

No. 865,873.

PATENTED SEPT. 10, 1907.

E. L. CUDABACK.
HARROW.

APPLICATION FILED SEPT. 27, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

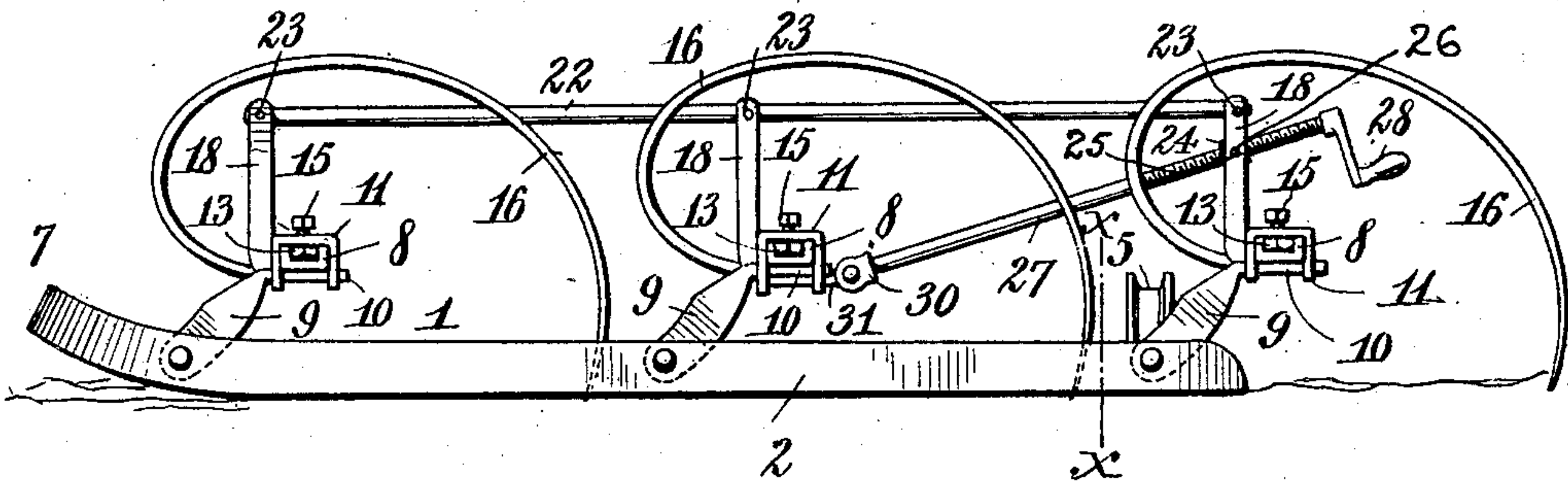
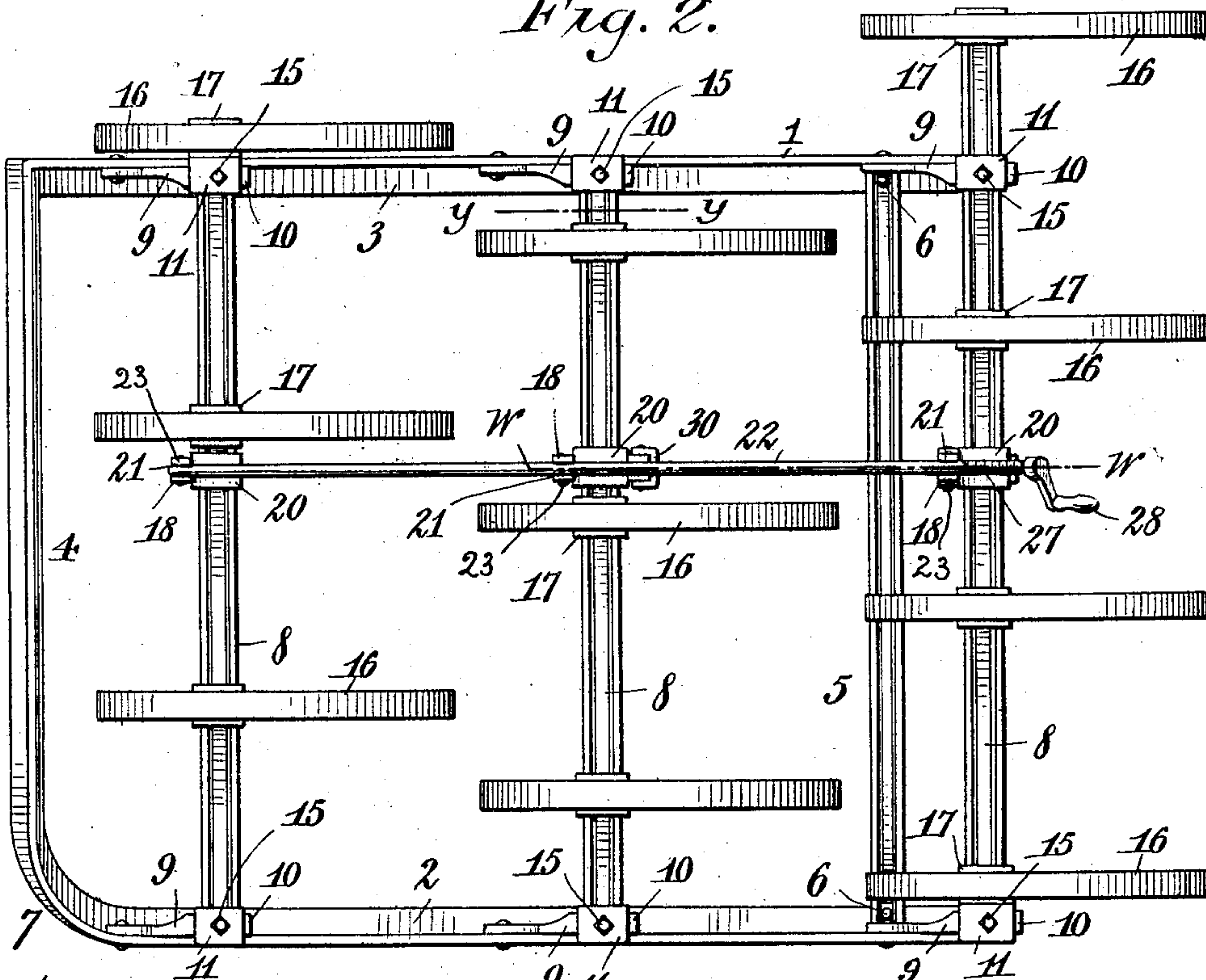


Fig. 2.



Witnesses:

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2 SHEETS—SHEET 2.

Fig. 3.

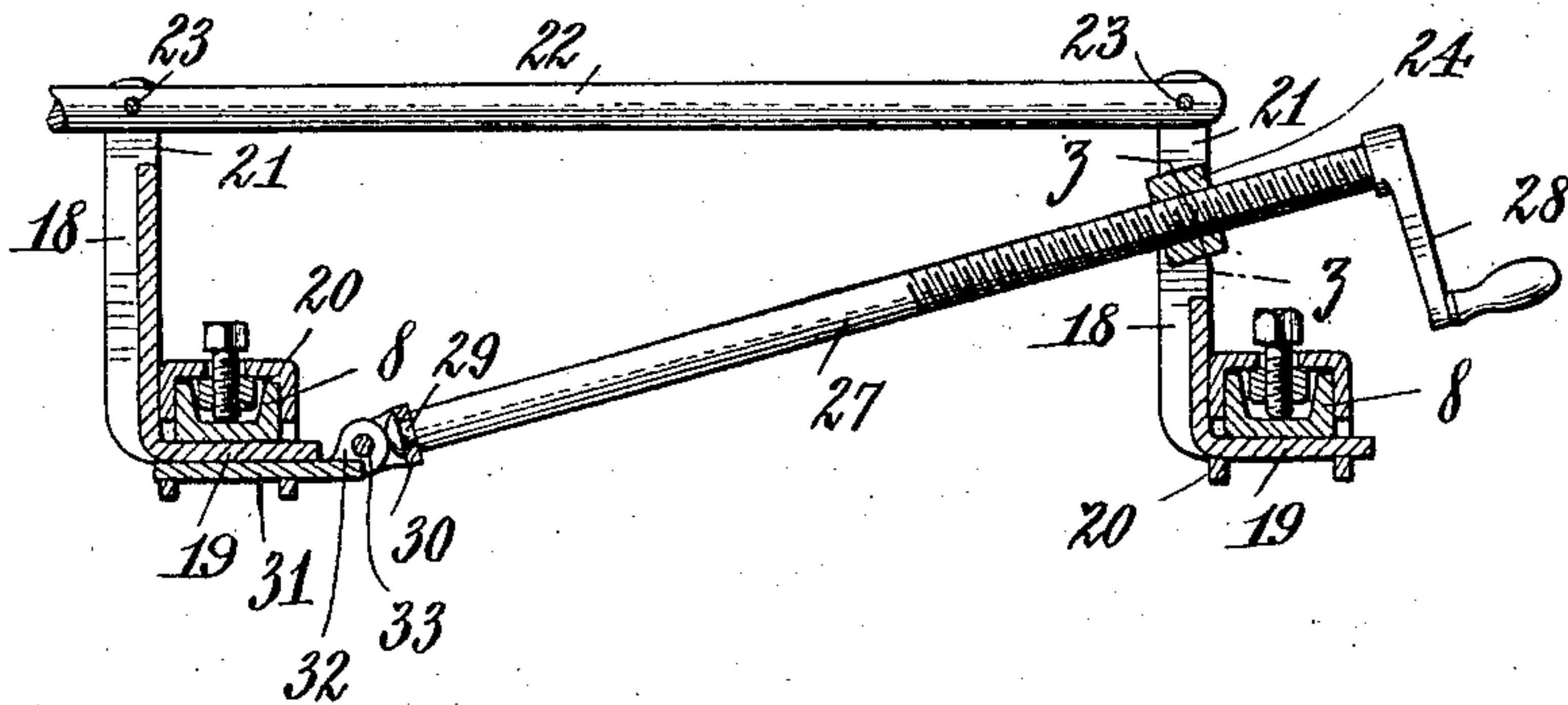


Fig. 4.

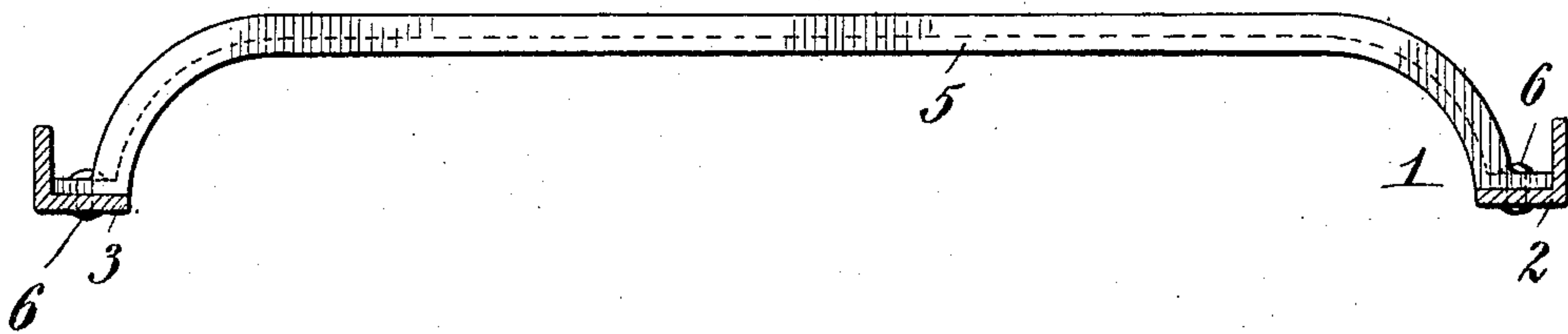


Fig. 6.

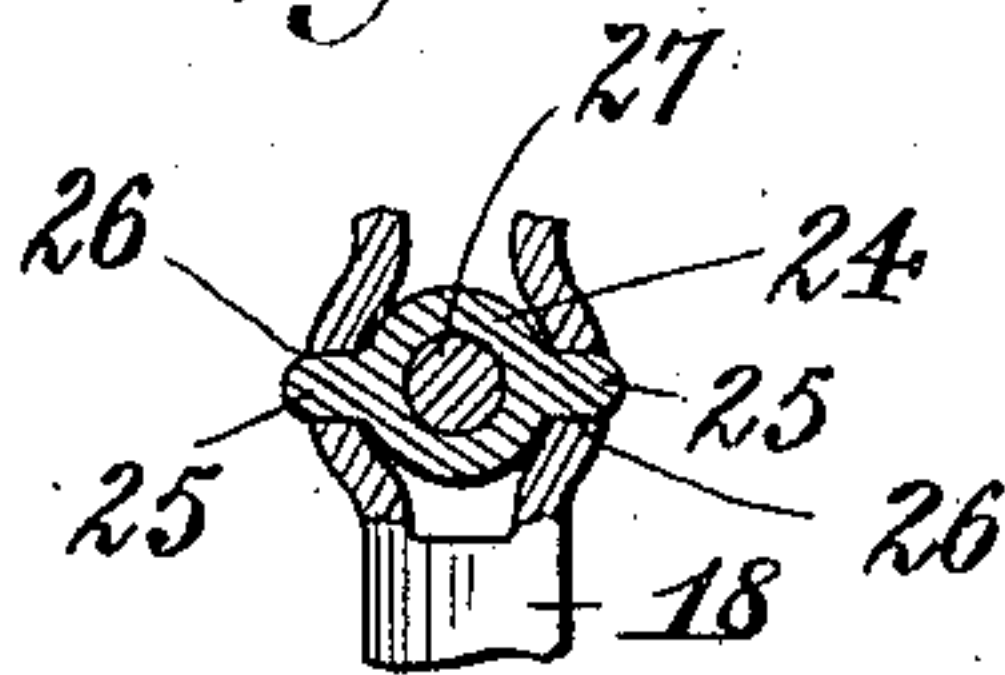


Fig. 5.

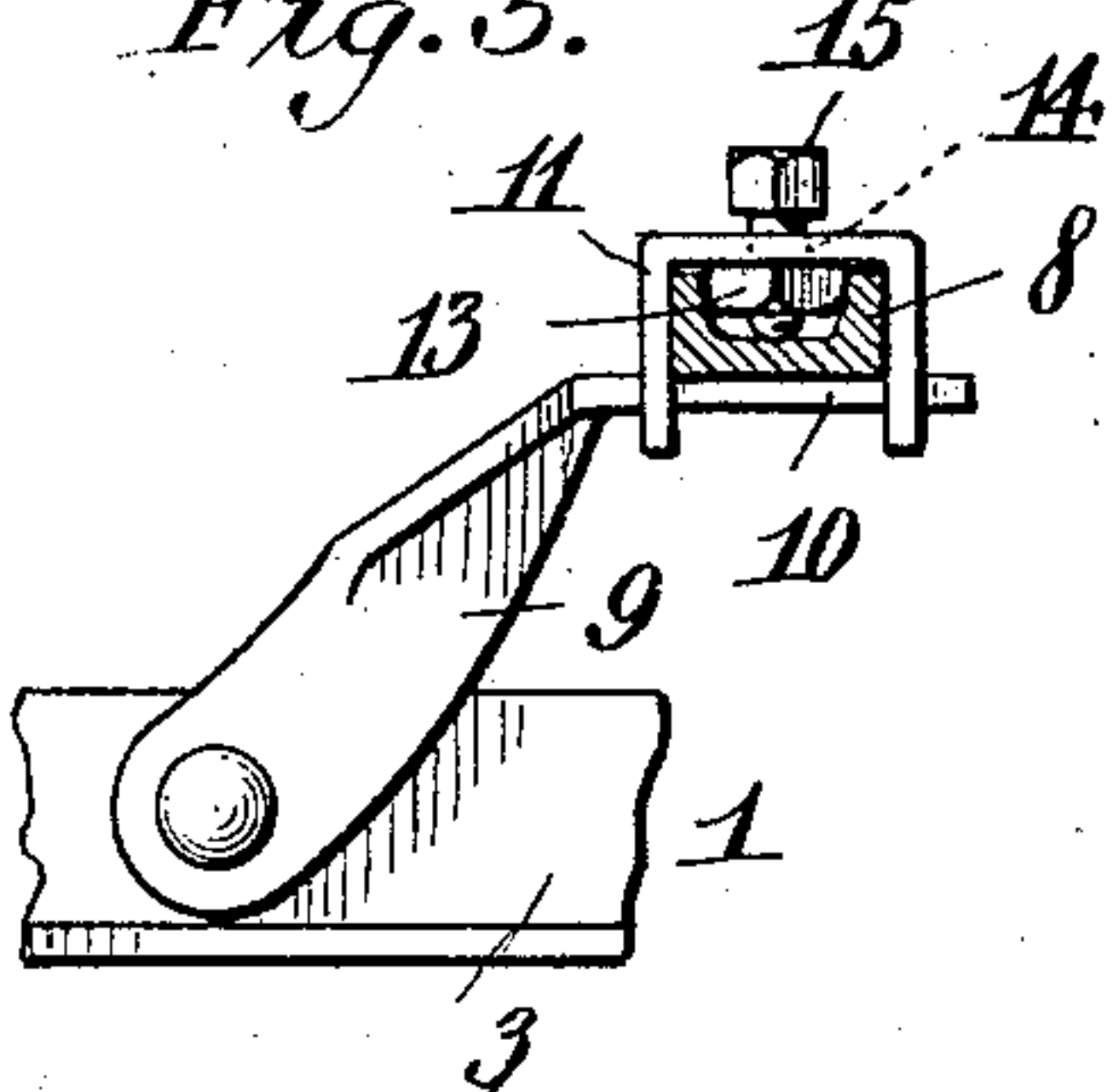


Fig. 8.

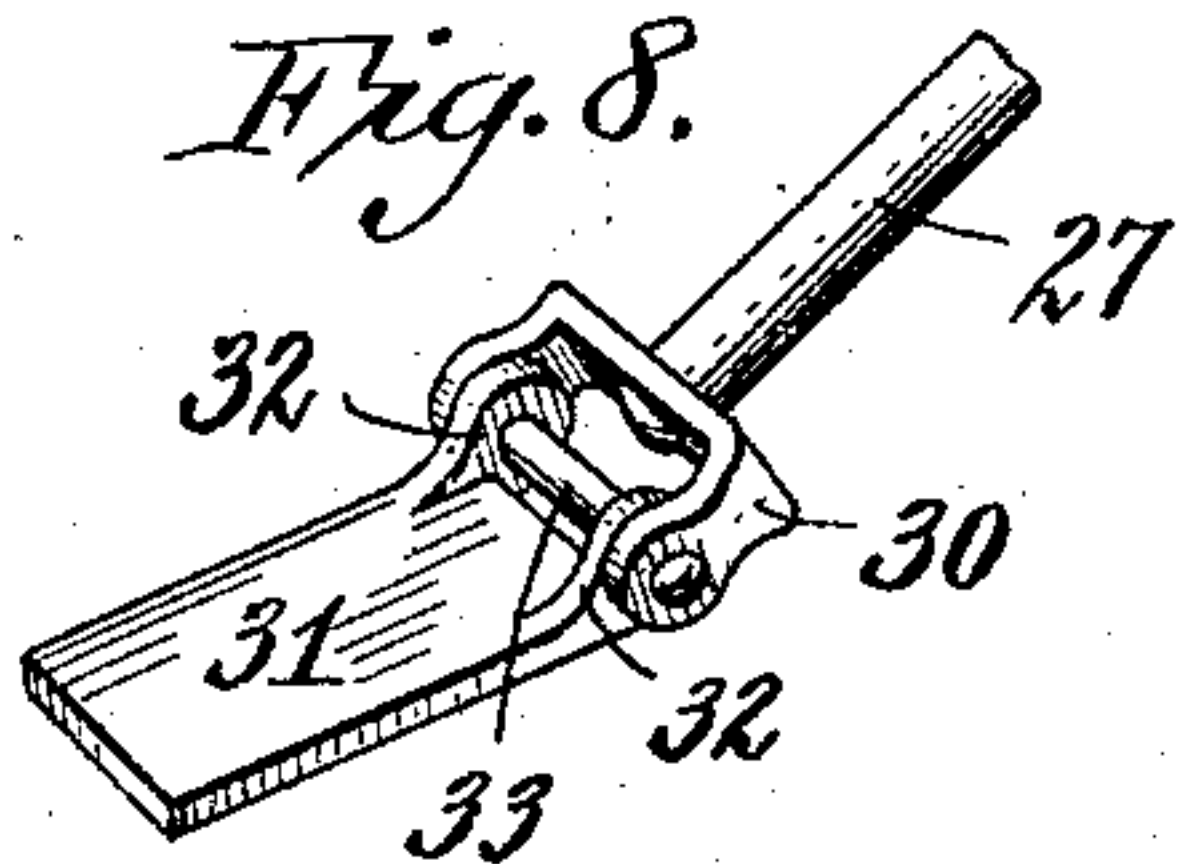
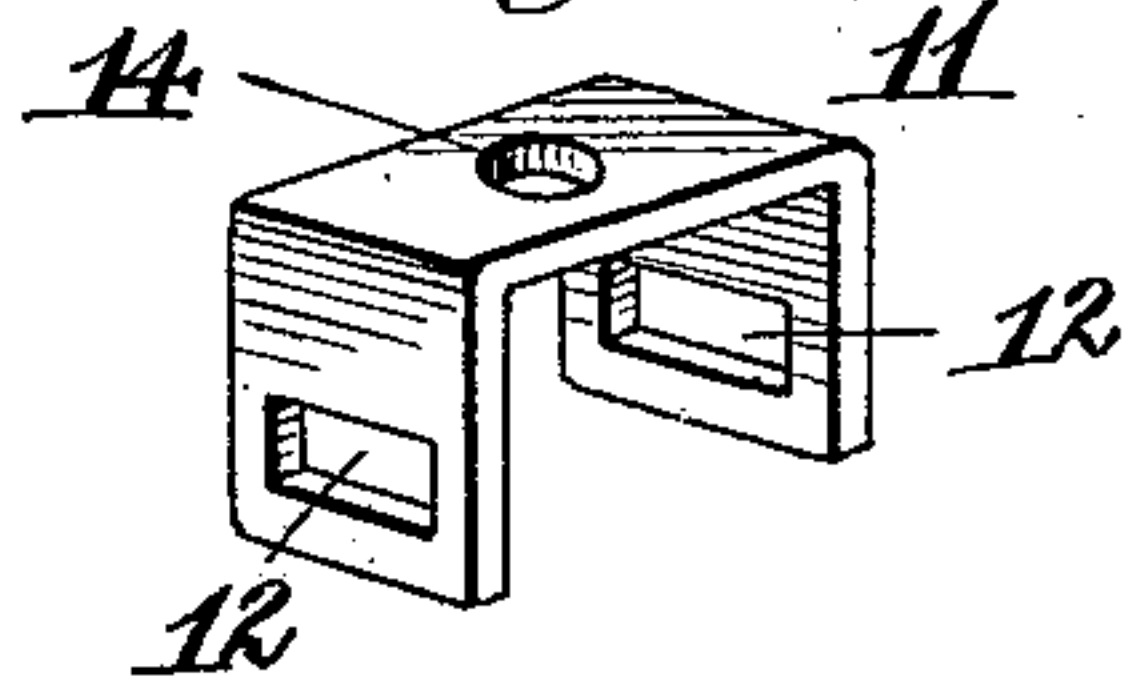


Fig. 7.



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UNITED STATES PATENT OFFICE.

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HARROW.

No. 865,873.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed September 27, 1905. Serial No. 280,288.

To all whom it may concern:

Be it known that I, EDGAR L. CUDABACK, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Harrows, of which the following is a specification.

My invention relates to harrows, and more particularly to that class of harrows known as the "spring-tooth" type; it, however, has many features of construction which may be used on "peg-tooth" or other harrows; and while I have illustrated my invention as applied to "spring-tooth" harrows it is understood that such illustration discloses merely a representative way of putting the invention into use.

The primary object of my invention is the production of a "spring-tooth" harrow in which the tooth-bars are affixed to levers pivoted to the harrow-frame.

Other objects are to maintain the tooth-bars on a plane or planes above the harrow-frame; to provide novel clips for securing the cross-bars to the supporting-levers, and the spring-teeth and adjusting-mechanism to the cross-bars; to provide novel adjusting-mechanism, and to otherwise improve on harrows now in use.

With these ends in view, the invention consists in the novel construction, arrangement, location and combination of parts to be hereinafter described and particularly pointed out in the appended claims.

In the drawings,—Figure 1 is a side elevation of a harrow embodying my invention, the draft appliance being omitted. Fig. 2 is a plan view of one section of a harrow, which may be used singly or in connection with another section, as is common. Fig. 3 is an enlarged longitudinal section taken on line *w—w*, Fig. 2. Fig. 4 is an enlarged transverse section through the frame, taken on line *x—x*, Fig. 1, looking to the rear. Fig. 5 is an enlarged section taken on line *y—y*, Fig. 2. Fig. 6 is an enlarged cross-section taken on line *z—z*, Fig. 3. Fig. 7 is an enlarged detached perspective view of one of the fastening clips. Fig. 8 is a perspective view of the inner end of the teeth adjusting screw and the connecting piece pivoted to the clevis thereof.

Referring to the drawings in detail, like numerals of reference refer to like parts in the several figures.

The numeral 1 designates the harrow-frame, which may serve as one section of a sectional harrow, or as a complete frame, as may be desired. The frame comprises side bars 2 and 3, which I will designate the outer and inner bars, respectively, to distinguish the outer or inner side of the frame in the event of its being used in connection with another frame to form a sectional harrow; 4 is the front cross-bar connecting the front ends of the side bars, and 5 the rear transverse bar which is secured to the rear ends of the side bars by rivets 6, or the like. The front ends of said side bars

are curved upward, as shown in Fig. 1 to maintain the front bar in an elevated position so that it may pass over weeds or other vegetable growth, and over rocks or other objects without offering the least obstruction to the free forward movement of the harrow.

The outer-forward angle, designated by the numeral 7 is curved, so that when coming in contact with a tree, stone, or other obstruction, the harrow is deflected, thus avoiding sudden jars or shocks which would strain the draft-appliance, which for convenience is omitted in the drawings, but which may be of any common construction and secured to the frame in any practicable manner. The inner-forward angle of the frame may be at a perfect right-angle, so that when the frame is used in connection with a second frame to form a sectional harrow, the space between the two frames at the front ends thereof, is not larger than necessary. The rear transverse bar 5 is arched, so that it also clears weeds, stones, or other like obstructions in the path of the harrow.

8 designates the tooth-bars which are of channel formation in cross-section and supported on levers 9 pivotally secured to the side bars of the frame. Each of said supporting-levers extends upward and rearward and terminates in a flat substantially horizontal portion 10 on which the tooth-bars are supported. Clips 11 are provided as a means for attaching the tooth-bars to said levers, each clip fitting over a tooth-bar and consisting of a flat piece of metal bent in substantially U-shape and having at each end, an opening 12 through which the ends of the supporting-levers 9 are passed. In the channels of the tooth-bars and within the clips are nuts 13 whose tapped openings register with apertures 14 in the clips, and by reason of their lying in the channels of said bars, the walls or webs forming the channels, prevent turning of the nuts. Bolts 15 are passed through the apertures 14 in the clips and through the nuts registering therewith, and impinge against the tooth-bars, thus causing the clips to be drawn upward to clamp the bars firmly to the supporting-levers.

Arranged on each tooth-bar at uniform intervals are spring-teeth 16, preferably of the common C-shape, which are secured to said bars by means of clips 17 similar in construction to the clips 11; the inner ends of the teeth being passed through the clips in like manner to the supporting-levers. The clips 17, however, secure the teeth to the tooth-bars, while the clips 11 serve to secure the tooth-bars to the supporting-levers.

Affixed to each tooth-bar is an upright arm 18 terminating at its lower end in a flat horizontal portion that lies against the tooth-bar and passes through the openings in the ends of clips 20, which are similar in construction to the clips 11 and 17 and secured to the

tooth-bars in like manner. Said upright arms are substantially U-shape in cross-section, and at their upper ends the sides are extended to form forks 21 in which a connecting-rod 22 is secured by means of pins 23, or otherwise. Within the forked portion of the rear upright arm a swivel-nut 24 is secured, the same having integral studs 25 that enter apertures 26 in the sides of said arm. An adjusting-screw 27 has threaded engagement with said swivel-nut and extends downward and forward for connection with the intermediate tooth-bar. The rear or outer end of said screw is provided with a suitable handle or crank 28 for operating the same, and its forward or inner end is reduced in diameter, as at 29, and passed through a clevis 30, which is secured to said feed-screw by upsetting the reduced end of the latter, thus permitting the screw to rotate in said clevis. Clamped underneath the intermediate upright arm and the corresponding clip is a connecting-piece 31 by means of which the adjusting-screw is connected to the tooth-bar. Said piece 31 has perforated lugs 32 at its rear end which lie within said clevis, a bolt 33 serving to connect the latter to said connecting-piece.

In adjusting the teeth, it is simply necessary to revolve the adjusting-screw, whereupon the lever supported tooth-bars, connected by rod 22, are raised and lowered in unison, their line of travel being in arcs of circles having the pivoted points of the supporting-levers as their centers. In this manner the teeth are raised or lowered without perceptibly turning the tooth-bars, and the acting or soil-working ends are therefore given but a slight change of angle, in contradistinction to a sharp turn, as has been the practice when rotating the tooth-bars. The tendency of the teeth to dig into the ground is thereby avoided, and the harrow is drawn with greater ease, and is more effective, while maintaining at all times the spring so desirable in implements of this kind.

Having thus described my invention, what I claim is,—

1. In a harrow, the combination of a frame, supporting-levers pivotally affixed to said frame, tooth-bars carried on

said supporting-levers, clips fitting onto said tooth-bars and having openings at their ends through which the free ends of said supporting-levers pass, and means to securely clamp the tooth-bars and said supporting-levers within said clips. 45

2. In a harrow, the combination of a frame, supporting-levers pivotally secured to said frame, channeled tooth-bars carried on said supporting-levers, U-shaped clips fitting onto said channeled tooth-bars and having openings at their ends through which said supporting-levers pass and apertures between their ends, nuts lying in said channeled tooth-bars between the same and said clips, and bolts passed through the apertures in said clips and through said nuts and impinging against the tooth-bars to cause the latter and the supporting-levers to be securely connected. 50 55

3. In a harrow, the combination with a frame, of a plurality of transverse tooth-bars supported for movement on said frame, harrow-teeth secured to said tooth-bars, upright arms having flat horizontal portions at their lower ends, clips fitting onto said tooth-bars and having openings through which the flat portions of said upright arms are passed, clips for securely fastening said upright arms to the tooth bars, a connection between said upright arms, and means for adjusting the teeth. 60 65

4. In a harrow, the combination with a frame, of supporting-levers pivotally secured to the frame, tooth-bars secured to the free ends of said supporting-levers, harrow teeth secured to said tooth-bars, a connection between said tooth-bars to cause them to move in unison, an adjusting screw having a swivel connection with one of said tooth-bars, and a nut supported on a second tooth-bar through which said adjusting screw is threaded. 70 75

5. In a harrow, the combination with a frame, of supporting-levers pivoted to said frame, tooth-bars secured to the free ends of said supporting-levers, U-shaped clips securing said tooth-bars to said supporting-levers an upright arm for each tooth-bar having a flat extension at its lower end, said clips having openings through which the flat portions of the upright arms are passed, a rod connecting said upright arms, a connecting-piece held in one of said clips, a clevis pivotally connected to said connecting-piece, an adjusting-screw having one end revolvably affixed to said clevis and its other end provided with a handle, and a swivel-nut secured to a second upright-arm and through which the adjusting-screw is passed. 80 85

In testimony whereof, I have affixed my signature in the presence of two subscribing witnesses.

EDGAR L. CUDABACK.

Witnesses:

JULIUS LANKES.
EMIL NEUHART.