

(No Model.)

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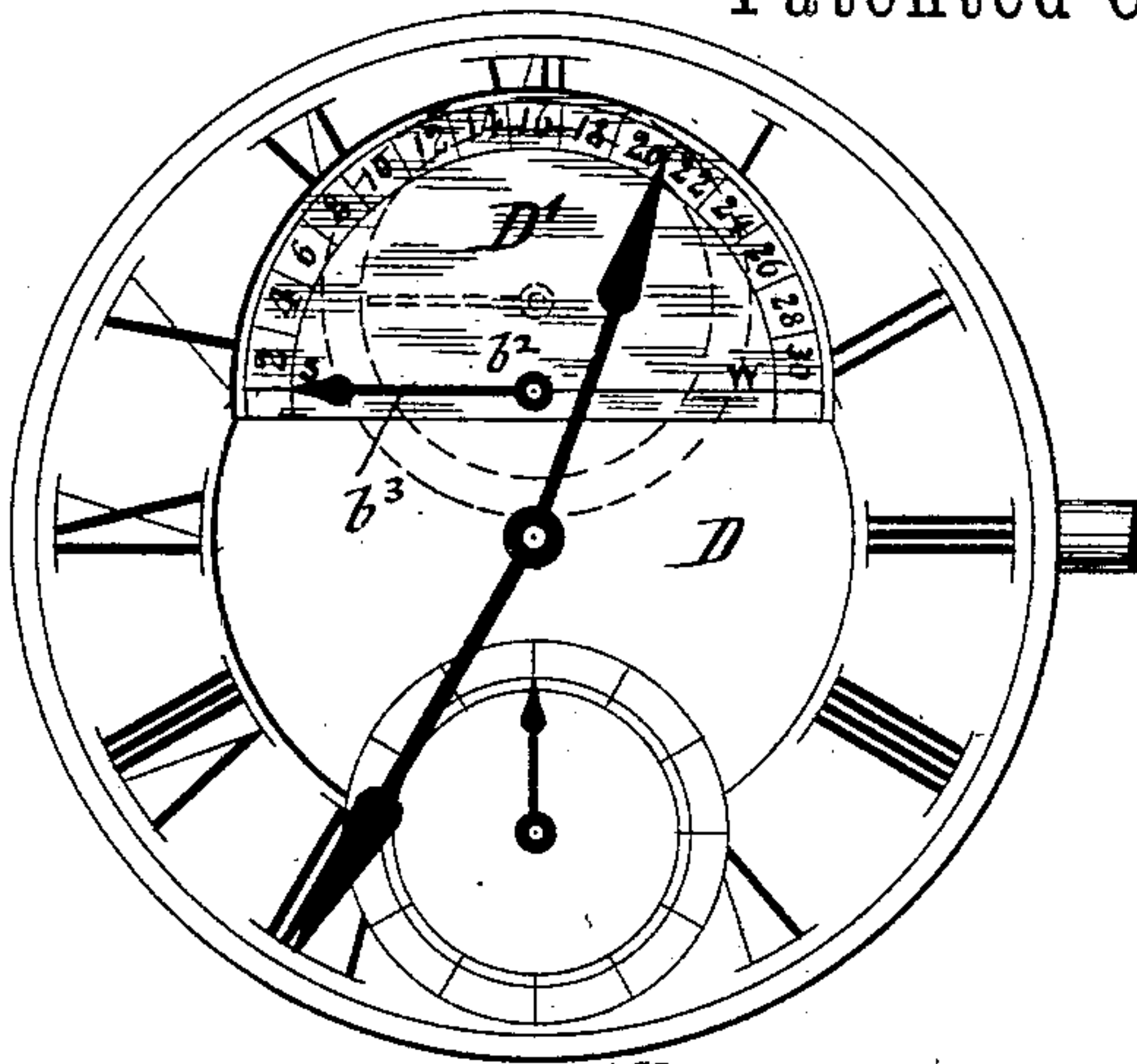
A. M. BACHRACH.

WINDING INDICATOR FOR TIME PIECES.

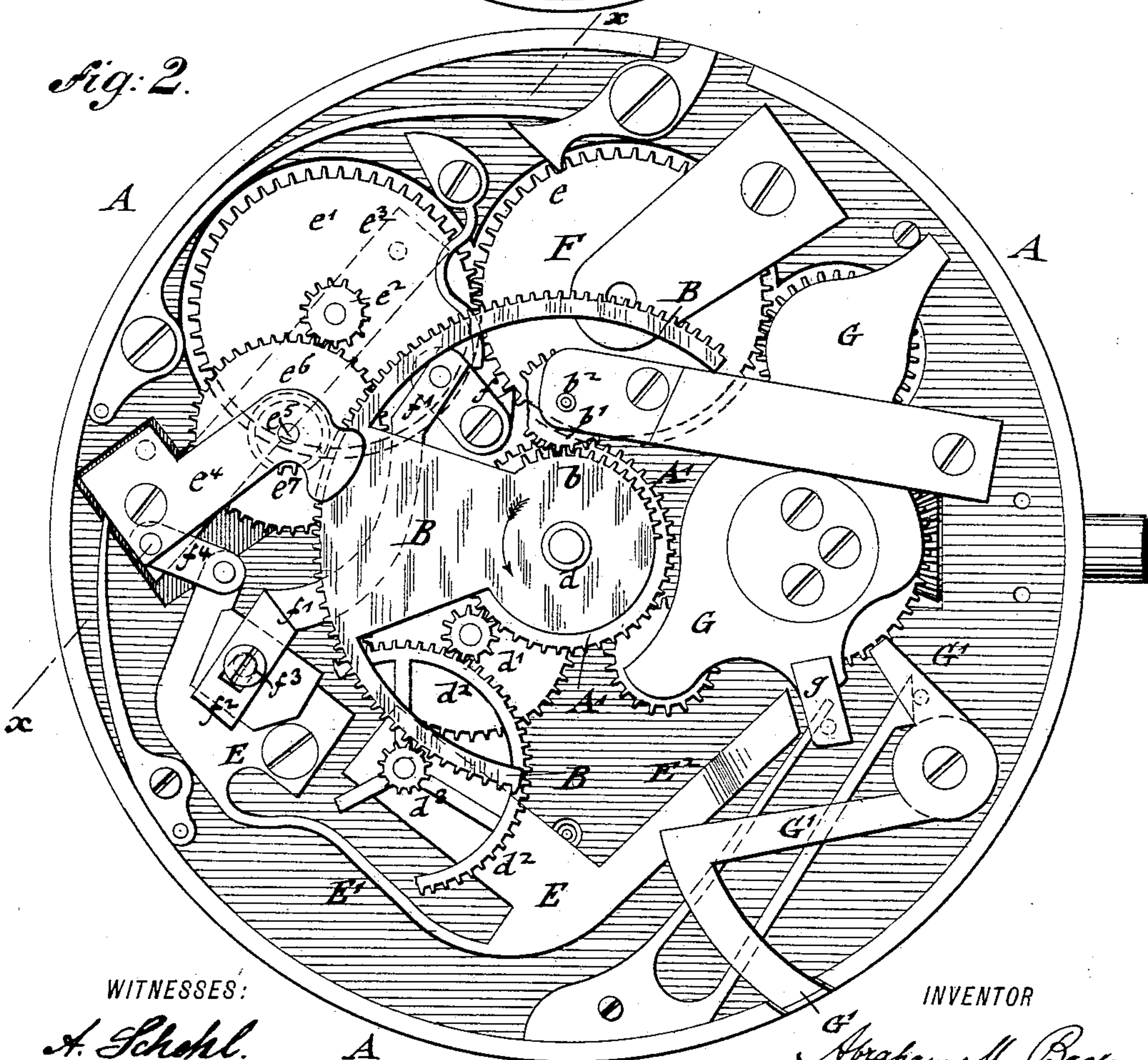
No. 390,333.

Patented Oct. 2, 1888.

*Fig. 1.*



*Fig. 2.*

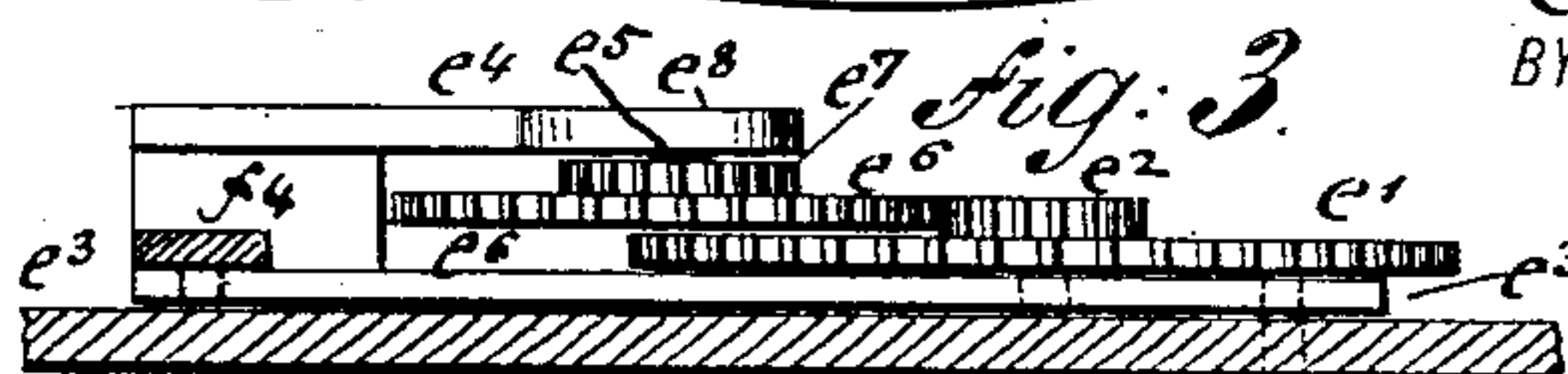


WITNESSES:

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BY *Georg & Paegener*  
ATTORNEYS.





(No Model.)

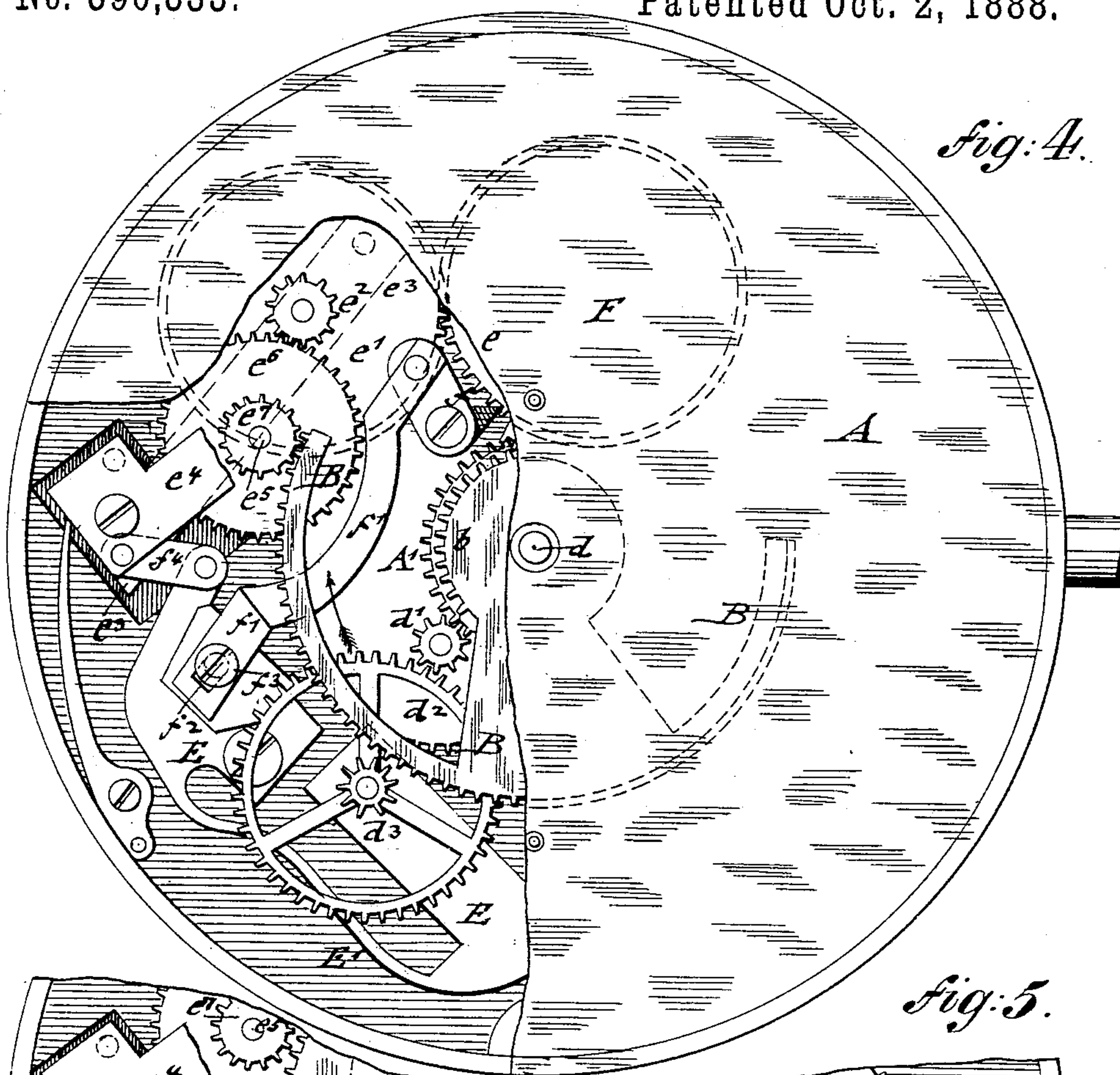
2 Sheets—Sheet 2.

A. M. BACHRACH.

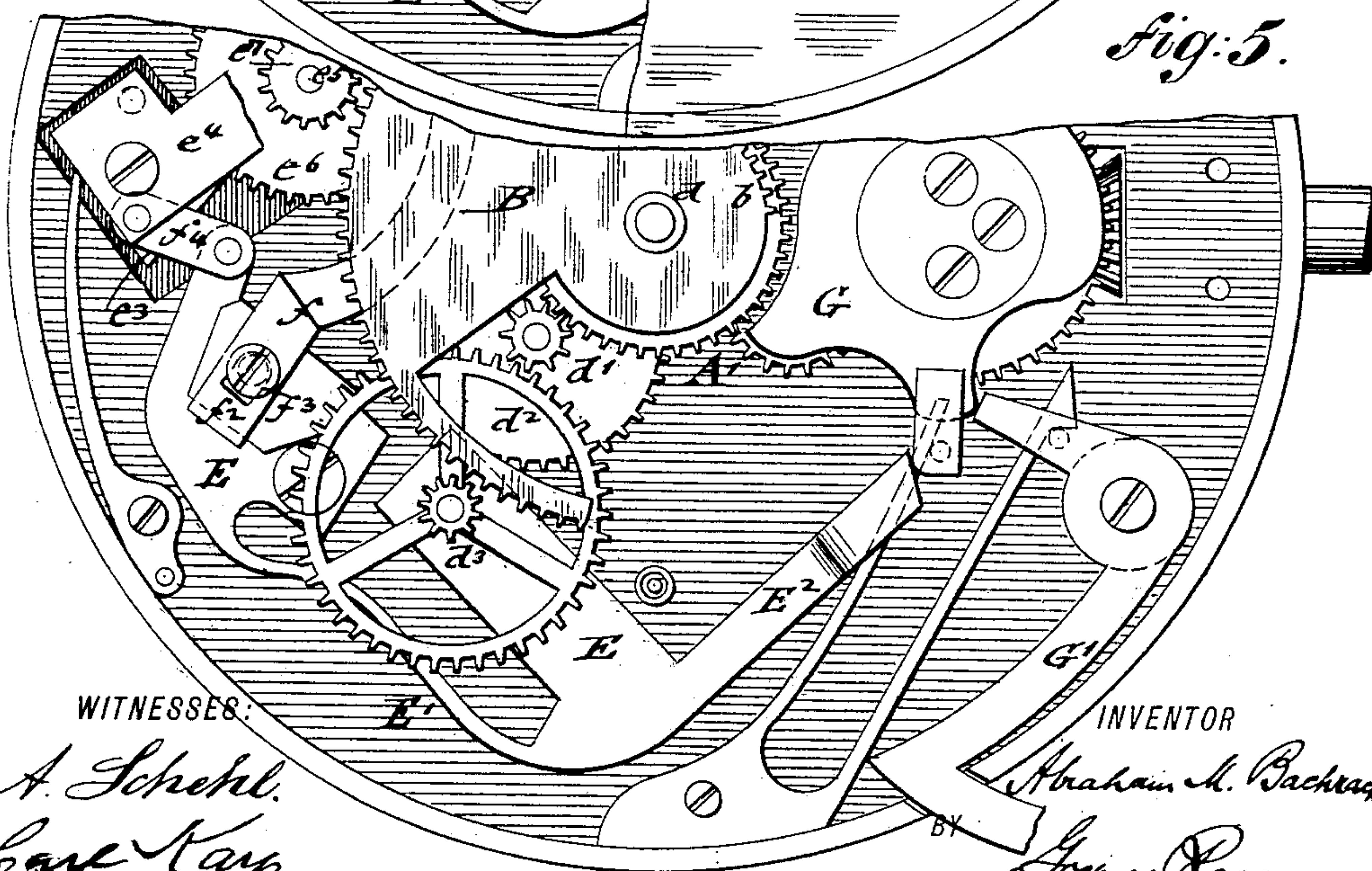
WINDING INDICATOR FOR TIME PIECES.

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*Fig: 4.*



*fig:5.*

~~WITNESSES:~~

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# UNITED STATES PATENT OFFICE.

ABRAHAM M. BACHRACH, OF NEW YORK, N. Y.

## WINDING-INDICATOR FOR TIME-PIECES.

SPECIFICATION forming part of Letters Patent No. 390,333, dated October 2, 1888.

Application filed July 27, 1887. Serial No. 245,415. (No model.)

*To all whom it may concern:*

Be it known that I, ABRAHAM M. BACHRACH, of the city, county, and State of New York, have invented certain new and useful  
5 Improvements in Attachments to Time-Pieces, of which the following is a specification.

This invention relates to an improved attachment to watches and clocks, by which is indicated on the dial whether the movement  
10 has run down and requires rewinding, so that the watch or clock is wound up at the proper time, and by which, furthermore, the overstraining of the mainspring in winding up the same is obviated.

15 The invention consists of an attachment to the movements of watches and clocks, which attachment is operated by the driving mechanism, and which comprises a toothed segment that is loosely applied to the arbor of  
20 the hour-wheel, said segment being provided with a smaller segment that meshes with a pinion on the arbor of a pointer that is moved along an auxiliary dial on the face of the main dial, said auxiliary dial and pointer indicating  
25 at any time the number of hours which the movement has been running. The toothed segment and pointer are set to their initial or starting position, when winding up the watch, by the action of the spring-barrel and suitable  
30 intermediate mechanism, and moved by the hour-wheel and suitable intermediate gearing. To permit the setting of the hands by the hand-setting devices without moving at the same time the toothed segment and pointer, the seg-  
35 ment is moved out of gear with the motion-transmitting mechanism by the hand-setting lever, as will be fully described in detail hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1  
40 represents a front elevation of a watch with my improved attachment for indicating the time which the movement has been running. Fig. 2 is a front view of a watch-movement with my improved attachment, the dial being  
45 removed and the watch shown in the act of going. Fig. 3 is a detail vertical transverse section on line *x x*, Fig. 2; and Figs. 4 and 5 are top views of the movement with my improved attachment, showing the same, re-  
50 spectively, in the act of winding it up and in the act of setting the hands.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents a watch or clock movement of any approved construction. 55 To the arbor *d* of the hour-wheel A' of the same is loosely applied a toothed main segment, B, which is provided nearer to said arbor with a smaller toothed segment, *b*, concentric to the former. The toothed segment *b* 60 meshes with a pinion, *b'*, on the arbor *b''* of a pointer or indicator, *b'''*, the arbor passing through the dial D, which is provided with an auxiliary dial, D', of semicircular or circular shape at that portion diametrically opposite 65 to the seconds-dial, said auxiliary dial being preferably depressed, so that the pointer *b'''* can move over the same without interfering with the hour and minute hands of the move-  
70 ment.

It is preferable to make the auxiliary dial D' of semicircular shape, as shown in full lines in Fig. 1, though it may also be made in circular shape, as indicated by dotted lines in Fig. 1. 75

The depressed auxiliary dial D' consists of an hour-graduation that runs up to thirty, forty-two, or more hours, according to the time for which the watch is to run. At one end of the dial is arranged the capital letter "S," indicating "stop," and at the other end the capital letter "W," indicating "wind," which indicate, when the pointer arrives at the same, that the time-piece is wound up sufficiently or that it needs rewinding. 85

The main segment B is set in motion by a gear-wheel connection with the hour-wheel A', so as to move with the movement, which gear-wheel connection consists of an intermediate pinion, *d'*, a gear-wheel, *d''*, and a pinion, *d'''*, 90 on the arbor of the gear-wheel *d''*, the pinion *d'''* meshing with the main segment B, as shown clearly in Fig. 2. The arbor of the gear-wheel *d''* and pinion *d'''* is supported in bearings of a fulcrumed lever, E, which is composed of two 95 parts that are connected by an intermediate spring portion, E', the latter serving to keep the pinion *d'''* in mesh with the teeth of the segment B, except when the same is withdrawn from the same while winding up the 100 movement or setting the hands. As the main segment B is moved by the gears *d' d'' d'''*, con-



nected with the hour-wheel of the movement, it is obvious that the pointer moves over the auxiliary dial  $D'$  and indicates clearly the condition of the mainspring—that is to say, how many hours the same has been running and how many hours it has yet to run. When the pointer arrives at the opposite end of the auxiliary dial  $D'$ , the movement is nearly run down and requires rewinding. The main segment B has then arrived in the position shown in Fig. 4, and has to be returned to its initial or starting position (shown in Fig. 2) by the winding motion of the spring-barrel F and a suitable motion-transmitting mechanism. This mechanism is interposed between the mainspring-barrel and the segment B, and consists of a gear-wheel transmission,  $e' e^2 e^6 e^7$ , supported on a pivoted lever,  $e^3$ , and of a pawl-and-lever connection,  $f f'$ , between the barrel of the mainspring and the fulcrumed lever E. The gear-wheel transmission consists of a gear-wheel,  $e'$ , that meshes with the ratchet-wheel  $e$  on the spring-barrel F, the arbor of the gear-wheel  $e'$  carrying a central pinion,  $e^2$ . This arbor is supported on the pivoted and spring-actuated lever  $e^3$ , which is arranged in a depression of the main plate of the movement. To the outer end of the lever  $e^3$  is attached a shorter arm or bridge,  $e^4$ , that carries an arbor,  $e^5$ , to which are applied a gear-wheel,  $e^6$ , that meshes with the pinion  $e^2$ , and a pinion,  $e^7$ , that meshes with the main segment B when the mainspring is to be wound up and the segment returned to its initial position. The bridge  $e^4$  is provided with a guard,  $e^8$ , that extends over the main segment B, and serves as a guide for the same during its motion in either direction.

During the winding-up motion of the barrel F the main segment moves in the direction of the arrow shown in Fig. 4 and assumes the position shown in Fig. 2 when the mainspring is entirely wound up.

For throwing the gear-wheel  $e^7$  in mesh with the main segment B, and simultaneously moving the pinion  $d^3$  out of gear therewith, so as not to interfere with the return movement of the main segment, the pawl-and-lever connection before referred to is employed. It consists of a fulcrumed and spring actuated pawl,  $f$ , that engages the teeth of the ratchet-wheel  $e$  of the spring-barrel F. The opposite end of the fulcrumed pawl  $f$  is pivoted to a connecting-arm,  $f'$ , which is guided by a slot,  $f^2$ , in its opposite end on a headed screw,  $f^3$ , at one end of the fulcrumed lever E. This end of the lever E is also connected by a pivot link,  $f^4$ , with the lever  $e^3$ , so that by the oscillations of the spring-pawl  $f$  in following the motion of the spring-barrel the connecting-arm  $f'$  oscillates the end of the lever E, and moves thereby the pinion  $e^7$  in mesh with the segment B and the pinion  $d^3$  out of mesh with the same, as shown in Fig. 4. At the intervals of time during which the spring-barrel in winding is at rest the pinion  $d^3$  is in mesh with the main

segment B and the pinion  $e^7$  out of mesh with the same, as shown in Fig. 2.

For the purpose of permitting the setting of the hands without interfering with the attachment that indicates the condition of the mainspring, the pinion  $d^3$  has to be temporarily moved out of mesh with the main segment B, which is accomplished by an arm,  $E^2$ , that extends from the lever E toward the yoke G of the usual stem-winding and hand-setting mechanism of the movement. The yoke G is provided with a lug,  $g$ , that engages the outer end of the arm  $E^2$  when the hand-setting lever  $G'$  is pulled out, as shown in Fig. 5. By pulling out the hand-setting lever  $G'$  the hand-setting attachment is thrown in mesh with the gear-wheels of the hands, and simultaneously the lug  $g$  of the yoke G pressed against the outer end of the arm  $E^2$ , so that by the spring action of the middle portion,  $E'$ , the pinion  $d^3$  is removed from the teeth of the main segment B, as shown clearly in Fig. 5. In this position the toothed segment B is entirely at rest, and is not moved in either direction while the setting of the hands takes place. As soon as the hand setting lever is returned to its normal position, the arm  $E^2$  is released and the pinion  $d^3$  returned to its normal position of mesh with the segment B by the action of the spring portion  $E'$  of the lever E.

The attachment described is located below the dial and in full view when the same is removed, so that it can be conveniently repaired in case it should be out of order. The indicating attachment is reset while winding the movement, and is moved by the mainspring simultaneously with the hands of the movement, so as to indicate at any time the exact state of the mainspring and the exact time when it is necessary to rewind the same. It also acts as an indicator, by which the straining of the mainspring in winding up the same is obviated, and thereby the injuring or breaking of the mainspring prevented.

I am aware that it is not broadly new to use in connection with watches a winding-indicator by which the condition of the mainspring is indicated, said indicator being set in motion by the movement from the hour-wheel and returned into its position by a suitable connection with the ratchet-wheel of the spring-barrel, and I therefore do not claim this feature, broadly, but confine myself to the construction of my winding-indicator.

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

1. The combination, with the driving mechanism of a time-piece, of a toothed main segment applied to the arbor of the hour-wheel, a pointer moving over an auxiliary dial on the main dial, intermediate gearing for transmitting motion from the segment to the pointer, a gear-wheel mechanism for transmitting motion from the hour-wheel to the segment, a second gear-wheel mechanism connecting the driving mechanism with the main segment, and a pawl-



and lever mechanism connecting the driving mechanism with both gear-wheel mechanisms, so as to throw the former out of mesh and the latter into mesh with the segment for winding up the time-piece, substantially as set forth.

2. The combination of a toothed main segment applied to the arbor of the hour-wheel, a pointer moving over an auxiliary dial of the main dial, intermediate gearing for transmitting motion from the segment to the pointer, a gear-wheel transmission connecting the hour-wheel with the main segment for imparting a going motion to the same, a hand-setting mechanism, and means for connecting the hand-setting mechanism with said gear-wheel mechanism, so as to move the latter out of mesh with the main segment and permit the setting of the hands while the segment is at rest, substantially as set forth.

3. The combination, in a time-piece, of the hour-wheel, a toothed segment on the arbor of said hour-wheel, a pointer moving over an auxiliary dial on the main dial, gearing for transmitting motion from the segment to the pointer, a gear-wheel mechanism for transmitting motion from the hour-wheel to the segment, a fulcrumed lever supporting said gear-wheel mechanism, a mainspring-barrel, a second gear-wheel mechanism meshing with the ratchet-wheel of said barrel, a pivot-lever supporting said gear-wheel mechanism, a pawl-and-lever connection connecting the barrel of the mainspring with the fulcrumed lever, and a pivot-link connecting the latter with the pivot-lever of the second gear-wheel mechanism, substantially as set forth.

4. The combination, in a time-piece, of the hour-wheel, a toothed segment on the arbor of said hour-wheel, a pointer passing over an auxiliary dial on the main dial, gearing for transmitting motion from the segment to the pointer, a gear-wheel mechanism for transmitting motion from the hour-wheel to the segment, a fulcrumed lever having a middle spring portion and an extension-arm, said lever supporting a part of said gear-wheel mechanism, and a hand-setting mechanism engaging the arm of said lever, so as to ungear the segment from its transmitting-gear-wheel mechanism when setting the hands, substantially as set forth.

5. The combination, in a time-piece, of the hour-wheel, a toothed segment applied to the arbor of said hour-wheel, a pointer moving over an auxiliary dial on the main dial, gearing for transmitting motion from the segment to the pointer, a mainspring-barrel, gearing connecting the mainspring-barrel with the segment, and a pawl-and-lever mechanism for throwing said gearing in mesh with the segment and return the same to its initial or starting position while winding up the mainspring, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ABRAHAM M. BACHRACH.

Witnesses:

PAUL GOEPEL,  
SIDNEY MANN.