(No Model.) 2 Sheets—Sheet 1.

C. A. JACQUES.

CLOCK.

No. 541,207. Patented June 18, 1895.

Fig. 2.

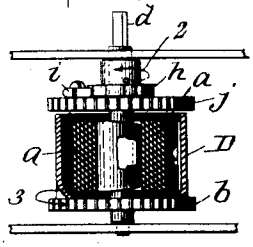


Fig. 1.

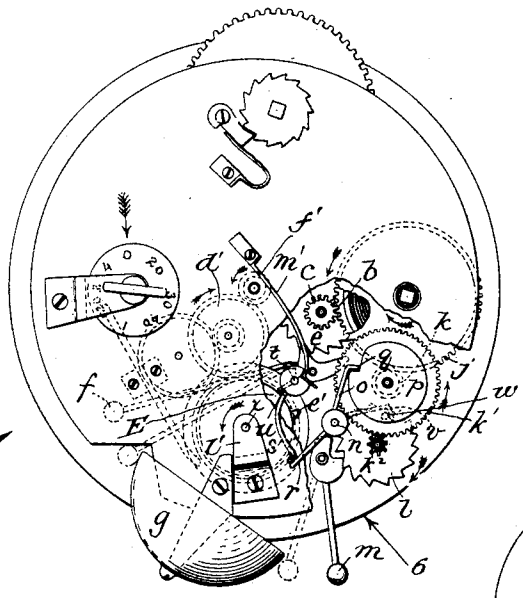


Fig. 3.

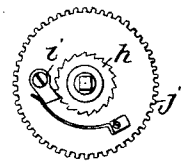


Fig. 4.

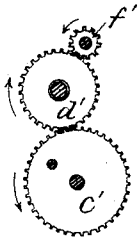
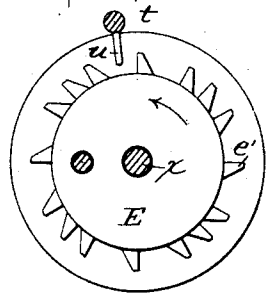


Fig. 7.



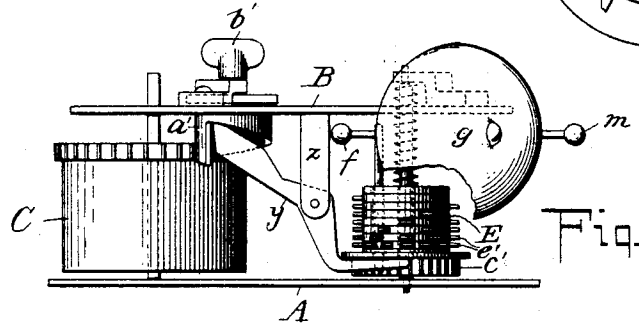
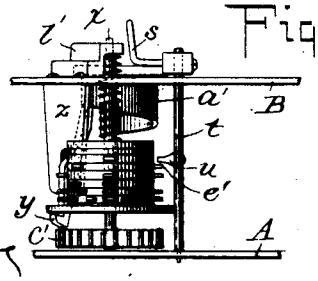


Fig. 5.

Fig. 6.



WITNESSES:

W. B. Shepherd.

F. C. Mason

INVENTOR

Charles A. Jacques,

BY Briesen & Knauth.

ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

C. A. JACQUES.

CLOCK.

No. 541,207. Patented June 18, 1895.

Fig. 10.

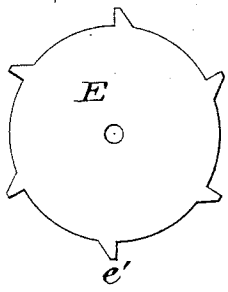


Fig. 8.

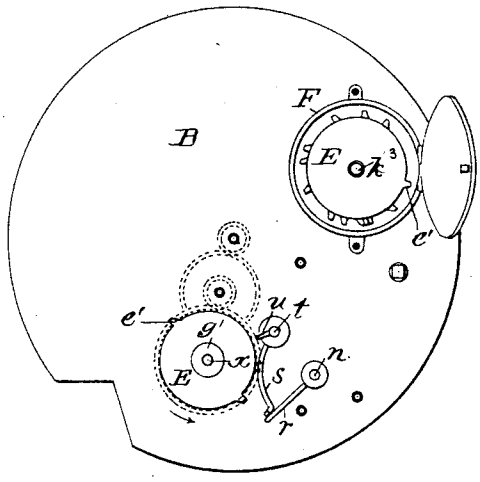


Fig. 12.

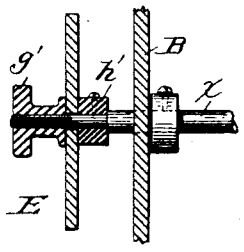


Fig. 11.

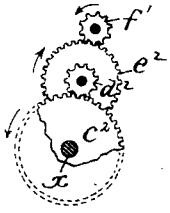
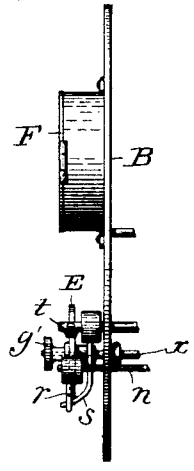


Fig. 9.



WITNESSES:

R. B. Shepherd.

Fred. C. Morse

INVENTOR

Charles A. Jacques,

BY Briesen & Knauth

ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES A. JACQUES, OF NEW YORK, N. Y.

CLOCK.

SPECIFICATION forming part of Letters Patent No. 541,207, dated June 18, 1895.

Application filed April 26, 1894. Serial No. 509,056. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. JACQUES, a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Clocks, of which the following is a specification.

My invention relates to clocks and has for its object to provide the same with means for giving an alarm at different predetermined recurring intervals during a predetermined period of time, and to this end my invention consists in providing suitable tripping devices or their equivalents which will be driven by the clock to trip or set off the alarm at predetermined recurring periods. This mechanism I denominate a repeating alarm.

I attain the object of my said invention by the mechanism described herein, illustrated in the accompanying drawings, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a rear view, partly broken away, of a clock having one form of my invention applied thereto. Figs. 2 and 3 are detail views of the spring-barrel for propelling the alarm. Fig. 4 is a plan view of a suitable gear for transmitting movement from the center pinion of the clock to the tripping-wheel of the alarm. Fig. 5 is a side view of the construction as represented in Fig. 1 looking in the direction of the arrow 5, some of the parts being omitted for clearer representation. Fig. 6 is a similar view taken in the direction of the arrow 6, some of the parts being omitted, as before. Fig. 7 is an enlarged plan view of the tripping-wheel. Fig. 8 is a rear view of a clock, showing my preferred form of tripping device applied thereto, the same consisting of a removable tripping disk or wheel preferably driven from the center pinion, as will be more fully hereinafter set forth. Fig. 9 is an edge view of the back plate of the clock shown in Fig. 8. Fig. 10 is a detail view of a single tripping-disk or wheel. Fig. 11 is a detail view of the train for communicating motion from the center pinion to the arbor of the tripping-disk. Fig. 12 is an enlarged detail view showing one method of removably attaching the tripping-disk shown in Fig. 10 to its arbor.

I will proceed to describe the mechanism shown in the accompanying drawings which show forms of my invention, without, however, limiting myself to the precise construction therein shown and described, as it is obvious that the devices and their construction and arrangement may be greatly varied without departing from the spirit of my invention.

In the drawings, A and B (see Fig. 5) represent the front and rear plates respectively of a clock movement.

C represents the going-barrel or other suitable driving mechanism for the clock.

D represents the going-barrel or driving mechanism for the alarm train. The arbor d of the going-barrel has attached to it by one end a coil-spring a, the other end of which is attached to the going-barrel in the usual manner. Secured rigidly upon the arbor d is a gear b upon which the going-barrel is mounted. From the gear b motion is communicated to a suitable pinion c, (Fig. 1) upon whose arbor is carried a ratchet e which co-operates with suitable pawl and ratchet mechanism to actuate a hammer f to strike a bell g or other audible signal. The apparatus which has just been described is, however, the regular alarm train and may, if desired, be omitted, the other train which will presently be described being capable of use as a regular set alarm. Mounted also upon the arbor d is a ratchet h with which co-operates a spring-pressed pawl i which is carried by a gear j loosely mounted upon the same arbor d so that when the arbor d is turned in a direction contrary to the direction of the arrow 2, Fig. 2, to wind the spring a, the pawl will slide over the ratchet teeth and the gear j will remain stationary; but when the spring has been released, as will be described, the pawl locks the gear j to the ratchet i, and they both travel together in the direction indicated by the arrow 3 in Fig. 2.

Meshing with the gear j is a pinion k which carries also upon its arbor a gear k' which meshes with a pinion k^2 which carries on its arbor ratchet l which actuates a hammer m which co-operates with the bell g. Upon a rock-shaft n is mounted an arm o which co-operates with a stop disk p mounted on or driven from the arbor carrying the gear k'. This disk is provided with a notch q in its circumference in which the toe of the arm o is adapted to be entered. Carried also upon the rock-shaft n is an arm r in the path of a

tripping-lever s carried by a rock-shaft t upon which is also mounted a detent u (Fig. 1) which is adapted to contact with the tripping-wheel, and normally held in such position by a spring m' as will be more fully hereinafter set forth. Mounted also upon the rock-shaft n is an arm v which is adapted to co-operate with a pin w on the ratchet l.

The mechanism last described constitutes a device for setting off the alarm, although this taken specifically, may be varied, as I may use any suitable device for striking the alarm, which will vary under the varying conditions of practice.

The tripping-wheel is built up of a pile of tripping-disks E carried by a suitable arbor, as x. These disks are provided with one or more spurs e', which are spaced around the periphery of the disks so as to engage with the detent u at predetermined intervals during the rotation of the tripping-wheel.

It will be observed that the detent u is of such width as to engage with the spurs on but one disk at a time, and as the spurs are spaced around the periphery of each disk to come opposite the detent at different recurring periods, some means must be adopted for raising and lowering the tripping-wheel to bring the desired disk into position for engaging the detent by means of its spurs. This mechanism I have shown as a lever y pivoted in a stirrup z having one end engaging under the tripping-wheel to raise the same, and its free end engaging under a cam cylinder a' or other cam device, which can be turned by means of a button b' to depress the free end of the pivoted lever y, and to cause the same to lift the tripping-wheel to any predetermined or desired extent to bring any desired disk in position to operate the detent u. This tripping-wheel is loosely carried upon the arbor x so as to be movable longitudinally thereon, but at the same time to be rotated thereby.

Mounted rigidly upon the arbor x is a gear c' with which meshes a gear d' (Fig. 4) which in turn gears with the center pinion f' of the clock. Thus, the tripping-wheel is driven by the rotation of the center pinion, but this tripping-wheel may be driven from other moving parts of the clock, if desired. This center pinion makes one rotation in one hour and the gearing is so cut and proportioned as to cause the tripping-wheel to make one rotation in every four hours. Now, if it is desired to actuate the repeating alarm once every four hours the button b' is manipulated so as to bring the tripping-disk having but a single spur in position for engagement with the detent u. If, however, it is desired to actuate the alarm twice in four hours, the disk having two spurs is brought into position for engagement, it being well understood, however, that instead of a pile of disks, a cylinder provided with pins may likewise be used with good effect.

In Figs. 8, 9, 10, 11 and 12, Sheet 2, I have shown a modification illustrating the preferred form of my invention, using similar letters of reference to indicate similar parts. In this modification the arbor x, which is driven in any suitable manner as before, but which I have shown as driven from the center pinion f' through the medium of gears e^2, d^2 and c^2 is provided with means such as a set-screw g', a block h' for removably attaching a single disk thereto instead of having a plurality of disks to make up a tripping-wheel and moving the same longitudinally on the arbor to bring the disks into proper position. I may also mount upon the back-plate B a suitable receptacle F provided centrally with a post k^3, for the accommodation of the spare disks; that is to say, the disks that are not in use. The disks E shown in Figs. 5, 6 and 7 may also be removed by removing the bracket l' and unstepping the arbor x. The disks are therefore removable in both the preferred and modified form, although, if found desirable, the disks of either construction may be rigidly secured to their arbor.

The operation of my device is as follows: The clockwork being in motion, at the proper predetermined time, a spur e' will come in contact with the detent u, thereby rocking the rock-shaft t against the tension of its spring m'. When the spur has passed off of the detent, the spring will cause the rock-shaft to be swung back to its initial position, bringing the tripping-lever s violently into contact with the arm r, lifting the toe of the lever o out of the notch q in the wheel p, also causing the arm v to release the pin w on the ratchet l. The alarm mechanism now revolves freely and causes the hammer m to strike the bell. The toe of the arm o resting on the face of the disk p while the same is revolving, thus holds the arm v away from the ratchet k. When, however, the notch in the disk p comes under the toe of the arm o, the said toe will drop into the notch again, thus rocking the rock-shaft n to cause the arm v to engage the pin w, thus locking the alarm mechanism by bringing the arm v into the path of the pin w again. This operation is repeated as often as a spur comes in contact with the detent u, and by bringing spurs in contact with the detent u the alarm may be given at predetermined times which, as will be recognized, is especially valuable where medicine has to be administered at predetermined times.

What I claim, and desire to secure by Letters Patent, is—

1. In an alarm clock, the combination of a main driving train, an alarm train with mechanical releasing means therefor, tripping disk or disks interposed and forming mechanical connection between the main train and the mechanical releasing means for said alarm train, and an adjusting device for moving said disk or one of said disks in the direction of its axis into position to move the alarm releasing mechanism, whereby the alarm can be operated at different predetermined recurring intervals, substantially as described.

2. In a clock, the combination of an alarm, releasing mechanism therefor, a cylindrical tripping-wheel mounted in proximity to the releasing mechanism, and means for adjusting the tripping wheel longitudinally of its axis and for holding the same in its adjusted position, whereby the alarm can be operated at different predetermined recurring intervals, substantially as described.

3. In a clock, the combination of an alarm train, mechanical releasing mechanism therefor, a cylindrical tripping-wheel, a pivoted adjusting lever engaging therewith, and a cam device engaging the free end of the pivoted lever, whereby the tripping-wheel can be moved and different portions of the working face can be brought in line with releasing mechanism to move the same, substantially as described.

4. In an alarm clock, the combination of an alarm train, releasing mechanism therefor, a spring actuated rock-shaft, an arm upon the rock-shaft adapted to release the alarm train, a detent on the rock-shaft, and a tripping device for moving the detent to rock the shaft against the tension of the spring, whereby when the detent has been released from the tripping-wheel the shaft will be rocked to move the arm carried thereby into engagement with the releasing device by a sudden positive movement, substantially as described.

5. In an alarm clock, the combination of an alarm train, releasing mechanism therefor, a spring actuated rock-shaft, an arm upon the rock-shaft and adapted to release the alarm train, a detent on the rock-shaft, and a tripping wheel for moving the detent to rock the shaft against the tension of the spring, whereby when the detent has been released from the tripping-wheel the shaft will be rocked to move the arm carried thereby into engagement with the releasing device by a sudden positive movement, substantially as described.

6. In an alarm clock the combination of a main driving train, a main alarm connected with and released thereby, and a second or auxiliary alarm also connected with the main driving train and released thereby at recurring intervals between the time for which the main alarm can be set, substantially as and for the purposes specified.

CHARLES A. JACQUES.

Witnesses:
GEO. E. MORSE,
FERNANDO SOLINGER.