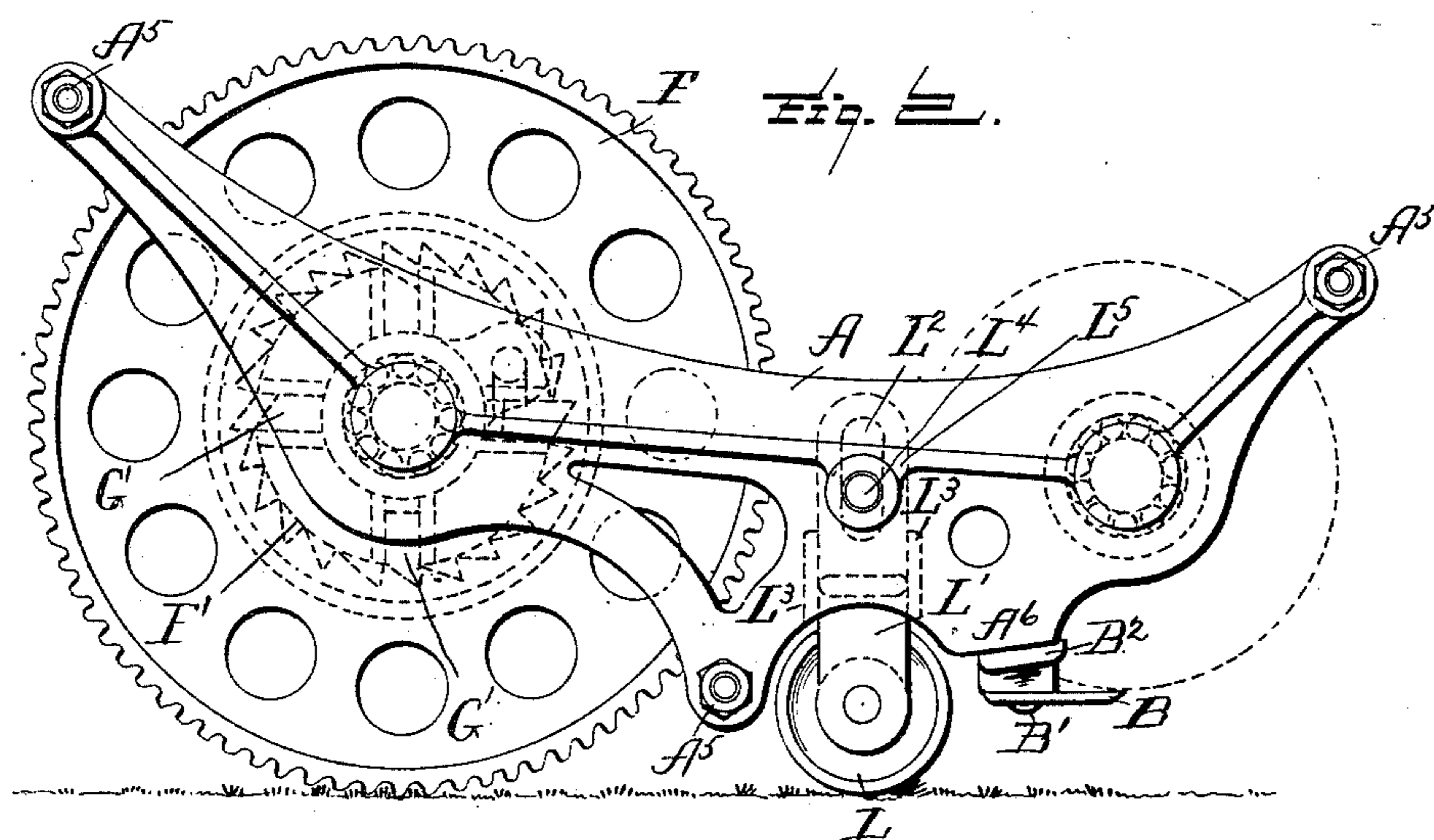
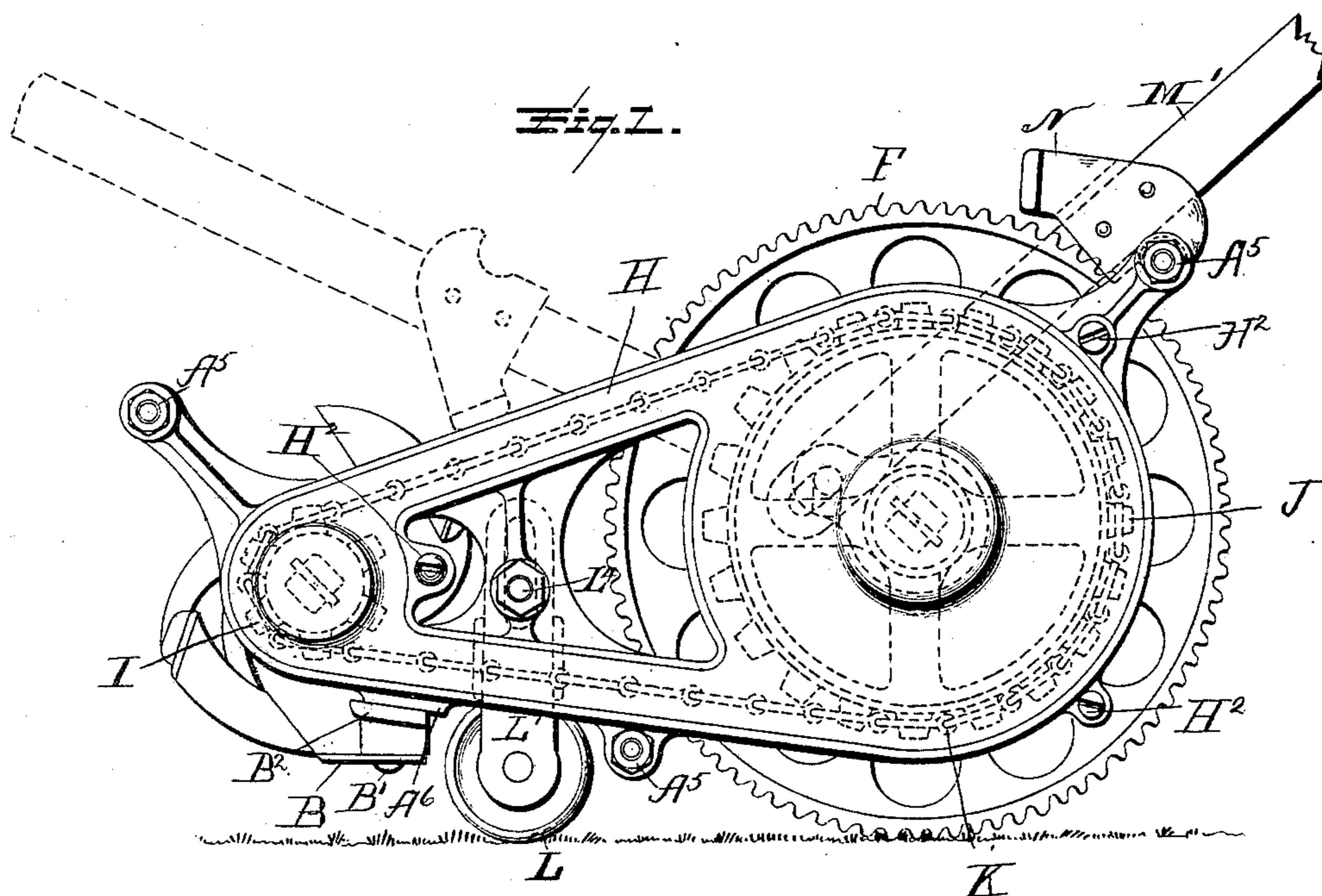


No. 433,318.

Patented July 29, 1890.



Witnesses

L. C. Hills.  
E. A. Bond.

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Inventor

N. S. E. R. Bowditch.  
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Attorney.

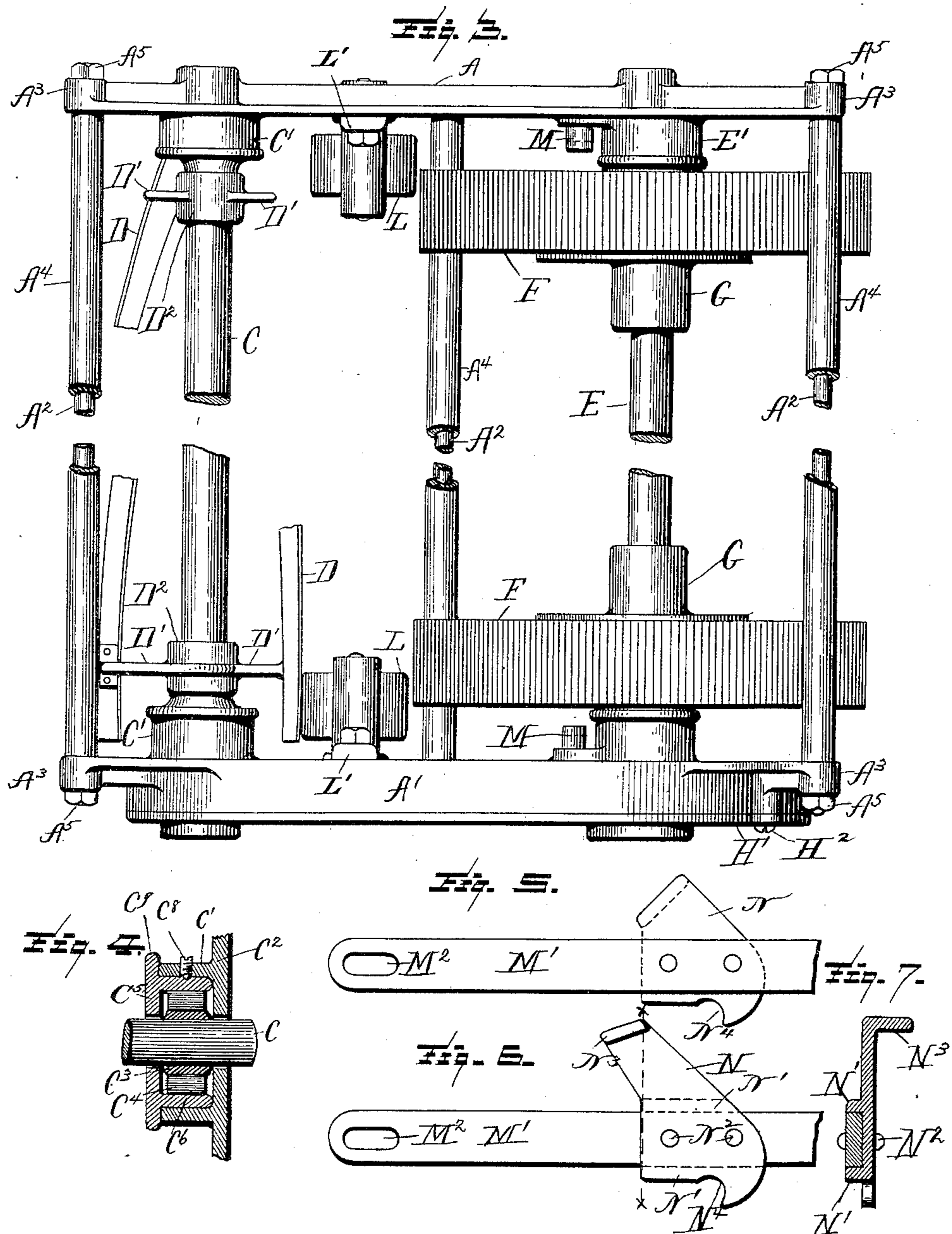
(No Model.)

2 Sheets—Sheet 2.

N. S. & E. R. BOWDISH.  
LAWN MOWER.

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# UNITED STATES PATENT OFFICE.

NELSON S. BOWDISH AND EDWARD R. BOWDISH, OF SKANEATELES, NEW YORK.

## LAWN-MOWER.

SPECIFICATION forming part of Letters Patent No. 433,318, dated July 29, 1890.

Application filed September 13, 1889. Serial No. 323,836. (No model.)

### *To all whom it may concern:*

Be it known that we, NELSON S. BOWDISH and EDWARD R. BOWDISH, citizens of the United States, residing at Skaneateles, in the county of Onondaga, State of New York, 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.

This invention relates to certain new and useful improvements in lawn-mowers; and it has for its object to produce a lawn-mower in which the power from the driving-shaft is transmitted to the cutters through the medium of sprocket wheels and chain, the shafts revolving in roller or ball bearings, and provisions being made for the ready adjustment of the parts, with a reversible handle easily moved from one position to the other when it is desired to move the machine either backward or forward.

The novelty in the present instance resides in the peculiarities of construction and the combinations, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then particularly pointed out in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a side elevation of our improved lawn-mower. Fig. 2 is a like view from the opposite side with parts removed. Fig. 3 is a top plan of the frame with parts broken away and other parts removed. Fig. 4 is an enlarged sectional view showing the roller-bearing of one of the shafts. Fig. 5 is a side elevation of one of the handle-attaching bars with its casting secured thereto. Fig. 6 is a like view of the other handle-attaching bar and its casting, and Fig. 7 is a section on the line *x x* of Fig. 6.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates a suitable casting forming one side of the frame of the machine, and A' another casting forming the opposite side thereof. These castings are connected together by means of transverse rods A<sup>2</sup>, which

pass through suitable bosses or lugs A<sup>3</sup> on the castings A and A', and are incased in tubes A<sup>4</sup>, which are of suitable length to fit between the castings, so that the ends thereof form shoulders which abut against the inner faces of the castings and serve to keep the same the desired distance apart. The ends of these rods A<sup>2</sup> are screw-threaded to receive nuts A<sup>5</sup>, which, when screwed up, serve to bind the parts together.

On the bottom edge of the casting A and on the corresponding edge of the casting A' is a boss A<sup>6</sup>, to which the cutter-bar B is bolted by means of suitable fastenings, as B'. This cutter-bar is formed with lugs B<sup>2</sup>, the upper faces of which are inclined, as shown in Figs. 1 and 2, the lower faces of the bosses A<sup>6</sup> being inversely inclined and the said lugs B<sup>2</sup> contacting with said lower faces of the boss. The inclined contacting surface of the lugs and bosses insure at all times a firm bearing for these parts, and the forward or backward movement of the cutter-bar raises or lowers the same, as will be readily understood.

C is a shaft journaled in suitable bearings in the pockets C' on the castings A and A', the said bearings being preferably roller-bearings of any improved construction, although we prefer the construction illustrated in Fig. 4, wherein C<sup>2</sup> designates the casting, C the shaft, C<sup>3</sup> a removable sleeve surrounding the shaft, C' the pocket, C<sup>4</sup> rollers, and C<sup>5</sup> a removable bushing having an annular flange C<sup>6</sup>, which fits within the pocket C', and an annular flange C<sup>7</sup>, which bears against the outer edge of the pocket, a screw C<sup>8</sup> passing through the annular flange of the pocket and into the annular flange of the bushing, as illustrated. This provides a cheap and efficient form of roller-bearing, and the bushing and sleeve take the wear of the rollers, and thus save the shaft and casting, said bushing and sleeve being readily replaced when worn at a trifling cost. The sleeve on the shaft and the removable bushing could be omitted, if desired. Although this is the preferred construction of bearing, we do not desire to restrict ourselves thereto in connection with the other parts of our invention, as the other parts will operate as well with other forms of roller-bearings.

D are the beaters, secured to their arms D' in any suitable manner, and said arms are secured to the shaft C in any desired manner, preferably being carried by a sleeve D<sup>2</sup>, secured on said shaft.

E is the main shaft journaled in suitable bearings in pocket E' on the castings, and having preferably roller-bearings of the form illustrated in Fig. 4 and above described in connection with the shaft C, although of course other forms of roller-bearings may be employed.

F are the driving-wheels (a drum may be employed in place of the wheels shown) on the shaft E, with their peripheries preferably roughened or toothed, as shown more clearly in Figs. 1 and 2, and these may be sleeved on the shaft in any suitable manner, and are provided with ratchets F'.

G are sleeves or castings fast on the shaft E and carrying the pawls G', preferably of the form shown in Fig. 2, and arranged to engage the ratchets when the machine moves forward to perform its work and release when the machine moves backward and allow the driving-wheels to turn loosely on their shaft. These pawls should be made with sharp points, so that they will be drawn down to the bottom of the ratchet-teeth as soon as they engage therewith.

We provide, preferably, roller-bearings at all points where they can be advantageously employed, in order to insure as easy running of the parts as possible; but plain or straight bearings may be used.

Attached to one side of the machine—as the casting A', for instance—or it may be formed integral therewith, as shown in Fig. 3, is a housing H, provided with a detachable cover H', secured by means of suitable fastenings, as H<sup>2</sup>, and on the shafts C and E, respectively, within this housing, are the sprocket-wheels I and J, fast upon their shafts and connected by means of the endless sprocket-chain K, so that in the forward movement of the machine motion is transmitted to the shaft C, and consequently to the beaters, through the medium of said sprocket wheels and chain.

In order to regulate or adjust the distance of the knife or cutter-bar B from the ground, we provide suitable means of adjustment for the supporting-rollers L, and in the drawings have shown what we consider at present the preferred manner of accomplishing such adjustment, which consists of a hanger L' at each side of the machine, the lower ends of said hangers carrying suitable pintles, on which said rollers are journaled, said hangers being provided with elongated slots L<sup>2</sup> and working in suitable guides L<sup>3</sup> on the castings and held in their adjusted positions by means of a set-screw L<sup>4</sup>, tapped through a lug L<sup>5</sup> on the casting. We have shown in the drawings two small rollers, one at each side of the machine, but may sometimes employ a single roller or drum extending clear across from one side of the machine to the other.

M are studs attached to or cast on the castings A A', as seen best in Fig. 3, and are designed for the purpose of detachably receiving the ends of the tongue or handle, which may be of any approved form, the attaching end of which is provided with metallic bars M', formed at their free ends with elongated slots M<sup>2</sup>, which may be readily engaged with the hooked studs by placing said bars in vertical position and preventing disengagement thereof when said bars are turned into their inclined or operative position, as indicated in Fig. 1.

N are castings formed with ribs N', designed to embrace the bars M, to which they are secured by means of suitable fastenings, as N<sup>2</sup>, as shown in Fig. 7, these castings being formed with lateral portions N<sup>3</sup>, designed to rest upon the castings A and A' when the machine is being moved backward, as indicated by dotted lines in Fig. 1, and upon the other side with a hooked end and curved recess N<sup>4</sup>, designed to engage the rear tube A<sup>4</sup> when the machine is being moved forward, as illustrated in Fig. 1 by full lines.

We may employ any desired number of beaters, and various modifications in detail may be resorted to without departing from the spirit of our invention.

What we claim as new is—

1. In a lawn-mower, the combination, with the side casting having a pocket, of the shaft, a removable sleeve surrounding the shaft, a bushing fitting the pocket, and rollers arranged in the pocket between the bushing and the sleeve, and a fastening means passed through the pocket into the bushing at right angles to the shaft, substantially as shown and described.

2. In a lawn-mower, the combination, with the side casting and the shaft, of a removable bushing having an annular flange fitting within the annular flange of the pocket, a removable sleeve surrounding said shaft, rollers within the pocket interposed between the sleeve and the flange of the bushing, and fastening means passing through the flange of the pocket and into the flange of the bushing, substantially as shown and described.

3. In a lawn-mower, the combination, with the frame and its attached parts, of the handle-attaching bars and castings N thereon, formed with a hooked and a lateral portion, the hooked portion adapted to engage the rear connecting-bar of the frame and the lateral portion to engage one of the side bars of the frame when the handle-bars are reversed, substantially as shown and described.

4. In a lawn-mower, the combination, with the frame, including the side castings A A' and the rear connecting-bar and its accessories, of the handle-attaching bars and the castings N thereon, formed upon one side with a lateral portion adapted to engage the side bar of the frame and upon the opposite side with a curved recess adapted to engage said rear connecting-bar when the handle is

reversed, substantially as and for the purpose specified.

5 5. In a lawn-mower, the combination, with the side castings and rear connecting-bar, the casting N, formed with parallel ribs N' and lateral portion N<sup>3</sup> at one end to engage the side bar of the frame when the handle is in one position, and a curved recess at the other to engage said rear connecting-bar when the handle is reversed, of a handle-attaching bar fit-

ted between said ribs and secured to the casting, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

NELSON S. BOWDISH.  
EDWARD R. BOWDISH.

Witnesses:

G. C. DURSTON,  
B. F. PETHERAM.