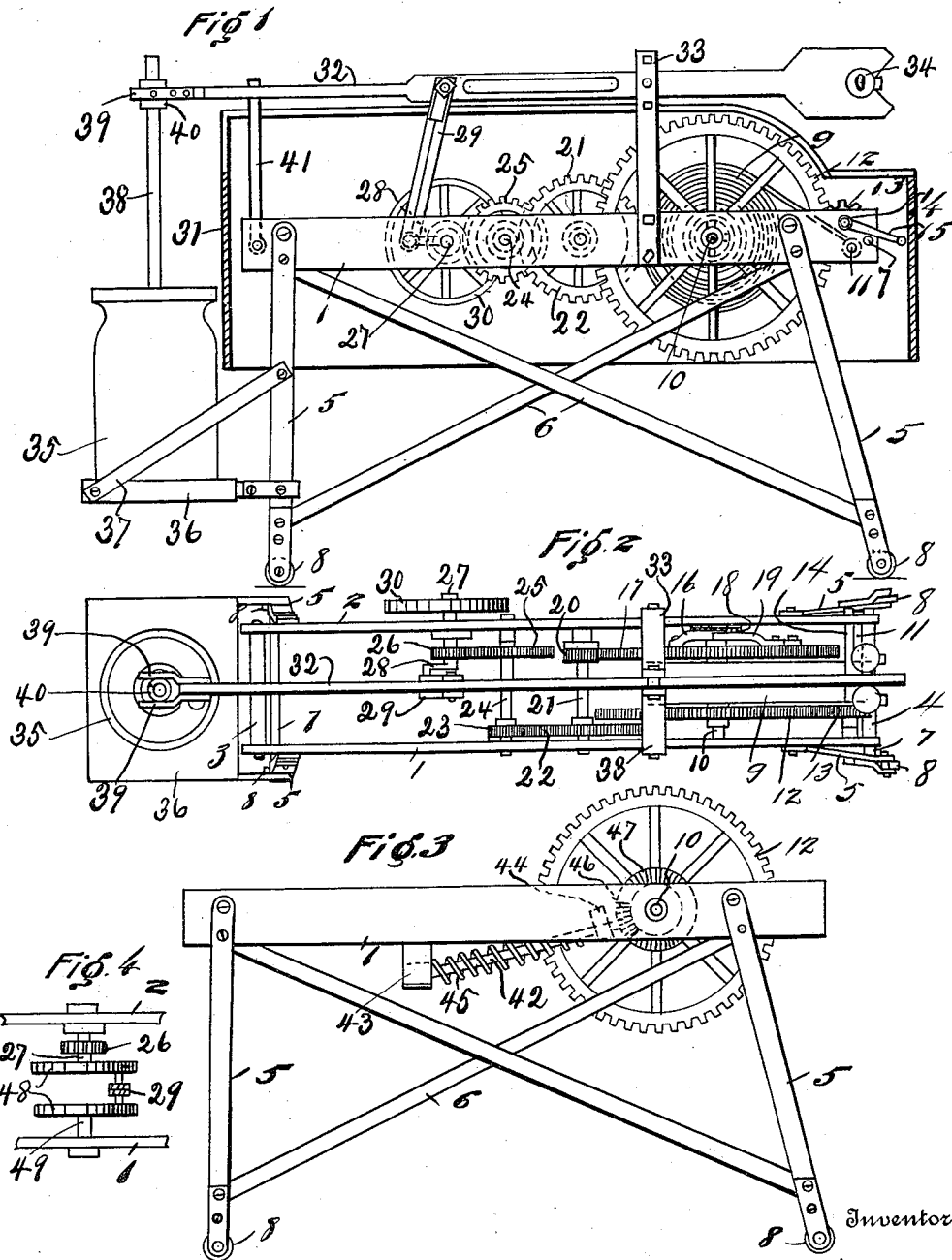


W. L. DAYTON.
 SPRING MOTOR.
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1,052,410.

Patented Feb. 4, 1913.



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WILLIAM L. DAYTON, OF FORT WORTH, TEXAS.

SPRING-MOTOR.

1,052,410.

Specification of Letters Patent.

Patented Feb. 4, 1913.

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To all whom it may concern:

Be it known that I, WILLIAM L. DAYTON, a citizen of the United States, residing at Fort Worth, in the county of Tarrant and State of Texas, have invented a certain new and useful Improvement in Spring-Motors, of which the following is a specification.

The object of the invention is to provide a simple and convenient means for utilizing the power of a spring motor for operating churns, sewing machines, fans, and other articles or devices, which means are capable of being adjusted to the load or to the power of the motor as may be desired or necessary, so that the effective power of the motor may be conserved.

The invention consists of the combination with a motor of a walking beam for utilizing the power of the motor in the operation of a churn or other article or machine, said beam being pivotally mounted between its ends, and connected with the motor at a point between its fulcrum and its load or weight end or point of application to the article to be operated, and about as far to one side of its fulcrum as its load end is on the other side, so as to attain the least resistance and in effect equalize the up and down stroke at the point of use, and having an adjustable counterpoise on its end beyond its fulcrum and most remote from the article to be operated, or point of use, so as to compensate for any increase of load, at the point of use, as by butter forming in a churn, or any decrease in power, as when the spring of a spring motor unwinds, all as I will proceed more particularly to explain and finally claim.

In the accompanying drawings illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a side elevation of the spring motor, showing the mechanism adapted to operate a churn, and Fig. 2 is a plan view of the same with the hood removed. Fig. 3 is a side elevation of the frame and main drive wheels and the braces, showing a variation in the spring which drives the main drive wheel. Fig. 4 is a plan view of a portion of the frame and a variation of the crank for applying the power.

A frame is provided consisting of side pieces 1 and 2, end bars 3 and 4, legs 5, side braces 6, and end braces 7. The legs

5 are provided with rollers 8. The power is derived from the spring 9 which at one end is attached to and coiled on the shaft 10, and at the other end attached to a rod or bar 11. The spring 9 is wound on the shaft 10 by means of a cog wheel 12 which is rigid with shaft 10 and meshed by the pinion 13 which is rigid with the shaft 14. The shaft 14 may be turned by a crank 15. The tension of the spring 9 is locked on the shaft 10 by a dog 16 which is pivotally mounted on the side or face of the cog wheel 17 and engages a ratchet wheel 18 which is rigid with shaft 10, the cog wheel 17 being loosely mounted on this shaft 10. The dog 16 is held in engagement with the ratchet wheel 18 by a spring 19 which is attached to the cog wheel 17. The spring 9 is wound on the shaft 10 without turning the wheel 17; and the dog 16 and spring 19 by means of the ratchet wheel 18 locks the cog wheel 17 to shaft 10 for driving purposes. The wheel 17 drives the pinion 20 which drives shaft 21, and the shaft 21 drives cog wheel 22, and cog wheel 22 drives pinion 23. Pinion 23 drives shaft 24, which shaft drives the cog wheel 25, and the cog wheel 25 drives the pinion 26 which drives the shaft 27 and crank 28. The crank 28 is the power crank and drives the pitman 29. The shaft 27 is provided with a fly or balance wheel 30. All the driving mechanism is covered with a hood 31 which is shown in section in Fig. 1. The pitman 29 is pivotally connected to a walking beam 32 which is fulcrumed in bearing arms 33 attached to the frame, said walking beam extending a considerable distance beyond its fulcrum and provided at its end with any suitable weight 34. The walking beam is operated by the pitman 29, and the speed is controlled by the weights 34 which may be of different sizes and adjustable on the beam 32.

A churn 35 is shown mounted on a bracket 36 and braces 37 which are mounted on the frame of the machine. The walking beam 32 is connected at its opposite free end to the dasher 38 by means of arms 39 which are attached rigidly to the beam 32 and by a collar 40 which engages the dasher 38 and is pivotally connected to the arms 39.

When there is tension in the spring 9, the machine will run and will run continually until the tension of the spring is used up or

its power is exhausted. In order to prevent the machine from running when there is no work to be done, any convenient keeper 41 (see Fig. 1) can be attached to the end bar 3 and hooked over the beam 32.

Fig. 3 shows a variation in the spring for driving the wheel 12. A shaft 42 is journaled in bearings 43 and 44. A spiral spring 45 is attached to the bearing 43 and to the shaft 42 for driving this shaft. A bevel pinion 46 is rigid with shaft 42 and a bevel gear wheel 47 which is rigid with cog wheel 12 meshes with pinion 46. Otherwise the machine and its operation is the same as that above described.

Fig. 4 shows a variation in the crank mechanism. Instead of the crank 28 previously described, two disks 48 are connected to the pitman rod 29 and to shaft 27 and an additional shaft 49. The disks 48 will serve as balance wheels so that the balance wheel 30 may be dispensed with, and the pitman rod will be operated in the same manner as previously described.

The pitman 29 is located at a distance from the beam's fulcrum about equal to the distance at which the weight is located therefrom, or at a point of least resistance, the extended weighted end of the beam beyond the fulcrum aiding the motor in its operation, thus producing a combination leverage of the third and first kinds, which produces an easy and regular operation of the parts, and thus decreases the utilization of the power of the spring and consequently the effective force of the motor is maintained for a longer time. The balance wheel 30 being on the shaft to which the pitman is applied contributes to the attainment of the consequent easy and regular running of the mechanism in this arrangement. It will be observed that the pitman is applied directly to the beam, thus minimizing the friction on the bearings. Furthermore, the arrangement shown equalizes the utilization of the power of the motor on the up and down strokes of the walking beam at the point of use, by reason of the fact that the weight aids the motor in the up stroke of the beam and tends to retard and prevent a quick down stroke and thus avoids a running away of the mechanism on the down stroke and consequent loss of power. The weight may be adjusted to compensate for the weakening of the motor force as it is expended in a spring motor, or by the additional load imposed by butter forming in the churn or the like effect of whatever is being worked.

What I claim is:—

1. In a device of the character described, a frame, a spring motor and train of gearing mounted in said frame, fulcrum arms attached to said frame, a walking beam fulcrumed between its ends in said arms, said beam having working attachments at one end and a governing weight at the other end, a crank operated by said train of gearing, and a pitman connecting said crank to said walking beam between said working attachment and the fulcrum of said beam.

2. In a device of the character described, a frame, a spring motor and train of gearing mounted in said frame, fulcrum arms attached to said frame, a walking beam fulcrumed in said arms between its ends, working attachments and a weight attached to the ends of said beam upon opposite sides of its fulcrum, and means for applying the power of said motor and gearing to said beam between said working attachments and the fulcrum of said beam.

3. In a device of the character described, a frame, a spring motor and train of gearing mounted in said frame, fulcrum arms attached to said frame, a walking beam fulcrumed in said arms between its ends, a working collar pivotally mounted in one end of said beam on one side of its fulcrum, an adjustable governing weight attached to the other end of said beam on the opposite side of its fulcrum, and means for applying the power of said motor and gearing to said beam between said collar and the fulcrum of said beam.

4. The combination of a motor mechanism, a walking beam pivotally mounted between its ends with relation to the motor mechanism, an adjustable weight applied to one end of the beam, means for connecting the other end of the beam with the article to be operated, and means connected to the beam and motor mechanism between the beam's pivot and its connection with the article to be operated, the point of connection of the beam with the article to be operated and the weight on said beam being about equidistant from the pivotal point of said beam.

In testimony whereof, I set my hand in the presence of two witnesses, this 4th day of December, 1911.

WILLIAM L. DAYTON.

Witnesses:

A. L. JACKSON,
W. L. SWEET.