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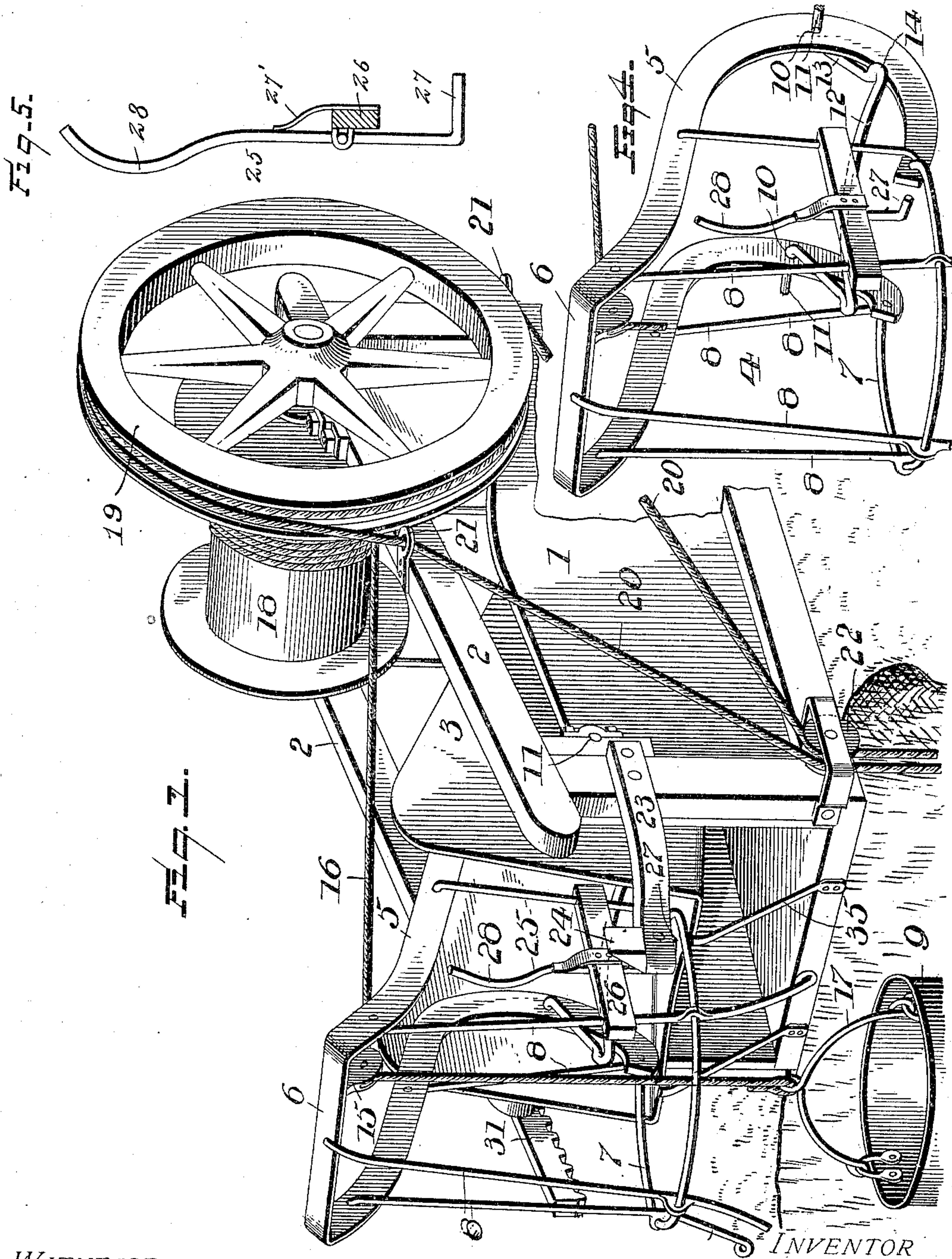
Patented Oct. 15, 1901.

G. H. BOWERS.  
HOISTING AND DUMPING MACHINE.

(Application filed Apr. 10, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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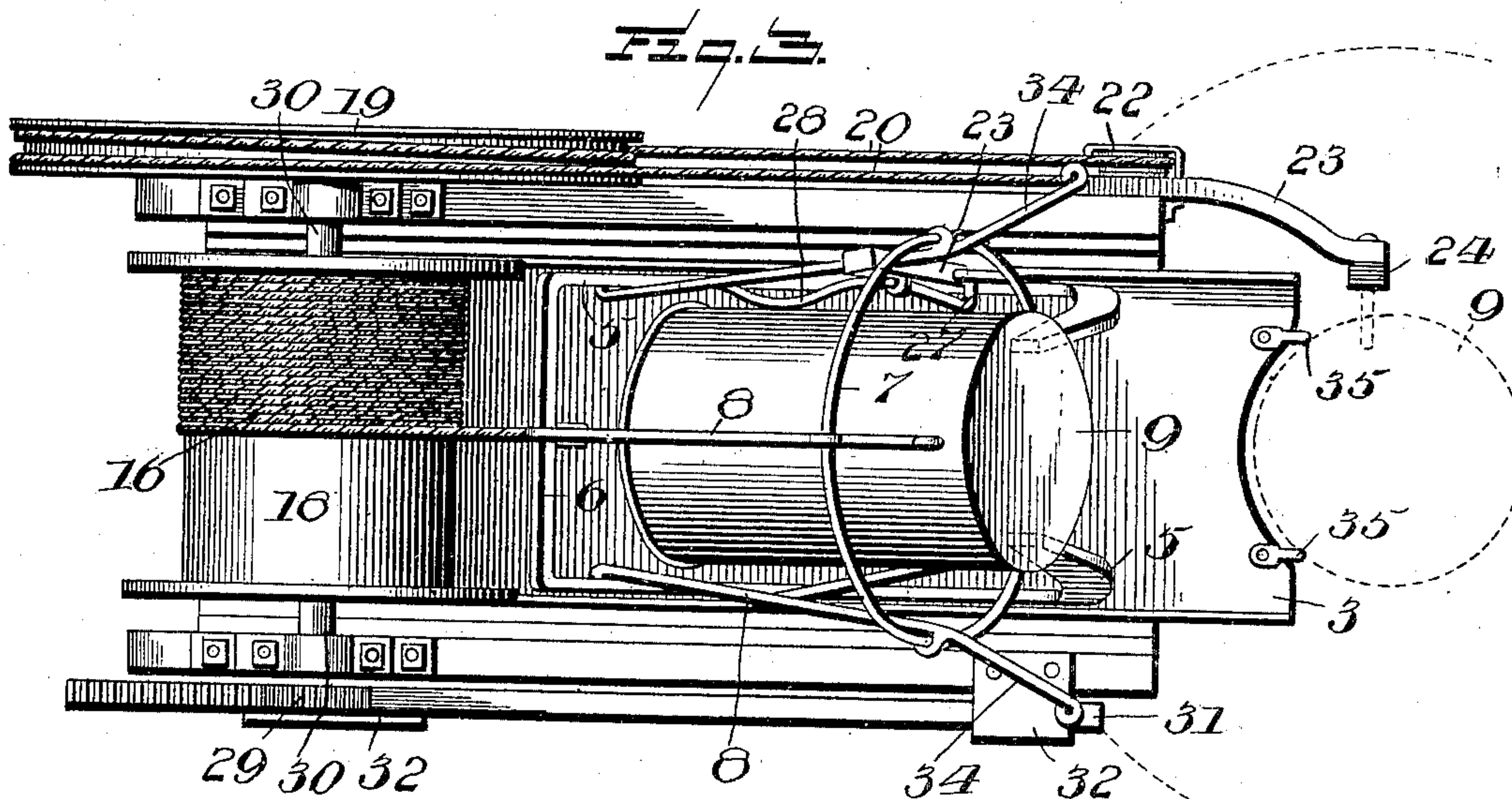
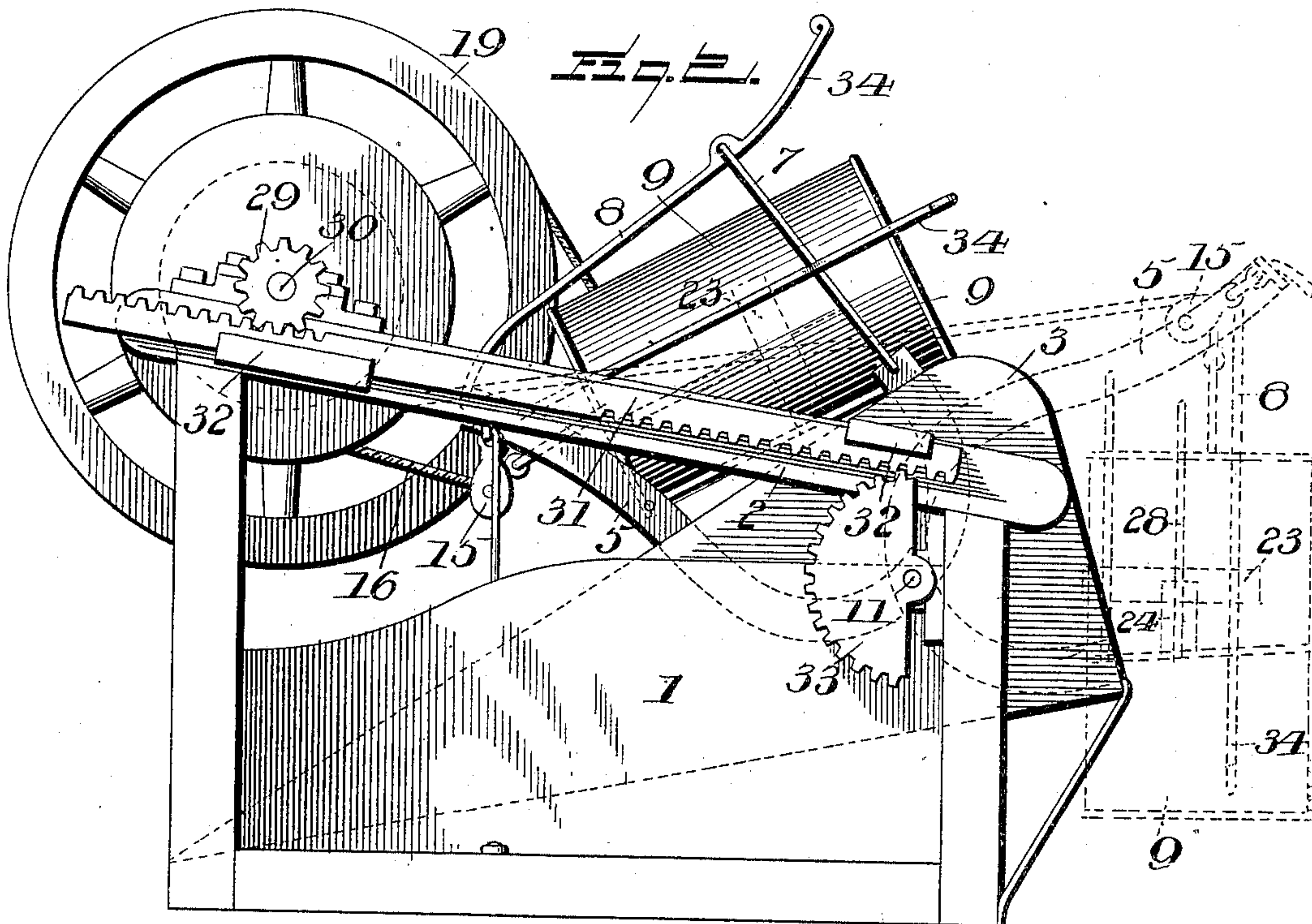
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(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

GEORGE H. BOWERS, OF SALIDA, COLORADO.

## HOISTING AND DUMPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 684,768, dated October 15, 1901.

Application filed April 10, 1900. Serial No. 12,297. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. BOWERS, a citizen of the United States, residing at Salida, in the county of Chaffee and State of Colorado, have invented a certain new and useful Hoisting and Dumping Machine, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to hoisting and dumping machines, and has for its object to simplify and improve the construction illustrated in Letters Patent No. 624,288, granted to me May 2, 1899.

The object of the present invention is to dispense with the offstanding band or hoop around the bucket.

Another object is to provide means to lock the tilting frame in position to receive the bucket.

Another object of the invention is to provide means whereby the bucket is caused to unlock the tilting frame as it comes in contact therewith, also to provide an improved mechanism for returning the tilting frame to its normal position.

A further object of the invention is to provide an improved construction of tilting frame and to combine therewith a cage or basket in which the bucket is received and held as the tilting frame swings.

Other objects and advantages of the invention will appear in the course of the ensuing description.

The invention consists in a hoisting and dumping machine embodying certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and incorporated in the claims.

In the accompanying drawings, Figure 1 is a perspective view showing the improved hoisting and dumping machine arranged adjacent to a well or other excavation, the tilting frame being shown in its lowered or normal position with the bucket depending therefrom. Fig. 2 is an elevation of the machine, taken from the opposite side to that shown in Fig. 1. Fig. 3 is a plan view of the machine. Fig. 4 is a detail perspective view of the tilting bucket-frame. Fig. 5 is a detail cross-section through the hanger-bar, showing the manner of mounting the latch thereon.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

The primary object of this invention is to enable a single operator to dig a well or other excavation and to hoist and dump a suitable receptacle which carries the earth from the bottom of the well or excavation and discharges it away from the mouth or entrance to said well. The machine in its general construction resembles that disclosed in my said prior patent, comprising a suitable frame 1, having inclined top bars 2, parallel to each other and arranged a suitable distance apart to have mounted between them a reversely-inclined trough 3, which slopes away from the mouth of the well, as shown in Fig. 1. The frame 1 is preferably formed of wood, while the trough 3 is preferably constructed of sheet metal and securely fastened between the side portions of the frame 1 in any convenient manner.

Mounted in the receiving end of the trough 3 is what I term a "tilting bucket-frame" 4, the main body of which is formed of a stout strap of iron, which is bent to form the curved side portions 5, and the cross-bar or connecting portion 6, uniting said side bars at their upper and outer ends. The side bars 5 fit between the side walls of the trough 3, and their lower ends are curved in semicircular form, as clearly shown in the detail view, Fig. 4, and extended forward, so as to project slightly outside of the receiving end of the trough, where they have connected thereto the terminals of a circular band or brace 7, which is normally disposed in an approximately horizontal plane. Connected to the band 7 at intervals are rods or uprights 8, which are rigidly connected at their upper ends to the tilting bucket-frame, as shown, the said rods 8 forming, together with the band 7, an open frame or basket sufficiently large to admit a hoisting bucket or receptacle 9.

The side bars 5 of the bucket-frame are provided with oppositely-located openings 10, through which pass the journal portions 11 of a supplemental swinging frame 12. The central portion of the frame 12 extends across the bucket-frame and has its end portions bent at right angles, as shown at 13, the journals 11 being formed at the extremities of said



arms 13 and inserted in bearings in the frame 1, as shown in Fig. 1. Offsets 14 are formed at the junction of the arms 13 with the central portion 12 of the frame, which offsets are adapted to bear against the lower portions of the side bars 5 for returning the tilting frame to its normal position, as will hereinafter appear. The frame 12 also forms a support or rest for the bucket 9 during the tilting of the bucket-frame, and the journals 11 form the fulcrum upon which the tilting frame swings.

Attached to the cross-bar 6 of the tilting frame is a pulley-block 15, over which runs a hoisting-cable 16, one end of which is attached to the bail 17 of the bucket 9. The cable 16 is wound around a drum 18, mounted on the frame 1 in suitable bearings. On the shaft of drum 18 is placed a grooved wheel 19, around which passes an operating rope or cable 20, said rope being given one or more complete turns around the wheel 19, after which the end portions of the cable are passed through guides 21 and thence over sheaves or pulleys 22 down into the well or excavation, where either end of the rope may be grasped for rotating the wheel 19 and drum 18 in the desired direction for hoisting or lowering the bucket 9.

In order to lock the tilting frame in its normal position, a rigid arm 23 is attached to the frame 1 and provided at its projecting end with a beveled lip 24, in connection with which a pivoted latch 25 operates. The lip 24 serves to deflect the latch or push the same to one side as the latch moves downward. The latch 25 is fulcrumed to swing on a horizontal axis on a hanger-bar 26, secured to a pair of the rods 8, hereinabove described.

The latch 25 is provided at its lower end with a projection or finger 27, adapted to engage beneath the arm 23, and thereby lock the tilting frame. The upper end of the latch is inwardly curved or offset, as shown at 28, such portion projecting into the path of movement of the bucket 9, so that as the bucket enters the basket of the tilting frame it comes in contact with the offset portion of the latch, thereby rocking the latter on its fulcrum and disengaging the finger or projection 27 from the arm 23. A spring 27' on the arm 23 bears against the latch 25 and holds the offset portion 28 thereof in the path of the bucket, but allows the latch to rock when the bucket comes in contact therewith. In the further upward movement of the bucket it comes in contact with the tilting frame, and as the hoisting-cable is further wound upon the drum the tilting frame is swung on its axis from the position shown in Fig. 1 to the position shown in Fig. 2, whereupon the contents of the bucket are dumped and are carried by gravity away from the mouth of the well or excavation, passing downward through the inclined chute or trough 3. At the opposite end of the shaft of the drum 18 from the wheel 19 is a spur gear-wheel 29. Said wheel is fast on the shaft 30 of the drum and meshes

with a reciprocatory rack-bar 31, sliding in suitable ways or bearings 32 on the frame 1. At its opposite end the rack-bar 31 meshes with a mutilated or half-spur gear-wheel 33, which is fast on one of the journals 11 of the supplemental frame 12. After the bucket has been dumped the operator reverses the direction of rotation of the drum by pulling on the proper end of the operating cable or rope. This causes a rotation of the gear-wheel 29, and the rack-bar 31 is thereby slid in the direction of the well or excavation and operates through the medium of the mutilated gear-wheel 33 to swing the frame 12, which, operating against the side bars of the bucket-frame, in turn swings the latter outward from the position shown in Fig. 2 to the normal position shown in Fig. 1. As the bucket-frame swings to the position shown in Fig. 1 the latch 28 snaps into engagement with the arm 23, thus locking the bucket-frame, and in the further unwinding of the hoisting-cable 16 the bucket 9 is again lowered into the well or excavation. It will be understood that as the shaft 30 and wheel 29 rotate and move the rack-bar 31 toward the well the hoisting-cable is at the same time unwound from the drum, which allows the bucket 9 and bucket-frame to swing outward as the bucket-frame is actuated by the devices hereinabove described.

In order to properly guide the bucket 9 into the basket, the rods 8 are extended below the band 7 and flared outwardly in opposite directions, as shown at 34, and other guides or deflectors 35 in the form of rods are secured to the end of the frame 1 and the trough 3, so as to prevent the edge of the bucket from striking against the bottom of the trough in its upward movement.

From the foregoing description it is thought that the construction of the hoisting and dumping machine will be clearly understood. It will also be seen that by the construction described I am enabled to dispense with the offstanding band or hoop around the bucket, as shown in my prior patent; also, that the tilting bucket-frame is locked in position to receive the bucket, so that it cannot begin to swing until the bucket enters and is included within the basket. It will also be seen that I have provided means whereby the bucket is caused to unlock the tilting frame, that reliable mechanism is provided for returning the tilting frame to its normal position, and that I have provided an improved construction of tilting frame having combined therewith a cage or basket in which the bucket is received and held during the tilting movement of the frame.

I do not desire to be limited to the exact details of construction hereinabove set forth, but reserve the right to change, modify, or vary the construction within the scope of this invention.

Having thus described the invention, what is claimed as new is—



1. In a hoisting and dumping machine, the combination with a stationary frame, of a tilting bucket-frame, a basket associated with said bucket-frame, a bucket arranged 5 to enter said basket, raising and lowering means for the bucket, a spring-actuated latch carried by the bucket-frame, a projection on the stationary frame, with which the latch engages, and an offset on the latch project- 10 ing into the path of movement of the bucket, whereby the bucket unlatches the bucket-frame, substantially as and for the purpose specified.

2. In a hoisting and dumping machine, the 15 combination with a stationary frame, of a tilting bucket-frame, a bucket, a hoisting-cable therefor connected with the bucket-frame, means for rocking the bucket-frame, and a basket attached to the bucket-frame 20 and comprising a plurality of rods or uprights connected at one end to the bucket-frame proper and having their lower ends deflected to form a flaring entrance to the basket and a

band or hoop connected to the bucket-frame proper and attached at intervals to the rods 25 or uprights, substantially as described.

3. In a hoisting and dumping machine, the combination with a stationary frame, of a tilting bucket-frame, a supplemental frame having projecting journals passing through 30 the side bars of the bucket-frame into the stationary frame and forming the axis of the bucket-frame, offsets on the supplemental frame which coöperate with the bucket-frame, a mutilated gear on one of the journals of the 35 supplemental frame, a rack-bar coöperating therewith, a drum geared to said rack-bar, a bucket, a hoisting-cable therefor wound upon the drum, and means for operating the drum, 40 substantially as described.

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

GEORGE H. BOWERS.

Witnesses:

B. D. KILLION,

FRANK E. WILSON.