

(No Model.)

2 Sheets—Sheet 1.

G. F. KNOLLMANN.
ELECTRIC SIGNALING DEVICE.

No. 567,984.

Patented Sept. 22, 1896.

Fig. 1.

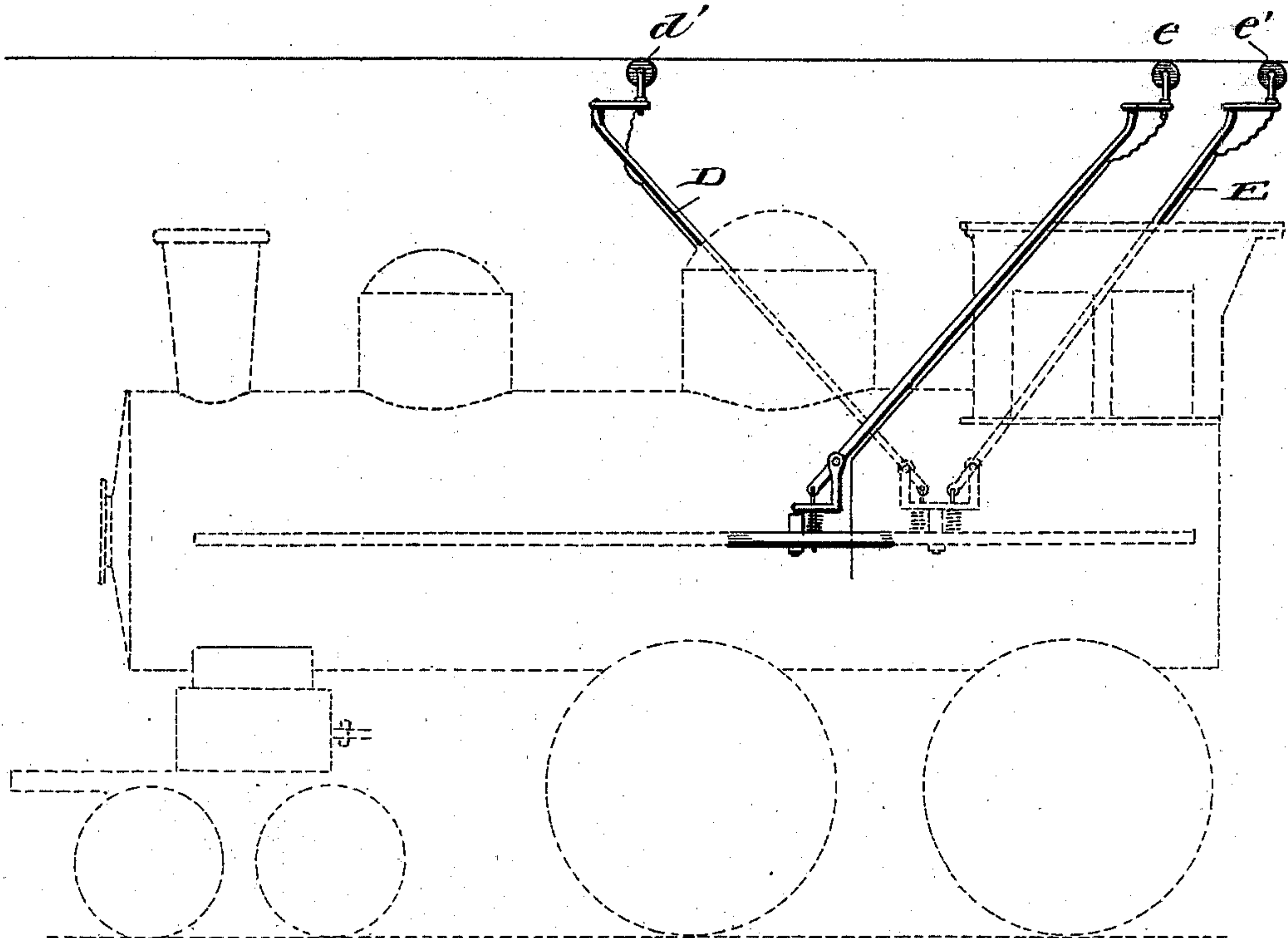


Fig. 2.

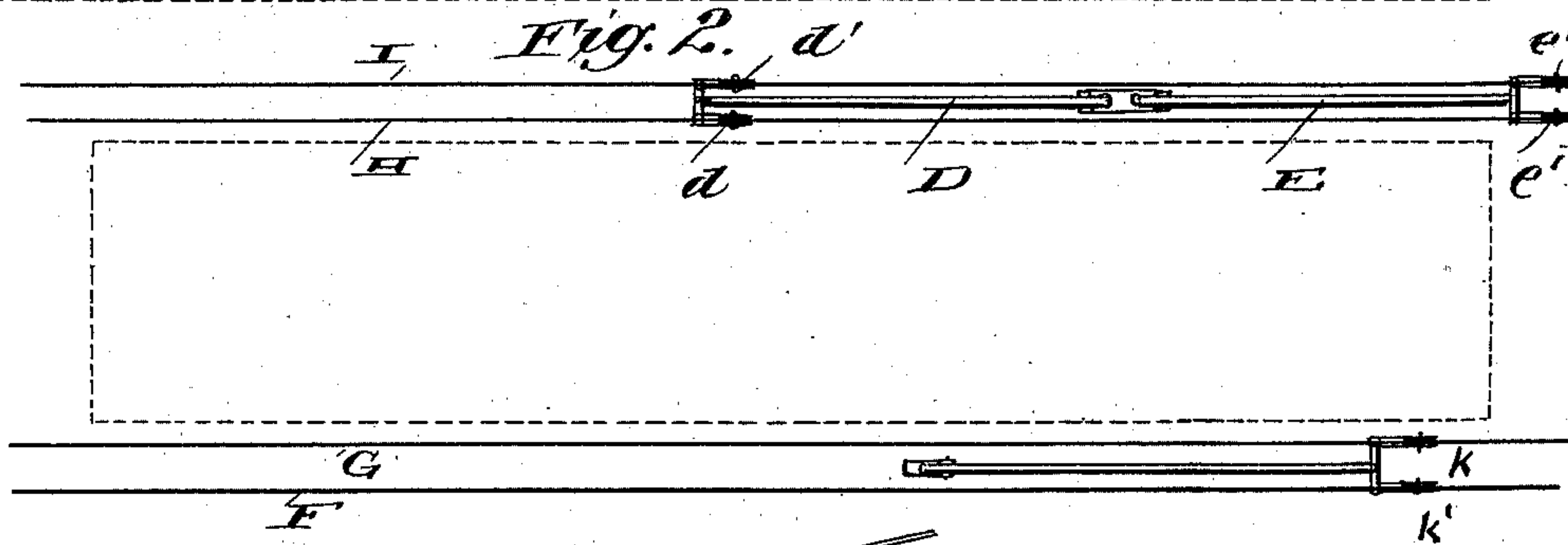
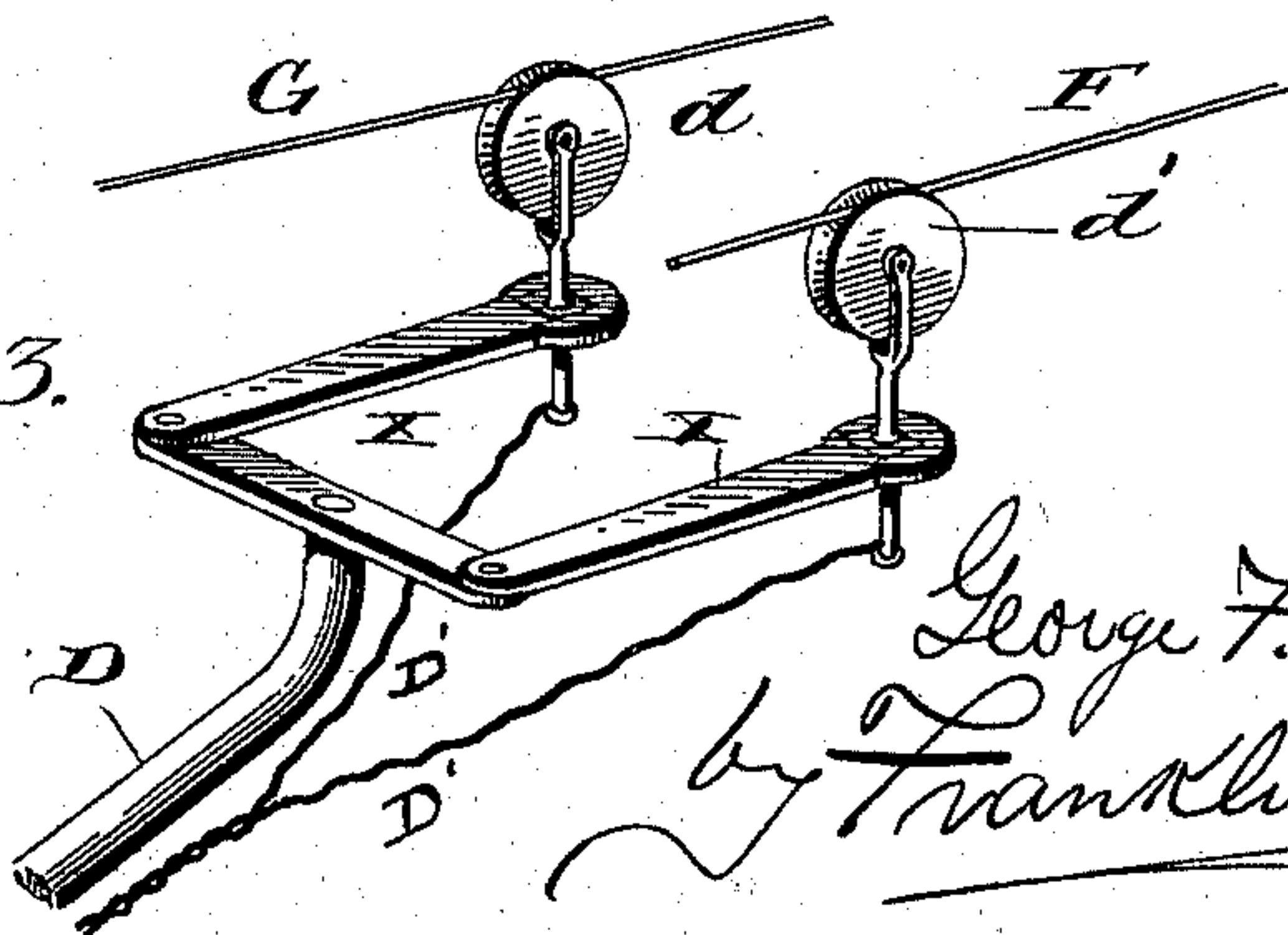


Fig. 3.



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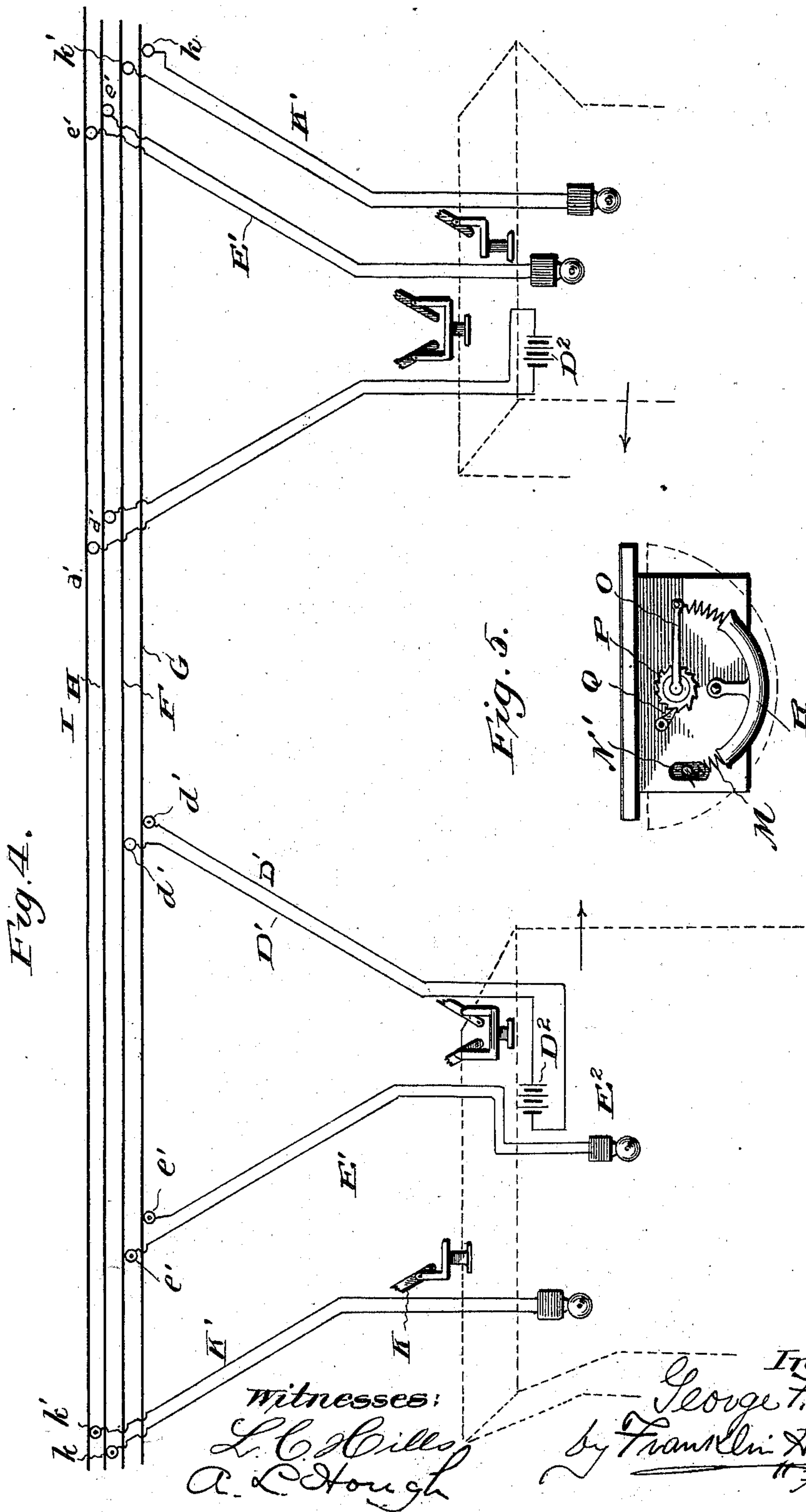
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UNITED STATES PATENT OFFICE.

GEORGE FR. KNOLLMANN, OF EVANSVILLE, INDIANA.

ELECTRIC SIGNALING DEVICE.

SPECIFICATION forming part of Letters Patent No. 567,984, dated September 22, 1896.

Application filed August 7, 1896. Serial No. 602,072. (No model.)

To all whom it may concern:

Be it known that I, GEORGE FR. KNOLLMANN, a citizen of the United States, residing at Evansville, in the county of Vanderburg and State of Indiana, have invented certain new and useful Improvements in Electric Signaling Devices; and I 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 of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in signaling apparatus, and especially to a mode of signaling between locomotives which are traveling in the same or in opposite directions on the same tracks, whereby the approach of an engine from in front or in the rear of another engine, which are equipped with my signals, alarm-bells will be rung notifying the engineer of approaching danger in ample time to avoid an accident.

The invention consists, further, of applying, preferably to the roof of the cab of a locomotive of each engine, three trolley-poles, two being located on one side of the cab-roof and one on the opposite side, the lower ends of the said trolley-poles having electrical connection with suitable batteries and electrical bells, while their upper ends carry wheels designed to contact and travel along on wires mounted on suitable poles.

In connection with the arrangement of the trolley-poles and their electrical connections with batteries and bells on each engine it is my purpose to provide a means for preventing the continual ringing of the bells on the engines, as each engine has a bell located in a continuous circuit, which is broken by the application of springs, which will be hereinafter more fully described.

To these ends and to such others as the invention may pertain the same consists, further, in the novel construction, combination, and adaptation of the parts, as will be hereinafter more fully described, and then specifically defined in the appended claims.

I clearly illustrate my invention in the ac-

companying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a side elevation of a locomotive equipped with my signaling device. Fig. 2 is a top plan view. Fig. 3 is an enlarged detail view of the upper end of a trolley-pole, showing trolley-wheels carried thereby. Fig. 4 is a diagrammatic view of two locomotives on the same track headed in opposite directions, each engine showing electrical connections with each other, the trolleys being carried on the cab-roof. Fig. 5 is a detail view of the spring arrangement connected to the bell to prevent a continuous ringing of the same.

Reference now being had to the details of the drawings by letter, A designates an engine having secured to the roof of the cab thereof on its right side two trolley-poles D and E, each of which carries at its upper end two trolley-wheels *d* and *d'* and *e* and *e'*, suitably mounted on insulated yokes supported on the arms X. The wires with which the trolley-wheels contact are represented by letters F G when the locomotive is moving to the right and by H and I when moving to the left.

D' D' are wires which connect the trolley-wheels *d* and *d'* with an electric battery D², which may be located at any convenient place in the cab of the engine, and wires E' connect the trolley-wheels *e* and *e'* with an electrical bell E², also mounted in the cab.

On the left side of the cab-roof is a trolley K, which carries at its upper end on suitable arms the trolley-wheels *k* and *k'*, which are mounted on yokes insulated from the arms supporting same. These trolley-wheels contact, respectively, with the wires H and I or F and G, according to the direction in which the locomotive is moving, and wires K' connect the yokes supporting the wheels *k* and *k'* with a bell K², located in the left side of the cab.

Each engine is similarly equipped with trolleys as above described. In each cab as the train approaches from opposite directions the bell is energized by the battery in the other cab.

It will be noted that an electrical connec-

tion is made from the battery D², through the wire D', wheels *d* and *d'*, wires F and G, trolley-wheels *e* and *e'*, and wires E', with the electrical bell E²; but a continuous ringing
 5 of the latter is prevented by the provision of a spring M, which has one end secured to the striker-arm N, carrying the hammer N', while its other end is secured to the setting-lever O, which is mounted to turn with a toothed
 10 wheel P, and a pawl Q is provided to engage with the various teeth of the said wheel to regulate the tension of the spring. The spring is guided by the curved tube R, through which it passes, and which tube is mounted
 15 on the bell-box. When it is desired to increase the tension of the said spring, the lever is swung backward, and when it is desired to lessen the tension the lever is pulled and held forward. The bell, being provided with
 20 the spring, regulated and connected as described, will not ring under the weak current generated by one battery, but when two engines approach each other the currents generated in each engine will be strong enough
 25 to overcome the tension of the spring and the bell will be caused to ring and give the alarm of an approaching engine when a second locomotive comes from the rear.

The wires F, G, H, and I are all divided
 30 into insulated blocks or sections, so that no signaling is effected until two engines are on the same block.

When the engines come from opposite directions, the electric current generated in
 35 each engine will be sufficiently strong to ring the bells on the left sides of each cab, as the said bells of the left side of each engine are

not provided with the spring regulating devices.

The bells on the opposite sides of the cab 40 may be of different tones, so as to enable the engineer to readily judge from which direction an approaching engine comes.

Having thus described my invention, what I claim to be new, and desire to secure by Let- 45 ters Patent, is—

1. In a train signaling system, the combination of a pair of line-wires with a plurality of locomotives, each provided with a signal apparatus comprising two pairs of traveling 50 contacts engaging said line-wires, a battery having its terminals connected with one of said pairs and a bell having its terminals connected with the other pair, said bell being so adjusted as to be incapable of being rung by 55 its own battery alone but only when energized by its battery in conjunction with the battery on another train.

2. A regulator for an electrical bell, consisting of a spring having one end secured to 60 the striking-arm of an electrical bell, its other end attached to a setting-lever secured to a toothed wheel, secured to the bell-box, a pawl engaging with the teeth of the said wheel, and a hollow curved tubing serving as a guide for 65 said spring, all combined substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE FR. KNOLLMANN.

Witnesses:

PHIL. SCHUELER,
 ISHAM TAYLOR.