

No. 772,004.

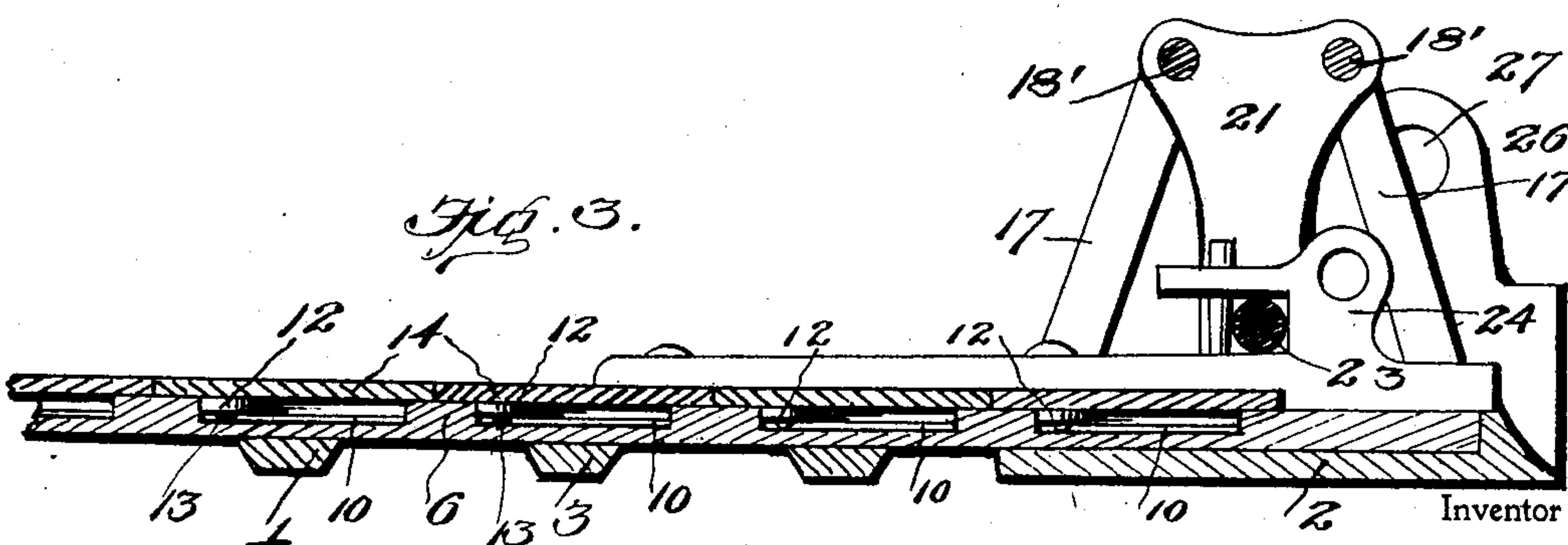
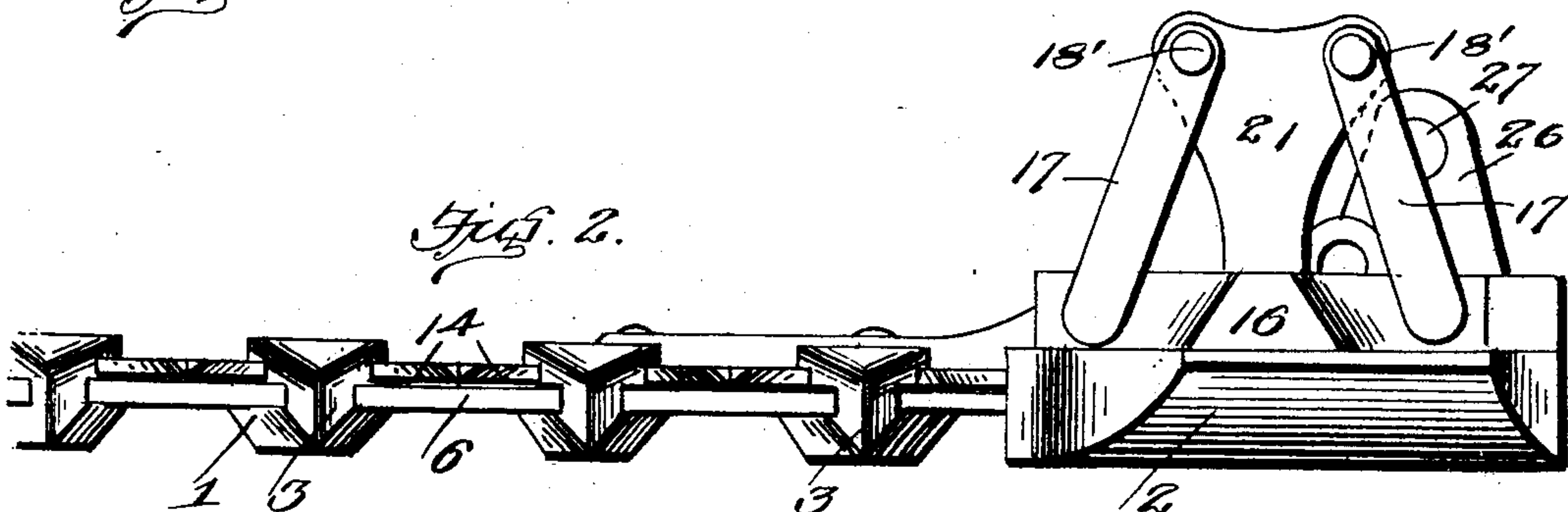
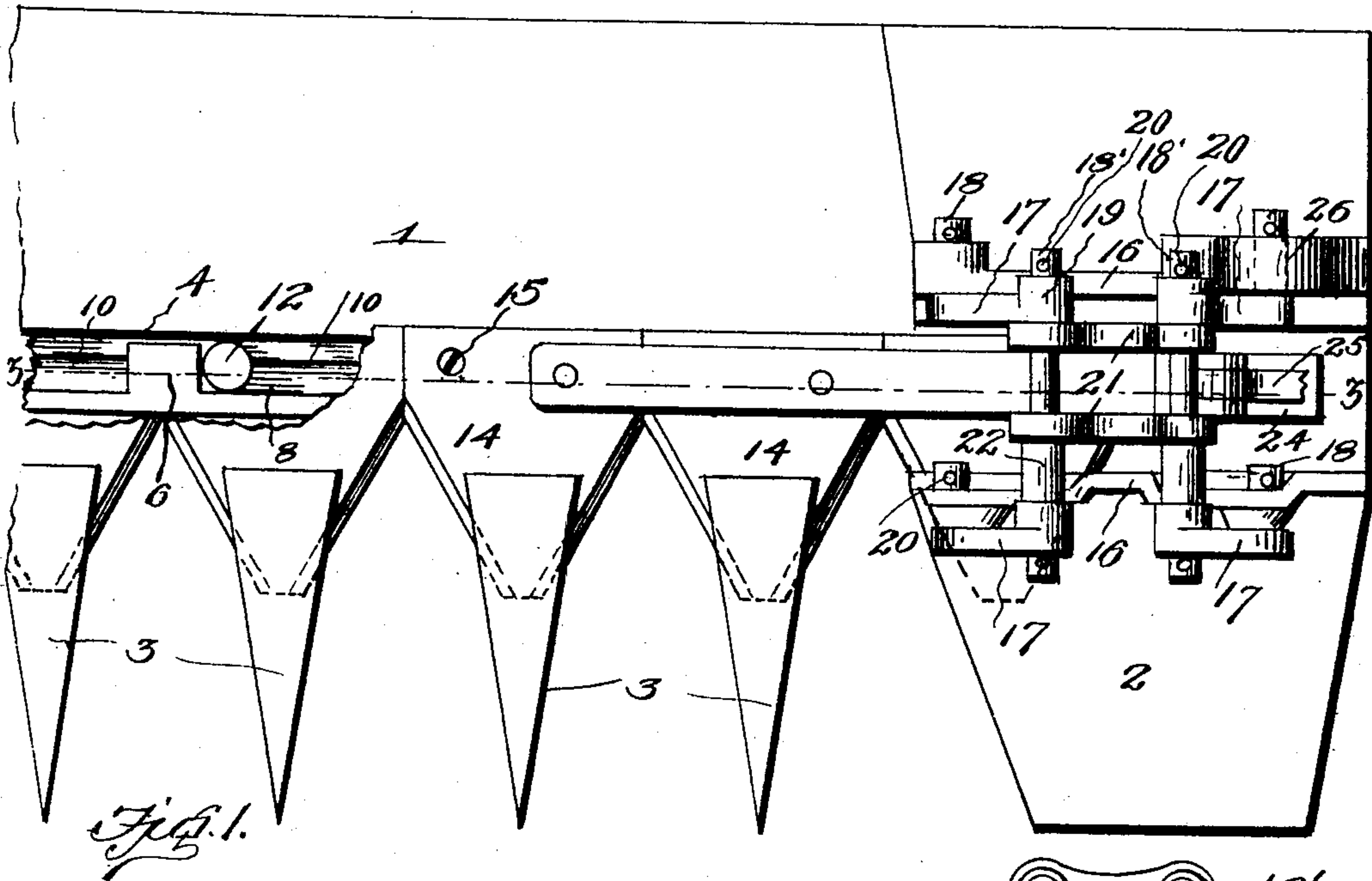
PATENTED OCT. 11, 1904.

L. STUDY.
CUTTING APPARATUS FOR MOWING MACHINES.

APPLICATION FILED JAN. 18, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

E. Hunt
A. B. Wilson

Leonard Study.

By

A. B. Wilson

Attorney

No. 772,004.

PATENTED OCT. 11, 1904.

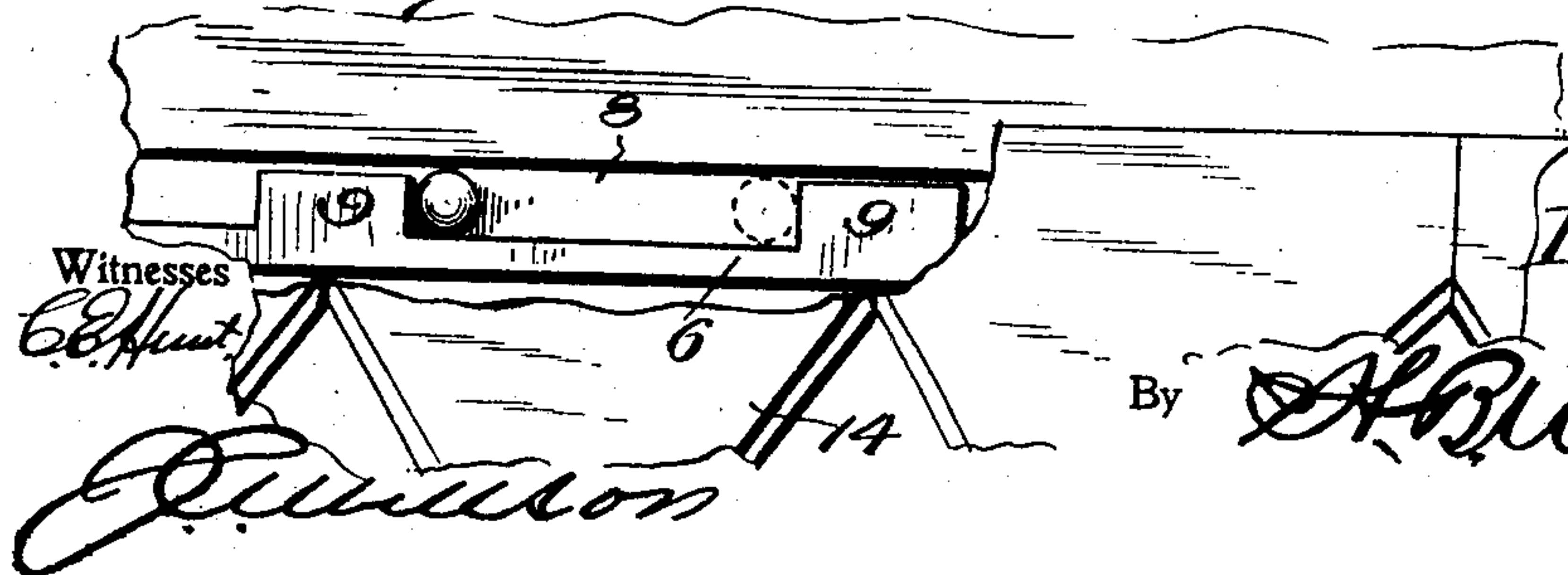
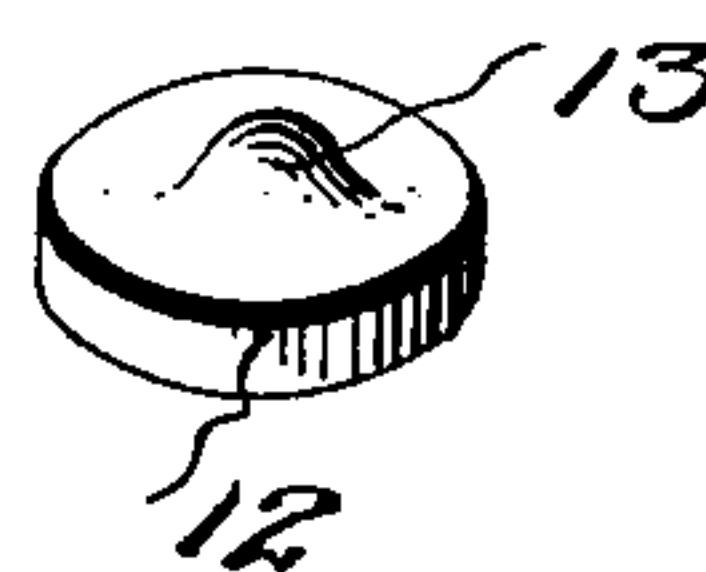
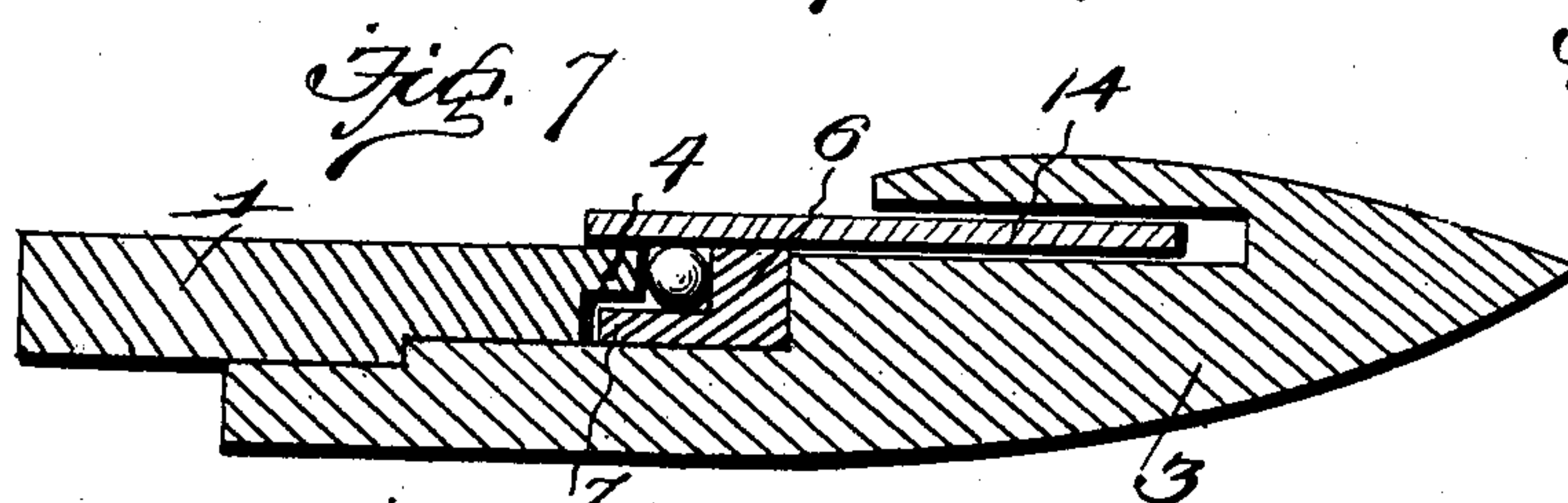
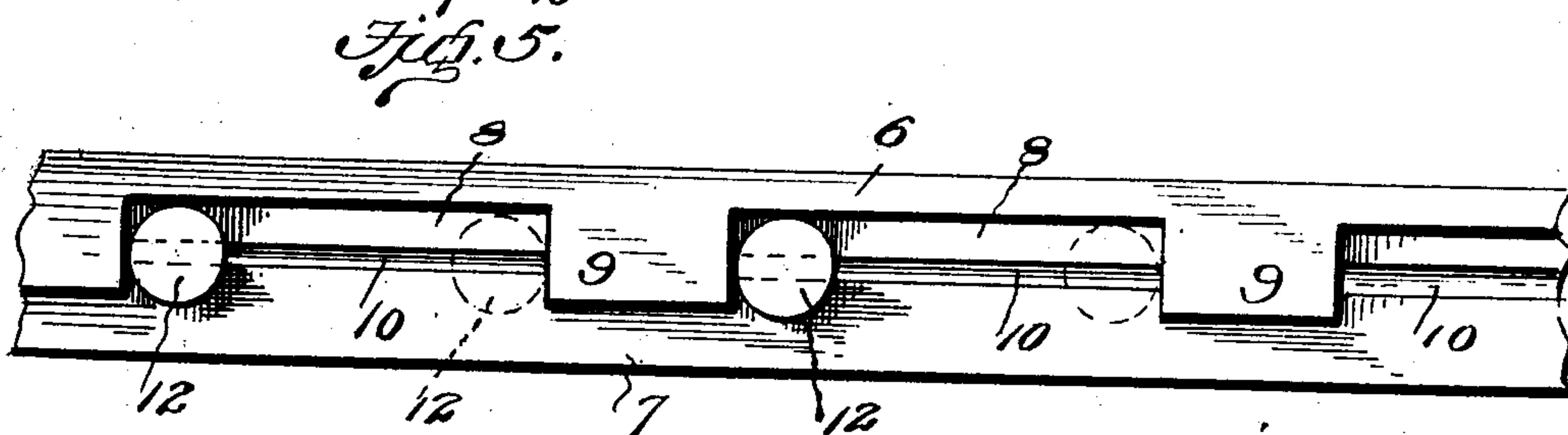
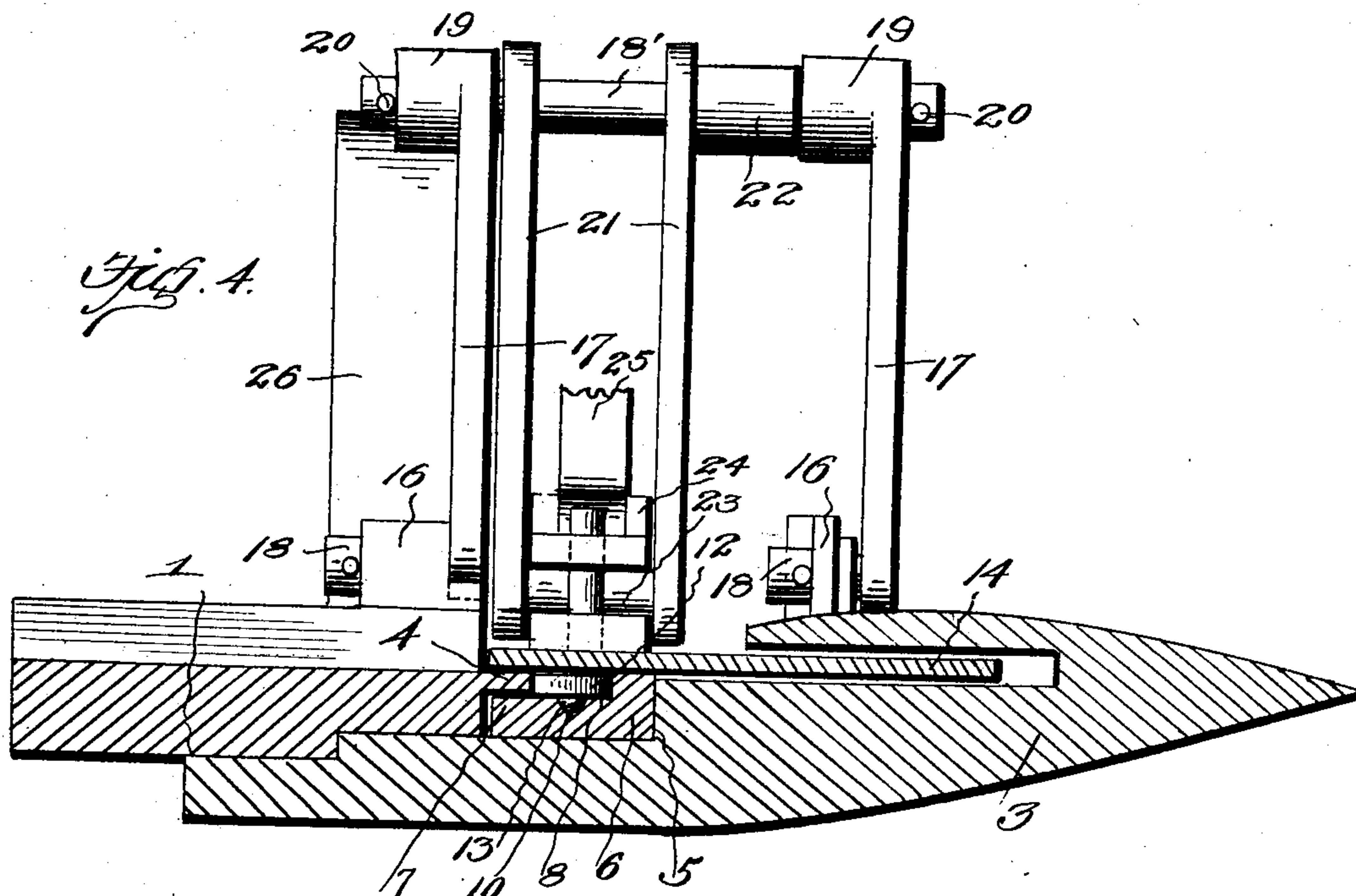
L. STUDY.

CUTTING APPARATUS FOR MOWING MACHINES.

APPLICATION FILED JAN. 18, 1904.

NO MODEL.

2 SHEETS—SHEET 2.



Inventor

Leonard Study.

By

A. B. Wilson

Attorney

UNITED STATES PATENT OFFICE.

LEONARD STUDY, OF THURMAN, IOWA.

CUTTING APPARATUS FOR MOWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 772,004, dated October 11, 1904.

Application filed January 18, 1904. Serial No. 189,554. (No model.)

To all whom it may concern:

Be it known that I, LEONARD STUDY, a citizen of the United States, residing at Thurman, in the county of Fremont and State of Iowa, have invented certain new and useful Improvements in Cutting Apparatus for Mowing-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in mowing and harvesting machines.

The object of the invention is to simplify and improve the construction shown in Letters Patent of the United States No. 748,118, granted to me December 29, 1903.

With this object in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a top plan view of a portion of the cutting apparatus of a mowing-machine, parts being broken away for illustration. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical longitudinal sectional view taken on the plane indicated by the line 3 3 of Fig. 1. Fig. 4 is a vertical cross-section on an enlarged scale. Fig. 5 is a top plan view of a portion of the cutter-bar, showing the blades removed. Fig. 6 is an inverted detail perspective view of one of the antifriction roller-disks. Fig. 7 is a vertical cross-sectional view of a modified form of the invention. Fig. 8 is a fragmentary top plan view of the same.

Referring to the drawings more particularly, 1 denotes the finger-bar of a mowing-machine, supported at its inner end by a shoe 2. To the under side of the finger-bar are secured the usual guard-fingers 3, which project forwardly in the usual manner. The forward edge of the finger-bar is rabbeted to form an overhanging edge or flange 4. The inner end of each guard-finger is recessed or cut-away, as at 5, thereby forming between the

same and the rabbeted edge of the finger-bar a guideway in which is adapted to slide the cutter-bar 6. On the rearward edge of said bar is formed a flange 7, which is adapted to engage and slide beneath the overhanging flange 4 on the forward edge of the finger-bar. In the upper side of the cutter-bar 6 is formed a series of raceways or recesses 8, the sides of which adjacent to the edge of the flange 4 on the finger-bar are open. The recesses 8 are spaced apart by blocks 9, formed integral with the cutter-bar, as shown, and in the bottom of each recess is formed a central longitudinally-disposed groove 10.

In each of the recesses or raceways 8 is arranged a flat disk roller 12, the peripheries of which are adapted to engage the edge of the flange 4 of the finger-bar on one side and the inner wall of the recesses on the opposite side, so that when said bar is reciprocated the disk will roll from one end of the recess to the other, and thereby relieve the friction caused by the rearward thrust of the cutter-bar. On the under side of each disk roller is formed a teat 13, which is adapted to engage the groove 10 in the raceways or recesses 8 to hold said disk in place when the cutter-bar is unshipped for repairs, grinding, &c.

On the cutter-bar 6 are arranged the blades or cutters 14, which are of the usual shape and construction and are secured to the bar in such a manner that each blade or cutter will cover one of the recesses 8 in said bar. The blades are held in place by the usual rivets 15, which pass through the same and into the spacing-blocks 9 between the recesses 8 in the cutter-bar. By thus arranging the blades on the cutter-bar they serve two functions, one as cutters and the other as cover-plates for the recesses 8 to hold the antifriction-disks 12 in place. The cutter-blades extend back over the cutter bar and onto the finger-bar, thereby covering the joints between the cutter and finger bars, and thus preventing the entrance of dust and dirt through said joints.

In the shoe at the inner end of the finger-

bar is formed a passage through which the inner end of the cutter-bar reciprocates, and on said shoe along the sides of said passage are formed bearing-flanges 16, in which are pivotally mounted the lower ends of two pairs of oscillating links 17, the said links having journals 18 at their lower ends to engage bearings formed in the flanges 16. The upper ends of the links 17 are provided with bearings 19, in which are journaled the ends of cross-rods 18', which extend between the links and pass through the bearings in the same and are provided in their ends with transverse holes, in which are inserted retaining-pins 20. On the rods 18 between the links 17 are fixed two parallel oscillating arms 21, which are substantially triangular in form. Through the upper corners are passed the rods 18, on which the arms are fixed and spaced a suitable distance apart. The arms are arranged on the rods adjacent to the rear pair of links 17 and are spaced from the forward pair of links by sleeves 22 on the rods 18. The lower ends or corners of the arms 21 are connected together by a bolt or pin 23, which also pivotally connects this end of the arms with a head 24, fixed on the inner end of the cutter-bar 6, whereby said bar is held and caused to move in a horizontal plane in the guideway formed between the finger-bar and the guard-fingers.

The head 24 on the cutter-bar is provided with an eye in which is pivotally connected the end of a pitman-rod 25, by which said cutter-bar is reciprocated, suitable mechanism being employed in connection with the running-gear of the machine to actuate said pitman-rod, said mechanism not being here shown, as it forms no part of the present invention.

On the shoe 2 adjacent to the inner flange 16 is formed a lug 26, which is provided with an eye 27, by which the finger-bar and cutting apparatus are pivoted to swing upwardly.

In Figs. 7 and 8 is shown a modified construction of the antifriction engagement between the cutter-bar and the finger-bar. In these figures spherical bodies or balls are shown instead of the disk rollers.

By the arrangement of the parts as herein shown and described a simple and efficient antifrictional bearing is provided between the cutter-bar and the finger-bar whereby, said cutter-bar is caused to run easily and the rearward thrust and wear of the parts are materially reduced.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the prin-

ciple or sacrificing any of the advantages of this invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In the cutting apparatus of a mowing or harvesting machine, the combination of a finger-bar having a projecting forward edge forming an overhanging flange, a reciprocating cutter-bar having a rearwardly-projecting flange underlapping the flange on said finger-bar, raceways formed in said cutter-bar, antifriction-rollers arranged in said races, to bear on the forward projecting edge of said finger-bar, substantially as described.

2. In the cutting apparatus of a mowing or harvesting machine, the combination of a finger-bar having a projecting forward edge forming an overhanging flange, a reciprocating cutter-bar having a rearwardly-projecting flange underlapping the flange on said finger-bar, raceways formed in said cutter-bar, antifriction-rollers arranged in said races to bear on the forward projecting edge of said finger-bar, and cutters or blades arranged on said cutter-bar to cover said raceways, substantially as described.

3. In the cutting apparatus of a mowing or harvesting machine, the combination of a finger-bar having a projecting forward edge forming an overhanging flange, a reciprocating cutter-bar having a rearwardly-projecting flange underlapping the flange on said finger-bar, raceways formed in said cutter-bar, antifriction-rollers arranged in said races to bear on the forward projecting edge of said finger-bar, and cutters or blades arranged on said cutter-bar to cover said races and the joints between said cutter and finger bars whereby foreign matter is prevented from entering the same, substantially as described.

4. In the cutting apparatus of a mowing or harvesting machine, the combination of a finger-bar having a projecting forward edge forming an overhanging flange, a reciprocating cutter-bar having a rearwardly-projecting flange underlapping the flange on said finger-bar, recesses arranged in the upper side of said cutter-bar to form raceways one side of which is closed by the overhanging flange of said finger-bar, centrally-arranged longitudinally-disposed grooves formed in said races, disk rollers arranged in said races and teats formed on the under side of said rollers to engage said longitudinal grooves, substantially as described.

5. In the cutting apparatus of a mowing or harvesting machine, the combination of a finger-bar having a projecting forward edge forming an overhanging flange, a reciprocating cutter-bar having a rearwardly-projecting flange underlapping the flange on said finger-bar, raceways formed in said cutter-bar, anti-

friction-rollers arranged in said races to bear
on the forward projecting edge of said finger-
bar, cutting-blades arranged on said cutter-
bar to cover said raceways, and means whereby
5 said reciprocating cutter-bar is caused to move
in a horizontal plane, substantially as de-
scribed.

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit-
nesses.

LEONARD STUDY.

Witnesses:

W. M. PAUL,
J. C. PAUL.