

No. 769,125.

PATENTED AUG. 30, 1904.

E. E. YAXLEY.
TELEPHONE SUBSTATION OUTFIT.
APPLICATION FILED DEC. 28, 1903.

NO MODEL.

Fig. 1.

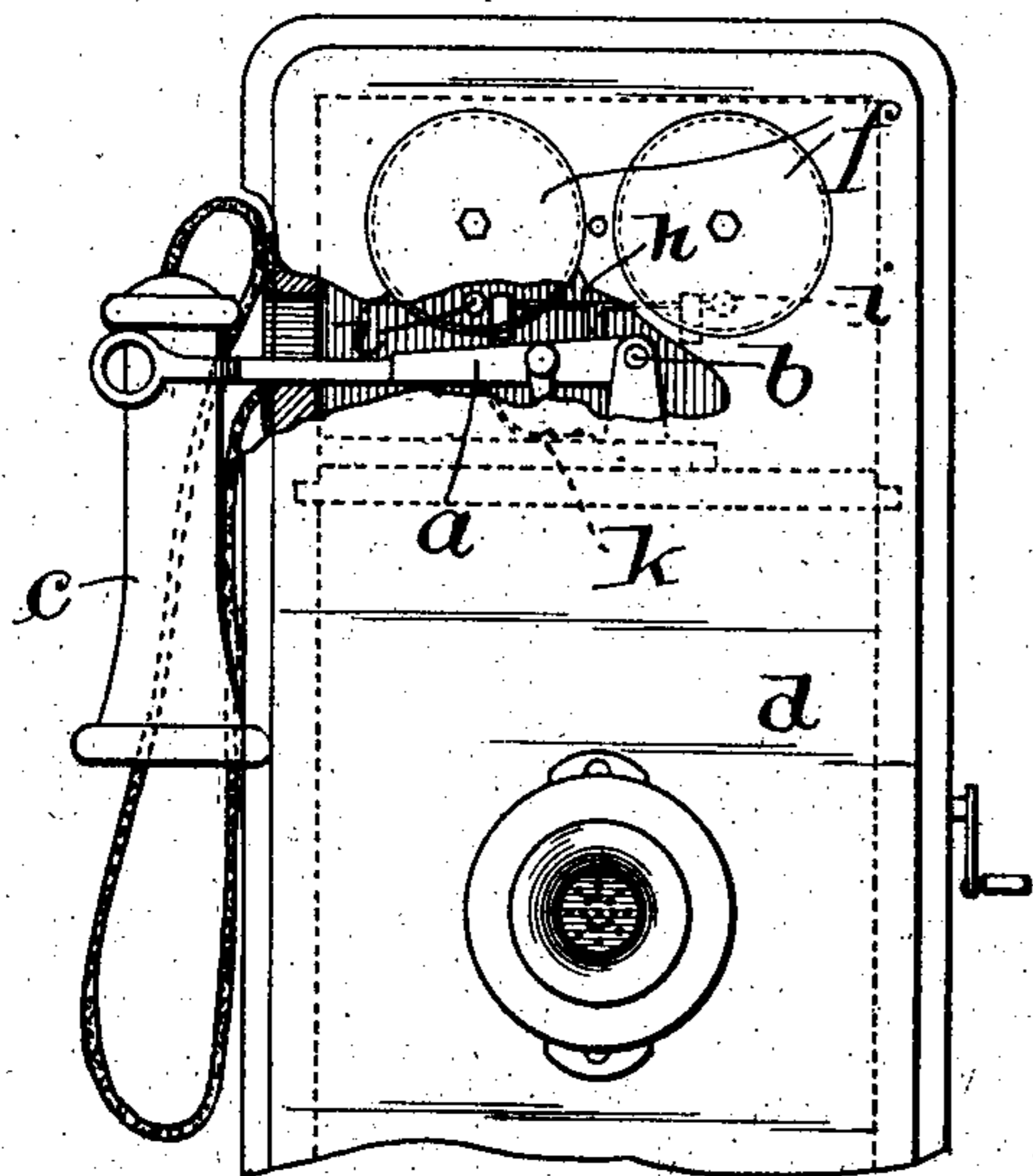


Fig. 2.

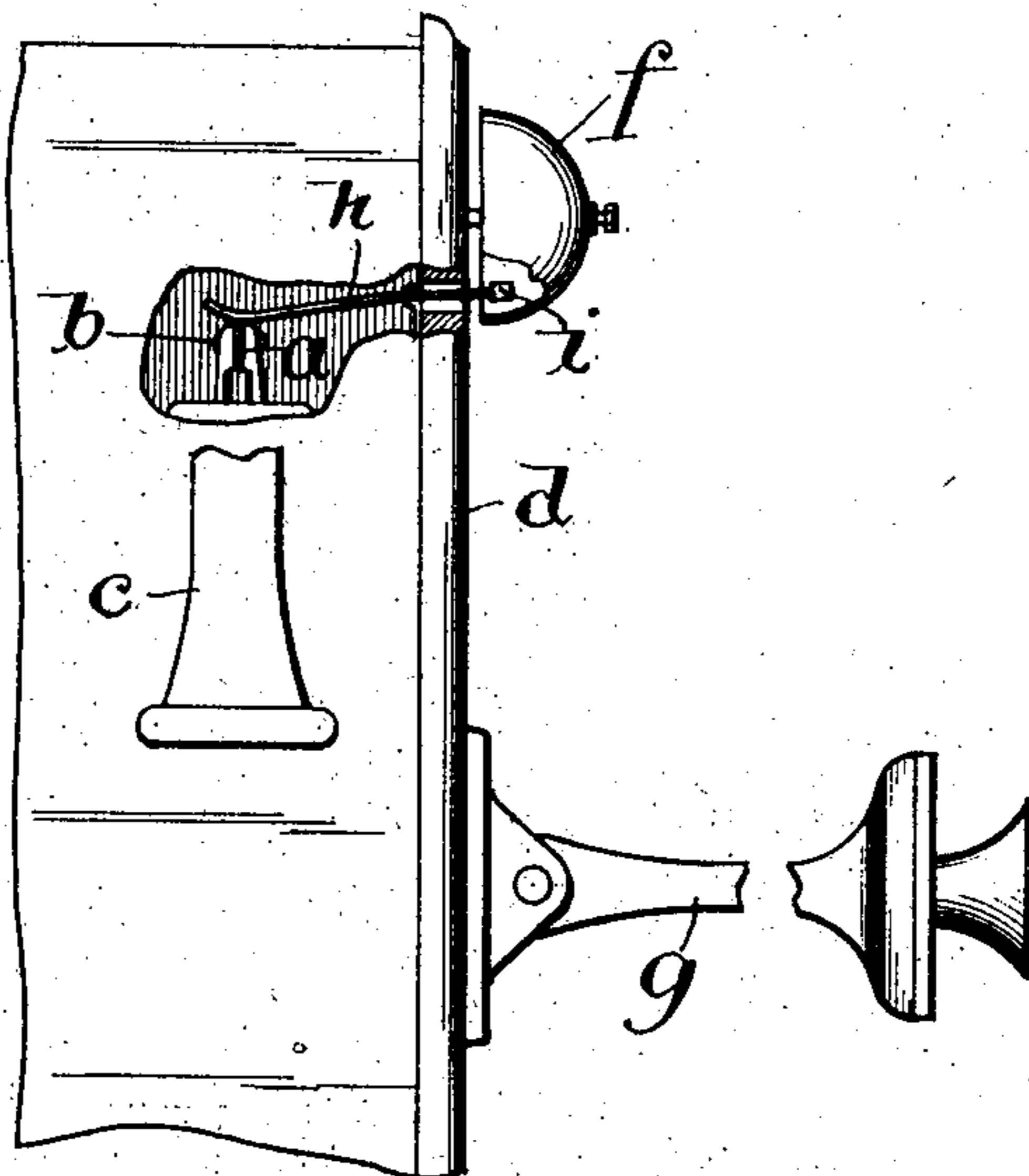


Fig. 3.

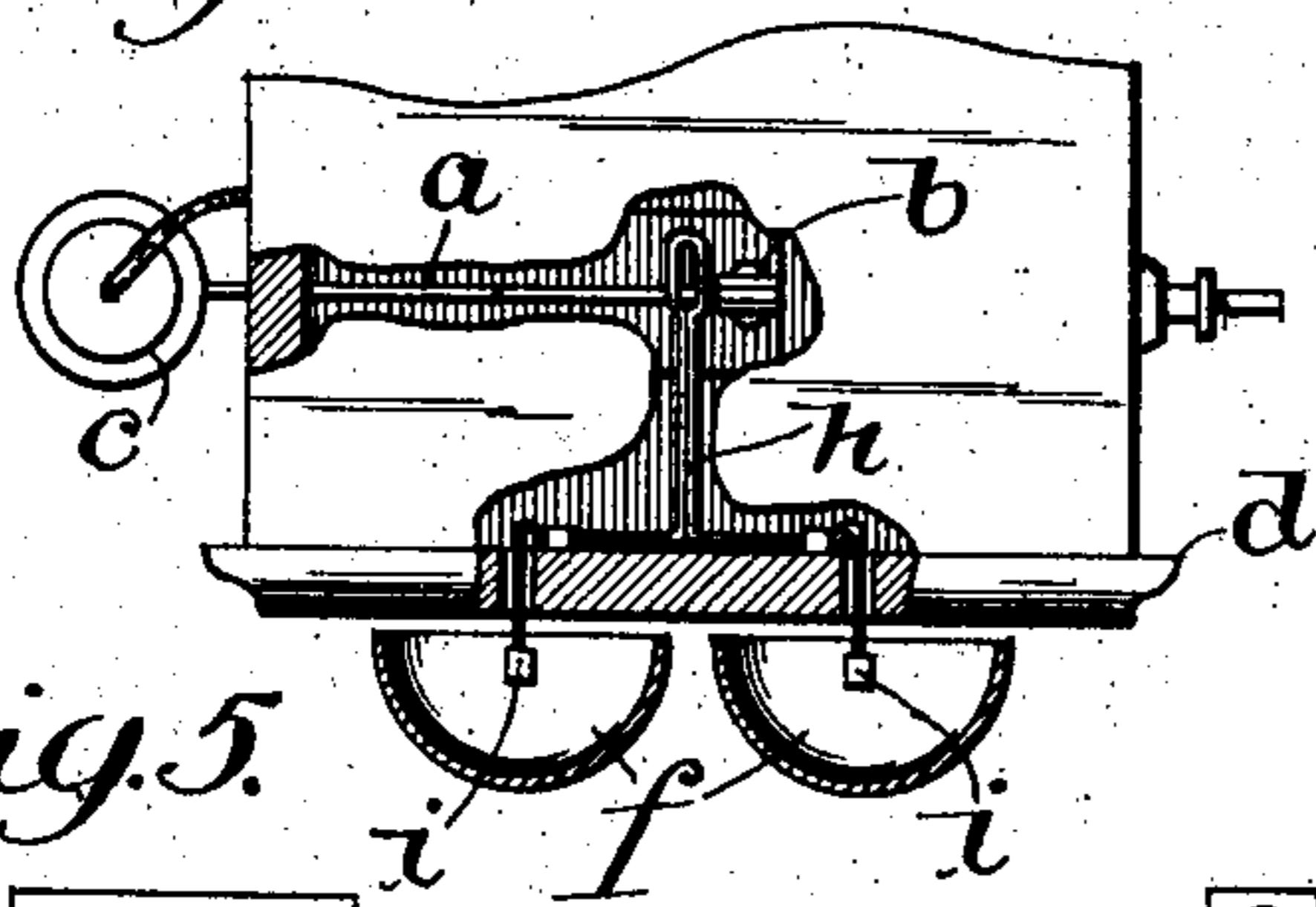


Fig. 4.

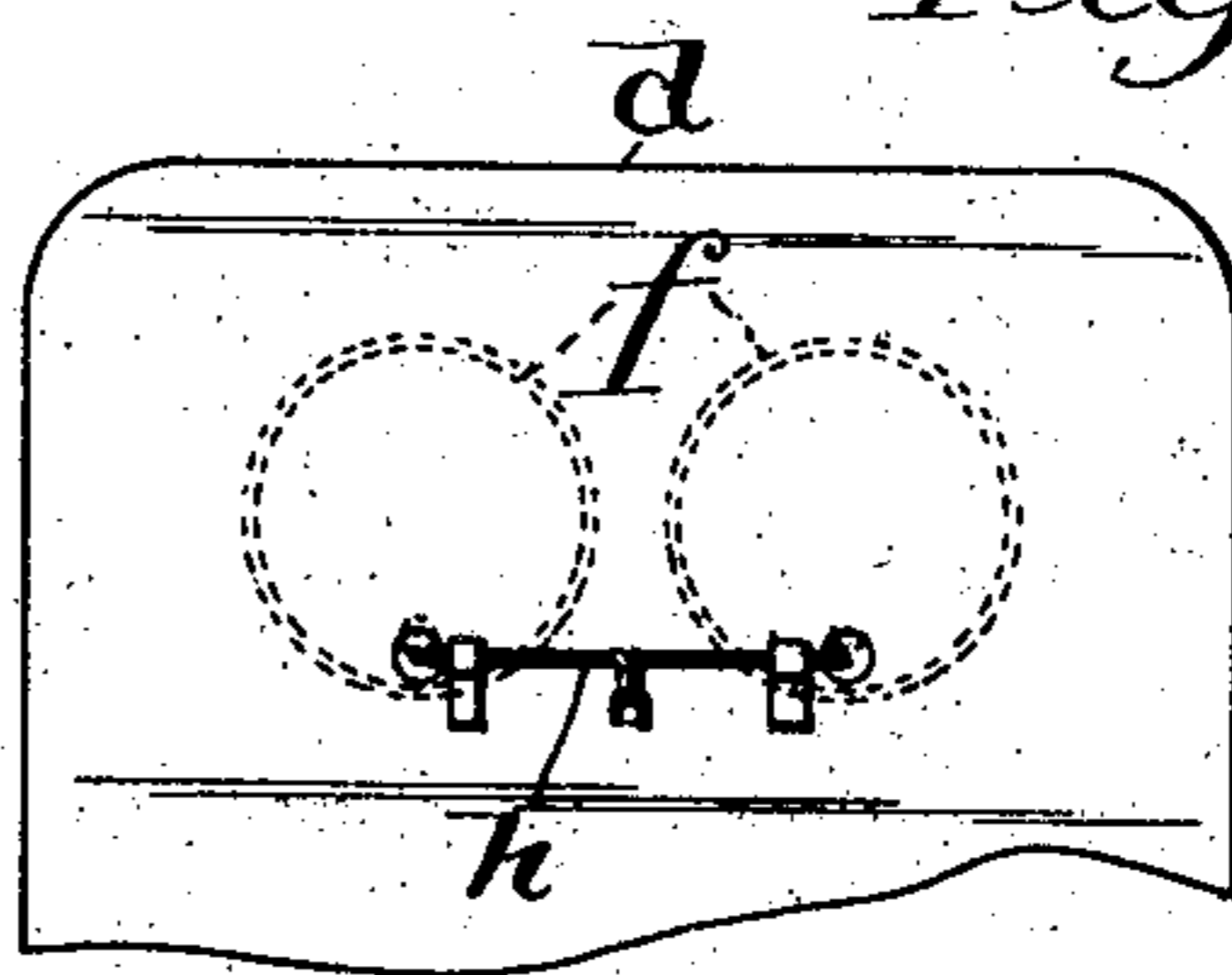


Fig. 5.

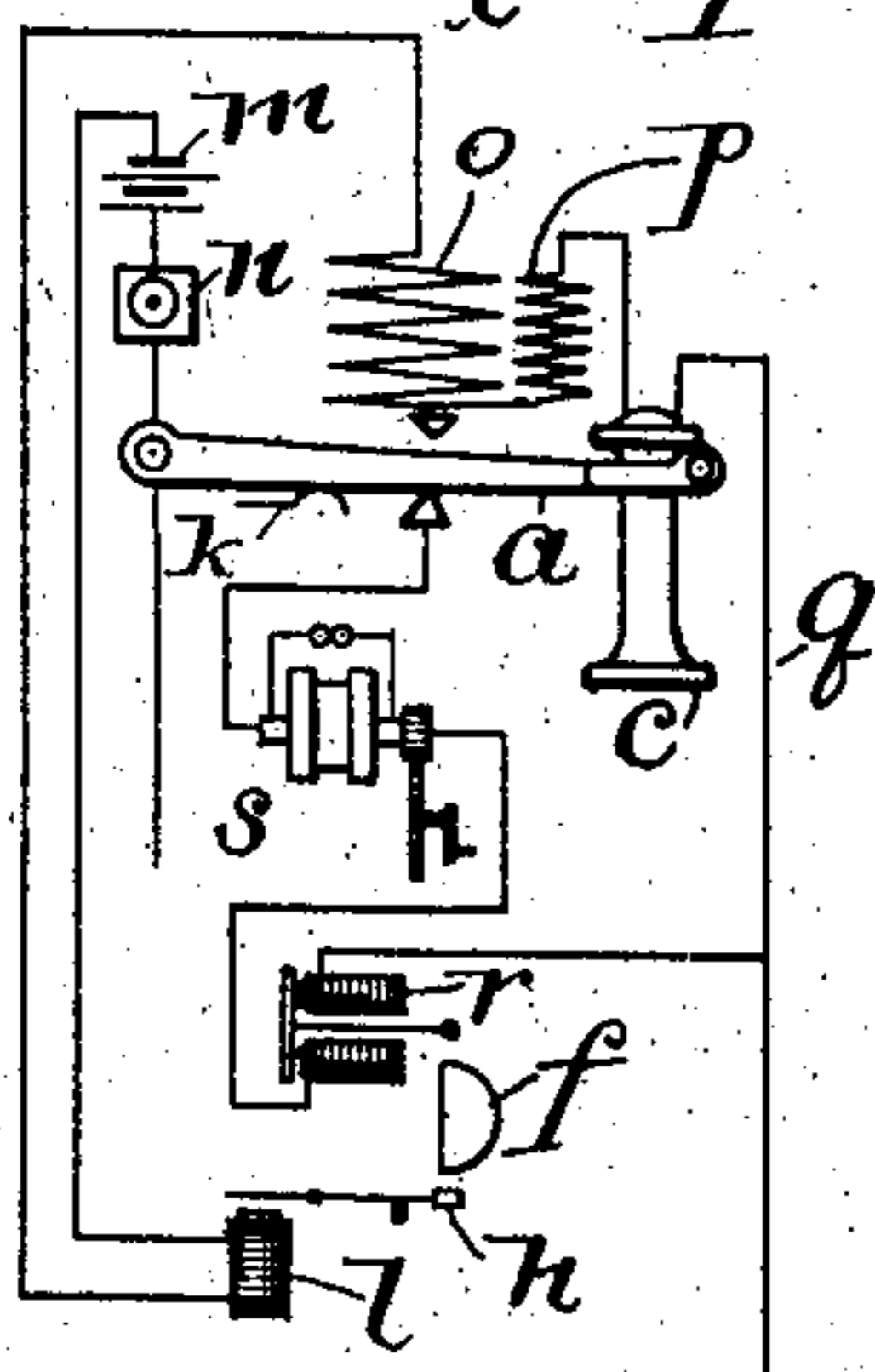


Fig. 6.

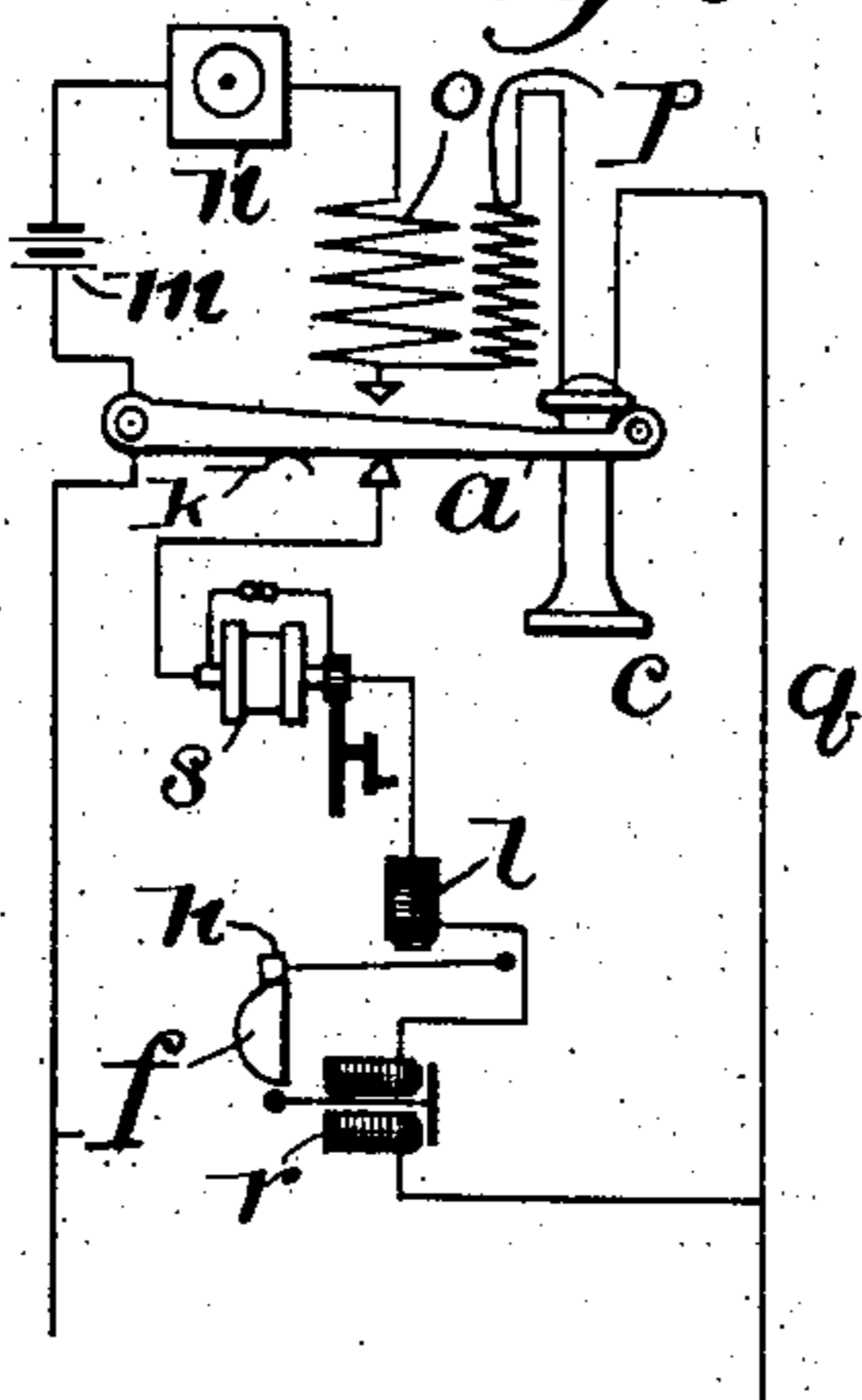
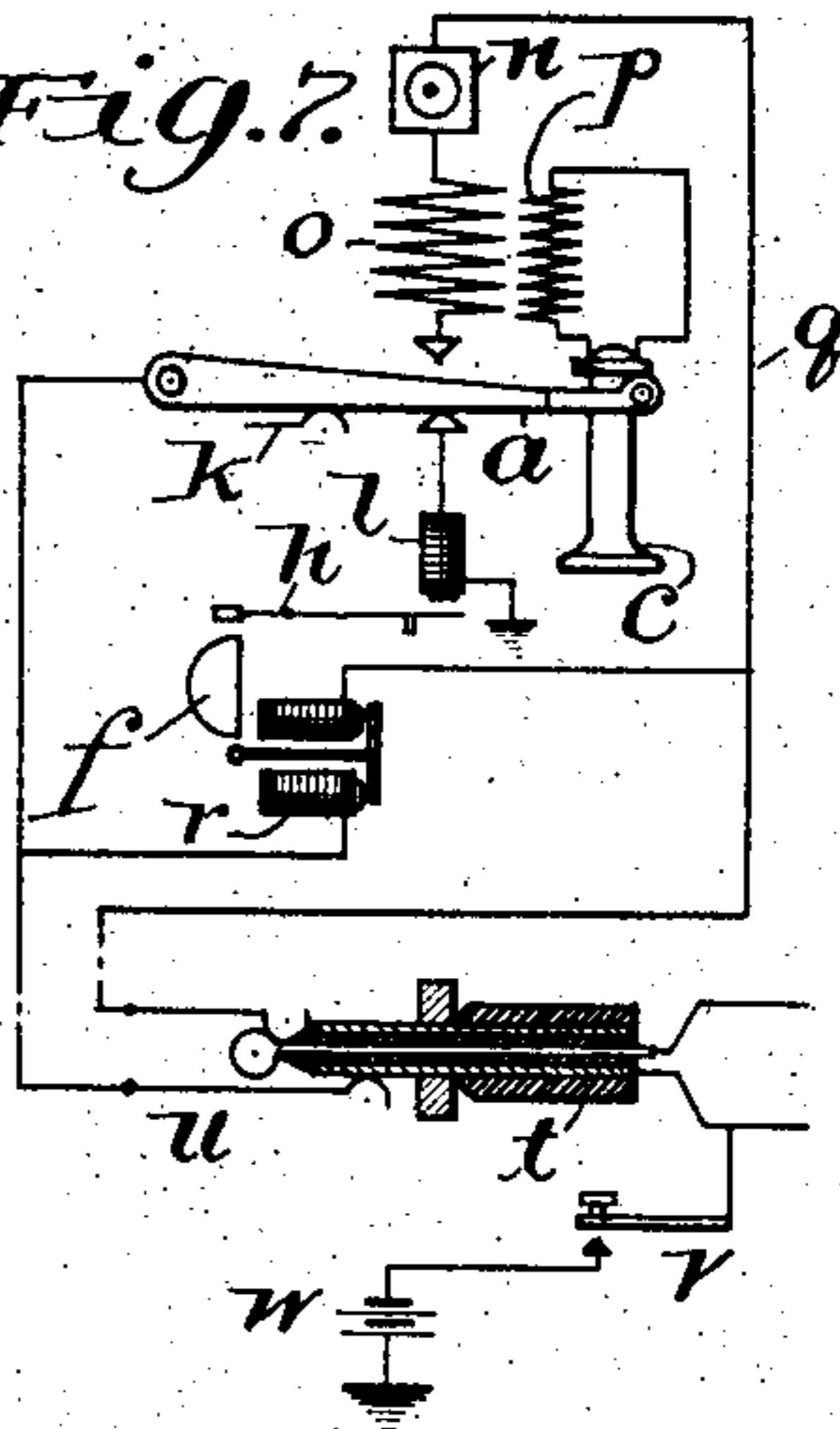


Fig. 7.



Witnesses:
Carl A. Crawford
Leon Ottom

Inventor
Ernest E. Yaxley
by G. L. Cragg
his Attorney

UNITED STATES PATENT OFFICE.

ERNEST E. YAXLEY, OF CHICAGO, ILLINOIS.

TELEPHONE SUBSTATION OUTFIT.

SPECIFICATION forming part of Letters Patent No. 769,125, dated August 30, 1904.

Application filed December 28, 1903. Serial No. 186,868. (No model.)

To all whom it may concern:

Be it known that I, ERNEST E. YAXLEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Telephone Substation Outfits, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to telephone substation outfits, and has for its object the elimination of sounds from telephone-receivers produced by the signal-receiving bells.

As is well known, the signal-receiving telephone-bells continue to vibrate after the telephone-receiver has been removed for conversation. This sound is frequently reproduced in the telephone-receiver to such an extent as absolutely to interfere with satisfactory telephonic communication. Especially is this the case with certain types of telephone apparatus, such as include large panel-boards carrying the gongs. This defect is particularly noticed where such sounding-boards form the covers for boxes that contain and support the entire telephonic apparatus. The difficulty mentioned is present in a variety of telephonic outfits and is particularly noticeable in substation outfits, including calling generators and batteries, for in this type of apparatus larger boxes are required to contain the generators and batteries. The vibrations by acting upon the sounding-board box-cover operate the transmitter to produce the objectionable sounds in the receiver. The invention, however, is also of service in telephonic outfits that exclude generators and batteries such as are present in common battery systems.

In accordance with my invention I provide, in connection with the signal-receiver, a sound-dampener, which is brought into operation after the signal-receiver has been actuated. This sound-dampener is preferably in the form of a swinging arm that is normally out of mechanical engagement with the gongs of the signal-receiver, but which is brought into engagement with the said gongs after the signal has been received to effect a discontinuation of the vibrations in the gongs, so that

when the telephone-receiver is applied to the ear of the listener the intense singing after effect of the gong-vibrations is removed. In the preferred embodiment of the invention this sound-dampening lever is controlled in its operation by the telephone-receiver, whereby the sound-dampener is not applied until after the telephone-receiver has been removed from its support. This control by means of the telephone-receiver is preferably a mechanical control and is most desirably effected through the agency of the telephone switch-hook, the mechanically-operated dampener being moved against the gongs by means of the switch-hook when said hook is relieved of the weight of the receiver. I do not wish to be limited, however, in all embodiments of my invention to the telephone-receiver control of the sound-dampener, as my invention is capable of other embodiments. For example, I have devised an arrangement wherein the sound-dampener is normally applied to the gongs and is controlled by an electromagnet that is included in the generator and bell branch and is energized as long as the generator is in operation, thereby effecting the removal of the sound-dampener during the presence of the signaling-current upon the line both at the calling and called stations.

Another embodiment of my invention is one wherein the sound-dampener is controlled at the exchange, apparatus being provided that includes at each substation a dampener-applying electromagnet through which circuit is completed by switching apparatus at the exchange. Thus an operator after transmitting a signal may cause the vibrations in the gongs to cease by effecting the operation of this switching apparatus.

Another embodiment of my invention is one wherein the dampener, while being controlled by the telephone-receiver, is not mechanically applied through the agency of said receiver, but is rather electrically controlled by the receiver, preferably through the agency of an electromagnet that is in direct coöperation with the dampener and through which circuit is closed when the telephone-receiver is removed from its switch-hook, such circuit being preferably completed through the di-

rect agency of the telephone switch-hook. This embodiment of my invention is very adaptable to systems wherein local batteries are provided for inclusion in circuit with
5 transmitters at the substations through the agency of the telephone switch-hooks, the dampener-controlling magnet being included in the transmitter-battery circuit.

I will explain my invention more fully by
10 reference to the accompanying drawings, illustrating preferred embodiments thereof, in which—

Figure 1 is a front elevation, partially broken away, of a telephonic apparatus constructed in accordance with my invention.
15 Fig. 2 is a side elevation of the structure shown in Fig. 1. Fig. 3 is a plan view of a portion of the structure indicated in Figs. 1 and 2, partially broken away clearly to reveal details of construction. Fig. 4 is a rear elevation of the
20 upper portion of the lid of the box, showing the sound-dampener. Fig. 5 is a diagrammatic view of the form in which the dampener-controlling magnet is adapted for inclusion in circuit with the local transmitter-battery.
25 Fig. 6 is a diagrammatic view indicating a telephone outfit having the dampener-controlling magnet in circuit with the generator and signal-bell. Fig. 7 is a view indicating
30 a telephone system having substation apparatus equipped with a dampener-controlling electromagnet whose circuit is controlled at the exchange.

Like parts are indicated by similar characters of reference throughout the different figures.
35

In each of the views there is indicated well-known telephonic apparatus. I have shown a well-known form of gravity switch-hook *a*,
40 pivoted at one end *b* and designed to support a telephone-receiver *c* at its other end, which is free and forked. The box and cover desirably carry and contain the entire apparatus. There is indicated upon the front of the
45 cover *d* the gongs *f* and a transmitter-arm *g*, while within the box is pivoted the switch-hook *a*, it being understood in the embodiment of the invention indicated in Figs. 1 to 4, inclusive, that the bell-operating magnets,
50 the battery, the induction-coil, and generator are all desirably within the box, as is well understood by those skilled in the art.

In the embodiment of the invention indicated in Figs. 1 to 4, inclusive, I have provided a sound-dampener, preferably in the
55 form of a bifurcated lever *h*, having a pivotal mounting between its ends, the inner end of the lever preferably being unbranched and slightly inclined, as shown most clearly in Fig. 2, so that the switch-hook in being elevated will forcibly effect the rotation of said
60 lever upon its mounting to effect the engagement of the ends of the branched or bifurcated portions of the lever with the gongs,

the free ends of these branches being desirably surrounded by collars or tips *i*, of leather
or other suitable sound-dampening material, that are thrust into direct contact with the gongs when the switch-hook is elevated.
The rotatable mounting of the sound-dampening lever is preferably accomplished by providing two bearings, one upon each side of the central branch of the lever and each enclosing one of the bifurcated portions of the lever. It will be understood that when the
75 telephone-receiver is removed from its hook said hook is elevated by means of a spring, such as *k*, whereupon the sound-dampener is applied as before stated. The mounting of the dampening-lever is closer to the collars
80 *i i* than to the inner end of the lever, this inner end of the lever thereby preponderating in weight to effect the removal by gravity of the dampener from engagement with the gongs when the receiver is replaced upon its
85 hook. Thus it will be seen that in the apparatus indicated in Figs. 1 to 4 the gongs will not be permitted effectively to vibrate while the telephone-receiver is removed from the switch-hook, so that it becomes immaterial to what extent the cover *d* may act as
90 a sounding-board.

In the embodiments of the invention indicated in Figs. 5, 6, and 7 I have shown elements of substation outfits that are also shown
95 in Figs. 1 to 4, and have marked such elements with similar characters of reference.

In Fig. 5 I have illustrated an apparatus which may be substantially like that shown in Figs. 1 to 4 except that the control by the
100 telephone-receiver of the sound-dampener, while being effected with the agency of the switch-hook, is not effected mechanically by the switch-hook, but is had with the agency of a dampener-controlling electromagnet *l* in
105 series with a transmitter-battery *m*, the transmitter *n*, and the primary of an induction-coil *o*, whose secondary *p* is included with the receiver *c* in the main telephone-line *q*. When the telephone-receiver is upon its switch-hook,
110 the circuit containing the battery *m* and the magnet *l* is open. When the telephone-receiver is removed from the switch-hook, said circuit is closed, whereupon the magnet *l* operates the sound-dampening lever *h* to cause it
115 to engage a gong *f* (one gong only being shown for the sake of clearness) which has been previously rung by the bell-operating magnet *r*, that may be operated by a magneto-generator *s* at the calling or called substation
120 or at the exchange.

In Fig. 6 I have indicated a telephone substation outfit that is very similar to the outfit indicated in Fig. 5, like parts being given
125 similar characters of reference. In Fig. 6, however, the dampener-controlling electromagnet *l* instead of being included in circuit with the transmitter-battery is included in

circuit with the magneto-generator *s* and the bell-magnet *r*. In this form of the invention the sound-dampener is constantly in engagement with the gongs, except when calling-current is impressed upon the ringer-magnet, either by the operation of the generator *s* at a calling or called station or by the operation of the signaling-generator at an exchange, during which operation the magnet *l* is energized to effect the removal of the dampener from the gongs, permitting the gongs to sound during and only during the time that the signaling-current is being impressed upon the line.

In the common battery system shown in Fig. 7 the telephone-receiver is, in accordance with well-known practice, included in a closed local circuit with the secondary *p* of an induction-coil, whose primary *o* is adapted for inclusion in circuit with the main telephone-line through the agency of the switch-hook when relieved of the telephone-receiver. The dampener-controlling electromagnet *l* is in this embodiment of the invention included in a grounded branch that is connected with the telephone switch-hook by means of a normal contact provided therefor, while at the exchange there is illustrated one end of a cord-circuit that includes a plug *t*, shown inserted within a spring-jack *u*, constituting the office terminals of the telephone-line. The magnet *l* is designed in the system shown in Fig. 7 to be controlled by the operator by means of any suitable mechanism, there being shown one form of mechanism and apparatus, including a circuit-controlling key *v*, which when depressed will include the grounded battery *w* in circuit with that side of the telephone-line that includes the grounded magnet *l* when the telephone-receiver is upon its hook. The operator after signaling a called subscriber may depress the key *v* and stop the vibration of the called subscriber's signal-bell, the sound-dampener being normally free from the gongs of the bell, but being applied by means of said magnet.

It will be seen that I have provided a pair of gongs with a single clapper capable of striking them both and a sound-dampener mechanically independent of the clapper capable of being brought into engagement with the gongs to cause the ring to cease whether said clapper is in operation or not. This is a very useful feature in telephony, as the gongs are

frequently rung after the called party is ready to answer.

It is obvious that many changes may be made in the various embodiments of my invention herein illustrated without departing from the spirit of my invention, and I do not, therefore, wish to be limited to the precise arrangements shown; but,

Having thus described my invention, I claim as new, and desire to secure by Letters Patent, the following:

1. A telephone substation apparatus having a signal-receiving bell provided with a sound-dampener controlled by the telephone-receiver, substantially as described.

2. A telephone substation apparatus including a signal-receiving bell, a telephone switch-hook, and a sound-dampener for the bell mechanically operated by the switch-hook, substantially as described.

3. A telephone substation apparatus including a signal-receiving bell, a sound-dampener for the bell, and means controlled by the switch-hook for effecting the application of the sound-dampener to the bell, substantially as described.

4. A telephone substation apparatus including a receiving-bell, a telephone switch-hook, and a sound-dampening lever pivoted between its ends and adapted to be engaged at one end by the switch-hook when relieved of the telephone-receiver and adapted to engage at the other end the gong of the bell when rotated upon the removal of the telephone-receiver, substantially as described.

5. A telephone substation apparatus having a signal-bell provided with two gongs having a common clapper, and a sound-dampener mechanically independent of the clapper and serving to engage the said gongs to prevent ringing, substantially as described.

6. A telephone substation apparatus having a signal-bell provided with a clapper, and a sound-dampener mechanically independent of the clapper and operating to engage the gong element to prevent the bell from ringing, substantially as described.

In witness whereof I hereunto subscribe my name this 23d day of December, A. D. 1903.

ERNEST E. YAXLEY.

Witnesses:

G. L. CRAGG,

CARL H. CRAWFORD.