J. W. HICE.

APPARATUS FOR BENDING AND SETTING STOCK.

APPLICATION FILED JULY 8, 1916.

1,234,665. Patented July 24, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

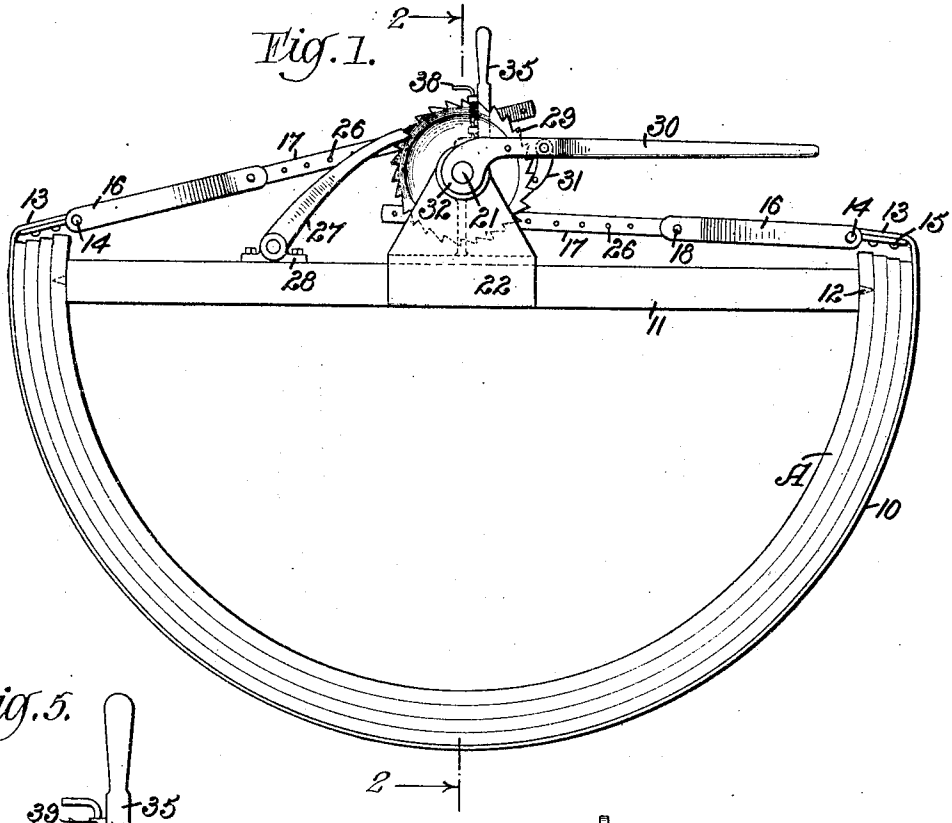


Fig. 5.

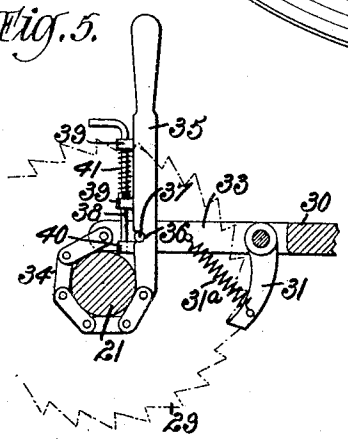
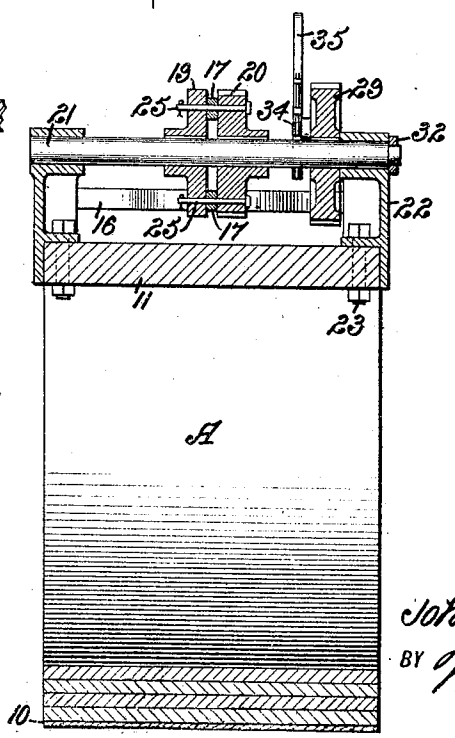


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

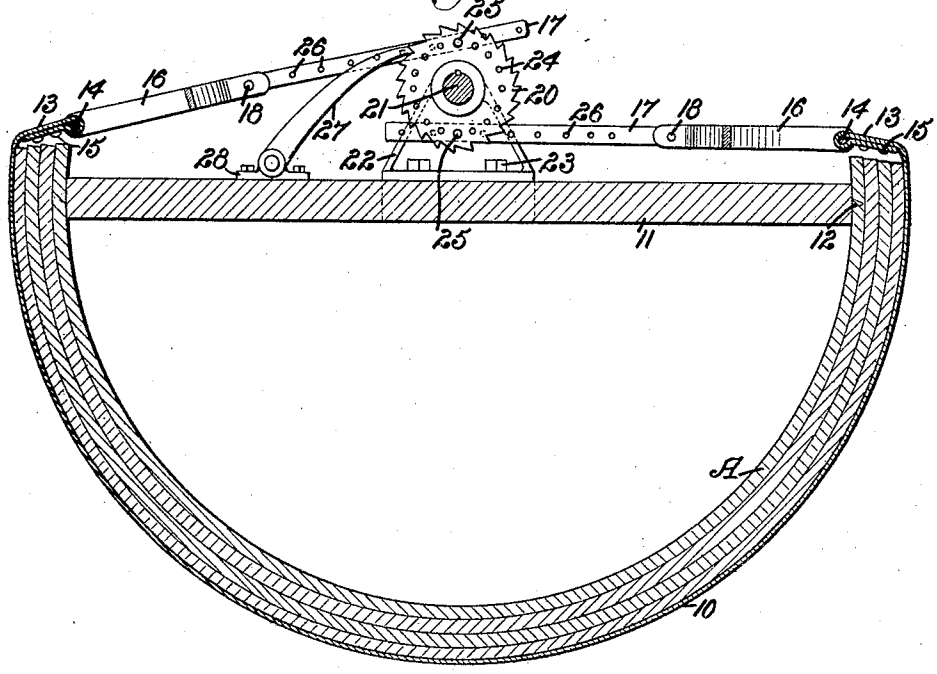
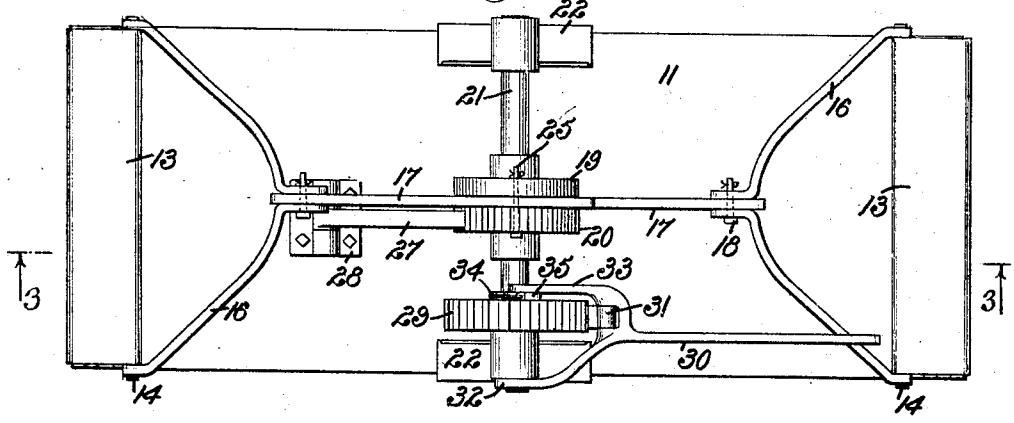


Fig. 4.



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APPARATUS FOR BENDING AND SETTING STOCK.

1,234,665. Specification of Letters Patent. Patented July 24, 1917.

Application filed July 8, 1916. Serial No. 108,110.

To all whom it may concern:

Be it known that I, JOHN W. HICE, a citizen of the United States, and a resident of Johnson City, in the county of Washington and State of Tennessee, have invented a new and Improved Apparatus for Bending and Setting Stock, of which the following is a full, clear, and exact description.

My invention relates to the class of machines, an example of which is illustrated in United States Letters Patent No. 1,122,750, granted to me December 29th, 1914, for bending of stock for forming wheel rims, fellies, table rims and aprons, and other articles. The machines of the class referred to embody the general features, a base or bed plate, an upright central frame, a half-round form, which is adjustably fastened to the upright frame, and a pair of bending arms or levers, along the working faces of which, there extends a master strap or flexible bending band on which the material to be bent is laid between the said band and the form.

In my patent above referred to, a restraining band is disclosed to be placed on the master strap or bending band before laying the material thereon; the ends of the restraining band are adapted, when the material is bent into curved form, to receive a shackle that ties the ends of the bent restraining band together to hold the rim or other article in bent form until set. Also, there is employed in connection with the restraining band, in said patent, a cap board adapted to be inserted between the ends of the stock. The restraining band in my patented construction is provided with end blocks, and the cap board is formed with risers at the ends to receive the pressure of the end blocks whereby to depress the cap board and exert pressure on the inner layer of the material being bent, the purpose being to produce a uniform radial pressure on the material while undergoing the bending operation.

The present invention provides a cap board that constitutes purely a resistance bar when inserted between the ends of the stock, and, in connection with the restraining band means are provided to connect the ends thereof and to tension the connecting means for taking up any slack in the restraining band and insuring the retention of the curvature of the bent material until same has become set, the result being accomplished without any depression of the cap board or the exertion of end pressure on the layers of the material being bent. I am thus enabled to do away with the end blocks on the restraining band, as well as the risers on the cap board which characterize my patented structure referred to, and which involve considerable expense. Moreover, I am enabled to produce the necessary curvature by the action of the usual bending levers of the machine, followed by the action of the tensioning means characterizing the present invention.

The invention will be particularly explained in the specific description following.

Reference is to be had to the accompanying drawings forming a part of this specification in which similar reference characters indicate corresponding parts in all the views.

Figure 1 is an end view showing the material bent into curve form and having my improved means applied thereto for holding the material in bent form until set;

Fig. 2 is a transverse vertical section on the line 2—2, Fig. 1;

Fig. 3 is a longitudinal vertical section on the line 3—3, Fig. 4;

Fig. 4 is a plan view;

Fig. 5 is a fragmentary side elevation giving a detail of a detachable ratchet means for tensioning the connecting means of the restraining band, the view being given on an enlarged scale.

My improved means includes a restraining band 10 which is laid in flat form on the usual strap or band, that lies on the levers of the bending machine, and the material to be bent is laid on the band 10 so that the movement of the usual bending levers of the machine, relatively to the usual form, will give the curvature to the material as indicated by the letter A. The band 10 corresponds in general with a similar band in my patent referred to.

In my patent above referred to, there is also employed a cap board to be inserted between the ends of the stock, said board corresponding in general with the board 11 in the present case, and it is to be understood that any suitable cap board may be employed. In the patented construction, end blocks on the restraining band exert a pressure on risers provided on the upper surface of the cap board so that the latter

is depressed, thereby exerting pressure on the inner layers of the bent material A. In the present instance, the cap board 11 is simply inserted in position between the ends of the stock, and the ends of the restraining band are connected and tensioned without any depression of the cap board. The board, preferably, has spurs 12 at the ends to engage the inner layer of the material being bent.

In the present construction, the ends 13 of the band, 10, are secured by bolts or rods 14 to yokes 16, preferably by bending over the ends of the band 10 and riveting the same as at 15.

The yokes 16 are fastened to be carried by the band 10. To the yokes 16, I secure bars 17 pivoted to the yokes as by pins 18 or other suitable means, said bars being of a length to overlap each other. The respective ends of the bars 17 are received between disks 19, 20, keyed on a transverse shaft 21 which is supported to turn in bearings 22, bolted as at 23 to the cap board 11, said bars 17 being disposed, respectively, above and below the said shaft. The disks, 19, 20, are formed with annular series of pin holes 24, adapted to receive pins 25, and the bars 17 are formed each with a longitudinal series of pin holes 26 to receive said pins and hold the bars disposed in opposite directions between the disks and positively fastened to the latter.

In order to tension the bars, 17, and yokes, 16, and thereby take up any slack in the band 10, as well as to hold the same firmly against the bent material A, I provide means for turning the shaft 21. One disk, as 20, is provided with ratchet teeth and a holding dog 27, engages the said teeth, being mounted in bearings on a plate 28 bolted to the upper side of the cap board 11.

On the shaft 21 also, is keyed a second ratchet wheel 29, and on the shaft 21 is adapted to be detachably secured a lever 30 having a pawl 31, connected with which is a spring 31^a to hold the pawl in engagement with the wheel 29. The lever 30 is forked, having an arm 32 at one side formed with a transverse hole, whereby the arm may slide over the end of the shaft 21. The opposite arm 33 of the fork is shorter and said arm is connected with a chain 34 having a latch 35 at its free end. The latch 35 is formed with a recess 36 in an edge thereof, adapted to receive a lateral pin 37 on the arm 33. The latch 35 has a bolt 38 disposed longitudinally therewith and adapted to slide in keepers, 39, 40, one keeper 40 being adjacent to the notch 36. A spring 41 on the bolt 38, normally tends to hold the ends of the bolt in the keeper 40 in front of the notch 36. From Fig. 5 it will be clear that the arm 33 may be readily attached to or detached from the shaft 21, since the bolt 38 may be slid to permit the entrance or removal of the pin 37.

It is to be understood that the yokes 16 are permanently carried by the restraining band 10, and that the shaft 21, with the disks 19, 20, and ratchet wheel 29, are permanently mounted on each cap board 11. In practice, a large number of these cap boards are employed and when inserted between the ends of material A, to co-act with the band 10, the ratchet lever 30 is secured in position and the arms 17 are applied to the yoke 16 and connected with the ratchet mechanism as described. When the band 10 and its connecting means are tensioned, the ratchet device 30 is removed to be again available so that a single ratchet lever can serve for tensioning the bands applied to different bent articles.

By the described means the bending of the stock to the curve form is effected without any end pressure on the layers of the material and without any depression of the cap board. Moreover, the new and improved result is obtained that the stock is maintained in bent form until set, the tensioning means serving to prevent any slack or play that would prevent the deformation of the stock from the curve that is given to it by the bending machine.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A means for use in connection with a bending machine to hold the bent stock in curved form until set, the same including a restraining band adapted to be bent about the stock with the bending of the latter, a bar insertible between the ends of the stock, bearings on the said bar, a shaft mounted to turn in said bearings, elements on said shaft and on the ends of the band, means to detachably connect the elements on the band with those on the shaft, a ratchet wheel on the shaft, a lever carrying a pawl to engage the said ratchet wheel, and means to detachably secure the said lever on the shaft.

2. A means for use in connection with a bending machine to hold the bent stock in curved form until set, the same including a restraining band adapted to be bent about the stock with the bending of the latter, a bar insertible between the ends of the stock, bearings on the said bar, a shaft mounted to turn in said bearings, elements on said shaft and on the ends of the band, means to detachably connect the elements on the band with those on the shaft, a ratchet wheel on the shaft, a lever carrying a pawl to engage the said ratchet wheel, said lever having forked ends, one arm of which is formed with a transverse hole, whereby the arm may be slipped onto the end of the shaft, and means on the other arm to detachably connect the lever with the shaft.

3. A means for use in connection with a bending machine to hold the bent stock in curved form until set, the same including a restraining band adapted to be bent about the stock with the bending of the latter, a bar insertible between the ends of the stock, bearings on the said bar, a shaft mounted to turn in said bearings, elements on said shaft and on the ends of the band, means to detachably connect the elements on the band with those on the shaft, a ratchet wheel on the shaft, a lever carrying a pawl to engage the said ratchet wheel, said lever having forked ends, one arm of which is formed with a transverse hole, whereby the arm may be slipped onto the end of the shaft, a chain secured to the free end of the other arm of the fork, a handled latch secured to the opposite end of the chain, and a spring-pressed bolt movable longitudinally on said latch, the latch having a notch at the back of the bolt, and the adjacent arm of the fork having a lateral stud adapted to enter said notch.

JOHN WESLEY HICE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."