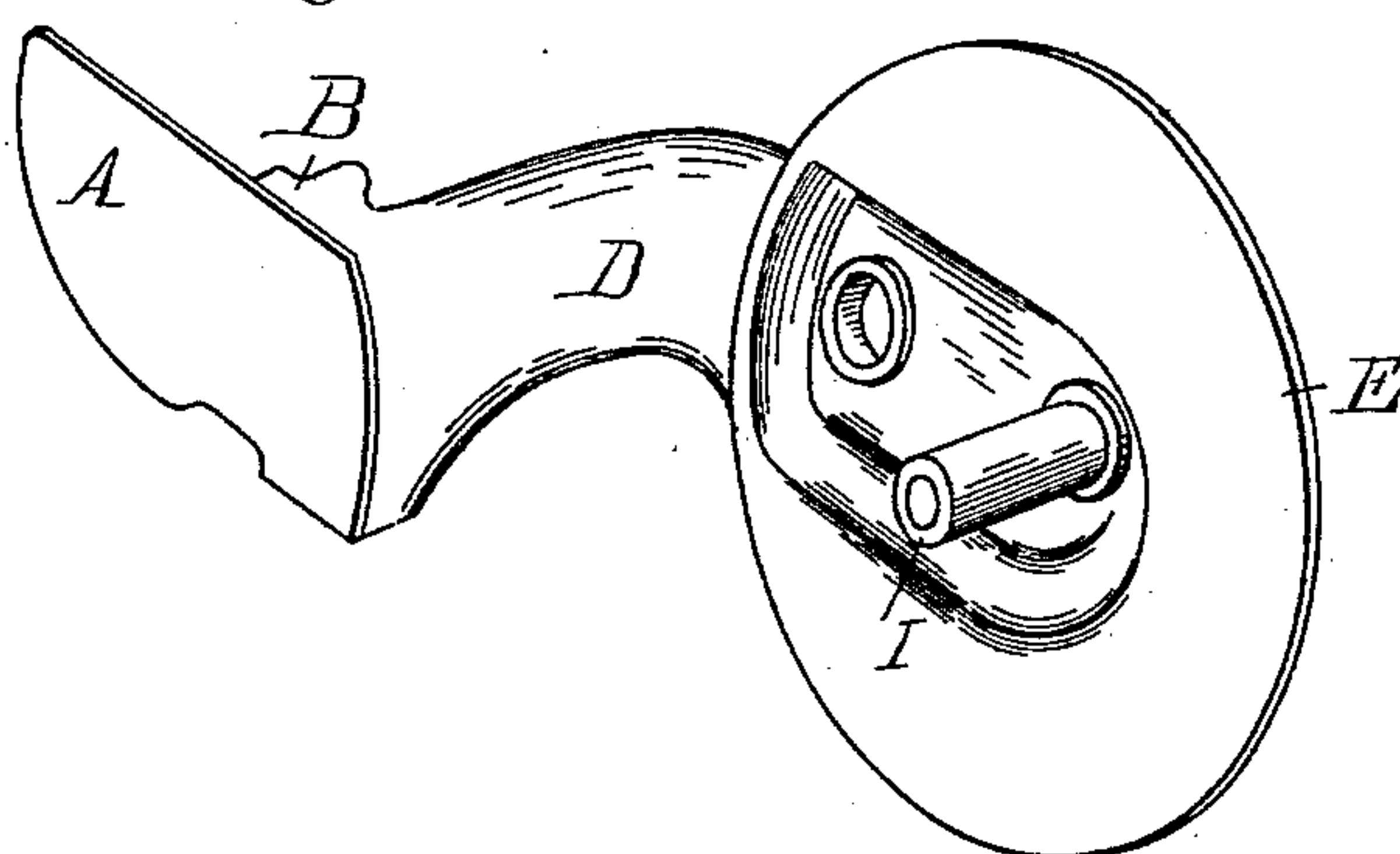
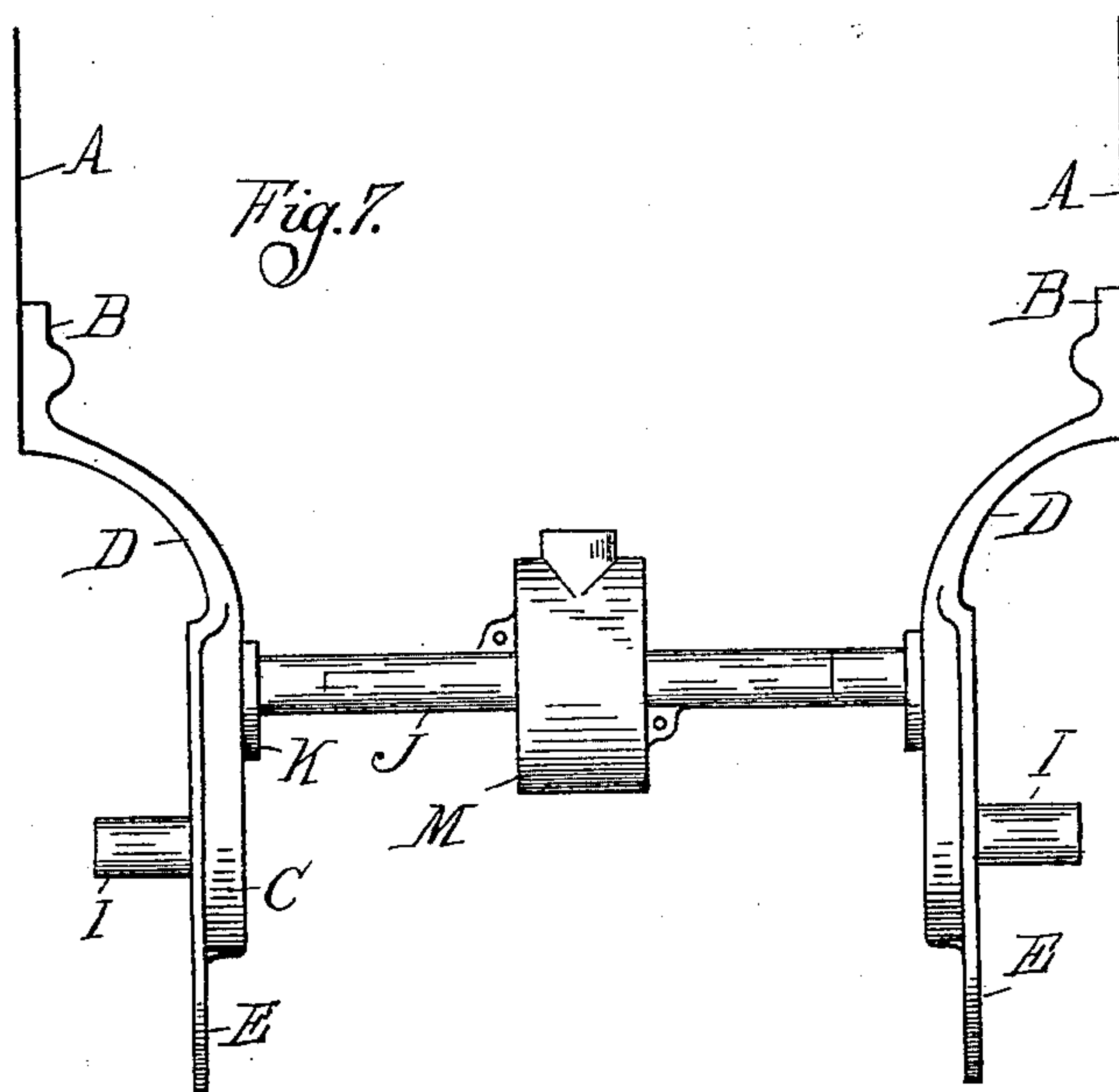


Fig. 7.



Witnesses:

Otto F. Barth,
W. B. Dogherty.

Inventor:

Frederick T. Maynard,

By Messrs. Maynard & Son

Attorneys.

UNITED STATES PATENT OFFICE.

FREDERICK T. MAYNARD, OF DETROIT, MICHIGAN, ASSIGNOR TO THE
DETROIT LAWN MOWER COMPANY, OF SAME PLACE.

LAWN-MOWER.

SPECIFICATION forming part of Letters Patent No. 623,121, dated April 11, 1899.

Application filed June 6, 1896. Serial No. 594,475. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK T. MAYNARD, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Lawn-Mowers, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The invention consists in the construction of a lawn-mower, the invention consisting particularly in the construction, arrangement, and combination of the various parts, all as more fully hereinafter described.

15 The invention relates to that class of lawn-mowers in which there is a middle or intermediate drive connection for the rotary cutter-head. In this class of lawn-mowers efforts have been made to devise a drive-gear which was somewhat reasonable in cost of
20 manufacture and which would stand the rough usage to which such mowers are subjected. Efforts have also been made to devise a supporting-frame for such mowers
25 which would be simple and strong and reasonably inexpensive. As far as I have been able to learn until my construction was devised, after much expense and many months of experiment and labor, such efforts were
30 unsuccessful and a marketable merchantable machine had not been devised.

In the drawings, Figure 1 is a top plan view of my improved lawn-mower, partly in section and showing the cap or cover of the rear gear-case removed. Fig. 2 is a longitudinal
35 section through this central gear-casing. Fig. 3 is a cross-section through the drive-shaft and its pinion, illustrating the construction of the pawl or clutch connection between the
40 two. Fig. 4 is a section on line *xx* of Fig. 3. Fig. 5 is a detail front elevation illustrating the construction of the guard-roller. Fig. 6 is a detached perspective of one of the side plates. Fig. 7 is a top plan view of the rear
45 portion of the frame.

My frame is composed of two side plates or bars. I preferably make each of these side plates in two parts, the front portion A preferably being of sheet metal, riveted or otherwise secured to the front end of the rear por-

tion. The object of making this portion A of sheet metal is to make as thin a side as possible opposite the cutters, so as to enable the machine to cut as near as possible to a building, sidewalk, or similar object. The rear
55 portion I preferably cast, and, as shown, it consists of the two straight portions B and C, substantially parallel and connected by the inwardly-extending connecting portion D. The rear end of this side bar is hollow or recessed, as plainly shown at the upper part of
60 Fig. 1 and in Fig. 6, and around the outer edge of this recessed or hollow portion is a circular flange E. Around this circular flange fits the inwardly-extending flange F of the
65 ground-wheels G. These ground-wheels are provided with a hub H, which fits over the trunnions I, projecting from the recessed portion of the side bar and preferably tubular, as shown, a bolt I', passing through this hollow
70 trunnion, holding a washer I² at its outer end to prevent the detachment of the ground-wheel. This construction of the rear portion of the side frame or bar I consider of considerable importance. It strengthens the disk
75 or plate which covers the inner face of the gear-wheel without adding materially to the weight. By having the trunnion H cast from the inner face of this hollow portion and the flange E formed on its outer face I construct
80 a long bearing for the hub of the ground-wheel and yet get ground-wheels of comparatively narrow tread and light weight.

The two side bars I connect together by a connecting member J, preferably having the
85 flanges K at each end to give a wide bearing to truss the connection against torsional or twisting movements of the frame. The member J is constructed to support the drive-shaft L and is preferably as shown—that is,
90 hollow—having formed, preferably integral therewith, at its middle portion the enlargement M, which forms a half of the central gear-casing on the drive-shaft.

M' is a complementary cap for this gear-
95 casing, which may have lateral extensions, if desired, covering a portion of the drive-shaft, as shown. The drive-shaft L has secured to it the bevel gear-wheel N, that drive-shaft being passed through this gear-wheel and
100

its bearing in the member J, with each end projecting beyond the side bars of the frame.

Beside the gear-wheel N and supported on the drive-shaft is the block O. This block is
5 provided with a shaft-bearing P, in which the rear end of the crank-shaft P' engages, this crank-shaft being provided with a bevel-pinion P² in a recess or aperture P³ in the block O. This block with the side of the
10 gear-case forms the step on either side of the gear N and forms the means for preventing end movement of the shaft L.

The drive-shaft L on the ends which project is provided, preferably, on opposite sides
15 with recesses Q. These recesses terminate at one end in a shoulder *a* and have the inclined inner face *b*. In this recess I place rollers *c*, which are of a diameter greater than the depth of the recess.

R are pinions sleeved over the end of the drive-shaft and have within a groove *d*, in which the rollers *c* are adapted to engage, and bearings *e*, preferably on each side of the groove *d* on the shaft. End motion of the
25 rollers is prevented by the shoulders or sides of the grooves. This construction enables me to utilize the steel of the shaft as a part of the clutch and therefore gives it long life. It also makes a very compact construction
30 which is not liable to get out of order and very greatly cheapens the structure over a device in which an additional bearing or sleeve is placed over the shaft in which to form the grooves for the rollers to run. The
35 inner face of the groove *d* is preferably formed polygonal, as shown at *h* in Fig. 3. The operation of this clutch, I think, will be well understood without further description.

S is a handle connected to the rear of the
40 flanges E, as shown.

1 is the cutter-shaft, the ends of which are supported in the boxes 2 on the inner side of the frame.

3 are two cutter-heads with the blades staggered and their inner ends overlapping in such a manner that the crank 4 on the shaft P' is adapted to have its opening turned to the overlapping end, as shown in Fig. 1. There is a suitable bevel gear-wheel 5 on the cutter-shaft and the bevel gear-wheel 6 on the end
50 of the crank-shaft P', the whole being inclosed in a gear-casing 7 between the ends of the cutter-heads. These parts are of known and usual construction.

8 is a bar connecting the forward end of the frame and supporting the usual stationary knife.

9 is a ground-wheel adjustably supported in rear of the cutters to determine the height
60 of the cut, these parts being of known and usual construction in the type of machine on which mine is an improvement.

S' are rollers journaled in the side bars of the frame, with a sector projecting slightly
65 outside the sides, so that in running the machine closely beside a house, sidewalk, or similar place the side of the bars will not be

scraped and marred and so the mower may be pushed along with one of these rollers in contact with such wall.

By the words "an intermediate connection" I mean a drive connection applied to the cutter intermediate its ends arranged in a corresponding position on the frame.

What I claim as my invention is—

1. In a lawn-mower having an intermediate drive connection, a frame comprising side plates supporting the ground-wheels, a rigid connecting member between the plates forming a housing for the drive-shaft.

2. In a lawn-mower having an intermediate drive connection for its rotary cutter, of a frame comprising two side plates extending to and supporting the ground-wheels, a rigid tubular connecting member between the side
85 plates supporting the drive-shaft and a gear-case formed as a part of said connecting member.

3. The combination of a shaft having formed therein a recess extending from the
90 end of the shaft inward and having an inclined bottom face and a shoulder at one side, a roller in said recess, a wheel having a recess for and inclosing the roller, and a bearing portion beside the recess adapted to bear
95 on the shaft.

4. The combination of a shaft having therein a recess extending from the end of the shaft inward, said recess having an inclined bottom face and a shoulder at one side, a roller in
100 said recess, an inclosing wheel having cylindrical bearings bearing on the shaft and having intermediate said bearings recesses provided with polygonal bearing-faces for the rollers, for the purpose described.

5. The combination of a shaft member having a recess therein, a wheel member journaled on said shaft having a recess opposite the recess in the shaft, a roller in one recess and projecting into the other recess, one of
110 said recesses being extended longitudinally to the end of the member in which it is formed, whereby the wheel can be removed longitudinally from the shaft.

6. The combination of a shaft having a recess therein extending from one end of the shaft inward, a wheel journaled on said shaft having a recess opposite the recess in the shaft, and a roller located in said recesses.

7. In a lawn-mower, the combination of a
120 cutter, ground-wheels, side plates supported by the ground-wheels, drive mechanisms between the wheels and cutter, and a connecting member between the side plates forming a housing for a portion of said drive mechanism.

8. In a lawn-mower, the combination of a frame comprising side bars each consisting of a front and rear end section in different vertical planes, and an inclined connecting section extending inwardly toward the rear end sections, the rear end section being hollow or recessed, a circular flange on the outer face
130 of each of the said rear end sections, ground-

wheels inclosing the circular flanges, a hollow connecting member between the rear sections of the side bars, a cutter, and a drive-shaft for the cutter in said hollow member, substantially as and for the purpose described.

5 9. In a lawn-mower, the combination of a frame comprising side bars each having a front and rear end section in different vertical planes and a connecting section extending
10 inwardly from the front to the rear end section, and a hollow member connecting the side bars between the rear sections thereof forming a housing, a rotary cutter-head between the forward end sections, drive means
15 therefor located in said housing, and ground-wheels beside the rear side-bar sections.

10 10. In a lawn-mower, the combination of side bars of the frame having thin metal forward plate-sections, and rear sections situated nearer together than said forward plate-sections for supporting the ground-wheels, ground-wheels, said forward plate-sections

having recesses therein, ears projecting inside the plate-sections of the side bars above and below said recesses, vertical rollers journaled in said ears and projecting through said
25 recesses beyond the outer faces of the side bars, for the purpose described.

11. The combination of the drive-shaft and its supporting-bearing and gear-case, of the
30 bevel-gear N secured to the drive-shaft in the gear-case, block O having a bearing engaging the drive-shaft beside the gear-wheel N a shaft bearing at right angles to the shaft L in the block O in which the crank-shaft P' is
35 journaled, the block O having a recess through which the shaft P' passes and the bevel-pinion secured to this shaft within the recess.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK T. MAYNARD.

Witnesses:

M. B. O'DOHERTY,
OTTO F. BARTHEL.