M. J. HADDIGAN.
MACHINE FOR DRESSING THE INTERIOR OF BARRELS.
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MACHINERY FOR DRESSING THE INTERIOR OF BARRELS.

UNITED STATES PATENT OFFICE.

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To all whom it may concern:

Be it known that I, MICHAEL J. HADDIGAN, citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Machines for Dressing the Interior of Barrels; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a machine for removing char from barrels.

It is the desire to remove the char from used whisky barrels in order to fit them for further use.

An object of the invention, therefore, is to construct a machine that will be thoroughly practical in its operation and thorough in its work in removing the char from a barrel, and one that will be able to handle a considerable number of barrels in the shortest possible time.

Another object is to adapt a plane or plane-bit to the routing or cleaning of the interior surface of a barrel especially in a machine of this type.

The majority of machines of this kind employ such devices as rasps, wire brushes and the like for the removal of the char but the operation is a slow and expensive one and in view of this I have adapted a plane for this purpose whose use calls for a peculiar arrangement of parts by which to handle it and by which to adjust it to its work.

But these and other features will be brought out in the following specification aided by the accompanying drawings, wherein,

Figure 1 is a side elevation of the machine. Fig. 2 is a sectional elevation of a part of a rotating barrel holding ring. Fig. 3 is a front or face view of the same. Fig. 4 is an end elevation of the machine. Fig. 5 shows a part of the machine in perspective. Fig. 6 shows a perspective a plane and some of its associated parts. Fig. 7 is a transverse sectional elevation of a gear box shown, Fig. 1, and Fig. 8 is a longitudinal section of the gear box shown in Figs. 1 and 7.

A indicates the frame of the machine which consists of a suitable base having at one end a raised portion B upon which is mounted a stationary shaft or spindle C, the same being secured in suitable clamps D, for example, fixed on said portion B. It may be stated, in passing, that the office of the part B is merely to furnish a support for the spindle C sufficiently high to allow the barrel, whose center is substantially coincident with the axis of said spindle, to freely rotate above the base A.

Rotatably mounted on the spindle C is a pulley E driven by means of a belt F for example. Rotatable also upon the spindle C is a clutch member G which is constructed with a tapered portion H adapted to frictionally engage the inner surface of the adjacent portion of the pulley E which is conically bored to receive it. The said clutch member G includes a series of arms J with which is cast a ring K having a conical bore L, Fig. 3, to correspond with the slant of the outer face of the end of the barrel. I employ the arms J or equivalent means by which to space the said ring K from the plate G and this spacing is done merely in order to set the barrel away from the clutch portion so that the parts which carry the cutting member to be described later, can extend beyond the end of the barrel to permit the said cutting member to move along the full length of the barrel or from end to end. For the sake of brevity I shall refer to the rotating part K as a "head" or "head piece."

I provide a second ring K' of smaller diameter than the ring K and this is seated in the latter and may be held by any suitable means, for instance one or more screws or pins M, but one of which is shown, see Figs. 2 and 3, and the bore of the ring K' is of a size and form that will receive and carry a barrel of smaller diameter than that held by the ring K.

The pulley E is adapted to shift laterally upon the spindle C and constitutes a clutch portion while the part G, which is the barrel rotating part, is held in any suitable manner so that it will have no lateral movement upon the said spindle, merely rotating thereon as stated.

A lever N is pivoted at O on some suitable part of the machine and is connected at its lower end to a shifting-rod P which extends toward the opposite end of the machine within easy reach of the operator and
a lever Q, for instance, may have control of the rod to make the operation of shifting the pulley an easy one although it is understood that any other means for this purpose may be employed. The base A is provided with suitable runways at its upper part which have been shown in Figs. 4 and 5 but these will receive no description herein, since they are common to many other types of machines and they are only required to be of a form that will support and properly guide the carriage indicated at R. This said carriage includes the upright side members S clearly shown in Fig. 5 to which is secured or with which is cast a ring T, which I shall term a tail-piece, the plane of which lies parallel to the plane of the ring K. Within said ring T is a ring T' having substantially the same internal diameter as the ring K and it may be provided also with a smaller ring T" corresponding to K'. Since the ring T is fixed in its position the ring T' is rotatable since it carries the end of a barrel of the large size, while the said smaller ring T" will take the small barrel in the same way as the ring K'. The ring T' must rotate while the ring T" will, of course, rotate with it.

Having provided means for holding the barrel, some means must be furnished for clamping the same between the two rings described. While this may be hand operated mechanism I prefer to operate it through certain gearing to be described presently which is within what I shall term a "gear-box" U mounted upon suitable ways V of part of the carriage R.

Depending from the ring T and secured relatively to it is a nut W threaded internally to take a screw 2 one end of which is journaled in a suitable boxing 3 mounted, for example, on a cross-partition 4 forming a part of the frame or base A. The other end of the screw is journaled in a boxing 5 mounted on the end of the base A. Rotation of the screw will naturally impart movement to the carriage R and the tail-piece T longitudinally of the frame. A gear wheel 6 is mounted upon the screw 2 and rotation is imparted to it through a gear 7 rotatably mounted on a fixed shaft or rod 8 in the gear-box, or by means of a gear 9 on a fixed shaft or rod 10, both of which wheels 7, 9, receive motion through means now to be described.

11 is a drive shaft preferably extending the full length of the machine and carrying a driving pulley 12 at one end. This shaft, see Fig. 8, carries a gear 13 the latter having a feather 14 which slides in a feather-way 15 of said shaft. This gear is in mesh with and drives the gear 9 of the fixed shaft 10 the last named gear being rotatable with a gear 16 which meshes with the said gear 7 of the fixed shaft 8. The shaft 11 is in constant rotation and will impart a movement to the gear 9 through said gear 13, the former rotating the gear 16 which in turn rotates the gear 7 which operates the gear 6, if the latter should be in mesh therewith. However, the said gear 6 may be in mesh with the gear 9 and in order that this may be possible the said gear 6 is shiftable along the shaft 2 which is accomplished through a forked member 17 which itself is carried by and is shiftable upon the fixed shaft or rod 8 and moves the wheel 6 by means of its hub 18 it being understood that the gear 6 must have a bore large enough to slide upon the screw 2 carrying it. On the rear end of the gear box is a lever 19 pivoted at its end on any suitable extension 20 and provided with a spring latch 21 to engage the usual notches of a sector 22 secured in any suitable manner to said gear box. 23 is a rod pivoted to the lever and extending through the wall of the gear box and having pivotal connection with the forked member 17 described.

It will be noted that a movement of the lever will shift the gear 6 into mesh with either the gear 7 or the gear 9 or it may be placed in an intermediate position in which case the screw 2 will not be rotated. It will be noted further that through the arrangement of gearing provided, the screw 2 can be operated in either direction according to the gear with which it may be in mesh. In one direction of rotation of the screw the carriage R can be moved away from the position of the barrel and in the other direction it will be moved up to the barrel to hold it in place for the cleaning operation.

Having now provided the means for clamping and rotating the barrel I next provide the means for cleaning its interior. This consists, first, of a screw 24 which extends through and at one end has its bearings in the walls of the gear-box U. 25 is a member constituting what may be termed a cross-arm having at substantially the middle of its length a bore 26 to slip upon the end of the spindle C. One end of the arm, in this instance the lower end, is bored and receives the end of the said screw 24 and constitutes a bearing for the same. A bent bar 27 which I term a pattern guide is fixed at one end in the other extremity of the cross-arm while the opposite end of the bar is held in suitable clamping portions 28 mounted upon the top of the gear-box as clearly shown in Figs. 1 and 4. This arm is bent intermediate its ends to substantially correspond with the curve of the inner surface of the barrel as indicated in Fig. 1, said bar being fixed relatively to the arm 25 and the said portions 28, and hangs downward and slightly forward in the direction of the front of the machine as viewed in Fig. 1.
Suspended from the said pattern guide 27 is a hanger 39 by means of suitable grooved rollers 30, for example, and suspended from said hanger is the cutting tool comprising a plane-block 31 provided with the usual bit or blade 32, there being a yoke 23 pivoted to said block which is the part suspended from the said hanger 29 by means, for example, of a stem 34.

Pivoted between the upright arms 34' of the plane-block is a member 35 provided with a stem 36 which is suitably swiveled in a block 37. The latter is bored at 38 and threaded to receive the screw 24 previously described. Said block 37 which may be termed a feed-nut has an arm extension 39 whose extremity is bored at 40 to receive a rod 41 lying parallel to the said screw 24. This said rod 41 is supported at each end in one end of a link 42, one lying near the gear box and the other adjacent the outer end of the said thread bar 24, the opposite ends of the links being bored so as to be placed on the latter, those parts of the screw carrying the said links being devoid of threads. The screw merely forms supports for the said links, the latter being merely intended to rock thereon and prevented from shifting along the same by any suitable means not shown.

The link 42 adjacent the gear box is provided with a lever extension 43 by which the operator may adjust the plane to its work. By a study of Fig. 4 it will be observed that the plane is suspended with its bit or blade 32 in position to engage the interior surface of the barrel and that the plane-block is suspended from the bent rod 27 as described. It is also observed that the lever 43, just mentioned, is in control of the rod 41 and can move that member in an arc described from the screw 24 through the links 42 and in its ability to thus move the extension 39 of the block 37 it can be raised or lowered as desired and by moving the lever toward the back of the machine so as to depress the forward extension of the block 37 the plane will be moved in the direction of the work and can be held with as much pressure to the work as desired and can be removed from the inner surface of the barrel by a forward movement of the lever.

As before stated, the pattern guide 27 corresponds substantially to the curve of the barrel its lowest point being opposite the blige of the latter. The rotation of the screw 24 in either direction will result in carrying the plane along it and the bent rod must, of course, cause the plane to follow the contour of the inner barrel surface.

In some of the claims I shall refer to the pattern guide 27, the screw 24, and the arm 25 as a "member" since together they constitute a unit upon which the plane is carried.

Means is provided to reverse the direction of rotation of the screw 24 and this is accomplished through a gear wheel 44 fixed thereon and certain other gearing. For example, 45 is a stationary engine or rod upon which is rotatably mounted a gear 46 together with a gear 47 both of which are fixed relatively to one another. The shaft 11 carries a gear 48 which is sidable along it but keyed to it, see key 49. A lever 50 is in control of the last named gear and is provided with any suitable spring-latch 51 engaging any one of a series of holes 52 in a sector 53 mounted on the gear box. Said gear 45 may mesh with the gear 46 or with a gear 54 on the fixed shaft 10, before described, said gear 54 being in mesh with the gear 47. It is observed that rotation of the shaft 11 will rotate the screw 24 in the same direction with it through the gears 46 and 44. However, when said gear 48 is carried into mesh with the gear 54 the opposite direction of rotation to the screw 24 will be imparted due to an added gear in the train, that is to say, gears 48, 54, 47, 46 and 44 are now those that constitute the train of gears. It is only necessary, in order to move the plane in either direction, to shift the lever 51 between its extremities of movement. But when this portion of the machine is to remain idle the central position of the lever will insure that the gear 48 will be in its neutral or idle position.

In its movement along bar 27 and the barrel the cutting tool will naturally follow the curve of the barrel surface, the operator through the lever 43 merely providing the desired pressure for the needed cut.

In order to provide for barrels of different lengths the gear box U is sidable for a limited distance upon the runways V of the carriage R. R' is a toothed rack formed with part of the said carriage R and lies parallel to the said runways V, one of its teeth being shown at R', Fig. 4. A vertical shaft U' is journaled in the gear box U and carries a pinion U which engages said rack. It is now observed that by movement of the shaft U' by means of the hand wheel W the gear box may be shifted upon the carriage R to the required extent, that is to say, the distance between the rings K T must vary with the length of the barrel to be cleaned and this distance is increased or decreased by movement of the carriage R which carries the ring T. Now since the distance between the gear box and the arm 25 which engages the fixed spindle C is always a fixed one an adjustment between the gear box and the carriage must be made. For example when the machine has been set for a short barrel and longer barrels are next to be cleaned the insertion of one of them between the rings K T would leave the arm 25 suspended free of the spindle C because the
gear box \( U \) would not lie near enough to the head \( G \) \( K \). It, therefore, becomes necessary to shift the gear box in the direction of said head by means of the pinion \( U^3 \) and the rack \( R' \) whereby the arm \( 25 \) will move up to and upon the said spindle \( C \).

In order to place a barrel in the machine the gear \( 6 \), which during the barrel cleaning operation has been idle, is shifted into mesh with one of the gears \( 7, 9 \), to move the carriage \( R \) along the screw \( 2 \) toward the head \( G \) \( K \). The gear box \( U \) also moves with the carriage so that the parts carrying the cutting tool, or plane, will be carried toward said head, the arm \( 25 \) slipping upon the spindle \( C \). In removing the barrel the reverse operation is brought about. The distance the carriage is moved along the said screw \( 2 \) is only sufficient to permit the barrel to be easily moved sidewise and shifted from off the arm \( 25 \).

A firm support for the outer suspended ends of the pattern guide \( 37 \) and the screw \( 24 \) is required and therefore the arm \( 25 \) is provided to slip upon the spindle \( C \), as explained, and also it is preferred to prevent the arm from moving relatively to the said spindle when placed thereon. This is done by providing a key-way \( C' \) in the latter and a key \( C^2 \) in the arm so that when the said arm passes over the spindle the key must enter the key-way.

The rotation of the ring \( K \) rotates the barrel and the barrel-carrying ring within the tail piece \( T \) carrying the barrel rotates with said barrel. The screw \( 2 \) and the shaft \( 11 \) must be provided with key-ways as illustrated and described so that the gear \( 6 \) on the former and the gear \( 48 \) on the latter while rotating therewith can slide along them as the gear box moves along the base \( A \) with the carriage \( R \). This is also true of the gear \( 13 \) of the said shaft \( 11 \). The gears \( 6 \) and \( 48 \) are held relatively to the gear box \( U \) by the levers \( 19 \) and \( 50 \) respectively while the said gear \( 13 \) is held by a suitable forked hanger \( 13^2 \) for example, secured to and depending from the fixed shaft \( 45 \).

Since the gear box moves some considerable distance the mentioned gears must be free to move with it.

I may vary the structure and arrangement of parts since the invention is susceptible of changes without departing from the spirit and intent thereof.

Having thus described my invention I claim:

1. A machine for dressing the interior of barrels, in combination, a suitable rotating head to carry one end of a barrel, a tail piece movable in the direction of the said head and arranged to carry the other end of the barrel, a feed screw projecting through the said tail piece toward said head and adapted to move, a bar lying parallel to the screw and likewise extending toward the head and arranged to move in an arc about said screw, a tool carrying member engaging the screw and slideable upon the bar, a tool carried by the member, a pattern guide carried by the tail piece and extending into the barrel, and a hanger moveable upon and along the same and pivotally attached to the tool.

2. In a machine for dressing the interior of barrels, in combination, a suitable bed, a rotating head to carry one end of the barrel, a tail piece to carry the other end and moveable toward the head, a carriage movable longitudinally of said bed, a rotating screw journalized therein and extending toward the head, a bar lying parallel to and arranged to swing in an arc about said screw, a tool carrying member slideable upon the bar and engaging the screw, a pattern guide carried by and extending from the carriage toward the rotating head, a member suspended from the pattern guide and carrying a tool, the first described tool carrying member also carrying said tool, and a support to carry the screw and the pattern guide at their ends adjacent the rotating head.

3. In a machine of the character described, in combination, a suitable bed, a rotating head to carry one end of a barrel, a tail piece including a rotating part to carry the other end of the barrel, a carriage moveable with respect to the tail piece longitudinally of the bed, means extending from the carriage toward the head and moveable with said carriage including a screw, means to rotate the screw in either direction, a pair of spaced arms carried by the screw, a rod lying parallel to the screw and carried by the arms and moveable in an arc about said screw, a pattern guide fixed on the carriage and lying in a plane parallel to the screw, a tool, a part moveable upon and along the pattern guide, a part moveable upon and along the screw, both said parts carrying 110 said tool, and a hand lever in control of one of the parts.

4. In a machine of the character described, in combination a suitable bed, a rotating head to carry one end of a barrel, a tail piece including a rotating part to carry the other end of the barrel, a carriage moveable with respect to the tail piece longitudinally of the bed, means extending from the carriage in the direction of the head and including a screw, means to rotate the screw in either direction, a rod lying parallel to and moveable in an arc about said screw members loosely mounted on the latter to carry said rod, a pattern guide mounted on the carriage and extending in the direction of the rotating head, a member in which the free ends of the pattern guide and the screw are carried, the former being fixed and the latter being rotatable therein, a tool, a
hanger suspended from the pattern guide and carrying the tool, and a part engaging the screw and having the tool attached to it.

6. In a machine of the character described

5 the combination of a suitable bed, a rotating driving head to carry one end of a barrel, a tail-piece to carry the other end of the barrel and adjustable longitudinally of the bed, a carriage movable upon and longitudinally of the bed independently of the said tail-piece, a tool to engage the interior surface of the barrel, a pattern guide mounted on the carriage, means carried by the guide to carry the tool, means to move the tool along said guide comprising a screw extending from and rotatable in the said carriage and including a part on the screw to engage said tool, means to rotate the screw in either direction at will, a rod spaced from the screw and lying parallel to it, spaced arms carried by and fixed relatively to the rod and mounted on the screw and arranged, together with the rod, to have a free arcuate movement about the said screw, and a supporting member extending from the rotating head with which, in use, one of said arms is adapted to engage, and by which said arm is supported.

6. In a machine for dressing the interior of barrels, the combination of the machine frame, a carriage movable longitudinally upon said frame, a pattern guide supported by said carriage to extend into the barrel to be dressed, a screw supported by the carriage and extending in the same general direction as said pattern guide, means to rotate the screw in either direction, an arm in which the extended ends of the pattern guide and screw are carried, the latter being rotatable therein, a support with which the arm is adapted to engage, a rod lying parallel to the screw, arms secured to said rod and loosely mounted on the screw and adapted to have an arcuate movement with respect to the axis of rotation of said screw, a tool, means to suspend it from the pattern guide, and a member slidably upon the rod and engaging the said tool.

7. In a machine of the class described, the combination of a carriage, a pattern guide mounted at one end thereon, a hanger mov- able upon the pattern guide, a tool suspended from the hanger, a rotatable screw substantially paralleling the pattern guide and journaled in the carriage, a rod parallelizing the screw, a pair of arms mounted on the screw to swing about it in an arc of movement, and having the rod fixed therein, and a member engaging the screw and slidably on the second rod and engaging the tool, and a lever fixed relative to the rod.

8. In a machine of the class described, including a suitable bed, the combination with a pair of rotating rings to engage the ends of a barrel, a carriage mounted upon and movable longitudinally of the bed, a bent member constituting a pattern guide fixed at one end relative to the carriage, and in the operation of the machine adapted to extend through the rings, an arm fixed relative to said pattern guide at the free end thereof, a screw journaled at its ends in the carriage and said arm, a member having a position coincident with the axis of rotation of the rings and extended to receive the said arm, said member adapted for supporting the screw and the pattern guide, a rod paralleling the screw, means to support the rod from said screw and permit said rod to have an arcuate movement relative to the latter, a hanger suspended from and movable along the pattern guide, a tool suspended from the same, and a part engaging the screw and connected with the tool.

9. In a machine of the class described including rotatable means to carry a barrel, a carriage, a pattern guide mounted on said carriage, a tool to engage the interior of the barrel, a hanger suspended from the pattern guide and engaging the tool, a screw rotatably mounted in the carriage and substantially paralleling the pattern guide, a member engaging the screw and movable along the same, and connected with the tool, pressure manually being placed upon the tool by means of said member.

In testimony whereof I affix my signature, in presence of two witnesses.

MICHAEL J. HADDIGAN.

Witnesses:

JAMES E. PILLSbury,
L. M. THORLOW.

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