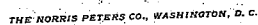


982,254.

2 SHEETS—SHEET 1.



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2 SHEETS--SHEET 2.



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RAIL-STRAIGHTENER.

982,254.

Specification of Letters Patent.

Patented Jan. 24, 1911.

Application filed October 27, 1910. Serial No. 589,464.

To all whom it may concern:

Be it known that I, JOHN CONTOS, a citizen of the United States, residing at Grand Island, in the county of Hall and State of Nebraska, have invented a new and useful Rail-Straightener, of which the following is a specification.

This invention relates to metal bending machines, and more particularly to those employing a reciprocating bender which is moved by a screw; and the object of the same is to produce a portable device for truing rails which may have become displaced or bent in their use on railroads.

To this end the invention consists broadly in the use of a temporarily fixed element adapted to be seated in the road-bed between ties, a worm or screw on said element and means for turning it in either direction and a rack bar having an adjustable head at one end and pushing or pulling devices at the other end; and the invention further consists in the details of construction of parts as set forth and claimed below and as shown in the drawings wherein—

Figure 1 is a plan view of the entire machine. Fig. 2 is a side elevation showing one end as pushing one rail and the other end as connected up so that it may pull the opposite rail. Fig. 3 is an enlarged section on the line 3—3 of Fig. 2. Fig. 4 is a perspective detail of the push and pull end of the device with its nearest leg broken away. Fig. 5 is a perspective detail of the swinging screw and the ring around its nut. Fig. 6 is a section through the inner end of the actuating lever, showing the two-way ratchet device therein. Fig. 7 is a perspective detail of the yoke.

The rack bar R forming one of the principal elements of this invention is by preference a square metal bar 1 having teeth 2 set slightly obliquely across its upper edge for a worm gear or screw to be described below, and this bar is by preference made in sections 3 best seen in Fig. 2 and with tongues 4 and grooves 5 in their meeting ends whereby they can be connected, and screws or pins 6 for holding them so connected. By these means the rack bar can be elongated for extra wide gage roads or reduced in length for narrow gage roads, or parts can be replaced when they become worn or broken. The head H at one end of said bar comprises a hollow casting 10 in whose outer end is swiveled the stem 11 of a

bearing plate 12 which is of a size and shape to rest against the web of a rail, as best seen in Fig. 2, and said plate may have ears 13 from which rises a handle 14. The inner end of the casting is threaded onto a screw 15 which itself is fixed in what may be one of the small sections 3 of the rack bar, so that when the casting is turned on the screw the bearing plate 12 can be set farther out or in.

The fixed element F comprises a U-shaped channel member 20 fitting loosely beneath the rack bar, a drive point 21 carried by said member, and a hinge member 22 pivoted at 23 to one side of the channel member and carrying the worm or screw hereinafter described and which screw is thrown into engagement with the teeth of the rack bar by latching said members together. For this purpose I employ a special form of latch best seen in assembled position in Fig. 1 and in detail in Figs. 3, 5 and 7. Pivoted at 24 to one side of the latch member opposite the pivot 23 is a screw 25 on which travels a wing nut 26, and around the latter is swiveled a ring 27 having pins 28 projecting from opposite sides thereof. Upon these pins are pivoted the legs of a yoke 29 which have outturned feet 30, and on the same pins outside the legs of the yoke are pivoted hooks 31 having downturned bills 32 at one end and outturned feet 33 at the other. The hinge member 22 comprises parallel arms connected by a top bar 34 and near their ends by a cross bar 35 having in its outer edge at its center a wide notch 36 for the reception of the screw 25 and at opposite sides thereof smaller notches 37 for the admission of the hooks 31. Each side bar of this member also carries an outturned and downwardly projecting hook 38 adapted to engage over an upwardly projecting spur 39 fixed upon the channel member 20.

The construction of parts just above described is such that to assemble the fixed element F with the rack bar R the hinge member 22 is thrown back on its pivots 23, the channel member is brought under the bar, the hinge member is then thrown forward until the hooks 38 pass over the spurs 39 when the upper end 21^a of the drive point will pass inside the cross bar 35, the wing nut is then run up on the screw 25 and the latter placed in the notch 36, the yoke 29 is then turned inward over said upper end 21^a, and finally the hooks 31 are turned inward

until their bills 32 engage behind the cross bar 35. The wing nut is then turned to draw the parts together. In a reversal of this operation to disconnect the elements, the operator will first tap upon the feet 33 of the hooks so as to lift their bills out of engagement with the cross bar 35, and then if necessary tap upon the feet 30 of the yoke so as to disengage its bend from the upper end 21^a of the point, and as the hooks and yoke swing on the pivot pins 28 they pass into the notches 37. The wing nut is then turned swivelly within the ring 27 until the latter is free to disengage the large notch 36.

The screw or worm S has by preference a rather long body 40 with threads adapted to the teeth 2 of the rack bar, and the stub axles 41 of the screw are journaled in the two arms of the hinge member 22 so that its body stands under the top bar 34. One of said axles is continued outward beyond the hinge member and made angular as at 42 so as to detachably engage the hole 43 through a collar 44 which turns in the forked lower end 45 of a handle socket 46, a nut 47 holding the fork and collar in place. Within the fork of the socket is a spring 47' engaging a sector 48 carried by a latch 49 pivoted in the fork and having two feet 50, and as the latch is turned to one side the feet on that side will engage teeth 51 on the collar so that movement of the socket to and fro by a handle 53 will turn the stub shaft 42 and screw S in one direction, whereas by setting the latch opposite to the position shown in Fig. 6 the reciprocation of the handle or lever 53 will turn the screw in the opposite direction. Any well known form of two-way ratchet may be used in the forked end of the handle member, its purpose obviously being to permit the rotation of the screw in the direction desired.

The push and pull element P is located at the opposite end of the rack bar R from the head H, and its construction is preferably as follows: The rack bar is forked at its end and between the outer ends of its legs 60 on a bolt 61 is pivoted a hook 62 whose bill is adapted to be projected above the rack bar by a link 63 pivoted at 64 to the lower end of the hook and extending along within the fork, and its other end pivoted at 65 to an L-shaped wedge block 66 whose body forms a right angle at 67 which is adapted to stand within the fork or be lifted out of the same. The remote end of this block carries a loop-shaped handle 68 which in turn carries a pivoted wedge-shaped pawl 69 having a notch 70.

From the construction so far described, the hook 62 is thrown upward to engage the base of the rail as seen in Fig. 2 by projecting the link 63 outward and said link is held outward by dropping the wedge block so that its angle rests in the throat of the fork. In

this position the entire device can be manipulated to draw the rail inward, but there is nothing to prevent said rail from twisting. I have therefore provided a pair of parallel rods 72 held by eye bolts 61 and 71 passing respectively through the legs of the fork and through the rack bar back of the fork so that the rods will stand parallel with and outside of its legs, and on one of such rods is pivoted an eye 73 at one end of a clamp 74, while a screw 75 takes through the other end thereof and has a forked head 76 at its lower end adapted to engage beneath the other rod 72 and a wing nut 77 at its upper end by which it may be tightened up. This clamp may stand across the upper edges of the legs 60 and be adjusted at almost any distance from the hook 62 so as to accommodate it to rail bases of various widths, but said legs are preferably notched in their upper edges as at 78 to receive the clamp when the latter stands at such distance from the hook as to embrace a rail base of the standard width. When it is desired to push a rail outward instead of drawing it inward, the wedge block 66 is raised around the pivot 65 whose extremities project into slots or grooves 79 formed horizontally through the legs 60, and said wedge block and link drawn bodily inward until its right angle rests in the throat of the fork and its body projects above the same to engage over the base flange of a rail and against its web. Some degree of adjustment may be accomplished by inserting the wedge pawl 69 behind the wedge block, and in order to keep the pawl from slipping out of place a pin may be inserted transversely through holes 80 in the legs 60 and engaged with the notch 70 in the pawl 69. For pushing the rail outward the clamp 74 is not ordinarily employed, but if other adjustment is desired than the pawl 69 will afford said clamp may be thrown over into position as shown and interposed between the outer edge of the wedge block and the base of the rail; however I prefer to use said outer edge next the rail because its configuration is such as conforms therewith.

In the use of this machine, the rack bar made in sections is built up to such length that when the hook 62 engages outside one rail the bearing plate 12 of the head will engage inside the opposite rail, and thus the device may be adapted to railroads having broad, narrow, or standard gage. If it be desired to bend outward a rail which may have sprung inward from any cause, either the head H at one end or the wedge block 66 at the other end may be used as most convenient; but if it be desired to draw inward a rail which has sprung outward from any cause, the hook 62 alone can be employed. It often happens that the rails are deflected out of their proper position within cross-

overs or switches or at points where the distance from one rail to another is considerably less than the ordinary gage of the road, and when this occurs certain sections of the rack bar will have to be temporarily removed to reduce its entire length. A hole is dug in the road bed between two ties and opposite the point where the rail is deflected out of place, and the fixed member F is located by either sinking or driving its point 21 into such hole and possibly by wedging it in place. If the rail is to be bent outward and the head H is to be used, the fixed member need not be sunk so deep as if the opposite end of the device is to be used, for in the latter case the legs 60 of the head must pass beneath the rail and to permit this the road bed must be dug out as will be clear.

If a rail has become deflected inward, it will be readily understood that by sinking the fixed member F in the road bed and bringing the head H up against the collar as seen in Fig. 2, then setting the latch 49 of Fig. 6 properly, and then manipulating the handle 53, the screw 40 engaging the teeth of the rack bar will cause the latter to move to the left with great power so as to restore the rail to its proper position. It will be readily understood that when the wedge block 66 is raised and engaged against the inner edge of a rail at the other side of the track, the latch 49 can be set in the other direction and by manipulation of the lever 53 that rail can be pressed outward. Or, when the hook 62 is raised as seen in Fig. 2 and engaged outside the base of the rail, the latch 49 can be properly set and the lever manipulated to draw the rail inward, and this whether it is clamped by either the outer face of the wedge block 66 or the clamp 74 or both, or whether it is not clamped in place at all. The particular utility of having at one end of the device an element which could either pull or push, will be appreciated when it is remembered that sometimes in resetting a deflected rail it is moved to an excessive degree and even beyond the point where it should be restored; and in such event this device is useful because by reversing the position of the latch and continuing to manipulate the lever, the rail is then moved in the opposite direction without even withdrawing the point 21 from the ground, and thus the same operator at the same time can correct the defect arising from the too vigorous initial use of this machine.

I do not consider it necessary to illustrate how this machine may be used for straightening or moving both rails and the ties, but it will be understood that in order to do so the rack bar will be made up in sections shorter than the distance between the rails, the fixed member F sunk in the ground between them, and the pushing or pulling

member employed as the exigencies of the case many demand; and the strength of the device is sufficient to move the entire trackway, especially if the ballast between and around the ties is removed.

What is claimed as new is:

1. A rail straightener comprising a fixed element for engagement with the road bed, a bar, means for adjusting the bar with respect to said element, and a pushing head at one end and a pulling hook at the other end of the bar.

2. A rail straightener comprising a fixed element for engagement with the road bed, a bar, means for adjusting the bar with respect to said element, and heads at opposite ends of said bar, one having a bearing plate for engaging inside a rail and the other having a hook for engaging outside the opposite rail and a member for engaging inside the last-named rail.

3. A rail straightener comprising a fixed element for engagement with the road bed, a rack bar slidably mounted through said element and having at its opposite end rail-engaging heads of which one includes a hook, a worm journaled in said element and engaging the teeth of the bar, a lever mounted loosely on the axle of said worm, and a two-way ratchet mechanism connecting the axle and lever.

4. A rail straightener comprising a fixed element for engagement with the road bed, heads for engagement with the rails respectively, a bar connecting said heads and made up of sections detachably connected and removable to adjust the device to differently-spaced rails, and means on said element for moving the bar through it in either direction at will.

5. In a rail straightener, the combination with a rack bar having rail-engaging heads at its ends; of a fixed element comprising a point for engaging the road bed, a U-shaped member carrying the point and fitting slidably beneath the bar, a hinge member pivoted at one side to said U-shaped member, a screw at the other side thereof for detachably connecting these members, a worm journaled in the hinge member, and means for turning it in either direction at will.

6. In a rail straightener, the combination with a rack bar having rail-engaging heads at its ends; of a fixed element comprising a point for engaging the road bed, a U-shaped member carrying the point and fitting slidably beneath the bar, two spurs rising from one arm of said member, a hinge member having two side bars pivoted to the opposite side of said U-shaped member, hooks on said side bars adapted to engage said spurs, a notched cross bar rigidly connecting the free ends of said side bars, a screw opposite said pivots for entering the notch in said cross bar, and a nut thereon for detachably con-

necting these members, a worm journaled in the hinge member, and means for turning it in either direction at will.

7. The combination with a bar, a U-shaped member fitting beneath it, a point therein having an upper end rising above the bar, and a hinge member pivoted to the opposite side of the U-shaped member, a cross bar on the hinge member inclosing said upper end when the members are brought together; of a screw pivoted to the U-shaped member, a wing nut thereon, a ring swiveled on the nut and having diametrically projecting pins, a yoke pivoted on said pins and adapted to pass over said upper end of the point when the members are drawn together, and hooks also mounted on said pins and adapted to engage said cross bar.

8. The combination with a bar, a U-shaped member fitting beneath, a point therein having an upper end rising above the bar, and a hinge member pivoted to the opposite side of the U-shaped member, a cross bar on the hinge member and having in its outer edge a deep central notch and two smaller notches; of a screw engaging the U-shaped member, a nut thereon, a ring swiveled on the nut, a yoke whose legs are pivoted to opposite sides of the ring and whose bend is adapted to pass over said upper end of the point when the members are brought together, the feet at the remote end of said legs being outturned, and hooks mounted on the same pivots as said legs and having downturned bills at one end and outturned feet at the other.

9. In a rail straightener, the combination with a fixed element for engagement with the road bed, a bar passing therethrough, and means for adjusting the latter in said element, the end of the bar being forked; of a bolt through the outer end of the fork, a hook pivoted thereon, a wedge block whose body forms a right angle adapted to rest in the throat of the fork or be lifted out of it, a

handle at the upper end of said block, and a link pivotally connecting its lower end to the lower end of said hook.

10. In a rail straightener, the combination with a fixed element for engagement with the road bed, a bar passing therethrough, and means for adjusting the latter in said element, the end of the bar being forked and its legs transversely notched on their upper edges; of a bolt through the outer end of the fork, a hook pivoted thereon, another bolt through the bar across the inner end of the fork, rods connecting said bolts outside of and parallel with the fork, a clamp having an eye at one end journaled on one rod, a screw through the other end of the clamp having a head removably engaging the other rod, a wing nut on this screw, a wedge block disposed in said fork inside said clamp, and connections between the lower ends of the block and hooks.

11. In a rail straightener, the combination with a fixed element for engagement with the road bed, a bar passing therethrough, and means for adjusting the latter in said element, the end of the bar being forked vertically and the legs of the fork slotted horizontally, a hook journaled on a fixed pivot through the outer ends of said legs, a wedge block having a right angular body disposed at the inner end of said fork, a looped handle pivoted to the upper end of the block, a wedge-shaped pawl pivoted to the handle, a pivot pin through the lower end of the wedge block with its extremities resting in said slots, and a link pivotally mounted at one end on said pin and pivotally connected at the other end with the lower end of said hook.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN CONTOS.

Witnesses:

PAUL THOMPSON,
FRED C. LONGMAN.