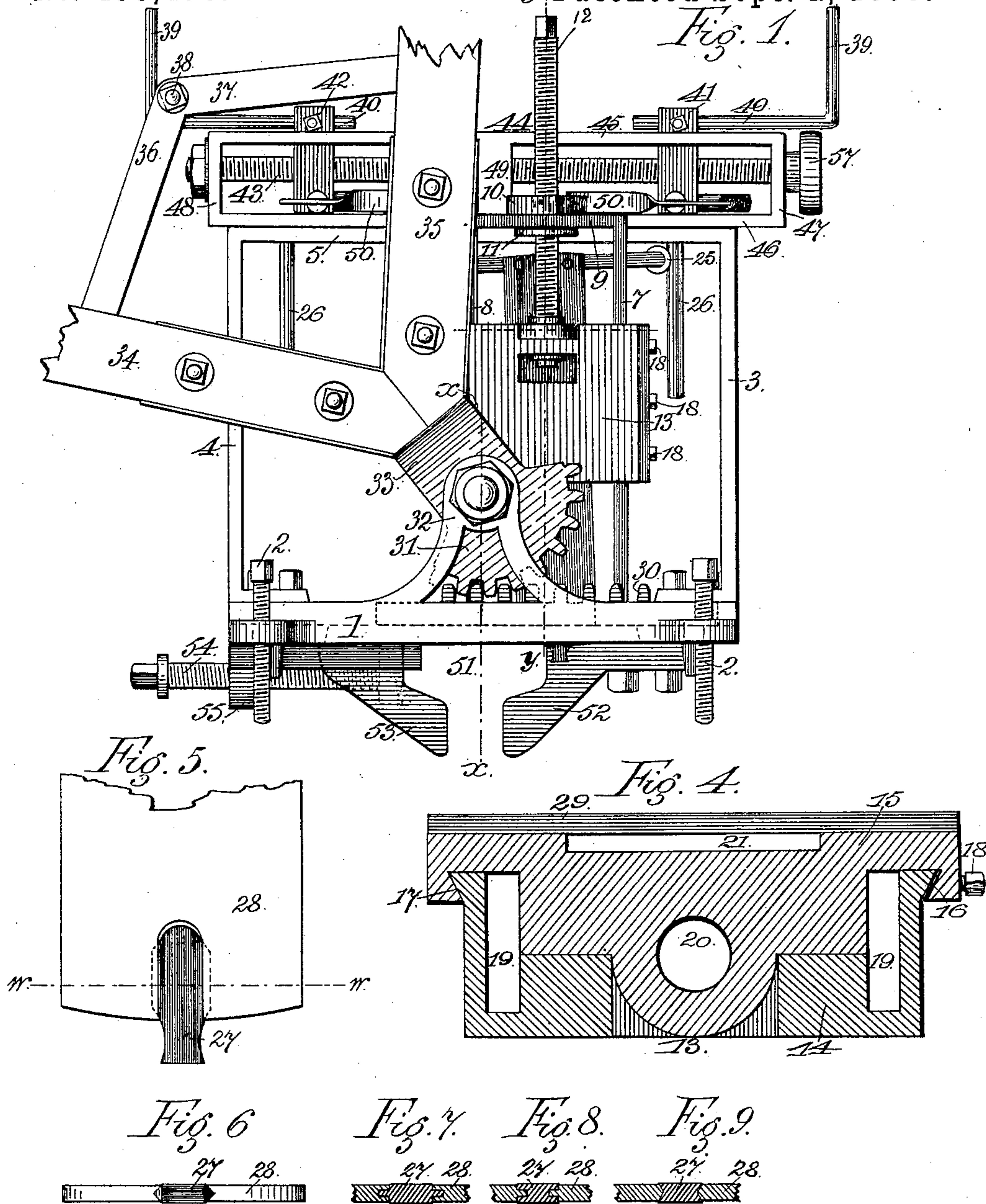


E. H. ANGELL.
RAILROAD RAIL CUTTER.

No. 435,476.

Patented Sept. 2, 1890.



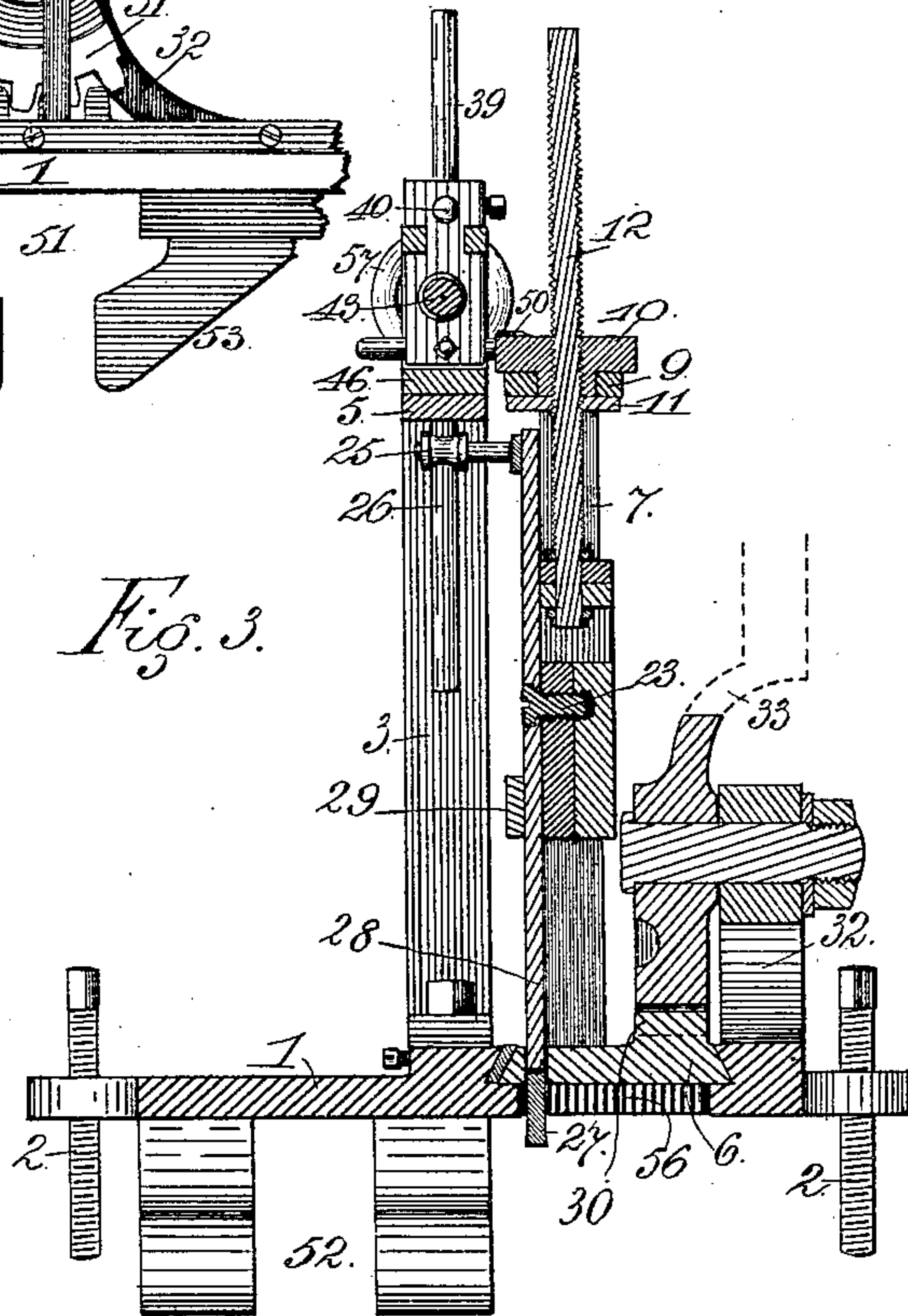
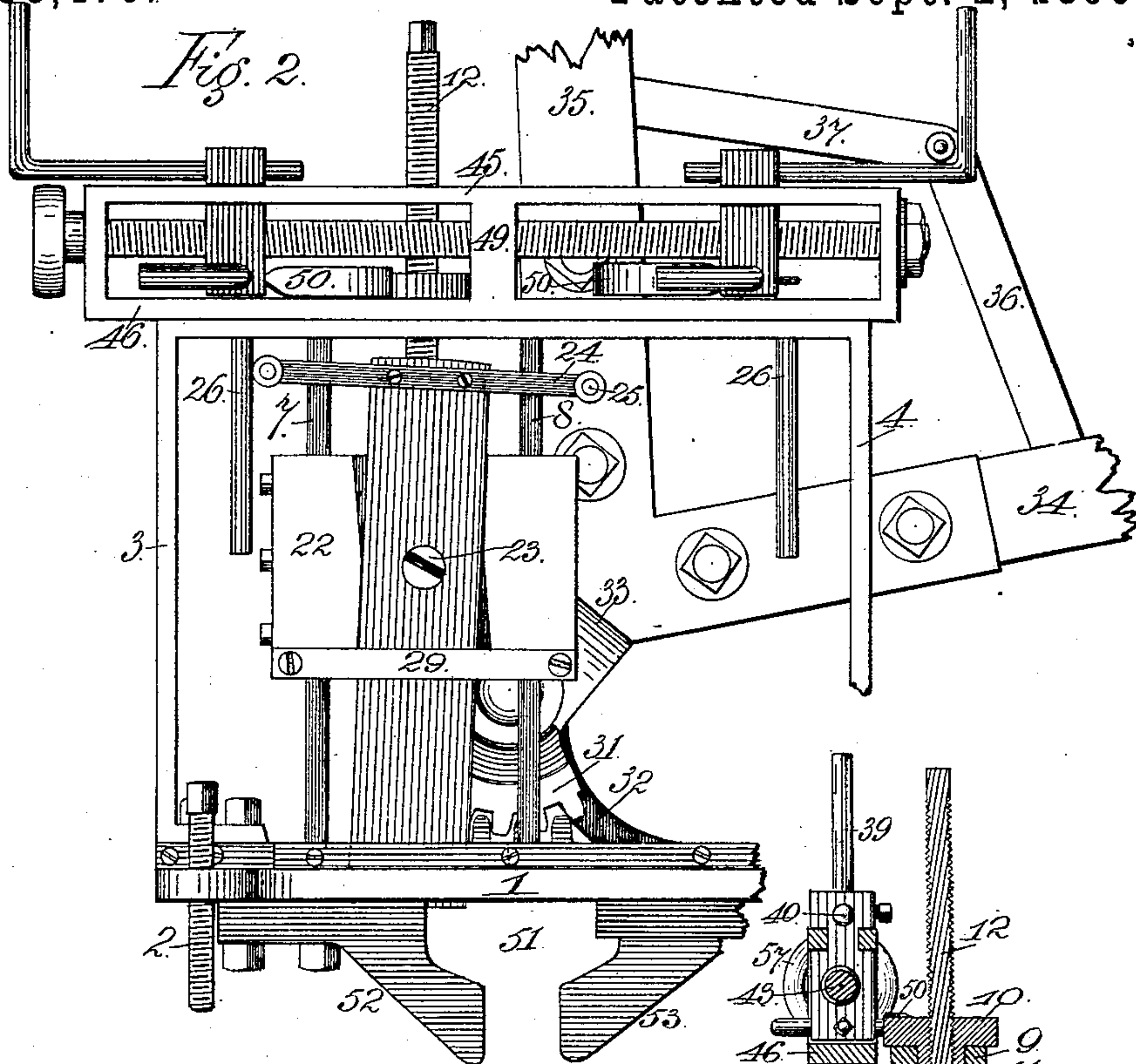
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UNITED STATES PATENT OFFICE.

EUGENE H. ANGELL, OF OURAY, COLORADO.

RAILROAD-RAIL CUTTER.

SPECIFICATION forming part of Letters Patent No. 435,476, dated September 2, 1890.

Application filed October 7, 1889. Serial No. 326,295. (No model.)

To all whom it may concern:

Be it known that I, EUGENE H. ANGELL, a citizen of the United States, residing at Ouray, in the county of Ouray and State of Colorado, have invented certain new and useful Improvements in Railroad-Rail Cutters; 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in railroad-rail cutters of the class designed for use in cutting rails used in constructing the tracks of the various railroads, cable roads, and electric roads, &c., throughout the country.

The advantages of a good device of this kind are apparent to all who are aware of the great amount of rail-cutting necessary in constructing and repairing the various railroads of different kinds now in use.

The object therefore of my invention is to provide a machine of the class stated which shall be of comparatively simple construction, economical in cost, easily operated, reliable and durable, and at the same time accomplish its work with great rapidity as compared with the present tedious method of rail-cutting.

To these ends my invention consists of the features, arrangements, and combinations hereinafter described and claimed.

In the drawings is illustrated an embodiment of my invention, in which—

Figure 1 is a front elevation of my improved device. Fig. 2 is a rear elevation of the same. Fig. 3 is an elevated section taken partly on the line *x x* and partly on the line *y y*, Fig. 1. Fig. 4 is an enlarged top view, partially in elevation and partially in section, the sectional part being taken on the line *z z*, Fig. 1. Fig. 5 is an elevation of the cutting-tool. Figs. 6, 7, 8, and 9 are sections taken on the line *w w*, Fig. 5, illustrating the different methods of inserting the bit in the stock.

In the views, let the reference-numeral 1 indicate a suitable stationary base of any desired dimensions and capable of being screwed to a solid foundation by means of the screw-

bolts 2, one being shown in each corner of the base. About the center of this base on two opposite sides are attached the standards 3 4, connected at the top by the cross-bar 5.

Supported upon the base is the sliding plate 6, Fig. 3, having a reciprocating movement in a suitable track or way formed therefor in the base. This track is undercut at the edges and the plate fashioned to fit therein, thus giving the plate a free sliding movement within its track and at the same time preventing it from being raised vertically therefrom. The base is cut away underneath the sliding plate, as shown at 56, the plate being suitably supported on each side of the opening thus made.

7 and 8 are vertical bars having their lower extremities made fast to the plate 6 and a suitable distance apart, their upper extremities being connected by a suitable cross-bar 9, Fig. 1.

Secured to the center of the cross-bar 9 is the ratchet-wheel 10. This ratchet-wheel is provided with a short hub, which passes through an aperture in the plate 9 and is continuous with and secured to a sort of washer 11, extending underneath the plate. The hub of the ratchet-wheel is adapted to turn freely within the bar which supports it. The wheel, however, is provided with a threaded aperture in its center adapted to receive a screw-bolt 12, which may be of any desired length. At its lower extremity screw-bolt 12 is secured to a block 13, consisting of sections 14 and 15, Fig. 4. Section 15 is under cut at 16 and 17, for the reception of oppositely-disposed parts of section 14. These sections are further secured together by bolts 18, Fig. 1. Block 13 is provided with apertures 19 19, through which pass the guide-bars 7 and 8, respectively. Block 13 is adapted to slide up and down upon guide-bars 7 and 8. This block is also provided with an aperture 20, a wheel, and a recess 21. Aperture 20 affords a means of securing screw-bolt 12 to the block. By turning bolt 12 block 13 is adjusted and held in any desired position upon the guide-bars. Recess 21 is formed in the rear of the block and fashioned to receive the cutting-tool 22, Fig. 2, which is secured to and pivoted upon the block by the screw 23. Re-

cess 21 is somewhat wider than the tool, thus allowing the same a slight lateral movement back and forth upon its pivot, which movement will be referred to hereinafter. The tool is further held in position within its recess by the cross-bar 29, secured to the back of block 13. Tool 22 may be of any desired length. Secured across its top portion is a bar 24, which projects beyond the edges of the tool a short distance on each side. Upon the extremities of this bar are formed short arms or handles 25, extending at right angles to the main portion of the bar and toward the rear of the machine. Arms 25 are adapted to engage hanging bars 26, which are secured to the top cross-bar 5, connecting standards 3 and 4. Hanging bars 26 are of sufficient length or extend downward sufficiently to be always in engaging distance of arms 25 of bar 24, regardless of the elevation of the tool. The lower extremity of the tool extends through a suitable slot in the sliding plate 6, and its projection beneath this plate is controlled by the adjustment of block 13 upon its guide-bars. The tool 22 consists of the bit or cutter 27 and the stock 28. The lower extremity of the stock is provided with a suitable slot cut through the stock, within which slot is tightly secured the removable bit, which is retained therein by the frictional contact of the parts. In Figs. 6, 7, 8, and 9 are shown some of the methods which may be employed for securing the bit in the stock. Upon the front portion of the sliding plate 6 is formed the cogged rack 30, adapted to secure and engage a corresponding segment-rack 31, which is pivoted to a suitable support 32, resting upon and secured to or continuous with the base of the machine. To a lug 33, projecting from the pivotal point of the segment, are secured the branched arms or levers 34 and 35. Extending from arms 34 and 35, at a considerable distance from their lower extremities, are the short arms 36 and 37, which at their contact extremities are rigidly secured together by a bolt or pin 38, which projects from the arms toward the rear of the machine, being adapted to engage upright arms 39 of bars 40, these bars being adjustably secured upon screw-blocks 41 and 42, said blocks having threaded apertures adapted to engage the right-and-left screw-shaft 43. This screw-shaft is journaled within the extremities of a narrow rack 44, secured to and guided upon the cross-bar 5 by means of the upper extremities of the bars 26, extending above the cross-bar 5 and entering a suitable slot in the under side of bar 46. This allows a slight movement to rack 44 by reason of pin 38 coming in contact with bars 39, as before stated. This movement of the rack at each stroke of the lever would move pawl 50 toward the ratchet-wheel; but this is not deemed essential, inasmuch as the pawls may be so adjusted by turning the screw-shaft 43 that the engagement of the ratchet-wheel with the pawl shall accomplish the desired result.

Rack 44 is composed of the two parallel bars 45 and 46, connected by the short-end cross-bars 47 and 48, and the central cross-bars 49. The shaft is journaled and turns freely within the end and central cross-bars, the central bar marking the division between the right and left portions of the screw. Bar 45 is slotted to allow the screw-blocks 41 and 42 freedom of movement back and forth therein. To each screw-block 41 and 42 is secured a pawl 50, adapted to engage alternately the ratchet-wheel 10 as said wheel moves back and forth with its connecting parts.

To the under side of the base of the machine is secured the vise 51, suitably shaped and adapted to receive and hold securely the rail while the bit or cutter is acting upon it. Vise 51 is composed of the stationary part 52 and the adjustable part 53. The adjustable part is moved back and forth by the screw-bolt 54, which is made fast to part 53 and moves within a threaded aperture of a hanger 55, secured to the base of the machine.

In the use of my improved device the rail to be operated upon is placed within the vise 51 and the tool raised or lowered, as may be necessary, to allow the bit or cutter to act properly upon the rail. Levers 34 and 35 are then moved backward and forward, each stroke moving the sliding plate 6, and consequently the tool, in a direction opposite to that in which the lever moves by virtue of the engagement of the segmental rack with the cogs of the plate. Each stroke of the lever brings the ratchet-wheel 10 in contact with the pawl 50, thus turning the wheel and lowering the cutting-bit as much as necessary, depending upon the depth of the bite which the cutting-bit takes out of the rail at each movement across it or at each stroke of the lever. The distance which the ratchet-wheel is turned during each engagement with a pawl is regulated by turning the right-and-left screw-shaft, using hand-pulley 5, thereby causing the screw-blocks to which the pawl is attached to approach or recede from each other, as may be desired. As the tool completes its movement in either direction an arm 25 of bar 24 comes in contact with a stationary hanging bar 26, thus moving the tool upon its pivot and giving it a slight inclination, as shown in Fig. 2, preparatory to its movement in the opposite direction. This inclination of the tool brings the corner of the bit or cutter in contact with the rail, thus giving better results than could be obtained if the tool were rigidly secured in the vertical position.

Having thus described my invention, what I claim is—

1. A tool for cutting railroad-rails, consisting of a stock 28, having a slot cut through it at one extremity, and a bit 27, inserted in the slot of the stock and retained therein by the frictional contact of the parts, the thickness of the bit being equal to or greater than that

of the stock to enable the stock to enter and move within the path cut in the rail by the bit, substantially as described.

2. In a device for cutting railroad-rails, a tool 22, consisting of a stock 28, having a slot cut through it at one extremity and provided with grooves on each side of the slot, and a bit 27, inserted in the slot of the stock, the bit being provided with tongues on its opposite edges to fit within the grooves on each side of the slot, the thickness of the bit being equal to or greater than that of the stock, substantially as described.

3. In a device for cutting railroad-rails, the combination of the tool 22, composed of a stock 28 and a removable bit 27, a base 1, a sliding plate 6, moving within a suitable track or way in the base, vertical guide-bars 7 and 8, secured to plate 6, a cross-bar 9, connecting the guide-bars, a ratchet-wheel 10, secured to the bar 9, a block 13, adapted to move vertically upon bars 7 and 8 and to which block the tool 22 is secured, a screw 12, passing through ratchet-wheel 10 and connected at its lower extremity with the block 13, suitable pawls adapted to engage ratchet-wheel 10, and suitable means for imparting a reciprocating movement to tool 22 and its connections, substantially as described.

4. In a device for cutting railroad-rails, a suitable base 1, a plate 6, adapted to slide within a track formed in the base, a cutting-tool 22, a suitable frame secured to plate 6 and adapted to support the cutting-tool, and suitable means for imparting a reciprocating movement to plate 6, substantially as described.

5. In a device for cutting railroad-rails, a base 1, a plate 6, adapted to slide within a track formed in the base and provided with a cogged rack or way 30, a cutting-tool secured to plate 6 and adjustable vertically therein, and a segment 31, pivoted to the base and adapted to move back and forth in rack 30, thereby imparting a reciprocating movement to the sliding plate and its connections, substantially as described.

6. In a device for cutting railroad-rails, a base 1, provided with a suitable vise underneath for holding the rail, a plate adapted to slide within the base, a tool 22, composed of a stock and a removable cutting-bit, a vertical frame secured to the sliding plate, a block 13, adjustable vertically upon said frame and

provided with a recess 21 somewhat wider than the cutting-tool, said tool being pivoted within said recess, a ratchet-wheel secured to the top of the frame, a rack 44, suitably supported upon standards 3 and 4, connected with the base, a screw-shaft journaled within rack 44 and composed of a right-and-left screw 43, two screw-blocks, one on the right and the other on the left portion of the screw and a pawl 50, attached to each screw-block and adapted to engage the ratchet-wheel 10, and means for imparting to plate 6 and its connections a reciprocating movement, substantially as described.

7. In a device for cutting railroad-rails, a base provided with a vise for the rail, a plate 6, adapted to slide within a suitable track formed in the base, a vertical frame secured to the plate, a block 13, adapted to move vertically upon such frame and provided with a recess 21 somewhat wider than the cutting-tool, a cutting-tool composed of a stock and a removable bit, said tool being pivoted within recess 21 of block 13, a bar 24, secured to the upper portion of the tool and provided with arms 25, hanging bars 26, attached to a cross-bar 5, said bar being supported by standards connected with the base of the machine, bars 26 being adapted to engage arms 25, a ratchet-wheel secured to the top of the vertical frame, suitable pawls for engaging the ratchet-wheel, a screw 12, passing through a suitable aperture in the ratchet-wheel and having its lower extremity connected with block 13, and means for imparting a reciprocating movement to the sliding plate and its attachments, substantially as described.

8. In a device for cutting railroad-rails, a tool 22, consisting of a stock 28, having a slot cut through it at one extremity and provided with tongues on each side of the slot, and a bit 27, inserted in the slot of the stock, the bit being grooved on its opposite edges to correspond with the engaging tongues on each side of the slot in the stock and held therein by frictional contact, the thickness of the bit being equal to or greater than that of the stock, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EUGENE H. ANGELL.

Witnesses:

WM. KOWALSKI,
WM. MCCONNELL.