No. 683,109. Patented Sept. 24, 1901.

C. S. DUTTON.

MACHINE FOR POLISHING OR BURNISHING METAL BARS OR RODS.

(Application filed Dec. 11, 1900.)

(No Model.)

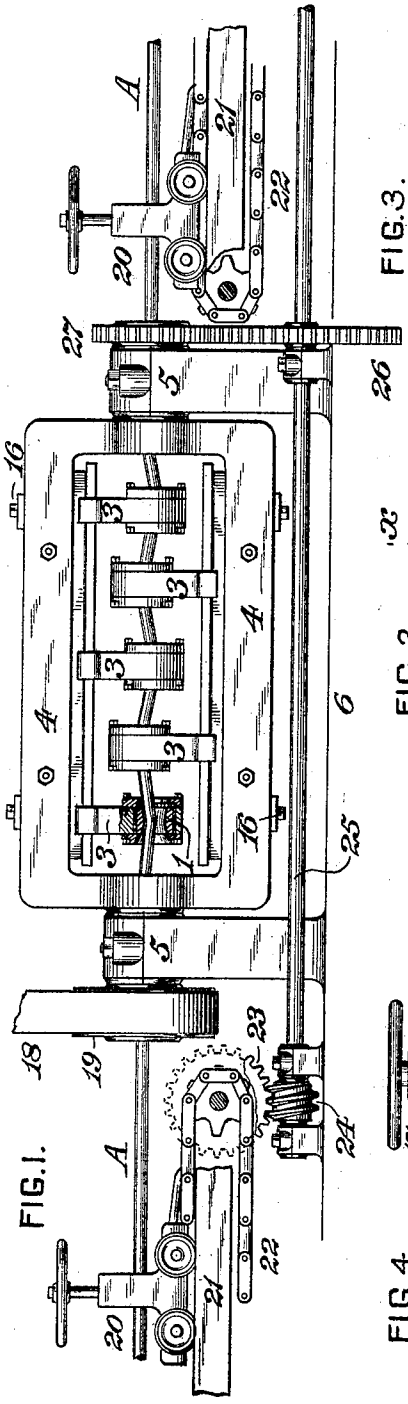


FIG. 1.

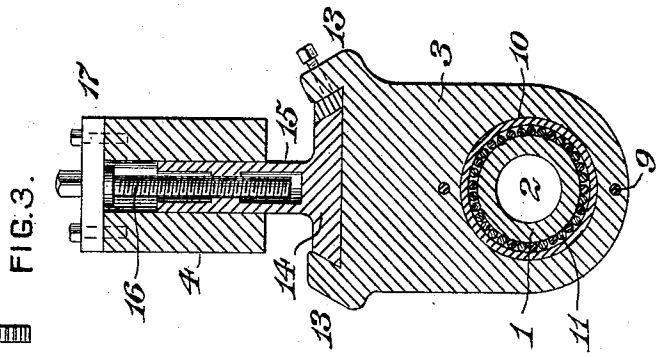


FIG. 3.

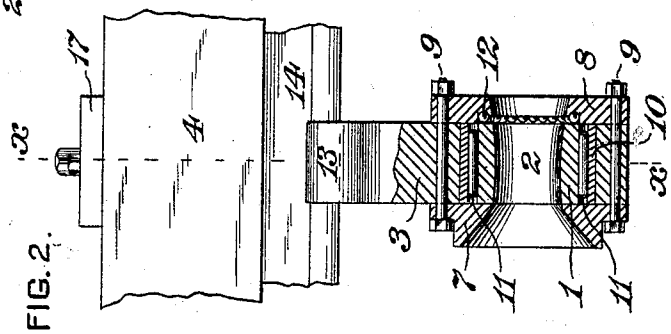


FIG. 2.

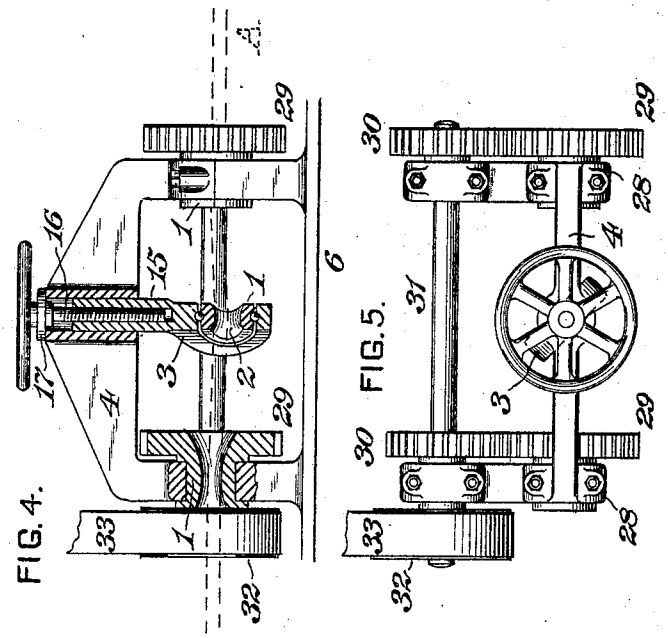


FIG. 4.

FIG. 5.

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CHARLES SEYMOUR DUTTON, OF PERTH AMBOY, NEW JERSEY.

MACHINE FOR POLISHING OR BURNISHING METAL BARS OR RODS.

SPECIFICATION forming part of Letters Patent No. 683,109, dated September 24, 1901.

Application filed December 11, 1900. Serial No. 39,480. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SEYMOUR DUTTON, of Perth Amboy, in the county of Middlesex and State of New Jersey, have invented a certain new and useful Improvement in Machines for Polishing or Burnishing Metal Bars or Rods, of which improvement the following is a specification.

The object of my invention is to provide simple and effective mechanism by the employment of which a perfectly smooth and polished surface may be imparted to a metal rod or bar and the bar be also straightened if out of true axial line.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a side view, partly in section, of a machine for polishing or burnishing metal bars or rods, illustrating an application of my invention; Fig. 2, a similar view, on an enlarged scale, of a polishing-ring and a portion of the frame to which it is connected; Fig. 3, a transverse section through the same at the line *x x* of Fig. 2; Fig. 4, a side view, partly in section, of a machine, illustrating another form of application of my invention; and Fig. 5, a plan or top view of the same.

In the practice of my invention I provide a polishing-ring 1, one or a plurality of which may be employed, as desired, the bore or central opening 2 of which is substantially circular in transverse section and which may be either cylindrical throughout its entire length or be outwardly curved or flared toward its ends, as preferred, its essential feature being that it shall be of such form as to permit the ring to roll around the bar or rod which is to be acted upon by the machine. The polishing-ring 1 is fitted to rotate freely in a head or bearing 3, adapted to be adjustably connected to a supporting-frame 4, which may be either a rotatable frame or flier of the ordinary type provided with tubular end trunnions journaled in bearings 5, as shown in Figs. 1, 2, and 3, or be fixed to a bed-plate 6, as in Figs. 4 and 5. In the former case the rings 1 are preferably fitted between end plates 7 8, secured to the heads 3 by bolts 9 and having outwardly-flaring central openings which register with the central openings of the rings 1, one of said plates, as the plate 8, Fig. 2, serving to receive the end thrust of the ring when in operation. The frictional surface of the head 3 is preferably formed on a bushing 10, fixed therein, and in order to reduce as far as practicable friction between the ring and its bearing-surfaces rollers 11 may be interposed between the ring and the bushing 10 and balls 12 between the ring and the end bearing-plate 8. Any suitable and preferred means may be adopted for effecting the adjustable connection of the heads 3 and their supporting-frame 4. As shown in Figs. 1, 2, and 3, the heads are provided with dovetailed recesses on their ends farther from the ring-bearings, the side lips 13 of said recesses engaging the outwardly-inclined sides of a connecting-bar 14, on which are formed guide-stems 15. The guide-stems 15 are fitted to traverse longitudinally in the supporting-frame 4 and are internally threaded to form nuts for adjusting-screws 16, which are fitted to be rotated in bearing-plates 17, secured to the supporting-frames. In the construction shown in Figs. 4 and 5 the connecting-bar 14 is dispensed with and the guide-stem is formed integral with the head 3. The central polishing-ring 1 of this construction is fitted to rotate freely in the head 3 and may be fitted between end plates 7 8, as above described. By proper movement of the adjusting-screws 16 the heads 3 may be brought into positions in which the desired degree of pressure is imposed upon the bar or rod A, which passes through them, by the inner surfaces of the polishing-rings 1. The bar or rod A, which is to be acted upon by the machine, is traversed longitudinally through the polishing ring or rings in any preferred manner, and mechanical expedients for effecting such traverse are familiar to those skilled in the art. Where a rotatable frame or flier is employed, as shown in Fig. 1, it may be actuated by a belt 18, through which power is imparted from a prime mover to a pulley 19 on one of the trunnions of the flier. The rod or bar A is held in grippers 20, of the ordinary construction which are traversed on longitudinal tracks 21 by endless chains 22, operated by worm-wheels 23, engaging worms 24 on a shaft 25, which carries a spur-gear 26, engaging a corresponding pinion 27 on one of the trunnions of the

flier. While the worm and worm-wheel driving-gear is shown only in connection with the left-hand gripper, it will be understood that that on the right-hand or entering end is preferably similarly actuated. Suitable mechanism for unhooking the grippers from their actuating-chains and for engaging and disengaging the worm and worm-wheel gearing of the entering end may be provided; but as the same does not in and of itself form part of my present invention it is not herein fully and at length set forth.

The leading and essential feature of operation of my invention consists in the relative rotation of the polishing-rings and the rod or bar upon which they act, and under such operative principle a construction in which the supporting-frame of the polishing-rings remains stationary while the rod or bar is rotated may be substituted for and would constitute the mechanical equivalent of that embodying a rotary frame and means for traversing without rotating the rod or bar, as above described. As shown in Fig. 1, the axes of rotation of the polishing-rings are parallel with that of the rotary frame or flier. The heads 3 may, however, be set in a plane at an angle other than a right angle with a central plane of the rotary frame, as indicated in Figs. 4 and 5, so that the axes of rotation of the polishing-rings shall be out of parallelism with that of the rotatory frame, and under such angular rotation the action of the polishing-rings upon the rod or bar which passes through them will effect its longitudinal traverse without the necessity of employing extraneous mechanism for that purpose. Figs. 4 and 5 illustrate a machine having a central polishing-ring 1 mounted rotatably in a head 3, which is adjustably connected to a fixed supporting-frame 4, and two polishing-rings 1, which are journaled in bearings 28 in the ends of the frame. Each of the polishing-rings is provided with a central passage 2, adapted to inclose the rod or bar which is to be acted upon by the machine, and the end polishing-rings are formed integral with or fixed to gears 29, which engage pinions 30, fixed upon a counter-shaft 31, carrying a driving-pulley 32, to which power is imparted from a prime mover through a belt 33. The plane of rotation of the central polishing-ring is set at an angle to those of the end rings, and the action of the central polishing-ring upon the rod or bar effects the longitudinal traverse thereof, as hereinbefore stated.

In the operation of an apparatus embodying my invention the polishing ring or rings is or are adjusted so as to bear upon a rod or bar with the requisite pressure, and the rod or bar is fed longitudinally through their central openings 2 while rotation is imparted to them. The polishing-rings bear upon and roll around the rod or bar, and their combined sliding and rolling contact therewith produces a smooth and polished surface thereon and also brings the rod or bar into true axial alinement if, as is ordinarily the case, it is not in such condition when presented to the machine.

I claim as my invention and desire to secure by Letters Patent—

1. In a machine for polishing or burnishing metal rods or bars, the combination of a polishing-ring having a central opening which is adapted to effect rolling contact of the ring with the periphery of a rod or bar of circular section, a supporting-frame a bearing adjustably secured therein and in which said polishing-ring is mounted rotatably, and means for adjusting said polishing-bearing in the supporting-frame, toward or from the axial line of a rod or bar traversing longitudinally through the central opening of the polishing-ring.

2. In a machine for polishing or burnishing metal bars or rods, the combination of a supporting-frame, a plurality of polishing-rings, each having a central opening which is adapted to effect rolling contact of the ring with the periphery of a rod or bar of circular section and being mounted rotatably in the supporting-frame, and means for adjusting one or more of the polishing-rings in the supporting-frame so as to vary the relation of its axis of rotation to that of an adjoining polishing ring or rings.

3. In a machine for polishing or burnishing metal bars or rods, the combination of a revolving frame, with a plurality of polishing-rings, each having a central opening within which the ring and the periphery of a rod or bar of circular section contact, said rings being arranged in series along said frame, and means for revolving the frame.

4. In a machine for polishing or burnishing metal rods or bars, the combination of a revolving frame having hollow trunnions, a series of polishing-rings arranged within said frame between its trunnions, means for adjusting the rings relatively to the axis of the frame, and means for revolving the frame.

5. In a machine for polishing or burnishing metal rods or bars, the combination of a revolving frame, a series of polishing-rings within said frame adjustably supported on the opposite sides thereof, and means for revolving the frame.

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