

No. 740,814.

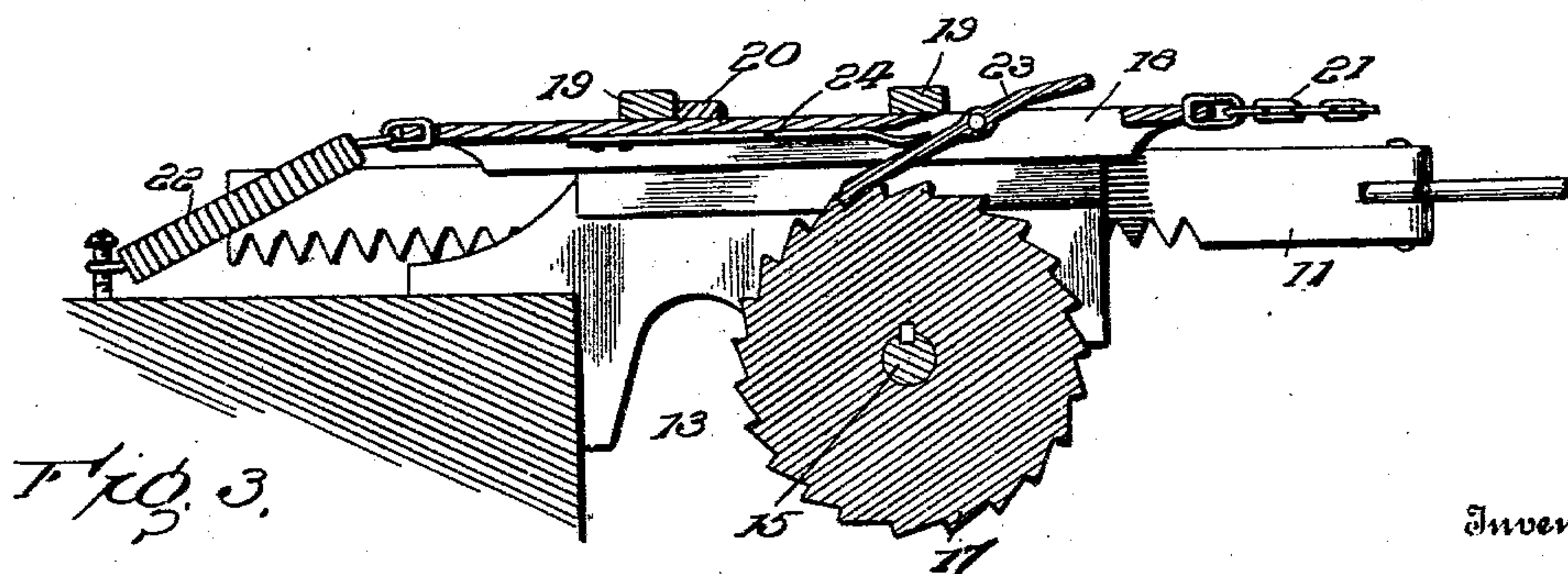
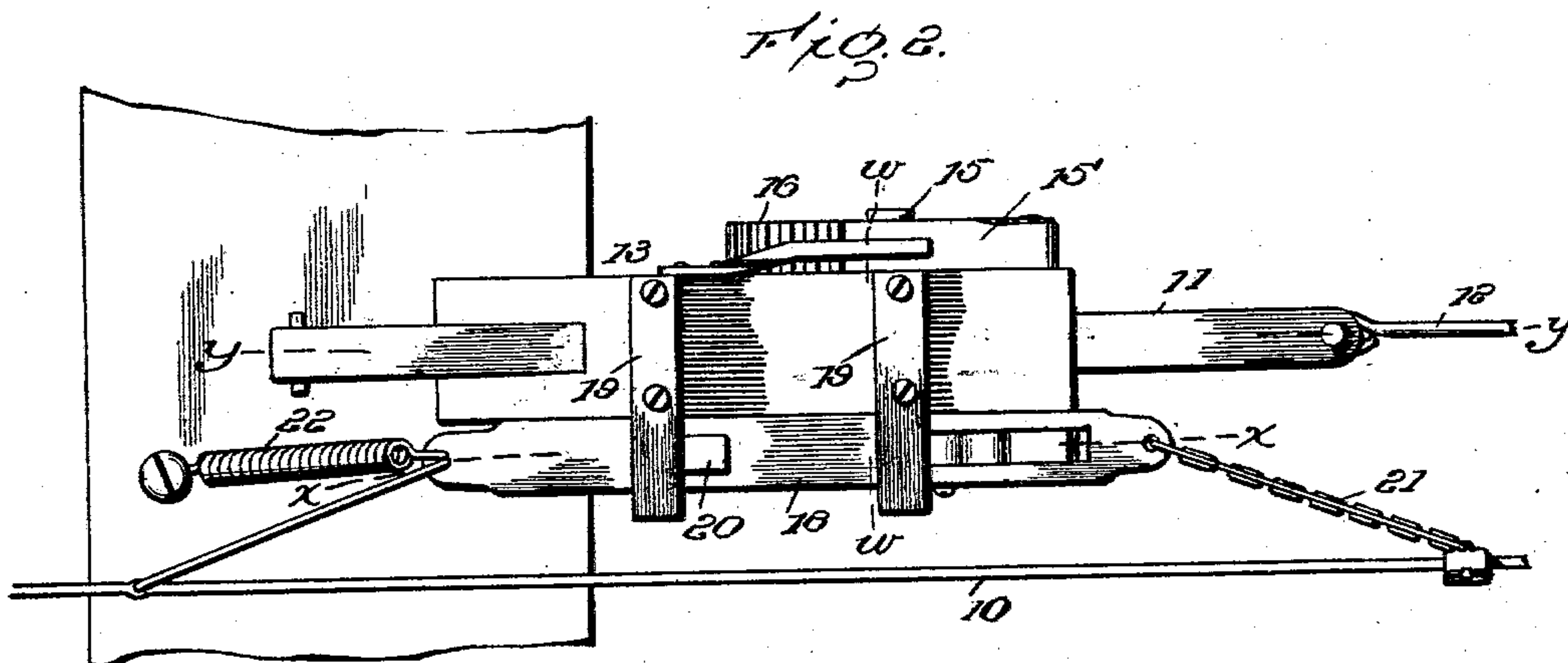
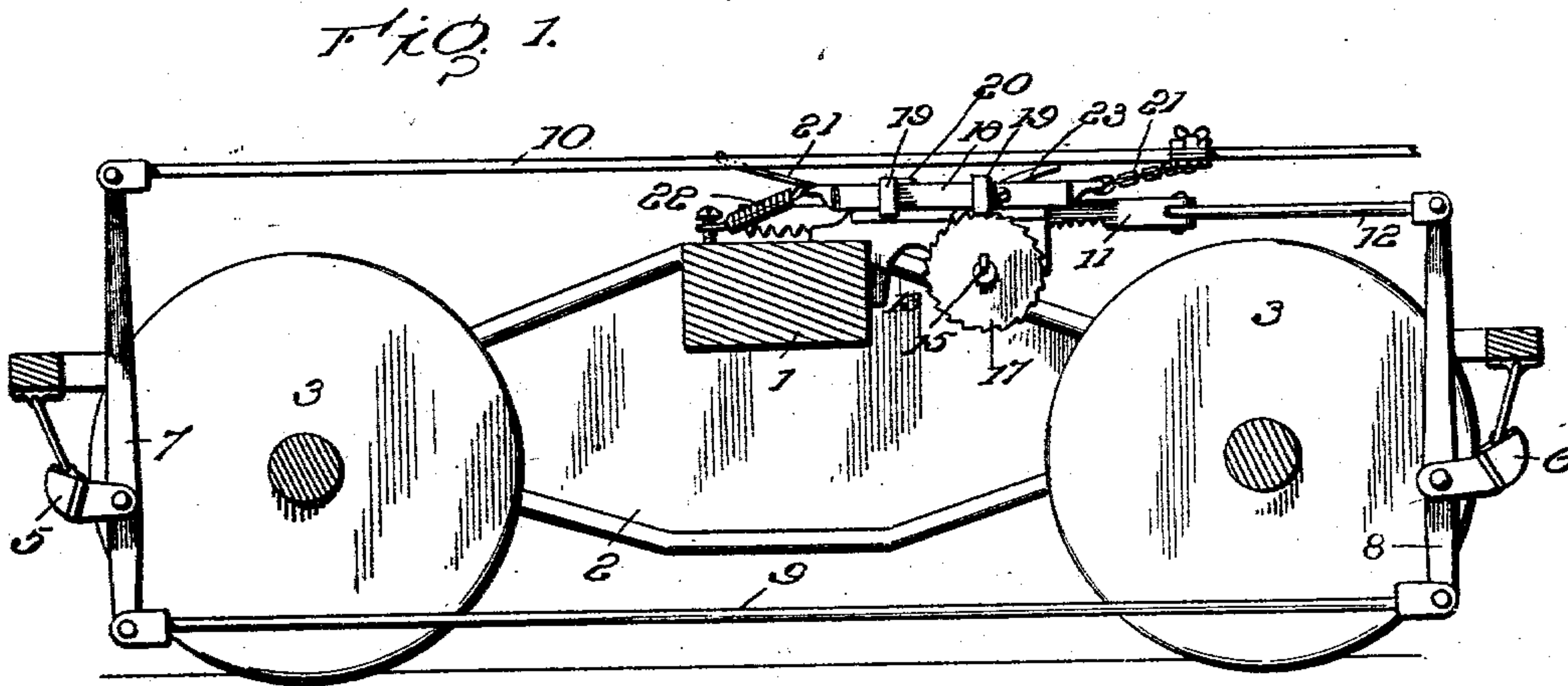
PATENTED OCT. 6, 1903.

E. E. CROWELL.  
SLACK ADJUSTER FOR BRAKES.

APPLICATION FILED FEB. 28, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

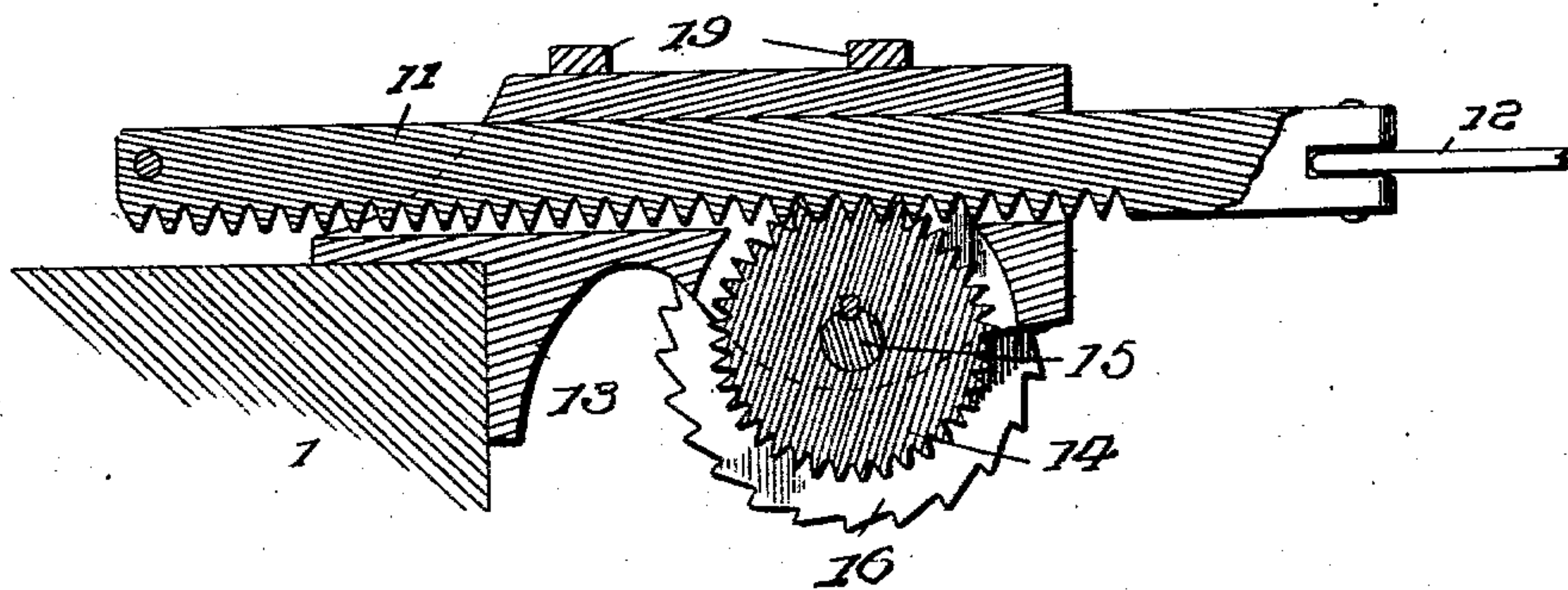


Fig. 5.

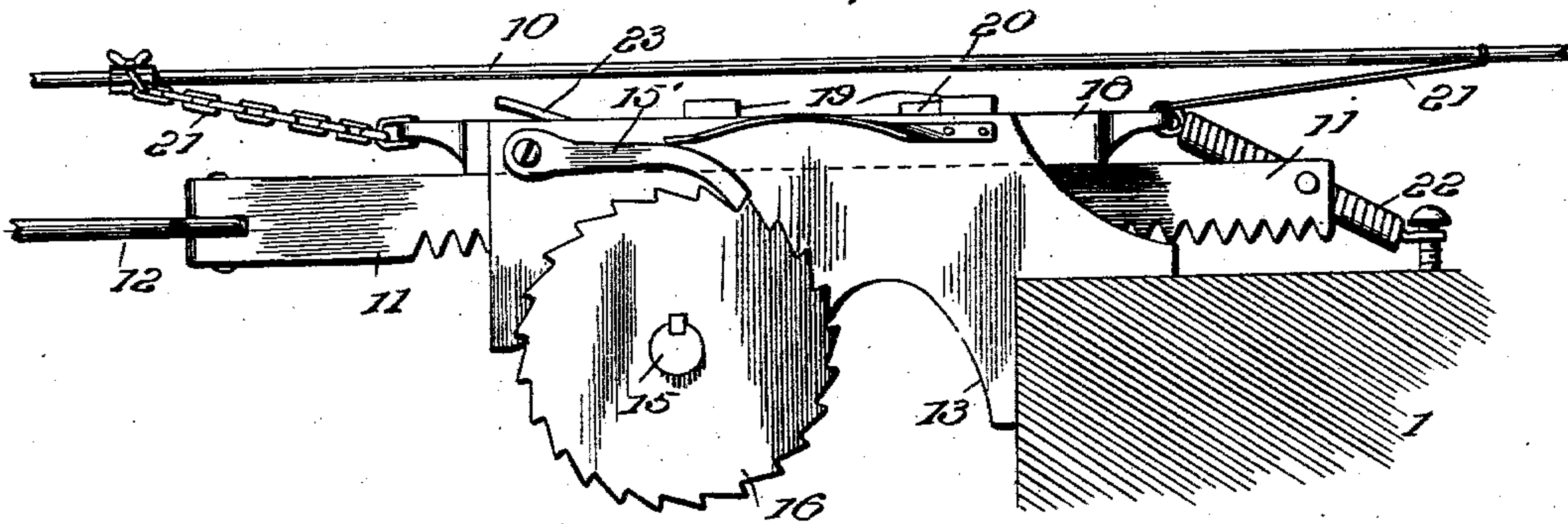


Fig. 6.

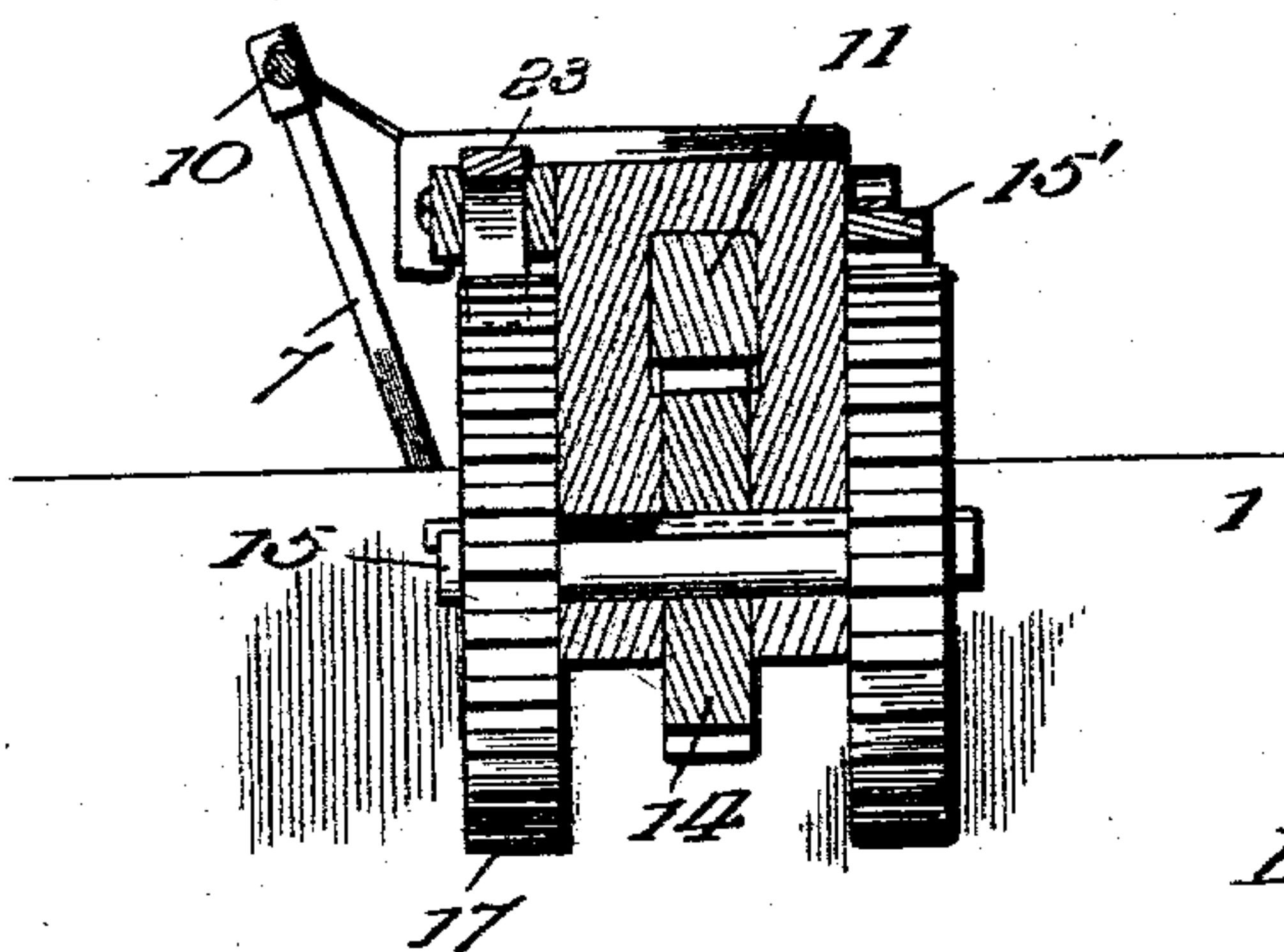
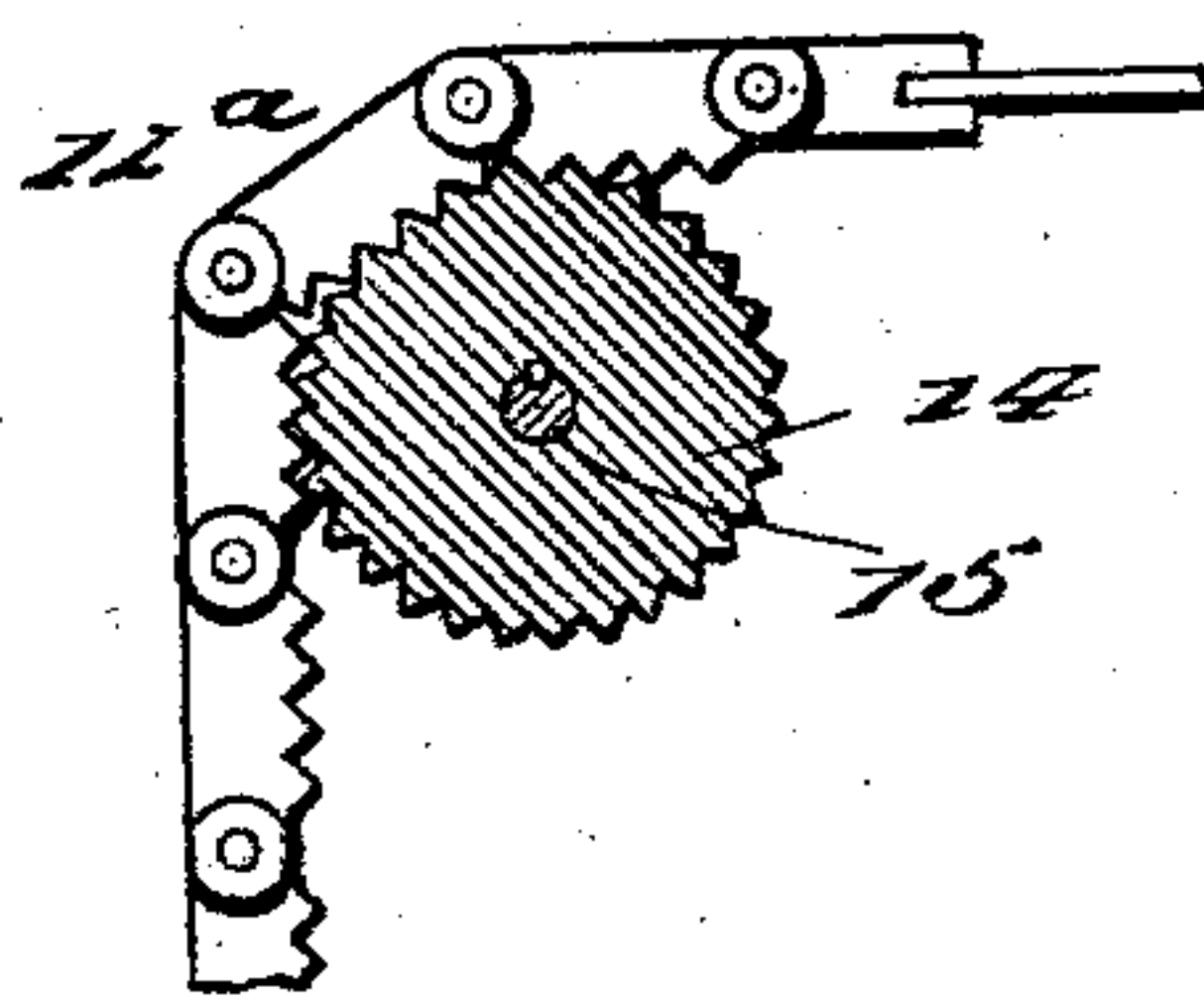


Fig. 7.



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# UNITED STATES PATENT OFFICE.

EDWARD E. CROWELL, OF WATERVILLE, MAINE, ASSIGNOR OF ONE-HALF  
TO JAMES H. KELLEHER, OF PORTLAND, MAINE.

## SLACK-ADJUSTER FOR BRAKES.

SPECIFICATION forming part of Letters Patent No. 740,814, dated October 6, 1903.

Application filed February 28, 1903. Serial No. 145,546. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD E. CROWELL, a citizen of the United States, residing at Waterville, in the county of Kennebec and State of Maine, have invented certain new and useful Improvements in Slack-Adjusters for Brakes, of which the following is a specification.

Brakes designed for rolling-stock, such as railway-cars, have the brake-beams of a truck connected for simultaneous action. Hence the wear upon the brake-shoes results in considerable slack or lost motion of the brake-setting connections.

This invention provides novel means for automatically taking up the slack as the brake-shoes wear, thereby maintaining the connections in a given condition with reference to the brake-beams, with the result that the brakes are positively set at all times upon a substantially like movement of the brake-setting device, such as the staff, lever, or other contrivance.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result, reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of a car-truck provided with a brake mechanism embodying the invention. Fig. 2 is a plan view of the take-up mechanism on a larger scale. Fig. 3 is a longitudinal section on the line X X of Fig. 2. Fig. 4 is a longitudinal section on the line Y Y of Fig. 2. Fig. 5 is a view of the take-up mechanism as seen from the reverse side of Fig. 1. Fig. 6 is a cross-section on the line W W of Fig. 2. Fig. 7 is a modification showing a flexible compensating bar.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Inasmuch as the invention is chiefly de-

signed for railway-brakes, it is shown in connection with a car-truck, although it is to be understood that the take-up mechanism may be employed in connection with a system of brakes of any type embodying a plurality of brake-beams and levers, so as to automatically compensate for wear of the brake-shoes. The truck illustrated is of ordinary construction and comprises bolster 1, frame 2, and wheels 3.

The system of brakes comprises brake-beams 5 and 6, hung in any convenient way and provided with brake-shoes of any type for coöperation with the wheels 3 in the accustomed way. Brake-levers 7 and 8 are pivotally connected between their ends to the respective brake-beams 5 and 6, and corresponding ends are joined by a rod 9 or like connection to cause simultaneous operation of the brake-beams when the brake-setting device is operated. An operating-rod 10 is connected to the opposite end of one of the brake-levers, as 7, and is adapted to have the power applied thereto for setting the brakes when the same are to be applied. The end of the other brake-lever, as 8, is connected with a compensating bar 11 by means of a rod or like part 12.

The take-up mechanism is applied to a frame 13, which is firmly attached to a convenient portion of the truck-frame, as the bolster 1, said frame consisting, essentially, of a casting or metal structure. The compensating bar 11 is slidably mounted in the frame 13, so as to move longitudinally therein, and is provided with teeth which are in meshing relation with a gear-wheel 14, secured to or forming a part of shaft 15, journaled transversely of frame 13 and provided at its ends with ratchet-wheels 16 and 17. A take-up bar 18 is slidably mounted with reference to the frame 13 and is movable parallel with the compensating bar and is preferably held in place by guides 19, which are bolted or otherwise detachably connected to the frame 13 to admit of ready removal of the bar 18 when required for any purpose. A stop 20 is applied to or forms a part of bar 18 and is arranged to play between the guides 19, whereby said take-up bar has a limited longitudinal movement. The take-up bar is connected at opposite ends with the operat-



ing-rod 10 by flexible connections 21, which admit of independent movement of the operating-rod without attracting the take-up bar under normal conditions. A spring 22 connects one end of take-up bar 18 with the bolster or other convenient portion of the frame, so as to hold said bar 18 in a normal position. A pawl 23 is applied to the take-up bar and is adapted to cooperate with the teeth of the ratchet-wheel 17. This pawl 23 is held in engagement with the teeth of the ratchet-wheel by means of spring 24 and is provided with an extension to form a finger-piece, whereby the pawl may be operated by hand at any time to effect disengagement thereof from ratchet-wheel 17. Under normal conditions a pull upon rod 10 to set the brakes will not effect or cause movement of bar 18. When the brake-shoes become worn or other parts of the system loosened through wear or other cause, so as to produce slack in the brake-setting connections, the rod 10 when operated receives a greater movement and carries the take-up bar with it for a part of its movement corresponding to the resulting slack incident to wear, with the result that the pawl 23 rides upon the teeth of ratchet-wheel 17. When rod 10 is released to permit unsetting of the brakes, the take-up bar 18 is returned to a normal position by action of the spring 22, thereby causing the shaft 15 to turn and move the compensating bar 11 a distance to take up the aforementioned slack. To prevent backward rotation of shaft 15', a detent-pawl 15 is provided and cooperates with the teeth of the ratchet-wheel 16.

While it is preferred to have compensating bar 11 rigid, yet in some instances it may be desirable and of advantage to have it flexible, so as to turn down out of the way. A construction of this kind is shown in Fig. 7, in which the bar 11<sup>a</sup> is composed of jointed parts or sections.

Having thus described the invention, what is claimed as new is—

1. In a brake system, and in combination with cooperating brake-levers, an automatic take-up mechanism comprising a compensating and a take-up bar slidably mounted in parallel relation and connected with the respective brake-levers, a shaft, means for preventing backward rotation of said shaft, a gear-wheel secured to the shaft and in meshing relation with teeth of said compensating bar, a ratchet-wheel secured to said shaft, and a pawl applied to the take-up bar for co-

operation with said ratchet-wheel, substantially as set forth.

2. In a brake-system, and in combination with cooperating brake-levers, an automatic take-up mechanism comprising a compensating and a take-up bar slidably mounted in parallel relation, means connecting the compensating bar with one of the brake-levers, an operating-rod connected to the other brake-lever, loose connections between opposite ends of the take-up bar and the operating-rod to admit of the latter having determinate movement under normal conditions without imparting any movement to the take-up bar, a shaft, means for preventing backward rotation of said shaft, a gear-wheel applied to the shaft and in mesh with teeth of the compensating bar, a ratchet-wheel secured to said shaft, and a pawl applied to the take-up bar to effect rotation of said shaft under abnormal conditions to automatically take up any slack in the brake connections, substantially as specified.

3. An automatic take-up mechanism for brake systems, the same comprising a frame, slidably-mounted compensating and take-up bars, a shaft, means for preventing backward rotation of the said shaft, a gear-wheel secured to said shaft and in mesh with teeth of the compensating bar, a ratchet-wheel applied to said shaft, a pawl carried by the take-up bar and cooperating with said ratchet-wheel, and a spring exerting force upon said take-up bar, substantially as set forth.

4. A take-up mechanism for a system of brakes, the same comprising a frame, a shaft journaled to the frame and provided with a ratchet-wheel and a gear-wheel, means for preventing backward rotation of said shaft, a toothed compensating bar longitudinally movable in the frame and in mesh with said gear-wheel, guides applied to the frame, a take-up bar slidably mounted in said guides, a stop applied to said take-up bar and adapted to operate between the guides to limit the longitudinal movement of said take-up bar, and a pawl carried by the take-up bar and in mesh with said ratchet-wheel, substantially as set forth.

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

EDWARD E. CROWELL. [L. S.]

Witnesses:

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