

No. 630,033.

Patented Aug. 1, 1899.

A. B. CASE.

BALL BEARING ADJUSTING DEVICE FOR LAWN MOWERS.

(Application filed June 14, 1899.)

No Model.

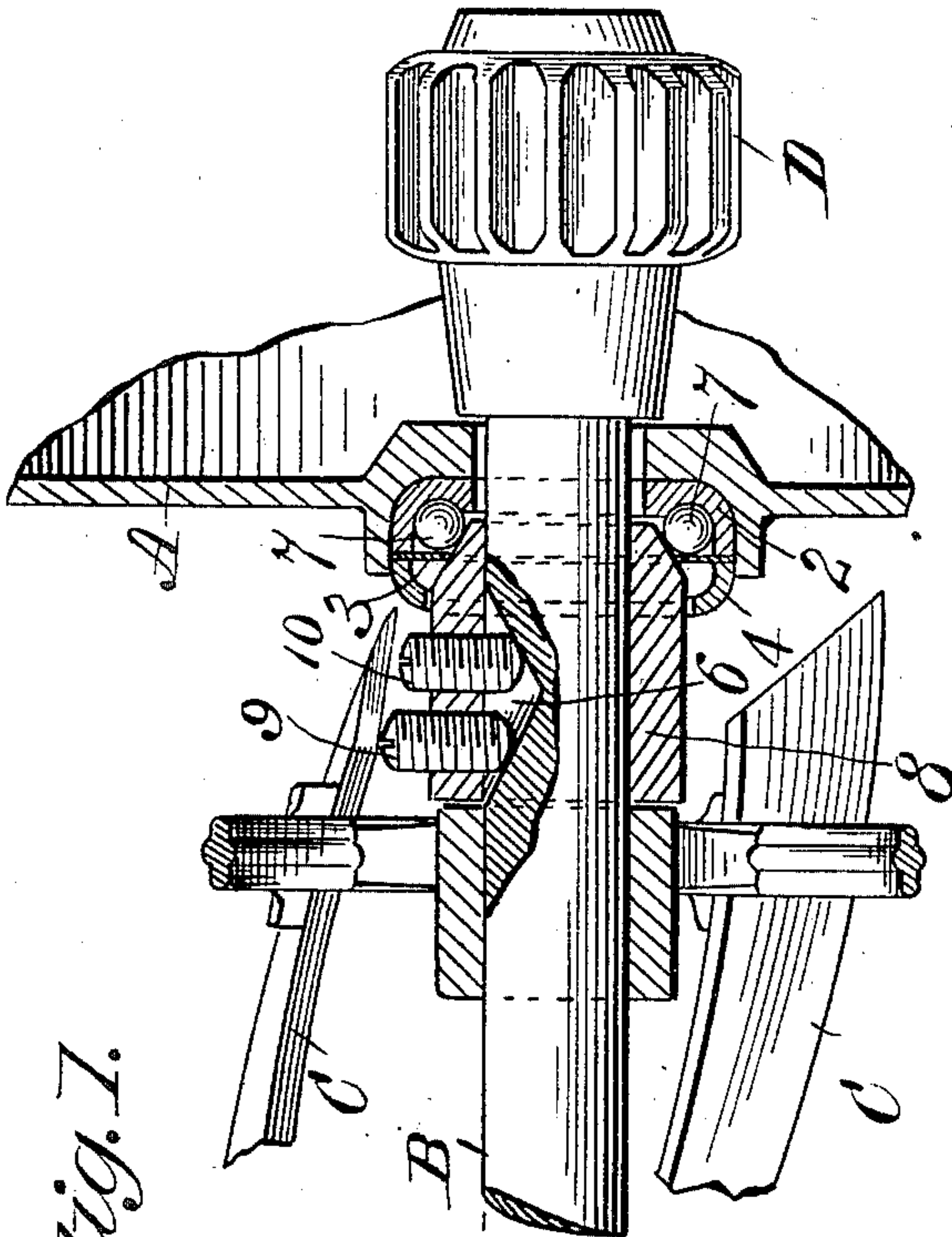


Fig. 1.

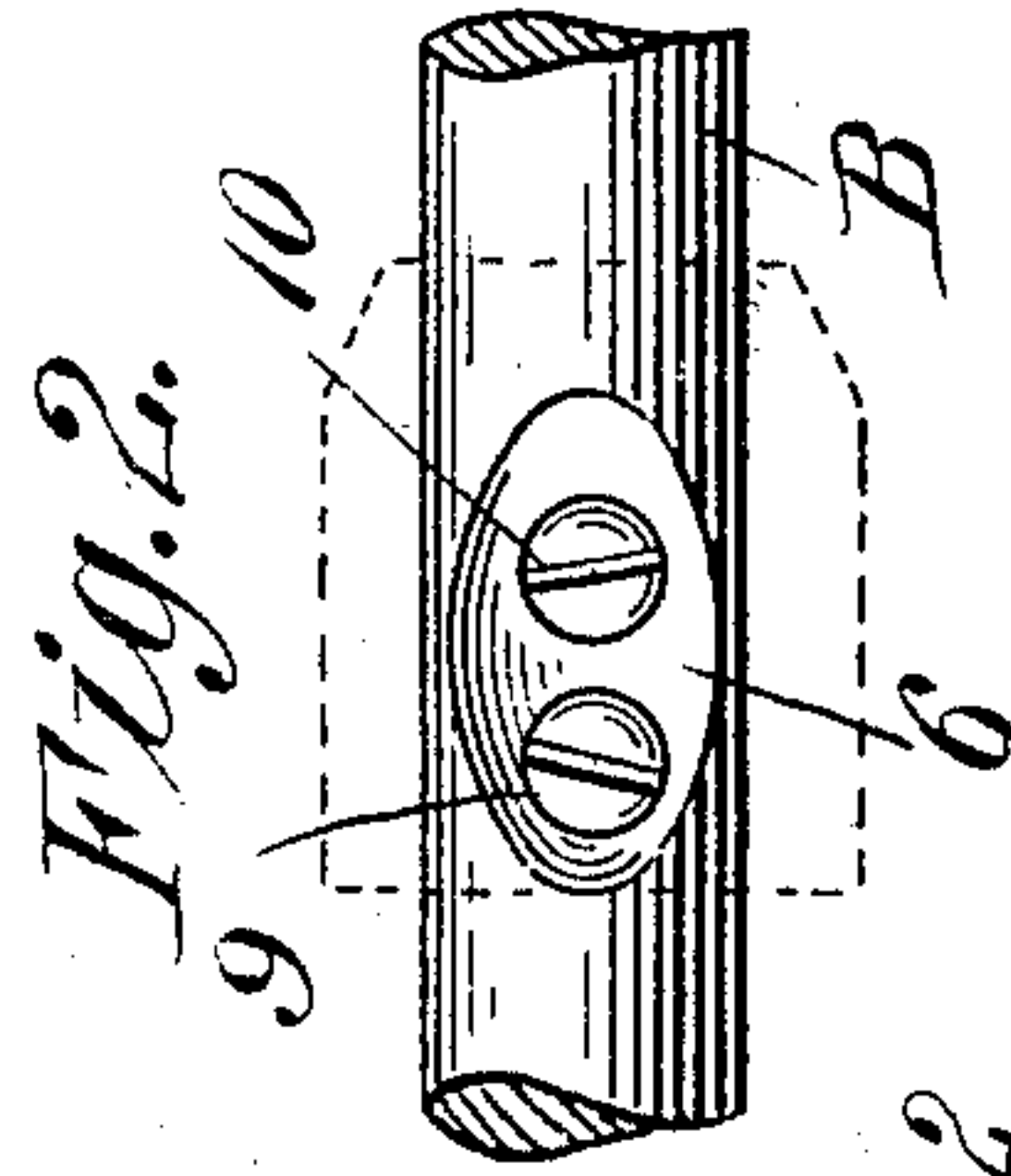


Fig. 2.

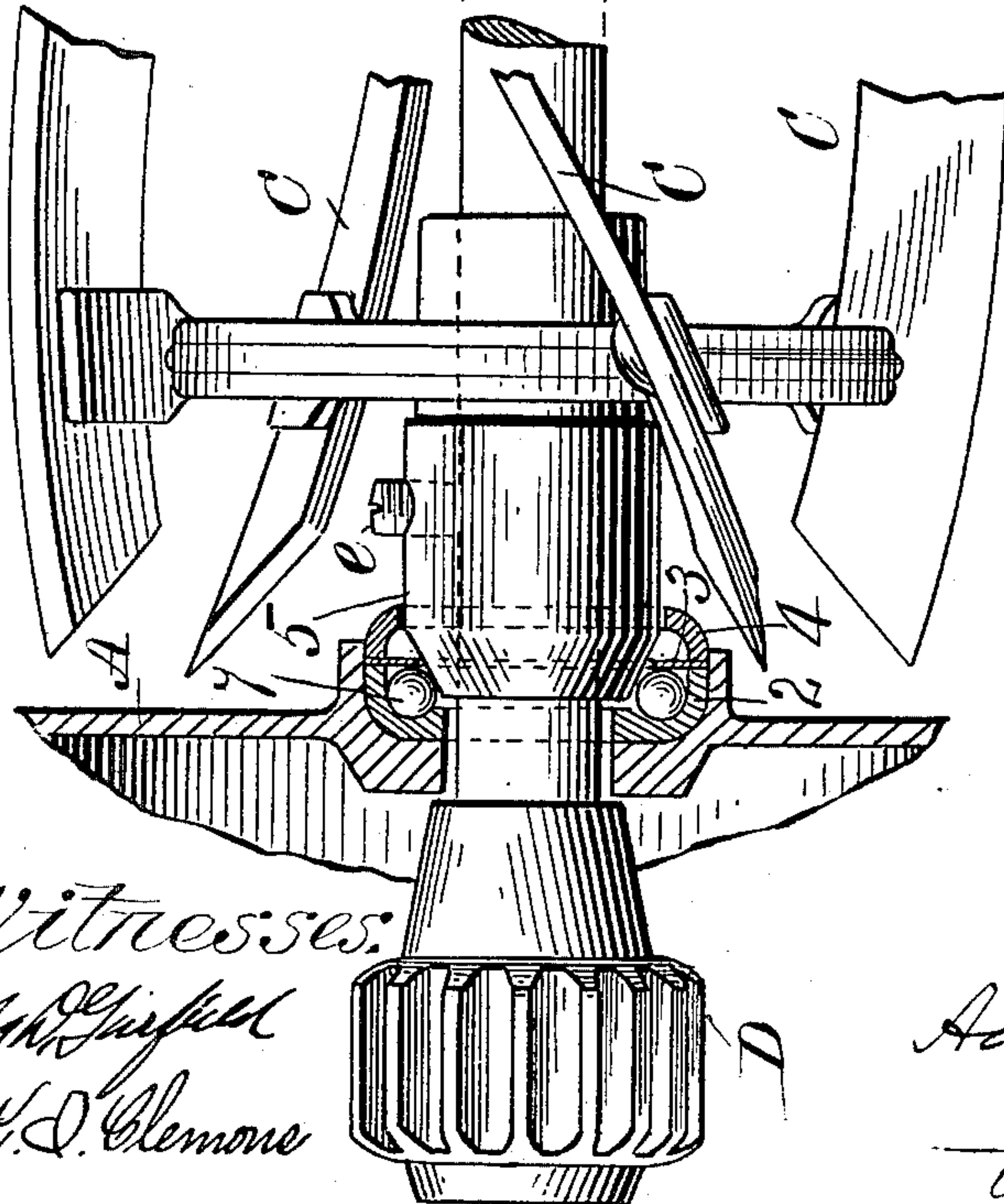


Fig. 3.

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UNITED STATES PATENT OFFICE.

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BALL-BEARING-ADJUSTING DEVICE FOR LAWN-MOWERS.

SPECIFICATION forming part of Letters Patent No. 630,033, dated August 1, 1899.

Application filed June 14, 1899. Serial No. 720,482. (No model.)

To all whom it may concern:

Be it known that I, ADELBERT B. CASE, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Ball-Bearing-Adjusting Devices for Lawn-Mowers and Analogous Machines, of which the following is a specification.

10 This invention relates to lawn-mowers and analogous machines having cutter-carrying shafts running in ball-bearings, the object being to provide an improved ball-engaging element or elements carried on said shafts and
15 means on and intermediate of the latter and said element or elements whereby the latter are moved on and rigidly locked in positions on said shafts nearer to or farther from the balls of the shaft-bearing, all as hereinafter
20 fully described, and more particularly pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a side elevation of the cutter-carrying shaft of a lawn-mower shown in
25 connection with sections of the frame or casing of the machine in which the ball-bearings of said shaft are located and illustrating sections of the cutters thereon containing my improved ball-engaging devices and means for
30 adjusting the same, as aforesaid. Fig. 2 is a longitudinal section of said shaft near the bearing thereof and is fully described below. Fig. 3 illustrates the ball and dust cup and dust-shield or ring of the ball-bearing, and
35 their relative purposes are below described.

Referring to the drawings, A A indicate sections of the inner end wall of the frame of a lawn-mower in which the bearings of the cutter-shaft of the machine are located. B indicates the cutter-shaft, and C portions of the cutters attached to and carried on said shaft in the usual manner. D indicates the pinions on the ends of said shaft, which engage with the geared driving-wheels of the machine. Each of said inner-end-wall sections
45 A has a suitable shaft-opening therethrough, as shown, and in a circular recess surrounding each of said openings is rigidly fixed a ball-bearing base-cup 2, of hard metal, and within
50 each of said cups are placed the bearing-balls 7. A flat ring 3 is closely fitted against the border of each of said base-cups and is there

held by the engagement of its border with the walls of said recess and by an outer cup 4 below described. Said ring serves to retain the
55 bearing-balls 7 in position and largely to prevent the accumulation of dust in said base-cup and among said balls. The diameter of the opening through said ring is such that the tapered extremity of the ball-engaging sleeve
60 8 below described is free to engage the bearing-balls 7 behind said ring. The said metal cup 4 has its border forced into the outer end of said recess in which said ball-bearing base-cup 2 is fixed and against said ring 3 and
65 serves to guard against the displacement of the latter and against the entrance of dust into the ball-chamber. To prepare said cutter-shaft B for receiving the before-mentioned adjustable ball-engaging element and its operating devices, a recess or depression 6 is
70 made in the side thereof near the shaft-bearing in one of said end walls A, having base-sections upwardly inclined from a central point therein relative to the axial line of said
75 shaft, as shown in Figs. 1 and 2. The said sleeve 8, whose operative position on the cutter-shaft B is one which causes it to cover said depression therein, as shown in Fig. 1, and the two screws 9 and 10 are provided in said
80 last-named sleeve, which alternately, in connection with said inclined base-sections of said recess 6 in the cutter-shaft B, act to move said sleeve 8 toward and from the adjacent
85 bearing-balls 7 and after said sleeve movements to rigidly lock the sleeve in the desired position on the shaft. Fig. 2 indicates in dotted lines the position of said sleeve over said
90 recess 6 in the said shaft and shows in end view the normal positions of said screws 9 and 10, which are those in which the points thereof have a bearing upon the opposite inclined sections of the base of said recess 6, as shown also in Fig. 1.

The sleeve 5 on the cutter-shaft B is here
95 shown as provided with a single set-screw e, whereby it is held in proper position on said shaft for engagement with the ball-bearing of that end of the shaft; but, if desired, the latter may be recessed, as at the opposite end,
100 and the sleeve be provided with two screws, as is said sleeve 8, for adjusting purposes, as aforesaid; but the single adjustable sleeve 8 is ordinarily sufficient, for it will be under-

stood that when from wear by use the tapered extremities of said sleeves 5 and 8 are not running sufficiently close to the balls of the bearings that the movement of the sleeve 8
5 against the balls with which it engages tends at the same time to move the tapered end of said sleeve 5 against its bearing-balls, and thus the said sleeves at both ends of the shaft B are brought to the desired bearing positions
10 against said balls and with the exact precision necessary to the proper action of ball-bearings by the manipulation of the said screws 9 and 10 of the sleeve 8 in connection with said inclined base of the recess 6 as follows: Assuming that the sleeve 8, as shown
15 in Fig. 1, because of the wear of its tapered end or from a like wear of the end of said sleeve 5 or of both sleeves is running so far from the bearing-balls as to permit too much
20 endwise movement in the cutter-shaft B, that is remedied by slightly turning the screw 10 of sleeve 8 to draw its inner end away from the inclined base-section of the shaft B thereunder. Then the screw 9 is turned to drive its
25 point against the said inclined base-section below it, and thereby the said sleeve is caused to slide on the shaft and bring its said tapered end to proper engagement with the bearing-balls, and thereby the shaft is or may
30 be moved slightly endwise, bringing the point of the sleeve 5 also to proper position against the balls on which it runs, and finally said screw 10 is turned in and set closely against the inclined base-section thereunder and the
35 opposite base-section is drawn so forcibly against the point of the screw 9 that the latter becomes forcibly locked against becoming

loose, or, in other words, the locking of both of said screws is effected by the united forcible engagement of each point thereof with
40 said oppositely-inclined base-sections by turning in one thereof against the inclined base thereunder.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is— 45

1. In a lawn-mower or analogous machine, ball-bearings in the frame thereof, a shaft extending through said bearings having in the side thereof, near one of said bearings, a recess having base-sections upwardly inclined
50 from a central point therein, a movable ball-engaging sleeve inclosing said recessed shaft part, and screws in said sleeve engaging said base-sections, whereby said sleeve is adjustable longitudinally on, and locked to, said
55 shaft, substantially as set forth.

2. In a lawn-mower or analogous machine, having ball-bearings in the frame thereof, a shaft extending through said bearings having in the side thereof, near one of said ball-bearings, a recess containing base-sections
60 upwardly inclined from a central point therein relative to the axial line of said shaft, toward each end thereof, and a ball-engaging sleeve inclosing said recessed shaft part, and
65 screws in said sleeve the inner ends of which engage said base-sections, whereby said sleeve is adjusted longitudinally on, and locked to, said shaft, substantially as set forth.

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