

(No Model.)

4 Sheets—Sheet 1.

W. H. GREENSHIELD.
TIE PLATE MACHINE.

No. 567,232.

Patented Sept. 8, 1896.

Fig. 7.

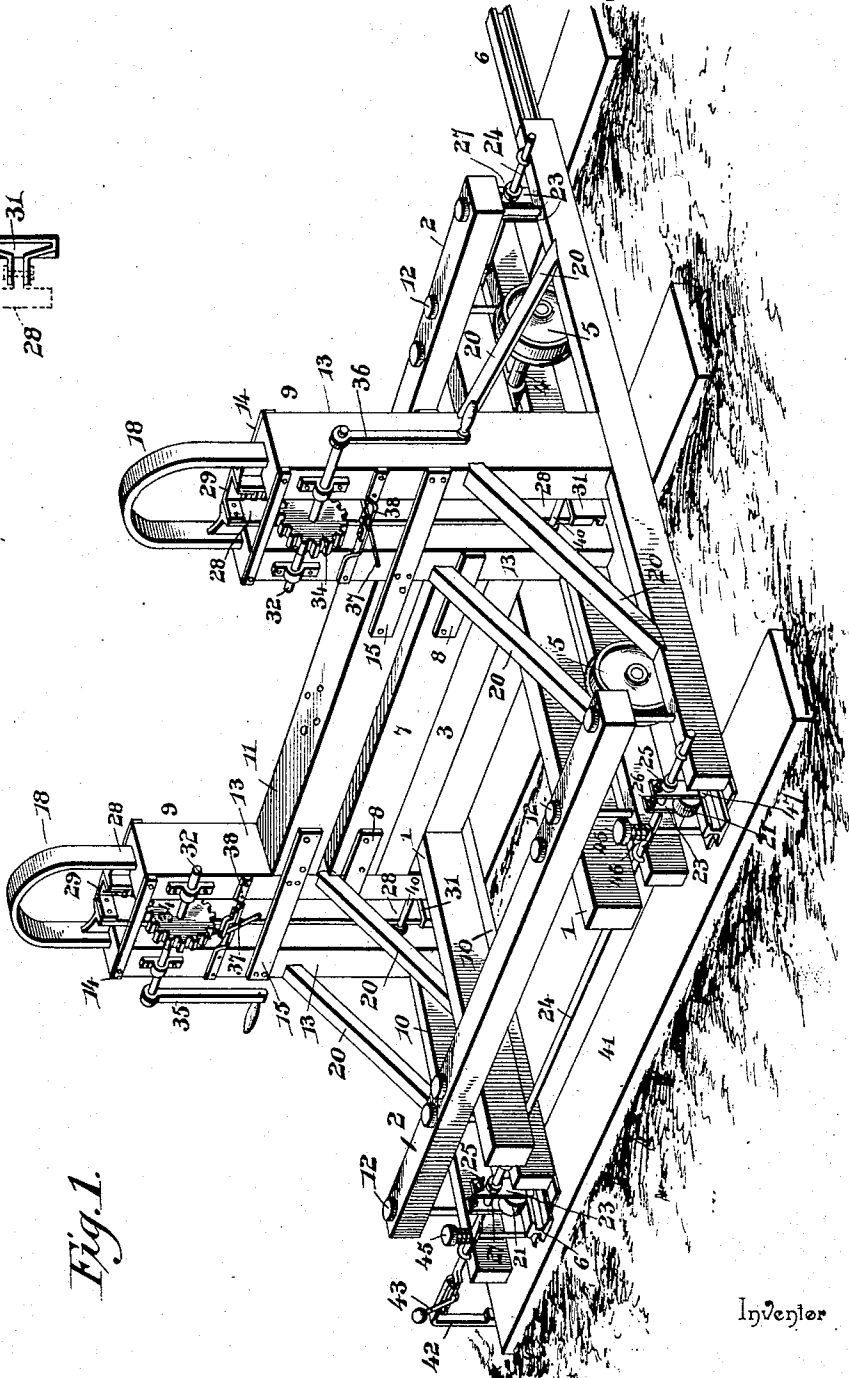
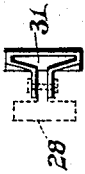


Fig. 1.

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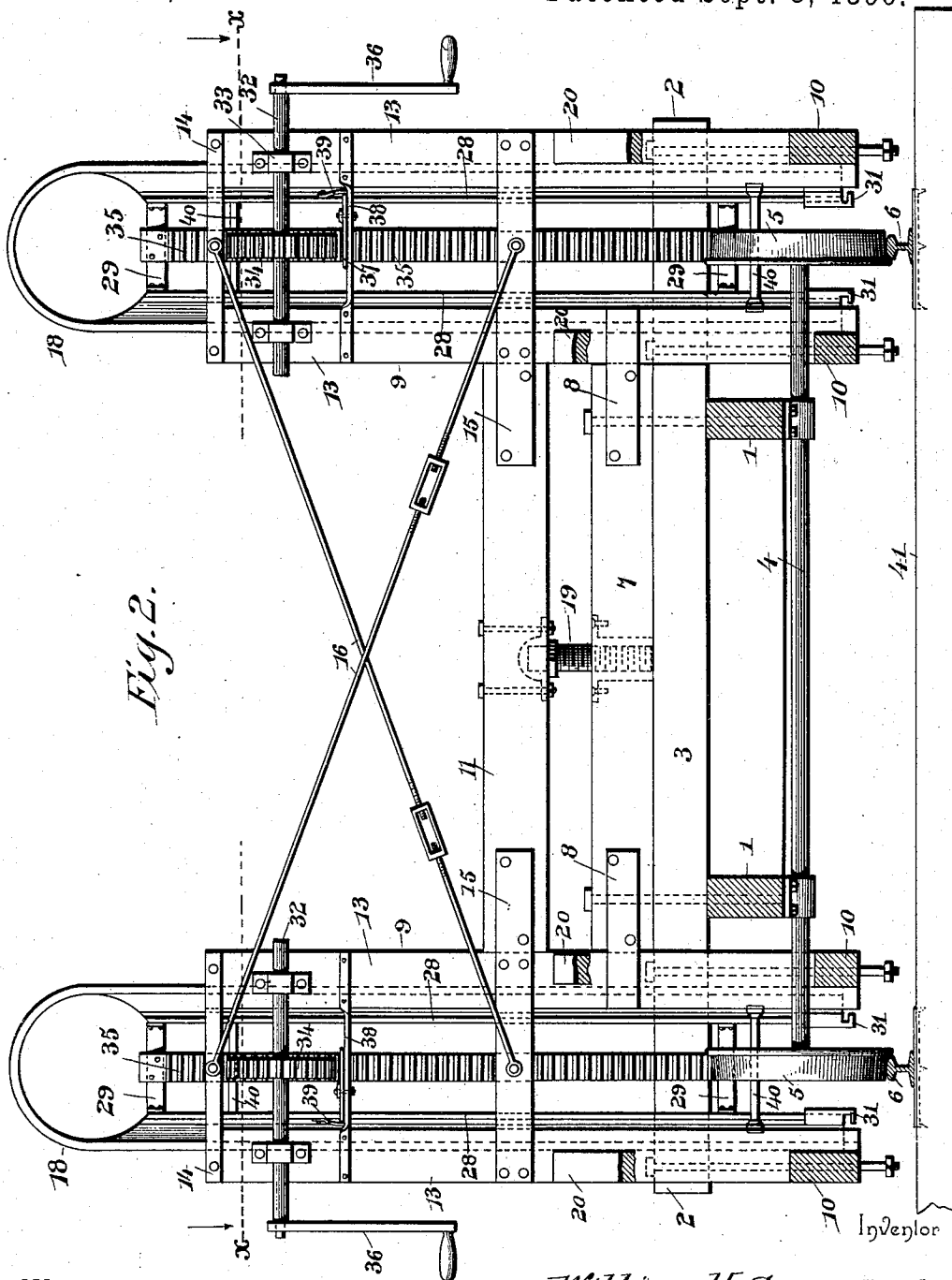
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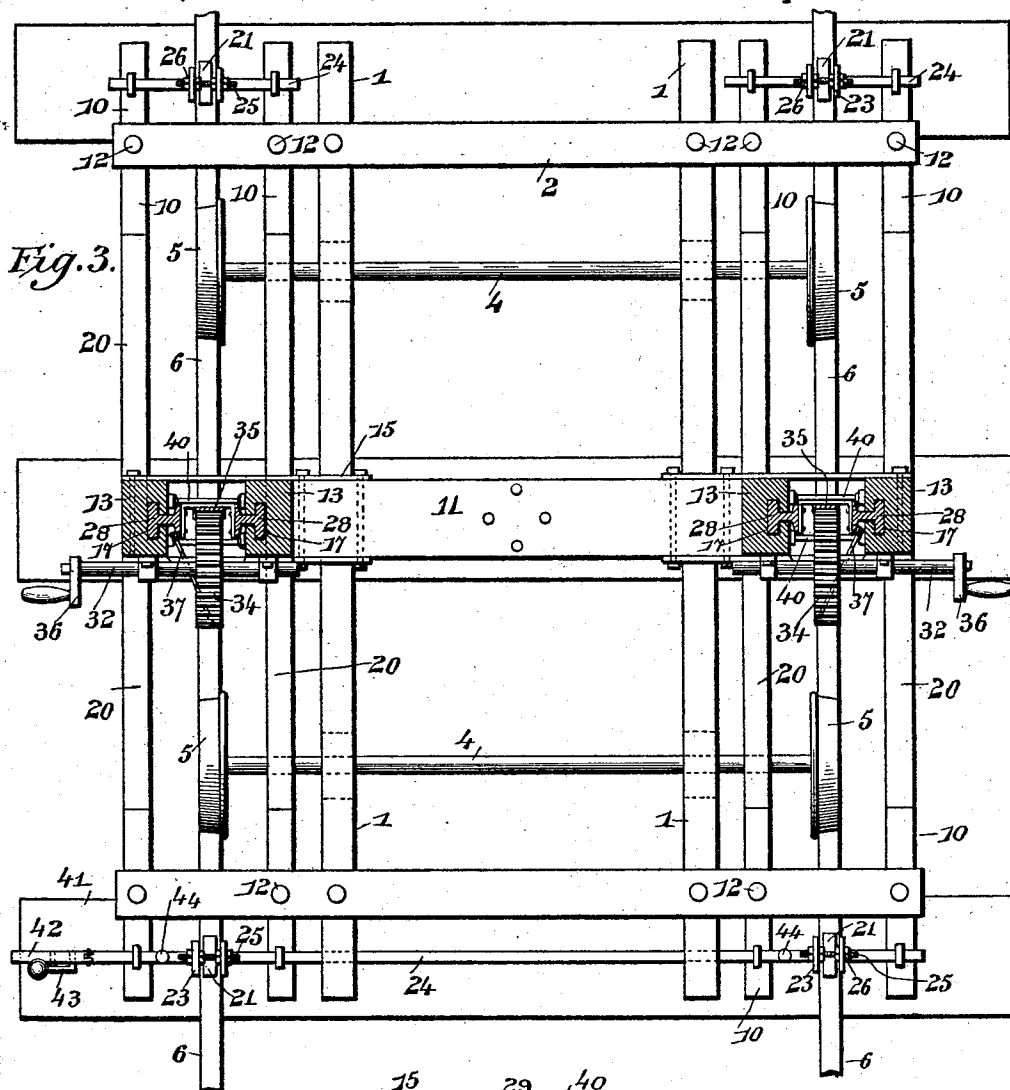
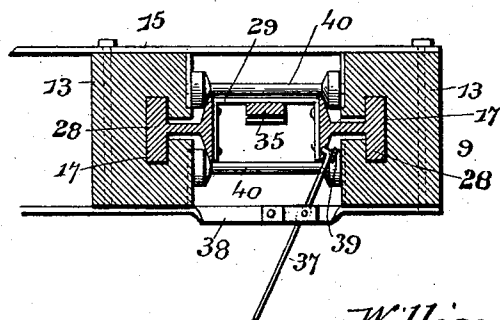


Fig. 5.



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W. H. GREENSHIELD.
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Fig. 8.

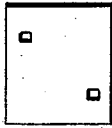


Fig. 4.

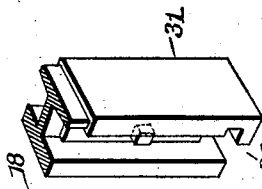
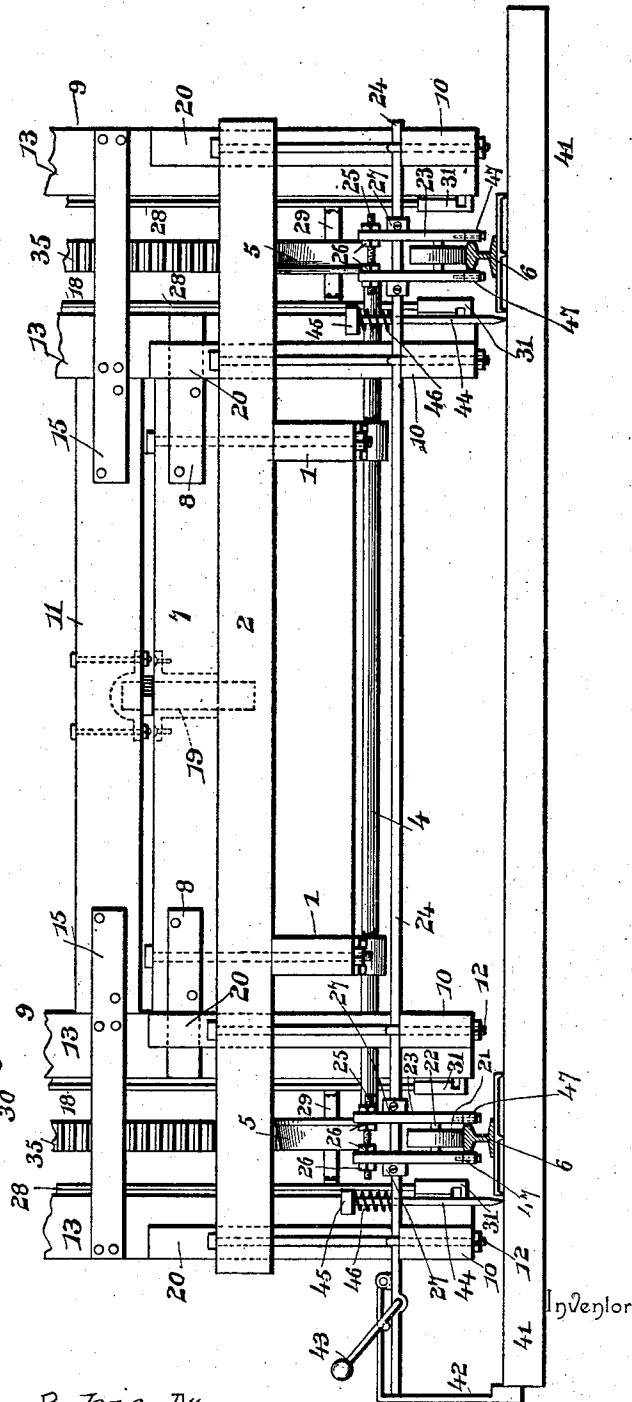


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM H. GREENSHIELD, OF FLATONIA, TEXAS.

TIE-PLATE MACHINE.

SPECIFICATION forming part of Letters Patent No. 567,232, dated September 8, 1896.

Application filed June 30, 1896. Serial No. 597,623. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. GREENSHIELD, a citizen of the United States, residing at Flatonia, in the county of Fayette and State of Texas, have invented a new and useful Tie-Plate Machine, of which the following is a specification.

This invention aims to provide a machine for properly positioning and securing metal plates to the cross-ties in the construction of railways, and which will obviate the coupling, buckling, or warping of the said plates when applying them to the wooden ties.

A purpose of the invention is to devise a machine for the purpose aforesaid which can be easily be operated and will facilitate the placing of the plates in position and reduce the help usually required for performing a given amount of work in a certain time.

A further purpose of the invention is the construction of a machine of the character set forth which will admit of the hammer or driving mechanism being adjusted vertically independently of the supporting truck, whereby when the machine is moved to the required position the frame bearing the guides for the hammers and provided with supporting-wheels can be adjusted vertically so as to add to its weight the weight of the truck, thereby fixing the position of the machine and causing the driving mechanism to operate positively and in a satisfactory manner when affixing the rail-plates to the ties.

Other objects and advantages are contemplated and will appear as the nature of the invention is unfolded, and to this end reference is to be had to the following description and the accompanying drawings.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and a full disclosure of the invention and adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of the improved machine, showing it in operation. Fig. 2 is a front view partly in section. Fig. 3 is a horizontal section on the line X X of Fig. 2. Fig. 4 is a front elevation of the lower portion of the machine. Fig. 5 is a plan sec-

tion of a guide and the hammer operating therewith, showing the means for holding the hammer elevated. Fig. 6 is a detail view of the lower portion of a hammer. Fig. 7 is a top plan view of a shoe, showing the hammer by dotted lines. Fig. 8 is a detail view of a rail-plate.

Corresponding and like parts are referred to in the following description, and indicated in the several views of the accompanying drawings by the same reference-characters.

The framework of the machine comprises a truck of desired construction, guides for the hammer or driving mechanism, and a supplemental frame carrying the guides, the supplemental frame having rolling supports and adjustable vertically with relation to the truck, whereby when required the weight of the truck can be added to the weight of the supplemental frame and the parts attached directly thereto. In its simplest form the truck comprises longitudinal beams 1, end connecting-beams 2, an intermediate beam 3, and axles 4, having supporting-wheels 5 at their extremities, said wheels being flanged in the ordinary way and adapted to travel upon the rails 6 of the road-bed in course of construction. The end portions of the intermediate and end beams 2 are extended beyond the longitudinal beams 1, so as to overhang the rails 6 and provide means for directing the supplemental frame in its vertical movements. A bolster 7 is secured upon the intermediate beam 3 and is provided at its extremities with a pair of plates 8, which are firmly secured to the opposite sides of the said bolster and project a short distance beyond the ends thereof, so as to embrace the sides of the vertical guides 9, carried by the supplemental frame, and assist materially in directing them in their vertical movements, while at the same time acting to hold the truck and supplemental frame together.

The supplemental frame bearing the driving mechanism, the mountings, and guides therefor, is composed of parallel sills 10 and a connecting-beam 11, the sills 10 being about equal in length to the longitudinal beams 1 and having loose connection with the respective projecting end portions of the transverse beams 2 by means of rods or bolts 12, which are secured to one of the parts and operate

loosely in the other part, said rods or bolts 12 being preferably held in openings formed in the projecting ends of the beams 2 and operating loosely in vertical openings formed in the sills 10. By means of the construction herein described it will be seen that the supplemental frame and truck are capable of independent vertical adjustment and are held in fixed relation and directed in their vertical movements by means of the plates 8 and the rods or bolts 12. The guides 9 are similarly formed and are located about midway the length of the sills 10, and each is formed of parallel uprights 13, which are firmly attached at their lower ends to the sills 10 and are connected at their upper ends by bars 14 and intermediate of their ends by plates 15, the latter having their inner ends extended and bolted or otherwise secured to the opposite sides of the beam 11, whereby a substantial structure is attained. Tie-rods or struts 16 are diagonally disposed and connect the upper ends of the guides with the plates 15, thereby strengthening and staying the said guides and securing them against the action of the hammers. Each pair of uprights is grooved, forming ways 17, in which the hammers 18 operate. An adjusting-screw 19 is interposed between the beam 11 and the bolster 7, so as to adjust the truck and supplemental frame vertically relative to each other. Any suitable means will be resorted to for turning the screw 19 so as to attain the desired end. The individual uprights 13 are strengthened by braces or stays 20, which have their ends cut off on a slant and let into notches formed in the sides of the uprights and the sills 10, as most clearly shown in Fig. 1. The supplemental frame is provided with rolling supports 21, which are broad-faced wheels adapted to travel upon the rails 6, and which are mounted upon axles 22, supported by plates 23, mounted upon cross-bars 24, connecting the terminals of the respective parallel sills 10. The plates 23 are connected at their upper ends by a rod 25, which is threaded and passes through corresponding openings in the plates, a pair of nuts 26 being provided near each end of the rod 25 and clamping a plate 23 between them. Each pair of plates 23 is mounted upon the respective cross-bar 24, and is held thereon between collars 27, said collars having binding-screws which are adapted to bear against the bar 24 and hold the plates in an adjusted position. By this arrangement provision is had for relatively adjusting the wheels 21 a distance apart to suit the gage of the track in course of construction or upon which the machine is to be used.

The hammer 18 comprises parallel members 28, and is preferably formed of a T-rail, which is folded or doubled upon itself, the folded parts or members 28 being connected by transverse plates 29, and the said rail having its middle portion cut away or reduced

so as to admit of the rail being readily folded, substantially as shown. The head portion of the rail faces outward and is adapted to operate in the ways 17, which latter are of corresponding shape to the rail in cross-section. The lower ends of the members 28 are equipped with shoes 30, which are removably attached thereto, so as to admit of shoes of varying size being applied to the hammer according to the size of the rail-plates to be fitted to the ties of the road-bed. These shoes 30 extend across the extremities of the members 28 and have a portion 31 to embrace three sides of a member 28 and which receives the bolt or fastening by means of which the shoes have detachable connection with the afore-said members.

Suitable means will be provided to elevate the hammer so that when the latter is released its mass and momentum will be sufficient to drive the rail-plates home into the cross-ties, and as shown the means consist of a shaft 32, journaled in bearings 33, provided near the upper ends of the uprights 13, a pinion 34, secured to the shaft 32, a rack-bar 35, fastened at or near its ends to the plates 29 and meshing with the pinion 34, and a crank 36, fitted to an end of the shaft 32 and serving to turn the said shaft so as to elevate the hammer to the required position. After the hammer has reached the required elevation it is secured by a latch 37, which is fulcrumed intermediate of its ends to a cross-bar 38, connecting the uprights 13. This latch 37 operates through an opening in the contiguous member of and engages with the hammer so as to attain the desired end. A spring 39 operates upon the latch 37 so as to cause the latter to engage with the hammer when the opening in the latter comes opposite to or registers with the active or engaging end of the said latch. By pressing upon the outer end of the latch in opposition to the force exerted by the spring 39 the hammer will be released and gravitate and deliver a blow upon the rail-plate, previously placed in position, so as to send the same home into the tie. A series of antifriction-rollers 40 are journaled at intervals in the length of the guides or uprights upon opposite sides of the hammer and engage with the latter and serve to prevent the latter binding in the ways 17 during its reciprocating movements.

In order to locate the rail-plates a given distance from the ends of the cross-ties 41, a gage is employed, and consists of a plate 42, comprising a vertical and a horizontal portion and appearing right angular in edge view. This plate or gage 42 is mounted upon the foremost cross-bar 24, and a lever 43 is fulcrumed to its horizontal arm and is adapted to engage with the bar 24 and lift the gage so as to clear the ties when it is required to move the machine to a new position. This gage is constructed to bear against the ends of the ties so as to properly position the rail-plates.

Markers 44 are mounted in the end portions of a cross-bar 24, and are pointed rods or bars having heads 45 at their upper ends, and are loosely mounted in vertical openings formed in the said bar. Coil-springs 46 are mounted upon the upper portion of the markers between the heads 45 and the bar 24, and are intended to support the pointed ends of the markers a proper distance above the ties. A smart blow delivered upon the heads 45 will cause the pointed ends of the markers to indent the top side of the ties and thereby designate the position of the rail-plates.

The rolling supports 21 are retained centrally upon the rails 6 by extending the plates 23 so as to project upon opposite sides of the said rails, and in order to relieve the friction incident to the lateral engagement of the plates 23 with the sides of the rails antifriction-rollers 47 are provided and journaled to the lower ends of the said plates 23 and are disposed to engage with the sides of the rails.

Having thus described the invention, what is claimed as new is—

1. In a machine of the character described, the combination of a truck, a supplemental frame mounted upon the truck and carrying the driving mechanism, and means for vertically and independently adjusting the said frame and truck, substantially as and for the purpose set forth.

2. In a machine of the character specified, the combination of a truck, a frame mounted upon the truck and capable of vertical adjustment, a driving mechanism carried by and movable with the frame, rolling supports attached to the said frame, and means for relatively adjusting the frame and truck in a vertical direction, whereby the weight of the truck may be transferred to the said frame and imposed upon the rolling supports thereof, substantially as set forth.

3. In a machine of the character set forth, the combination of a truck, a frame vertically adjustable with respect to the truck, means for guiding the frame in its vertical movements, a driving mechanism carried by the frame and movable therewith vertically, and means for positively adjusting the frame vertically, substantially as set forth for the purpose described.

4. In a machine of the character described, the combination of a truck, a frame having attachment with the truck and capable of vertical adjustment, a driving mechanism carried by and movable with the frame, means for adjusting the frame vertically and directing it in its movements, rolling supports having connection with the frame, and plates located upon opposite sides of the rolling supports and adapted to bear laterally against the sides of the rails upon which the said rolling supports travel, substantially as set forth.

5. In a machine of the character set forth, the combination of a truck, a frame having connection with the truck and capable of ver-

tical adjustment, vertically-disposed plates having connection with the said frame and adapted to bear laterally against the opposite sides of the rails upon which the truck is adapted to travel, and rolling supports carried by the said plates and adapted to travel upon the same rails with the wheels of the truck, substantially as and for the purpose set forth.

6. In a machine for securing rail-plates to cross-ties, the combination of a truck, a mechanism mounted upon the truck and adapted to fasten the plates to the ties, and a gage carried by the truck and adapted to engage with the ends of the ties so as to properly position the machine and plates, substantially as described.

7. In a machine for securing rail-plates to cross-ties, the combination of a truck, a mechanism mounted upon the truck and adapted to fasten the plates to the ties, a gage carried by the truck and adapted to engage with the ends of the ties to properly position the machine and plates, and means for adjusting the gage vertically so as to clear the ties when it is required to move the machine, substantially as described.

8. In a machine for securing rail-plates to cross-ties, the combination of a truck, a mechanism mounted upon the truck and adapted to secure the plates to the ties, and markers for indicating the correct position of the plates with respect to the ties, substantially as specified.

9. In a machine for securing rail-plates to cross-ties, the combination with a hammer, of a shoe detachably fitted to the lower extremity of the hammer, substantially as and for the purpose specified.

10. A hammer for use in connection with a machine for securing rail-plates to cross-ties, formed by bending or doubling a rail upon itself, substantially in the manner set forth.

11. A hammer for use in connection with a machine for securing rail-plates to cross-ties, formed from an approximately T-rail having its middle portion reduced or cut away, and folded or doubled upon itself, substantially as set forth.

12. In a machine for the purpose specified, the combination of a guide comprising parallel uprights formed with guideways, and a hammer comprising parallel members which are adapted to operate in the guideways of the uprights, substantially as described.

13. In a machine for the purpose set forth, the combination of parallel uprights grooved on their inner or opposing sides, forming guideways, a hammer comprising parallel members which operate in the said guideways, and antifriction-rollers disposed upon opposite sides of the hammer and adapted to direct the same in its vertical movements, substantially as set forth.

14. In combination, a vertical guide, a hammer comprising parallel members mounted to

slide vertically in the guide and having its members connected, a rack-bar secured to the connections uniting the members of the hammer, a shaft provided with a pinion meshing
5 with the rack-bar, and a latch to hold the hammer elevated, substantially in the manner and for the purpose set forth.

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

WILLIAM H. GREENSHIELD.

Witnesses:

J. F. MULCAHY,

J. W. MAY.