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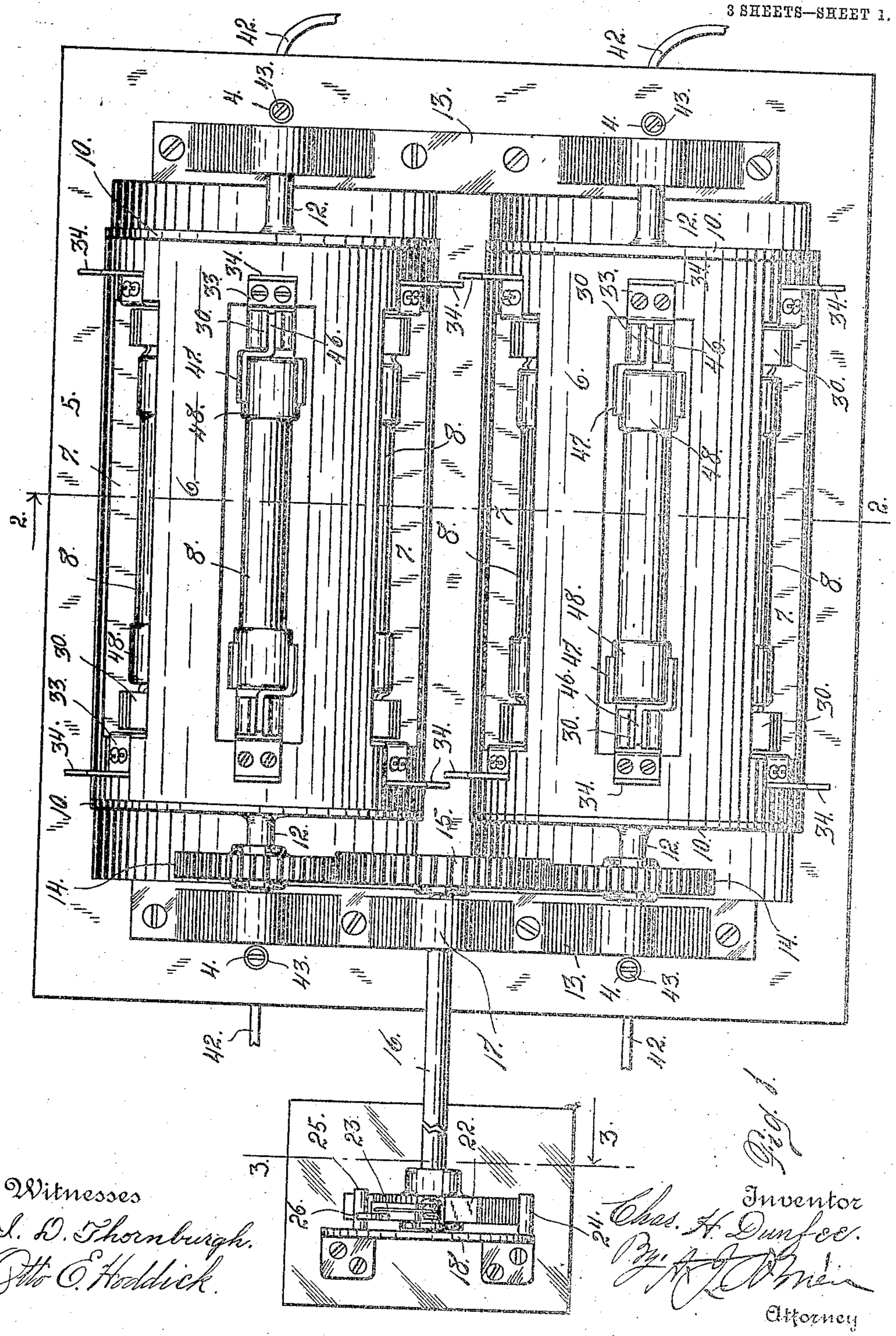
MULTIPLE FUSE BLOCK.

APPLICATION FILED JUNE 12, 1908.

951,305.

Patented Mar. 8, 1910.

3 SHEETS—SHEET 1.



Witnesses

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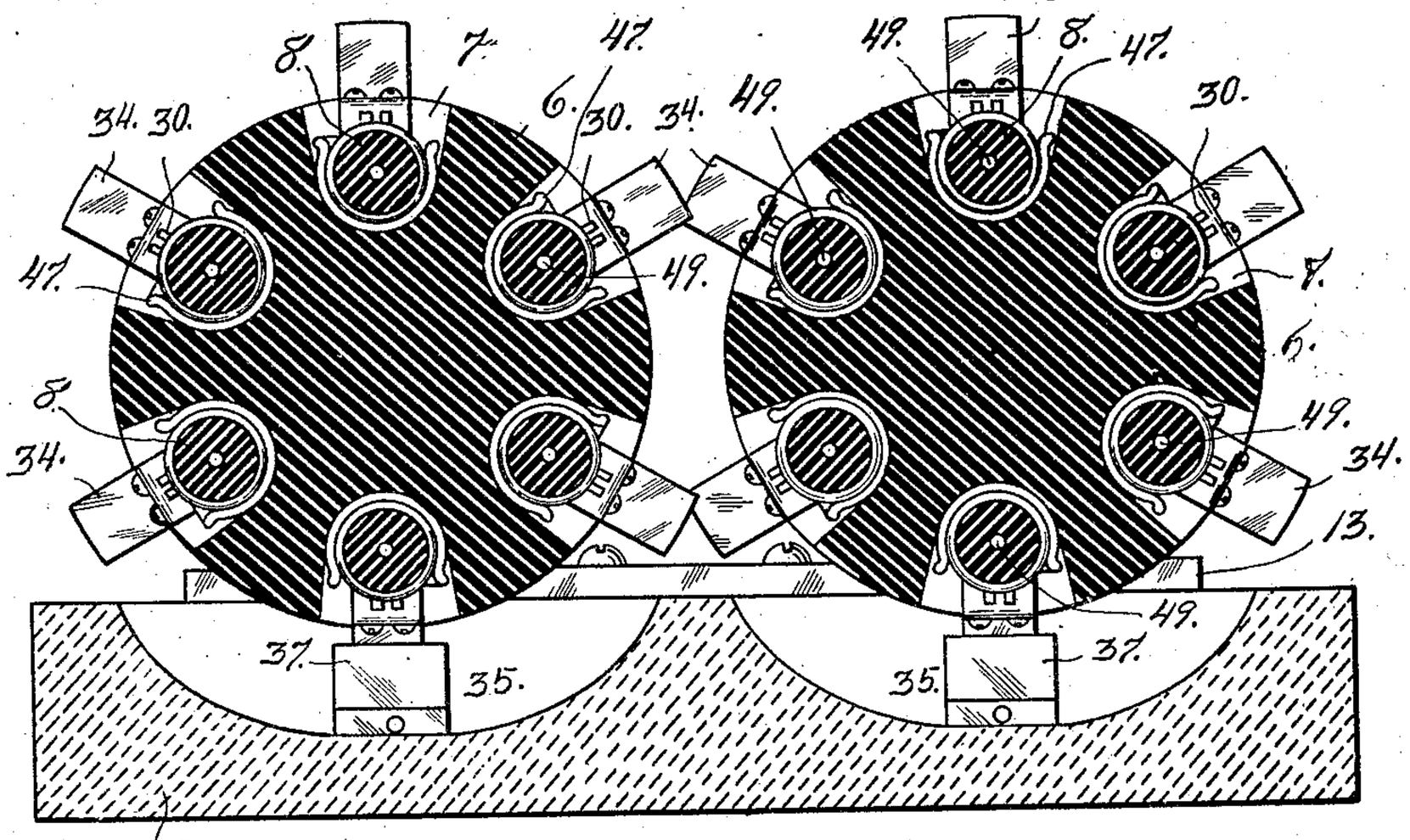

Fig. 2.

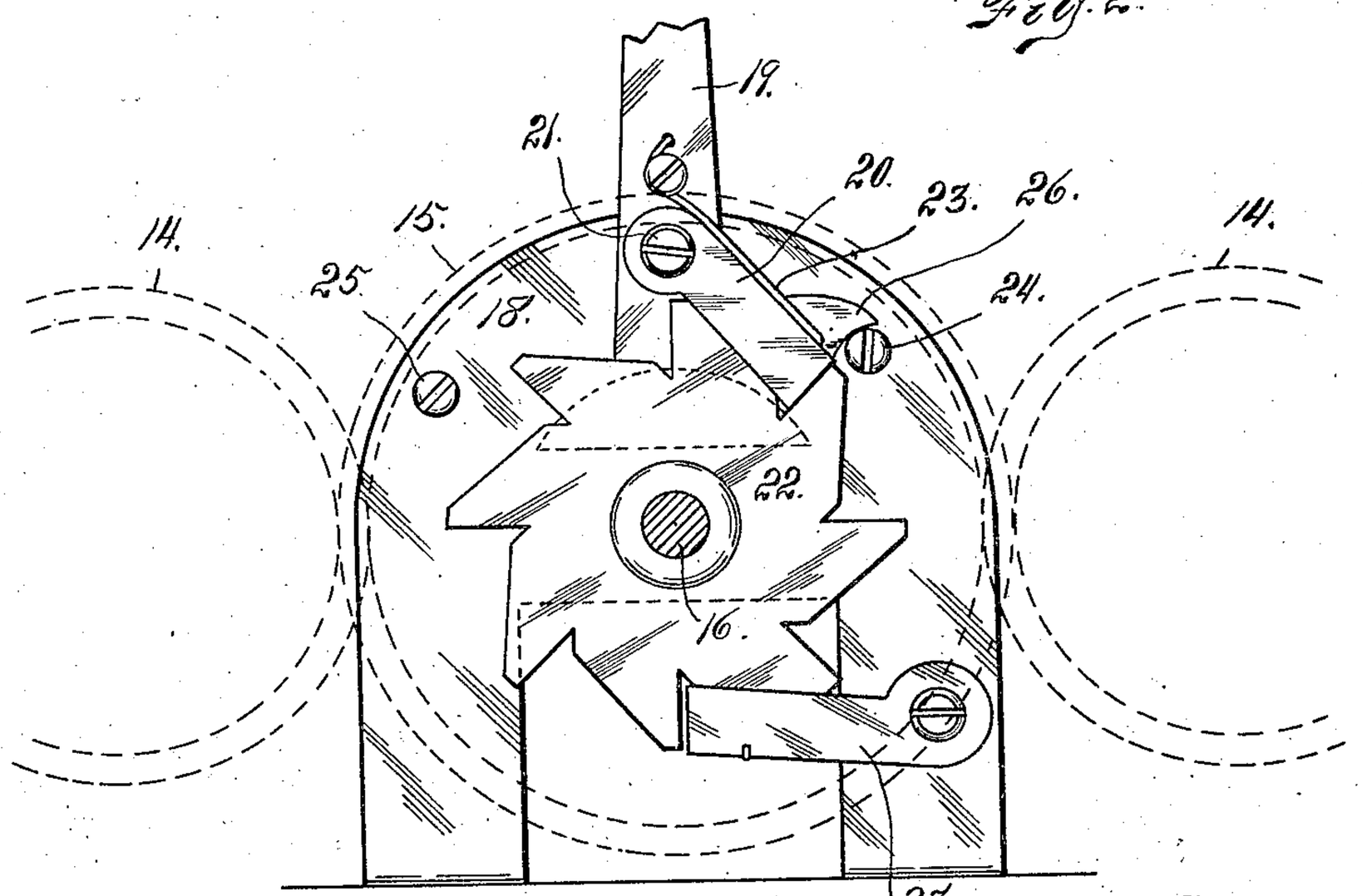

Fig. 3.

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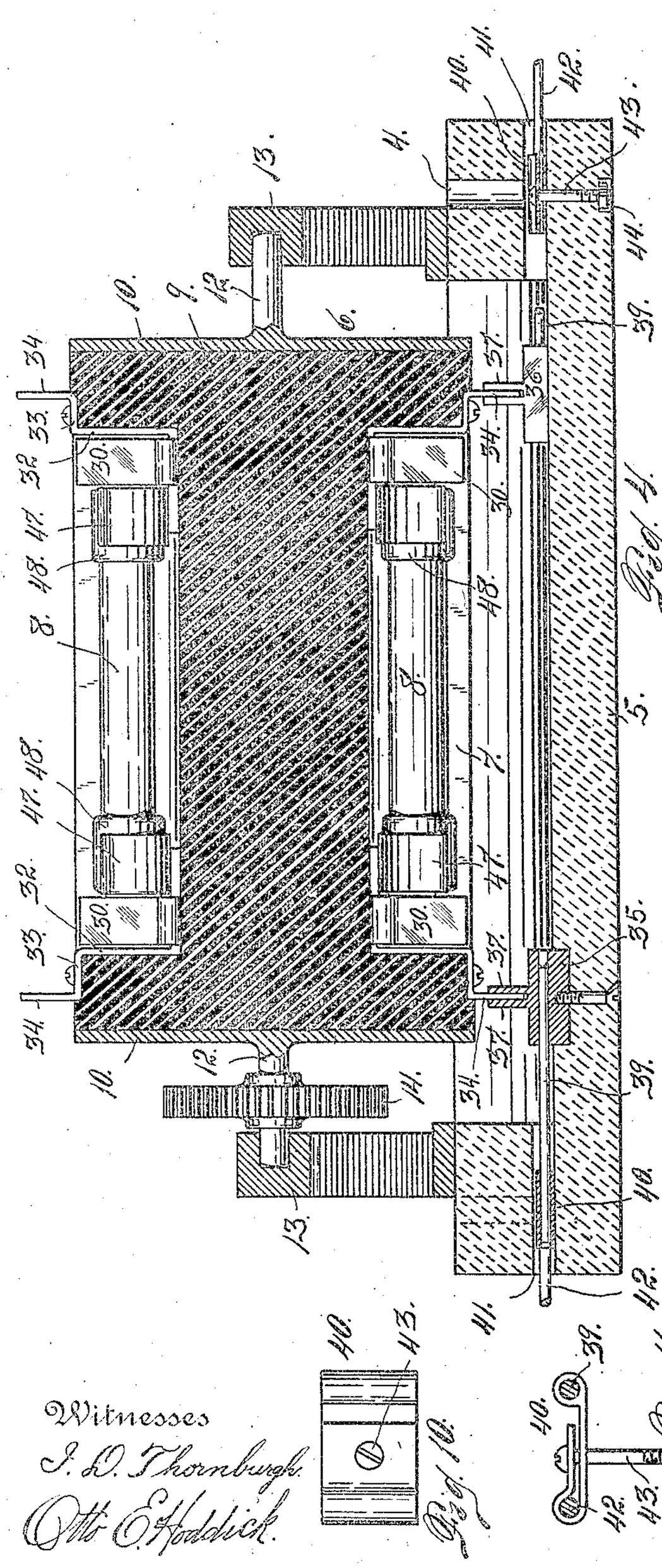

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UNITED STATES PATENT OFFICE.

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MULTIPLE-FUSE BLOCK.

951,305. Specification of Letters Patent. Patented Mar. 8, 1910.

Application filed June 12, 1908. Serial No. 438,235.

To all whom it may concern:

Be it known that I, CHARLES H. DUNFEE, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Multiple-Fuse Blocks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in what I term multiple fuse blocks.

In my improved construction I employ two blocks which in the particular construction shown in the drawing, are mounted to rotate synchronously. In the periphery of each of these blocks is formed a number of longitudinally disposed grooves open at the curved surface of the block and adapted to hold fuses whose axes lie parallel with the axis of the block. Each block is journaled in a suitable stationary support, the base of which is recessed to permit the end contacts with which the block is provided to move downwardly during the rotation of the block. Within these recesses of the stationary base are located stationary contacts between which the blades of the fuse block contacts pass when a fuse is placed in a circuit. Each rotary fuse block may carry any desired number of fuses, care, however, being taken not to place the fuses so close together as to cause an arc as one fuse is disengaged and another fuse thrown into the circuit.

As shown in the drawing one journal of each fuse block is provided with a gear meshing with a centrally located gear operated by a ratchet and lever connection whereby the two fuse blocks are simultaneously rotated in the same direction. Each stroke of the lever is so gaged that at the completion of a stroke two fuses are thrown into the circuit, one into each branch thereof.

My improved construction may be employed as a switch as well as a fuse block, by simply arranging the mechanism so that two movements of the ratchet lever will be necessary to disengage two fuses and place two other fuses in the circuit. In this event one movement of the lever and ratchet wheel will actuate the blocks to disengage one set of fuses and break the circuit, while the next movement of the lever and ratchet will bring the two new fuses into engagement with the stationary contacts, thus closing the circuit. It will be understood that either form of construction may be employed, that is to say a form in which a single movement of the lever and ratchet will throw one set of fuses out and another set in; or a construction in which two movements of the lever are required one to break the circuit and the other to throw the new fuses into place. It is evident that any suitable power may be employed for rotating the fuse blocks.

Having briefly outlined my improved construction, I will proceed to describe the same in detail reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a top plan view of my improved fuse block mechanism. Fig. 2 is a cross section taken through the same on the line 2—2 Fig. 1 looking toward the right or in the direction of the arrow. Fig. 3 is a section taken through the operating shaft on the line 3—3 Fig. 1 looking toward the left or in the direction of the arrow, the parts being shown on a larger scale. Fig. 4 is a longitudinal section taken through the construction cutting one of the fuse blocks centrally, the fuses located therein, however, being shown in elevation. Figs. 5 and 6 show two forms of fuse adapted for use with my improved block. Fig. 7 is a perspective view of one of the contacts with which my improved fuse blocks are equipped. Fig. 8 is a detail view of a contact member detachably connected with either extremity of a fuse. Fig. 9 is a perspective view in detail of a stationary contact which coöperates with a contact carried by a fuse block, to close the circuit when the block is adjusted to bring the fuse into proper position. Fig. 10 is a top plan view in detail of a contact applied to the base of my improved construction and employed in connecting the main circuit wires or conductors with the stationary contacts located in the base of the structure beneath the rotary fuse blocks. Fig. 11 is an edge view of the same showing the conductors in cross section.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a stationary base which may be composed of porcelain or

other suitable insulating material. Mounted above this base are two fuse blocks 6 whose general shape is cylindrical, each block, however, is provided with a number of longitudinally disposed recesses 7 adapted to receive fuses 8 of any suitable construction. The body of each fuse block is composed of insulating material 9 and to its opposite ends are applied metallic disks 10 provided with journals 12 engaging bearings 13 mounted upon the base 5.

To one journal of each fuse block is made fast a gear 14, which meshes with a centrally located gear 15 fast on an operating shaft 16 journaled at one extremity in a bearing 17 and at its opposite extremity in a bearing 18. Upon this operating shaft is fulcrumed an operating lever 19 carrying an actuating pawl 20 which is pivotally connected with the lever as shown at 21 and held in operative relation with the ratchet wheel 22 by a spring 23. The bearing plate 18 is provided with two stop pins 24 and 25, which limit the movement of the lever in both directions. The pawl 20 is provided with a tooth or lug 26 adapted to engage the stop pin 24 to limit the forward movement of the lever. During its rearward or reverse movement, the lever engages the stop pin 25. During the reverse movement of the lever, the pawl 20 slips over the teeth of the ratchet wheel, and a spring-actuated pawl 27 locks the ratchet wheel and its operating shaft against making the reverse movement.

At the opposite extremities of each groove 7, of each fuse block, are located angle-shaped contact members 28. Each of these members is provided with a base 29 which engages the bottom of the groove and is provided with outwardly projecting separated parts 30. The outer extremity of each of these members is angle-shaped as shown at 31 and consists of an outwardly projecting part 32, a horizontal part 33 and an outwardly projecting part 34 which projects beyond the outer face of the block and is adapted to engage a stationary contact 35 (see Fig. 9). Each contact 33 is composed of a base 36 and two upwardly projecting separated blades or parts 37 between which a part 34 of the contact 28 passes whenever a fuse is thrown into the circuit. The base of the contact 35 is provided with a perforation 38 adapted to receive a branch 39 of the circuit, which leads to one extremity of a contact 40 (see Fig. 10) located in an opening 41 formed in the base 5 beyond each extremity of each rotary block. An external member 42 of the circuit, is also connected with the contact 40, which is secured in place on the base 5 by means of a depending screw 43 to whose lower extremity is applied a nut 44, which is countersunk in the base (see Fig. 4).

To the opposite extremities of each fuse 8, is applied a contact 45 composed of a blade 46 and a clasp 47. The end of the fuse is inserted in this clasp which tightly grasps the same, while the blade 46 passes between the two knife blade parts 30 of the contact 28. Each end of each fuse 8 is provided with a metal sleeve 48 with which the extremities of the fuse wire 49 are connected. These metal sleeves engage the clasps 47 when this particular style of fuse is employed. The style of fuse shown in Fig. 5 may also be used if desired. This fuse may be designated 8^A and is provided at its opposite extremities with metallic sleeves 50 provided with knife blade projections 51 adapted to pass between the parts 30 of the contact 28 when this style of fuse is employed.

Assuming that each fuse block is equipped with fuses 8 or 8^A as the case may be, and that the contact blocks 36 are connected with the contacts 40 by means of short conductors 39 and that the opposite extremities 42 of the main line conductors are also attached to the contacts 40 at the opposite extremities of the base, the mechanism will be ready for use. Now if I assume that a fuse is blown out in either or both branches of the circuit, it is only necessary to impart a partial rotation to each rotary fuse block, of the necessary degree, to disconnect two fuses from the contact blocks 35 and throw two other fuses into engagement with the said blocks, thus reëstablishing the circuit. It will be understood that this can be quickly and easily accomplished by manipulating the lever 19 in the manner heretofore explained. As this lever is moved forward or toward the right (see Fig. 3) a partial rotary movement will be imparted to the operating shaft or spindle 16 whereby the gear 15 is rotated and the two meshing gears 14 actuated to impart corresponding partial rotary movements to the fuse blocks 6, in the same direction.

In order to apply the screws 43 to the contacts 40, it is necessary that these contacts be first inserted in the horizontal openings 41 the short conductors 39 having been first secured in place by soldering or otherwise. The terminals 42 are then placed in position after which the screws 43 are introduced through vertical openings 4 intersecting the openings 41. These screws will readily drop into position and the conductors 42 are fastened in place by applying nuts 44 to the lower or threaded extremities of the screws as heretofore explained.

Attention is called to the fact that the knife blade projections 34 of the contacts 48, are arranged in staggered relation upon the two rotary fuse blocks, in order to prevent interference during the movement of the blocks as would otherwise be the case unless the blocks were placed far enough apart to allow the contacts of the two blocks

to move in the same vertical plane. As it is, however, advisable for the sake of compactness to have the two blocks in close proximity, I prefer to arrange the blades 34 on the two blocks in different vertical planes.

Having thus described my invention, what I claim is:

1. The combination with a base, of two fuse blocks mounted to rotate thereon and arranged in suitable proximity to each other, each block being provided with a number of longitudinally arranged grooves adapted to receive fuses, the opposite extremities of the grooves being equipped with contacts, fuses located in these grooves and connected with the contacts, stationary contacts mounted on the base adjacent each fuse block and adapted to be engaged by each pair of contacts mounted on the corresponding fuse block, and suitable means for synchronously actuating the two fuse blocks, substantially as described.

2. The combination with a pair of cylindrical fuse blocks arranged in suitable proximity and adapted to rotate, each fuse block being equipped with a number of fuses, an electrical circuit, means for synchronously rotating the two blocks, and means whereby correspondingly located fuses upon the two blocks are simultaneously thrown into the circuit, substantially as described.

3. The combination with an electrical circuit, of a fuse block mechanism comprising a pair of cylindrical fuse blocks mounted to rotate, each fuse block carrying a number of longitudinally disposed fuses, means for synchronously actuating the two fuse blocks, and means whereby corresponding fuses of the two blocks are simultaneously thrown into the opposite branches of the electrical circuit, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. DUNFEE.

Witnesses:

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DENA NELSON.