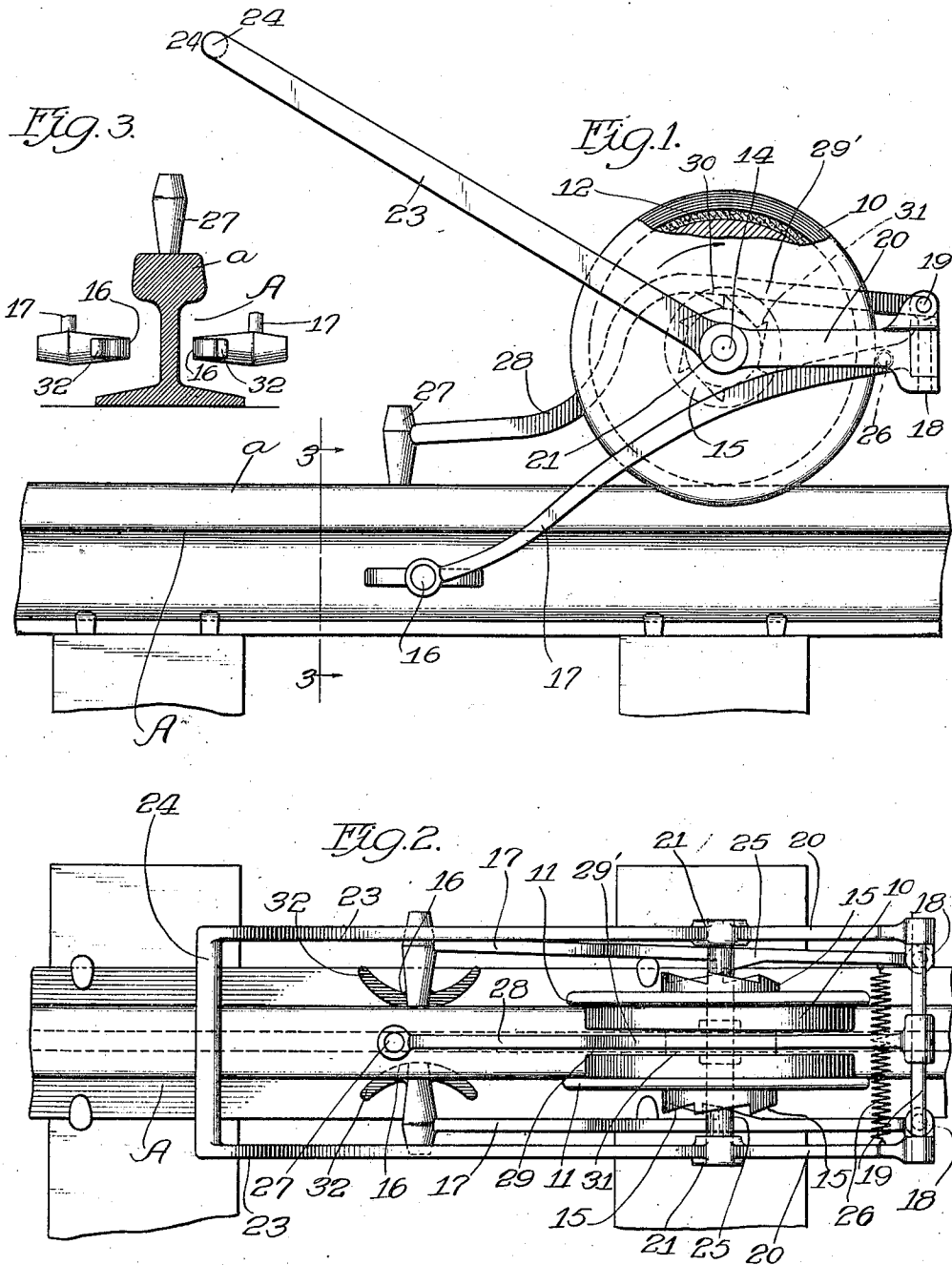


H. Y. ARMSTRONG.
RAIL TESTING DEVICE.
APPLICATION FILED JULY 27, 1914.

1,130,657.

Patented Mar. 2, 1915.



Witnesses:
Harold C. Bennett.
Bertrude C. Dowle.

Inventor:
Harry Y. Armstrong.
By William H. Hall
Atty.

UNITED STATES PATENT OFFICE.

HARRY YARRINGTON ARMSTRONG, OF SPRINGFIELD, MASSACHUSETTS.

RAIL-TESTING DEVICE.

1,130,657.

Specification of Letters Patent.

Patented Mar. 2, 1915.

Application filed July 27, 1914. Serial No. 853,536.

To all whom it may concern:

Be it known that I, HARRY Y. ARMSTRONG, a citizen of the United States, and a resident of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Rail-Testing Devices; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to a novel railroad rail testing device, in the nature of a plurality of hammers for striking the rail to ascertain whether or not a flaw exists therein.

One of the objects of the invention is to provide a simple and economical device by which all parts of the rail may be sounded to detect flaws therein, and the device herein shown for effecting said object is so arranged as to provide for the striking by a series of hammers of the two sides and the top of the rail, the hammers being arranged to operate in sequence, so that the rail is struck by one hammer at a time. In this manner, and assisted by an experienced ear, the character of all parts of the rail may be accurately determined. The series of hammers will be arranged to progressively strike the rail at comparatively short distances apart so as to thereby provide for an efficient rail inspection. A further object of the invention is to provide means to give a quick sharp blow of the hammers on the rail, whereby the sound effect of the hammer is not deadened or otherwise modified by a lingering of the hammers on the rail.

A further object of the invention is to provide a novel device in the nature of a wheeled carriage for carrying the series of hammers and an operating mechanism for imparting striking motion thereto.

The invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a side elevation of a rail sounding device embodying my invention, showing the same in position on a railroad rail. Fig. 2 is a plan view thereof. Fig. 3 is a cross section on the line 3—3 of Fig. 1.

As shown in the drawings, 10 designates a wheel adapted to travel on a rail A to be

tested. Said wheel has a tread that is preferably flanged at both sides thereof with flanges 11, 11 of a distance apart to snugly fit over the head *a* of a standard rail. The movement over the rail should be noiseless so as not to interfere with the sound effects of the hammers. The tread of the wheel in contact with the rail may, therefore, be composed of a cushioning material, such as a strip of rubber 12, or the like, shown in Fig. 1 to thereby render noiseless the movement of the wheel over the rail.

Extending axially through the wheel and projecting from opposite sides thereof, and preferably turning with the wheel, is a horizontal shaft 14. Carried also by the wheel and said shaft and located axially of the wheel are two bosses or projections which are provided with annularly disposed, laterally directed ratchet teeth 15, 15.

16, 16 designate side striking hammers arranged one at each side of the machine, and adapted to strike the two sides of the web of the rail. They are carried by the rear ends of arms 17, 17, which latter are pivoted at their forward ends, by means of vertical pivots or trunnions 18, 18, to a horizontal transverse frame member 19 located at the front of the machine. Said frame member 19 is supported at its ends on the forward ends of side frame members 20, 20, which latter have bearings 21, 21 at their rear ends, in which the wheel shaft 14 is rotatively mounted. The said frame members 20 are shown as continued rearwardly and upwardly to constitute handle bars 23, 23, which are connected at their rear ends by a cross member or hand bar 24, to constitute a handle by which the machine may be pushed forwardly. The said hammer arms 17, 17 are provided on their inner sides opposite to the ratchet teeth 15 with projections 25, 25 adapted to engage the ratchet teeth 15 and to be thereby swung on their pivots during the rotation of the latter. The arms 17, 17 are pressed inwardly to hold said projections 25, 25 against said ratchet teeth by a spring pressure, herein shown as afforded by a spiral contractile spring 26 which extends between and is attached to the forward ends of said hammer arms.

27 designates a top striking hammer which is carried by the rear end of a hammer arm 28 which extends forwardly through the space 29 between the two members of the wheel 10, and is pivotally mounted at its

forward end on the forward transverse frame member 19. The said lever 28 extends rearwardly in a substantially horizontal direction from its pivot support 19 through the wheel interspace 29, and thence curves downwardly and rearwardly toward its hammer supporting end. The upper horizontal portion 29' of the arm is provided with a projection 30 (shown in dotted lines on Fig. 1) to engage the teeth of a ratchet wheel 31 mounted on the shaft 14 and which serves to alternately raise the top striking hammer and allow it to fall on the rail. The spacing of the ratchet teeth 31 relatively to the ratchet teeth 15 is such that the top striking hammer is allowed to fall upon the rail between the striking operations of the side hammers 16.

In order that the side striking hammers may readily pass projections at the sides of the rail, such, for instance, as fish plates, when in their innermost positions, they are provided at their forward and rear ends, respectively, with outturned or curved guiding or deflecting portions 32, 32 as best shown in Fig. 2, said portions serving to deflect the hammers outwardly when striking such projections.

In practice, the side hammers may be so arranged that when they occupy an intermediate position between their innermost and outermost limits of motion they will, if at such time be lifted vertically, clear the head *a* of the rail so that by lifting of the hammers through the handle bars 23, the hammers may be raised free from the rails. If desired, however, the side striking hammer arm may be adjusted with a less range of movement, in which event the hammer carrying ends of the said arms may be manually spread apart to allow them and the attached hammers to clear the rails and to be lifted above the plane of the rail head.

In operation, the device is adjusted to the rail in the manner indicated in Fig. 1. It is pushed forwardly over the rail by an operator standing in rear thereof and grasping the hand bar 24. The ratchet teeth 15, 15 and 31 act on the hammer arms and serves to move them outwardly away from the rail, and spring or gravity force serves, when the arms are released from the ratchet teeth, to bring the hammers successively in sharp contact against the rail. The hammers do not rest against the rail, due to the configuration of the ratchet notches, thus giving to the hammers a quick sharp blow, the sounding effect of which is not dampened or deadened by continued pressure of the hammers against the rail.

By the use of the machine described, it is possible to sound a railroad rail at closely spaced points along its length and by means which permits a single operator to travel over a much greater rail length than is pos-

sible by the use of an ordinary hammer. Moreover, the reliability of the work is to a greater extent assured, inasmuch as the machine herein shown cannot pass over the rail without proper striking contact of the same, and, therefore, cannot slight the work.

It is to be understood that the hammers may be controlled by other means than herein shown to impart striking movement thereto, and, so far as the broader features of the invention are concerned, it is not limited to the structural details herein shown.

I claim as my invention,—

1. A rail testing device comprising an organized unitary series of hammers with means for alternately operating them, and a support therefor adapted to travel on the rail to be tested.

2. A rail testing device comprising an organized unitary series of hammers with actuating means therefor and supporting means for said hammers adapted to travel along the rail to be tested.

3. A rail testing device comprising side and top rail striking hammers with means to actuate the hammers, and a wheeled support for said hammers adapted to travel on the rail to be tested.

4. A rail testing device comprising a wheeled frame adapted to travel on the rail to be tested, arms pivoted thereto to swing toward and from the sides of the rail and carrying side striking hammers at their free ends, and an arm carried by the frame to swing vertically toward and from the rail and carrying a top striking hammer, with means controlled by the forward movement of the device to operate said hammers.

5. A rail testing device comprising a frame, arms pivoted thereto to swing toward and from the sides of the rail and carrying side striking hammers at their free ends, and an arm carried by the frame to swing vertically toward and from the rail and carrying a top striking hammer with means controlled by forward movement of the device to alternately operate said hammer arms.

6. A rail testing device comprising a wheeled frame to travel along the rail to be tested, hammers carried thereby, and controlling means acting on the hammers to successively strike them against the rail.

7. A rail testing device comprising a wheel to travel on a rail and provided with an axle, a frame supported by said axle, side hammer arms pivoted to said frame, a top hammer arm pivoted also to said frame, rail striking hammer carried by said arms, a push bar extending rearwardly from said frame and means to alternately actuate said arms.

8. A rail testing device comprising a wheel to travel on a rail and provided with

an axle, a frame supported by said axle, side hammer arms carrying rail striking hammers pivoted to said frame to swing toward and from the rail, spring means tending to force said arms toward the rail, means to force the side hammer arms away from the rail against the action of the spring means, a top hammer arm carrying at its free end a top rail striking hammer and pivoted also to the machine frame and means to raise said arm to allow it to fall by gravity.

9. A rail testing device comprising a wheel to travel on a rail and provided with an axle, a frame supported by said axle, side hammer arms pivoted to said frame, and carrying rail striking hammers, a top hammer arm pivoted also to said frame, and carrying a rail striking hammer, means carried by the wheel to control the striking movement of said arms, and means whereby the machine may be propelled forwardly.

10. A rail testing device comprising a wheel to travel on a rail and provided with an axle, a frame supported by said axle, side hammer arms pivoted to said frame to swing toward and from the rail, and carrying rail striking hammers, spring devices to

swing said arms toward the rail, a top hammer arm pivoted also to the frame to swing by gravity toward the top of the rail, and carrying rail striking hammers, and ratchet teeth carried by said wheel to alternately swing said arms away from the rail, for the purpose set forth.

11. A rail testing device comprising side and top rail striking hammers, with means to actuate the hammers, and with means to move them along a rail, said side striking hammers being formed with outwardly curved front and rear deflecting horns.

12. A rail testing device comprising a wheeled frame adapted to travel along a rail, a rail striking hammer mounted on the frame and means controlled by the wheel of said frame to actuate the hammer to cause it to strike the rail.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 14th day of July, A. D. 1914.

HARRY YARRINGTON ARMSTRONG.

Witnesses:

F. G. NEAL,

H. E. HARTWELL.