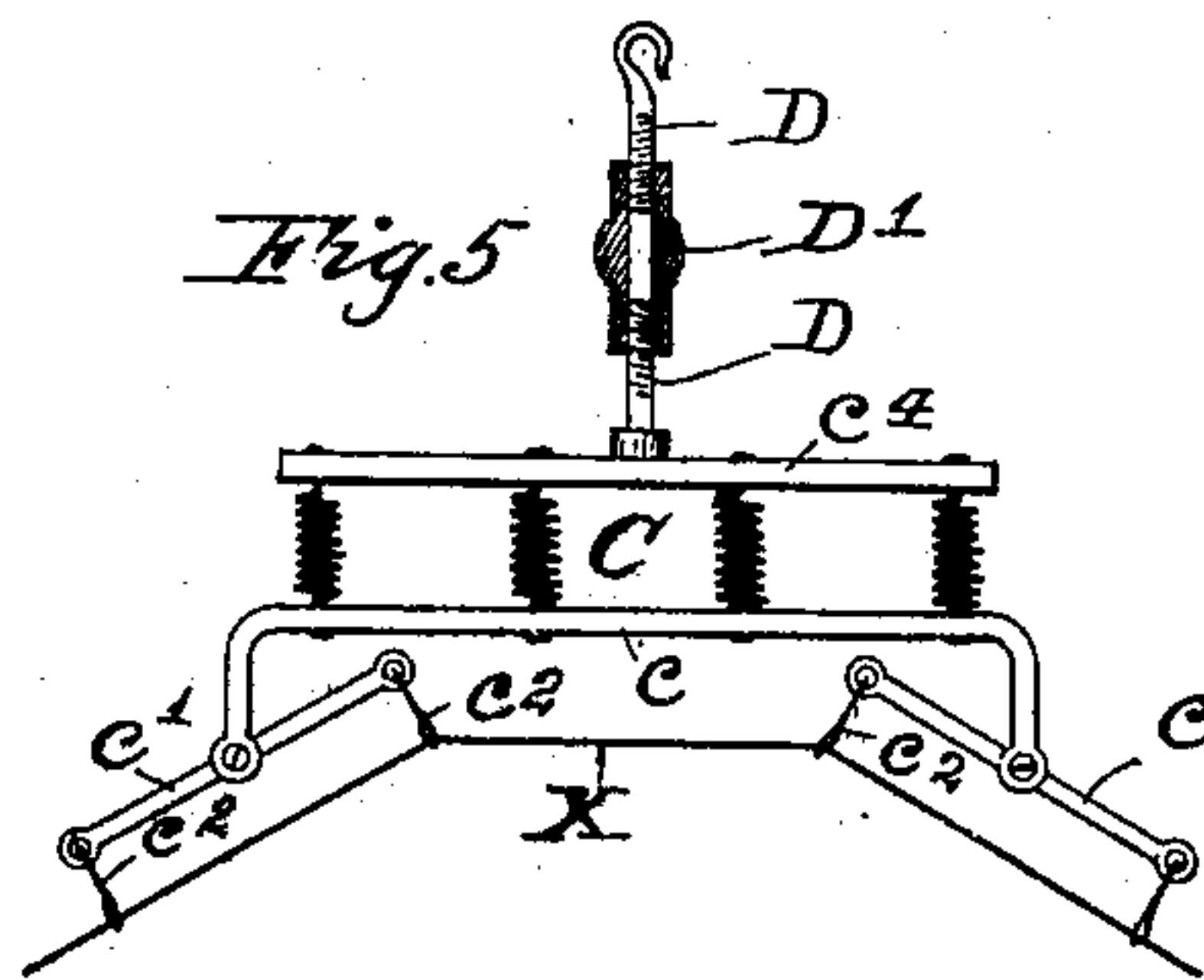
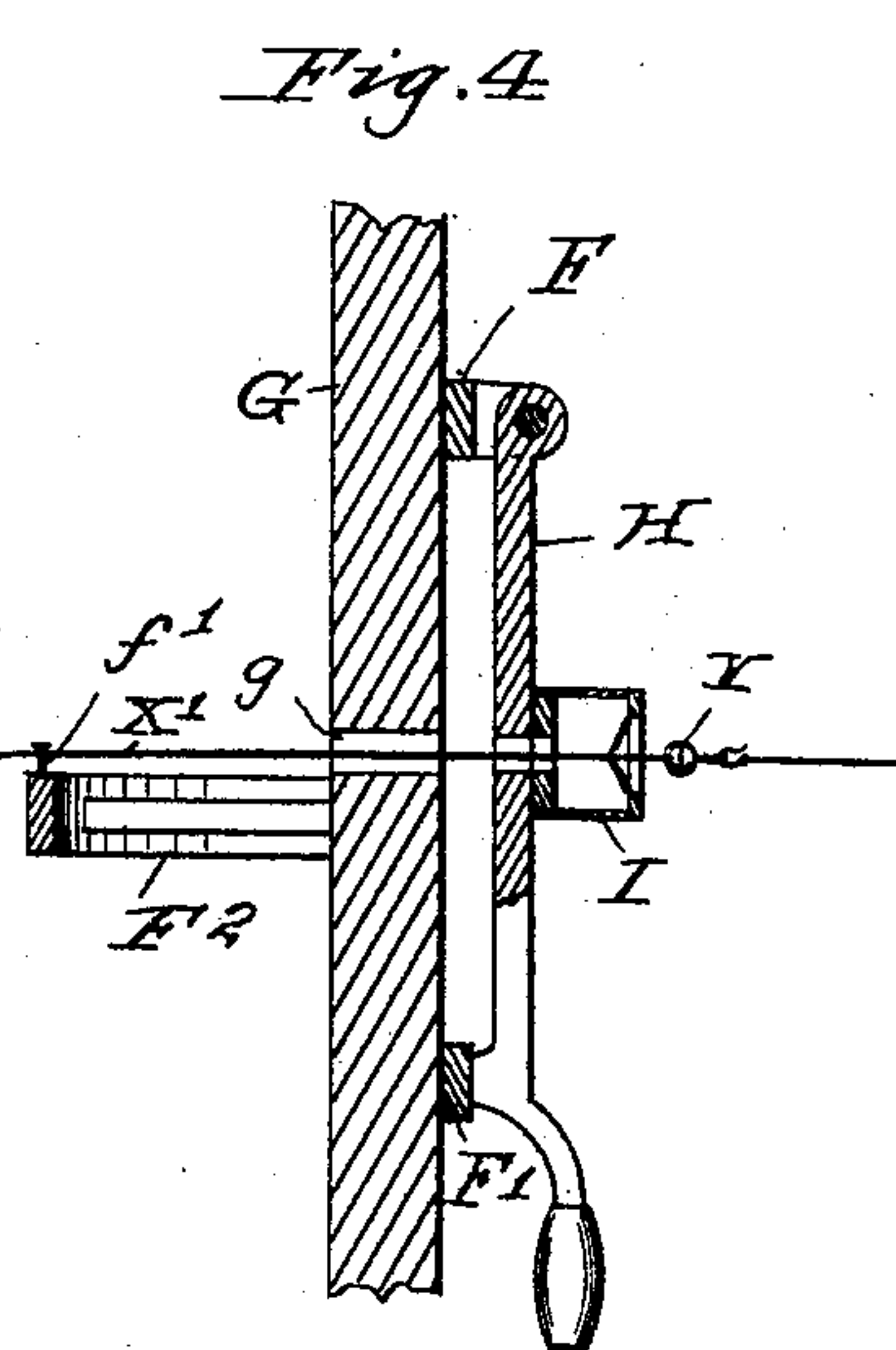
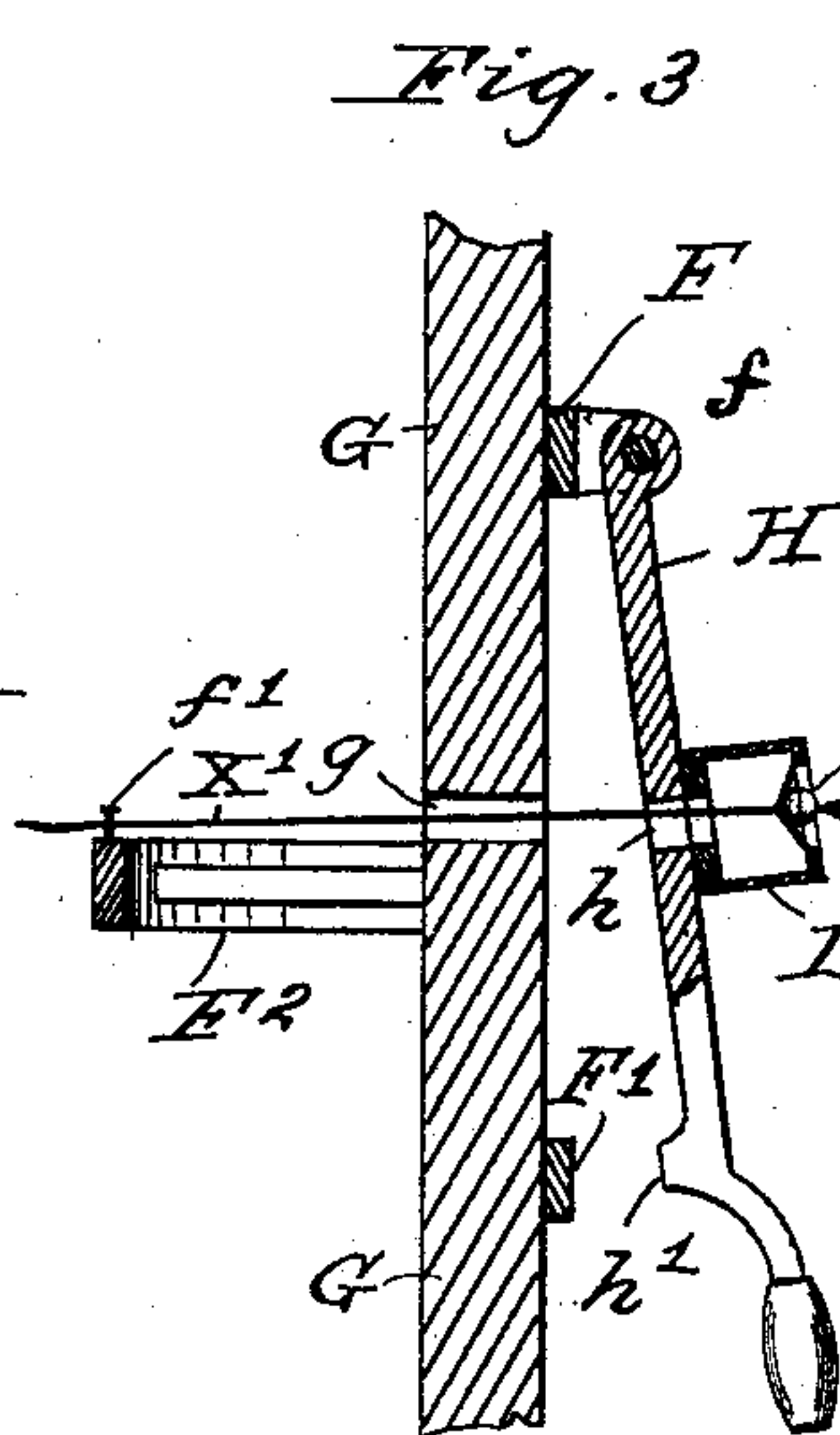
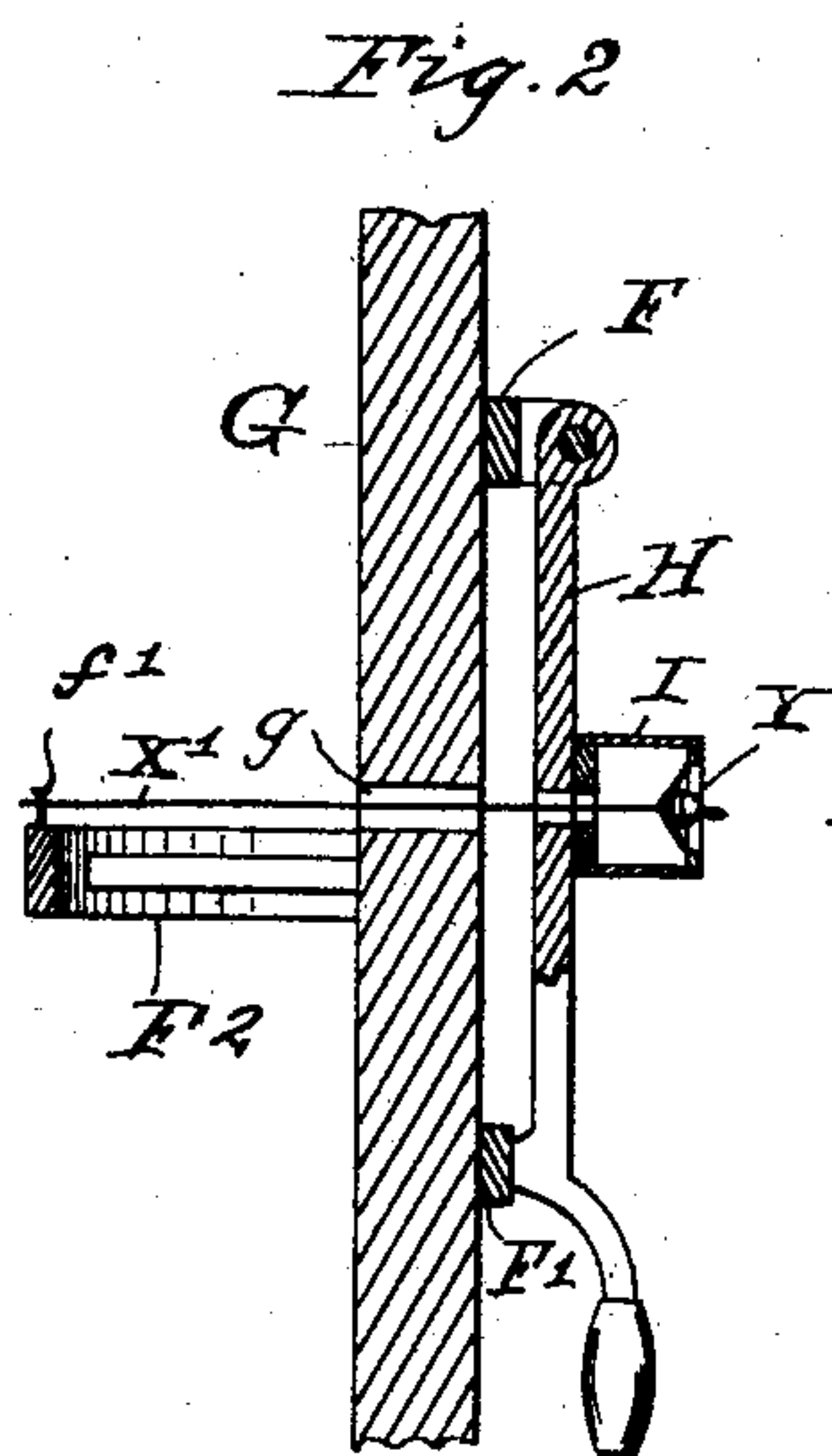
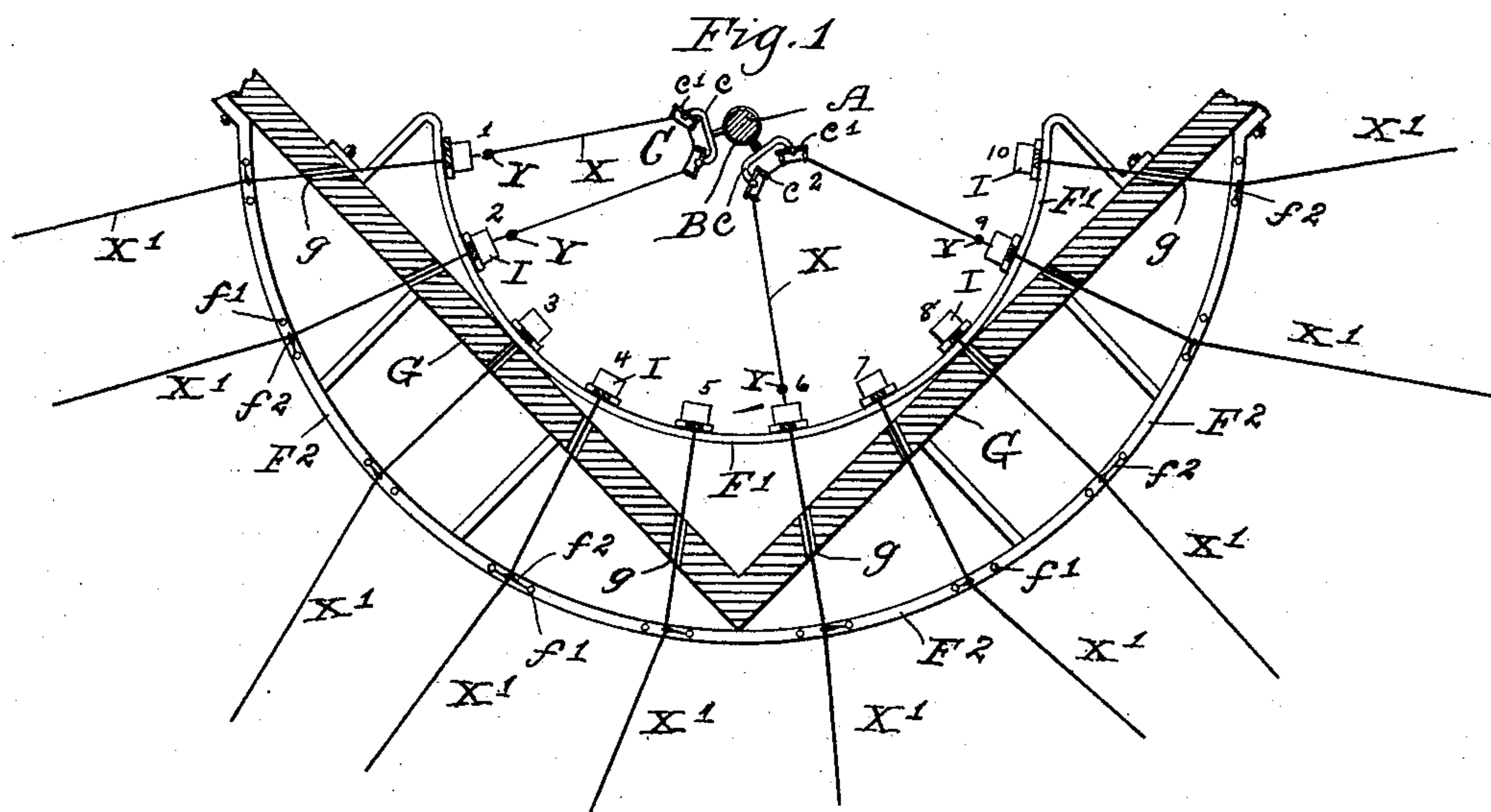


(No Model.)

W. H. EASTMAN.  
ACOUSTIC TELEPHONE EXCHANGE.

No. 373,060.

Patented Nov. 15, 1887.



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# UNITED STATES PATENT OFFICE.

WILLIAM H. EASTMAN, OF CONCORD, NEW HAMPSHIRE, ASSIGNOR TO FINLEY R. BUTTERFIELD, OF SAME PLACE, AND A. J. LANE AND ALONZO ELLIOTT, BOTH OF MANCHESTER, NEW HAMPSHIRE.

## ACOUSTIC-TELEPHONE EXCHANGE.

SPECIFICATION forming part of Letters Patent No. 373,060, dated November 15, 1887.

Application filed January 10, 1887. Serial No. 223,856. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. EASTMAN, a citizen of the United States, residing at Concord, in the county of Merrimac and State of New Hampshire, have invented certain new and useful Improvements in a System for an Acoustic-Telephone Exchange, of which the following is a specification.

The object of this invention is to provide means whereby acoustic telephones may have an exchange system wherein various subscribers, after being connected, may talk directly with each other without the necessity of having the message repeated by the operator at the exchange. This result is attained by the various mechanisms described in the following specification, and clearly illustrated in the accompanying drawings, forming part thereof, of which—

Figure 1 is a sectional plan view showing one tier of telephones arranged in a semicircle around a central post, upon which are attached several adjustable angle-irons provided with wires having hooks at their ends for connecting with the various lines, as when coming into the corner of a building. Fig. 2 is an enlarged detail view showing a portion of the wall of the building, the outer frame-work over which the lines are run, a portion of line-wire, and one of the levers, partly in elevation, having its telephone attached. In this view the lever is represented as when the line-wire button is bearing on the diaphragm of the telephone and not connected with any other subscriber. Fig. 3 represents said lever pulled out, as when the connection is being made in the exchange. Fig. 4 represents the lever as when returned to its normal position after the connection has been made. Fig. 5 is an enlarged plan view of one of the hangers for the connecting-wires in the exchange.

Similar letters indicate corresponding parts.

Ordinarily a corner of a building will serve the purpose of an exchange, and the various wires enter in a semicircle, as in Fig. 1, in which A represents a post, and B loose rings or collars thereon. To the rings B an angle-hanger, C, is attached. This consists of a bar, c, to the bent ends of which are pivoted a short arm, c', in the ends of which are secured wire

loops or rings c', through which the wire X is passed.

In order that the hanger may be somewhat yielding to the vibration of the wire at the time a message is being sent, spiral springs c<sup>3</sup> are, as shown in Fig. 5, introduced between the bars c and c', the latter of which is attached to either ring B. The hangers C may be rendered adjustable as to distance from the post A, if desired, by forming the connecting-wire in two parts, D, which are connected by means of a nut, D', having a right-and-left thread. Levers H may be arranged in tiers in the corner of a building or tower; but where there are but few subscribers one tier, as shown in Fig. 1, would probably be sufficient.

Frames F F', formed either circular or in a segment of a circle, are secured in a horizontal position to the wall G. The upper frame, F, is provided with ears f, to which are pivoted the upper ends of the levers H, to which are secured the telephones I, to be hereinafter more fully described.

The line-wires X' pass from a button, Y, through the back of each telephone, the levers H at h and the wall G at g, and thence to the various subscribers belonging to the system. A frame, F<sup>2</sup>, or its equivalent, must be provided on the outside of the building, having pins or pegs f', from which loops f<sup>2</sup> are suspended, through which the line-wire X' is passed, in order to cause the line-wires to clear the holes g in the wall G. (Shown best in Fig. 1.)

Near the handle of either of the levers H are projections h', which, when said levers are in their normal position, rest upon the frame F', as in Figs. 2 and 4. In Fig. 1 there are ten lines shown to come into the exchange. Each should be numbered 1, 2, 3, &c., as shown. Of these, four lines are shown to be in use—i. e., No. 1 is connected with No. 2 and No. 6 is connected with No. 9.

In order to connect two subscribers, the levers H have simply to be pulled out from the position shown in Fig. 2 to that shown in Fig. 3, which operation draws in the line-wires sufficiently to connect the hooks x of the wires X to an eye on the button Y. When each end of one of the wires X has been thus connected



to one of the buttons Y, the subscriber at the end of either of said wires can talk with the one at the end of the other. It must be noted that as the post A is concentric with the circular frames on which the levers and telephones rest the tension on the lines when connected through the exchange are all equal, and as the button Y in each case is pulled clear of the diaphragm, as in Fig. 4, the telephones connected to the levers H are inoperative, and nothing can be heard by the operator in the exchange of a conversation carried on between two subscribers. When the wires X are disconnected from the line-wires X', the button Y is permitted to rest upon the diaphragms of the telephones I. Then conversation may be carried on between a subscriber and the operator in the exchange.

When a large number of subscribers are connected in one exchange, suitable signals will be adopted other than the ordinary magnetic call-bell, in order that the operator may waste no time in finding and answering the wants of any particular subscriber.

Having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a telephone-exchange, the combination, with the several lines, of corresponding telephones, buttons connecting the lines with the diaphragms of the telephones, and movable supports carrying the telephones, whereby

the latter may be moved bodily to facilitate the connection of two lines, substantially as set forth.

2. In a telephone-exchange, the combination, with the several lines, of corresponding telephones, buttons adapted to form an operative connection between the same, loops upon said buttons, and connections, as described, for placing two buttons and lines in communication and at the same time disconnecting the buttons from their telephones, substantially as set forth.

3. The combination of the bars  $c^4$   $c$ , a series of springs,  $c^3$ , connecting the same, and the wire-holding devices connected with said bar  $c$ , substantially as set forth.

4. The combination of the spring-connected bars  $c^4$   $c$ , oppositely-arranged pivoted bars  $c'$ , and the supports  $c^2$ , carried by the latter, substantially as set forth.

5. In a telephone exchange, the combination, with the line-wires and walls G, having the apertures  $g$ , of the bar  $F^2$ , having devices, substantially as described, in line with said apertures for supporting the wires, substantially as set forth.

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

WM. H. EASTMAN.

Witnesses:

J. B. THURSTON,

NATHANIEL E. MARTIN.