

H. WACHTELHAUSEN.
ALARM CLOCK.
APPLICATION FILED DEC. 15, 1910.

990,465.

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Fig. 1.

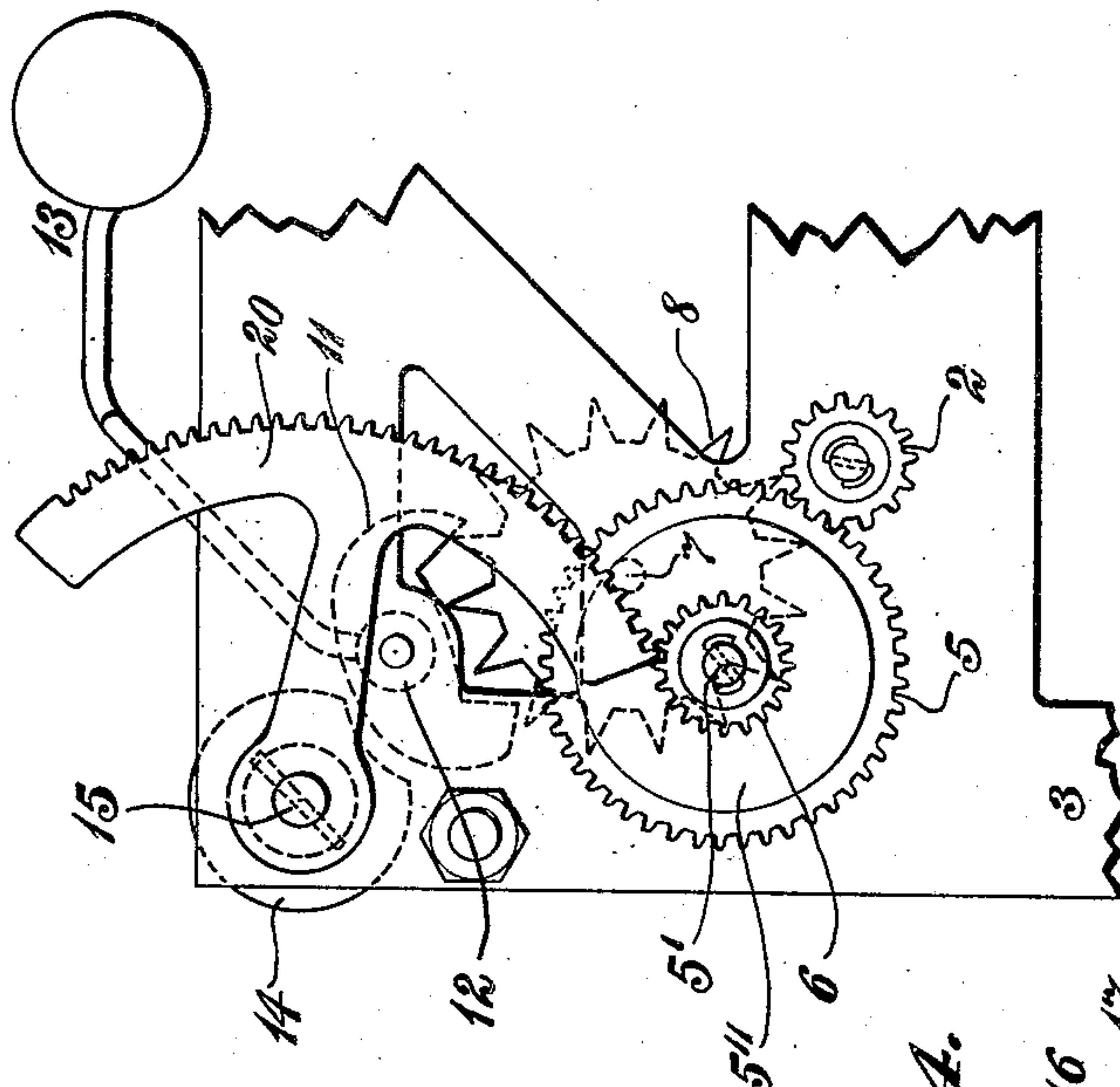


Fig. 2.

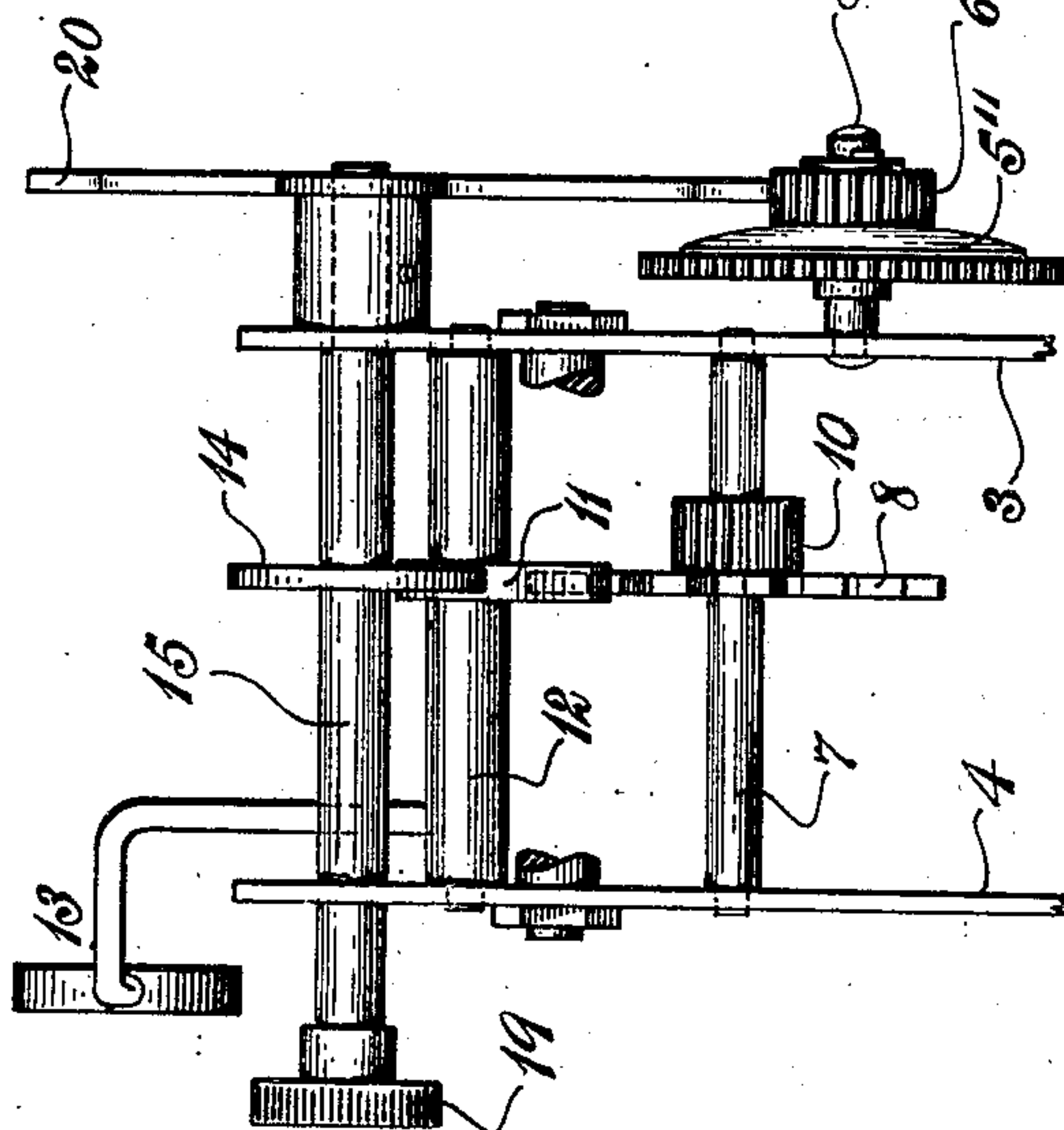
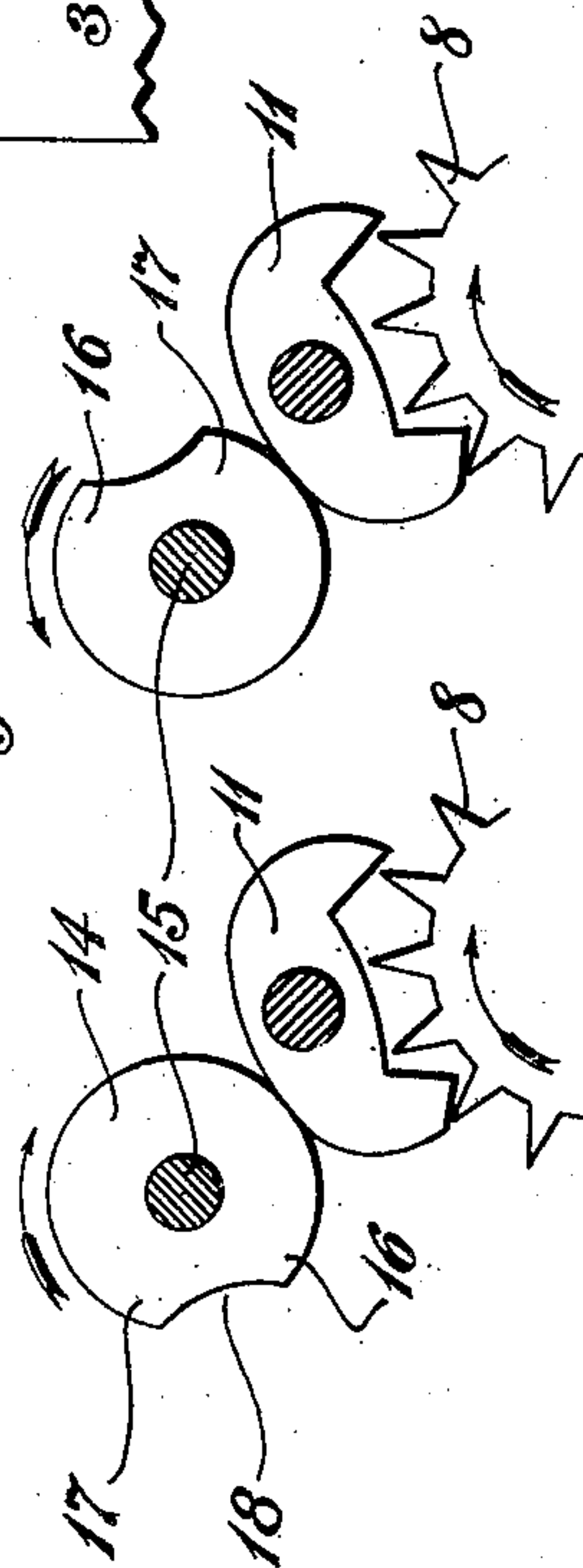


Fig. 4.

Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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ALARM-CLOCK.

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To all whom it may concern:

Be it known that I, HENRY WACHTELHAUSEN, a citizen of the United States, residing at Meriden, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Alarm-Clocks, of which the following is a specification.

This invention relates to alarm clocks, the object of the invention being to provide simple and effective means for insuring the free movement of a shut-off either manually or automatically.

In the drawings accompanying and forming part of the present specification I show in detail one simple form of embodiment of the invention which to enable those skilled in the art to practice the same will be fully set forth in the following description, while the novelty of the invention will be included in the claims succeeding said description.

From the statements made it will be clear that I do not restrict myself to the disclosure made by said drawings and description as I may depart therefrom in several respects within the scope of my invention as expressed in said claims.

Referring to said drawings: Figure 1 is a front elevation of a portion of an alarm clock including my invention. Fig. 2 is an elevation as seen from the left in Fig. 1. Figs. 3 and 4 are diagrammatic views of escapement mechanism and a coöperative shut-off hereinafter more particularly described.

Like characters refer to like parts throughout the several figures.

In the drawings I have shown only a portion of the alarm mechanism, the bell, gong or its equivalent being wholly omitted, although the hammer, hereinafter described, is illustrated. I have represented but one wheel of the time train the same being denoted by 2 and being supported upon the front movement plate 3 connected with the back movement plate 4 by the usual pillars. The pinion 2 serves as a suitable means for turning the spur gear 5 supported for rotation on or by the front movement plate 3 and in connection with the spur gear 5 is a pinion 6, and there is a novel relation, as will hereinafter appear, between the spur gear 5 and said pinion 6. I prefer that the gears already referred to be so proportioned that the pinion 6 will be turned twice in

twenty-four hours making it, therefore, the equivalent practically of the customary twelve hour wheel of a clock. This proportion of parts however, is not essential nor do I restrict myself to the particular connection hereinafter described between the two gears 5 and 6.

The alarm mechanism includes in its make-up an arbor 7 supported for rotation by and between the two plates 3 and 4, said arbor having rigidly connected therewith the escapement wheel 8. The alarm mechanism includes a spring as is well-known and gearing for transferring the effect of the spring to the arbor 7, the final gear for this purpose being fastened to said arbor and being denoted by 10. This alarm spring after the customary practice will be prevented normally from action or until such time as the alarm is released at which point the said spring will turn the escapement wheel 8 in the direction indicated by the arrow thereon in Figs. 3 and 4. It will, therefore, be evident that if the alarm mechanism be released, the arbor 7 will be rotated and the escapement 8 will, therefore, oscillate the verge 11 and consequently the arbor 12 to which said verge and also the hammer 13 are rigidly connected, whereby said hammer can operate the alarm.

A shut-off such as answers my purpose is that denoted by 14 represented consisting of a cam rigidly connected with the arbor 15 rotatively supported by and extending through the front and back movement plates 3 and 4 respectively. The shut-off cam 14 has two effective portions 16 and 17 and an ineffective or releasing portion 18 uniting the same and formed on an inward arc or convex. In Fig. 3 the active or cam portion 16 is against the verge 11 to lock the same into the escapement wheel 18 and thereby prevent the turning of the said escapement and hence the action of the alarm.

At this point it might be well to state that there are two shut-off positions, one a temporary and the other a permanent, and when the cam portion 16 is in action in the manner described this will be the temporary locking or shut-off position, while when the cam portion 17 holds the verge 11 in locked relation with the escapement 8 as shown in Fig. 4, this will be the permanent locking position. In addition to the temporary and permanent locking positions,

there is a third position of the shut-off or cam 14, this being the releasing position or that illustrated in Fig. 1, the convex or releasing portion 18 of the cam 14 at this time being opposite the verge 11, so that if the escapement wheel 8 be turned in the manner hereinbefore described, the verge is oscillated to operate the hammer 13. Various means may be provided for turning the arbor 15 and thereby the cam 14, so that said cam may be put at will into its three distinct positions. For this purpose the milled knob 19 may be provided, said knob being located at the back of the clock and rigidly connected with the arbor 15. I have not shown any means for indicating which of the three positions the shut-off occupies.

Automatic means is provided for moving the shut-off from its temporary locking position to its releasing position, so that in case the user of the clock fails to do so, the clock will automatically. When, however, the shut-off is in its permanent locking position, it is out of the range of the automatic restoring means and can, therefore, be moved to its releasing position only manually. I provide means broadly for moving the shut-off from one position to another, and for also always permitting free opposite manual operation of said shut-off, and while the said result can be effected in various ways, means including a frictional connection has been found quite satisfactory and in the organization illustrated the frictional connection is so related that the shut-off can be returned at any time during the twenty-four hours freely and without resistance of any kind from its permanent locking position to its said releasing position and the spur gear 5 and pinion 6 to which I have hereinbefore referred have been found quite convenient in the connection noted. It will be obvious, of course, that I do not limit myself to this relation. The connection between the spur gear 5 and the pinion 6 which is supported by the arbor 5' of said spur gear is a frictional one, and consequently the gears 5 and 6 are relatively rotative, this result being secured in the present case by supporting the pinion 6 loosely on the stud or arbor 5'. To secure the desired frictional relation between the gear 5 and coöperating pinion 6 the resilient washer 5'' may be provided said washer being interposed between said two gears. In mesh with the pinion 6 is a sector or curved rack 20, the arm or stem of which is rigidly connected with the shut-off arbor 15.

It will be assumed that the clock is in operation, and the shut-off 14 is in its temporary locking position as shown in Fig. 3, having been moved to this position by hand on the turning of the arbor 15, and that one end of the sector 20 is in mesh with the pinion 6. As the clock operates, the spur gear

5 through the pinion 2 constituting part of the time train will be rotated, and through its frictional engagement with the pinion 6 will rotate the latter thereby moving the sector or circular rack 20 to the position shown in Fig. 1 and bringing the releasing portion 18 of the cam opposite the verge 11 and hence releasing the verge 11. As will be understood by the mechanism described, the shut-off is moved automatically from its temporary locking or silent position to its releasing position. In the event that the shut-off cam 14 is operated to carry the cam portion 17 into locking engagement with the verge 11, the sector 20 will be thrown wholly out of the range of action of the automatic mechanism, and it, therefore, follows that the only way the sector can be returned to its original or into the alarm releasing position is by hand. It happens sometimes that after the permanent shut-off position has been adopted, the user of the clock desires to bring the shut-off to silent or releasing position, and I am familiar with certain types of clocks in which this condition is only possible at certain intervals within the twenty-four hours. The frictional relation between the pinion 6 and the spur gear 5 freely and unobstructedly permits, however, the movement of the sector 20 and therefore the shut-off cam 14 to the releasing position shown in Fig. 1 or to the temporary locking position shown in Fig. 3 at any and all times. I might also add that I can move in similar manner, at all times, the shut-off into any one of its several positions.

What I claim is:

1. In an alarm clock, the combination of an alarm shut-off manually settable into two alarm locking positions and into an alarm releasing position, and automatic means for operating said shut-off from one of its locking positions to its releasing position, said automatic means comprising two members in constant frictional engagement.

2. In an alarm clock the combination of a shut-off manually settable into alarm locking and releasing positions, time controlled mechanism including a gear, a gear in mesh with the other gear, and a pair of meshing gears, one of which has a frictional engagement with said second gear, and the other of which is connected with the shut-off for movement therewith.

3. In an alarm clock, the combination of an escapement wheel, and a verge therefor, a shut-off cam for said verge having two locking portions and a connecting releasing portion, said cam being manually operable to bring the cam portions alternately into locking relation with the verge or the releasing portion into releasing relation with the verge, time controlled mechanism, and means including a frictional connection, for

transferring the effect of the time controlled mechanism to said shut-off.

4. In an alarm clock, the combination of an alarm shut-off, a gear movable with said
5 alarm shut-off, and a pair of frictionally connected gears, one of which is in mesh with said first mentioned gear.

5. In an alarm clock, the combination of an alarm shut-off, a sector connected with
10 said shut-off, a gear, time controlled mechanism for operating said gear, and a second gear in frictional relation with the first gear and in mesh with said sector.

6. In an alarm clock, the combination of

an alarm shut-off manually settable into two 15 alarm locking positions and into an alarm releasing position, a gear, time controlled means for operating said gear, a pinion frictionally connected with said gear, and a sector in mesh with said pinion and rigidly 20 connected with said shut-off.

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

HENRY WACHTELHAUSEN.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
