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H. KEIM.

TIME ALARM FOR TELEPHONES.

(Application filed June 14, 1897.)

(No Model.)

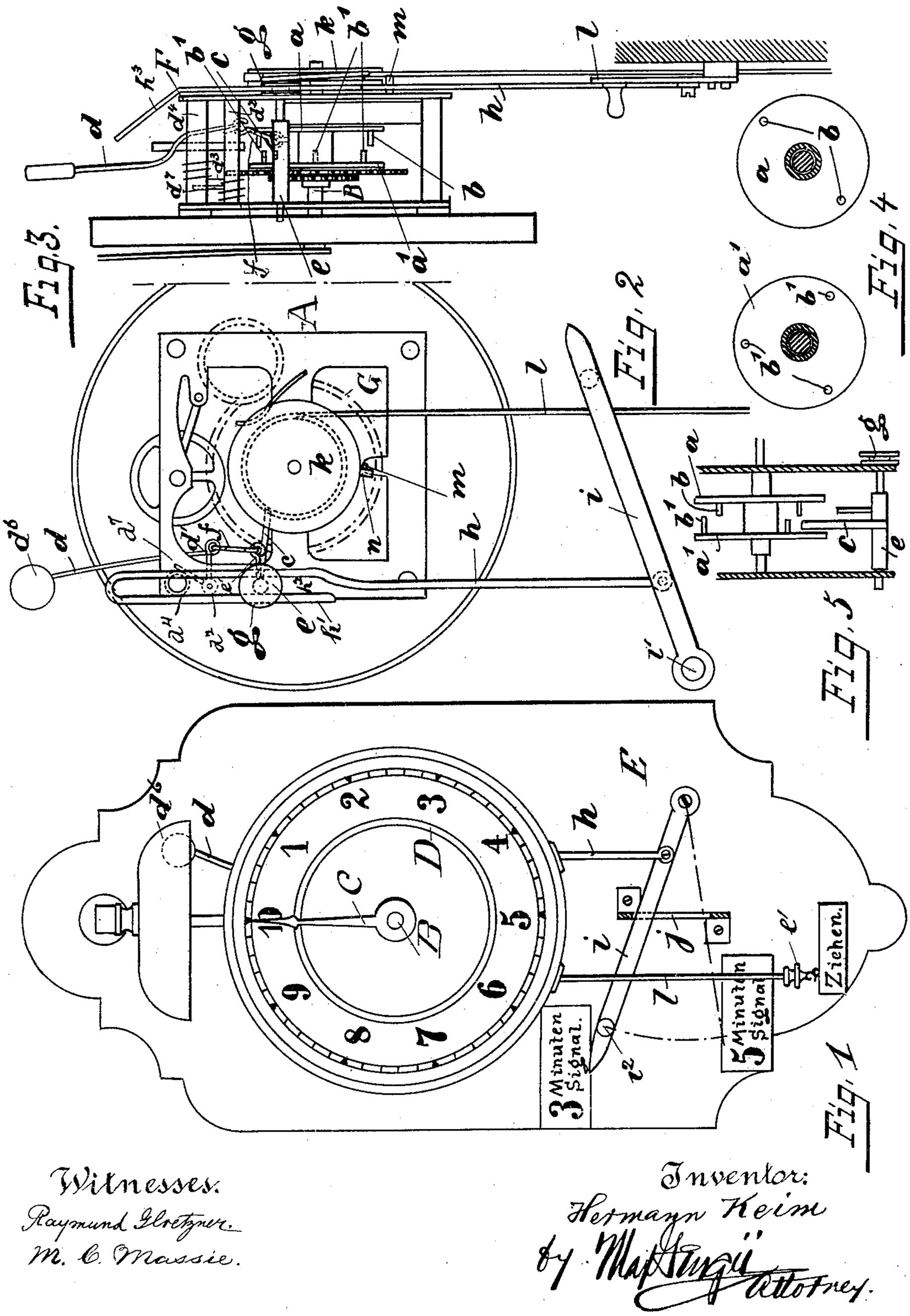

Fig. 1

Fig. 2

Fig. 3.

Fig. 4

Fig. 5

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TIME-ALARM FOR TELEPHONES.

SPECIFICATION forming part of Letters Patent No. 628,472, dated July 11, 1899.

Application filed June 14, 1897. Serial No. 640,695. (No model.)

To all whom it may concern:

Be it known that I, HERMANN KEIM, a citizen of the Empire of Germany, residing at Munich, Germany, have invented certain new and useful Improvements in Time-Measuring Devices for Telephones and the Like; 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.

My invention relates to an improved time-measuring device whereby certain predetermined intervals of time may be indicated.

My invention is particularly designed for use in connection with telephones where a certain charge is made for the use of the telephone according to the length of time it is in use.

The object of my invention is to provide a device which will measure off certain predetermined intervals of time and give a signal prior to the close of such interval of time, in order that the person using the telephone may have due notice of the near approach of the limit of the period of conversation, in order that such person may terminate the conversation in a proper manner within the short interval still remaining before the end of such period, or, if the conversation cannot be concluded within such period, will be duly apprised of the number of periods of time during which the telephone was in use.

My invention consists in the features, details of construction, and combinations of parts, which will first be described in connection with the accompanying drawings and then particularly pointed out in the claims.

In the drawings, Figure 1 is a front elevation of a device embodying my invention mounted upon a base-board; Fig. 2, a rear elevation of the same with the base-board removed; Fig. 3, a side elevation; Fig. 4, a detail front elevation of the counting-disks, and Fig. 5 a detail side elevation of said disks in place on their shaft.

Referring to the drawings, A is an ordinary clock-going train provided with the usual index-spindle B, which is equivalent to the ordinary minute-arbor in the usual clock mechanism. This spindle B carries the hand or index C, arranged to move over a dial D, graduated to indicate the desired number of minutes—in this case ten—as shown in Fig. 1. On the said spindle B are fixed two counting-disks a a', which are provided with studs b b', respectively, the said studs projecting from their respective disks toward each other. The disk a has two studs and the disk a' is supplied with three. A lever c is secured to a longitudinally-movable arbor e and arranged to be brought into engagement with the pins of either counting-disk a or a', as may be desired. The rear end of the arbor e is provided with a nut g, having a circumferential slot in its periphery, which is engaged by the two arms h' and h^2 of a loop formed in the upper end of a shifting rod h, pivotally attached to a setting-lever i, fulcrumed at i' and provided, preferably, with a handle or knob i^2. The lever i moves over and in frictional contact with a friction-plate j, fixed to any suitable part of the mechanism—as, for instance, the base-board E, which carries all of the mechanism. The upper end of the loop on the shifting rod h is bent at an incline and so arranged that when the said rod is drawn downward its incline h^3 will come into contact with the upper edge of the back plate F of the clock-frame, whereby said upper end of the rod is forced rearward and causes the arbor e to be shifted longitudinally in the same direction, thus bringing the lever c into a position for engagement with the pins b on the rear counting-disk a. When the rod h is pushed upward, its inclined portion h^3 will be above the upper edge of the back plate F, and the elasticity of said rod will cause it to force the arbor in a longitudinal direction toward the front of the apparatus, and thereby bring the lever c into a position where it will be engaged by the studs b' on the counting-disk a'. On the extreme rear end of the spindle B is placed a cord-drum k, around which is wrapped a cord l, preferably provided at its lower end with a suitable knob l', whereby the cord may be pulled downward, thus rotating the drum k and winding the clock mechanism. The said drum k is provided with a radially-projecting stop-pin n, arranged to contact with a pin m, projecting rearward from the back plate F.

In the normal condition of the apparatus the clock-spring (shown in dotted lines at G, Fig. 2) holds the stop-pin n in contact with

the pin m, while the cord l is wound to its full extent upon the drum k. When the cord l is drawn downward, and thereby unwound from the drum k, the stop-pin n is moved around until it again comes in contact with the pin m, the drum k thereby being rotated and the clock-spring G wound up. Upon releasing the cord l the clock-spring will move the drum k in the opposite direction until the stop-pin n again comes into contact with the pin m and the cord l is again wound upon the said drum k. The arbor e is also provided with a radially-projecting arm e', having an eye in its outer end, into which is hooked one end of a link f, whose other end engages an eye in an arm d', projecting radially from an arbor d^2, around which is coiled a spring d^3, one end of said spring being fixed to said arbor d^2, while the other end of said spring is carried around and secured to one of the posts d^4 of the clock-frame. The arm d' also carries an upward-projecting hammer-arm d, preferably somewhat flexible and provided at its upper end with a hammer d^5, arranged to strike a bell d^6. The arbor d^2 is further provided with a stop-arm d^7, rigidly secured to said arbor d^2 and arranged to come into contact with the post d^4.

The operation of the device thus described is as follows: The lever i is shifted so as to bring the lever c into contact with the pins of the desired disk and the cord l is pulled downward, thereby rotating the drum k one revolution and winding the clock-spring G. The cord is then released and the spring rotates the mechanism back to its normal position, whereby the pins on the respective counting-disks will depress the lever c intermittingly and cause the partial rotation of the arbor e, which by means of the arm e' and link f will pull down the arm d' and give a partial rotation to the arbor d^2, thereby winding or tightening the coils of the spring d^3 and at the same time pulling the hammer d^5 away from the bell d^6. As each pin on the respective counting-disks passes the lever c the latter is released and drawn upward by the resiliency of the spring d^3, which rotates the arbor d^2 in an opposite direction and throws the hammer d^5 forcibly against the bell d^6, the stop-arm d^7 limiting the rotation of the arbor d^2 by coming into contact with the post d^4.

Since there are two pins b on the counting-disk a, the lever c when in position to contact with said pins b will be operated twice during the revolution of said disk a, and the signal-bell d^6 will be struck at intervals of five minutes, since, as was previously stated, the disk a is fixed to the spindle B, which is arranged to rotate once in ten minutes. The pins b, however, are set in the disk a in such a position that the bell d^6 will be rung somewhat before the termination of each period of five minutes, as indicated by the dial D and index C, whereby the person using the telephone with which my apparatus is employed will have sufficient notice of the approach of the limit of the normal period as fixed by the rates of charges for the use of the telephone.

The counting-disk a' is provided with three pins b', and consequently when the lever c is in a position to be engaged by said pins it will be depressed three times during the revolution of said disk a', and the bell will thereby be rung three times in ten minutes. These pins b' are also set to ring the bell slightly in advance of the termination of three minutes for the same purpose as hereinbefore explained.

The two positions of the lever i are conveniently designated with signs, as shown in Fig. 1, which aid in setting said lever to the desired position either for a three-minute signal or for a five-minute signal.

Of course it is to be understood that the length of time for which the clock will run in making one revolution may be altered as desired in the construction of the apparatus, while the pins on the counting-disks may be increased or decreased, as may be necessary, according to the interval of time desired between the respective signals.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a time-measuring device for telephones and the like, the combination, with a clock mechanism, and means for winding the same, of counting-disks operated by said mechanism, a longitudinally-movable arbor, a lever on said arbor, means for shifting said arbor to bring the lever into engagement with any desired counting-disk, an additional arbor, a movable connection between the two arbors, a spring on the second arbor normally retaining the lever in a position to be engaged by the counting-disks, and a signal device operated on disengagement of the lever with the counting-disk.

2. In a time-measuring device for telephones and the like, the combination, with a clock mechanism, mounted upon a suitable back-plate, and means for winding the same, of counting-disks operated by said mechanism, a longitudinally-movable arbor, a nut on the arbor having a circumferential slot, a shifting rod having a loop whose arms enter the slot, and also having an inclined portion engaging or riding upon the edge of the back-plate, means on the arbor for engaging any desired one of the counting-disks, and a signal device operated by the lever.

3. In a time-measuring device for telephones and the like, the combination, with a clock mechanism, and means for winding the same, of counting-disks operated by said mechanism, a longitudinally-movable arbor, a lever and a projecting arm on said arbor, means for shifting the arbor to bring the lever into engagement with any one of the counting-disks, an additional arbor also having a projecting arm, a link connection between the two arms, a spring on the second arbor normally returning the lever in position to be

engaged by the disks, and a signal device operated by the lever.

4. In a time-measuring device for telephones and the like, the combination, with a clock mechanism, of a plurality of counting-disks arranged to be rotated by the clock mechanism, a longitudinally-movable arbor, a nut mounted on the arbor and having a circumferential slot, a shifting rod provided with a loop whose arms enter the slot in said nut, a lever mounted on the arbor and arranged to be shifted into engagement with any desired one of the counting-disks, and a signal device operated by the lever.

5. In a time-measuring device for telephones, the combination, with a clock mechanism, a drum arranged to wind the same, and means for rotating the drum, of counting-disks operated by the clock mechanism, a longitudinally-movable arbor, a lever on said arbor, a shifting rod arranged to move the arbor longitudinally whereby the lever is brought into engagement with any desired counting-disk and a signal device arranged to be operated by the lever.

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

HERMANN KEIM.

Witnesses:
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