

No. 850,152.

PATENTED APR. 16, 1907.

G. C. GRABLE.  
BRAKE FOR HOISTING MACHINES.

APPLICATION FILED JUNE 1, 1905.

2 SHEETS—SHEET 1.

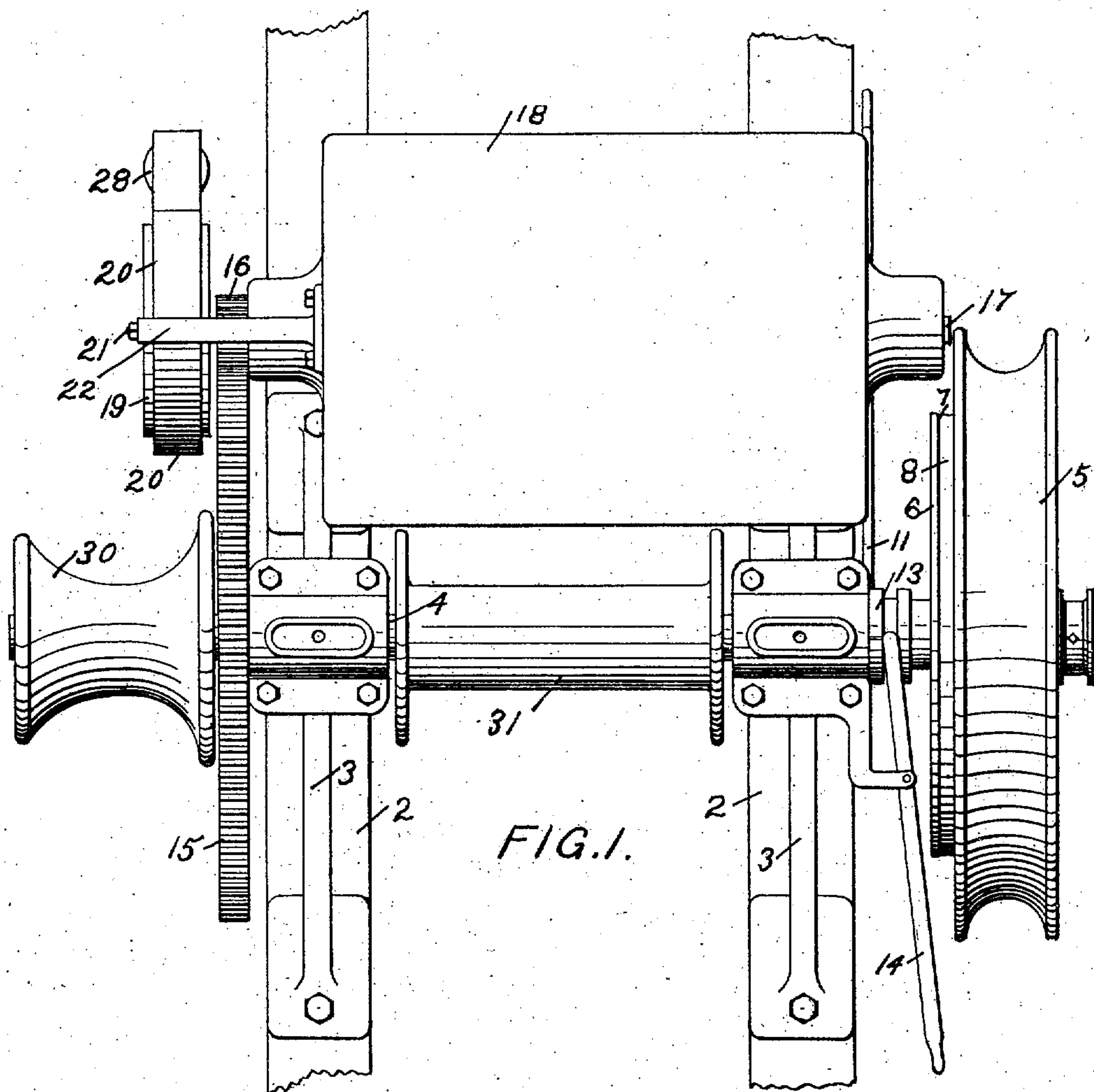


FIG. 1.

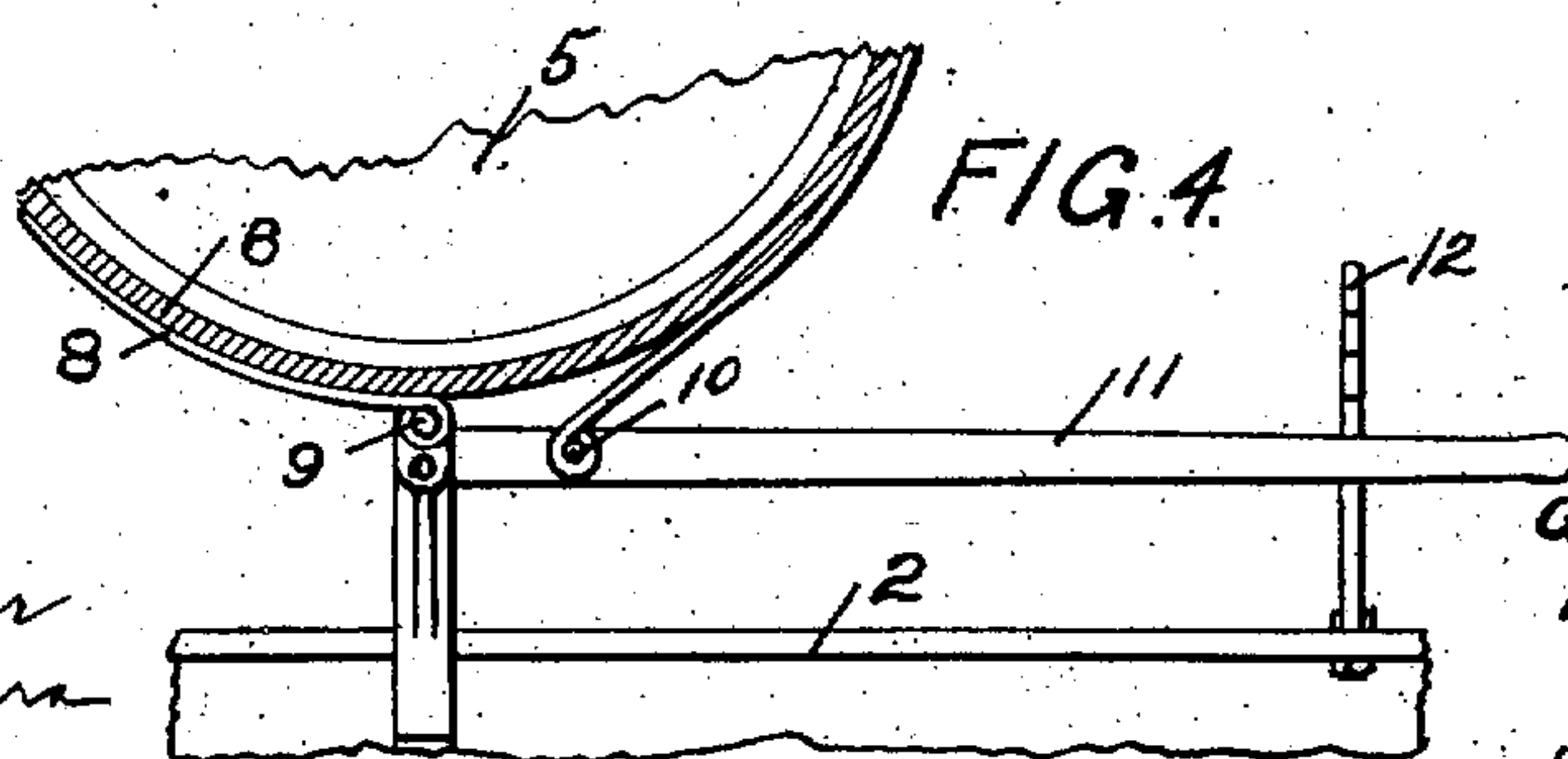


FIG. 4.

WITNESSES  
*F. O. Tanner*  
*E. Mannamann*

INVENTOR  
GUY C. GRABLE  
BY *Paul & Paul*  
HIS ATTORNEYS.

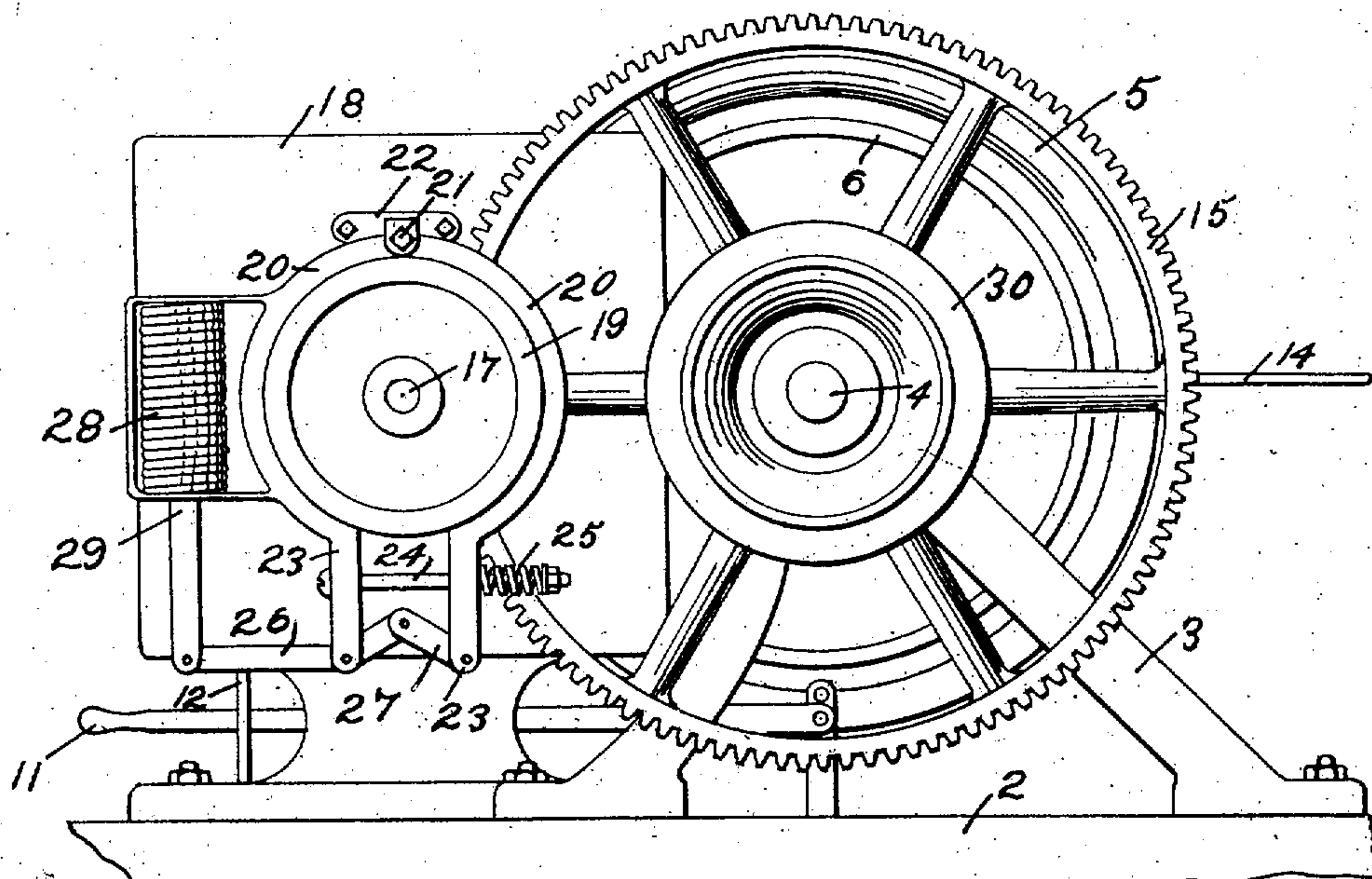
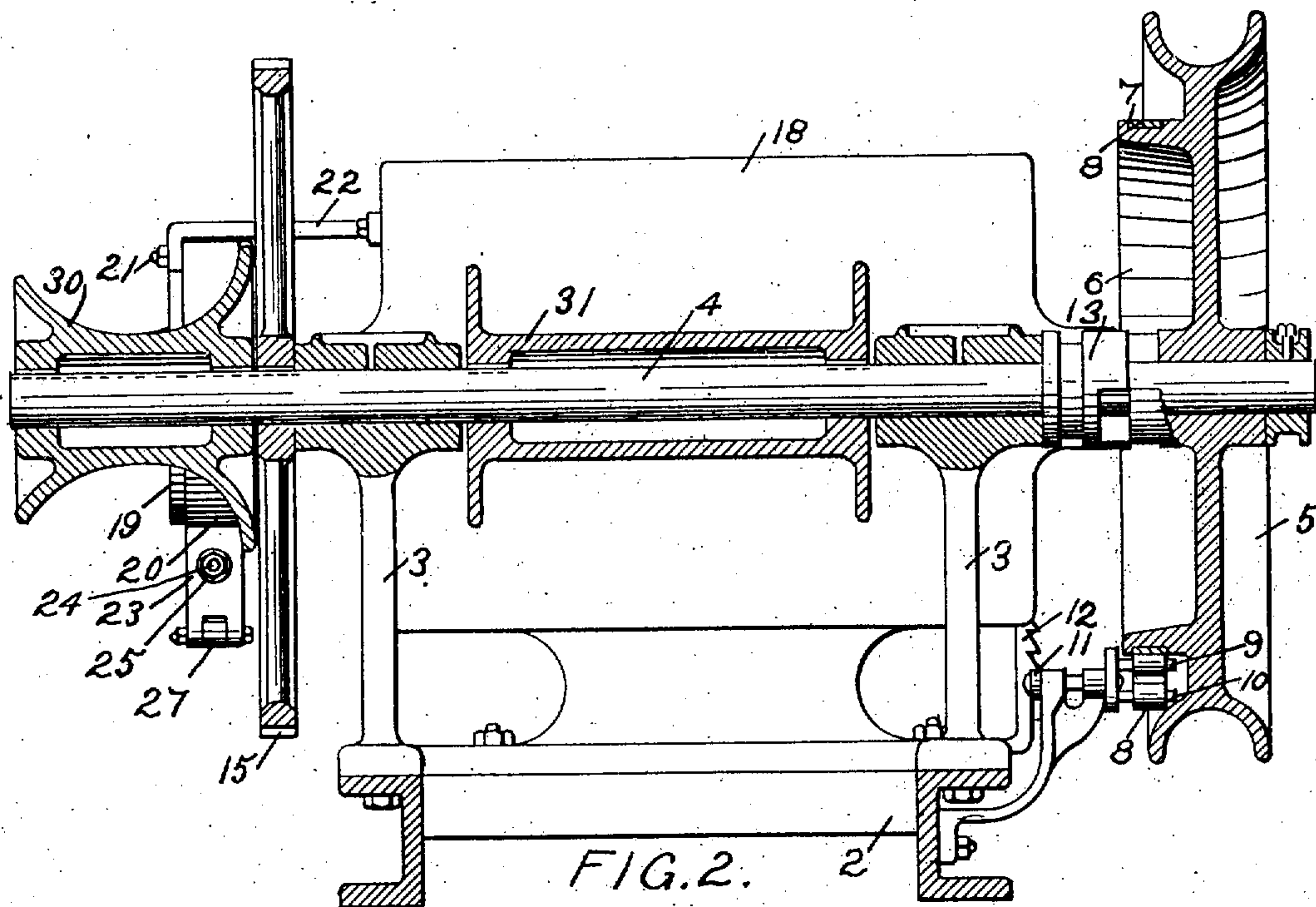
No. 850,152.

PATENTED APR. 16, 1907.

G. C. GRABLE.  
BRAKE FOR HOISTING MACHINES.

APPLICATION FILED JUNE 1, 1905.

2 SHEETS—SHEET 2.



WITNESSES

F. O. Tanner

C. Masumura

FIG. 3.

INVENTOR

GUY C. GRABLE

BY *Paul & Paul*  
HIS ATTORNEYS.



# UNITED STATES PATENT OFFICE.

GUY C. GRABLE, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO W. L. McBRIDE, OF MINNEAPOLIS, MINNESOTA.

## BRAKE FOR HOISTING-MACHINES.

No. 850,152.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed June 1, 1905. Serial No. 263,308.

*To all whom it may concern:*

Be it known that I, GUY C. GRABLE, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Brakes for Hoisting-Machines, of which the following is a specification.

The object of my invention is to provide a machine adapted for hoisting purposes generally, but particularly designed as a brick and mortar hoist.

A further object is to provide a hoisting-machine that is quick and positive in its action and of strong and durable construction.

A further object is to provide a hoisting-machine which can be easily and quickly locked against movement in either direction at any point in its revolution.

The invention consists generally in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of a hoisting-machine embodying my invention. Fig. 2 is a longitudinal vertical sectional view showing the shaft of the hoist and the pulleys mounted thereon. Fig. 3 is an end elevation illustrating the brake mechanism by means of which the machine is automatically locked and released. Fig. 4 is a detail view of the hand-brake device provided in connection with the loose pulley.

In the drawings, 2 represents a suitable base having brackets or standards 3 thereon supporting a shaft 4. On one end of this shaft a pulley 5 is loosely mounted and provided on one side with an annular flange 6, having a seat 7 for a brake-strap 8. One end of this strap is pivoted at 9, (see Fig. 4,) and the other end is attached to a pin 10 on a lever 11, which engages a notched bar 12. By depressing this lever the brake-strap is drawn snugly against its seat on the flange 6, and by raising the said lever the strap will be released. This pulley 5 will be connected in the usual way to the hoisting platforms or cars whereon brick and mortar are elevated to the upper floors of the building that is being erected. One car will go up as the other comes down, and the brake allows the attendant to lock the pulley in any desired position should the clutch mechanism between the pulley and its shaft for any reason become inoperative or the power give out. The

clutch member 13 is slidably mounted on the shaft 4 and engages the hub of the pulley 5 to lock it on the shaft. The clutch has the usual keyway on its shaft and is operated by the lever 14. The opposite end of the shaft 4 is provided with a large gear-wheel 15, secured thereon and meshing with a pinion 16 on the shaft 17 of a motor 18 (preferably electric) and connected with a generator in the usual manner.

The electrical connections to this machine form no part of this present invention, and I do not, therefore, illustrate or describe them herein.

The end of the shaft 17 projects beyond the pinion 16 and is provided with a disk 19, having a flat surface inclosed by brake-shoes 20, which are pivotally supported at 21 on a bracket 22. The ends 23 of these shoes depend below the disk 19 and are connected by a rod 24, having a spring 25, which normally tends to draw the ends of the shoes together to grip the disk 19 and stop the hoist. A bar 26 is pivoted in one of the ends 23 and has a link connection 27 with the corresponding end of the other shoe. This bar and link connection form a toggle-joint, as shown clearly in Fig. 3, one end of the bar 26 being turned upwardly to raise its pivotal connection with the link 27 above the level of the pivot of the bar 26 on the end 23. When the bar 26 is lifted, the toggle connection between the ends of the shoes will be started, the spring 25 put under tension, and the brake-shoes separated to release the hoist.

I prefer to provide means for automatically controlling these brake-shoes, which consists in mounting a solenoid 28 near the brake-shoes and pivotally connecting its armature 29 with the bar 26. The windings of this solenoid are connected in series (not shown) with the windings of the motor, and consequently when the circuit is closed through the motor to start the hoist the armature 29 will be drawn up into the coil of the solenoid, the bar 26 will be tilted, and the brake-shoes separated to free the disk 19 and allow the hoist to operate. When the circuit is broken through the motor, either intentionally or unintentionally, the solenoid will also be cut out and its armature allowed to drop, and the spring 25 will draw the shoes together and grip the disk 19 and



lock the hoist against movement in either direction. This operation of the brake will be entirely automatic, and no attention whatever will be required on the part of the operator.

Near the gear-wheel 15 I prefer to provide a pulley 30, keyed on the shaft 4 and designed particularly for hoisting lumber, one end of the cable being held by the attendant while the other end is wound on the pulley. This is a common form of pulley and the ordinary means employed for hoisting lumber and similar material, and I make no claim to the same herein. Between the gear 15 and the pulley 5 I prefer to mount a drum 31, also keyed on the shaft 4 and equipped with the ordinary hoisting-cable. (Not shown.)

I have shown and described this hoisting-machine operated from an electric motor and for convenience have connected its circuit in series with the solenoid; but the circuits of the motor and solenoid may be independent, if preferred, and any other type of motor can be substituted in place of the one shown, any change of this matter being within the scope of my invention.

I claim as my invention—

1. In a hoisting-machine, the combination, with a shaft and a pulley mounted thereon, of a motor located to one side of said pulley-shaft and having its shaft parallel with and geared to said pulley-shaft, and a brake device arranged to be mechanically set and electrically released upon the stopping and starting of said motor, substantially as described.

2. The combination, with a shaft and its pulley, of an electric motor located to one side of said pulley-shaft and having its shaft parallel with and geared to said pulley-shaft, a solenoid in circuit with said motor, and a brake device arranged to be released when the circuit is closed through said motor and solenoid, substantially as described.

3. The combination, with a shaft and its pulley, of an electric motor located to one side of said pulley-shaft and having its shaft parallel with and geared to said pulley-shaft, a solenoid in circuit with said motor, a brake device arranged to be released when the circuit is closed through said motor and solenoid, and means for mechanically setting said brake device when the circuit is broken through said motor and solenoid.

4. The combination, with a shaft and its pulley, of a motor located to one side of said pulley-shaft and having its shaft parallel

with and geared thereto, a brake-disk, shoes therefor, a solenoid having its armature connected with said shoes and arranged to release them when the circuit is closed through said solenoid, substantially as described.

5. The combination, with a shaft and its pulley, of an electric motor having its shaft geared to said pulley-shaft, a solenoid in circuit with said motor, a disk mounted on said motor-shaft, brake-shoes arranged to grip said disk and having a toggle-joint connection with the armature of said solenoid whereby when the circuit is closed through said solenoid said brake-shoes will be released, said toggle-joint connection consisting of a bar having a deflected end and pivoted to an extension of one of the shoes, and a link connecting said deflected end with an extension of the other shoe, substantially as described.

6. The combination, with a motor-shaft and a disk secured thereon, of brake-shoes arranged to grip said disk, a spring mechanism normally tending to draw said shoes together against said disk, a solenoid, and toggle-links connecting the armature of said solenoid and said shoes whereby when the circuit is closed through said solenoid said brake-shoes will be separated to release said disk, said toggle-links comprising a bar having a deflected end and pivoted to an extension of one of said shoes, and a link connecting said deflected end with an extension of the other shoe.

7. The combination of a motor-shaft and a disk secured thereon, a pulley-shaft geared with said motor-shaft, brake-shoes located to grip said disk and each having an extension, a spring normally drawing said shoes toward the disk to grip the same, a bar pivoted to the extension of one of said shoes and having an end deflected between the extensions of the shoes, a link pivoted to the extension of one shoe and pivotally connected with the deflected end of said bar, and a solenoid having its armature connected with one end of said bar having the deflected end for actuating said bar and its link to spread and release the shoes when a circuit is closed through the solenoid, substantially as described.

In witness whereof I have hereunto set my hand this 12th day of May, 1905.

GUY C. GRABLE.

Witnesses:

RICHARD PAUL,  
C. MACNAMARA.