

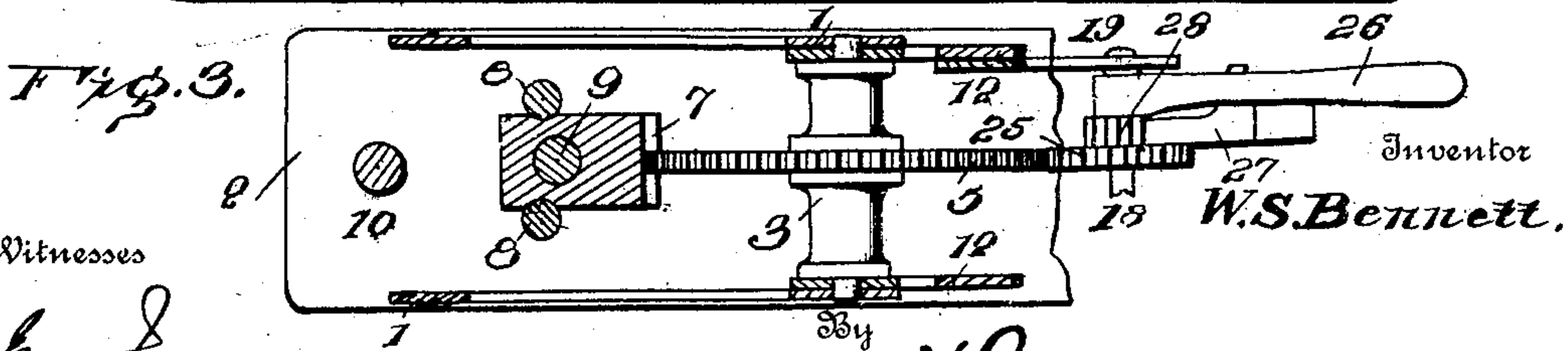
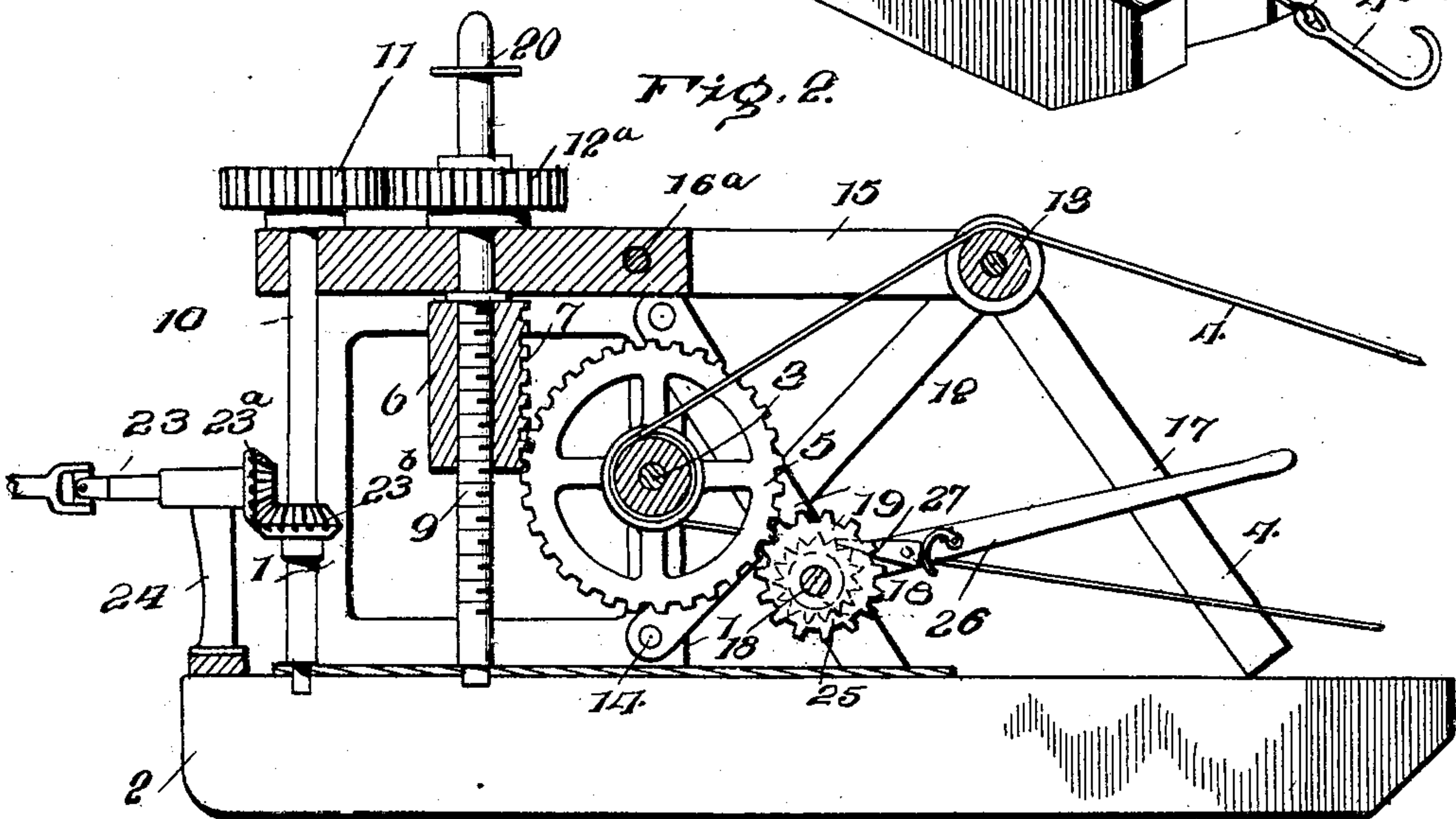
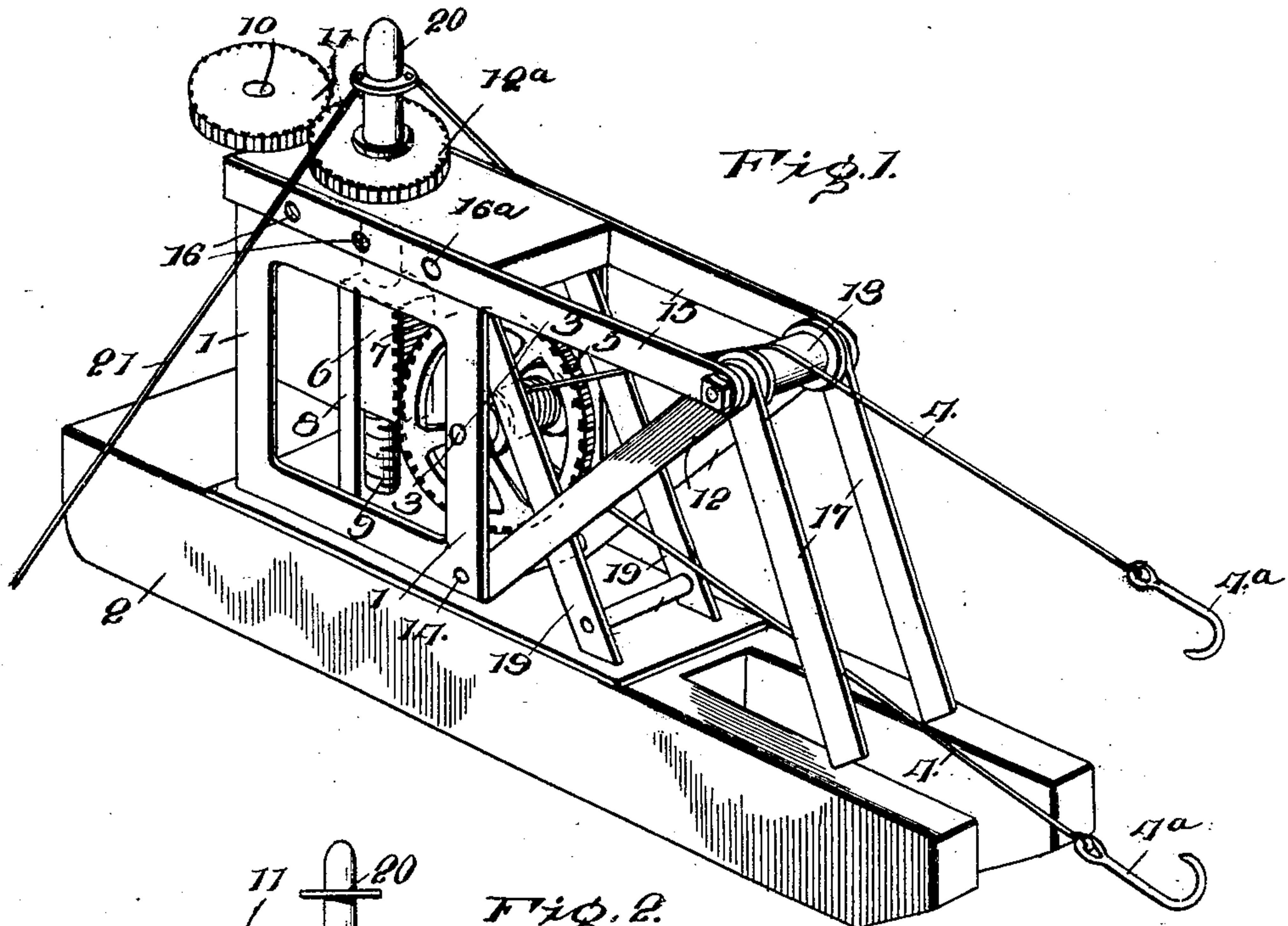
No. 771,602.

PATENTED OCT. 4, 1904.

W. S. BENNETT.
HOISTING MACHINE.

APPLICATION FILED JUNE 11, 1904.

NO MODEL.



Witnesses

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HOISTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 771,602, dated October 4, 1904.

Application filed June 11, 1904. Serial No. 212,141. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. BENNETT, a citizen of the United States, residing at Leavenworth, in the county of Leavenworth and State of Kansas, have invented certain new and useful Improvements in Hoisting-Machines, of which the following is a specification.

My invention relates to machines of the derrick type and is specially designed for hoisting purposes in moving heavy weights from one location to another.

The invention resides particularly in the operating means for actuating the hoisting or operating ropes or cables, the peculiar mounting of said ropes or cables with reference to the winding shaft or drum, and in the form of derrick provided upon the machine.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a machine constructed in accordance with my invention. Fig. 2 is a longitudinal vertical sectional view. Fig. 3 is a horizontal sectional view partially broken away.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In its general structure my machine comprises, essentially, a frame consisting of vertical uprights 1, which rest upon a suitable base 2, as found necessary in the actual use of the machine. As illustrated, the machine is stationary. However, it will be understood

that the same may be mounted upon a truck or carrier when it is desired to make the invention portable. A horizontal winding shaft or drum 3 is mounted in certain of the uprights 1 of the frame, preferably adjacent one end thereof, and wound about the shaft or drum 3 are the independent hoisting or operating ropes or cables 4. The operating-ropes 4 are reversely wound upon opposite ends of the shaft 3, and separating the wound portions of the operating-cords is a power-wheel in the form of a gear 5, which power-wheel is designed to impart the necessary revolution to the shaft 3 when the machine is in operation.

The operating means for actuating the power-wheel 5 of the shaft 3 comprises a rack-bar 6, vertically movable in the frame and having its teeth 7 in mesh with the power-wheel 5 aforesaid. The rack-bar 6 is mounted in vertical spaced guides 8 for slidable movement therebetween, and this rack-bar is actuated by means of a vertical screw 9, which passes through a vertical opening in the rack-bar. It is designed to utilize any suitable means for rotating the screw 9, and that shown consists of a drive-shaft 10, provided with a gear 11, which meshes with a similar gear 12^a, mounted upon the upper end of the screw 9. The shaft 10 may be driven by means of an engine or other motor, or, if desired, the screw 9 may be operated by means of a sweep or similar device, this latter, however, being non-essential within the contemplation of the invention.

The derrick is disposed at one end of the frame of the machine and consists of the pivoted supporting-standards 12, which extend upwardly and outwardly from the frame-bars 1 adjacent thereto, and these standards 12 carry at their upper ends the pulley or sheave 13. The standards 12 are pivoted at their lower ends to the lower end portions of the end uprights 1, as shown at 14, and these standards

are adjustable, so as to lower or raise the pulley 13 to thereby admit of adjustment of the elevation of this pulley—a feature which is desirable in this class of devices. Adjusting-bars 5 15 connect the upper ends of the standards 12 with the upper portion of the frame of the machine, said bars 15 being pivoted to the standards and having adjustable connection with the frame. Specifically the bars 15 are provided 10 at their inner ends with a plurality of openings 16, through which a transverse pivot member 16^a may be passed to rigidly attach the bars in an adjusted position. The bars 15 are adapted to be tilted on their pivot 16^a, so 15 that their outer ends are elevated or lowered, and this movement will correspondingly actuate the standards 12. In order to brace the derrick structure more firmly, pivoted brace-bars 17 are carried by the standard, and these 20 bars are pivoted at their upper ends to the upper ends of the standards 12, their lower ends being adapted to rest upon the base or that which supports the machine. One of the operating-cords 4 passes upwardly over the 25 pulley 13, and the other operating-cord passes beneath the pulley. A shaft 18 is mounted in rigid brace members 19, which project from the frame-bars 1 adjacent to the standards 12 of the derrick.

30 In actual operation as the rack-bar 6 is raised or lowered by rotation of the screw 9 the drum or shaft 3 is likewise actuated, the movement of the said shaft or drum being reversed upon reversal of the movement of 35 the rack-bar 6 as the said rack-bar approaches the upper and lower ends of the screw. It will thus be noted that the operating-ropes 4 are being constantly operated as the screw 9 is driven, one of said rods unwinding from 40 and the other winding upon the shaft 3. Thus one operating-cord may be attached to the object which is being lifted or otherwise operated upon, and as soon as this cord has been wound upon the shaft 3 the movement of said 45 shaft is reversed, and the other operating-cord, which has previously been unwinding, is now connected with the object, so as to continue the proper actuation of the same. One or both of the operating-cords 4 may pass 50 over the upper pulley 13, and the greater the weight which is being moved under the actuation of said operating-cord the greater the pressure upon the brace-bars 17. The arrangement of said bars thus enables the machine to be firmly braced and positioned when 55 in operation, and when the height of the pulley 13 is adjusted by movement of the adjusting-bar 15 the brace-bars 17 may be similarly adjusted. Each of the operating-cords 4 may 60 be provided with hooks 4^a at their ends, which hooks may be used to cooperate with a main cable or rope attached to the weight being operated upon, or said hooks may be directly

connected with the said weight. When the machine is mounted in a wrecking-car or 65 when otherwise used, a bearing-cap 20 may be provided for the upper end of the screw 9, and guy-ropes 21 may be connected with the cap 20 to rigidly support the machine.

The structure and operation of my machine 70 are very simple, and the use of the independent reversely-wound operating ropes or cables 4 is an essential advantage in that an object may be moved in one direction by reversing the 75 movement of the shaft 3 and changing the connection of the operating-cord in the manner before described.

As illustrated in the drawings, a power-shaft 23 is utilized as the means for communicating motion to the drive-shaft 10, which latter is vertically disposed in the frame of the machine adjacent the screw 9. The power-shaft 23 is provided with a bevel-gear 23^a, which meshes with a second bevel-gear 23^b and 80 upon the lower portion of the drive-shaft 10. The power-shaft may be mounted in a standard 24, mounted upon the base 2. The shaft 18, above mentioned, has a gear-wheel 25 85 mounted thereon, which meshes with the gear 5. An operating-lever 26 is also carried by 90 the shaft 18 and is provided with a pawl 27, pivoted to engage a pinion 28, projected from the gear-wheel 25. The pawl 27 is spring-actuated and reversible, and the lever 26 is designed to be operated in starting the machine, 95 so as to relieve the strain of the initial starting movement. The gear-wheel 25 cooperates with the gear 5 in the above operation. The operating-lever 26 with the adjacent gear 25 and immediate cooperating parts are omitted 100 from Fig. 1, so that the structure of the frame may be clearly noted.

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

1. In a hoisting-machine, the combination 105 of a frame, a winding shaft or drum mounted in said frame, an operating cable or rope carried by said drum, a gear actuating said drum, a screw mounted in the frame, and a rack-bar actuated by said screw and in mesh with the 110 gear of the winding-shaft.

2. In a hoisting-machine, the combination of a frame, a winding-shaft mounted in said frame, an operating-rope, a gear-wheel carried by said shaft, a rack-bar meshing with the 115 gear-wheel for actuation thereof, and a screw passing through the rack-bar and adapted to impart movement thereto.

3. In a hoisting-machine, the combination of a frame, a winding drum or shaft mounted 120 in said frame, means for actuating said drum or shaft, pivoted supporting-standards projected from the frame, a pulley mounted upon said standards, adjusting-bars connecting said standards with the frame, and brace-bars con- 125 nected with the standards.

4. In a hoisting-machine, the combination
of a frame, a winding drum or shaft mounted
in said frame, means for actuating said drum
or shaft, pivoted supporting-standards pro-
5 jected from the frame, a pulley mounted upon
said standards, adjusting-bars connecting the
upper ends of the standards and adapted for
adjustable connection with the frame, and

brace-bars pivoted to the upper ends of the
standards and pendent from said standards. 10

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

WILLIAM S. BENNETT. [L. s.]

Witnesses:

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WILLIAM T. TALBOTT.