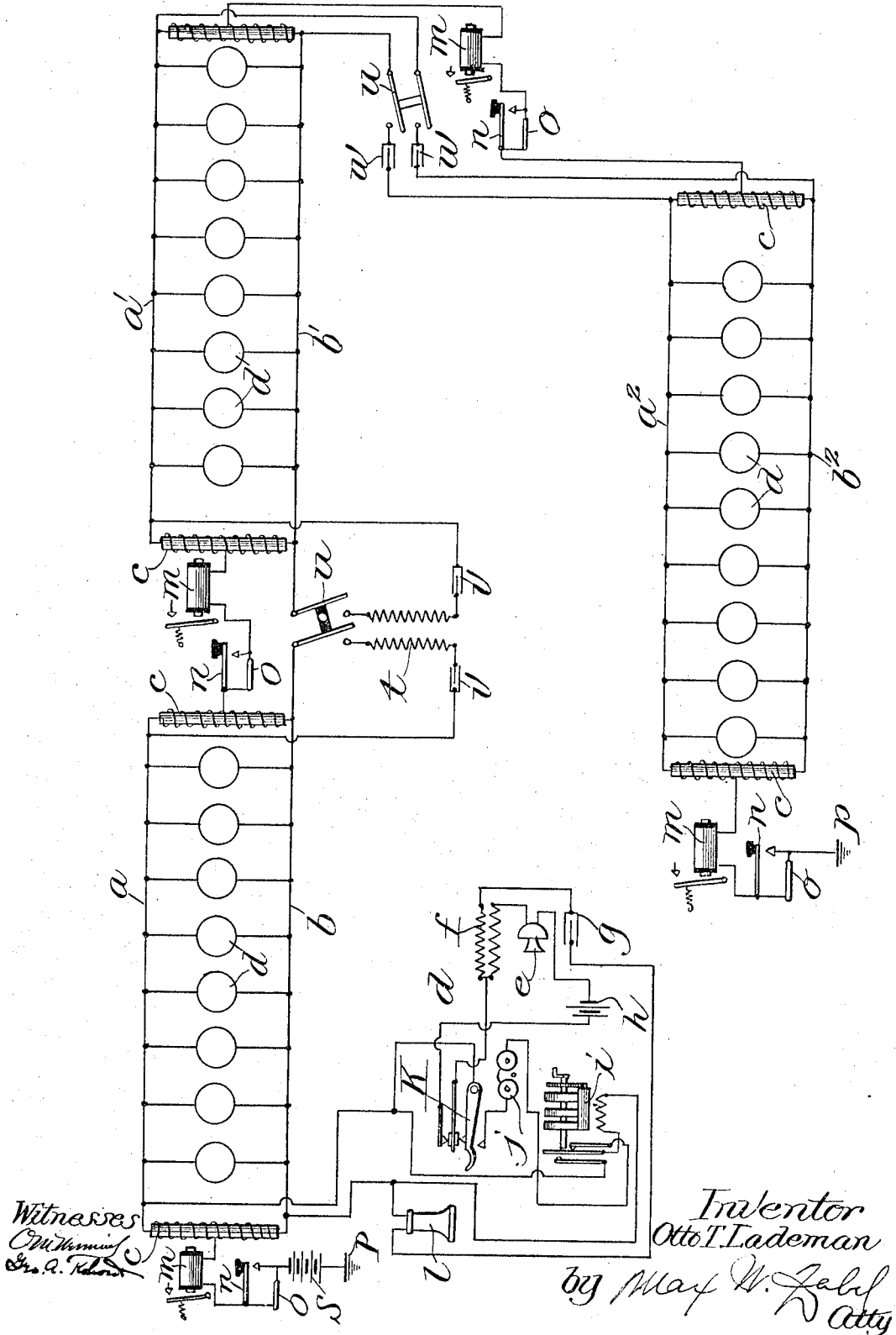


O. T. LADEMAN.
COMPOSITE SYSTEM.

APPLICATION FILED FEB. 15, 1909.

949,188.

Patented Feb. 15, 1910.



UNITED STATES PATENT OFFICE.

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COMPOSITE SYSTEM.

949,188.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed February 15, 1909. Serial No. 478,072.

To all whom it may concern:

Be it known that I, OTTO T. LADEMAN, citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Improvement in Composite Systems, 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 composite systems, and is designed to facilitate communication over a circuit, both for telephonic and telegraphic appliances.

My invention more particularly contemplates the provision of a plurality of metallic telephone circuits placed end to end, electrically speaking, having telegraphic appliances interposed between these various telephone circuits.

This invention will be more clearly understood by reference to the accompanying drawing, illustrating the preferred embodiment thereof.

I have here shown three metallic telephone circuits, consisting respectively of the two conductors a, b, a', b' , and a^2, b^2 . These metallic telephone circuits are provided with reactive devices c , which join the ends of the conductors conductively, but which, on account of their high reactive effect, are sufficient to prevent injurious deflection of telephonic currents from the metallic line conductors aforesaid.

I have shown telephone instruments d, d , indicated by circles throughout the various metallic telephone circuits, one of these telephone sub-station sets, however, being shown in detail at the left hand end of the metallic circuit a, b . Any suitable sub-station set may be used, and the one herein illustrated consists of the transmitter e , induction coil f , condenser g , battery h , generator i , local signal j , switch-hook k , and receiver l , properly arranged in this instance for metallic transmission in bridge with the line conductors a, b .

It will be seen that the impedance coils c define the limits of the voice currents, confining them to the metallic conductors a, b , or a', b' , or a^2, b^2 , as the case may be. Thus there are provided three different telephone systems along a railway right-of-way, for instance, which telephones are placed preferably at the less important stations. More

important stations are designed to occur where the respective metallic circuits end, and at these more important stations, there are provided telephone sets capable of communicating over the two metallic circuits entering said station, and in addition, telegraphic appliances consisting of the relays m , keys n , and short circuiting switch o . These telegraphic appliances are preferably connected between the central portion of the impedance devices c , thus forming a circuit, using both the line wires a, b , the line wires a', b' , and the line wires a^2, b^2 , in parallel with the ground, in this instance, as a return circuit. The telegraphic appliances at the ends of their complete circuits are grounded at p . The battery s is inserted in the telegraphic circuit, as is well understood.

It will be seen from what has thus far been described that there are a variety of metallic telephone circuits arranged end to end, with telegraphic devices interposed between these metallic sections and at their respective ends, thus permitting of telegraphic communication throughout the entire length of the metallic circuits, and at the same time permitting telephonic communication metallically between the telephonic devices. Thus, for instance, the telegraphic signals are sent to the more important stations, and then those intended for the less important stations are sent on by telephone by the operators at the more important stations. It may happen, however, that the station at the extreme left of the circuit a, b , (which, for instance, I will call "the despatcher's telephone station") may desire to communicate directly on the telephone on the circuit a', b' , or on the circuit a^2, b^2 , and to accomplish this result, I apply at the various stations having telegraphic appliances, a repeating coil t , which, by reason of the switch u , and condensers v , serves to connect the adjoining telephonic circuits together. The repeating coil t may, of course, be replaced by condensers w, w , if desired. It will thus be seen that telephonic communication can be carried on throughout the entire length of the three circuits, if desired.

While I have herein shown and particularly described the preferred embodiment of my invention, I do not wish to limit myself to the precise construction and arrangement as herein set forth, but

Having thus set forth its most salient features, what I claim as new and desire to secure by Letters Patent is:

1. A composite system of telephony and
5 telegraphy consisting of several independent
metallic telephone circuits arranged end to
end, telephone sets metalically arranged
with said circuits, reactive means associated
with said circuits to establish a telegraph
10 circuit using the two conductors of each
metallic circuit in parallel and a return cir-
cuit, telegraph instruments interposed in
said telegraphic circuit between said me-
tallic telephone circuits, and switching
15 means and a repeating coil for telephonically
connecting the various metallic telephone
circuits.

2. A composite system of telephony and
telegraphy consisting of several independent
20 metallic telephone circuits arranged end to

end, telephone sets metalically arranged
with said circuits, reactive means associated
with said circuits to establish a telegraph cir-
cuit using the two conductors of each me-
tallic circuit in parallel and a return circuit, 25
telegraph instruments interposed in said
telegraphic circuit between said metallic
telephone circuits, and switching means for
establishing circuits telephonically connect-
ing the various metallic telephone circuits, 30
said circuits being opaque to telegraphic
currents.

In witness whereof, I hereunto subscribe
my name this 19th day of January A. D.,
1909.

OTTO T. LADEMAN.

Witnesses:

MAX W. ZABEL,
O. M. WENNEL.