(No Model.)

G. A. HALL.

CUTTER FOR MOWING MACHINES.

No. 426,801. Patented Apr. 29, 1890.

Fig. 1.

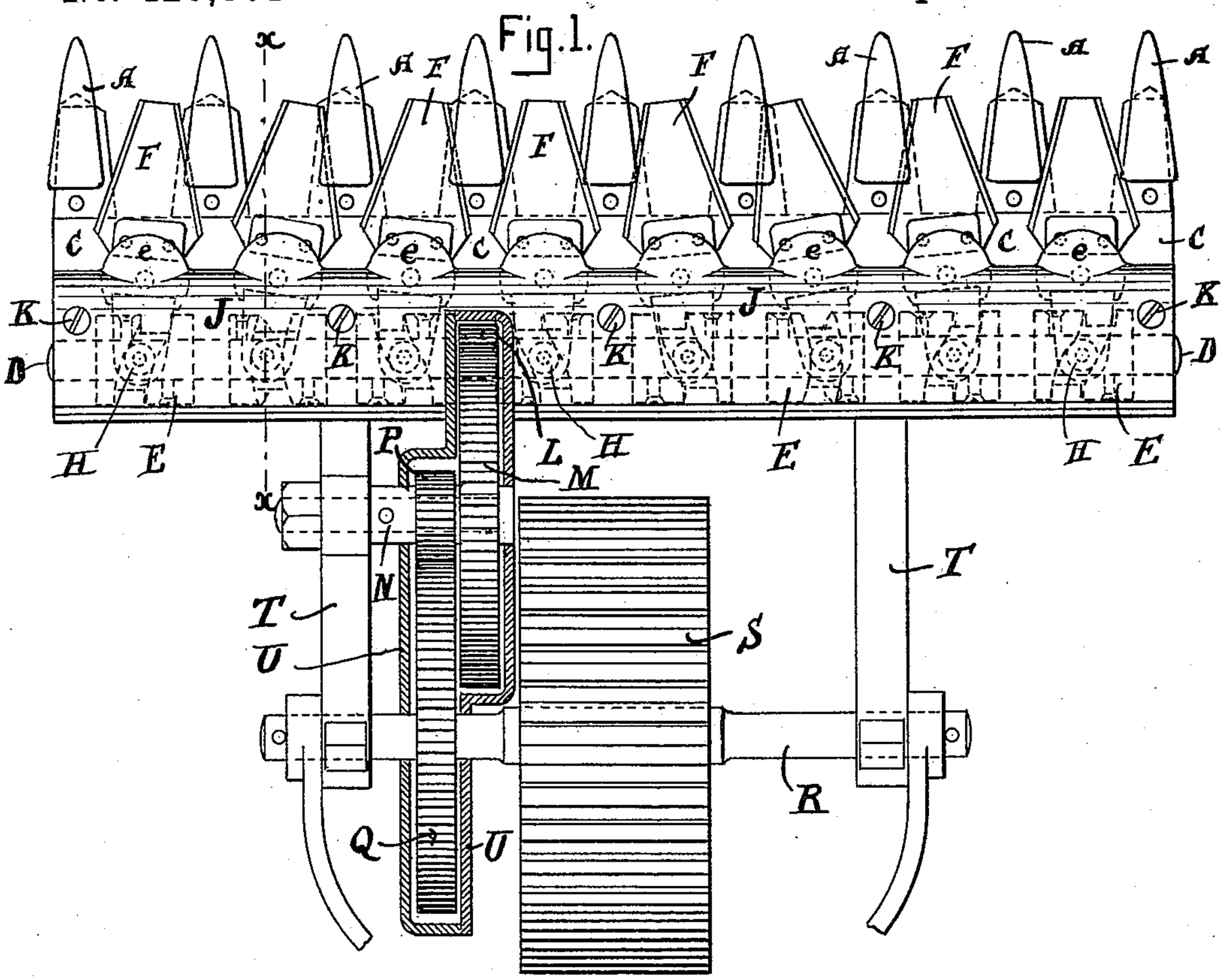


Fig. 8

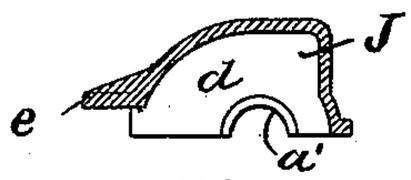


Fig. 9.

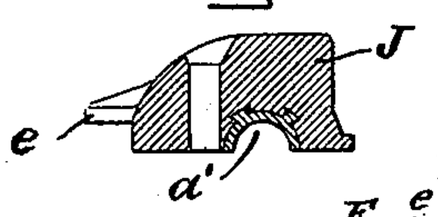


Fig. 2.

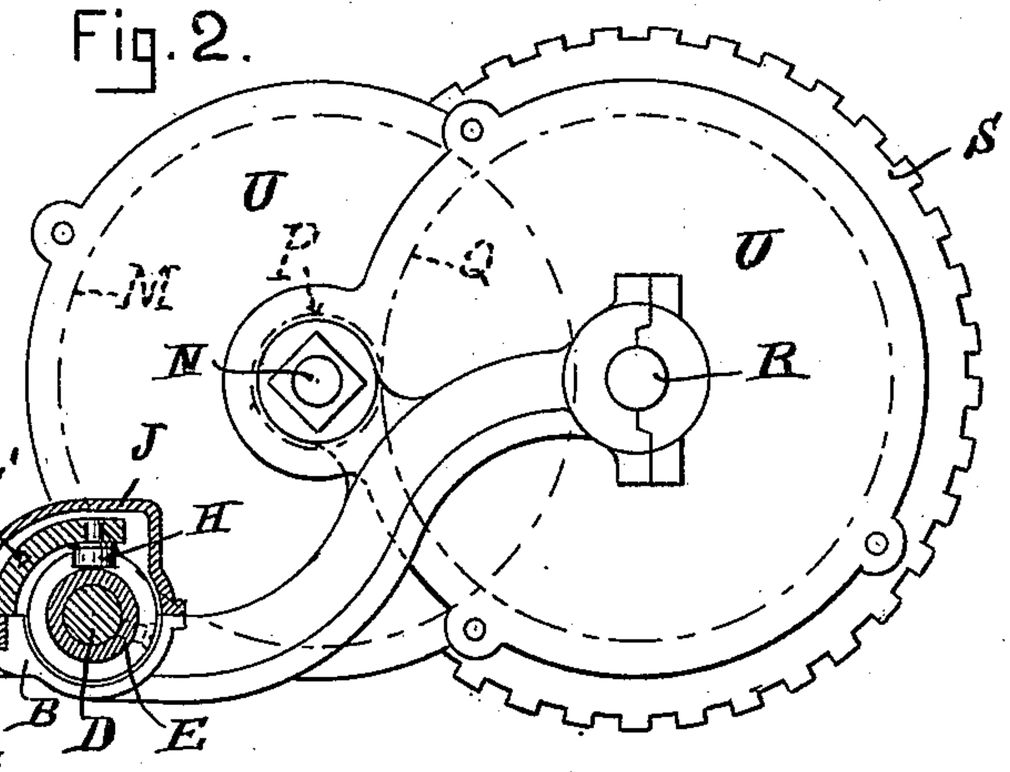


Fig. 7

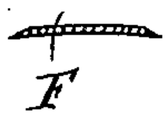


Fig. 5.

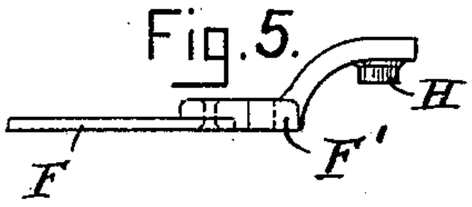


Fig. 3.

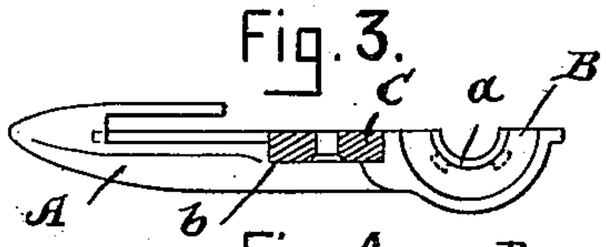


Fig. 6.

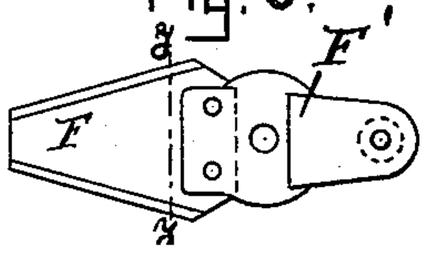
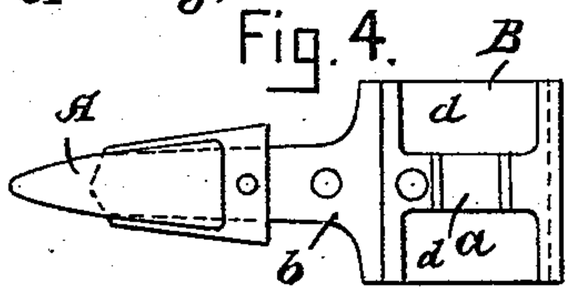


Fig. 4.



Witnesses.
J. George Deltzer
George E. Marvin

Inventor.
George A. Hall
by Edwin Blanke
attorney.

UNITED STATES PATENT OFFICE.

GEORGE A. HALL, OF DEERING, ASSIGNOR TO THE HALL MOWING MACHINE COMPANY, OF PORTLAND, MAINE.

CUTTER FOR MOWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 426,801, dated April 29, 1890.

Application filed April 9, 1889. Serial No. 306,570. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. HALL, a citizen of the United States, residing at Deering, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Cutters for Mowing-Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to an improvement in the construction and operation of the cutters of mowing-machines, whereby the efficiency of the cutters is greatly increased and with less friction than in those in common use.

The invention consists in certain details of construction hereinafter fully described, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a plan view of a lawn-mower embodying my invention. Fig. 2 is a transverse section taken on line *x x* of Fig. 1, and showing the frame, gear-casing, and driving-wheel in elevation. Fig. 3 is a side view of one of the fingers detached. Fig. 4 is a plan or top view of the same. Fig. 5 is a side elevation of one of the cutters. Fig. 6 is a plan view of the same. Fig. 7 is a section of one of the cutters, taken on line *y y* of Fig. 6. Fig. 8 is a vertical section of the cover-plate, taken over one of the cutters; and Fig. 9 is a vertical section of the same, taken between the cutters.

The fingers A are each provided with a rear extension B, in the center of which is formed a bearing *a*, (see Figs. 3 and 4,) in which the shaft for operating the cutters run, and a recess *b* is formed between the bearing *a* and the rear of the upper portion of the finger, in which recess is placed a finger-bar C, to which all the fingers are secured, the rear extension of the fingers abutting against each other, and are thus caused to take the place of the base-plate now in use with ordinary mowing-machines.

In the bearings *a* is laid the main shaft D, on which is arranged a series of adjustable cams E, secured thereto by set-screws, keys, or other convenient means.

F F are cutters, which may be made slightly concave on their under sides in cross-section, as shown in Fig. 7. These cutters are each secured to a plate F′. (See Figs. 5 and 6.) The cutter-plates are pivoted to the finger-bar C by a stud G, upon which they are free to vibrate. On the rear end of the cutter-plates are anti-friction rollers H, mounted upon studs projecting downward from the cutter-plate, said rollers moving in the grooves of the cams E, so that as the shaft D is rotated a vibrating motion will be imparted to the cutters.

The adjustable cams E are preferably set so that each one is a little in advance of the next adjacent cam. Thus all the cutters stand at different angles, and do not all cut in the same portion of the blade at the same time, so that the mower works very easily.

J is a cover, which is placed over the rear extensions B of the fingers, and is provided with bearings *a′*, to correspond with the bearings *a* in the rear extensions B, a space *d* being left on each side of the bearings *a a′*, both in the rear extension B and in the cover J, in which the cams E rotate, and a small lip *e* projects from the main body of the cover over the center of each cutter F, which securely holds them in place when the cover is fastened down, which may be by screws K, as shown, or by any other suitable fastening.

Motion is communicated to the cam-shaft by a pinion L, secured thereon, which is in gear with a cog-wheel M, mounted on a stud N, which also carries a pinion P, that is in gear with a cog-wheel Q, mounted upon a shaft R, on which is also mounted the driving-wheel S. The shaft R and stud N are carried by side frames T, formed in one with or secured to the rear extensions B of two of the fingers A.

U is a casing that incloses the cog-wheels and pinions, so that all the working parts are covered up, thereby excluding dust or other injurious substances.

In horse-mowers the pinion L would be on the end of the cam-shaft and engaging with a corresponding gear connected with the motive power, or it may be rotated by any other suitable means.

What I claim as my invention is—

1. In a mowing-machine, fingers A, having a rear extension B, provided with a bearing *a*, and a recess *b* between the bearing *a* and rear

portion of the fingers, in combination with the bar C, cam-shaft D, cover J, and cutters F, substantially as shown and described.

2. The cam-shaft B, upon which is mounted adjustable cams E, in combination with cutters F, pivoted at or about their center to the finger-bar C, and having their rear ends extending beyond the center of the cam-shaft D, and provided with rollers H, that work in the cam-slots, substantially as shown and described.

3. The fingers A, each having a rear extension B, provided with a bearing *a* for the cam-shaft D, and a recess *b* between the bearing *a* and rear portion of the fingers to receive the finger-bar C, in combination with the cutters F, pivoted at or about their center to the finger-bar C, and having at their rear ends anti-friction rollers H, the cam-shaft D, adjustable cams E, and cover J, having bearings *a'* to correspond to the bearings *a*, and spaces *d* in which the cams rotate, substantially as shown and described.

4. In a mowing-machine, a series of adjustable cams mounted upon the cam-shaft and held in place by set-screws or other equivalent means, whereby the cams can be adjusted upon the shaft to any desired position, so as to cause the cutting-blades to stand in any desired angle relatively to each other, substantially as shown and described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 4th day of April, A. D. 1889.

GEORGE A. HALL.

Witnesses:
N. S. GARDINER,
S. W. ROBERTS.