

(No Model.)

C. H. SEWALL & H. E. PROCUNIER.
TERMINAL HEAD FOR ELECTRICAL CONDUCTORS.

No. 598,328.

Patented Feb. 1, 1898.

Fig. 1.

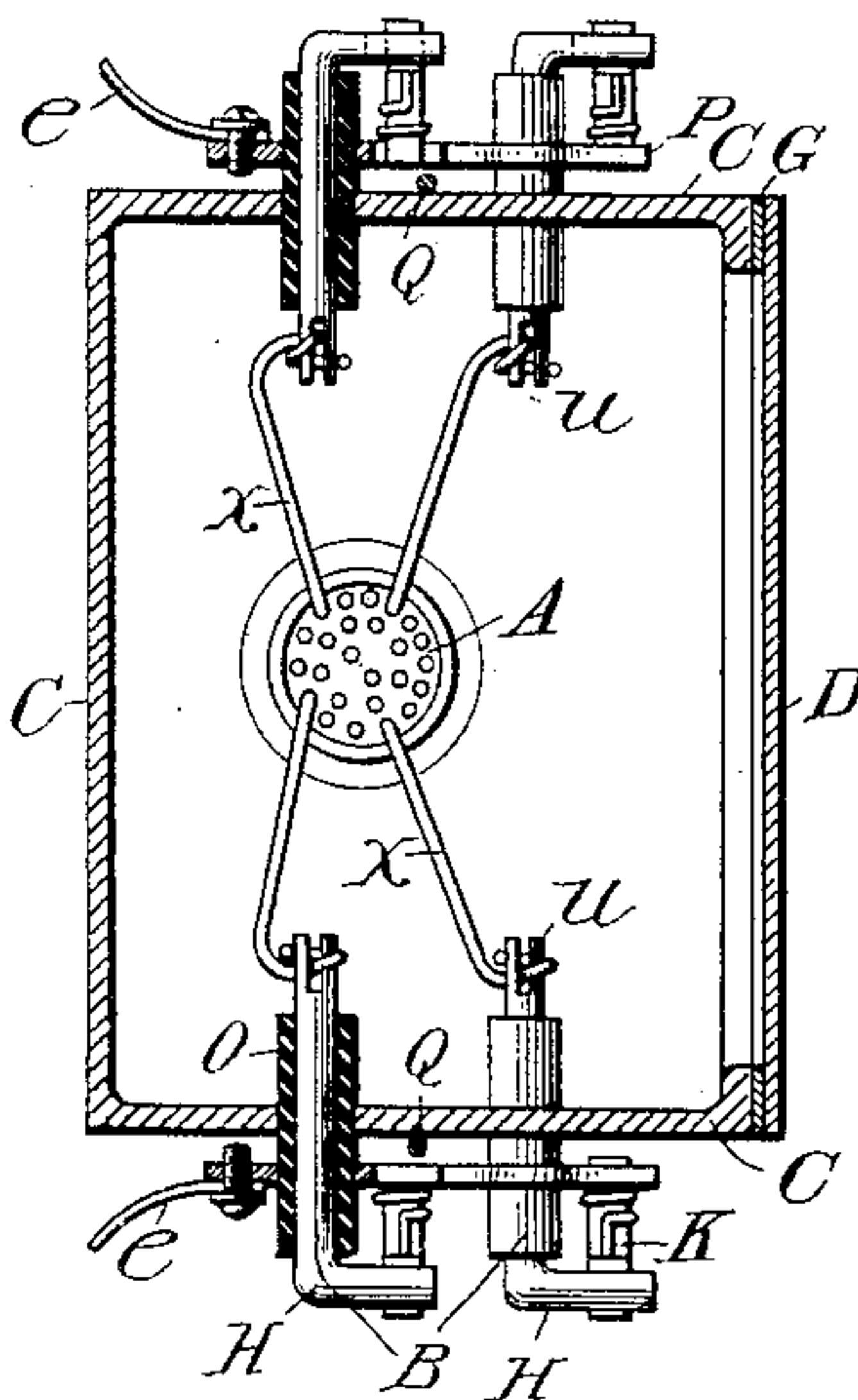


Fig. 2.

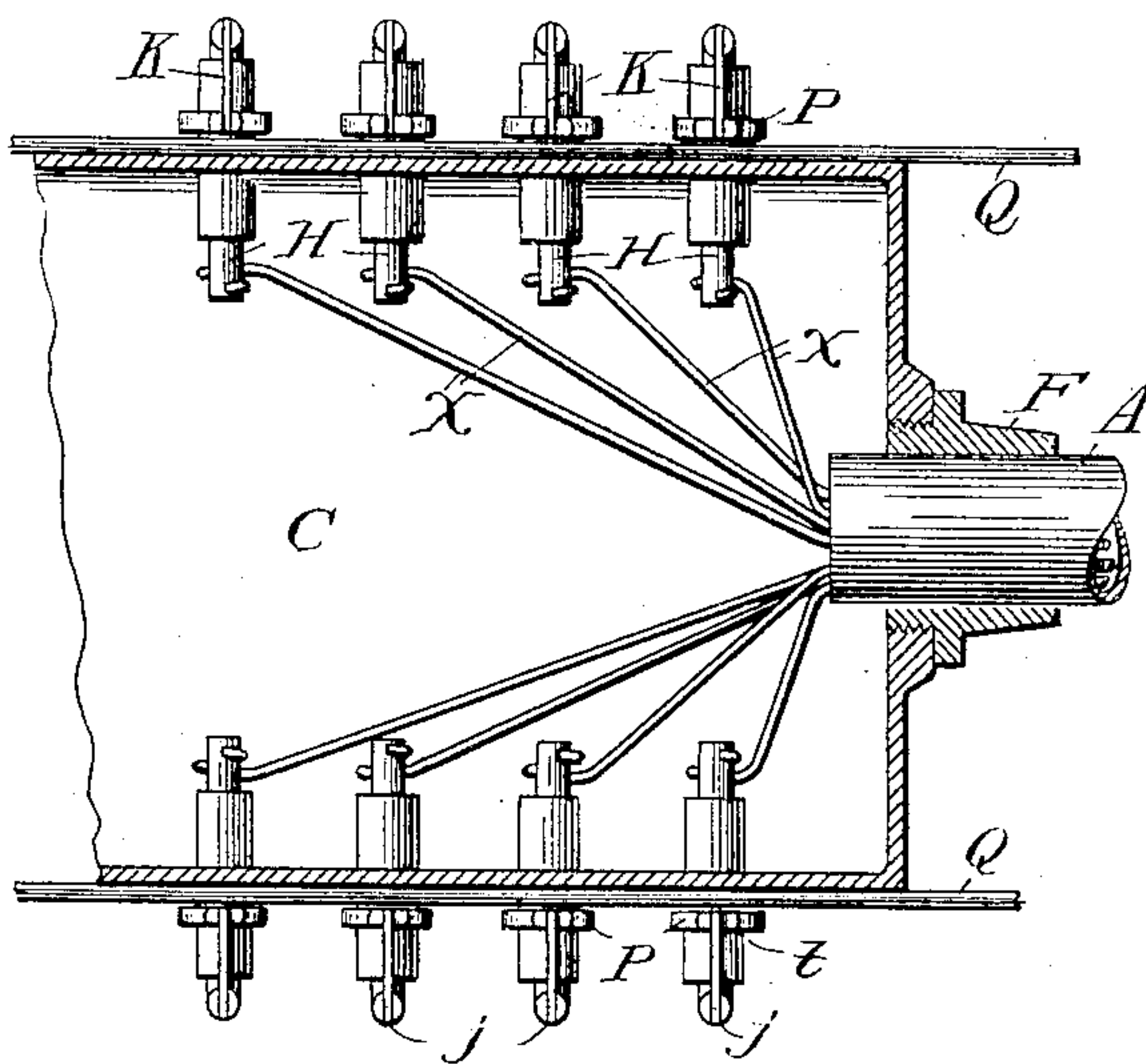


Fig. 3.

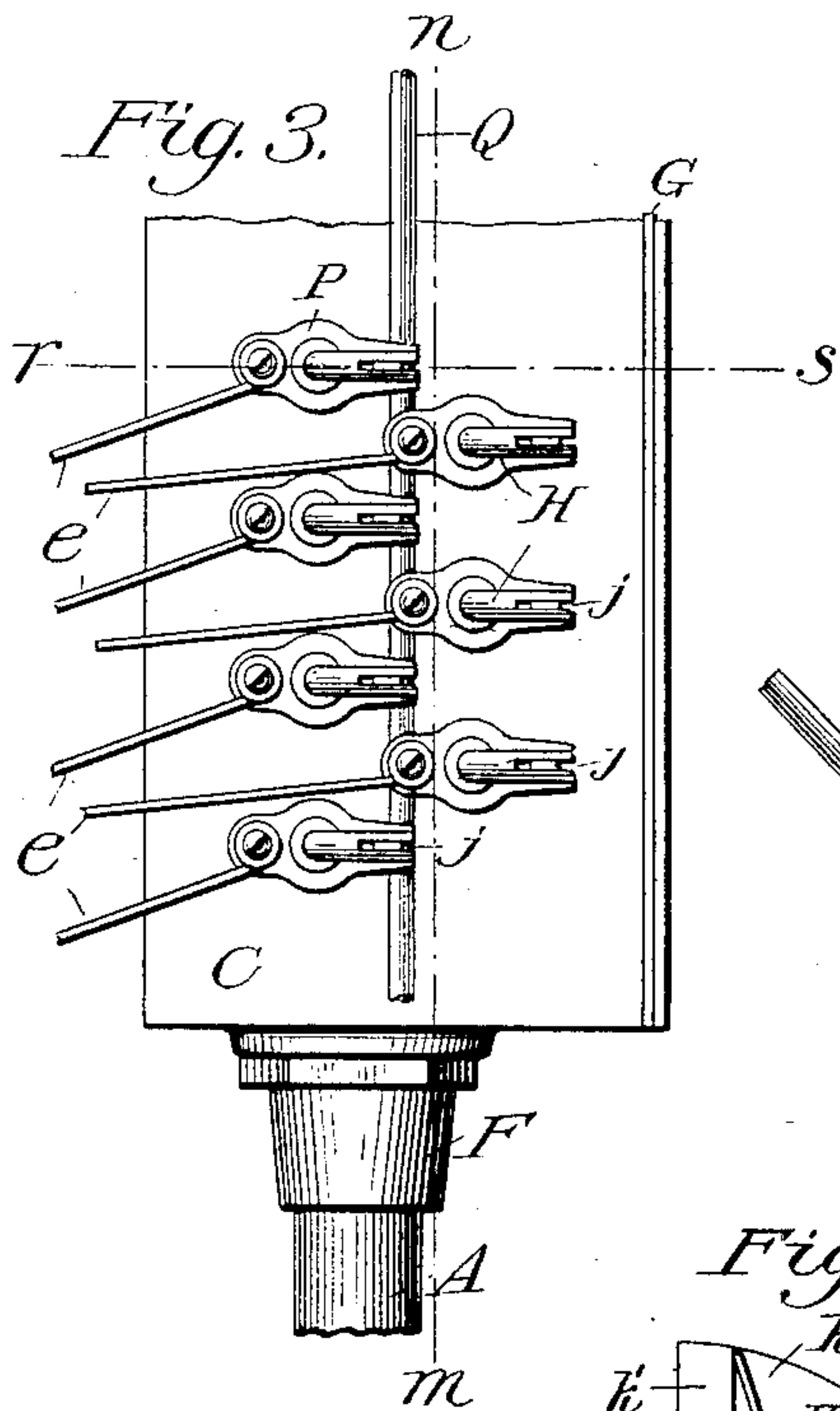


Fig. 7.

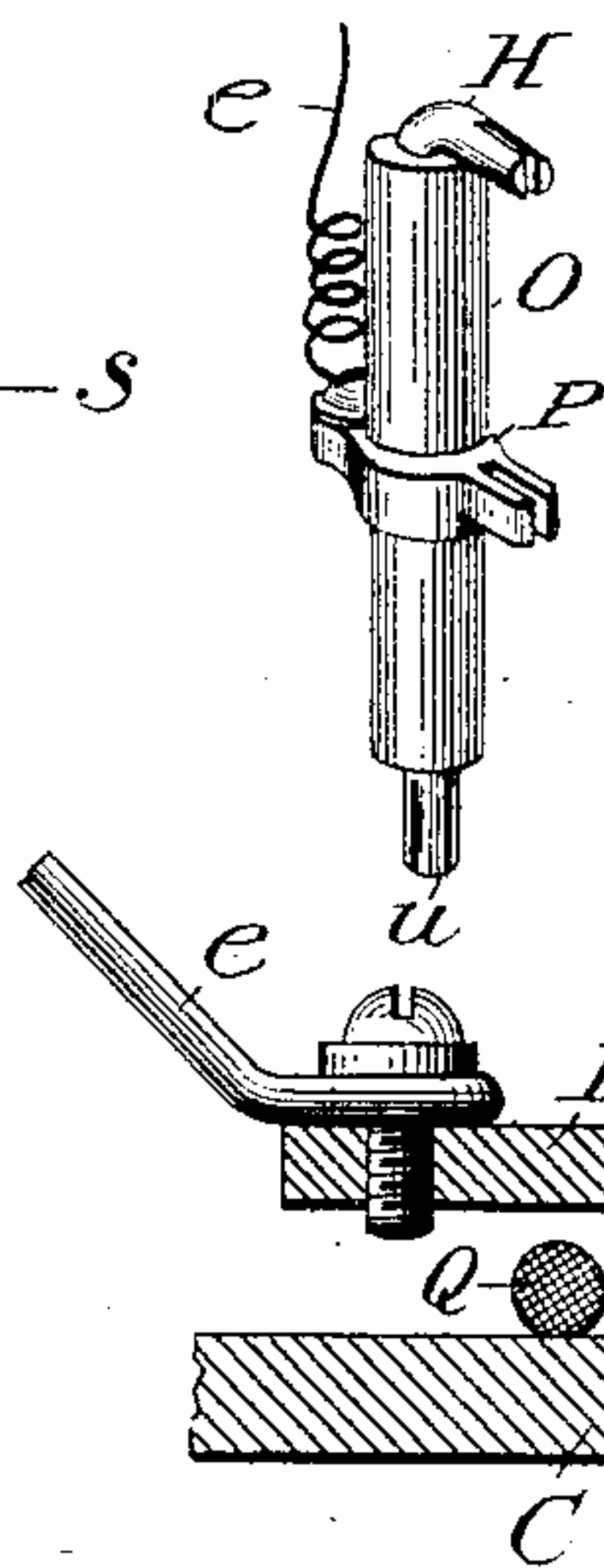


Fig. 4.

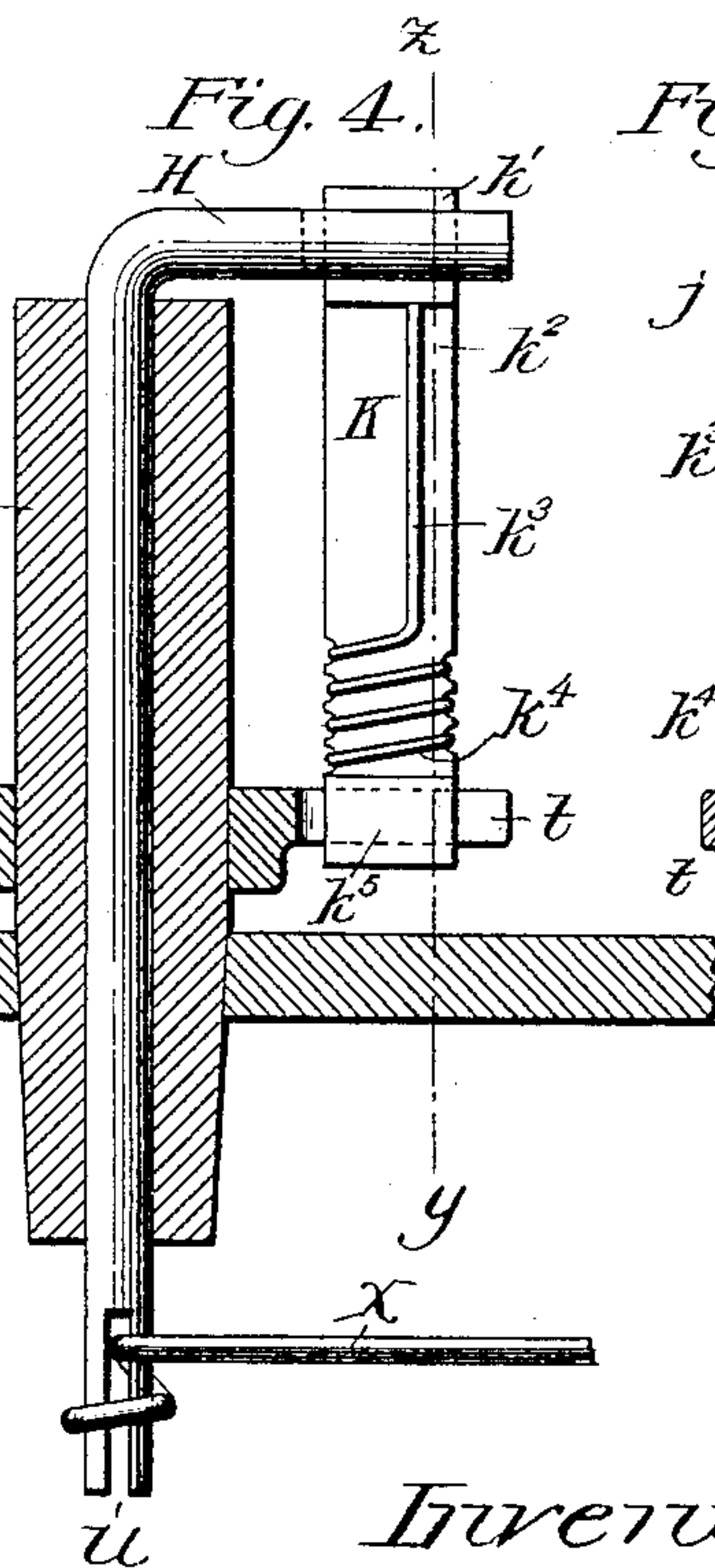


Fig. 5.

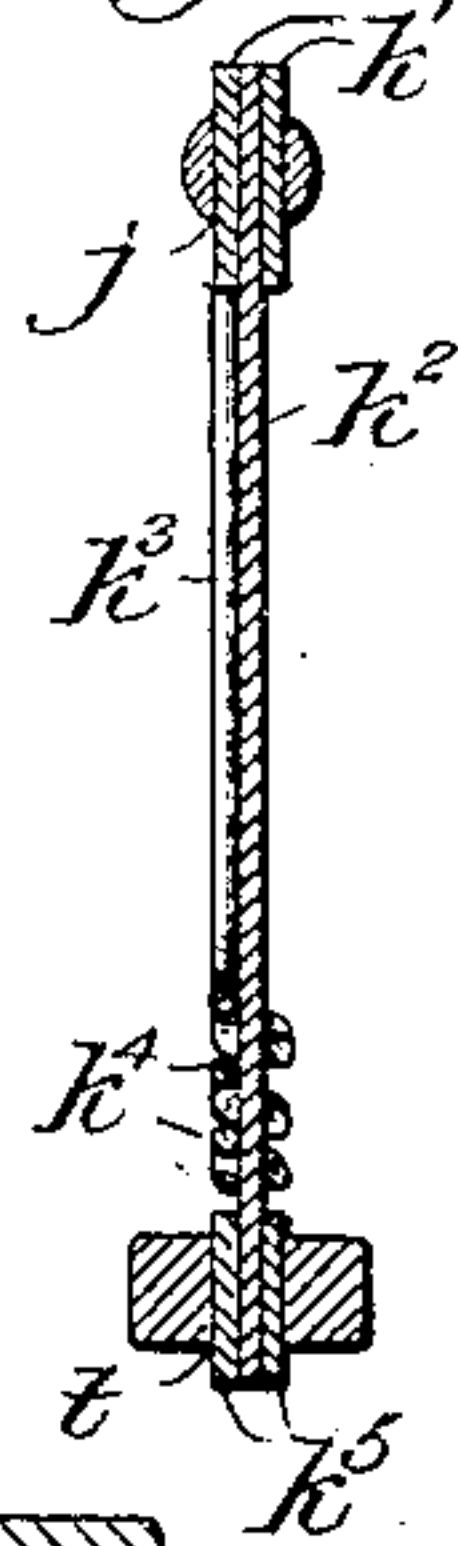
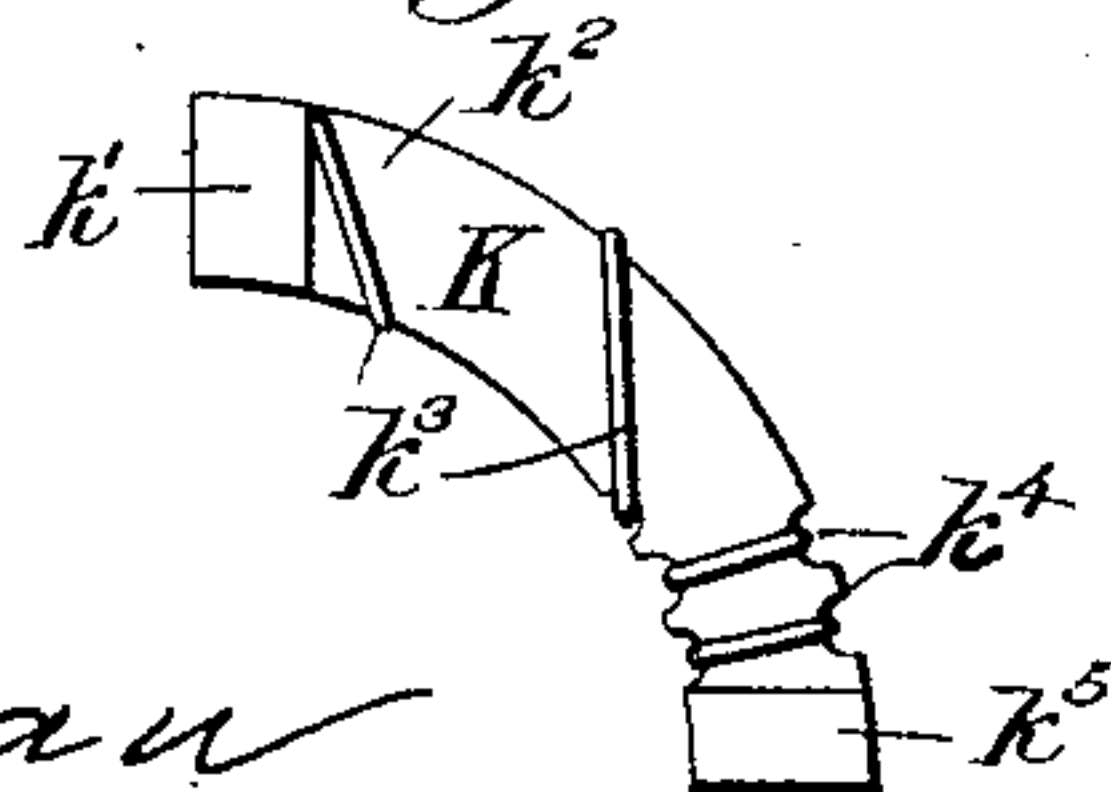


Fig. 6.



Witnesses.

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UNITED STATES PATENT OFFICE.

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TERMINAL HEAD FOR ELECTRICAL CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 598,328, dated February 1, 1898.

Application filed August 22, 1896. Serial No. 603,625. (No model.)

To all whom it may concern:

Be it known that we, CHARLES H. SEWALL, residing at Chicago, and HENRY E. PROCUNIER, residing at Oak Park, in the county of Cook and State of Illinois, citizens of the United States, have invented a new and useful Terminal Head for Electrical Conductors, of which the following is a specification.

The devices shown can be used to protect the ends of cables connecting one or more electrical conductors such as are used in the construction of telegraph, telephone, and various kinds of signaling or electric light, heat, or power systems, as it is necessary merely to vary the relative proportions of the conducting, insulating, and fusing material to adapt the said devices to any of the above-mentioned uses. In the following description and accompanying drawings we have, however, illustrated the protection of that particular class of cables used generally for telephonic or telegraphic purposes, in which are grouped a number of conductors, each conductor being separately insulated, then bunched and incased in lead.

The objects of our invention are, first, to provide receptacles for the ends of cables which shall thoroughly protect the conductors of said cables from moisture, lightning, and from manufactured electric currents of such strength as will injure said conductors; second, to accomplish such results with the greatest economy of space and labor. We attain these objects by the devices illustrated in the accompanying drawings, in which—

Figure 1 is a horizontal cross-section of the terminal head. Fig. 2 is a vertical longitudinal section of the same on the line *m n* in Fig. 3. Fig. 3 is a detail side view of the lower portion of the terminal head. Fig. 4 is an enlarged longitudinal section of B on the line *r s* of Fig. 3. Fig. 5 is an enlarged section of the fuse K (shown in the various views of B) on the line *y z* in Fig. 4, with sections of slot *j* and of slot *t*, into which the fuse is slipped. Fig. 6 is the fuse K having a curved instead of a straight support. Fig. 7 shows in perspective the rod H, incased by bushing O, and the metallic yoke P attached to said bushing.

The same letters refer to the same parts throughout the several views.

In Fig. 1, A is the protected cable; B B, connecting devices between cable-wires *x x* and outside conductors *e e*; C C, walls of the terminal head or box; D, removable cover of said box; G, gasket between box and removable cover; F, nozzle for connecting cable A to box and through which cable enters the box. H is the metallic connecting-rod.

K is a fuse.

O is an insulated bushing surrounding H and insulating it from shell C.

In Fig. 3 the slot *j* is adapted to contain the upper portion of fuse K.

u is a slot holding cable conductor *x*.

P is a metallic yoke surrounding O and extending beyond in two directions.

Q is a metallic conductor connected to the earth, the yoke P and earth-conductor Q (see Fig. 4) being equivalent to the two plates of a lightning-arrester.

In Fig. 5 the fuse K is shown with upper metallic terminal *k'*, insulating-support *k''*, fusible conductor *k'''*, inductive coil *k''''*, and lower metallic terminal *k''''''*, said fuse being adapted to be forced into slots *j* and *t*, Figs. 3 and 5, respectively connecting rod H and yoke P.

To further illustrate, when the several devices are in position and an electric current in operation the operating-current will pass, say, from cable A through conductor *x*, slot *u*, rod H, terminal *k'*, fusible conductor *k'''*, coil *k''''*, terminal *k''''''*, slot *t*, yoke P, and outside conductor *e* either to the wires on a pole if used as a "pole-terminal" or to the wires of a switchboard if used as a "station-terminal."

Heretofore terminal heads have been made with straight connecting-rods and rubber bushings forced through the shell of an iron box, such box being adapted to be hermetically sealed, and the apparatus for protection by fuses and lightning-arresters has been carried out as a separate organization. Another way has been to carry the fuse from the end of a straight connecting-rod by a straight fuse to a binding-post or to an insulated screw and washer on the box itself and under this straight fuse to place the earth-plate of a

lightning-arrester. From both of these methods we make a radical departure. We force over the bushing O a metallic yoke P. One extension of this yoke is arranged to receive a conductor e and the other extension slotted at t to receive the fuse-terminal k^5 . Our connecting-rod H, instead of being straight, is bent at its outside end and slotted at j to receive the fuse-terminal k' . Just under the yokes (see Figs. 3 and 4) is placed earth-conductor Q, and it will be observed in the arrangement shown in Fig. 3 that although Q is placed in juxtaposition with two different portions of the surfaces of the yoke P on alternate terminals yet its lightning-arresting influence in either case occurs before the charge can reach fuse K.

We show in Figs. 4, 5, and 6 (fuse K) either the fusible conductor itself or a connecting-wire coiled about the insulating-strip k^2 , notches being cut in k^2 to insulate the turns, or the said turns can be wound with insulating material. The turns of k^4 , Fig. 5, are shown close together, whereby they will act as a choking-coil by reason of self-induction in said coil. The self-inductive influence caused by the insulated turns tends to retard the passage of lightning and render more certain a full discharge to Q. A sure discharge to Q will greatly reduce the flow of current through k^3 , and thus admit the use of a more delicate fuse without the annoyance and expense consequent upon frequent replacements. The employment of a fuse of a greater delicacy than heretofore results in better protection from currents of low intensity and large quantity, which through accidental con-

tact with outside wires might otherwise enter and damage the cable conductors or station apparatus.

It is not necessary that rod H shall be bent. The distance between a straight rod and the yoke can be bridged by a curved fuse.

What we claim, and desire to secure by Letters Patent, is—

1. A stem of conducting material forming part of an electric circuit projecting from the outside surface of a base or holder and surrounded by a non-conducting bushing; a metallic connector mounted on the bushing; means for interposing another part of an electric circuit to complete upon one side of base or holder the circuit between stem and connector.

2. The combination substantially as shown and described of the rod H, surrounded by the bushing O; slot J; fuse K; yoke P surrounding bushing O; said yoke having slot t adapted to connect fuse K; and a second fastening attachment adapted to connect conductor e .

3. A metallic case; conducting-stems; non-conducting bushings surrounding the stems and extending from the inside to the outside of the case; metallic connectors mounted upon the bushings on the outside of the case and means to complete the circuit between the stem and the connector which is mounted thereon but insulated therefrom.

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Witnesses:

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