

No. 790,178.

PATENTED MAY 16, 1905.

E. S. BOYNTON.
INDICATOR.

APPLICATION FILED DEC. 30, 1903.

3 SHEETS—SHEET 1.

Fig. 1.

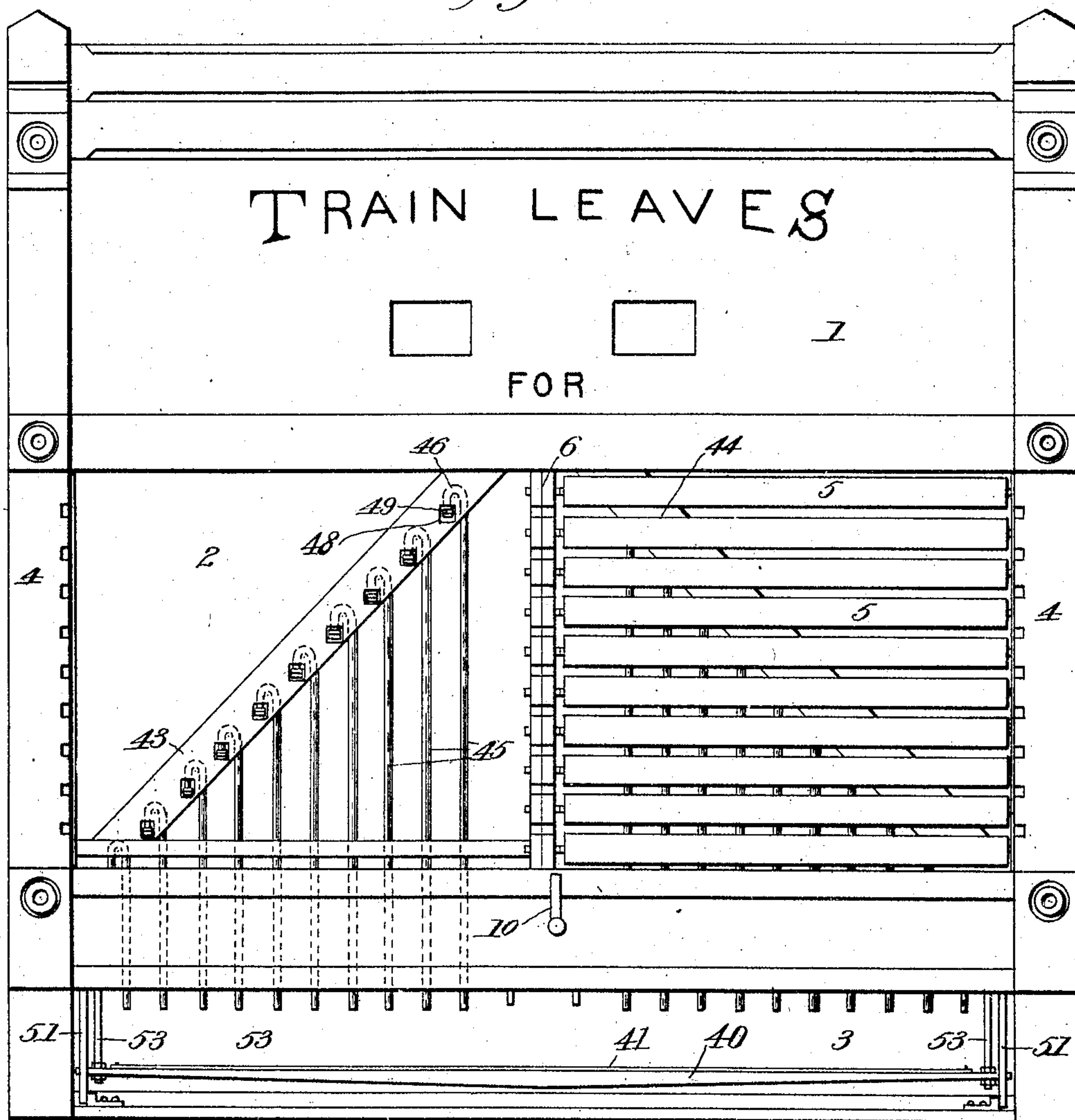
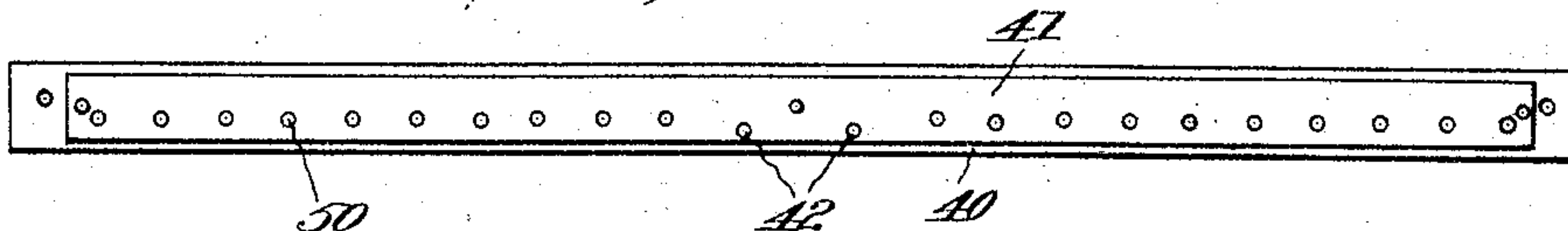


Fig. 4.



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3 SHEETS—SHEET 2.

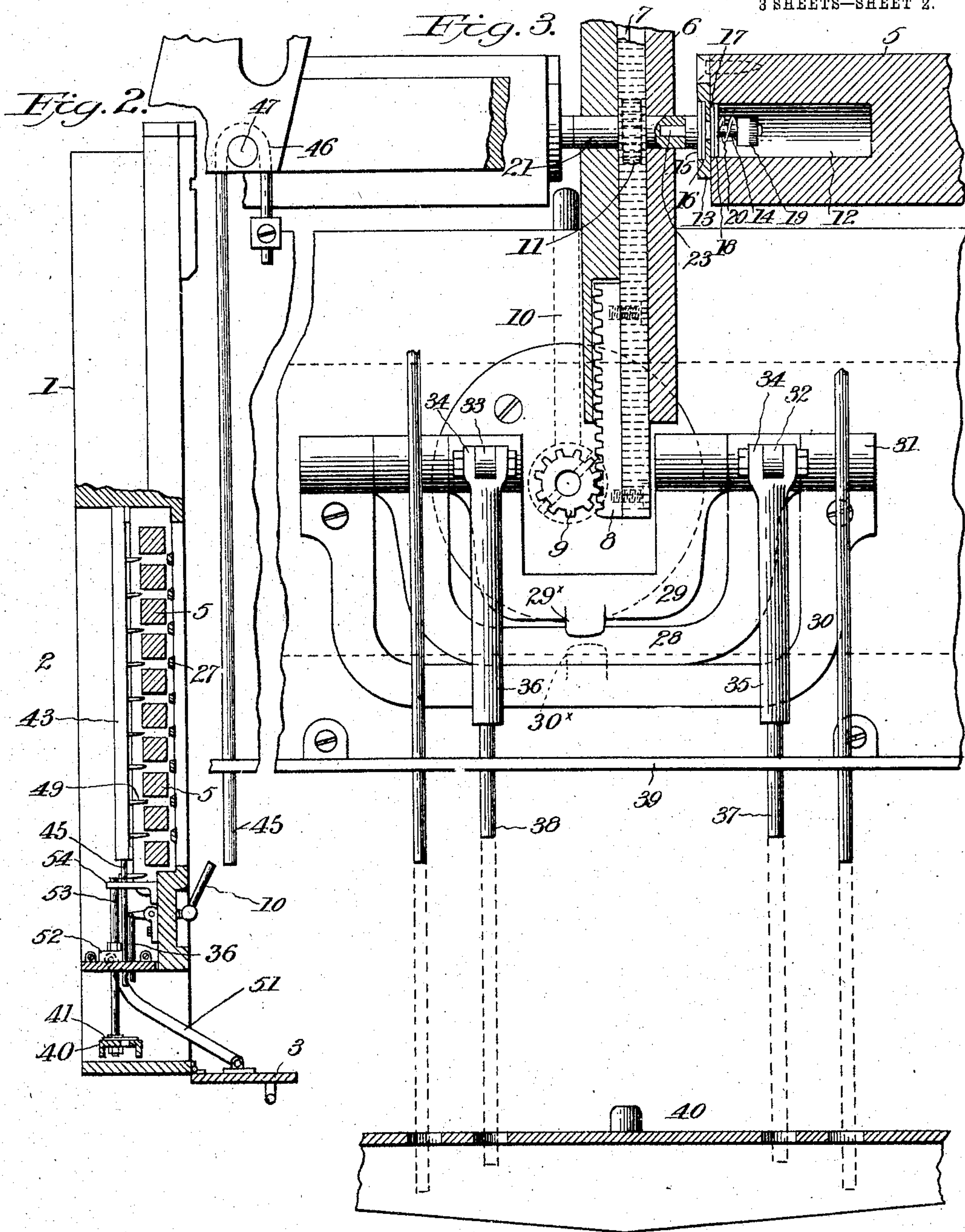
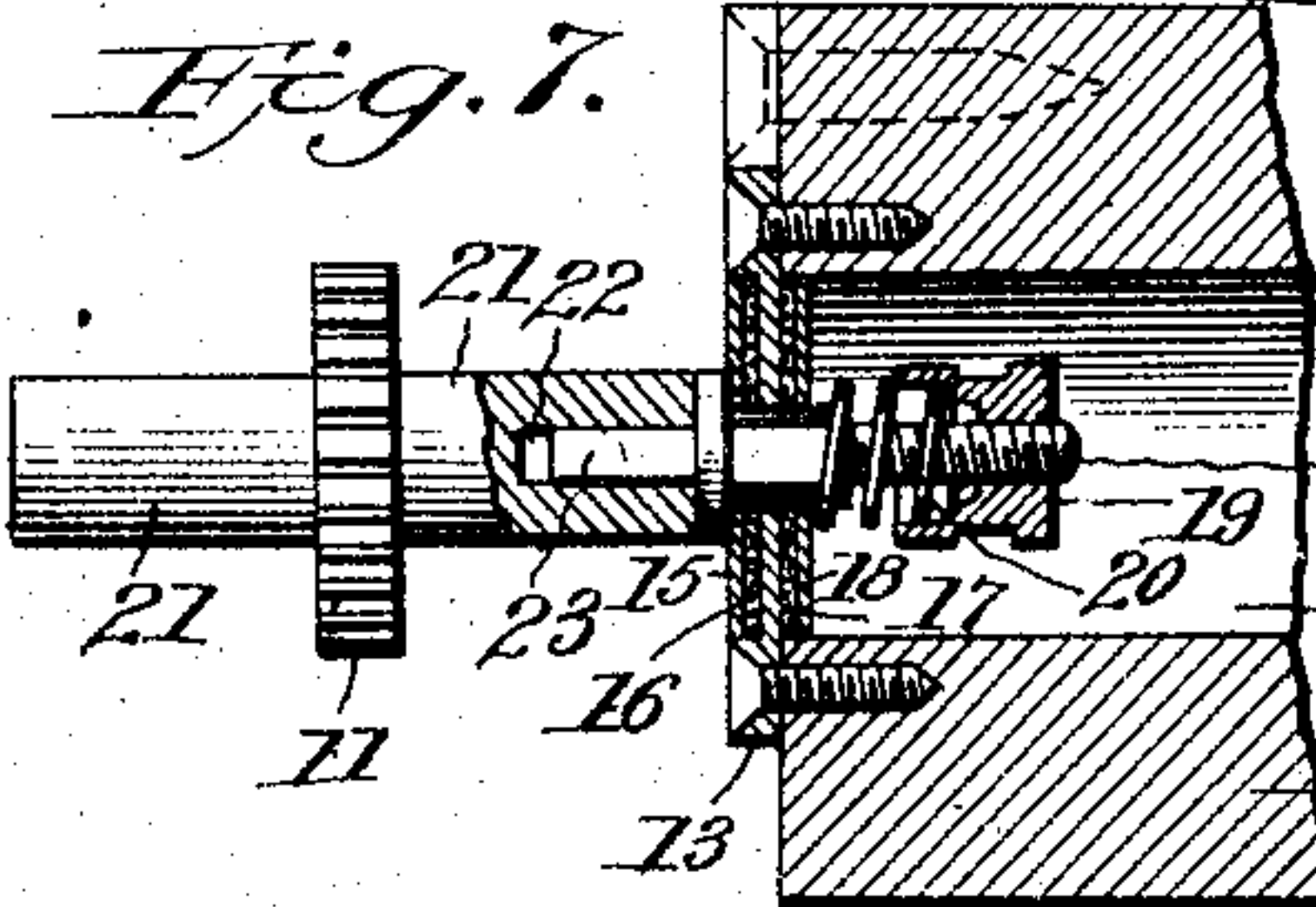


Fig. 7.

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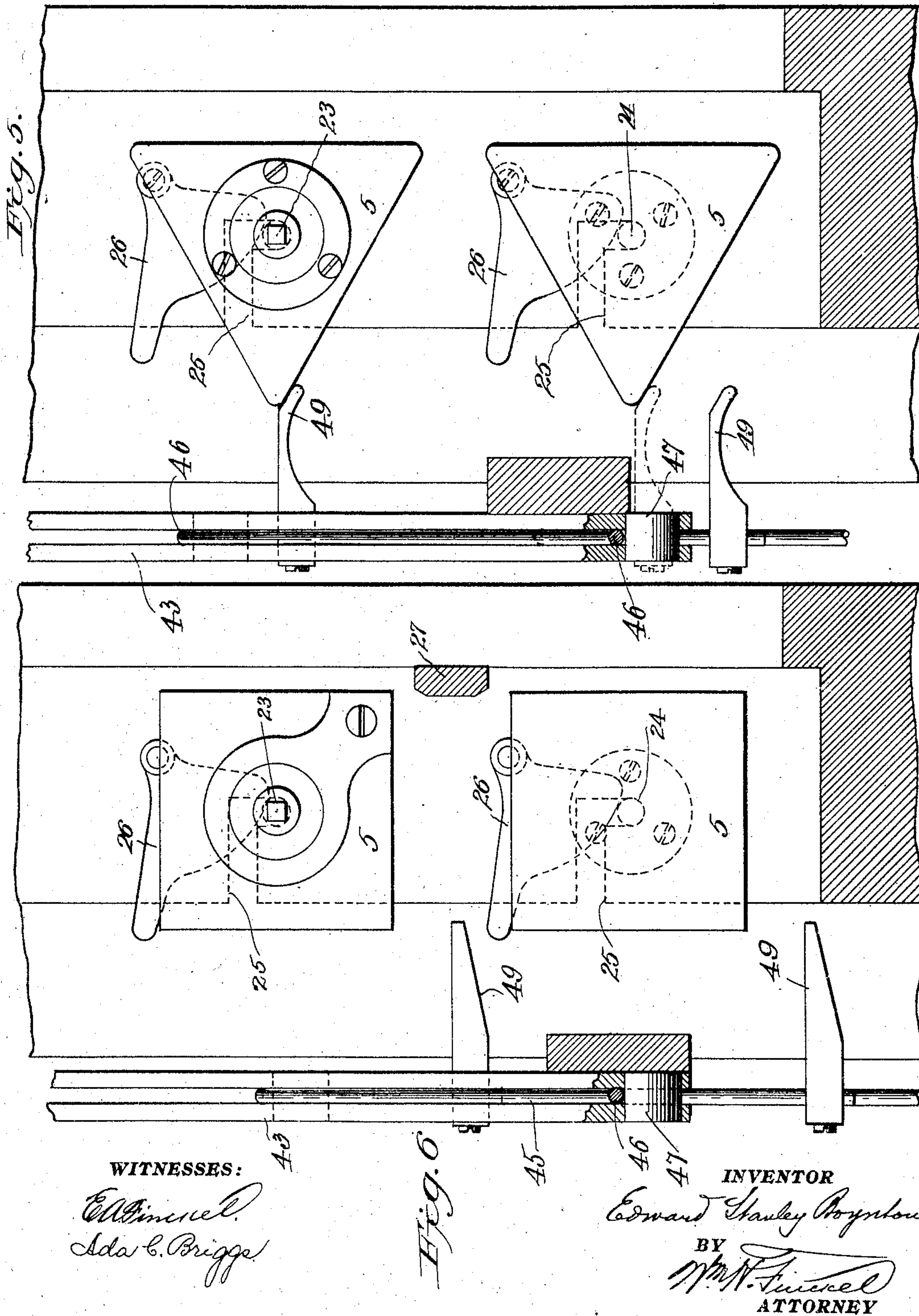
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3 SHEETS—SHEET 3.



UNITED STATES PATENT OFFICE.

EDWARD STANLEY BOYNTON, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR
TO WHEELER & WILSON MANUFACTURING COMPANY, OF BRIDGE-
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INDICATOR.

SPECIFICATION forming part of Letters Patent No. 790,178, dated May 16, 1905.

Application filed December 30, 1903. Serial No. 187,212.

To all whom it may concern:

Be it known that I, EDWARD STANLEY BOYNTON, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented a certain new and useful Improvement in Indicators, of which the following is a full, clear, and exact description.

This invention relates to that class of indicators which are adapted to display any one or more of a number of signs and of which the combined railway-train time and station directory used at most of the large railroad-stations is an example.

The object of the invention is to automatically control the movements of the signs so that only the individual signs which it is desired to bring to view are exposed.

The invention is illustrated in a railway-train time and station directory having a series of removable flat perforated keys, which because operating upon certain selecting devices after the manner of jacquard-cards are termed "jacquard-keys" and serve to control the desired selection of signs, all as will be particularly described and claimed.

In the accompanying drawings, illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a front elevation, the parts in front of the selecting-wires on the left and the parts in front of the slats on the right being omitted. Fig. 2 is a side elevation of Fig. 1, partially in section. Fig. 3 is a rear view, on a larger scale, of parts of the operating mechanism. Fig. 4 is a plan view of the movable key-holder and the jacquard-key. Figs. 5 and 6 are end elevations showing, respectively, triangular and square forms of sign-slats, together with parts of the operating mechanism, the upper sign-slats—that is to say, those next to the left-hand longer side of the sheet of drawings—showing the parts next the rack-bar and the other slat in each figure showing in dotted lines the far end construction. Fig. 7 is a longitudinal section and partial elevation of the end of one slat and the friction-gearing and gear-wheel.

The controlling and operating mechanisms are arranged in a casing constructed of the top portion 1, the intermediate section 2, and the lower portion or door 3, and the ends 4. The portion 2 is divided centrally into two sections, in each of which is mounted any desired number of horizontal slats 5, ten being here shown. These slats are constructed in the form of a square, Figs. 2 and 6; but it is obvious that they may be of triangular form, Fig. 5, or of any polyhedral form suitable to the requirements of the information to be displayed. One face of the several slats of whatever shape must be left blank, and on the other faces are placed the names of the stations or such information as it is desired to communicate. The sign-slats are journaled in the sides of the casing, so that they may be turned through a predetermined portion of a revolution in order to expose the desired information.

6 is a partition centrally located in the portion 2 and made in two sections, as shown in Figs. 1 and 3. Centrally mounted in the partition 6 is a toothed rack 7, to the lower end of which is secured another but shorter section of toothed rack 8, having its teeth disposed at right angles to the teeth on the rack 7. A pinion 9 meshes with the rack 8 to raise and lower the rack 7.

10 is a key (see Figs. 1, 2, and 3) to rotate the pinion 9.

As shown in Fig. 3, the rack 7 meshes with as many gear-wheels 11 (one only being shown) as there are signs located in one-half of the portion 2, (see Fig. 1,) it being understood that in actual construction the section of portion 2 at the left of the signs, Fig. 1, is provided with like sign-slats.

The inside end of each sign-slat is connected to the gear-wheel 11 by a frictional bearing, comprising a circular hole 12, cut in the end of the sign-slat and over which is secured by suitable screws a metal plate 13, in which is loosely mounted a screw-threaded stud-shaft 14. In a recess in the plate 13 is fitted a ring 15, which confines beneath it a friction-washer 16, preferably of felt, and on the op-

posite side of the plate 13 is a similar washer 17, against which bears a metal washer 18. Upon the shaft 14 is a thumb-nut 19, between which and the metal washer 18 is a spring 20.

5 The washers 16 and 17 form a frictional contact against the plate 13, varying in tension according to the pressure of the thumb-nut 19 on the spring 20. The gear-wheels 11 are formed with long journals 21, which extend
10 beyond the sides of the partition 6 and at their ends each is formed with an angular socket 22 to receive the corresponding journal end 23 of the shaft 14, so as to cause the two to turn together. Centrally secured on the opposite
15 end of the sign is a journal 24, which enters a slot 25 in the side frame and is held in position by the latch 26.

As a finish to the portion 2, slats 27 (shown in Figs. 2 and 6 in cross-section) are placed
20 between the signs.

Assuming that the signs are all in position to expose their blank faces and that the key 10 has been inserted in the position shown in Figs. 1, 2, and 3, it will be understood that
25 by raising or lowering the rack 7, through the medium of the pinion 9 and rack 8, the signs will be caused to turn in their bearings by the action of the rack 7 on the gear-wheels 11 and their frictional connection with the
30 signs. The mechanism which controls the downward movement of the rack 7, so that the several sign-slats may be appropriately rotated for bringing to view the desired information, is as follows: 28 and 29 are stirrup-like swing-
35 ing stops, connected at their upper ends to the stationary stop 30 by a hinge-joint 31, which permits them to swing outwardly. Arms 32 and 33 extend out from the stops 28 and 29, respectively, to which by suitable hinge-joints,
40 as 34, are connected depending rods 35 and 36, provided at their lower ends with smaller sections 37 and 38, which extend through a perforated metal plate 39. The movable key-
45 holder 40 (shown in Figs. 1 to 4, inclusive,) carries the jacquard-key 41, and, as shown in Fig. 4, this key 41 has a number of circles indicated on it, and the position of the circles shown at 42 corresponds with the position of the depending rod-sections 37 and 38. If holes
50 are cut in the key 41 where these circles 42 are shown, the key will not lift the rod 35 or 36; but if there is no perforation of the jacquard-key then the arms will be lifted when the key-holder is raised and will thereby cause the
55 stops to swing out of the path of the rack 7. If it is intended to turn the sign through the full distance, both stops 28 and 29 must be operated; but if it is intended that the stop 29 only shall be operated upon then but one of
60 the holes 42 (the one corresponding with the depending rod 35) should be open. Referring to Fig. 1, two diagonal bars 43 and 44 are shown secured in the two sections of the portion 2. Between these bars 43 and 44 are
65 secured selecting-wires 45 of varying lengths

and provided with portions 46, bent substantially in the form of a semicircle to engage pins 47 on the bars, the balance of the wire extending downwardly through holes in the plate 39 toward the key-holder 40. Holes 70 48 are cut in each of the diagonal bars, and the selecting-fingers 49 of the selecting-wires project through and are capable of moving freely up and down in said holes. The selecting-
75 wires, which are of different lengths, have their lower ends, as indicated by full lines, Fig. 2, and dotted lines, Fig. 3, in substantially the same plane as the free ends of the depending rods 35 and 36. On the jacquard-
80 key 41 at 50 is indicated a line of circles which correspond in position with the lower ends of the selecting-wires 45. As in the case of rods 35 and 36, a wire will not act if there is a hole in the key at the circle corresponding with it; but when the key is solid the selecting-
85 wire will be forced upwardly and its selecting-finger will rise and stand in the path of rotation of the adjacent sign, as shown in dotted lines, Fig. 5, and prevent the movement
90 of the sign selected to stand still, while the other signs turn freely, the friction-gearing of the arrested sign turning while the sign itself is stationary. The movable key-holder (shown in Figs. 1, 2, 3, and 4) carrying the
95 jacquard-key is raised or lowered through the medium of the lift-arms 51, the front ends of which are hinged to the door 3, their opposite ends being secured or hinged to fixtures 52, bolted to the lift-rods 53. These
100 rods 53 slide up and down in ways in the bracket 54 and at their lower ends are bolted to the key-holder.

The operation is as follows: It is assumed as understood that an indicator has been manufactured for use in, for example, a railroad-
105 station where there is a certain schedule of train departures or arrivals by one or a number of roads and that the sign-slats have been prepared accordingly and the jacquard-key likewise prepared accordingly. A suitably-
110 perforated jacquard-key 41 having been placed in position on the movable key-holder 40 to effect the operation of the desired signs and no others, the door 3 is raised into closed position and locked. The selecting-wires 45
115 have now raised the fingers or stops 49 into the path of the signs which are to remain blank, and the proper swinging stop 28 or 29 has been raised from the path of the downward movement of the rack 7. Where three
120 sides of a quadrilateral sign are marked, there will be three stops, as in the drawings. Stop 29 if interposed in the path of descent of the rack will restrict the movement of the sign to one side, while if that stop be swung out
125 of the way and stop 28 be exposed then the sign will be turned through two sides, and if stops 29 and 28 be turned out and stop 30 exposed then the sign may be turned to expose the third of the marked sides. The stop
130

30 being stationary limits the extent of descent of the rack. Now by inserting the key 10 and turning the pinion 9 the rack 7 will be moved downwardly such distance as it is allowed to travel by the stop interposed in its path, and thus turn the signs to bring the selected side into position to be read. The stop 29 is provided with a lip or lug 29^x, which when in normal position rests against the stop 28, which in turn rests against a lug 30^x on stop 30. The stop 29 is lifted independently of the stop 28; but when the stop 28 is lifted it carries the stop 29 with it. The stop 28 when in its normal position is prevented from turning backward by the lug of stop 30.

As many jacquard-keys as there are possible permutations of signs will be used to effect the proper display of the signs.

What I claim is—

1. In an indicator, frictionally-rotary signs in combination with a perforated movable key, and suitable connections between the signs and key, to control the movements of said signs.

2. In an indicator, rotary signs, a perforated movable key, and a rack and pinion interposed between the signs and the key, in combination with stirrup-like swinging stops controlled by said movable key for limiting the movement of said rack.

3. In an indicator, rotary signs, a perforated movable key, stops between said signs and key, and suitable connections between the signs and key, arranged and operating to arrest the movements of said signs.

4. In an indicator, rotary signs, a reciprocating toothed rack, friction-gearing between the signs and rack, and means to permit rotation of some of said signs and restrain others.

5. In an indicator, rotary signs, a toothed rack, means to reciprocate said rack, a stop

to limit the extent of movement of said rack, friction-gearing between the signs and rack, and means to permit rotation of some of said signs and restrain others.

6. In an indicator, rotary signs, a toothed rack, means to reciprocate said rack, a stop to limit the extent of movement of said rack, friction-gearing interposed between the signs and rack, a selecting-wire and stop for each sign, a jacquard-key to control the movements of the selecting-wires, and a key-holder.

7. In an indicator, rotary signs, a toothed rack, means to reciprocate said rack, a stop to limit the extent of movement of said rack, friction-gearing interposed between the signs and rack, a selecting-wire and stop for each sign, a jacquard-key to control the movements of the selecting-wires, and a key-holder, combined with a casing having a door, and connections between the door and key-holder to actuate the holder as the door is opened and closed.

8. In an indicator, rotary signs, a toothed rack, means to reciprocate said rack longitudinally, a series of stops and means to interpose the stops individually in the path of movement of the rack, combined with friction-gearing interposed between the signs and rack, and means to permit rotation of some of said signs and restrain others.

9. In an indicator, rotary signs, a toothed rack, means to reciprocate said rack longitudinally, a series of stops, and means to effect the individual and also the conjoint operation of said stops with relation to the toothed rack.

In testimony whereof I have hereunto set my hand this 29th day of December, A. D. 1903.

EDWARD STANLEY BOYNTON.

Witnesses:

J. V. MEEKS,

C. N. WORTHEN.