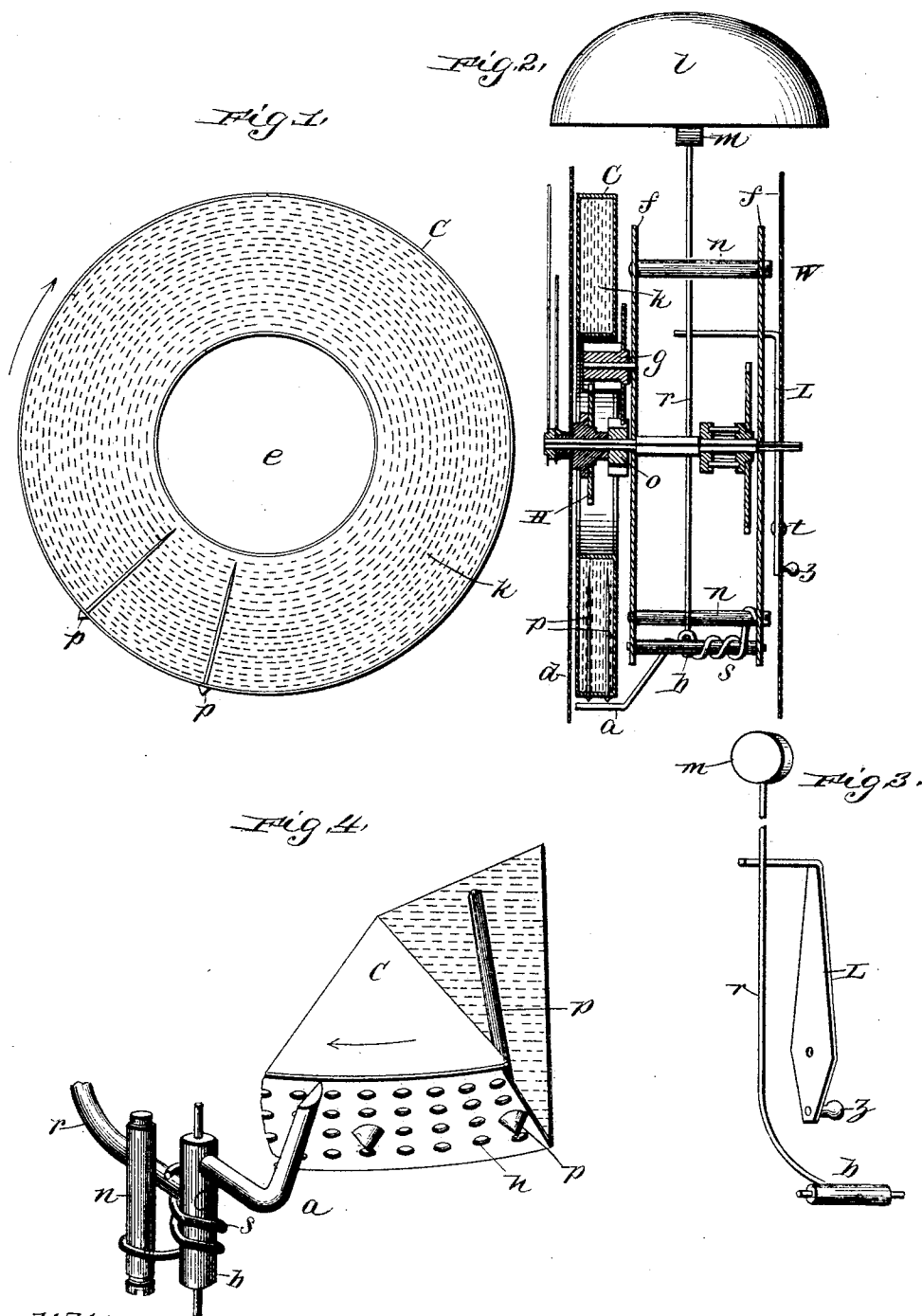


(No Model.)

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.

Application filed January 7, 1892. Serial No. 417,332. (No model.)

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
 5 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
 10 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
 15 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
 20 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
 25 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,
 30 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
 35 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
 40 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
 45 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.

50 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 correspond-
 55 ing 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
 60 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
 65 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
 70 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
 75 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 four-
 80 teen 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, 85
 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 90
 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*,
 105 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
 120 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,
 J. R. GRISTY.