

(No Model.)

J. A. CABOT.
TELEPHONE SWITCH.

No. 324,358.

Patented Aug. 18, 1885.

Fig. 5.

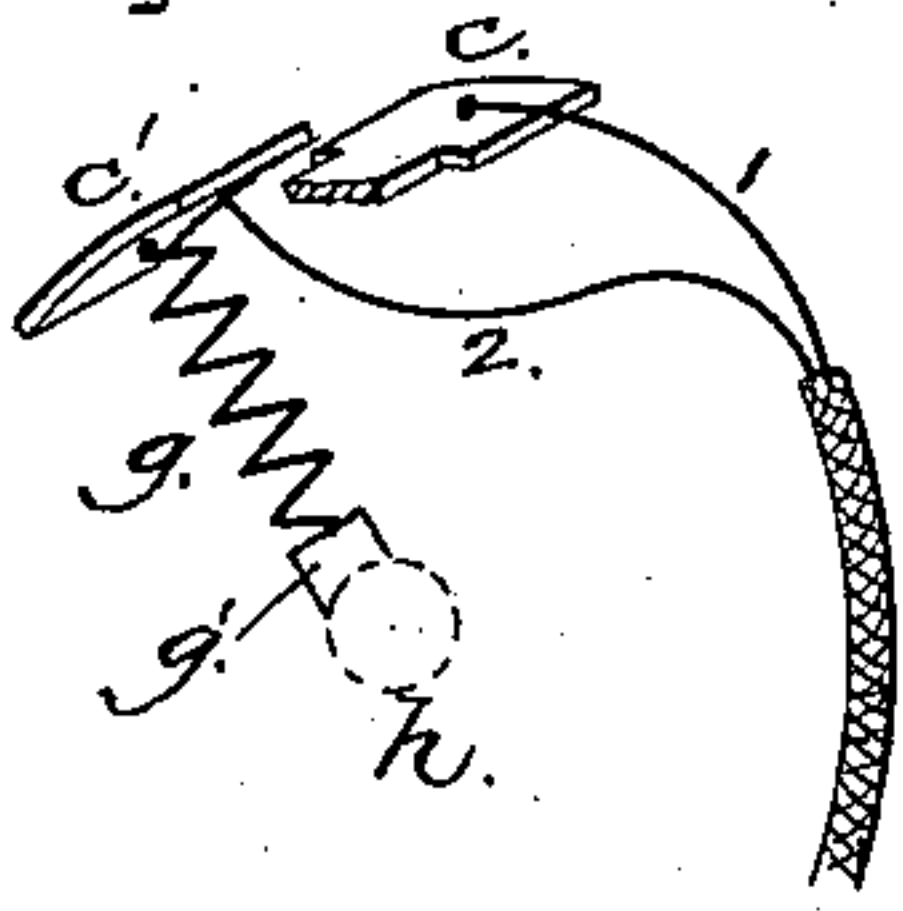


Fig. 1.

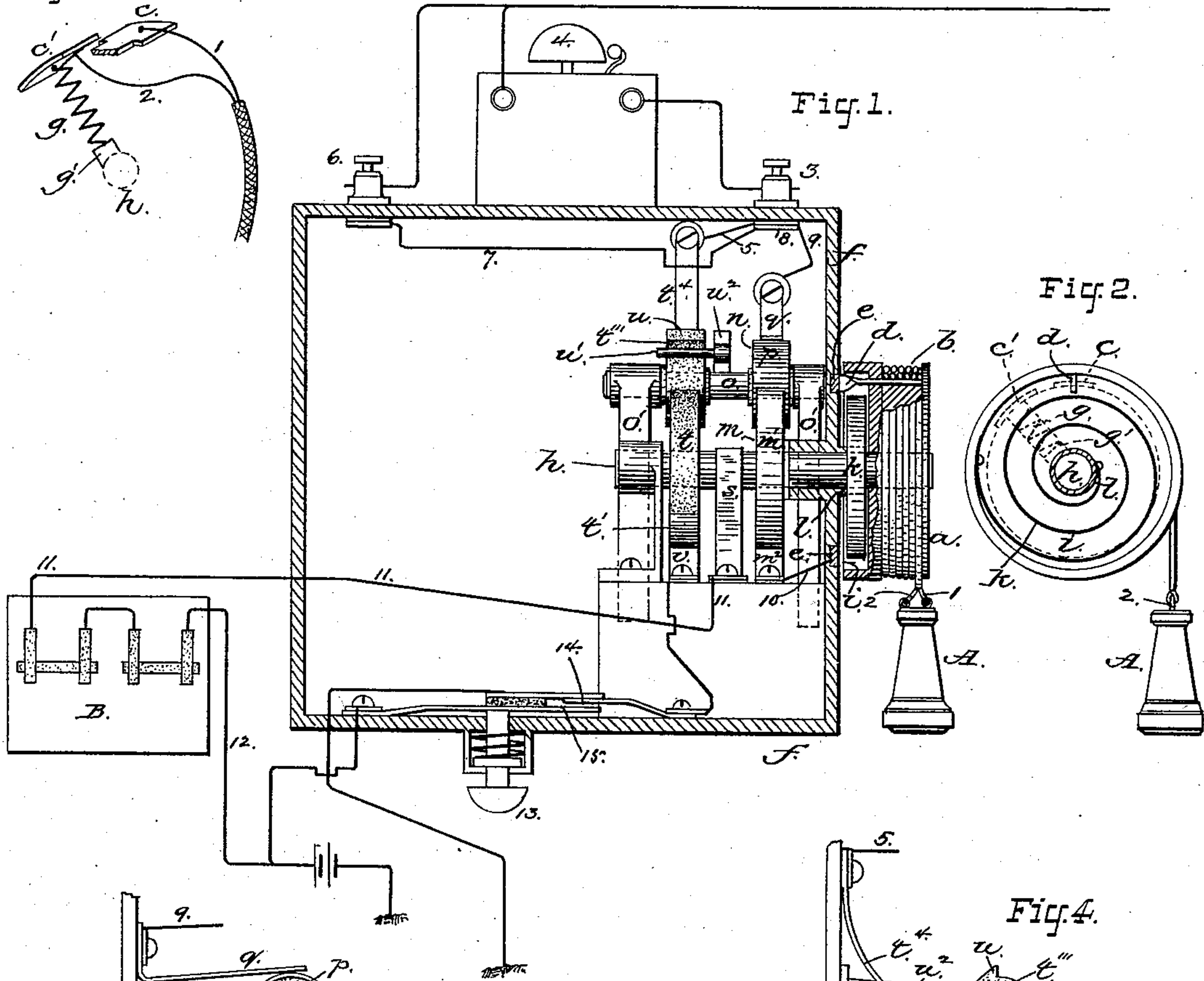


Fig. 2.

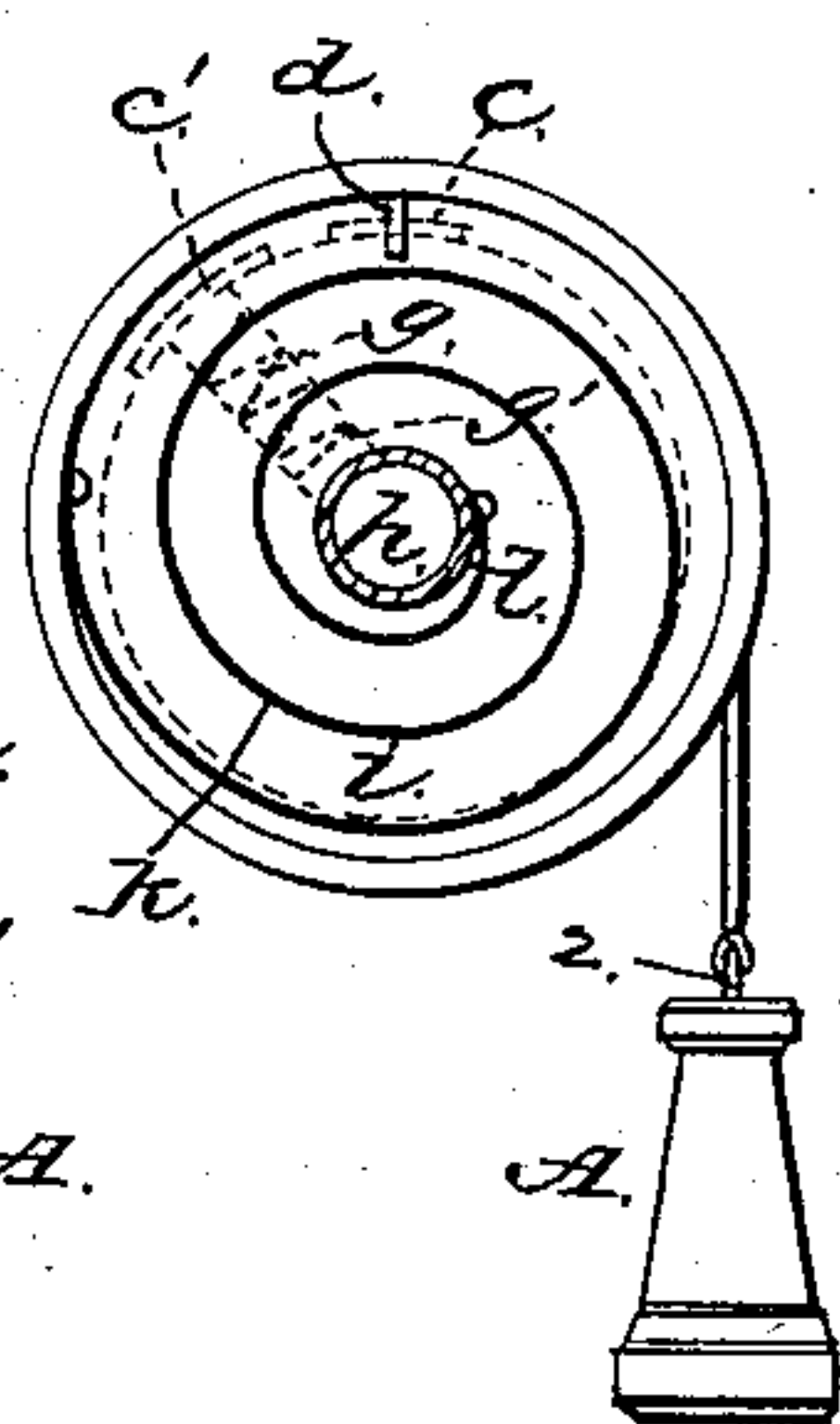


Fig. 3.

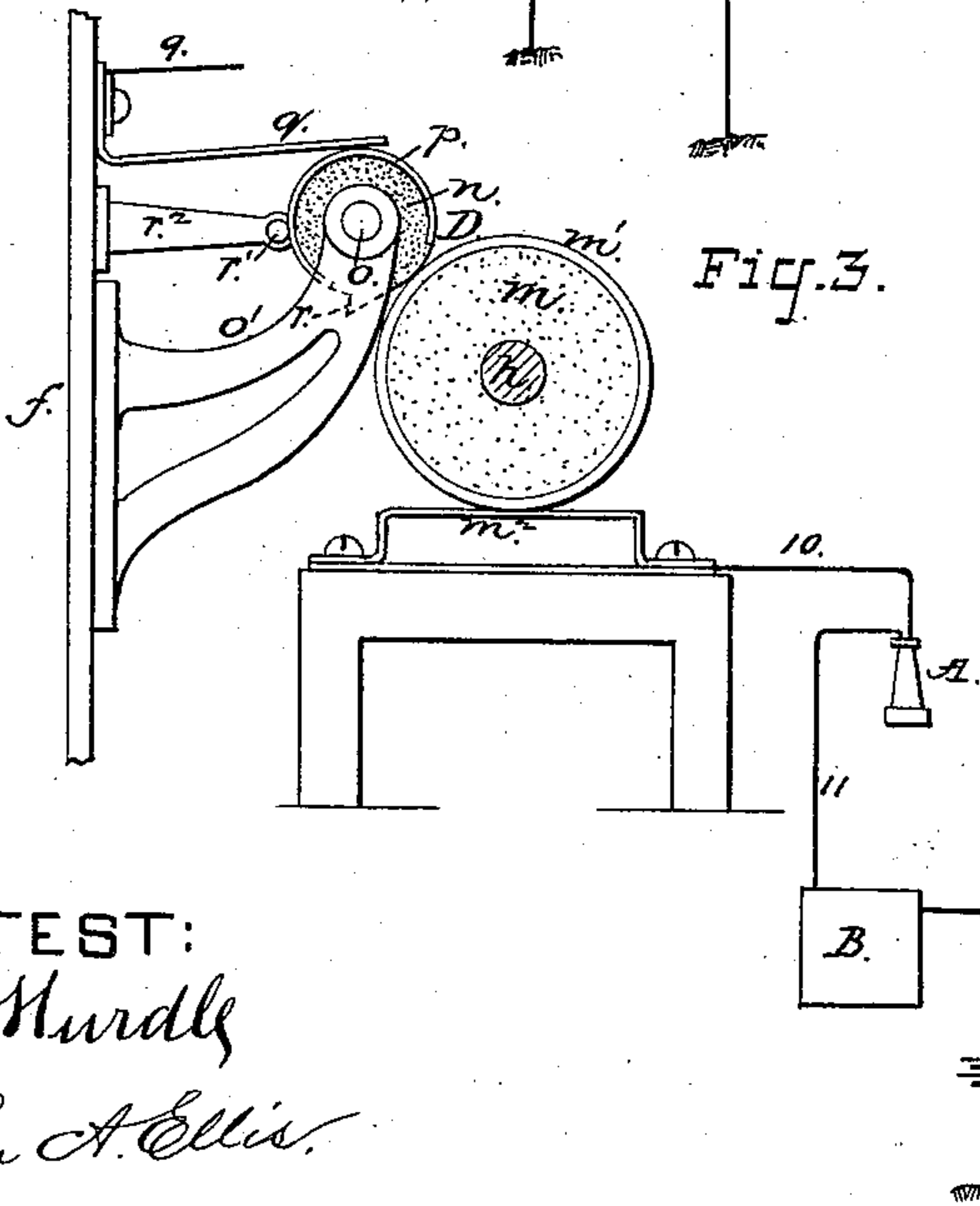
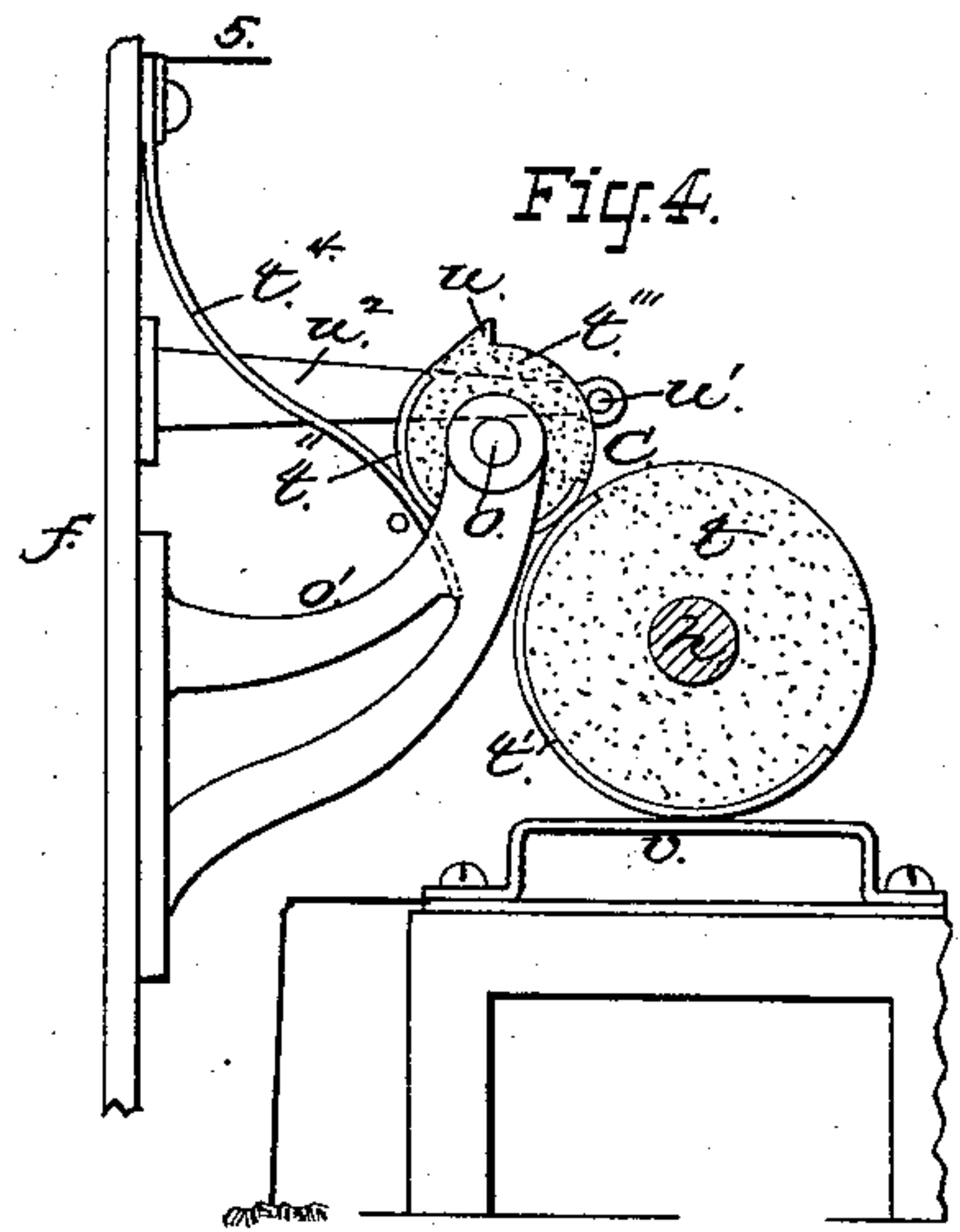


Fig. 4.



ATTEST:

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UNITED STATES PATENT OFFICE.

JOHN A. CABOT, OF NEW YORK, N. Y.

TELEPHONE-SWITCH.

SPECIFICATION forming part of Letters Patent No. 324,358, dated August 18, 1885.

Application filed September 15, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. CABOT, a citizen of the United States, and a resident of New-York, in the county of New York and State
5 of New York, have invented certain new and useful Improvements in Telephone-Switches, of which the following is a specification.

My invention relates to a novel telephonic switch, of which a full and clear description
10 will be given hereinafter.

The first part of my invention consists of a grooved pulley. The base of the groove is provided with metallic plates, one of which is electrically connected with one end of the
15 conductor leading to the receiver. This plate is provided with a longitudinally-projecting spring adapted to bear against a metallic ring arranged on the side of the box containing the switch mechanism. The other end of the sec-
20 ond conductor of the receiver is connected with the second metallic plate on the base of the groove mentioned above. This plate is provided with a spiral metallic spring, the lower end of which is electrically connected
25 with a metallic block engaging with the metallic shaft carrying said grooved pulley. On one side of this pulley is provided a recess, to the interior wall of which is connected one end of a retracting convolute spring, the other
30 end of which is fixed to a hub integral with or fastened to the outside of the frame forming a part of the box carrying the switch mechanism. This pulley is of course rigidly fixed to the shaft.

35 The second part of my invention consists of a disk of insulating material mounted on the shaft carrying the grooved pulley. The periphery of the disk is provided with a metallic ring in frictional contact with a smaller
40 disk of insulating material mounted on a second shaft, this disk having a part of its periphery covered with a metallic strip, which strip is arranged so as to be in constant contact with a metallic spring arranged in circuit with the
45 receiver and transmitter when in closed circuit. The periphery is also provided with a projecting lug adapted to strike against a stop when turned by the larger disk. The lower portion of the larger disk is in constant
50 contact with a metallic spring, which is electrically connected with the metallic ring on

the side of the box and which is in contact with the projecting spring leading from the base of the groove on the pulley hereinbefore mentioned.

55 The third part of my invention consists of a second disk of insulating material mounted on the same shaft with the grooved pulley, and the periphery of this disk is partly covered with a metallic strip and arranged so as to be
60 in closed circuit when in its normal condition. The metallic strip is in constant contact with a metallic spring connected with the conductor leading to earth. This metallic strip is also in frictional contact with a metallic strip
65 covering a part of the periphery of a smaller disk mounted on the second shaft. The metallic strip of this smaller disk is in constant contact with a metallic spring connected with a conductor leading to the call-bell placed in
70 the main-line circuit. This smaller disk is also provided with a projecting lug adapted to strike against a stop when turned by the larger disk in frictional contact therewith.

In the drawings, Figure 1 represents a section-
75 al view of a case, showing the switch mechanism in elevation and the grooved pulley partly in section. Fig. 2 represents a side elevation of the grooved pulley, showing the manner in which the retracting convolute spring is con-
80 nected therewith. Fig. 3 represents a side elevation of the switch for closing the circuit, with the transmitter and receiver. Fig. 4 is a similar view of the switch mechanism for closing and opening the bell-circuit. Fig. 5 rep-
85 resents a diagram of the plates arranged on the base of the grooved pulley.

Similar letters refer to similar parts throughout the drawings, in which *a* represents the pulley provided with the continuous groove
90 *b*, the base of which is provided with two metallic plates, *c c'*. The plate *c* is connected with the positive conductor 1, leading to the receiver A, while the negative conductor 2 is connected with the plate *c'*. Plate *c* is provided
95 with a projecting contact-spring *d*, the end of which bears in constant contact with the metallic ring *e*, fixed to the case *f*. The under side of the plate *c'* is connected with the spiral metallic spring *g*, the lower end of which
100 is electrically connected with a metallic block, *g'*, which bears constantly against the pulley-

shaft *h*, to which the pulley *a* is rigidly fixed.

The recess *i* is formed on one side of the grooved pulley *a*, having one end of the convolute spring *K* connected to the interior surface of its wall. The other end is fixed to the hub *l*, made integral or fixed to the exterior of the frame *f*.

A disk, *m*, of insulating material, is rigidly fixed to the metallic shaft *h*. The periphery of this disk is provided with a continuous metallic ring, *m'*, which engages with the periphery of a smaller disk, *n*, of insulating material. This disk is mounted on the second shaft, *o*, supported by brackets *o' o'*. The periphery of this smaller disk *n* is partly covered with the metallic strip *p*, which is at all times in contact with the metallic spring *q*, electrically connected with the binding-post 3, having the main-line conductor connected therewith. The projecting lug *r* is integral with the aforesaid disk *n*, and is adapted to strike against the stop *r'* when rotated by the disk *m*. The stop *r'* is supported by the bracket *r²*. The lower portion of the metallic ring *m'* of the disk *m* is in constant contact with the metallic spring *m²*, which is electrically connected with the metallic ring *e*.

s is a metallic spring, which is at all times in contact with the shaft *h*, the lower end of which is connected with a conductor leading to the transmitter B.

t is the disk of insulating material, which is also rigidly fixed to the shaft *h*, and having a part of its periphery mounted with a metallic strip, *t'*, which metallic strip bears against the metallic strip *t''* of the smaller disk *t'''*, and this metallic strip *t''* covers a part of the periphery of the disk *t'''*, and is in contact with the spring *t⁴*. This disk is also mounted on shaft *o*. The lug *u* is integral with the disk *t*, and is adapted to strike against the stop *u'*, which is held in position by the bracket *u²*. The metallic strip *t'* is also in constant contact with the metallic spring *v*, electrically connected with the conductor leading to the earth.

Modus operandi: In Fig. 1 the instrument is supposed to be at rest and the bell 4 in closed circuit. The call from the other end will cause the bell to give the alarm. The circuit at this time will enter at the binding-post 3, from which it passes to the conductor 5, to the spring *t'*; thence to the metallic strip *t''*, from which it passes to and through metallic strip *t'* to the metallic spring *v*, leading to the earth, thus completing the circuit through the bell. The receiver A is then pulled to the rear, which movement unwinds the conductors from the pulley *a*, and thereby rotates the same, and causes the bell-circuit to break at C, Fig. 4, and closes the circuit with the receiver A at D, Fig. 3. The current now enters at the binding-post 6, from which it passes to the conductor 7, to the plate 8 of the binding-post 3; thence through the conductor 9 to the metallic spring *q*, from which it passes to the metallic strip *p*; thence through the me-

tallic ring *m'* to the metallic spring *m²*, from which it passes to the conductor 10 through the metallic ring *e*; thence to the metallic spring *d*, integral with the metallic plate *c*; thence through the positive conductor 1, through which it passes to the receiver A, returning, through the negative conductor 2, to the metallic plate *c'*; thence through spiral spring *g* to the metallic plug *g'*, to the shaft *h*, from which it passes to the metallic spring *s*, to the conductor 11; thence through the transmitter B to conductor 12, connected with the positive pole of the battery, the negative pole thereof connected with the earth, thus completing the circuit through the transmitter and receiver.

When through with the transmitter and receiver, the latter is allowed to drop from the hand, and the retracting force of the convolute spring *K* will rotate the pulley *a* and wind up the conductors of the receiver A. At the same time the rotation of said pulley will break the circuit with the transmitter and receiver and close the bell-circuit.

When desirous of calling up at the other end of the line, you have simply to press on the button 13, which will break the bell-circuit at 14 and close it through the local battery at 15, thus giving the alarm at the other end of the line.

I am aware that a spring-actuated pulley has heretofore been used in connection with telephone-receivers. I therefore do not claim, broadly, this particular feature.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a telephone-receiver, of a grooved pulley mounted on a metallic shaft carrying the conductors of the receiver, one end of each of which is connected with metallic plates arranged on the base of the groove of the pulley and in the positive and negative poles of the circuit, a convolute retracting-spring arranged on one side of the grooved pulley, the said spring adapted to rotate the grooved pulley automatically, substantially as shown and described.

2. The combination, with a telephone-receiver, of the circuit maker and breaker consisting of a disk of insulating material having mounted upon its periphery a metallic ring having frictional contact with the periphery of a smaller disk of insulating material, and having a part of its periphery covered with a metallic strip, a projecting lug integral with the periphery of the smaller disk, adapted to strike against the stop when rotated, the metallic surface of both disks in contact with metallic springs connected with conductors, forming the circuit when the respective plates of the disks are in contact with each other, substantially as shown and described.

3. The combination, with the bell-circuit of a telephone-receiver, of a circuit maker and breaker composed of a disk of insulating material mounted on the shaft of the grooved pul-

ley, a part of the periphery covered with a metallic strip making frictional contact with a metallic strip on a smaller disk in contact with a metallic spring in circuit with the bell, and the metallic spring in contact with the periphery of the disk of the pulley-shaft.

4. In combination with a telephone-receiver, the pulley *a*, carrying the metallic disk *c'*, electrically connected with one end of the spiral metallic spring *g*, the other end of the spring electrically connected with a metallic

block, *g'*, in contact with the metallic shaft *h*, the whole placed in electrical circuit, substantially as shown and described.

Signed at New York, in the county of New York and State of New York, this 11th day of September, A. D. 1884.

JOHN A. CALOT.

Witnesses:

J. A. HURDLE,
A. W. STEIGER.