

(No Model.)

P. DUFFY.
LET-OFF FOR LOOMS.

No. 497,170.

Patented May 9, 1893.

Fig: 1.

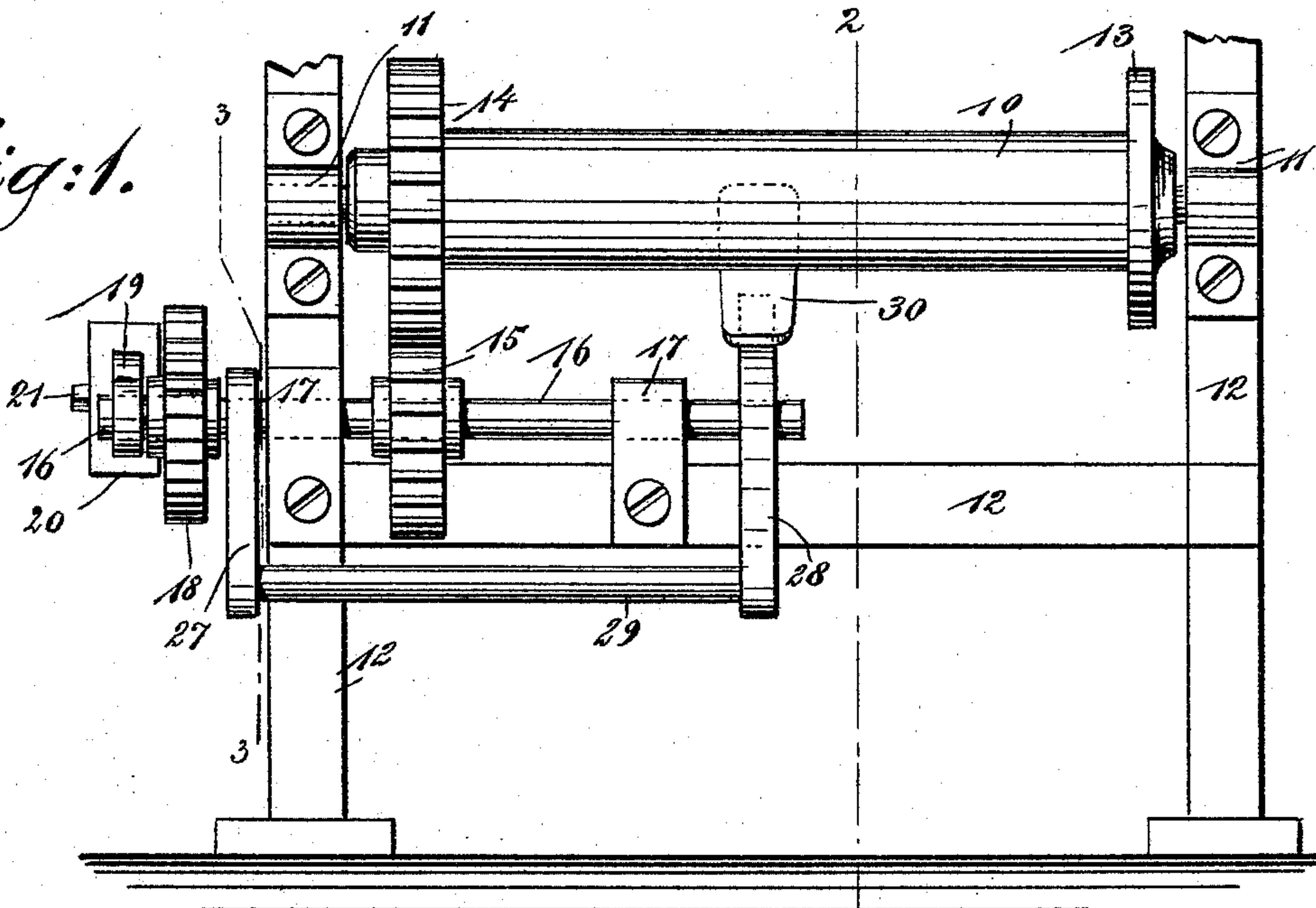


Fig: 2.

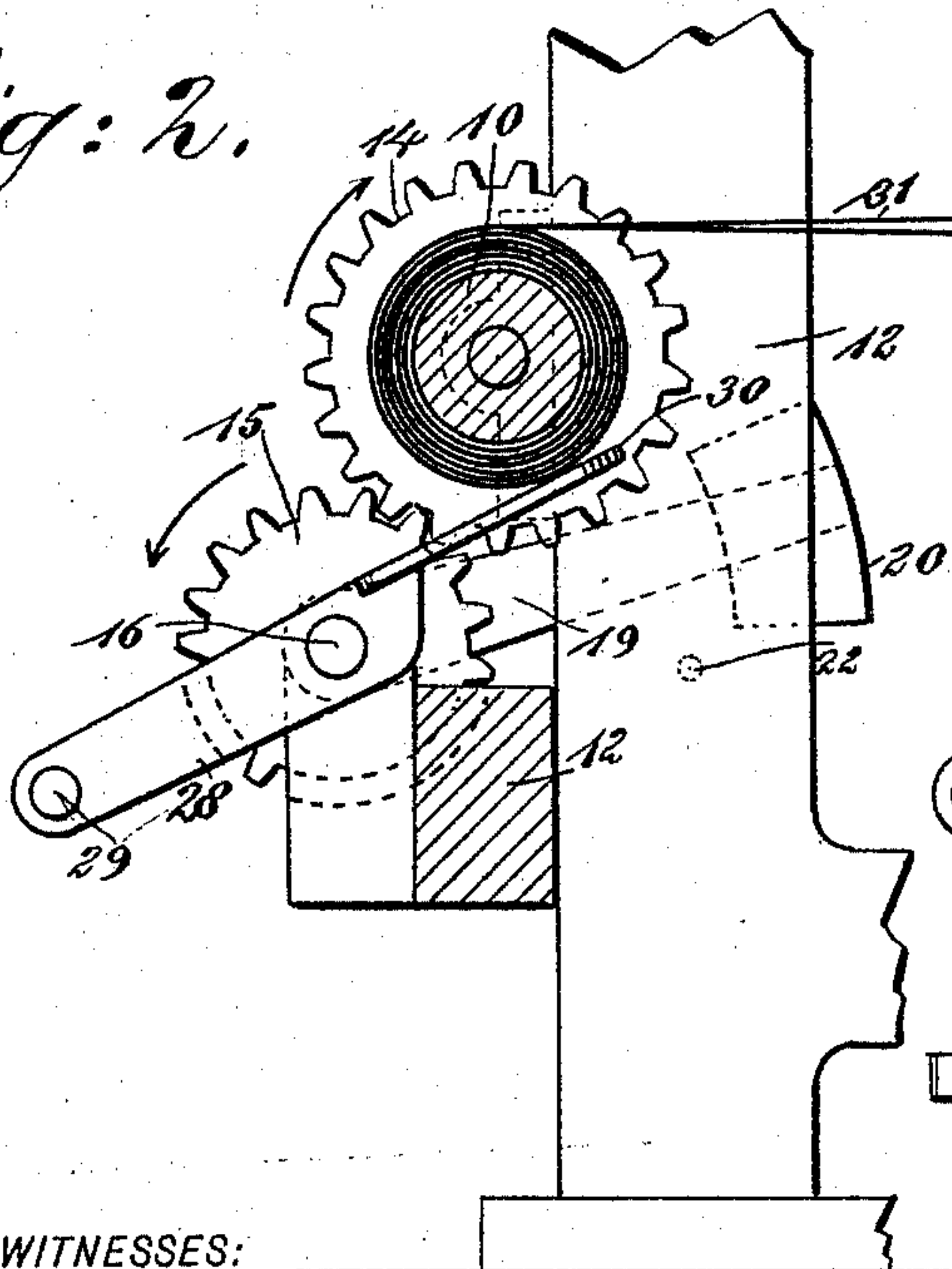


Fig: 3.

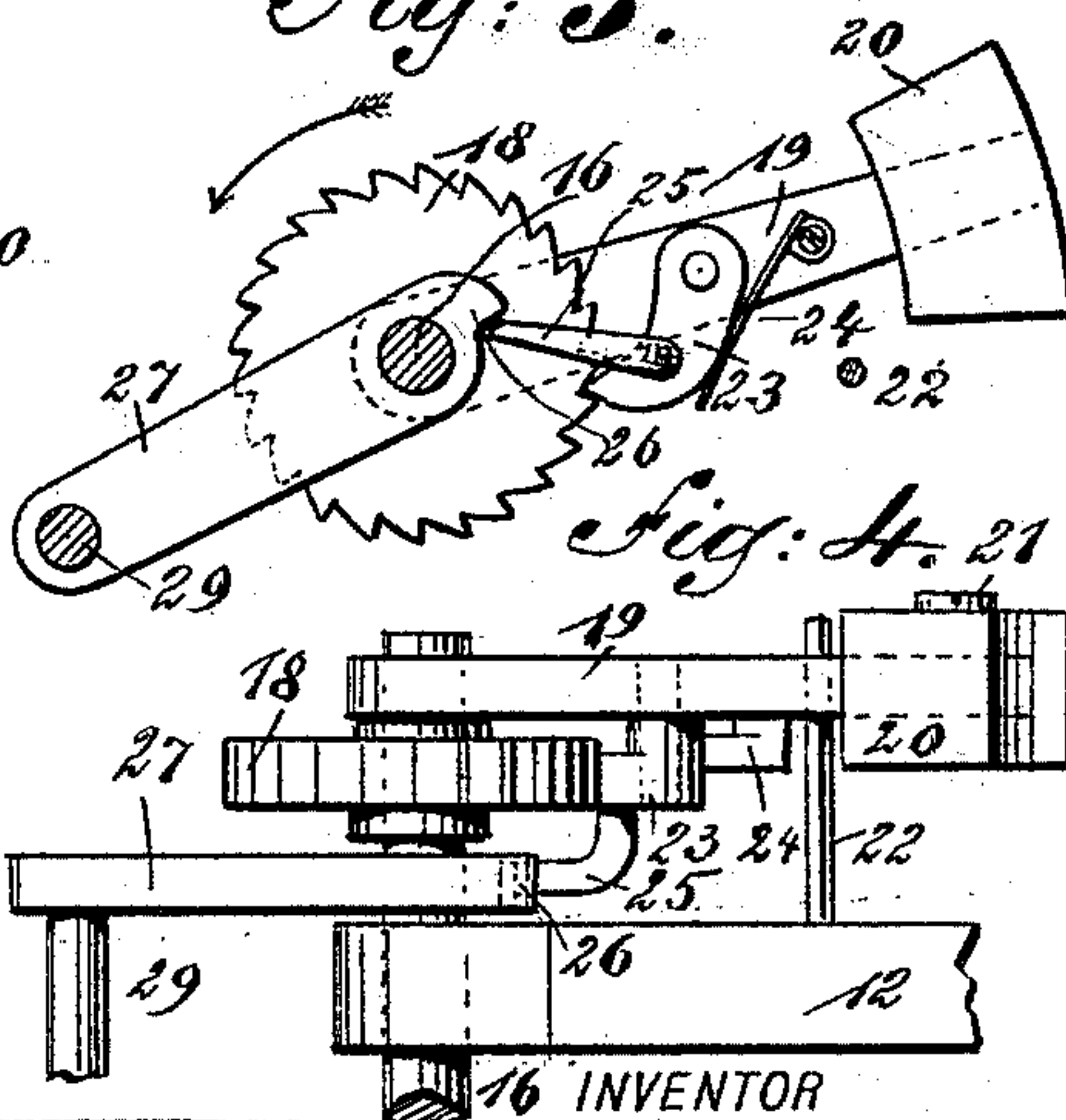
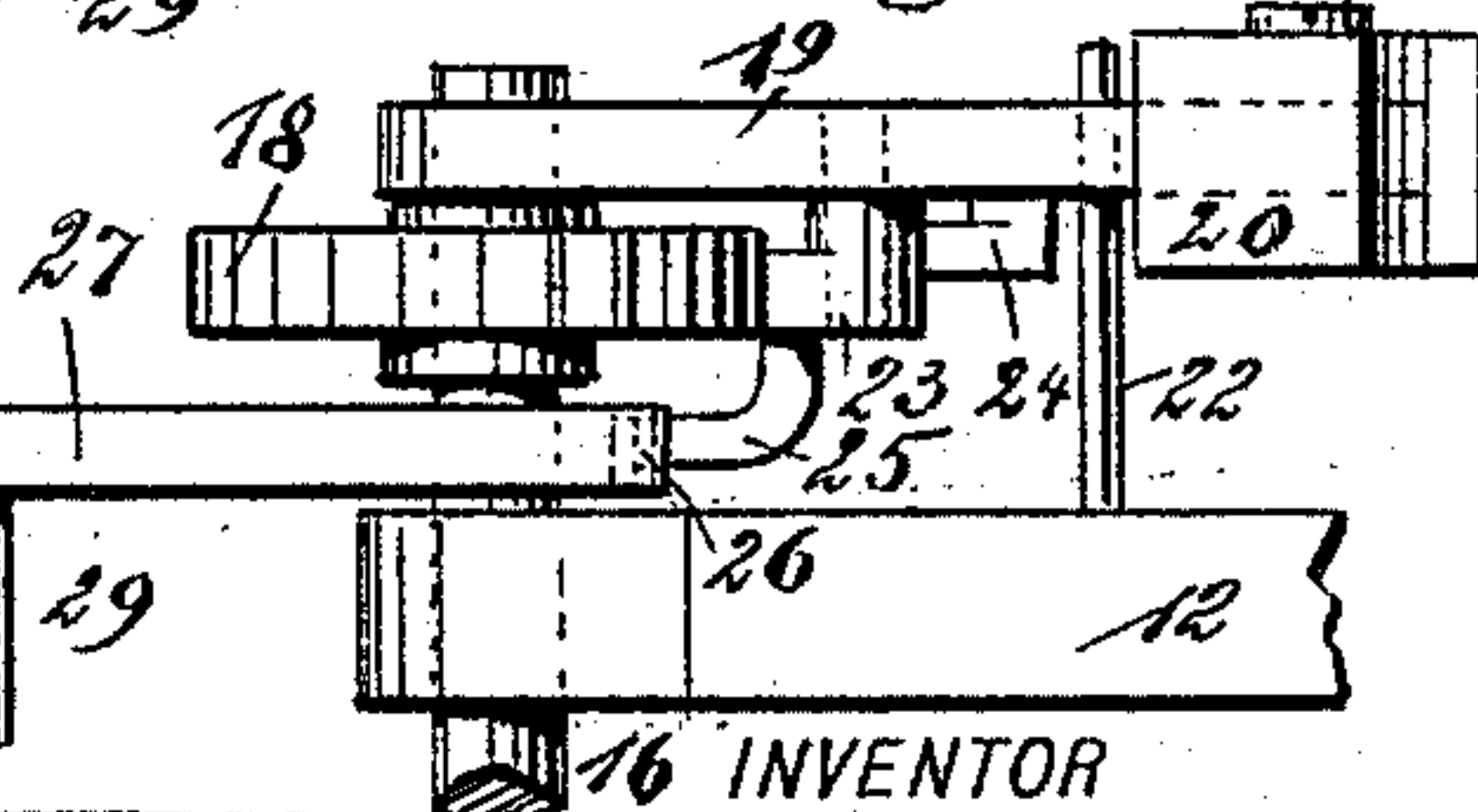


Fig: 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

PATRICK DUFFY, OF NEW BEDFORD, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO JAMES F. POWERS, OF SAME PLACE.

LET-OFF FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 497,170, dated May 9, 1893.

Application filed September 26, 1892. Serial No. 446,927. (No model.)

To all whom it may concern:

Be it known that I, PATRICK DUFFY, of New Bedford, in the county of Bristol and State of Massachusetts, have invented a new and Improved Let-Off for Looms, of which the following is a full, clear, and exact description.

My invention relates to improvements in that kind of let-off mechanism for looms which is used to let off the warp yarns from the warp beam or roller, and which is intended to give the proper tension to the warp.

The object of my invention is to produce an extremely simple apparatus which carries a dead weight arranged at one side of the shaft and actuates the weight by a shoe or arm, so as to shift the weight as the warp is wound off, thus keeping an absolutely even tension on the warp without regard to the amount of warp on the beam or roller.

A further object of my invention is to produce mechanism of this kind so that it may be easily adjusted and to construct it in such a way that it will be very durable and will not get out of repair.

To these ends, my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the apparatus as applied to the warp beam and loom frame. Fig. 2 is a sectional end view on the line 2—2 in Fig. 1. Fig. 3 is a detail cross section on the line 3—3 in Fig. 1, showing the ratchet mechanism for controlling the weight; and Fig. 4 is a broken plan of the ratchet mechanism as shown in Fig. 3.

The warp beam or roller 10 is journaled in suitable bearings 11 on the loom frame 12, and the warp which is wound upon the beam is drawn off in the usual way. At one end of the beam is a gear-wheel 14, which meshes with a pinion 15, the latter being carried by a shaft 16, which is journaled in bearings 17, and extends parallel with the beam 10, but projects from one side of the loom frame.

On the projecting end portion of the shaft

16 is a ratchet wheel 18, which turns in a direction opposite to the travel of the beam 10. On the end of the shaft 16 and at one side of the ratchet wheel 18, is journaled a lever 19, which extends at right angles to the shaft and which carries a weight 20, the weight being held to the lever by a set screw 21. The weight may be adjusted on the shaft so as to regulate the tension on the warp beam as hereinafter described. The lever 19 is prevented from dropping down too far by a pin 22, which is secured to the loom frame and extends beneath the lever.

Pivoted on the lever 19, near the back side of the ratchet wheel 18, is a pawl 23, which is held in engagement with the ratchet wheel by a light spring 24, and the pawl has on one side a bent arm 25 which extends forward parallel with the plane of the ratchet wheel and engages a shoulder 26, on the end of one of the side pieces 27 of a swinging frame, the frame comprising the said side piece 27, the parallel side piece 28, which is journaled on the inner end of the shaft 16 and a connecting cross bar 29 secured to the lower or outer ends of the side pieces. The shoulder 26 projects on the inner end of the side piece 27, which end projects inward beyond the shaft 16, and the said side piece 28 likewise projects inward and terminates in a flat shoe or arm 30, which is adapted to engage the warp 31 on the warp beam 10, and hold the swinging frame so as to bring the shoulder 26 in position to engage the pawl arm 25. This warp 31 is drawn through the loom in the usual manner.

The operation of the let-off mechanism is as follows: When the warp beam is nearly full of warp, the swinging frame will be held in a nearly horizontal position, and the lever 19 will also be in a nearly horizontal position so that the weight 20 will exert its greatest force. As soon as the warp beam starts, impelled by the drawing off of the warp, the gear wheel 14 turns the pinion 15 and shaft 16, and the ratchet wheel 18 is also turned so that its tooth engaging the pawl 23, lifts the weighted lever 19. The weight thus acts as a drag on the shaft 16 and consequently on the beam or roller 10, causing the proper tension to be maintained in the warp. As soon

as the pawl 23 has traveled about the distance of one tooth, the arm 25 strikes the shoulder 26 thus tilting and releasing the pawl which drops back to the next tooth, this operation being constantly repeated till the warp is wound off. As the warp beam continues to turn this operation is continually repeated, the pawl striving to clutch the ratchet wheel and the pressure on the shoulder 26 and arm 25 continually throwing it off. As the warp on the beam 10 becomes diminished, it is obvious that the tension of the warp will be increased if the lever 19 is arranged in a horizontal position, but the shoe or arm 30 follows the warp and the positions of the swinging frame and lever 19 change through the changing of the quantity of warp, so that when the warp is almost wound off, the lever 19 will extend upward so that its weight 20 will be held at a less horizontal distance from the center of the shaft 16, and thus the tension on the warp remains constant.

I do not confine myself to the exact construction shown for shifting the position of the weight which causes the right tension to be maintained on the warp, as I claim as my invention any construction by which a dead weight arranged to hang from one side of a shaft and having a ratchet connection therewith may be made to exert tension on the warp by acting as a drag on the warp beam and to shift its position with the change in the quantity of warp on the beam.

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

1. The combination, with the revoluble warp beam, of a weighted swinging lever, a swinging frame pivoted adjacent to the warp beam and having a shoe to run on the warp on the beam, a pawl and ratchet mechanism for supporting the weighted lever, and means for tripping and releasing the pawl by the move-

ment of the frame, whereby the weighted lever is made to drag intermittently on the beam, substantially as described.

2. The combination with the revoluble warp beam, of a shaft arranged adjacent thereto and held to turn in unison therewith, a swinging frame carried by the shaft and having a shoe to run upon the warp on the beam, a weighted lever journaled on the shaft and extending laterally therefrom, and a ratchet connection between the lever and frame whereby the frame will shift the position of the weight, substantially as described.

3. The combination with the warp beam, of a shaft geared to the warp beam, a swinging frame journaled on the lever and having on one side a shoe to run upon the warp on the beam, a ratchet wheel carried by the shaft, a weighted lever journaled on the shaft and extending opposite to the swinging frame, a spring-pressed pawl pivoted on the lever and held to engage the ratchet wheel, and means for moving the pawl by the movement of the swinging frame, substantially as described.

4. The combination with the revoluble warp beam, of a shaft arranged parallel therewith and geared to the brake beam, a swinging frame journaled on the shaft, one side piece of the frame having an inwardly-projecting shoe to run upon the warp on the beam, and the other side piece having an inwardly-extending shoulder, a ratchet wheel carried by the shaft, a weighted lever journaled on the shaft and extending oppositely to the swinging frame, a spring-pressed pawl carried by the lever and held to engage the ratchet wheel, and an arm secured to the pawl and extending into the path of the shoulder on the swinging frame, substantially as described.

PATRICK DUFFY.

Witnesses:

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