

No. 780,314.

PATENTED JAN. 17, 1905.

L. T. WEISS.
RACK CUTTING APPARATUS.
APPLICATION FILED DEC. 28, 1903.

2 SHEETS—SHEET 1.

Fig. 1.

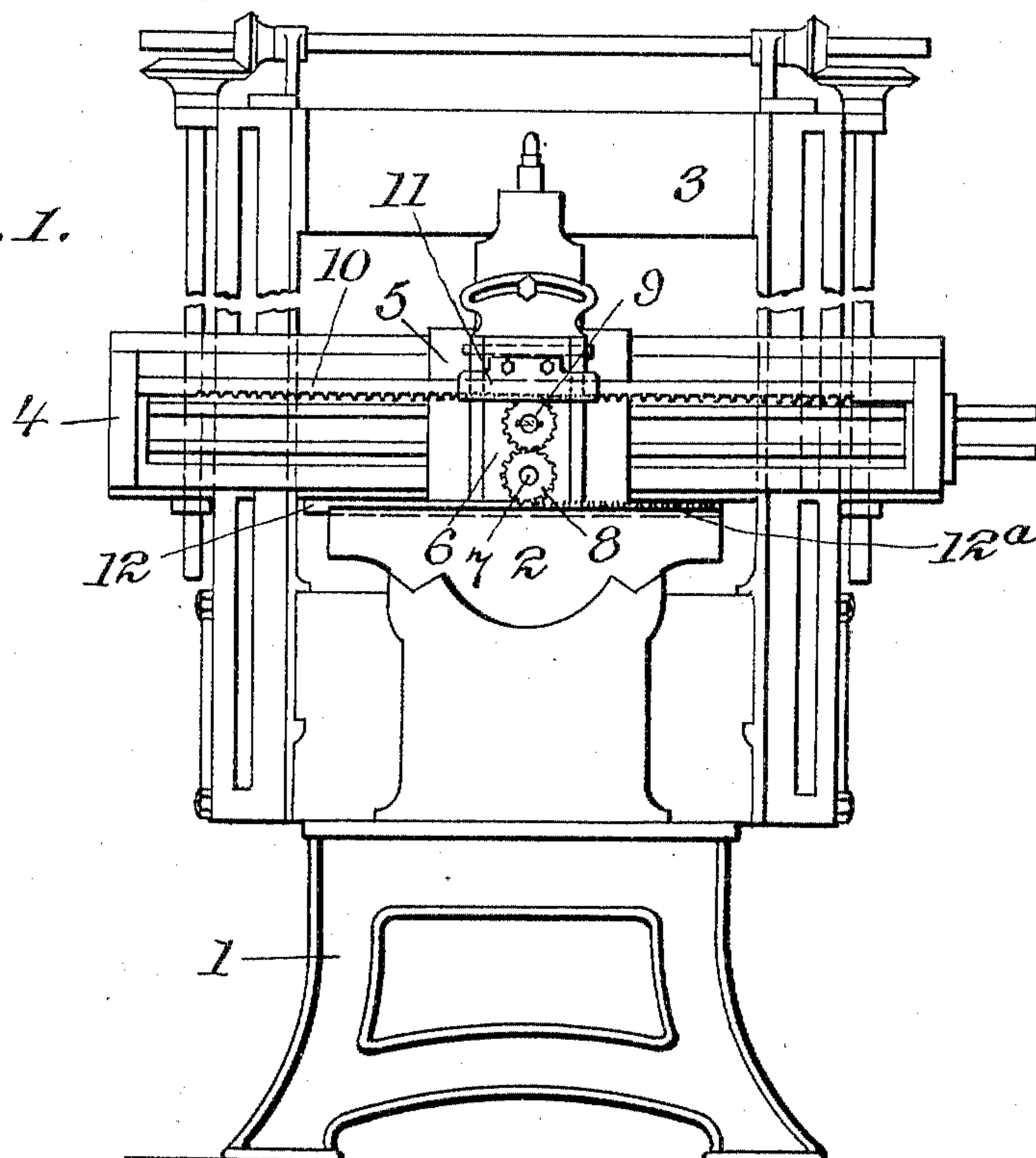
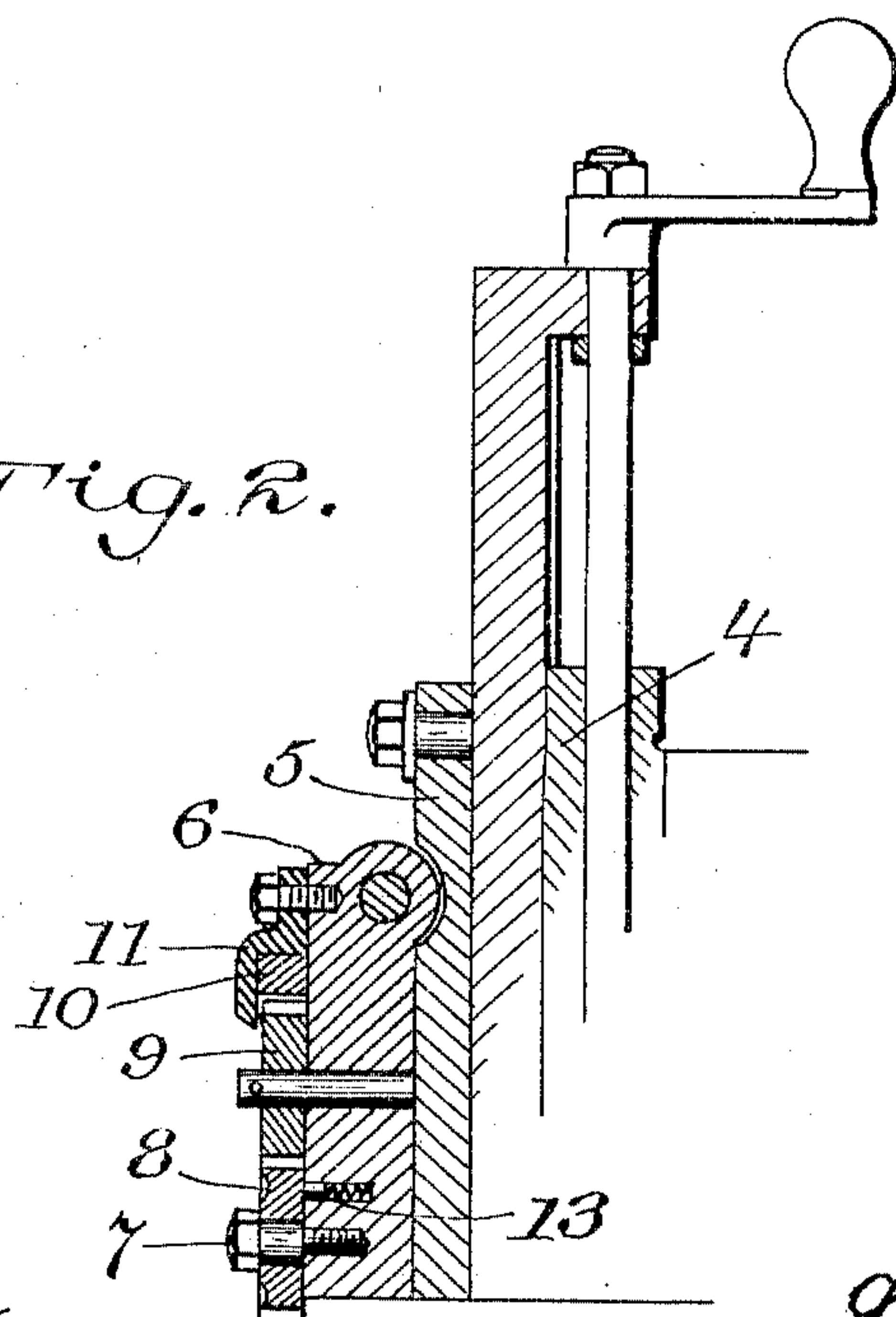


Fig. 2.



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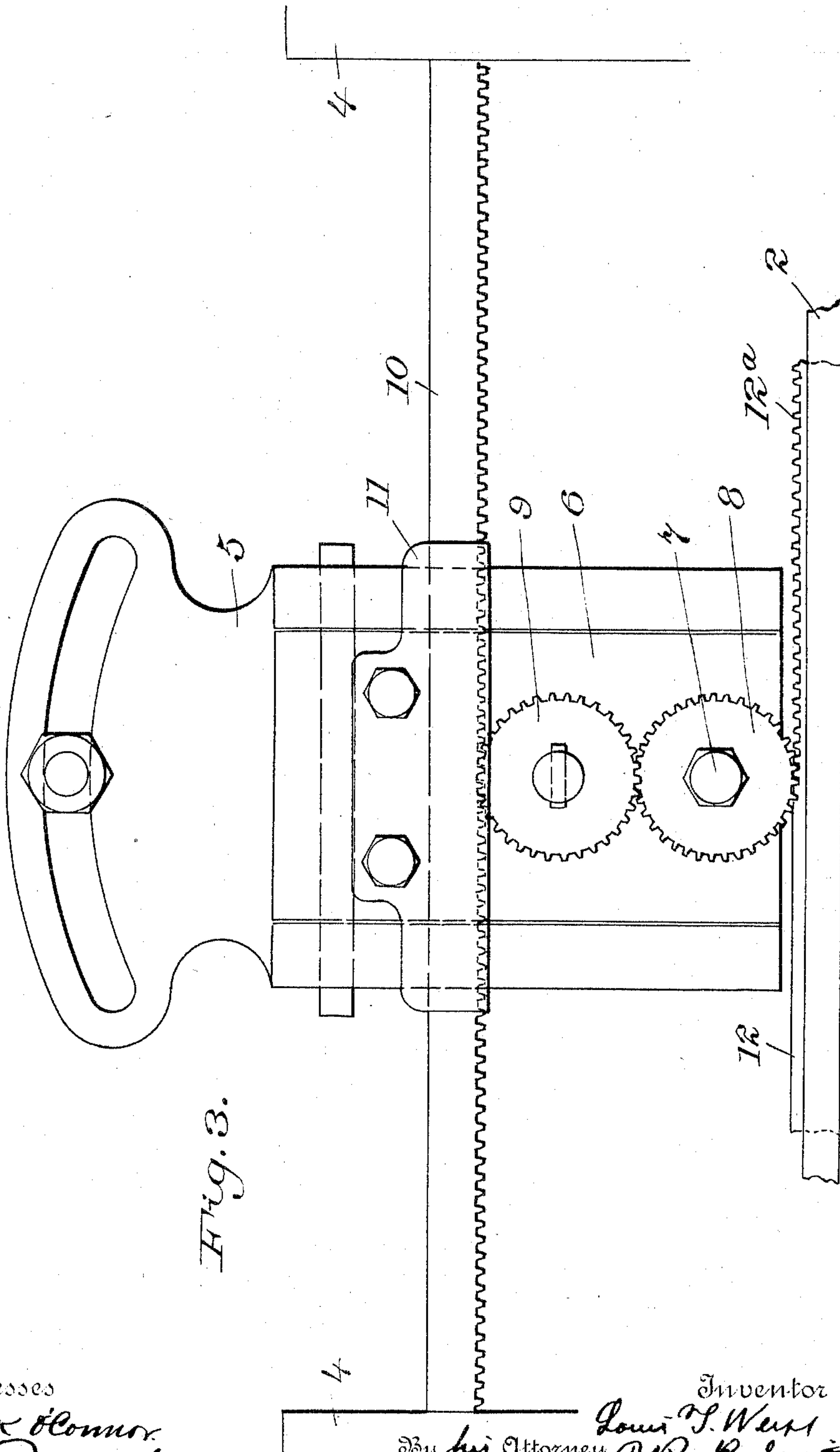
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UNITED STATES PATENT OFFICE.

LOUIS T. WEISS, OF NEW YORK, N. Y., ASSIGNOR TO WILLIAM M. SPEER,
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RACK-CUTTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 780,314, dated January 17, 1905.

Application filed December 28, 1903. Serial No. 186,785.

To all whom it may concern:

Be it known that I, LOUIS T. WEISS, a citizen of the United States of America, and a resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Rack-Cutting Apparatus, of which the following is a specification.

My invention relates in general to machine-tools; and more specifically it consists of an improved attachment for the ordinary form of planing-machine having a reciprocating bed by the use of which said planing-machines may be employed to cut toothed racks.

One form of my invention is illustrated in the accompanying two sheets of drawings, in which—

Figure 1 is an end elevation of a planer with parts broken away, showing my invention applied thereto. Fig. 2 is an enlarged detail cross-section of the planer cross-head and tool-carrier. Fig. 3 is an enlarged detail elevation of the tool-carrier, my attachment thereto, and a rack in the process of being cut.

Throughout the drawings like reference-figures indicate like parts.

Fig. 1 shows an ordinary form of planer having the base 1, the reciprocating bed 2, the housing 3, and the vertically-movable cross-head 4, mounted on said housing. On the cross-head is mounted the slide 5, capable of horizontal reciprocation thereon and carrying the swinging tool-holder 6. On this tool-holder is the stud-shaft 7, on which is freely journaled the gear-cutter 8, having radial cutting-teeth corresponding in shape to the profile of the gear-teeth with which the rack to be cut is to coöperate. Also journaled on the tool-carrier so as to freely revolve is the idler-gear 9, which meshes with the gear-cutter 8. The master-rack 10, which corresponds to the racks which are to be cut, is mounted in the cross-head 4 so as to prevent any endwise movement of said rack and has its teeth meshing in the idler-gear 9. Preferably this rack is guided by the clamp 11, which is bolted to the tool-carrier.

12 represents a piece of material clamped to the reciprocating bed 2 of the planer and

in which a number of teeth 12^a have already been cut.

In order to prevent chattering of the gear-cutter 8, I may employ a small spring-plunger 13, located in the tool-carrier and pressing against the inner upper face of the gear-cutter, as shown in Fig. 2.

The operation of my invention is as follows: A considerable number of pieces 12, which are to be formed into racks, may be clamped to the bed 2 of the planer in any ordinary manner, and the tool-carrier being properly adjusted so that the cutter will first engage one end of said pieces the planer is started up. It is evident that as the work-pieces are carried back and forth under the cutter the same will cut them out transversely and as the regular feed motion of the planer sends the tool-carrier along the cross-head transversely of the planer-bed the idler-gear 9 will roll on the master-rack 10, giving the gear-cutter 8 a similar rotation in the opposite direction, so that the radial teeth of said gear-cutter will be presented to the work-pieces in a manner to cut out a series of racks each of which will be the counterpart of the master-rack 10.

The advantages of my invention comprise its cheapness and ready adaptability to any ordinary form of planer and the facility with which large numbers of racks may be cut at one time, thereby producing a great economy of operation.

It is evident that various changes would be made in the details of the construction above described when the invention is applied to planers of slightly-different construction, but the principle of operation would remain the same. It is also evident that other forms of connecting gearing between the rotary cutter and the master-rack might be employed and the location and manner of mounting said rack might be varied so long as the master-rack is held stationary against endwise movement and the rotary cutter is given a rotation exactly corresponding to that which it would have if rolled along the face of the master-rack, such rotation being on an axis parallel to the line of travel of the reciprocating bed.

While I have shown and described the cutter as stationary and the bed carrying the work as reciprocating, it is evident that the invention is not limited to this exact construction, but might be applied to machines otherwise arranged. So long as the tool has a reciprocating motion relative to the work it does not matter which is stationary and which moves so far as the principle of my invention is concerned.

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

1. In combination with a planing-machine having the usual reciprocating bed and transversely-fed tool-holder, of a gear-tooth cutter having radial cutting-teeth journaled on said tool-carrier on an axis parallel to the line of travel of the bed, and means for rotating said cutter as the tool-carrier is fed across the bed of the planer, said means comprising a toothed master-rack held against endwise movement, and gearing between the same and the gear-cutter.

2. In combination with a planing-machine having the usual reciprocating bed and transversely-fed tool-holder, of a gear-tooth cutter having radial cutting-teeth journaled on said tool-carrier on an axis parallel to the line of travel of the bed, and means for rotating said cutter as the tool-carrier is fed across the bed of the planer, said means comprising a toothed master-rack rigidly fastened on the planer cross-head, and a gear-wheel loosely journaled on the tool-carrier and meshing with said master-rack and with said gear-cutter.

3. In combination with a planing-machine having the usual reciprocating bed and transversely-fed tool-holder, of a gear-tooth cutter having radial cutting-teeth journaled on said tool-carrier on an axis parallel to the line of travel of the bed, and means for rotating said cutter as the tool-carrier is fed across the bed of the planer, said means comprising a toothed master-rack rigidly fastened on the planer cross-head, and a gear-wheel loosely journaled on the tool-carrier and meshing with said master-rack and with said gear-cutter, together with a guide for said master-rack on said tool-carrier.

4. In combination with a planing-machine having the usual reciprocating bed and transversely-fed tool-holder, of a gear-tooth cutter having radial cutting-teeth journaled on said tool-carrier on an axis parallel to the line of travel of the bed, and means for rotating said cutter as the tool-carrier is fed across the bed of the planer, said means comprising a toothed master-rack rigidly fastened on the planer cross-head and a gear-wheel loosely journaled on the tool-carrier and meshing with said master-rack and with said gear-cutter, together with a spring-pressed device mounted in a tool-carrier and bearing on the upper under side of the gear-cutter.

Signed at New York this 13th day of November, 1903.

LOUIS T. WEISS.

Witnesses:

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A. PARKER-SMITH.