Nov. 15, 1927. 1,648,900

E. F. HEARD ET AL

TOOL CARRIER FOR LATHES

Filed Dec. 4, 1924

Fig. 1.

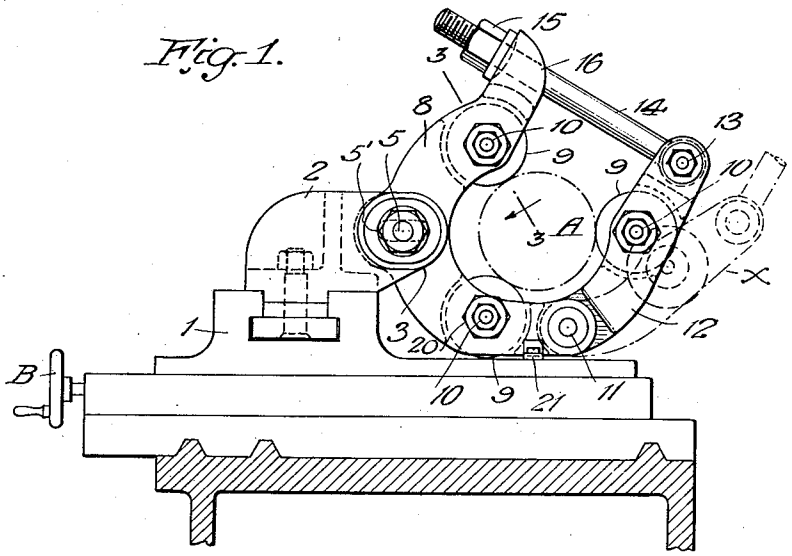


Fig. 2.

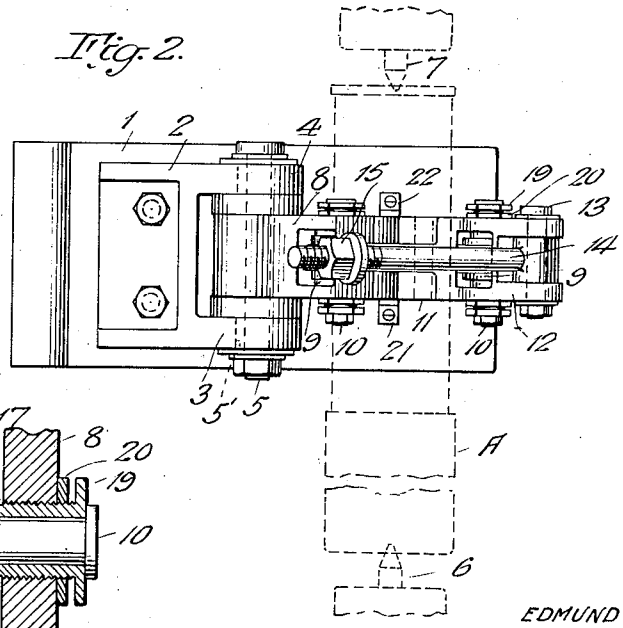
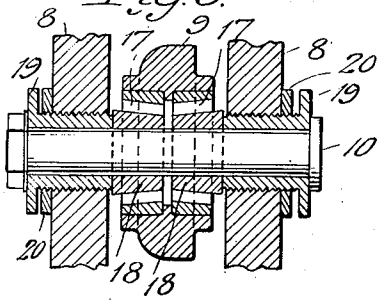


Fig. 3.



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UNITED STATES PATENT OFFICE.

EDMUND F. HEARD, OF ELIZABETH CITY COUNTY, AND MAYO M. FITZ HUGH, OF NEWPORT NEWS, VIRGINIA, ASSIGNORS TO NEWPORT NEWS SHIPBUILDING & DRY DOCK COMPANY, OF NEWPORT NEWS, VIRGINIA, A CORPORATION OF VIRGINIA.

TOOL CARRIER FOR LATHES.

Application filed December 4, 1924. Serial No. 753,889.

Our invention relates to carriers for members operative upon the work being treated in lathes and has for its object the provision of an improved device of this character. More particularly, our invention relates to burnishing mechanism for lathes, either of the single end type commonly known as engine lathes, or of the double end center driven type.

An object of our invention is to save wear on the lathe centers by relieving them of the thrust resulting from the use of a single burnishing roller when roll burnishing axle and shaft journals and the like, which desirable result is obtained by using a plurality of rollers, so disposed that the strains set up by the pressures applied to the axle or shaft are contained within a closed unit.

Another object is to increase the production per machine.

Our invention will be better understood from the following description taken in connection with the accompanying drawings and its scope will be pointed out in the appended claims.

In the drawings illustrating our invention:

Fig. 1 is a side view of our invention, with closed and open positions indicated in full and broken lines respectively.

Fig. 2 is a plan view as viewed from the top of the lathe, with lathe centers indicated, and

Fig. 3 is a sectional view of one of the rollers, taken on the line 3—3 of Fig. 1.

Referring to the drawings, in which 1 indicates a lathe carriage, which has fixed thereon in any suitable manner a bracket or holder 2 having arms 3, 4, which support a pin or bolt 5, parallel with the center line of the lathe centers 6, 7, as shown in Fig. 2. The bolt 5 is preferably held in a slot 5′, the purpose of which will be pointed out hereinafter. The bolt 5 supports a curved frame 8, as shown, which is provided with a plurality of rollers 9, rotatable on pins 10. The lower free end of frame 8 has pivotally connected thereto on a pin or bolt 11 an arm or extension 12, which is also provided with a roller 9, rotatable on a pin 10. The axes of the pins 10 are also parallel with the center line of centers 6, 7. While we do not limit ourselves to any particular number of rollers 9, we preferably provide two of such rollers on the frame 8 and one on the pivoted arm 12 arranged as shown in Fig. 1. The free end of arm 12 has pivoted or hinged thereon on pins 13, a bolt 14, provided at its opposite end with a nut 15. Said free end of bolt 14 is adapted to fit into a slot 16 provided in the upper free end of frame 8.

In order for our invention to function properly, it is necessary that pins 10 supporting rollers 9 be parallel with the line through the lathe centers, and that the rollers 9 have no appreciable lateral movement on their pins. To accomplish this result, the rollers are provided with tapered roller bearings 17 and conical bearings 18 to permit easy running with the minimum lost motion. As a further safeguard against lost motion and lateral movement, the frame 8 is bored and threaded to receive adjusting sleeves 19 which may be adjusted to bear against the bearings 18, and held in position by lock nuts 20.

In using our invention, the nut 15 is loosened, and hinged bolt 14 is disengaged from slot 16, which allows arm 12 to swing about its pivot 11 to open position indicated in broken lines at X. The axle or shaft A, to be worked upon, is inserted, as shown in Fig. 1, and bolt 14 reintroduced into slot 16. The nut 15 is tightened, bringing rollers 9 into contact with said piece of work A. By tightening nut 15, the pressure between the work A, and rollers 9 may be increased and since frame members 8 and 12 and bolt 14 constitute a closed system, and since the bolt 5 is fitted in a slotted hole 5′, there is no additional strain upon the lathe centers, due to the pressure of rollers 9 on the centers 6, 7, about which the work A is turning. It is necessary in order to secure accuracy of the finished work that the rollers be maintained in a definite and fixed relation with each other. This requirement is fully complied with by means of the threaded bolt 14 which holds the frame members rigidly together, thus preventing springing of the rollers due to irregularities in the work. If sufficient looseness is allowed between the cross-feed screw B of the lathe and its nut, the slot 5′ may be omitted, and the necessary clearance to allow the mechanism to float and accomodate itself to any irregularities or eccentric displacements of the axle or shaft being burnished, may be obtained by

moving the entire cross slide carriage 1 to which the bracket 2 is fixed.

When such articles like railway axles have shoulders to be burnished, a considerable pressure along the axes of pins 10 is necessary, and there is therefore a tendency to rotate the frame and its appurtenances about a vertical axis which passes through the pin 5. To overcome this tendency, stops 21, 22 are introduced on each side of the frame 8, the inside surfaces of the stops adjacent the frame being vertical planes. Thus it will be seen that the frame 8 with its appendages is free to rotate within small limits about pin 5, while the thrust from the shoulder burnishing is taken by stops 21, 22. This permits more intense pressure along the axis of pins 10 and at the same time forces or tends to force the rollers 9 against the work with equal intensity.

While we have described our invention as embodied in concrete form in accordance with the provisions of the patent statutes, it should be understood that we do not limit our invention thereto, since various modifications thereof will suggest themselves to those skilled in the art without departing from the spirit of our invention, the scope of which is set forth in the annexed claims.

What we claim and desire to secure by United States Letters Patent is:

1. Burnishing apparatus comprising, a fixed support, a frame including a supporting member, said member being pivoted centrally on said support so as to permit movement thereof eccentrically with respect to the axis of the work to be burnished, rollers carried on said member at equal distances at each side of said pivot, a second member pivoted on the first member, a roller on said second member and so located thereon as to be spaced from the first rollers by distances equal to the spacing of said rollers on said supporting member and means for drawing said second member toward the first member.

2. Burnishing apparatus comprising, a fixed support, a frame including an arcuate member, said arcuate member being centrally pivoted and slidably mounted on said support so as to permit movement thereof eccentrically with respect to the axis of the work to be burnished, rollers carried on said member at equal distances from said support, a second member pivoted on the first member, a roller on said second member and so located thereon as to be spaced from the first rollers by distances equal to the spacing of said rollers on said arcuate member, means for drawing said second member toward the first member and means for preventing said frame from moving longitudinally with respect to the work.

3. Burnishing apparatus comprising, a fixed support, a frame including an arcuate member, said arcuate member being centrally pivoted and slidably mounted on said support at substantially the height of the axis of the work to be burnished so as to permit movement thereof eccentrically with respect to the axis of the work, rollers carried on said member at equal distances from said support, a second member pivoted on the first member, a roller on said second member and so located thereon as to be spaced from the first rollers by distances equal to the spacing of said rollers on said arcuate member, means for drawing said second member toward the first member and means for preventing said frame from moving longitudinally with respect to the work.

Signed this 25th day of November, 1924.

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