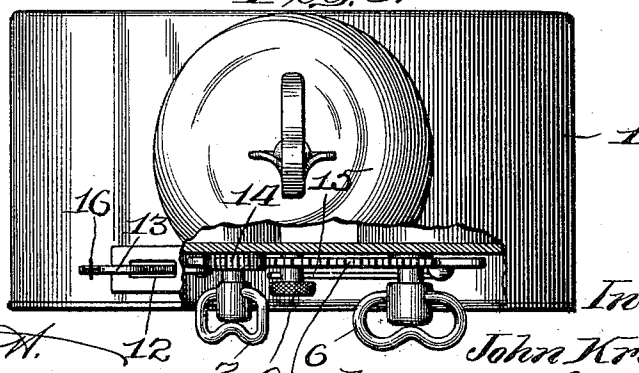
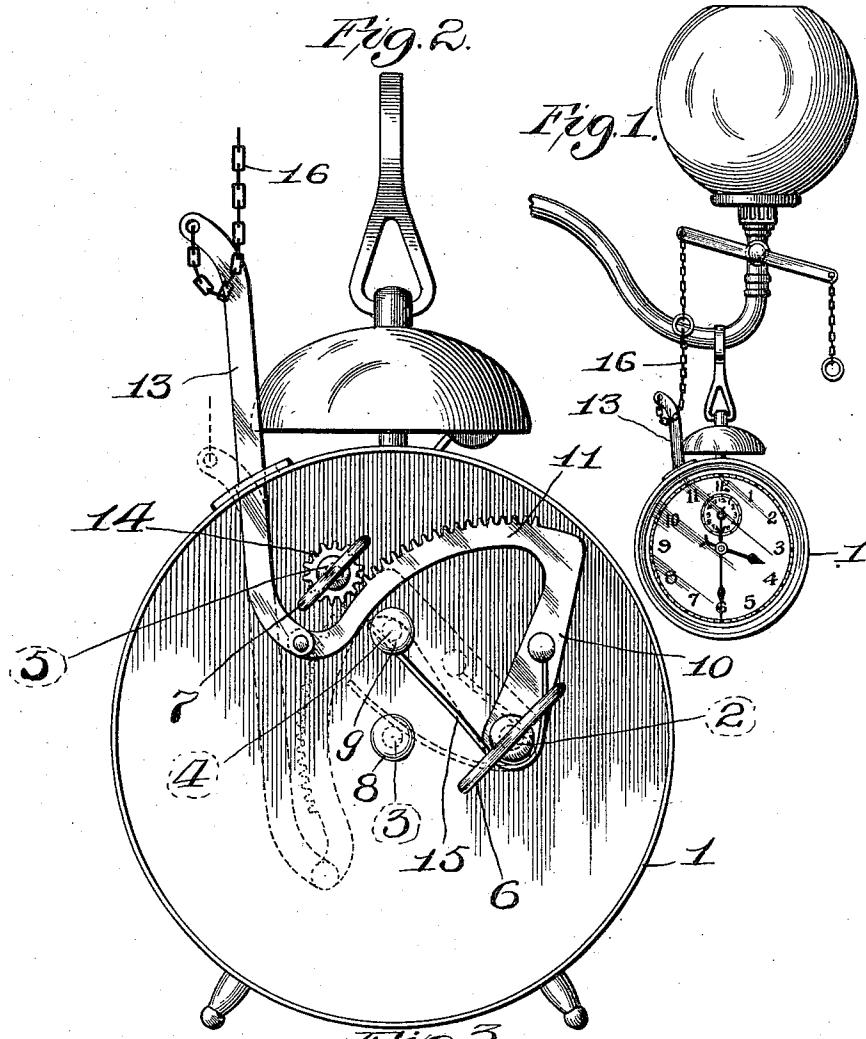


J. KRUSE.
ALARM CLOCK.

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ALARM-CLOCK.

1,041,307.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN KRUSE, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Alarm-Clocks, of which the following is a specification, containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in alarm clocks, and the object of my invention is to construct a device which is actuated by a rotation of the alarm arbor and which device may be connected with a mechanical device such as a valve, damper or the like, for its operation, the arrangement of parts being such as to permit, at times, movements of the alarm arbor without effecting a movement of the device.

With the above purposes in view my invention consists in certain novel features of construction and arrangement of parts as will be hereinafter more fully described, pointed out in the claims and illustrated by the accompanying drawings in which:

Figure 1 shows a clock constructed according to my invention and applied for the operation of a valve of a gas lamp; Fig. 2 is an enlarged, rear elevation of a clock having my attachment thereon; and Fig. 3 is a plan, partly in section, of a clock equipped with my improved device.

Referring by numerals to the accompanying drawing: 1 designates the ordinary clock casing, 2 the winding arbor of the main spring of the clock, 3 the arbor upon which the time hands are supported, 4 the arbor which supports the alarm hand, and 5 the arbor upon which the spring of the alarm mechanism is supported. The arbor 2 and the arbor 5 are provided with the ordinary winding keys 6 and 7 and the arbors 3 and 4 are provided with the ordinary knurled nuts 8 and 9. All of the parts so far mentioned are or may be of ordinary construction.

Pivotaly supported upon the arbor 2 is a lever 10 and carried by the free end of the lever 10 is a segmental rack 11. The lever 10 and rack 11 are preferably stamped from a single piece of sheet metal, and the portion constituting the segmental rack is not toothed for its entire length for reasons which will be made clear hereinafter.

The clock casing through its top portion is slotted at 12 to permit of the operation of

the link 13 which is extended through said slot and pivotally connected with the free end of the segmental rack 11.

Secured for rotation upon the alarm arbor 5 there is a pinion 14 which is arranged to mesh, at times, with the segmental rack 11.

15 designates a substantially U-shaped spring, one end of which is connected with the lever 10 and its other end is free and arranged to engage with one or the other of the arbors 3 or 4.

16 designates a flexible member, preferably a chain, connected with the upper end of the link 13 which is designed for attachment to the device to be operated.

When the parts are in the position as shown in Fig. 2 in the solid lines, it is obvious that the alarm shaft may be rotated in a winding direction without a further movement of the segmental rack 11 in a position to set the device. By this arrangement of parts I am enabled to completely wind the alarm spring after the device has been moved to a position sufficient to operate a device connected with the link 13, and in the same figure I have shown, in dotted lines, the operative parts in a position after an operation by the alarm shaft.

It is to be observed that the pinion has moved the segmental rack and that after the pinion has traveled over the entire rack there will be nothing to oppose the continued rotation of the alarm shaft, hence the alarm may continue to operate to its fullest extent. This construction, that is the arrangement of parts whereby the alarm shaft may be free to move to its fullest extent either in winding or unwinding its spring and cause only a limited movement of the segmental rack, is one of the leading and distinctive features of my present invention.

In the practical operation of my improved clock, assuming the parts to be in position, shown in Fig. 2, and the alarm shaft released in a common manner, it is obvious that, by reason of the spring 15 being fixed to the lever 10 at its one end and engaging with the arbor 4 at its opposite end and having a tendency of its ends to spring together, the teeth of the segmental rack are held against the pinion 14 and hence when the pinion is rotated the rack 11 and lever 10 will be moved a distance equal to the length of the rack and draw the link 13 downwardly, hence causing the operation of a de-

vice connected with the chain 16 carried by the link. After the pinion has moved the rack its full length the free end of the spring 15 will be carried to the position shown in dotted lines or next the arbor 3, thus causing the rack 11 to have a tendency toward an upward movement, but which holding of the rack by the spring 15 will not interfere with the further unwinding or movement of the alarm mechanism and, by reason of the spring 15 being thus held by the arbor 3 and the rack sprung in a direction toward the pinion 14, the rack will be carried by the spring until caught by the teeth of the pinion in rewinding the alarm shaft.

I am aware that it is not new, broadly speaking, to provide an attachment for alarm clocks for the operation of various mechanical devices, but so far as I know all of such devices employed winding drums operable from the alarm shafts and employed a flexible member to be wound upon the drum and in all of such devices the movement of the alarm shaft was necessarily stopped after an operation of the device, with which they were connected, was accomplished.

While I have shown the lever 10 pivotally supported upon the arbor 2, and the spring 15 arranged to engage the arbors 3 and 4 I do not wish to be understood as limiting myself to this construction, as it is obvious that the lever 10 may be pivoted to any suitable support and that means other

than the arbors 3 and 4 may be employed in connection with the spring 15. I have merely employed these arbors for the sake of economy. Nor, do I wish to be understood as limiting myself to a clock having a link such as 13, for it is apparent that a device to be actuated may be connected directly with the segmental rack portion 11.

I claim:

1. In an alarm clock, a pivoted lever, a segmental member carried by said lever, a rack formed on said segmental member of less length than said member, a pinion secured for rotation upon the alarm arbor, a spring connected with said lever at its one end, a pair of stops arranged for engagement at different times with the free end of the spring, and a link pivotally connected with the free end of said segmental member and arranged for operation through the clock casing.

2. In an alarm clock, a pinion carried by the alarm arbor and secured for rotation therewith, a rack, a spring secured at one of its ends to said rack, and a pair of stops for engagement with the free end of the spring at different times, for the purposes stated.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

JOHN KRUSE.

Witnesses:

E. L. WALLACE,
N. G. BUTLER.