H. C. FORSYTH.

RAILROAD SPIKING MACHINE.

APPLICATION FILED MAY 16, 1919.

1,347,943.

Patented July 27, 1920.

3 SHEETS—SHEET 1.

Fig. 1.

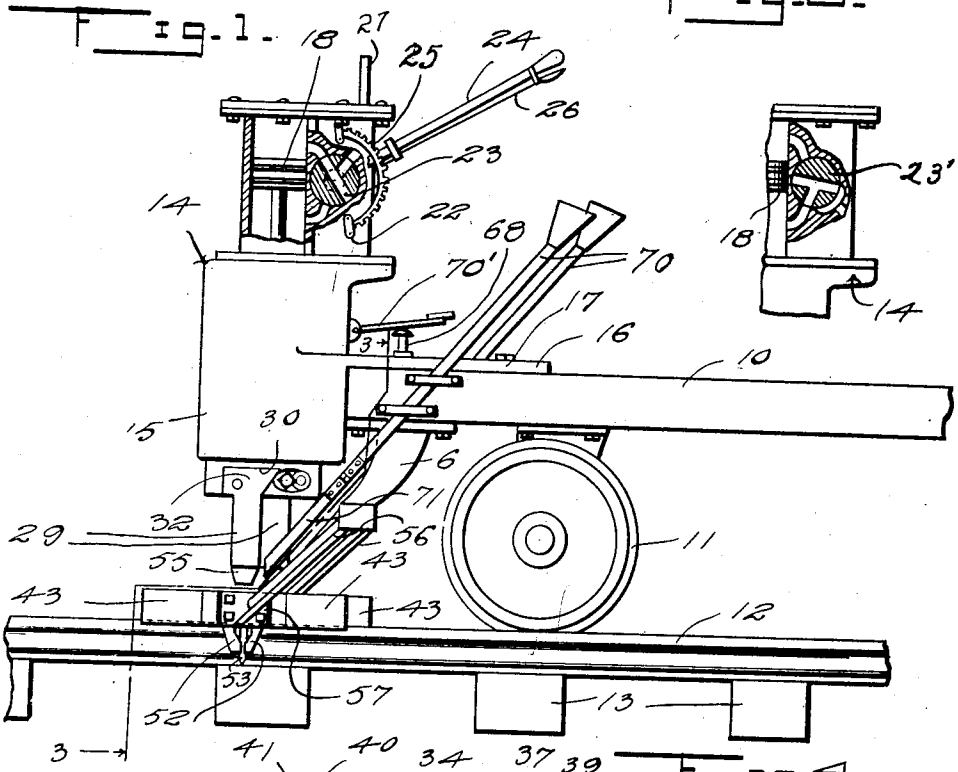
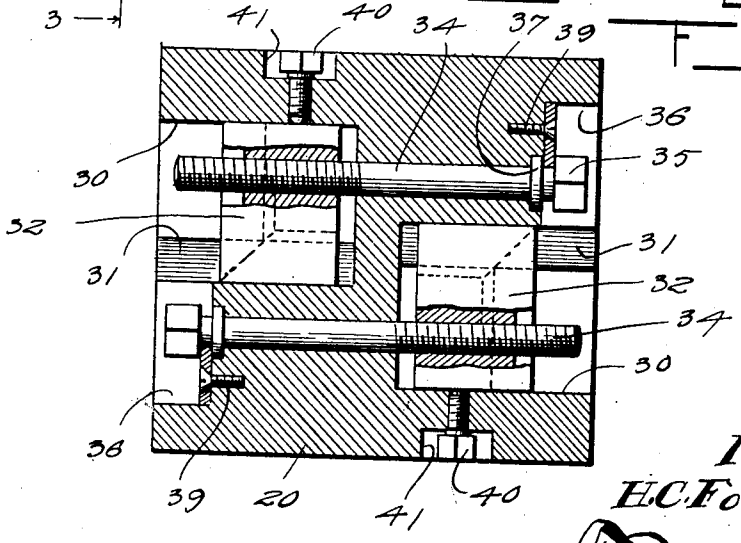


Fig. 3.

Fig. 4.



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3 SHEETS—SHEET 2.

Fig. 2.

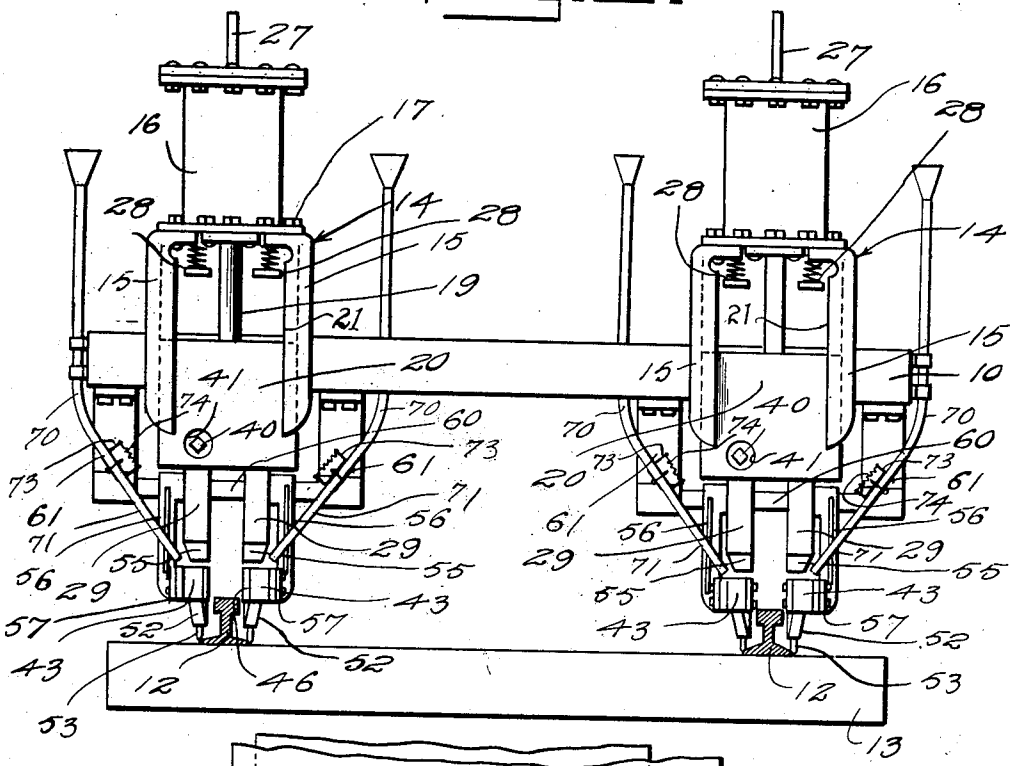


Fig. 5.

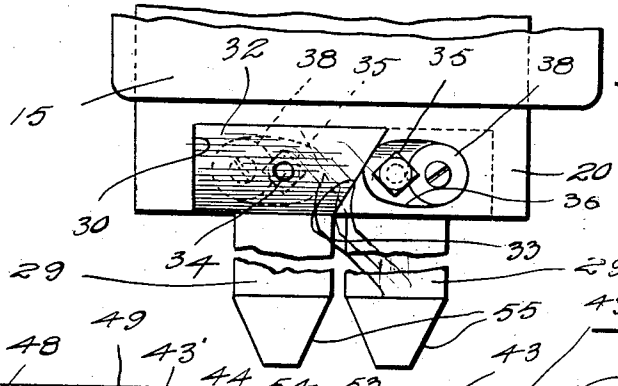
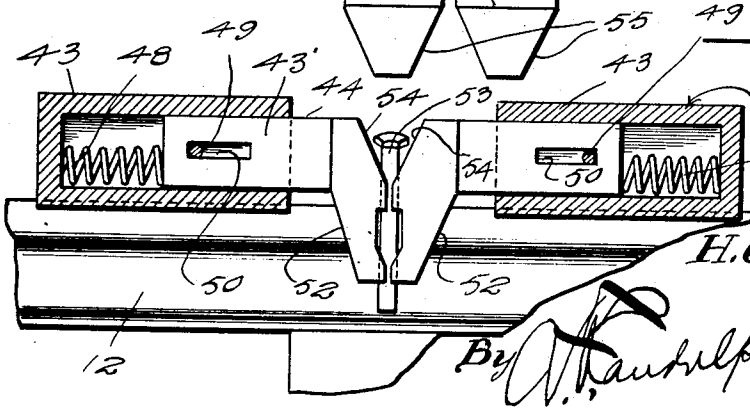


Fig. 7.



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3 SHEETS—SHEET 3.

Fig. 5.

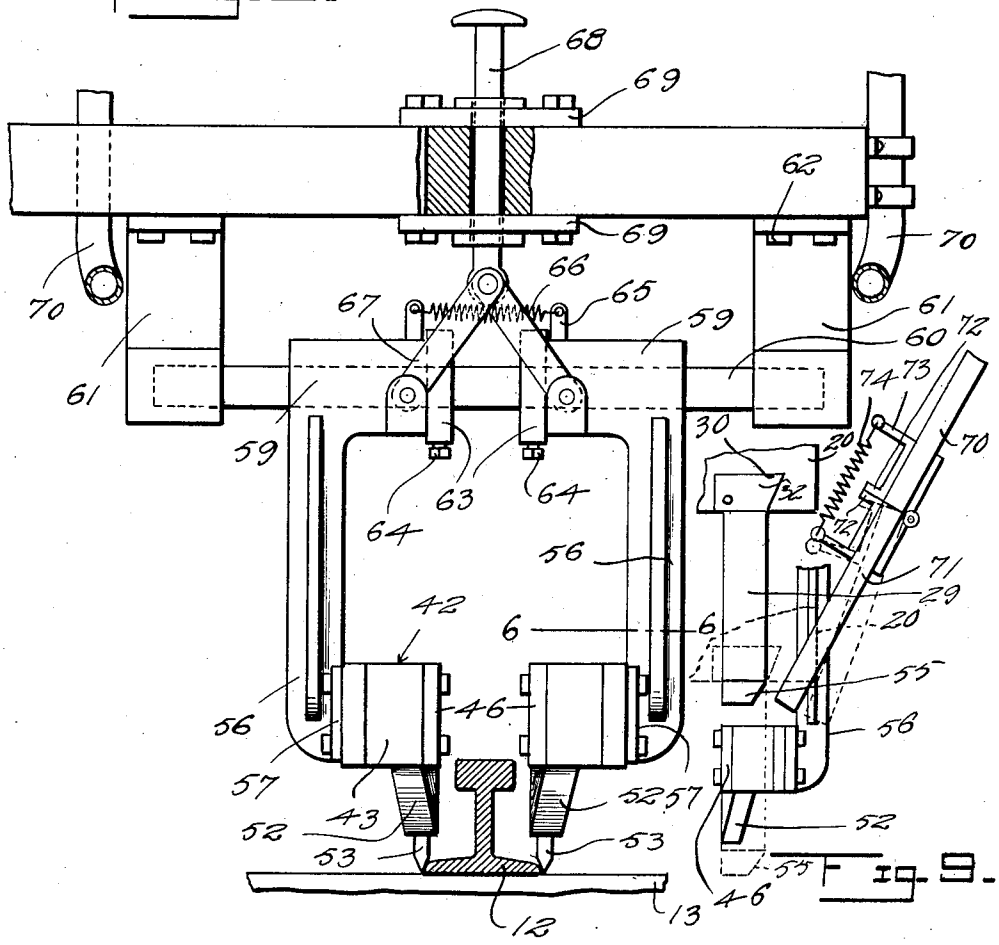
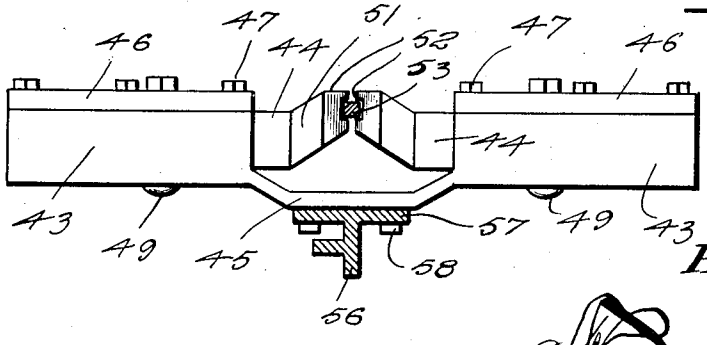


Fig. 9.

Fig. 6.



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UNITED STATES PATENT OFFICE.

HOMER C. FORSYTH, OF WALDO, FLORIDA.

RAILROAD SPIKING-MACHINE.

1,347,943. Specification of Letters Patent. Patented July 27, 1920.

Application filed May 16, 1919. Serial No. 297,530.

To all whom it may concern:

Be it known that I, HOMER C. FORSYTH, a citizen of the United States, residing at Waldo, in the county of Alachua and State of Florida, have invented certain new and useful Improvements in Railroad Spiking-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in rail spiking machines adapted for spiking ties in rapid succession.

An important object of this invention is to provide a spike driving machine having novel means for supporting the spikes prior to and while being driven into the tie.

A further object is to provide a spike driving machine having means for spacing the spike holding members on opposite sides of the rails when passing the fish plates or other lateral projections.

A further object is to provide means for supporting and operating the driving members whereby the spikes on one or both sides of the tie may be driven home separately or simultaneously.

A further object is to provide a spike driving machine having means for adjustably and rigidly supporting the spike driving hammers whereby the same may be readily adjusted for spiking different width rails.

A further object is to provide a rail spiking machine which is of highly simplified construction, durable in use and which may be operated with a minimum of attendant labor.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a fragmentary side elevation of a truck or car having my improved rail spiking machine applied thereto,

Fig. 2 is a front elevation of the same, the rails being shown in section,

Fig. 3 is a vertical transverse section taken on line 3—3 of Fig. 1,

Fig. 4 is a horizontal section through one of the hammer supporting heads illustrating the adjusting means for the hammer,

Fig. 5 is an enlarged fragmentary elevation of one of the heads adapted for supporting the hammers,

Fig. 6 is a horizontal section taken on line 6—6 of Fig. 3,

Fig. 7 is a longitudinal section through one of the spike supporting members,

Fig. 8 is a fragmentary sectional view through the upper portion of one of the cylinders, the view illustrating the exhaust port of the same, and

Fig. 9 is a fragmentary view of a spike supplying tube and associated element.

In the drawings wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 10 designates a truck or car rotatably mounted on wheels 11. The wheels operate on a track including rails 12 and ties 13.

A hammer supporting and operating structure generally designated by the numeral 14 is mounted at one end of the truck and includes independently operated members arranged above each rail. Each hammer supporting and operating structure includes a pair of spaced vertical guides 15 having attaching brackets 16 extended therefrom and secured to the truck or car by bolts 17. A power unit 16 which in this case is a fluid pressure cylinder is mounted upon the guides 15 and secured thereto by bolts 17. A reciprocatory piston 18 is mounted within the cylinder 16 and is provided with a vertical depending piston rod 19 having connection with a head 20 slidably mounted between the guides 15.

As indicated in Fig. 2 the vertical edge portions 21 of the guides 15 extend about the front and rear edges of the head 20 and thereby prevent undue movement of the head.

A valve chest 22 is carried by the cylinder 16 and is provided with a valve 23 adapted for supplying fluid pressure to both sides of the piston whereby the same may be elevated and lowered as desired. A manually controlled lever 24 has connection with the valve and is adapted for controlling the position of the same. A segmental rack 25 carried by the valve chest is adapted to be engaged by a dog 26 carried by the lever 24 for locking the lever in an adjusted position. A fluid pressure supply pipe 27 is adapted for supplying fluid pressure to the valve chest from where it is conveyed to either side of the cylinder. A pair of coil springs 28 are carried by the upper sides

of the guides and are disposed on opposite sides of the piston rod 19 for cushioning the upward movement of the head 20.

Hammers 29 are carried by the under side of the hammer heads 20 and are adapted to hammer spikes on opposite sides of a rail. As illustrated in Figs. 1 and 4 one hammer is slightly in advance of the other whereby the spikes are hammered into the tie one in advance of the other. The heads 20 are provided in their opposite sides with grooves 30 opening out through the sides of the same and having one of their side walls inclined as indicated at 31. The upper end portions 32 of the hammers are enlarged and have one of their sides inclined outwardly as indicated at 33 for contacting with the inclined sides 31 of the grooves. The top of the hammers flatly abut the top walls of the grooves, whereby upon engaging the spikes the full force of the impact will be transmitted to the heads. The inclined sides 31 and 33 prevent the loosening of the hammers within the grooves as the result of lateral strain. Transversely extending adjusting screws 34 have threaded engagement with the upper portions 32 of the hammers and are adapted to be rotated for adjusting the hammers laterally. The heads 35 of each bolt are mounted within oval shaped recesses 36 in the head. Annular shoulders 37 are formed on the screw bolt 34 at points spaced from the heads 35 and form annular recesses in which retaining washers 38 are partially received for preventing longitudinal movement of the screw bolts. The retaining washers 38 are held in position by locking screws 39. Set screws 40 have threaded engagement with the sides of the heads and engage the sides of the hammers for locking the same in adjusted position and have their heads mounted in recesses 41.

Spike supporting members generally designated by the numeral 42 are clearly shown in Figs. 6 and 7 and are arranged on each side of the rails, one slightly in advance of the other. Each spike supporting member includes a pair of casings 43 arranged in endwise relation and having their adjacent ends open for the reception of the shank portions 43′ of jaws 44. The casings are rigidly connected by an intermediate plate 45 which is offset at its ends to dispose its central portion outwardly. Plates 46 are detachably secured to the inner sides of the casings 43 by bolts 47. The jaws are set together by coil springs 48 arranged within the casing and are limited in their forward movement by transverse stops or bolts 49 extending through elongated slots 50 provided in the shank portions 43′ of the jaws. The jaws are provided adjacent their spike engaging ends with inwardly extending offsets 51 which dispose the spike engaging portions 52 directly below the hammers. The adjacent ends of the jaws are provided with recesses forming openings in which the spikes 53 are received. The upper faces 54 of the adjacent end portions of the jaws are inclined downwardly to serve as guides for the spikes and also to be squarely engaged by the inclined lower end portions 55 of the hammers which serve to push the jaws outwardly upon engaging the same.

The spike supporting members are suspended from arms 56 having attaching plates 57 secured to the connecting plates 45 by bolts 58. The upper ends of the arms 56 are provided with inwardly directed sleeves 59 provided with rectangular openings slidably receiving a squared shaft 60. The shaft 60 is suspended from brackets 61 secured to the truck by bolts 62. Collars 63 are mounted on the squared shaft 60 and are adapted for limiting the inward movement of the sleeves 59. Set screws 64 securely retain the collars in a set position.

Apertured ears 65 are carried by the sleeves 59 and are connected to the ends of a contractile coil spring 66 adapted for retaining the sleeves in contact with the collars 63 whereby the spike supporting members are normally retained in their innermost positions.

Links 67 are pivotally connected to the sides of the sleeves and have their upper ends pivotally connected to a vertically movable pedal 68 which is extended through the bottom of the truck and guide plates 69. A pivoted level 70′ is arranged in contact with the upper portion of the pedal and is adapted to be operated for depressing the same. Upon the spike supporting members approaching the fish plates of the rails or other lateral projections, the pedal 68 may be depressed and the pairs of spike engaging members thereby caused to separate. Immediately upon removing the pressure from the pedal 68, the spike supporting members assume their normal inward position directly below the hammers. Spike supplying tubes 70 are carried by the truck and adapted for supplying the spikes to the recesses within the jaws. The spikes are fed manually to the tubes as each tie is about to be spiked. As illustrated in Fig. 9 the lower portion of each spike supplying tube is provided with a hinged section 71 adapted to be swung outwardly upon being engaged by the head 20 on its downward movement. Shoulders 72 are carried by the adjacent ends of the spout 70 and the section 71 and serve to limit the inward swinging movement of the section 71. Arms 73 extending inwardly from the section 71 and the spout 70 are connected by a coil spring 74 which serves to normally retain the section 71 in alinement with the spout.

In operation the spike driving and sup-

porting mechanism is arranged directly above the tie and spikes fed through the supply tubes. The cylinders are now supplied with fluid pressure and caused to drive the spikes into the tie. The downward movement of the hammers separates the jaws simultaneously with the driving in of the spikes. Upon the completion of the spike driving operating, the fluid pressure supply is reversed and the fluid pressure supplied to the under side of the pistons whereby the hammers are elevated, preparatory to spiking the next tie.

While I have shown and described the preferred embodiment of my invention, it is understood that such minor changes in arrangement and construction of parts may be made as will remain within the spirit of the invention and the scope of the appended claims.

Having thus described my invention, what I claim is:

1. A spiking machine including guiding elements, a cylinder carried by the guiding elements, means to support said guiding elements and cylinder, a head disposed between said guiding elements and having connection with said cylinder, and hammers carried by said head and adapted for driving spikes on opposite sides of a rail simultaneously.

2. A rail spiking machine including a base member, a cylinder supported upon the base member and having a depending reciprocating piston rod, hammers connected to said piston, and means to adjust the hammers laterally.

3. A rail spiking machine including a base member, a cylinder supported upon the base member and having a depending reciprocating piston rod, hammers connected to said piston and means to cushion the upward movement of the hammers.

4. A rail spiking machine including a pair of spaced vertical guides having their vertical edge portions extending inwardly, a head slidably arranged between said guides, attaching and supporting members extending from said guides, a cylinder supported upon said guides and disposed directly above said head and having a vertically movable piston and piston rod, said piston rod being connected to said head, spike engaging means carried by said head and means to cushion the upward movement of said head.

5. A spike driving machine including a head, operating means for the head, spaced hammers carried by the head, and means to adjust said hammers laterally.

6. A spike driving machine including a head, operating means for the head, spaced hammers carried by the head, said head having laterally disposed grooves receiving the upper end portions of said hammers, and means to adjust said head to conform to different width rails.

7. A spike driving machine including a head, operating means for the head, spaced hammers carried by the head, said head having laterally disposed grooves receiving the upper end portions of said hammers, means to adjust said head to conform to different width rails, and means to lock the hammers in adjusted positions.

8. A spike driving machine including a head, operating means for the head, spaced hammers carried by the head, said head having laterally disposed grooves receiving the upper end portions of said hammers, means to adjust said head to conform to different width rails, said grooves opening out through opposite sides of the head.

9. A spike driving machine including a head, operating means for the head, spaced hammers carried by the head, said head having laterally disposed grooves receiving the upper end portions of said hammers, means to adjust said head to conform to different width rails, and said hammers being provided with inclined sides.

10. A rail spiking machine including a head having grooves opening out through opposite sides, hammers having enlarged upper portions slidably arranged in said grooves, one side of the upper portion of each head and the corresponding side of each groove being inclined, adjusting bolts having threaded engagement with the upper portion of the hammers and extending through said head, said head having recesses receiving the heads of said bolts, means to prevent displacement of said bolts, and set screws engaging said hammers for locking the same in adjusted positions.

11. A spiking machine including a pair of casings, spike holding jaws carried by the casings, means to support the casings, and coil springs urging the jaws forwardly.

12. A spiking machine including pairs of casings arranged on opposite sides of a rail, means to support the casings, spike holding jaws slidably carried by the casings and having spike receiving recesses in their adjacent ends, and means to urge the jaws forwardly.

13. A spiking machine including a pair of casings, means to adjustably support the casings, spike holding jaws carried by the casings and slidable therein, coil springs carried by said casings and adapted for urging said jaws together, said jaws having elongated slots, and stops extending through said slots for limiting the movement of the jaws.

14. A spiking machine including a pair of casings, spike supporting jaws carried by the casings, means to limit the forward

movement of said jaws, said jaws having spike receiving recesses in their opposed ends, and means to urge the jaws together.

15. A spiking machine including a pair of casings, jaws disposed within the casings and adapted for supporting spikes, a hammer disposed above the jaws, the lower portion of the hammer and the adjacent portions of the jaws being inclined, said hammer being adapted for separating the jaws upon driving a spike.

16. A railroad spiking machine including a pair of jaws, means to support the jaws, a hammer arranged above the inner end portions of the jaws and adapted for driving spikes, the lower portion of the hammer and the adjacent portion of the jaws being inclined to separate the jaws upon the depression of the hammer.

17. A spiking machine including a pair of spaced casings arranged in endwise relation and having their adjacent ends open, an attaching member connecting the casings, one side of each of said casings being detachable, jaws slidably arranged in said casings and having their adjacent ends adapted for engaging spikes, and springs for pressing the jaws together, and means to limit the sliding movement of the jaws.

18. A spiking machine including a pair of arms, spike engaging members carried by the arms, a support for said arms, and sleeves formed integral with said arms and slidably arranged on said support, said support being rectangular in cross section.

19. A spiking machine including a pair of arms, spike engaging members carried by the arms, a support for said arms, said arms being slidable with relation to said support, and stops carried by said support and adapted to limit the inward movement of said arms.

20. A spiking machine including a pair of arms, spike engaging members carried by the arms, a support for said arms, sleeves formed integral with said arms and slidably arranged on said support, stops adjustably arranged on said support, and spring means connecting said arms and normally retaining the arms in their innermost position.

21. A spiking machine including a pair of arms, spike engaging members carried by the arms, a support for said arms, sleeves carried by said arms and slidably arranged on said support, collars adjustably arranged on said support, and adapted to be engaged by said sleeves for limiting the inward movement of the same, a coil spring connecting said sleeves for normally retaining the arms inwardly, and a pedal having connection with said sleeves and adapted for moving the same outwardly.

22. A spiking machine including a pair of arms, spike engaging members carried by the arms, a support for said arms, sleeves carried by said arms and slidably arranged on said support, collars adjustably arranged on said support and limiting the inward movement of said arms, coil springs connecting said arms for normally retaining the same inwardly, links pivotally connected to said sleeves, and a pedal connected to said links and adapted to be depressed for moving the arms outwardly.

23. A spiking machine including a pair of arms, spike engaging members carried by the arms, a support for said arms, said support being rectangular in cross section, sleeves carried by the inner side of said arms and slidable on said support, collars adjustably arranged on said support between said sleeves for limiting the inward movement of the same, spring means pressing the sleeves inwardly, links pivotally connected to said sleeves, a pedal pivotally connected to said links, and a lever adapted for operating said pedal.

24. A rail spiking machine including means to support the spikes, a spike driving member movable vertically above the spike supporting means, and a spike supplying tube having its lower portion hinged and adapted for supplying spikes to said spike supporting means, said hinged section being disposed in the path of travel of said spike driving member and adapted to be swung outwardly on the downward movement of the spike driving member.

25. The construction set forth in claim 24, and means to limit the inward swinging movement of the hinged section.

26. The construction set forth in claim 24, and means to normally retain the hinged section in alinement with the remainder of the spout.

In testimony whereof I affix my signature in presence of two witnesses.

HOMER C. FORSYTH.

Witnesses:
B. W. TILLIS,
E. W. WILLIAMS.