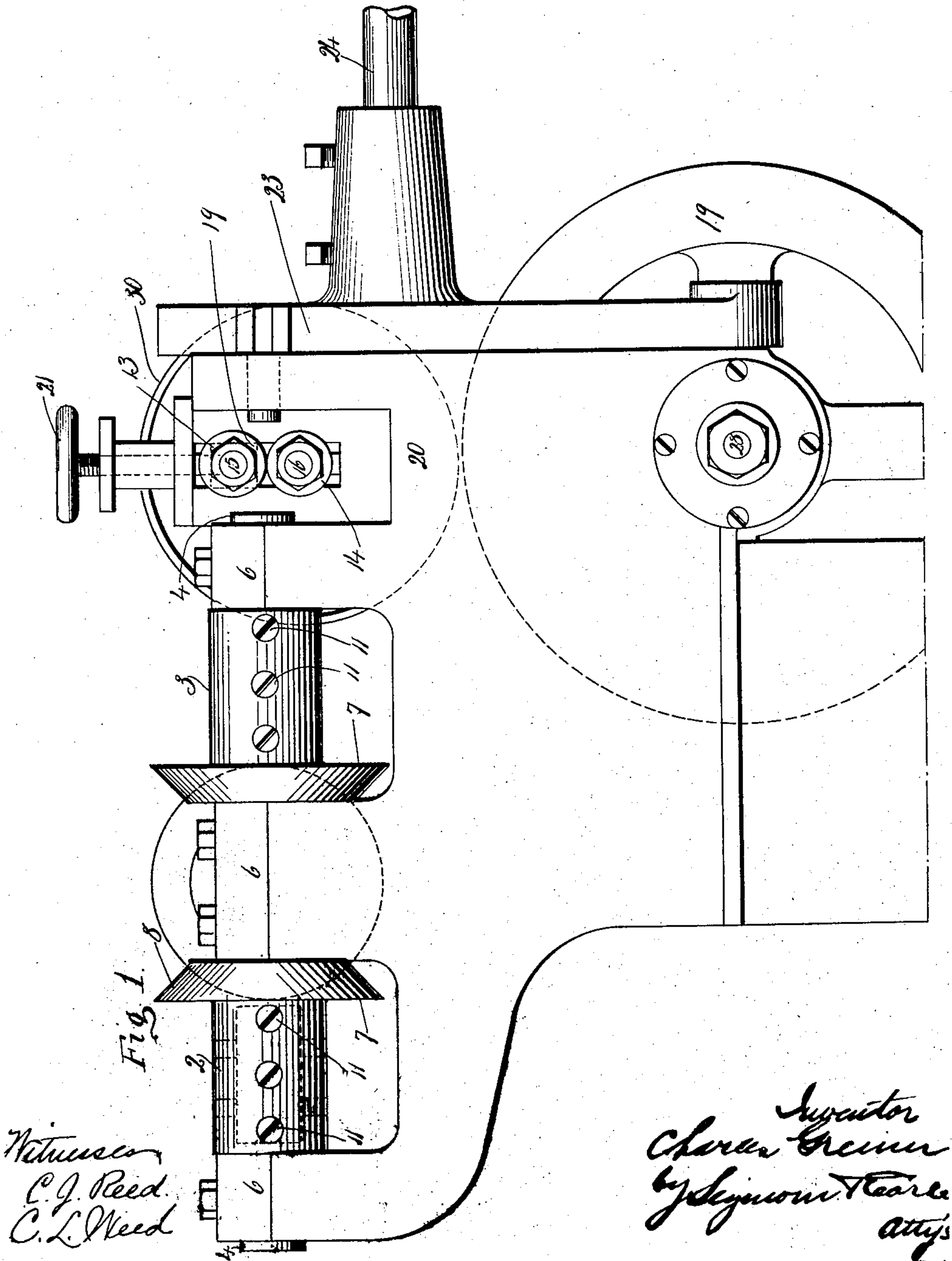


C. GREINER.
MACHINE FOR STRAIGHTENING AND CUTTING WIRE.
APPLICATION FILED JAN. 3, 1910.

998,087.

Patented July 18, 1911.

3 SHEETS-SHEET 1.



Witnesses
C. J. Reed
C. L. Weed

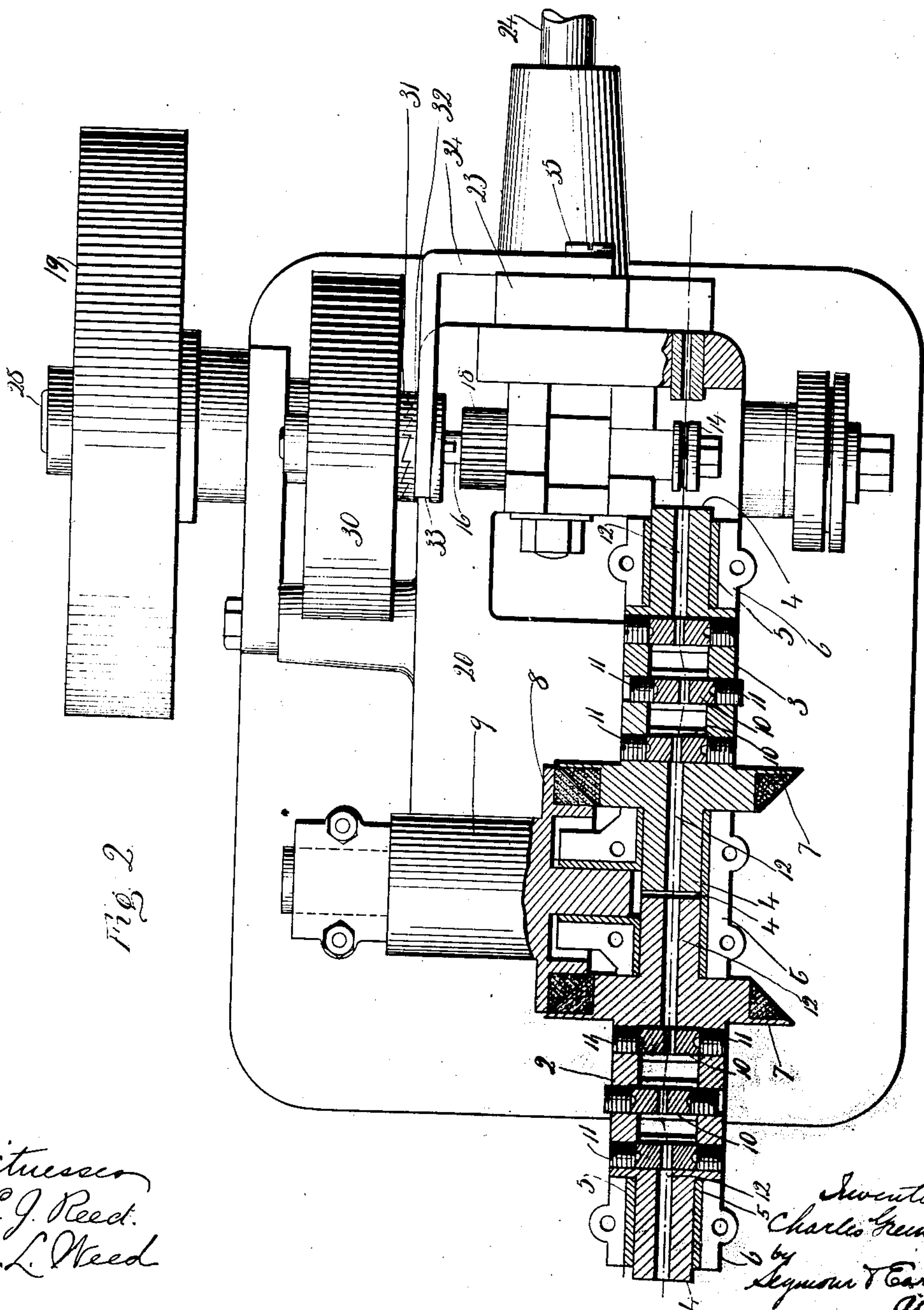
Inventor
Charles Greiner
by Seymour Teare
attys

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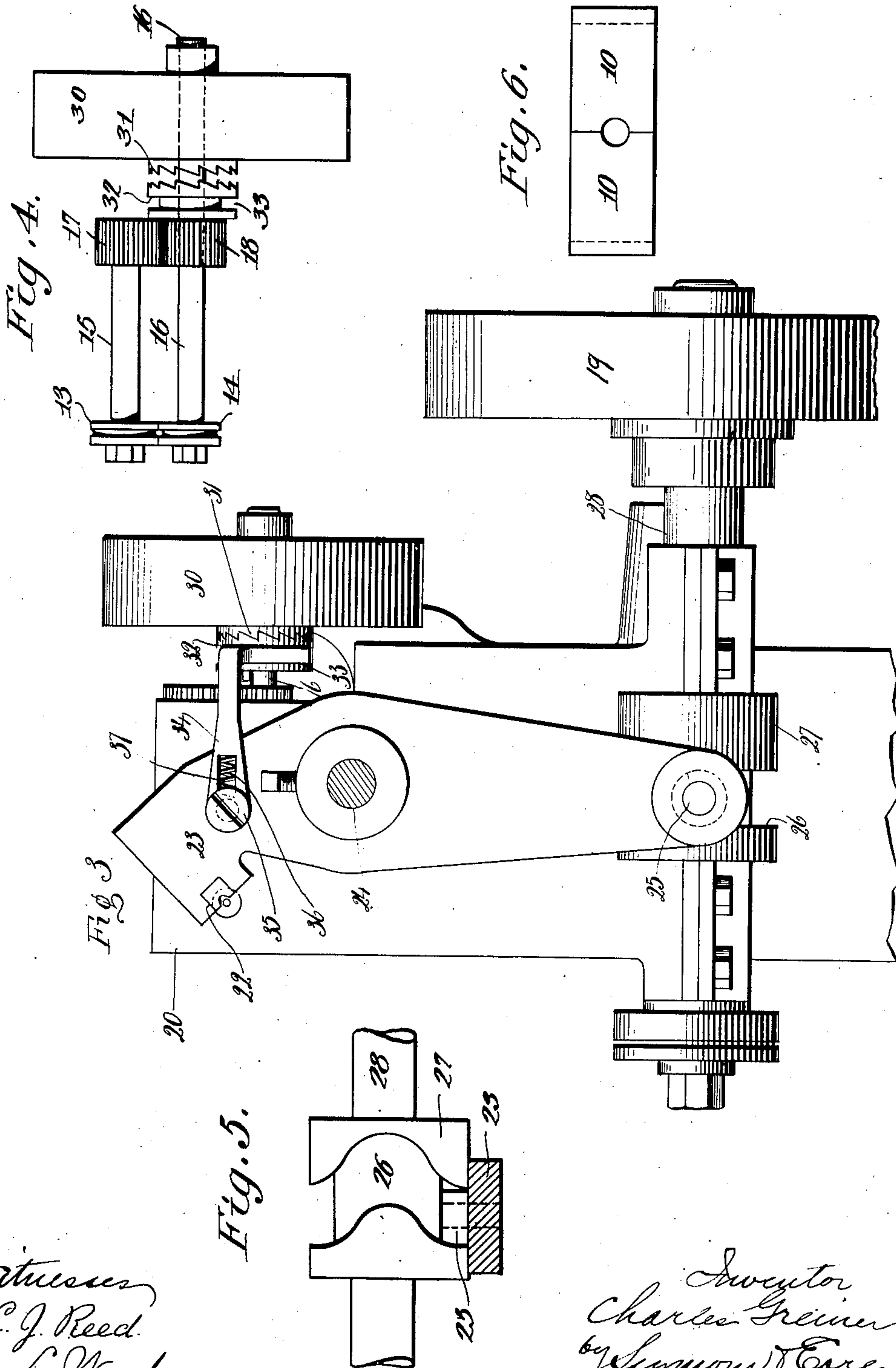
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3 SHEETS—SHEET 3.



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C. J. Reed.
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UNITED STATES PATENT OFFICE.

CHARLES GREINER, OF NEW HAVEN, CONNECTICUT.

MACHINE FOR STRAIGHTENING AND CUTTING WIRE.

998,087.

Specification of Letters Patent.

Patented July 18, 1911.

Application filed January 3, 1910. Serial No. 536,161.

To all whom it may concern:

Be it known that I, CHARLES GREINER, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Machines for Straightening and Cutting Wire; and I do hereby declare the following, when taken in connection with the accompanying drawings and the figures of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1 a broken view in front elevation of an automatic wire-straightening and wire-cutting machine constructed in accordance with my invention. Fig. 2 a view thereof partly in plan, and partly in horizontal section. Fig. 3 a broken view of the machine in end elevation looking from right to left. Fig. 4 a detached view in elevation of the feed-mechanism. Fig. 5 a view partly in elevation and partly in section of the cut-off cam. Fig. 6 a detached view in inside elevation of a pair of the dies.

In carrying out my invention as herein shown, I employ two boxes 2 and 3, arranged in line with each other, and each having two trunnions 4 running in bushings 5 mounted in journal-bearings 6 of any approved construction. Each box is provided, as shown, with a beveled friction wheel 7, the said wheels being respectively driven in opposite directions by a beveled friction wheel 8 driven by a pulley 9. The friction wheels 7 and 8 may however be replaced, if desired, by beveled gears. The substitution of gears or of belts for the friction wheels 7 and 8 is so obvious that I have deemed it unnecessary to show or describe these alternative methods of imparting opposite rotation to the boxes 2 and 3.

Each of the boxes 2 and 3 is provided with three sets of dies 10 held in place by screw plugs 11, the outer pairs of dies being arranged in line with each other, while the middle pairs of dies are set out of that line, as clearly shown in Fig. 2. These dies are of ordinary construction and adapted in the usual manner to be reversed end for end. As the boxes 2 and 3, and hence the dies 10 carried by them, are rotated in opposite directions, the tendency of the dies of one box to twist the wire in one direction is exactly balanced by the tendency of the dies in the

other box to twist the wire in the opposite direction, the result being that the wire is not twisted in either direction but emerges from the machine without twisting. This is an important feature of my invention, as the dies of wire-straightening machines as heretofore constructed have been rotated in one and the same direction, causing the wire to emerge from the machine in a twisted condition, disqualifying it for use, for example, in helical springs. Furthermore the employment of boxes rotating in opposite directions secures such a hold upon the wire that its tail-end is controlled and straightened by the machine so that I avoid the waste entailed by the use of the old machines from which the tail-end of the wire of a length practically corresponding to the length of the machine had to be withdrawn and was virtually wasted. My machine also avoids the danger to the workmen resulting from the whirling in one direction of the tail-end of the wire; since in my machine, the tendency to twist being balanced, the tail-end of the wire remains perfectly quiet as it is drawn into the machine.

For admitting the wire to the dies 10, the trunnions 4 of the boxes 2 and 3 are provided with central passages 12 all located in line, and also passing through the friction wheels 7. The wire is drawn through the continuous passage thus produced by means of feed-rolls 13 and 14 mounted upon the outer ends of shafts 15 and 16 the inner ends of which are furnished with pinions 17 and 18, the upper shaft being journaled in a vertically movable box 19 mounted in the machine-frame 20 and adjusted by means of a hand wheel 21.

For cutting off the wire, I employ a cutter 22 mounted in the upper end of a heavy cut-off lever 23 hung on a stud 24 and having its lower end furnished with a roller 25 entering a suitable cam-groove 26 in a cut-off cam 27 mounted on a shaft 28 driven by a pulley 29. Now to momentarily take off the power from the feed-rolls 13 and 14 just as the cutter 22 is operated, I employ a clutch interposed between the shaft 16 of the feed-roll 14 and the driving pulley 30 which runs loosely on the inner end of the shaft 16. As shown, this clutch consists of a toothed-member 31 carried by the pulley 30, and a corresponding toothed member 32 splined upon the shaft 16 so as

to be laterally movable thereupon and furnished with a groove 33 for the reception of the forked end of a lever 34 bent between its ends into angular form and secured by a screw pivot 35 to the upper end of the cut-off lever 23. The said parts are constructed, arranged and timed so that just before the cutter 22 begins to cut off the wire, the lever 34 will have drawn the member 33 of the clutch sufficiently away from the member 31 thereof to break connection between them, whereby the power of the pulley 30 will be cut off from the shaft 16 which will stop, as well as the shaft 15 which is driven by it through the pinions 17 and 18. The feed-rolls 13 and 14 will therefore be suspended in their feeding action just before the wire is cut off. When the wire has been cut off, the cam-path 26 of the cut-off cam 27 quickly swings the cut-off lever 23 in the opposite direction, whereby the lever 34' acts to throw the clutch-members 31 and 32 into engagement and so reapplies the power of the pulley 30 to the feed-rolls 13 and 14. In this manner I provide for momentarily suspending the action of the feed-rolls during the cutting off of the wire and so prevent that defacing of the wire which inevitably takes place when the feed rolls are continuously rotated as in prior machines, since when the feed-rolls are continuously rotated they will slip momentarily upon the wire when the same is being cut off and deface it. I wish to point out that although I momentarily suspend the rotation of the feed-rolls, neither of them is moved at this time away from the wire which they continue to support during its cutting operation, whereby the tendency of the wire to spring back is avoided.

As a provision for the safety of the clutch-members 31 and 32, I form a recess 36 in the lever 34 and interpose a helical spring 37 between the bottom of the recess and the adjacent face of the screw-pivot 35 so that in case the high points of the teeth of the clutch-members collide instead of meshing into each other, the lever 34 will yield and prevent breakage.

I do not limit myself to the employment of a toothed clutch such as shown, as some

other form of clutch, such as a friction clutch, will answer the same purpose.

I claim:—

1. In an automatic machine for straightening wire, the combination with two die-boxes each provided with a beveled wheel, of straightening dies mounted in the said die-boxes, a beveled wheel interposed between the beveled wheels before mentioned for rotating the die-boxes in opposite directions, feed-rolls for drawing the wire through the said dies, and a cutter for the straightened wire.

2. In an automatic machine for straightening wire, the combination with two die-boxes arranged in line with each other and each provided near their adjacent ends with a beveled friction-wheel, of a beveled friction-wheel interposed between the two wheels before mentioned and driving them in opposite directions, straightening dies mounted in the said boxes, feed rolls for drawing the wire through the said dies, and a cutter for cutting off the straightened wire.

3. In an automatic machine for straightening wire, the combination with the dies thereof, of feed-rolls for drawing the wire through the dies, a cutter for cutting off the wire, and a clutch-mechanism for momentarily suspending the rotation of the feed-rolls during the operation of the cutter without moving either roll away from the wire, whereby the rolls are utilized at the moment of cutting the wire for supporting the same.

4. In an automatic machine for straightening and cutting off wire, the combination with the dies thereof, of feed-rolls, a cutter, a cut-off lever, a clutch controlling the transmission of power to the feed-rolls, and connection between the said cut-off lever and the clutch, whereby as the lever moves to bring the cutter into play, it operates the clutch to take the power off the feed-rolls.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

CHARLES GREINER.

Witnesses:

CHARLES GREINER, Jr.,
LEWIS HAWTHORNE.