Sheet 1-2 Sheets.

I. A. Clippinger,

Machine Brake,

No. 50,687, Patented Oct. 31, 1865.

Fig. 1.

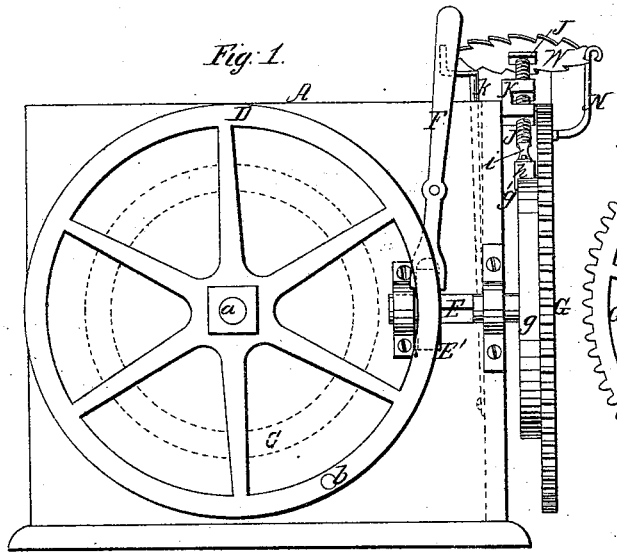


Fig. 2.

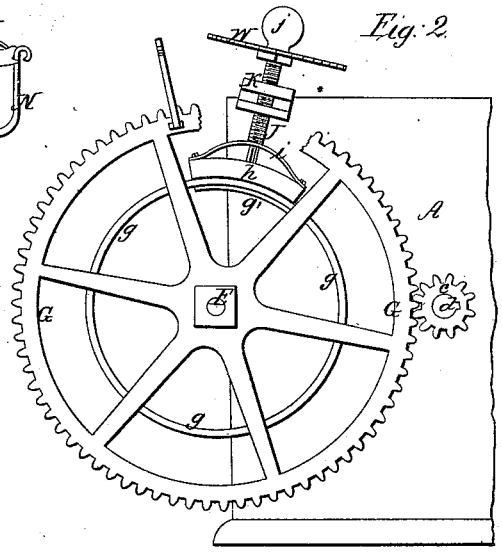


Fig. 3.

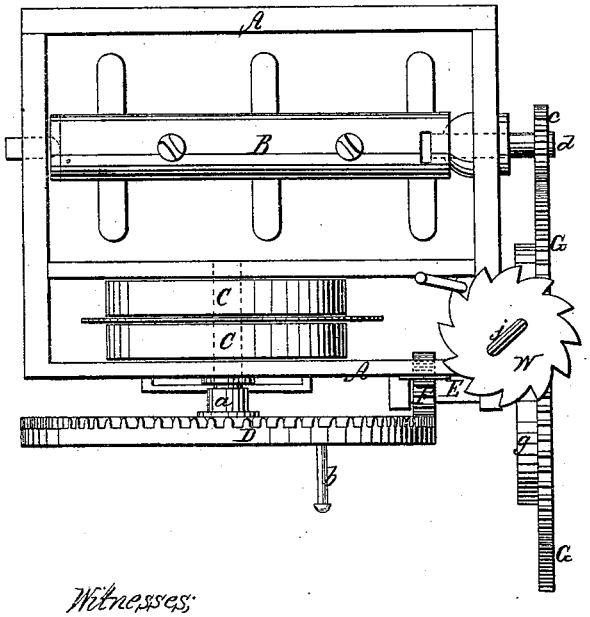
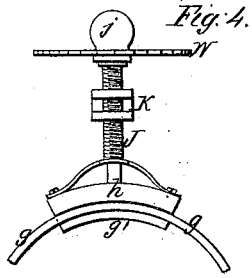


Fig. 4.



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E. Schafer

Inventor:
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by his Attys
Mason, Fenwick & Lawrence.

Sheet 2 - 2 Sheets.

I. A. Clipfinger,

Machine Brake,

No. 50,687. Patented Oct. 31, 1865.

Fig. 5.

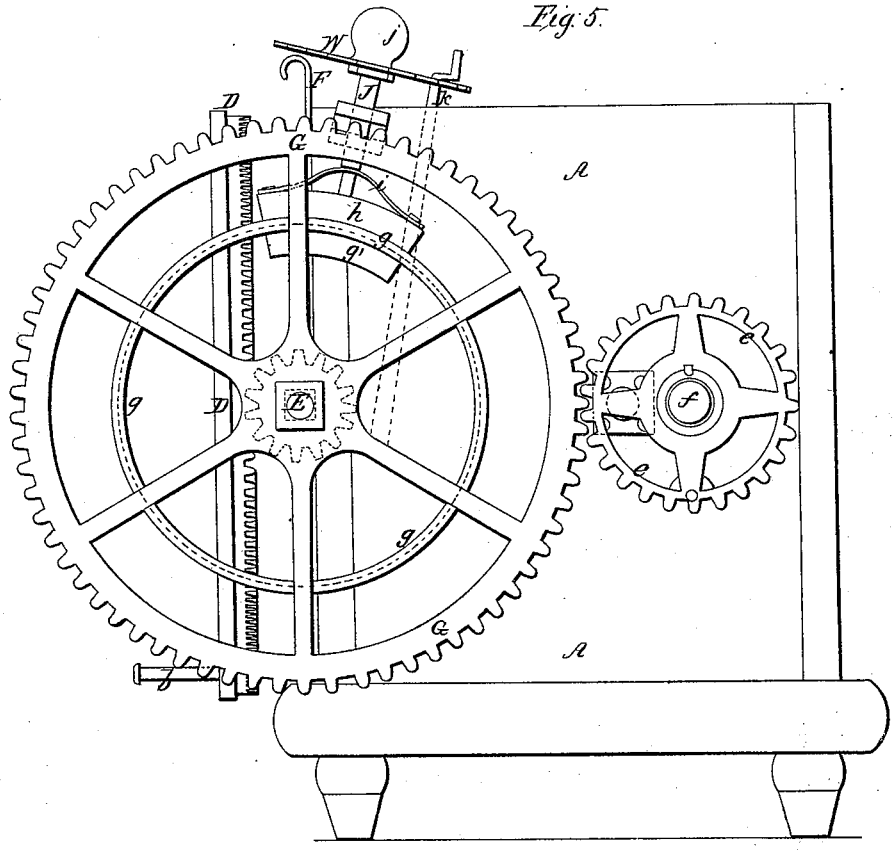
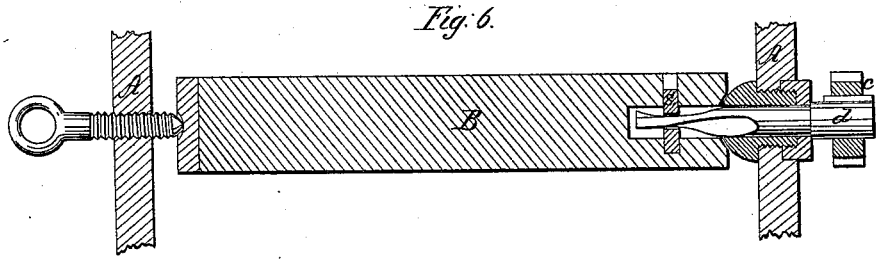


Fig. 6.



Witnesses;
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Inventor;
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UNITED STATES PATENT OFFICE.

ISAIAH A. CLIPPINGER, OF NEWTON, IOWA.

IMPROVEMENT IN MECHANICAL MOVEMENTS.

Specification forming part of Letters Patent No. **50,687**, dated October 31, 1865.

To all whom it may concern:

Be it known that I, ISAIAH A. CLIPPINGER, of Newton, in the county of Jasper and State of Iowa, have invented a new and useful Mechanical Movement; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an elevation of one side of my machine arranged for operating the dashers of a churn. Fig. 2 is an end view of the driven wheel and contrivance for actuating the brake. Fig. 3 is a top view of the churn having my mechanical movement applied to it. Fig. 4 shows the brake and a portion of the friction-flange of the driven wheel. Fig. 5, Sheet 2, is an elevation of one side of the machine adapted for transmitting motion to other machinery. Fig. 6, Sheet 2, is a sectional view showing the mode of applying the pinion to the dasher-shaft of the churn.

Similar letters of reference indicate corresponding parts in the several figures.

The main object of my invention is to equalize the force of a spring under tension in such manner that it can be practically employed as a motive power for light machinery—such as sewing-machines, churns, reels, &c.—and be made to work for a long time at each winding up without the necessity of employing clock-escapements and the complex and delicate machinery which attend their use.

Another object of my invention is to so contrive a machine having a spring for its prime mover that the driving-wheel, which receives its motion directly from the spring, will also serve as a crank for winding up the spring again when it has expended its power, all as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

The drawings represent my invention applied to a churn for rotating the dash-shaft; but I desire to extend the invention to machines of every description which can be practically operated by spring power.

The churn-box A is constructed of a rectangular form and separated by a partition into two apartments, the largest apartment being used for the dash-shaft B, and the smallest apartment being employed to receive one or more volute springs, C. The springs C C are secured to a horizontal shaft, *a*, which projects from one side of the churn-box and has keyed on it a large spur-wheel, D, the teeth of which are on one side of the rim, as shown in Figs. 3 and 5, so as to engage with the teeth of a pinion which is on a shaft, E, that is arranged at right angles to the shaft *a*.

The pinion E′, above referred to, is so applied to its shaft E that it can be moved into or out of gear with the large wheel D at pleasure by means of the lever F.

The object of providing for throwing pinion E out of gear is to enable me to employ the large wheel D to wind up the spring C when this spring has run down. To practically employ this wheel as a crank-wheel, I insert a handle or pin, *b*, into its face, which is grasped in the hand while winding up the spring or springs.

The shaft E carries on its outer end a large spur-wheel, G, the teeth of which engage with a pinion, *c*, which is on a short shaft, *d*, that couples with the dash-shaft, as shown in Figs. 3 and 6.

When it is desired to transmit motion to other machines and to employ the churn-box as a base or support for the driving mechanism, I remove the pinion *c* and introduce a larger pinion, *e*, upon the bearing *f*, as shown in Fig. 5, Sheet 2.

On that side of the large spur-wheel G which is nearest the churn-box I apply a concentric flange, *g*, of any suitable width or diameter, which flange is intended to serve as a friction-surface for a brake, *h*, that is acted upon by a spring, *i*, and screw-rod J, as shown in Figs. 1, 2, 4, and 5. The brake *h* is in the form of a segment adapted to press snugly upon the circumference of the flange *g*, and it is kept in place upon this flange by means of the projecting plate *g′* and the screw J. This screw J is tapped through a bracket, K, which is rigidly secured to the churn-box, and it carries on its upper end a ratchet or toothed wheel, *w*, and also a thumb-button, *j*.

Within the spring-chamber of the churn-box is a spring-rod, *k*, the upper end of which projects a short distance above the top of this box and presses slightly against the notched circumference of the wheel W, so as to prevent

this wheel from being moved more than one notch at a time.

The large spur-wheel G is provided with an arm, N, which is intended to strike the notched wheel W and move this wheel the distance of one notch at every complete revolution of wheel G.

Having thus described the several essential parts of my mechanical movement, I will now describe the operation of these parts.

The small pinion spur-wheel E′ is disengaged from the large wheel D, so as to allow this wheel to be rotated backward until the springs C C are wound up, after which the wheel E′ is moved into gear again. The brake-block *h* is forced down hard upon the friction-flange *g* by means of the screw-rod J, so that the greatest pressure of this brake will occur when the springs C C are exerting their greatest force. If it is found that the resistance of the brake-block *h* exceeds the force of the springs to such a degree as to prevent the wheels from being moved by these springs the wheel G may be rotated several times, or the screw-rod J may be turned backward, so as to diminish the pressure of the brake-spring *i*. The parts being thus started in motion the arm N will strike the teeth of wheel W at every complete turn of the wheel G and move the screw-rod J backward one tenth or twentieth of a revolution, according to the number of teeth on wheel N. This will slowly release the pressure of the brake upon the flange *g*, and compensate for the gradually-diminishing force of the springs C C. Thus it will be seen that the resistance to be overcome by the springs C C is gradually diminished in proportion as the force of these springs diminishes, and consequently a uniform motion may be kept up for a considerable time.

When the force of the springs is very great the spring-arrester *k* will operate as a check to prevent the wheel N from being moved more than one notch at a time; but as the springs C C become weak the wheel W is elevated above the end of said spring-rod, and consequently this rod ceases to operate or offer any resistance.

In Fig. 6 I have represented a mode of connecting the short shaft *d* of the pinion-wheel *c* to the dash-shaft, which consists in flattening the shaft *a* and giving it a spiral twist and applying a slotted nut, *s*, to the dask-shaft to receive said spiral shaft. When the mechanical movement is employed to operate the churn or dash-shaft the wheel is employed; but when used as a power for driving other machines this wheel is removed and a wheel, *e*, employed.

Other means for transmitting motion from the wheel G may be adopted, as circumstances require.

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

1. The employment of the self-adjusting friction-brake, or its equivalent, in combination with a train of wheels and a spring, substantially as and for the purpose set forth.

2. So constructing a friction-brake that its action will be controlled automatically and its resistance diminished in proportion as the force of the power exerted by the spring to be overcome diminishes, substantially as described.

3. The combination of a driving-wheel, D, which is adapted to serve as a crank-wheel for winding up the spring C, with the adjustable pinion E′ and a train of wheels, substantially as and for the purpose set forth.

4. Arranging the shafts of the wheels D and G so as to operate at right angles to each other when these parts are operated by springs and controlled by a brake, substantially as described.

ISAIAH A. CLIPPINGER.

Witnesses:

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S. H. LINDLEY.