

E. S. Pierce.

Converting Motion.

Nº 92,091.

Patented Jan. 29, 1869.

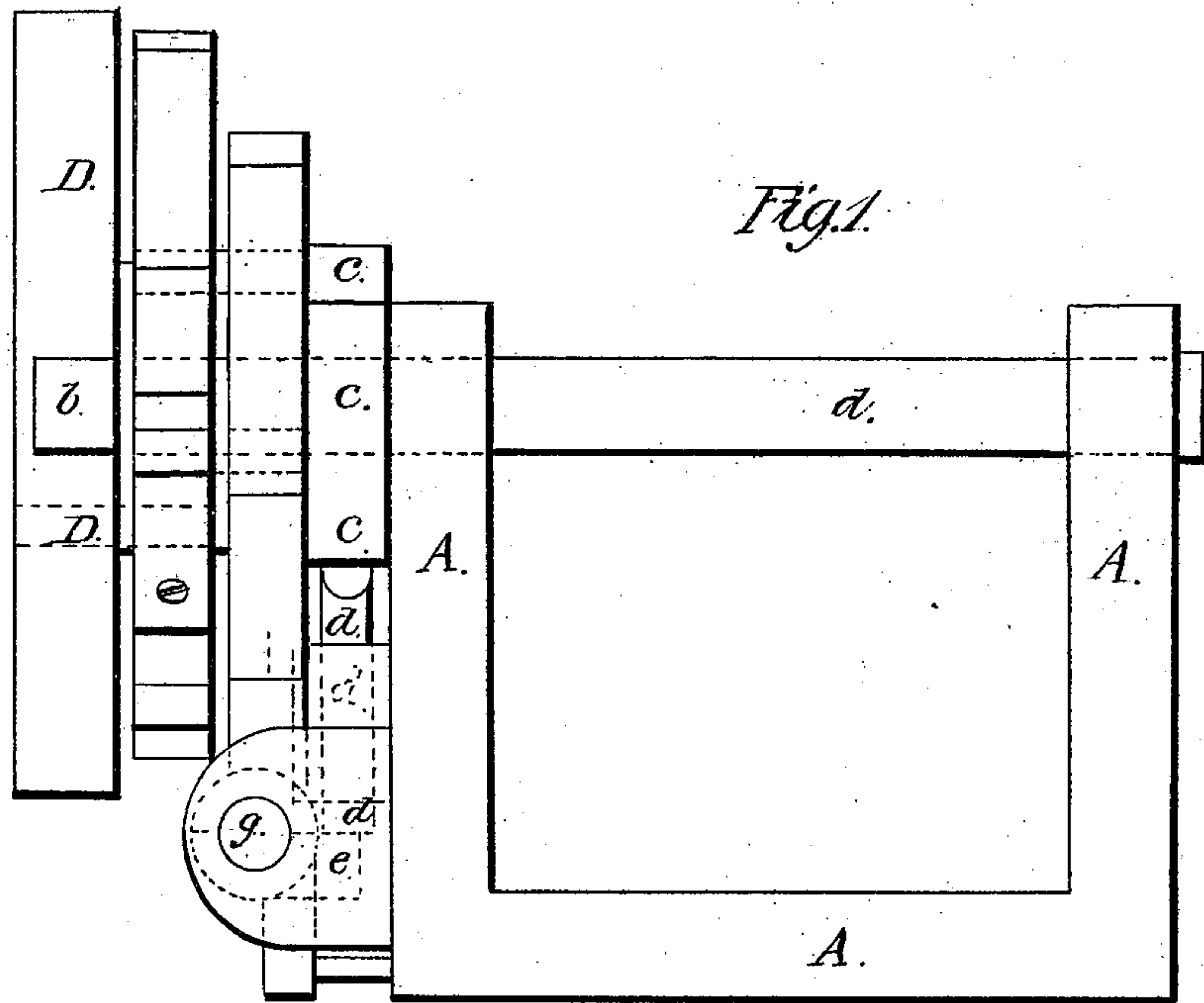
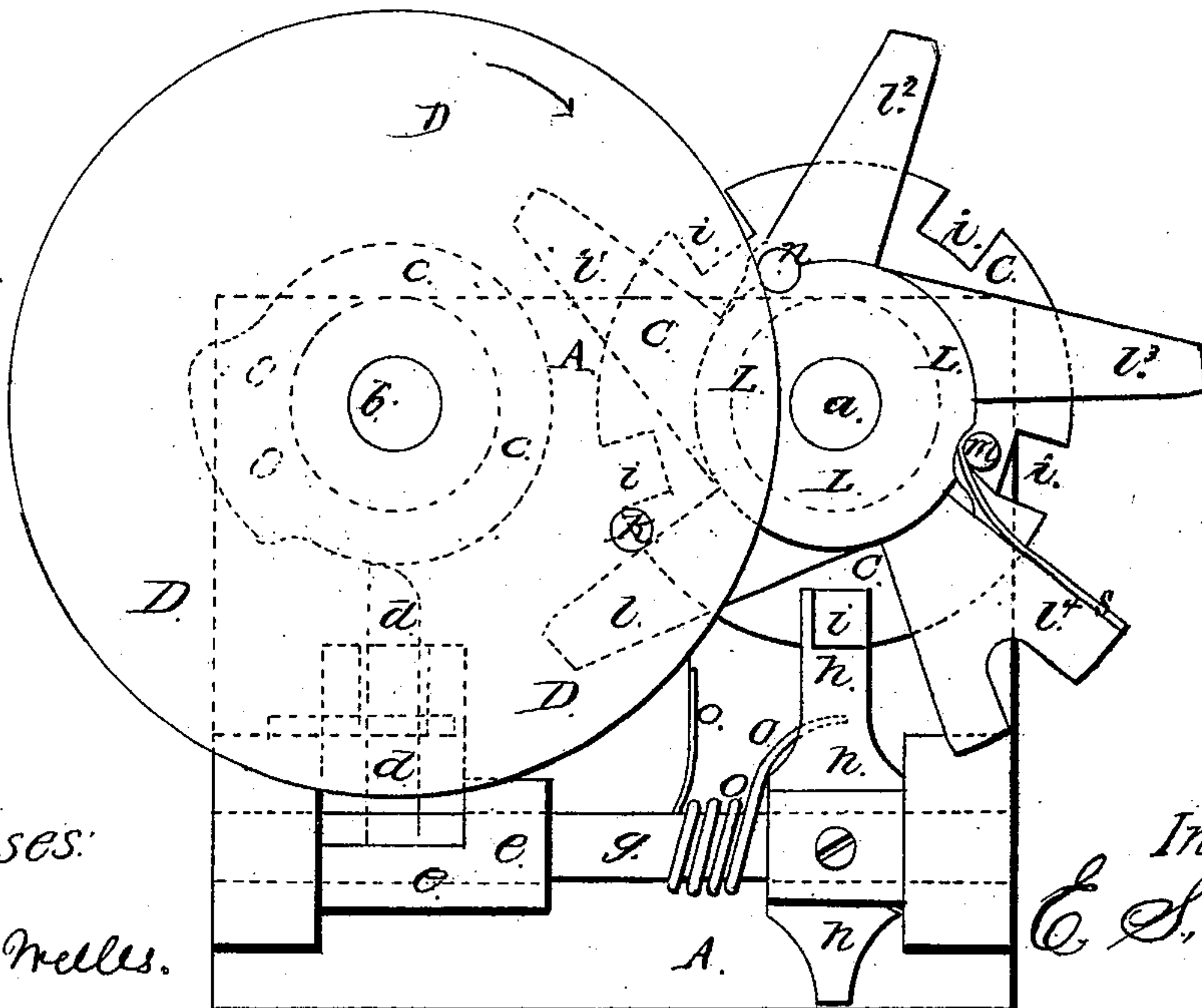


Fig. 2.



Witnesses:

Roger Wells.

E. Henry Hyde Jr.

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United States Patent Office.

ELIJAH S. PIERCE, OF HARTFORD, CONNECTICUT, ASSIGNOR TO
THE NATIONAL SCREW COMPANY, OF SAME PLACE.

Letters Patent No. 92,091, dated June 29, 1869.

IMPROVED MECHANISM FOR CONVERTING MOTION.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, ELIJAH S. PIERCE, of Hartford, in the county of Hartford, and State of Connecticut, have invented a new and useful Improvement in Mechanisms for Converting Continuous into Intermittent Motion; and I declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming a part of this specification.

Figure 1 is a side elevation of my device.

Figure 2 is an end elevation.

The same letters always indicate the same parts.

As is well known to machinists, it is often desirable to convert continuous into intermittent motion, and to do this so that the stoppage in the intermittent motion shall always take place at some desired precise point.

It is often, in such cases, equally desirable that the intermittent motion should commence and close gently, so as to avoid sudden jars in the machinery.

My invention is designed to accomplish the precise stoppage of the intermittent motion; and to make the commencement and close of the intermittent motion slow and gentle, and more rapid in its middle stage.

The letter A designates the frame of the device, containing the two shafts *a* and *b*.

On the shaft *b* is the cam *c*, which, at the proper moment, drives down the sliding pin *d*, which, in its turn, pushes down the short arm *e*, which is fastened to the shaft *g*, to the other end of which the pawl *h* is fastened.

When the short arm *e* is pushed down, the pawl *h* is rotated back out of that one of the notches *i*, in the index-wheel C, which it may occupy at that moment.

The letter D designates the drive-wheel, to the shaft of which the driving-power is applied.

From the inner face of this drive-wheel a pin, *k*, projects.

As the drive-wheel rotates, (in the direction indicated by the arrow,) this pin *k* will strike upon the arms *l l' p' p' l'* in succession, which are all a part of the armed wheel L, and rotate them and the armed wheel.

This armed wheel is loose upon the shaft *a*. It fits up tight against the index-wheel C, which is fast upon the shaft *a*.

To that side of this index-wheel which is next the armed wheel L, are rigidly affixed two pins, *m* and *n*.

The pin *n* fits loosely into a round hole in the armed wheel, so as to allow a little play of the armed wheel upon it. As the armed wheel revolves, it will carry the index-wheel C with it, but will allow a little play.

Now, to show one of the essential elements of my invention.

To one side of the arm *l'* is affixed the spring *s*, which bears, at its loose end, against the pin *m*. This spring is made strong enough to rotate the index-wheel C, and whatever mechanism may be attached to its shaft *a*.

The pin *k*, upon the drive-wheel D, is so placed, with reference to the armed wheel L, that each time it impinges upon one of the arms *l l' p' p' l'*, it will rotate the armed wheel L a trifle further each time than is necessary to bring one of the notches *i* around so that the pawl *h* will catch into it.

This excess of motion is taken up, and absorbed on the spring *s*; and thus it is brought about, that when the parts become worn more or less, the armed wheel L will always strive to carry the notches *i* past the pawl *h*, thus insuring that the notches shall be always brought squarely up for the pawl to snap into.

It must, of course, be understood that the mechanism which operates the pawl *l* will allow it to snap promptly into one of the notches *i* when it comes to the proper point.

To insure this, in my device, a spiral spring, *o*, is arranged upon the shaft *g*, which constantly presses the pawl *h* forward; and as it rests against the inside of the index-wheel, after it has been operated backward out of one of the notches *i*, by means of the mechanism hereinbefore described, it will snap into the next notch as soon as presented.

There is another important advantage gained by my mechanism.

By means of the peculiar shape given to the arms *l l' p' p' l'*, when the pin *k* commences to impinge upon one of them, it will make the line of contact but a little more abrupt than a radial line extending from the first point of contact to the centre of the armed wheel.

The effect of this arrangement is to make the motion of the armed wheel very slow at its commencement, and close and rapid in its middle stage, which is a great advantage in most kinds of mechanism where intermittent motion is used.

In the mechanism above described, continuous rotary motion is converted into intermittent rotary motion.

My improvement is applicable when continuous rotary motion is converted into intermittent straight-line motion, and *vice versa*; and, in some cases, when continuous straight-line motion is converted into intermittent straight-line motion, the shape of the parts being adapted to the office required of them. And in the patent applied for herewith, it is intended to cover these adaptations of my invention.

I claim as my invention—

1. The armed wheel L, with the impinging faces of the arms *l l' l'' l'''*, made as described, in combination with the drive-pin *k*, all constructed and operating as and for the purposes described.

2. The spring *s*, in combination with the armed wheel *h*, when arranged and operating in the manner described.

3. The combination of the armed wheel L with the index-wheel C, by means of the pins *m* and *n*, and the spring *s*, the whole constructed and operating as and for the purposes described.

4. The combination of the shaft *b*, cam *c*, drive-wheel D, drive-pin *k*, sliding-pin *d*, short arm *e*, shaft *g*, pawl *h*, spring *o*, armed wheel L, spring *s*, pins *m* and *n*, index-wheel C, and shaft *a*, all constructed, arranged, and operating as and for the purposes described.

Dated April 17, 1869.

ELIJAH S. PIERCE.

Witnesses:

L. HAFELIN,
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