Dec. 7, 1943. E. T. PETERSON 2,336,289

RAIL TURNING MACHINE

Filed Oct. 13, 1941 2 Sheets-Sheet 1

Fig. 1.

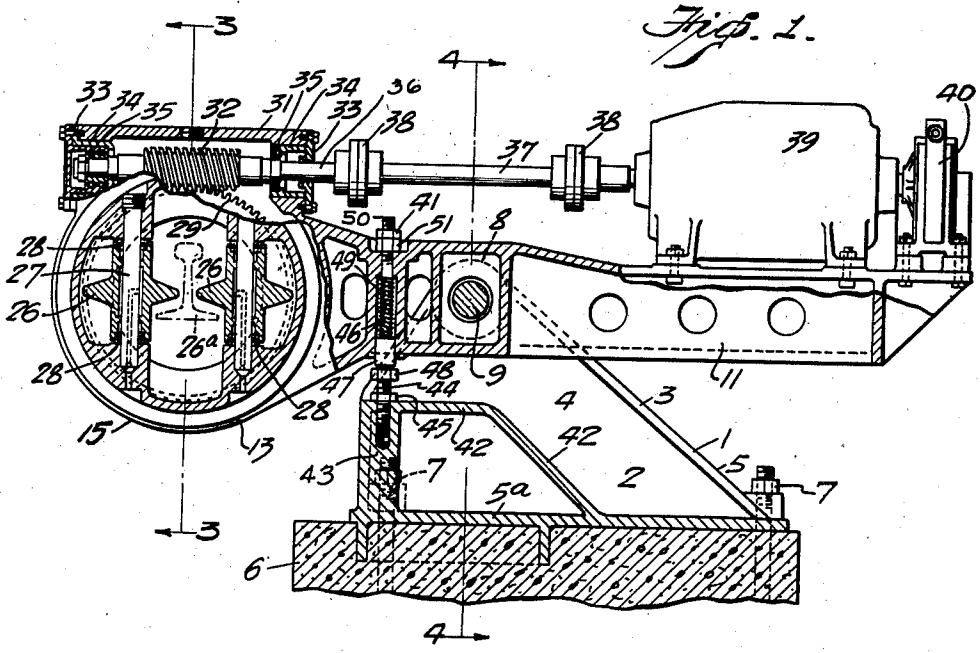
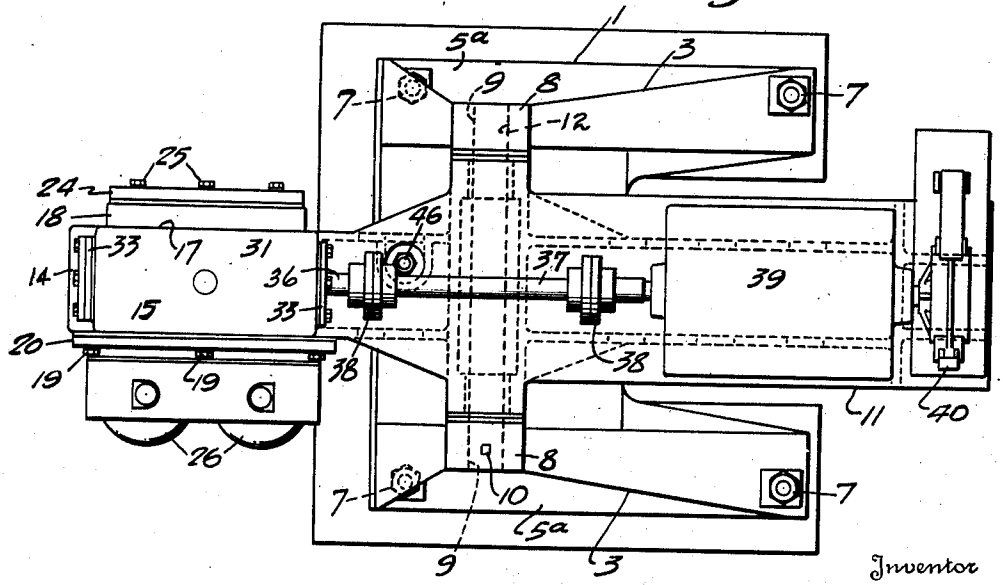



Fig. 2.




Inventor

EDWARD T. PETERSON

By Ernest J. Mecklin

his Attorney

Dec. 7, 1943. E. T. PETERSON 2,336,289

RAIL TURNING MACHINE

Filed Oct. 13, 1941 2 Sheets-Sheet 2

Fig. 4.

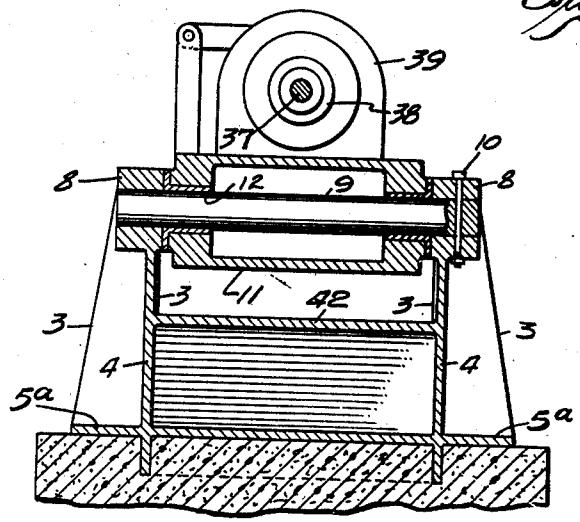
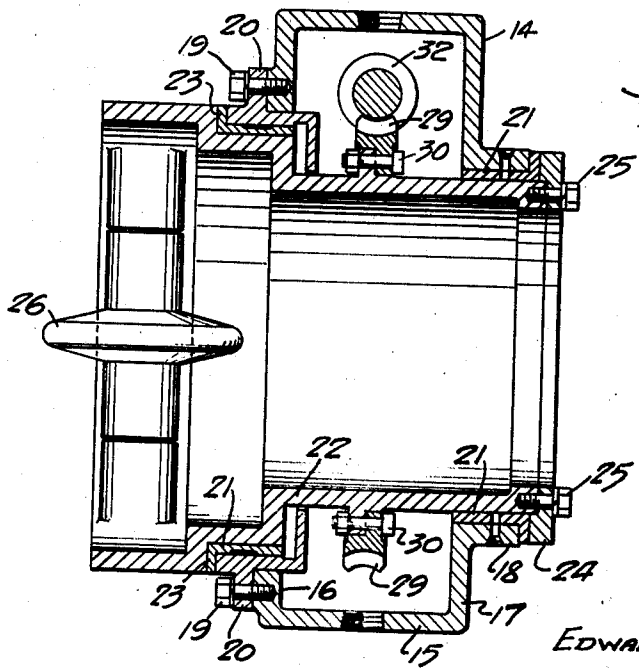



Fig. 3.




Inventor

EDWARD T. PETERSON

By Ernest C. Mechlin

His Attorney

Patented Dec. 7, 1943 2,336,289

# UNITED STATES PATENT OFFICE

2,336,289

## RAIL TURNING MACHINE

Edward T. Peterson, Reading, Pa.

Application October 13, 1941, Serial No. 414,896

2 Claims. (Cl. 214—1)

The invention relates to a rail turning machine.

In the manufacture of rails, the latter come from the delivery rolls of the mill in other than perfectly straight condition. It, therefore, becomes necessary to straighten them before they can be delivered for service. At the present writing, rails have been increased materially in weight over those heretofore used or made, and while formerly rails were handled after coming from the delivery rolls of a mill by hand, that is a plurality of workmen would, by means of special tools, rotate the rail as it passed through a straightening machine, the increased weight of rails prohibits this form of practice in turning a rail as it is fed through the straightening machine. With the above, therefore, as a background, an object of the invention is to provide a rail turning machine of simple, rugged and durable construction, capable of handling rails of any given size or weight.

Another object of the invention is the provision, in a rail turning machine, of a substantially balanced beam capable of having the rail receiving or engaging extremity thereof vary vertically to accommodate the particular disposition of the rail.

A further object of the invention is the provision, in a rail turning machine, of a beam which carries at opposite extremities thereof the rail receiving and holding mechanism and the power means to move the mechanism.

The above, as well as numerous other objects of the invention, will become apparent from the succeeding description considered together with the accompanying drawings wherein:

Figure 1 is a side view of a rail tilting or turning machine embodying the present invention and being shown partially in vertical section to more clearly illustrate the invention;

Figure 2 is a plan view of the rail tilting or turning machine shown in Figure 1;

Figure 3 is a transverse sectional view taken along the lines 3—3 of Figure 1 looking in the direction of the arrows;

Figure 4 is a transverse sectional view taken along the lines 4—4 of Figure 1 looking in the direction of the arrows.

Referring now to the drawings in detail where, through the several views thereof, there is disclosed an exemplified form of the invention and wherein like reference characters refer to like parts. The rail turning machine indicated generally by the numeral 1, is formed in part by a standard, bracket or pedestal 2, having laterally spaced upstanding or vertically disposed arms 3. Each standard arm is formed by a vertical web 4 generally of triangular configuration and having a peripheral, transversely disposed, reenforcing flange 5, the lowermost or horizontal portion 5a thereof forming a bearing plate and being mounted upon a footing or foundation 6 and anchored thereto through the medium of bolts 7 or any other desired securing means.

Positioned adjacent the upper extremities of the arms are a plurality of horizontally aligned bearings 8 arranged to accommodate extremities of a shaft or axle 9 which is locked in the bearings by removable pins or bolts 10 to prevent its shifting in a longitudinal direction and becoming accidentally displaced in service. Pivotally mounted on the shaft is a beam or swing support 11 having intermediate its ends a bore or axle accommodating opening 12 and being adapted to oscillate vertically about the axle in response to service forces. The outer or rail carrying extremity 13 of the beam is provided with a circular collar 14 formed by a transverse web 15 having an inturned flange 16 or a flange directed inwardly of the column at one extremity of the web and a flange 17 of greater extent than the first-named flange positioned at the other extremity of the web. The flange 17 has its free extremity terminating in an outwardly directed annular extension 18 which defines an opening smaller than that defined by the flange 16.

Removably associated with the inturned flange 16 through the medium of cap bolts 19 is a bearing ring 20 which defines a clear opening into the collar substantially equal to the opening formed by the annular extension 18. The bearing ring and annular extension each have a bushing 21 angular in cross section and adapted to guidingly receive a spider designated generally by the reference character 22 so as to permit the latter to rotate or revolve about a given axis. As will be noted by referring particularly to Figure 3 of the drawings, the spider is, in cross section, of stepped arrangement so as to present an angular shoulder 23 bearing horizontally against an associated bushing to present engaging, wearing or contacting surfaces and prevent a transverse movement of the spider in a direction inwardly of the collar from the illustrated position due to thrusts imparted to the spider in service. Locking the spider in a predetermined location and preventing its movement transversely or outwardly of the collar is a retainer ring 24 removably secured to the spider by cap bolts 25 and arranged to bear transversely against the associated bushings.

Associated with one or the bearing ring extremity of the spider is a pair of spaced rollers 26 journaled to the spider through suitable pins or shafts 27 and arranged for thrusts endwise of the shaft as well as to facilitate a free unrestricted rotation of the rollers through the medium of roller bearings 28. The rollers are spaced apart a sufficient distance to receive and support be-

tween and by the peripheries thereof a rail indicated diagrammatically as at 26a.

When a rail emerges from the delivery rolls of a mill, as hereinbefore indicated, it possesses kinks or bends and it becomes necessary to further process the rail to straighten it. The rail supported and handled by the machine of the instant invention is fed through the straightening machine and, since the latter contains a vertically movable or reciprocating ram, it becomes necessary during the straightening operation to rotate the rail through various degrees in order that the ram may be brought down to bear upon the rail and eliminate any kinks or bends appearing therein. For the fulfillment of the above, the portion of the spider within the confines of the collar is provided with a circular rack or worm gear 29 which is fixed to the spider by means of a plurality of suitably spaced bolts 30. Since the worm gear has an outside diameter greater than the clear or unrestricted opening into the collar defined by the bearing ring, the latter is made removable and the spider of stepped configuration so that the worm gear may be formed as a single casting or integral element and housed or positioned within the confines of the collar. There is provided a housing 31 generally of inverted U-shape and upstanding from the collar as an integral portion thereof to communicate with the inner confines of the collar or face inwardly of the beam. The housing forms a receptacle for the worm 32 which is intermeshed with the worm gear and is anchored to opposite end walls 33 of the housing through the mountings 34 which contain roller bearings or anti-friction assemblies 35 to allow an easy or free rotated movement of the worm.

Coupled to the worm gear, and particularly the shank portion 36 thereof which extends through and beyond one of the housings and walls, is a drive shaft 37 extending substantially horizontally in a plane above the beam and containing suitable couplings 38. Anchored at the other end of the beam or the end thereof removed from the collar is a motor or driving means or mechanism 39. The motor is carried or supported by one end of the beam at a location so as to substantially or normally maintain the beam in a balanced state or horizontal disposition. By thus arranging the beam, the rollers 26 are retained in a proper or predetermined elevation to intercept a rail to be inserted or admitted therebetween. Mounted on or carried by the beam in coupled relation with the motor is a solenoid brake 40 to control the movement of the motor or to interrupt the driving mechanism when the rail has been rotated to a desired position.

While the motor and brake function as a counter-balance, the beam, when carrying a rail between the rollers 26 thereof, will be urged in a counter-clockwise direction until, in the absence of some provision, it comes into contact with some element or instrumentality to arrest such a movement and so as to eliminate an excessive counter-clockwise movement of the beam which would lower the rail to a position not conforming with the rail straightening machine or device, there is provided a resilient means or cushioning element 41 which compensates for the added weight of the rail and still maintains the beam in a substantially horizontal disposition. Since, as previously stated, the beam is normally balanced, it remains only necessary to counteract a counter-clockwise motion of the beam due to the added weight of the rail, and accordingly there is provided in the support a shelf 42 which extends between and is secured to the webs of the arms to rigidify the latter against service stresses. Depending from the shelf for any desired distance is a column 43 which has a suitably tapped aperture communicating with an aligned tapped aperture in the shelf with both apertures accommodating a threaded element or bolt 44 which extends above the shelf a predetermined distance and is held firmly in place against rotation by means of a locking element or jamb nut 45. Guidingly received by aligned openings in the beam located in the proximity of the pivot means or axle 9 is a vertically disposed plunger 46 having the major portion thereof encased by the beam and comprising an upset or enlarged lower extremity 47 bearing upon or in intimate contact with a subjacent head 48 of the bolt 44. Reacting vertically against the plunger enlarged extremity and the overlapping portion of the beam is a resilient means or spring element characterized by a coil spring 49 which is retained in assembled relation with the plunger by having the stem 50 thereof extend through the spring. A rotatable element such as a nut 51 is threadedly associated with the free extremity of the plunger stem outwardly of the beam to maintain the spring under a desired compression and also limit the movement of the plunger downwardly toward the bolt. The cushioning element 41 is, through the bolt 44 and plunger 46, rendered adjustable so that, due to manufacturing tolerances or variations in the several or various parts making up the rail tilting machine, the beam may be set in a normally fixed disposition to have the rollers properly positioned to accommodate the straightening machine.

From the above, therefore, it will be observed that various alterations may be made to the exemplified form of the invention hereinbefore described and illustrated without departing from within the spirit of the invention and the scope of the appended claims.

I claim:

1. In a machine for turning a rail, the combination of a standard, a beam balanced irrespective of the disposition of said rail, a pivot means extending through said beam intermediate the ends thereof and supported by said standard, resilient means in the proximity of said pivot means reacting at all times against said beam and standard, a member adapted to receive and rotate a rail carried by one end of said beam outwardly of said resilient means, and an actuating means for said member mounted upon the other end of said beam.

2. In a rail turning machine, the combination of a standard, a balanced beam, pivot means extending through said beam intermediate the ends thereof and supported by said standard, adjustable resilient means carried by said beam adjacent said pivot means and reacting at all times against said standard, a rotatable spider carried by an end of said beam outwardly of said resilient means, rail engaging means within said spider, and spider rotating means mounted upon the other end of said beam.

EDWARD T. PETERSON.