



No. 815,039.

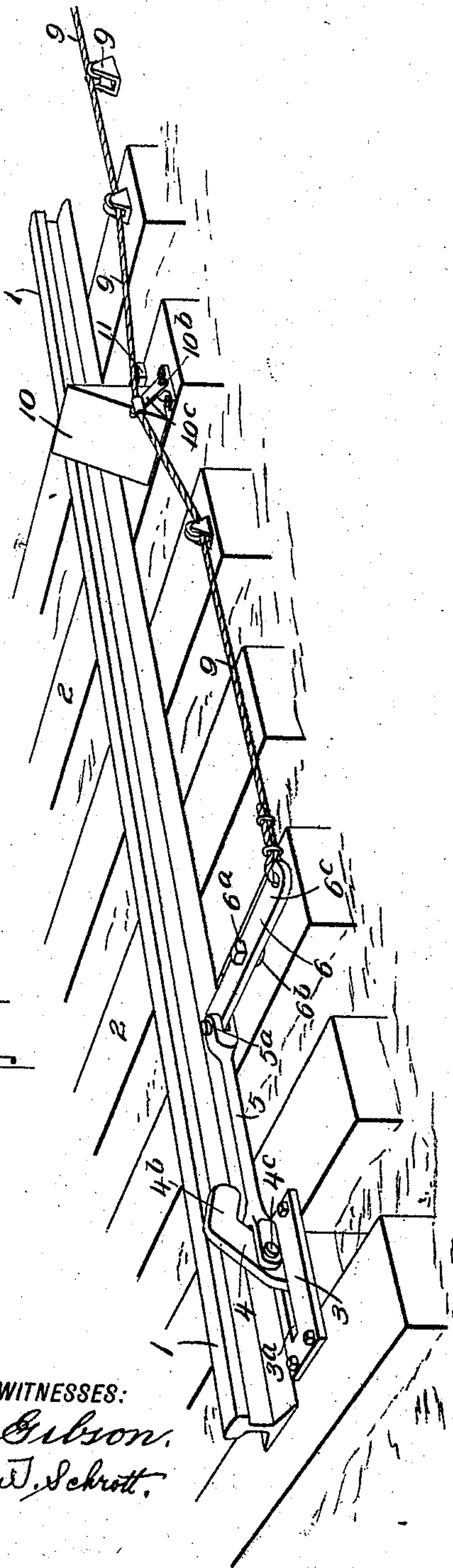
PATENTED MAR. 13, 1906.

S. ROMAIN.  
RAILWAY SIGNAL.

APPLICATION FILED JULY 13, 1905.

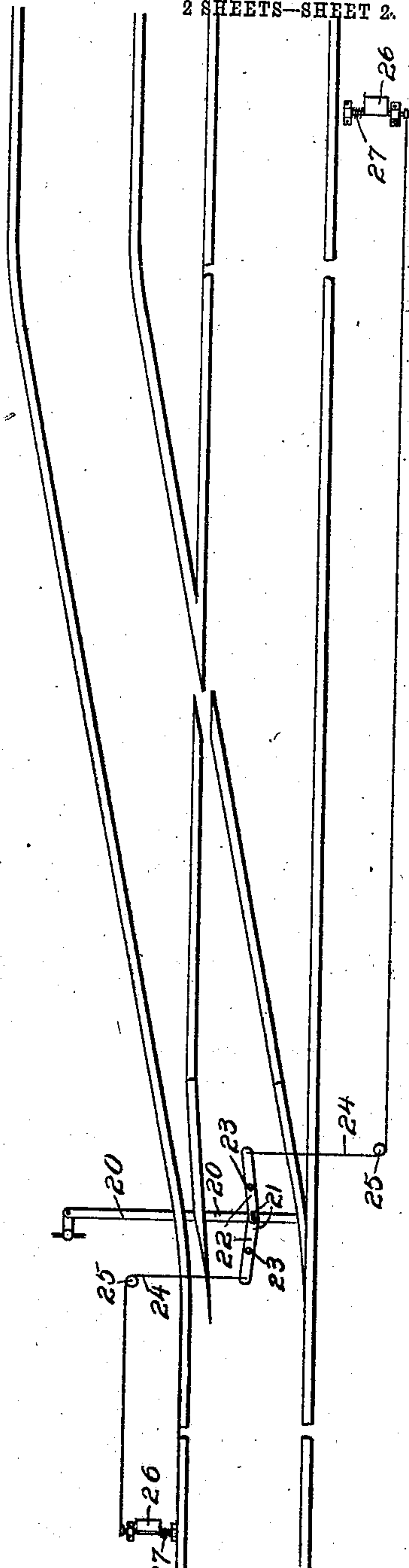
2 SHEETS—SHEET 2.

Fig. 7.



WITNESSES:  
*F. C. Gibson.*  
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Fig. 6.



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# UNITED STATES PATENT OFFICE.

STEPHEN ROMAIN, OF NEW ORLEANS, LOUISIANA, ASSIGNOR OF ONE-HALF TO TRAYNERE BAPTISTE, OF MOBILE, ALABAMA.

## RAILWAY-SIGNAL.

No. 815,039.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed July 13, 1905. Serial No. 269,553.

*To all whom it may concern:*

Be it known that I, STEPHEN ROMAIN, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Railway-Signals, of which the following is a specification.

My invention relates to certain new and useful improvements in railroad-signals; and it particularly seeks to provide an improvement in signaling devices for notifying running trains on a single-track railroad of trains approaching from an opposite direction by sounding an alarm-bell in the engineer's cab: and the invention primarily consists in certain novel construction, combination, and arrangement of parts, including a plurality of lever-operated striker devices arranged along each side of the railroad-track, those on one side of the track being disposed one-half length in advance of those on the other side of the track, so that the devices on each side of the track will overlap one another, all of which will be first described in detail and then specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view diagrammatically showing my invention. Fig. 2 is a side elevation thereof. Fig. 3 is an enlarged detail perspective view of one of the bell-blocks. Fig. 4 is an enlarged sectional view of one of the trigger devices. Fig. 5 is a horizontal section on the line 5 5 of Fig. 4. Fig. 6 is a detail diagrammatic plan view of a slightly-modified form of my invention, showing the same as applied for use to indicate the position of a switch. Fig. 7 is a detail perspective view of a part of my invention.

Referring now to the accompanying drawings, in which like numerals of reference indicate like parts in all of the figures, 1 designates the track-rails, which are mounted on the usual cross-ties 2. At each side of the track my improved signal-operating mechanism is disposed, and this mechanism comprises a plurality of housings or casings 3, spaced a suitable distance apart, preferably one mile apart, in each of which housings 3 a trigger 4 is fulcrumed on a pivot-stud or axis 4<sup>a</sup>, and the trigger 4 projects out through an opening 3<sup>a</sup> in the top of the housings and is formed with a striker-engaging end 4<sup>b</sup>, as shown.

5 5 designate rod members pivotally secured to the triggers 4, as at 4<sup>c</sup>, and have their other ends pivotally secured at 5<sup>a</sup> to a horizontally-disposed lever 6, which is centrally fulcrumed, as at 6<sup>a</sup>, to a stud or post 6<sup>b</sup>, secured to one of the cross-ties 2.

Disposed adjacent one housing 3 is a supplemental lever 7, which is pivotally mounted midway its ends at 7<sup>a</sup> to a stud 7<sup>b</sup>, secured to the cross-tie 2, and the lever 7 has one of its ends connected to one lever 6 by a rod 8, which is pivotally secured to the levers 7 and 6 at 8<sup>a</sup> 8<sup>a</sup>, as clearly shown in Fig. 1 of the drawings. The other lever 6 and the lever 7 have their other ends 6<sup>c</sup> 7<sup>c</sup> connected by a cable or chain 9 of approximately one mile in length, and the chain 9 passes over guide-rollers 9<sup>a</sup> 9<sup>a</sup>, spaced a suitable distance apart along the line, as shown.

Arranged at intervals of approximately one-eighth mile apart between the levers 6 and 7 are a plurality of what I term "bell-blocks" 10 10, each of which comprises an elongated member of substantial wedge shape in cross-section, which is fulcrumed on an axis 10<sup>b</sup> 10<sup>b</sup>, secured to the cross-ties 2, as shown, and the axis 10<sup>a</sup> terminates in a crank 10<sup>c</sup>, which is connected to a cable or chain 9, as shown.

11 designates what I term a "resting-block" for the bell-block 10 when in its depressed position, as will be more clearly understood hereinafter.

The trigger mechanisms T T' and their intermediate connections constitute one section of my signaling mechanism, and these sections are disposed end to end along the entire length of the track and on each side thereof, the sections on opposite sides of the track being arranged to be set by trains moving in opposite directions, and the trigger devices on each side of the track are arranged at a point approximately midway between those on the other side of the track, so that there will be a set of trigger devices at each half-mile, first on one side of the track and then on the other, as diagrammatically shown in Fig. 1.

12 designates a striking iron or block secured to the train or locomotive in any desired and approved manner, which block 12 is adapted to engage the end 4<sup>b</sup> of the trigger 4 to depress the same, the triggers of the several studs or sections of my signal-operating mechanism being arranged in pairs, as be-



fore mentioned, so that when one trigger is depressed the other at the other end will be elevated, and vice versa.

13 designates a bell-operating lever pivotally secured to the locomotive on the side opposite the trigger-striking block 12 and arranged to engage the bell-blocks 10 10 and to be operated thereby. The bell-striking lever 13 connects with a cable or cord 14, which passes into the engineer's cab of the locomotive and connects with the striking-arm 15 of a bell or gong 16, as shown, so that when the bell-striking lever 13 engages a bell-block 10 the bell 16 in the engineer's cab will be rung.

So far as described the manner in which my invention operates will be best explained by reference to Fig. 1 of the drawings and as follows: Assuming a locomotive to be moving from left to right in Fig. 1, as the striking iron or block 12 engages the lever 4 the same will be depressed, thus causing the bell-blocks 10 to be elevated and the lever 4 at the other end of the section to be raised. Now, assuming another train to be coming from right to left in Fig. 1, as the block 12 engages the lever 4 adjacent the said train on the opposite side of the track the said lever will be depressed, and the bell-blocks 10 on the opposite side of the track will be elevated, while the lever 4 at the other end of that section will be raised. After the trains have thus moved along for a distance of about one-half mile the bell-operating levers 13 on each train will engage the raised bell-blocks 10, and the bell in the engineer's cab will be operated, thus warning the engineers of the approaching train and allowing them ample time to bring their train to a stop.

In Fig. 6 I have shown a slightly-modified form of my invention in which the same is applied for use in connection with a switch to signal the position of the switch. In this form of my invention the switch-rod 20 connects with one end 21 of a pair of levers 22, which are pivotally mounted at 23 23 and have their other ends connected with a cable or chain 24, which passes over guide-pulleys 25 and connects at the other end with bell-blocks 26 26, as shown. In this form of my invention the bell-blocks 26 are normally held to their depressed position by the springs 27 27, as shown. The bell-blocks 26 are arranged about one-half mile from the switch and on opposite sides of the main track, so as to operate the bell within the engineer's cab of a train coming in either one direction or the other toward the switch, the bell-blocks being so arranged with respect to the switch as to be set when the switch is open, thus signaling the engineers that the switch is open and giving them one-half mile in which to stop their trains.

It should be understood that the trigger mechanisms at each end of each section of my apparatus can be placed either more or

less than a mile apart, if desired and as conditions may require, and the bell-blocks can be likewise placed either more or less than an eighth of a mile apart, if found desirable.

In order to hold the triggers 4 to their depressed or elevated positions and prevent the same from shifting their positions when not operated upon by the train, I provide in each housing 3 a pair of spring-plates 3<sup>x</sup> 3<sup>x</sup>, having corrugated portions 3<sup>y</sup> 3<sup>y</sup>, in which nibs 4<sup>y</sup> 4<sup>y</sup> on the triggers 4 are adapted to seat when the triggers are in the extreme position of their movement, as will be clearly understood by reference to Fig. 5.

My invention can also be applied to railway-crossings and the like, if desired, as the same will readily operate to signal trains coming in any direction whatever toward each other.

From the foregoing, taken in connection with the accompanying drawings, it is thought the complete construction, operation, and many advantages of my invention will be readily understood by those skilled in the art to which it appertains.

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

1. In a signal mechanism, a plurality of signaling devices arranged in sets, each set arranged end to end on each side of the track, the sets on one side of the track being arranged one-half length in advance of those on the other side of the track to overlap one another, each of said sets comprising a pair of trigger members fulcrumed for movement in a vertical plane, a lever fulcrumed for movement in a horizontal plane adjacent each of said trigger members, and connecting-rods connecting one end of each of said levers to their adjacent triggers, a supplemental lever pivotally mounted for movement in a horizontal plane adjacent one of said first-mentioned levers and having one end connected to the opposite end of the adjacent first-mentioned lever, a cable or chain connecting the free end of the other first-mentioned lever to the free end of the supplemental lever, guide-pulleys for said cable or chain and a plurality of bell-blocks pivotally mounted for movement in the vertical plane and connected with said cable, means carried by the train for engaging said trigger members to operate the same, and signal-bell devices carried by the train having means for engaging said bell-blocks to operate the same, all being arranged so that when the first trigger member of a section is depressed, the other trigger member of that section will be elevated and the bell-blocks will be elevated, substantially as shown and described.

2. In a signal mechanism, a plurality of signaling devices arranged in sets, each set arranged end to end on each side of the track, the sets on one side of the track being



arranged one-half length in advance of those on the other side of the track to overlap one another, each of said sets comprising a pair of trigger members fulcrumed for movement in a vertical plane, a lever fulcrumed for movement in a horizontal plane adjacent each of said trigger members, and connecting-rods connecting one end of each of said levers to their adjacent triggers, a supplemental lever pivotally mounted for movement in a horizontal plane adjacent one of said first-mentioned levers, and having one end connected to the opposite end of the adjacent first-mentioned lever, a cable or chain connecting the free end of the other first-mentioned lever to the free end of the supplemental lever, guide-pulleys for said cable or chain and a plurality of bell-blocks pivotally mounted for movement in a vertical plane and connected with said cable, means carried by the train for engaging said trigger members to operate the same, and signaling-bell devices carried by the train having means for engaging said bell-blocks to operate the same, all being arranged so that when the first trigger member of each section is depressed the other trigger member of that section will be elevated and the bell-blocks will be elevated, said bell-blocks comprising elongated members, a shaft on which said members are mounted, bearings for said shaft, a crank-arm secured to said shaft and said cable, and a resting-block mounted adjacent to the bell-blocks to limit their downward movement, all being arranged substantially as shown and described.

3. In a signal mechanism, a plurality of signaling devices arranged in sets, each set arranged end to end on each side of the track, the sets on one side of the track being arranged one-half length in advance of those on the other side of the track to overlap one another, each of said sets comprising a pair of trigger members fulcrumed for movement in a vertical plane, a lever fulcrumed for movement in a horizontal plane adjacent each of said trigger members, a connecting-rod connecting one end of each of said levers to their adjacent triggers, a supplemental lever pivotally mounted for movement in a horizontal plane adjacent one of said first-mentioned levers, and having one end connected to the opposite end of the adjacent first-mentioned lever, a cable or chain connecting the free end of the other first-mentioned lever to the free end of the supplemental lever, guide-pulleys for said cable or chain and a plurality of bell-blocks pivotally mounted for movement in a vertical plane and connected with said cable, means carried by the train for engaging said trigger members to operate the same, signal-bell devices carried by the train having means for engag-

ing said bell-blocks to operate the same, all being arranged so that when the first trigger member of each section is depressed the other trigger member of that section will be elevated and the bell-blocks will be elevated, said bell-blocks comprising elongated members, a shaft on which said members are mounted, bearings for said shaft, a crank-arm secured to said shaft and said cable, a resting-block mounted adjacent to the bell-blocks to limit their downward movement, and a housing for each of said trigger members having an aperture in its top through which the trigger member projects, substantially as shown and described.

4. In a signal mechanism, a plurality of signaling devices arranged in sets, each set arranged end to end on each side of the track, the sets on one side of the track being arranged one-half length in advance of those on the other side of the track to overlap one another, each of said sets comprising a pair of trigger members fulcrumed for movement in a vertical plane, a lever fulcrumed for movement in a horizontal plane adjacent each of said trigger members, and connecting-rods connecting one end of each of said levers to their adjacent triggers, a supplemental lever pivotally mounted for movement in a horizontal plane adjacent one of said first-mentioned levers and having one end connected to the opposite end of the adjacent first-mentioned lever, a cable or chain connecting the free end of the other first-mentioned lever to the free end of the supplemental lever, guide-pulleys for said cable or chain and a plurality of bell-blocks pivotally mounted for movement in a vertical plane and connected with said cable, means carried by the train for engaging said trigger members to operate the same, signal-bell devices carried by the train having means for engaging said bell-blocks to operate the same, all being arranged so that when the first trigger member of each section is depressed the other trigger member of that section will be elevated and the bell-blocks will be elevated, said bell-blocks comprising elongated members, a shaft on which said members are mounted, bearings for said shaft, a crank-arm secured to said shaft and said cable, and a resting-block mounted adjacent to the bell-blocks to limit their downward movement, a housing for each of said trigger members having an aperture in its top through which the trigger member projects, and means within the housing for locking the trigger member to the limit of its movement in either direction, substantially as shown and described.

STEPHEN ROMAIN.

Witnesses:

AUGUSTE PIERRE,  
CELESTIN GLAPION.