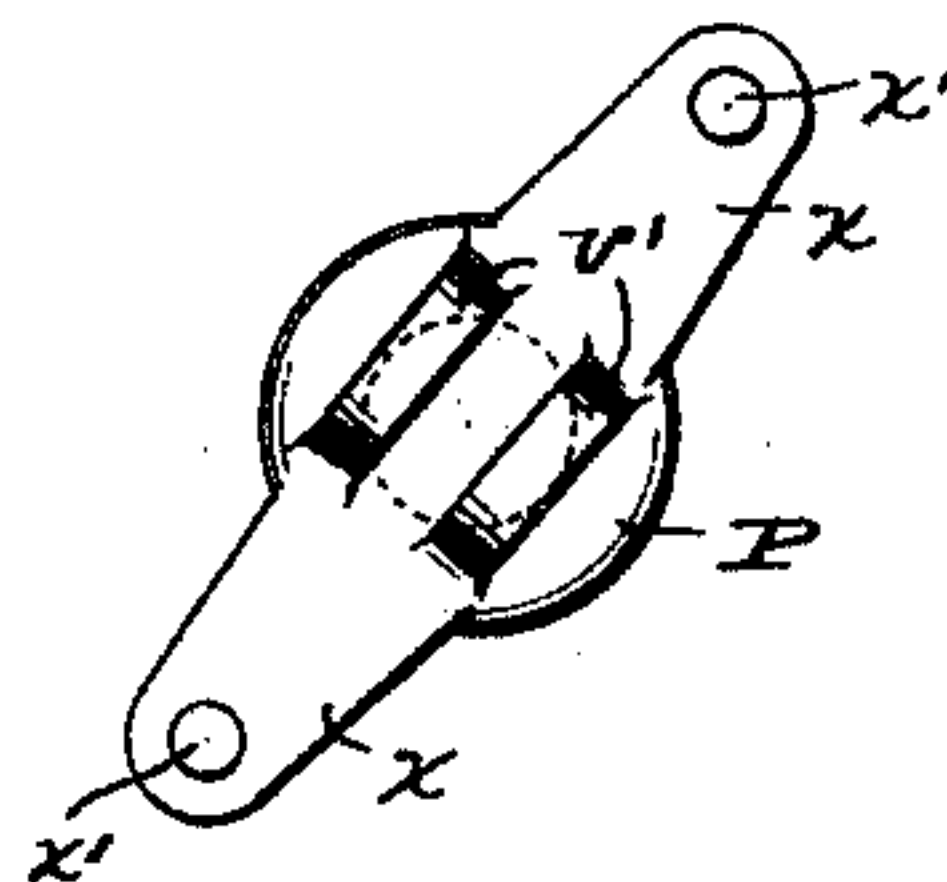


2 Sheets—Sheet 1.

Patented Sept. 3, 1889.



Fig. 6



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2 Sheets—Sheet 2.

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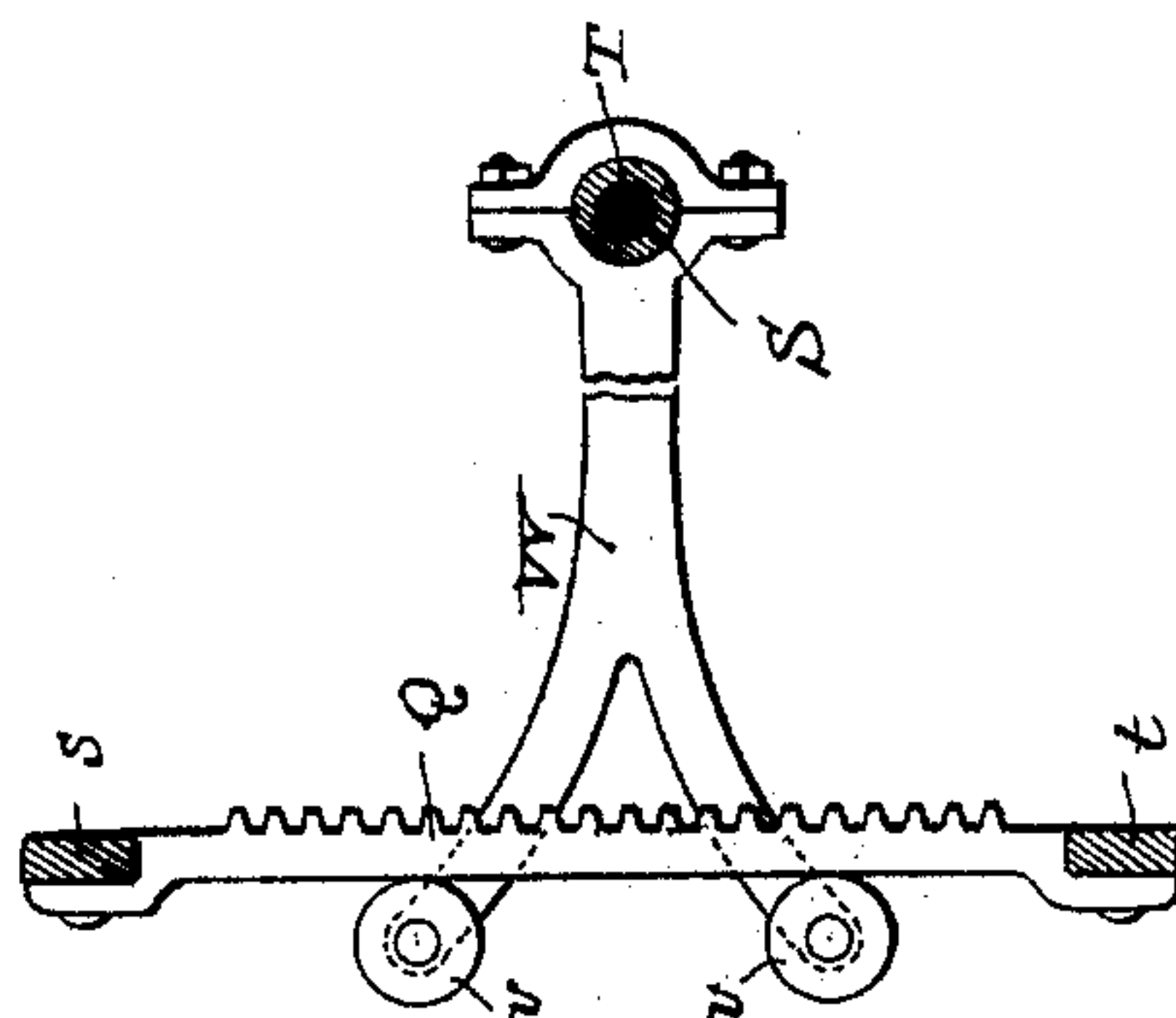


Fig. 5.

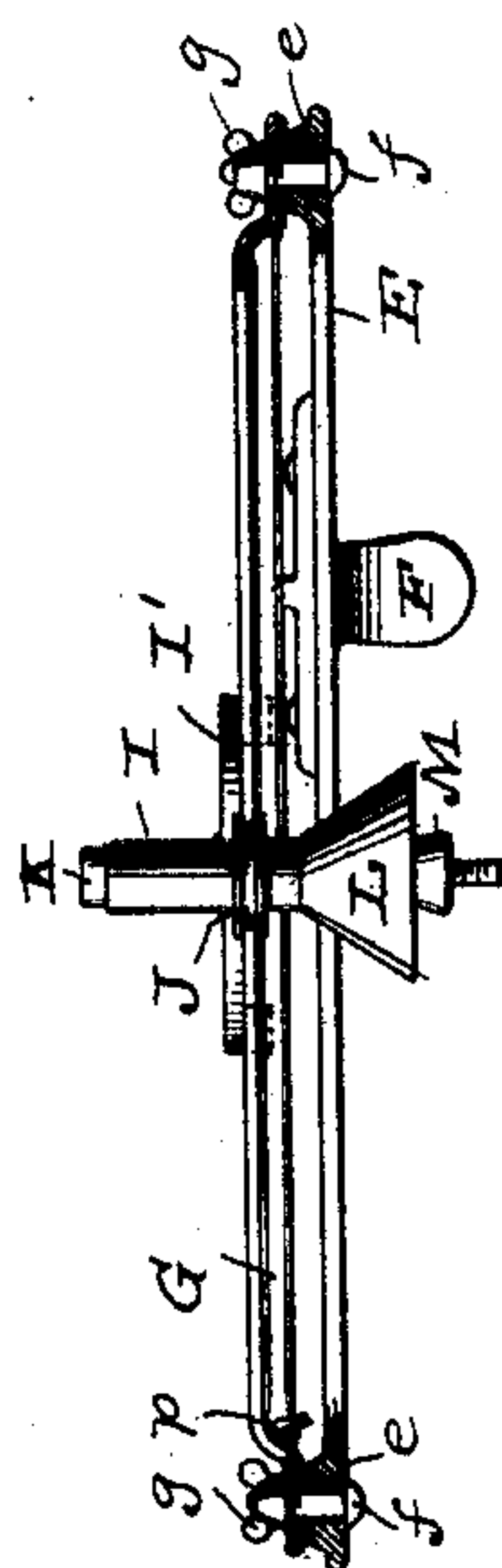
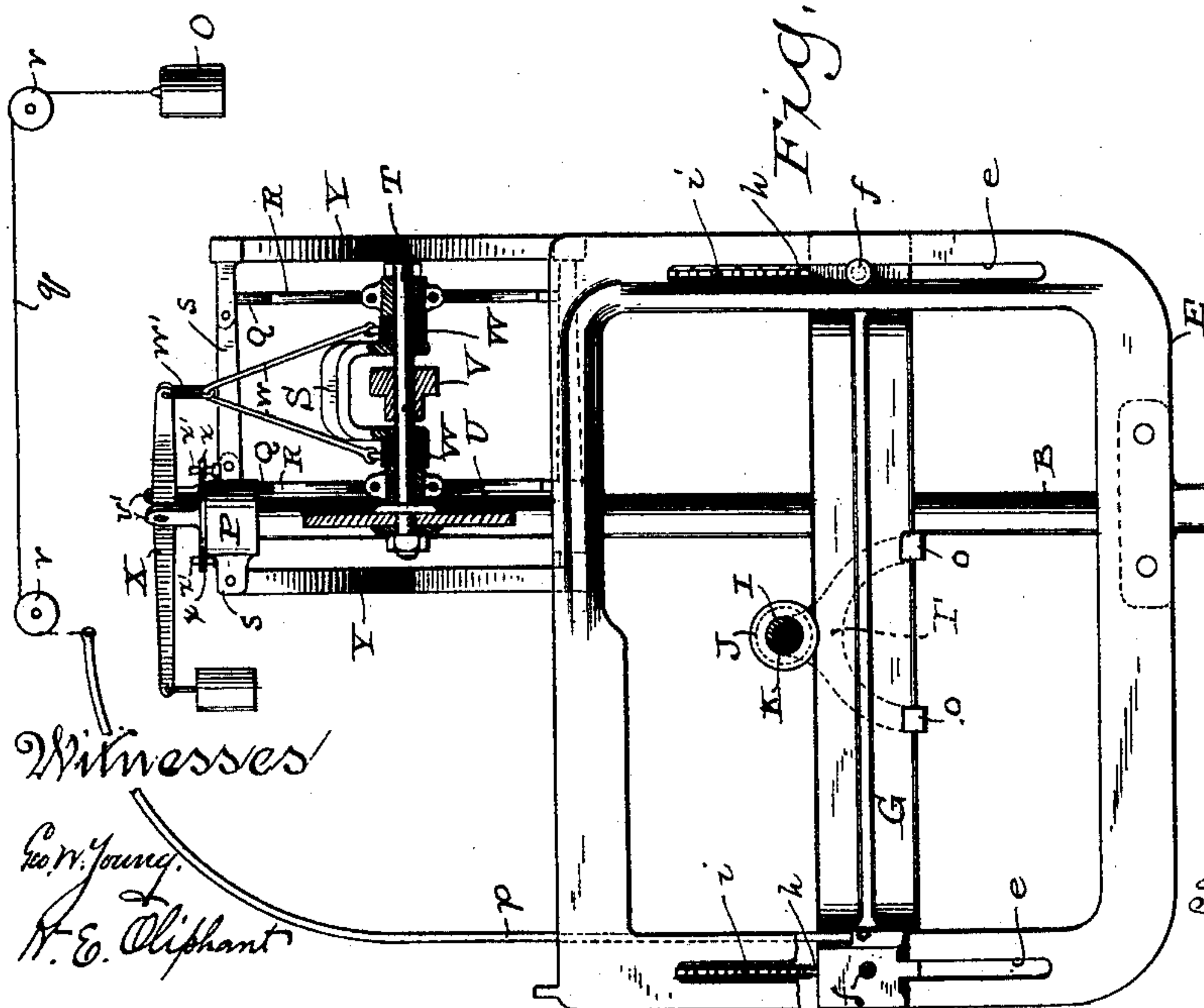


Fig. 4.



Witnesses

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Fig. 2.

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# UNITED STATES PATENT OFFICE.

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## SAW-SHARPENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 410,444, dated September 3, 1889.

Application filed June 6, 1889. Serial No. 313,347. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUST F. RADANT, of Wausau, in the county of Marathon, and in the State of Wisconsin, have invented certain new and useful Improvements in Saw-Sharpening Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to machines for sharpening circular saws; and it consists in certain peculiarities of construction and combination of parts, to be hereinafter described with reference to the accompanying drawings and subsequently claimed.

In the drawings, Figure 1 represents a side elevation, partly in section, of a saw-sharpening machine constructed according to my invention; Fig. 2, a front elevation partly in section; Fig. 3, a plan view partly in horizontal section; Fig. 4, a similar view of the saw-carrying frame; Fig. 5, a detailed view of a rack and adjustable bearing that form parts of my machine, and Fig. 6 a detail plan view of a cap-piece for the standard of my machine.

Referring by letter to the drawings, A represents a base and B a vertical standard that support the various other elements that go to make up a saw-sharpening machine constructed according to my invention. At a certain elevation a collar C is made fast to the standard B, and projected from this collar is a horizontal flange *b*, provided with a groove or guide *c* for a segmental plate D, the latter being retained in the groove by means of an overlapping guard *d*, attached to said flange. Rigidly connected to the segmental plate D is a rectangular frame E, provided with a depending goose-neck F, the latter being pivotally connected to the base A, as best illustrated in Fig. 1. The vertical sides of the frame E are provided with longitudinal slots *e*, that serve as guides for bolts *f*, these bolts being passed through the ends of a transverse track-bar G to engage set-nuts *g*, the latter serving to clamp said track-bar in any position to which it may be vertically adjusted. Connected to eyes *h* on the upper edge of the track-bar G are chains *i*, that engage sprocket-wheels *j* on a crank-shaft H, the latter having its bearings in arms *k* at the upper end of the frame E, as best illus-

trated in Fig. 3. By loosening the set-nuts *g* and operating the crank-shaft H the track-bar G may be readily adjusted in a vertical direction, and said crank-shaft is preferably provided with a ratchet-wheel *m*, that engages with a stop-pawl *n* to check against the weight of said track-bar.

Loosely arranged on a sleeve I is a roller J, that travels on the upper edge of the track-bar G, and the sleeve is provided with a depending yoke I', having upturned ends *o*, for engagement with the lower edge of said track-bar, as is best illustrated in Fig. 1. The sleeve I forms a bearing for a spindle K, and on this spindle I arrange saw-chucks L M, the chuck M being adjustable and of a conical shape, to accommodate the arbor-openings of different diameters. To hold the chuck M in its adjusted position, I employ a hand-wheel N, arranged on the screw-threaded outer end of the spindle K, as illustrated in Fig. 1.

As shown in Fig. 2, the greater portion of the frame E is on one side of the standard B, and to balance said frame I attach a curved rod *p* thereto, on that side farthest from said standard, and connect the upper end of this rod with a cord *q*, that is arranged on suitably-hung pulleys *r*, to support a counterweight O. Supported on the upper end of the standard B is a cap P, provided with lateral projections *s*, that extend in opposite directions, and the collar C on said standard is provided with similar projections *t*, that also extend in opposite directions. Bolted or otherwise suitably connected to the lateral projections *s t* on the cap P and collar C are vertical racks Q, that engage with toothed segments R, the latter having screw-threaded extensions *u*, that connect with a yoke S, this yoke being provided with bearings for a shaft T, that carries a grinding-wheel U and cone-pulley V, as best illustrated in Fig. 2. Rearwardly-extended arms W are loosely clipped to the yoke S, and carry anti-friction rollers *v*, that travel on the rear edges of the racks Q, as shown in Figs. 1, 3, and 5. A triangular link *w* and straight link *w'* connect the arms W with a counterbalanced lever X, that is pivotally connected to vertical ears *v'* on the cap P, the latter being provided with horizontal extensions *x*, parallel to the lever on



opposite sides of said cap. The extensions  $\alpha$  on the cap serve as bearings for stop-screws  $\alpha'$ , whereby the throw of the lever X may be readily regulated to correspond with the depth of the teeth on various-sized saws. Brackets Y are made fast to the lateral projections  $s$   $t$  on the cap P and collar C, and these brackets are provided with bearings for a shaft Z, that carries a driving-pulley Z' and cone-pulley Z<sup>2</sup>, the latter being designed for belt-connection with the cone-pulley V on the shaft T, whereby the grinding-wheel U may be rotated at different speeds.

In the operation of my machine a saw is clamped between the chucks L M, and the carriage, formed by the sleeve I, roller J, and yoke I', is adjusted on the track-bar, in order to have the grinding-wheel U strike the saw at the proper angle, said track-bar being also adjusted to bring said saw to the proper elevation. The suspended yoke S is now lowered and raised by the operator to bring the grinding-wheel in and out of contact with the saw. The toothed segments R are centered on the shaft T, and in consequence of this arrangement the fall and rise of the grinding-wheel U are always on a vertical line regardless of the rock of said segments. When it is desired to bevel the edges of the saw-teeth, the frame E is turned on its pivot to the required angle, and it will be noticed that said pivot (the lower end of the goose-neck F) is in line with the grinding-wheel U, whereby said grinding-wheel is always just over the tooth to be worked upon regardless of the adjustment of said frame; or, in other words, the frame turns on a line struck through the pivot end of the goose-neck and the center of the grinding-wheel.

While I have described the segments R as provided with teeth to mesh with racks Q, it is obvious that the teeth may be omitted from said segments, and instead of the racks I would employ tracks for the latter form of segments.

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

1. In a saw-sharpening machine, the combination of a pivoted frame, a transverse track-bar vertically adjustable on the frame, and a saw-carriage laterally adjustable on the track-bar, substantially as set forth.

2. In a saw-sharpening machine, the combination of a pivoted frame having vertical sides provided with guides, bolts arranged in the guides, a transverse track-bar supported on the bolts, set-nuts arranged on said bolts to impinge against the track-bar, a crank-shaft journaled in the frame, sprocket-wheels carried by the shaft and chains passed over the sprocket-wheels and connected to the track-bar, and a saw-carriage laterally adjustable on said track-bar, substantially as set forth.

3. In a saw-sharpening machine, the combination of a rectangular frame having a depending goose-neck pivoted to a suitable

base, a segmental plate connected to the upper side of the frame, a guide for this plate, a transverse track-bar vertically adjustable on said frame, and a saw-carriage laterally adjustable on the track-bar, substantially as set forth.

4. In a saw-sharpening machine, the combination of a pivoted frame having the greater portion thereof on one side of its pivot-point, a counter-balance for the frame, a track-bar vertically adjustable on said frame, and a saw-carriage laterally adjustable on the track-bar, substantially as set forth.

5. In a saw-sharpening machine, the combination of a pivoted lever, a yoke having rearwardly-extended arms linked to the lever, a revoluble shaft having its bearings in the yoke, a grinding-wheel carried by the shaft, segments connected to said yoke to center on the shaft, and tracks for the segments, substantially as set forth.

6. In a saw-sharpening machine, the combination of a pivoted lever, a yoke having rearwardly-extended arms linked to the lever, a revoluble shaft having its bearings in the yoke, a grinding-wheel carried by the shaft, segments connected to said yoke to center on the shaft, tracks for the segments, and anti-friction rollers arranged on said yoke-arms to travel on said segment-tracks, substantially as set forth.

7. In a saw-sharpening machine, the combination of a pivoted lever, a yoke having rearwardly-extended arms linked to the lever, a revoluble shaft having its bearings in the yoke, a grinding-wheel carried by the shaft, toothed segments connected to said yoke to center on the shaft, and racks arranged to engage the segments, substantially as set forth.

8. In a saw-sharpening machine, the combination of a pivoted lever, adjustable stops for the lever, a yoke having rearwardly-extended arms linked to the lever, a revoluble shaft having its bearings in the yoke, a grinding-wheel carried by the shaft, segments connected to said yoke to center on the shaft, and tracks for the segments, substantially as set forth.

9. In a saw-sharpening machine, the combination of a pivoted lever, a yoke having rearwardly-extended arms linked to the lever, a shaft having its bearings in the yoke, a grinding-wheel and a pulley carried by the shaft, segments connected to said yoke to center on the shaft, tracks for the segments, suitably-arranged brackets, a drive-shaft having its bearings in the brackets, and a pulley arranged on the drive-shaft for belt-connection with the pulley on the shaft that carries said grinding-wheel, substantially as set forth.

10. In a saw-sharpening machine, the combination of a base, a standard connected to the base, a collar arranged on the standard and provided with a flange having a segmental guide, a frame having a depending



goose-neck pivoted to said base and a top  
plate arranged to work in the segmental  
guide, a track-bar vertically adjustable on  
the frame, a saw-carriage laterally adjustable  
5 on the track-bar, a pivoted lever supported  
on said standard, a yoke having rearwardly-  
extended arms linked to the lever, a revoluble  
shaft having its bearings in the yoke, a  
grinding-wheel carried by the shaft in line  
10 with the goose-neck pivot, segments con-  
nected to said yoke to center on the shaft,

and tracks for the segments, substantially as  
set forth.

In testimony that I claim the foregoing I  
have hereunto set my hand, at Wausau, in 15  
the county of Marathon and State of Wis-  
consin, in the presence of two witnesses.

AUGUST F. RADANT.

Witnesses:

JOHN LIVERMORE,  
SAM KRIDER.