

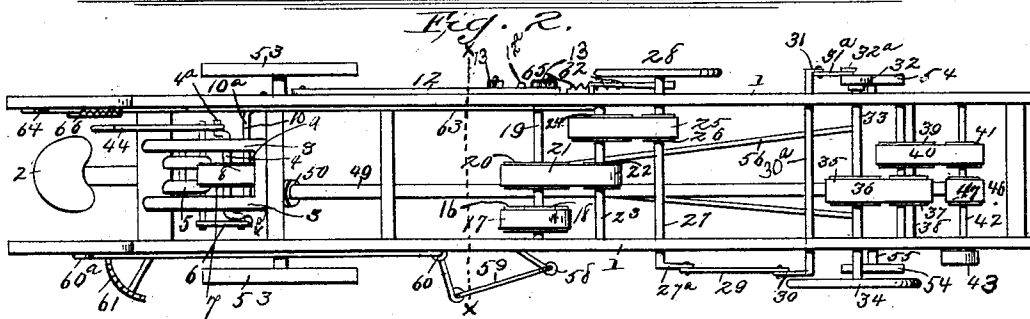
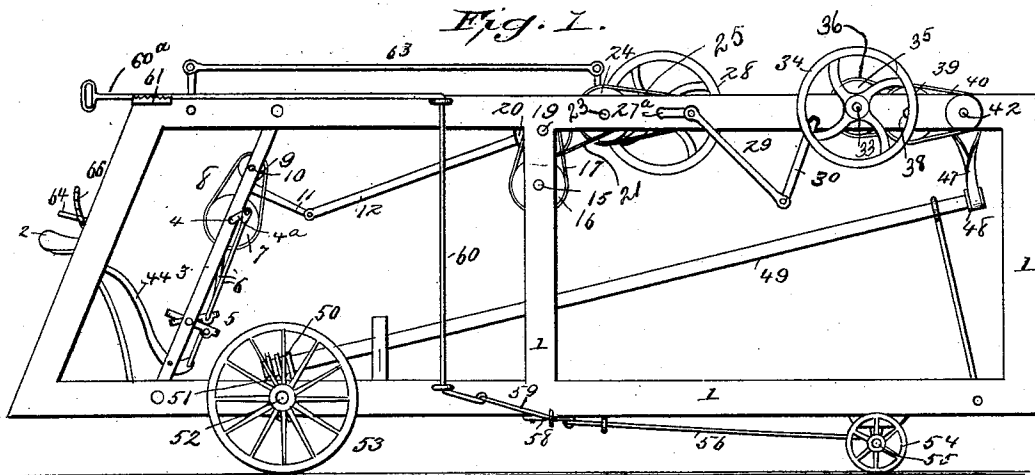
(No Model.)

3 Sheets—Sheet 1.

D. J. DEAN.
MECHANICAL MOTOR.

No. 483,046.

Patented Sept. 20, 1892.



Witnesses

A. J. Schwarz
J. S. Myers

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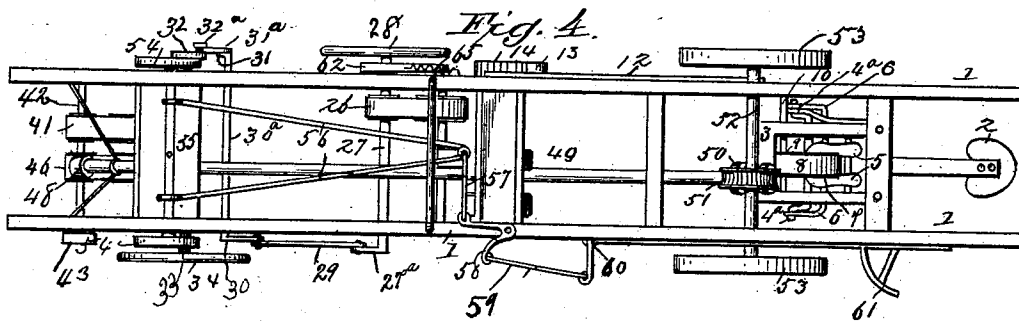
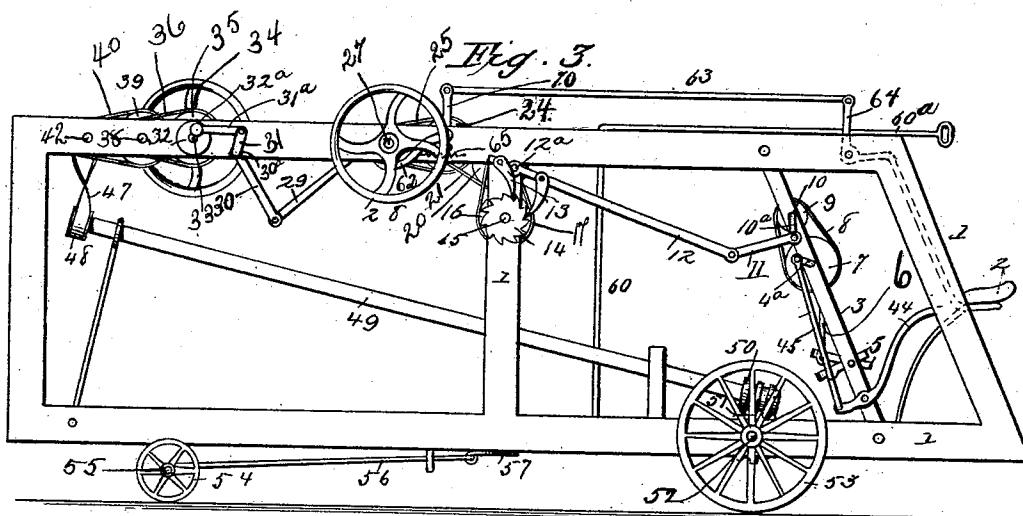
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3 Sheets—Sheet 2.

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Fig. 5.

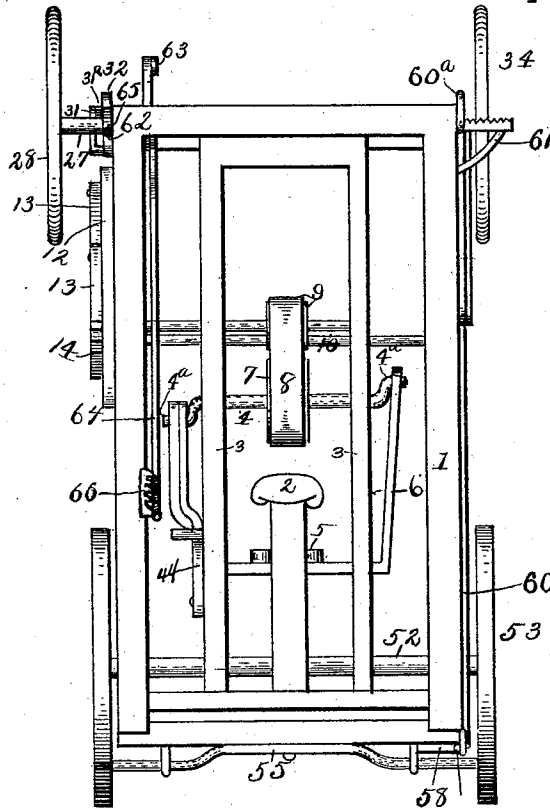
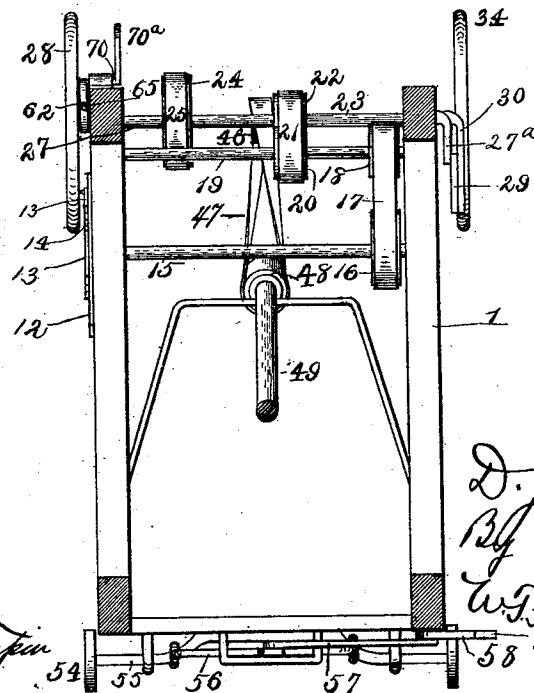


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

DANNIAL J. DEAN, OF BIRD ISLAND, MINNESOTA.

MECHANICAL MOTOR.

SPECIFICATION forming part of Letters Patent No. 483,046, dated September 20, 1892.

Application filed December 5, 1891. Serial No. 414,108. (No model.)

To all whom it may concern:

Be it known that I, DANNIAL J. DEAN, a citizen of the United States, residing at Bird Island, in the county of Renville and State of Minnesota, have invented certain new and useful Improvements in Mechanical Motors; 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.

My invention consists in a new and improved power-gearing which can be run by foot-power by one person and is adapted to drive all kinds of small machinery, such as circular saws, grinding-mills of various kinds, grain separators and cleaners, elevators, and farming machinery of all kinds, and the motor can also be propelled from one point to another.

The invention will be hereinafter fully described and claimed.

Referring to the accompanying drawings, Figure 1 is an elevation of one side of my improved apparatus. Fig. 2 is a plan view of the same. Fig. 3 is an elevation of the side of my apparatus opposite to that shown in Fig. 1. Fig. 4 is an inverted plan view of the same. Fig. 5 is an enlarged rear end elevation; and Fig. 6 is an enlarged vertical transverse section taken in the plane indicated by the line *xx* of Fig. 2, looking toward the forward end of the apparatus.

Referring to the several parts by their designating-numerals, 1 indicates the outer supporting-frame of my new and improved motor, which is preferably made of the form shown, though, if desired, any other suitable form of frame may be employed. At the end of the supporting-frame, which may be termed its "rear end," is mounted an adjustable seat 2, which can be raised or lowered to suit the operator. Within the parallel inner uprights 3 is mounted transversely a shaft 4, having a crank 4^a at each end. Between the lower parts of the uprights 3 are pivoted the foot pieces or pedals 5, the forward ends of which are pivotally connected by the pitmen 6 with the cranked ends of the shaft 4.

Upon the central part of the shaft 4 is mounted a drive-wheel 7, and a belt 8 passes around this wheel and a small band-wheel 9,

which is secured upon an upper shaft 10, mounted in the uprights 3. The cranked projecting end 10^a of the shaft 10 is pivotally connected by a link 11 with the rear lower end of a lever 12, which is pivoted near its upper end, at 12^a, near the upper middle part of the supporting-frame. This lever 12 is provided on each side of its pivotal point with the curved pawls 13 13, which engage alternately with the teeth of a ratchet-wheel 14, secured on the outer end of a transverse shaft 15. Upon the shaft 15, within the supporting-casing, is mounted a drive-wheel 16, and a belt 17 passes around this wheel and a small band-wheel 18, secured upon a shaft 19. Upon the shaft 19 is secured a band-wheel 20; and a belt 21 passes around this wheel and a small band-wheel 22, secured on a transverse shaft 23. A large band-wheel 24 is secured on the shaft 23, and a belt 25 passes around this wheel and a small band-wheel 26, secured upon an upper transverse shaft 27.

One end of the shaft 27 is provided with a balance-wheel 28, while the other end of the shaft is bent to form the crank 27^a, which is pivotally connected by a pitman 29 and link 29^b with the crank end 30 of a rock-shaft 30^a. The other crank end 31 of this rock-shaft is pivotally connected by a link 31^a to the wrist-pin 32^a of a disk 32, which is secured on one end of a transverse shaft 33, the other end of said shaft being provided with a balance-wheel 34. Upon the central part of the shaft 33 is secured a band-wheel 35, and a belt 36 passes around this wheel and a small band-wheel 37, mounted on an intermediate shaft 38. This latter shaft in turn is provided with a large band-wheel 39, and a belt 40 passes around this wheel and a small band-wheel 41, mounted on the shaft 42.

It will be seen that by the above-described arrangement of progressively-arranged drive-wheels each shaft will revolve the next one, to which it imparts motion at a higher rate of speed than it is itself revolved, so that when the shaft 4 is rotated the shaft 42 will be rotated at a much greater speed, and this multiplication of rotary speed can be increased by regulating the size of the respective large and small band-wheels, as will be readily understood. A suitable band-wheel 43 is mounted on the shaft 42, and a belt passes around

said wheel and a corresponding drive-wheel on the piece of machinery which the motor is to revolve.

It will be seen that by the use of my new 5 and improved motor one person can by sitting in the seat 2 and working the foot-pedals 5 rotate the shaft 42 of the motor at a high rate of speed, and thus propel a circular saw or thrashing-machine or any other piece of farm 10 or other machinery for driving which a steam or other expensive and complicated motor is now required.

Where a heavy piece of machinery is being driven, I employ a hand-lever 44 for assisting 15 the foot-pedals in starting the motor, this lever being pivoted, as shown, at its center to the uprights 3 and connected by a pitman 45 with one cranked end 4^a of the shaft 4.

When it is desired to convey the motor from 20 one place to another, it can be propelled along the roads by running a belt 47 from a band-wheel 46 on the shaft 42 to the inclined rotary shaft 49, which is provided with peripheral flanges, as illustrated. This shaft 49 has a 25 worm-gear 50 at its lower end, which meshes with a cog-wheel 51, fixed on an axle 52, mounted in the lower part of the supporting-frame, this axle having the road-wheels 53 secured on its ends. The forward end of the 30 motor is supported on the smaller wheels 54, which are mounted on the ends of a centrally-pivoted axle 55.

56 indicates rearwardly-converging connecting-bars, which run back from the pivoted front axle and are connected at their 35 rear ends by a link 57 to one end of a bell-crank 58, which is pivoted to one of the lower longitudinal bars of the frame and has its other end connected by a link 59 to the lower 40 crank end of a rock-shaft 60, the upper end of which is provided with an angular handle branch 60^a, adapted to engage with a curved rack 61 to hold it at the point to which it is adjusted. It will now be seen that when the 45 shaft 49 is thrown into gear the road-wheels 53 will be revolved as the foot-pedals are worked, and the motor will thus be propelled along the road and can be easily steered by moving the hand branch 60^a of the rock-shaft 50 60, which through the connections described will turn the pivoted front axle and the wheels which the latter carries.

62 indicates a curvilinear brake-shoe, which is designed and adapted to engage and brake 55 the shaft 27 and enable the rider to control the speed of the machine. This shoe 62, as better illustrated in Figs. 3 and 6 of the drawings, is fixedly connected to or formed integral with one end of a short rock-shaft 70,

which is journaled in one of the upper lon- 60 gitudinal bars of the frame 1 and is provided at its inner end with an angular branch 70^a, as illustrated. Pivottally connected to the free end of the angular branch 70^a and extending rearwardly therefrom is a pitman 63, 65 which is pivottally connected at its rear end to the angular upper end of the hand-lever 64, which lever extends down to within easy reach of the rider and is designed to engage the segmental rack 66, whereby the shoe 62 70 may be held in or out of engagement with the shaft 27.

Connected at one end to the shoe 62 and extending rearwardly therefrom is a coiled 75 spring 65, which is connected at its rear end to the frame 1 and is designed and adapted to normally hold the shoe away from the shaft 27 when the hand-lever 64 is not in engagement with the rack 66.

Having thus described my invention, what 80 I claim, and desire to secure by Letters Patent, is—

1. The combination of the shaft 4, having the drive-wheel 7 and the end cranks 4^a, the pivoted foot-pedals 5, the pitmen 6, the upper 85 shaft 10, having the crank 10^a and the small band-wheel 9, the belt 8, arranged around said wheel, the bar 12, pivoted near its upper end and having the two pawls 13 13, the connecting-link 11, the shaft 15, having the end 90 ratchet 14 and the drive-wheel 16, the shafts 19 and 23, having the band-wheels arranged upon them, the upper transverse shaft 27, having the cranked outer end, the end balance-wheel, and the small band-wheel, the 95 lower shaft 30^a, the pitman 29, the connecting-link 31^a, the shaft 33, having the end disk and end balance-wheel and provided with a band-wheel, and the intermediate and final shafts provided with the band-wheels and 100 the several connecting-belts, arranged as specified, substantially as set forth.

2. The combination, with the pivoted foot-pedals 5, the shaft 42, and the intermediate drive mechanism, of the inclined shaft 49, 105 having the worm-gear on its lower end and the peripheral flange 48 on its upper end, the band-wheel 46, secured on the shaft 42, the removable belt 47, the axle 52, having the central cog 51 and the end road-wheels, and 110 the forward supporting-wheels 54, substantially as set forth.

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

DANNIAL J. DEAN.

Witnesses:

J. L. KENNY,
JOHN C. BROWN.