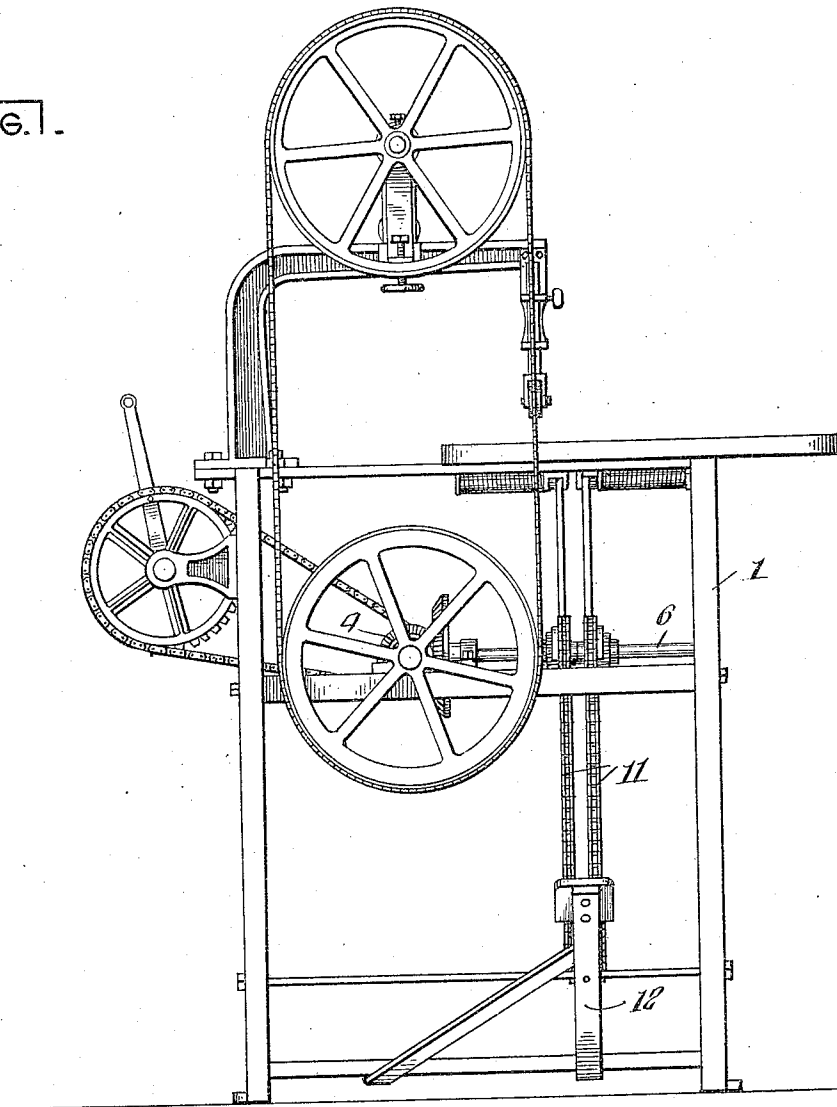


W. HARGROVE.
FOOT POWER MOTOR.
APPLICATION FILED NOV. 11, 1907.

942,556.

Patented Dec. 7, 1909.
4 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Eugene W. Slaney.
W. S. Babcock.

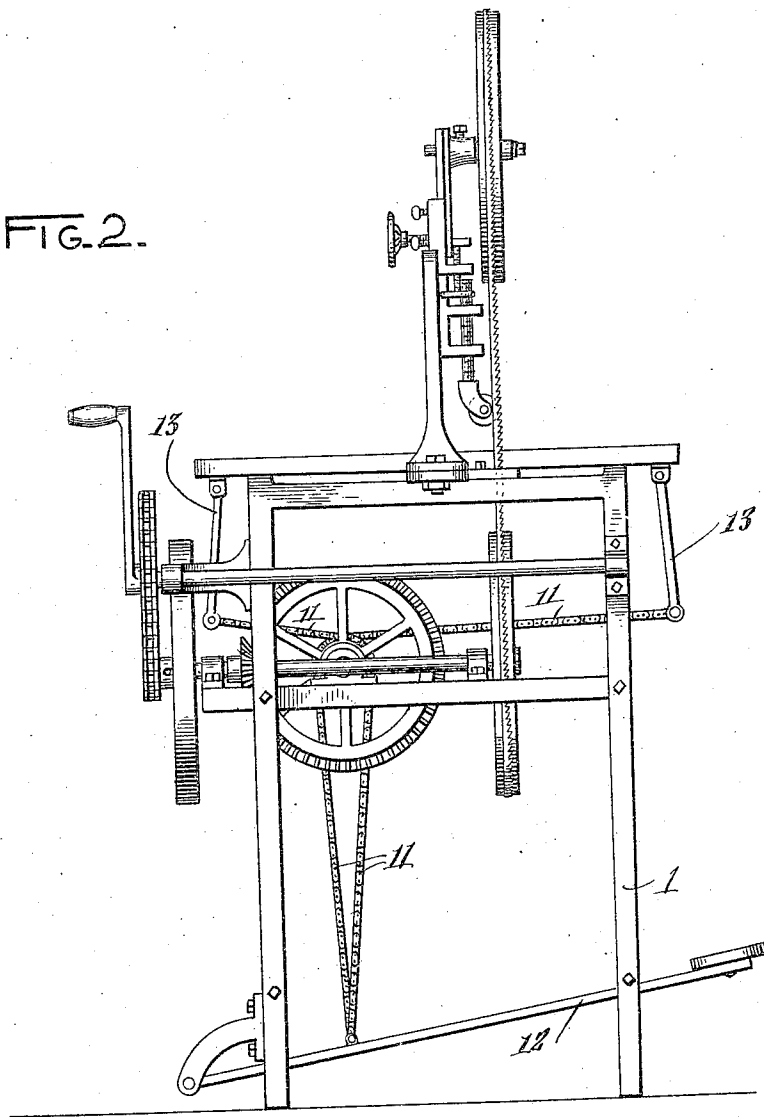
William Hargrove. Inventor,
By *Marion Marion* Attorneys

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4 SHEETS—SHEET 2.

FIG. 2.



Witnesses:

Eugene M. Slaney
W. S. Babcock

William Hargrove,
Inventor,

By *Marion Marion*
Attorneys

W. HARGROVE.
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4 SHEETS—SHEET 3.

FIG. 3.

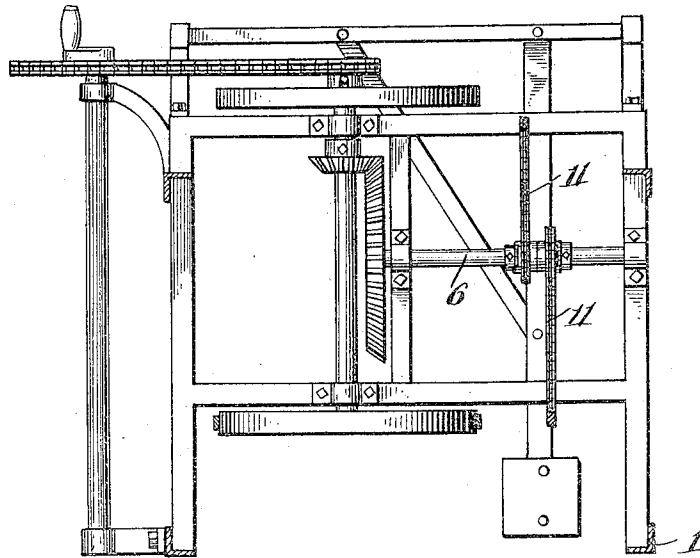


FIG. 4.

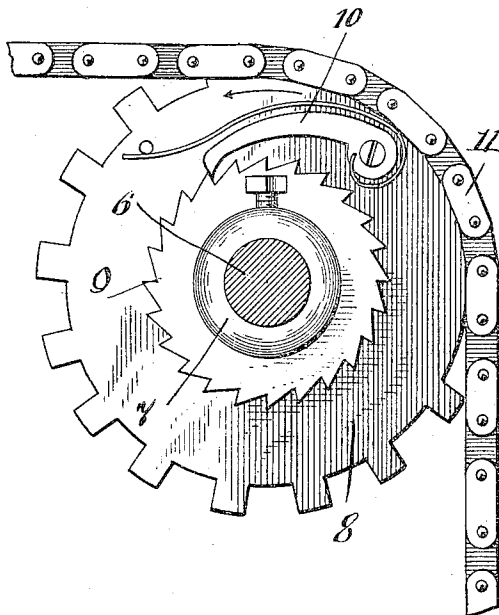
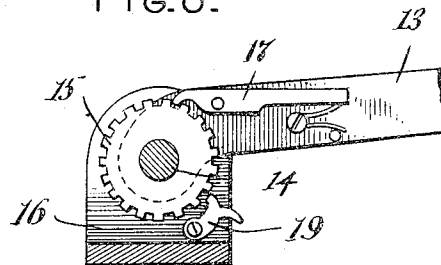


FIG. 8.



Witnesses:

Eugene M. Slaney.
W. S. Babcock.

William Hargrove.

Inventor,

By *Marion & Marion*
Attorneys

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4 SHEETS—SHEET 4.

FIG. 5.

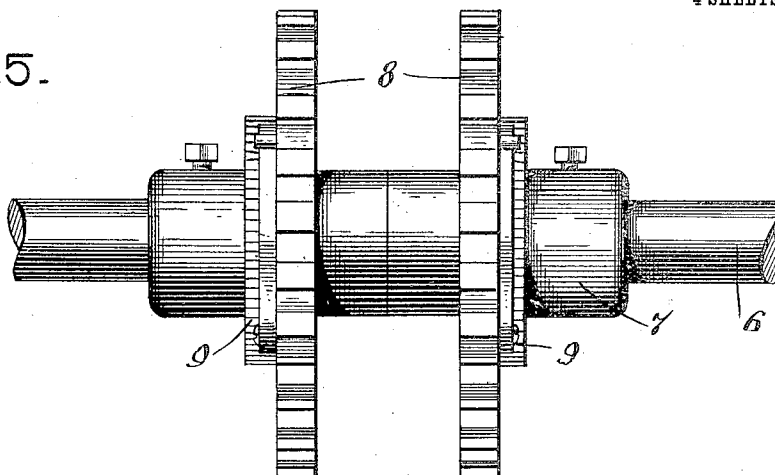


FIG. 6.

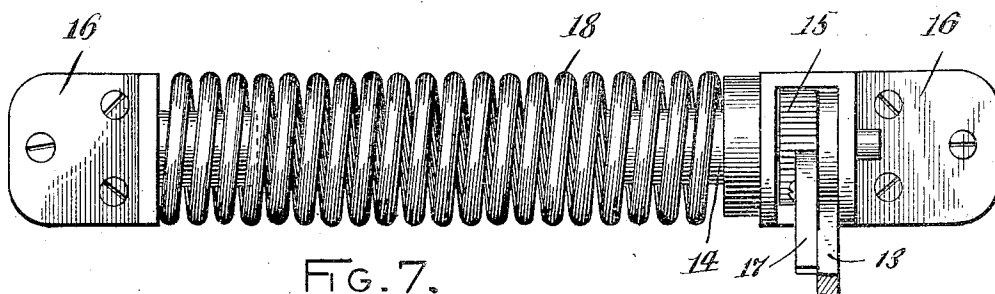
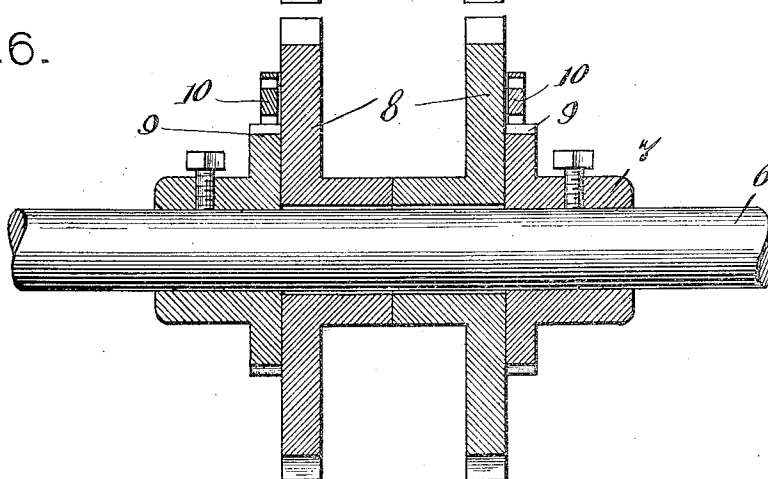


FIG. 7.

Witnesses:

Eugene W. Slaney.
W. S. Babcock.

William Hargrove.
Inventor,

By *Marion & Marion*
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM HARGROVE, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR OF ONE-HALF TO
PHILIP ARMSTRONG ELLIOTT, OF MONTREAL, CANADA.

FOOT-POWER MOTOR.

942,556.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed November 11, 1907. Serial No. 401,623.

To all whom it may concern:

Be it known that I, WILLIAM HARGROVE, a subject of the King of Great Britain, residing in the city and district of Montreal, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Foot-Power Motors; and I do hereby declare that the following is 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 motors which put springs under pressure by the depression of treadles, the said springs continuing the action of said treadles in actuating a shaft or shafts and band saw or other mechanism adapted to operate on wood or other materials and the said invention consists in the construction and combination of parts hereinafter more particularly set forth and claimed.

In the drawings: Figure 1 is a side elevation of the machine to which the invention is applied; Fig. 2 is a left hand end elevation of the same; Fig. 3 is a plan view of the driving mechanism; Fig. 4 is a detail elevation of one of the driving sprockets and its ratchet clutch mechanism; Fig. 5 is a side elevation of a sprocket wheel and its ratchet drive; Fig. 6 is a longitudinal section of Fig. 5; Fig. 7 is a plan view of one of the power springs detached; and Fig. 8 is a detail sectional view showing the mechanism for locking the power spring.

1 designates a frame in which is journaled a power shaft 6 on which are clamped collars 7, sprocket wheels 8 being loosely mounted on said shaft between said collars, which in turn are provided with ratchets 9. Spring pressed pawls 10 are mounted on said sprocket wheels 8 and are adapted to engage and lock with the teeth of ratchets 9, when the sprocket wheels are rotated in the direction of the arrow, and to slide over or pass over the teeth of said ratchets when the sprocket wheels are rotated in the reverse direction.

11 designates sprocket chains, which pass over the sprocket wheels 8 in opposite directions and are attached at their opposite ends to a pedal 12, mounted in the frame 1, and to spring actuated arms 13, mounted at opposite sides in said frame on the underside of the top thereof. Said lever arms 13 have pintles 14 loosely journaled therein, said pin-

cles having square toothed ratchets 15 stationarily mounted thereon, said pintles 14 being journaled in brackets 16 fixed to the frame 1 aforesaid. 17 designates spring pressed pawls mounted upon said lever arms 13 and which are adapted to engage ratchets 15 and by reason of such engagement turn or actuate the lever arms 13 when said ratchets, being in engagement with said pawls, are rotated. 18 designates the spiral springs for actuating said arms 13. Said springs for a part of their length encircle said pintles 14 and are attached thereto on the sides thereof in such manner that when the pintles are turned by the ratchets which in turn are turned by the lever arms 13, in one direction the springs will be wound tight and when the springs unwind they will turn the pintles 14 and the ratchets 15 which in turn will actuate the lever arms 13. 19 designates pawls mounted upon said brackets 16 and adapted to engage said ratchets 15 and hold the same still or keep them from rotating, thus providing a means for adjusting the tension of the springs 18.

Each pawl or dog 19 holds its ratchet 15 against rotation while the pawl 17 of said ratchet travels over one or more teeth of the latter to get a new hold for turning the ratchet more or less by step by step motion and so putting the said spring under tension. Without the dog 19, the spring would turn back the ratchet during this shifting of the pawls 17 to a new position thereby losing tension at least partly offsetting the increase thus gained. The office of the dogs 19 is to make sure that the said ratchets shall never turn backward while these dogs are in operative position.

The operation of the machine is as follows: The pedal 12 is depressed, and thereby rotates the left hand sprocket wheel 8 in the direction opposite to that indicated by the arrow, Fig. 4, and the right hand sprocket wheel in the opposite direction. The pawl 10 of the right hand sprocket wheel engages the ratchet 9 and thereby rotates the shaft 6 in a counter-clockwise direction, while the pawl 10 of the left hand sprocket wheel rides freely over its ratchet. By the downward movement of the pedal, the arms 12 are swung inwardly, and their respective springs brought under tension. The tension of the springs acting through the arms 13 and attached sprocket chains 11,

rotates the sprocket wheels 8 in their reverse directions, thus driving the shaft 6 in the same direction, but by the left hand sprocket wheel and its pawl and ratchet mechanism, while the right hand sprocket wheel runs free. The tension of the spring acting on the sprocket chain passing over the right hand sprocket wheel which runs free as the pedal rises, therefore acts to raise the pedal, while its companion drives the shaft 6. Thus the same power used to depress the pedal for driving the machine may be used as spring tension for continuing the drive as the pedal is raised.

Many changes in the detail construction of the several parts, in their several combinations, many rearrangements of the same, and various other applications may be had without in any way departing from the field and scope of the invention, and it is meant to include all such within this application, wherein only the preferred form of construction has been illustrated.

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

1. The combination of a frame and a shaft mounted therein, with sprocket wheels loosely supported on said shaft, one way clutch connections between said sprocket wheels and the said shaft, a treadle, chains connected at one end to the treadle and passing over the said sprocket wheels in opposite directions, arms to which the other ends

of the chains are connected, pintles on which the said arms are loosely mounted, means for rotatably supporting the pintles, coiled springs each connected at one end to the frame and at the other end to a pintle, a pair of ratchets each of which turns with one of said pintles, a pair of pawls each of which is pivoted to one of said arms and engages the proximate ratchet to feed the same and a pair of retaining pawls or dogs each of which engages one of these ratchets substantially as set forth.

2. In combination with a shaft and a treadle, a rocking arm, a chain connecting said treadle to said arm and engaging a sprocket wheel on said shaft, a ratchet mounted on said shaft, a spring pressed pawl engaging said ratchet mounted on said sprocket wheel, a rocking pintle, a spring attached thereto and tending to raise said treadle, a pawl and ratchet making connection between said pintle and said arm, and a dog adapted to engage said ratchet at will to hold it in one position while the pawl is shifted over one or more teeth for a new hold, thus providing for the adjustment of the tension of said spring, substantially as set forth.

In witnesses whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM HARGROVE.

Witnesses:

EUGENE M. SLINNEY,
W. S. BABCOCK.