July 17, 1923. **1,461,739**

K. SILBERMANN

DRIVING MECHANISM FOR CLOCKS AND THE LIKE

Filed Feb. 12, 1921

Fig. 1.

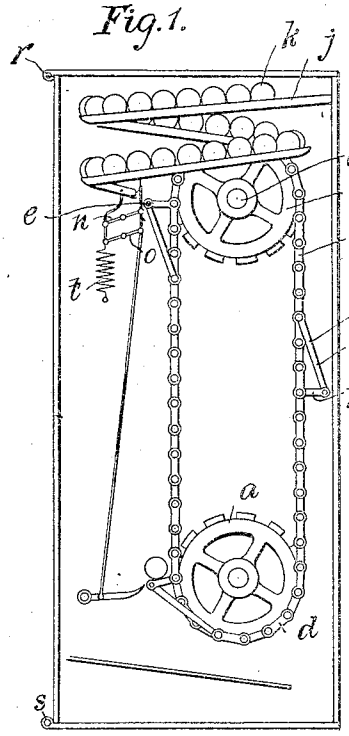


Fig. 2.

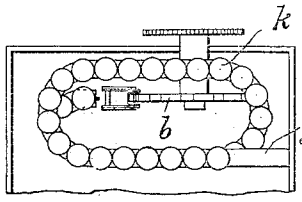


Fig. 3.

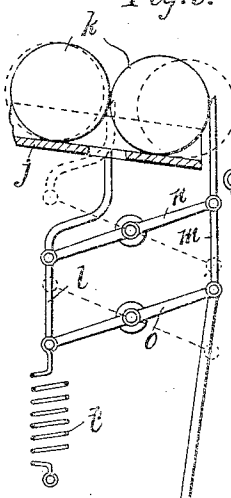


Fig. 4.

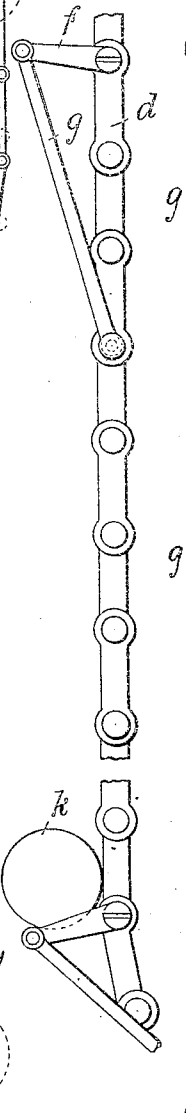


Fig. 5.

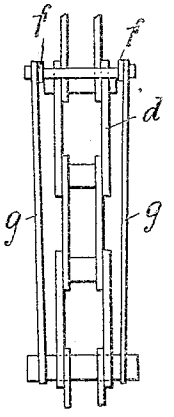
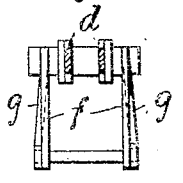


Fig. 6



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Patented July 17, 1923. 1,461,739

UNITED STATES PATENT OFFICE.

KELLMANN SILBERMANN, OF LA CHAUX-DE-FONDS, SWITZERLAND.

DRIVING MECHANISM FOR CLOCKS AND THE LIKE.

Application filed February 12, 1921. Serial No. 444,459.

To all whom it may concern:

Be it known that I, KELLMANN SILBERMANN, citizen of the Swiss Republic, residing at La Chaux-de-Fonds, Switzerland, have invented certain new and useful Improvements in Driving Mechanism for Clocks and the like, of which the following is a specification.

This invention relates to driving mechanism for clocks and the like particularly for clocks that run for considerable periods of time, and wherein considerable power is required for rewinding, for example public clocks, church clocks, tower clocks and the like.

Referring now to the accompanying drawings which illustrate a driving mechanism for clocks and the like constructed according to the invention,

Figure 1 is a front elevation,

Figure 2 is a plan view thereof with the cover removed.

Figure 3, a side view of the escapement device drawn to a larger scale.

Figure 4 a side view of the transmission chain drawn to a larger scale.

Figure 5 is an edge view of a portion of Fig. 4, looking from the left of that figure, and

Figure 6 a plan view of the part shown in Figure 4.

The illustrated form of construction shows two sprocket wheels, *a*, *b*, arranged one above the other, the latter one of which is rigidly connected to the driving shaft *c* of a wheel-train of a clock or the like. The two sprockets are connected by means of an endless chain or jointed transmission member *d*.

On the endless chain or transmission member *d*, a plurality of carriers or supports *e* are provided located at equal distances from each other, each consisting of a pair of outwardly extending links *f* pivoted at their inner ends to the chain, and a pair of links *g* each pivoted at one of their ends to one of the links *f*, and at their other ends to the chain.

At the upper end of a casing *i*, which encloses the parts there is secured an inclined track *j*, which is in the form of a helix, flattened at its sides as shown in the plan view Figure 2, and on the track are shown a plurality of rolling weights *k*, which may take the form of balls or rollers, which, as will be understood by reason of their weight have the tendency to roll down the track *j*. The lower end of the track is open and is so situated that during the movement of the endless chain or transmission member, the carriers or supports *e*, pass in close proximity to said lower open end of the track, a weight *k* being allowed to roll on the respective carrier or support every time a carrier or support passes the end of the track, as will hereafter be particularly described. It will be seen that these weights act as the driving power on the transmission member wheels *a*, *b*, so that the latter are set in motion, and consequently the wheel train of the clock or the like.

In order that the weight will be liberated only at predetermined intervals, an escapement device is provided, actuated by each weight at the lower sprocket wheel *a*.

The escapement device comprises two parallel rods *l*, *m*, suspended on two parallel pivoted levers *n*, *o*.

The levers are pivoted intermediate their ends and their ends are articulated to the rods.

The rod *m*, has a downwardly directed extension that is pivoted at its lower end to a lever *p*, that is pivoted to the casing at *q*, and the free end of which is so located that a weight *k*, arriving at the lower wheel *a*, and dropping from its rest falls on the lever *p*.

The upper side of the casing is hinged at *r*, for the purpose of placing the weights on the track and the lower side is also hinged at *s*, for removal of the weights. The upper end of rods *l* and *m*, are so arranged that the end of rod *m* when in its normal position as shown in full lines Figure 3, projects above the open end of the track *j* under the action of a spring *t*, and retains the weights thereon whilst the corresponding end of rod *l* is located below the track.

It will be understood that by the use of the mechanism according to the present invention a clock may be caused to run for a considerable period of time, which of course is determined by the number of weights placed on the track. For example, a tower clock, church clock, or the like may be driven for a year, or even a number of years or more by providing a suitable number of weights on the track, which is a consideration of importance in clocks of this nature.

The operation is as follows;—

When now a carrier or support *e*, carry-

ing a weight, turns around the lower wheel *a*, the weight slides off its rest and drops onto the lever *p*, depressing the latter as shown in dotted lines (Figure 3) which causes rod *m* to be pulled down and its extreme upper end releases a weight from the track *j*, so that the latter will run on the corresponding carrier or support *e*. Simultaneously with this movement the rod *l* has moved in an upward direction, its upper end entering the track behind the escaping weight and retaining the succeeding weights. as soon as the force exerted on lever *p* ceases, by reason of the fact that the weight leaves lever *p* to roll to the storage chamber provided below, the parts are returned to their normal positions under the action of spring *t*, permitting the succeeding weights to travel one step farther on track *j*. The mechanism is then ready for the next operation.

This process is repeated until all weights stored on track *j* have been used.

What I claim as new and desire to secure by Letters Patent is;

1. Gravity operated driving mechanism for clocks or the like comprising an inclined track for supporting a plurality of weights, having its lower end arranged adjacent transmission means adapted to receive and discharge the weights, means for releasing the weights, which in its normal position holds them from movement on the track, consisting of a pair of members that are simultaneously moved on the discharge of a weight from the transmission means, one to releasing position and the other to a position to retain the remaining weights on the track, whereby one weight is released and means for returning said members to normal position.

2. Gravity operated driving mechanism for clocks or the like comprising an inclined track for supporting a plurality of weights, having its lower end arranged adjacent transmission means adapted to receive and discharge the weights, means for releasing the weights including a member pivoted intermediate its ends, having an upwardly projecting part at each end, one of which parts. when the member is in normal position holds the weights from movement on the track, but which, when said member is operated on the discharge of a weight from the transmission means is moved downwardly to position to release a weight whilst at the same time the other part is moved upwardly to retain the succeeding weights, and means for returning the parts to normal position.

3. Gravity operated driving mechanism for clocks or the like comprising an inclined track for supporting a plurality of weights, having its lower end arranged adjacent transmission means consisting of an endless driving member carrying a plurality of carriers or supports located at equal distances from each other, adapted to receive and discharge the weights, means for releasing the weights, which, in its normal position holds them from movement on the track, but which is operated on the discharge of a weight from the transmission means to release another weight, and at the same time prevents the succeeding weights from being released, and means for returning said releasing means to normal position.

4. Gravity operated driving mechanism for clocks or the like comprising an inclined track for supporting a plurality of weights, having its lower end arranged adjacent transmission means consisting of an endless driving member carrying a plurality of carriers or supports located at equal distances from each other, adapted to receive and discharge the weights, means for releasing the weights including a member pivoted intermediate its ends, having an upwardly projecting part at each end, one of which parts, when the member is in normal position holds the weights from movement on the track, but which, when said member is operated on the discharge of a weight from the transmission means is moved downwardly to position to release a weight whilst at the same time the other part is moved upwardly to retain the succeeding weights, and means for returning the parts to normal position.

5. Gravity operated driving mechanism for clocks or the like comprising an inclined track for supporting a plurality of weights, having its lower end arranged adjacent transmission means adapted to receive and discharge the weights, means for releasing the weights, which in its normal position holds them from movement on the track, consisting of a pair of members that are simultaneously moved on the discharge of a weight from the transmission means, one to releasing position and the other to a position to retain the remaining weights on the track, whereby one weight is released, and spring means for returning said members to normal position.

6. Gravity operated driving mechanism for clocks or the like comprising an inclined track for supporting a plurality of weights, having its lower end arranged adjacent transmission means adapted to receive and discharge the weights, means for releasing the weights including a member pivoted intermediate its ends, having an upwardly projecting part at each end, one of which parts, when the member is in normal position holds the weights from movement on the track, but which, when said member is operated on the discharge of a weight from the transmission means is moved downwardly to position to release a weight, whilst at the same time the other part is moved

upwardly to retain the succeeding weights, and spring means for returning said releasing means to normal position.

7. Gravity operated driving mechanism for clocks or the like comprising an inclined track for supporting a plurality of weights, having its lower end arranged adjacent transmission means consisting of an endless driving member carrying a plurality of carriers or supports located at equal distances from each other, adapted to receive and discharge the weights, means for releasing the weights, which, in its normal position holds them from movement on the track, but which is operated on the discharge of a weight from the transmission means to release another weight, and at the same time prevents the succeeding weights from being released, and spring means for returning said releasing means to normal position.

8. Gravity operated driving mechanism for clocks or the like comprising an inclined track for supporting a plurality of weights, having its lower end arranged adjacent transmission means consisting of an endless driving member carrying a plurality of carriers or supports located at equal distances from each other adapted to receive and discharge the weights, means for releasing the weights including a member pivoted intermediate its ends, having an upwardly projecting part at each end, one of which parts, when the member is in normal position holds the weights from movement on the track, but which, when said member is operated on the discharge of a weight from the transmission means is moved downwardly to position to release a weight, whilst at the same time the other part is moved upwardly to retain the succeeding weights, and spring means for returning the parts to normal position.

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

KELLMANN SILBERMANN.

Witnesses:

STEWART L. WHITMAN,

M. F. STARLING.