

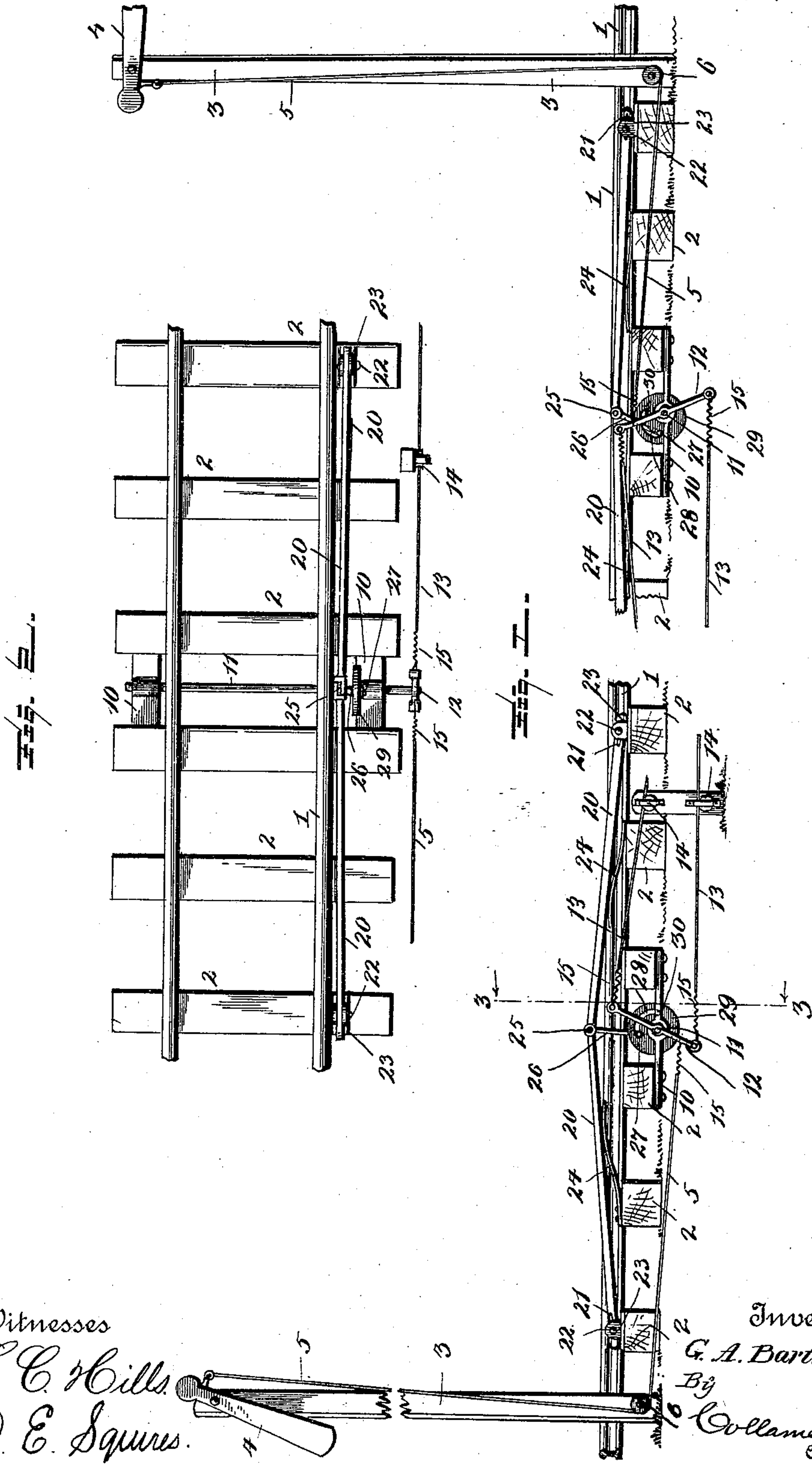
(No Model.)

2 Sheets—Sheet 1.

G. A. BARTHOLOMEW.
RAILWAY SIGNAL.

No. 486,271.

Patented Nov. 15, 1892.



Witnesses
L. C. Hills.
W. E. Squires.

Inventor:
G. A. Bartholomew
By
Collamer & Co.
Attorneys

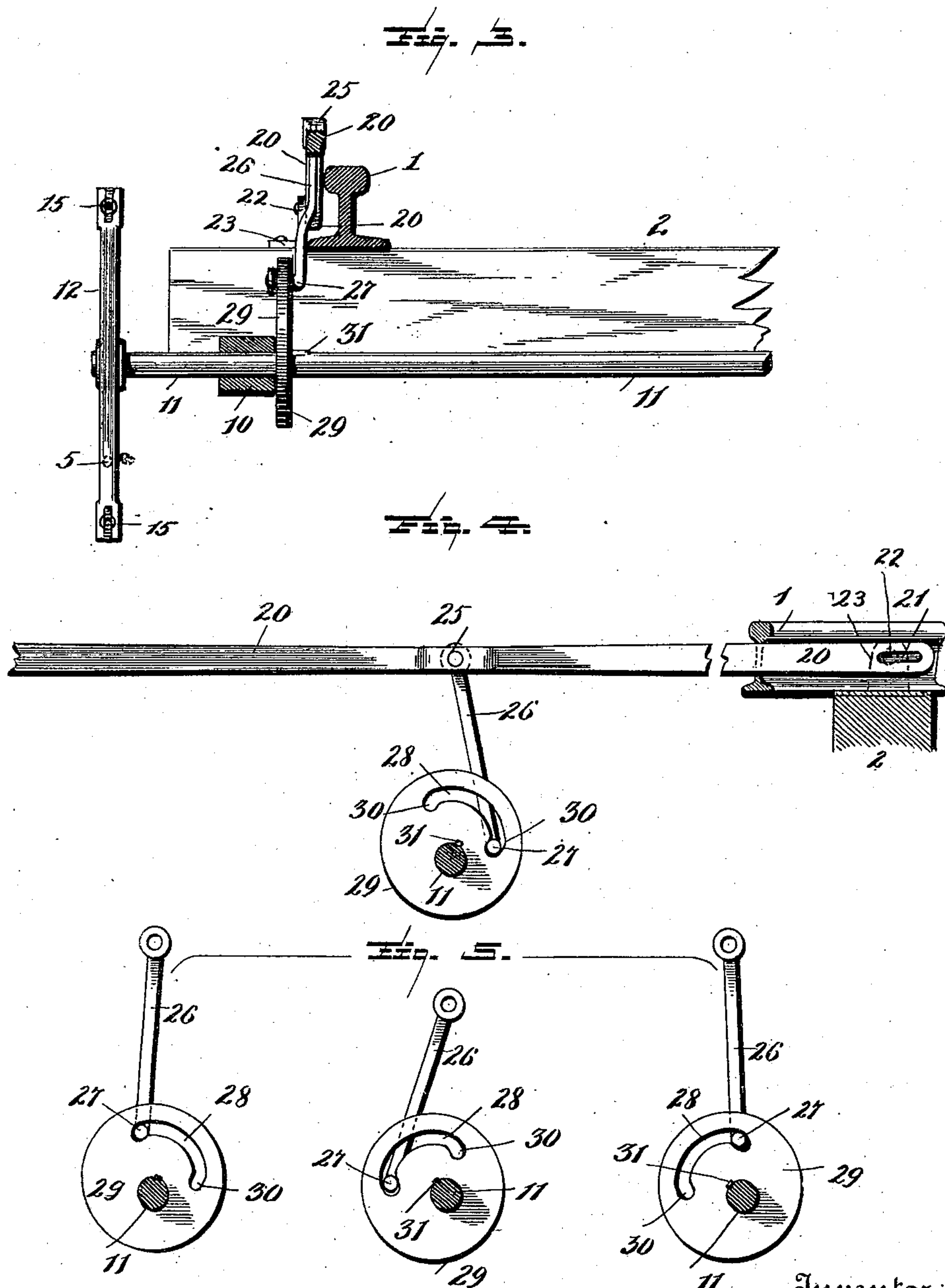
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UNITED STATES PATENT OFFICE.

GILBERT A. BARTHOLOMEW, OF MAUMEE, OHIO.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 486,271, dated November 15, 1892.

Application filed May 7, 1892. Serial No. 432,150. (No model.)

To all whom it may concern:

Be it known that I, GILBERT A. BARTHOLOMEW, a citizen of the United States, residing at Maumee, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Railway-Signals; and I do hereby 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.

This invention relates to railways, and more especially to the automatic signals used in connection therewith; and the object of the same is to produce certain improvements in the mechanism for operating such signals.

To this end the invention consists, primarily, in a disk having a concentric slot with inwardly-deflected ends, the disk being eccentrically mounted on a rock-shaft, and a toggle-lever operated by the passage of the train and having a link engaging said slot, and, secondarily, in the details of construction and the arrangement of parts which co-operate with this device, all as hereinafter more fully described and claimed, and as illustrated on the accompanying drawings, wherein—

Figure 1 is an elevation showing two of these devices applied to a section of track and in their normal condition, one of said devices illustrating the position of parts before and the other after its signal has been moved. Fig. 2 is a plan view of one of the operating devices. Fig. 3 is a section on the line 3-3 of Fig. 1. Fig. 4 is a diagrammatic elevation showing the toggle-lever and the disk, the former being depressed and the latter being turned to one extremity of its movement. Fig. 5 shows diagrammatic elevations of the disk and the link and stud in several different positions.

Referring to the said drawings, 1 designates the near rail of a section of track mounted on ties 2, and 3 are upright posts standing alongside the track at remote points, as at the ends of a tunnel, a sharp curve, or a block. Each post carries a signal 4, whose construction is not herein more fully described or illustrated, because it is not material to the successful operation of the invention. It is only necessary that the signal shall normally display a

“safety” or white sign or light and be capable of changing this sign or light to “danger” or red upon the pulling of the operating-wire 5, which leads from the signal down the post under the sheave 6 and inwardly toward the other post and is connected to one of the operating devices. The latter are duplicates, and hence a description of one will suffice for both.

In suitable boxes 10 is journaled a rock-shaft 11, which stands horizontally beneath and across the rail 1, and which at its outer end carries a double lever 12. The lower arm of the left lever and the upper arm of the right lever are connected with the operating-wire 5, and each arm of each lever is connected with the corresponding arm of the other lever by a connecting-wire 13, suitably supported at intervals by sheaves 14 along the side of the track, as will be understood. In some or all of these wires are preferably located coiled springs 15, here shown as adjacent to the arms of the levers 12, the object of these springs being to permit a slight yielding of the wires in the direction of their lengths under the varying temperatures of different seasons, so that the device will remain in operation under all degrees of heat and cold. With this construction of parts when the lever 12 stands as seen at the left of Fig. 1 (and the right lever will also stand in the same position, owing to the connecting-wires 13) the signal 4 will be in its normal position—i. e., white or at “safety;” but when the lever is shifted, as seen at the right of this figure, (and the left lever will shift with it,) the operating-wire 5 will be drawn on and the signal will be changed to red or “danger.” Hence if some means is provided for oscillating the connected rock-shafts in one direction at the passage of the train over one rock-shaft and the shafts then in the opposite direction at the passage of the train over the other shaft it will be obvious that as the train goes onto the block here shown both signals will be changed to red, and as it passes off the block both signals will be changed back to white. The mechanism for causing these movements of the shafts will now be described.

20 are the arms or members of a long toggle-lever, each having at its outer end a slot

21, which embraces a pin 22 in a suitable support 23, and 24 are springs under these members to cause the pivoted center 25 of the toggle-lever to rise normally slightly above and alongside the rail 1. The length of this lever is such that before the forward truck of the longest car has passed off of one member the rearward truck will pass onto the other member, by which means the toggle-lever will not be permitted to rise under the influence of its springs 24 between the independent depressions of a lengthy car.

26 is a link depending from the pivot 25 and having at its lower end a laterally-projecting stud 27, which fits loosely in a slot 28, that is struck around the true center of a disk 29, and which slot has its ends 30 slightly deflected inwardly toward such true center. The said disk is eccentrically keyed or otherwise secured, as at 31, to the rock-shaft 11. The sizes, shapes, proportions, and materials of parts are immaterial to the successful operation of the device, as considerable change may be made in the details of construction without departing from the spirit of my invention.

The operation of this improved railway-signal is as follows: At the passage of the train onto the block here illustrated the tread of the wheels depresses the toggle, and the link is borne downward, its upper end at the pivot 25 moving in a vertical line and its stud 27 moving as the eccentrically-mounted disk necessitates. The parts being at this time in the position shown at the left of Fig. 1, with the disk standing as seen in the first view of Fig. 5—i. e., with the stud 27 in the left end of the slot 28—the first downward movement of the stud carries it into the left deflection 30, and further downward movement thereof turns the disk to the position seen in the second view of Fig. 5, whereby the rock-shaft 11 of the lever 12 is drawn, as seen at the right of Figure 1, and the signal 4 is set at "danger." As the train passes off this left toggle the springs 24 cause it to rise, and the stud 27 is thereby turned up the slot 28 to the position shown in the third view of Fig. 5, at which time the stud will stand directly over the right deflection 30 of the slot, as seen. Owing to the connection of the two rock-shafts by the wires 13, the signals move in unison and the danger-signal is set at each end of the block. The train passing on comes now to the second device, which then stands as seen at the right of Fig. 5, and its effect upon this device is the same, except that the descent of the stud 27 now causes the disk 29 to turn in the other direction, as will be clear, by reason of the position of the stud at this time, as seen in the third view of Fig. 5. Hence as the train passes off the block both signals are changed from red to white to indicate "safety." It is obvious that an entire road could be equipped with devices of this character arranged in pairs on successive

blocks of, say, one mile and then whenever the train was on any given block the signals at both ends thereof would be set at "danger."

What is claimed as new is—

1. In a railway-signal, the combination, with a toggle-lever supported alongside a rail, springs for holding said lever normally raised, and a link depending from the lever and having a stud at its lower end, of a disk having a slot which said stud engages, a shaft to which the disk is eccentrically secured, a double lever secured to said shaft, wires leading from the arms of said lever to signals, and springs in the wires, as and for the purpose set forth.

2. In a railway-signal, the combination, with a toggle-lever whose ends are slotted, pins passing through the slots, whereby the lever is supported alongside a rail, springs for holding said lever normally raised, and a link pivoted to and depending from the center of the lever and having a stud at its lower end, of a disk having a slot which said stud engages, a shaft to which the disk is eccentrically secured, a lever secured to said shaft, and wires leading from said lever to signals, as and for the purpose set forth.

3. In a railway-signal, the combination, with a toggle-lever supported alongside a rail, springs for holding said lever normally raised, and a link pivoted to and depending from the lever and having a stud at its lower end, of a disk having a concentric slot which said stud engages, the ends of the slot being deflected toward the center of the disk, a shaft to which the disk is eccentrically secured, a double lever secured to said shaft, and wires leading from the arms of said lever to signals, as and for the purpose set forth.

4. In a railway-signal, the combination, with a toggle-lever supported alongside a rail and a link depending from the lever and having a stud at its lower end, of a disk having a concentric slot which said stud engages, the ends of the slot being deflected toward the center of the disk, a shaft to which the disk is eccentrically secured, a signal, and connections, substantially as described, between the shaft and the signal, as and for the purpose set forth.

5. In a railway-signal, the combination, with a toggle-lever supported alongside a rail and a link depending from the lever and having a stud at its lower end, of a disk having a concentric slot which said stud engages, said disk being eccentrically pivoted, a signal, and connections, substantially as described, between the disk and signal, as and for the purpose set forth.

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

GILBERT A. BARTHOLOMEW.

Witnesses:

A. F. FILES,
S. A. ECKERT.