

(No Model.)

2 Sheets—Sheet 1.

H. BOYER.

CHAMFERING AND GROZING MACHINE.

No. 547,416.

Patented Oct. 8, 1895.

FIG. 1.

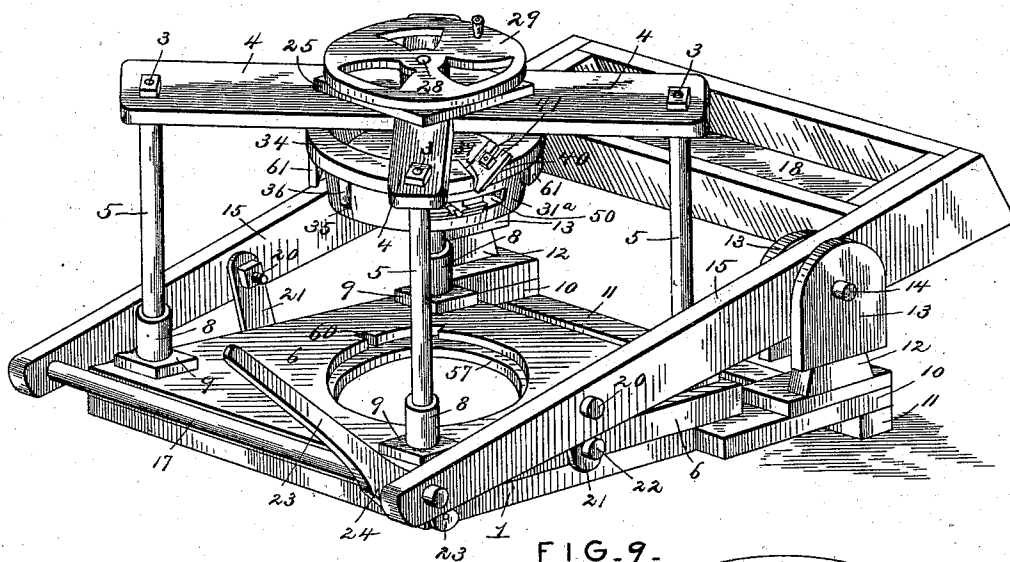


FIG. 9.

FIG. 3.

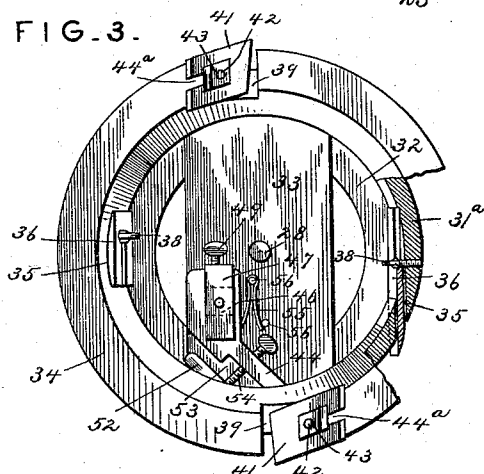


FIG. 4.

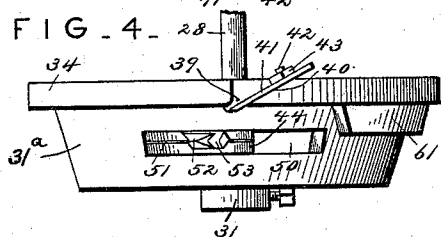
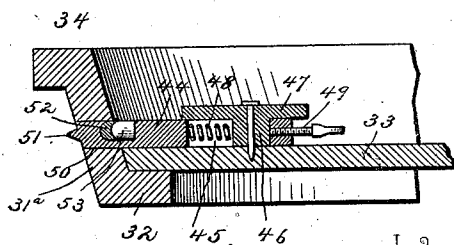


FIG. 5.



Inventor

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Witnesses

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FIG. 2.

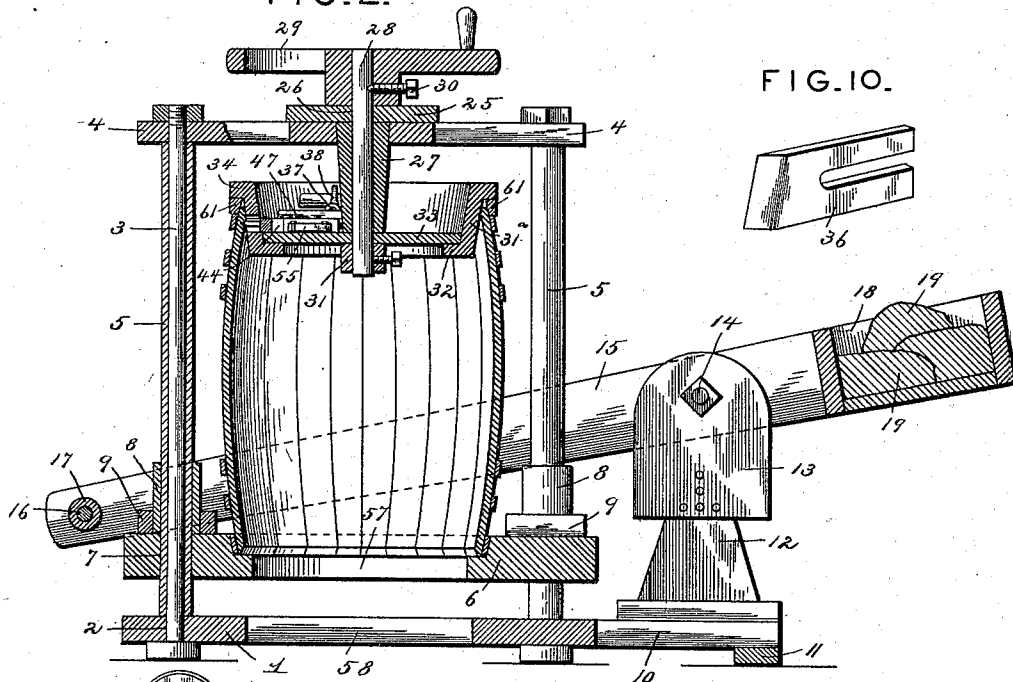


FIG. 10.

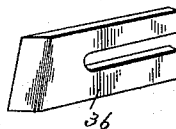


Fig. 11.

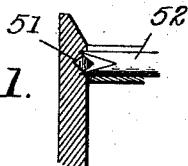


FIG. 7.

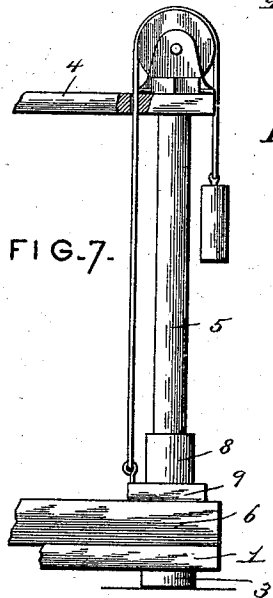


FIG. 8.

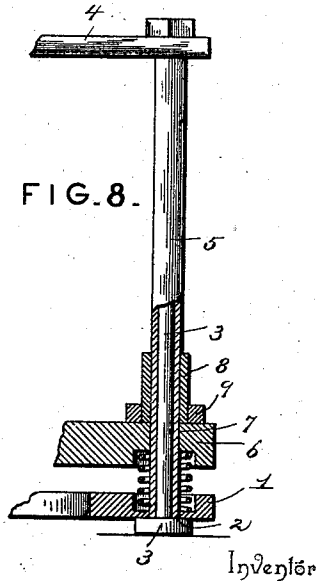
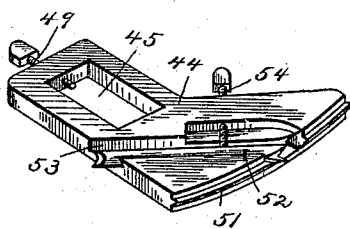


FIG. 6.



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UNITED STATES PATENT OFFICE.

HUDSON BOYER, OF THIBODEAUX, LOUISIANA, ASSIGNOR OF ONE-THIRD
TO FRANCIS W. NICHOLLS, OF SAME PLACE.

CHAMFERING AND CROZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 547,416, dated October 8, 1895.

Application filed September 11, 1894. Serial No. 522,721. (No model.)

To all whom it may concern:

Be it known that I, HUDSON BOYER, a citizen of the United States, residing at Thibodeaux, in the parish of La Fourche and State of Louisiana, have invented a new and useful Chamfering and Crozing Machine, of which the following is a specification.

This invention relates to an improved machine for chamfering and crozing barrels, so as to permit the application of the heads thereto; and it consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully described hereinafter, and finally embodied in the claims.

In the accompanying drawings, Figure 1 represents a perspective view of my complete machine, showing it in operation; Fig. 2, a vertical longitudinal section thereof; Fig. 3, a plan view of the chamfering and crozing head of the machine; Fig. 4, a side elevation thereof; Fig. 5, a detail section of the same; Fig. 6, a detail perspective of the crozing-tool, showing it detached from the head; Fig. 7, a side elevation of a modification; Fig. 8, a sectional view of a second modification; Fig. 9, a detail view showing the pin or nail, which is attached to one of the hoops on the barrel; Fig. 10, a detail perspective of a chamfering knife or block. Fig. 11 is a detail view showing the operative relation of the crozing-knives.

The reference-numeral 1 indicates the bed, base, or foundation of the machine, and this may be formed of wood or metal, and has formed in each of its corners the openings 2, through which the respective tie-rods 3 pass. The tie-rods 3 are four in number and project up to the cross-bars 4 of the machine, through the ends of which they pass. The bars 4 are two in number and are crossed at their middles and mortised into each other, so that each of their ends may receive its respective tie-rod 3. Embracing the tie-rods 3 are the tubes or sleeves 5, which are one for each rod, and which are of a length equal to the distance from the base 1 to the cross-bars 4, they being adapted to have their ends respectively engage the base and the cross-bars, whereby the cross-bars are rigidly supported above the base, as will be apparent from the

drawings. The heads of the tie-rods 3 project below the base 1 and serve as supports for the same.

6 indicates the movable base or platform, which is also square in shape and which is formed with openings 7 therein at each of its corners. Rigidly secured to or over the openings 7 are the tubes or sleeves 8, which are one for each opening, and which are formed with base-flanges 9 thereon, by which they are secured in place. These sleeves are adapted to receive the sleeves 5 and to be movable vertically thereon, whereby the base 1 is carried on said sleeves.

The base 1 is formed at one side with two offsets 10, which are braced against each other and supported in place by means of the beam 11, fixed thereto and extending from one to the other. Rigidly secured to the respective offsets 10 are the pedestals 12, which project upwardly therefrom and have the plates 13 secured to or formed integral with them. The plates 13 are two for each pedestal and are arranged one on each side thereof, and provided to permit the passage of the bolts 14, which are one for each pedestal and have for their purpose to fulcrum the beams 15. The beams 15 are two in number and have one of their ends extended past the base 6 and joined by the tie-rod 16 and intermediate sleeve 17, all of which will be understood, while the remaining ends of the beams are projected slightly beyond the pedestals and rigidly secured to the transversely-elongated box 18. This box extends from one beam to the other and is provided to receive the weights 19, whereby these ends of the levers are depressed.

Passed horizontally through the beams 15 at points about midway the ends having rod 16 and the fulcrums are the bolts 20, to which the links 21 are pivotally connected, as shown. The lower ends of the links 21 are pivotally connected to the headed studs or screws 22, which are two in number and which are secured to the respective sides of the base 6. By these means the base 6 is connected to the beams 15 and it is by the means of the beams 15 that the base is raised or lowered.

Pivotally secured to the base 1 and at the front side thereof is the rod 23, which is pro-

vided to lock the rod 16 in a lowered position, and to this end it is formed with a shoulder or offset 24, capable of engaging with this bar and locking the same in place.

5 Rigidly secured to the cross-bars 4 and at the upper side of their juncture is the plate 25, which is centrally perforated at 26, said perforations being continued through the bars 4. Secured immovably just below the bars
10 4 is the sleeve 27, which is arranged in alignment with the opening 26. Extending through the sleeve 27 and through the plate 25 is the shaft 28, which has its upper end projected above the plate 25 and rigidly secured to the
15 crank-wheel 29 by means of a set pin or screw 30.

The lower end of the shaft 28 is fixed within the boss or sleeve 31 of the chamfering and crozing head. This portion of my invention
20 consists of a circular rim 31^a, having at its lower end an interior flange 32, upon which the cross-bar 33 is arranged and secured. On this bar 33 the boss or sleeve 31 is arranged, and said bar forms the bottom of the head.
25 The outer sides or periphery of the head is slanted or beveled inwardly and provided at its upper end with a flange 34, projecting beyond the largest periphery of the head. Extending tangentially from the interior of the
30 head and passing beyond the side thereof are the two passages 35, which are shaped as vertically-elongated slots and provided for the passage of the chamfering-blades 36. (Shown in detail in Fig. 10.) The blades 36 are two
35 in number, one for each passage, and provided with edges beveled to conform to the arc of the periphery of the head. The blades 36 are slotted at their shanks or inner ends and operate with the threaded studs 37 and
40 nuts 38, whereby they may be adjusted to suit the degree which it is desired that they shall cut.

Formed in the flange 34 and oppositely arranged therein are the recesses 39, each having an inclined side 40, upon which the end-trimming blades 41 are seated, and these
45 blades are held in place by means of the threaded studs 42 and nuts 43, similar to those used in connection with the blades 36, the
50 blades 41 being provided with slots 44^a, whereby the studs 42 are received. The edges of these blades 41 project down below the flange 34 and are beveled to lie in a horizontal line, so as to trim the barrels similarly, as will be
55 better described hereinafter.

The crozing blade or knife consists of a plate 44, provided with an elongated slot 45, through which the stud 46 of the head projects, said stud being rigidly secured in place
60 and provided with a cap 47, projecting over the plate and operating to retain it in position. Located within the slot 45 of the plate 44 and in addition to the stud 46 is the expansive coil-spring 48, which operates to push
65 the plate 44 outwardly. This movement of the plate is prevented and the plate adjusted by means of the set-screw 49, which operates

in the inner end thereof and against the stud 46. The outward end of the plate 44 projects through an opening 50 in the periphery of 70 the head, and said opening is shaped as a horizontally-elongated slot. The outer end of the plate 44 is curved to conform to the arc of the periphery of the head and formed with a cutting-rib 51 thereon. This rib 51 75 operates in conjunction with the knife 52, which consists of a bar of steel seated in a groove 53 in the plate 44. The cutting end of this bar or knife 52 is shaped as a fork and arranged so that one arm thereof will lie on 80 one side of the rib and the remaining arm on the other side.

54 indicates a set-screw operating in plate 44, and by which the bar or knife 52 is secured adjustably in place. 85

55 indicates a leaf-spring, which is secured in place by the studs 56, and which has one arm bearing against the plate 44, so as to hold the same firmly against one end of the slot or passage 50. 90

61 indicates two blocks, which are secured to the under side of the flange 34, so that a space will be left between them and the side of the head, and which are provided to engage with the upper head-hoop of the barrel and 95 to prevent further upward movement thereof, as will be more fully described hereinafter.

Formed in the center of the base 6 is the circular opening 57, in which the lower end of the barrel being operated upon is adapted to 100 be seated. This opening has a rabbet-groove in its upper side, in which the head-hoop of the barrel is adapted to be placed. 58 indicates the said head-hoop, which has fixed thereto a stud or bolt 59, adapted to be received by the corresponding slot 60 in the upper side of the base 6. It will be understood that the hoop 58 is fixed to the barrel operated upon, and by these means the barrel is held incapable of revolution on the base 6 110 while being operated upon, as will be more fully described hereinafter.

The purpose of my invention is to chamfer and croze barrels when the staves have been assembled and when it is desired to place the 115 heads thereof in position. Supposing, therefore, that it is desired to operate upon such a barrel, all that will be necessary is to place the barrel in the opening 57, so that the hoop 58 will be seated within the rabbet-groove there- 120 of. The beams 15 are now loaded, as shown in Fig. 2, so that the barrel will be fed toward the head of the machine and so that the beveled periphery thereof will project into the upper end of the barrel and with its various 125 knives and blades in engagement therewith. When the parts have assumed this position, the head should next be revolved by means of the crank-wheel in connection therewith, and so as to cause the knives 41 to engage the 130 upper ends of the staves. This operation will result in a cutting down of said upper ends until the upper head-hoop engages with the blocks 61 of the head of the machine, which

will prevent the barrel from moving up farther, and thereby keep the knives 41 from engagement with the barrel. Simultaneously with this operation the knives 34 will be operating to form in the barrel an interior bevel or chamfer, such as is usually provided. When the blocks 61 engage with the upper head-hoop of the barrel, the direction in which the head revolves must be changed, so as to bring the crozing-knife into operation. This knife will form in the chamfered portion of the barrel a croze, and this by the co-operation of the cutting-rib 51 and the forked knife 52, the rib operating to make a narrow groove first, while the forked knife cuts away the groove at its sides. The revolution of the head should be continued until the knives 51 and 52 have cut away as much as their adjustment will permit, when the operation on the head will be complete. The barrel may now be reversed and the remaining head operated upon.

Various changes in the form, proportion, and arrangement of the parts of my invention may be resorted to without departing from the substance thereof. Therefore I desire it understood that I am not restricted to the precise construction herein shown, but am entitled to all such variations as come within the above definition.

It will be understood that the machine is so constructed as to prevent a concurrent operation of the leveling and chamfering knives and the crozing-knife, and this end is attained by providing the latter knife with the aforesaid spring 55, which permits the plate 44, containing said knife, to swing within the head during the operation of the leveling and chamfering knives. When, however, the direction in which the head revolves is changed and the leveling and chamfering knives cease to operate, the plate 44 and its contained crozing-knife bind against one end of the slot in which it is arranged, which causes the knife to operate positively upon the staves and to form therein the croze, which it is the purpose of my invention to provide.

The modification of Fig. 7 consists in an arrangement for effecting the feed of the platform 6, and this consists of four weighted cords, respectively, passed over pulleys located one at each upper end of the tie-rods 3, and having their inner ends connected to the platform. By these means the platform is given a regular and continual tendency to rise, which can be overcome only by applying thereto force greater than the aggregate force of the four weights which are attached to the cords aforesaid.

Fig. 8 illustrates a modified arrangement for the same purpose as the arrangement of Fig. 7, and this second modification consists in the use of four expansive springs interposed between the base 1 and the movable platform or base 6, so as to give said platform or base a tendency upward, as will be obvious. This tendency, like the tendency produced by the weighted cords of Fig. 7, is

sufficient to feed the barrel, as has been explained.

I have shown the chamfering and crozing head to be provided with a driving-wheel mounted on a vertical axis, and while this form is perfectly efficient it is, perhaps, not the preferred form, since the operation of a horizontally-extending drive-wheel will be more tiresome than the operation of a vertically-extending wheel. Therefore I prefer to change the axis of the drive-wheel to a vertical line, to the end that the operation of the machine by hand-power will be made easier. Illustration of this point is not thought to be necessary, since the arrangement shown is perfectly practicable and operative, and since to change the axis of the drive-wheel would be a most obvious variation in the embodiment of the machine.

Having described the invention, I claim—

1. The combination of a revoluble head, a plate fixed thereto and having a cutting rib formed thereon, and a knife-bar slidably mounted on the plate and having its ends forked and arranged one on each side of the cutting rib, substantially as described.

2. In a chamfering and crozing machine, a revoluble head, in combination with an adjustable leveling knife mounted thereon, a chamfering knife also adjustably mounted on said head and having its cutting edge disposed in the same direction as the leveling knife, and a yielding self-adjusting crozing knife reversely disposed to the leveling and chamfering knives and adapted to yield back from its cutting position when the rotation of the head is in one direction and automatically return when the rotation is in the reverse direction, substantially as specified.

3. In a chamfering and crozing machine, a revoluble head comprising a frusto-conical or tapering portion, and an annular flange projecting transversely from the larger end of the said portion, chamfering and crozing knives projecting from the frusto-conical portion, leveling knives arranged in the flange and having horizontal cutting edges projecting below the same and a block carried by said head and secured to the outer portion of the flange and extending downwardly from the under side thereof, said block being arranged to lie on the outer side of the barrel and to engage with the head hoop thereof, whereby the upward progress of the barrel is arrested and the operation of the leveling and chamfering knives limited, substantially as described.

4. In a chamfering and crozing machine, a revoluble head comprising a frusto-conical or tapering portion having a transverse slot therein, a block fixed to the interior of the head and adjacent to the transverse slot, a plate having one end projected through the transverse slot and formed with a cutting edge thereon and having a slot formed in its remaining end, in which slot the block of the head is received, a spring also located within

the slot of the plate and pressing against the block, a set-screw in the plate bearing against the side of the block opposite the side engaged by the spring, an oblique groove or recess in the face of said plate and an adjustable cutting tool arranged therein, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HUDSON BOYER.

Witnesses:

JOHN M. WALSH,
HENRY KNOBLOCH.