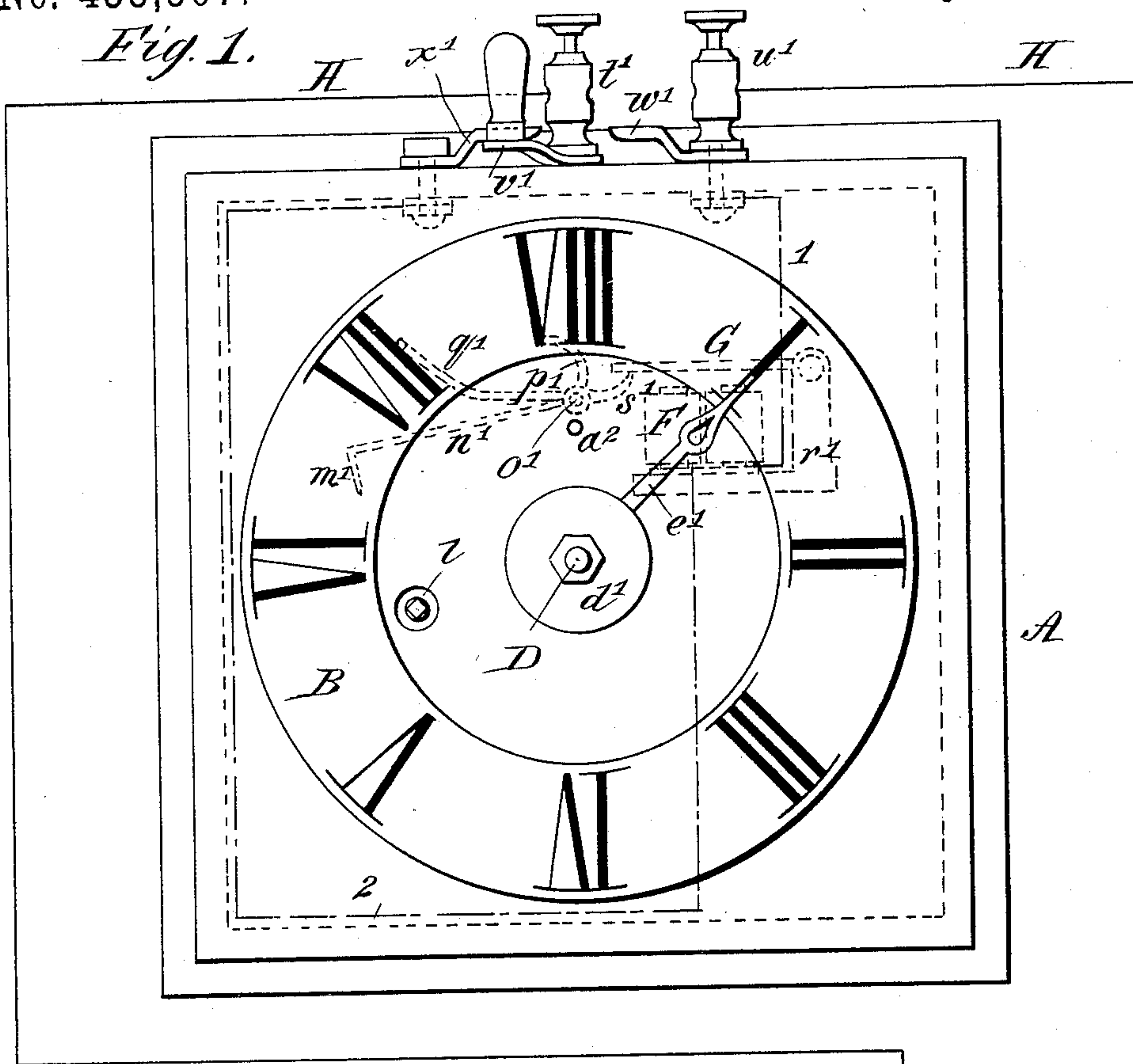


W. E. ROBINSON.  
TELEPHONE CALL REGISTER.

No. 433,307.

Patented July 29, 1890.

*Fig. 1.*



*Fig. 6.*

TALLY BOARD														
COLUMN NO. 1					COLUMN NO. 2.									
1	°	①	①	①	°	°	°	°	°	°	°	°	°	①
2	°	②	②	②	°	°	°	°	°	°	°	°	°	②
3	°	③	③	③	°	°	°	°	°	°	°	°	°	③
4	°	④	④	④	°	°	°	°	°	°	°	°	°	④
5	°	⑤	⑤	⑤	°	°	°	°	°	°	°	°	°	⑤
6	°	⑥	⑥	⑥	°	°	°	°	°	°	°	°	°	⑥
7	°	⑦	⑦	⑦	°	°	°	°	°	°	°	°	°	⑦
8	°	⑧	⑧	⑧	°	°	°	°	°	°	°	°	°	⑧
9	°	⑨	⑨	⑨	°	°	°	°	°	°	°	°	°	⑨
10	°	⑩	⑩	⑩	°	°	°	°	°	°	°	°	°	⑩
11	°	⑪	⑪	⑪	°	°	°	°	°	°	°	°	°	⑪
12	°	⑫	⑫	⑫	°	°	°	°	°	°	°	°	°	⑫
13	°	⑬	⑬	⑬	°	°	°	°	°	°	°	°	°	⑬
14	°	⑭	⑭	⑭	°	°	°	°	°	°	°	°	°	⑭
15	°	⑮	⑮	⑮	°	°	°	°	°	°	°	°	°	⑮

WITNESSES:

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*Magneto*

INVENTOR

*W. E. Robinson*

BY

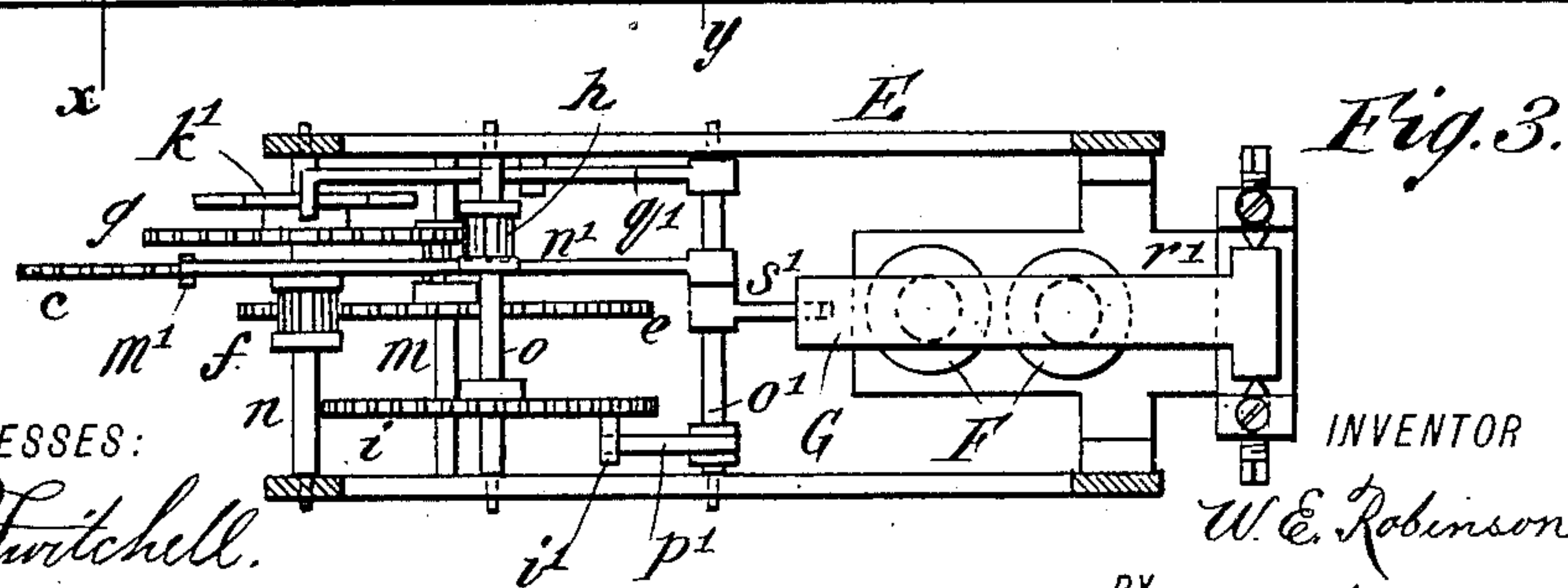
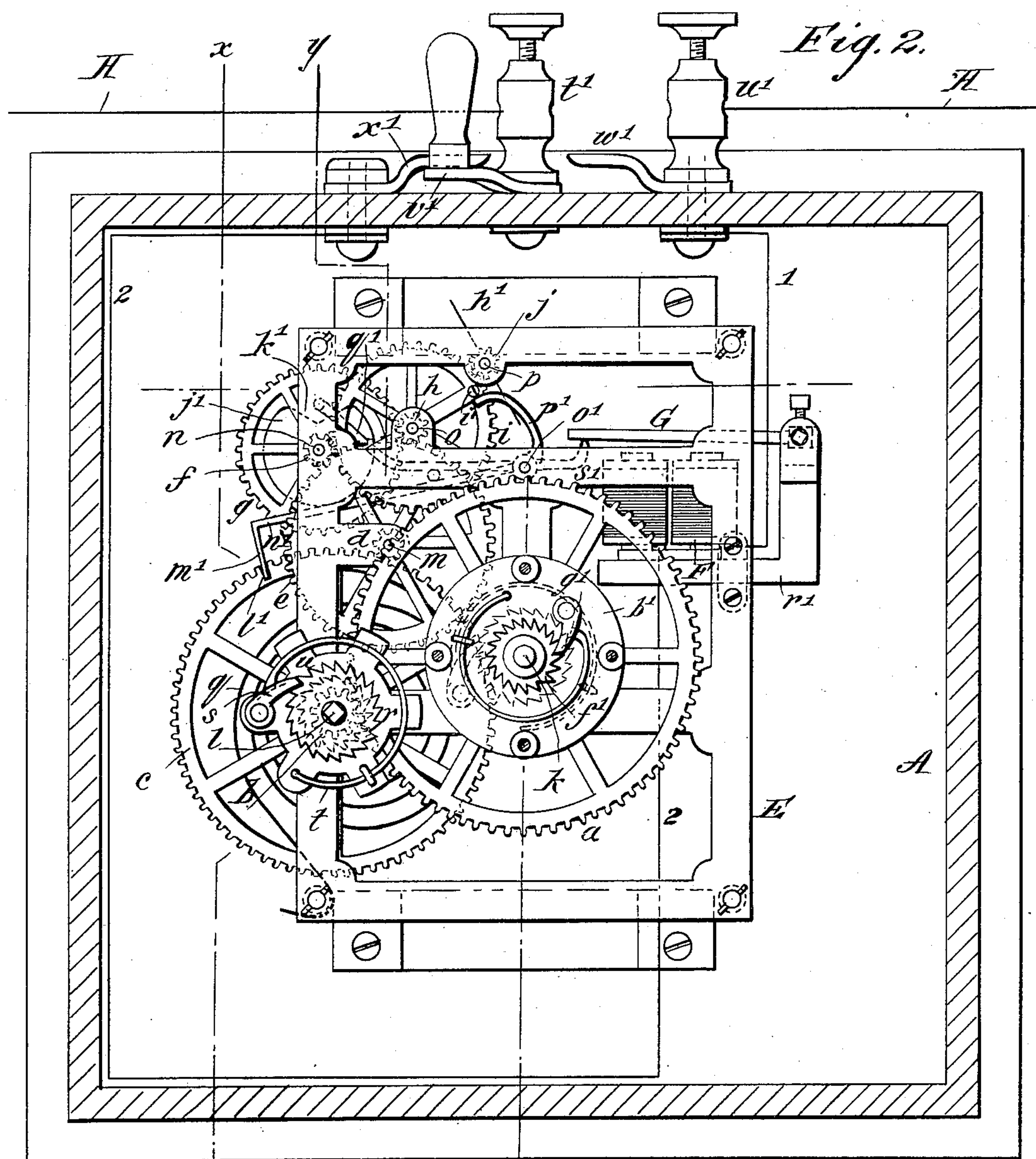
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4 Sheets—Sheet 2.

No. 433,307.

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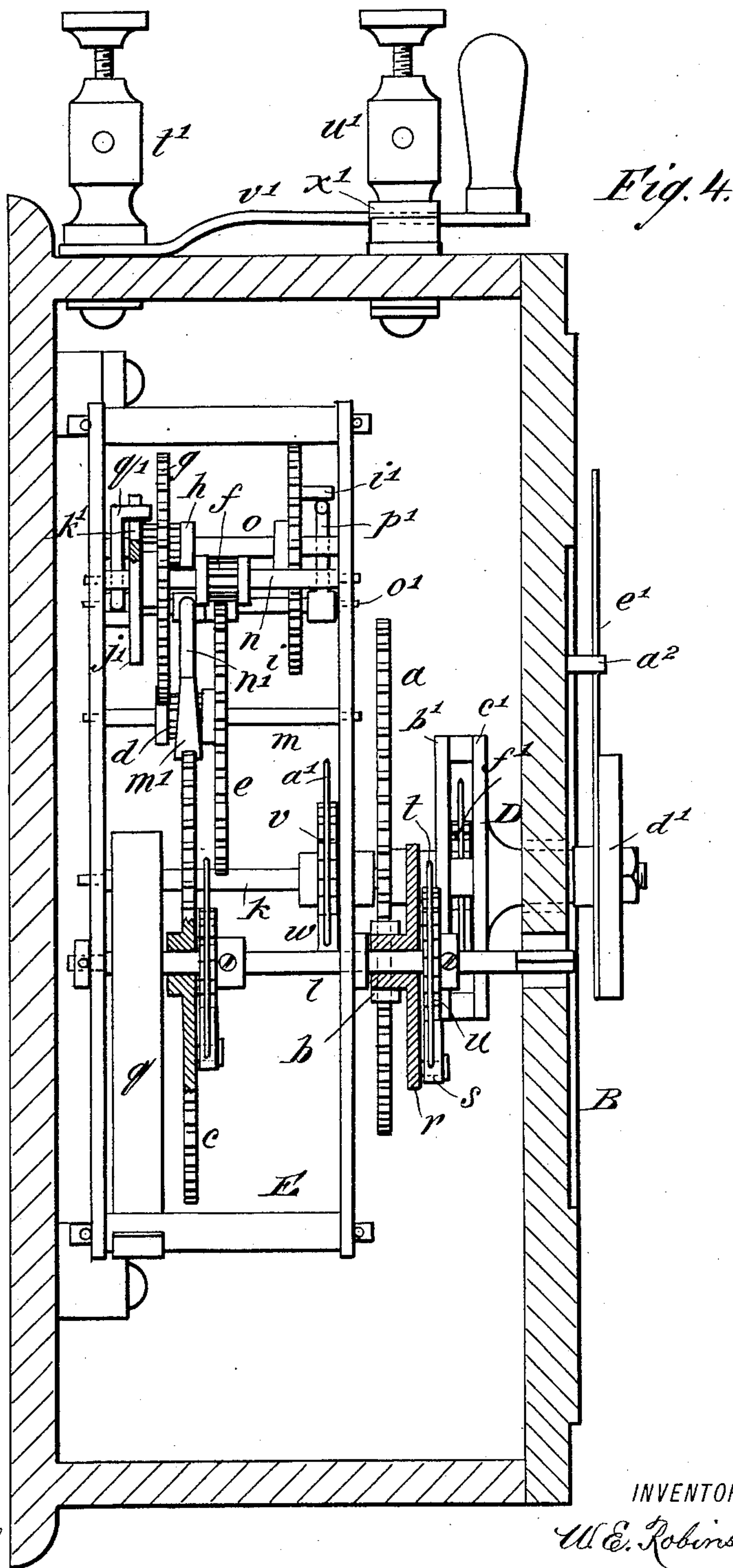
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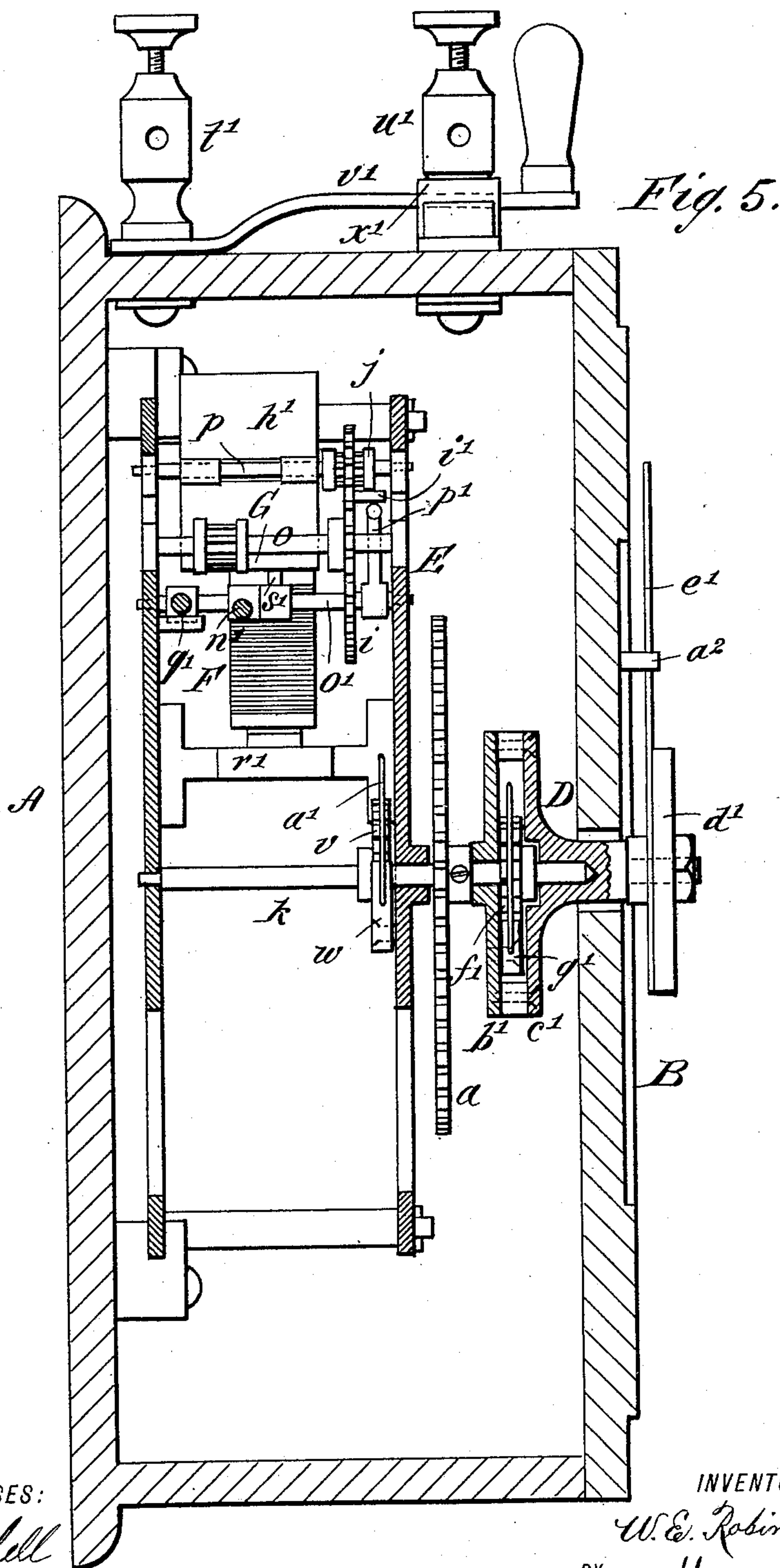
(No Model.)

4 Sheets—Sheet 4.

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TELEPHONE CALL REGISTER.

No. 433,307.

Patented July 29, 1890.



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# UNITED STATES PATENT OFFICE.

WILLIS EUGENE ROBINSON, OF FARIBAULT, MINNESOTA.

## TELEPHONE-CALL REGISTER.

SPECIFICATION forming part of Letters Patent No. 433,307, dated July 29, 1890.

Application filed February 15, 1889. Serial No. 299,970. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIS EUGENE ROBINSON, of Faribault, in the county of Rice and State of Minnesota, have invented a new and  
5 Improved Telephone-Call Register, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a front elevation of my improved  
10 telephone-call register. Fig. 2 is a front elevation of the same, with the dial and front of the case removed. Fig. 3 is a sectional plan view. Fig. 4 is a vertical transverse section taken on line *x x* in Fig. 2. Fig. 5 is a vertical  
15 transverse section taken on line *y y* in Fig. 2, and Fig. 6 is a front elevation of the tally-board.

Similar letters and figures of reference indicate corresponding parts in all the views.

20 My invention consists in the combination with a train of spring-actuated gearing provided with a stop-motion, of an electro-magnetic releaser for starting the train, a dial for recording the number of separate movements  
25 of the train, and mechanism for permitting of the winding of the driving-spring without disarranging the other parts of the apparatus.

The invention further consists in devices which permit of setting the index, all as will  
30 be hereinafter more fully described, and pointed out in the claims.

The casing A, which contains all of the mechanism of the register, is provided with a dial B on the front thereof, which is aper-  
35 tured for the arbor *l* and the boss D. Within the casing is arranged a train of gearing consisting of a wheel *a*, pinion *b*, wheel *c*, pinion *d*, wheel *e*, pinion *f*, wheel *g*, pinion *h*, wheel *i*, and pinion *j* mounted upon the ar-  
40 bors *k l m n o p*, all of the said arbors being journaled in the frame E, the arbor *l* being provided with the driving-spring *q*, and furnished with a squared end for receiving the winding-key. The pinion *b*, which meshes  
45 into the wheel *a*, is loosely mounted upon the arbor *l*, and carries a disk *r*, to which is pivoted a pawl *s*, pressed by the spring *t*, the said pawl being arranged to engage the ratchet *u*, secured to the arbor *l*, the teeth of  
50 the ratchet and the pawl being arranged relative to the arbor *l*, so that when the arbor is

turned in the direction required to wind the spring *q* it will not turn the disk *r*; but when the arbor is turned in the opposite direction by the unwinding of the spring *q* the ratchet-  
55 wheel *u* will engage the pawl and turn the disk and the pinion *b* attached thereto.

To the arbor *k* within the frame E is secured a ratchet-wheel *v*, which is engaged by a pawl *w*, pivoted to the frame and pressed  
60 into engagement with the ratchet by the spring *a'*. The spur-wheel *a* is secured to the arbor *k*, and upon the said arbor outside of the spur-wheel *a* is loosely placed a disk *b'*, which is connected with the disk *c'*, also loosely  
65 placed upon the arbor *k* and provided with the boss D, which extends through the dial B and is reduced in diameter and threaded to receive the disk *d'*, which carries the index *e'*.

To the arbor *k* between the disks *b' c'* is  
70 secured the ratchet-wheel *f'*, which is engaged by the pawl *g'*, pivoted to the disk *b'*, the ratchets *f' v'* being oppositely arranged with respect to each other, the ratchet-wheel  
75 *v* being arranged to permit of the forward movement of the arbor *k* while preventing it from moving backward, and the ratchet *f'* being arranged to permit of turning the index *e'* backward when it is desired to return  
80 it to the point of starting. The arbor *p* carries a fly-fan *h'*, and in the side of the wheel *i* is inserted the stud *i'*. Upon the arbor *n* is mounted a cam *j'*, which is provided with the notch *k'*. The wheel *c* is provided with a notch *l'* between two of its teeth for receiv-  
85 ing the right-angled end *m'* of the lever *n'*, the said lever being attached to the arbor *o'*, journaled in the frame E. From the said arbor *o'* a curved arm *p'* extends upwardly and is curved over toward the arbor *o* in position  
90 to engage the stud *i'* in the manner presently to be described. To the same arbor *o'* is secured a curved arm *q'*, which extends over the arbor *n* and is bent at right angles parallel with the said arbor, the end thus  
95 bent extending over the edge of the cam *j'*.

In the frame E is secured a right-angled arm *r'*, which supports the electro-magnet F, and in the upright arm of which is pivoted  
100 an armature G, which extends over the face of the magnet F. To the arbor *o'* is secured the arm *s'*, which is curved upwardly and supports



the free end of the armature G when no current passes through the magnet F.

To the top of the casing A are secured the binding-posts  $t' u'$ , for receiving the line-wire  
 5 H. To the binding-post  $t'$  is pivoted a switch-arm  $v'$ , and to the binding-post  $u'$  is attached a contact-piece  $w'$ , which is capable of being engaged by the switch-arm  $v'$ . A contact-piece  $x'$  is secured to the top of the casing A,  
 10 and is also capable of being engaged by the switch-arm  $v'$ . From the binding-post  $u'$  the wire 1 extends to one terminal of the magnet F, the remaining terminal of the magnet being connected by the wire 2 with the contact-  
 15 piece  $x'$ , so that when the switch-arm  $v'$  is in contact with the piece  $x'$  the current passes from the line through the binding-post  $u'$  and wire 1 to the electro-magnet F, thence by the wire 2 to the contact-piece  $x'$  through the  
 20 switch-arm  $v'$  and binding-post  $t'$  to the line H, so that whenever an impulse is sent over the line H the electro-magnet F will be energized, and when it is desired to cut the electro-magnet F out of the line the switch-arm  
 25  $v'$  is moved over to the contact  $w'$ , when the current of the main line will pass through the binding-post  $u'$ , contact-piece  $w'$ , switch-arm  $v'$ , and the binding-post  $t'$ . Whenever the magnet F is energized the armature G  
 30 will be drawn down, and by virtue of its contact with the arms  $s'$  turns the arbor  $o'$  through a part of a revolution, thereby lifting the end of the lever  $n'$  out of the notch  $l'$  of the wheel  
 35  $c$ , at the same time releasing the stud  $i'$  from the curved arm  $p'$ , and also lifting the angled end of the arm  $q'$  out of the notch  $k'$  of the cam  $j'$ . The train of gearing being thus released is propelled by the spring  $q$ , thereby  
 40 carrying the index  $e'$  forward. Whenever the cam  $j'$  makes a revolution the arm  $q'$  drops into the said cam; but the downward movement of the said arm  $q'$ , and consequently the forward movement of the arm  $p'$ , is limited by the engagement of the right-  
 45 angled end  $m'$  of the lever  $n'$  with the periphery of the wheel  $c$ , between the teeth of the said wheel, the end  $m'$  of the lever  $n'$  being made much thinner than the space between the teeth of the wheel, so that the wheel  $c$   
 50 may continue to revolve until it has made a complete revolution, when the end  $m'$  of the lever  $n'$  drops into the notch  $l'$  of the said wheel, thereby bringing the arm  $p'$  into engagement with the stud  $i'$ , stopping the motion of the train before the cam  $j'$  can strike  
 55 the arm  $q'$ . The apparatus remains in a state of rest until the magnet F is again energized, when the operation just described is repeated. Every operation of the gearing moves forward  
 60 the index  $e'$  one division of the dial. In the present case the dial is provided with eight divisions, and consequently is capable of recording eight calls.

The fly-fan  $h'$  retards the motion of the  
 65 train of gearing so that one operation of the train covers a period of about two minutes. This provision is to avoid making any record

of a second or third call made within a space of two minutes, so that if the subscriber should be in the vicinity of the apparatus he  
 70 would have time to reach the instrument before the train of gearing could be started to record another call. After the calls are answered, the index  $e'$  is returned to the point of starting, a stud  $a^2$  projecting from the dial  
 75 serving to limit the rearward motion of the index.

At the central office is arranged a tally-board, shown in Fig. 6, which is provided with two columns of squares, the squares in  
 80 both columns being arranged in horizontal and vertical rows, the horizontal rows being numbered 1 2 3 4, &c., representing the lines of the subscribers, and in column No. 1 are inserted plugs having figures on the faces,  
 85 representing the numbers of the subscribers, and when the attendant at the central office makes a call which is not responded to, he removes one of the plugs from column No. 1 and places it in column No. 2, in the row be-  
 90 longing to the subscriber who was called, which in the case represented was No. 2, so that after a suitable time has elapsed the attendant at the central office again calls No. 2, and if he is present, telephonic commu-  
 95 cation is proceeded with, as usual; but if he is not present, the second call is recorded on the register.

Having thus described my invention, I claim as new and desire to secure by Letters Pat-  
 100 ent—

1. The combination, with the index-carrying arbor  $k$ , a driving-arbor  $l$  geared thereto, and provided with a toothed pinion  $c$ , having a notch  $l'$ , the arbor  $n$  above the arbor  $l$ , driven  
 105 therefrom and provided with a peripherally-notched cam  $j'$ , and the arbor  $o$  operated from arbor  $n$  and provided with a wheel having pin  $i'$  on one side, of the magnet having a horizontal armature G, the rock-shaft  $o'$  above  
 110 the arbor  $k$ , and provided with an arm  $s'$  extending under the free end of the armature, an arm  $p'$  curved upward and inward into the path of the pin  $i$ , an arm  $q'$  extending over the arbor  $n$  and bent laterally to enter the  
 115 notch of said cam  $j'$ , and the arm  $n'$  extending over the pinion  $c$  and having a tooth  $m'$  to enter the notch  $l'$ , substantially as set forth.

2. In a telephone-call register, the combination of the index-carrying arbor, two sets  
 120 of pawl-and-ratchet mechanism placed on the said arbor and oppositely arranged with respect to each other, a driving-arbor, a pinion placed loosely on the said driving-arbor and connected with the said arbor by a pawl and  
 125 ratchet, and an index-carrying wheel placed upon the index-carrying arbor and arranged to be engaged by the pinion of the driving-arbor, substantially as specified.

WILLIS EUGENE ROBINSON.

Witnesses:

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 R. A. MOTT.