No. 625,349. Patented May 23, 1899.

E. C. NICHOLS.

MECHANICAL MOTOR.

(Application filed Mar. 30, 1898.)

(No Model.) 5 Sheets—Sheet 2.

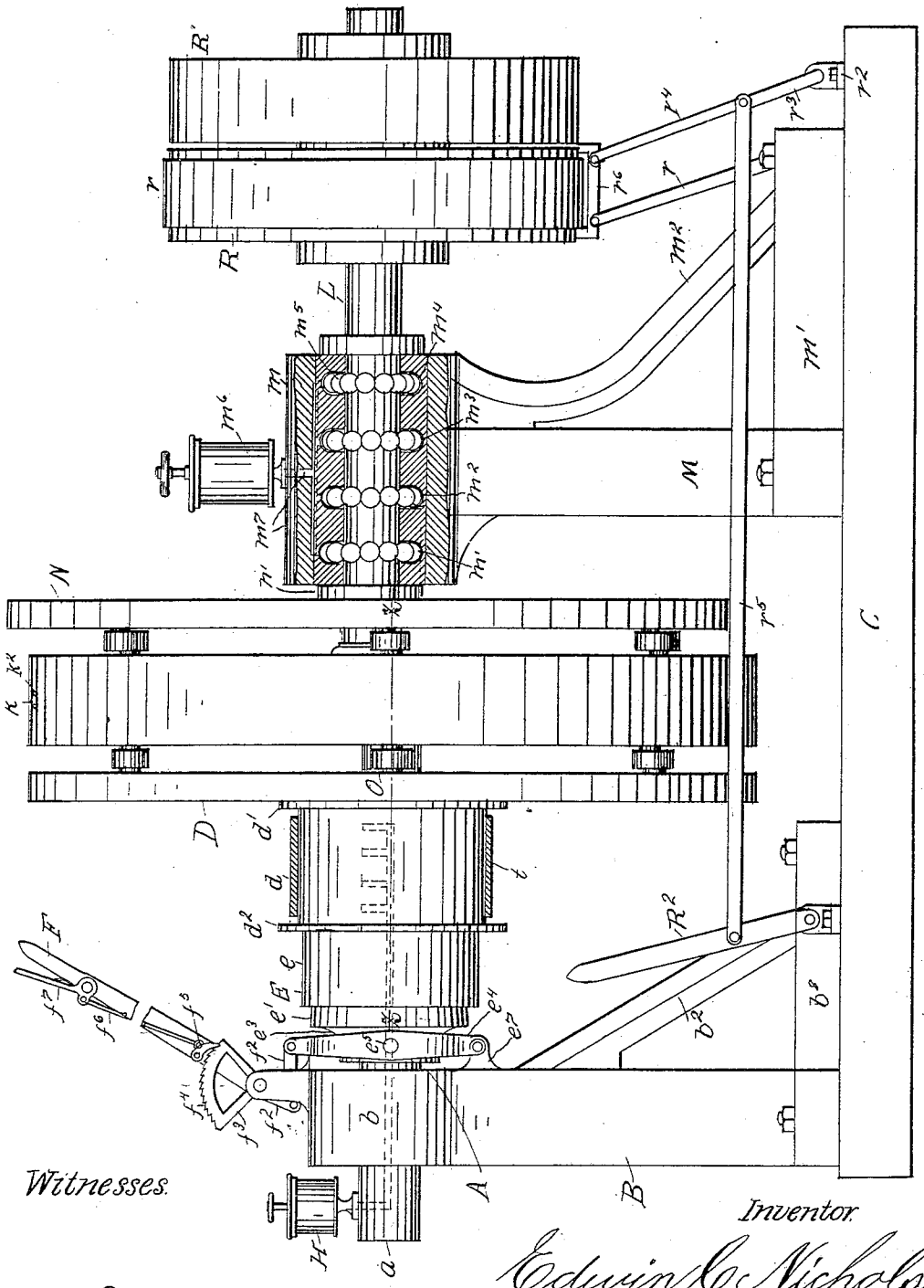


Fig. 2.

Witnesses.

A. B. Jacobus

L. L. C. Hasson

Inventor.

Edwin C. Nichols

By Richd. N. Manning

Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 625,349. Patented May 23, 1899.

E. C. NICHOLS.

MECHANICAL MOTOR.

(Application filed Mar. 30, 1898.)

(No Model.) 5 Sheets—Sheet 2.

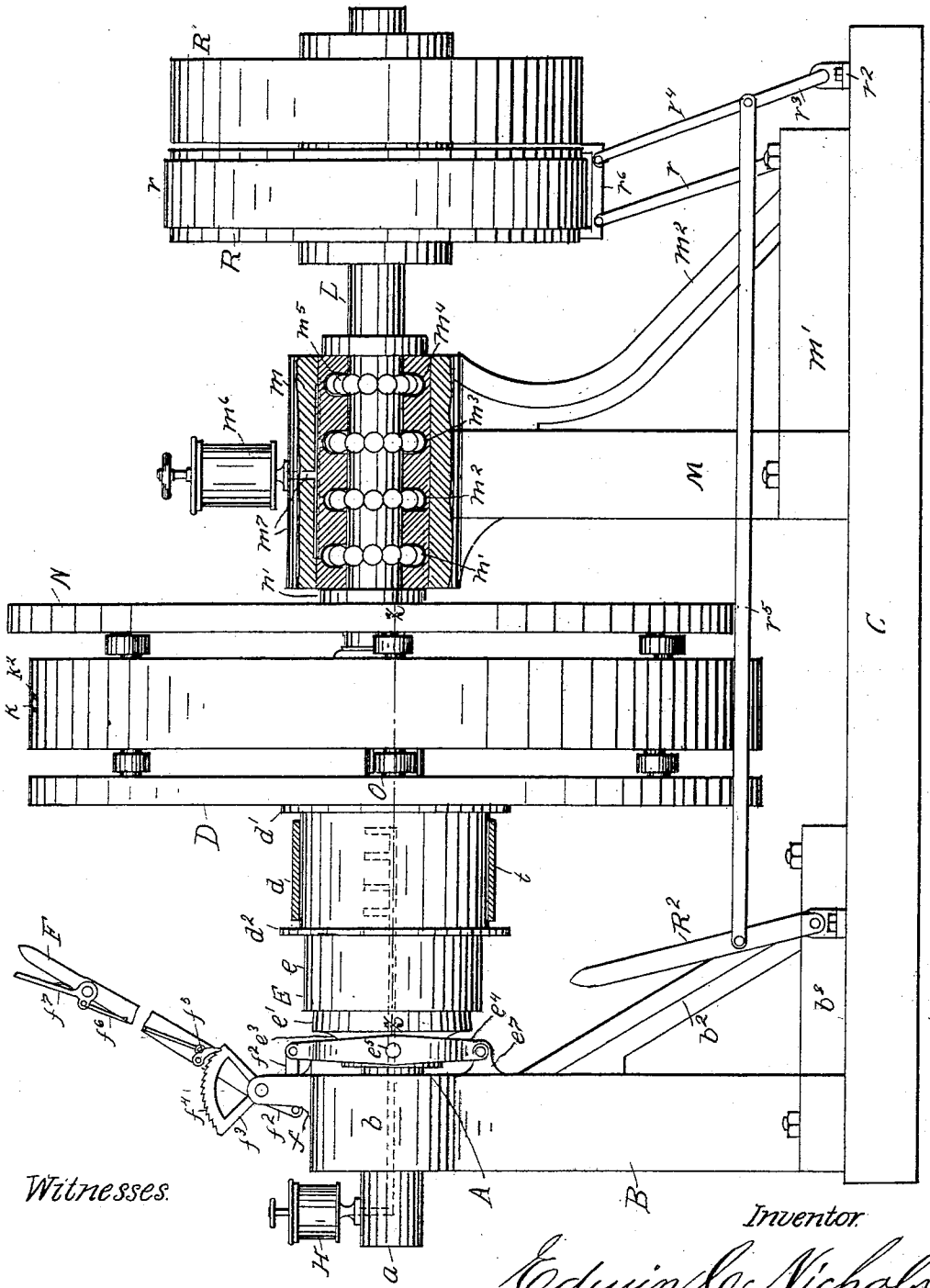


Fig. 2.

Witnesses.

A. B. Jacobus

L. L. C. Hasson

Inventor.

Edwin C. Nichols

By Richd. N. Manning

Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 625,349. Patented May 23, 1899.

E. C. NICHOLS.

MECHANICAL MOTOR.

(Application filed Mar. 30, 1898.)

(No Model.) 5 Sheets—Sheet 3.

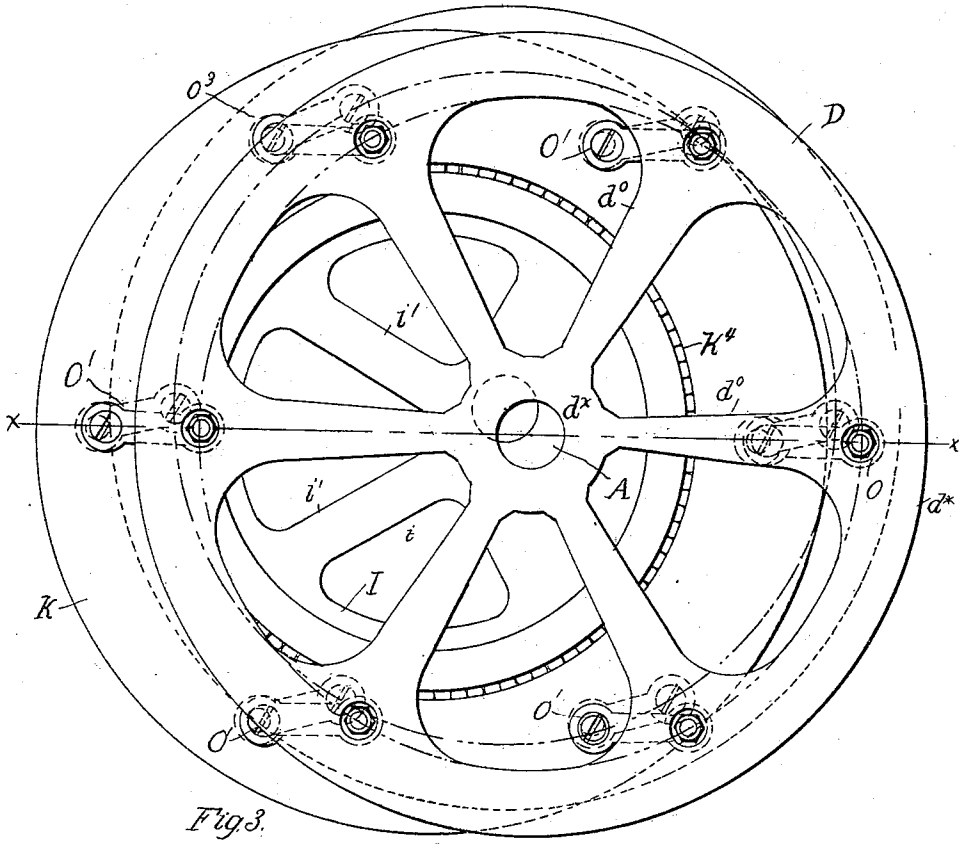


Fig. 3.

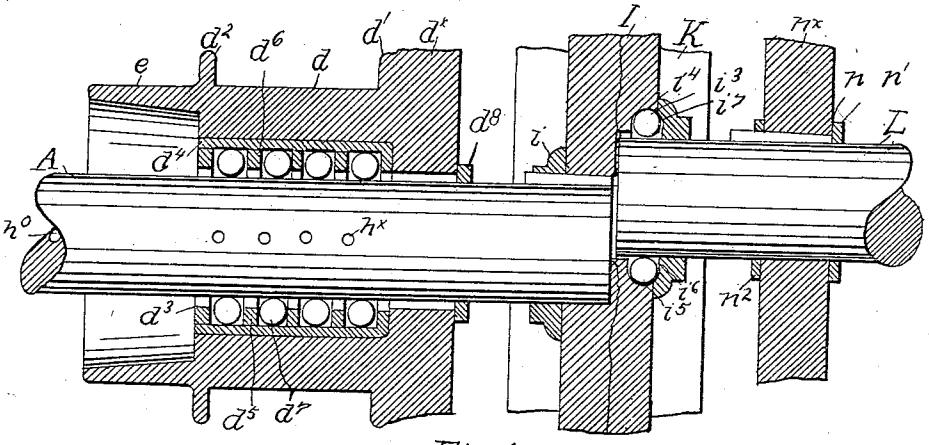


Fig. 4.

Witnesses.

A. B. Jacobus

L. L. C. Hasson

Inventor.

Edwin C. Nichols

By Richards & Manning

Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 625,349. Patented May 23, 1899.

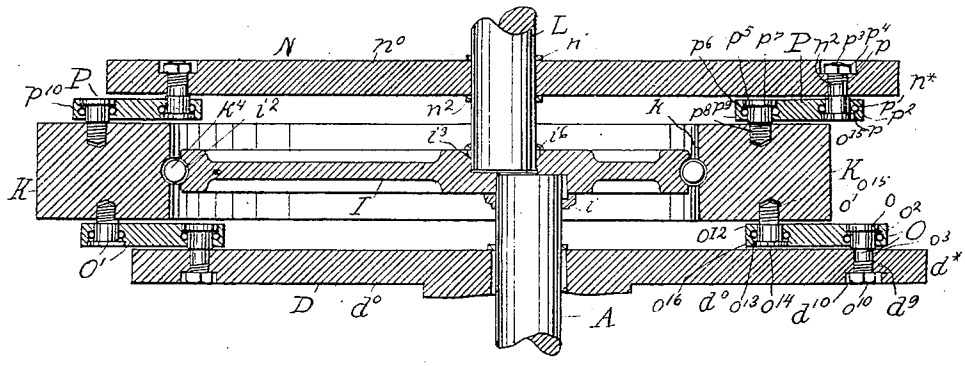
E. C. NICHOLS.

MECHANICAL MOTOR.

(Application filed Mar. 30, 1898.)

(No Model.) 5 Sheets—Sheet 4.

Fig. 5.



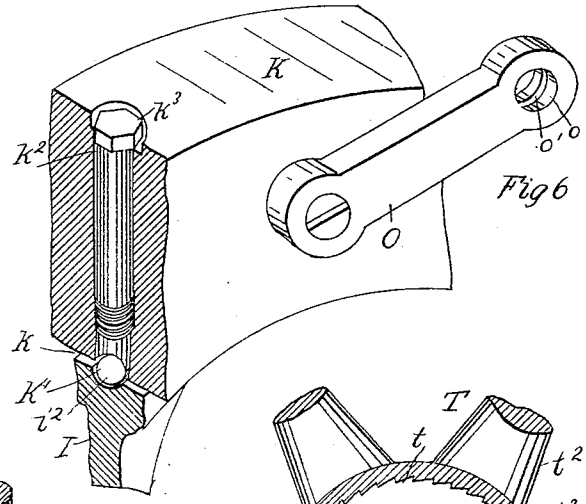


Fig 6

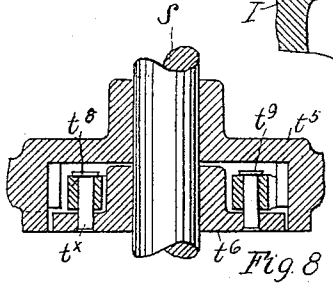


Fig. 8

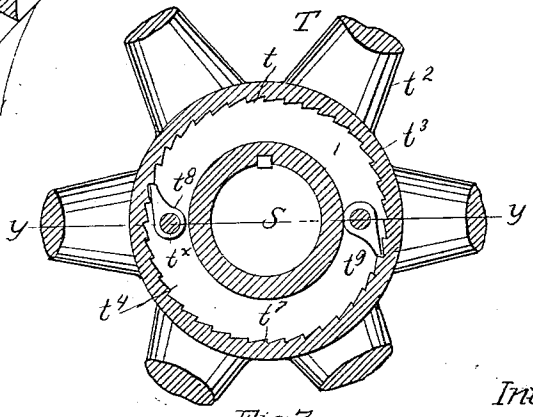


Fig 7.

Witnesses.

A. B. Jacobus

S. L. C. Hasson

Inventor.

By Edwin C. Nichols.

Richards, Manning & Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 625,349. Patented May 23, 1899.

E. C. NICHOLS.

MECHANICAL MOTOR.

(Application filed Mar. 30, 1898.)

(No Model.) 5 Sheets—Sheet 5.

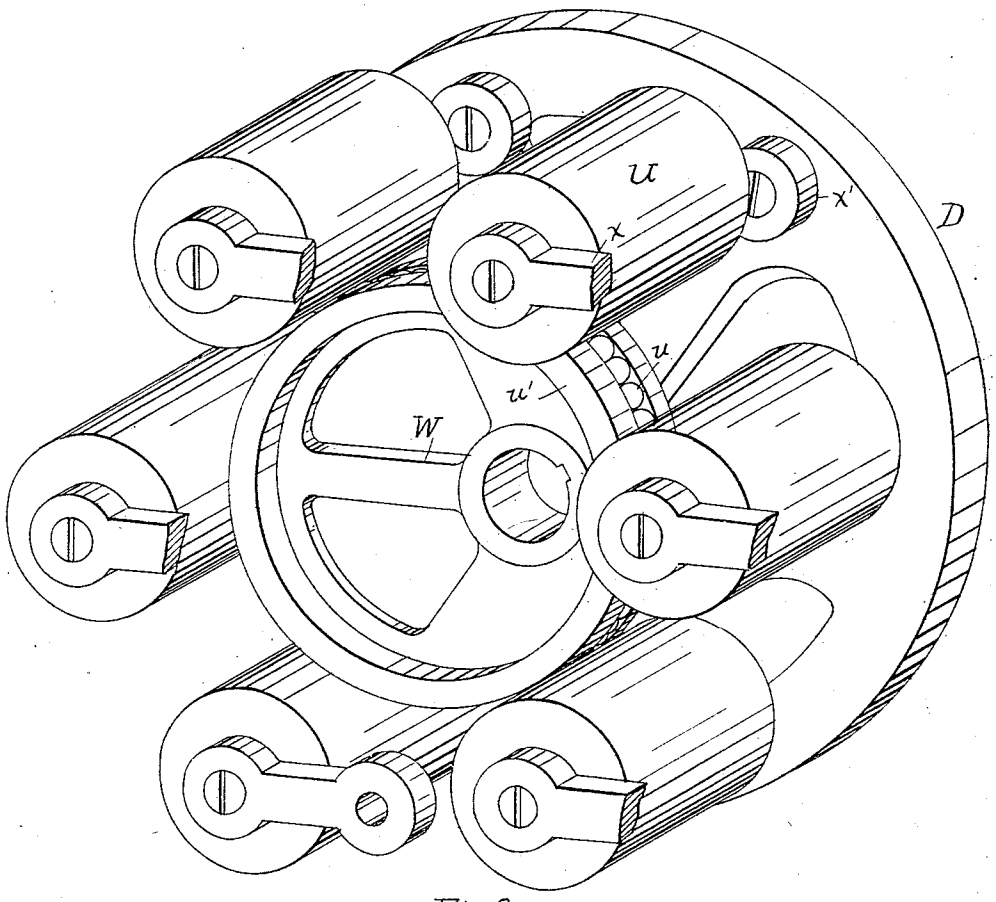


Fig. 9

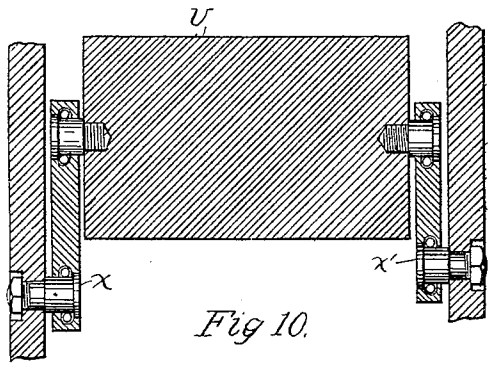


Fig 10.

Witnesses.

A. B. Jacobus

S. L. C. Hasson

Inventor.

Edwin C. Nichols

By Richards & Manning

Att'y

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWIN C. NICHOLS, OF TOPEKA, KANSAS.

MECHANICAL MOTOR.

SPECIFICATION forming part of Letters Patent No. 625,349, dated May 23, 1899.

Application filed March 30, 1898. Serial No. 675,832. (No model.)

To all whom it may concern:

Be it known that I, EDWIN C. NICHOLS, a citizen of the United States, residing at Topeka, in the county of Shawnee and State of Kansas, have invented a certain new and Improved Mechanical Motor for the Increment of Power; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention is designed to transmit an increment of power to a power-transmission shaft from a separate power-actuated shaft of lesser degrees of speed and power and economize the original energy required to give momentum to the said shafts; and it consists in the novel construction and combination of parts, such as will be first fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a view in perspective of the novel mechanical motor, showing the crank-shaft of the engine and its pulley connected with the shaft of the motor. Fig. 2 is a front view in elevation of the mechanical motor, with one of the journal-boxes shown in vertical section and a portion of the periphery of one of the motor-wheels broken away to show one of the links. Fig. 3 is a side view in detail of the motor-wheels from a position opposite to that shown in Fig. 1, showing also the eccentric, the weighted ring, and the links connected with the said ring, and the respective motor-wheels. Fig. 4 is a horizontal sectional view, taken upon line $z\,z$ of Fig. 2, through the hubs of the motor-wheels and of the eccentric-plate, showing the separate motor-shafts and a portion of the friction-clutch connected with the hub of one of the wheels of the motor. Fig. 5 is a horizontal sectional view of the motor-wheels, the eccentric, and the weighted ring, taken upon the line $x\,x$ of Fig. 3. Fig. 6 is a broken segment of the weighted ring, showing the opening for the passage of the antifriction-balls and the plug. Fig. 7 is a detail view of the pulley on the crank-shaft to the engine with the rim broken away, showing the hollow hub, the ratchet-teeth on the inner side of the outer wall of the said hub, and the pawl on the removable plate. Fig. 8 is a cross-sectional view of the pulley, taken on the line $y\,y$ of Fig. 7. Fig. 9 is a view in perspective of an alternate form of the counterpoised weighted ring, showing the eccentric and one of the wheels, as in Fig. 1. Fig. 10 is a sectional view of one of the cylindrical weights as seen in Fig. 9, showing also the links in their relative position on the cylindrical weight.

Similar letters of reference indicate corresponding parts in all the drawings.

Referring to the drawings, A represents a horizontal stationary shaft, one end portion a of which shaft extends within and is rigidly connected with a box or bearing b, which is supported by the upper meeting ends of the separate beams B B, the lower ends of which beams are spread apart at opposing angles to each other and rigidly connected with a beam b', extending in a transverse direction to the shaft A. On the inner side of the supports B B is a brace b^2, which is connected with the under side portion of the box b at one end and with a lateral extension b^3 of the beam b at the lower end. The beam b' of the braced support B B of the box b is bolted to a bed-plate or base C of considerable length, which is designed to support the entire motor. Upon the other end of shaft A to that connected with the box b and which extends but a short distance from said box is loosely mounted a wheel D, having a hub d and spokes d^0 extending from the hub to the periphery or round of said wheel, and for the purpose designed is nearly of the circumference of an ordinary fly-wheel to an engine. On the side of the wheel D in the direction of the shaft-supporting box b is rigidly connected a hub d, which extends around shaft A, and upon the outer surface of which hub are two separate annular flanges d' d^2, one of which flanges d' is adjacent to the side of the wheel D and the other flange d^2 a suitable distance therefrom or near the outer end of the hub to receive the power-conveying belt hereinafter described between them. Extending from the outer end of the hub d is a circular flanged portion e of a friction-clutch E, the other sliding portion e' of which clutch extends around the shaft A and also within the flanged portion e of said clutch. (See Fig. 2.) On the outer end of the sliding portion e' of the clutch E is a neck e^3, which is

smaller in circumference than the portion e', and extending half-way around said neck is a plate e^4, which is pivotally connected at e^5 with said neck. Upon the other side of the neck e^3 is a plate e^6, which is also pivotally connected with the neck e^3, the lower end portions of which plates e^4 e^6 are pivotally connected with each other and also to the lug e^7 on the inner side of the box b. On the upper side portion of the box b are separate vertically-extended lugs $f f'$, within which lugs are pivotally connected the lower end portion of an operating-lever F.

With the lower end portion of the lever F is pivotally connected one end of a link f^2, the other end of which link is pivotally connected with the separate upper end portions of the plates e^4 e^6 on the portion e^3 of the clutch E. With the upper end portion of one of the lugs f is connected a quadrant f^3, notched at f^4. Upon the side of the operating-lever F, above the quadrant f^3, is a pawl f^5, which engages with the notches f^4 in said quadrant. With the pawl f^5 is connected one end of a rod f^6, the other end of which rod is pivotally connected with a spring-actuated bell-crank lever f^7 on the upper end of the said lever F. On the inner side of the hub d of wheel D is an opening d^3, concentric with the shaft A, in which opening is fitted a circular plate d^4, on the side portion of which plate, extending toward the shaft A, are a series of ribs or flanges d^5, between which ribs are separate spaces d^6. In each space d^6 are a series of balls d^7 in the circular direction of the shaft A, the peripheral portion of which balls bear upon the said shaft. On the shaft A and upon the other side of the wheel D from that having the hub d is a collar d^8, shrunk on said shaft at a point a short distance from the outer end portion of shaft A.

On the outer end a and upper side portion of the shaft A is an oil-cup H. In the central portion of shaft A is an oil-conduit h^0, which extends from the oil-cup H within the shaft A in the direction of the outer end of said shaft to a position therein opposite the hub d of the wheel D, and from which conduit extend branch conduits or passages $h^\times$, leading to the outer surface of the shaft and opposite each space d^6 in the inner side of the hub d, carrying the series of antifriction-balls d^7. (See Fig. 4.)

With the extreme outer end portion of the stationary shaft A is connected fixedly an eccentric-plate I, the end portion of which shaft A extends to a position in said plate equidistant from the opposite sides of said plate. On the shaft A and rigidly connected with the side of the plate I, opposite the wheel D, is a collar i, which is shrunk on the shaft A. In the side of the eccentric-plate I are transverse openings $i' i'$. The circumference of the eccentric I is comparatively about one-third that of the wheel D. In the peripheral portion of the eccentric I is a groove i^2, extending in the circumferential direction of the eccentric-plate.

Extending around the periphery of the eccentric-plate I is a ring K, of great weight, it being cast or wrought from suitable metal and the weight counterpoised throughout the circumference, and which ring is wider than the eccentric-plate I, and between the inner side of which ring and the periphery of the plate I is a concentric space of slight width to avoid frictional contact of the said parts.

On the inner side portion of the ring K is an annular groove k, extending in the circular direction of the said ring. In the ring K is an internal screw-threaded opening k^2, extending in the direction of and to the groove k, from the periphery, in which is fitted a solid plug k^3, corresponding in weight to the amount of metal removed. In the grooves k and i^2 of the eccentric I and the ring K, respectively, are the antifriction-balls k^4 in suitable numbers to extend around the eccentric I, said balls being supplied to said grooves within the opening or passage k^2 in the ring K.

Upon the other side of the eccentric I to that connected with the shaft A is a rotary shaft L, which is journaled in a journal-box m, which box is supported upon uprights M M and brace m^2, secured to the base m', constructed, as described, of the supports B B. Said supports M M and brace m' are longer than the supports B B and are arranged upon the base C a short distance in rear of the line of position of the supports B B, thus placing the journal-box m in a position as respects the shaft A a short distance above and a distance in rear of an extended plane of the shaft A. One end portion of the shaft L extends within a circular opening i^3 in the side of the eccentric-plate I, which opening extends half-way through said plate. In the sides of the opening i^3 is a concentric groove i^4, in which groove are the antifriction-balls i^5, which balls extend around the shaft L. On the shaft L is loosely fitted a collar i^6, which is rigidly secured to the side of the eccentric-plate I, said collar having a concentric groove i^7 on the inner side portion opposite said balls i^5. On shaft L the same described distance from the eccentric-plate I as described by the wheel D is a wheel N, having a hub $n^\times$ and spokes n^0, extending from the hub to the periphery or rim $n^\times$ of said wheel, which hub is keyed by the ordinary key or feather n to the rotary shaft L. On one side of the portion of wheel N, adjacent to ring K, is a collar n^2, which is shrunk on said shaft, and upon the other side is a collar n', which is also shrunk on said shaft, between which collars the wheel N is held rigidly in position.

With the inner side portion of the wheel D and the adjacent side of the ring K is pivotally connected at the points of equilibrium the respective opposite ends of a link or bar O, which bar is of a defined length, as further explained. Near one end of the link O is an opening o for the passage of a bolt or

pivot and on the inner side of which opening is a concentric groove o', in which groove are the antifriction-rollers o^2 (see Fig. 5) for the purpose of relieving all friction on the pivots. Extending transversely through the rim $d^\times$ of the wheel D, at a point where the spoke d^0 meets the inner side of the said rim, is an opening d^9. Through the opening o in the link O is inserted one end of a nut-bolt o^3, the head being countersunk into said wheel, the balls o^2 in said opening being held in position temporarily by wax until the bolt is inserted. Said nut-bolt o^3 is also inserted through the opening d^9 in the rim $d^\times$ of the wheel D and a nut o^{10} fitted thereto, which is countersunk at d^{10} in said rim. The weighted ring is shown in the drawings in a convenient position for the attachment of the links or such as to present its position as far rearwardly as the eccentric I gives it an orbit. These separate shafts A and L are arranged in separate, elevated, and eccentric axial planes for the purpose of advancing the weighted ring K beyond the center of the fixed shaft, the position of the main body of the ring being thereby given an advanced position beyond the centers of the two shafts, so as to obtain an accretion of power which would be unattainable were the shafts in line with each other. The other end of the link O extends to a position intermediate the inner and outer edges of ring K and close in position to the side of said ring; and in said end portion of said link is a transverse opening o^{12}, in which is a concentric groove o^{13} and balls o^{14}, as described at the other end of link O. In the adjacent side of the ring K, at a point equidistant from the outer and inner edges of said ring, is a screw-threaded opening o^{15}. Through the opening o^{12} in the link O is inserted a screw-bolt o^{16}, which is also fitted to the screw-threaded opening o^{15} in the ring K. The described distance between the centers of the respective openings o and o^{12} for the pivots in the link O is equal the described distance from the center of the axis of the wheel D and the center with which the weighted ring K is concentric or from a point upon which the circumference of the ring may be described. With the other portion of the wheel D, and in nearly the same plane as shown connected with the ring K by the link O, is a link O', which is constructed precisely the same as link O and secured to the inner side of the rim $d^\times$ and also to the adjacent side of the ring K at points precisely the same as described of the link O, as clearly seen in Figs. 3 and 5. I have shown on the drawings the other links O' in series connected in like manner with the rim of the wheel D and also with the ring K in a position at the point of connection of each spoke d^0 with the rim of the wheel D, thus giving each portion of the circumference of the wheel D a controlling power upon each part of the weighted ring K.

Upon the other side of the ring K from that having the link O is a link P, which is shorter in length than the link O, as further defined. Said link P is provided with a transverse opening p, in which is a concentric groove p' and antifriction-rollers p^2, as described of link O, and in which opening is a nut-bolt p^3, the head of which bolt is countersunk in the link. In the rim $n^\times$ of the wheel N, at the point at which the spoke n^0 meets the inner edge of the said rim, is an opening n^2, in which is the threaded end of the bolt p^3, upon which end is a nut p^4, countersunk in the outer side portion of said rim, as described of the nut o^{10} in the rim of the wheel D. The other end of the link P extends to a point intermediate the outer and inner edges of the ring K, and in said end portion of the link P is an opening p^5 and having the concentric groove p^6 and balls p^7 and screw-bolt p^9, as described of the other end of said link. In the side of the ring K adjacent to the rim of wheel N is a threaded opening p^8, in which is inserted the screw-bolt p^9. The difference in length of link P from that described between the centers of the openings o and o^{12} of link O and that of the link P between the centers of the openings p p^5 of said link P will be equal nearly to one-fourth the described distance between the axial lines taken upon a horizontal plane of the separate shafts A L. The center of the opening p^8 and the pivot therefore in the ring K is advanced toward the inner side of ring K from a point equidistant from the periphery and inner side of said ring and beyond the transverse line upon which the inner end of link O is located the same one-fourth distance described, as heretofore defined, as between the axial centers of the shafts A L. The link P', which for illustration is shown in nearly the same horizontal plane, is the same precisely as the link P and connected with the rim of the wheel N on its inner side near the point of connection of the spoke end n^0 with the said rim, as described of the link P. The point of connection of the screw-bolt in said link with the side of the rim K will be seen to be advanced the described one-fourth distance between the axes of the separate shafts A L toward the periphery of the wheel K and the same distance from an intermediate point between the periphery and the inner side of the said ring toward said periphery as described of the center line of the opening p^8 from a like point toward the inner side of said ring. The other links P', which are the same as links P, are secured in position in precisely the same manner as that hitherto described of the links P P', and the spokes d^0 and n^0 being shown upon the same radius of their respective wheels a corresponding rotation of the separate wheels places the spokes in position for the like attachment of the other links to be seen as illustrated and described of the links P P'.

On the inner side of the journal-box m for the shaft L are separate concentric grooves m' m^2 m^3 m^4, in which grooves are antifric-

tion-balls m^5, extending around said shaft. Upon the outer side portion of the journal-box m is an oil-cup m^6, and in the said journal-box is an oil-conduit m^7, leading from the oil-cup to each concentric groove in branches, so as to keep each groove supplied with oil.

Upon the outer end portion of the shaft L is a band-wheel R, over which is extended a belt r, which belt is extended over the band-wheel of a driven shaft for the purpose of transmitting increase of power developed by the motor.

Upon the shaft L, outside of the band-wheel R, is an idler R'. Upon the base C, beneath the idler R', is an oscillating rod r', extending in a transverse direction to said base and mounted in the separate shaft-bearings r^2 r^2. The opposite ends of shaft r' are bent at an angle to said shaft and in an upward direction, as at r^3 r^4. Near the belt-pulley T and also in advance of the wheel D of the motor is a lever R^2, pivoted at its lower end to said base C. With the lever R^2 at a point a considerable distance above its point of connection with base C is connected one end of a connecting-rod r^5, the other end of which rod is connected with the bent end portion r^3 of the oscillating rod r'. With the other bent end portion r^4 of rod r' is connected a belt-shifting bar r^6, which is also supported by the bar r^7.

S represents a crank-shaft of an engine, and T the band-wheel keyed on said shaft and having spokes t^2 and a hollow hub t^3. Within the hub t^3 is a concentric opening t^4, extending to the fixed back plate t^5 and closed at the other side by a removable circular plate t^6. On the inner side portion of the outer wall of the hub t^3 are ratchet-teeth t^7, which are pitched in the direction in which the band-wheel is rotated. On the inner side portion of the front or removable plate t^6 is pivoted a pawl t^8, which engages with the ratchet-teeth t^7. t^9 is another pawl on the inner side of plate t^6, which is the same as pawl t^8 and engages with the ratchet-teeth t^7.

Over the band-wheel T on the crank-shaft S is extended one end of a belt t, the other end of which belt is extended over the hub d on the wheel D between the flanges d' d^2, and the ends of the belt are connected together in the usual manner.

In the operation of the motor power is supplied from the engine to the crank-shaft S, and thence through the belt t to the hub d of wheel D of the motor, and thence through the links O O' from wheel D, and transmits it to ring K, which in turn transmits it to wheel N on the power-transmitting shaft L through links P P', and in transmitting this motion from the engine to cause the incipient movement of the motor the belt r is in a position upon the idler R'. As soon as the motor has gained speed there is an increase of power, which is maintained, and the lever R^2 is operated to throw the belt r from the idler R' upon the fixed pulley R, and the power is communicated to the desired line-shaft with which the belt r is connected. It will be observed, therefore, that the wheel D acts compulsorily upon the weighted ring K and the power from said wheel, which in the incipient movement of the said wheel D may be sufficient to give the same degree of speed to the ring K as that of the band-wheel R on the crank-shaft. From increased degrees of speed the power in the weighted ring K is augmented. In other words, the equilibrium of the weighted ring K is governed by the links O and P, which restore the equilibrium occasioned by the momentum in its orbit around the eccentric I. This movement, however, is supplemented by the wheel N, which, together with the wheel D, in tending to throw the weighted ring K from one center of motion to another, results in the weighted ring K accumulating power, and the ring being caused to move in an orbit first in one direction and then the other direction from the result of the eccentric axis of shafts A and L the links O O' and P P' describe a full circle in rotation and speed is transmitted to the belt-pulley R and to the belt r, and thence to the desired line-shaft, for the movement of machinery of all descriptions. The initial power of a slow-running engine or motor is thus increased in a short space of time in the motor and transmitted to shaft L and utilized. A degree of speed, however, of said shaft in excess of the crank-shaft S will result in the increasing speed of pulley T. This pulley, however, having the side plate t^6 independently connected with the outer circular portion of the hub enables the spokes t^2 to travel at an increased degree of speed to that of the inner portion of the hub on shaft S, which movement remains the same the moment the shaft S increases in speed. The economy in the energy which would otherwise be expended in driving the shaft L from the engine, which is equivalent to a direct saving in the cost of the production of power to attain the same result, I obtain in the motor. All of the shaft and pivot bearings of the motor being such as to reduce friction to the minimum, the full power of the motor is obtained. In order that the rapidity of the speed of the motor may be checked and slowed down to a normal degree of speed, the lever f^6 is thrown forward or away from the direction of wheel D and the link f^2 forces the clamping-plates e^4 e^6 and the portion e' of the clutch E within the portion e of said clutch, the pawl f^5 on the lever F engaging with the ratchet-teeth f^4 on the quadrant f^3 and retaining said lever in its forward position. In this manner the wheel D may be permitted a slow movement or its movement arrested, as described.

Instead of employing a counterpoised weighted ring to acquire the power momentum I may use separate weights or cylindrical bodies U, as shown in Fig. 9. In this construction instead of the ring K between the separate wheels, as in Fig. 1, separate cylin-

drical weights U are employed, each weight being of the required circumference and length to compensate for the amount of material required to effect a counterpoise of the ring K, which must equal in the divisional portions of the ring described between points on said ring equidistant from the pivotal point of connection of the separate links.

In the peripheral portion of the eccentric W, which is in a fixed position as described of the eccentric I, the antifriction-balls *u* are set and dovetailed in groove *u'*, which admits of the contact of the balls and cylindrical weight. The links X X' in Fig. 9 are the same in length as the arms O and P in Fig. 1. The outer ends of each one of the links X and X' are pivoted to the sides of the cylindrical weight U upon the same axial line extending through said cylinders.

The motor is preferably mounted upon a movable bed-plate, which enables a perfect adjustment of the shafts A and L to be made and kept better in alinement; but the motor may be secured in position upon the floor of a workshop and operated with equal facility for the purpose designed.

Having fully described my invention, what I now claim as new, and desire to secure by Letters Patent, is—

1. A mechanical motor composed of separate rotating and non-rotating shafts in separate elevated and eccentric axial planes and separate rotary bodies upon the respective shafts, an eccentric on the non-rotating shaft between said rotatory bodies, a counterpoised weight traveling upon the periphery of said eccentric interposed between said rotating bodies, and separate pivoted revolving links of unequal length, on opposite sides of the said weight, connected with the respective rotatory bodies, and means for imparting motion to the rotating body on the non-rotating shaft.

2. A mechanical motor consisting of separate rotatory wheels, having separate rotating and non-rotating shafts, in separate elevated and eccentric axial planes respectively, an eccentric-plate fixed on the non-rotating shaft, interposed between said wheels, and a counterpoised weighted ring extending around said eccentric, and links on opposite sides of said ring of unequal length, pivotally connected with said ring and also with the inner side portions of the respective wheels, and means for imparting motion to the wheel on the non-rotating shaft, substantially as described.

3. A mechanical motor, consisting of a rotatory power-transmitting shaft and a separate non-rotating shaft, in separate elevated and eccentric axial planes, and supported within suitable fixed journal-bearings, separate rotatory wheels, having hubs on the opposing ends of said rotating and non-rotating shafts, an eccentric interposed between said rotatory wheels and fixed to said non-rotating shaft, and a counterpoised weighted ring extending around the periphery of said eccentric, and antifriction devices between said ring and said eccentric, links between the said ring and the wheel on the non-rotating shaft, having pivotal connections at each end with the said ring and also with the said wheel, at distances upon each link corresponding to the distance between the axis of the power-transmitting shaft and the center upon which the periphery of the eccentric is described, and separate links on the other side of the said ring, shorter in length and also pivotally connected with said ring, and the sides of the wheel on the power-transmission shaft, and a power-driven band on the hub of the wheel, on the non-rotating shaft.

4. A mechanical motor, consisting of a rotating, power-transmission shaft, and a separate non-rotating shaft in separate elevated and eccentric axial planes, and supported within suitable fixed journal-bearings, separate rotatory wheels, having hubs on the opposing ends of said rotating and non-rotating shafts, an eccentric-plate interposed between said rotatory wheels and fixed to said non-rotating shaft, and having a groove concentric with its periphery, and a counterpoised weighted ring having an annular groove upon its inner side portion, and antifriction-balls in said grooves, between said ring and eccentric, links upon the opposite side of said weighted ring, of unequal length, and pivotally connected with the said ring and the rims of the respective wheels, a generator of power, and power-conveying devices connected therewith and with the wheel on the non-rotating shaft, and devices on the rotating shaft for transmitting the increment of power of the motor, and means for controlling the speed of the motor in degrees, substantially as described.

5. A mechanical motor consisting of a rotating power-transmission shaft, and a separate non-rotating shaft supported within suitable fixed bearings, in separate elevated and eccentric axial planes and supported within suitable fixed journal-bearings, separate rotatory wheels having hubs and spokes extending in radial lines to the rim of said wheels on the opposing ends of said rotating and non-rotating shafts, an eccentric-plate interposed between said rotatory wheels and fixed to said non-rotating shaft, and a counterpoised weighted ring extending around the periphery of said eccentric, and antifriction devices between said ring and said eccentric links on opposite sides of and pivotally connected with said weighted rings, of unequal length, and also pivotally connected with the inner side of the rims of the respective wheels, a generator of power and its driving-shaft, and a pulley on said shaft, having a hollow hub and independently-rotating geared parts, and a belt extending over said pulley and also over the hub of the wheel on the non-rotating shaft.

6. A mechanical motor, consisting of a ro

tating power-transmission shaft, and a separate non-rotating shaft in separate elevated and eccentric axial planes and supported within suitable fixed journal-bearings, separate rotatory wheels having hubs on the opposing ends of the separate rotating and non-rotating shafts, an eccentric-plate interposed between said rotatory wheels and fixed to said non-rotating shaft, and having a groove concentric with its periphery, and a counterpoised weighted ring extending around the periphery of said eccentric-plate, and having an annular groove on its inner side portion, and antifriction-balls in said grooves, links upon opposite sides of said ring, of unequal length, and having openings for the pivot-bolts at each end, and concentric grooves on each opening and antifriction-balls in said grooves, and links having nut-bolts connecting one of the ends of each link pivotally with the rim of an adjacent wheel and screw-bolts connecting the other end pivotally with the side of the weighted ring, at the points described, a suitable initial source of power having power-energizing devices connected with the wheel on the non-rotating shaft, and means for transmitting the accretion of power of the power-transmission shaft, substantially as described.

7. A mechanical motor consisting of a rotating power-transmission shaft, and a separate non-rotating shaft, in separate elevated and eccentric axial planes, and supported within suitable fixed journal-bearings, separate rotatory wheels on the opposing ends of the separate shafts, and an eccentric-plate interposed between said wheels and connected fixedly with the end of the non-rotating shaft, upon one side of said plate, and having an opening upon the other side for the reception of the opposing end of the power-transmission shaft, and antifriction devices in said opening and a counterpoised weighted ring extending around the periphery of said eccentric-plate, and having antifriction devices between said ring and said plate, and revolving links on both sides of said ring, of unequal length, and connected pivotally with the inner side of the rims of the separate wheels, and also with the sides of the said ring, at the points of equilibrium, and means for imparting motion to the wheel on the non-rotating shaft.

8. A mechanical motor, consisting of a rotating power-transmission shaft, and a separate non-rotating shaft in separate elevated and eccentric axial planes, and supported within suitable fixed journal-bearings, separate rotatory wheels on the opposing ends of the separate shafts, one of said wheels having a hub provided with concentric grooves on its inner side, and antifriction-balls on said grooves, and a friction-clutch on said non-rotating shaft, having one portion thereof connected with said hub, an eccentric-plate interposed between said wheels, and having a groove on its outer edge concentric with its periphery, and one side connected with the end portion of said shaft, and an opening upon the other side, for the reception of the adjacent end of the power-transmission rotating shaft, and a concentric groove in said opening, and antifriction-balls in said groove, a counterpoised weighted ring extending around the periphery of said eccentric-plate, having an annular groove on the inner side portion, antifriction-balls in said grooves, revolving links upon both sides of said ring, of unequal length, and pivotally connected therewith, and also with the inner side portion of the rim of each wheel, and a non-rotating sliding portion of said clutch in the non-rotating shaft, and a lever for operating said sliding portion of the clutch.

EDWIN C. NICHOLS.

Witnesses:
E. P. PRATT,
A. L. GREER.