This invention relates to a track gauging device.

An object of the invention is to provide a device that can be disposed on the railroad tracks, to be run over the rails at any desired speed, and which is provided with means for automatically indicating and registering any defect in the tracks, either in the form of spread rails or sunken rails.

A further object concerns the provision of a device in which the above mentioned object is achieved with a minimum number of simple, compact, strong parts requiring a minimum of attention and operation on the part of the workmen and requiring a minimum of time and labor to keep it in adjustment and repair.

The invention is illustrated in the drawings, of which—

Figure 1 is a plan view of the device;
Figure 2 is an elevation thereof;
Figure 3 is a longitudinal vertical section taken on the line 3—3 of Figure 1;
Figure 4 is a vertical transverse section taken on the line 4—4 of Figure 3;
Figure 5 is an enlarged partial end section taken in a horizontal plane showing the means for indicating when the rails have spread; this section is taken on the line 5—5 of Figure 6;
Figure 6 is an elevation of the same portion of the device as shown in Figure 5;
Figure 7 is an elevation with certain parts in section taken through the center of the device showing the means for indicating a variation in level of the rails;
Figure 8 is a vertical section taken on the line 8—8 of Figure 9 showing the valve construction;
Figure 9 is a horizontal section taken on the line 9—9 of Figure 8.

I wish it to be understood that in describing and illustrating a specific form of my apparatus that I do not intend to be limited to the particular combination and arrangement of elements shown, nor to the character of materials employed, any variation in the combination and arrangement of the elements and in the character of the materials employed being permissible so long as the same inventive idea is involved.

In its general aspect, the invention comprises a support or frame mounted on wheels adapted to roll over a railroad track.

At least one of the wheels is slideable on its shaft, and means are provided tending to move it outwardly at all times. In conjunction with this means, I provide indicating and registering devices, so that whenever the device rolls over a portion of the track along which the rails have spread the wheels will automatically move outward and the indicating and registering devices will come into play to denote this condition.

I also provide means whereby any variation in the level of the track will cause an indication, preferably in the form of a signal, so that the workmen can note this fact as it is thus indicated to them. Preferably, the indicating means is electrically constructed devices for ringing a bell under the desired circumstances, and the registering means is an apparatus including colored fluid automatically released from a tank to drop onto the tie whenever a valve actuating mechanism is brought into play by the variation from normal of the track condition.

In the preferred form of the invention as shown in the drawing, I provide a frame. This frame is formed of spaced bars 10 and 11 connected at their ends to journal boxes 12 and 13. In these journal boxes, shafts 14 and 15 are mounted. Wheels 16 and 17 are mounted on these respective shafts. The wheel 18 at least is mounted to turn on its shaft. This wheel is mounted on a sleeve 18 and fixed thereto. The end of the shaft 14 projects through the wheel into the space formed within the flange of the wheel. Against the rear face of the wheel is mounted a grooved pulley 19. This pulley is mounted on the rear end of the sleeve 18. A forked lever 20, pivoted at 21, embraces the shaft back of the pulley 19. This lever is connected to an arm 22, to which is connected a spring 23, the other end of the spring being connected to the journal casing 12. The pivot shaft 21 is supported from a bracket arm 24 connected to the journal casing 12. The spring 23 tends to force the forked lever 20 against the pulley 19 to hold the wheel 16 outwardly as far as the rail will permit it to move.

Surrounding the shaft back of the pulley 19 is a collar 25 adapted to slide along the shaft 14 and held from rotation thereon by means of a key 26. This collar is provided with oppositely disposed finger arms 27 and 28, the ends of which project into the groove in the pulley 19. A spring finger 29 is connected to one of these arms, such as 28, and
is adapted to engage with a pivoted switch lever 30. The switch lever 30 is supported from the journal casing 12 by means of an arm 31. The outer end 32 of the switch lever 30 is provided with a contact member 33 connected with a circuit wire 34. This contact member is adapted to engage with the contact member 35 connected to a circuit wire 36 and mounted on a bracket plate 37 supported from the journal casing 12. The members 30 to 37 are all mounted on a plate 38 provided with slots 39 and 40 and adjustably disposed against the side of the journal casing 12 so that all these elements can be moved along the face of the journal casing 12 to effect a desired adjustment so that the time of their operation can be varied in a predetermined manner. As shown in Figure 1, the wire 34 is connected to a bell 41, and the wire 36 is connected to a battery 42, the other side of which is connected by a wire 43 to the other side of the bell 41. In this manner, therefore, whenever the rails are spread beyond the normal distance, the spring 23 will, through the yoke lever 20, force the wheel 16 outwardly, and if this movement of the wheel amounts to more than the predetermined distance, the end of the spring 29 will move past the pivot point of the switch lever 30 to a position such as shown in Figure 6 and will cause the contact members 33 and 35 to engage, whereby the bell 41 is rung, indicating the spread of the rails beyond a safe amount.

In order to indicate a variation in the level of the rails, the following mechanism is provided:

Disposed in the center of the bars 10 and 11 forming the frame, and preferably mounted centrally thereof, are a pair of bracket plates 44 and 45. Pivotedly supported between said plates is a curved weighted element 46 having upwardly curved spaced end portions 47 and 48. Arms 49 and 50 pivoted between the plates 44 and 45 rest on the end of the curved weighted element 46. A spring member 51 adjustable on a stem 52 by means of a threadable nut 53 is adapted to be pressed against the arms 49 and 50 to force them against the ends 47 and 48 with any desired degree of pressure. The stem 52 is secured to a suitable part of the frame of the device. By means of this pressure adjustment, the movement from the normal position of the weighted element 46 can be resisted to any desired degree. The weighted element is provided with oppositely extending levers 54 and 55 respectively carrying contact members 56 and 57, to which wires 58 and 59 are connected. These contact members are adapted to engage respectively with contact members 60 and 61, to which wires 62 and 63 are respectively connected. These contact members 60 and 61 are mounted on insulating plates 64 and 65 fastened to the bottom of the journal casings 12 and 13. As the weighted element 46 varies its relative position with respect to the frame, one or the other pair of contact members are brought into engagement if the movement is sufficiently great and the bell 41 is rung again, the wires being connected in circuit, as shown in Figure 1. The spring pressure against the weighted element 46 can be adjusted so that minor vibrations of the truck or frame will not cause any ringing of the bell.

For the purpose of registering on the track, preferably by means of colored fluid, the following mechanism is provided:

The inner end of the sleeve 18 is provided with a plate 66 lying against the inner face of the wheel in the space within the flange of the wheel. This plate is provided with a dog or projection 67 which is adapted to rotate with the wheel. In the normal position of the wheel for a standard gauge or truck, this dog rotates without encountering anything, but when the wheel is forced outwardly in the manner above described, the dog is adapted to encounter any one of a plurality of projections, such as 68, on a star wheel 69. The star wheel 69 has fastened to its rear face dependent fingers 70. These fingers depend into a groove formed in the sleeve 71. This sleeve is fastened by means of a key 72 to the shaft 14 and can, therefore, slide on the shaft, but will not rotate around it. Mounted on the sleeve 71 is a tank 73 containing suitable coloring fluid 74. This tank has a discharge passage 75. This passage is controlled by a valve mechanism.

The star wheel is provided with projections, such as 76, which, as the star wheel is moved by the engagement of the dog 67 with the projection 68, will encounter the upper end of a valve lever 77. This valve lever is connected to a valve plug 78. The lower end 79 of the lever 77 is engaged on opposite sides by springs 80 and 81 suitable fastened against the sides of the tank; therefore, as long as the dog 67 engages with one of the projections 68, the star wheel will be rotated and, as each projection 76 thereon engages the upper end of the valve lever 77, it will move the valve plug 78. This plug is provided with a passage 82 adapted, when moved, to align fluid passages 83 and 84 in a valve block 85 fixed within a casing 86 and fastened by means of bolts 87 to the tank 73. The passages 83 and 84 are connected respectively to the interior of the tank and to the discharge passage 75. Therefore, the instant wheel 36 is moved outwardly beyond a predetermined position, the valve mechanism is actuated to cause fluid to flow out of the tank onto the track. It is to be understood that this disposition of the
fluid discharge means is only one manner in which it may be located and operated. It is possible to locate the tank elsewhere on the frame. It may be supported between the wheels and actuated by any suitable mechanism similar to the one described. I have not shown such a disposition, but it is well within the scope of my idea to locate the tank at any desired point and operate it to discharge fluid in any desired manner. This frame and the wheels and the apparatus above mentioned may form part of a separate vehicle or may be attached to a regular car. Preferably, it forms part of a special truck or small car adapted to run over the road and inspect and test its condition. The device is simple, the parts are compact, strong and require very little care and attention to keep them in operative condition at all times. It will be observed that when the wheel moves outwardly, not only is an indication effected by means of the bell 41, but a registration is effected by means of the colored fluid discharged from the tank.

Having thus described my invention, I claim:

1. A track gauging device which comprises a frame having wheels on its opposite ends, a weighted element pivoted to the frame adapted to swing in a plane transverse to the track when said wheels engage the rails of a track, a signal circuit closing means associated with the element adapted to energize the signal as the weighted element changes its relative position with respect to the frame due to the variation in track level, and means for preventing minor vibrations of the frame from affecting the movement of the weighted element.

2. A track gauging device which comprises a frame having wheels on its opposite ends, a weighted element pivoted to the frame adapted to swing in a plane transverse to the track when said wheels engage the rails of a track, a signal circuit closing means associated with the element adapted to energize the signal as the weighted element changes its relative position with respect to the frame due to the variation in track level, means for preventing minor vibrations of the frame from affecting the movement of the weighted element, one of said wheels being slidable on said frame, means tending normally to force said wheel against the rail, and means actuated when the wheel slides from normal position more than a predetermined amount to deposit colored fluid on the track and to sound a signal.

3. A track gauging device comprising a frame having shafts mounted thereon, at least one of said shafts being fixed to the frame, wheels mounted on shafts, the wheel mounted on the fixed shaft being slidable and rotatable thereon, yieldable means for urging said slidable and rotatable wheel outwardly, said slidable and rotatable wheel having a flange around a portion of its shaft, a reservoir for marking fluid fixed to the portion of the fixed shaft embraced by the flange of its wheel, said reservoir having discharge means extending outside of the flange, a valve controlling said discharge means and valve operating mechanism actuated from the slidable and rotatable wheel when it slides outwardly a predetermined distance.

4. A track gauging device comprising a frame having shafts mounted thereon, at least one of said shafts being fixed to said frame, wheels mounted on said shafts, the wheel mounted on the fixed shaft being slidable and rotatable thereon, a grooved pulley fixed to said slidable and rotatable wheel, a collar slidable on the fixed shaft fingers fixed to the collar having inturned ends fitting in the groove of the pulley, a lever having a fulcrum on the frame and engaged with said fixed shaft between the pulley and collar, spring means connected with the lever for biasing the same to urge the wheel outwardly, and means operable by the movement of the slidable wheel outwardly beyond a predetermined amount to effect an indication.

5. A track gauging device comprising a frame having shafts mounted thereon, at least one of said shafts being fixed to said frame, wheels mounted on said shafts, the wheel mounted on the fixed shaft being slidable and rotatable thereon, yieldable means for urging said slidable and rotatable wheel outwardly, an electric signal, a circuit in which the signal is incorporated, circuit making and breaking means incorporated in the circuit and including a rockable element having a fulcrum on the frame, and a spring arm connected with the wheel to partake of the sliding movement thereof and shiftable along the rockable element to engage it on one side and then the other of its fulcrum depending upon the slidable adjustment of the wheel.

6. A track gauging device comprising a frame having shafts mounted thereon, at least one of said shafts being fixed to said frame, wheels mounted on said shafts, the wheel mounted on the fixed shaft being slidable and rotatable thereon, a grooved pulley fixed to said slidable and rotatable wheel, a collar slidable on the fixed shaft, fingers fixed to the collar said fixed shaft having inturned ends fitting in the groove of the pulley, a lever having a fulcrum on the frame and engaged with and between the pulley and collar, spring means connected with the lever for biasing the same to urge the wheel outwardly and means operable by the movement of the slidable wheel outwardly beyond a predetermined
amount to effect an indication and including an electric signal, a circuit therefor, a circuit maker and breaker incorporated in said circuit and having a rockable element fulcrummed on the frame, and a spring arm fixed to one of the fingers and slidably engaged with the rockable element.

7. A track gauging device which comprises a frame having wheels on its opposite ends, a weighted element pivoted to the frame adapted to swing in a plane transverse to the track when said wheels engage the rails of the track, a signal circuit closing means associated with the element adapted to energize the signal as the weighted element changes its relative position with respect to the frame due to the variation in track level, and means for preventing minor vibrations of the frame from affecting the movement of the weighted element, and including pivoted arms engaging the weighted element, a spring member engaging the arms, and adjustable means for tensioning the spring member.

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