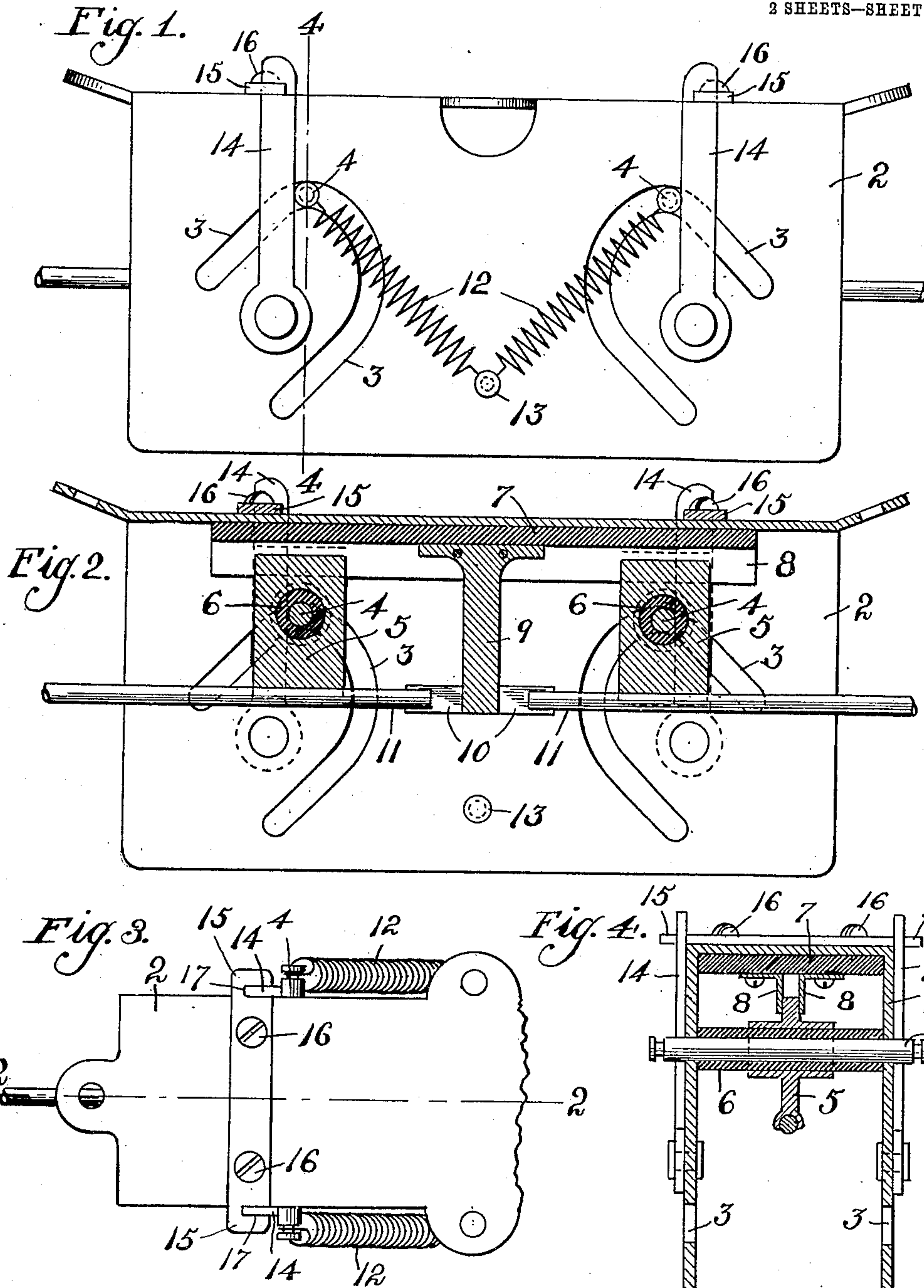


H. NANNENHORN.
TROLLEY SAFETY DEVICE.
APPLICATION FILED APR. 15, 1908.

913,542.

Patented Feb. 23, 1909.

2 SHEETS—SHEET 1.



WITNESSES:

C. F. Wilson
E. L. Moor.

INVENTOR:

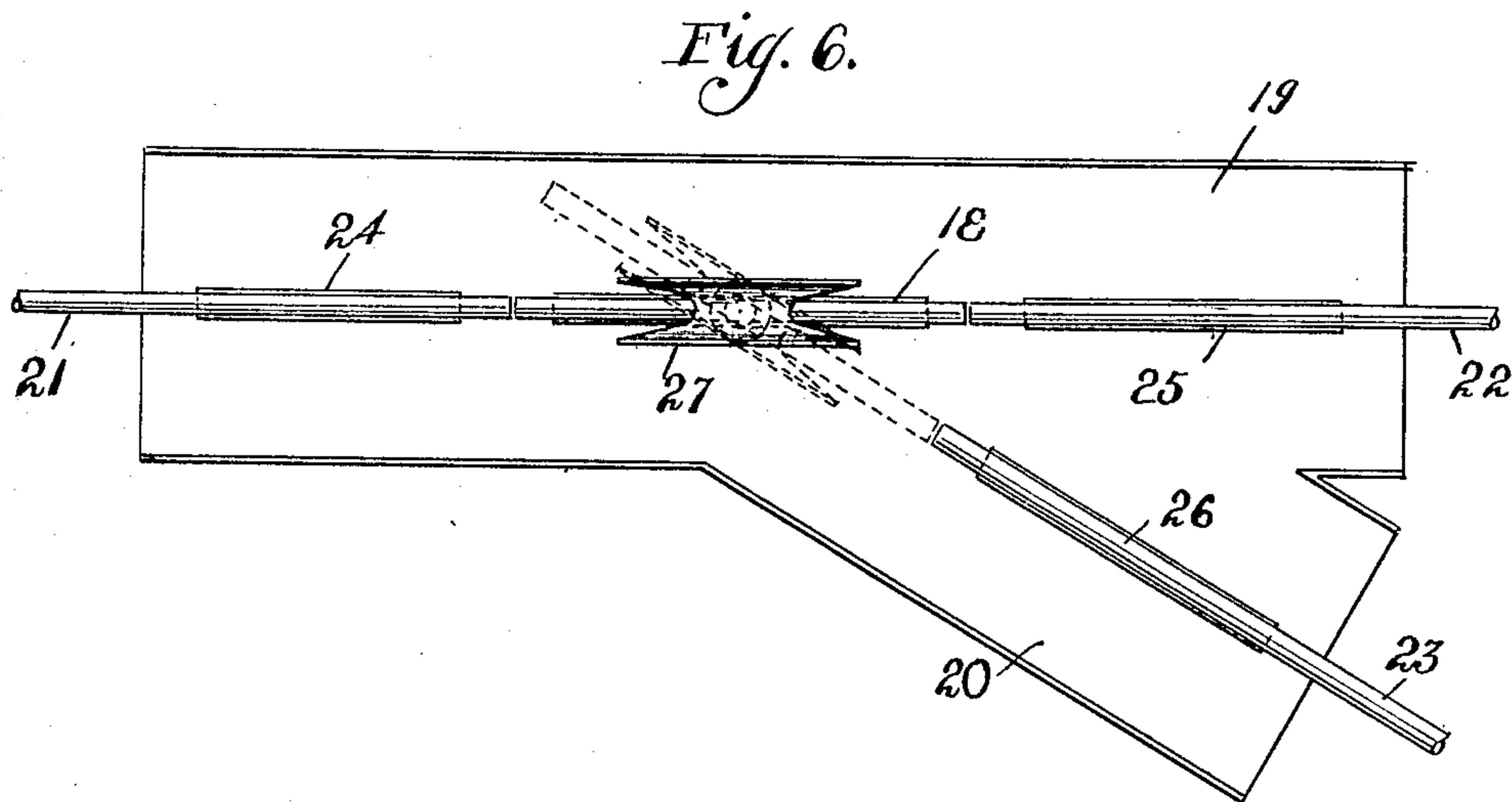
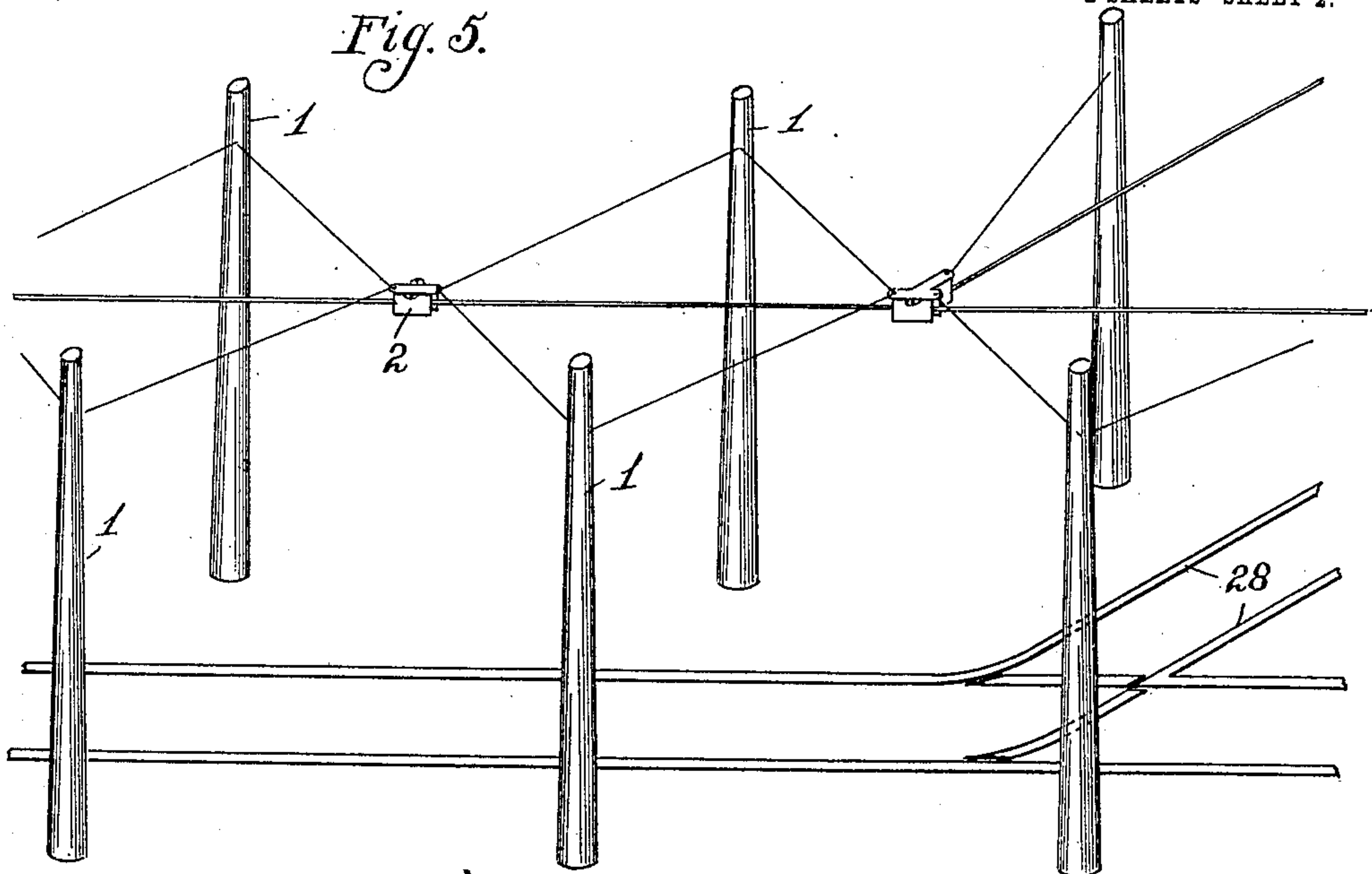
Henry Nannenhorn
BY: Rudolf [Signature]
ATTORNEY

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Henry Nannenhorn
BY *Rudolph L. [Signature]*
ATTORNEY.

UNITED STATES PATENT OFFICE.

HENRY NANNENHORN, OF CHICAGO, ILLINOIS.

TROLLEY SAFETY DEVICE.

No. 913,542.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed April 15, 1908. Serial No. 427,131.

To all whom it may concern:

Be it known that I, HENRY NANNENHORN, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Trolley Safety Devices; and I do hereby 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.

This invention relates to a novel construction in a safety device for trolley lines, the object being to provide means for automatically breaking the circuit through a severed section of trolley wire between the supports thereof, and consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings illustrating my invention: Figure —1— is a side elevation of a trolley wire supporting device constructed in accordance with my invention. Fig. —2— is a central longitudinal section of the same. Fig. —3— is a fragmentary detail top plan view of the same. Fig. —4— is a vertical transverse section on the line 4—4 of Fig. —1—. Fig. —5— is a perspective view of a trolley line showing a switch to a branch line. Fig. —6— is a bottom plan view of a trolley deflecting device employed.

My said invention is designed to obviate danger to pedestrians and teamsters from depending live broken trolley wires by providing means whereby broken sections of such wires are automatically thrown out of the circuit and thus rendered harmless.

The invention resides in the particular construction of circuit breakers employed.

Suitably supported on the trolley poles —1— at regular intervals are inverted U-shaped plates —2— each provided in its flanges with inclined substantially U-shaped oppositely disposed slots —3— in which pins —4— carrying blocks —5— are movable, said blocks being insulated from said pins by means of insulation —6— interposed between the same. Mounted upon the inner face of the web of said plate —2— is a strip —7— of insulating material on which are mounted two opposed parallel L-shaped plates —8— between which the blocks —5— are received, said plates serving to transmit the electric current from one of said blocks to the other thereof. The trolley wire sec-

tions —9— are secured at their opposite ends to the blocks —5— of adjacent plates —2— and carry the current from the plates —8— of one plate —2— to the plates —8— of the next succeeding plate —2—. Midway of said strip —7— of insulating material is mounted a depending post —9— which is preferably also maintained in contact with said plates —8— and at its free end is equipped with horizontally disposed contact arms —10— adapted to engage the extreme projecting free end portions —11— of the trolley wires, the main function of said arms —10— being to provide a bridge between opposing ends of adjacent trolley wire sections for the passage of the trolley wheel without interrupting the flow of current. The ends of said pins —4— project beyond said flanges of said plates —2— and are connected with the ends of spiral tension springs —12— secured at their other ends to a pin —13— mounted midway between the ends and adjacent the lower edges of said flanges of said plate —2—, said springs serving to normally draw said pins —4— into the lower portions of said slots —3— and acting to withdraw the blocks —5— from contact with the plates —8— and also throw the ends —11— of the trolley wires out of engagement with the arms —10— of the post —9— when a trolley wire breaks, and thus cut the broken sections out of the circuit. The said pins —4— are maintained normally in the highest portions of said slots —3— by the tension of the trolley wire sections and their engagement with levers —14— pivotally secured at one end to said flanges of said plates —2— and which at their free ends engage stops —15—, the latter comprising cross-bars of greater length than the width of the web of the plate —2— and secured to the latter by means of screws —16—, the projecting recesses —17— receiving said levers —14— and holding the latter against lateral movement.

The operation of my device is as follows: The trolley wire sections are primarily suitably secured to the blocks —5—, the stops —15— being preferably removed and the levers —14— swung downwardly so as to permit the pins —4— to lie in the outer ends of the upper arms of said slots —3—. This being accomplished the said levers —14— are swung back and said pins —4— forced thereby to the position shown in Fig. —1— and there held while said stops —15—

are replaced, the tension of the said trolley wires being thus increased beyond the usual tension imparted by construction crews. When said pins are thus thrown back the blocks —5— are thrown in contact with the plates —8— and the projecting ends —11— of the trolley wire are thrown into engagement with the arms —10— of the post —9—. The number and character of the contacts insures uninterrupted transmission of current from one section of trolley wire to the next. If one of said sections should break, however, the said springs —12— will instantly draw the blocks —5— to which the ends of said section are secured rearwardly and downwardly, and the latter will be turned on their pivots by the weight of the trolley wire and are thus withdrawn from engagement with the plates —8—. At the same time the ends —11— of the wires will be thrown out of engagement with the arms —10— of the posts —9— and the current thus entirely cut out of said broken section, thus obviating all danger to pedestrians therefrom.

In connection with the above I also prefer to provide means whereby the danger of trolley wheels running off the wires at switches is avoided. These means consist of a switch member —18— pivotally secured to the web of the inverted U-shaped plate —19— having the arm —20— and to which the ends of trolley wire sections —21— —22— and —23— are respectively secured by means of suitable depending posts —24— —25— and —26—. The said switch member —18— is disposed between and suitably maintained normally in alinement with said posts —24— and —25— and is adapted to swing into alinement with said post —26—, the same being thus swung by the trolley wheel —27— of a car switched to the branch line —28—.

My said invention is simple and efficient. I claim as my invention:

1. In a trolley line, inverted U shaped members suspended from the trolley poles, and provided in their flanges with substantially inverted U shaped slots having their arms disposed at an incline, the slots at opposite ends of said flanges being oppositely disposed, pins movable in said slots, blocks mounted on said pins and insulated therefrom, each of said blocks being secured to one end of a section of trolley wire, contact members mounted within said U shaped members and engaging said blocks when the said pins are moved into the highest portion of said slots, said contact members serving to carry the current from one block to another, springs engaging said pins and normally maintaining the same in the lower portion of the lower arms of said slots, and movable stops disposed in the path of said pins to maintain the same in the uppermost portions of the

said slots against the tension of the trolley wire sections, the latter serving to support said pins against the action of said springs.

2. In a trolley line, inverted U shaped members suspended from the trolley poles, and provided in their flanges with substantially inverted U shaped slots having their arms disposed at an incline, the slots at opposite ends of said flanges being oppositely disposed, pins movable in said slots, blocks mounted on said pins and insulated therefrom, each of said blocks being secured to one end of a section of trolley wire, contact members mounted within said U shaped members and engaging said blocks when the said pins are moved into the highest portion of said slots, said contact members serving to carry the current from one block to another, springs engaging said pins and normally maintaining the same in the lower portion of the lower arms of said slots, and movable stop-levers pivotally secured to said U shaped members, and cross-bars rigidly secured to said U shaped members and projecting into the paths of said levers, the latter serving to hold said pins against movement in one direction by the tension exerted by the trolley wire, the latter serving to support said pins against the action of said springs.

3. In a trolley line, inverted U shaped members suspended from the trolley poles, and provided in their flanges with substantially inverted U shaped slots having their arms disposed at an incline, the slots at opposite ends of said flanges being oppositely disposed, pins movable in said slots, blocks mounted on said pins and insulated therefrom, each of said blocks being secured to one end of a section of trolley wire, contact members mounted within said U shaped members and engaging said blocks when the said pins are moved into the highest portion of said slots, said contact members serving to carry the current from one block to another, springs engaging said pins and normally maintaining the same in the lower portion of the lower arms of said slots, and movable stop-levers pivotally secured to said U shaped members, and cross-bars rigidly secured to said U shaped members and projecting into the path of said levers, the latter serving to hold said pins against movement in one direction by the tension exerted by the trolley wire, the latter serving to support said pins against the action of said springs and a bridge member disposed between the ends of said U shaped plate and engaging the extreme end portion of adjacent trolley wire sections.

4. In a trolley line, inverted U shaped members suspended from the trolley poles, and provided in their flanges with substantially inverted U shaped slots having their arms disposed at an incline, the slots at op-

posite ends of said flanges being oppositely disposed, pins movable in said slots, blocks mounted on said pins and insulated therefrom, each of said blocks being secured to one end of a section of trolley wire, contact members mounted within said U shaped members and engaging said blocks when the said pins are moved into the highest portion of said slots, and said contact members serving to carry the current from one block to another, springs engaging said pins and normally maintaining the same in the lower portion of the lower arms of said slots, and movable stop-levers pivotally secured to said U shaped members, and cross-bars rigidly secured to said U shaped members and projecting into the path of said levers, there be-

ing recesses in the end portions of said cross-bars in which the said levers are received, the latter serving to hold said pins against movement in one direction by the tension exerted by the trolley wire, the latter serving to support said pins against the action of said springs, and a bridge member disposed between the ends of said U shaped plate and engaging the extreme end portion of adjacent trolley wire sections.

In testimony whereof I have signed my name in the presence of two subscribing witnesses.

HENRY NANNENHORN.

Witnesses:

RUDOLPH WM. LOTZ,
E. L. MOORE.