J. H. DOAK.

SPIKE DRIVING MACHINE.

APPLICATION FILED MAR. 29, 1921.

1,404,841.

Patented Jan. 31, 1922.

3 SHEETS—SHEET 1.

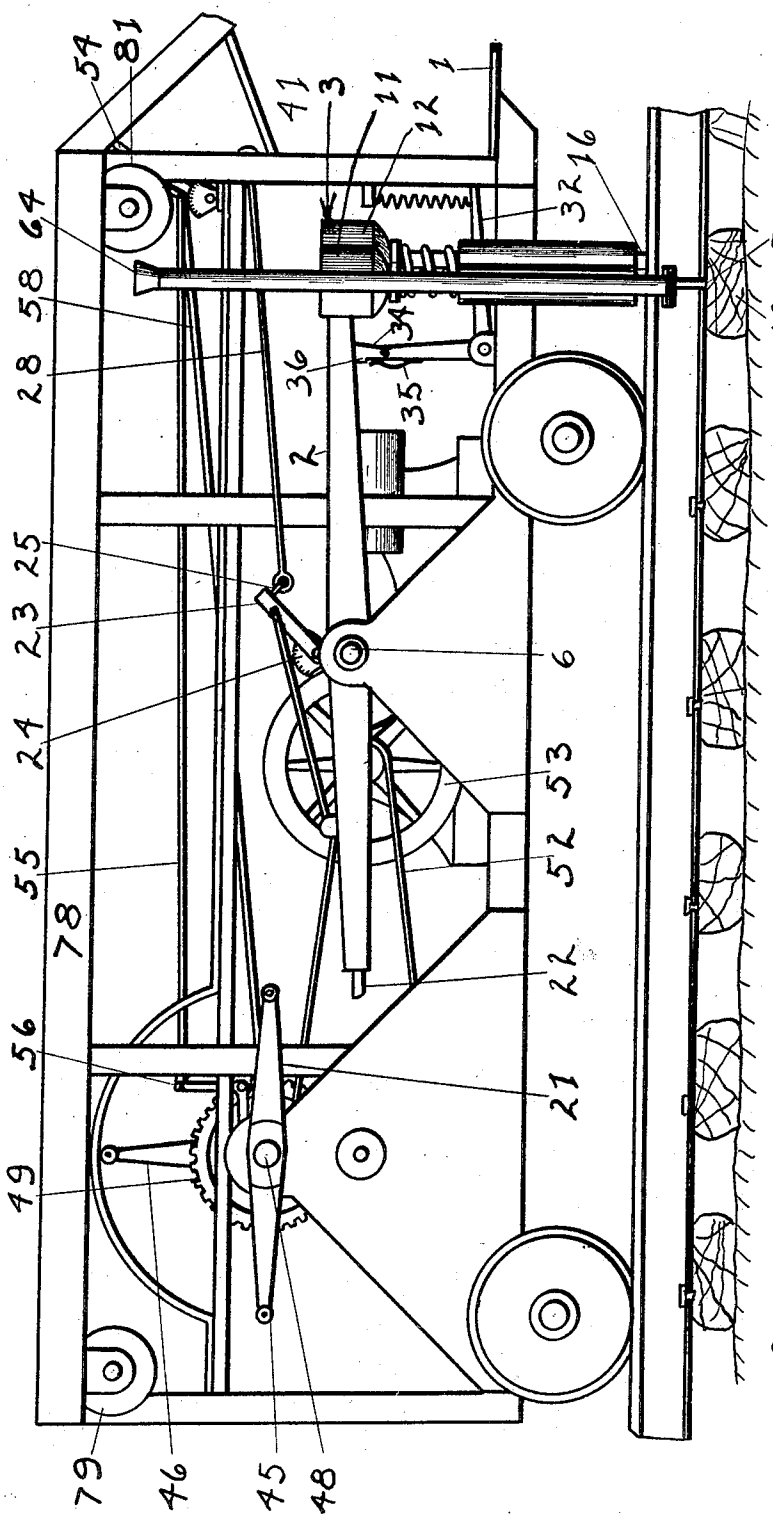


Fig. 1

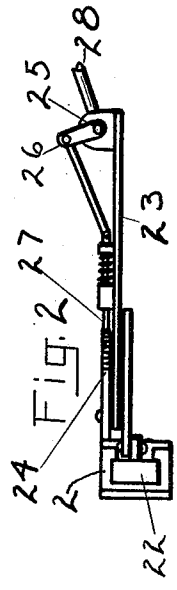


Fig. 2

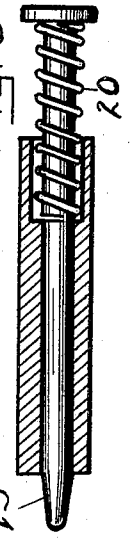


Fig. 3

John H. Doak
Inventor
By Lloyd Garrison
Attorney

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3 SHEETS—SHEET 2.

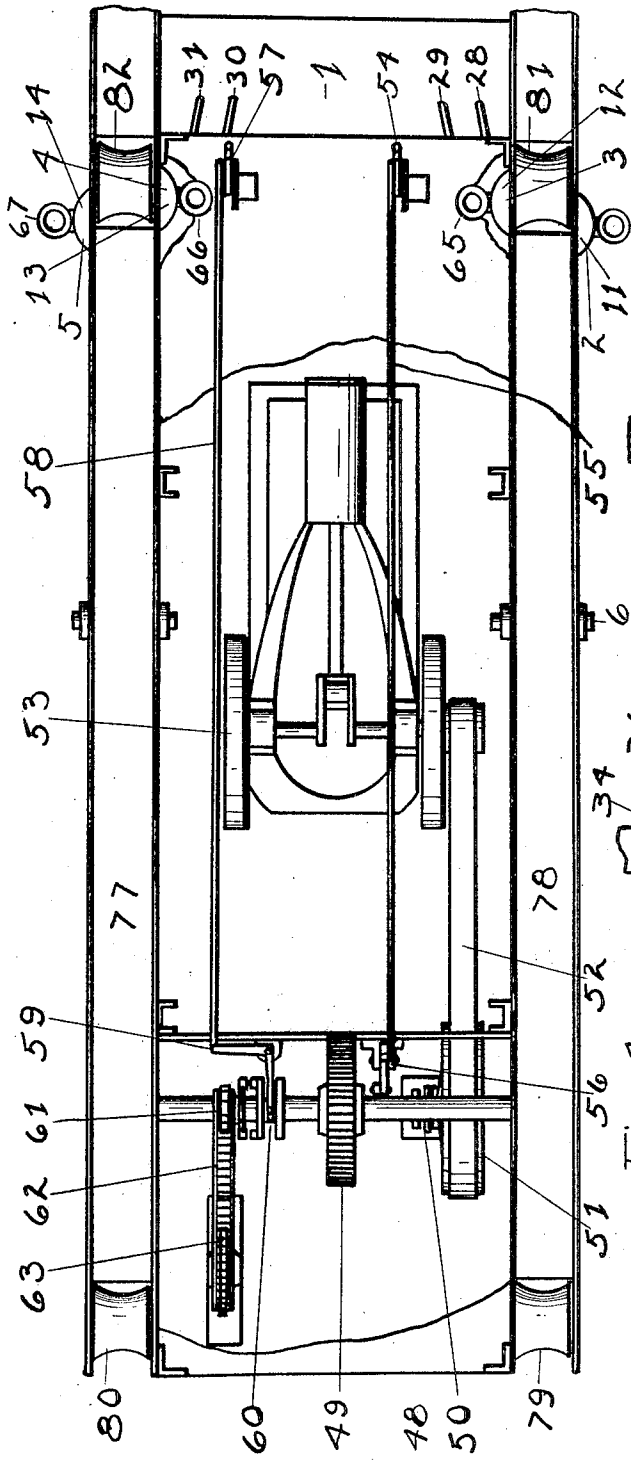


Fig. 4

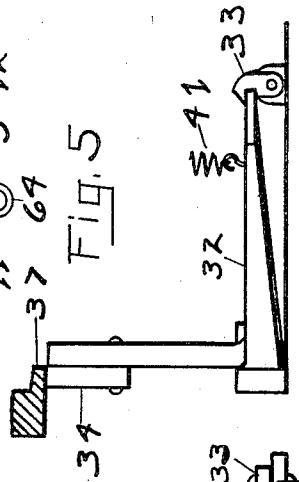


Fig. 5

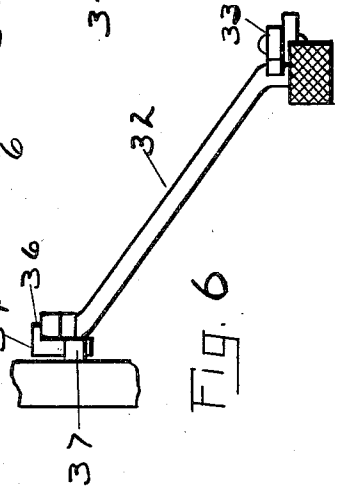


Fig. 6

John H. Doak
Inventor
By Lloyd Garrison
Attorney

J. H. DOAK.

SPIKE DRIVING MACHINE.

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3 SHEETS—SHEET 3.

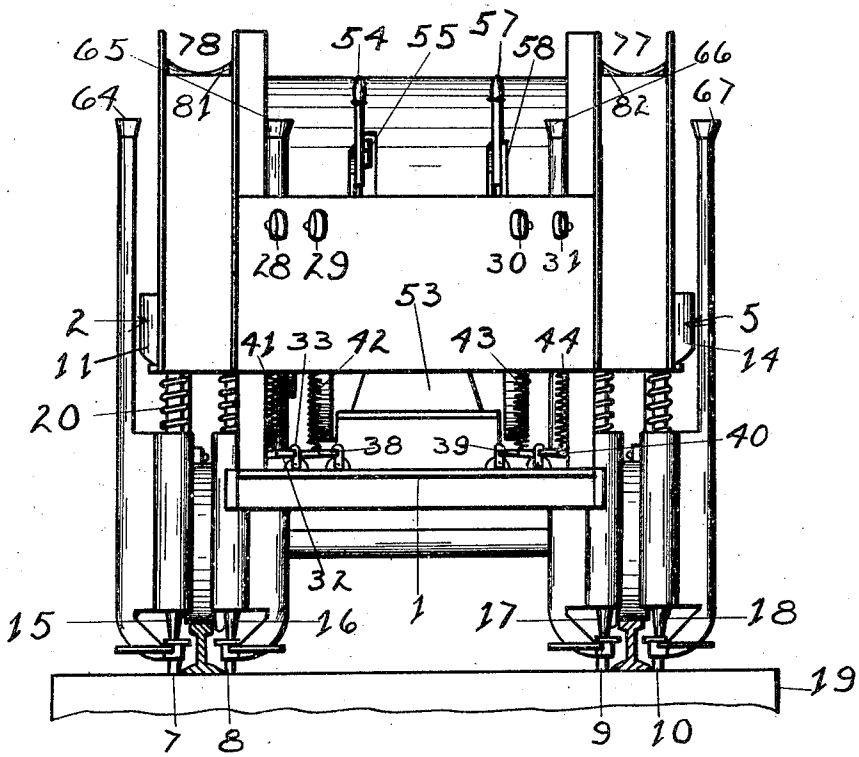


Fig. 7

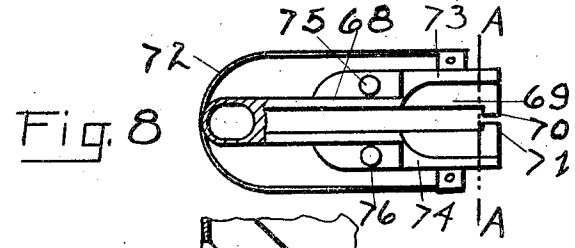


Fig. 8

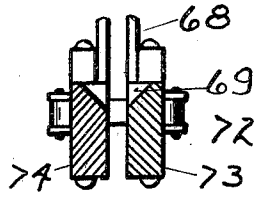


Fig. 10

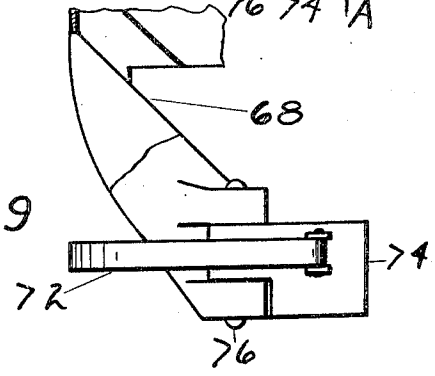


Fig. 9

John H. Doak
Inventor
By Lloyd Garrison
Attorney

UNITED STATES PATENT OFFICE.

JOHN H. DOAK, OF BOISE, IDAHO.

SPIKE-DRIVING MACHINE.

1,404,841. Specification of Letters Patent. Patented Jan. 31, 1922.

Application filed March 29, 1921. Serial No. 456,674.

To all whom it may concern:

Be it known that I, JOHN H. DOAK, a citizen of the United States, residing at Boise, in the county of Ada and State of Idaho, have invented new and useful Improvements in Spike-Driving Machines, of which the following is a specification.

My invention pertains to that class of devices which has for its object the mechanical driving of railroad spikes. It is intended to precede the flat car carrying the rails and ties and drives the spikes as it travels over the newly laid rails.

In the accompanying drawings Fig. 1 is a side elevation of the machine.

Fig. 2 is an end view of the hammer control lever.

Fig. 3 is a section of the striker shaft and housing.

Fig. 4 is a top view of the machine with a portion of the protecting plate cut away.

Fig. 5 is a front elevation of the foot pedal control for the hammer.

Fig. 6 is a top view of Fig. 5.

Fig. 7 is a front elevation of the machine.

Figures 8 and 9 are respectively top and side views of the spike holder.

Fig. 10 is section A—A of Fig. 8.

In operating the machine the person in charge thereof stands on platform 1 at the front of the machine, to which point all controls are run. The four hammers 2, 3, 4, and 5, pivoted at points midway their length, as 6, are used to drive the spikes 7, 8, 9, and 10 by allowing the hammer heads 11, 12, 13, and 14, to fall upon strikers 15, 16, 17, and 18 which in turn strike the spikes and force them into tie 19. All of the strikers are equipped with springs, as 20, which normally raise the striker points to clear the spikes, but these springs are not of sufficient strength to support the hammer heads. The hammer heads are raised by rotating arms, as 21, which come in contact with slide 22 and after raising the hammer heads, suddenly release them. Rollers are provided on the end of arms 21 to reduce the friction on slide 22. Slide 22 runs in a groove cut in the hammer arm, Fig. 2, and its position is controlled by lever 23. The latter is an ordinary lever with a spring catch which meshes in the toothed sector 24. Shaft 25 and dog 26 serve to raise the spring catch 27. Shaft 25 is operated by a rod 28 which runs to the operator's platform. The four rods 28, 29, 30, and 31 control the levers operating the four slides. By moving lever 23 back and forth slide 22 is brought more or less into engagement with arm 21, the extent of the contact determining the amount head 11 is raised. When it is desired to stop the operation of any hammer, as 2, lever 23 is moved to a certain known position which allows arm 21 to raise head 11 to the position shown in the drawings. At the same time foot lever 32 is pressed down until it is held by catch 33. The arm of the foot lever opposite the pedal carries a spring pawl, Figures 5 and 6, 34 which is kept in place by spring 35 but is restricted in its forward motion by catch 36 which comes in contact with the lever arm. As hammer 2 rises, a projection, 37, on its side passes up the inclined forward surface of pawl 34, forcing it back until projection 37 passes the pawl, when it springs forward and prevents the hammer descending. The travel of the hammer is regulated for this operation until it just passes the top of pawl 34. Slide 22 is then withdrawn from contact with arm 21 and there is no further movement of the hammer until catch 33 is released. The foot levers 32, 38, 39, and 40 are normally kept elevated by springs 41, 42, 43, and 44 so that there will be no engagement of the pawls and hammer arms. Arms 21, 45, 46, and one opposite 46 which is not shown in the drawing, are mounted on shaft 48. The latter is driven by gear 49, which is in turn driven through clutch 50, pulley 51, and belt 52 by gas engine 53. Clutch 50 is controlled by lever 54 through rod 55 and lever 56. The whole car is moved forward by moving lever 57 which acting through rod 58, lever 59, and clutch 60 causes the loose sprocket 61 to rotate. The latter drives chain 62 which passes over sprocket 63 on the shaft of the rear trucks.

Spikes are placed in the tops of chutes 64, 65, 66, and 67 whence they drop into position beside the rail. The spike descends with considerable speed and striking incline 68, Figures 8, 9, and 10, slides down this until the head rests in recess 69 with the shaft vertical. The travel toward the rail is restricted by projections 70 and 71. Rebound from these projections is prevented by the pressure of spring 72. The jaws 73 and 74 are hinged at 75 and 76, respectively. This arrangement, with spring 72, allows the spike to be held firmly in place yet forms a yielding support which gives way and al-

lows the head of the spike to pass through when it is being driven.

Troughs 77 and 78, with rollers 79, 80, 81, and 82 are provided to carry the rails from the flat car in rear to their place in front of the spike driver. An incline with rest is provided on the forward end of each trough to facilitate the removal of the rail.

The device herein described is intended to replace the large crew of men required in spike driving when new railroad track is laid. The work is done rapidly, four spikes are driven at one time, and the whole track is spiked at the time of laying instead of having a follow up gang to complete the spike driving which remains when the present system is employed. This eliminates the need of stringing spikes along the track and a very large portion of the work to be done after the track layer has passed.

What I claim as my invention is:

1. In a spike driving device of the type described a set of four pivoted hammers, weight elements on one end of each of said hammers and slide elements for regulating the travel thereof mounted on the other ends, rotating arms to engage the slide elements and raise and release the weight elements, means for driving the rotating arms, means of positioning and feeding the spikes, striker elements to receive the hammer blow and transmit it to the spike, and stops to prevent the action of the hammers.

2. In a spike driving device of the type described striker elements to contact with the spikes, pivoted lever hammer elements, weights on the forward ends thereof to impact on the striker elements, adjustable slide elements on the other ends of the hammer levers, rotating arms to contact with the slide elements and lower and release the same, means of driving the rotating arms, means of feeding and positioning the spikes, and stops to prevent the action of the hammers.

3. In a spike driving device of the type described striker elements to contact with the spikes, chutes and recessed spring jaws for feeding and positioning the spikes, pivoted hammer elements, weights on the forward ends thereof to impact on the striker elements, adjustable lever controlled slide elements on the other ends of the hammer elements, rotating arms to contact with the slide elements and lower and release the same, means of driving the rotating arms, and stops to prevent the action of the hammers.

JOHN H. DOAK.

Witnesses:
JOHN D. CAMOMILE,
W. N. GUNDRY.