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Patented Sept. 5, 1899.

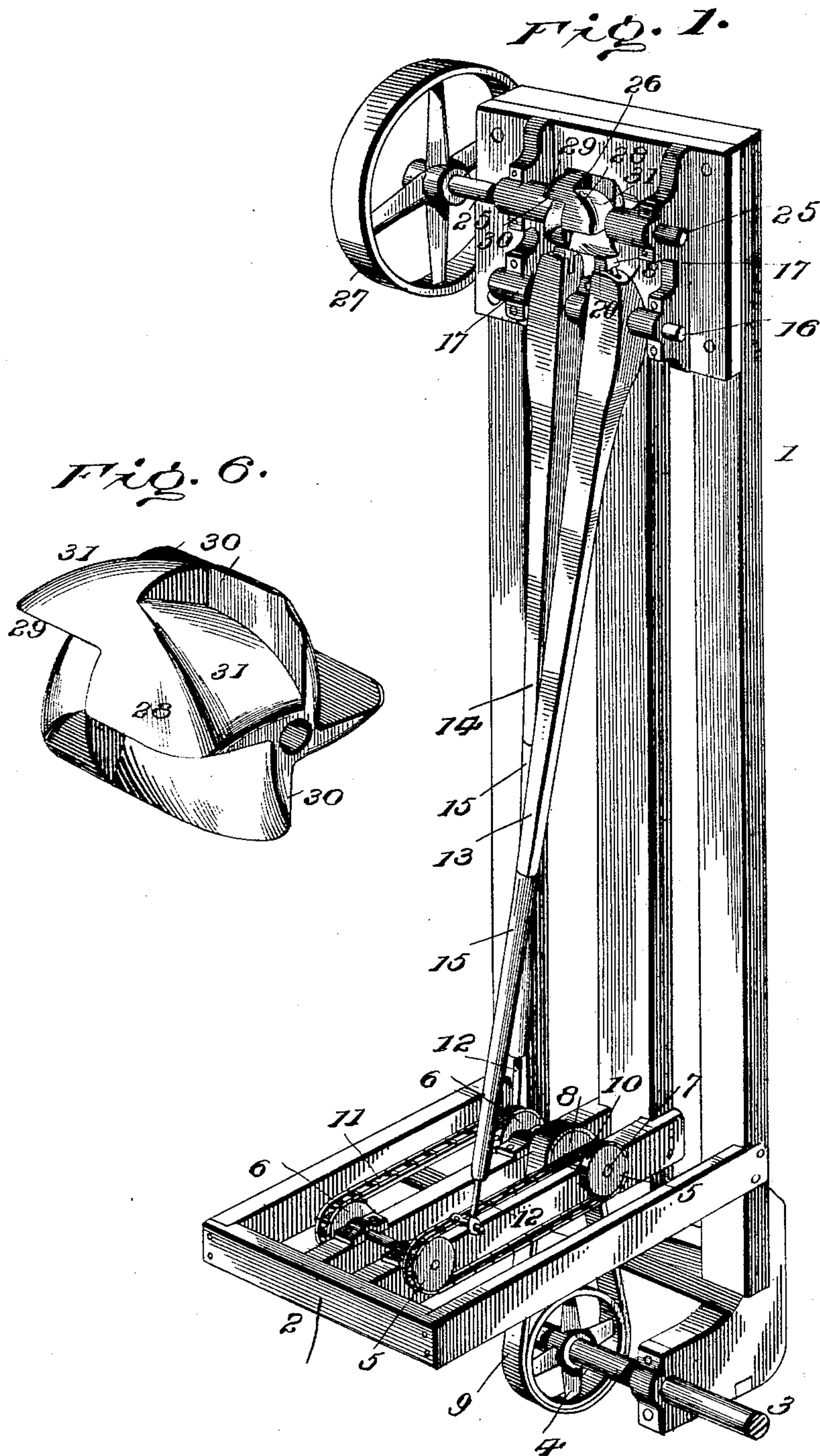
J. WHITTINGTON.

MECHANISM FOR INCREASING EFFECTIVENESS OF DRIVING FORCES.

(Application filed Oct. 22, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

*For Miss
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His Attorney

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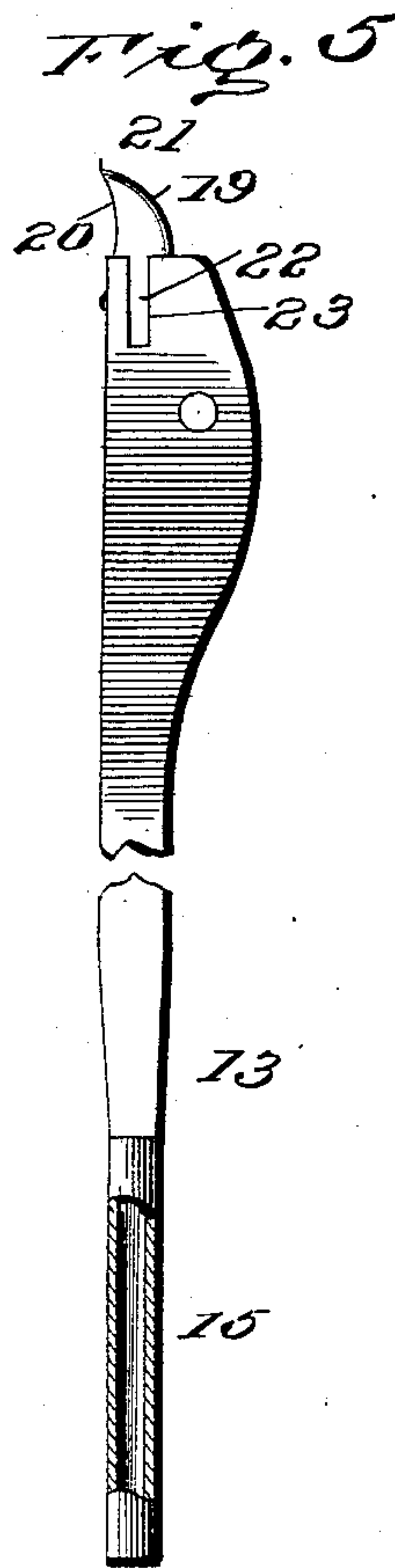
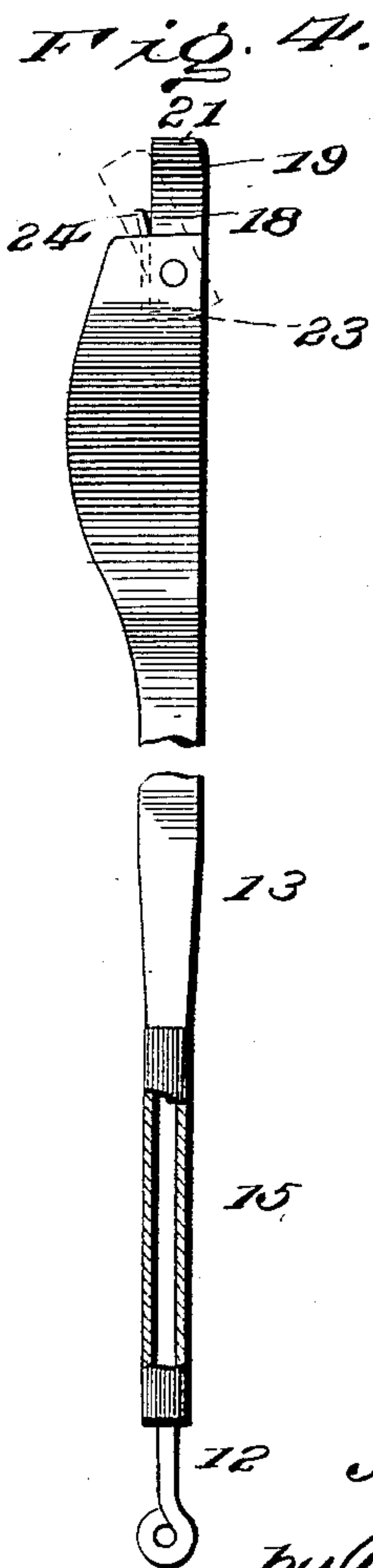
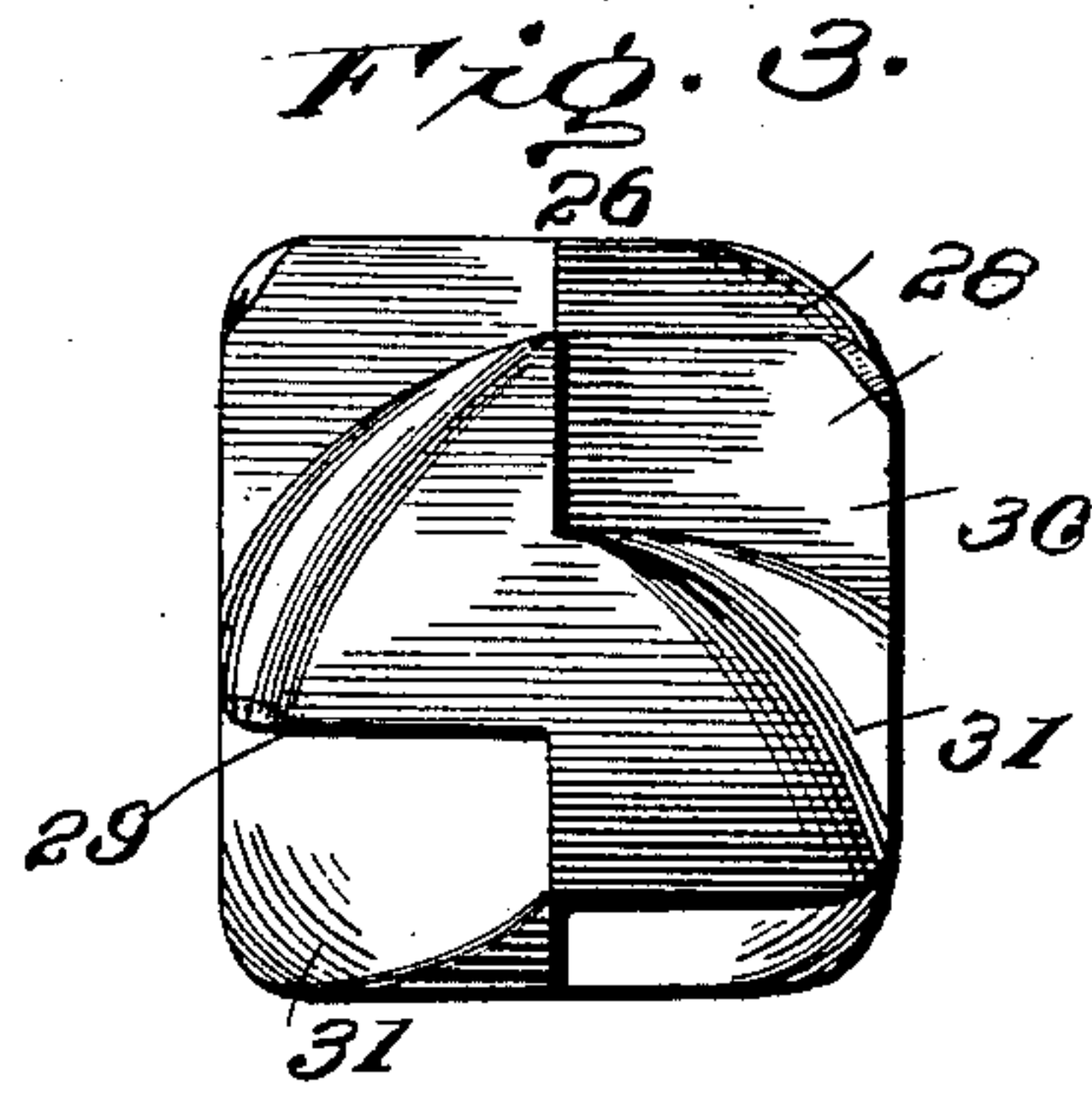
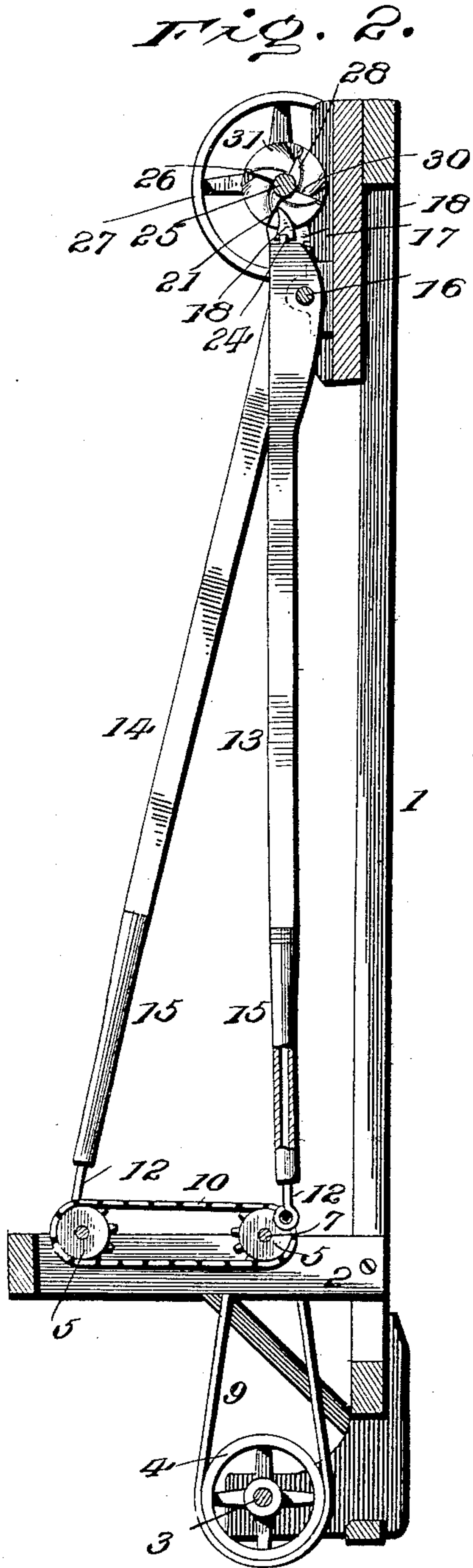
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2 Sheets—Sheet 2.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES WHITTINGTON, OF WILLIFORD, ARKANSAS.

MECHANISM FOR INCREASING EFFECTIVENESS OF DRIVING FORCES.

SPECIFICATION forming part of Letters Patent No. 632,608, dated September 5, 1899.

Application filed October 22, 1898. Serial No. 694,312. (No model.)

To all whom it may concern:

Be it known that I, JAMES WHITTINGTON, a citizen of the United States, residing at Williford, in the county of Sharp and State of Arkansas, have invented certain new and useful Improvements in Mechanism for Increasing the Effectiveness of a Driving Force; 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.

This invention relates to mechanism for increasing the effectiveness of a driving force, and it consists, essentially, of adjacent belts actuated by an engine or other motor-shaft and having connected thereto adjustable levers which engage a compound ratchet-wheel on the shaft to be driven and from which driving force may be taken either through the medium of a belt or other means and regulable in accordance with the length of the levers.

The invention further consists of the details of construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

The object of the invention is to utilize the forceful lifting power of levers located intermediate of two shafts to increase the effectiveness of one on the other through the medium of an alternate thrust of the opposite levers, which is carried on so rapidly as to cause a continuous movement of the shaft to which the thrust is imparted, and thereby materially benefit the driving force of an engine or motor shaft and materially resolve it into a stronger condition on the driven shaft without affecting the prime generator.

In the accompanying drawings, Figure 1 is a perspective view of the supporting-framework, illustrated for the purpose of demonstration and having therein the features of the invention. Fig. 2 is a vertical section of the device as shown arranged in Fig. 1. Fig. 3 is an end elevation of the ratchet-wheel. Figs. 4 and 5 are broken elevations of the operating-levers in different positions. Fig. 6 is a detailed perspective view of the ratchet-wheel.

Referring to the drawings, wherein similar numerals of reference are utilized to indicate corresponding parts in the several views, the

numeral 1 designates the vertical part of a frame, which is shown merely to illustrate a mounting for the mechanism and has a horizontal shelf or extension 2 near the lower end. It will be understood, however, that this form of support need not necessarily be used, and other suitable structure or means for attaching the several devices can be equally well employed, and any reference to the said structure hereinafter will not be intended in the least to limit the salient features of the invention to such mode of application.

Under the shelf or extension 2 in the lower end of the vertical part of the frame an engine or other motor shaft 3 has bearing and provided with a belt-pulley 4. On the shelf or extension 2 two pairs of sprocket-wheels 5 5 and 6 6 are located and one of one pair connected at one end of a shaft 7, on which is a belt-pulley 8, engaged by a belt 9 from pulley 4 below. The pairs of sprocket-wheels are surrounded by chain belts 10 and 11, which have a similar operation or move in the same direction through the medium of the shaft 7. To the outer edges of the belts 10 and 11 the lower automatically-adjustable ends 12 of levers 13 and 14 are pivotally attached. These levers are so applied that they will have an alternate rise and fall or thrust and depression during regular periods of time. The lower end of each lever is formed with an elongated socket or tube 15, in which the automatically-adjustable ends 12 have free movement, and said levers gradually increase in cross-sectional extent toward their upper ends, where they are pivotally mounted, as at 16, in suitable ears of an upper hanger 17. The upper portions of the said levers are enlarged, as stated, to give them a more positive bearing and operation and at the same time strengthen them at the point where a great deal of wear and tear will ensue.

In the upper end of each of the levers and standing inwardly is a pawl 18, which has a rear curved face 19 and a front engaging side 20 with a projected terminating end 21. Each pawl-shank 22 is pivotally mounted in a slot 23 in the lever, and the movement of the pawl is to one side, being held in normal straight position by a spring 24, as clearly shown in Fig. 4. Above the pivotal point of the said levers a shaft 25 is mounted in the

hanger 17, and on said shaft in operative position directly above pawls 18 is a compound ratchet-wheel 26. (Clearly shown in detail in Figs. 1, 3, and 6.) The shaft 25 is also supplied with a belt wheel or pulley 27 for transmission of power by means of a belt or analogous device. The compound ratchet-wheel 26 has opposite teeth 28 and 29 with straight faces 30, against which the engaging sides 20 of the pawls 18 have bearing. From the base of each straight face 30 to the next succeeding tooth outwardly and downwardly sloping surfaces 31 are formed, and the opposite teeth are arranged in alternation—that is, one tooth on one side stands between two teeth on the opposite side. In the primary arrangement of the levers and said ratchet-wheel the pawls 18 are caused to engage teeth on opposite sides, and consequently the said levers are projected at different angles, and while one pawl is pushing against the straight face 30 of its teeth 28 the opposite pawl is riding off and outward on the surface 31 next succeeding the tooth with which it has just been in engagement. The said pawls continue to ride off in this manner until they reach the outer termination or adjacent end of the ratchet-wheel and are then snapped back by the springs 24 into normal position and into engagement with the succeeding straight faces 30. The rear curved face 19 of each pawl eases this riding movement and materially reduces the friction as well as wear, and, furthermore, the operation is rendered extremely sensitive and without obstruction. By the operation of the chain belts 10 and 11 the lower automatically-adjustable ends of the levers are carried around therewith and accommodate variation in the distance between the ends of said levers and the sprocket-wheels by the expansion and retraction of said ends from and into the sockets on the said levers. As previously indicated, the levers are attached to different points on the opposite chain belts, and a throwing movement is imparted to said levers, each acting through the pawls 18, coöperating with the double ratchet-wheel, as set forth, and rotating the shaft 25 in a more effective manner, and the movement of said chain belts being rapidly carried on the operation of the pawls consequently becomes continuous and so quick as to produce an unbroken revolution of the compound ratchet-wheel 26 and the shaft on which it is mounted. The automatically-adjustable ends of the levers operate

to compensate for the varying positions of said levers relatively to their points of attachment to the belts operating the same and the movements of the latter.

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

1. In a device of the character set forth, the combination with two shafts, rectilinearly-movable devices supported by the said shafts, and actuating mechanism therefor, of automatically-adjustable levers having the movable parts of each attached respectively to the said rectilinearly-movable devices, a driving-shaft, and a compound ratchet applied to the driving-shaft and acting jointly with the opposite end portions of the said levers by an alternate thrust to actuate the said driving-shaft.

2. In a device of the character described, the combination of a shaft, a compound ratchet applied to the said shaft, levers mounted with their fulcrum in line and acting jointly by an alternate thrust of one end against the aforesaid ratchet to actuate its shaft, and operating mechanism for imparting a rectilinear motion to the opposite ends of the levers in alternate and opposite directions, substantially as described.

3. In a device of the character specified, the combination of a shaft, a ratchet-wheel on said shaft, rectilinearly-movable belts, shafts supporting said belts, actuating mechanism for the belts, automatically-adjustable levers connected to opposite portions of the belts to receive an opposite and alternate simultaneous movement, and pawls applied to the levers to coöperate with the aforesaid ratchet-wheel, substantially in the manner set forth and for the purpose described.

4. In a device of the character set forth, the combination of a shaft, a compound ratchet-wheel applied to the said shaft, rectilinearly-movable belts, shafts supporting said belts, means for imparting movement to the belts, automatically-adjustable levers connected to the said belts, and pawls applied to the levers and acting jointly by an alternate thrust against the ratchet-wheel to impart a continuous rotary movement to the shaft thereof, substantially as set forth.

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

JAMES WHITTINGTON.

Witnesses:

H. J. DAVIDSON,
R. W. HALL.