No. 672,267. Patented Apr. 16, 1901.

M. GEHRE.

DEVICE FOR THE PERIODIC UTILIZATION OF POWER.

(Application filed Aug. 8, 1900.)

(No Model.)

Fig. 1.

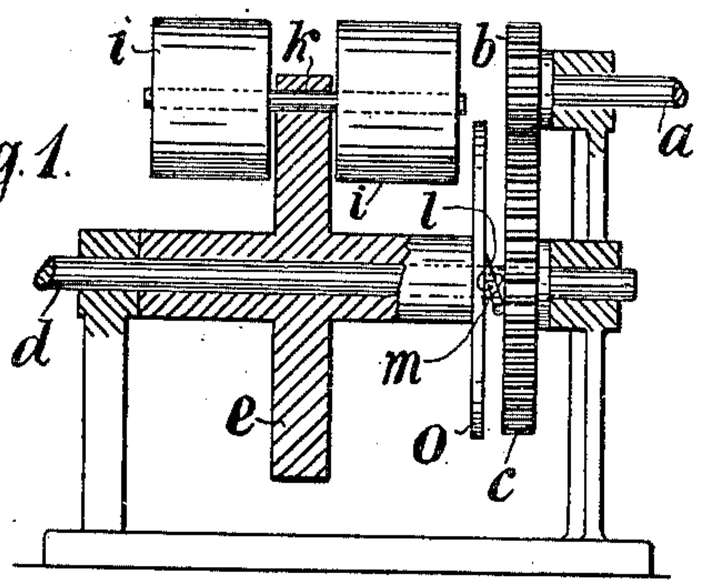
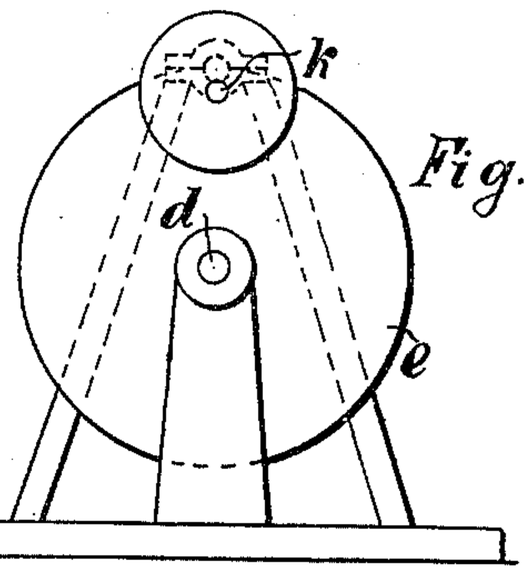


Fig. 2.



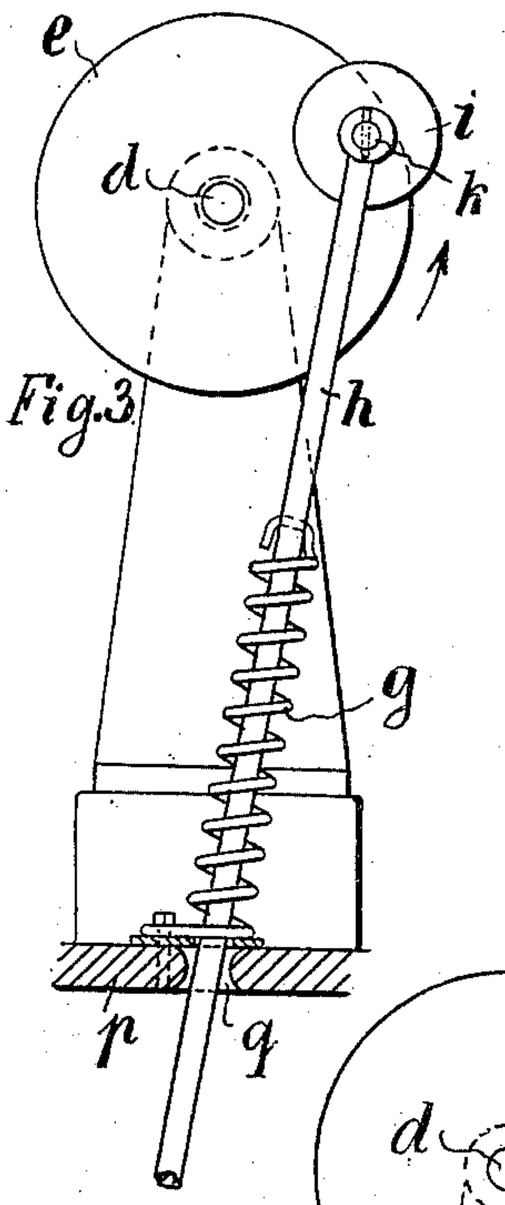


Fig. 3.

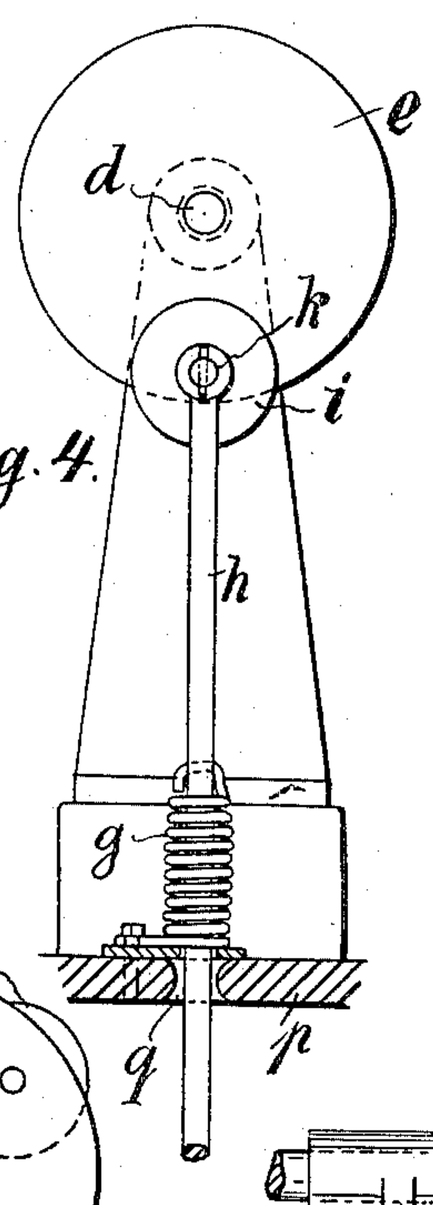


Fig. 4.

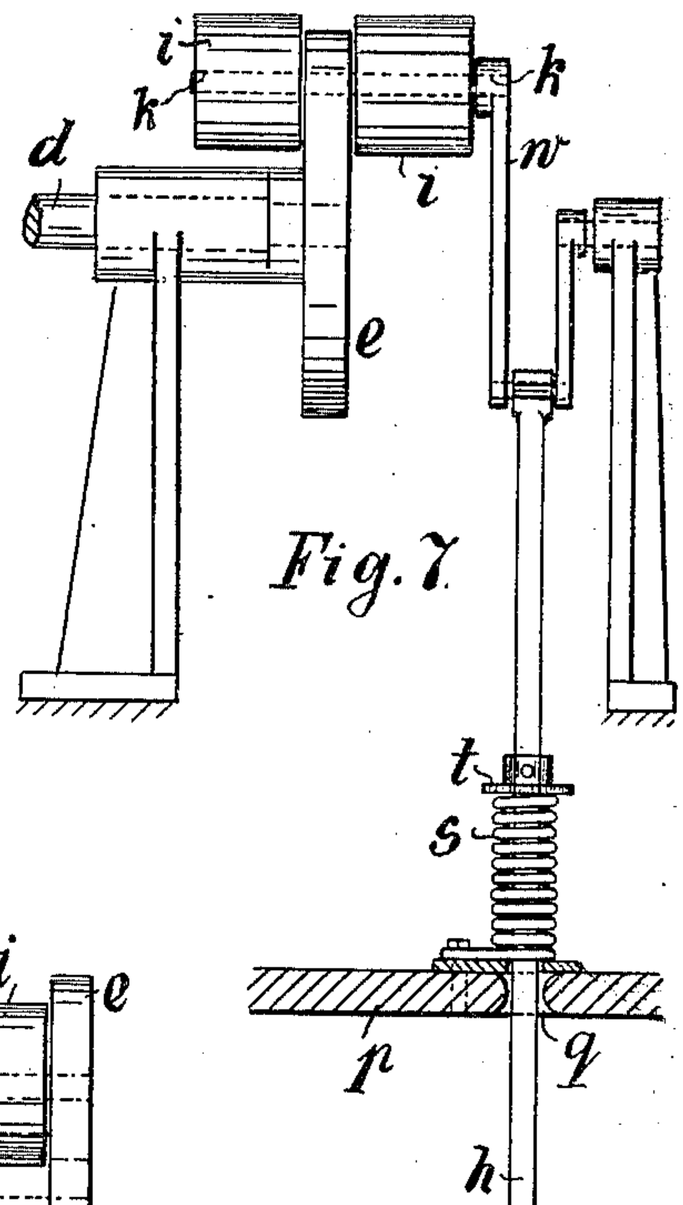


Fig. 7.

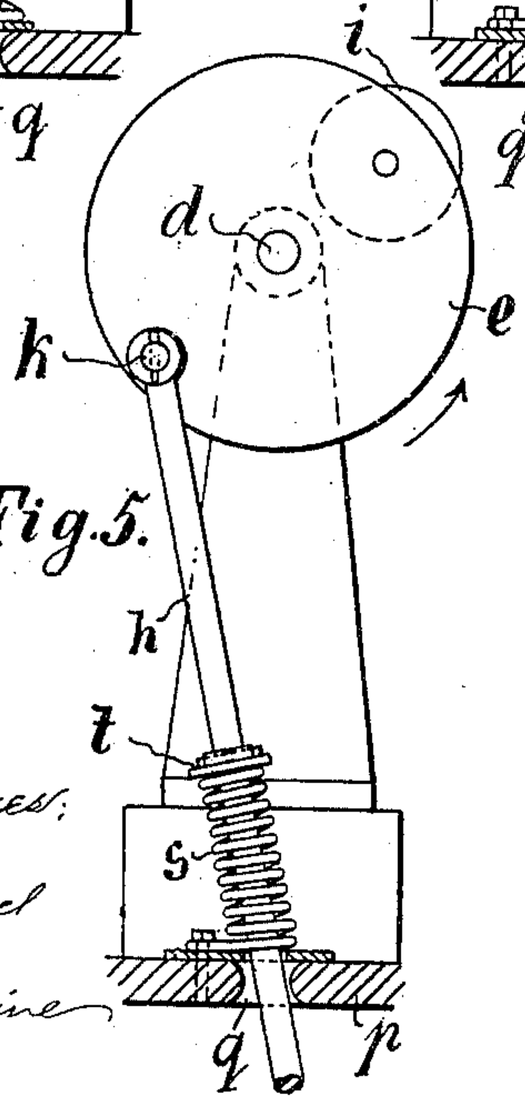


Fig. 5.

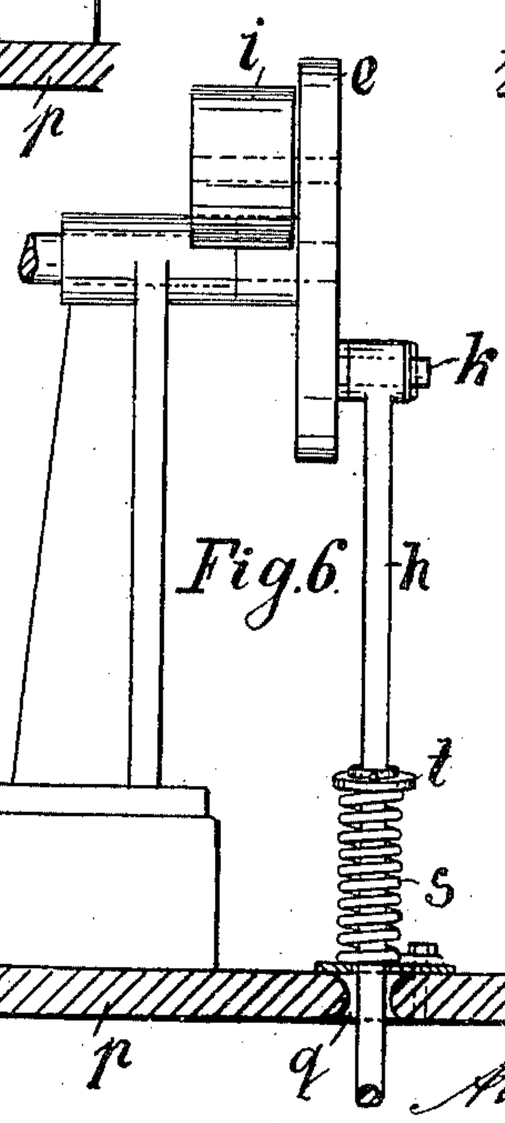


Fig. 6.

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UNITED STATES PATENT OFFICE.

MAX GEHRE, OF RATH, NEAR DÜSSELDORF, GERMANY.

DEVICE FOR THE PERIODIC UTILIZATION OF POWER.

SPECIFICATION forming part of Letters Patent No. 672,267, dated April 16, 1901.

Application filed August 8, 1900. Serial No. 26,219. (No model.)

To all whom it may concern:

Be it known that I, MAX GEHRE, engineer, a subject of the Duke of Saxe-Anhalt, residing at Rath, near Düsseldorf, Germany, have invented certain new and useful Improvements in Devices for the Periodic Utilization of Power; 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.

The present invention has for its object an apparatus for utilizing the periodic action of a weight or weights or springs which are raised or tightened, respectively, by means of an irregularly-acting motor—such, for instance, as a wind-motor—in such a way that a variable speed of a power-shaft which is driven by the action of the weight or the like is obtained. This is desirable, for instance, where it is a question of producing by the action of the weight an electrical current of variable strength for producing flash-light of suitable varying intensity. For this object the weight (or weights or springs, as the case may be) is arranged on a disk (or disks) mounted on the power-shaft, which is driven by a suitable motor with irregular exertion of power until the weight (or weights or springs) itself begins to act after the end of the stroke has been passed and continues its action with a leverage which becomes gradually longer and then shorter, so that the required variable speed of the working shaft is obtained.

A form of construction of the apparatus is shown in the accompanying drawings, in which—

Figure 1 is a longitudinal elevation, partly in section, and Fig. 2 an end view, while Figs. 3 and 4 are diagrammatic end views of a modification of the same in two different positions. Figs. 5 and 6 show another modification in end view and side elevation. Fig. 7 is a side elevation of a third modification.

From a motor which exerts an irregular force, which motor is not shown in the drawings, a shaft *a* is driven, which by means of a pinion *b* drives a larger cog-wheel *c*, which is loosely revolubly mounted on a power-shaft *d*. An engagement-pawl *l*, carried by the cog-wheel *c*, has opposite it a disk *o*, having a projection or stud *m*, which disk is firmly connected with the weight-disk *e*, which is fixed on the power-shaft *d*. The disk *e* carries weights *i* on both sides on a cross-bolt *k*. When the weights *i* have passed the upper dead-point in the irregular rotation produced by the shaft *a*, the said weights act, while the stud *m* runs in front of the pawl *l*, with an equal exertion of power, first with a gradually-lengthening and then a gradually-shortening leverage. By this means the weights *i* produce the desired variable speed and the desired variable strength—for instance, in the flash-light to be produced.

Instead of a weight or weights one or more springs may be connected with the disk, which are slowly stretched or compressed by the irregularly-working motor, and then when the end of the stroke has been passed their power of contraction or expansion comes into play.

As shown in Figs. 3 and 4, weights and springs may also be employed in conjunction. In this case a rod *h* is pivotally connected to the pin *k*, carrying the weight, which rod projects through the opening *q* in a fixed plate *p* and serves as guide for a spring *g*. This spring is connected at its upper end to the rod *h* and at its lower end to the fixed plate *p*. When the weight *i* has been raised in the manner described by the irregularly-acting motor in the direction of the arrow shown in Fig. 3, the spring *g* is stretched, and when then the weight *i* has passed the upper dead-point both the weight and the stretched spring come into action and impart to the shaft *d* an accumulated power.

If instead of a tension-spring a compression-spring be employed, it must engage the disk *e* at an angle of one hundred and eighty degrees as compared with the weight *i*, as shown in Fig. 5, so that when the weight is lifted in the direction indicated by the arrow the compression-spring *s* is compressed. This spring bears with its upper end against a stop *t* on the guide-bar *h*, and its lower end bears against the fixed plate *p*. In this arrangement, as shown in Fig. 6, preferably only one weight *i* is employed, which is arranged on one side of the disk *e*, while the guide-bar *h* of the spring engages on the other side of the disk. The

rod *h* may, however, engage on a counter-crank *w*, connected with the bolt *k*, as shown in Fig. 7.

It will be understood with reference to Figs. 3 to 7 that the devices therein shown are connected with the driving member by a connection such as is illustrated in Fig. 1 or its equivalent. Such connection may in the devices of Figs. 3 to 6 be applied at the rear end of the shaft *d* and in Fig. 7 may be applied at this point or at the end of the shaft of the counter-crank *w*.

In the arrangement shown in Figs. 3 to 7 the weights *i* may also be entirely omitted, so that merely the springs come into action.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. A device for the periodic utilization of power, comprising a driving member, a driven member, a means for storing power connected to said driving member and said driven member, said means adapted to discharge its stored-up power at every stroke, and a connection between the driving member and said power-storing means adapted to permit the latter to propel the driven member independently of the operation of the driving member.

2. A device for the periodic utilization of power, comprising driving and driven members, a crank, a weight adapted to be raised by said crank, and a pawl connected to said driving member adapted to rotate said crank in one direction, whereby when said crank passes its dead-center the weight transmits power with variable speed to said driven member independently of the pawl action.

3. A device for the periodic utilization of power, comprising a driving-shaft, a driven shaft, a rotatable part connected to the driven shaft, a weight connected to said rotatable part, in such a way that the weight, after the end of the stroke has been passed, acts with a gradually increasing and then decreasing leverage, and a connection between said driving-shaft and said rotatable part adapted to permit the latter to propel the driven shaft independently of the operation of the driving-shaft.

4. A device for the periodic utilization of power, comprising a driving member, a driven member, a means for storing power connected to said driving member, and adapted to discharge its stored-up power at the end of each stroke and thereby drive the driven member, said power-storing means comprising a spring and a weight adapted to be respectively strained and raised by the operation of said driving member, and a connection between such power-storing means and said driving member adapted to permit said power-storing means to propel the driven member independently of the movement of said driving member.

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

MAX GEHRE.

Witnesses:
PETER LIEBER,
WILLIAM ESSENWEIN.