F. V. CARMAN.

WORK HOLDING CRADLE FOR SPIKE HOLE PLUG MACHINES.

APPLICATION FILED OCT. 27, 1919.

1,328,492.

Patented Jan. 20, 1920.

3 SHEETS—SHEET 1.

Fig. 1.

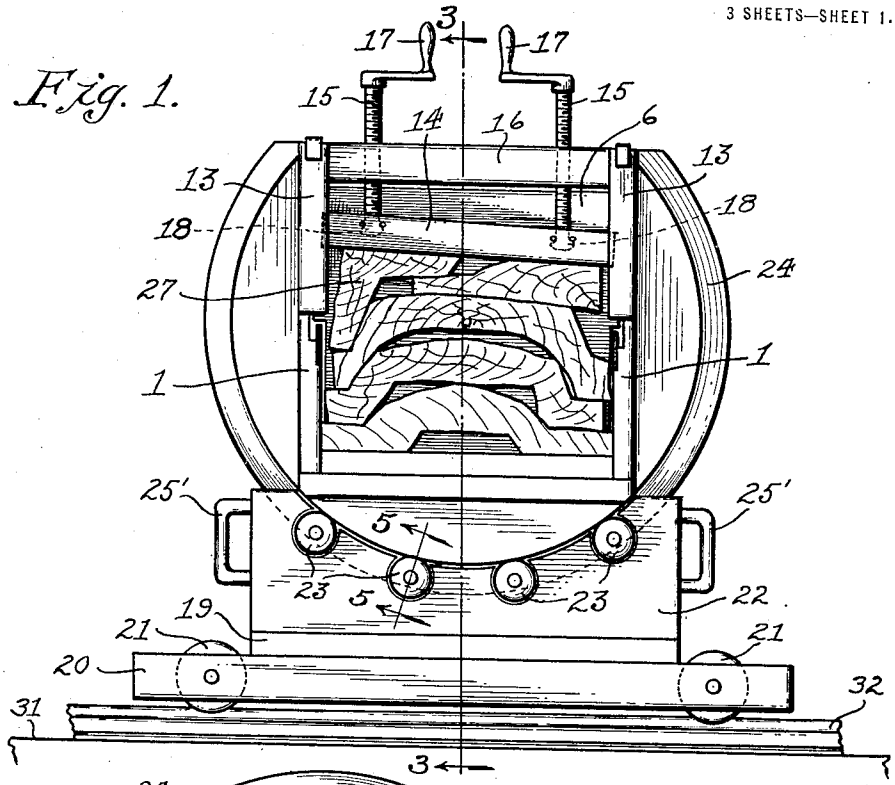
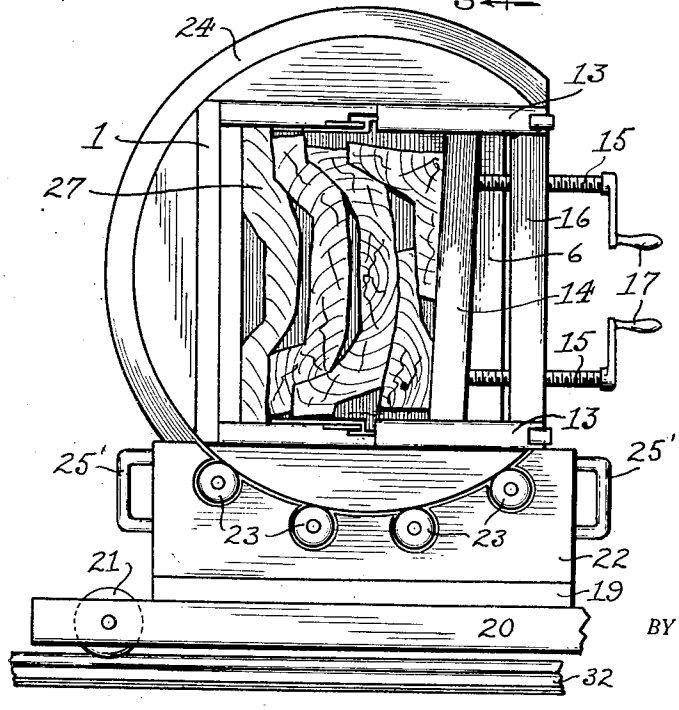


Fig. 2.



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3 SHEETS—SHEET 2.

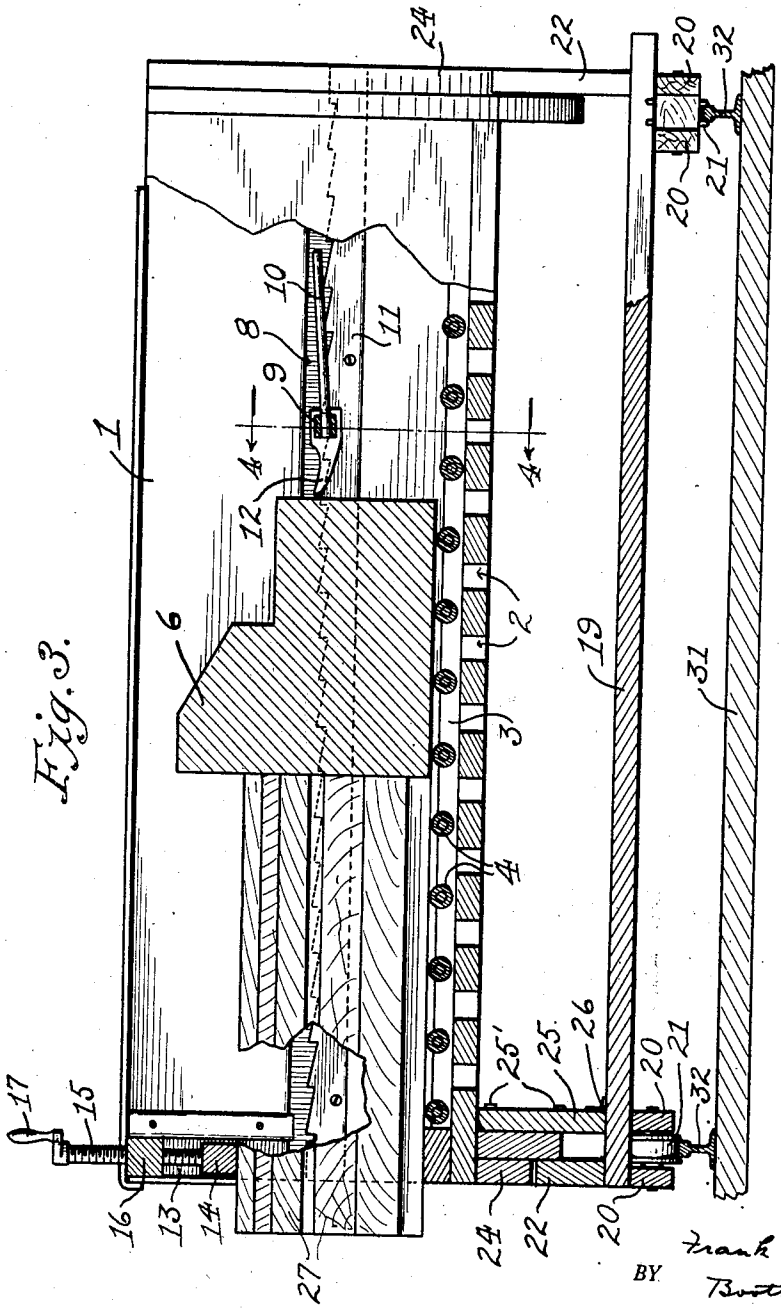


Fig. 3.

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3 SHEETS—SHEET 3.

Fig. 6.

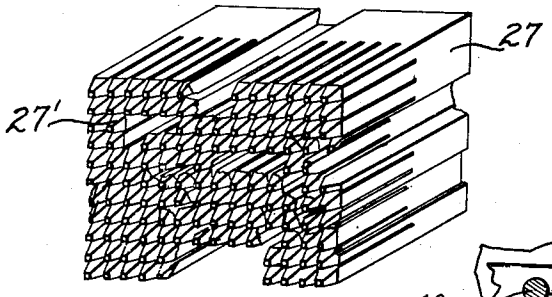


Fig. 4.

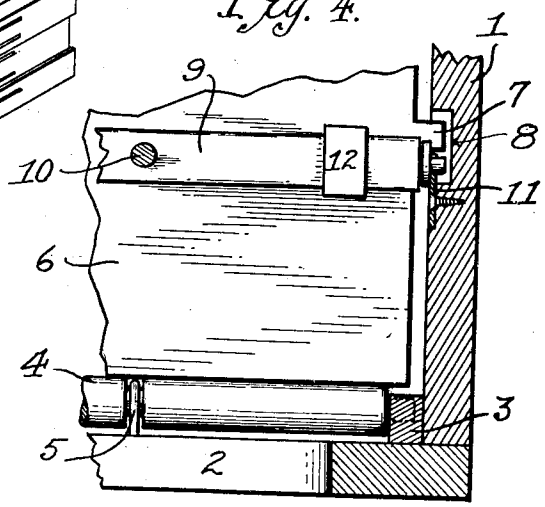


Fig. 5.

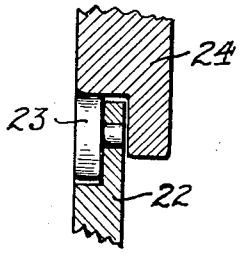
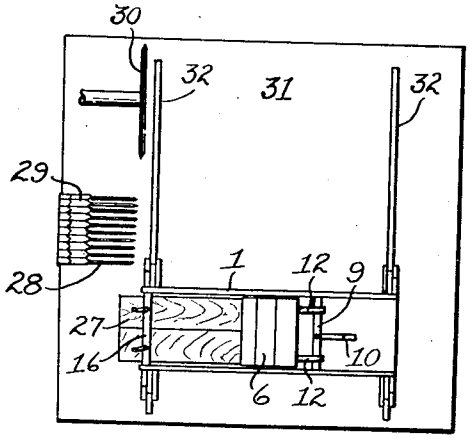


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRANK V. CARMAN, OF OAKLAND, CALIFORNIA.

WORK-HOLDING CRADLE FOR SPIKE-HOLE-PLUG MACHINES.

1,328,492. Specification of Letters Patent. Patented Jan. 20, 1920.

Application filed October 27, 1919. Serial No. 333,785.

To all whom it may concern:

Be it known that I, FRANK V. CARMAN, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Work-Holding Cradles for Spike-Hole-Plug Machines, of which the following is a specification.

My invention relates in general to machines for making wooden plugs, especially adapted for filling the spike holes left in railway cross-ties after the spikes have been drawn out, thereby restoring the holding capacity of the ties for fresh spikes or for the old ones redriven. In particular my invention relates to the cradles by which the work is held and presented to the cutting instrumentalities which make the plugs.

In machines for this purpose the work which is a block of wood, is carried in a cradle and is presented in one position to a gang of saws followed by a gang of pointing knives, the saws cutting a series of parallel kerfs in the block end to a depth determined by the length of the plugs to be made, and the knives beveling the ends of the cut sections. The cradle is then turned through an arc of 90 degrees, to present the block in a position a quarter turned, whereby a second series of parallel kerfs is made by the saws in the block end, at right angles to the first series and the pointing knives bevel the remaining sides of the cut sections. There is thus formed in the end of the block a group of pointed square plugs, as yet unsevered. The cradle is then moved to present the cut block to the cut off saw which severs the entire group of cut plugs from the block and dismembers it.

A machine for this purpose is fully disclosed in United States Patent, No. 1,218,836, granted to me March 13, 1917. Reference may be had to this patent if desired.

The object of my present invention is to provide a cradle for holding and presenting the work to the cutting instrumentalities, which is adapted to receive, firmly clamp and properly present a group of irregular slabs of wood, thereby using up refuse material.

To this end my invention consists in the novel work-holding-cradle which I shall hereinafter fully describe, by reference to the accompanying drawings, in which—

Figure 1 is an end elevation of my cradle in its upright position, showing a group of irregular mill-slabs held in position therein.

Fig. 2 is a similar end elevation, showing the position of the cradle after having been rotated a quarter-turn.

Fig. 3 is a partly broken longitudinal section, taken mainly on the line 3—3 of Fig. 1.

Fig. 4 is a sectional detail, enlarged, of the follower, taken on the line 4—4 of Fig. 3.

Fig. 5 is a sectional detail, enlarged, of one of the cradle-supporting rollers, taken on the line 5—5 of Fig. 1.

Fig. 6 is a perspective view of the end of the groups of slabs after the two kerfs have been made and the pointing done, but before the cutting-off operation, showing the plugs formed but still attached to the slabs.

Fig. 7 is a diagrammatic plan view showing the arrangement of the cradle with respect to the various saws and cutters.

The cradle-body 1 comprises two sides and a bottom. In the bottom are openings 2, Figs. 3 and 4, to permit the ready escape of any saw-dust which may and usually does accompany the refuse slabs which constitute the work from which the plugs are made.

Mounted in side cleats 3 secured to the sides of the body are the transversely disposed rollers 4, which overlie the bottom of the body and may have holding bearings 5, Fig. 4, at their middles.

6 is a follower block mounted in the body 1, and resting on the side-cleats and rollers, as shown in Figs. 4 and 5. The follower is guided and held in the body by side flanges 7, Fig. 4, sliding in grooves 8 in the body sides.

The follower 6 is set up in order to feed the work, by means of a rock-shaft 9 with a lever 10, Figs. 3, 4 and 7. The ends of the rock shaft are journaled in the grooves 8 of the body sides and engage the teeth of rack-bars 11, Figs. 3 and 4, secured to the sides of the body.

Cams 12 on the rock shaft bear against the back of the follower.

The operation of this detail is as follows:—The rock-shaft 9, being held by the rack-bars 11, lies up against the back of the follower 6, with its cams 12 extending downwardly. If now the shaft 9 be rocked by pulling back on the lever 10, the cams 12 rising against the follower will force said follower forward, the various parts taking the positions shown in Figs. 3 and 4. Then

the shaft being rocked forwardly, its cams move down away from the follower, and the shaft may then be manually bodily moved forward to engage advanced teeth of the rack-bars 11, in which position the shaft will lie against the follower ready to feed the latter forward again as in the first instance. The effective length of the cams 12 is equal to the distance between the rack-bar teeth, and these dimensions, it may be here stated, are the same as the length of the spike-hole-plugs to be cut from the work, as will more fully appear in the description of the complete operation.

Slidably mounted in vertical guides 13, Figs. 1, 2 and 3, at the front end of the body 1, is a transverse clamp-bar 14 carried by the lower ends of clamping-screws 15, which are threaded through a cross bar 16, and have handles 17. The connection between the lower ends of the screws 15 and the clamp bar 14 is a swiveled one, as indicated at 18, in Fig. 1, so that said bar may yield to any unevenness in the surface of the work upon which it is forced down by the screws, and may thereby bind uniformly.

19 is the carriage for the cradle body 1. The carriage has legs 20 with wheels 21. It also has end members 22 which are concaved on their upper surfaces on the arc of a circle, and in these arcuate surfaces are mounted anti-friction bearing rollers 23, Figs. 1, 2 and 5. The cradle-body 1, is provided at each end with a flanged member 24, Figs. 1, 2, 3 and 5, circular in contour and lying about the bottom and sides of the body. These flanged members fit and rest upon the concave arcuate surfaces of the members 22 of the carriage 19, the members 24 being in effect rockers and the members 22 rocker-beds, enabling the cradle body to be turned on its axis through a quarter revolution for its contemplated use, as shown in Figs. 1 and 2.

Upon the carriage 19, near one end is the body-locking bar 25, Fig. 3, with handles 25′, Figs. 1, 2 and 3. This bar is hinged transversely to the carriage at 26, Fig. 3, so that it may be turned to either a position perpendicular to the carriage or parallel therewith; and it has a width sufficient when turned to a perpendicular position, as shown in the drawings, to bear up under and against the bottom or the side of the cradle 1, as the case may be, thereby locking said cradle against movement on its axis.

27 indicates the work. This consists, as shown in Figs. 1, 2 and 3, of slabs of wood, irregular in shape and of various sizes. These slabs are usually refuse material, but they contain wood enough for many plugs.

They are grouped together in the cradle as compactly as their contours will permit and all are clamped together by the clamp-bar 14. Their rear ends abut against the follower 6, while their forward ends are initially sawed off evenly.

In Fig. 7 I have indicated somewhat diagrammatically a gang of saws 28, with an overlying gang of pointing knives 29. Also in a position to one side I have indicated a cut off saw 30, and associated with these cutting instrumentalities I have indicated a platform 31, with rails 32. Upon these rails I indicate my improved cradle 1.

The operation of my cradle will now be understood:—With the cradle drawn over to the near side of the platform 31, as shown in Fig. 7, the operator fills it with the slabs 27, the follower 6 being at its rearward limit, and bearing up against the rear ends of the slabs. By any suitable means the forward ends of the slabs are evened up and they project from the cradle a distance sufficient for the required length of plugs to be cut. The group of slabs are now clamped down tightly by the bar 14, and the cradle body 1 is locked against rotation by the bar 25.

The whole cradle is then pushed over on the platform rails 32, until the projecting end of the slab group 27 comes under the saws 28. The saws 28, followed by the pointing knives 29 now descend and cut into the work end, making a series of parallel kerfs the depth of the plugs to be made, and the knives bevel the cut sections on two sides. The saws and knives now ascend through the kerfs, and then, while the cradle is still in position, its body 1 is turned on its rockers 24 through a quarter revolution, the locking bar 25 having first been turned on its hinges to permit this movement. When the quarter turn of the cradle body is complete, the locking bar 25 is raised again to lock the cradle body and thereupon the saws and knives again descend and thus make a series of kerfs in the work end at right angles to the first kerfs; and the knives point the other sides of the sections, whereby there is made in the projecting end of the work a group or cluster of unsevered pointed plugs are shown in Fig. 6 by 27′.

Now the cradle is run over to the saw 30, Fig. 7, which cuts off the plugs, thus dismembering the group. Thereupon the cradle is run back to the first side of the platform, where the clamp-bar 14 is relieved, and then the rock shaft 9 is operated by the lever 10 to cause its cams 12 to force the follower 6 forward against the slabs 27 whereby said slabs are shoved or fed forward, sliding easily on the bottom rollers 4, a distance equal to the first projection of the work. When this is done, the rock shaft is moved bodily up in the next teeth of the rack-bars 11 and thus bears against and holds the follower 6. Then the clamp-bar 14 is restored and the operation of cutting a fresh group of plugs is repeated, and so on, until the slabs are used up.

I claim:—

1. A work-holding-cradle comprising a carriage; a cradle-body mounted on the carriage for axial rotation; means for locking the body at the limits of a quarter revolution; a movable follower in the body for feeding the work forward; and means at the forward end of the cradle body for clamping the work.

2. A work-holding-cradle comprising a carriage; a cradle body mounted on the carriage for axial rotation; means for locking the body at the limits of a quarter revolution; a movable follower in the body for feeding the work forward; a movable rock-shaft having cams for forcing forward the follower; rack-bars carried by the body for holding the rock-shaft in the positions to which it is successively moved; and means at the forward end of the cradle body for clamping the work.

3. A work-holding-cradle comprising a carriage having arcuate rocker-beds at each end; a cradle body having arcuate rockers at each end, seated upon the rocker-beds of the carriage, whereby said body may be turned on its axis; means for locking the body at the limits of a quarter revolution, and means for clamping the work in said cradle-body.

4. A work-holding-cradle comprising a carriage having arcuate rocker-beds at each end; a cradle body having arcuate rockers at each end, seated upon the rocker-beds of the carriage, whereby said body may be turned on its axis; means for locking the body at the limits of a quarter revolution, means for clamping the work in said cradle-body, and means for feeding the work forward in said body.

5. A work-holding-cradle comprising a carriage; a cradle-body mounted on the carriage for axial rotation; means for locking the body at the limits of a quarter revolution consisting of a bar hinged to the carriage and adapted to be turned into the path of revolution of the body; and means for clamping the work in the body.

6. A work-holding-cradle comprising a carriage having arcuate rocker-beds at each end, a cradle body having arcuate rockers at each end seated upon the rocker-beds, whereby the body may be turned on its axis; a transversely disposed bar hinged to the carriage and adapted to be turned into engagement with the body to lock it at the limits of a quarter revolution; and means for clamping the work in the cradle body.

7. A work-holding-cradle comprising a carriage having arcuate rocker-beds at each end, a cradle body having arcuate rockers at each end seated upon the rocker-beds, whereby the body may be turned on its axis; a transversely disposed bar hinged to the carriage and adapted to be turned into engagement with the body to lock it at the limits of a quarter revolution; and means for clamping the work in the cradle body and feeding it forward, consisting of a clamp-bar with operating screws, at the forward end of the cradle-body, a slidable follower in the body adapted to bear on the rear end of the work, a slidable rock shaft with cams acting on the follower, and rack-bars in the body for holding the rock-shaft.

8. A work-holding-cradle comprising a carriage; a cradle-body mounted on the carriage for axial rotation; means for locking the body at the limits of a quarter-revolution; a series of transversely-disposed rollers, in the bottom of the body, upon which the work rests; a movable follower in the body for feeding the work forward; and means at the forward end of the body for clamping the work.

9. A work-holding-cradle comprising a carriage; a cradle-body mounted on the body for axial rotation; means for locking the body at the limits of a quarter-revolution; a series of transversely-disposed rollers, in the bottom of the body, upon which the work rests; a movable follower, resting upon said rollers and operating in guide-ways formed in the body, for feeding the work forward; and means for clamping the work in the body.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK V. CARMAN.

Witnesses:
WILLIAM F. BOOTH, Jr.,
D. B. RICHARDS.