No. 790,302. PATENTED MAY 23, 1905.

R. R. JONES, H. J. GRAY & J. B. WIDEN.

APPARATUS FOR HEATING BOLT BLANKS.

APPLICATION FILED AUG. 29, 1904.

2 SHEETS—SHEET 1.

FIG. I.

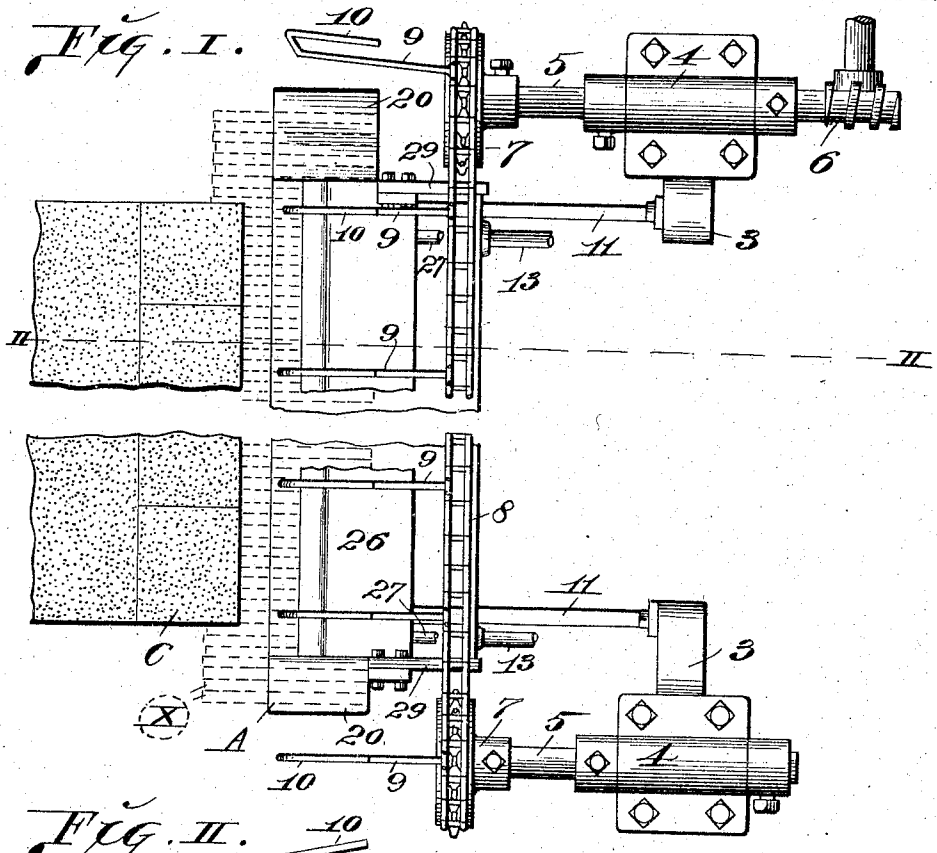
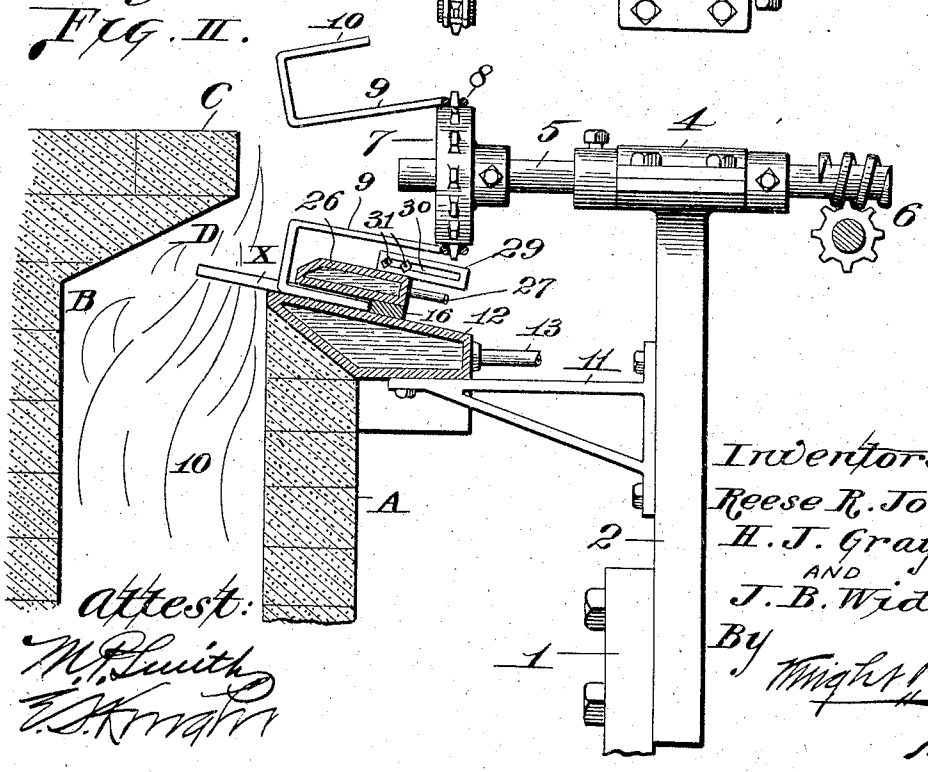


FIG. II.



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2 SHEETS—SHEET 2.

FIG. III.

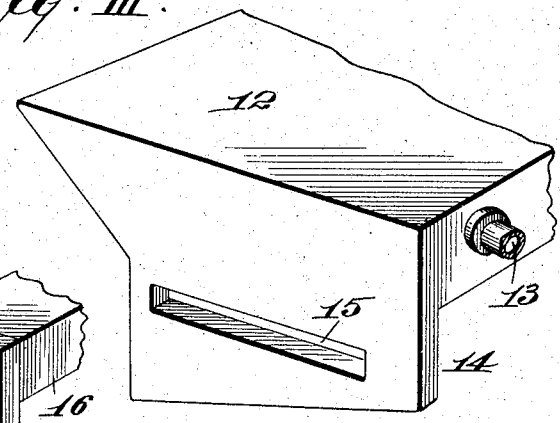


FIG. IV.

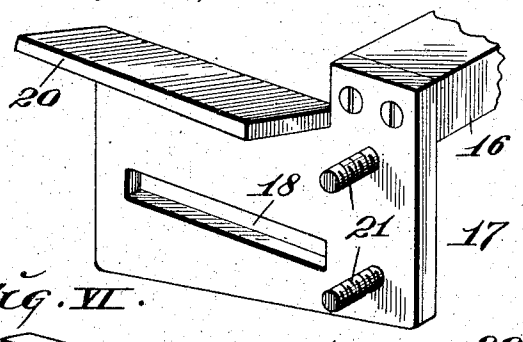


FIG. VI.

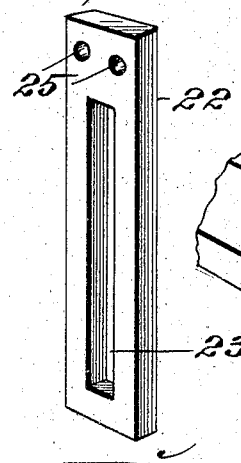


FIG. V.

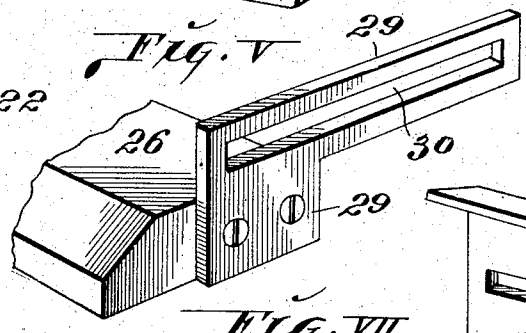


FIG. IX.

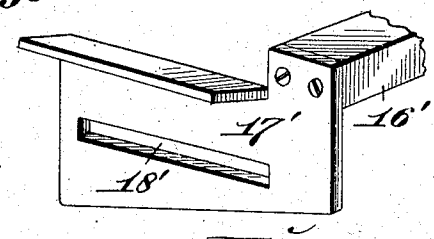


FIG. VII.

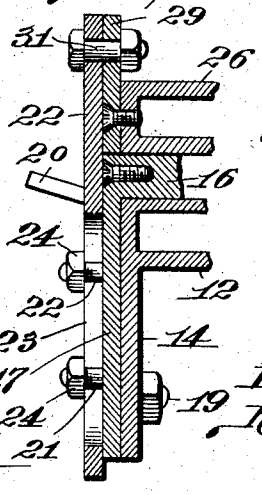


FIG. XI.

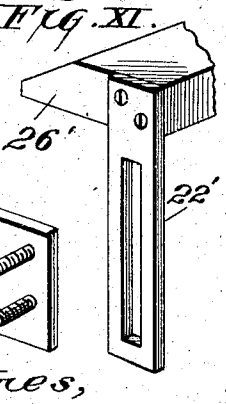


FIG. X.

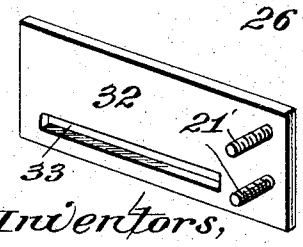
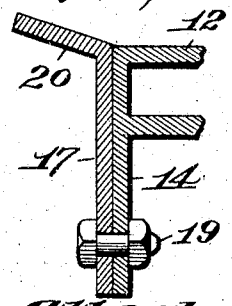


FIG. VIII.



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No. 790,302. Patented May 23, 1905.

UNITED STATES PATENT OFFICE.

REESE R. JONES, HERRICK J. GRAY, AND JOSEPH B. WIDEN, OF ST. LOUIS, MISSOURI, ASSIGNORS TO ROBERT L. McLAREN, OF ST. LOUIS, MISSOURI.

APPARATUS FOR HEATING BOLT-BLANKS.

SPECIFICATION forming part of Letters Patent No. 790,302, dated May 23, 1905.

Application filed August 29, 1904. Serial No. 222,492.

To all whom it may concern:

Be it known that we, REESE R. JONES, HERRICK J. GRAY, and JOSEPH B. WIDEN, citizens of the United States, residing in the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Apparatus for Heating Bolt-Blanks Previous to Heading Them, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention relates to an apparatus for use in conducting the blanks from which bolts are to be made through a heating medium, so that the ends that are to be headed may be projected into the heating medium, while the remaining portions of the blanks are maintained in a cool condition.

Figure I is a top or plan view of our apparatus, partially broken out. Fig. II is a vertical cross-section taken on line II II of Fig. I. Fig. III is an enlarged perspective view of one end of the lower water-box. Fig. IV is an enlarged perspective view of one end of the gage-bar and one of its end plates. Fig. V is an enlarged perspective view of one end of the upper water-box and the end arm secured thereto, through means of which said box is adjusted horizontally. Fig. VI is an enlarged perspective view of one of the vertical supporting and adjusting plates for the upper water-boxes. Fig. VII is an enlarged vertical longitudinal section taken through ends of the lower and upper water-boxes and gage-bar and the parts associated with said members at their ends. Fig. VIII is an enlarged vertical longitudinal section taken through one end of the lower water-box, its leg, and one of the end plates of the gage-bar on a line remote from that on which Fig. VII is taken. Fig. IX is a perspective view of a modification of the gage-bar end plates. Fig. X is a perspective view of a modification of the horizontally-adjustable upper-water-box-supporting plate. Fig. XI is a perspective view of one end of the upper water-box and a modification of its vertically-adjustable supporting-plates.

A designates the front wall of a furnace, and B the furnace rear wall. The wall B has an overhanging portion C, between which and the top of the front wall is an exit-way D for the flames from the furnace fire-chamber. (See Fig. II.)

1 designates one of a pair of standards, to which is adjustably secured uprights 2, that are provided with arms 3. At the upper ends of the uprights are bearing-boxes 4. 5 designates shafts journaled in said bearing-boxes, one of which is driven by the worm-gearing 6 or other suitable power mechanism. Longitudinally adjustable upon the shafts 5 are toothed wheels 7, and operating upon said toothed wheels is a conveyer-chain 8.

9 designates carrier-arms secured to the conveyer-chain at intervals, (see Figs. I and II,) each arm being provided with a return-bend at its free end and a finger 10. These fingers are the members by which the bolt-blanks are conveyed during the operation of the conveyer.

11 designates brackets secured to the arms 3 of the uprights 2 and projecting therefrom toward the furnace-wall A. 12 is a lower water-box that is partially supported by said brackets and rests upon the furnace-wall A. A fresh supply of water is continuously conducted to said water-box and discharged therefrom through conducting-pipes 13. At each end of the lower water-box is a leg 14, (see Figs. III, VII, and VIII,) in which is a slot 15, extending transversely of the box.

16 designates a gage-bar that rests loosely upon the top of the lower water-box. (See Figs. II, IV, and VII.) This gage-bar extends longitudinally of the lower water-box and is adapted to be moved transversely or forwardly and rearwardly on the box to provide runways of varying widths in which the bolt-blanks are conveyed while riding upon the water-box as a table. At each end of the gage-bar is secured a plate 17, that is provided with a slot 18, corresponding to the slots 15 in the lower water-box legs. These slots 15 and 18 together receive clamp-bolts 19, by which the gage-bar end plates are adjustably

secured to the water-box legs to be moved forwardly and rearwardly to permit of the gage-bar being advanced or receded on the water-box. At the top of each gage-bar end plate is a shelf 20, onto which the bolt-blanks are fed to pass onto the lower water-box and be conducted longitudinally thereacross and after their passage delivered onto the second shelf.

21 designates threaded stub-bolts extending outwardly from the gage-bar end plates near their rear ends at points rearward from the shelves 20.

22 designates a vertical plate that is provided with a slot 23, (see Figs. VI and VII,) that receives the stub-bolts 21, through the medium of which and nuts 24 applied thereto the vertical plate is secured to the gage-bar end plates in a manner to permit of vertical adjustment thereof. In the upper end of the plate 22 are bolt-holes 25.

26 designates an upper water-box that surmounts the lower box 12. This upper water-box has conducting-pipes 27 fitted to it, through which water is delivered to and discharged from the box from a continuous supply.

28 designates end plates secured to the upper water-box and provided with arms 29, in which are longitudinal slots 30. The arms 29 extend rearwardly from the upper water-box and the slots therein receive clamp-bolts 31, that are seated in the bolt-holes of the vertical plate 22. By this construction the upper water-box may be shifted forwardly and rearwardly when the clamp-bolts 31 are loosened in order that said box may be placed in advanced or receded position relative to the exit-way D of the furnace to accommodate the handling of bolt-blanks of varying lengths. The vertical adjustment of the upper water-box with respect to the lower water-box to accommodate bolt-blanks of varying diameters is provided for by the vertically-adjustable plate 22, which supports the water-box end plates 28 and their arms.

In the practical use of our apparatus the operation is as follows: The person feeding the apparatus places the bolt-blanks to be heated and headed upon one of the shelves 20 of the gage-bar end plates, from which they are passed onto the lower water-box to be conducted longitudinally across the box and delivered therefrom onto the shelf 20 at the far end of the machine. The gage-bar 16 is so set that the bolt-blanks X will project partially beyond the inner edge of the lower water-box, as seen in Figs. I and II, while the remainder of the blanks occupy a position between the two water-boxes, to be kept in a cool condition and ready for the bolt-heading machine to which the blanks are presented immediately after they have been heated. While the bolt-blanks are being passed onto the lower water-box the conveyer-chain 8 is in motion and the carrier-arms 9 and their fingers 10 are constantly conducted in a continuous circuit, so that said fingers will be caused to ride between the two water-boxes and conduct the bolt-blanks through the space between them.

In Figs. IX to XI, inclusive, we have shown a modification of the means for supporting the upper water-box. In this modification the gage-bar 16′ has the end plates 17′, provided with the slots 18′, secured to its ends; but the stub-bolts 21 are omitted from said end plates. Instead of said stub-bolts being seated in the end plates an additional slide-plate 32 is utilized, this slide-plate being provided with a slot 33, corresponding to the slot in the gage-bar end plates, and has set thereinto stub-bolts 21′. 22′ is one of a pair of slotted plates carried directly by the upper water-box 26′, the slots in the plates being designed to receive the stub-bolts 21′. In this construction the slide-plates 32 are shifted horizontally to secure the desired lateral adjustment of the upper water-box when the nuts of clamp-bolts passing through the slots 33 of the slide-plates and slots 18′ of the gage-bar end plates are loosened. Direct vertical adjustment of the upper water-box is secured by loosening the nuts applied to the stub-bolts 21′, thereby releasing the vertically-slotted plates 22′, so that they may be raised and lowered together with the upper water-box.

We claim as our invention—

1. In an apparatus of the character described, the combination of a bolt-blank conveyer, a pair of cooling members between which said conveyer operates, and means whereby one of said cooling members is rendered adjustable with respect to the other member, substantially as set forth.

2. In an apparatus of the character described, the combination of a lower cooling member, an upper cooling member, means for adjusting said upper member with respect to said lower member, and a bolt-blank conveyer arranged to operate between said cooling members, substantially as set forth.

3. In an apparatus of the character described, the combination of a lower cooling member, an upper cooling member adjustably mounted above the lower member, a gage adjustably mounted upon said lower cooling member, and a bolt-blank conveyer arranged to operate between said cooling members, substantially as set forth.

4. In an apparatus of the character described, the combination of a furnace, a pair of cooling members located exterior of said furnace, and one of which constitutes a table on which the bolt-blanks rest, and a conveyer arranged to operate between said cooling members; said conveyer consisting of a car-

rying member and fingers secured to said carrying member at intervals and adapted to enter between said cooling members to move the bolt-blanks on said table cooling member, substantially as set forth.

5. In an apparatus of the character described, the combination of a bolt-blank conveyer, a lower water-box, an upper water-box, and means whereby said upper water-box is supported for both horizontal and vertical adjustment with respect to said lower box, substantially as set forth.

6. In an apparatus of the character described, the combination of a bolt-blank conveyer, a lower water-box, vertically-adjustable plates supported by said lower water-box, an upper water-box, and a horizontally-adjustable arm secured to said upper water-box and fitted to said vertically-adjustable plates, substantially as set forth.

7. In an apparatus of the character described, the combination of a bolt-blank conveyer, a lower water-box, a gage surmounting said lower water-box, end plates secured to said gage and having sliding engagement with said lower water-box, an upper water-box, vertically-adjustable plates connected to said gage end plates, and arms secured to said upper water-box adjustably connected to said vertical plates, substantially as set forth.

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