

Nov. 28, 1933.

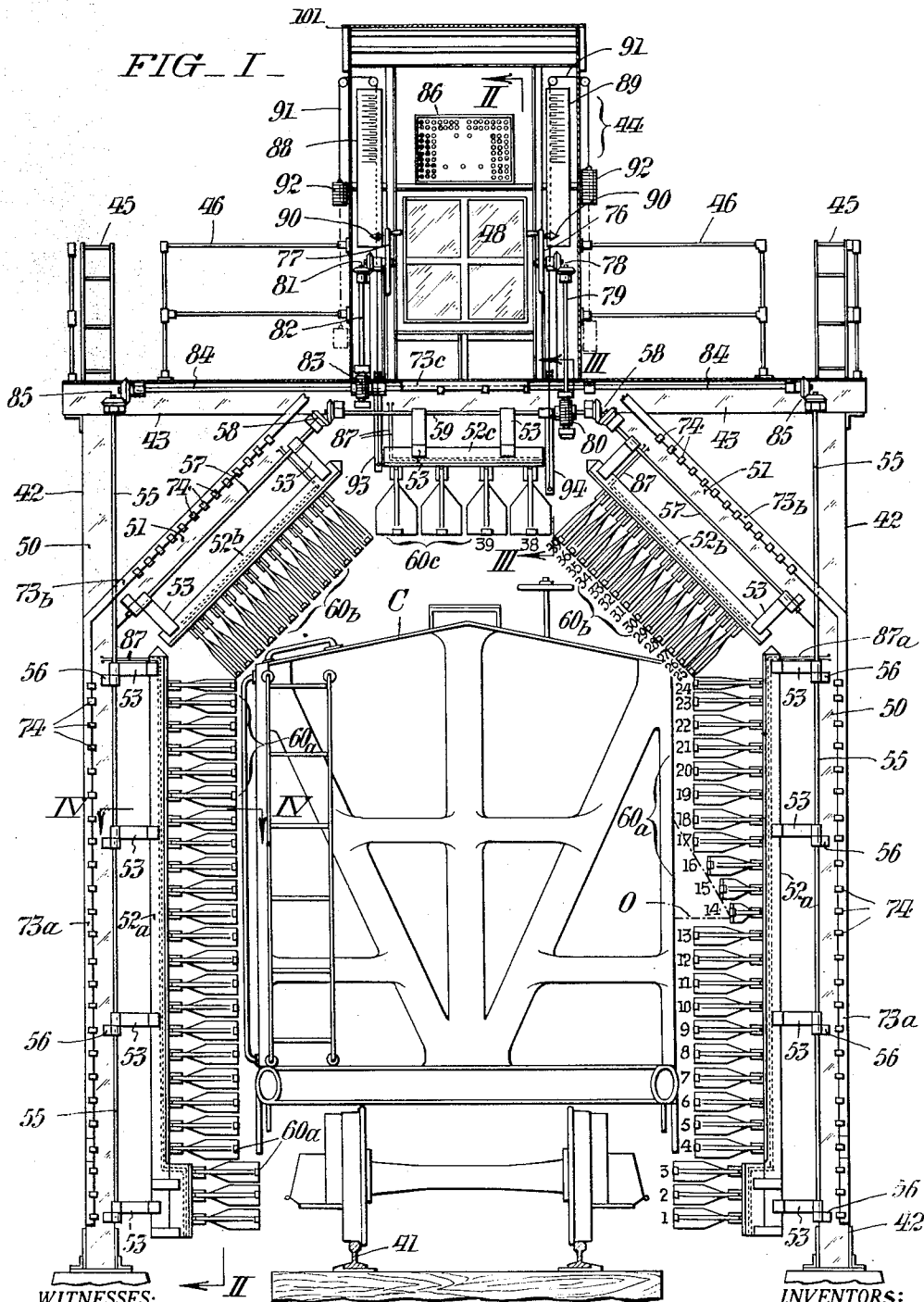
M. W. CLEMENT ET AL

1,936,828

RAILWAY CLEARANCE INDICATOR

Filed Dec. 20, 1932

4 Sheets-Sheet 1



WITNESSES:

Thomas W. Kerr, Jr.
Hubert Fuchs

INVENTORS:

Martin W. Clement, Rudolph L. Klaus &
John W. Rowland,

By *Fraser & Paul*
ATTORNEYS.

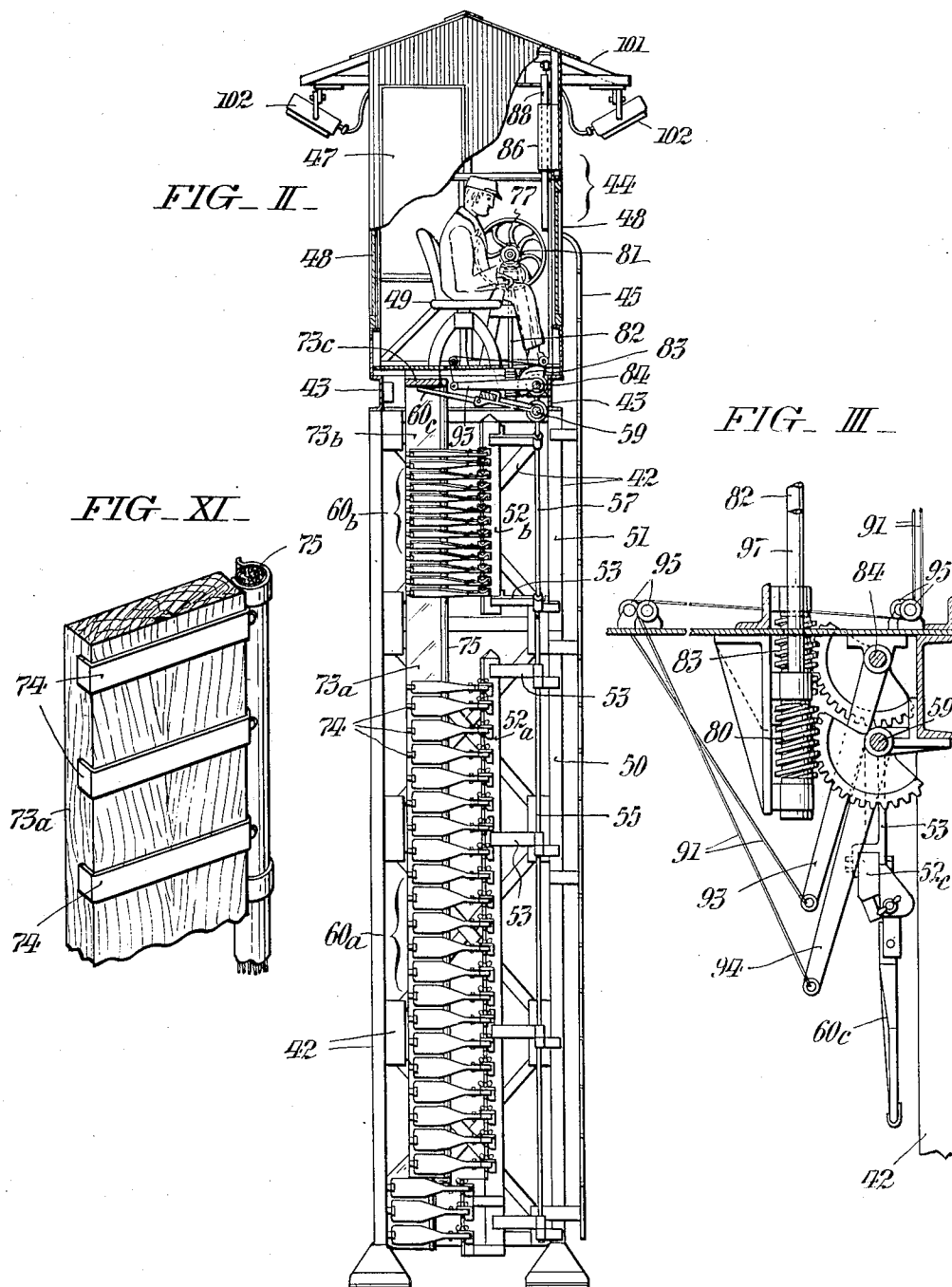
Nov. 28, 1933.

M. W. CLEMENT ET AL
RAILWAY CLEARANCE INDICATOR

1,936,828

Filed Dec. 20, 1932

4 Sheets-Sheet 2



WITNESSES:

Thomas W. Kerr, Jr.
Hubert Fuchs

INVENTORS:

Martin W. Clement, Rudolph L. Klein &
John W. Rowland,
BY Fraley & Caul
ATTORNEYS.

Nov. 28, 1933.

M. W. CLEMENT ET AL
RAILWAY CLEARANCE INDICATOR

1,936,828

Filed Dec. 20, 1932

4 Sheets-Sheet 3

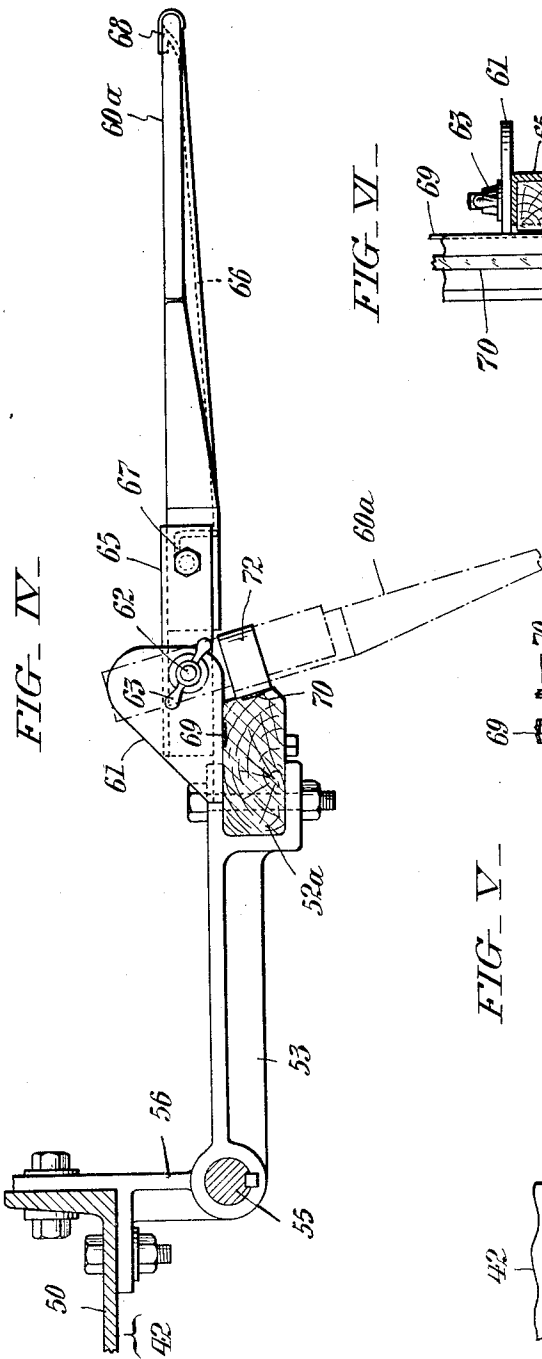


FIG- VI-

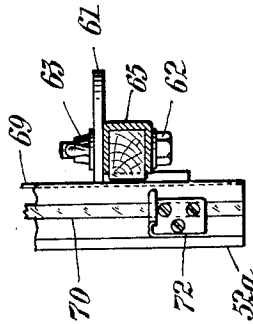
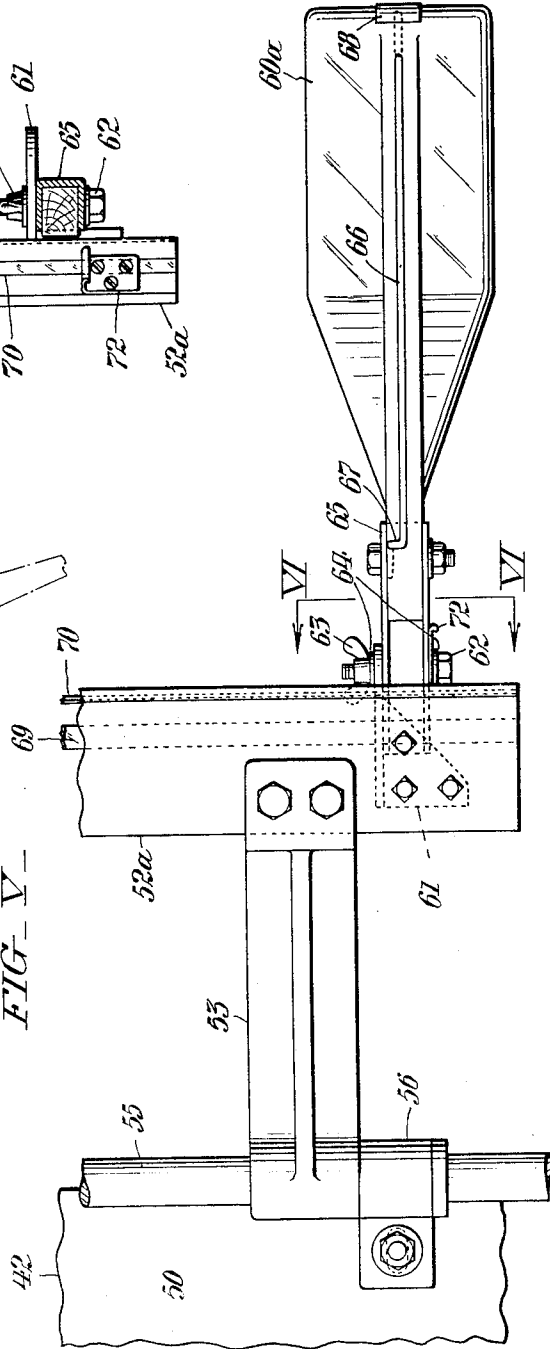


FIG- V-



WITNESSES:

Thomas W. Kerr, Jr.
Hubert Fuchs

INVENTORS:

Martin W. Clement, Rudolph L. Klein &
John W. Rowland,

BY Tracy Paul
ATTORNEYS.

Nov. 28, 1933.

M. W. CLEMENT ET AL

1,936,828

RAILWAY CLEARANCE INDICATOR

Filed Dec. 20, 1932

4 Sheets-Sheet 4

FIG. VII.

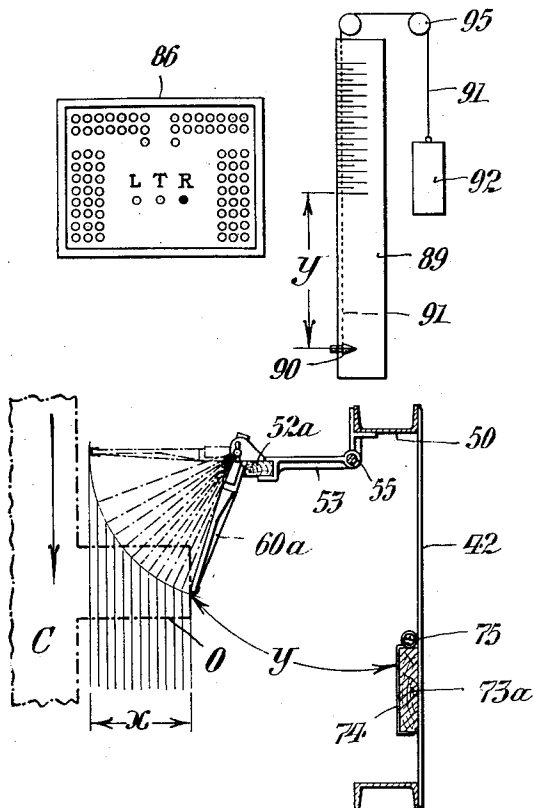


FIG. VIII.

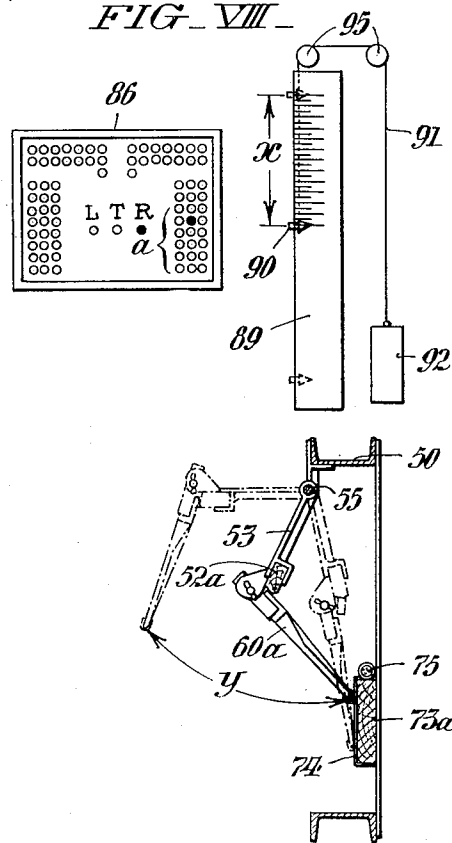


FIG IX

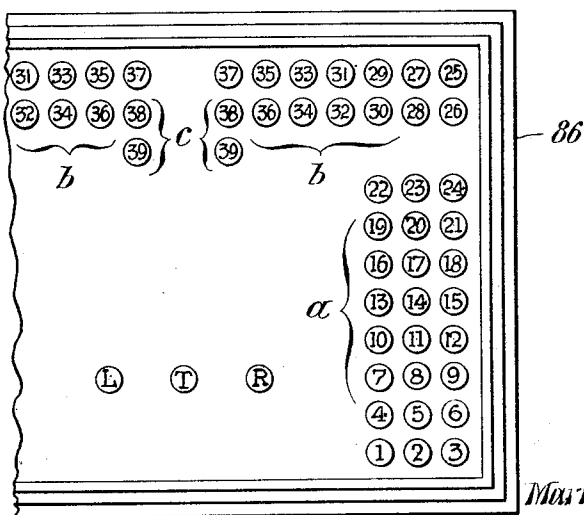
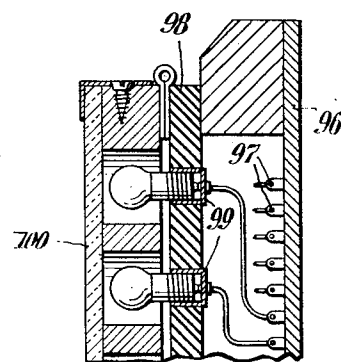


FIG. X.



INVENTORS:

*Martin W. Clement, Rudolph J. Klein &
John W. Rowland,*

BY *Tracy Paul*
ATTORNEYS.

UNITED STATES PATENT OFFICE

1,936,828

RAILWAY CLEARANCE INDICATOR

Martin W. Clement, Haverford, and Rudolph L.
Kleine, Philadelphia, and John W. Rowland,
Paoli, Pa.

Application December 20, 1932
Serial No. 648,078

16 Claims. (Cl. 33—175)

This invention relates to railway clearance indicators, and more particularly to a device for gauging railway cars and their lading to determine the existence and location of obstructions extending beyond the minimum clearance diagram of the railroad over which such cars are to be hauled. Clearance diagrams are prescribed by railroads as a matter of safety to insure the safe passage of cars through tunnels, bridges, switch stands and the like. It not infrequently happens that cars are too wide or too high for the clearance limits of the railroad over which the cars are routed; or that lading on cars exceeds the clearance limits; or that portions of cars such as doors, running boards, roofs, etc., become defective and project outward or upward beyond the safe clearance lines.

The object of our invention is to provide a means of gauging cars at receiving yards or other convenient points, thereby to detect the presence of any obstructions which extend beyond safe clearance limits and to identify the location of such obstructions. To this end our invention comprises a stationary structure bridging a track and having movable devices pivoted thereon with their free ends defining a clearance diagram of predetermined outline. According to the preferred practice of the invention, cars are moved in groups at a slow uniform speed through the bridging structure, and means are provided so that, whenever parts of a car or its lading project beyond the clearance diagram, the operator is notified. Additional means are provided to enable the operator to determine readily the point at which the obstruction occurs and to measure the extent to which it exceeds safe clearance limits.

The clearance indicator of our invention is especially useful as a part of equipment used for making a comprehensive inspection of railroad cars such as described in our pending application for U. S. Letters Patent, Serial No. 633,702, filed September 19, 1932. For this purpose the clearance indicator preferably takes the form of a tower and includes an operator's station from which the roofs of passing cars may be observed for defects, such as loose running boards, ventilators or the like. Such a clearance tower may be conveniently located between a receiving yard and a classification yard.

Other objects and advantages characterizing our invention will become more fully apparent from the description hereinafter set forth of one embodiment or example of the practice thereof,

having reference to the accompanying drawings. Of the drawings:

Fig. I represents a front elevation of a clearance tower of our invention with the swinging tabs used for gauging clearance shown in open position.

Fig. II represents a cross section of the same, taken as indicated by the lines II—II of Fig. I, with the swinging tabs in closed position.

Fig. III represents an enlarged cross section of a part of the same, taken as indicated by the lines III—III of Fig. I.

Fig. IV represents an enlarged cross section of the same, taken as indicated by the lines IV—IV of Fig. I, and showing one of the swinging tabs and the manner in which it is supported.

Fig. V represents an enlarged front elevation of the swinging tab shown in Fig. IV.

Fig. VI represents a cross section of the same, taken as indicated by the lines VI—VI of Fig. V.

Fig. VII represents the indicator panel at the operator's station together with a view of the clearance gauge and one of the swinging tabs after engagement with an obstruction, showing the indications given to the operator under the condition represented.

Fig. VIII represents the indicator panel, clearance gauge and swinging tab while a measurement is being taken.

Fig. IX represents an enlarged view of a portion of the face of the indicator panel.

Fig. X represents a cross section of a portion of the indicator panel; and,

Fig. XI represents a perspective view of a portion of a striking plate.

With reference initially to Figs. I and II, there is shown in the drawings a clearance indicator of our invention in the form of a tower bridging a track 41. The tower comprises a framework having upright side members 42 of lattice construction, and a cross member 43 which affords support for an operator's cabin 44. Ladders 45 are provided at each side to permit the operator to climb the tower, and a railing 46 extends at each side of the operator's cabin. Access to the operator's cabin 44 is had through a door 47 in the side thereof, and windows 48 are provided at the front and back of the operator's cabin to give to the operator a lengthwise view of the track in either direction. As shown in Fig. II, the operator is conveniently seated in a swivel chair 49 from which he may view cars, as they approach or leave the clearance tower.

The framework of the tower includes upright channel beams 50 and diagonal channel beams

51 to which are hinged vertical and diagonal tab supports 52a and 52b. Each tab support 52a has affixed thereto, as shown in Figs. IV and V, spaced hinge members 53 which are keyed to a vertical shaft 55 at the side of the clearance tower. The vertical shafts 55 are in turn supported for rotation in bearings 56 located at spaced intervals along the channel beams 50 of the side member 42. In like manner the diagonal tab supports 52b are attached to additional hinge members 53 which are carried on diagonal shafts 57. The two diagonal shafts 57 at each side of the clearance tower are connected by bevel gearing 58 to a horizontal shaft 59 which is disposed directly beneath the operator's cabin 44. Suspended by hinge members 53 from the horizontal shaft 59 there is an additional tab support 52c. The vertical tab supports 52a have hinged thereto a series of tabs collectively designated at 60a which project inwardly towards the track 41. Likewise the diagonal tab supports 52b have hinged thereto swinging tabs 60b, and the horizontal tab support 52c has hinged thereto tabs 60c which project downwardly towards the track 41. The swinging tabs may take a great variety of forms, but in the present instance flat wooden paddles have been selected.

It will be observed that the free ends of the three groups of tabs 60a, 60b, 60c define a clearance diagram. This diagram is determined by the safe clearance limits of the railroad for which the clearance tower is designed. The diagram may be made to correspond to the outline of clearances obtained by clearance cars which are in common use by railroads for ascertaining clearances of objects adjacent to and above the tracks.

All of the tabs 60a, 60b, 60c are hinged to their supports 52a, 52b, 52c with capacity for independent swinging movement. As illustrated in Figs. IV and V, each tab support 52a comprises a member of wood, or other insulating material, having horizontally extending brackets 61 at spaced intervals therealong. To each bracket 61 a tab 60a is hinged by means of a bolt 62 and wing nut 63 with washers 64 interposed therebetween. At its hinged end each tab 60a has bolted thereto a U-shaped holder 65 of conducting material, as shown in Fig. VI, which bears directly against the bracket 61. Each tab also carries a strip 66 of conducting material, one end of which is in contact with the tab holder 65 as indicated at 67, and the other end of which terminates in a contact member 68 at the free end of the tab. By adjustment of the wing nuts 63 sufficient frictional resistance is offered to swinging of the tabs as to cause them to move only under impact with an obstruction.

On different side faces of the tab support 52a there are two conductors 69 and 70 which extend throughout the length of the same. The conductor 69 is disposed on the side of the tab support 52a upon which the brackets 61 are mounted and is in electric contact with all of the brackets 61. The conductor 70 has attached thereto at intervals of its length clips 72 which are adapted to contact with the lower faces of the tab holders 65 when the tabs are swung away from their normal positions. Thus when a tab 60a is moved from the position shown in full lines in Fig. IV to the position shown in broken lines, as soon as the movement is initiated, the holder 65 comes in contact with the clip 72, permitting current to pass from conductor 69 to conductor 70. The swing-

ing tabs 60b and 60c, though somewhat differently shaped, are constructed in the same manner as the tabs 60a and are hinged to their respective tab holders 52b and 52c in the same manner.

Adjacent to each tab holder 52a there is a striking plate 73a comprising a vertically disposed flat board, as illustrated in Fig. XI, having a series of contact plates 74 located at spaced intervals along the inner face thereof. Adjacent to the diagonal tab holders 52b there are similar diagonal striking plates 73b; and adjacent to the top or horizontal tab holder 52c there is an additional striking plate 73c. All of the striking plates 73a, 73b, 73c are constructed in the same manner, and have associated therewith cables 75, as shown in Fig. XI, carrying a series of individual conductors each one of which is connected to a separate contact plate 74. The striking plates 73a, 73b, 73c are used for the purpose of returning tabs which have been displaced by the movement of cars through the clearance tower which have obstructions thereon exceeding the limits of the clearance diagram. The striking plates also afford a means of completing electrical circuits and thus to give indications to the man in the operator's cabin of the location of the displaced tabs.

For the purpose of enabling the operator to ascertain the location and extent of displacement of a tab struck by a passing car, means are provided for moving the tabs 60a, 60b, 60c by groups, such means being controlled from the operator's cabin by two hand wheels 76 and 77. The hand wheel 76 is connected through bevel gearing 78 with a shaft 79. The shaft 79 is in turn connected through a worm gear 80 to the horizontal shaft 59 which controls movement of the diagonal and horizontal tab holders 52b and 52c. Accordingly, rotation of the hand wheel 76 causes simultaneous rotation of the tab holders 52b, 52c whereby the tabs 60b, 60c may be brought into engagement with the striking plates 73b, 73c. The other hand wheel 77 is connected through bevel gearing 81 with a shaft 82 which in turn is connected through a worm gear 83 with an additional shaft 84 extending horizontally across the top of the clearance tower. The shaft 84 is connected through bevel gearing 85 with the vertical shafts 55. Accordingly, rotation of the hand wheel 77 causes simultaneous rotation of the vertical tab holders 52a, and by such rotation the tabs 60a may be swung into engagement with the striking plates 73a, thus returning to vertical alignment any tabs which have been displaced by contact with cars passing through the clearance tower.

In the operator's cabin 44 there is provided an indicator panel 86. This panel is shown in detail in Fig. IX. It has thereon a series of lights arranged in groups and numbered to correspond with designating numbers on the swinging tabs. In the illustrated example of our invention, there are twenty-four tabs in the vertical group at each side of the tower designated by the numbers 1 to 24. The lights corresponding to these tabs are collectively designated at a on the indicator panel 86. At each side of the clearance tower there are thirteen swinging tabs in the diagonal group 60b, with designating numbers 25-37, the lights corresponding to which are collectively designated at b, and two more tabs in the horizontal group 60c, the lights corresponding to which are designated at c. On the indicator panel 86 there are three additional lights designated at L, T and R, and designating, respectively, the "left", 150

"top" and "right" portions of the clearance diagram. The light designated at L is illuminated whenever a tab of the left hand group of tabs 60a is displaced the closing of the circuit being accomplished by contact between a tab holder 65 and a clip 72 as explained above. Likewise the light T is illuminated whenever any of the tabs 60b, 60c at the top of the clearance diagram are swung out of position; and the light R is illuminated whenever any of the tabs of the right hand group 60a is displaced. The conductors 69 and 70 lead from the tab holders 52a, 52b, 52c, through cables 37, to the operator's cabin 44 and terminate at the indicator panel 86 behind the lights designated at L, T and R.

The lights of the indicator panel 86 in the groups designated at a, b and c, are illuminated whenever contact is made between the end of a tab and a striking plate. Assuming, for example, that the hand wheel 77 has been rotated and that the tab designated by the numeral 14 has been displaced, it will be apparent that this tab will be the first to come in contact with the striking plate 73a. When the tab designated by the numeral 14 has come in contact with the striking plate 73a, a circuit will be completed, through one of the conductors of the cable 75, the contact plate 74 adjacent to the tab, the contact member 68 at the end of the tab, its conducting strip 66, the tab holder 65, and the bracket 61 to conductor 69. The completion of this circuit causes illumination of the light designated at 14 on the indicator panel 86.

In order to enable the operator to determine the extent of displacement of tabs which have been struck by passing cars, and thus to determine the outline of the obstruction which projects beyond the clearance diagram, measuring devices 88 and 89 having graduated scales are provided at the operator's station. The measuring device 88 indicates displacement measurements relating to the side groups of tabs 60a, whereas the measuring device 89 indicates such measurements relating to the diagonal and horizontal tabs 60b, 60c. Each measuring device has associated therewith a pointer 90, which is attached to a cable 91, and a counterweight 92 at the end of the cable. As shown clearly in Fig. III, one such cable 91, the one associated with the measuring device 88, is attached to an arm 93 fixed on the horizontal shaft 84 which operates the side groups of tabs 60a, whereas the other cable 91 associated with the measuring device 89 is attached to an arm 94 fixed on the horizontal shaft 59 which operates the diagonal and horizontal groups of tabs 60b, 60c. Sheaves 95 are employed for guiding the cables 91 as they lead downward from the operator's cabin and outward and downward to the ends of the arms 93 and 94. The linear movement of each pointer 90 over the face of the measuring devices 88, 89 is in direct proportion to the angular movement of the shafts 84, 59 and hence in direct proportion to the angular movement of the tab holders 52a, 52b, 52c. By properly positioning the pointer 90 with respect to the graduated scale on the measuring device, the apparatus may be arranged so that, when the tab holder 52a is in a plane transverse to the track, the pointer will be at the base of the measuring device, as indicated in Fig. VII, whereas when the tab holder 52a is at the fully open position shown in broken lines in Fig. VIII, the pointer will be at the top of the measuring device as indicated in the latter figure. With such an arrangement, whenever a tab has

been displaced by impact with a passing car and the tab holder is rotated towards the striking plate, a light will appear on the indicator panel 86 before the pointer 90 has reached the top of the graduated scale. The graduations on the measuring devices 88, 89 are therefore made to correspond with the angular swinging movement of the tabs. When an obstruction, such as indicated at O in Figs. I and VII, projects outward from a car C to the maximum distance for which the clearance tower is designed, this distance being indicated at x, the tab engaged by the obstruction will be displaced and swung to the position shown in full lines in Fig. VII. Subsequent movement of the tab holder 52a through the angle y to the position shown in full lines in Fig. VIII, will bring the tab into contact with the striking plate 73a. At the instant of contact a light will appear on the indicator panel 86. At this point the pointer 90 will have travelled to the position shown in Fig. VIII, and the graduation immediately beneath the pointer is a measurement of the extent to which the obstruction O projects beyond the clearance diagram.

In Fig. X there is shown a cross section of a portion of the indicator panel 86 illustrating the nature of its construction. It comprises briefly a base board 96, having thereon a series of terminals 97 connected to the contact plates 74 and to the conductors 70, an insulated plate 98 having sockets 99 for the accommodation of the indicator lights and a hinged glass cover 100.

To afford shelter for the operator's station, the cabin 44 is preferably provided with an overhanging roof 101 to which search lights 102 are conveniently attached, enabling the operator to conduct his work at night as well as in the day time. The search lights 102 are preferably directed lengthwise of the track.

The operation of the above described clearance tower of our invention is as follows. Cars are moved slowly at a uniform speed through the tower in the direction indicated by the arrow in Fig. VII. The operator in the cabin 44 carefully inspects each car as it approaches the clearance tower and makes a note of all visible defects relating to the roofs or superstructures of the cars. Under ordinary conditions, where the cars have no obstructions projecting therefrom beyond the predetermined clearance diagram, the operator's work consists merely of an inspection of the upper parts of the cars passing through the tower, and the making of notes identifying the location of defects so that they can be subsequently remedied. In the event, however, that a car passes through the clearance tower having thereon an object projecting beyond the clearance diagram, a light will immediately appear on the indicator panel 86 in front of the operator. Assuming that a car such as that represented at C in Fig. I has thereon a projection projecting laterally according to the outline at O in broken lines, it will be apparent that the obstruction will cause the tabs having thereon the designating numbers 14, 15, 16, to be swung out of the way. Inasmuch as the obstruction has engaged the group of tabs 60a at the right hand side of the track, the light R will be illuminated on the instrument 86, the illumination taking place immediately after the first tab has been engaged by the obstruction.

After the operator has been thus warned that the clearance diagram has been exceeded by an object on the car passing through the tower, he

proceeds to signal the train operator to stop the train.

In order to ascertain the location and outline of the obstruction, the operator then turns the hand wheel 77 to rotate the tab holder 52a. The hand wheel 77 is turned slowly and as soon as the tab designated by the numeral 14 engages the striking plate 73a, a light will appear, as represented in Fig. VIII, on the group *a* of lights at the right hand side of the indicator panel 86. This light identifies to the operator the particular tab at which the maximum obstruction has occurred. As soon as the light appears, the operator examines the measuring device 88 and notes the graduation adjacent to the pointer 90. Having thus ascertained the extent of displacement of the tab designated by the number 14, the operator continues to rotate the hand wheel 77 and determines in the same manner the extent of displacement of tabs numbered 15, 16. When the hand wheel 77 has been rotated to the point where all of the tabs of the group have come into engagement with the striking plate 73a, it will be apparent that the displaced tabs will be returned to a common vertical plane. With the tabs thus re-aligned, the operator moves the hand wheel 77 in the opposite direction, returning the tabs of the group to a plane transverse to the track 41.

Having noted the location and outline of the obstruction, the operator then signals the train to proceed. From the operator's notes the car having thereon the obstruction is identified and corrective action taken.

From the above description it will be apparent that the clearance tower of our invention affords a safeguard against accidents occurring by reason of projecting objects on railway cars which exceed the clearance limits of the right-of-way over which the cars pass.

While the invention has been described with reference to a preferred embodiment in which a clearance tower forms a part of a comprehensive inspection of railway cars, it will be apparent that the principle of our invention may be utilized to advantage for the sole purpose of gauging cars for objects exceeding clearance limits, and it will be further apparent that the particular forms of the various devices specifically referred to herein admit of considerable change and re-arrangement without departure from the spirit of our invention as defined in the annexed claims.

Having thus described our invention, we claim:—

1. A railway clearance indicator comprising a framework bridging a track, a series of tabs projecting inwardly from said framework with their ends defining a clearance diagram, means for mounting said tabs on said framework with capacity for independent movement away from said track, and means for indicating the location of tabs displaced by contact with objects passing through said framework and projecting beyond said clearance diagram.

2. A railway clearance indicator comprising a framework bridging a track, a series of tabs projecting inwardly from said framework with their ends defining a clearance diagram, means for mounting said tabs on said framework with capacity for independent movement away from said track, means for indicating the location of tabs displaced by contact with objects passing through said framework and projecting beyond said dia-

gram, and means for measuring the extent of displacement of such tabs.

3. A railway clearance indicator comprising a framework bridging a track, a series of tabs normally projecting inwardly from said framework in a common vertical plane with their ends defining a clearance diagram, means for mounting said tabs on said framework with capacity for independent swinging movement away from said track, and mechanical means for moving said tabs by groups, whereby, when one or more tabs have been displaced, all the tabs of a group may be returned to the common vertical plane.

4. A railway clearance indicator comprising a framework bridging a track, a series of tabs normally projecting inwardly from said framework in a common vertical plane with their ends defining a clearance diagram, means for mounting said tabs on said framework with capacity for independent swinging movement away from said track, a striking plate on said framework adjacent to said tabs, and means for swinging said tabs to contact with said striking plate, whereby, when one or more tabs have been displaced, all the tabs may be returned to the common vertical plane.

5. A railway clearance indicator comprising a framework bridging a track, a group of tabs projecting downwardly from the top of said framework towards the track, additional groups of tabs projecting inwardly from each side of said framework towards the track, means for mounting said tabs on said framework with capacity for independent swinging movement, and means for indicating the particular group wherein tabs have been displaced by contact with cars passing through said framework.

6. A railway clearance indicator comprising a framework bridging a track, a group of tabs projecting downwardly from the top of said framework towards the track, additional groups of tabs projecting inwardly from each side of said framework towards the track, means for mounting said tabs on said framework with capacity for independent swinging movement, means for indicating the particular group wherein tabs have been displaced by contact with cars passing through said framework, and means for indicating the particular tabs of such group which have been displaced.

7. A railway clearance indicator comprising a framework bridging a track, a group of tabs projecting downwardly from the top of said framework towards the track, additional groups of tabs projecting inwardly from each side of the framework towards the track, said tabs being normally disposed in a common vertical plane, means for mounting said tabs on said framework with capacity for independent swinging movement, striking plates on said framework adjacent said groups of tabs, and means for swinging all the tabs of a group together to contact with a striking plate, whereby, when one or more tabs of a group have been displaced, all tabs of the group may be returned to the common plane.

8. A railway clearance indicator comprising a framework bridging a track, a tab support, means for pivotally mounting said tab support on said framework, a series of tabs, means for mounting said tabs on said support with capacity for independent swinging movement thereon, said tabs normally projecting inwardly from the framework in a common plane with their ends defining a clearance diagram, a striking plate on said framework, and means for moving the

tab support to effect engagement between the tabs thereon and the striking plate, whereby, when one or more tabs have been displaced, all of the tabs may be returned to the common plane.

9. A railway clearance indicator comprising a framework bridging a track, a tab support, means for pivotally mounting said tab support on said framework, a series of tabs, means for mounting said tabs on said support with capacity for independent swinging movement thereon, said tabs projecting inwardly from the framework with their free ends defining a clearance diagram, a striking plate on said framework, means for moving the tab supports to effect engagement between the tabs thereon and the striking plate, and means for measuring the angular movement of the tab support whenever a tab engages the striking plate.

10. A railway clearance indicator comprising a framework bridging a track, a tab support, means for pivotally mounting said tab support on said framework, a series of tabs, means for mounting said tabs on said support with capacity for independent swinging movement thereon, said tabs projecting inwardly from the framework with their free ends defining a clearance diagram, a striking plate on said framework, means for moving the tab supports to effect engagement between the tabs thereon and the striking plate, means for indicating the instant of contact, whenever a tab engages the striking plate, and the location of such tab, and means for measuring the angular movement of the tab support, whereby, when a tab engages the striking plate, the extent of its displacement may be determined.

11. A railway clearance tower comprising a framework bridging a track, said framework including an operator's station from which cars passing along the track may be viewed, a series of independently movable tabs projecting from said framework towards the track, the free ends of said tabs defining a clearance diagram, means for indicating at the operator's station the location of tabs displaced by contact with cars passing through said framework, and means for indicating at said operator's station the extent of displacement of such tabs.

12. A railway clearance tower comprising a framework bridging a track, said framework including an operator's station from which cars passing along the track may be viewed, a series of independently movable tabs projecting from said framework towards the track and normally disposed in a common vertical plane, said tabs being arranged in groups at the sides and above said track, and means operable from said operator's station for moving said tabs by groups, whereby, when one or more tabs have been displaced by cars passing through said framework, all the tabs of a group may be returned to the common vertical plane.

13. A railway clearance tower comprising a framework bridging a track, said framework including an operator's station commanding a view lengthwise of the track, a series of tabs projecting inwardly from said framework normally in a common vertical plane, means for mounting said tabs on said framework with capacity for independent swinging movement thereon, a striking plate on said framework adjacent to said tabs, and means operable from said operator's station for swinging said tabs to contact with said striking plate, whereby, when one or more tabs have been displaced by cars moving through said framework, all the tabs may be returned to the common vertical plane.

14. A railway clearance tower comprising a framework bridging a track, said framework including an operator's station above the track, tabs projecting downwardly from the top of said framework towards the track, and inwardly from each side of said framework towards the track, said tabs being independently movable on said framework and normally occupying a position transverse to the track, means for indicating at said operator's station the tabs displaced by cars passing through said framework, and means controlled at said operator's station for returning displaced tabs to their normal position.

15. A railway clearance tower comprising a framework bridging a track, said framework including an operator's station above the track, a group of tabs projecting downwardly from the top of said framework towards the track, an additional group of tabs projecting inwardly from each side of said framework towards the track, said tabs being independently movable on said framework, and means for indicating at said operator's station the particular group wherein tabs have been displaced by contact with cars passing through said framework, and means for indicating at said operator's station the tabs of such group which have been displaced.

16. A railway clearance tower comprising a framework bridging a track, said framework including an operator's station, a series of independently movable tabs projecting inwardly from said framework and normally aligned in a vertical plane with their free ends defining a clearance diagram, means responsive to the displacement of a tab, incident to the passage of a car exceeding the clearance limits of said diagram through said framework, for producing a signal at said operator's station, means controlled from said operator's station for rotating said tabs collectively thereby to re-align displaced tabs, and means responsive to such collective rotation of the tabs for indicating at said operator's station the location of the tabs which have been displaced.

MARTIN W. CLEMENT.
RUDOLPH L. KLEINE.
JOHN W. ROWLAND.