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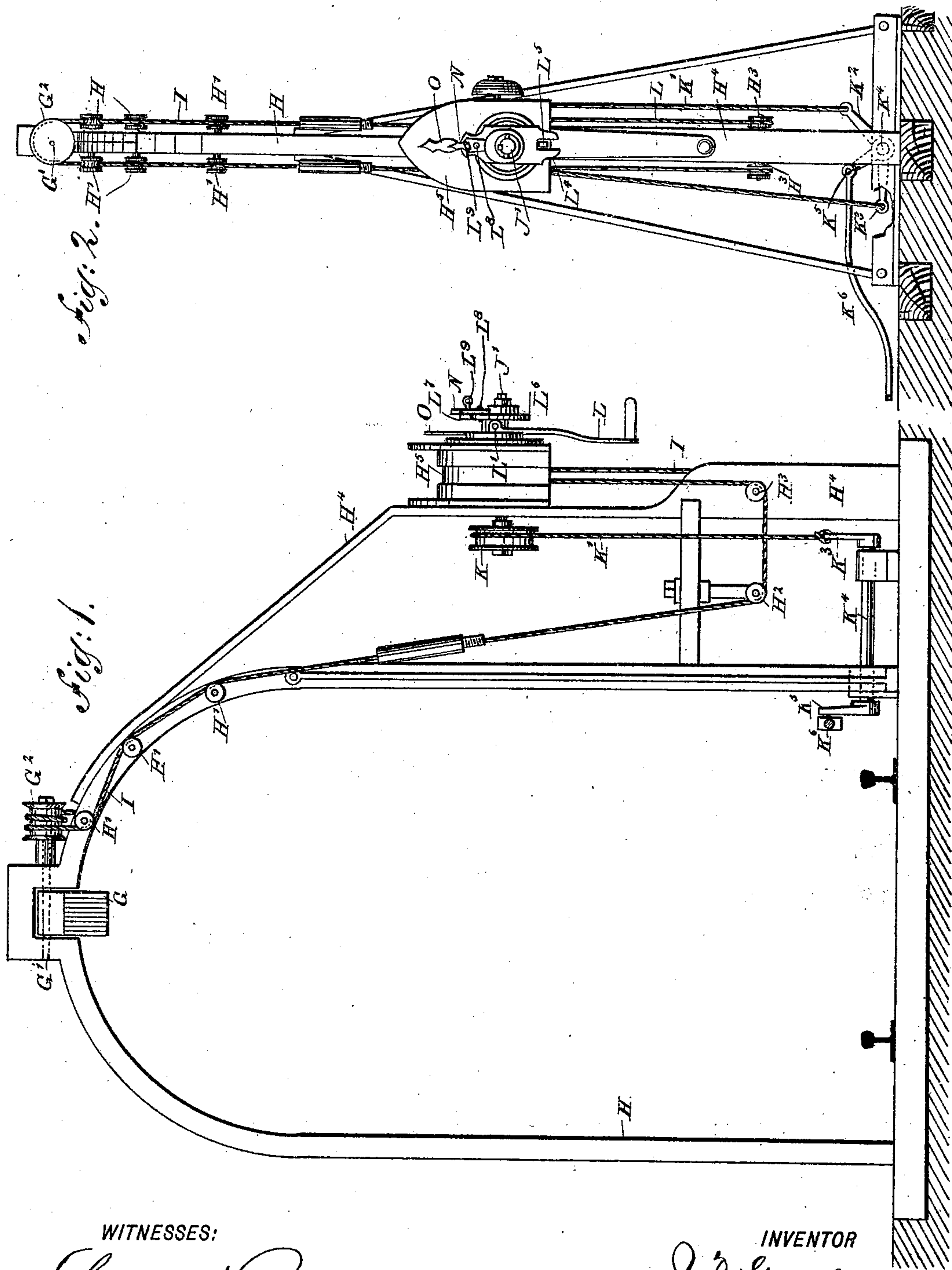
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J. B. GROSS.

TRAIN STOPPING MECHANISM FOR RAILROAD TRACKS.

No. 503,111.

Patented Aug. 8, 1893.



WITNESSES:

Chas. Nicola.  
C. Sedgwick

INVENTOR

J. B. Gross  
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Munn & Co.  
ATTORNEYS.

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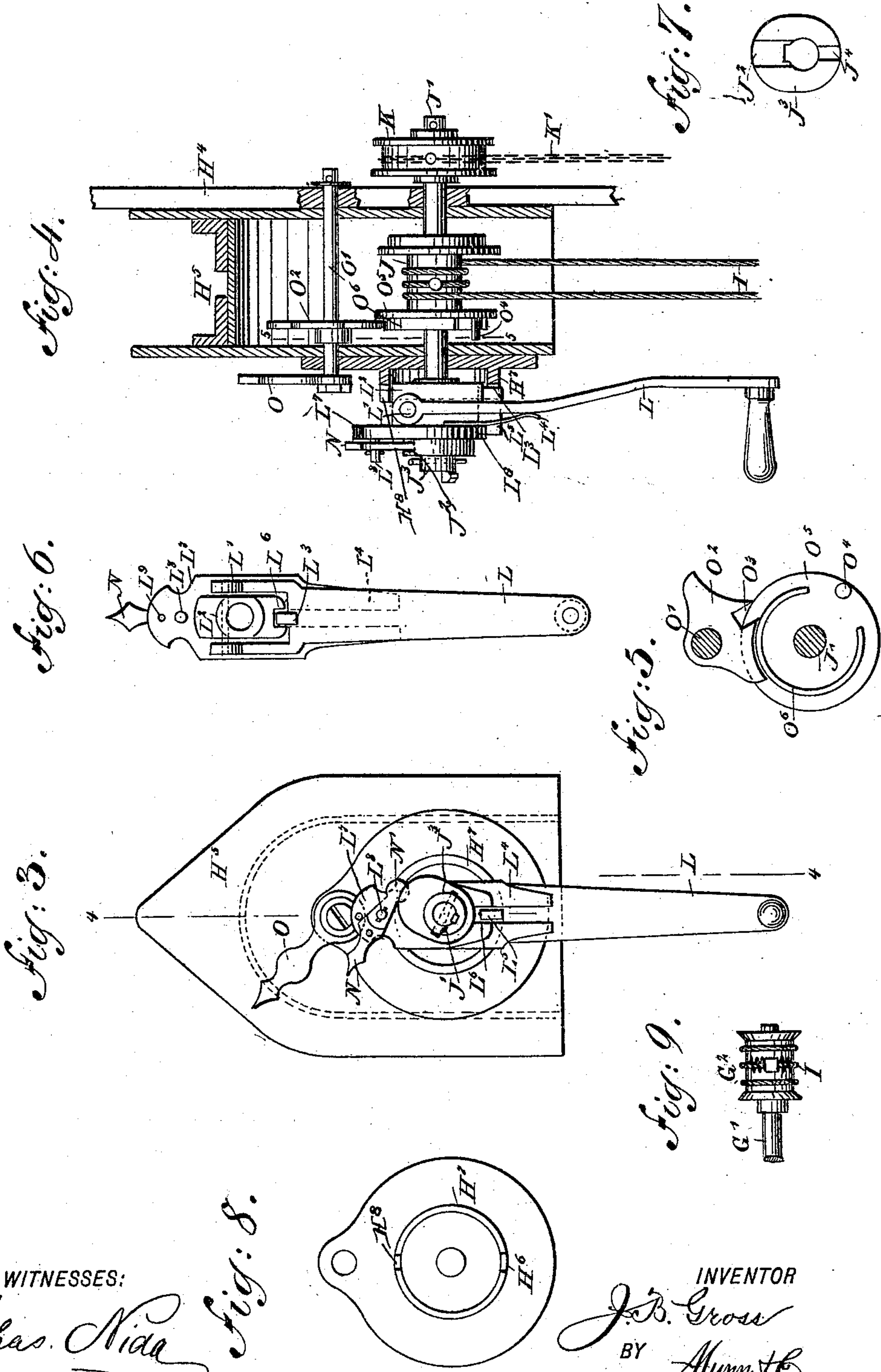
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# UNITED STATES PATENT OFFICE.

JOHN B. GROSS, OF HOBOKEN, NEW JERSEY.

## TRAIN-STOPPING MECHANISM FOR RAILROAD-TRACKS.

SPECIFICATION forming part of Letters Patent No. 503,111, dated August 8, 1893.

Original application filed November 22, 1892, Serial No. 452,792. Divided and this application filed January 11, 1893. Serial No. 458,066. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN B. GROSS, of Hoboken, in the county of Hudson and State of New Jersey, have invented a new and Improved Train-Stopping Mechanism on Railroad-Tracks, of which the following is a full, clear, and exact description, this specification forming a division of the application for locomotive attachment for signals, Serial No. 452,792, filed by me on November 22, 1892.

The object of the invention is to provide a new and improved train stopping mechanism designed for use on railroad tracks, to actuate a mechanism on the passing train to give a signal and automatically stop the train, in case danger is ahead on account of an open draw or switch.

The invention consists principally of a signal arm mounted to swing over the road-bed and journaled in a bracket erected on the railroad ties, and a mechanism supported on the bracket and connected with the shaft of the said arm and with the switch or draw.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is an end elevation of the improvement as applied. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged side elevation of the mechanism for setting the signal arm. Fig. 4 is a transverse section of the same on the line 4—4 of Fig. 3. Fig. 5 is a like view of part of the same on the line 5—5 of Fig. 4. Fig. 6 is a rear face view of the setting lever. Fig. 7 is a face view of a collar for the said setting lever. Fig. 8 is a face view of the covering plate for the setting mechanism; and Fig. 9 is a plan view of the shaft pulley for the signal arm.

The improved device is provided with a signal arm G arranged over the road-bed, as plainly illustrated in Fig. 1, and adapted to actuate the mechanism on the passing train, as fully described in the application above referred to and of which this is a division. This arm G is secured on a transversely-ex-

tending shaft G' journaled in suitable bearings in a frame or bracket H, preferably made U-shaped and attached to some of the ties of the railroad track. The frame H extends over the track, as is plainly shown in Fig. 1, so that the train with the locomotive and tender and cars in passing through the said bracket has its train stopping mechanism actuated by the arm G in case danger is ahead for the train. The arm G is connected with a switch located ahead of the bracket H or with a draw or other point of danger in the road-bed. Now, in order to actuate the said signal arm G so that it will stand in a proper position to actuate and be actuated by special independent devices on the locomotive at the time the switch or the draw is open, the following device is provided: On the shaft G' is secured a pulley G<sup>2</sup>, to which are secured the ends of a rope I, each strand of the latter passing several times around the said pulley and then extending downward to pass over a series of pulleys H' secured on the sides of the bracket H, as plainly illustrated in Figs. 1 and 2.

The strands of the rope I pass under pulleys H<sup>2</sup> and H<sup>3</sup> held on an auxiliary frame H<sup>4</sup> attached to one side of the bracket H and then the strands extend upward and wind on a drum J secured on a shaft J' extending transversely in a housing H<sup>5</sup> secured to the auxiliary frame H<sup>4</sup> as plainly shown in the drawings.

By reference to Fig. 4, it will be seen that the strands of the rope I pass upon the said drum J in opposite directions, so that when the drum is turned, one of the strands is wound up while the other unwinds from the said drum, and a like motion takes place on the pulley G<sup>2</sup>, so that the shaft G' is turned in an opposite direction to that in which the shaft J' is turned. The shaft J' is connected with a switch or draw and is provided for this purpose with a pulley K on which is secured a chain or rope K' extending downward and having its ends connected with arms K<sup>2</sup> and K<sup>3</sup> secured on a transversely extending shaft K<sup>4</sup> journaled in suitable bearings attached to the ties carrying the bracket H, as plainly illustrated in Fig. 1. On this shaft K<sup>4</sup> is secured another arm K<sup>5</sup> pivotally-connected with a link K<sup>6</sup> extending to the switch lever or to the draw to



enable the operator to open or close the switch or to lock and unlock the draw.

The shaft  $J'$  is adapted to be actuated by the operator in charge of the switch or draw, and for this purpose a hand lever  $L$  is provided which is pivoted at  $L'$  to the collar  $L^2$  mounted loosely on the shaft  $J'$ , as shown in Figs. 4 and 6. On the rear side of the lever  $L$  is secured a lug  $L^3$  adapted to engage a notch  $H^6$  formed in an annular flange  $H^7$  (see Fig. 8), secured on one of the covering plates of the housing  $H^5$ . The lug  $L^3$  is also adapted to engage a notch  $H^8$  formed diametrically opposite the notch  $H^6$  on the top of the flange  $H^7$ , as shown in Fig. 8. A spring  $L^4$  presses on the front side of the lever  $L$ , so as to hold the lug  $L^3$  in contact with either of the notches  $H^6$  or  $H^8$ .

In order to engage the lug  $L^3$  with the notch  $H^8$ , the hand lever  $L$  is given a half turn in an upward direction either to the right or left. When the hand lever  $L$  is moved into this uppermost position, the switch is closed or the draw is locked and no danger is ahead for the train. A second lug  $L^5$  is arranged on the front side of the hand lever  $L$ , directly opposite the lug  $L^3$  and this lug  $L^5$  is adapted to engage the notch  $L^6$  formed in a flange  $L^7$  forming part of the collar  $L^2$  previously mentioned and shown in Fig. 4. On the upper end of this flange  $L^7$  is held a stud  $L^8$  on which is fulcrumed a pointer  $N$  adapted to engage with its lower rounded end  $N'$  (see Fig. 3), a recess  $J^2$  formed in the collar  $J^3$  secured by a key or other means to the main shaft  $J'$ . The lug  $L^5$  previously mentioned is adapted when drawn outward to pass through the notch  $L^6$  into a recess  $J^4$  formed on the inner face of the said collar  $J^3$ , the said recess being located diametrically opposite the recess  $J^2$ , as plainly shown in Fig. 7.

The pointer  $N$  is adapted to be locked to the flange  $L^7$  by a pin  $L^9$  passing through registering apertures in the pointer  $N$  and flange  $L^7$ , as shown in Figs. 1 and 2. This pin  $L^9$  is sheared off by the pointer  $N$  when the latter is turned on its stud  $L^8$  at the time the arm  $G$  is forcibly swung to one side when struck by a projection carried by the train moving through the bracket, the said arm  $G$  then causing a turning of the drum  $J$ , shaft  $J'$  and collar  $J^3$ , which latter engages the lower end  $N'$  of the pointer  $N$ . Now, when the several parts are in the position shown in Figs. 1 and 2, then the lug  $L^3$  engages the notch  $H^6$  and when it is desired to turn the hand lever  $L$  into an uppermost position for the purpose of moving the arm  $G$  into a horizontal or "no danger" position, then the operator slightly swings the lever  $L$  outward to disengage the lug  $L^3$  from the notch  $H^6$  and to move at the same time the other lug  $L^5$  into engagement with the recess  $J^4$  in the collar  $J^3$ . The operator can then swing the lever  $L$  upward until the lug  $L^3$  registers with and snaps into the notch  $H^8$  on the top of the flange  $H^7$ . By turning the lever  $L$  upward, as described, the shaft

$J'$  is turned, thus imparting a traveling motion to the rope or chain  $I$ , so as to change the arm  $G$  from a vertical "danger" to a horizontal "no danger" position.

When the switch or draw is open, the lever  $L$  stands vertically downward, as shown in Figs. 1 and 2, so that the arm  $G$  extends likewise vertically downward, into the path of the devices to be actuated and located on the locomotive, it being understood that one of the said devices also actuates the said arm to swing it from a vertical into a horizontal position. When the hand lever  $L$  is in its lowermost position, the pointer  $N$  stands vertically upward and is locked by the pin  $L^9$  to the flange  $L^7$  and the lever  $L$  is locked to the fixed flange  $H^7$  by the lug  $L^3$  engaging the notch  $H^6$  of the said flange, as above described. Now, when the train moves along the track and comes to the bracket  $H$  located a suitable distance from the open switch or draw, then the arm  $G$  is struck by one of the said devices on the locomotive so that the arm causes the device on the locomotive to be actuated to stop the train, as fully described in the application above referred to. The next following device on the locomotive then strikes the arm  $G$  and swings the same into a horizontal position and this forcible swinging to one side of the arm  $G$  causes a turning of the drum  $J$  and shaft  $J'$ , so that the collar  $J^3$  imparts a swinging motion to the pointer  $N$ , whereby the pin  $L^9$  held in the flange  $L^7$  and pointer  $N$  is sheared off, the pointer and collar  $J^3$  then moving into the position shown in Fig. 3. When the several parts are in this position, the lever  $L$  is locked in place, as the turning of the collar  $J^3$  moves the latter's notch  $J^4$  out of register with the lug  $L^5$ , so that the lever cannot be swung outwardly by the operator, to disengage the lug  $L^3$  from the notch  $H^6$  on the fixed flange  $H^7$ . Now, in order to reset the device, the operator must first turn the shaft  $J'$  back with a wrench or other suitable tool applied on the front or rear end of the shaft  $J'$ , so as to turn the collar  $J^3$  to move its notch  $J^2$  again in register and engagement with the lower end  $N'$  of the pointer  $N$ , the latter being turned back by the operator to engage its end  $N'$  with the notch  $J^2$ . On the further turning of the shaft  $J'$  in the direction mentioned the pointer  $N$  is moved by the collar  $J^3$  back to its normal vertical position. A new pin  $L^9$  is then again inserted in the registering aperture in the pointer  $N$ , and flange  $L^7$ , to lock the latter two parts together. The turning of the collar  $J^3$  back to its normal position as described, again brings its recess  $J^4$  into alignment with the notch  $L^6$  and lug  $L^5$  so that the lever  $L$  can then again be swung outward a short distance to disengage the lug  $L^3$  from the notch  $H^6$  so as to permit the operator to swing the lever  $L$  upward if desired, and for the purpose above described.

In order to readily indicate to the operator in charge of the switch or draw the direction



in which the train is coming, I provide a pointer O pointing in the direction in which the train is moving along the track, it being understood that the lever L is then in an uppermost or "no danger" position. When the lever is in a "danger" position, as shown in Figs. 1 and 2, then the pointer O stands vertically in alignment with the pointer N. The pointer O as illustrated in Figs. 3 and 4, is secured on the outer end of a transversely-extending shaft O' mounted to turn in suitable bearings in the housing H<sup>5</sup>. On this shaft O' is secured a cam O<sup>2</sup> formed with a notch O<sup>3</sup> adapted to be engaged by a pin O<sup>4</sup> projecting from the face of a disk O<sup>5</sup> secured on the shaft J' and preferably forming one of the flanges of the drum J, as illustrated in Figs. 4 and 5. The cam O<sup>2</sup> is formed on its underside with two segmental surfaces adapted to ride on a segmental flange O<sup>6</sup> projecting from the disk O<sup>5</sup> so that an accidental displacement of the pointer O is prevented as the latter cannot be turned until the pin O<sup>4</sup> engages the notch O<sup>3</sup> of the cam O<sup>2</sup>. Now, when the handle lever L is in a lowermost position as shown in Figs. 1 and 2, then the pin O<sup>4</sup> engages the notch O<sup>3</sup> and when the handle lever L is swung in an upward direction, either to the right or left, then the turning of the shaft J' and drum J causes the pin O<sup>4</sup> to impart a swinging movement to the cam O<sup>2</sup>, whereby the shaft O' is turned and the pointer O is moved to the left, when the handle lever L is moved upward to the left, and the pointer O is moved to the right in case the handle lever L is moved upward to the right. Thus, when the pointer stands to the right it indicates that a train is coming from the right hand direction and when turned to the left, as shown in Fig. 3, it indicates that the train is coming from the left. When the switch or draw is to be opened then the hand lever L is swung from an uppermost position into a lowermost position, as shown in Figs. 1 and 2, whereby the switch is opened or the draw is unlocked, and at the same time the arm G is swung into a lowermost or "danger" position to bring the said arm into the path of the mechanism to be actuated and located on the coming train. In case the arm is then forcibly swung into an angular position by an obstruction carried along by the locomotive then the shaft G' is turned and the pin L<sup>9</sup> is sheared off as above described. The mechanism in the housing H<sup>5</sup> must then be reset as above described to unlock the lever L and to enable the operator to then manipulate the said lever for closing or opening the switch for locking or unlocking the draw and for setting the arm G correspondingly.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A train stopping mechanism on railroad tracks comprising an arm mounted to swing and adapted to move into the path of an ob-

struction on the locomotive or train, a bracket erected on the railroad ties and carrying the said arm, a drum connected with the shaft of the said arm and adapted to be revolved when the arm is moved by an obstruction on the locomotive or train, and means for connecting the drum shaft with the switch or draw, substantially as shown and described.

2. A train stopping mechanism on railroad tracks comprising an arm mounted to swing and adapted to move into the path of an obstruction on the locomotive or train, a bracket erected on the railroad ties and carrying the said arm, a drum connected with the shaft of the said arm and adapted to be revolved when the arm is moved by an obstruction on the locomotive or train, means for connecting the drum shaft with the switch or draw, a pivoted pointer, a pin for locking the pointer in a fixed position, and means substantially as described, for imparting a swinging motion to the said pointer from the drum to shear off the said pin, substantially as shown and described.

3. In a train stopping mechanism on railroad tracks, the combination with an arm mounted to swing and carrying on its shaft a pulley, of a rope connected with the said pulley, a drum connected with the said rope so that when the drum is turned one strand of the rope is wound up and the other unwound to shift the said arm, means for connecting the drum shaft with the switch or draw, a hand lever pivoted on a sleeve held loosely on the drum shaft, and a fixed collar on the said drum shaft and adapted to be engaged by a lug on the said lever, substantially as shown and described.

4. In a train stopping mechanism on railroad tracks, the combination with an arm mounted to swing and carrying on its shaft a pulley, of a rope connected with the said pulley, a drum connected with the said rope so that when the drum is turned one strand of the rope is wound up and the other unwound to shift the said arm, means for connecting the drum shaft with the switch or draw, a hand lever pivoted on a sleeve held loosely on the drum shaft, a fixed collar on the said drum shaft and adapted to be engaged by a lug on the said lever, and a pointer adapted to be actuated by the said fixed collar when the latter is turned, substantially as shown and described.

5. In a train stopping mechanism on railroad tracks, the combination with an arm mounted to swing and carrying on its shaft a pulley, of a rope connected with the said pulley, a drum connected with the said rope so that when the drum is turned one strand of the rope is wound up and the other unwound to shift the said arm, means for connecting the drum shaft with the switch or draw, a hand lever pivoted on a sleeve held loosely on the drum shaft, a fixed collar on the said drum shaft and adapted to be engaged by a lug on the said lever, a pointer for indicating the direction of the moving train, a cam held on the shaft of the



said pointer, and a pin held on the flange of the said drum to actuate the said cam, substantially as shown and described.

6. In a train stopping mechanism on railroad tracks, the combination with an arm mounted to swing and carrying on its shaft a pulley, of a rope connected with the said pulley, a drum connected with the said rope so that when the drum is turned one strand of the rope is wound up and the other unwound to shift the said arm, means for connecting the drum shaft with the switch or draw, a hand lever pivoted on a sleeve held loosely on the drum shaft, a fixed collar on the said drum shaft and adapted to be engaged by a lug on the said lever, a pointer adapted to be actuated by the said fixed collar when the latter is turned, and a pin for connecting the said pointer with the said collar or sleeve carrying the hand lever,

the said pin being adapted to be sheared off by the pointer, substantially as shown and described.

7. In a train stopping mechanism, the combination with a housing, of a drum shaft carrying a drum and journaled in the said housing, a collar held loosely on the said shaft, a hand lever pivoted on the said collar and adapted to be locked to the said housing, a pointer pivoted on the said collar and adapted to be locked thereto by a pin, and a second collar fixed to the said drum shaft and adapted to engage and impart a swinging motion to the said pointer to shear off the said pin, substantially as shown and described.

JOHN B. GROSS.

Witnesses:

THEO. G. HOSTER,  
E. M. CLARK.