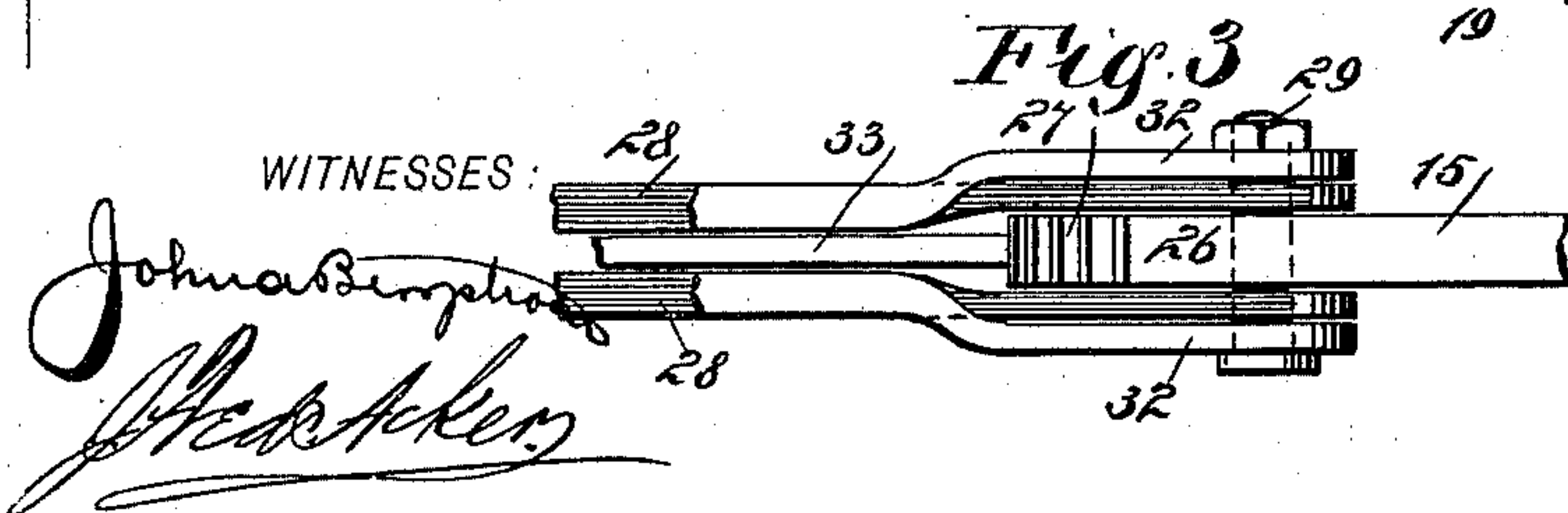
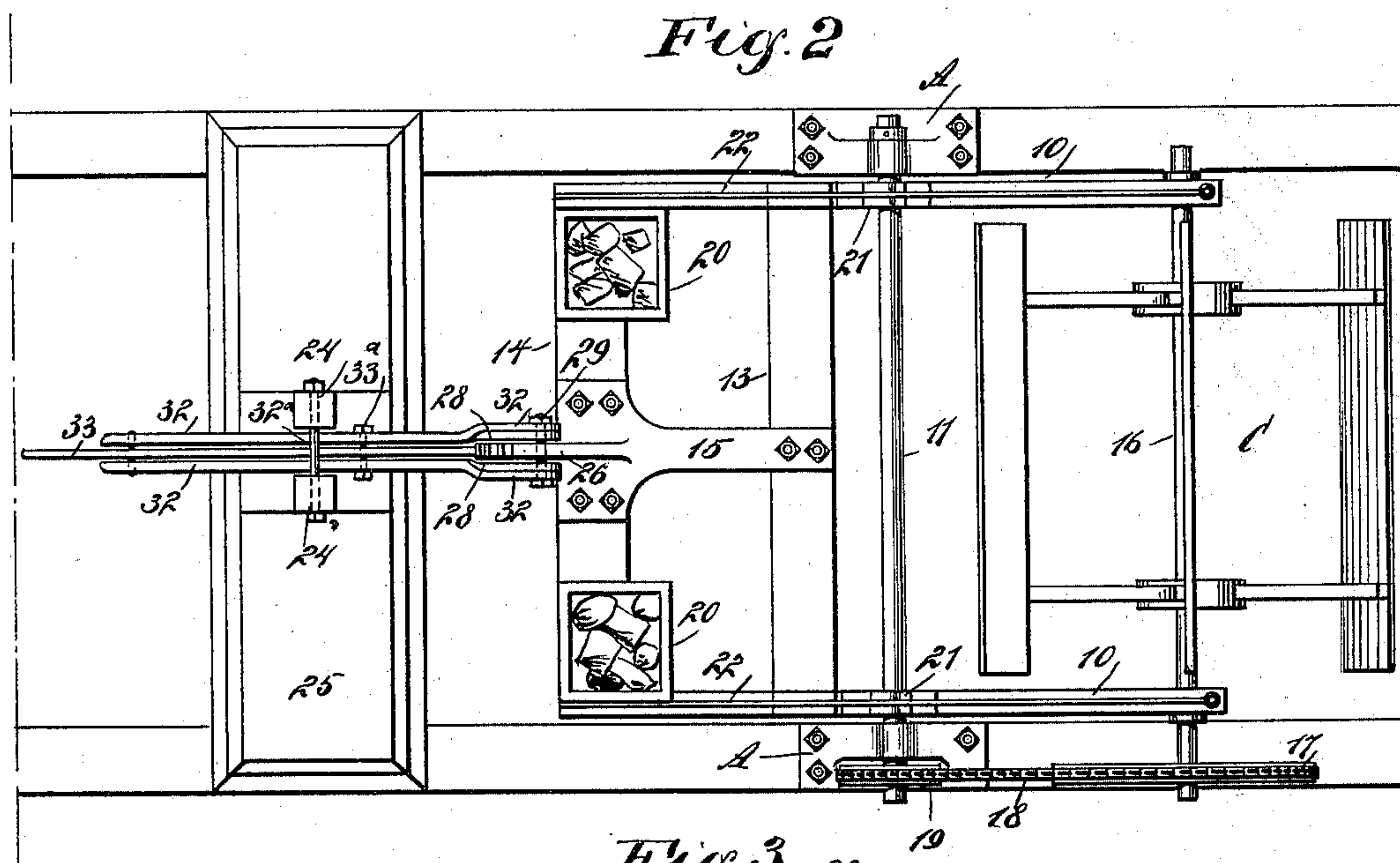
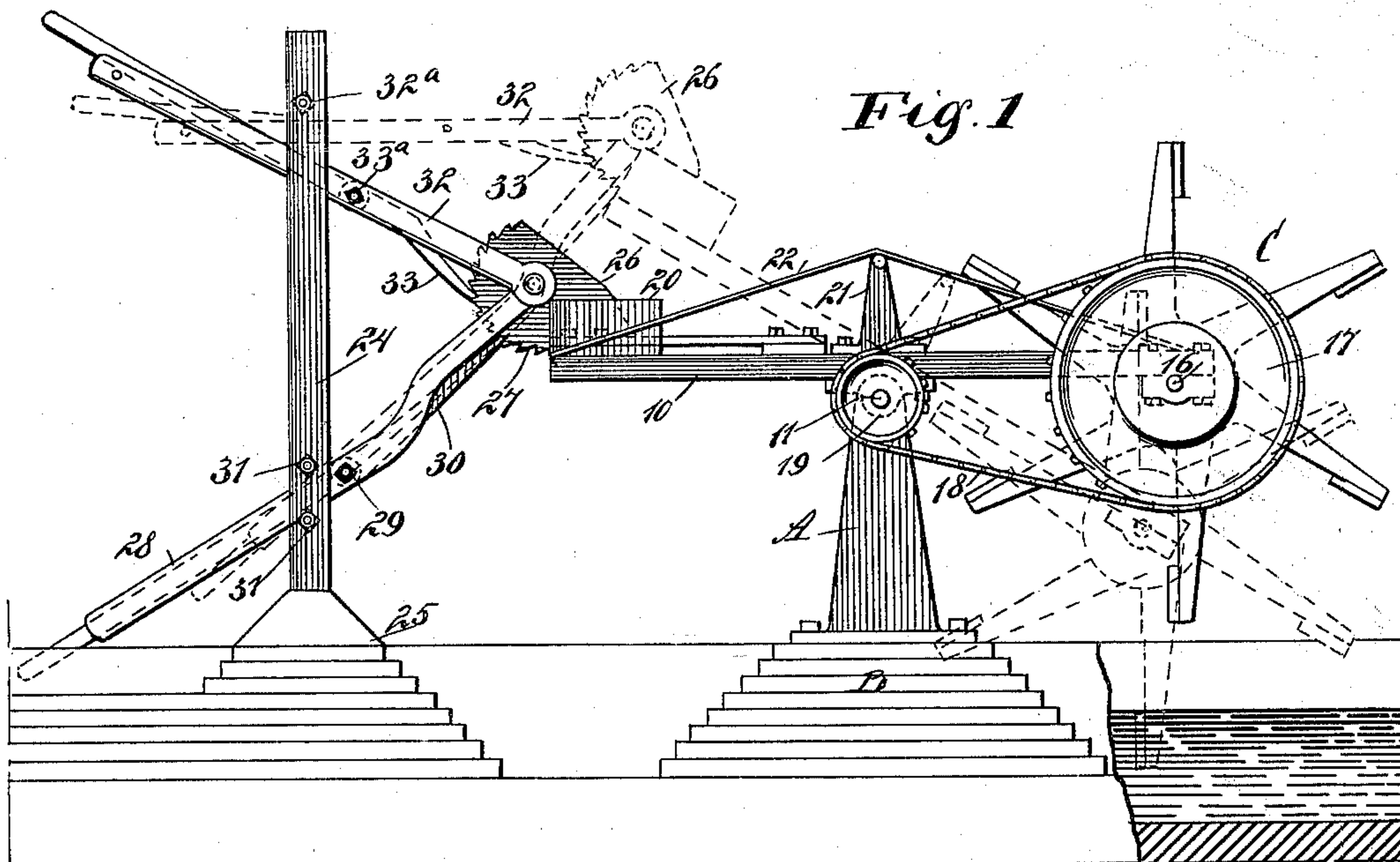


(No Model.)

D. MORGAN.
WATER WHEEL.

No. 598,802.

Patented Feb. 8, 1898.



WITNESSES:

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UNITED STATES PATENT OFFICE.

DAVID MORGAN, OF AXIAL, COLORADO.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 598,802, dated February 8, 1898.

Application filed June 25, 1897. Serial No. 642,260. (No model.)

To all whom it may concern:

Be it known that I, DAVID MORGAN, of Axial, in the county of Routt and State of Colorado, have invented a new and Improved
5 Water-Wheel, of which the following is a full, clear, and exact description.

My invention relates to an improvement in water-wheels, and has for its object to provide a means whereby the wheel may be raised
10 and lowered in a minimum of space and held immersed to a desired extent without interfering with the automatic action of the wheel in rising and falling in concert with the rise and fall of the water.

15 The invention consists in the novel construction and combination of these several parts, as will be hereinafter fully set forth, and pointed out in the claims.

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

Figure 1 is a side elevation of the improved water-wheel. Fig. 2 is a plan view thereof;
25 and Fig. 3 is a detail plan view of the levers for raising, lowering, and locking the wheel, and the rack with which the levers are connected.

Standards A are supported upon a suitable
30 foundation B, and the said standards are adapted in their turn to support a frame. This frame consists of two side pieces 10, which are mounted to turn upon a shaft 11, extending from one upright to the other. The
35 side pieces are connected by an intermediate cross-bar 13 and an end cross-bar 14, the end cross-bar and intermediate cross-bar being connected by a brace 15, preferably of metal.

A water-wheel C is mounted to revolve in
40 the side pieces 10 at the end opposite that at which the cross-bar 13 is located, the said wheel being carried by and secured to a shaft 16, properly mounted in the said side pieces. This shaft is provided at one outer end with
45 a sprocket-wheel 17 or its equivalent, which is connected by a chain 18 with a small sprocket-wheel 19, mounted to turn upon the pivot-shaft 11 for the supporting-frame of the said wheel. At each side of the supporting-
50 frame for the said wheel a box 20 is located upon the end cross-bar 14, and these boxes are weighted to such an extent as to nearly

counterbalance the weight of the water-wheel C, the wheel being heaviest and at all times will have a tendency to fall. In order to
55 strengthen the supporting-frame for the water-wheel, standards 21 are projected upward from the central portion of the side pieces 10, and the said standards are provided with
60 trusses 22, secured to the end portions of the said side pieces.

Uprights 24 are located at the rear of the supporting-frame for the water-wheel, being attached to a suitable bed 25, and upon the
65 brace 15 at the rear of the supporting-frame for the water-wheel a segmental block 26 is either secured to or made integral with the brace, extending in direction of the rear up-
70 rights 24, and this block, which is in the nature of a rack, is provided on its cylindrical face with a series of ratchet-teeth 27. A double lever 28, or a lever made in two members,
75 is held to slide between the rear uprights 24 between rods or pins 31, as shown in Fig. 1, and between the two members of this lever 28 a pawl 30 is pivoted through the medium of
80 a pin 29, and the handle portion of the said pawl is preferably of sufficient length to extend beyond the extremities of the outer end portions of the lever 28, as is also shown in
85 Fig. 1. A second double lever 32 is pivoted on the aforesaid pin 29 and extends normally upward between the rear standards 24, having vertical play between the said standards
90 and being limited in its upward movement by a pin 32^a. Between the members of the lever 32, which is composed of two members, a dog 33 is pivoted, the pivot-pin being designated
95 as 33^a, and a handle portion of this dog is carried beyond the outer extremity of the aforesaid lever 32, as shown in Figs. 1 and 2.

In operation both levers and both the pawl 30 and dog 33 are employed to lower the wheel, while the upper lever and dog 33 only are re-
100 quired to raise the wheel. Let it be supposed the wheel is raised and it is desired to lower it. The dog 33 is released from engagement with the rack 26, and the upper lever 32, carrying the dog, is pressed downward as close as possible to the lower lever 28, and the dog
100 is allowed to again engage with the rack. The pawl 30 is now disengaged from the rack and the wheel will drop until the upper lever strikes the pin 32^a. If the wheel be not dropped

low enough by this operation, the dog 33 is again disengaged from the rack, the rack being meanwhile held by the pawl 30, and the upper lever is again carried down to the lower one, and the pawl 30 is released from engagement with the rack, permitting the wheel to drop still lower. In order to raise the wheel, it is simply necessary to carry the upper lever downward, the dog being in engagement with the rack, and if the wheel has not been sufficiently raised by a single movement of the upper lever said lever is again raised and again carried downward, its dog engaging with the rack, it being understood that the pawl will hold the wheel to the position to which it was first raised while the upper lever is being carried to a position to still further elevate the wheel.

The wheel is always heaviest, whether in the water or out of it, and has always an inclination to drop, the levers, however, preventing the wheel from falling, unless it be desirable to lower it.

It is obvious that in the event the water in which the wheel is placed should rise the frame may be moved correspondingly, so that said wheel will be sustained at the proper relation to the water, even when the water is slack. The weight of the frame enables the levers to be easily operated in raising and lowering the wheel. Without weight in the boxes the levers would need to be too long for convenient operation.

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

1. The combination, with a pivoted frame, a water-wheel carried at one end of the said frame and a rack at the opposite end of the frame, of levers pivoted upon the said rack, one lever being provided with a dog and the other lever with a pawl, both the dog and pawl being arranged for engagement with the rack, the pawl and attached lever being adapted to hold the frame in its adjusted position and the dog and its attached lever being adapted for raising the wheel and to assist in lowering the same, as described.

2. The combination, with a pivoted frame, a water-wheel located near one end of the said frame and a rack of segmental character at the opposite end of the said frame, of uprights, and a lever having guided movement between the said uprights and provided with a pawl for engagement with the rack, and a second lever pivoted likewise to said rack, and

provided with a dog arranged for engagement with said rack, one lever and its dog being adapted to raise the said wheel and assist in lowering it, the other lever and its pawl being arranged to hold the wheel in its adjusted position, and means, substantially as described for limiting the movement of the lever carrying the dog in one direction, as and for the purpose specified.

3. The combination, with a pivoted frame, a water-wheel located at one end of the said frame, the opposite end of said frame being weighted to partially counterbalance said wheel, of a rack secured to the weighted portion of the frame, the said rack being of a segmental form and provided with teeth upon its segmental surface, standards, guide-pins passed through the said standards, a lever passed between the said guide-pins and fulcrumed upon the said rack, a pawl pivoted in the said lever, arranged for engagement with the teeth of the rack, and a second lever likewise pivoted to the said rack, provided with a dog arranged also for engagement with the teeth of the rack, for the purpose specified.

4. The combination, with a pivoted frame provided with a water-wheel at one of its ends, and a weight at its opposite end which partially counterbalances the wheel, of a rack attached to the weighted end of the frame, levers connected with the said rack, one lever being provided with a dog for engagement with the said rack, the other lever having a pawl likewise adapted for engagement with the rack, as and for the purpose specified.

5. The combination, with a pivoted frame provided with a water-wheel at one of its ends and a weight at the opposite end which partially counterbalances the wheel, of a rack attached to the weighted end of the frame, two levers pivotally attached to the said rack, one lever above the other, the upper lever being provided with a dog for engagement with the teeth of the rack, the lower lever carrying a pawl likewise adapted for engagement with the teeth of the rack, a support upon which the lower lever slides, and means substantially as described, for limiting the upper movement of the upper lever, as set forth.

DAVID MORGAN.

Witnesses:

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F. W. H. PFEIFFER.