S. A. BARBER.

SPIKE DRIVING MACHINE.

APPLICATION FILED APR. 11, 1912.

1,058,654.

Patented Apr. 8, 1913

2 SHEETS—SHEET 1.

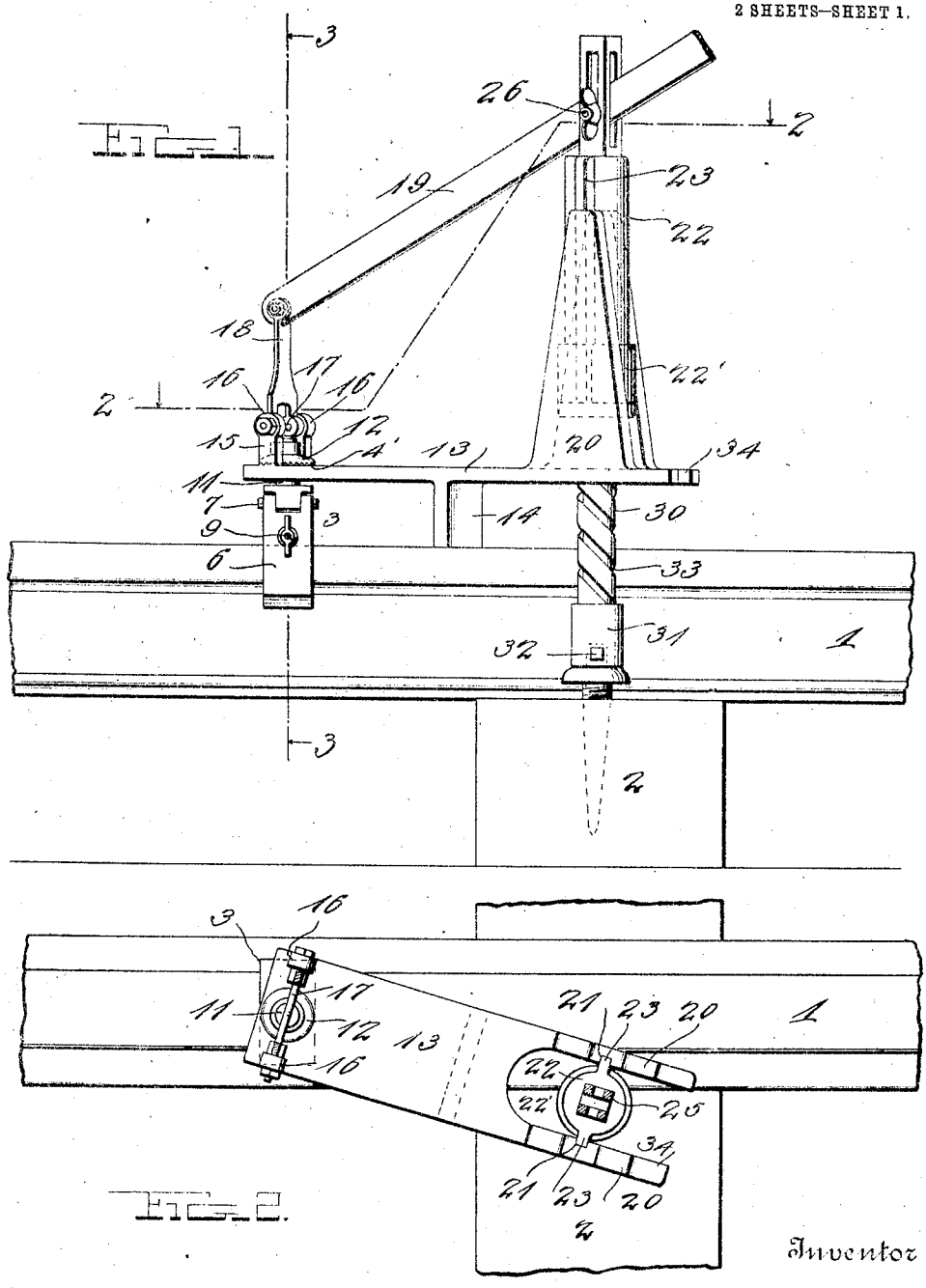

FIG. 2.

Witnesses
J. R. Pierce
N. L. Collamer

Inventor
S. A. Barber
By A. B. Williamson & Co.
Attorneys

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2 SHEETS—SHEET 2.

FIG. 3.

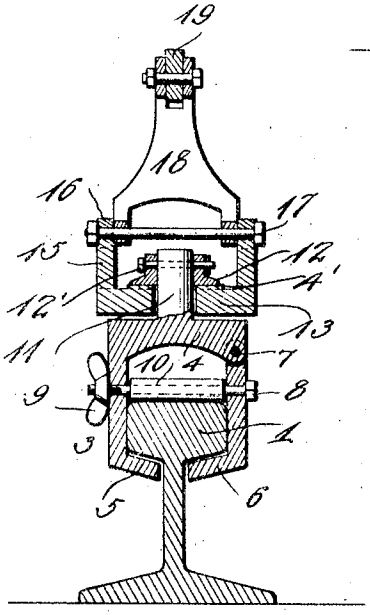
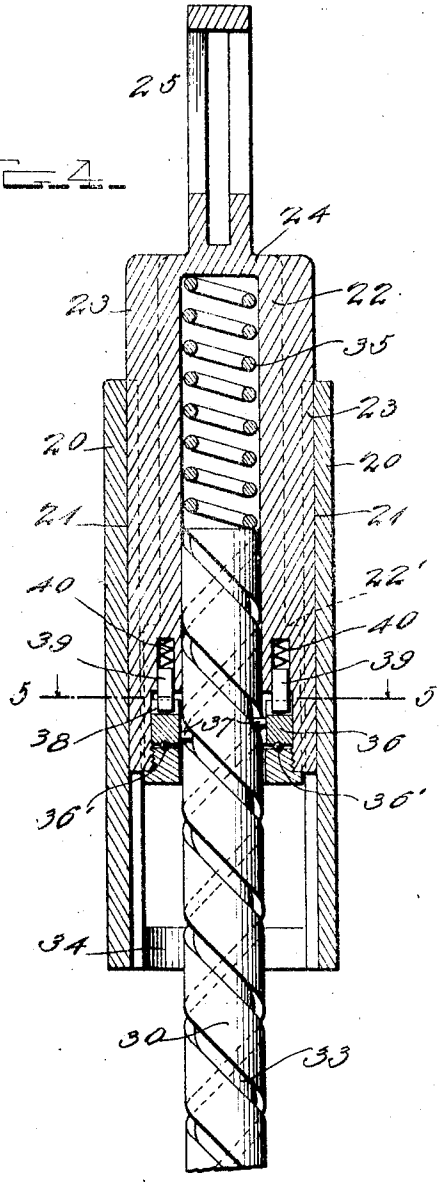


FIG. 4.



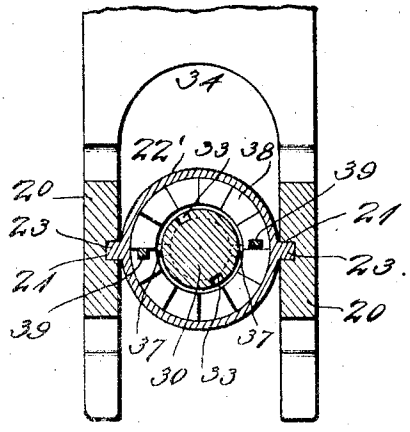


FIG. 5.

Witnesses
J. R. Pierce
W. Collamer

Inventor
S. A. Barber.
by H. B. Williamson & Co
Attorneys

UNITED STATES PATENT OFFICE.

SAMUEL A. BARBER, OF FRANKFORT, KENTUCKY.

SPIKE-DRIVING MACHINE.

1,058,654. Specification of Letters Patent. Patented Apr. 8, 1913.

Application filed April 11, 1912. Serial No. 689,987.

To all whom it may concern:

Be it known that I, SAMUEL A. BARBER, a citizen of the United States, residing at Frankfort, in the county of Franklin and State of Kentucky, have invented certain new and useful Improvements in Spike-Driving Machines; and I do 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.

This invention relates to spiral tool drivers, and more especially to those wherein the driving is done by forward pressure; and the object of the same is to produce an instrument or tool of this kind more particularly adapted for driving threaded spikes through or alongside the base of rails into the ties. This object is carried out by the construction hereinafter more fully described and claimed, and as shown in the drawings wherein—

Figure 1 is a side elevation of this machine complete, and Figs. 2 and 3 are sections on the lines 2—2 and 3—3 of Fig. 1. Fig. 4 is an enlarged vertical section through the two standards and the plunger which moves between them, and Fig. 5 is a cross section on the line 5—5 of Fig. 4.

In the drawings the numeral 1 designates a rail mounted upon ties 2 and to which it is to be connected by spikes. I propose to thread the shanks of the latter so that in effect they become screws, but this detail forms no part of the present application. The tool described below would drive such a screw or threaded spike, or if a suitable bit be inserted into its lower end it would bore a hole for such a spike or one of any other form which could be driven into the hole, and on this understanding the tool might be called a spike driving machine or a boring machine, according to the work performed by it.

The numeral 3 designates broadly a clamp by means of which the tool is to be held on the head of the rail, and the same comprises a horizontal body 4 having a fixed and hook-shaped jaw 5 depending from one side and a movable jaw 6 depending from and pivoted to its other side as at 7. The jaws are connected by a through bolt 8 having a thumb nut 9 on one extremity, and a roller 10 preferably surrounds the body of this bolt between the jaws and rests upon the face of the rail as seen. By loosening the thumb nut the movable jaw 6 may be swung outward a little so that the entire clamp can be slid along and adjusted in any desired position upon the rail in a manner which will be understood.

Rising from the otherwise flat upper face of the body 4 is a pin 11 on which, beneath a collar or other fastening device 12, is pivotally mounted the inner end of the base plate 13 which may therefore swing in a horizontal plane at some distance above the head of the rail 1, and this plate may—if desired—be supported from the rail by means of a short leg 14 as seen so that what might be called the outer end of the base plate can swing across the rail and the bit (yet to be described) can be forced downward to either side thereof.

Rising from the edges of the base plate 13 at opposite sides of the pin 11 are lugs 15 having eyes 16 at their upper ends through which passes a bolt 17, and on the latter is pivoted the lower end of an upstanding link 18. To the upper end of the later is pivotally connected the main handle 19 whose body therefore stands over the base plate 13 as seen in Fig. 3. This swinging connection by means of which the inner end of the handle is attached to the inner end of the base plate is adopted for the purpose of allowing the point of connection between said handle and the bit driving mechanism (described below) to move vertically while the handle is swung around its pivot in a manner which will be clear.

Superimposed upon and carried by the forked outer end 34 of the base plate 13 are two upright standards 20 whose inner faces have two oppositely disposed upright grooves 21, and between said standards reciprocates a hollow plunger 22 having oppositely disposed ribs 23 sliding in said grooves. The upper end or head of the plunger is closed as seen at 24, and rising therefrom is an extension 25 having crossed slots through it. Through one of the latter the handle 19 projects loosely, and through the other slot passes a pin 26 (preferably a bolt with a thumb nut as shown) which also passes through the handle and pivots the latter loosely within the extension 25. As the plunger is guided vertically between the

standards the pivot 26 through the plunger and handle must move vertically although the handle swings over the link 18 in a manner described above; and as the pin and handle both have some considerable movement within the slots in the extension 25, this form of connection permits a pounding action on the plunger which is useful in starting the bit into the tie, especially if said bit has a sharp point.

The spindle 30 has a socket 31 in its lower end and a set screw or other suitable clamp 32 for holding within said socket the upper end of the bit if the machine is to do drilling or the head of a specially shaped spike or screw if the machine is to sink the same in the tie in a manner above suggested. The body of the spindle is threaded or rifled as at 33, it extends loosely through and may rotate or reciprocate within the fork 34 in the outer end of the base plate 13, it passes upward into the interior of the plunger 22 in which it is also guided, and it is pressed normally downward by means of an expansive coiled spring 35 interposed between its upper end and the closed upper end 24 of the plunger as seen. By this means it will be seen that the spring tends to normally project the spindle through the fork 34 and hold the bit to its work while the handle rises, and the farther the handle is depressed the greater the tension of the spring which is thereby compressed and hence toward the close of its stroke the pressure upon the spindle will almost and finally fully equal that upon the handle. Meanwhile the spindle is rotated in the manner which will now be described.

Carried on ball bearings 36′ within a channel in the enlarged lower end 22′ of the plunger 2 is a nut 36 which is shown in Fig. 4 as having two internal projections 37 adapted to engage the rifles within the spindle although of course the projections and rifles are the equivalent of teeth engaging threads on the drill. The upper end of the nut is provided with ratchet teeth 38, and at two or more opposite points within the shell of the plunger 22 are disposed pawls 39 borne normally downward by springs 40. The result of this construction is that when the plunger is depressed the pawls engaging the teeth prevent the nut from rotating and the projections within the nut engaging the rifles cause the rotation of the spindle; but when the handle is elevated and the plunger rises the nut is permitted to rotate because its ratchet teeth move under the pawls 39 in a manner which will be clear.

The upper face of the inner end of the plate 13 is corrugated or grooved radially around the pin 11 as seen at 4′, and so also is the lower face of the member 12 which is a collar removably held upon the upper end of the pin 11 by any suitable means such as a bolt 12′. Downward pressure on the outer end of the handle 19 causes its inner end to rise, and the ribs or corrugations on the two members 12 and 13 to interengage so that the outer end of the base plate cannot be swung to either side of its clamped position upon the rail.

What is claimed as new is:

1. The combination with a clamp adapted to embrace the head of a rail and having a pin rising from its body, and a fastening device on said pin; of a base plate whose outer end is forked and whose inner end is pivotally mounted on the pin beneath said fastening device so that its body may swing in a horizontal plane above the rail, a leg depending from said plate and adapted to rest on the rail, a pair of standards rising from the arms of the fork, and driving mechanism reciprocating vertically between said standards.

2. The combination with a clamp comprising a flat body having a pin rising from its upper face, and a collar detachably secured on the upper end of said pin and having radial grooves in its lower face; of a base plate whose inner end is pivoted on said pin and radially grooved in its upper face around the pivot, a standard rising from the outer end of the plate, driving mechanism reciprocating vertically within said standard, a link pivoted to the head of said pin, and a main handle pivoted to the upper end of the link and connected with said mechanism.

3. The combination with a horizontal base plate, a two-part standard rising from one end of the same and containing upright guides, a link connected with the other end of said plate, and a handle pivotally connected at one extremity with said link and passing over the standard; of a spindle guided through the outer end of said base plate, a plunger reciprocating vertically in said guides and having an extension from its upper end provided with two slots standing at right angles to each other, said handle passing through one of the slots, a bolt through the other of the slots and through the handle, said slots being of sufficient length to permit some lost motion of the handle and bolt therein, and connections between the plunger and spindle.

4. The combination with an upright pair of standards having grooves in their inner faces, a hollow plunger reciprocating between said standards and having ribs sliding in said grooves and its upper end closed and its lower end notched, and means for reciprocating said plunger; of a rifled spindle whose body is guided between the lower end of the standards and whose upper end extends into the plunger, an expansive spring between this end of the spindle and the closed upper end of the plunger, a nut rota-

tably mounted in the lower end of the plunger and having ratchet teeth on its upper face and inwardly extending projections engaging the rifles of the spindle, and spring-pressed pawls mounted in the notches in the lower end of the plunger and engaging said ratchet teeth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SAMUEL A. BARBER.

Witnesses:
B. F. THORN LEROY,
W. C. FURR.