

H. G. SMART.  
TIE PLUG MACHINE.  
APPLICATION FILED JAN. 8, 1914.

1,211,974.

Patented Jan. 9, 1917.  
3 SHEETS—SHEET 1.

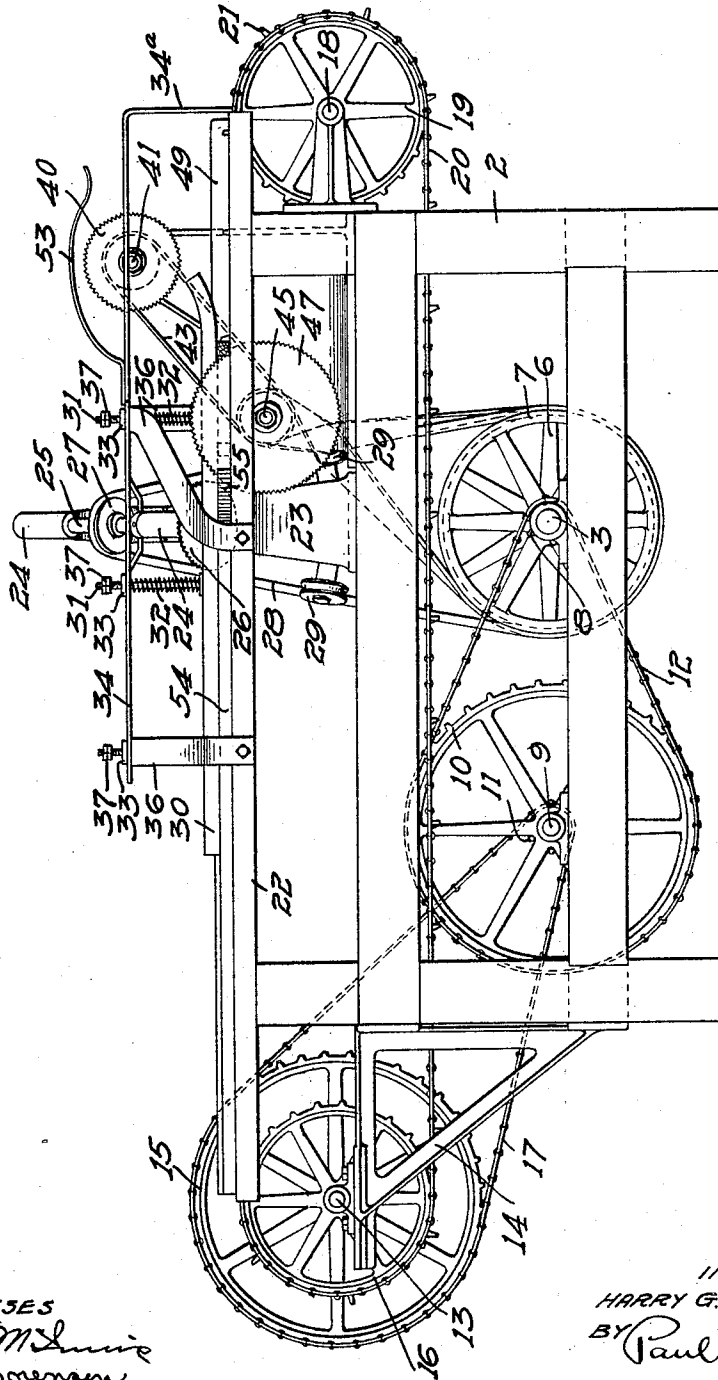


FIG. 1.

WITNESSES  
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G. E. Sorenson

INVENTOR  
HARRY G. SMART  
BY Paul & Paul  
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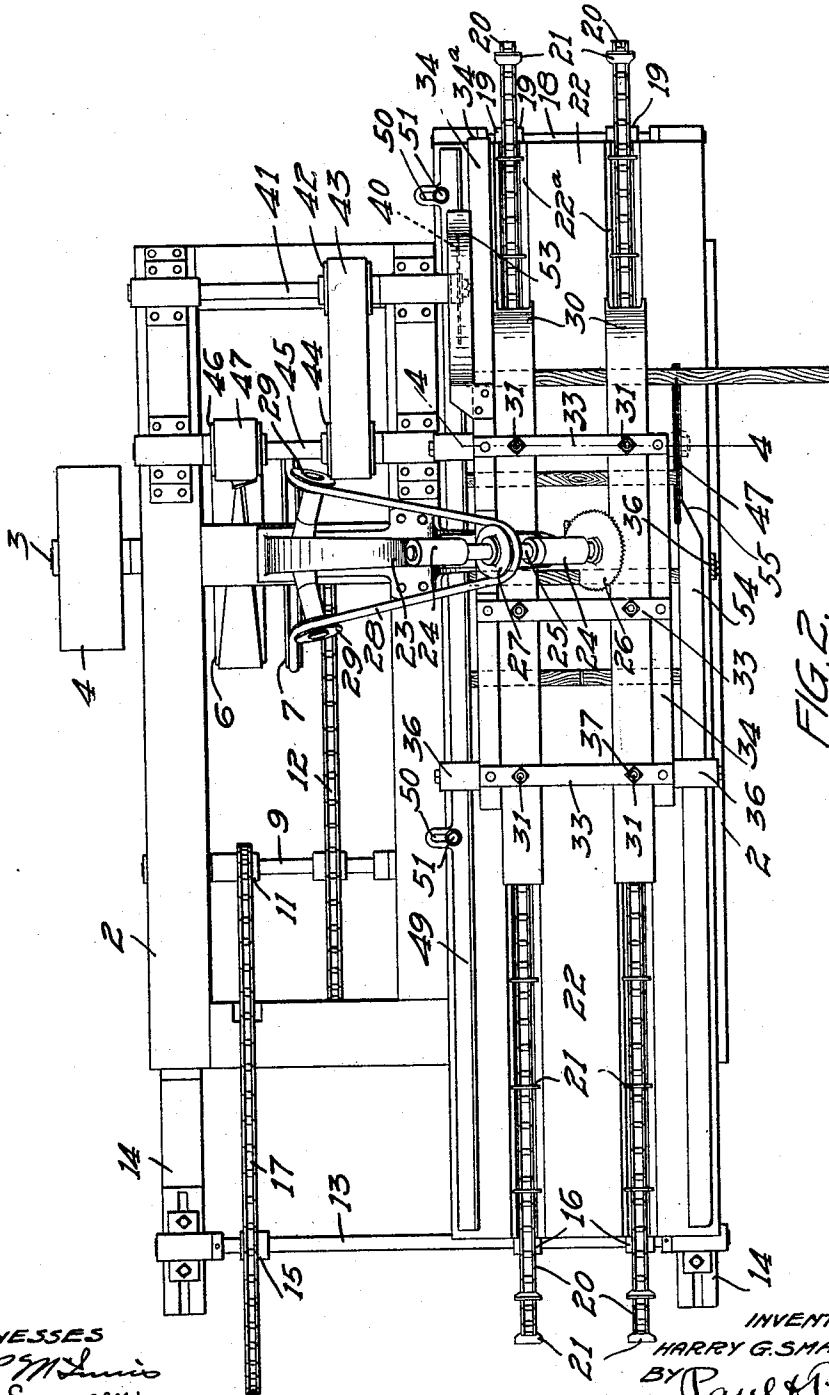


FIG. 2.

WITNESSES  
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1,211,974.

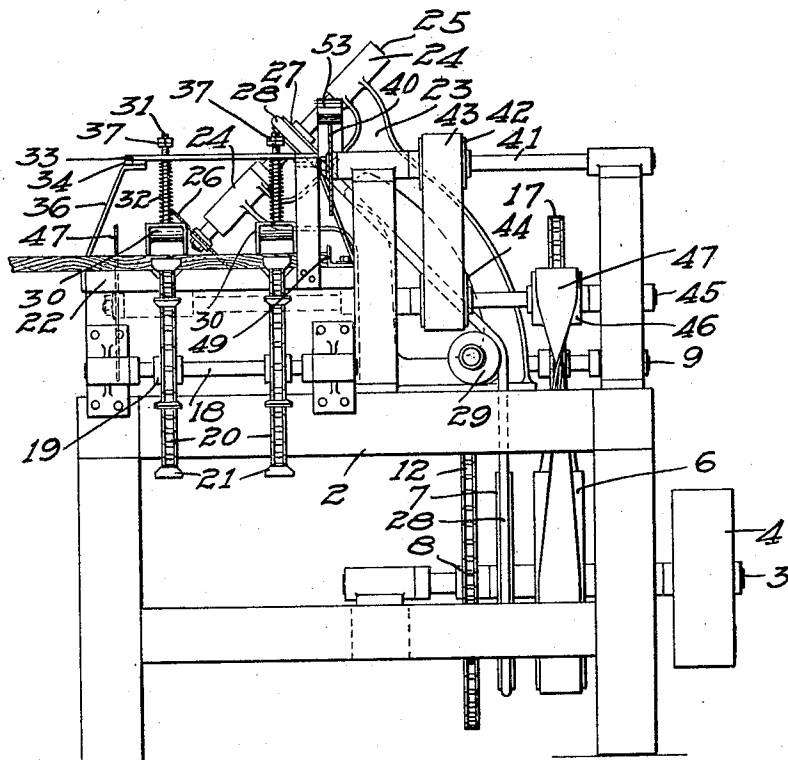


FIG. 3.

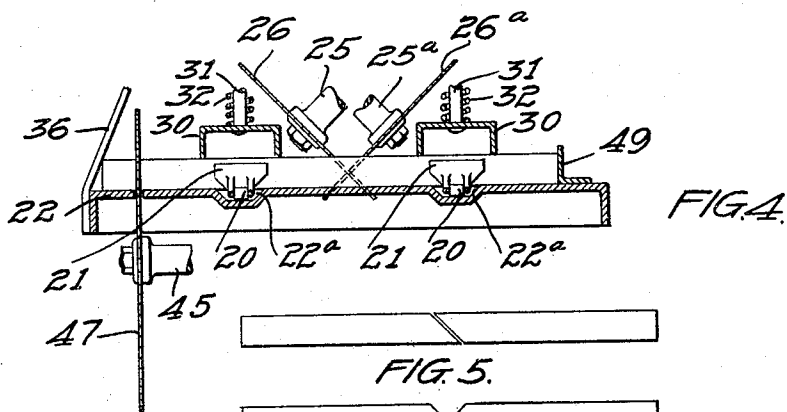


FIG. 4.

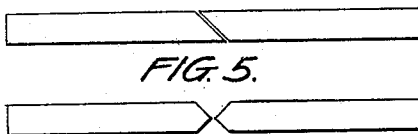


FIG. 5.



FIG. 6.

WITNESSES  
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INVENTOR  
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# UNITED STATES PATENT OFFICE.

HARRY G. SMART, OF ST. CLOUD, MINNESOTA.

## TIE-PLUG MACHINE.

1,211,974.

Specification of Letters Patent.

Patented Jan. 9, 1917.

Application filed January 8, 1914. Serial No. 810,955.

*To all whom it may concern:*

Be it known that I, HARRY G. SMART, a citizen of the United States, residing at St. Cloud, in the county of Stearns and State of Minnesota, have invented certain new and useful Improvements in Tie-Plug Machines, of which the following is a specification.

This invention relates to improvements in machines designed for cutting and pointing plugs used for filling the holes in wooden railway ties when the spikes are removed, to prevent them from decaying.

The object of the invention is to provide a machine that is simple in construction and by means of which the plugs may be rapidly formed and pointed ready for use.

The invention consists generally in the constructions and combinations hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a side elevation of a machine embodying my invention, Fig. 2 is a plan view of the same, Fig. 3 is an end elevation. Fig. 4 is a detail section on line 4—4 of Fig. 2, showing, however, the position of a second saw which may be used when it is desired to use center pointed plugs. Fig. 5 is a side elevation of two of the plugs illustrating the manner of cutting them so as to form a point located at one end of the plug. Fig. 6 is a similar view showing the double cut which produces the point at the center of the plug.

In the drawings, 2 represents the frame of the machine which may be of any suitable size and construction and which preferably has mounted therein a suitable driving shaft 3, provided with a belt pulley 4. This shaft is mounted in suitable bearings upon the frame of the machine and it is provided with the pulleys 6 and 7 and with a sprocket pinion 8. A counter shaft 9 is also mounted on the frame of the machine. This counter shaft is provided with a sprocket wheel 10 and pinion 11. The shaft 9 is driven from the shaft 3 by means of a sprocket chain 12 which passes around the pinion 8 and the wheel 10. The shaft 13 is mounted at one end of the machine, preferably in slidable bearings arranged in suitable brackets 14. This shaft is provided with a suitable sprocket gear 15, and with two sprocket wheels 16, 16. The shaft 13 is driven from the shaft 9 by the sprocket

chain 17 which passes around the pinion 11 and the gear 15. At the opposite end of the machine is located a counter shaft 18 carrying two sprocket wheels 19 corresponding to the wheels 16 on the shaft 13. Suitable carrier chains 20 provided with lugs 21 pass around the wheels 16 and 19. Supported upon the frame of the machine beneath the upper horizontal portions of the carrier chain 20 is a bed or table 22, having depressions 22<sup>a</sup> extending longitudinally thereof and forming guideways for the chains 20. This table serves for a support for the tie-plug strips while they are being moved forward and cut by the saw or saws and the depressions form guideways for the sprocket chain. I also provide upon the frame of the machine a standard 23 having inclined bearing boxes 24 in which is mounted an inclined shaft 25 carrying a suitable saw 26. The shaft 25 is provided with a suitable pulley 27 and is driven by a belt 28 which passes around the pulley 7 on the shaft 3 and around the inclined idler guide pulleys 29. By this means the shaft 25 and the saw 24 carried thereby are driven at any desired rate of speed.

Arranged above each of the carrier chains 20 is a guide bar 30 having an upturned forward end, said guide bar being provided with supporting rods 31, preferably surrounded by spiral springs 32. The guide bars are preferably formed of metal and are U-shaped in cross section, each bar providing two narrow bearing surfaces pressing upon the upper faces of the tie-plug strips. The lower ends of these springs bear upon the guide bars 30 and their upper ends bear against cross bars 33 connected by suitable longitudinal bars 34, said bars being supported by standards 36 on the table 22. The rods 31 pass through the cross bars 33 and are provided with suitable adjusting nuts 37. This arrangement of the presser bars 30 and the springs 32 causes the narrow edges of the said presser bars to be held with yielding pressure against the tie-plug strips while they are being passed through the machine. The edges bearing upon the plugs being narrow, there is little friction between the said bars and the strips.

I prefer to provide a cut off saw 40 arranged upon a counter shaft 41, said counter shaft being provided with a suitable pulley 42 and being driven by a belt 43 passing

around a pulley 44 on a shaft 45. The shaft is also provided with a pulley 46 and is driven by a cross belt 47 from the pulley 6 on the driving shaft 3. The shaft 45 is also preferably provided with a suitable cut-off saw 47 that is arranged below the table 22 and projects through a slot therein. It is located at the desired position to cut the tie-plug strips to the right length.

10 A horizontally adjustable guide rail 49 is arranged on the table 22 at the side of the machine opposite that having the cut-off saw 47. This guide bar is provided with suitable slots 50 and is held in position by  
15 suitable bolts 51. This arrangement of slots and bolts permits the guide bar to be adjusted near to or farther from the saw 26.

I preferably extend one of the bars 34 past the saw 40, and terminate it into a standard 34<sup>a</sup>, secured to the table 22. The said bar 34 extends parallel and in proximity to the face of the saw 40 and said bar forms a support for the tie-plug strip while the other end is being cut off or trimmed by  
25 the saw 40. I also prefer to provide a suitable guard strip 53 arranged over the saw 40 to protect the person using the machine. I also provide a strip 54 having a beveled edge 55 against the saw 47, the object of  
30 which is to direct the sawed off ends of the plugs away from the saw and chains.

A suitable slot or slots may be provided in the table to receive the lower edge of the saw 26, and the saw 26<sup>a</sup> when two saws are  
35 employed.

If preferred a duplicate of the saw 26 as shown at 26<sup>a</sup> may be provided, arranged upon a shaft 25<sup>a</sup> opposite the incline to the shaft 25. The shaft 25<sup>a</sup>, if used, is supported in bearings in a standard corresponding to the standard 23 but oppositely placed. When two saws are used one will be arranged in front of the other, so as to act successively upon the plugs.

45 Operation: In using the machine, the strips, if not already provided with square ends, may have their ends trimmed by the saw 40, after which they are placed upon the table and are engaged and moved forward by the lugs 21 upon the carrier belts, the trimmed end of the strip being placed  
50 against the guide bar 49. The strips will be

cut off the right length by the saw 47 and they are held firmly against the table as they are moved forward by the presser bars 30. 55 As they pass beneath the saw 26 they are cut in two as indicated in Fig. 5, each plug being given a sharp point located at one edge of the plug. If two saws are used then a second cut will be made thus forming the  
60 point at the center of the plug as shown in Fig. 6 of the drawing. The strips are passed rapidly through the machine. The plugs are held firmly against the table and are cut off to the right length and are pointed, 65 as illustrated, as they are passed through the machine.

I claim as my invention:

1. In a tie plug machine, the combination with a suitable table, of a pair of endless chains or conveyers upon said table, each of said chains being provided with a series of carrying lugs, a presser bar arranged over each conveyer and extending across the table substantially parallel with the line of  
75 movement of the conveyers, said presser bars being constructed so as to engage the tie-plug at opposite sides of the carrying lugs, and a saw for sawing entirely through the material in proximity to the upper face 80 of said table and between said conveyers.

2. In a tie plug machine, the combination with a suitable table, of a pair of endless chains or conveyers upon said table, each of said chains being provided with a series of  
85 carrying lugs, a U-shaped presser bar arranged over each conveyer and extending across the table substantially parallel with the line of movement of the conveyers, said U-shaped presser bars being constructed so  
90 as to engage the tie-plug at opposite sides of the carrying lugs, springs controlling the pressure of said bars, and an inclined saw arranged above the table with its lower edge in proximity to the upper face of said table 95 and substantially midway between said conveyers.

In witness whereof, I have hereunto set my hand this 29th day of December, 1913.

HARRY G. SMART.

Witnesses:

EDWARD A. PAUL,  
GENEVIEVE E. SORENSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."