(No Model.) 3 Sheets—Sheet 1.

A. E. MEEK.

MECHANICAL MOTOR.

No. 562,902. Patented June 30, 1896.

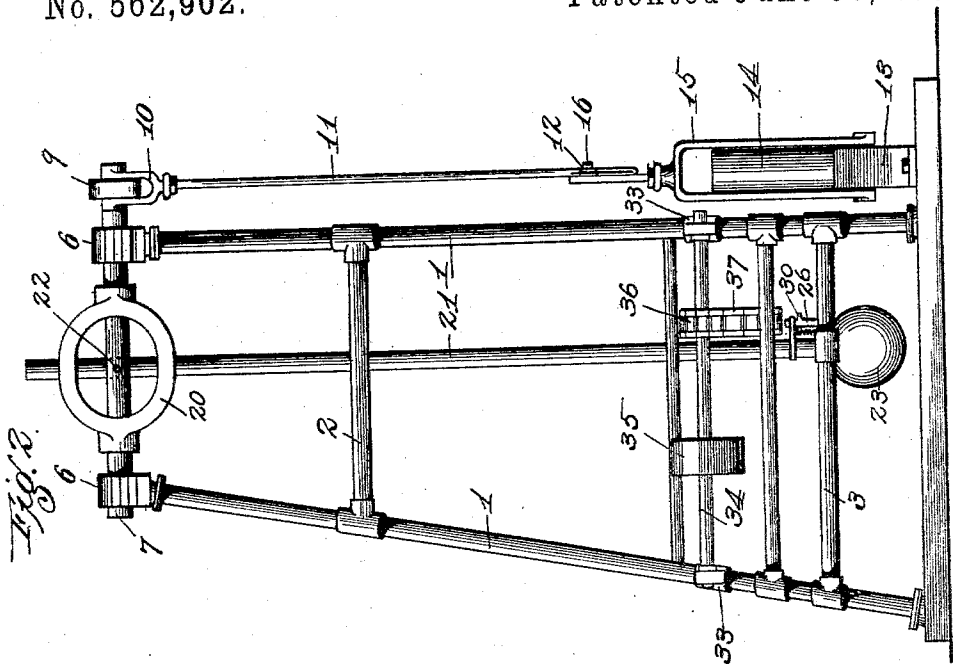

Fig. 2.

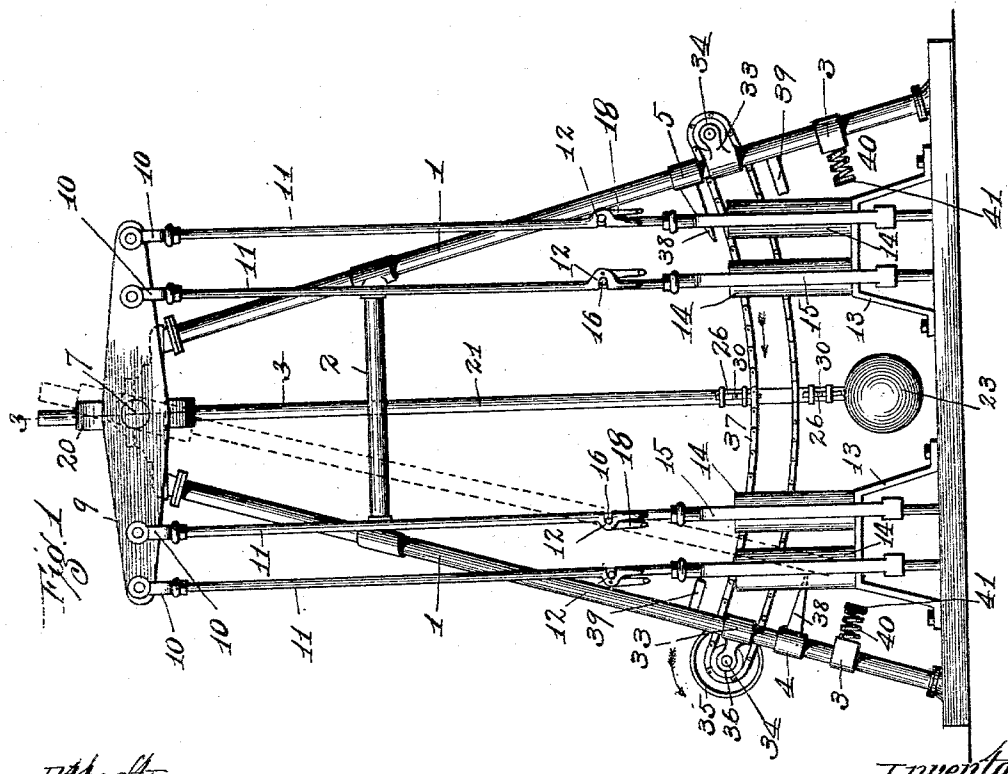

Fig. 1.

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Fig. 3.

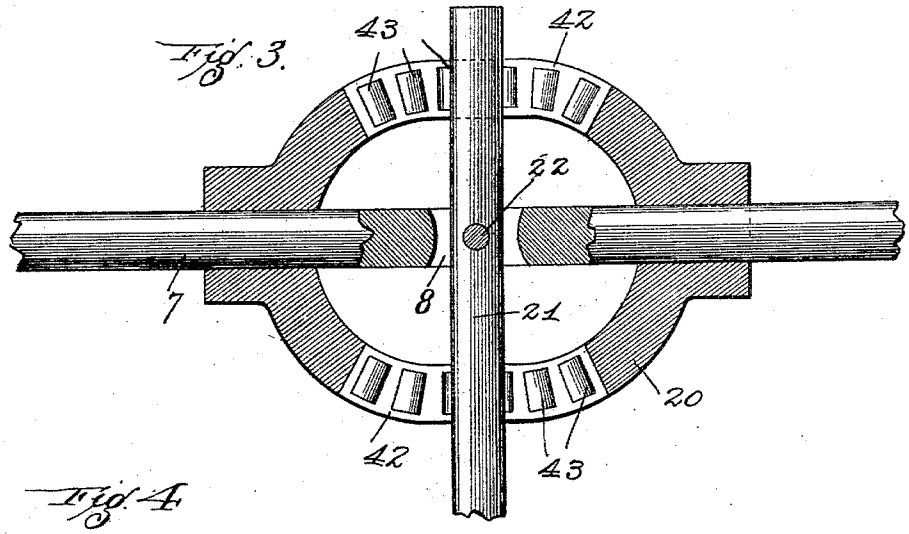

Fig. 4.

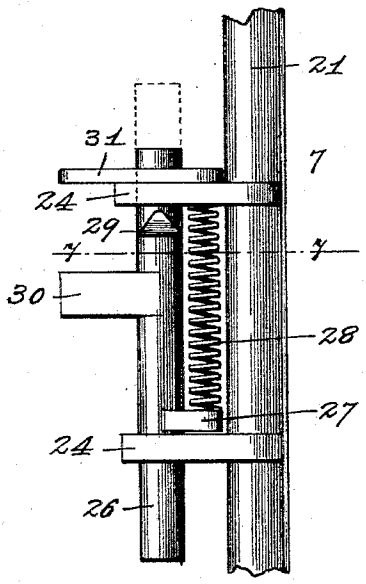

Fig. 5.

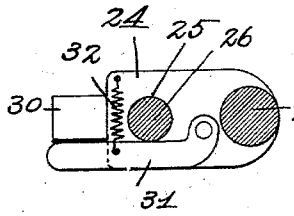

Fig. 6.

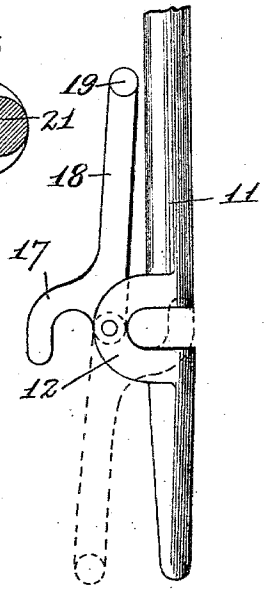

Fig. 7.

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MECHANICAL MOTOR.

No. 562,902. Patented June 30, 1896.

Fig. 8.

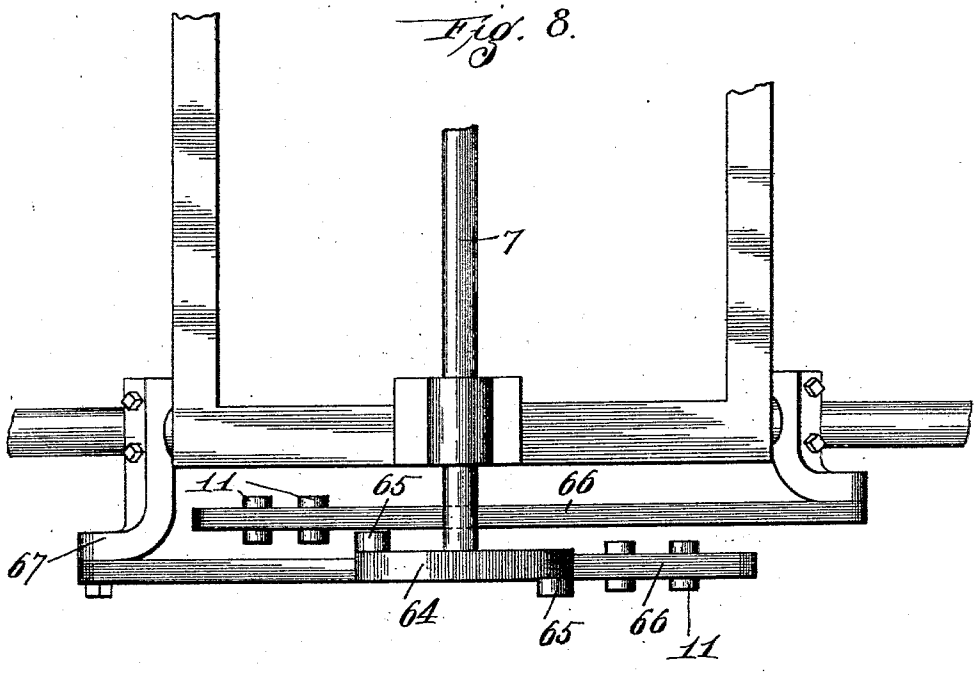
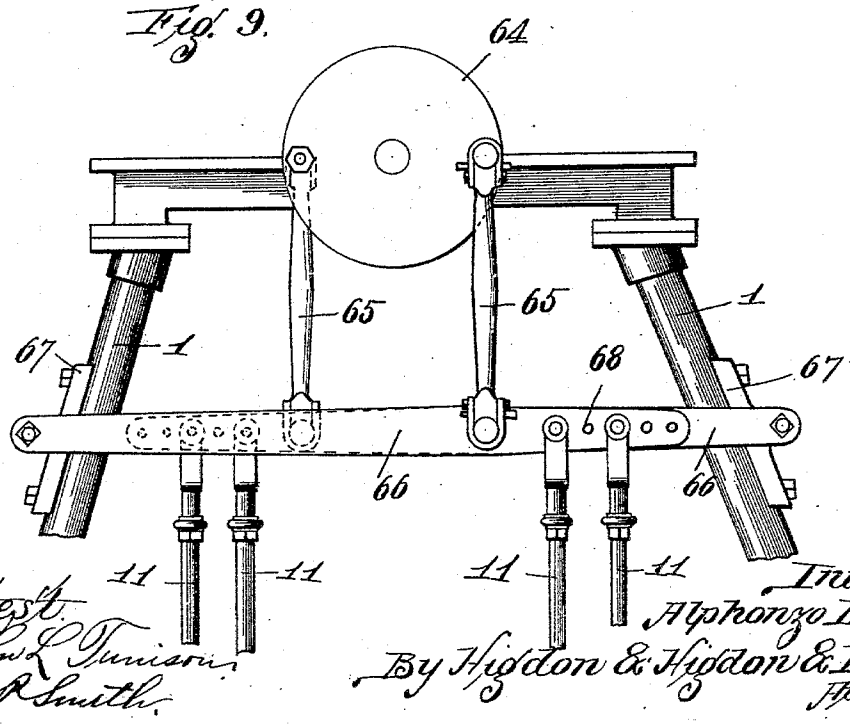


Fig. 9.



Witnesses:
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Inventor:
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By Higdon & Higdon & London
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UNITED STATES PATENT OFFICE.

ALPHONZO E. MEEK, OF KANSAS CITY, MISSOURI.

MECHANICAL MOTOR.

SPECIFICATION forming part of Letters Patent No. 562,902, dated June 30, 1896.

Application filed August 26, 1895. Serial No. 560,543. (No model.)

To all whom it may concern:

Be it known that I, ALPHONZO E. MEEK, of Kansas City, Jackson county, State of Missouri, have invented certain new and useful Improvements in Mechanical Motors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved mechanical motor; and it consists in the novel construction, combination, and arrangement of parts hereinafter described and claimed.

In the drawings, Figure 1 is a front elevation of my improved mechanical motor. Fig. 2 is a side elevation thereof. Fig. 3 is an enlarged cross-sectional view taken approximately on the indicated line 3 3 of Fig. 1. Fig. 4 is a detail elevation of an automatic catch made use of in carrying out my invention. Fig. 5 is a cross-sectional view taken approximately on the indicated line 7 7 of Fig. 4. Fig. 6 is a side elevation of the lower end of one of the pump-rods and hook thereon used in my improved motor. Fig. 7 is a front elevation of said lower portion of the rod and hook. Fig. 8 is a plan view of a further modified form of my improved mechanical motor. Fig. 9 is a front elevation thereof.

Referring by numerals to the accompanying drawings, 1 1 indicate suitable tubular standards, the same being framed together adjacent their upper ends by tubular braces 2. Extending transversely between the front and rear standards adjacent their lower ends are tubular braces 3, and arranged between said front and rear standards at suitable distances above said braces 3 are bars 4 and 5, the latter being in a plane slightly higher than that occupied by the bar 4. The upper ends of the standards 1 carry horizontally-alined antifriction journal-boxes 6, in which is mounted for rotation a shaft 7, in the center of which is formed a slot or aperture 8. Located upon the end of the shaft 7, that extends through the journal-boxes 6 at the front of the frame, is a working beam 9, the same carrying on each end a pair of stirrups 10. Fixed in the lower ends of said stirrups 10 are the lower ends of vertically-arranged rods 11, in the lower ends of which are formed laterally-projecting bends 12. Arranged upon suitable standards 13, immediately below the lower ends of these rods 11, are pump-cylinders 14. The pump-rods 15 extend upwardly from said pump-cylinders and have formed integral with their upper ends laterally-projecting pins 16 of such size as that they will readily engage in the recesses formed by the laterally-projecting bent portions 12.

U-shaped hooks, such as 17, are pivoted by one end to the outer end of each of the laterally-projecting portions 12, and said U-shaped hooks are provided with integral arms 18, from which project operating-handles 19. These hooks 17 are so arranged as that when the arms 18 are thrown downwardly and into parallel planes with the lower ends of the rods 11, said hooks will engage around the pins 16 on the upper ends of the pump-rods 15. Located upon the shaft 7, between the journal-boxes 6, is a yoke 20, and passing through said yoke and through the slot or aperture 8 in the shaft 7 is the upper end of a rod 21, the same being held to said shaft 7 by a pivot-pin 22. Upon the lower end of this rod 21 is fixed a weight 23, preferably of spherical form, and said rod 21 and weight 23 perform the functions of and operate identically like an ordinary pendulum.

Formed integral with the rod 21, a slight distance above the weight 23, and projecting laterally therefrom, is a pair of arms 24, in the outer ends of which are formed vertically-alined apertures 25. Arranged to move vertically through these apertures 25 is a pin 26, with which is formed integral a laterally-projecting lug 27, that is normally located directly above the lowermost one of the arms 24, and said lug projects toward the rod 21. Interposed between said lug 27 and the opposite arm 24 is an expansive coil-spring 28.

Formed in one side of the pin 26, adjacent the upper end thereof, is a notch 29, which, when the pin 26 is in its normal position, occupies a position immediately below the arm 24 opposite from the arm adjacent which the lug 27 is located. Formed integral with and projecting outwardly from the pin 26, a slight distance below this notch 29, is an arm or lug 30.

Pivoted to the face of the arm 24, on the opposite side from which the coil-spring 28 bears, is a catch 31, to which is fixed a retractile coil-spring 32, the opposite end of

which is fixed to the top of the arm 24. The normal tendency of the coil-spring 32 causes the catch 31 to bear directly against the face of the pin 26.

A second pair of arms 24 is formed integral with the rod 21 a slight distance above the first set of arms 24, and a pin, spring, and catch, in every way similar to the pin 26, spring 28, and catch 31, are arranged upon said second pair of arms 24, and said second pin is arranged to move downwardly or toward the first-mentioned pin 26.

Fixed to the standard 1, at suitable points above the cross-frames 3, are journal-boxes 33, in which are mounted for rotation shafts 34. Located upon one of said shafts 34 is a belt-wheel 35, and arranged upon each of said shafts 34 are sprocket-wheels 36, and a sprocket-chain 37 is arranged around said sprocket-wheels 36, said sprocket-chain 37 being arranged in front of the rod 21 and passing between the pairs of arms 24 formed integral with said rod 21.

Formed integral with and extending inwardly from the bars 4 and 5 are V-shaped lugs or projections 38, that lie directly in the paths of travel of the lugs 30, formed integral with the pin 26. Arranged upon suitable cross-bars above and below said cross-bars 4 and 5 are lugs or projections 39, that lie directly in the paths of travel of the outer ends of the catch 31.

Fixed to and extending inwardly from the cross-frames 3 are coil-springs 40, the outer ends of which carry plates 41, the same lying directly in the path of travel of the weight 23.

In the modification shown in Figs. 8 and 9, the shaft 7 carries upon its forward end a disk 64. Connecting-rods 65 connect this disk to the forward ends of levers 66, which in turn are journaled upon brackets 67, which are fixed to the framework 1. The levers 66 extend a slight distance beyond the point where the connecting-rods 65 are attached, and the vertically-arranged rods 11 are attached to this extending portion. A number of apertures 68 are provided, so that the stroke of the vertically-arranged rods 11 may be changed as desired.

The operation of the preferred form of my improved motor is as follows: Before starting my improved motor, it is essential that the hooks 17 be thrown upwardly into the position as shown in Fig. 6, and the laterally-bent portions 12 are disengaged from the pins 16 on the upper ends of the pump-rods 15. A belt (not shown) is now passed around the belt-wheel 35, and as said belt is moved by an engine or motor rotary motion will be imparted to the shaft 34 and sprocket-wheel 36 located thereon. Assuming that the rotary motion of said shaft 34 and belt-wheel 35 is in the direction as indicated by the arrow adjacent said belt-wheel in Fig. 1, the motion to the sprocket-chain 37, passing around the sprocket-wheels 36, one of which is located upon the shaft 34, will be in the direction as indicated by the arrow adjacent said sprocket-chain in Fig. 1. Before the chain 37 has started in its movement, it is essential that one of the pins 26 be passed through one of the links of said chain 37. In Fig. 1 the top pin 26 is thus shown in engagement, and when said pin is so located the catch 31 is engaged in the notch 29 and the lower end of said pin 26 is held through one of the links of said chain. The lower pin 26 is out of engagement with the links of said chain, the coil-spring adjacent said lower pin being extended and the catch 31 disengaged from the notch 29. As said chain 37 moves in the direction as indicated by the arrow adjacent said chain, the rod 21, carrying the weight, will be carried toward the left-hand side of the motor (seen in Fig. 1) or to the position indicated by dotted lines in said figure. As the rod 21 thus swings to the side of the motor the end of the catch 31 will engage against the end of the lug 39 and said catch 31 will be thrown out of the notch 29, and as soon as this movement takes place the coil-spring 28 will expand and throw the upper one of the pins 26 to its upward limit of movement and the lower end thereof will be disengaged from the link in the sprocket-chain 37, in which it has been located. Simultaneous with this movement the lug 30 on the lowermost one of the pins 26 will engage against the inclined face of the left-hand one of the triangular lugs or arms 38, and the lug 30 and pin 26 will be moved upwardly thereby until the upper end of said pin 26 passes through one of the links in the chain 37. As said pin moves upwardly the notch 29 therein will pass the plane occupied by the catch 31 and said catch will be thrown into said notch by the action of the coil-spring 32. This will retain said pin 26 in the link of the sprocket-chain 37, and the lower portion of said chain 37, moving in a reverse direction to that indicated by the arrow in Fig. 1, will cause the rod 21, carrying the weight 23, to swing to the opposite side of the frame of the motor. When said rod 21 reaches the other side of the frame, movements in every way similar to the movements just described will take place, owing to the location of the second pair of lugs 38 and 39 on this side, and the lowermost pin will be thrown out of engagement while the top pin will be thrown into engagement with the chain and the rod 21 and weight will move in the direction as indicated by the arrow adjacent the sprocket-chain in Fig. 1. Thus an oscillating or pendulum-like movement is imparted to the rod 21 and weight 23. The reason for alternately forming the connection between the pendulum-rod 21 and the top and bottom portions of the sprocket-chain 37 is to cause said pendulum-rod to swing to its fullest stroke. As said weight 23 reaches its limit of movement it alternately engages against the plates 41 on the coil-springs 40 and is thereby assisted in its start on its return movement. As the rod 21 moves backward and forward the

working beam 9 will oscillate in the usual manner and the rods 11 will alternately move upwardly and downwardly. As soon as a sufficient power has been developed by the swinging of the rod 21 and weight 23 the operator successively guides each one of the lower ends of the rods 11 along the pins 16, protruding from the upper ends of the pump-rods 15, until said pins engage in the recesses formed by the laterally-bent portions 12 at the lower ends of said rods; and when this has been done the operator grasps the handles 19 of the arms 18 and throws the same downwardly to the position shown by dotted lines in Fig. 6, which locks the pins within the recesses and thus forms a rigid connection between the rods 11 and pump-rods 15.

The operation of the modified form shown in Figs. 8 and 9 is as follows: The shaft 7 being rocked will necessarily impart an oscillatory motion to the disk 64, and said motion will be communicated from the rods 65 to the levers 66 and to the vertically-arranged rods 11.

Motors of my improved construction are applicable for a great many purposes, and the same may be operated by any motive power desired. Said motors possess superior advantages in point of simplicity, durability, and general efficiency, are easily constructed, require no attention while in use, and may be used very advantageously wherever it is desired to increase or transmit power.

I claim—

1. The herein-described motor, constructed with a frame, a swinging rod, a weight carried by the lower end thereof, a journaled shaft carrying said rod, a working beam carried by said shaft, rods depending from said working beam, shafts journaled in each side of said frame, sprocket-wheels arranged upon said shafts, a sprocket-chain passing around said sprocket-wheels, means for driving said chain means for automatically forming a connection between the swinging rod and the upper part of the chain during the swinging movement or oscillation of said rod in one direction, and means for automatically forming a connection between the swinging rod and the lower part of the chain during the swinging movement or oscillation of the rod in the opposite direction.

2. An improved motor, constructed with a frame, a shaft journaled in the upper end thereof, a working beam carried by one end of said shaft, operating-rods depending from the ends of said working beam, shafts journaled at each side of the frame, sprocket-wheels fixed upon each of said shafts, a sprocket-chain passing around said sprocket-wheels, means for driving said chain, a belt-wheel arranged upon one of said shafts, catch devices arranged upon the swinging rod to engage with the upper part of the sprocket-chain as said rod swings or oscillates in one direction, means for automatically forming a connection between the swinging rod and the lower part of the chain during the swinging movement or oscillation of the rod in the opposite direction, and lugs arranged upon each side of the frame for automatically throwing the catch devices into engagement.

3. An improved motor, constructed with a frame, a pendulum arranged to swing in said frame, a driven sprocket-chain arranged on an arc concentric with the center in which the pendulum swings, and means for automatically forming a connection between the upper part of the sprocket-chain and the pendulum during the swinging movement of the latter in one direction, and means for automatically forming a connection between the swinging rod and the lower part of the chain during the swinging movement or oscillation of the rod in the opposite direction.

4. In a mechanical motor, a suitable framework, a rock-shaft journaled in the upper end thereof, a working beam carried by one end of said shaft, a driven sprocket-chain arranged in the lower end of said frame, a pendulum depending from the journaled shaft, a weight carried by the lower end of said rod, spring-actuated pins arranged to move vertically upon said rod to engage with the upper part of the sprocket-chain when the same is moving in one direction and to engage with the lower part of the chain when the rod moves in the opposite direction, and certain formed lugs arranged at each side of the frame to cause said pins to engage and disengage with and from the sprocket-chain.

5. In an improved mechanical motor the combination of a chain, means for driving the same, an engaging device, comprising a rod, lugs formed integral with said rod, a pin arranged to slide through apertures formed in the outer ends of said lugs, a lug formed integral with said pin, a coil-spring interposed between said lug and one of the lugs on the rod, a second lug formed integral with and extending laterally from the movable pin, and a spring-actuated catch pivoted upon one of the first-mentioned lugs that is arranged to engage with a notch in the pin when said pin is depressed.

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

ALPHONZO E. MEEK.

Witnesses:
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W. S. EDMOND.