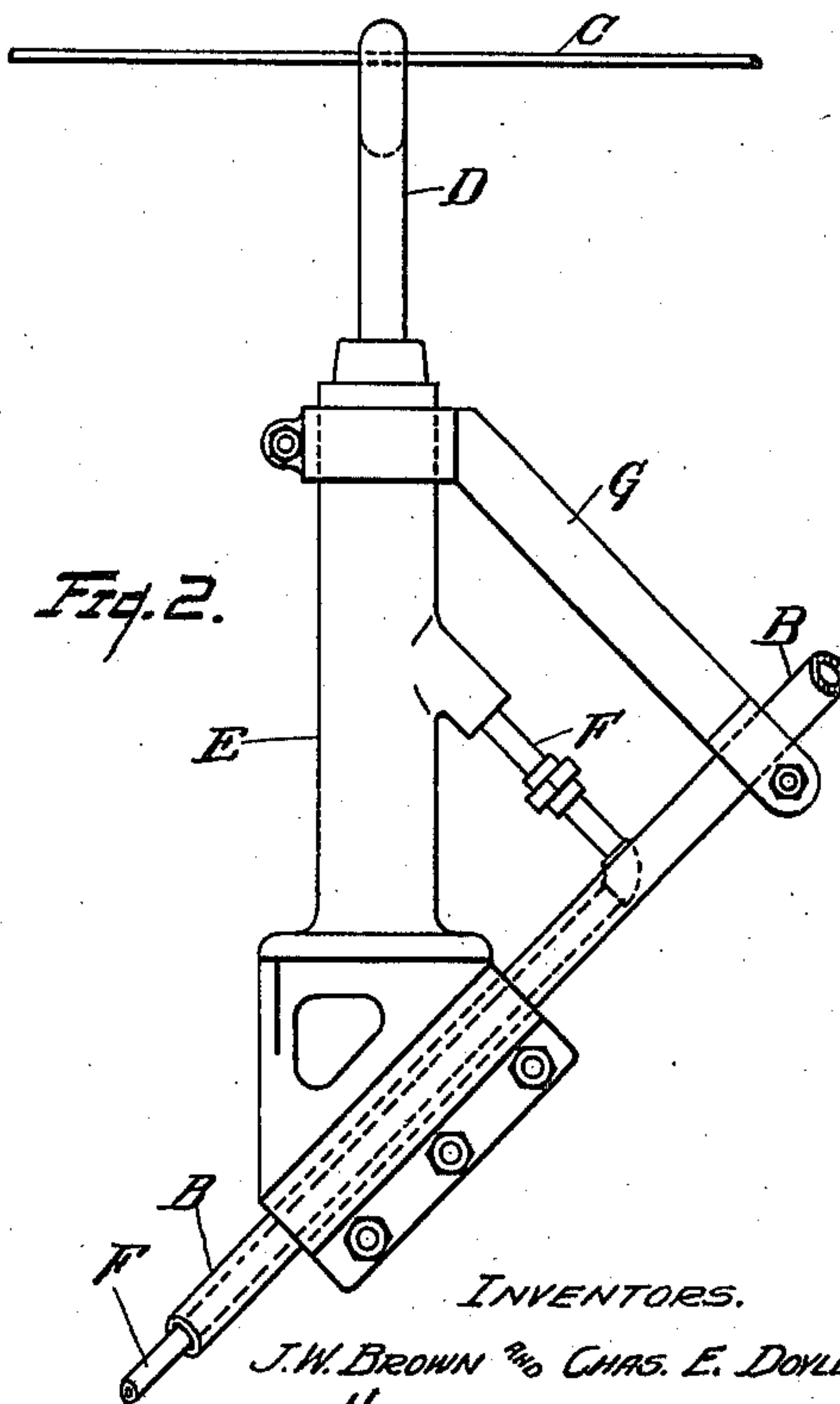
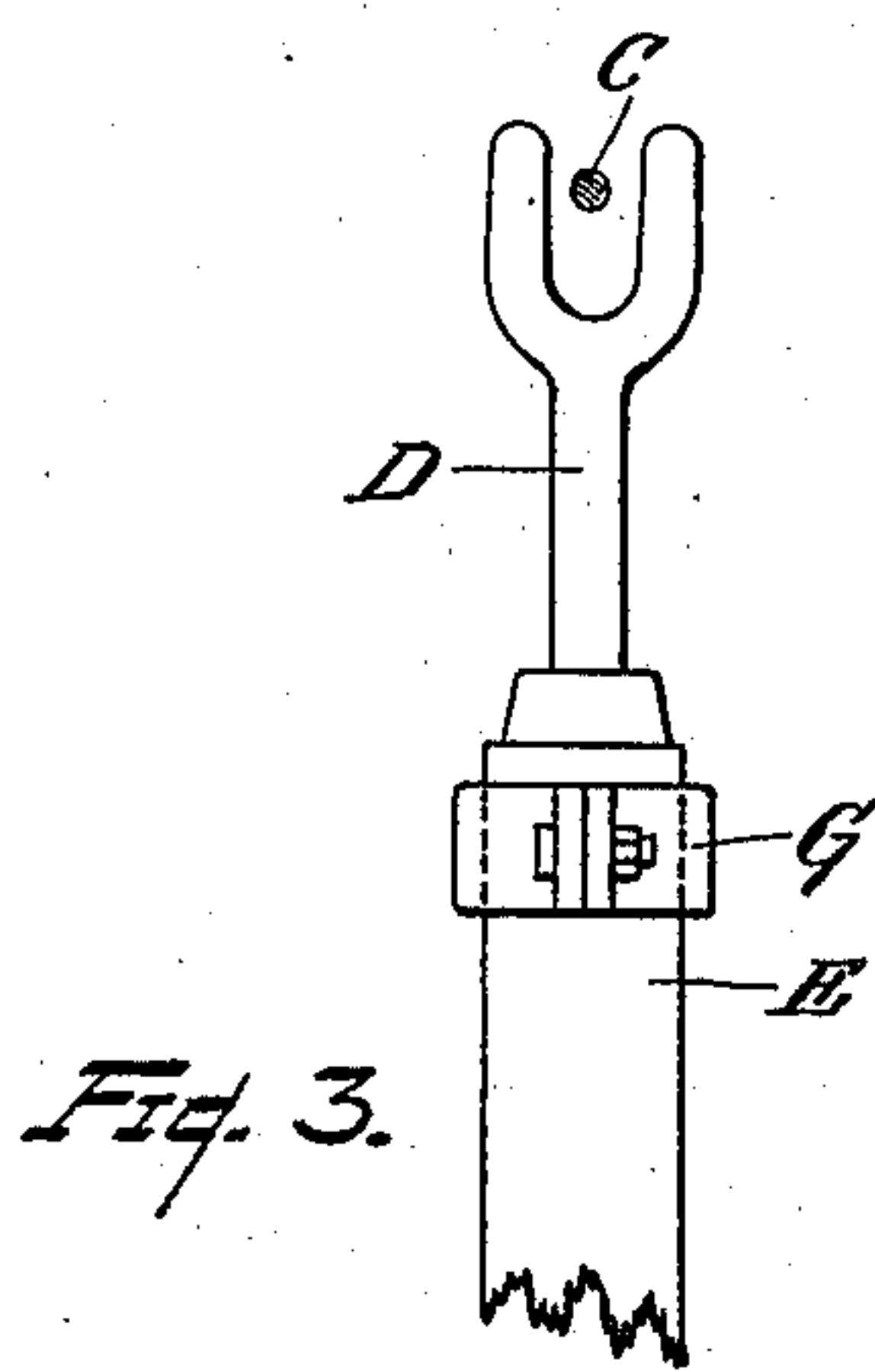
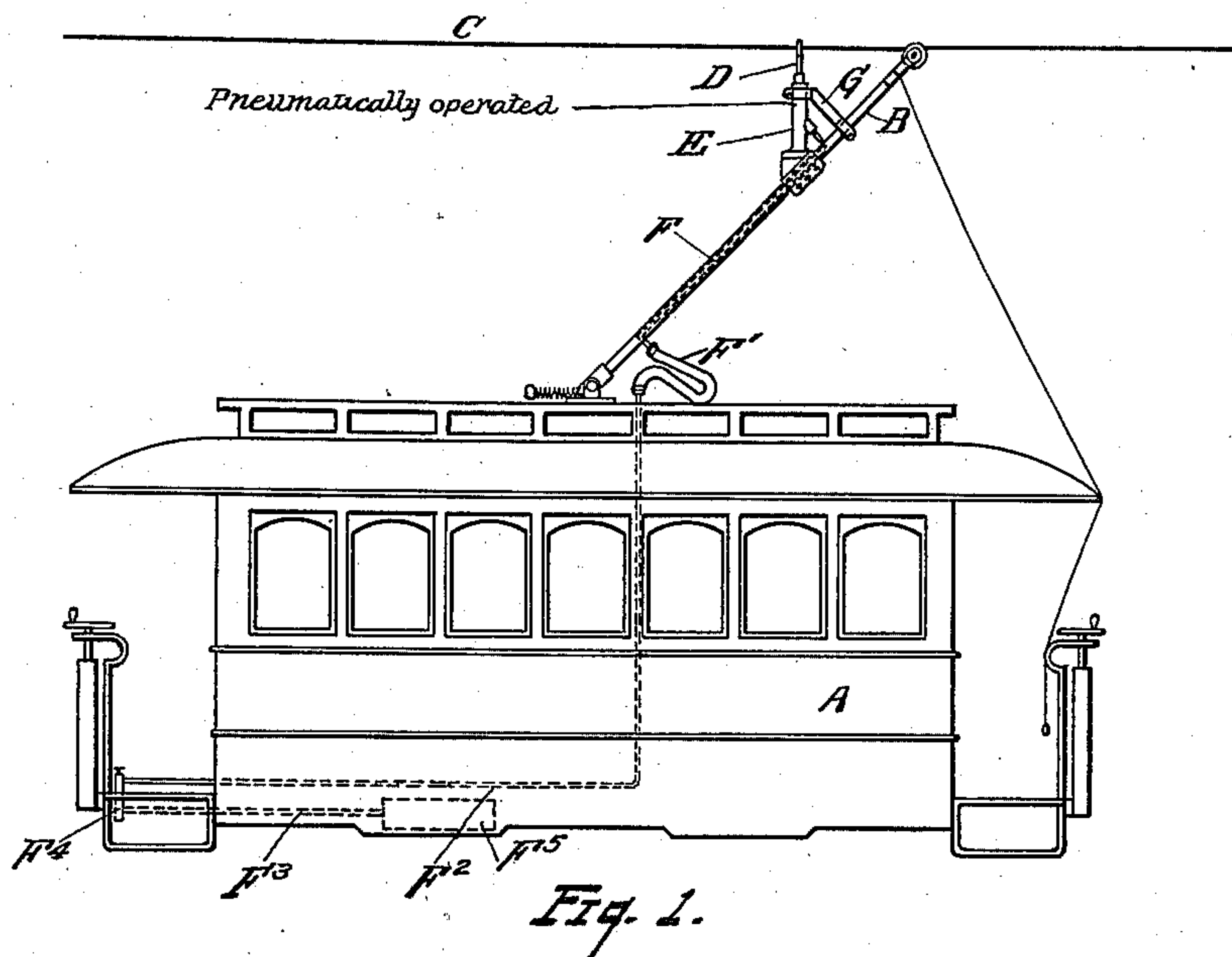


J. W. BROWN & C. E. DOYLE.
TROLLEY WIRE ICE REMOVER.
APPLICATION FILED JUNE 3, 1909.

963,205.

Patented July 5, 1910.



WITNESSES:-

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JOHN W. BROWN, OF HUBBARD, AND CHARLES E. DOYLE, OF YOUNGSTOWN, OHIO.

TROLLEY-WIRE ICE-REMOVER.

963,205.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOHN W. BROWN and CHARLES E. DOYLE, residing at Hubbard, Ohio, and Youngstown, Ohio, respectively, have invented certain new and useful Improvements in Trolley-Wire Ice-Removers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an attachment for street railway cars in which the motive power is electricity introduced by an overhead wire, and is intended to remove ice which has collected on the wire and interferes with the proper contact between the trolley and the wire.

One of the objects of the invention being to afford means under the immediate control of the motorman for acting upon the trolley wire as the greater or less presence of ice demands, and a further object is to comprise in the means so removing the ice a device which will be positive in its action, and will not damage the wire.

Further objects and ends of the invention will be set forth in the specification following.

The invention accordingly consists in the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following.

In the accompanying drawing wherein is illustrated one of the possible embodiments of our invention; Figure 1 represents a trolley car with our appliance attached thereto, certain parts of the car being shown in outline and other parts enlarged for the purpose of illustration. Fig. 2 represents an enlarged view of the pneumatic hammer as connected to a section of the trolley pole. Fig. 3 is a broken section of the top of the hammer viewed from the front and showing the Y shaped hammer head.

Referring to the several figures "A" is a conventional form of trolley car and "B" the usual trolley pole pivotally connected to the top of the car and with spring tensioning means for pressing the trolley against the wire "C."

Clamped to the trolley pole "B" by means of suitable bolts is the integral hammer seat

and pneumatic hammer "E" in which the striking head "D" is adapted to rise and fall under pneumatic action.

"F" is a line of pipe running up the interior of the trolley pole to the hammer "E" and connected by flexible coupling F', with the piping F² which is concealed in the cabin work of the car and leads to the motor-man's foot valve F⁴.

F⁵ is the usual car air tank carried by cars in which air brakes are used and which connects with the valve F⁴ by means of the piping F³.

To further reinforce and maintain the vertical position of the hammer "E" a brace rod "G" is bolted to the hammer and trolley pole.

As previously stated Fig. 1 is not drawn in proportion, this for the purpose of more clearly setting forth the features of our invention.

The size of the hammer is about three times that of the one best adapted for our purpose as compared with the scale of the car. While the same applies to the flexible coupling F' which need only be long enough to permit of the swinging of the trolley pole when the car is reversed. Where the lower branch of the pipe F² connects with the motorman's foot valve, the piping was purposely placed above the upper level of the platform to more clearly illustrate the system of pneumatic piping.

Our invention is drawn merely to the novel combination of the pneumatic hammer adapted to be used on a trolley car for effecting blows on the wire, and thus breaking and jarring therefrom all ice which has collected on it.

The hammer head is of a Y shaped construction to permit it to partially embrace the wire when striking from underneath the latter. The hammer base is seated in an ordinary valve hammer seat and is operated from a valve located at either end of the car and under control of the motorman.

As the construction of pneumatic hammers and the ordinary air valves are so well known in the art, it is deemed unnecessary to set forth in detail the construction of these elements.

By so gaging the position of the hammer on the trolley pole as to prevent the hammer when in its uppermost position coming into

direct contact with the wire, it will be seen that there will be no injurious effect on the wire from the blows of the pneumatic hammer.

5 The distance of the bottom of the Y from the wire when the hammer head is in its raised position need only be an eighth or quarter of an inch, as such distance will afford ample protection to the wire and at the
10 same time, will allow it to hit any ice which has collected on the wire, and is of thickness great enough to interfere with the proper contact of the wire and trolley.

Other advantages obtained in the present
15 invention will appear from an inspection of the drawing and the principles embodied therein.

While we have described one method of carrying out our invention, it should be understood that various changes may be made
20 without departing from the spirit of our invention, which contemplates broadly a pneumatically actuated trolley wire ice remover.

25 Having thus described our invention what we claim as new and desire to secure by Letters Patent is:

1. In combination an electrical railway car, an overhead wire through which the
30 electricity is conducted, and pneumatically actuated means for removing ice from said wire, substantially as shown and described.

2. In combination, an electrical railway car, an overhead trolley wire, a member on
35 said car, and pneumatically operated means positioned on said member for removing ice from the wire, said means being controlled from the motorman's platform, substantially as shown and described.

40 3. In combination an electrical car, an overhead electrical wire, a trolley pole affording contact between the car and the wire and means positioned on said trolley pole for striking blows to remove ice from said
45 wire, said means being actuated by air power, substantially as shown and described.

4. In combination an electric railway car, an overhead trolley wire, means for striking
50 said overhead wire when the latter is covered with ice, a chamber carried by said car containing air under pressure and operative connection between said chamber and said striking means, substantially as shown and described.

55 5. In combination an electric railway car, a tank containing air under pressure carried by said car, a hammer carried by the trolley pole of said car and means under the control of the motorman, connecting

said tank and hammer and actuating the
60 latter, substantially as shown and described.

6. A trolley wire ice remover comprising a pneumatic hammer located on the trolley pole having a "Y" shaped head and adapted to embrace the wire, said hammer being
65 secured in a vertical position to the trolley pole and pneumatic means for actuating said hammer, substantially as shown and described.

7. The combination of an electric car, an
70 overhead trolley wire, a trolley pole connecting said car and wire, a pneumatic hammer vertically positioned on the upper part of the trolley pole, means for supplying air under pressure, and pipes connecting
75 said means and said pneumatic hammer, substantially as shown and described.

8. The combination of an electric car, an overhead trolley wire, a trolley pole connecting said car and wire, a pneumatic
80 hammer vertically positioned on the upper part of the trolley pole, means for supplying air under pressure, and pipes connecting said means and said pneumatic hammer, said means being under the control of the
85 motorman, substantially as shown and described.

9. The combination of an electric car, an overhead trolley wire, a trolley pole connecting said car and wire, a pneumatic
90 hammer secured to the upper part of a trolley pole means located within the trolley pole for supplying the hammer with air under pressure and flexible means for connecting said first mentioned means with a
95 source of air supply located in the car, substantially as shown and described.

10. The combination of an electric railway car, an overhead trolley wire, a trolley pole pivoted on said car and pressing
100 against the wire, a pneumatic hammer carried by said trolley pole, and adapted to strike any ice collected upon the wire, chamber located under the flooring of the car and containing air under pressure, piping
105 extending from said chamber to the platform and there controlled by valve means, and piping including a flexible hose connection extending from said valve to the
110 hammer substantially as shown and described.

In testimony whereof we affix our signatures, in the presence of two witnesses.

JOHN W. BROWN.
CHARLES E. DOYLE.

Witnesses:

E. E. ANDERSON,
ROY NEVILLE.