

No. 769,088.

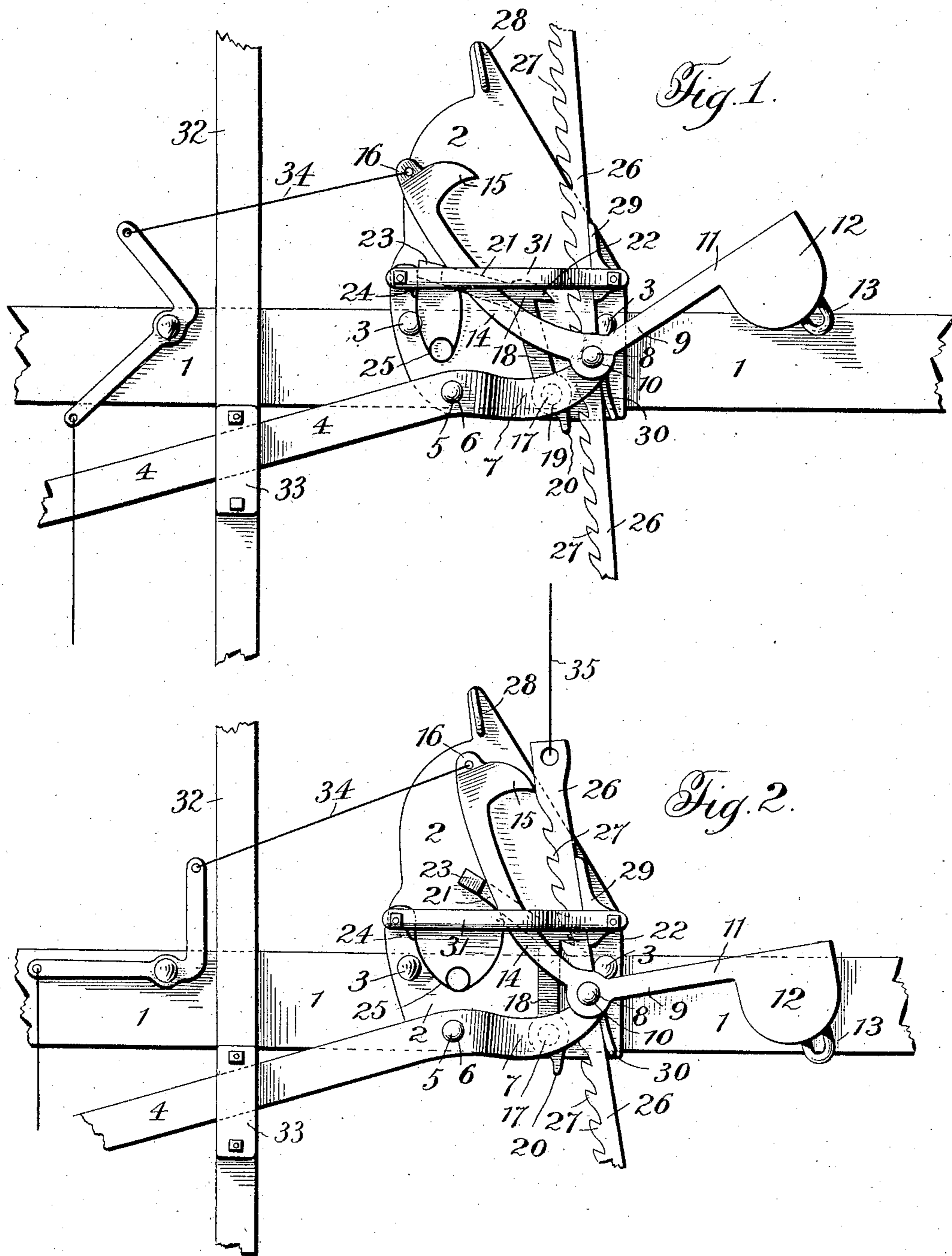
PATENTED AUG. 30, 1904.

F. T. JACOBS.
WIND WHEEL REGULATOR.

APPLICATION FILED APR. 5, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

James Hutchinson
A. M. Dow

Inventor:

Francis T. Jacobs,
By Royal E. Burnham, Attorney

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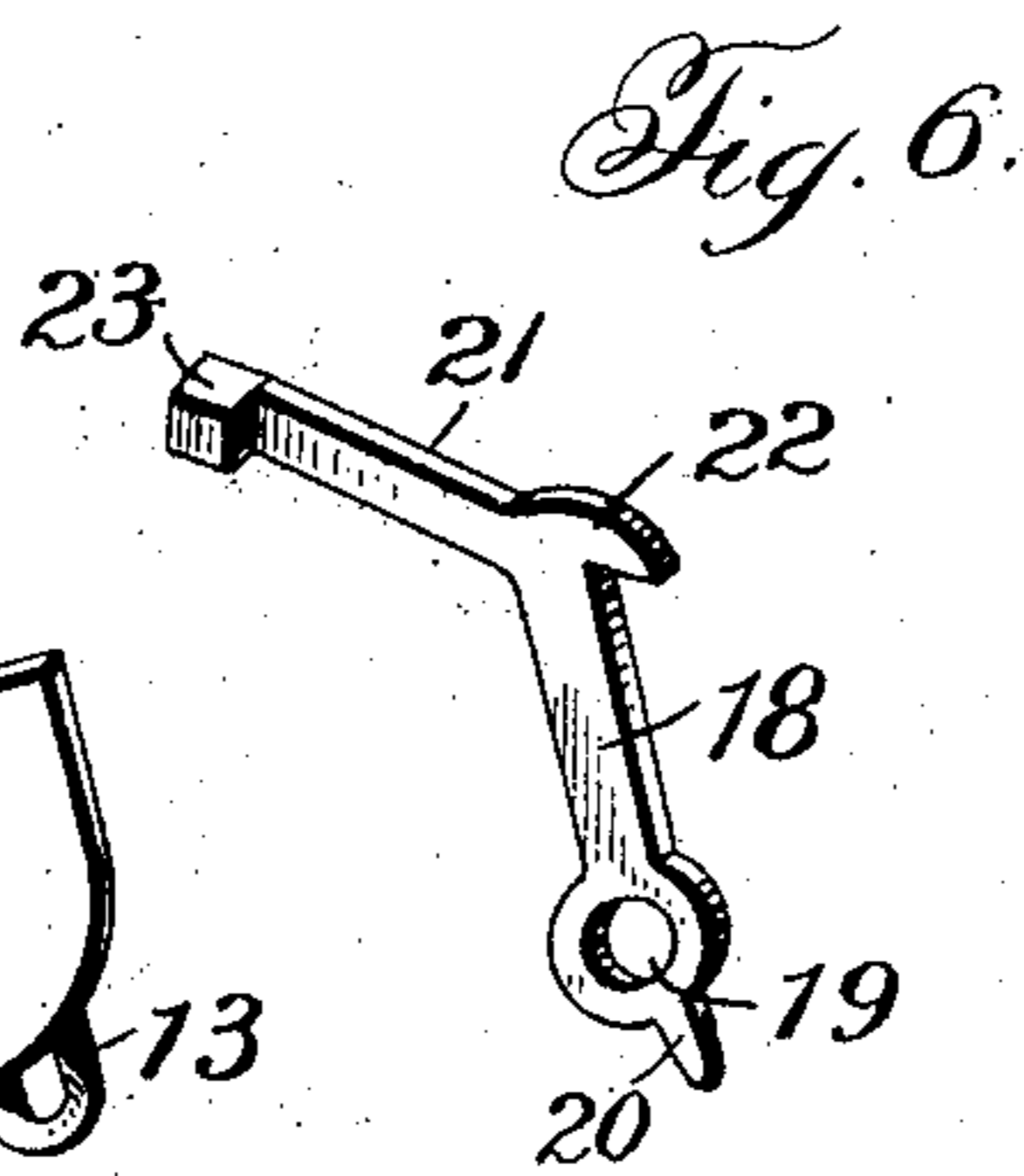
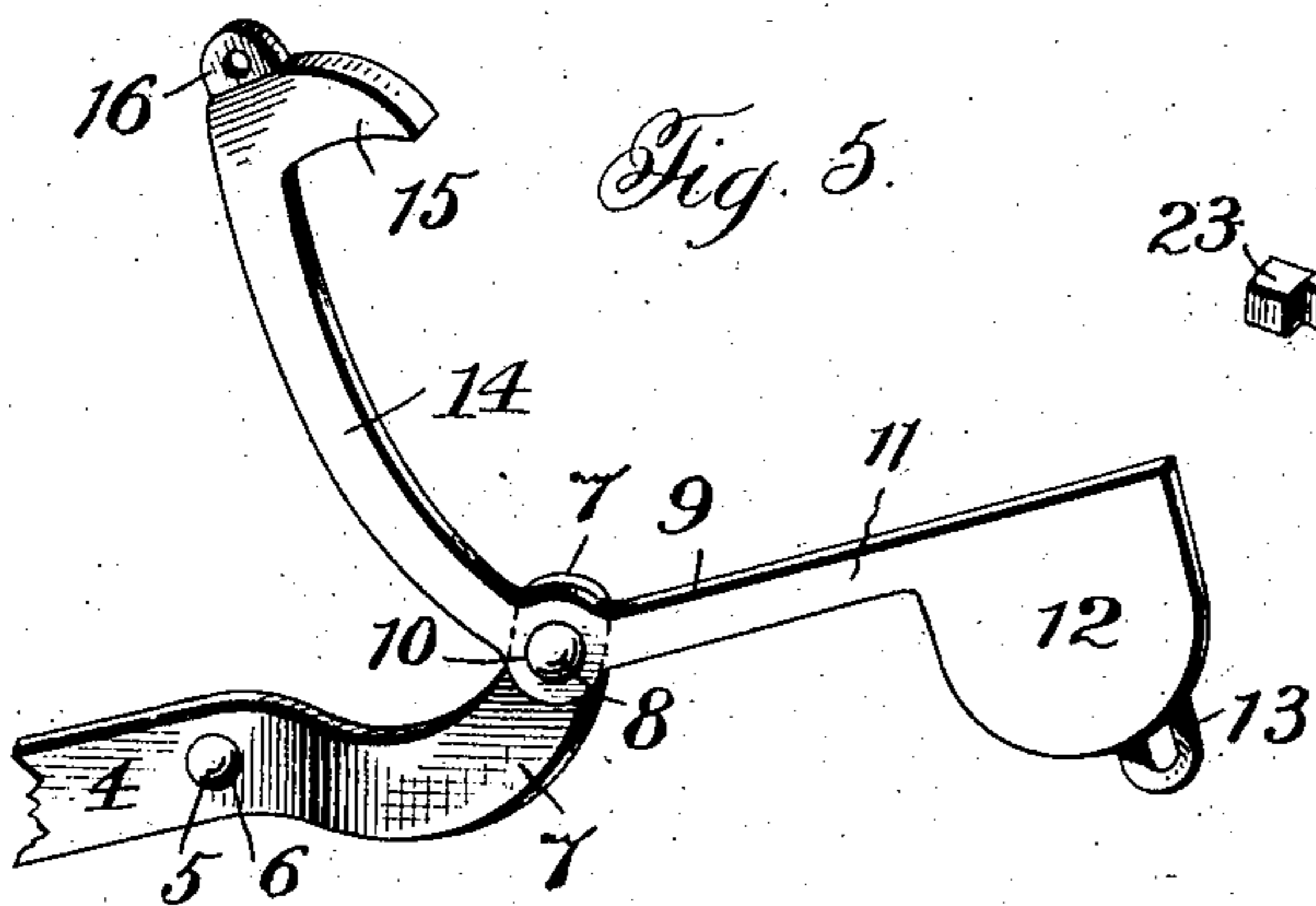
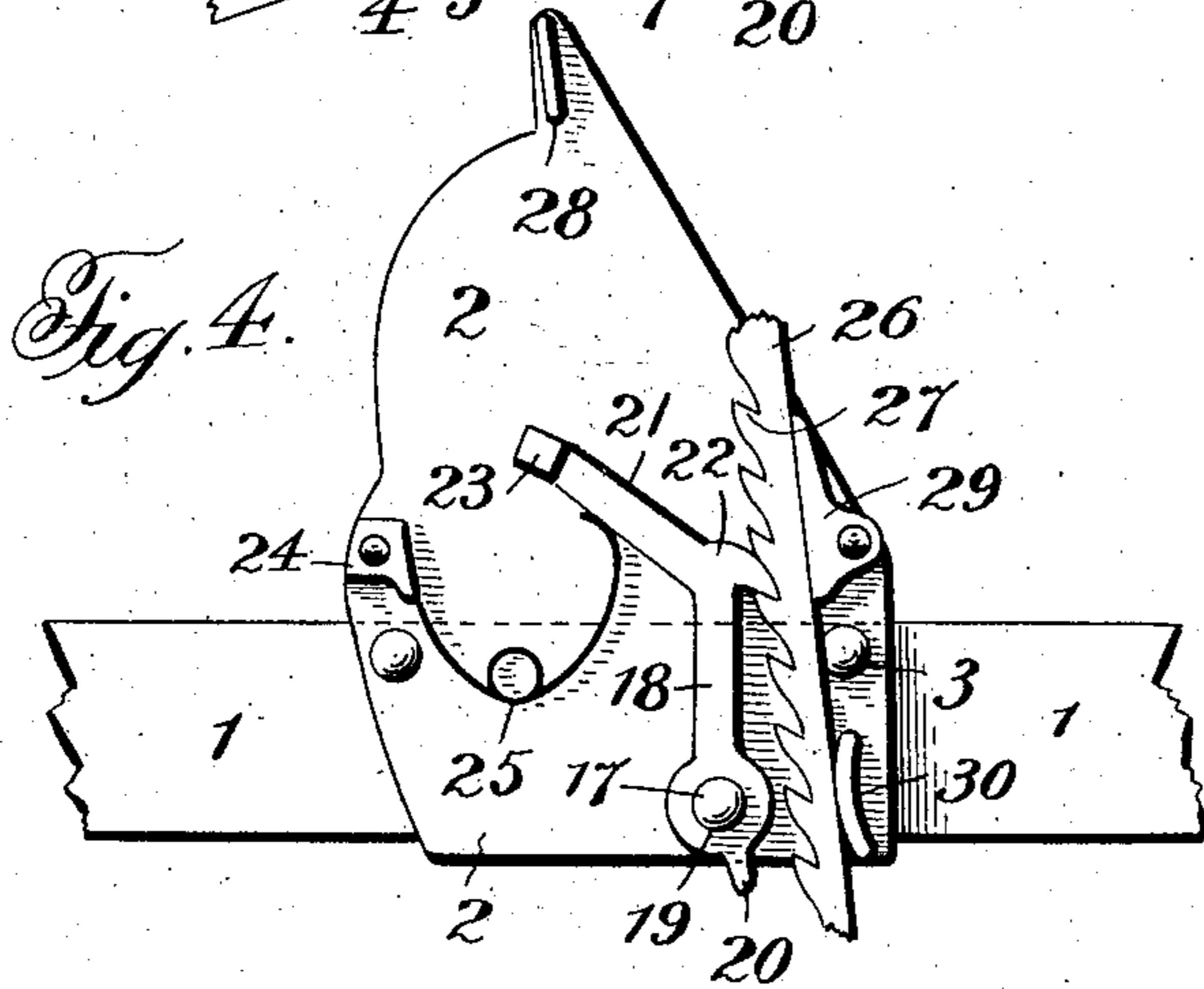
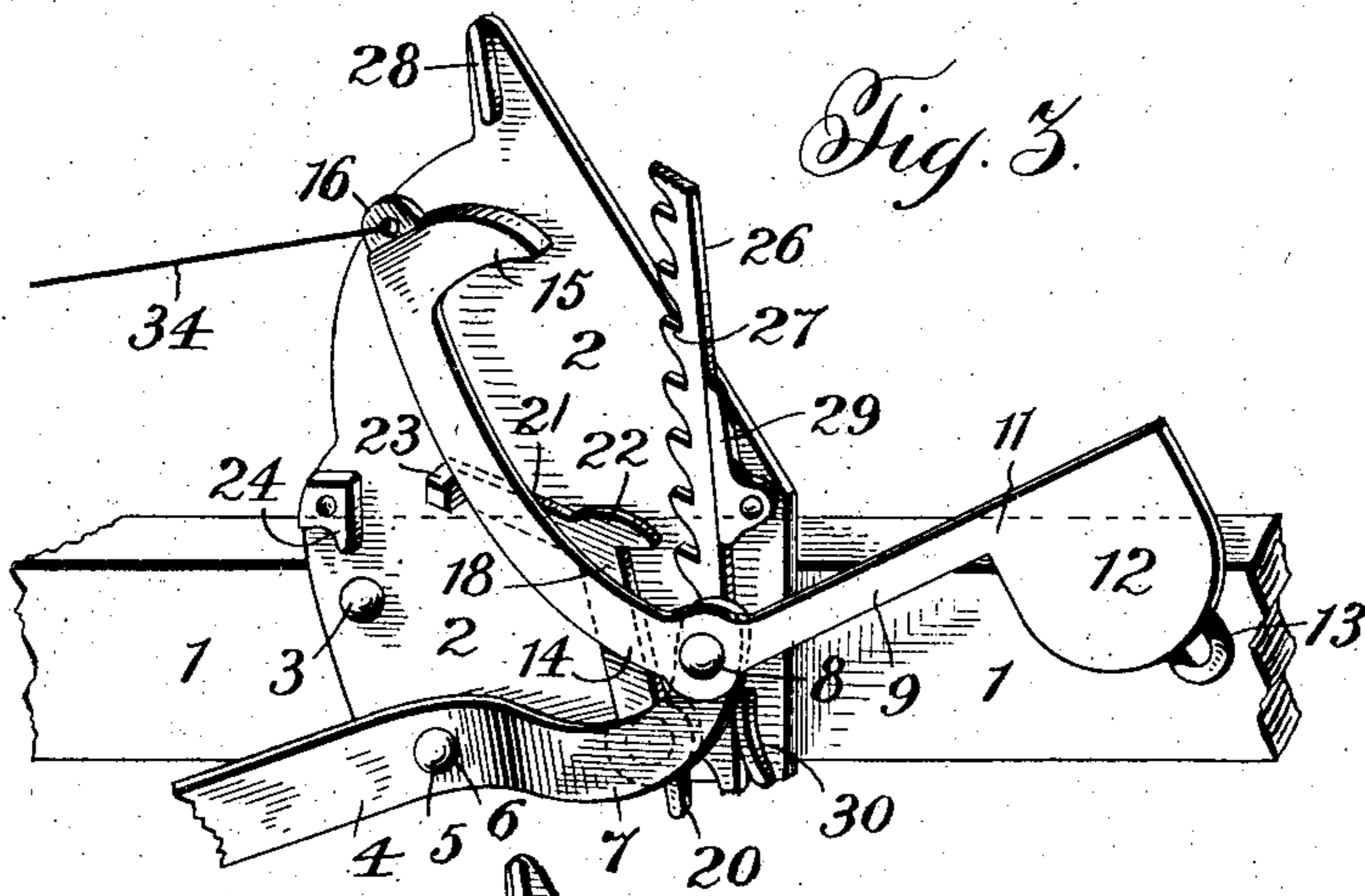
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FRANCIS THOMAS JACOBS, OF NEWTON, KANSAS.

WIND-WHEEL REGULATOR.

SPECIFICATION forming part of Letters Patent No. 769,088, dated August 30, 1904.

Application filed April 5, 1904. Serial No. 201,656. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS THOMAS JACOBS, a citizen of the United States, residing at Newton, in the county of Harvey and State of Kansas, have invented certain new and useful Improvements in Wind-Wheel Regulators, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to wind-wheels; and it particularly pertains to means whereby the operation of such wheels is controlled.

It is an object of the invention to provide means which will automatically operate to throw a wind-wheel into the wind—that is, into operation—when, for instance, the water becomes low in a tank filled by power derived from the wind-wheel and which will automatically operate to throw such a wheel out of the wind—that is, out of operation—when sufficient water has been forced into the tank.

A preferable embodiment of the invention is disclosed for purposes of illustration in the accompanying drawings, forming part hereof, and reference to which is made hereinafter. It is to be understood, however, that the invention is susceptible to other applications and that it is not restricted to the precise forms shown in the drawings; as various changes can be made in the details of construction within the limits prescribed by the claims without altering the character of the invention or departing from its nature and spirit.

35 In the drawings like reference characters refer to corresponding parts in the several views, of which—

Figure 1 is a view of the controlling mechanism, the parts being in the positions occupied by them when the wind-wheel is in the wind. Fig. 2 is another view of the controlling mechanism, the parts being in the positions occupied by them when the wind-wheel is out of the wind. Fig. 3 is still another view of the controlling mechanism. Fig. 4 is a view of part of the controlling mechanism, the operating-lever, lever-pawl, and securing member being removed. Fig. 5 is a view of the lever-pawl and a part of the operating-lever, and Fig. 6 is a view of the fixed pawl.

Referring more particularly to the drawings, 1 designates framework of a wind-wheel tower, and 2 a plate secured to said framework by bolts 3, mechanism whereby the wind-wheel is automatically put into the wind and drawn out of the wind being attached to this plate. Near the bottom of plate 2 a lever 4 is pivoted near one of its ends on pivot 5, which passes through journal 6 of said lever, this lever being so hung as to leave a comparatively short arm 7. Arm 7 is curved outwardly slightly from plate 2. On pivot 8 a member 9 is hung at the end of arm 7, said pivot passing through journal 10 of said member. Member 9 comprises a weight-arm 11, carrying a weight 12, having a depending eye 13, and a pawl-arm 14, having at the end thereof a ratchet-hook 15 and an eye 16. A pivot 17, which is placed near the bottom of plate 2, has fixed thereon a pawl 18, pivot 17 passing through a journal 19, near the lower end of said pawl. Pawl 18 is formed with a depending lug 20 below journal 19, and intermediate said journal and its upper end it is bent to form a retracted arm 21, there being placed at the point of retraction a ratchet-hook 22 and at the end of the retracted arm 21 an outwardly-projecting lug 23. Pawl 18 is so placed that it occupies a position between plate 2 and lever 4 and pawl-arm 14. Interposed between pawl 18 and a lug 24 on plate 2 is a spring 25, which tends to force pawl 18 toward a ratchet-bar 26 and at the same time pawl-arm 14 by engagement of lug 23 thereagainst and to cause ratchet-hooks 15 and 22 to engage with teeth 27 on said bar. Weight 12 also has the tendency to cause hook 15 to engage these teeth. The ratchet-bar 26 is arranged adjacent to plate 2 and is capable of up-and-down movement. The teeth 27 are formed in one side or edge of bar 26 for its entire length except for a short distance at its top. Any undue lateral movement of bar 26 is prevented by plate 2, lugs 28, 29, and 30, projecting from said plate, the edge of pawl 18 adjacent to said bar, and a member 31, bolted to lugs 24 and 29. Member 31 also serves to confine and limit the action of pawl-arm 9 and pawl 18, which are so formed that the ratchet-hooks 15 and 22 operate in the same plane as ratchet-bar 26 and are capable of engagement

with the teeth 27 thereof. An operating-rod 32 extends from the wind-wheel to the pump or other mechanism to be operated, and lever 4 is held loosely thereto by clamp 33. A wire 34 or other suitable means fastened in eye 16 of pawl-arm 14 connects said arm to a float or like part in a tank into which is pumped water by means operated by rod 32, and a wire 35 or other suitable means connects ratchet-bar 26 with any suitable means above on the wind-wheel, which operates to throw said wheel into or out of the wind. While the wind-wheel is in the wind operating-rod 32 moves up and down, and thus operates a pump or other mechanism and at the same time operates lever 4, which is loosely attached thereto by clamp 33.

While the wind-wheel is in the wind the various parts of the controlling means are in the positions shown in Fig. 1. The tank being empty or nearly so, the weight of the float therein, to which wire 34 is connected, operating through said wire holds pawl-arm 14 and its hook 15 away from ratchet-bar 26, and arm 14, engaging lug 23 of pawl 18 at the same time, holds ratchet-hook 22 away from said bar. Therefore while the parts are in these positions movement of lever 4 will have no effect upon ratchet-bar 26, which is now held in a comparatively high position by wire 35.

When the water in the tank becomes high enough to lift the float therein, this will serve to decrease the tension on wire 34, caused by said float, and when the tension is decreased to such a degree that it is not sufficient to overcome the exertion of weight 12 and spring 25 this weight and spring will operate to throw ratchet-hooks 15 and 22 into engagement with teeth 27 of ratchet-bar 26. The wind-wheel being in operation when this occurs and imparting motion to lever 4 through rod 32, every downward movement of arm 7 of said lever-operating pawl-arm 14 will cause ratchet-bar 26 to descend a certain distance, and said bar will be held down by pawl 18. Bar 26 is pulled down in this manner until wire 35 attached thereto has operated the mechanism at the wind-wheel and drawn said wheel out of the wind, and thereby stopped its operation. The parts will then be in the positions shown in Fig. 2.

Ratchet-hooks 15 and 22 and teeth 27 are so conformed that bar 26 can readily be moved downward when engaged by said hooks, but not upward. Wire 35 is made of such length and is so adjusted that ratchet-hook 15 will reach the top part of bar 26, where there are no teeth, just at the time the wind-wheel comes entirely out of the wind, the toothless part of the bar being provided in order that no strain will be put upon the different parts of the apparatus by any rotation of the wheel and consequent movement of the other parts after said wheel is drawn out of the wind.

When the water in the tank becomes sufficiently low to throw the weight of the float upon wire 34, said wire will withdraw pawl-arm 14 and pawl 18 from engagement with bar 26 and permit the latter to run out or upwardly and let the wind-wheel into the wind, thereby putting it into operation.

The controlling mechanism is bolted to the framework 1 at a distance, according to the length of stroke of operating-rod 32, to secure the proper amount of movement in lever 4, it being obvious that the nearer the mechanism is to said rod the greater the movement of said lever, and it has been found by experience that the movement should be such that each stroke will cause ratchet-hook 15 to move the distance occupied by one and one-half teeth on bar 26, which will result in said rod being drawn down the distance of one tooth with each stroke.

Where the tank is placed a comparatively long distance from the wind-wheel wire 34 would necessarily be comparatively long, and the weight thereof might be sufficient to overcome the tendency of weight 12 and spring 25 as adjusted for ordinary distances to hold ratchet-hooks 15 and 22 against bar 26 when they should be so held. To meet the requirements of this condition, eye 13 is provided on weight 12, upon which may be hung another weight, the results of which are obvious.

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

1. The combination with the operating-rod of a wind-wheel and a ratchet-bar connected with means arranged to draw said wheel out of the wind, of a lever operated by said rod, a pawl on said lever whereby said bar is moved, a pawl whereby contrary movement of said bar is prevented, and means on said last-mentioned pawl whereby said pawl is released from said bar by the pawl on said lever.

2. The combination with the operating-rod of a wind-wheel and a ratchet-bar connected with means arranged to draw said wheel out of the wind, of a lever operated by said rod, a pawl on said lever for moving said bar, means connected with said pawl for automatically releasing said pawl from said bar, and a pawl whereby contrary movement of said bar is prevented and having a lug thereon engaged by said first-mentioned pawl whereby said last-mentioned pawl is withdrawn from said bar by said first-mentioned pawl.

3. The combination with the operating-rod of a wind-wheel and a ratchet-bar connected with means arranged to draw said wheel out of the wind, of a lever operated by said rod, a pawl on said lever whereby said bar is moved, a pawl whereby contrary movement of said bar is prevented, and a spring operating on one of said pawls whereby both of said pawls are thrown against said bar.

4. The combination with the operating-rod

of a wind-wheel and a ratchet-bar connected with means arranged to draw said wheel out of the wind, of a lever operated by said rod, a pawl on said lever whereby said bar is moved, 5 a pawl whereby contrary movement of said bar is prevented, and having a lug thereon engaged by said first-mentioned pawl, and a spring operating on one of said pawls whereby both of said pawls are thrown against said bar. 10 5. The combination with the operating-rod of a wind-wheel and a ratchet-bar connected with means arranged to draw said wheel out of the wind, of a lever operated by said rod, a pawl on said lever whereby said bar is moved, 15 a pawl whereby contrary movement of said bar is prevented, means whereby said pawls are automatically released from said bar, and means on the pawl on said lever whereby the

tendency of said pawl to engage said bar may be altered. 20

6. The combination with the operating-rod of a wind-wheel and a ratchet-bar connected with means arranged to draw said wheel out of the wind, of a lever operated by said rod, a pawl on said lever whereby said bar is moved, 25 a pawl whereby contrary movement of said bar is prevented, a supporting-plate, and a member attached to said plate and spanning said bar and said pawls whereby the movements thereof are limited. 30

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

FRANCIS THOMAS JACOBS.

Witnesses:

W. J. TROUSDALE,
G. DE LONG.