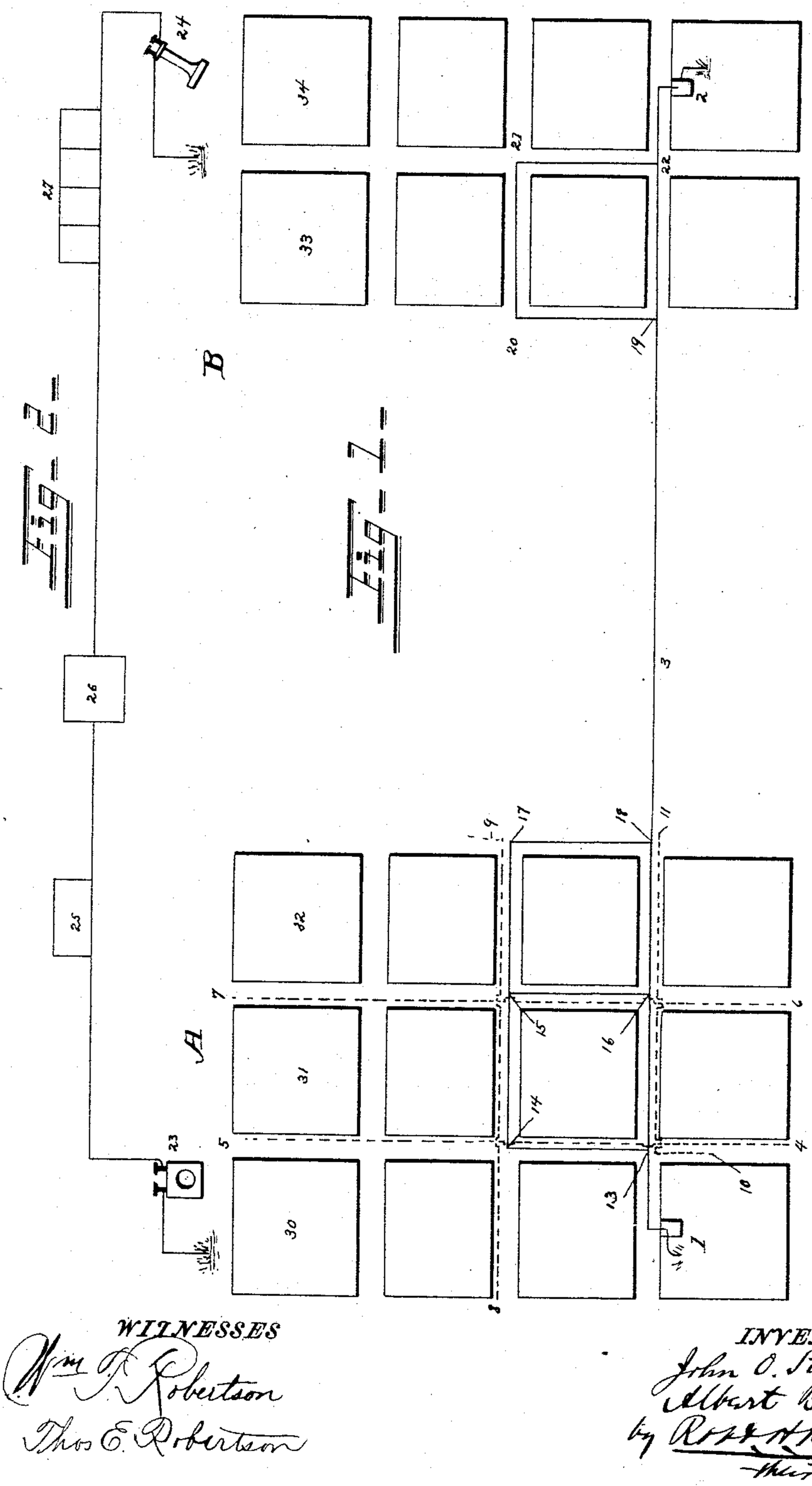
(No Model.)

J. O. STOCKWELL & A. BARRETT.

ANTI INDUCTION SYSTEM.

No. 413,795. Patented Oct. 29, 1889.



WITNESSES

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JOHN O. STOCKWELL, OF BURLINGTON, KANSAS, AND ALBERT BARRETT, OF KANSAS CITY, MISSOURI.

ANTI-INDUCTION SYSTEM.

SPECIFICATION forming part of Letters Patent No. 413,795, dated October 29, 1889.

Application filed February 26, 1889. Serial No. 301,228. (No model.)

To all whom it may concern:

Be it known that we, JOHN O. STOCKWELL and ALBERT BARRETT, citizens of the United States, residing, respectively, at Burlington, in the county of Coffey and State of Kansas, and Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Anti-Induction Systems for Signaling-Lines; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to the suppression of the annoying results of the inductive influences of adjacent circuits upon telephone or telegraph lines, and is more particularly applicable to such lines as must for a portion of their extent pass through neighborhoods in which inductive disturbances are inevitable by reason of the existence of light, power, or other electric circuits.

The object of the invention is to provide the induced currents set up in the telephone or telegraph line with a short circuit through which it may discharge and leave the main body of the line substantially unaffected.

The invention consists in providing the line in the affected neighborhoods with a local short circuit or closed loop, only part of which is subject to the inductive influence.

In the accompanying drawings we have illustrated, diagrammatically, two distant stations connected by a conductor provided with our anti-inductive device.

Figure 1 represents the streets of two electrically-connected towns or cities through which the line-wire must pass to reach the telephone or telegraph stations. Fig. 2 represents the line provided at various points, where inductive disturbances may exist, with our anti-inductive device.

A and B, Fig. 1, represent two distant towns or cities, 30, 31, 32, 33, and 34 representing the blocks of buildings.

1 and 2 represent telephone or telegraph stations, and 3 a line-wire connecting the same. Through the streets of the city may exist electric light or power or signaling circuits, as 4 5, 6 7, 8 9, and 10 11. The current passing over the circuit 10 11 will induce a current in the line-wire 3 with every start or interruption or variation in its electro-motive force; and these induced currents in finding a path of discharge pass to ground at the stations 1 and 2, and cause irregularities in the action of signaling-instruments in circuit. In order to prevent these currents proceeding to ground or passing through the signaling-instruments we provide a loop or series of loops 13 14 15 16, 15 16 17 18 in the affected neighborhoods, these loops being connected to the main line and carried a sufficient distance away therefrom, so that part of the loop will be unaffected by induction from the disturbing source. The distance between the terminals of the loop should be coextensive with the length of inducing-conductor which lies adjacent to the line-circuit; or, as shown in Fig. 1, should be at the points 13 and 18. In the diagram we have shown the loops as extending entirely around the block or square. This will not in all cases be necessary, the only desideratum being that a portion of the loop shall be removed a sufficient distance from the inducing source not to be affected by the inductive action. It will be seen on an inspection of the diagram that any induced electro-motive force developed in the wire by the conductor 10 11 will be provided with a closed circuit over the path 13 18 17 14, and will follow this path in discharge by reason of its comparatively low resistance in proportion to the resistance of the line-wire 3.

In the drawings we have shown other circuits, as 4 and 5, lying in inductive relation to other parts of the loop; but it will be noted that only one portion of each loop is subject to inductive influence from the same source, and that therefore there will not be opposing actions in different portions of the loop which would force the current to line. At station B the loop 19 20 21 22 protects the line entering to station at B from the inductive action which might arise from disturbing-circuits lying in the line of entrance.

In Fig. 2, where 23 and 24 represent distant stations, we have shown various ways in which

the protecting loops or shunts may be arranged, as at 25, where a disturbing-circuit may exist one side of the line; at 26, where it may exist on opposite sides, and at 27, where there may be several independent disturbing sources of induction in the same neighborhood; but in all cases the same principle is involved, which is, that by providing a loop so proportioned and related to the disturbing-circuit that the electro-motive force or electro-motive forces developed by inductive action will all tend to produce a current flowing in one direction through the loop a short circuit for the induced current always exists, through which it may find a closed path of discharge without being forced to the terminals of the line-wire.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. Means for preventing inductive effects on electric signaling-lines, consisting of a shunt or loop in closed relation to the line in the neighborhood of inductive disturbance, the return-circuit for the line being out of inductive range of the disturbing source.

2. Means for preventing inductive effects on electric signaling-lines, consisting of a closed shunt or loop around the source of disturbance, only part of said loop lying in inductive proximity to the disturbing source.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN O. STOCKWELL.
ALBERT BARRETT.

Witnesses:
JOHN W. EBERT,
C. D. CRANDALL.