No. 792,567. PATENTED JUNE 13, 1905.

J. N. WRIGHT.

HOISTING APPARATUS.

APPLICATION FILED JAN. 3, 1905.

3 SHEETS—SHEET 1.

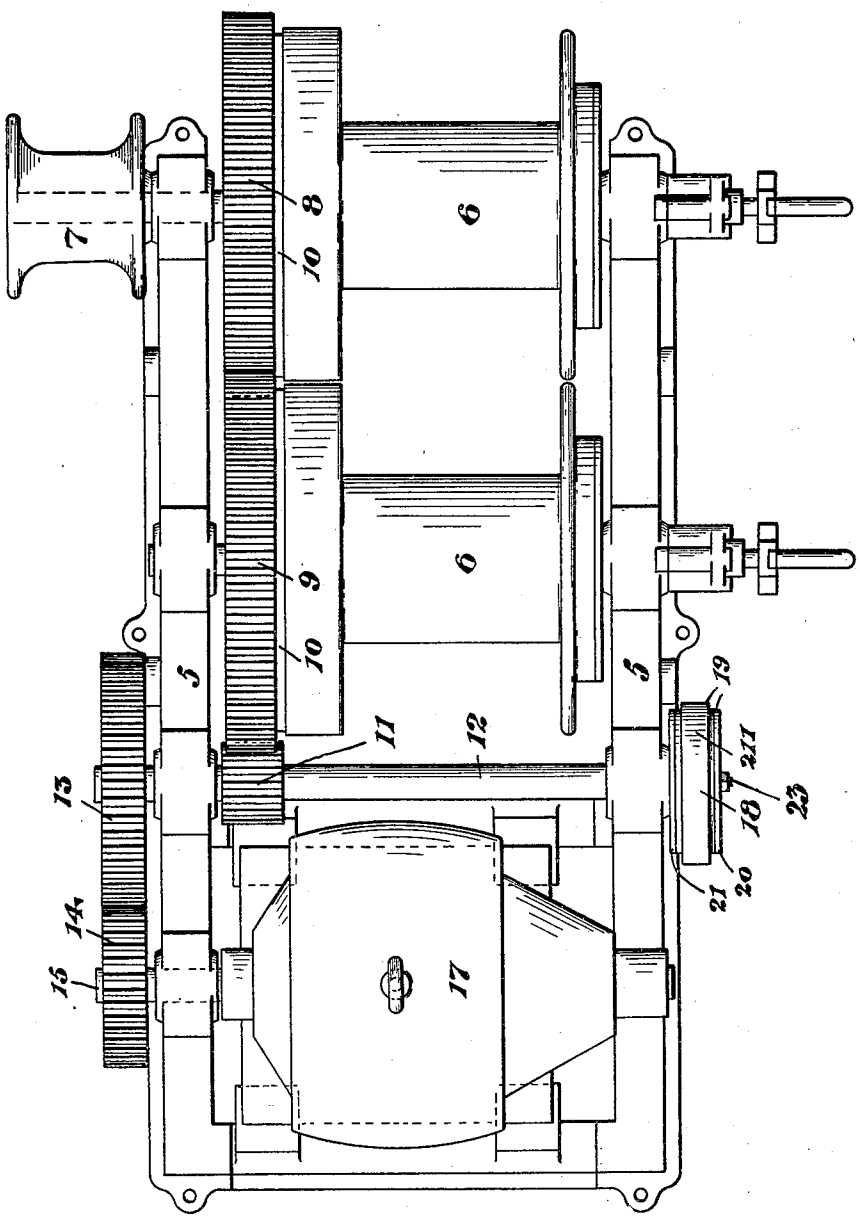


Fig. 1.

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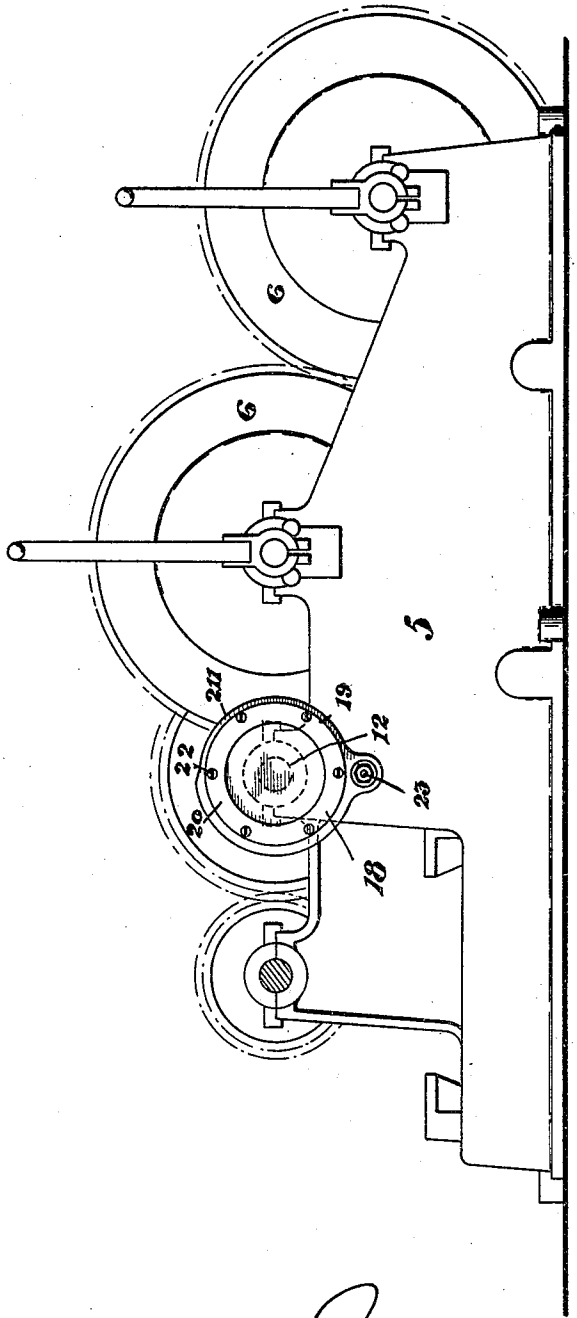


Fig. 2.

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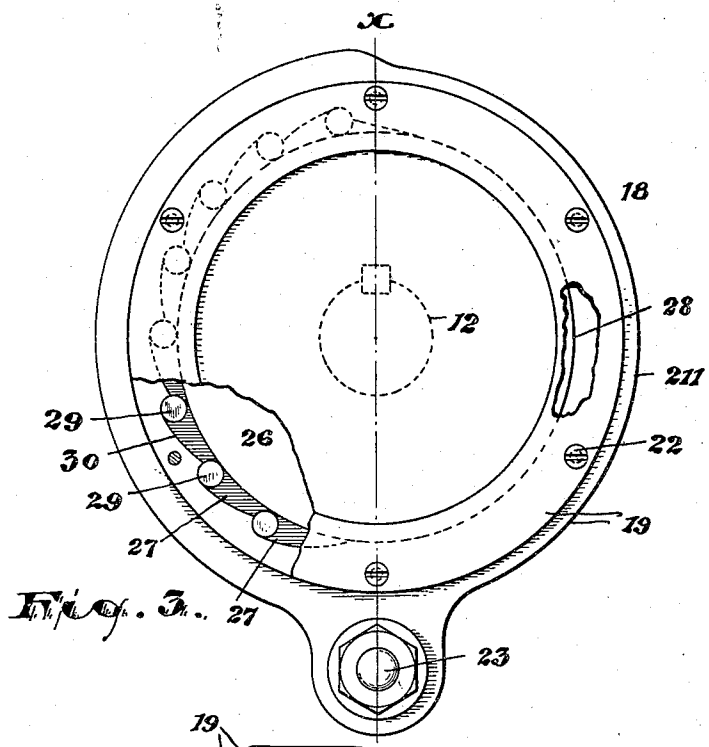


Fig. 3.

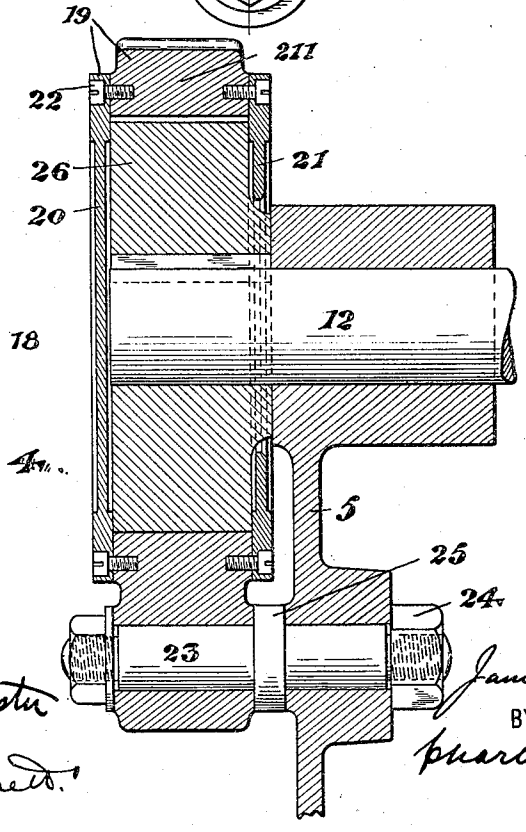


Fig. 4.

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No. 792,567. Patented June 13, 1905.

UNITED STATES PATENT OFFICE.

JAMES N. WRIGHT, OF NEWARK, NEW JERSEY, ASSIGNOR TO JOSEPH S. MUNDY, OF NEWARK, NEW JERSEY.

HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 792,567, dated June 13, 1905.

Application filed January 3, 1905. Serial No. 239,441.

To all whom it may concern:

Be it known that I, JAMES N. WRIGHT, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hoisting Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to numerals of reference marked thereon, which form a part of this specification.

This invention relates more particularly to the automatic control of electrically-driven winches and friction-drums, although it is applicable to other forms of hoisting apparatus, the objects of the invention being to secure a more perfect control of said winches and drums, to prevent accidental lowering of loads which have been hoisted or elevated by the electrical motor with which my improvements are associated, to avoid the use of brakes such as have sometimes been employed heretofore operated by the hand or foot and the defects and deficiencies incident to their use, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved hoisting apparatus, in the locking device therefor, and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like numerals of reference indicate corresponding parts in each of the several figures, Figure 1 is a plan of the improved hoist. Fig. 2 is a side elevation of the same, the motor being removed and the motor-shaft being shown in section. Fig. 3 is an enlarged detail side view of a lock employed in connection with the hoist; and Fig. 4 is a section of the same, taken through line x, Fig. 3.

In said drawings, 5 indicates the frame of the hoisting-machine, upon which the drums 6 and winch 7 have their bearings in any ordinary manner, power being transmitted to said drums and winches by means of cog-wheels 8 and 9, and friction devices 10, also in any usual manner. Power is applied to the cog-wheels by means of a pinion 11, arranged on the power-shaft 12, which shaft 12 receives its power from any source, but preferably through the cog-wheels 13 and 14 from a shaft 15 of the electrical motor 17, Fig. 1.

To provide an automatic lock for the movable mechanical parts above referred to whereby should the power of the motor be suddenly withdrawn accidentally or otherwise the load carried by the hoisting-machine will not fall by gravity and be the occasion of damage, I have provided an autotomatic lock 18, (shown in detail more clearly in Figs. 3 and 4,) the said lock serving to automatically prevent rotation of the rotary parts in a backward or return direction. To this end the said lock 18 comprises a case 19, having side plates 20 21, which are bolted, riveted, or screwed to the annular section 211, as indicated at 22, and locking means within said case.

The side plate 21, lying at the side of the annular section toward the body of the hoisting-machine, is open at its center to permit the passage therethrough of the power-shaft 12.

The case formed by the annular section 19 and the side plates 20 21 is securely and adjustably fastened upon the frame of the machine by means of a pivotal bolt 23. The said bolt 23 is rigidly secured within the frame 5, being held therein by a nut 24 and collar or shoulder 25, Fig. 4. It projects laterally from said frame to provide a stud on which the case 19 may swing slightly to accommodate the parts therein to the conditions hereinafter referred to.

Upon the shaft 12 is keyed a wheel 26, the periphery of which is straight transversely, as in Fig. 4, the wheel being cylindrical in shape. Said periphery lies at a point closely adjacent to the interior wall of the annular section 211 of the casing. The said interior wall of the said annular section is, at one side thereof, provided with a series of recesses 27,

while the opposite side presents a regular curved surface 28, extending about one-half way around said frame. The recessed part of the said section is furnished with a series of rollers 29, which lie in the recesses 27 without engaging or at least affecting the wheel 26 when the latter is moving in its hoisting direction; but when the movement of the said wheels is reversed the said rollers are wedged between the periphery of the said wheel 26 and the inclined or elliptical side walls 30 of the recesses, so that the movement of the said wheel 26 in its reversed backward or return direction is stopped, thereby preventing the load from dropping, and the stopping of gravitation is automatic, so that no damage can result from an inadvertent switching of the power-current from the motor or the breaking of circuit-wires or other accidental interruption of the normal electrical working.

When I desire to lower the elevator or load, the lowering operations are effected in the usual manner with the friction devices above referred to in connection with the drums in the ordinary manner; but should the motor fail to operate because of a failure of power or break in the electrical circuit the back movement of the wheel 26 will force the rollers toward the small ends of the recesses 27, wedging the said rollers between said wheel and the annular section of the case and driving the opposite side of the wheel hard against the concentric and regular surface 28 of said casing, so that rotation is immediately stopped.

I am aware that changes or modifications may be made in my invention without departing from the spirit or scope of the invention, and therefore I do not wish to be understood as limiting myself by the positive expressions in the foregoing description excepting as the prior state of the art may require.

Having thus described the invention, what I claim as new is—

1. The improved hoisting-machine, comprising a frame having a hoisting-drum a motor and means for transmitting power to said drum, and a lock in connection with said drum and controlling the back movement of the same automatically to stop the rotation thereof said lock comprising a case, inclosing a wheel in connection with said drum and pivoted upon the frame at a point eccentric to said wheel and having interiorly surfaces extending in a direction tangential to said wheel, balls interposed between said wheel and the interior walls of the case, and said wheel within said case and in operative connection with said drum.

2. The improved hoisting-machine, comprising a frame having a hoisting-drum a motor and means for transmitting power to said drum, and a lock in connection with said drum and controlling the back movement of the same, said lock comprising a case having a recessed inner wall, rollers in the recesses of said wall and a wheel adapted to be pressed by the rollers against the wall of the casing opposite the recessed wall.

3. The improved hoisting-machine, comprising a frame having a hoisting-drum a motor and means for transmitting power to said drum, and a lock in connection with said drum and controlling the back movement of the same, said lock comprising a case pivoted upon said frame having a recessed inner wall, rollers in the recesses of said wall and a wheel adapted to be pressed by the rollers against the casing opposite the recessed wall.

4. The improved hoisting-machine, comprising a frame, hoisting apparatus having bearings in said frame, a wheel in connection with said hoisting apparatus, a casing pivoted upon said frame and inclosing said wheel, the inner walls of said casing having recesses at one side and a regularly-curved surface at the opposite side and rollers arranged in said recesses.

5. The improved hoisting-machine, comprising a frame, hoisting apparatus having bearings in said frame, a wheel in connection with said hoisting apparatus, a casing upon said frame and inclosing said wheel, the inner walls of said casing having recesses at one side and a regularly-curved surface at the opposite side and rollers arranged in said recesses.

6. In combination with the frame of a hoisting-machine, and the hoisting means therein arranged having a shaft 12, of a wheel fixed on said shaft, an annular section secured to said frame and arranged around said wheel, said frame having inclined surfaces near the periphery of said wheel, rollers arranged at one side of the wheel between said periphery and said annular section and adapted to force the wheel at its opposite side against said annular section, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of December, 1904.

J. N. WRIGHT.

Witnesses:
CHARLES H. PELL,
RUSSELL M. EVERETT.