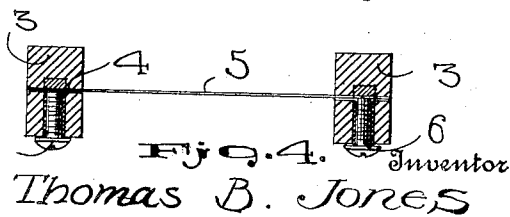
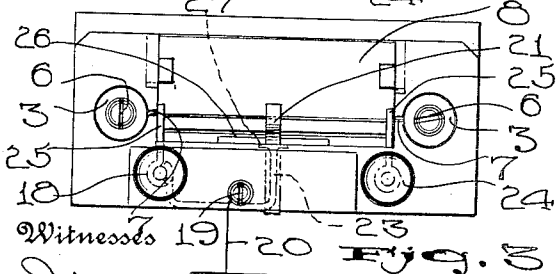
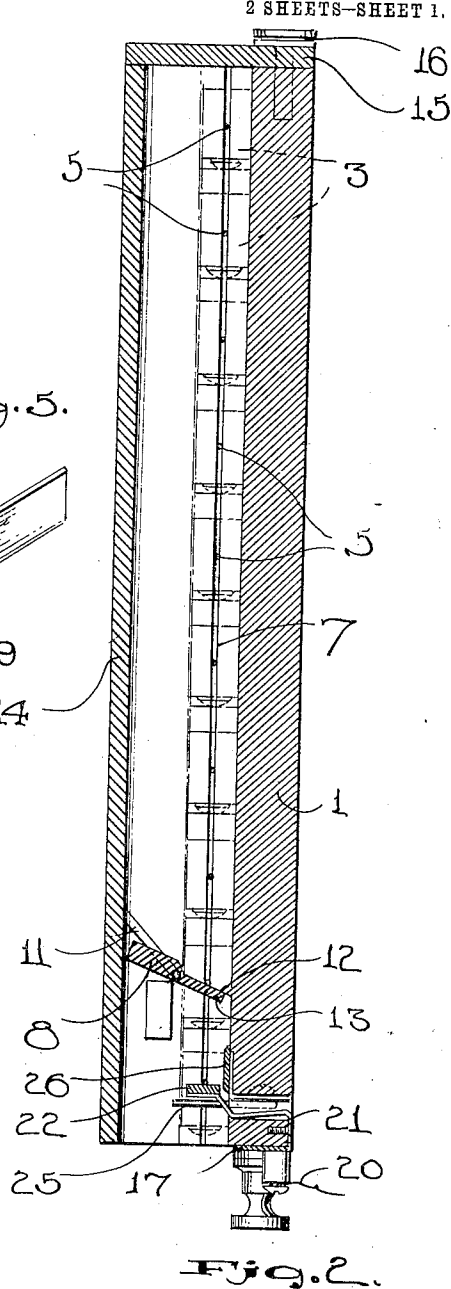
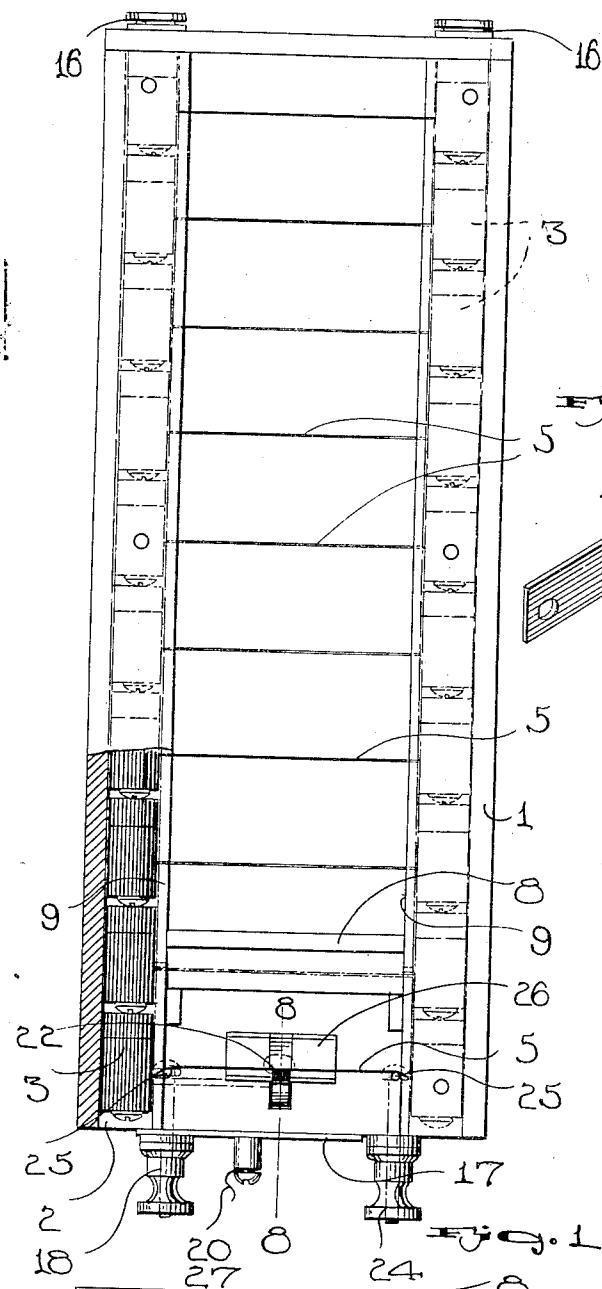


1,054,559.

Patented Feb. 25, 1913.

2 SHEETS—SHEET 1.



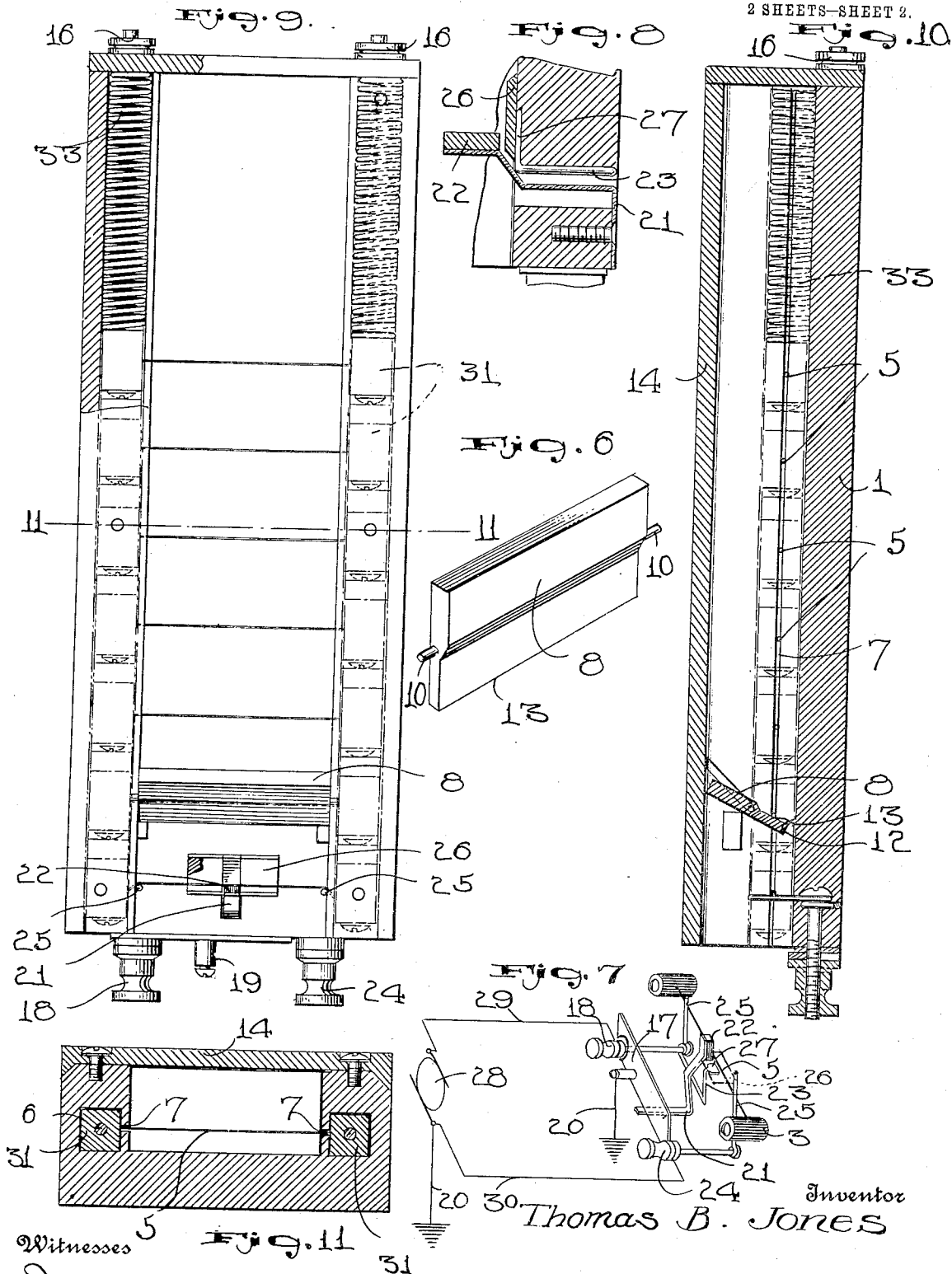
Witnesses
 J. Jones
 Dr. L. McLaughlin.

By E. C. Frooman,
 his attorney

1,054,559.

Patented Feb. 25, 1913.

2 SHEETS-SHEET 2.



Witnesses
J. M. Jones
W. L. McLaughlin

Inventor
 Thomas B. Jones
 By *E. C. Frooman*,
 his Attorney

UNITED STATES PATENT OFFICE.

THOMAS BENTON JONES, OF DOME, ARIZONA.

AUTOMATIC FUSE-BLOCK AND RELAY PROTECTOR.

1,054,559.

Specification of Letters Patent. Patented Feb. 25, 1913.

Application filed November 4, 1912. Serial No. 729,406.

To all whom it may concern:

Be it known that I, THOMAS BENTON JONES, a citizen of the United States, residing at Dome, in the county of Yuma and State of Arizona, have invented certain new and useful Improvements in Automatic Fuse-Block and Relay Protectors, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an automatic fuse block and relay protector and has for its object the production of an efficient fuse block which will automatically reset itself after one fuse has burned out, one of the features being the automatic ground which is brought into action whenever a fuse wire is burned or blown out and stays thus grounded until another fuse wire replaces the burned one, which then releases the ground.

Another object of this invention is the production of a simple and efficient means whereby the fuses while inactive will be protected against burning.

With these and other objects in view, this invention consists of certain novel constructions, combinations and arrangements of parts as will be hereinafter fully described and claimed.

In the drawings: Figure 1 is a front elevation of the fuse block partly in section. Fig. 2 is a central longitudinal section of the fuse block. Fig. 3 is a bottom plan view of the fuse block. Fig. 4 is a transverse sectional view through two of the plugs connected by means of a fuse wire. Fig. 5 is a detail perspective of the grounding plate. Fig. 6 is a detail perspective of the protector gate. Fig. 7 is a diagrammatic view of the electrical circuits involved in connection with the present invention. Fig. 8 is an enlarged section taken on line 8—8 of Fig. 1. Fig. 9 is a flat elevation partly in section of a modified form of the invention. Fig. 10 is a central longitudinal section of the structure illustrated in Fig. 9. Fig. 11 is a section taken on line 11—11 of Fig. 9.

By referring to the drawings it will be seen that 1 designates the box or body of the fuse block which is provided with a channel 2 extending along each side of the box 1. Plugs 3 are slidably mounted within the channels 2 and may be made of any desired shape, said plugs being shown circular in cross section in Fig. 1. These plugs 3 are

preferably formed of insulating material and are provided with transversely extending apertures 4 in which apertures fit the respective ends of the fuse wire 5. The ends of the fuse wire 5 are held in engagement with the plugs 3 by means of binding screws 6. The binding screw 6 working in a threaded metal tube which is firmly set in plugs 3. The transversely extending apertures 4 in plugs 3 pass through the threaded metal tube in which binding screw 6 works. The end of the tube extending into the plug 3 being solid as far as the aperture. The transverse aperture being a part of and forming a straight transverse aperture through plug 3 into which fit the respective ends of fuse wire 5 being held in engagement by binding screw 6. These plugs 3 are placed one above the other as illustrated in the drawings so as to successively take up their correct position as soon as one of the fuse wires have become burned. A longitudinal extending groove 7 is formed upon one side of each of the channels 2 so as to allow the fuse wires 5 to pass therethrough. It will, therefore, be seen that these plugs 3 may easily slide to their correct position as soon as one of the fuse wires should become blown out or burned.

A hinged gate 8 is mounted between the side walls 9 of the channels 2 and has its stub shafts 10 journaled in the diagonally extending slots 11. A rib 12 is formed upon the rear wall of the box 1, against which rests the lower end 13 of the hinge gate 8. Also a rib is formed on the wall of the channel 2 to prevent the hinge gate 8 from turning only sufficiently to allow the fuse wire to pass through. This gate 8 is adapted to prevent the fuse wires which are inactive from becoming burned, should the active fuse become burned. The gate 8, however, is so mounted as to allow the same to be swung out of position so as to permit the passage of the fuse plugs and fuse wire below the gate. As soon as the fuse wire has passed below the gate, it will be seen that the gate 8 will return to its normal position.

In the foregoing description it will be seen that a very efficient and automatic fuse block has been produced for supplying the fuses to their correct position automatically.

A cover 14 is placed over the box 1 and the upper end of the box 1 is closed by means of a rib 15 which is firmly held in position by means of binding screws 16. It

will be seen that the box may be loaded by removing the lid 15 and placing additional plugs 3 and 5 therein.

A grounding plate 17 is screwed to the box 1 by means of the insulated binding post 18 and this grounding plate 17 is provided with a stud 19 to which the grounding wire 20 is attached. A spring lever 21 is connected to the grounding plate 17 and carries at its upper end an insulating block 22 which is firmly brought into engagement with one of the fuse wires 5. The spring lever 21 is, therefore, held out of engagement with the contacting arm 23. The binding post 18 as well as the binding post 24 is provided with an upwardly extending finger 25 and the fuse wire 5 rests across the fingers 25 in such a manner as to support the plugs 3 in their correct position. A carbon plate 26 is screwed to the rear wall of the box 1 and shields the enlarged end 27 of the arm 23. It will, therefore, be seen that the arms 21 and 23 will be held out of engagement with each other, but as soon as the fuse wire 5 should melt, the spring arm 21 would be brought against the carbon plate 26 which covers the enlarged end 27 of the arm 23. The carbon block 26 prevents fusing between the arms 21 and 23 when returned to their open position after having been brought into contact by the blowing out of the previously engaged fuse wire 5. The duty of the arms 21 and 23 is to make a direct ground through the carbon plate 26 for carrying off over charges of lightning. This automatic ground used in connection with the fuse block will be used on power lines, automatic signals and telegraph for protecting relays and telephone lines for protecting their equipment, the size and style of block and automatic ground depending on the class of service for which it is to be used.

Under ordinary circumstances it will be understood when the current passes through the regular channel, the current will pass from the generator 28 through the wire 29, binding post 18, finger 25 of the binding post 18, fuse wire 5, finger 25 of the binding post 24, through the binding post 24 and back to the generator through the wire 30. When the fuse wire 5 is burned, the circuit between the two fingers 25 will be broken and the current will then pass from the generator through the wire 29, binding post 18, arm 23, arm 21, grounding plate 17, and to the ground through the ground wire 20, thereby cutting off the current through the ordinary circuit and sending the current to the ground.

As previously explained the plugs 3 may be made of any desired shape as for instance, being made square as indicated at 31 in Fig. 11. Coil springs 32 may be also employed to exert a pressure upon the plugs

and cause the same to feed provided the plugs would not efficiently feed through gravity owing to the position of the box 1.

What is claimed is:—

1. A fuse box of the class described comprising a body, said body provided with a plurality of channels, plugs positioned within said channels, fuse wires connecting said plugs, contacting members crossing said fuse wire, and means cooperating with said contacting members for sending the current adapted to pass through said fuse wire to the ground when said fuse wire becomes burned.

2. A fuse box of the class described comprising a body, plugs slidably mounted within said body, fuse wires connecting said plugs, means for forming a contact with said fuse wires, and protector means carried by said body for protecting the inactive fuse wires.

3. A fuse box of the class described comprising a body, a plurality of plugs positioned therein one upon the other, fuse wires connecting said plugs in pairs, contacting means engaging said fuse wires and constituting a support for said plugs and allowing said plugs to automatically drop from said body when said fuse wire becomes burned whereby the next succeeding fuse wire will be brought into contact with said contacting members, and a protector means carried by said body for protecting the inactive fuse wires.

4. A fuse box of the class described comprising a body, a plurality of plugs positioned therein one upon the other, fuse wires connecting said plugs in pairs, contacting means engaging said fuse wires and constituting a support for said plugs and allowing said plugs to automatically drop from said body when said fuse wire becomes burned whereby the next succeeding fuse wire will be brought into contact with said contacting members, and a gate pivotally mounted upon said body for protecting the inactive fuse wires and allowing the plugs to feed automatically when one fuse wire has become burned.

5. A fuse box of the class described comprising a body, said body provided with a plurality of longitudinally extending channels, said channels provided with side walls having longitudinally extending slots, plugs positioned within said channels, fuse wires connecting the opposite plugs and passing through said slots, and contacting means engaging said fuse wires for supporting said plugs and fuse wires in an operative position.

6. A fuse box of the class described comprising a body, said body provided with a plurality of longitudinally extending channels, said channels provided with side walls having longitudinally extending slots, plugs

positioned within said channels, fuse wires connecting the opposite plugs and passing through said slots, and contacting means engaging said fuse wires for supporting said plugs and fuse wires in an operative position, and spring means for exerting a downward pressure upon said plugs.

7. A box of the class described comprising a body, said body provided with a plurality of channels, plugs working in said channels, said body provided with side walls adjacent said channels, said side walls provided with longitudinally extending slots, fuse wires engaging said plugs, binding posts carried by said body, upwardly extending contact fingers engaging said fuse wires, a grounding plate carried by said body, a spring arm carried by said body and engaging said grounding plate, a grounding arm connected to one of said binding posts, an insulating block carried by the upper end of said spring arm and adapted to engage the fuse wire for holding said spring arm and grounding arm out of contact, said spring arm and grounding arm adapted to contact when said fuse wire is broken, means for connecting said grounding plate with the ground whereby the current may pass from one of said binding posts through said grounding arm, through said spring arm, and through said grounding plate to the ground, and said plugs adapted to automatically feed to an operative position.

8. A box of the class described comprising a body, said body provided with a plu-

ality of channels, plugs working in said channels, said body provided with side walls adjacent said channels, said side walls provided with longitudinally extending slots, fuse wires engaging said plugs, binding posts carried by said body, upwardly extending contact fingers engaging said fuse wires, a grounding plate carried by said body, a spring arm carried by said body and engaging said grounding plate, a grounding arm connected to one of said binding posts, an insulating block carried by the upper end of said spring arm and adapted to engage the fuse wire for holding said spring arm and grounding arm out of contact, said spring arm and grounding arm adapted to contact when said fuse wire is broken, means for connecting said grounding plate with the ground whereby the current may pass from one of said binding posts through said grounding arm, through said spring arm, and through said grounding plate to the ground, and said plugs adapted to automatically feed to an operative position, said grounding arm provided with a flattened head and a protector carbon block overhanging said enlarged head for preventing the fuse wire from coming in engagement with said grounding arm.

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

THOMAS BENTON JONES.

Witnesses:

C. F. RATHBUN,
G. H. RANDALL.