

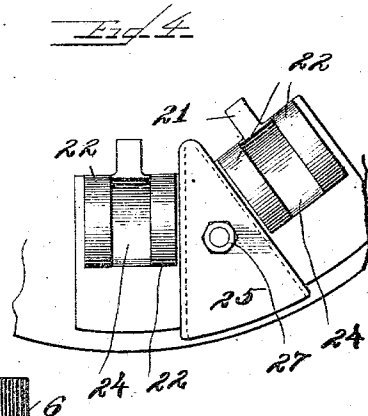
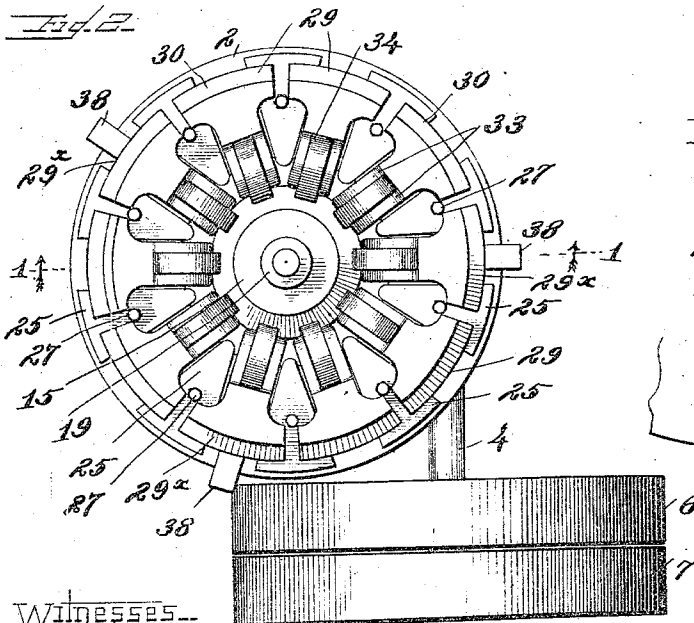
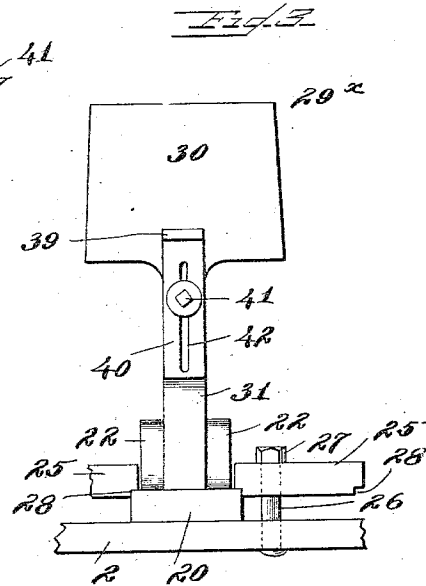
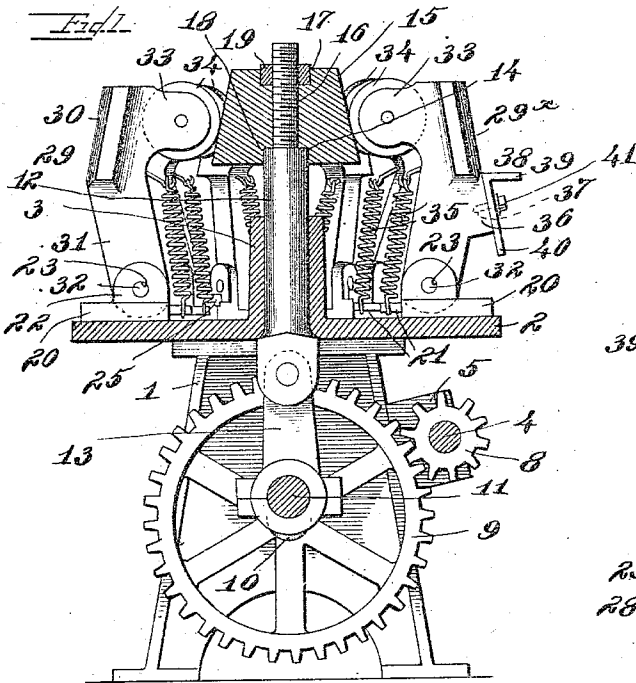
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C. GROTNES.
HOOP FLARING AND SIZING MACHINE.

APPLICATION FILED NOV. 9, 1903.

NO MODEL.



Witnesses--

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UNITED STATES PATENT OFFICE.

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HOOP FLARING AND SIZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 752,153, dated February 16, 1904.

Application filed November 9, 1903. Serial No. 180,431. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GROTNES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hoop Flaring and Sizing Machines, of which the following is a specification.

In the production of a barrel-hoop the ends of a piece of band iron or steel are united by rivets or in any other suitable manner. The hoop thus formed requires to be given a true circular shape, stretched to proper size, and given the necessary degree of flare.

The object of this invention is the production of improved means for thus treating the rough or unfinished hoops as they come from the riveter.

In the accompanying drawings, Figure 1 is a vertical central section through a hoop-forming machine embodying the features of my invention, said view being taken on the plane of dotted line 1 1 of Fig. 2. Fig. 2 is a top plan view of said machine. Fig. 3 is a fragmental view showing one of the expanding members in front elevation. Fig. 4 is a fragmental view illustrating the means for supporting the expanding members.

In the construction of a hoop flaring and sizing machine embodying my invention I provide a supporting-frame comprising two end frames 1 and a circular bed-plate 2, secured in any suitable manner to the upper ends of said end frames. Formed integral with said bed-plate is a central upwardly-extending tubular stem 3, the bore of which stem is produced through said bed-plate.

A drive-shaft 4 is journaled in bearing-boxes 5, secured to one edge of each of the end frames 1, which drive-shaft carries at one end, outside the supporting-framework, a fixed drive-pulley 6 and a loose pulley 7. Intermediate its ends and between the end frames 1 the drive-shaft 4 has fixed rigidly thereto a pinion 8, which pinion is adapted to mesh with a spur-gear 9, secured upon a shaft 10. The shaft 10 is rotatably mounted in suitable bearings in the end frames 1 and centrally of the supporting-frame is provided with a crank 11.

12 refers to a plunger slidably mounted with-

in the upwardly-extending tubular stem 3 of the bed-plate 2, which plunger is arranged to be reciprocated within said stem by means of a pitman 13, pivotally connected with the lower end of said plunger and with the crank 11 of the shaft 10. The upper end of the plunger 12 is reduced in diameter, providing a shoulder 14, and said reduced portion is screw-threaded to receive a head 15, having a central aperture 16, which aperture is screw-threaded to correspond with the threads upon the upper end of the plunger 12. This head is of truncated-cone form and is provided in its upper and lower faces with central recesses 17 and 18, respectively, the upper recess 17 being adapted to receive a nut or collar 19, having a screw-thread engagement with the threaded portion of the plunger 12, and the lower recess 18 receiving the shoulder 14 of said plunger. The head 15 is thus securely fixed with relation to the plunger.

Arranged upon the upper face of the bed-plate 2 concentric with the tubular stem 3 is a series of base-blocks 20—in this instance ten in number. Each of these base-blocks is provided with a stud 21 at its inner end, for a purpose to appear hereinafter, also with two upwardly-extending ears 22, which ears are perforated to provide bearing-openings 23. Between said ears the upper side of the base-block is cut away in the recess 24. The base-blocks 20 are adjustably secured to the bed-plate 2 by means of clamping-plates 25 of substantially triangular outline, each of said plates lying between two adjacent base-blocks 20. A clamping-bolt 26, provided with a nut 27, extends through the bed-plate 2 and each clamping-plate 25 for clamping the base-blocks 20 to said bed-plate. On its lower side and at two of its side edges each clamping-plate has a rabbet 28, adapted to receive one edge of the adjacent base-block and to serve as a guideway during the adjusting movement of the block.

Segmental expanding members 29 are arranged in a circle concentric with the head 15, each of said expanding members being pivotally mounted upon one of the base-blocks 20. The expanding members each have an expand-

ing-face 30 and a stem 31, provided near its lower end with trunnions 32, adapted to lie in the bearing-openings 23 of the base-blocks 20. The lower end of the stem 31 is rounded and lies within the recess 24 of the base-block. Rearward of its expanding-face each member 29 has two ears 33, between which ears is rotatably mounted a roller 34, adapted to bear upon the conical face of the head 15. A coil-spring 35, secured at one end near the upper end of the expanding member 29 and at its other end to the stud 21 of the base-block 20, tends to hold the roller 34 in contact with the head 15.

Adjustable guides for the barrel-hoop are located at substantially equidistant points upon the periphery of the circular series of expanding members. I have shown three such guides in the drawings; but it will be understood that any suitable or convenient number may be employed. Each of these guides is mounted upon one, 29^x, of the expanding members 29, said members 29^x being each provided upon their forward sides below their expanding-faces 30 with a guide-support 36, formed integral with said expanding member. The face of said guide-support 36 is alined with the expanding-face 30, and said support has a screw-threaded opening 37. A guide 38 of angular form, comprising the horizontal member 39 and the downwardly-extending member 40, is adjustably secured upon said support 36 by means of a screw 41, extending through an elongated slot 42 in the downwardly-extending member 40 and entering the screw-threaded opening 37 in the support 36.

In operation power is communicated to the mechanism through the medium of a belt extending over the drive-pulley 6. The machine is placed in operation with the head 15 in its lowest position, and consequently with the expanding members 29 in their retracted position. The barrel-hoop to be shaped is placed upon the faces of the expanding members, said hoop resting upon the guides 38. The machine is then started, the upward movement of the head forcing the expanding members 29 outward against the resistance of the coil-springs 35 and the hoop being formed. The hoop is thus trued, stretched to size, and given its proper flare.

The guides 38 are moved up or down upon their supports 36 to receive hoops of different diameters. The degree of flare to be given the hoop is varied by moving the base-blocks 20 toward or away from the center of the bed-plate 2, the clamping-bolts 26 being loosened to permit of such movement and tightened again when the base-blocks have been properly positioned.

It is apparent that a different number of expanding members and hoop-guides from that shown and described herein may be employed and that many other changes may be made

without departing from the spirit and scope of my invention, wherefore I desire to have it understood that I do not limit myself to the precise details herein set forth.

I claim as my invention—

1. In a hoop flaring and sizing machine, in combination, a supporting-frame; a plurality of expanding members, each having an expanding-face and a roller at the rear of said expanding-face; a base-block for each of said expanding members; means for adjustably securing said base-blocks to said supporting-frame; a reciprocatory head having a conical face against which said rollers are adapted to bear; and a spring for each of said expanding members for holding said roller in contact with said head, said spring extending between said base-block and the upper end of said expanding member.

2. In a hoop flaring and sizing machine, in combination, a supporting-frame having a central, upwardly-extending, tubular stem; a circular series of expanding members, each having an expanding-face and a roller at the rear of said expanding-face; a base-block for each of said expanding members; means for adjustably securing said base-block to said supporting-frame; a plunger slidably mounted in said tubular stem; a head secured to the upper end of said plunger, said head having a conical face against which said rollers are adapted to bear; means for reciprocating said plunger; and a spring for each of said members, for holding said roller in contact with said head, said spring extending between said base-block and the upper end of said expanding member.

3. In a hoop flaring and sizing machine, in combination, a supporting-frame; a series of base-blocks upon said frame; an expanding member pivotally mounted upon each of said base-blocks; clamping-plates overlying said base-blocks; means for securing said clamping-plates to the supporting-frame; and means for pivotally moving said expanding members.

4. In a hoop flaring and sizing machine, in combination, a supporting-frame; a circular series of base-blocks upon said frame; an expanding member pivotally mounted upon each of said base-blocks; clamping-plates of triangular outline, each provided on two of its sides with a rabbet adapted to receive one edge of the adjacent base-block; means for securing said clamping-plates to the supporting-frame; and means for pivotally moving said expanding members.

5. In a hoop flaring and sizing machine, in combination, a supporting-frame; a series of base-blocks upon said frame; means for adjustably securing said base-blocks to said frame; an expanding member pivotally mounted upon each of said base-blocks, one of said members having a guide-support alined with the face of said expanding member; a hoop-

guide adjustably mounted upon said guide-support; and means for pivotally moving said expanding members.

6. In a hoop flaring and sizing machine, in
5 combination, a supporting-frame; a series of
base-blocks upon said frame; an expanding
member pivotally mounted upon each of said
base-blocks; means for adjustably securing
said base-blocks to said frame; means for piv-
10 otally moving said expanding members in one

direction; and a coil-spring for each of said
members, extending between said base-block
and the upper end of said expanding member
for moving said member in the opposite di-
rection.

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