Jan. 15, 1952 J. TACKETT 2,582,658

RAILROAD TIE DRESSER

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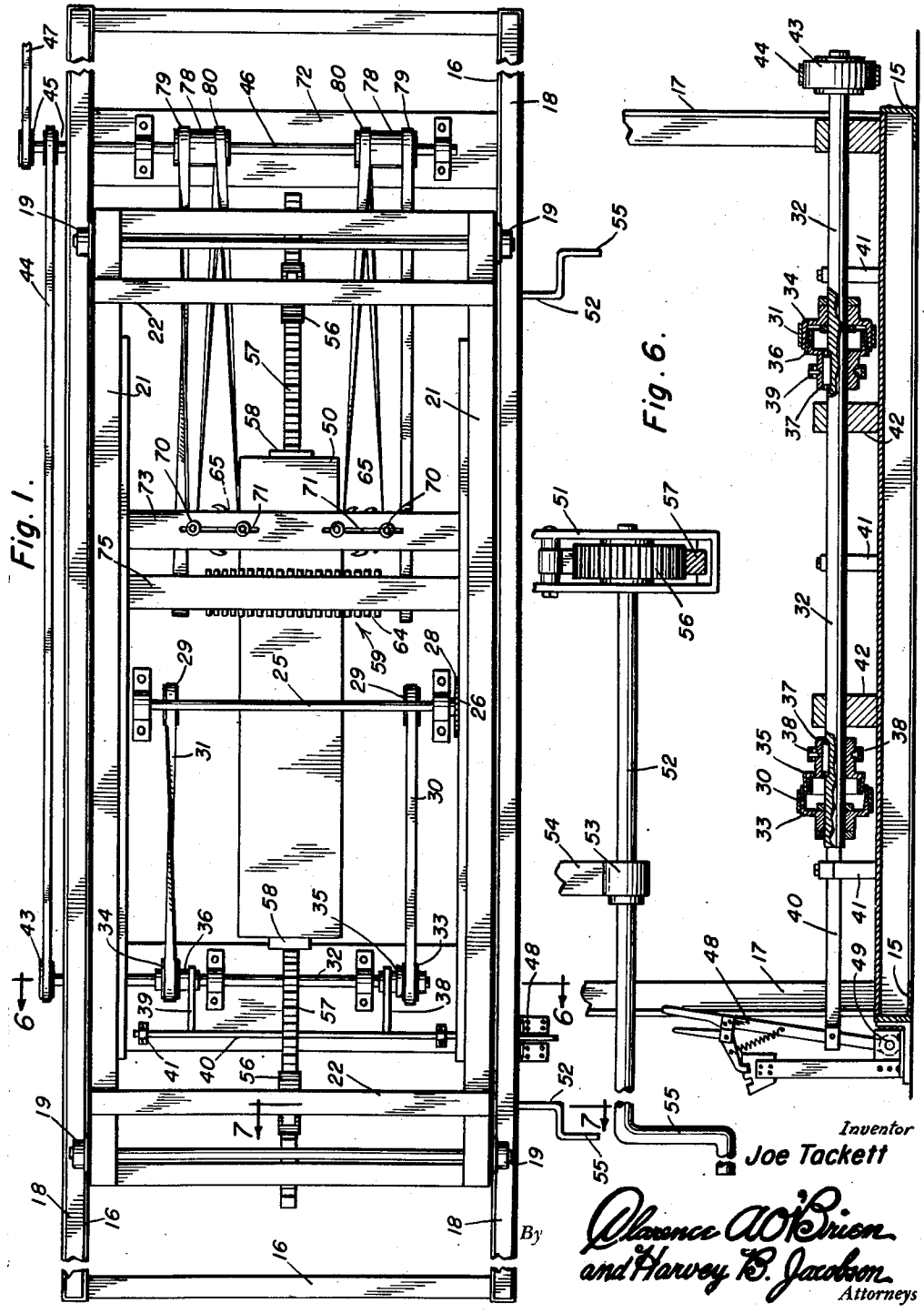


Fig. 1.

Fig. 6.

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Fig. 2.

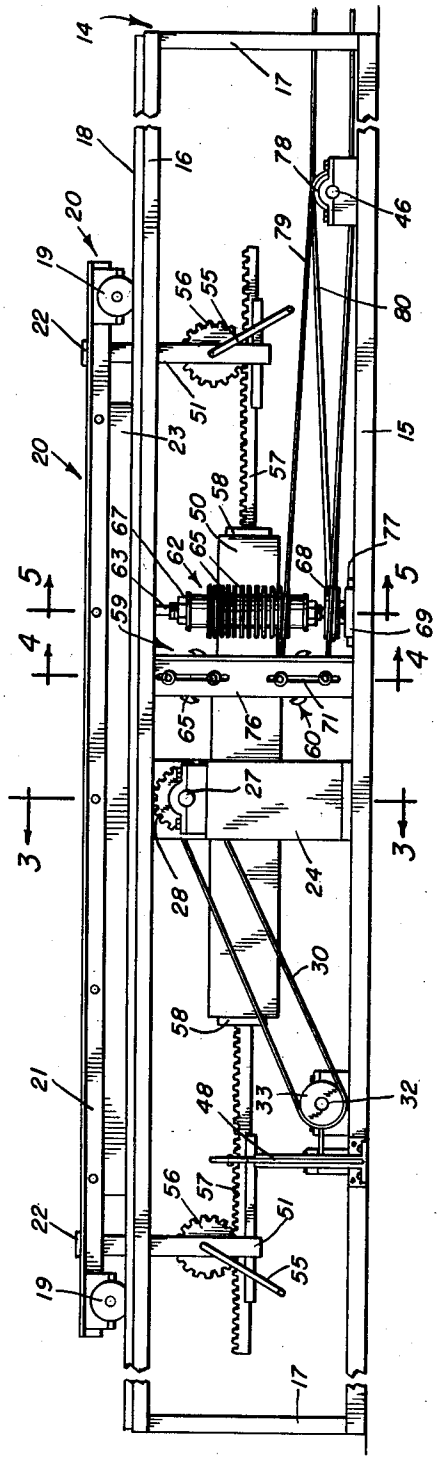


Fig. 7.

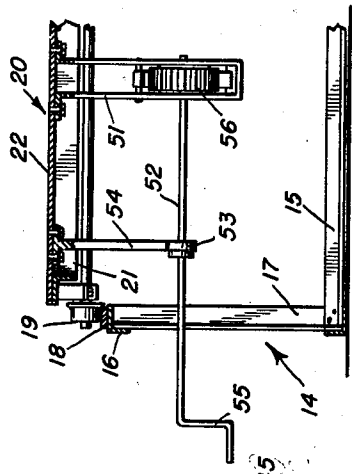
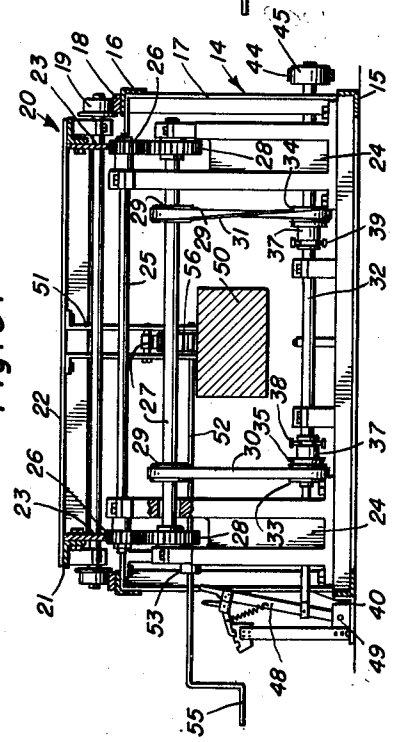


Fig. 3.



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Fig. 4.

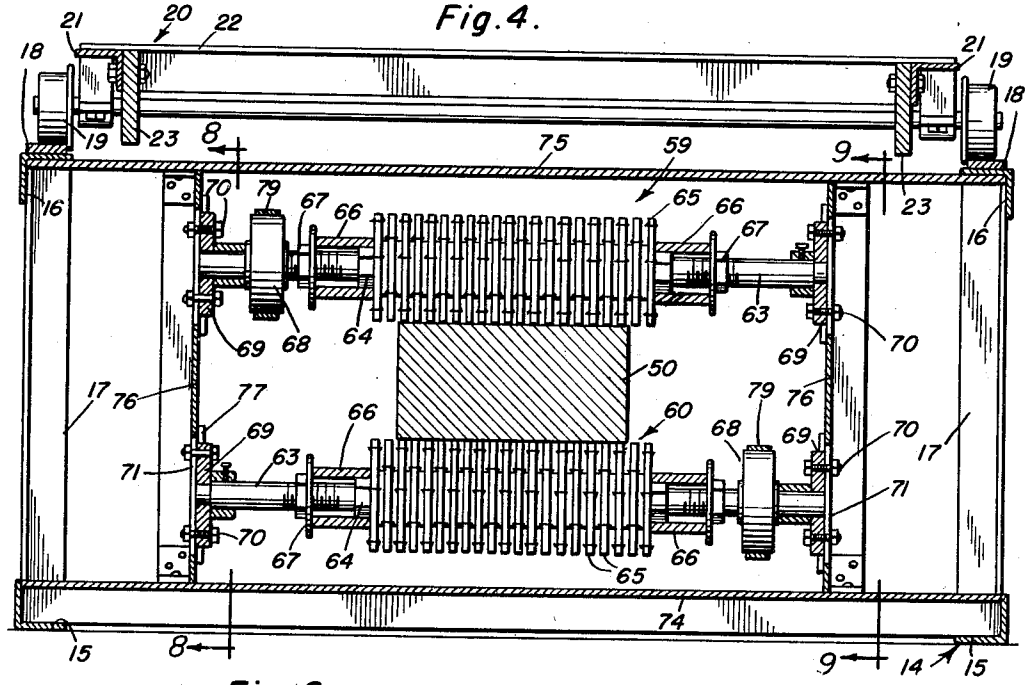


Fig. 8.

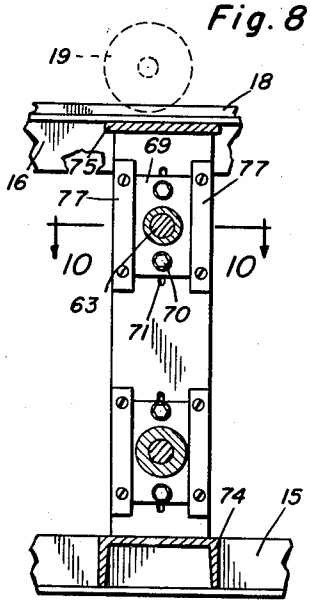


Fig. 9.

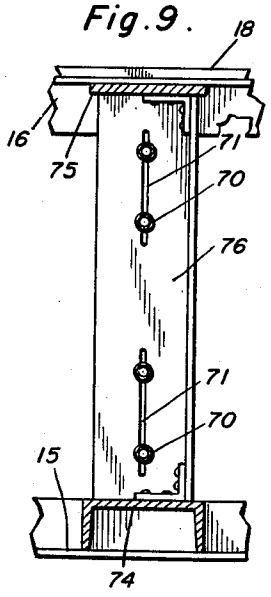
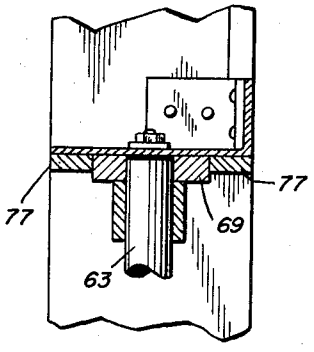


Fig. 10.



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Fig. 5.

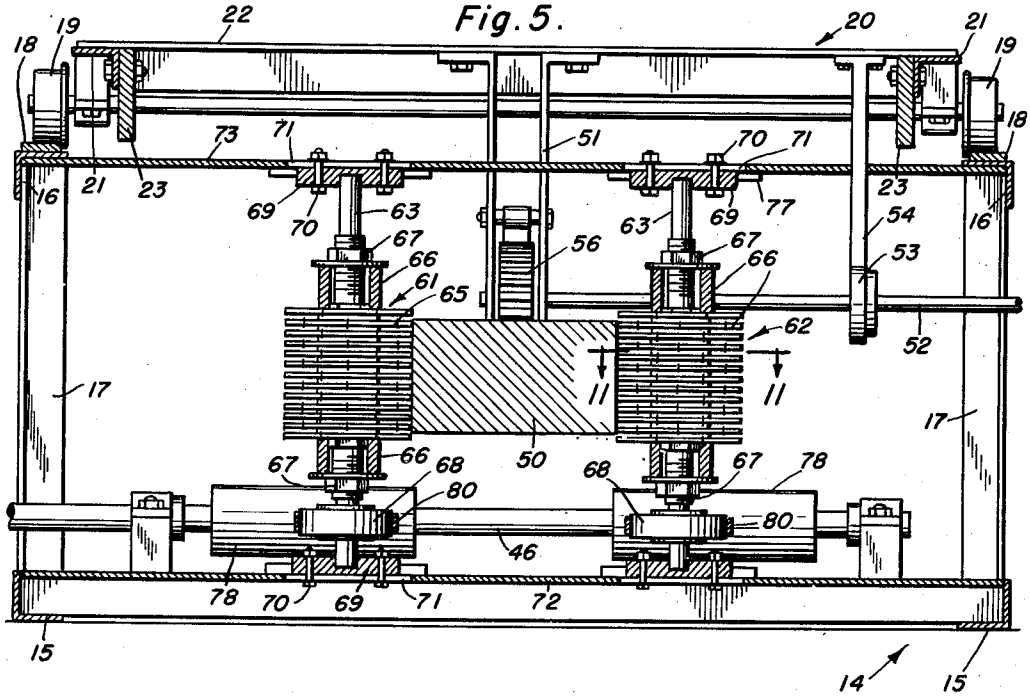


Fig. 12.

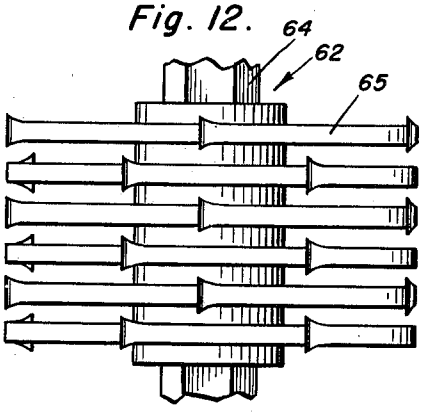
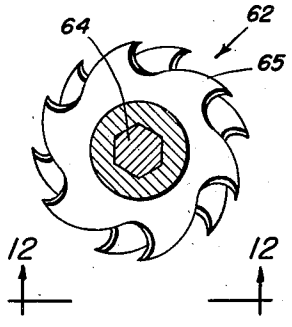


Fig. 11.



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UNITED STATES PATENT OFFICE

2,582,658

RAILROAD TIE DRESSER

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Application September 8, 1947, Serial No. 772,823

3 Claims. (Cl. 144—116)

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The present invention relates to a machine which is especially constructed to handle and to facilitate the steps required in properly surfacing and adequately dressing the four surfaces of a conventional-type railroad tie.

The primary object of the invention is to structurally, functionally and otherwise improve upon machines for surfacing and dressing work, particularly wherein a table-like carriage is shiftably mounted for reciprocation on a suitable foundational base or framework and wherein means is incorporated within the limiting confines of the framework to contact and treat the various surfaces of the work.

More particularly, in carrying out the principles of the invention I have evolved and produced a reasonably simple and satisfactory machine which lends itself admirably well to accomplishing desired results partly through the medium of a plurality of rotary cutter devices or units, said units being arranged in a group of four and being disposed in suitably positioned pairs, there being a pair of horizontal cutters for simultaneously conditioning top and bottom surfaces of the tie, and a pair of vertical cutters for simultaneously acting on and surfacing the longitudinal edges or surfaces of the tie.

More particularly, novelty is predicated upon hanger devices suspended from the carriage and operable within the confines of the frame and so situated as to permit the tie to be clamped therebetween and to be fed back and forth between the frame supported cutter devices in a practical and reliable manner.

Another object of the invention is to provide a simple and practical power transmission arrangement characterized by drive and driven shafts and an association of pulleys and belts all coordinating their conjoint functions in systematically reciprocating the work suspending carriage and likewise systematically operating and controlling the grouped cutter devices.

Other objects and advantages will become more readily apparent from the following description and the accompanying illustrative drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the views:

Figure 1 is a top plan view of a rail tie handling, surface treating and dressing machine constructed in accordance with the principles of the present invention;

Figure 2 is a side elevational view of the same;

Figures 3, 4 and 5 are transverse vertical sections taken on the lines 3—3, 4—4, and 5—5 of Figure 2, looking in the direction of the arrows;

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Figure 6 is a horizontal fragmentary sectional and elevation view on the line 6—6 of Figure 1, looking in the direction of the arrows;

Figure 7 is a fragmentary detail view on the line 7—7 of Figure 1, looking in the direction of the arrows;

Figures 8 and 9 are similar vertical sectional views on the planes of the lines 8—8 and 9—9 of Figure 4, looking in the direction of the arrows;

Figure 10 is a section on the line 10—10 of Figure 8;

Figure 11 is a section on line 11—11 of Figure 5, looking in the direction of the arrows; and

Figure 12 is an enlarged fragmentary elevational view on the line 12—12 of Figure 11.

Reference is had first to the general views illustrative of certain main assemblies. For example in Figures 1 and 2 we see the openwork framework or structure, this denoted by the numeral 14, the same comprising a plurality of angle irons or rails 15 providing a bottom frame, these angle irons being connected to similar angle irons or rails 16, forming the top frame, by way of vertical corner posts 17. The longitudinal rails of the frame at the top are provided with appropriate runners 18 which provide track rails, these serving to accommodate flanged rollers 19 appropriately mounted on and supported by a table-like carriage device 20. The carriage embodies appropriate frame members 21 (see Figure 5) connected by cross straps 22, said frame structure including longitudinal beams 23, the lower edges of said beams being serrated to provide rack teeth. It will be systematic, at this point, to direct attention to Figure 3 wherein it will be seen that the main frame structure 14 is provided with appropriate uprights 24 having bearings atop their upper ends to accommodate a horizontal cog-wheel shaft 25. This shaft is provided at its ends with cog-wheels 26 which mesh with the rack teeth on the plates 23. Supported below the shaft 25 is a similar and slightly larger gearing shaft and this is denoted by the numeral 27 and is provided with gears 28 at opposite ends which gears mesh with the cogs 26, driving the cogs and causing the cogs to actuate the carriage 20 back and forth. The shaft 27 is provided with pulleys 29, these to accommodate power transmitting belts 30 and 31, one belt serving to drive the carriage forward and the other belt to drive it rearwardly.

Continuing with this transmission phase, attention is directed to Figure 1 where it will be

seen that the lower ends of the belts 30 and 31 derive motion from a motion transmitting shaft 32. This shaft, as brought out to advantage in Figure 6, is provided with clutch pulleys 33 and 34, these fixedly keyed on the shaft. I now call attention to co-acting clutch members 35 and 36 having brake bands, these telescoped into the belt pulleys 33 and 34 in an obvious manner. Each of these devices 35 and 36 is provided with a sleeve 37 which is splined on the shaft. The sleeve is provided to accommodate a yoke 38 on one side and a similar yoke 39 on the other. These yokes are operable by a shifter member 40 operatively mounted in appropriate bearings or stands 41. Incidentally, the shaft 32 is mounted for rotation in bearings 42 and said shaft is provided on its outer end with a pulley 43 which is driven by a power supply belt 44. The belt 44 is operated by way of a pulley 45 on a drive shaft 46 which receives motion from a belt 47 from an appropriate source.

From the description of the details so far given it will be seen that the power from an appropriate source received by way of belt 47 drives drive shaft 46 and its pulley 45. Motion is transmitted from pulley 45 to pulley 43 which turns the driven special clutch equipped shaft. The shaft 32, the later clutch shaft is of the special construction shown in Figure 6 and therefore it is possible to shift the clutch means to rotate the shaft in either one direction or the other. By pushing the control lever 48 (see Figure 6) on its pivot 49 in a direction from, let us say, left to right, the shifter 40 goes in the same direction and this, through the yoke 38 disengages the clutch member 35. At the same time it engages the clutch member 36 with the clutch pulley 34. Moving the lever 48 and shifter rod 40 in the opposite direction from right to left the opposite result is attained. That is to say, the clutch 36 is disengaged and the clutch 35 is engaged. These clutches are arranged so as to provide the desired forward and rearward drive motions for the carriage, the carriage taking its motion by way of the gears 26 and 28 in mesh with each other and operated through the medium of shafts 25 and 27 receiving motion from the belts 30 and 31 (see Figure 3). Thus, we have so far covered the frame structure, the carriage means and the shafts, pulleys, and clutch arrangements whereby the carriage may be shifted back and forth in relation to the frame structure.

It is desirable to employ the shiftable carriage as a reciprocatory table for holding and accommodating the work. The work in the instant situation happens to be a railroad tie, this denoted by the numeral 50 in Figure 2 for example. Here we observe clamping devices suspended from the end portions of the carriage and engaged with the opposite end portions of the tie. Each clamping device is the same and a description of one will suffice for both. Attention is therefore directed in particular to Figures 6 and 7 where it will be seen that the preferred construction embodies a yoke 51 properly hung from the carriage 20, a shaft 52 mounted in a bearing 53 on a hanger 54 carried by the carriage, said shaft having a crank handle 55 at its outer end. Mounted on the shaft is a pinion 56 which meshes with the teeth of a rack bar 57 slidably mounted in the yoke. The rack bar has a clamping head 58 on its inner end which engages the adjacent end of the tie.

I next call attention to the group of four rotary cutter units or devices mounted within the confines of the frame structure and so positioned as to permit the log, tie or other work to be moved back and forth in relation thereto. It is desirable to simultaneously surface all four surfaces of the tie and any suitable tools or devices may be employed to accomplish this end. It is desirable however to employ rotary cutters and these are arranged in pairs. For instance in Figure 4 we see the horizontal cutters 59 and 60. Then, in Figure 5 we see the pair of close complemental vertical cuters 61 and 62. Each cutter is the same in construction and a description of one will suffice for all. The cutter includes a shaft 63 with a central polygonal portion 64 on which suitably arranged cutter blades 65 are mounted. The blades are independent and of toothed construction as shown for instance in Figures 11 and 12. The teeth are properly staggered and interrelated to produce the desired continuity in the cutting results. In addition, spacing collars 66 are provided and these are mounted in place by clamping nuts 67 and under the arrangement described it is possible to insert and remove cutter blades to adjust the total cutting surfaces to the width and thickness of the work to be acted on. Each shaft is provided with a power reception pulley 68. The end portions of the shaft are mounted in accommodation or adaptor blocks 69 having bolts 70 slidable in accommodation slots 71 provided therefor.

In Figure 5 we see the slots 71 in a transverse angle iron 72 embodied in the main frame structure. The slots at the top are in cross straps 73 also attached to the main frame structure by way of the top angle irons, this as is obvious. In Figure 4 a horizontal angle iron 74 is provided and this coacts with a horizontal cross piece 75 at the top and the two parts 74 and 75 support uprights or posts 76 in which the stated slots 71 for the bolts 70 are provided. The posts are fixedly mounted between parts 74 and 75. In addition, I provide cleats 77 wherever necessary to accommodate the shiftable blocks. The main thing is that each cutter device is the same, is bodily adjustable and is within itself adjustable so that the number of blades can be increased or diminished as conditions require. The cutter devices are in horizontal and vertical pairs and this makes it possible to adjust the pairs properly to accommodate variances in cross sectional width and thicknesses and also makes it possible to shave more-or-less off of top and bottom surfaces or side surfaces, as the case may be.

Coming now to the drive shaft again I call attention to the power take-off pulleys 77 and 78 which operate motion transmission belts 79 and 80. The belts are arranged in pairs and the pulleys are sufficiently large to handle same and the belts are obviously so arranged and twisted as to supply motion to co-acting pulleys 68 on the four rotary surface cutter devices 59, 60, 61 and 62 respectively.

The simple pulley, belt and shaft arrangement makes it possible to supply power from a single source to operate the drive shaft, to use the drive shaft for simultaneously operating the pulley equipped arrangement of four cutter devices. In addition the driven shaft 32 with its pulley arrangement and belts serves to supply the necessary motion for shifting the carriage back and forth. The carriage suspends the work and the work moves in proper relation between the sets or pairs of cutter devices and

all surfaces of the work are thus simultaneously acted on and desired results accomplished.

A careful consideration of the foregoing description in conjunction with the invention as illustrated in the drawings will enable the reader to obtain a clear understanding and impression of the alleged features of merit and novelty sufficient to clarify the construction of the invention as hereinafter claimed.

Minor changes in shape, size, materials and rearrangement of parts may be resorted to in actual practice so long as no departure is made from the invention as claimed.

Having described the invention, what is claimed as new is:

1. In a railroad cross-tie surfacing and dressing machine of the class described, a relatively stationary open-work foundation framework, a pair of opposed parallel rotary cutter devices horizontally mounted for operation within the confines of said framework, a second pair of opposed spaced parallel vertical rotary cutter devices also mounted within the confines of said framework and in close spaced proximity to said first-named cutter device and permitting the longitudinally reciprocable work piece to be shifted and operated back and forth between effective surfaces of said cutter devices in a manner to condition all work surfaces at substantially the same time, a carriage shiftably mounted atop said framework, means for moving the carriage back and forth in respect to said framework, and adjustable work suspending and clamping devices attached to and hung from said carriage and depending into said framework, said devices being engageable with the opposite end portions of the work piece in a manner to maintain same in a horizontal plane within the confines of the framework and to reciprocate it in operative association with said cutter devices.

2. The structure specified in claim 1, wherein said framework embodies horizontal track rails and said carriage is provided with wheels rollable along said rails, said carriage being a rectangular frame which is flat and free of obstructions and wherein said work suspending and clamping devices are attached to end portions of the carriage and depend into the framework in centered work-operating alignment in respect to the spaced pairs of cutter devices.

3. A railroad cross-tie surface cutting and dressing machine comprising a relatively stationary open-work foundational framework, said framework being of general rectangular construction and having a pair of spaced parallel

elevated horizontal track rails, a horizontal rectangular frame disposed in spaced parallelism above said track rails and having flanged wheels contacting and movable along said rails, said frame constituting a carriage and the upper side thereof being wholly free of vertical or other obstructions, a pair of opposed parallel rotary bladed cutter devices mounted horizontally for operation within the confines of said framework, a second pair of opposed spaced parallel vertical rotary cutter devices also mounted in said framework in longitudinally spaced relation in respect to said first-named cutter devices and all of said cutter devices being inter-related to one another and said framework to permit a cross-tie, while horizontally suspended from said carriage, to be moved by reciprocation between the effective cutting surfaces of said cutter devices, means adjustably mounting all of said cutter devices to allow the top, bottom and vertical side surfaces of the cross-tie to be progressively and proportionately acted on, a pair of vertically disposed yokes attached to the respective end portions of said carriage and depending within the confines of said framework and located in alignment with each other and also in working axial alignment with the respective cutter devices, horizontally disposed rack bars slidably mounted in the respective yokes and having the inner adjacent ends located to clamp against end portions of the cross-tie, and pinions operatively mounted on the respective yokes and having their teeth cooperable with the teeth on said rack bars, permitting the rack bars to be operated in respect to each other, said yokes and said cross-tie.

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