

No. 766,157.

PATENTED JULY 26, 1904.

R. B. CHARLTON.

MACHINE FOR BURRING RAILWAY CONNECTING PLATES.

APPLICATION FILED APR. 19, 1902. RENEWED JUNE 23, 1904.

NO MODEL.

3 SHEETS—SHEET 1.

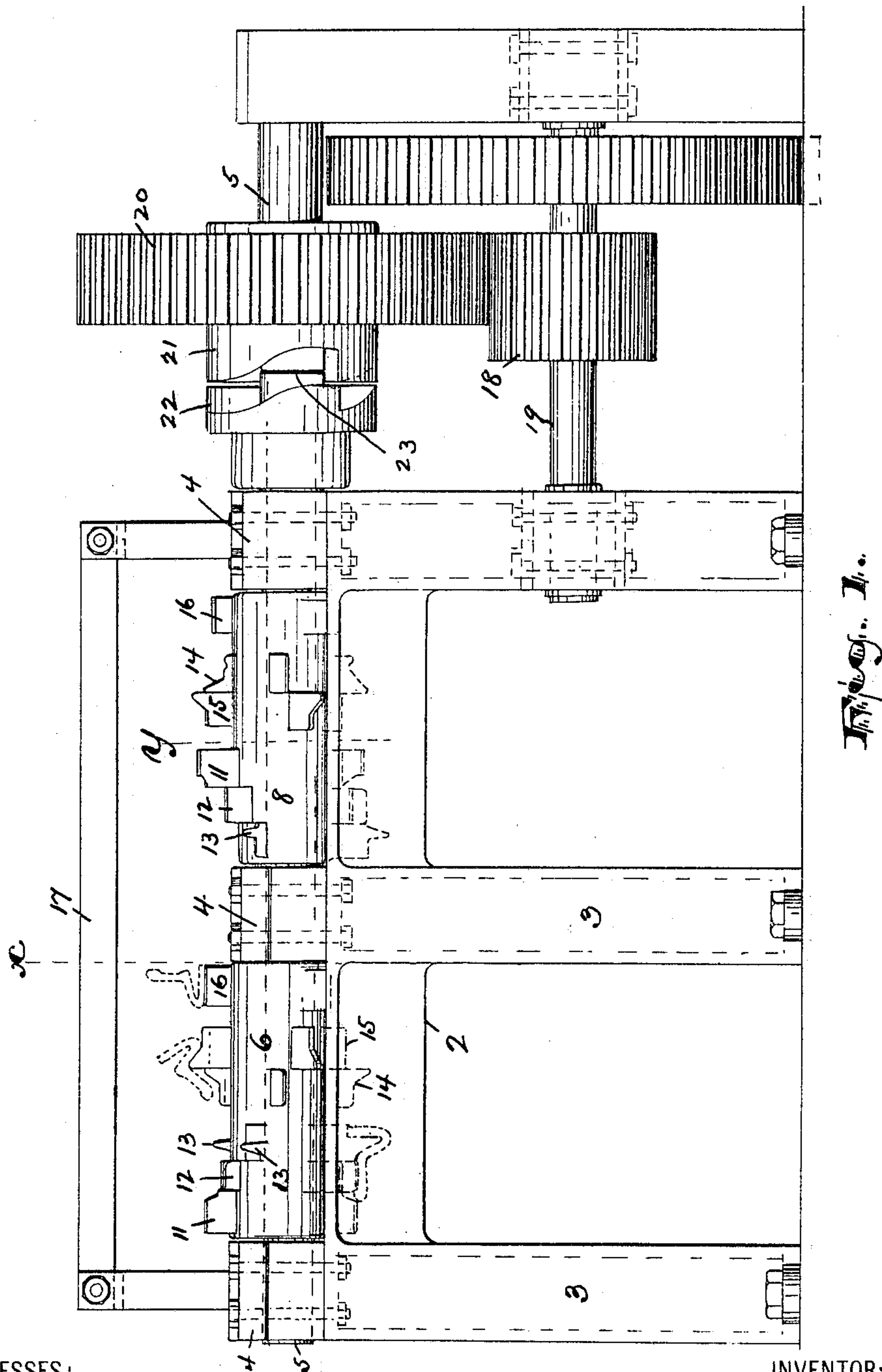


Fig. 1.

WITNESSES:

*Henry Krug*

*Russell M. Everett*

INVENTOR:

**Richard B. Charlton,**

BY

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ATTORNEYS.

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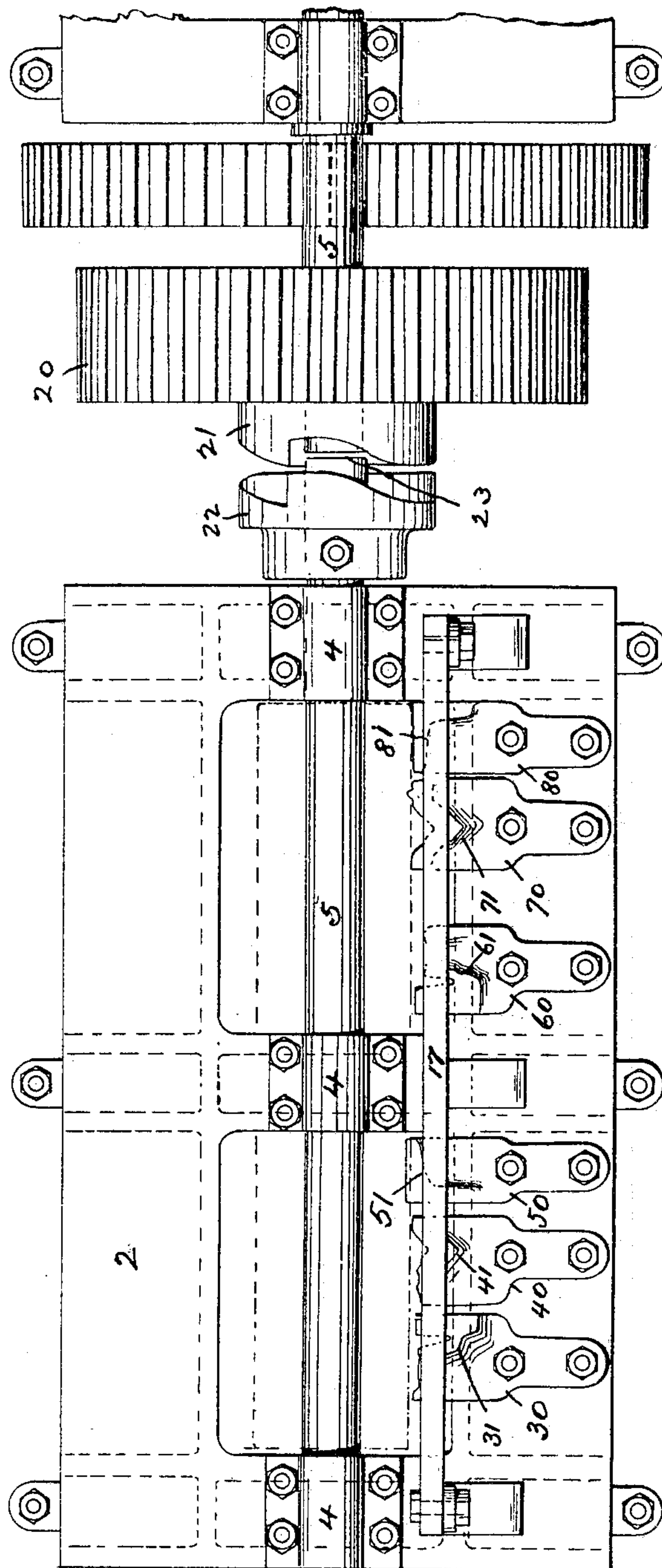


Fig. 2.

WITNESSES:

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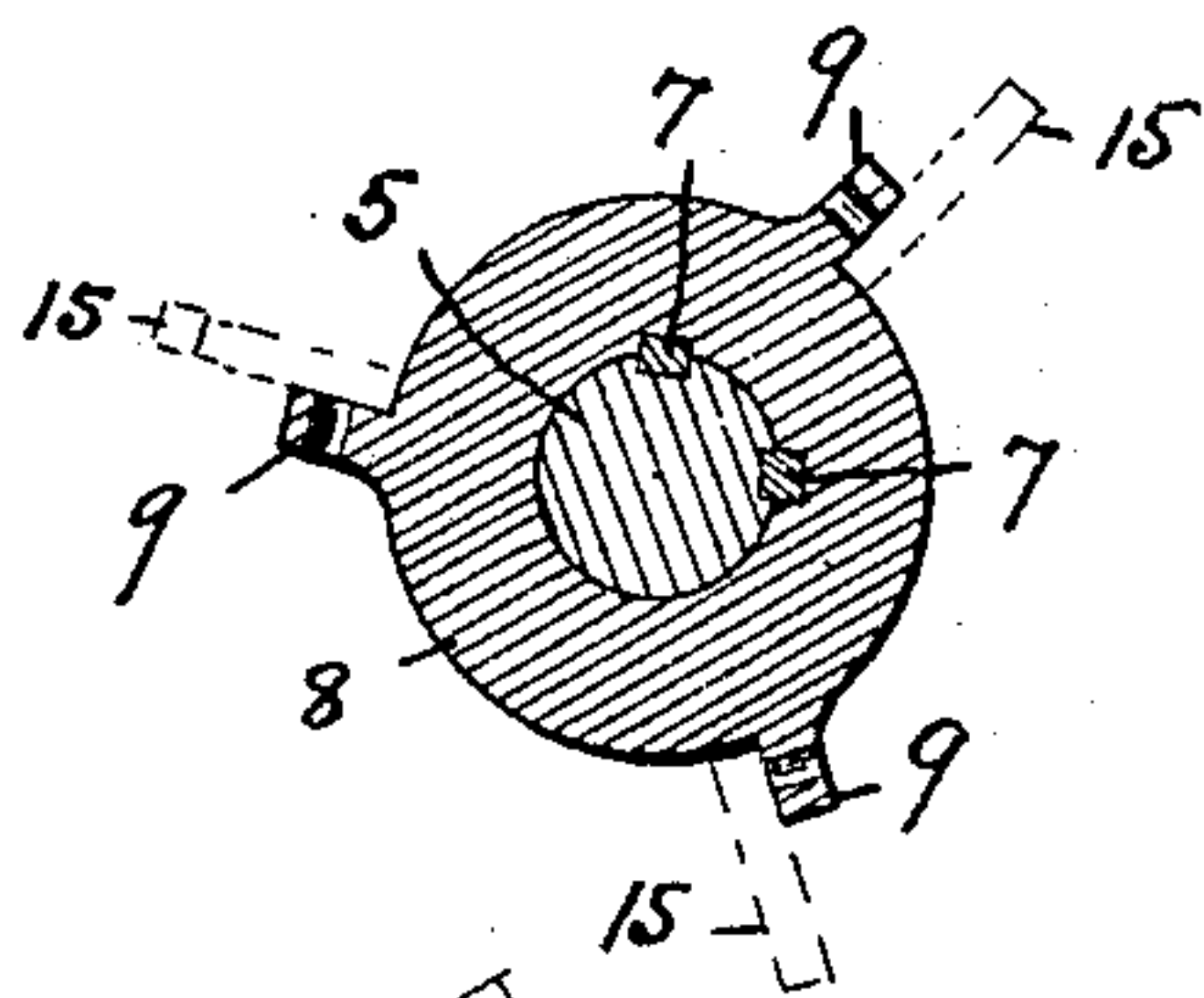
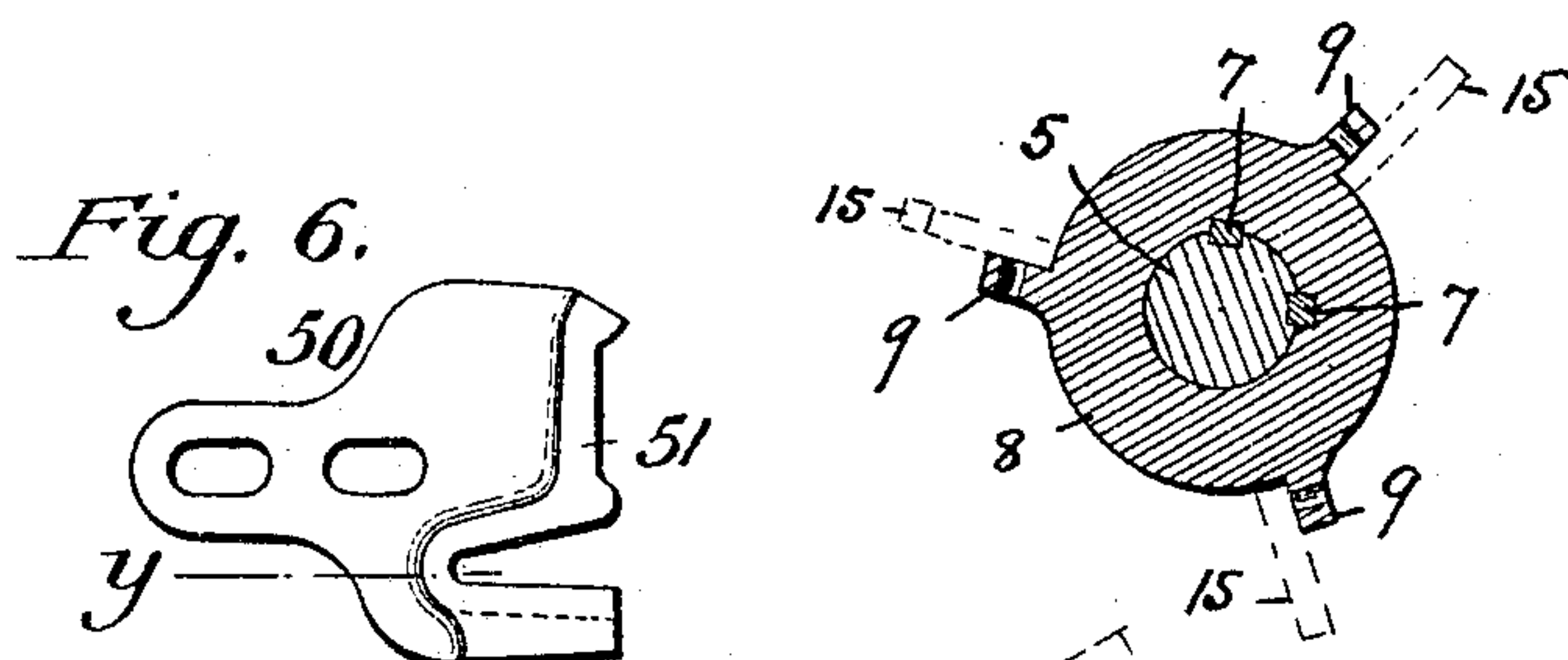
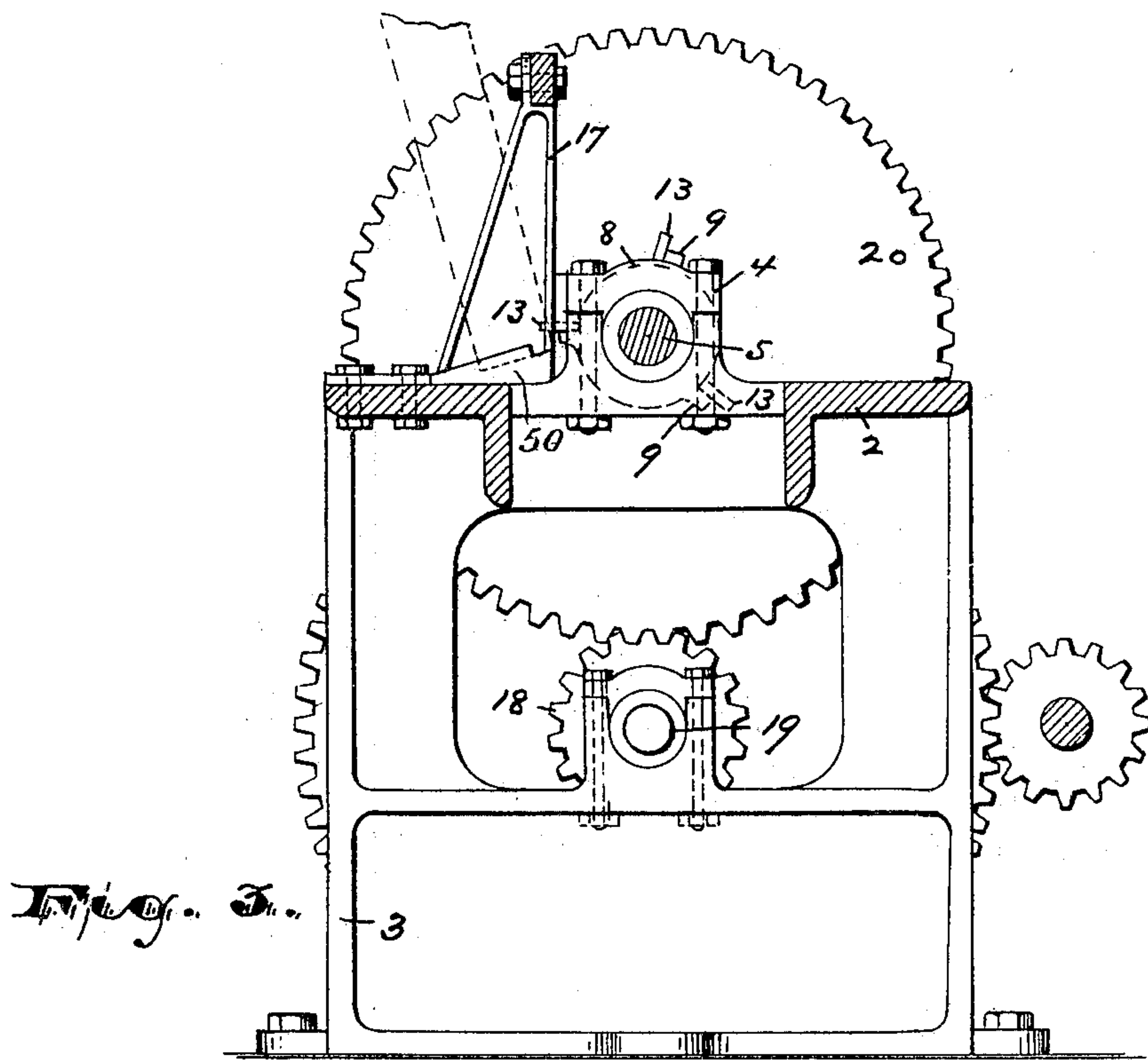
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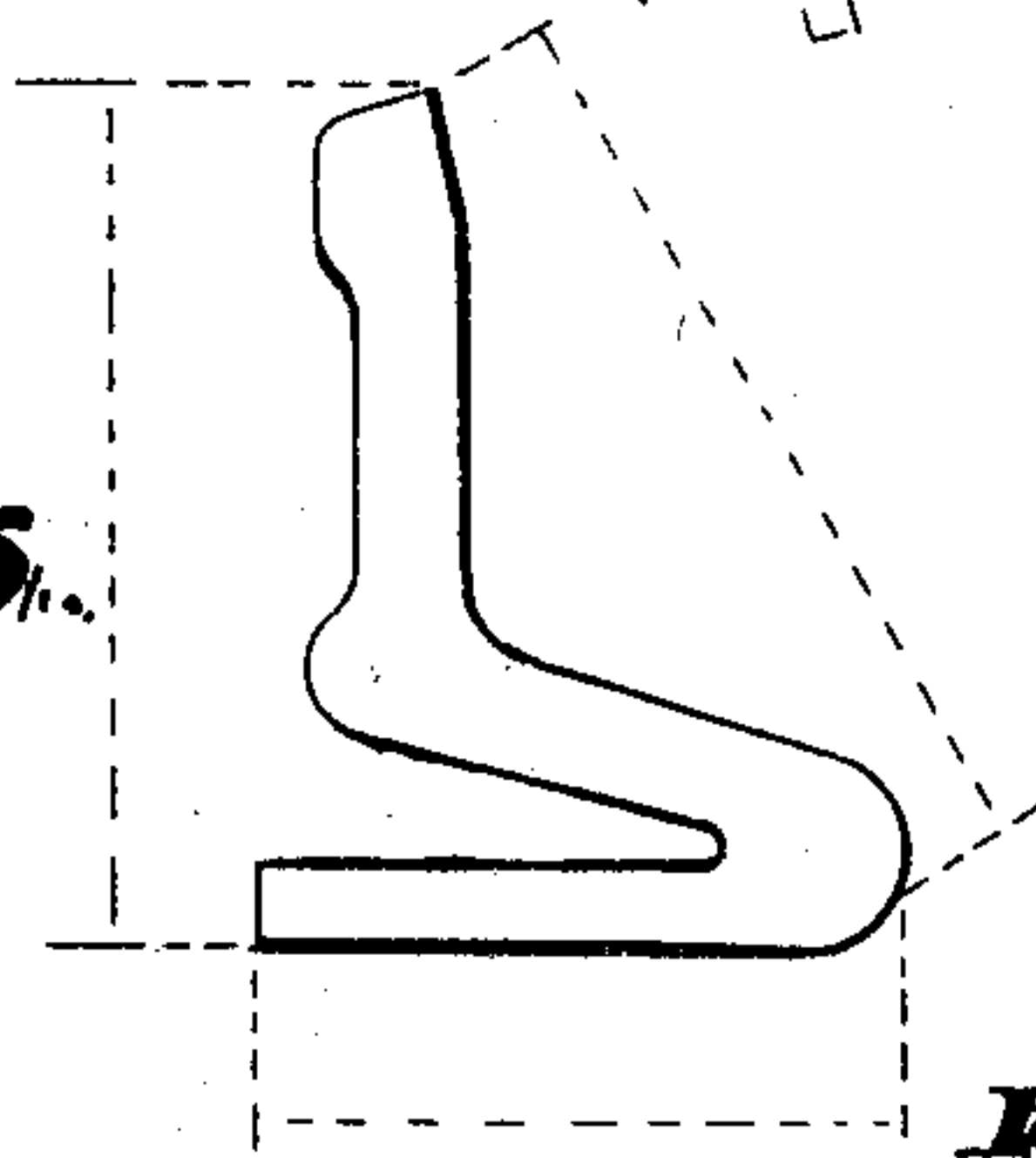
3 SHEETS—SHEET 3



*Fig. 4.*



*Fig. 5.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

RICHARD B. CHARLTON, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO  
CONTINUOUS RAIL JOINT CO. OF AMERICA, A CORPORATION OF  
NEW JERSEY.

## MACHINE FOR BURRING RAILWAY CONNECTING-PLATES.

SPECIFICATION forming part of Letters Patent No. 766,157, dated July 26, 1904.

Original application filed April 25, 1900, Serial No. 14,233. Divided and this application filed April 19, 1902. Renewed June 23, 1904.  
Serial No. 213,820. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD B. CHARLTON, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Machines for Burr-  
ing Railway Connecting-Plates; and I do hereby 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, reference being had to the accompanying drawings, and to numerals of reference marked thereon, which form a part of this specification.

This invention, which is a division of my prior application filed April 25, 1900, Serial No. 14,233, relates to the manufacture of railway fish-plates or rail-joint connections, and more particularly that class of fish-plates represented by the ones shown in Patents No. 427,017, of April 29, 1890, to John Speicher, and No. 627,723, of November 21, 1899, to Frederick T. Fearey.

The invention relates more especially to the finishing of the fish-plates after being rolled and cut into lengths, or the "burring," as it is termed in the art. It will be understood that as sawed the ends of the fish-plates have burs or ragged outstanding edges which in the application of the fish-plate to a rail first engage the rail-surface, and so prevent a close and intimate contact or seating of the plate against the rail. It is therefore essential to a perfect joint that these saw-burs be chipped off, and to provide means for doing this is the primary object of my invention.

Other objects are to enable the cutters to be mechanically operated in continuous succession, to obtain greater uniformity and precision of cutting, to secure a compact construction, save time and labor, and attain other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved machine for burring railway connecting-plates and in the arrangements and combinations of

parts of the same, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like numerals of reference indicate corresponding parts in each of the several figures, Figure 1 is a front elevation of my improved machine; and Fig. 2 is a plan of the same, the burring-sleeves being removed to more clearly show the other parts. Fig. 3 is a vertical section of the complete machine as on line *x*, Fig. 1. Fig. 4 is a detail cross-section of a burring-sleeve and shaft therefor as on line *y*, Fig. 1; and Fig. 5 is a diagrammatic illustration indicating what portions of the fish-plate the different cutting-dies are adapted to act upon. Figs. 6 and 7 are detail views of one of the dies or seats for the end of the fish-plate, showing the same in plan and section, respectively.

In said drawings, 2 indicates a cast-iron frame or bed supported upon suitable legs or posts 3 and providing at its upper side bearings 4 for a horizontal longitudinally-disposed shaft 5, which may be continuous from end to end of the bed-frame or in separable sections. There are preferably three such bearings—one at each end of the bed-frame and one in the middle—and the two portions of the shaft thus exposed are adapted to receive cast-iron sleeves 6 8, securely held to rotate therewith, as by keys or splines 7 7.

Each sleeve has on its peripheral surface circumferential series of lugs or projections 9, all providing shoulders or seats facing the same way and to which radially-disposed cutters can be firmly bolted, the lugs forming strong backings for said cutters. While each sleeve may have any number of such circumferential series as may be thought necessary to properly clear the entire edges of the end of the fish-plate from saw-burs, I prefer to mount on each sleeve six series of cutters, as shown.

Each series comprises, preferably, three cutters, all of the same form and adapted to act on the same portion of the fish-plate, but suc-



cessively and in different degrees—that is, the first acts as a roughing-cutter, the second trims closer, and the third finishes a smooth clean cut. The work must of course be thrust into position at a certain point of the revolution of the rotary cutter-sleeve—namely, at such a time that the shortest cutter will first engage the work and then the longer ones. Since the machine normally runs slow, this may easily be done by an expert workman, especially if the shortest or roughing cutter is made conspicuous, as by painting it red. The cutters of the said series are also staggered longitudinally of the sleeve or set at different circumferential points with respect to one another, so that they do not stand in a straight line parallel to the shaft 5, and hence no two will be cutting at the same instant, and thus the strain on the driving mechanism is relieved.

The form and disposition of cutters which I prefer is to place in the three series at the first end of the first sleeve, as 6, cutters 11 12 13, respectively, which are shaped to clean successive portions of the inner edges of the fish-plate or next its contact-surface, as indicated in Fig. 5. These three series are, moreover, placed close together longitudinally of the sleeve, so that it is not necessary to move the fish-plate being acted on; but said fish-plate can be held in one position for the three cutters to act.

The fourth series is a little distant from the third and has cutters 14, adapted to cooperate with those, 15, of the fifth series and which is arranged close to the fourth series in cleaning the edges for the entire outer side of the fish-plate, as shown in Fig. 5. The fish-plate is thus subjected to these two series of cutters at the same time. The sixth and last series of cutters 16 stands by itself on the sleeve, and after the fish-plate has been removed from the fourth and fifth series it is turned to present the edge of its base to these cutters.

In order to illustrate the engagement of the different groups of cutters with the different surfaces of the fish-plate, respectively, as above described, I have for convenience sake shown in dotted lines in Fig. 1 fish-plate cross-sections at the upper and lower profiles of the cutter-sleeve, although it will be understood that the plates are actually in endwise position upon dies or seats at one side of its cutter-sleeve when engaged, as hereinafter described.

One end of the fish-plate has then been completely burred, and it is then passed to a second workman or operator, who stands at the second sleeve 8 and who clears the other end of the fish-plate of burs. To do this, the same shapes of cutters are mounted on said second sleeve 8 as on the first and in the same groups of circumferential rows; but the order in each group is reversed, so as to fit the reverse end of the fish-plate—that is, the cutters of the first, second, and third rows on the second

sleeve 8 are the same as those of the third, second, and first rows, respectively, of the first sleeve. The fourth and fifth rows on the second sleeve have likewise the same cutters as are in the fifth and fourth rows of the first sleeve, respectively.

During the successive burring operations each fish-plate is held in an endwise position, with its upper end inclined away from the cutter-sleeve at an angle of about twelve degrees from the vertical. The lower end of the fish-plate or end being cleaned rests in a suitably-shaped die, which provides a seat or recess open next the cutter-sleeve to present the edge of the fish-plate to the cutters and having at the opposite side a shoulder to firmly hold the plate forward to the cutters. These dies are bolted upon the upper horizontal surface of the frame 2, and obviously there will be three for each sleeve, or one for each group of circumferential rows of cutters. There are therefore in the machine shown six dies, all different and which I have marked 30, 40, 50, 60, 70, and 80, numerals 31, 41, 51, 61, 71, and 81 indicating the shoulders of said dies, respectively.

A guard or safety device 17 is erected in front of the sleeves 6 8 between them and the upper ends of the fish-plates to prevent any possible injury to the operators.

The shaft 5, on which the sleeves 6 8 are mounted, is preferably driven by a gear-wheel 18 on a driving-shaft 19, said driving-gear meshing with another gear, 20, on the said shaft 5. The gear 20 is preferably loose on the shaft 5 and provided with a clutch member 21 at its side adapted to engage a cooperating clutch member 22, fast on the shaft 5. Preferably the shaft 5 is furthermore divided, as at 23, between said clutch members 21 22, so that when the members are disengaged the sleeve-carrying portion of the shaft may be removed and replaced by another exactly like it, but with freshly-ground cutters, without disturbing the gear-wheels 20 19 or stopping the power. There is thus no material loss of time.

Having thus described the invention, what I claim as new is—

1. In a burring-machine, the combination with a shaft and means for rotating the same, of a longitudinal series of circumferential series of cutters arranged on said shaft in fixed position, the cutters of different circumferential series being staggered with respect to one another longitudinally of the shaft.

2. In a burring-machine, the combination of a shaft and means for rotating the same, a removable sleeve on said shaft provided with radially-projecting shoulders or rests arranged in a longitudinal series of circumferential series and cutters bolted to said shoulders or rests, the successive cutters of each circumferential series projecting different distances to effect different degrees of cutting.



3. In a burring-machine, the combination  
with a shaft and means for rotating the same,  
of a removable sleeve on said shaft adapted  
to rotate therewith, said sleeve being provided  
5 with radially-projecting shoulders or rests  
arranged in a longitudinal series of groups  
of circumferential series, and cutters mount-  
ed upon said shoulders or rests, the cutters  
of the different circumferential series being  
10 staggered longitudinally of the sleeve.

4. In a machine for burring the ends of  
fish-plates, the combination with a frame and  
a rotary shaft journaled therein, of two series

of circumferential series of cutters arranged  
longitudinally of said shaft, the circumferen- 15  
tial series of said two longitudinal series be-  
ing disposed in different order and adapted  
one to clean one end of a fish-plate and the  
other the other end.

In testimony that I claim the foregoing I 20  
have hereunto set my hand this 16th day of  
April, 1902.

RICHARD B. CHARLTON.

Witnesses:

M. E. CHRISTENSEN,

H. P. KAYE, Jr.