

(No Model.)

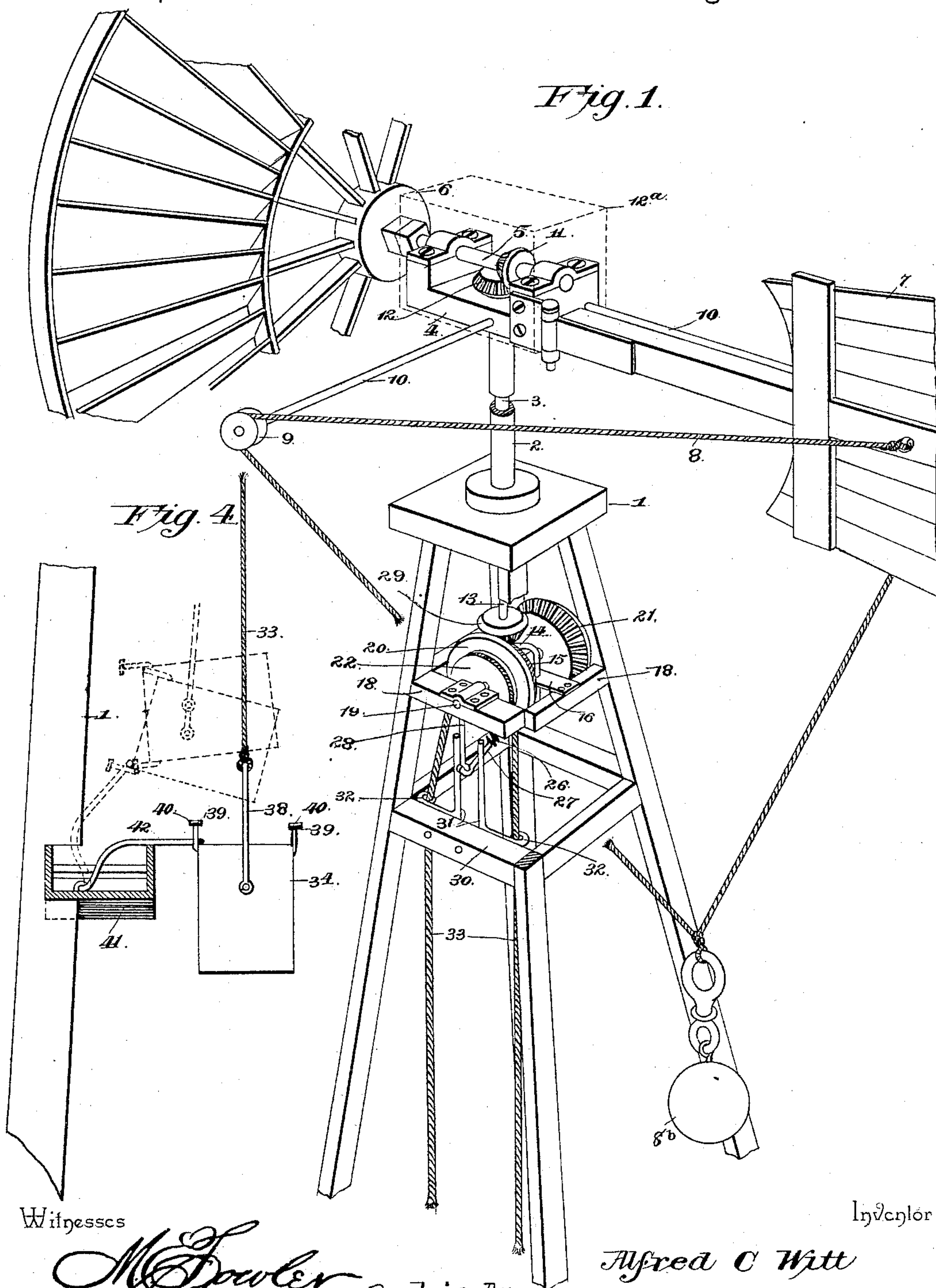
2 Sheets—Sheet 1.

A. C. WITT.

DEVICE FOR RAISING WATER FROM WELLS.

No. 434,969.

Patented Aug. 26, 1890.



Witnesses

M. Fowler

Wm. Bagger

By His Attorneys,

Alfred C Witt

C. Snowles

Inventor

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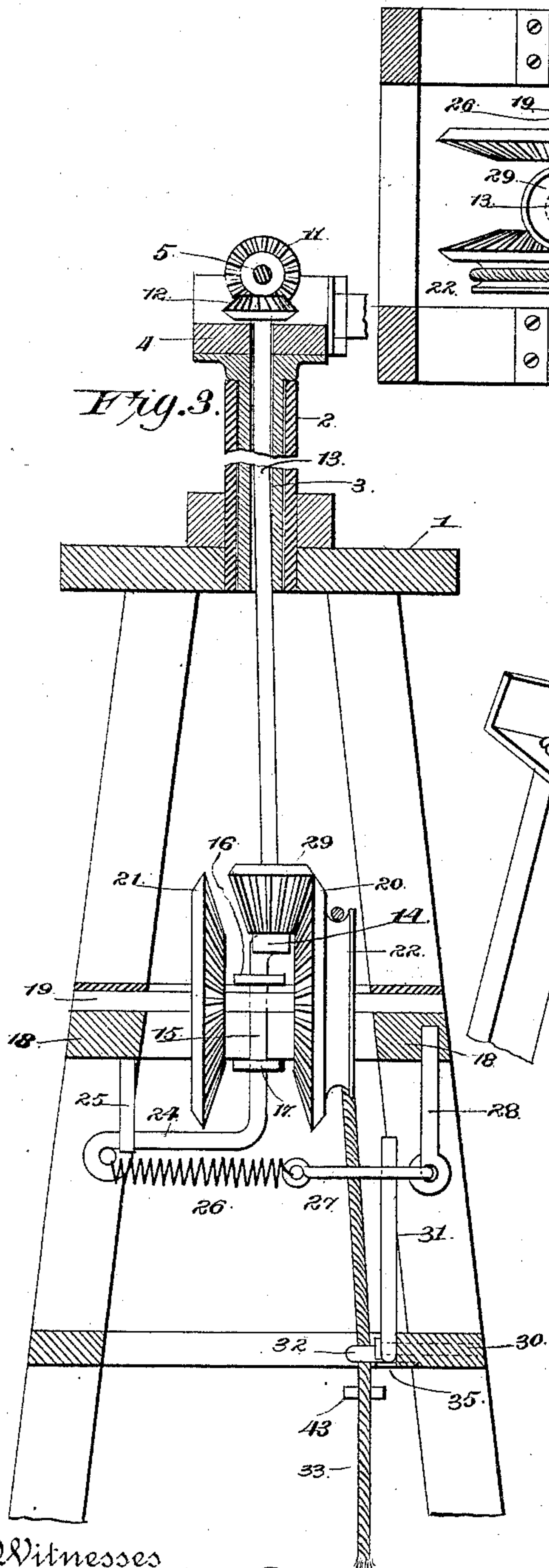


Fig. 3.

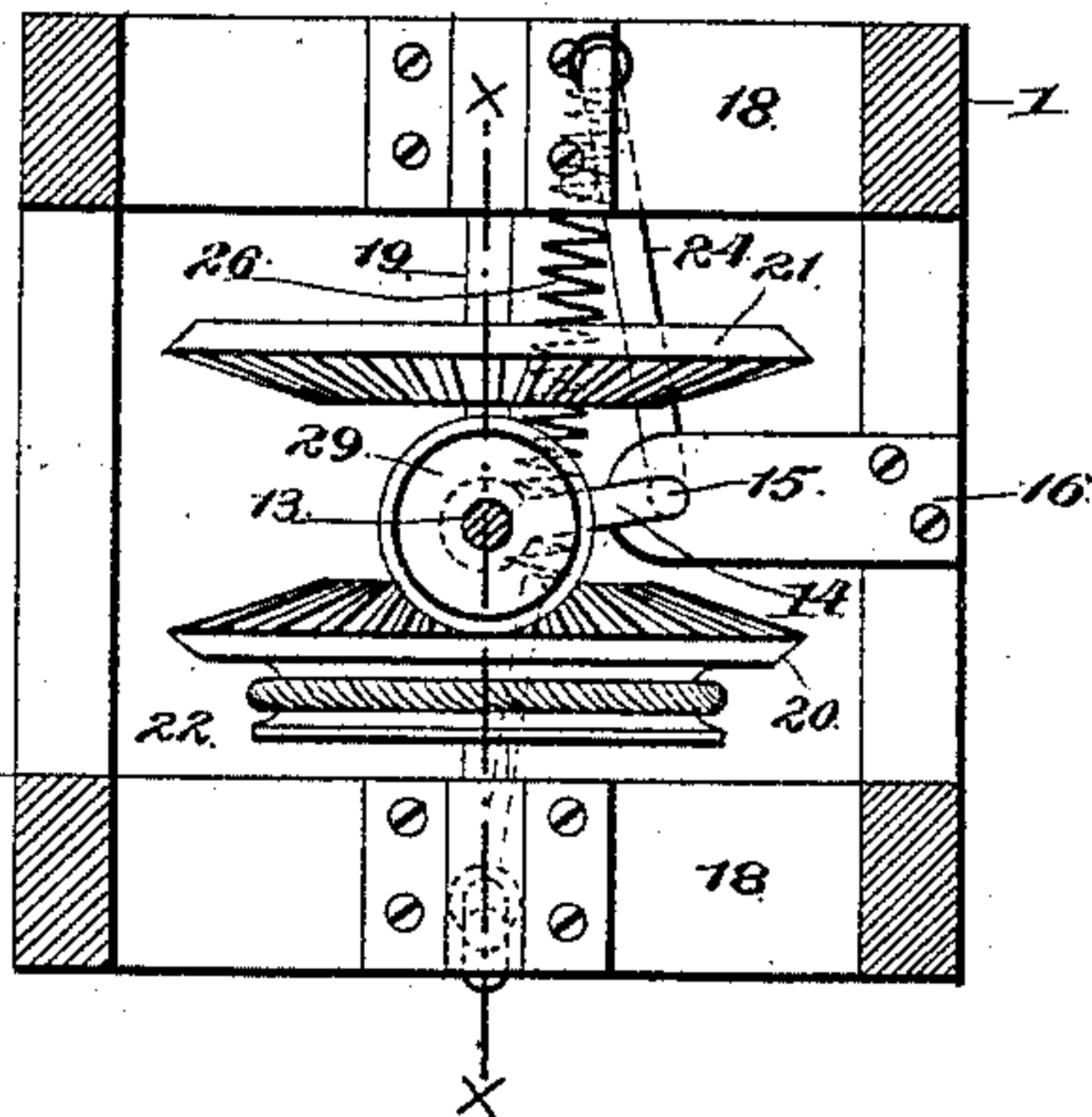


Fig. 2.

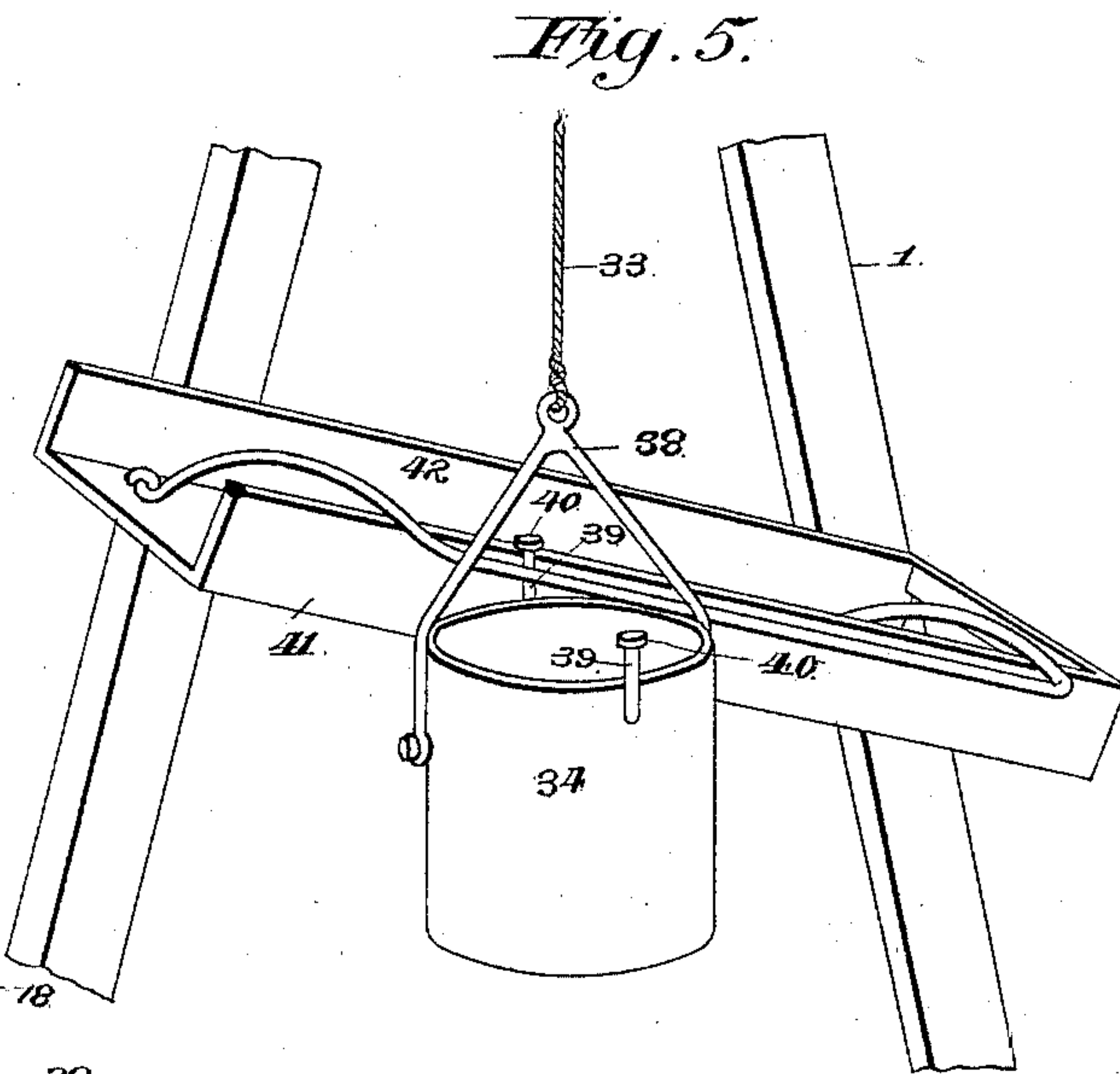
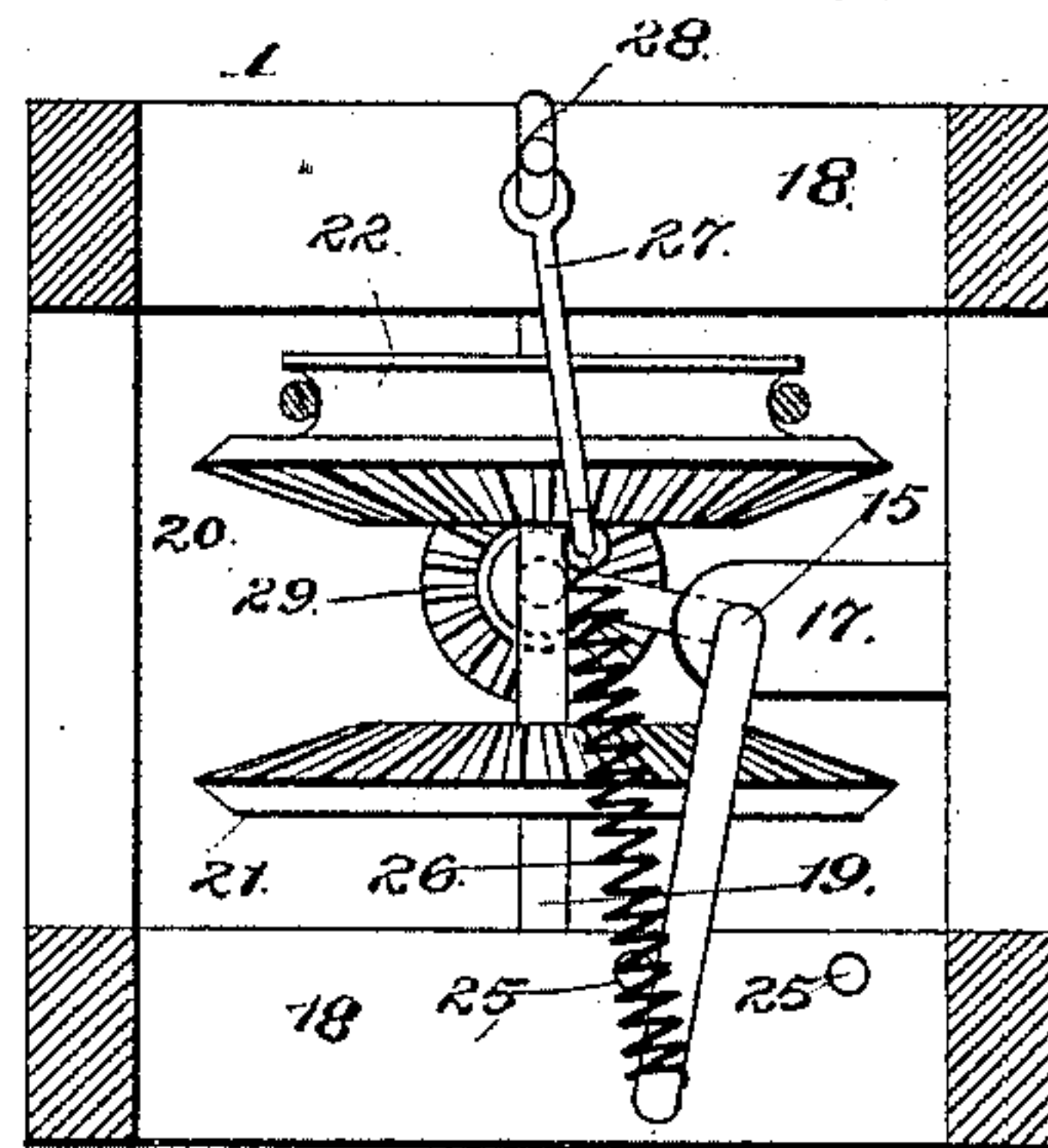


Fig. 5.

Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

ALFRED C. WITT, OF GRIGSBY, KANSAS.

DEVICE FOR RAISING WATER FROM WELLS.

SPECIFICATION forming part of Letters Patent No. 434,969, dated August 26, 1890.

Application filed January 13, 1890. Serial No. 336,782. (No model.)

To all whom it may concern:

Be it known that I, ALFRED C. WITT, a citizen of the United States, residing at Grigsby, in the county of Scott and State of Kansas, have invented a new and useful Device for Raising Water from Wells, of which the following is a specification.

This invention relates to devices for raising water from wells; and it has for its object to provide a hoisting mechanism operated by windmill-power, and comprising a pair of buckets for raising the water, reversing mechanism for automatically reversing the movement of the buckets at the proper time, and mechanism for automatically discharging the contents of the buckets.

The invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view of my improved water-raising device complete and in position for operation. Fig. 2 is a horizontal sectional view, on a larger scale, of the reversing mechanism. Fig. 3 is a vertical sectional view taken on the line *xx* in Fig. 2. Fig. 4 is a detail view, on a larger scale, of the bucket tilting or discharging mechanism. Fig. 5 is a detail perspective view. Fig. 6 is a reverse plan view of reversing mechanism.

Like numerals of reference indicate like parts in all the figures.

1 designates a windmill-tower of ordinary construction, in the top piece or cap of which is secured a vertical upwardly-extending pipe 2, in which is journaled a tubular shaft 3, to the upper end of which is secured the head-block 4. The latter is provided with bearings for the horizontal shaft 5, at the front end of which a wind-wheel 6, of ordinary construction, is secured. A tail-vane 7 is hinged to one of the rear corners of the head-block 4, and to the opposite sides of said vane are secured the ends of a rope 8. Said rope passes over pulleys 9 at the outer ends of arms 10, which extend from the head-block 4 at right angles to each other, one rearwardly and the other laterally. Upon the rope 8 is mounted a weight 8^b, the position of which upon the rope determines the position of the tail-vane

and regulates the speed of the wind-wheel. By using a weight sufficiently heavy the tail-vane may be brought to a position to keep the wheel entirely out of the wind. The horizontal shaft 5 is provided with a pinion 11, meshing with a pinion 12 at the upper end of a vertical shaft 13, extending through the tubular shaft 3 and having its bearing in the latter, said bearing being, however, sufficiently loose to enable the lower end of the said shaft 13 to vibrate within certain limits. Pinions 11 and 12 are protected by a cover 12^a. The lower end of the shaft 13 is journaled in a crank 14, formed at the upper end of a vertical shaft 15, which has its bearings in horizontal brackets 16 and 17 near the upper end of the windmill-tower.

The tower 1 is provided near its upper ends with cross-bars or braces 18, having bearings for a transverse horizontal shaft 19, upon which are mounted a pair of bevel-gears 20 and 21, the toothed sides of which face each other, as shown. A grooved pulley 22, of suitable construction, is likewise mounted upon the shaft 19. The bevel-gears 20 and 21 are located on opposite sides of the braces or cross-bars in which the vertical shaft 15, having the crank 14, is journaled. The lower end of the shaft 13 is provided with a pinion 29, which, by vibrating the shaft 15, may be thrown into engagement with either one of the gear-wheels 20 or 21. The lower end of the shaft 15 has an arm or crank 24 extending horizontally in an outward direction between two pins 25, extending downwardly from one of the cross-bars or braces 18, and which serve to limit the vibratory movement of the said arm. The outer end of the arm 24 is connected by a coiled spring 26 with one end of a rod 27, the opposite end of which is pivoted to a bracket 28, depending from the cross-bar 18 on the opposite side of the tower. The pins 25 are located on opposite sides of the shaft 15, having the arm 24, and it will therefore be seen that the tension of the spring 26 serves to hold the arm 24 at all times in contact with one of the pins 25. By shifting the position of the arm 24 the crank 14 at the upper end of the shaft 15 is also shifted, so as to throw the lower end of the shaft 13, journaled in said crank and carrying the pinion 29, from one side to the other,

thus throwing said pinion 29 out of mesh with one of the bevel-gears 20 or 21, as the case may be, and into mesh with the other, thereby reversing the direction of rotation of the shaft 19, carrying the said bevel-gears.

30 is a cross-bar or brace to which is pivoted a pair of bell-crank levers 31, the horizontal arms of which extend outward from each other, and are provided with eyes 32, forming guides for the hoisting-rope 33, which passes over the grooved pulley 22, and to the ends of which the buckets 34 are attached. Pins or brackets 35 support the horizontal arms of the bell-crank levers 31, and the vertical arms of the latter extend upwardly on either side of the connecting-rod 27.

The well-buckets 34 are provided with bails 38, hinged to the outer sides of the said buckets at about two-thirds of their height, and the upper edges of the said buckets are provided with upwardly-extending pins or pegs 39, located on diametrically-opposite sides, between the points at which the bails 38 are hinged, and having heads 40.

Suitably attached to the tower 1 at any convenient point of its height is a trough 41, one end of which may be open and provided with a spout adapted to discharge the water into some suitable reservoir or receptacle, or such receptacle may be formed by the trough itself. Hinged in the bottom of said trough or receptacle is a rectangular bail 42, which extends over the inner edge of the said trough and lies in the path of the well-buckets.

The reversing-levers or bell-crank levers 31 may be actuated by contact with the bails of the buckets, or by means of stops 43, attached at suitable points upon the hoisting-rope.

In operation the wind-wheel transmits motion, through the vertical shaft 13, to one of the bevel-gears upon the horizontal shaft 19, which is thus caused to revolve in either direction, causing one of the well-buckets to be raised while the other one descends. When the rim of the full bucket comes in contact with the rectangular bail 42, one of the pins or pegs 39 of said bucket will be engaged by the said bail, causing the bucket to be tilted and its contents to be discharged into the trough or receptacle. The bails 38 of the buckets are so constructed that by frictional contact with bail 42 they will swing the buckets to bring the pegs 39 in the line of said bail 42. At about the same time, or when the bucket has been emptied, its bail, or the stop 43 upon the hoisting-rope, comes in contact with the horizontal arm of one of the reversing-levers, causing said lever to swing upon its fulcrum and to engage the connecting-rod 27, thus vibrating the vertical rock-shaft 15 until its arm 24 comes into contact with the opposite pin 25, and thus likewise reversing the position of the crank 14 at the upper end of said rock-shaft, throwing the lower end of the shaft 13, carrying the pinion 29, out of engagement with the bevel-gear which it was at the time engaging and into mesh with the

other one, thus reversing the direction of rotation of the shaft 19, causing the empty bucket to descend and the full one to be elevated. The operation, it will be seen, is entirely automatic, and will continue as long as the wind-wheel is in operation. Should it be desired to suspend the operation of the device, it may be accomplished by throwing the windmill out of gear in the usual manner.

From the foregoing description, taken in connection with the drawings hereto annexed, the operations and advantages of this invention will be readily understood.

The construction of the device is exceedingly simple and inexpensive, and it requires no attention, being entirely automatic in its operation.

While I have herein described the preferred form of the invention, I desire it to be understood that I reserve the right to such modifications and changes in the construction of the detailed parts of the same as may be resorted to without departing from the spirit of my invention.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a device for raising water, the combination of a windmill-tower, a horizontal shaft journaled in cross-bars near the upper end of the same, a pair of bevel-gears mounted upon the said shaft, facing each other, a rock-shaft journaled vertically between the said bevel-gears and having a crank at its upper end, a vertical shaft having its lower end journaled in said crank and provided with a pinion adapted to mesh with either bevel-gear, a wind-wheel arranged to communicate motion to said vertical shaft, and mechanism for reversing the position of the rock-shaft, substantially as and for the purpose set forth.

2. The combination of the windmill-tower, a pipe extending upwardly from the same, a tubular shaft journaled in said pipe and having a head-block at its upper end, a shaft journaled on said head-block and having a wind-wheel and a pinion mounted thereon, a shaft extending vertically through the tubular shaft and having at its upper end a pinion meshing with the pinion upon the wind-wheel shaft and having its lower end stepped in a crank at the upper end of a vertical rock-shaft and provided with a pinion, bevel-gears mounted upon a horizontal shaft on either side of said pinion and adapted to mesh therewith alternately, and mechanism for reversing the position of the rock-shaft and for retaining it in any position to which it may be adjusted, substantially as and for the purpose set forth.

3. The combination of the vertical rock-shaft having a crank at its upper end, a vertical shaft stepped in said crank and having a pinion, a transverse shaft having bevel-gears arranged on opposite sides of and adapted to engage said pinion, an arm extending from the lower end of the rock-shaft, pins

or stops to limit the movement of said arm, a coiled spring and pivoted rod connecting the outer end of said arm with a bracket, a pair of bell-cranks or trip-levers, the vertical arms of which extend upwardly to engage the said connecting-rod and the horizontal arms of which are provided with guide-eyes, a pulley mounted upon the transverse shaft, a hoisting-rope passing over said pulley and passing through the eyes in the trip-levers, and the buckets or stops upon said hoisting-rope to engage the said trip-levers, substantially as and for the purpose set forth.

4. The combination of the windmill-tower, the horizontal shaft near the upper end of the same, the wind-wheel, mechanism for transmitting motion from the latter to the said horizontal shaft, mechanism for reversing the direction of rotation of the latter, trip-levers for actuating the said reversing mech-

anism, a pulley upon the horizontal shaft, a hoisting-rope passing over said pulley and through eyes in the horizontal arms of the trip-levers, the buckets having pivoted bails attached to said hoisting-rope, devices to engage and actuate the trip-levers, pins or pegs extending upwardly from the rims of the buckets, a trough or receptacle, and a bail pivoted in the bottom of the latter and extending in the path of the buckets to engage the pins or pegs of the latter, substantially as and for the purpose herein set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ALFRED C. WITT.

Witnesses:

J. TURNBULL,
GEORGE NORMAN.