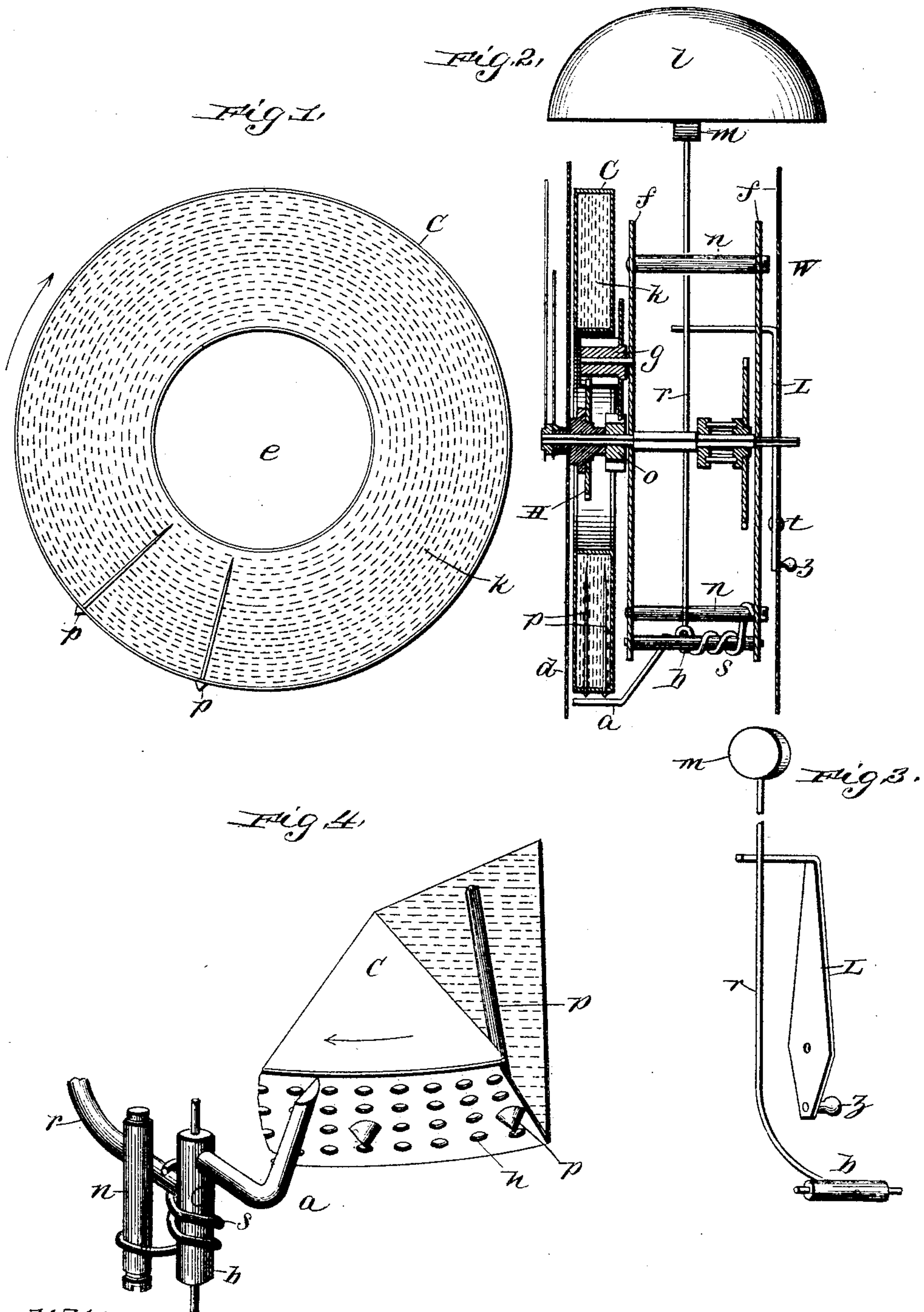


(No Model.)

A. EVANS & B. HOLLENBACK.
PROGRAM ALARM CLOCK.

No. 497,019.

Patented May 9, 1893.



Witnesses:
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UNITED STATES PATENT OFFICE.

ALBERT EVANS AND BERT HOLLENBACK, OF SPRING HILL, KANSAS.

PROGRAM ALARM-CLOCK.

SPECIFICATION forming part of Letters Patent No. 497,019, dated May 9, 1893.

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To all whom it may concern:

Be it known that we, ALBERT EVANS and BERT HOLLENBACK, citizens of the United States, residing at Spring Hill, in the county of Johnson and State of Kansas, have invented a new and useful Mechanical Automatic Program-Alarm Attachment for Clocks; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to improvements in mechanical automatic program alarm attachments for clocks and our invention consists in connecting with the ordinary clock-work mechanism which operates the hands, a rotating cylinder, drum, or wheel, provided with removable and adjustable pins, adapted to successively operate the alarm.

Our invention consists in a cylinder which makes a complete revolution in every twelve hours, and provided with holes or perforations arranged in rows, in horizontal and vertical planes, removable pins fitted to these holes and held in place by a suitable packing of fibrous material contained within the cylinder, a pivoted arbor *b* by the partial rotation and return of which the alarm is sounded, and carrying an arm with which the pins of the rotating cylinder successively come in contact, whereby the arbor is partially rotated, and a means for throwing the alarm out of action, and various details of construction, all of which we shall hereinafter fully describe.

The object of our invention is to provide a program clock that is simple in construction, and one that may be manufactured cheaply, which is capable of sounding a number of successive alarms during the day, said alarms taking place at any time in the day, and as many times a day as may be desired, at regular or irregular intervals, with such restrictions as shall hereinafter appear; and that once set, it will so alarm from day to day, until purposely changed. It is especially adapted for use in school-rooms where the hours are divided into stated periods for accomplishing certain work. We attain these objects by the mechanism illustrated in the accompanying drawings in which—

Figure 1 represents an end view of the cylinder, with the plate removed; Fig. 2 a view in cross section of the cylinder; showing the

frame and part of the gearing of the ordinary clock, the dial, hands, pivoted arbor and the bell. Fig. 3 is a view of the silencing device. Fig. 4 is an enlarged view of a part of the cylinder and the pivoted arbor, with the flat and round sided arm with which the pins come in contact.

Similar letters refer to similar parts throughout the several views.

The plates *f* and pillars *n* constitute the frame of the clock, the works are the ordinary clock-work and we show only the parts which relate to our invention. The cylinder *C* is attached, back of the dial *d* directly to the hollow arbor which carries the hour-hand, thus revolving in conjunction with it, the cylinder having a recess *e* to admit the usual gearing *g* between the center pinion *O* and hour-wheel *H*. The cylinder *C* is perforated or provided with holes *h*, which are of suitable size to receive the pins *p*. The interior of the cylinder *C* is filled with the packing *k*, of such material that it may be easily penetrated by the pins *p* and also securely hold them in place and prevent their falling out. The pins *p* have a cone shaped head, and are pointed so that they can penetrate the packing without difficulty.

The pivoted arbor *b* is supported by its pivots in the frame *f*, and carries a hammer *m* on the rod *r*, and an arm *a* which extends diagonally across the cylinder *C* in such a way as to be raised by the pins *p* and at such an angle that one hole in the cylinder will pass from under the arm each minute. The side of the arm *a* which first touches the sloping heads of the pins *p* is rounding and the side that is next to the pin after dropping from the same is flat, and the plane of the flat side is at right angles to a plane intersecting lengthwise the arbor *b* and arm *a*. The arbor *b* is held in the frame *f* at such a point that the flat side of the arm *a* lies parallel with the sloping side of the cone headed pin from the top of which it has just previously dropped. The arm *a* is held from contact with the cylinder, by the hammer rod *r* resting against the pillar *n*, which also holds the hammer *m* from contact with the bell, which would deaden the sound.

As a pin *p* in the cylinder comes in contact with the arm *a*, the arm is raised whereby the arbor *b* is partially rotated, which brings the hammer back, through the rod *r*, when relieved

of the pin the spring *s* throws the arbor back to position, the hammer *m* on the flexible rod *r*, strikes the bell *l* which sounds the alarm.

The holes in the cylinder are arranged in four parallel rows, one hundred and eighty holes in each row, which makes a total of seven hundred and twenty holes, the number of minutes in twelve hours, in which time the cylinder makes one revolution. It will follow that if the holes are arranged in line square across the cylinder, one hole would pass from under the diagonal arm *a* every minute and a pin inserted in any one of the holes would give an alarm, provided no two pins were in the same row across the cylinder, in which case there would not be room between them for the arm to descend.

To further illustrate the operation of the mechanism in attaining the results desired we will describe the manner of setting the clock to alarm in harmony with the following partial program for a school: Opening 9.00, Class 9.05, Class 9.17, Class 9.33, Class 9.45, &c. The hands of the clock are turned to indicate 9.00 a pin is inserted at the hole which has last passed under the arm *a*, the hands are then turned to 9.05 and a pin is inserted in the hole which has passed under the arm *a* and so on in like manner for every alarm desired, provided no two are within four minutes. Then the clock is set to the correct time, as the cylinder revolves and the day advances the alarm will sound at the time intended. As it is not desirable that the clock should strike the program through the night, we provide a silencing device or lever *L*, which turns on the fulcrum rivet *t*, secured to the case *W*, by moving the lever in the proper direction, by means of the knob *z*, the lever comes in contact with the hammer rod *r* thereby rotating the arbor *b* and raising the arm *a* so as not to be operated by the pins *p*. The lever *L* is provided with a knob *z* by which it is operated, which extends through a slot in the case, the slot regulating the distance the lever is to be moved. The friction between the case *W*, and the lever *L*, is sufficient to hold the lever in either position, for the alarm to sound or remain silent.

It is obvious that if it is desired to change the program so as not to ring at any time at which it has been ringing, the corresponding pin is withdrawn from the cylinder, while if it is desired to insert a stroke a corresponding pin is introduced. A suitable case is provided, only a part of which is shown at *W*.

We do not desire to be understood as limiting ourselves to the exact mode of construction set forth in the foregoing specification and drawings, as it is evident that a number of changes may be made, without departing from the spirit of our invention. For instance the holes in the cylinder may be arranged in rows diagonally across the cylinder, and the arm *a* extend square across the

cylinder, which would give the same results, the reason we do not make them that way is, the perforated material having holes not arranged in rows at right angles is not easily secured, or the holes could be arranged in three rows around the cylinder, two hundred and forty holes in each row, in which case the alarm could be made to sound at intervals of three minutes each or any additional number within twelve hours or the holes could be arranged in any number of rows more or less, the number of holes in the row across the cylinder being equal to the number of minutes in which the clock cannot alarm twice. The cylinder could have fourteen hundred and forty holes and be geared so as to make one revolution in twenty-four hours, which could strike a separate program for the day and one for the night.

We are aware that, prior to our invention, alarm clocks, and call and alarm bells of various descriptions have been made and actuated by a mechanism which would set off the alarm mechanism from time to time. We do not claim such a combination broadly but

What we do claim as our invention, and desire to secure by Letters Patent, is—

1. In a mechanical automatic program alarm attachment for clocks, a rotating cylinder *C*, secured to the hollow hour-hand arbor *H* and having a recess *e* and provided with perforations or holes *h* arranged in rows in horizontal and vertical planes, and filled with the packing *K*, and the removable, cone-headed pins *p* held in the said holes *h* by the fibrous packing *K* contained within the cylinder, in combination with the flat and round sided arm *a* extending diagonally across the cylinder and adapted to come in contact with the pins *p*, and having its pivoted arbor *b*, spring *s*, and hammer *m* on the rod *r*, as and for the purpose specified.

2. In a mechanical automatic program alarm attachment for clocks a cylinder *C* secured to the hollow hour-hand arbor *H*, and having a recess *e*, and provided with holes *h*, removable cone-headed pins *p* in said holes, and held in place by the packing *K*, in combination with the arm *a*, extending diagonally across the cylinder, and mounted on its pivoted arbor *b* which carries the spring *s*, hammer *m*, on the rod *r*, adapted to sound the bell *l*, a silencing lever *L* adapted to come in contact with the rod *r*, and partially rotate the arbor *b*, thereby raising the arm *a* so as not to be operated on by the pins *p*, substantially as, and for the purpose specified.

In testimony whereof we affix our signatures in the presence of two witnesses.

ALBERT EVANS.
BERT HOLLENBACK.

Witnesses:

JNO. S. GASAWAY,
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