

(No Model.)

2 Sheets—Sheet 1.

H. THEIS.

MACHINE FOR BEVELING BARREL HEADS.

No. 481,335.

Patented Aug. 23, 1892.

FIG. 13.

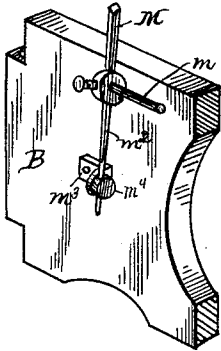


FIG. 14.

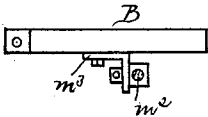


FIG. 4.

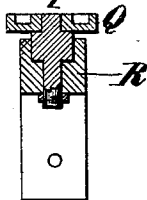
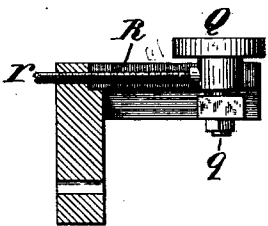


FIG. 5.



Witnesses

John O. Rose
C. B. Donaldson.

FIG. 1.

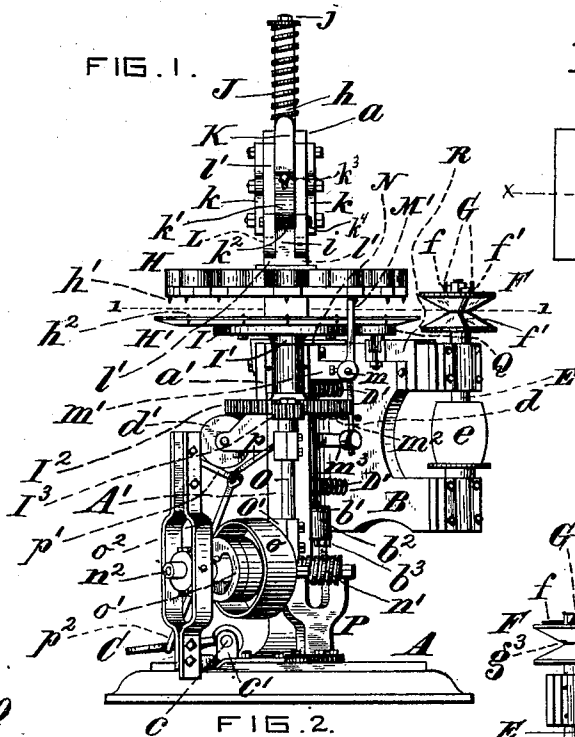


FIG. 2.

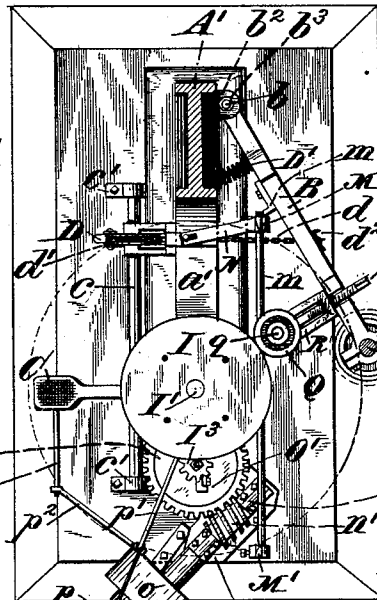


FIG. 15.

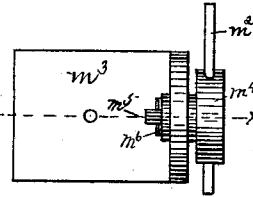


FIG. 3.

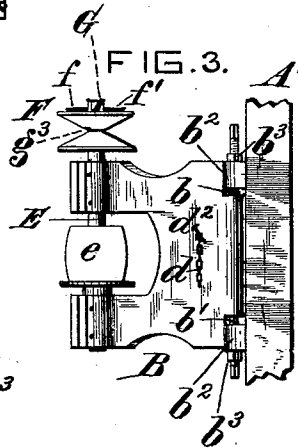
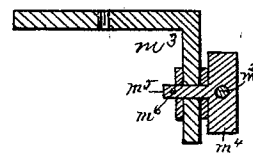


FIG. 16.



Inventor

Henry Theis,
By his Attorney
John C. Jones.

(No Model.)

2 Sheets—Sheet 2.

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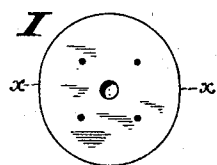
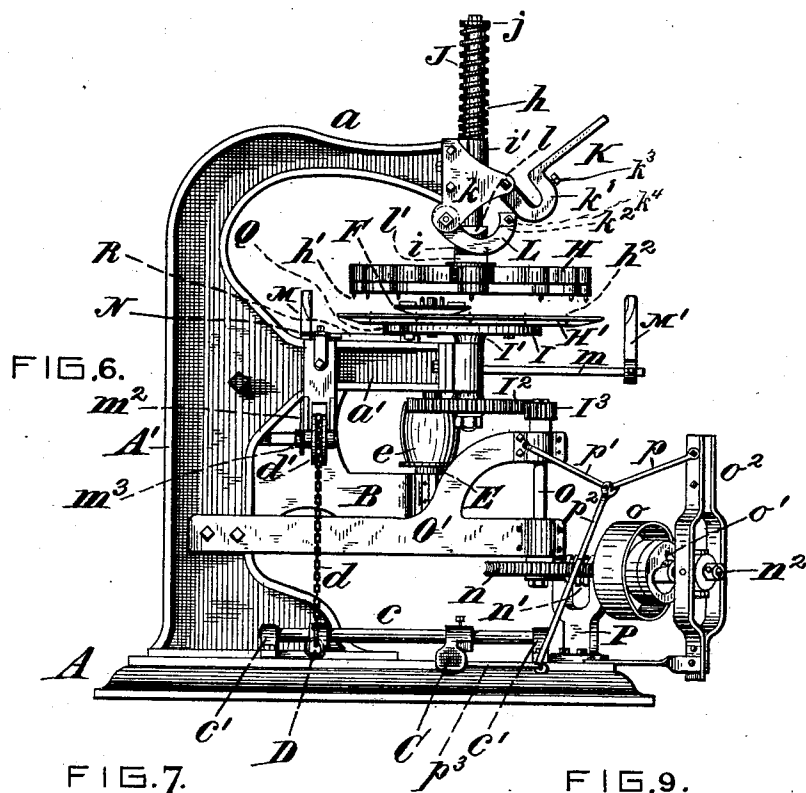


FIG. 8.

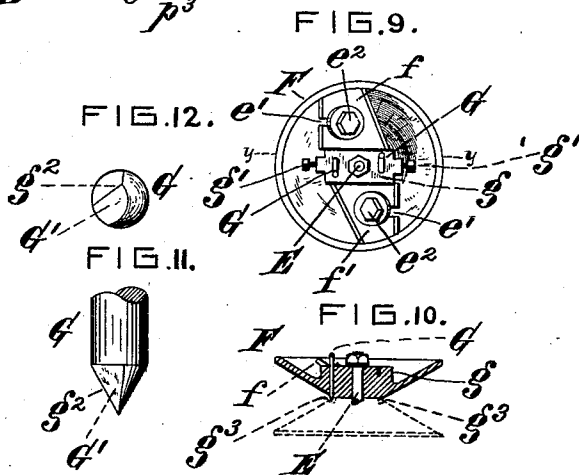


FIG. 12.

FIG. 11.

FIG. 10.

Witnesses
John O. Rose
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Inventor
Henry Theis
By his Attorney
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UNITED STATES PATENT OFFICE.

HENRY THEIS, OF LAWRENCEBURG, INDIANA.

MACHINE FOR BEVELING BARREL-HEADS.

SPECIFICATION forming part of Letters Patent No. 481,335, dated August 23, 1892.

Application filed September 26, 1891. Serial No. 406,912. (No model.)

To all whom it may concern:

Be it known that I, HENRY THEIS, a citizen of the United States, residing at Lawrenceburg, in the county of Dearborn and State of Indiana, have invented certain new and useful Improvements in Machines for Beveling Barrel-Heads, of which the following is a specification.

My invention relates to improvements in that class of machines for dressing barrel-headings in which a revolving cutter-head is employed to chamfer the edges of said headings to the desired bevel, the construction, arrangement, and operation of which will be fully hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a fore end elevation of the machine embodying my invention; Fig. 2, a sectional plan on line 1 1 of Fig. 1 with the lower clamping-disk or revolving platen removed to show the oval plate or pattern-disk on the spindle of said clamping-disk, a heading-blank and the cutter-head being shown in dotted outlines; Fig. 3, a detail outside elevation of the swinging frame which carries the cutter-head, showing the manner of its vertical adjustment for headings of different thicknesses, the upright portion or pillar of the main supporting-frame being broken off just above and below the inner hinged end of said swinging frame; Fig. 4, a detail cross-section of the presser-roller and its upright horizontally-adjustable bearing-spindle, both being mounted on said swinging frame for action in connection with said oval pattern-disk; Fig. 5, a broken longitudinal section, partly in elevation, of the parts shown in Fig. 4; Fig. 6, a longitudinal elevation of my machine, the clamping devices thereof being thrown open ready for a heading-blank, the same as in Fig. 1; Fig. 7, a detail plan of said oval pattern-disk; Fig. 8, a transverse section on line xx of Fig. 7; Fig. 9, a plan of the preferred form of cutter-head; Fig. 10, a transverse section on line yy , Fig. 9, the lower half of the cutter-head being shown in dotted lines; Fig. 11, a broken elevation of the lower end of one of the beading-cutters; Fig. 12, an end elevation showing the point of each of the beading-cutters. Fig. 13 is a detail perspective view of the swinging arm, showing the swivel device thereon for

engaging with the barrel-head-blank gage devices, the latter being also shown with their shafts broken off; Fig. 14, a top plan view of Fig. 13 with the gage-standard and shaft omitted, but showing the pendent arm of said standard in cross-section; Fig. 15, a front elevation of said swivel device, omitting all the gage devices, with the exception of the said pendent arm, which latter is shown broken off at its upper end; and Fig. 16, a central longitudinal section of line xx , Fig. 15.

A represents the bed or base of my machine, and A' an upright frame or pillar supported by said base and provided with forwardly-projecting arms a and a' , as clearly shown in Fig. 6.

B represents a horizontally-swinging arm or frame hinged at its inner end to the upright A', as shown in Figs. 1, 2, and 3. It is preferably hinged to said upright A' between two pivotal points b and b' , which latter are screw-threaded to adjustably engage female threads in lugs $b^2 b^2$ on said upright. Suitable lock-nuts $b^3 b^3$ are provided on the threaded points b and b' , whereby they may be secured against turning with the swinging arm, and also firmly set in the desired position after the vertical adjustment of the swinging arm, the purpose for which is to allow for head-blanks of different thicknesses. Square heads are also provided on the points b and b' by which to readily turn them, as customary.

C represents a foot-treadle projecting from rock-shaft c , the latter being mounted in bearings or boxes $c' c'$ on base A and provided with a crank-arm D.

d represents a chain passing over a grooved wheel d' , suspended from the pillar-arm a' and connecting the swinging arm B with the crank-arm D. The outer end of chain d is preferably passed through a hole in the body of said swinging arm and adjustably and detachably held from slipping backward through said hole by means of a pin or the like d^2 , as clearly shown in Figs. 1, 2, and 3. It will be seen that pin d^2 can be readily disengaged from the several links of the chain it occupies and replaced in a link either nearer to or farther from the outer end of said chain to make due allowance for headings of different diameters and the consequent greater or less swing of the hinged arm B.

D' D' are two spiral springs interposed between the swinging arm B and the upright pillar A', as shown in Figs. 1 and 2, to promote the backward or retractile movement of the said swinging arm when pressure on the foot-treadle has been removed. The outer end of the swinging arm is bifurcated or forked, its two projecting ends having bearings or boxes, in which is mounted and revolves a vertical shaft or arbor E.

e is a tight live-pulley on arbor E in the opening intermediate said projecting box ends of the swinging arm. A suitable belt (not shown) leads from pulley e to the usual driving-pulley.

F represents a cutter-head on the upper projecting end of arbor E, its preferred form being clearly shown in Figs. 9, 10, 11, and 12, and which I will now describe. The usual V-concave is made in the face of my cutter-head, and from both its top and bottom I introduce longitudinally-adjustable cutters f f'. Such adjustability is secured by making a slot e' in each cutter-blade and passing a screw e² through it into the body of the head. The cutting-edge of each blade is made at an angle to suit that of the said V-concave and also tangential to said arbor or the axis of the head, as best shown in Figs. 1 and 9, and is projected beyond the usual opening in the V-face of said head to effect the desired cut on the edge of the blank.

G G represent cutting-tools mounted in the hub g of the cutter-head and adjustably held in place by screws g', their inner cutting edges or points g² being shaped as clearly seen in Figs. 11 and 12 and each entering or occupying a recess g³ in the angle of said V-concave, as indicated in the dotted lines in Fig. 10. The cutting-edge of each of these tools G G proceeds to a point and has a concave clearing and cutting face G' for dressing or cutting down the sharp edge produced on the blank by the beveling-cutters f f', thus finishing or beading said edge of the blank ready for use and simultaneous with the beveling or chamfering operation.

H represents the upper clamping-disk, and H' the lower one, between both of which the head-blank is placed and firmly held in position for the beveling and beading operations of the above-described cutter-head. The clamping-disks are arranged horizontally, the upper one H being suspended free to turn thereon from the lower end of a non-revolving arbor h and the lower or live one H' secured to a plate or flange I on an arbor I'.

h' represents each of the usual spring-controlled points or barbs projecting in a circular series near its periphery from the lower face or bottom of the upper clamping-disk, and h² are fixed points projecting in a circular series near its periphery from the upper face of the lower clamping-disk, both sets of points being designed to form the usual pin-disks, which firmly hold the head-blank between the said clamping-disks entirely free

from turning or becoming loose therein during a beveling and beading operation. The non-revolving arbor h passes upwardly into a block or head i, where it is tightly secured, and thence through a box i' at the outer end of the upper pillar-arm a, as shown in Fig. 6.

J represents a retractile spiral spring encircling the upper portion of arbor h, which projects beyond the box i', and j represents an ordinary stop-washer and nut device on the extreme upper end of said arbor h to form the upper abutment for said spring J, the top of box i forming the lower abutment.

K represents a depressing-lever for moving the disk H toward the disk H' to clamp the barrel-head between them. It is hinged at its inner end to the bearing cheeks or plates k, which project forwardly from the pillar-arm a at either side the box i'. The lower rounded end or nose k' of lever K engages a block or ligament k² in the outer end of a split foot or cam L, the latter being hinged at its inner end to ears on the lower ends of the cheeks k and straddling the block or head i between its laterally-projecting lugs l and l', respectively, as clearly shown in Fig. 6. The cam L is substantially U-shaped, and its lower curved surface engages with the block i and forces it downward whenever pressure is applied to its free end by the nose k' of the operating-lever K. A stop pin or bolt k³ in the nose of the lever K engages with the bolt k⁴ in the end of the cam L and limits the downward movement of the lever.

M M' represent upright standards at the opposite ends of a horizontal rod or shaft m, the latter being mounted in a bracket bearing or box m', projecting from the pillar-arm a', and suitable collars being detachably secured to said shaft m at either side said box m' to prevent longitudinal movement of said shaft.

m² represents a pendent arm projecting from the standard M and designed to be engaged by the stop-arm or bracket-swivel m³, projecting from the inner face of the swinging arm B, as clearly shown in Figs. 1 and 2, when the latter has been advanced by pressure on the foot-treadle, as hereinafter more fully described.

The bracket-swivel is composed of an angle bar or arm secured by a screw to the said swinging arm B and a head m⁴, having a journal-bearing m⁵ engaging and opening in the projecting part of said angle-bar. Suitable washers are applied to the bearing m⁵, and a pin m⁶, passing through the outer end of the bearing, serves to properly sustain said head m⁴ in place. A diametrical hole is made in head m⁴, through which the lower end of pendent arm m² passes and is adapted to freely reciprocate when the swinging arm B is brought forward or back on its pivots.

N represents a horizontal arm adjustably secured by means of slot and screw at one end to the pillar-arm a', its other end engaging by contact the said standard M.

The standards $M M'$ are adjustably and detachably secured to shaft m by means of screws and form gages whereby the head-blanks are readily and properly centered in the clamping-disks. The object of adjustably securing these standards on shaft m is to provide for blanks of different diameters, the adjustability of the arm N being for a like purpose.

Arbor I' journals in a box at the outer end of pillar-arm a' and is provided at its lower end with a gear-wheel I^2 , which engages a pinion I^3 , the latter being mounted upon a vertical shaft O , journaled in boxes at the outer forked end of a supporting-arm O' , projecting from the lower portion of the pillar A' .

n is a worm-wheel at the lower end of shaft O , and n' a driving-worm on a horizontal shaft n^2 , the latter being mounted in suitable bearings on an upright standard P , secured to the base A .

o represents a live-pulley on worm-shaft n^2 , and o' any suitable clutch device, also mounted on said shaft and controlled by a beam or lever o^2 , the latter being suitably hinged or fulcrumed at its lower end and connected by coupling-rods p, p', p^2 , and p^3 with the supporting-arm O' and the foot-treadle, respectively, whereby the swinging arm B , with its accompanying mechanism and the power devices for giving motion to the machine, may be manipulated and controlled simultaneously from the foot-treadle.

Plate or flange I beneath the lower clamping-disk H' , to which the latter is secured, is in the present instance oval in outline—that is, its circumference is oval—so as to impart a correspondingly-oval outline or circumference to the head-blank held in the clamping device, which is the desired form for use in most barrels; but it is obvious that this plate could be of any other form—such as perfectly circular or otherwise—and the machine operate equally well.

In order to bring the cutter-head to engage the periphery of the head-blank, so as to cut the oval or other form presented by said plate, or, more properly speaking, pattern-disk I , I mount a presser-roller Q on the swinging arm B , which roller is brought to bear against the periphery of said pattern-disk by simply drawing said swinging arm inwardly by means of the foot-treadle and chain hereinbefore described, all as clearly shown in Fig. 2. Roller Q is preferably mounted on a spindle q , which is longitudinally adjustable in a slotted bracket-arm R , projecting from the inner face of the swinging arm.

r represents the adjusting-screw for the roller-spindle q , adapting said roller to engage the pattern-disk I for blanks of different diameters. The nut and screw-shank on the lower end of the roller-spindle q serve to properly secure the roller device in place upon proper setting thereof.

In the operation of my machine the blank,

(shown in dotted lines in Fig. 2,) which has been previously rounded by the rounding-machine or otherwise, is placed between the open clamping-disks, (shown in Figs. 1 and 6,) the gages M and M' (the one M of which is normally in contact with stop-arm N) serving as stops and means for readily and accurately centering it. The lever K is then lowered or depressed, thereby causing the said clamping-disks to firmly close on said blank. The foot-treadle is then depressed, which action simultaneously causes the swinging arm B to advance, the springs $D' D'$ to compress, and the clutch mechanism to bring the clamp and other moving parts on the body of the machine into motion. The pulley e on said swinging arm is constantly in motion to drive the cutter-head, as is obvious. This advance movement of the swinging arm simultaneously brings the presser-roller into intimate frictional contact with the pattern-disk I , and it also brings the swivel stop arm or bracket m^3 on the swinging arm into engaging contact with the standard pendent arm m^2 , which thus automatically backs or retreats both standards M and M' , thereby permitting the blank to revolve without liability of unnecessary frictional contact therewith. The swivel devices $m^3 m^4$ and the pendent arm m^2 serve to prevent the standards $M M'$ and their shaft m turning or moving, except when necessary, otherwise (in the absence of said swivel device and pendent arm) the weight or gravity of said standards would cause them to turn downward in a pendent position on their shaft, and would therefore not be held upright in operating position, as is clearly obvious. One revolution of the clamping-disks for each blank is of course sufficient to present its entire periphery to the revolving cutter-head to form both bevels and beading combined on the edge of each blank, and the operation of the cutter-head, constructed as herein shown and described, is such that the cut or dressing is uniform both against and with the grain of the wood and perfectly smooth throughout. As soon as the bevels and beading are formed on the blank the pressure on the foot-treadle is removed. The swinging arm B instantly moves backward by the expansion of springs $D' D'$, and the hand-lever K is then raised to permit the upper clamping-disk H to rise by the expansion of spring J on the upper end of its arbor. The finished blank may then be removed, the rotation of the lower clamping-disk having been stopped by said release of pressure from the foot-treadle, and all the parts are now in their respective normal positions ready for another blank.

I claim—

1. In a machine for dressing the peripheral edges of barrel-headings, a blank-holding clamp composed of the lower live-disk H' , upper vertically-movable disk H , arbor h , at the lower end of which said upper disk is mounted, block or head i , having laterally-

projecting lugs l' and receiving the said arbor h , compressible retractile spring J , depressing hand-lever K k' , pivoted to the outer end of the pillar-arm a on the main frame, and split foot or cam L , hinged to said pillar-arm and engaging said lugs l' on the head-block i , said depressing-lever K engaging said foot or cam L for the downward or closing movement of the upper disk H and when raised allowing spring J to retract or withdraw said upper disk from the blank, and thereby automatically open the clamp for the release of said blank, substantially as herein set forth.

2. In a machine for dressing the peripheral edges of barrel-headings, the combination, with the head-blank clamp, of the upright standards M M' , mounted on a horizontal rod or shaft m , the latter being suitably mounted in a bracket-bearing m' , projecting from the pillar-arm a' of the main frame, a pendent arm m^2 , projecting from standard M , said standards M and M' forming gages or stops whereby the said head-blank is readily and properly centered in said clamp, and suitable stop arms or brackets m^3 and N on the swinging arm B and pillar-arm a' , respectively, whereby said standards are held in proper relation to the head-blank both for setting and revolving it, substantially as herein set forth.

3. In a machine for dressing the peripheral edges of barrel-headings, the combination, with a frame the standard of which is pro-

vided with two shafts, one of which is movable longitudinally relatively to the other one and each of which is provided upon its inner end with a clamping-disk, of two lugs upon the frame, each provided with an adjusting-screw the axis of which is parallel with the axis of said shafts, an arm adjustably secured to the frame by means of said screws, and a revolving cutter in the outer end of said arm, the axis of which is also parallel with the shafts and the periphery of which is provided with a V-shaped groove, substantially as set forth.

4. In a machine for dressing the peripheral edges of barrel-headings, the combination, in a revolving cutter-head F , having a V-concave face and one or more cutters or blades f f' , mounted therein, of a cutting tool or tools G G , mounted in one half of the hub of said cutter-head and adjustably held in place, with their inner ends or cutting-edges g^2 entering or occupying a recess or chamber g^3 in the other half of the hub at the angle of said V-concave, whereby both the beading or dressing and beveling on the edge of the blank are performed, substantially as herein set forth.

In testimony of which invention I have hereunto set my hand.

HENRY THEIS.

Witnesses:

WARREN TIBBS,
JOS. F. FRAZER.