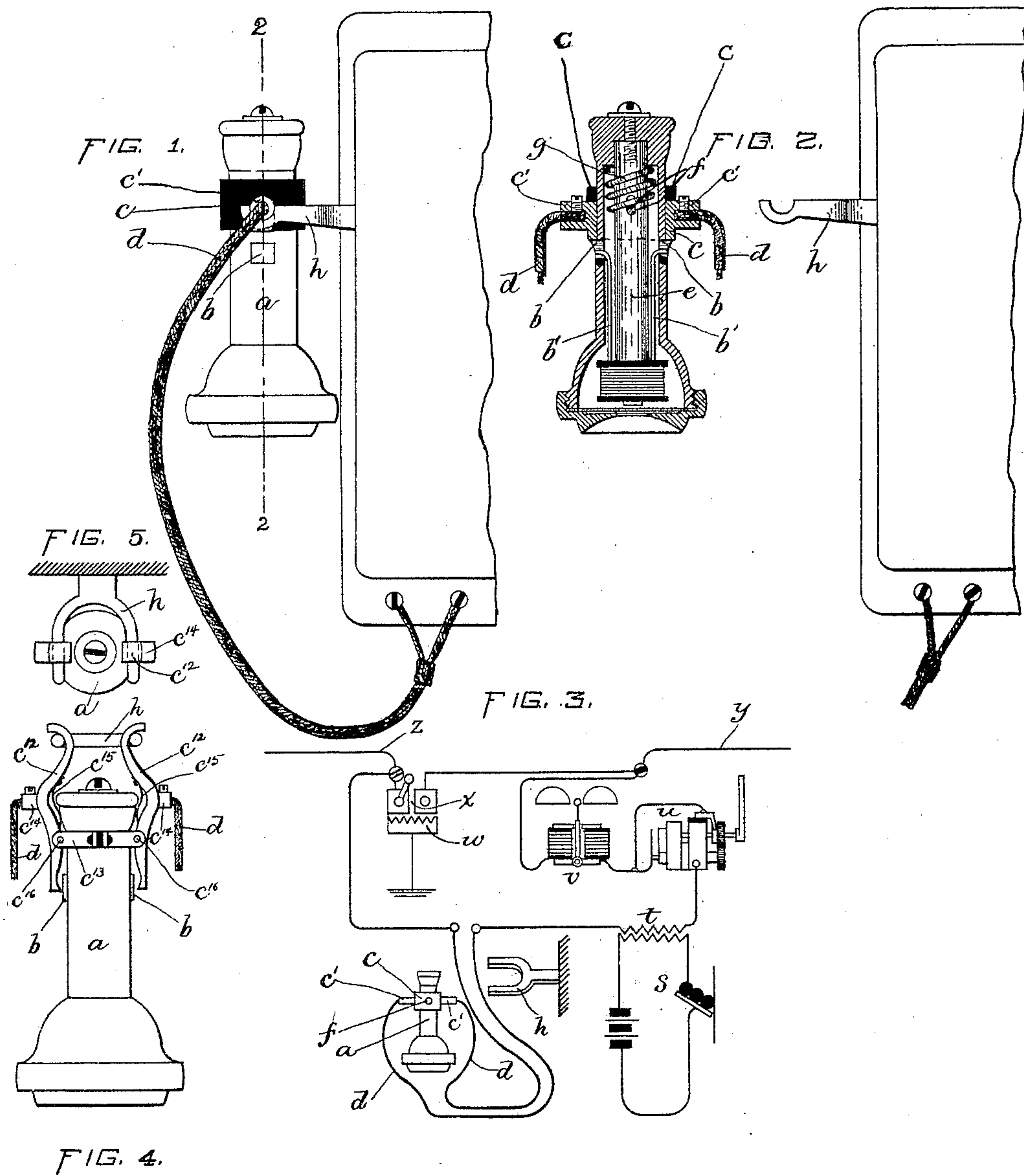


(No Model.)

J. H. HOWARD.
TELEPHONE RECEIVER.

No. 459,205.

Patented Sept. 8, 1891.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JAMES H. HOWARD, OF MEDFORD, MASSACHUSETTS.

TELEPHONE-RECEIVER.

SPECIFICATION forming part of Letters Patent No. 459,205, dated September 8, 1891.

Application filed March 3, 1891. Serial No. 383,628. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. HOWARD, of Medford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Telephone-Receivers, of which the following is a specification.

This invention has for its object to provide an improved telephone-receiver which shall embody in its own construction the switch which cuts out from the circuit the coil of said receiver when the receiver is not in use; and it consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a telephone-receiver provided with my improvements and of a portion of the box to which the same is connected, the receiver being hung upon its hook. Fig. 2 represents a similar view, the receiver being detached from its hook and shown in section taken on the line 2 2 of Fig. 1. Fig. 3 represents a diagram showing the relation of the various parts of the telephone. Fig. 4 represents a side elevation of a modification, and Fig. 5 represents a top plan view of the same.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents the body or frame of the receiver, which is of non-conducting material, as usual.

b b represent two contact-pieces, which project through said body *a* at opposite sides thereof, one of said pieces *b* being connected with one end *b'* of the wire forming the coil in the receiver, while the other contact-piece *b* is connected with the other end *b²* of said wire.

c represents a ring surrounding the body *a* and having suitable terminals *c' c'* for the attachment to said ring of the wires *d d* of the circuit.

f represents a pin passing through a slot in the core *e* of the receiver and through similar slots in the body *a*, the ends of said pin *f* being fixed in the ring *c*.

g represents a spring surrounding the core *e*, one end of said spring pressing against an internal shoulder in the body *a*, while the other end presses against the pin *f*, which is

affixed to the ring *c*, as already described. It will thus be seen that the said spring acts to hold the ring *c* in the position on the receiver shown in Figs. 2 and 3. The ring *c* is made partly of conducting and partly of non-conducting material. The two portions at the sides where the wires *d d* are attached to said ring are made of a conducting material, and these two parts of the ring are joined by two pieces of a non-conducting material, the ends of the pin *f* being affixed to said non-conducting portions of the ring *c*. The said pin *f* may be made of a conducting or of a non-conducting material, its material being unimportant.

h represents a fixed metallic hook, upon which the receiver is adapted to be hung when not in use. It will be seen that when the receiver is detached from its hook, as shown in Fig. 2, the conducting portions of the ring *c*, carrying the circuit-wires *d d*, make contact with the pieces *b b*, the current thus flowing through the coil of the receiver, the wires *b' b²* of said coil forming the only conducting connection between the circuit-wires *d d*. When, however, the receiver is hung upon its hook *h*, the arms *c'* resting on the hook, the weight of the receiver is such as to overcome the stress of the spring *g*, and the receiver moves slightly downward through its inclosing ring *c*, which is supported by its arms *c'* on the hook *h*, thus breaking the contact between the said ring *c* and the contact-pieces *b*, connected with the coil of the receiver. Contact is then made between the conducting portions of the ring *c*, carrying the wires *d d* by means of the hook *h*, the arms *c' c'* resting on the arms of said hook. It will be seen that the current then flows from one wire *d* to the other through said hook *h*, thus cutting out the coil of the receiver and avoiding the resistance of the same.

In the diagram shown in Fig. 3, *x* and *y* are the main-line wires, *x* the usual switch, *w* the lightning-arrester, *v* the bell, *u* the Siemens armature, *t* the induction-coil, and *s* the secondary circuit, all arranged as usual and needing no description here. From this diagram the course of the current will be readily traced. The Siemens armature is shown as provided with improvements shown and de-

scribed in an application filed herewith for Letters Patent for an improvement in telephones, Serial No. 383,630.

In Figs. 4 and 5 I have shown a modification. In this construction, instead of the ring *c* I use two conducting-arms *c*¹² *c*¹², the same being coupled together by non-conducting straps or bars *c*¹³, there being, preferably, one of said straps at one side of the receiver-body and one at the opposite side, said arms being pivoted at *c*¹⁶ to said straps. The arms *c*¹² are provided on their outer sides with terminals *c*¹⁴ *c*¹⁴, to which the ends of the circuit-wires *d* *d* are adapted to be attached. The arms *c*¹² are provided on the inner sides with small springs *c*¹⁵ *c*¹⁵, which are adapted to press on the body *a* of the receiver, and thus force outwardly the upper ends of the arms *c*¹² and causing the lower ends of said arms to make contact with the contact-pieces *b*, connected with the coil of the receiver. When the receiver is hung upon its hook, the upper ends of the arms *c*¹² are brought slightly together against the stress of the springs *c*¹⁵, thus breaking the contact of said arms with the pieces *b* and causing the current to flow from one arm to the other through the hook *h*, thus cutting out the coil of the magnet, as in the form of the device first described.

I claim—

1. The combination, with a telephone-receiver *a*, of two contact-pieces on the exterior thereof, one connected with one end and the other with the other end of the wire forming the coil in the receiver, two spring-pressed contact-pieces connected with the circuit-wires and normally held by their springs in contact with the contact-pieces on the receiver, said spring-pressed contact-pieces being movable out of contact with the pieces on the receiver when the latter is not in use, and means for electrically connecting the spring-pressed contact-pieces externally of the receiver when the said spring-pressed pieces are not in contact with the contact-pieces on the receiver, as set forth.

2. The improved telephone-receiver hereinbefore described, comprising a body of non-conducting material having the usual magnet and coil, two contact-pieces projecting from the exterior of the said body at opposite sides thereof, said contact-pieces being

connected with the ends of the wire forming the coil in the receiver, a ring adapted to slide on the said body and having two contact-pieces insulated from each other and connected to the wires of the circuit corresponding in position to the contact-pieces on the body of the receiver, means for yieldingly holding the said ring in position with its contact-pieces in electrical contact with the contact-pieces on the body, said ring being movable from said position when the receiver is not in use, and means for electrically connecting the contact-pieces on said ring exterior of the telephone when the said contact-pieces are not in contact with the contact-pieces on the receiver, as set forth.

3. The combination, with a telephone-receiver, of the two contact-pieces on the exterior of the receiver, the one being connected to one end and the other to the other end of the wire forming the coil in the receiver, a ring adapted to slide upon the exterior of the receiver and provided with two contact-pieces insulated from each other and connected to the circuit-wires, said contact-pieces corresponding in position to the contact-pieces on the receiver, a pin extending through a slot in the receiver and having its ends fixed in the said ring, a spring interposed between said pin and an internal shoulder in the receiver, said spring acting to press the ring to the position where the contact-pieces thereon are in contact with the contact-pieces on the receiver, and a hook or support upon which the receiver is adapted to be placed, the arms of said support being adapted to bear on the contact-pieces in said ring and to support the same while the receiver by its weight slides through said ring against the stress of the spring and moves its contact-pieces out of electrical connection with the contact-pieces of the ring, electrical connection between the said contact-pieces on the ring being established by the hook or support, as set forth.

In testimony whereof I have signed my name to this specification, in presence of two subscribing witnesses, this 14th day of February, A. D. 1891.

JAMES H. HOWARD.

Witnesses

EWING W. HAMLEN,
C. F. BROWN.