(No Model.)

J. CAIN.

Telegraph Keys.

No. 239,723. **Patented April 5, 1881.**

Fig. 1.

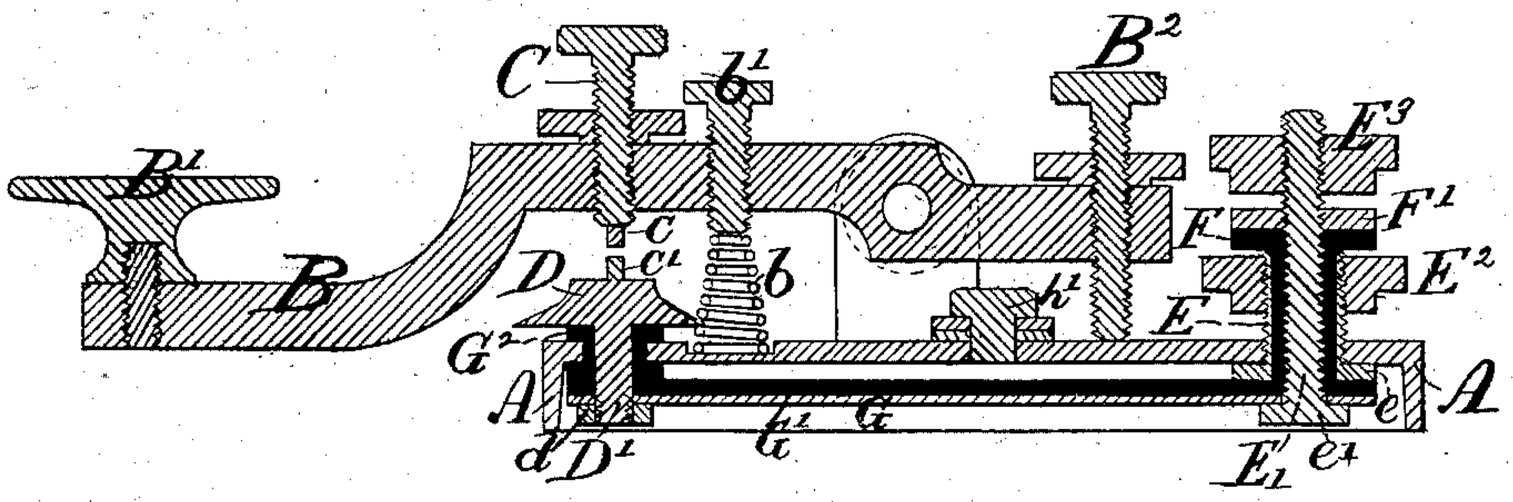
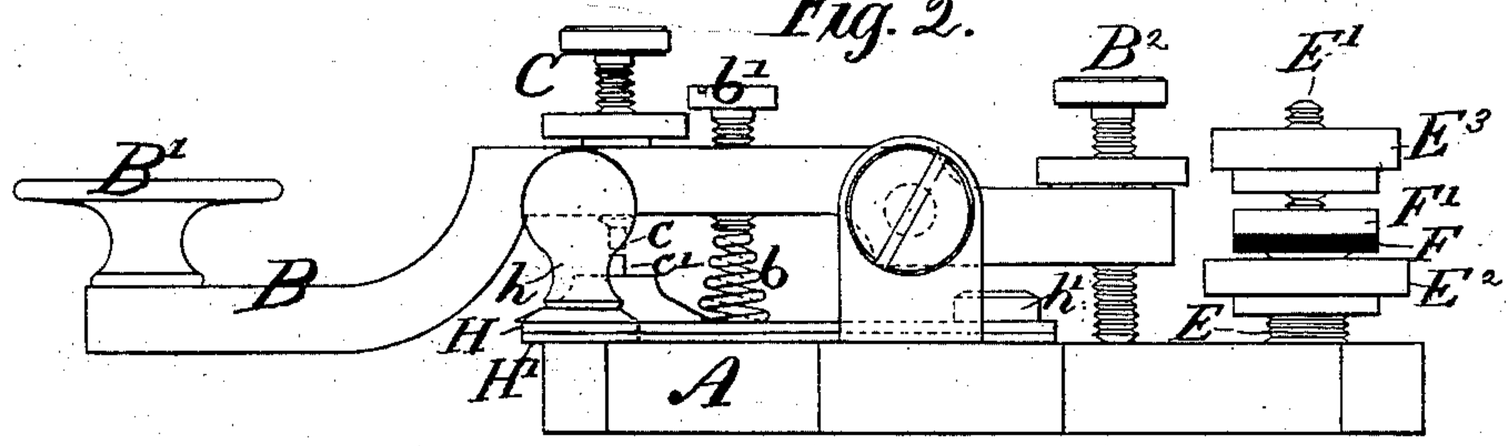


Fig. 2.



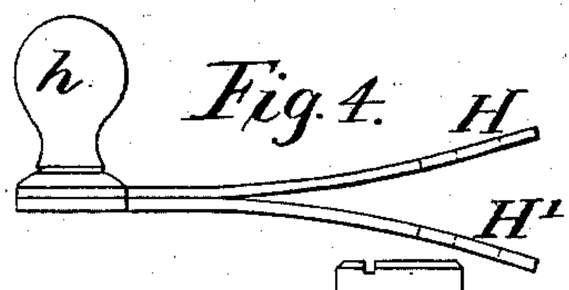
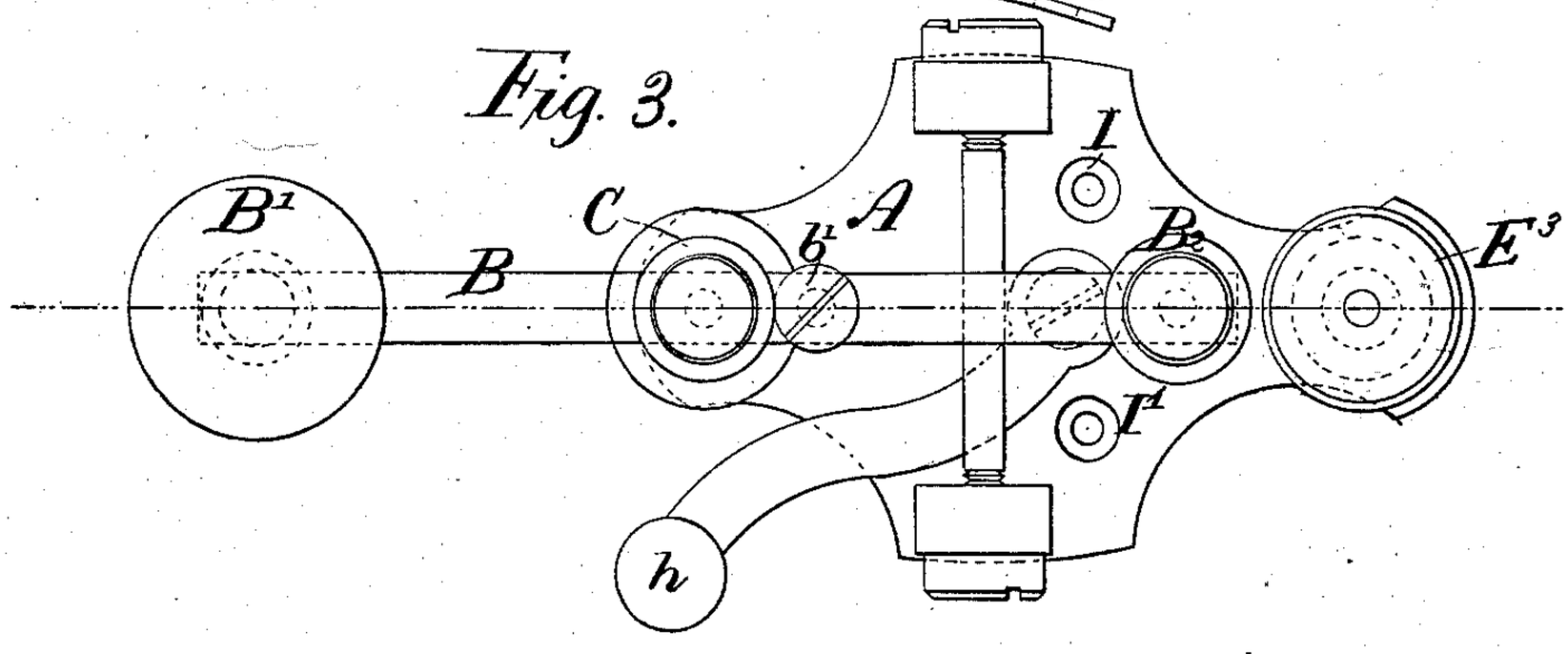


Fig. 4.

Fig. 3.



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JACOB CAIN, OF ALTOONA, PENNSYLVANIA.

TELEGRAPH-KEY.

SPECIFICATION forming part of Letters Patent No. 239,723, dated April 5, 1881.

Application filed February 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, JACOB CAIN, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Telegraphic Keys, of which the following is a specification.

My invention relates especially to that class of telegraphic keys which are employed for the transmission of signals in connection with the Morse telegraph system.

My invention consists, first, in an improved device for attaching the conducting-wires to the key, whereby the electrical connections are made above the base of the key instead of underneath the table or support upon which the key is placed, which consists in the combination of two concentric-threaded metallic bolts, of different lengths, separated from each other by an intervening insulating-layer, with two threaded nuts, independently movable upon the respective bolts; second, in a device for insuring an effectual electrical contact between the anvil and the base of the key when the latter is not in use for signaling, which consists in the combination, with the key-base and insulated anvil, of a circuit-closer constructed of two independent resilient plates, which are compressed between the said base and anvil when the circuit is to be closed.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of a key embodying my improvements. Fig. 2 is a side elevation, and Fig. 3 a plan view, of the same. Fig. 4 is a detached view, showing the construction of the circuit-closer or switch.

Referring to Fig. 1, A represents the base of the key, upon which the lever and other parts are mounted.

B is the key-lever, of the usual and well-known construction, which is mounted upon trunnions and provided with the ordinary knob or finger-piece B′ and adjustable stop B^2 at its rear end for limiting the extent of its oscillation in one direction.

A compressible volute-spring, *b*, is mounted upon the base A, and projects upward against an adjustable screw, *b′*, thus serving to raise the key-lever when it is released by the hand of the operator.

An adjustable set-screw, C, passes vertically through the front portion of the lever B, carrying upon its lower end a contact-point, *c*, preferably composed of platinum or other hard or infusible metal, which, by means of the screw, may be readily adjusted to regulate its distance from another contact-point, *c′*, fixed upon the anvil D, thus avoiding the necessity of altering the position of the lever B by means of the adjustable stop B^2, as in the keys heretofore used. An adjustable screw can, however, if desired, be inserted through a threaded hole in the anvil, and adjusted in respect to its distance from a stationary point upon the key-lever.

It will therefore be understood that by use of the set-screws B^2 and C the position of the lever B in the vertical plane of its motion may be changed without altering the distance between the contact-points *c* and *c′*, and, conversely, that the distance between the contact-points may be changed without altering the position of the key-lever. This is a very useful feature of my improved key, as the height of the lever and its knob above the table can be adjusted to suit the habits or convenience of different operators without altering the distance between the contact-points.

I will now proceed to describe the construction of my improved device for connecting the electric conductors to the anvil and base of the key.

Referring to Fig. 1, a hollow threaded bolt, E, is inserted through a corresponding aperture in the base A, so that its flat head *e* will bear against the under side of the base and be in electrical connection with it, as shown. A milled nut, E^2, is fitted to move freely upon the threaded portion of the bolt E, which, as hereinbefore stated, is made hollow, having a hole bored centrally through its entire length large enough to admit a hollow cylinder of vulcanite or other suitable insulating material, F, which extends through the interior of said bolt, and has a projecting flange at the top, which forms a seat for a metallic washer, F′. A second bolt, E′, of smaller diameter and considerably greater length than the bolt E, is screwed, from beneath, through the threaded hole within the insulating material F. The flat head *e′* of the bolt E′ bears against a narrow strip of conducting metal, G, which forms an electrical connection with the anvil D. A strip of insulating material, G′, which preferably corre-

sponds in size to the metal strip, is placed between the metal strip and the base, and insulates it therefrom. A second milled nut, E^3, is fitted upon the threaded bolt E′, and may be moved freely thereupon. The anvil D is secured in its place by the downward projection D′, which passes through the insulating-collar G′, inserted in the base A, and through the metal strip G, to which it is firmly fastened by a nut, *d*. A washer of insulating material, G^2, is interposed between the base A and the anvil D, which is larger in diameter than the aperture in the base.

Thus it will be understood that by securing one wire or conductor of the electric circuit between the milled nut E^2 and base A and the other between the nut E^3 and washer F′, (which is best done by looping the wires around the respective bolts,) the former will be in metallic connection with the contact-point *c* through the base, trunnions, and lever, and the latter in metallic connection with the anvil D and contact-point thereon through the stud E′, metallic strip G, and the projection D′ of the anvil itself. Therefore, by depressing the lever, the electric connection will be completed in the usual manner.

I prefer to make use of a circuit-closer for maintaining the continuity of the circuit when the key is at rest, the construction of which will be best understood by reference to Fig. 4.

H and H′ are thin plates of resilient metal, normally curved in opposite directions, fastened together by the handle or knob *h*, and springing apart at their other ends, as shown. The separate ends are compressed nearly or quite into contact with each other, and are attached to the base by the flat-headed screw *h*′, which also serves as a pivot for it to turn horizontally upon. The construction of this circuit-closer insures more perfect electrical connection between the base and anvil than the solid circuit-closers heretofore in use, in consequence of the resilient properties of the separated pieces of metal, which, when thrust edgewise between the anvil and the base of the key, are pressed together, by which means perfect contact is secured.

I prefer to attach the key to a support by screws passing through countersunk holes I I, Fig. 3, although it may be secured in any other well-known and convenient manner.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of two concentric-threaded metallic bolts of different lengths, separated from each other by an intervening layer of insulating material, with two threaded nuts independently movable upon the respective bolts and serving to clamp the conducting-wires.

2. The combination, substantially as hereinbefore set forth, with the base and insulated anvil of a telegraphic key, of a circuit-closer constructed of two independent resilient plates, which are compressed between the said base and anvil in order to close the circuit.

In testimony whereof I have hereunto subscribed my name this 11th day of February, A. D. 1881.

JACOB CAIN.

Witnesses:
E. B. SNOW,
C. N. REDDING.