

J. P. COLEMAN.  
LIGHTNING ARRESTER.  
APPLICATION FILED FEB. 1, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

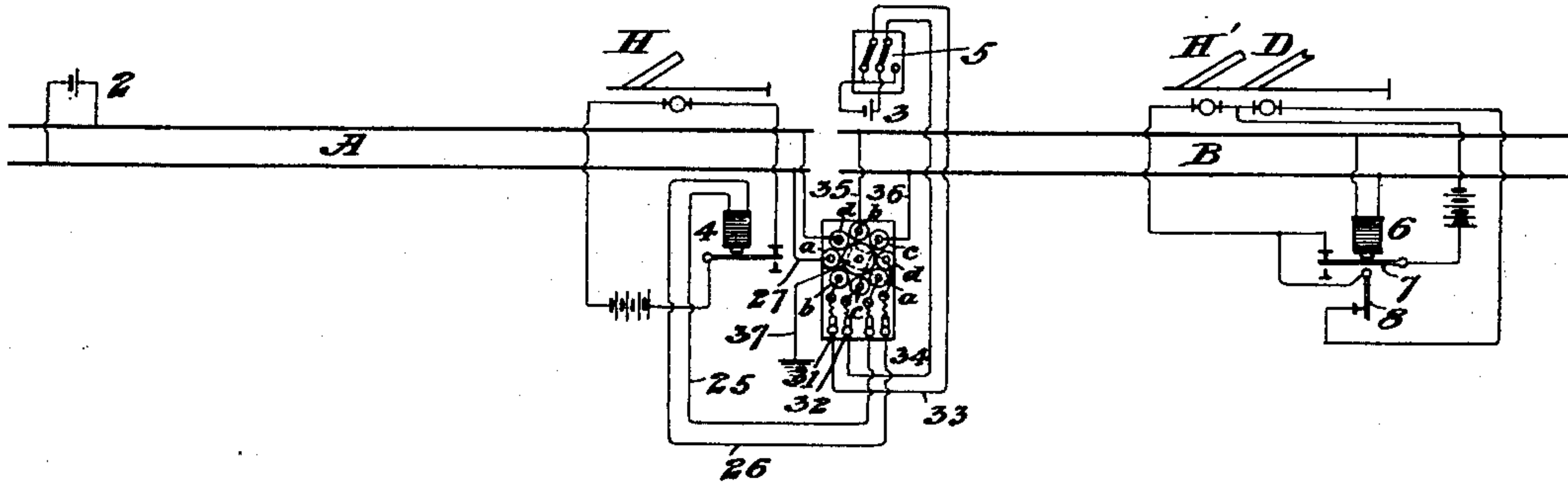
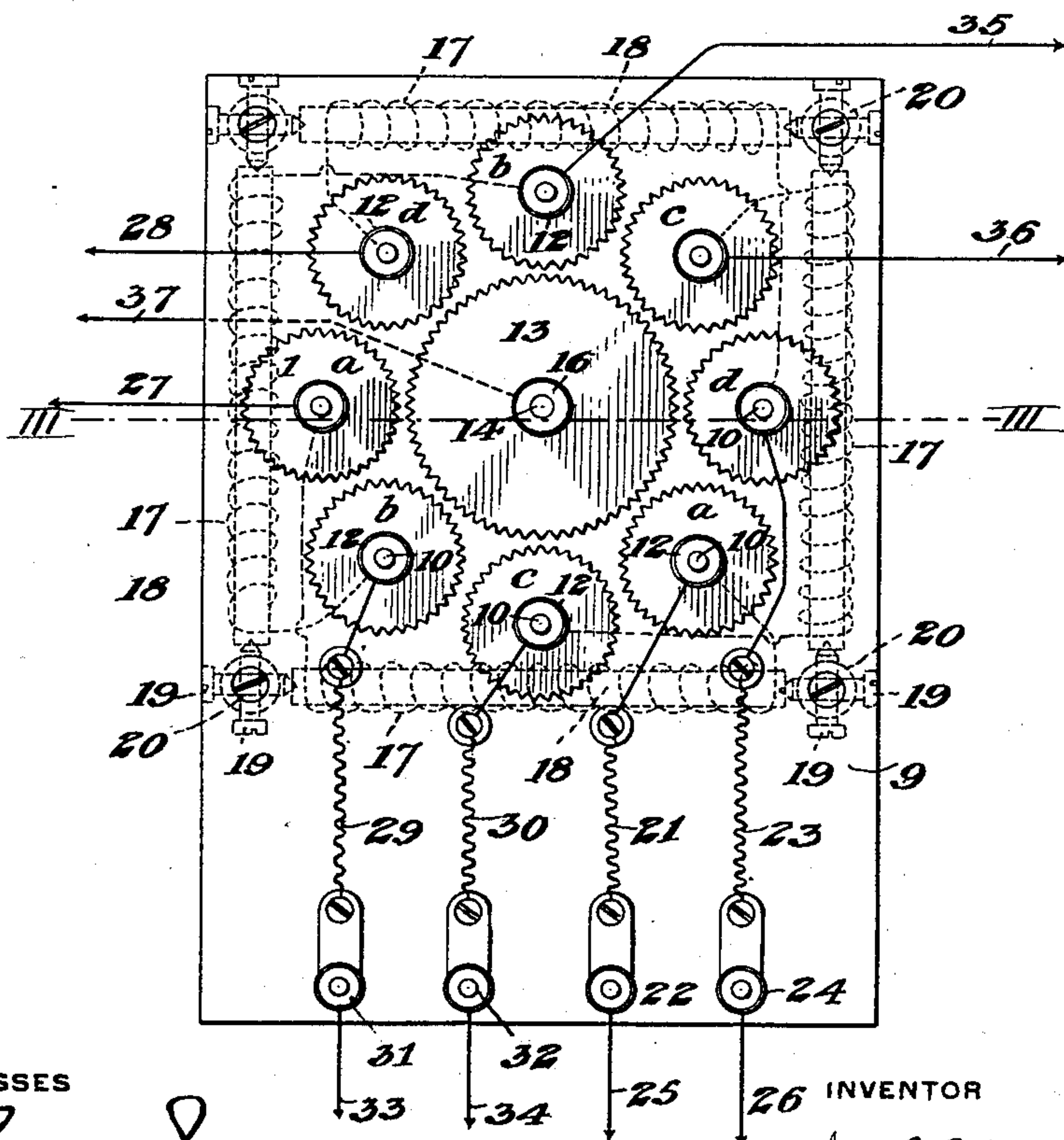


Fig. 2.



WITNESSES

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INVENTOR

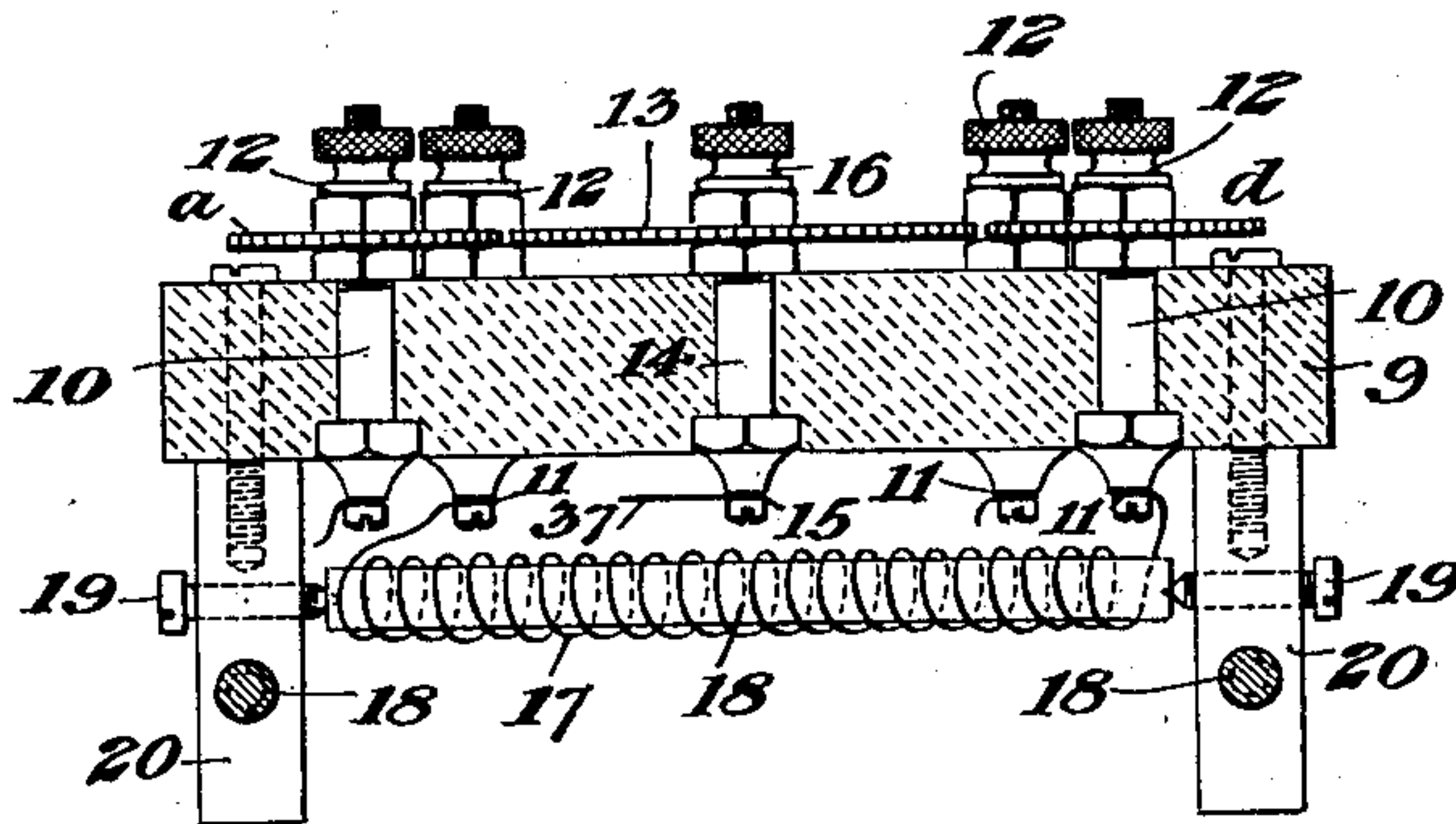
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2 SHEETS—SHEET 2.

Fig. 3.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JOHN PRESSLEY COLEMAN, OF EDGEWOOD PARK, PENNSYLVANIA, ASSIGNOR TO THE UNION SWITCH AND SIGNAL COMPANY, OF SWISSVALE, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 720,226, dated February 10, 1903.

Application filed February 1, 1902. Serial No. 92,141. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN PRESSLEY COLEMAN, of Edgewood Park, in the county of Allegheny and State of Pennsylvania, have  
5 invented a new and useful Lightning-Arrester, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a diagrammatic illustration of my improved lightning-arrester applied to two block-sections of a railroad. Fig. 2 is a top plan view of the arrester, and Fig. 3 is a cross-section on the line III III of Fig. 2.

15 My invention relates to that class of lightning-arresters which are used in connection with automatic block-signal systems, and particularly those systems in which the rails form the means for carrying the main circuits, and it is designed to afford a simple  
20 and effective apparatus whereby the static charge of electricity in the rails constituting a block-section may be easily discharged.

A further object is to provide adjustments  
25 whereby air-gaps formed between adjacent plates of the arrester may be regulated and means by which said plates may be used for a prolonged period, even after repeated injury.

30 My invention consists of a lightning-arrester which may be introduced between the adjacent ends of block-sections. Said lightning-arrester comprises a series of plates arranged in close proximity to a common  
35 ground-plate and lying electrically adjacent to each other and to the ground-plate, either by reason of their positions relative to each other or of the connections between them.

It further consists in providing the plates  
40 with means for adjusting the space between adjacent plates and in forming on their periphery suitable projections which may be brought into proper positions so that the device may be used repeatedly after the plate  
45 has been injured by the charge of electricity.

My invention further consists in certain features of construction and combination of parts, as will more fully hereinafter appear, and be pointed out in the claims.

50 In the drawings, A B are adjacent block-

sections, the rails of which constitute the conductors of a track-circuit, which are fed by suitable track-batteries 2 3. The track-circuit in section A includes the helix of the relay 4, controlling the block-signal or other  
55 circuit in the usual way. The track-section formed by section B is supplied from track-battery 3 through a pole-changer 5, operated by the signal H, which is provided with the usual signal-operating mechanism governed  
60 by the relay 4. The relay 6 is similar to the relay 4, but is provided with a neutral armature 7 and a polarized armature 8 of well-known construction. The neutral armature controls the signal or other circuit, and the  
65 polarized armature controls a second signal or other circuit independently of that controlled by the neutral armature in the usual manner by the reversal of the direction of the current by the operation of the pole-  
70 changer which is attached to the signal or other device of the next succeeding block.

A train on the section B will short-circuit the relay, and thus operate the usual neutral and polarized armatures. Between the adjacent  
75 block-sections and connected to the rails of each section I place my improved lightning-arrester, which comprises a suitable base, of insulating material 9, through which extend suitable pins 10, provided with binding-  
80 posts 11 and 12. These pins 10 are provided with notched plates or disks *a a, b b, c c, d d*, preferably arranged in groups, as shown in Fig. 2, and surround a central ground plate or disk 13, mounted on a pin 14 and provided  
85 with suitable binding-posts 15 and thumb-nut 16. An inductive resistance 17 is placed between the pins carrying the plates *a a*, and the ends of the coils are connected to the binding-posts 12 12. The plates *b b, c c*, and *d d*  
90 are similarly connected, and these inductive resistance-coils 17 I preferably place beneath the base 9 and support them upon a rod or core 18, which is held in position by clamping-screws 19, which pass through the legs 20 of  
95 the base, as shown in Figs. 2 and 3.

One of the binding-posts 11 for the plate or disk *a* is connected to a suitable fuse-coil 21, which is connected to a binding-post 22. One  
100 of the plates *d* is similarly connected to a fuse-



coil 23, which is connected to the binding-post 24. From the binding-posts 22 and 24 connections 25 and 26 lead to the relay 4, controlling the signals for section A, and from 5 the binding-posts 11 of the other disks *a* and *d* connections 27 and 28 lead to the rails of block-section A. One of the plates *c* and *b* is connected to fuse-coils 29 and 30, connected to binding-posts 31 and 32, and from 10 the posts connections lead to the pole-changer 5 in the track battery-circuit for block-section B. The binding-posts 11 for the other disks or plates *c* *b* are connected to the tracks of section B by the connections 35 and 36. 15 The ground plate or disk 13 is connected with the ground by a suitable connection 37. The disks or plates *a* *b* *c* *d* and the ground-plate 13 are serrated and lie in the same horizontal plane, as shown in Fig. 3. The serrated edges 20 are adjacent to each other, and the disks or plates, as before described, are electrically connected, so that the static charge accumulated in the rails of one block-section is discharged into the ground instead of passing 25 from the rails to the block instrument or to one or both rails of the next block-section. When the serrations of the disks *a* *b* *c* *d* adjacent to the ground-plate 13 are melted off by the electrical discharge passing to the 30 ground, the horizontal arrangement of the plates prevents the fusing together of the points that are melted, thereby preventing the uniting of circuits that should remain insulated one from the other or from the ground. 35 The operation of my device will be readily understood by those skilled in the art. Its advantages result from the arrangement of its discharge-plates, which permits discharges to occur between any two members of the 40 circuits protected without presenting more than one air-gap to the path of rupture. Other advantages result from the simplicity of construction and the mounting of the plates so that they may be used after repeated injury. 45

Many changes may be made in the form

and arrangement of parts without departing from the spirit and scope of my invention, since

I claim—

1. In a lightning-arrester, the combination of one or more serrated electrodes for each conductor protected, arranged so that at least one electrode of each conductor lies adjacent to an electrode of one of the other conductors, and a serrated electrode connected to earth and arranged in juxtaposition to all the other electrodes, substantially as described. 50 55

2. In a lightning-arrester, the combination of a centrally-arranged serrated electrode connected to earth, and a plurality of serrated electrodes at least one for each conductor to be protected, arranged relatively to each other and to the said electrode connected to earth as to form an air-space between any 60 65 two adjacent electrodes, substantially as described.

3. A lightning-arrester, comprising a supporting-base, two or more serrated disks electrically adjacent to each other but not touching and connected to electrical devices or circuits, a serrated electrode connected to earth and arranged in juxtaposition to the line-electrodes, the said disks being mounted above the level of the top of said base so as to afford a space between said base and said disks, substantially as described. 70 75

4. In a lightning-arrester, the combination of a central adjustable serrated disk forming the earth-electrode, and a circular series of adjustable serrated disks surrounding the earth-electrode and forming the line-electrodes, all of said electrodes being in operative juxtaposition with its immediate neighbors, substantially as described. 80 85

In testimony whereof I have hereunto set my hand.

JOHN PRESSLEY COLEMAN.

Witnesses:

W. L. MCDANIEL,  
JAMES CHALMERS, Jr.