

No. 656,380.

Patented Aug. 21, 1900.

G. P. SMITH.
POWER TRANSMITTER.

(Application filed Feb. 8, 1900.)

(No Model.)

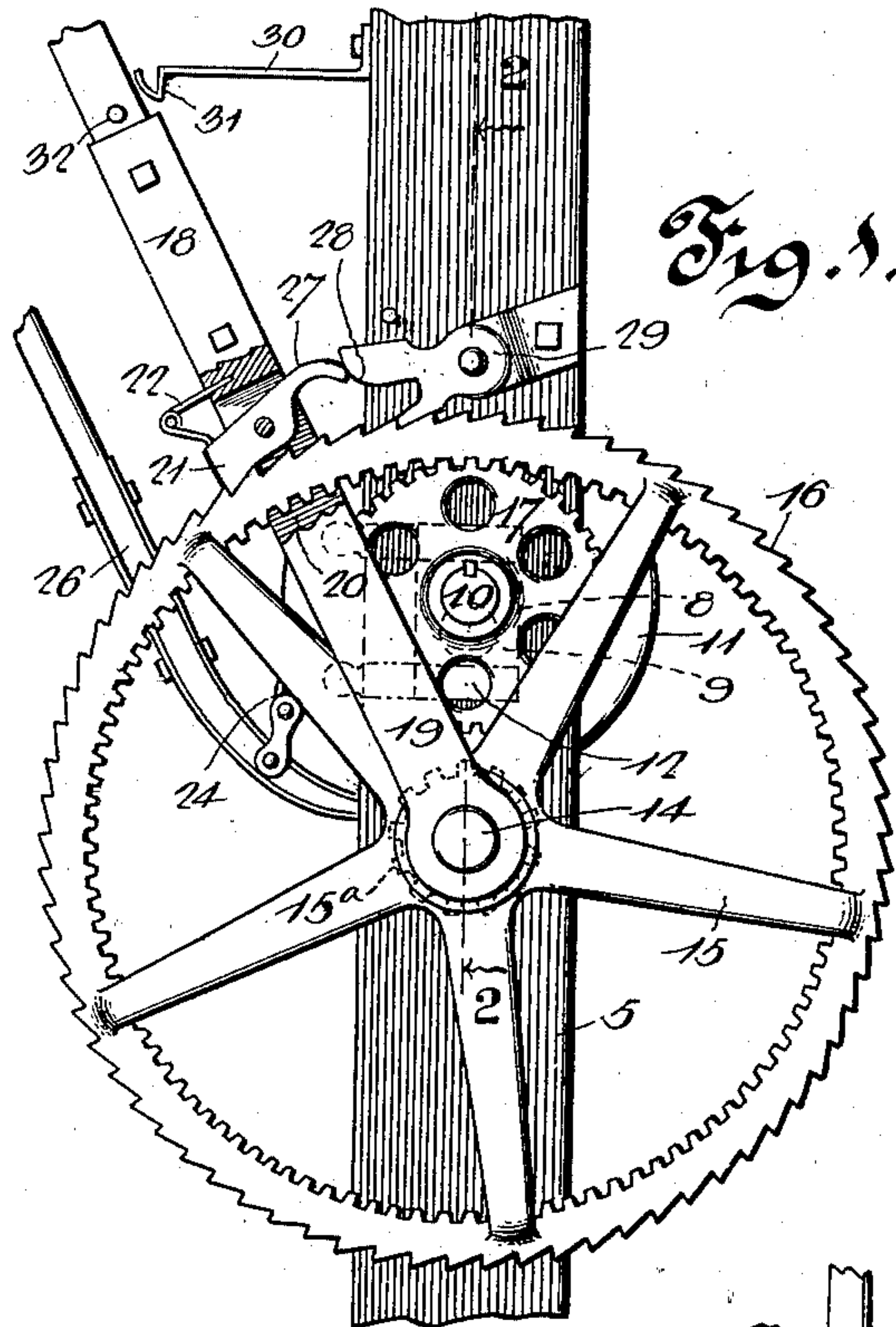


Fig. 1.

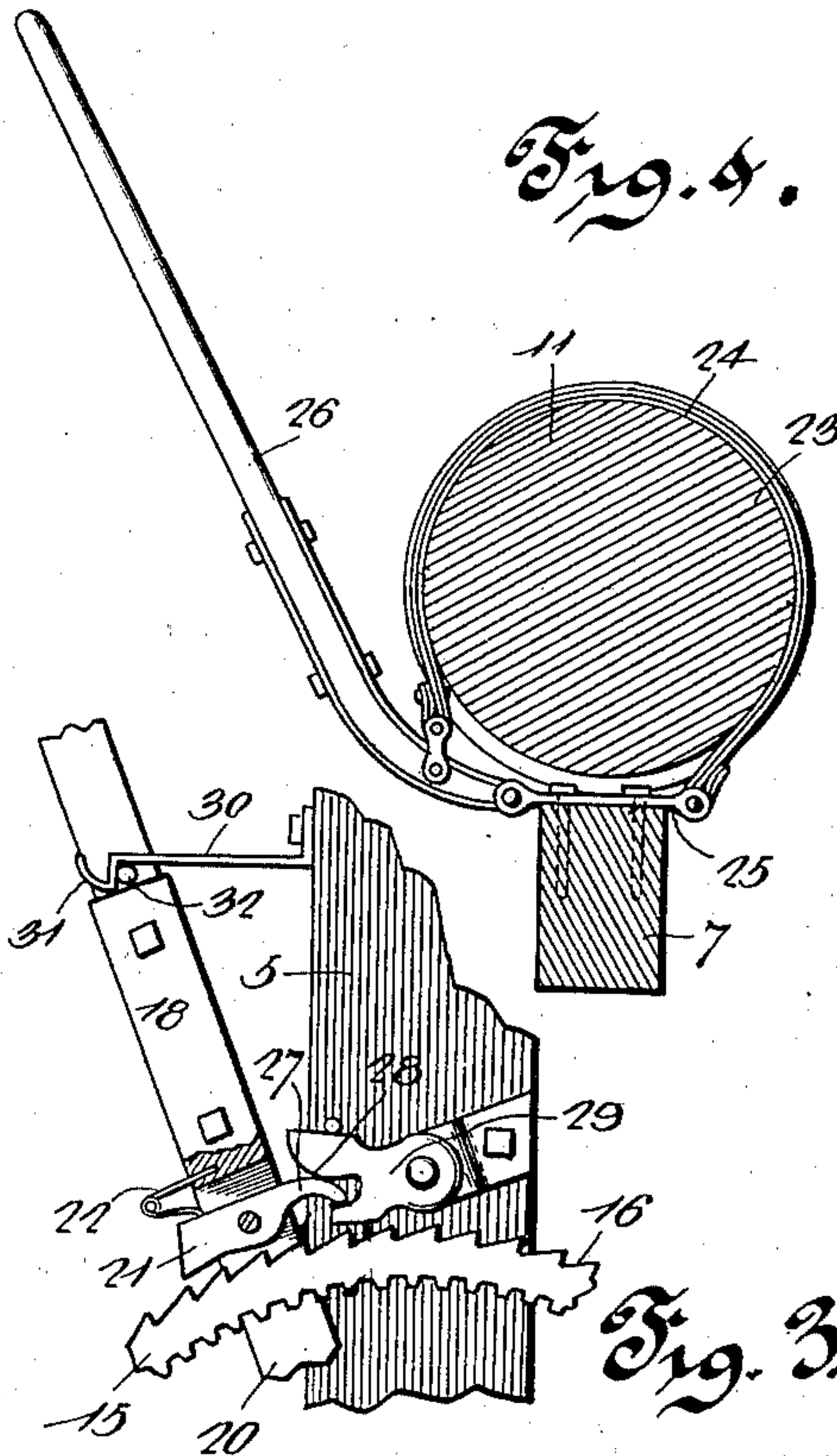


Fig. 4.

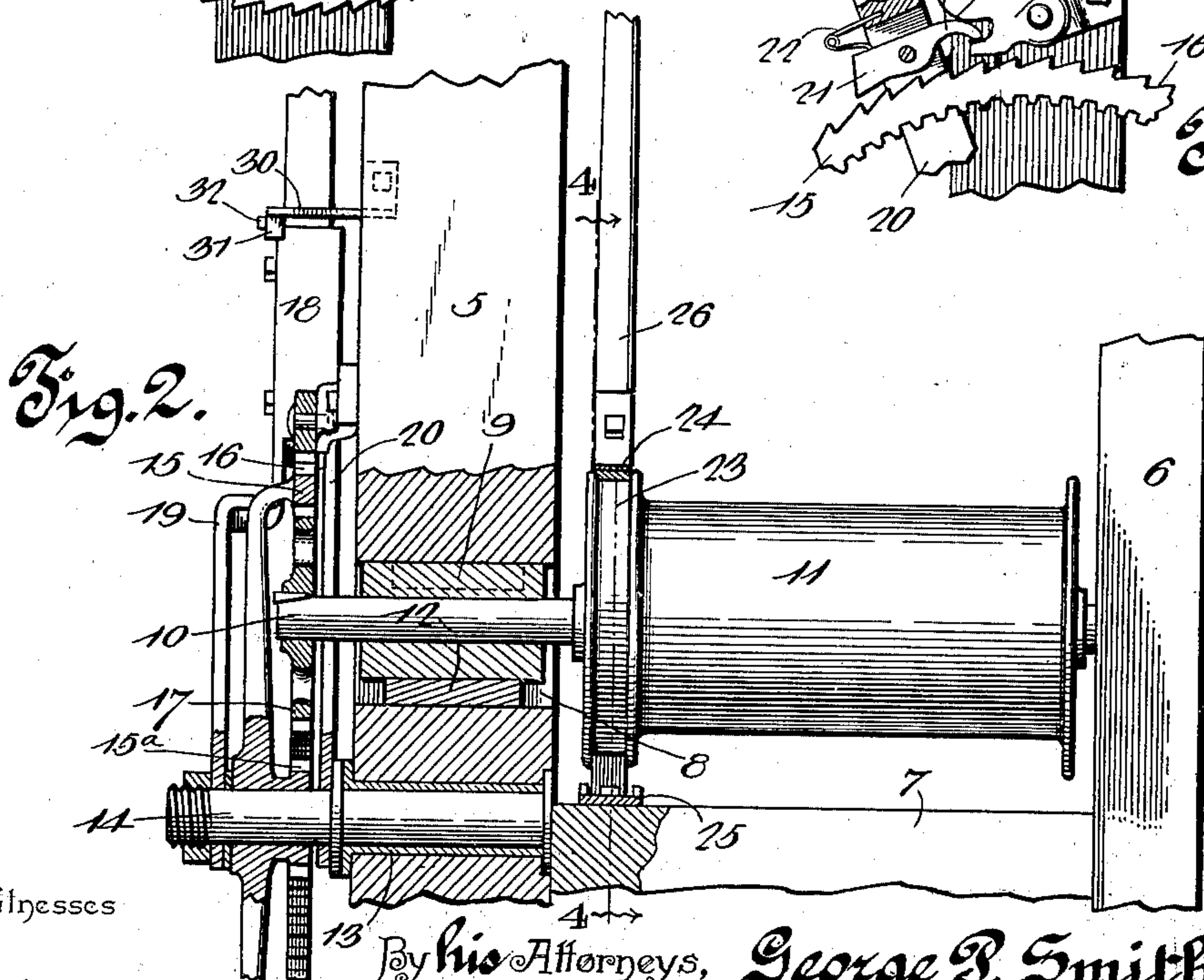


Fig. 2.

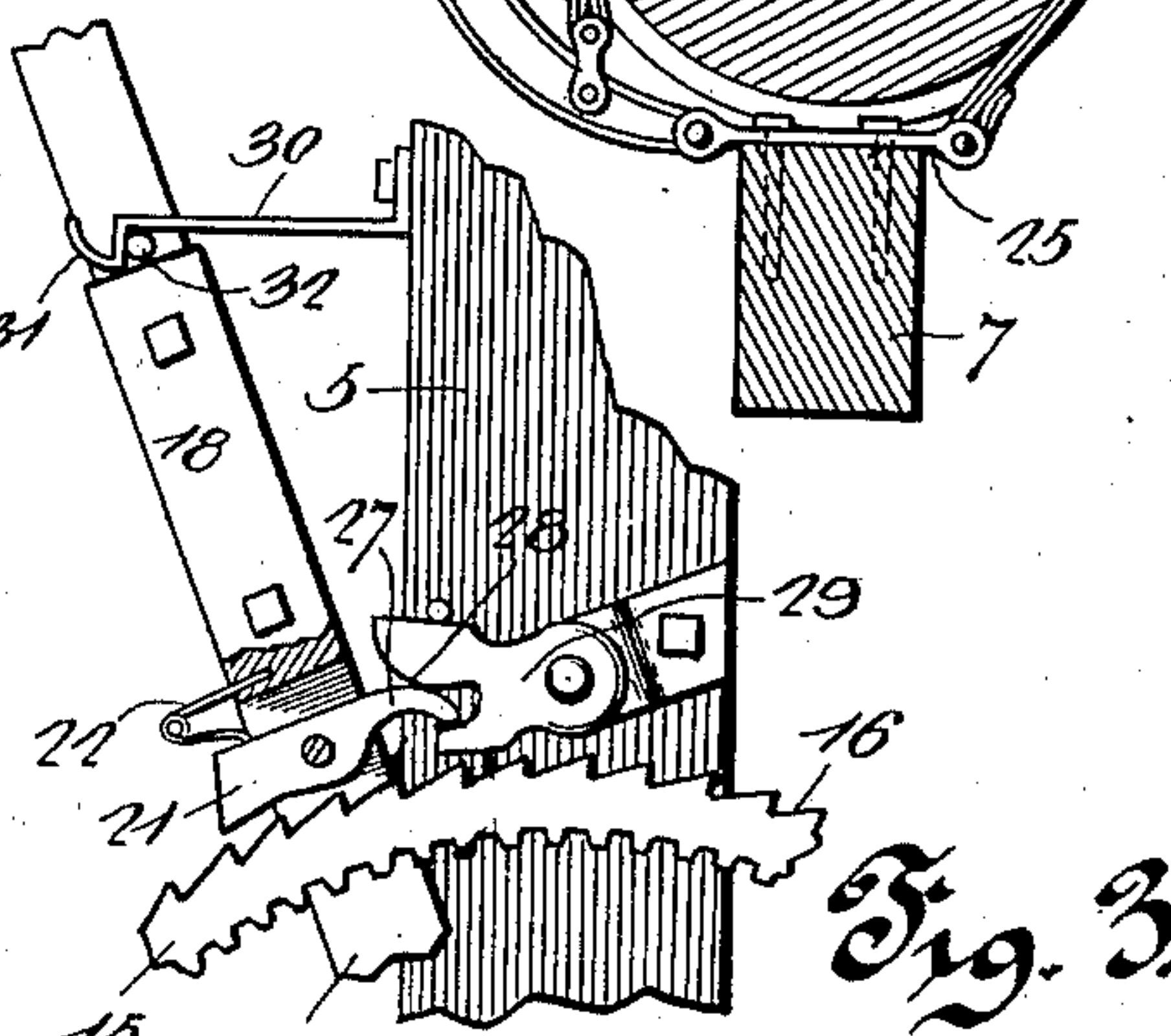


Fig. 3.

Witnesses

J. H. Culverwell,
Geo. A. Chandler

By his Attorneys,

George B. Smith,

Chas. Snow & Co.

Inventor.

UNITED STATES PATENT OFFICE.

GEORGE P. SMITH, OF JERSEYVILLE, ILLINOIS.

POWER-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 656,380, dated August 21, 1900.

Application filed February 8, 1900. Serial No. 4,536. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. SMITH, a citizen of the United States, residing at Jerseyville, in the county of Jersey and State of Illinois, have invented a new and useful Power-Transmitter, of which the following is a specification.

This invention relates to winding-drums in general, and more particularly to the mechanism for operating the drum, although the principles involved may be adapted to the transmission of power for any other purpose.

The object of the invention is to provide a construction and arrangement in which the energy applied to a lever will be converted to rotary motion of high power to turn the winding-drum for lifting weights and in which, furthermore, the lever mechanism may be thrown out of operation and the drum may be permitted to move in a reverse direction at whatever speed may be desired, modified by the energy applied to give the drum its reverse movement.

In the drawings forming a portion of this specification, and in which similar numerals of reference designate like and corresponding parts in the several views, Figure 1 is a side elevation of a mechanism for operating a winding-drum and including the frame in which the drum is journaled. Fig. 2 is side elevation of Fig. 1, parts being shown in section to illustrate the adjustable journal-box for the shaft of the winding-drum. Fig. 3 is a detail elevation showing the latches for holding the operating-lever and its pawl in their inoperative positions. Fig. 4 is a transverse section of the brake-drum and illustrating the positions of the brake-band and brake-lever.

Referring now to the drawings, the mechanism of the present invention is mounted in uprights 5 and 6, having a cross-beam 7, and in these uprights 5 and 6 are formed transverse slots 8. In each slot or passage 8 is disposed a bearing-block 9 of suitable metal, the height of this bearing-block being somewhat less than the height of the slot, while its width is such as to fit snugly. In these bearing-blocks 9 is journaled a drum-shaft 10, having a winding-drum 11 mounted thereon, and when it is desired to raise the winding-drum the spacing-blocks 12 are forced between

the bearing-blocks and the lower walls of the slots 8 to raise the blocks. When it is desired to lower the winding-drum, the spacing-blocks 12 are inserted between the blocks 9 and the upper walls of the slots to hold the bearing-blocks against the lower walls of the slots, the object of this adjustment of the bearing-blocks being hereinafter explained.

In the upright 5 and at one side of the slot 8 thereof is fixed a bearing-sleeve 13, in which is mounted a stub-shaft 14, having an internal gear-wheel 15 mounted thereon, this internal gear-wheel having ratchet-teeth upon its outer periphery, as illustrated at 16. The teeth of the internal gear are adapted for engagement with a pinion 17, mounted upon the outer end of the shaft 10, the engagement of the pinion with the gear being accomplished by shifting the blocks 9 to their proper positions by means of spacing-blocks 12.

In order to rotate the gear-wheel 15, there is provided a lever 18, one end of which is bifurcated, the legs 19 and 20 thereof being disposed to straddle the internal gear-wheel and having the extremities thereof mounted upon the shaft 14. Between the legs of the lever 18 is mounted a pawl 21, against which impinges a spring 22, carried by the lever, this spring acting to hold the pawl normally in engagement with the ratchet-teeth 16. Thus it will be seen that if the lever 18 be operated in one direction it will correspondingly rotate the wheel 15, and if operated in an opposite direction the pawl will ride freely over the ratchet-teeth, this movement of the gear-wheel 15 being communicated to the winding-drum 11 through the medium of the pinion 17 and shaft 10.

In the raising and lowering of weights it is of course necessary that some means be provided for permitting the return movement of the winding-drum at a proper speed, and for this purpose a brake-drum 23 is formed upon one end of the winding-drum, and with this brake-drum is engaged a brake-band 24, one extremity of which is attached to a plate 25 upon the cross-beam 7, while the opposite end of the band is connected with a lever 26, fulcrumed at its extremity upon the plate 25 at the opposite side of the beam 7. Thus if the lever 26 be operated in

one direction the brake-band 24 will be moved against the brake-drum, with the effect of increasing the resistance to the rotation of the drum, while by operating the lever in an opposite direction the drum will be permitted to rotate freely. To prevent return movement of the brake-drum as the lever 18 is raised for a second stroke, a pawl 29 is pivoted to the upright 5 in a position to engage the teeth of the ratchet in the same direction as pawl 21. This pawl 29 is a gravity-actuated pawl and may be raised from its engaging position against the action of gravity, as illustrated in Fig. 3 of the drawings. When the brake-drum is permitted to rotate in the direction opposite to that given by the lever 18, it is of course necessary that the pawls 21 and 29 be held from engagement with the ratchet-teeth 16, and for this purpose the pawl 21 has a rear arc-shaped extension 27, which is adapted to engage the face of a cam 28, carried by the pawl 29 upon the upright 5. This engagement of the extension with the cam acts to raise the pawl from engagement with the ratchet-teeth. To maintain the lever in this position with the pawl raised, a spring-latch 30 is fixed to the upright 5 and has its downturned end 31 disposed to snap over a pin 32 upon the lever 18. When it is desired to rotate the drum 11 at a lesser speed, the blocks 12 may be removed from beneath the blocks 9 to move the shaft 10 to engage the pinion 17 with a gear 15^a upon the hub of the gear 15, the blocks 12 then being placed above the blocks 9 to hold the pinion in proper position with respect to the hub of the gear. With this decrease in speed there is a corresponding increase in power.

40 What is claimed is—

1. The combination with a ratchet, of a bodily-movable pawl for engagement with the ratchet to operate it, said pawl having an engaging portion, and a second pawl disposed for engagement with the ratchet to hold it from return movement, the second pawl having an engaging portion for engagement by the engaging portion of the first pawl to move both pawls from the ratchet.

50 2. The combination with a ratchet, of a pawl-carrying device, a pawl upon the carrying device and adapted to engage the ratchet, a cam in the path of movement of the pawl in one direction for engagement thereby to move the pawl from engagement with the ratchet, and a latch for engagement by the pawl-carrier to hold the carrier with the pawl in engagement with the cam.

60 3. The combination with a drum-shaft, of a winding-drum mounted thereon and provided with a brake-drum, a pinion upon the drum-shaft, an internal gear engaged with the pinion and having a ratchet, a pivoted

lever having a pawl for engagement with the ratchet, said pawl having an extension, and a cam adapted for engagement by the extension of the pawl to raise the pawl and hold it from engagement with the ratchet, and a brake-band operatively connected with the brake-drum. 70

4. The combination with a drum-shaft, of a winding-drum mounted thereon and provided with a brake-drum, a pinion upon the drum-shaft, an internal gear engaged with the pinion and provided with a ratchet, a pivoted lever having a pawl for cooperation with the ratchet, said pawl having an extension, a cam adapted for engagement by the extension of the pawl to move the pawl from engagement with the ratchet, a latch for engagement by the lever to hold it with the pawl in engagement with the cam, and a brake engaged with the brake-drum. 75 80

5. The combination with uprights having slots, of bearing-blocks within the slots and adapted for adjustment, wedges for holding the blocks at different points of their adjustment, a drum-shaft mounted in the blocks and provided with a pinion, a stub-shaft mounted adjacent the first-named shaft, an internal gear-wheel mounted upon the stub-shaft, a gear upon the hub of the internal gear and adapted to receive the pinion of the drum-shaft interchangeably with the internal gear, a ratchet carried by the internal gear, and a pivoted lever provided with a pawl for engagement with the ratchet to rotate the internal gear. 85 90 95

6. The combination with a ratchet-wheel, of a lever, a pawl carried by the lever for engagement with the ratchet, said pawl having an extension, and a second pawl disposed for engagement with the ratchet, said second pawl having a portion disposed for engagement by the extension of the first pawl to disengage both pawls from the ratchet when the lever is moved to the limit of its motion in one direction. 100 105

7. The combination with a ratchet-wheel of a pivoted lever, a spring-pressed pawl pivoted to the lever for engagement with the ratchet said pawl having an extension, a second pawl pivoted for engagement with the ratchet and lying in the path of movement of the extension of the first pawl when the lever is moved in one direction to disengage both pawls from the ratchet, and a brake mechanism operatively connected with the ratchet. 110 115

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses. 120

GEORGE P. SMITH.

Witnesses:

PAUL M. HAMILTON,
F. J. LAURENT.