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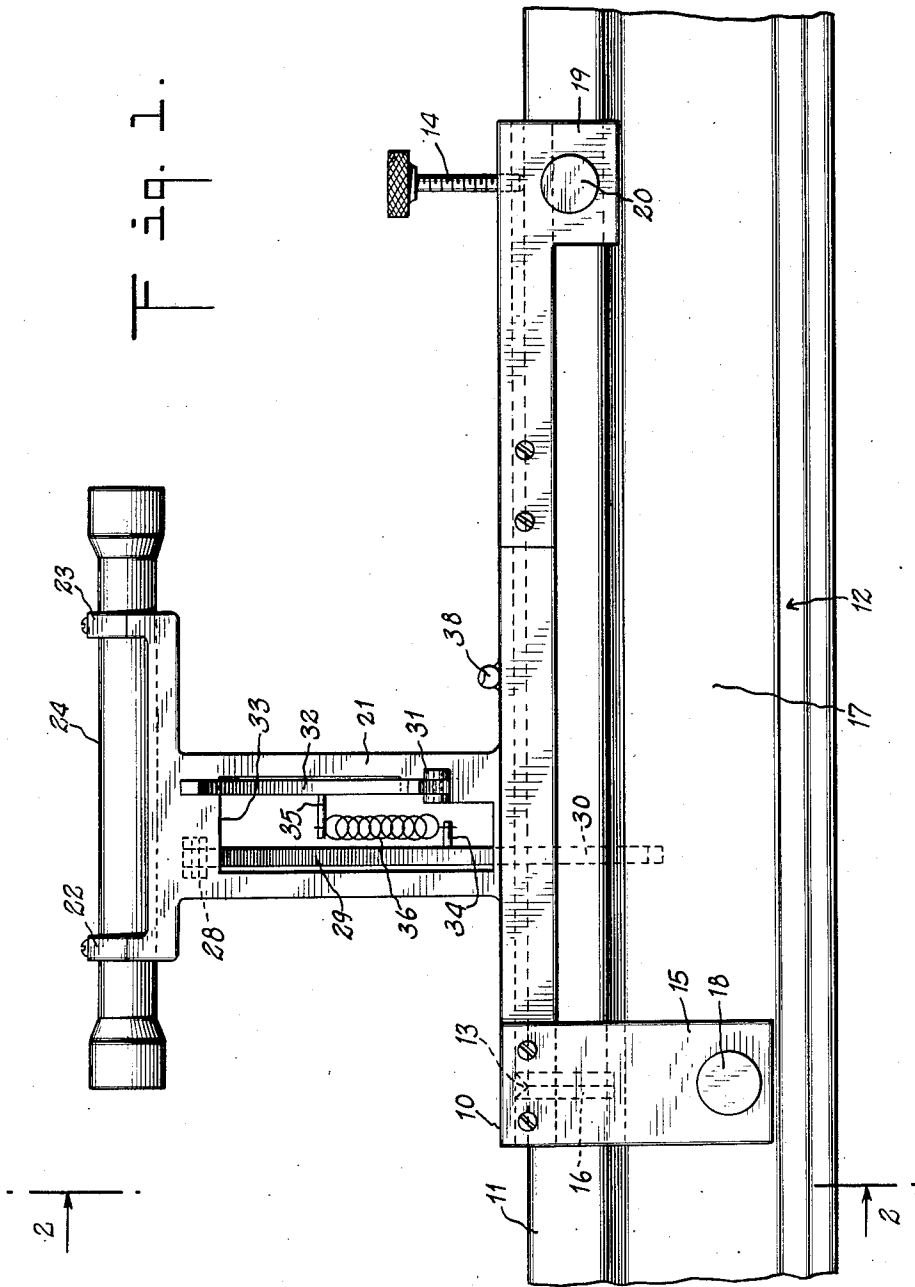
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TRACK ALIGNING TELESCOPE AND MOUNTING

Filed March 22, 1951

3 Sheets-Sheet 1



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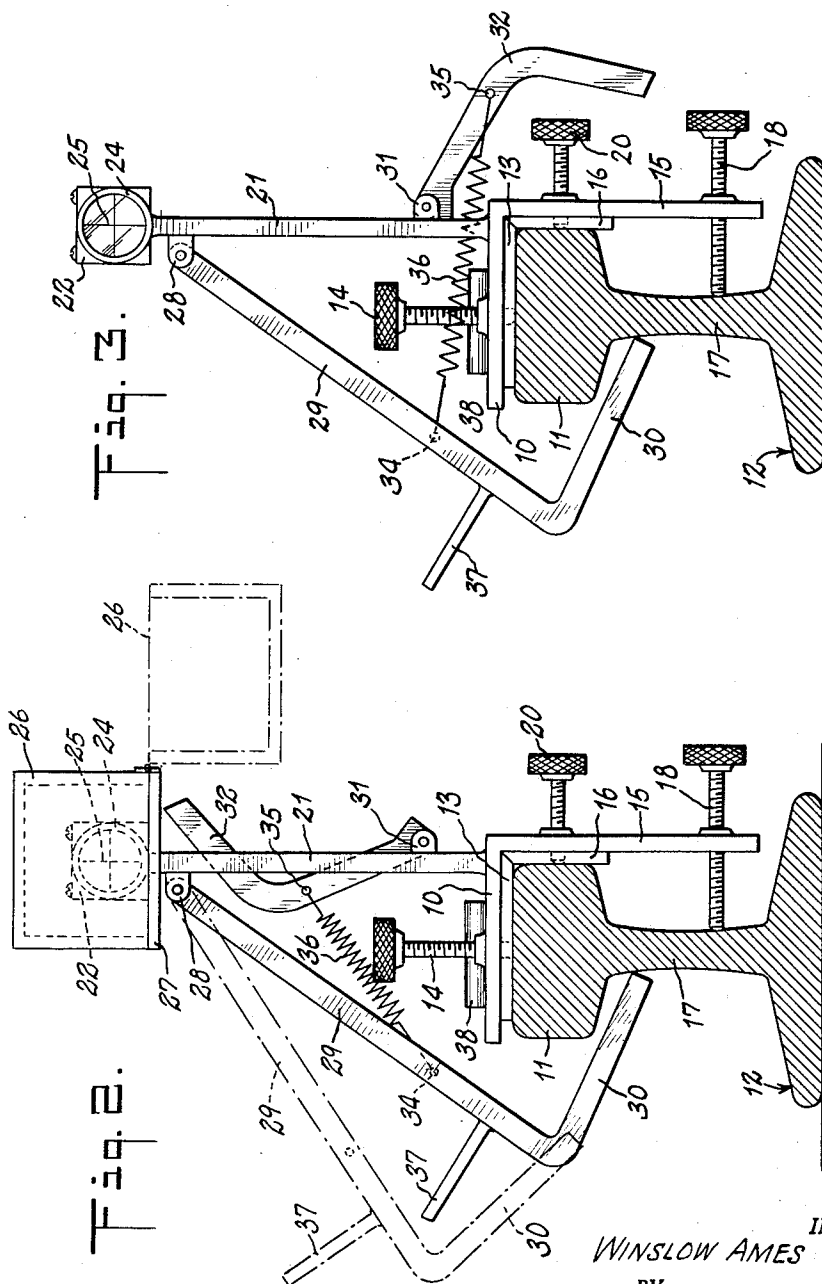
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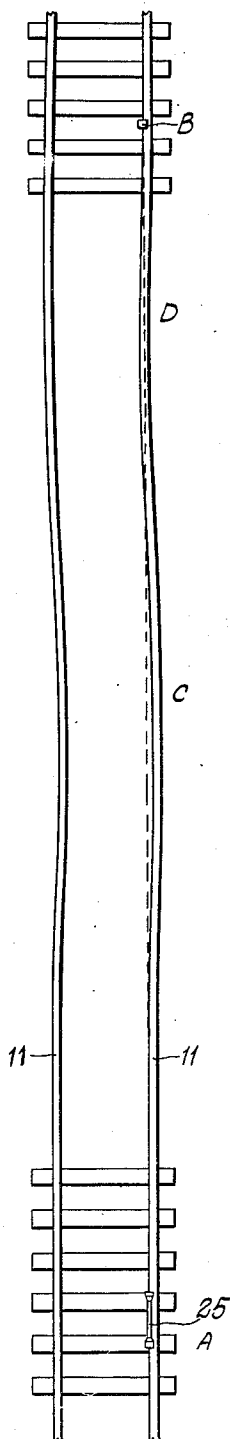
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Fig. 4.



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TRACK ALIGNING TELESCOPE AND MOUNTING

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2 Claims. (Cl. 33—60)

My present invention relates to a mounting for a track aligning telescope which may be quickly and easily mounted on a track to bring the cross wires of the telescope into accurate and correct position relative to the gage line of the head of the rail. The invention also enables the mounting to be adjusted to fit rails of various dimensions.

When the telescope of my invention is mounted on a rail so that its cross wires coincide with similar cross lines on a target similarly mounted at a distance on the track, any deviation in the vertical alignment of the track between the telescope and the target can be detected by placing on the track at successive positions between the telescope and the target a spot board having a horizontal line at the same level above the track as the cross wires of the telescope and the cross lines of the target. The track may then be raised or lowered to bring it into accurate vertical alignment. Similarly in aligning the track a spot board having a vertical line aligned with the gage line of the rail may be placed at successive intervals between the telescope and target and sidewise deviations in the alignment detected and corrected by a sidewise shifting of the track. The telescope may be of the type and construction such as are used on rifles and guns which do not require adjustment and focusing.

The mounting of my invention comprises a base plate to be placed on the rail and supported near one end with a knife edge to rest on the top of the rail and a face plate depending from said base plate to face against the side of the rail head at the gage line. The face plate is spaced from the side of the rail head by a knife edge or a narrow strip, preferably at the sighting end of the telescope, and a pair of adjusting screws, one to contact the web of the rail below the knife edge and the other to contact the side of the rail head at a distance from the knife edge. The plate is held against the rail by a spring pressed clamp bearing on the side of the rail web opposite the face plate within or at approximately the center of the triangle defined by the knife edge and adjusting screws. The clamp is readily released by a lever mechanism. The telescope is mounted above the rail head by a bracket or extension on the base plate. It may be at any selected distance above the top of the rail but preferably at a distance of eight inches or ten inches, which are the usual distances of the target cross lines, and may be conveniently sighted by the user in a prone position.

A spirit level is also provided to lie horizontally above and transversely of the rail head so that when it is level the telescope will be positioned with its vertical cross wire aligned with the gage line of the rail.

The horizontal cross wire of the telescope may be brought into alignment with the horizontal line of the target by an adjusting screw on the base plate bearing on the top of the rail head at a distance from the knife edge. The clamping levers comprise one pivoted on the bracket at a distance above the rail head and extending downwardly and inwardly to the face of the web of the rail opposite the screws, a second lever pivoted below the first or upper lever and tilting upwardly or downwardly, and a spring connected to the levers to pass the pivotal point of the lower one as a dead center.

The various features of the invention are illustrated, by way of example, in the accompanying drawings in which

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Fig. 1 is a side elevation of a telescope and mounting embodying a preferred form of the invention;

Fig. 2 is an end view of the telescope and mounting showing the parts in position for clamping on a rail, the clamping lever being shown in full lines in position to be clamped to the rail and in broken lines in the position free from the rail;

Fig. 3 is an end elevation similar to that of Fig. 2 showing the position of the levers when the mounting is clamped to the rail;

Fig. 4 is a plan view of a track showing the method of use of the invention in aligning the track.

Referring to Figs. 1, 2 and 3, the mounting device comprises a horizontal base plate 10 supported and paced from the head 11 of a rail 12 by a knife edge or triangular prism 13, and near the opposite end by an adjusting screw 14.

Extending downwardly from one edge of the plate 10 at the end which bears the knife edge 13 is a face plate or bracket 15 spaced from the side face of the head 11 by means of a narrow plate or knife edge 16. The lower end of the plate 15 is spaced from and supported by the web 17 of the rail by means of an adjusting screw 18. Similarly at the opposite end of the plate 10 is a side plate or flange 19 adjustably spaced from the rail head by means of an adjusting screw 20.

Extending upwardly from the plate 10 is a vertical plate or bracket 21 having at its upper end a pair of clamps 22 and 23 for supporting a telescope 24 having cross wires 25. The telescope may be enclosed in a box 26 hinged to a supporting plate 27 on the plate or bracket 21 so that it may be swung to the full line position of Fig. 2 to enclose and protect the telescope when not in use, or swung to position shown in dotted lines, in which position it will be out of the way and permit free use of the telescope.

The bracket 21 is positioned between the plates 15 and 19 preferably nearer to the plate 15 than to the plate 19. Near its upper end it carries a sidewise projecting pivot lug 28 on which is pivoted a hook shaped lever 29 extending downwardly and having an end 30 bent inwardly to contact with the web of the rail at approximately the mid point of the triangular space defined by the adjusting screws 18, 20, and the knife edge 16.

Also provided on the opposite side of the vertical plate 21 and near the lower part thereof is a pivot lug 31 on which is pivoted a lever 32. The lever 32 is bent to form an elbow and the plate 21 is provided with an opening 33 into which the elbow portion of the lever may project when the lever is tilted to its uppermost position.

The levers 29 and 32 are provided with sidewise projecting pins 34 and 35 between which is tensioned a coil spring 36. When the lever 32 is in the position shown in Fig. 2 there is but slight tension on the spring 36 and, therefore, the lever 29 may be moved to the position shown in dotted lines free of the rail head so that it may be lifted and removed. A handle 37 is provided on the lever 29 to enable it to be readily tilted.

When the lever 32 is tilted to the position shown in Fig. 3 the distance between the pins 34 and 35 is increased putting the spring under tension and forcing the end 30 of the lever 29 against the web 17. Moreover, inasmuch as the spring 36 is below the pivotal point 31, or past dead center, it cannot spring the lever 32 upwardly to the position in Fig. 2.

When clamped as shown in Fig. 3, the end 30 of the lever 29 exerts a force against the web 17 at a point within the area defined by the knife edge 16 and adjusting screws 18 and 20 pulling these points of contact 16, 18 and 20 tightly against the rail.

A spirit level 38 is mounted transversely on the top of the plate 10. By rotating the screw 18 the lower end of the downwardly extending plate 15 is moved inwardly and outwardly tilting the plate 10 to level the latter. The telescope and its bracket are so fixed relative to plate 10 and the vertical knife edge or plate 16 that when the plate 10 is level and the knife edge or plate 16 is tightly against the gage side of the rail head, the vertical cross wire 25 will be in vertical alignment

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with the gage side face of the rail head 11. The other end of the plate 10 may be adjusted vertically or sideways to bring the cross wires 25 into exact alignment with cross markings on a target mounted at a distance on the rail and with its cross lines or markings in alignment with the gage face of the rail. Vertical adjustment is obtained by an appropriate movement of the screw 14, and sidewise by an appropriate movement of the screw 20. When thus adjusted any intermediate part of the rail between the telescope and the target may be brought into accurate vertical and sidewise alignment. In adjusting the level of the intermediate parts of the track a gage board is placed across the rails and is provided with a horizontal line at the same elevation above the rail head as that of the horizontal cross wire 25. If the track is too low at the place on which the gage board is placed this will be immediately apparent and the track may be raised. Similarly if a target be placed at an intermediate point having a vertical line in alignment with the gage face of the rail, any deviation will be immediately apparent and the rail may be shifted to correct this deviation.

The manner of use is illustrated in Fig. 4 in which the telescope is mounted at the station A and the target at the station B, the dotted line shows the position of alignment. An intermediate target at the place C would indicate a deviation to the right which would be corrected by movement of the rail in the opposite direction. Similarly a target at the point D would indicate a deviation to the left which would be corrected by movement of the rail in the opposite direction. In a similar manner low points and high points at intermediate parts of the track could be immediately detected.

The telescope 24 is to be mounted with its horizontal cross wire at the same height as the horizontal cross line on the target, which is generally at a distance eight to ten inches above the top surface of the rail. At this height the telescope may be sighted by the user in a prone position, similar to the sighting of a gun or rifle.

The mounting device may be very quickly and easily clamped to a rail by placing it in position thereon and depressing the lever 32, and may be as readily released by throwing the lever 32 upwardly. The adjusting screw 18 enables the device to be adjusted to rails of different widths, or to rails the heads of which have been worn.

The telescope being of the type usually on gun sights requires no adjustment.

Having described my invention, what I claim is:

1. A mounting for a track aligning telescope which comprises a base plate having a knife edge to rest transversely on the head of a rail, an adjusting screw threaded

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vertically through said base plate at a distance from said knife edge and a telescope holding bracket extending upwardly from said base plate to hold a telescope longitudinally of a rail, a face plate extending downwardly from said base plate and having a knife edge to lie vertically against the head of said rail and having a pair of adjusting screws to contact the side of a rail, one below said vertical knife edge and the other spaced horizontally from said vertical knife edge to form a three point side support for said mounting, a telescope mounted on said bracket, said telescope having a vertical cross-wire and a horizontal cross-wire, said vertical cross-wire being aligned with said vertical knife edge, and a clamp positioned to bear on the opposite side of said rail within the area of said three point support.

2. A mounting for a track aligning telescope which comprises a base plate having a knife edge to rest transversely on the head of a rail, an adjusting screw threaded vertically through said base plate at a distance from said knife edge and a telescope holding bracket extending upwardly from said base plate to hold a telescope longitudinally of a rail, a face plate extending downwardly from said base plate and having a knife edge to lie vertically against the head of said rail and having a pair of adjusting screws to contact the side of the rail, one below said vertical knife edge and the other spaced horizontally from said vertical knife edge to form a three point side support for said mounting and a clamp comprising a bearing lever pivoted to said bracket and tiltable downwardly to bear against the face of the rail opposite the area of said three point support, a tensioning lever pivoted below the pivot of said bearing lever and tiltable in a vertical direction, and a spring connected between said bearing lever and said tensioning lever to draw said bearing lever against said rail when said tensioning lever is swung to bring said spring past the pivotal point of said tensioning lever.

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