P. Hayden,

Turning Bungs.

No. 41,506. Patented Feb. 9, 1864.

Fig. 1.

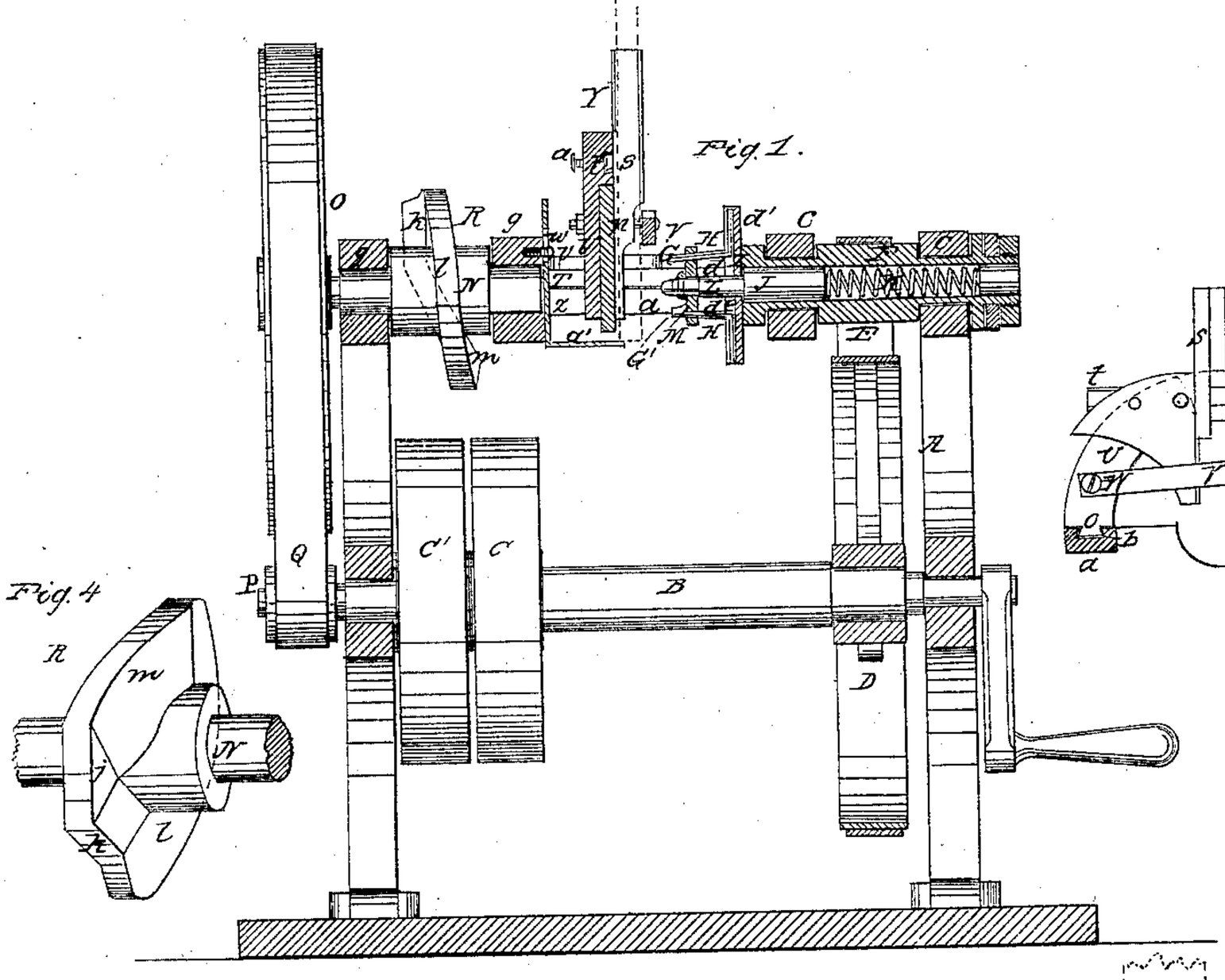


Fig. 3

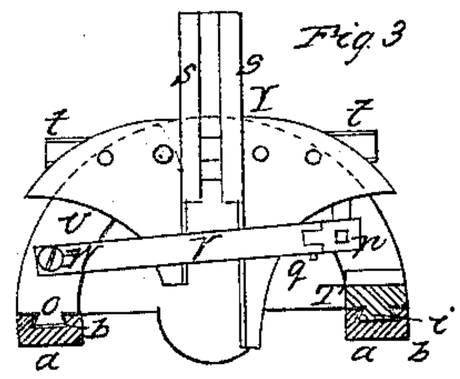


Fig. 4

Fig. 2.

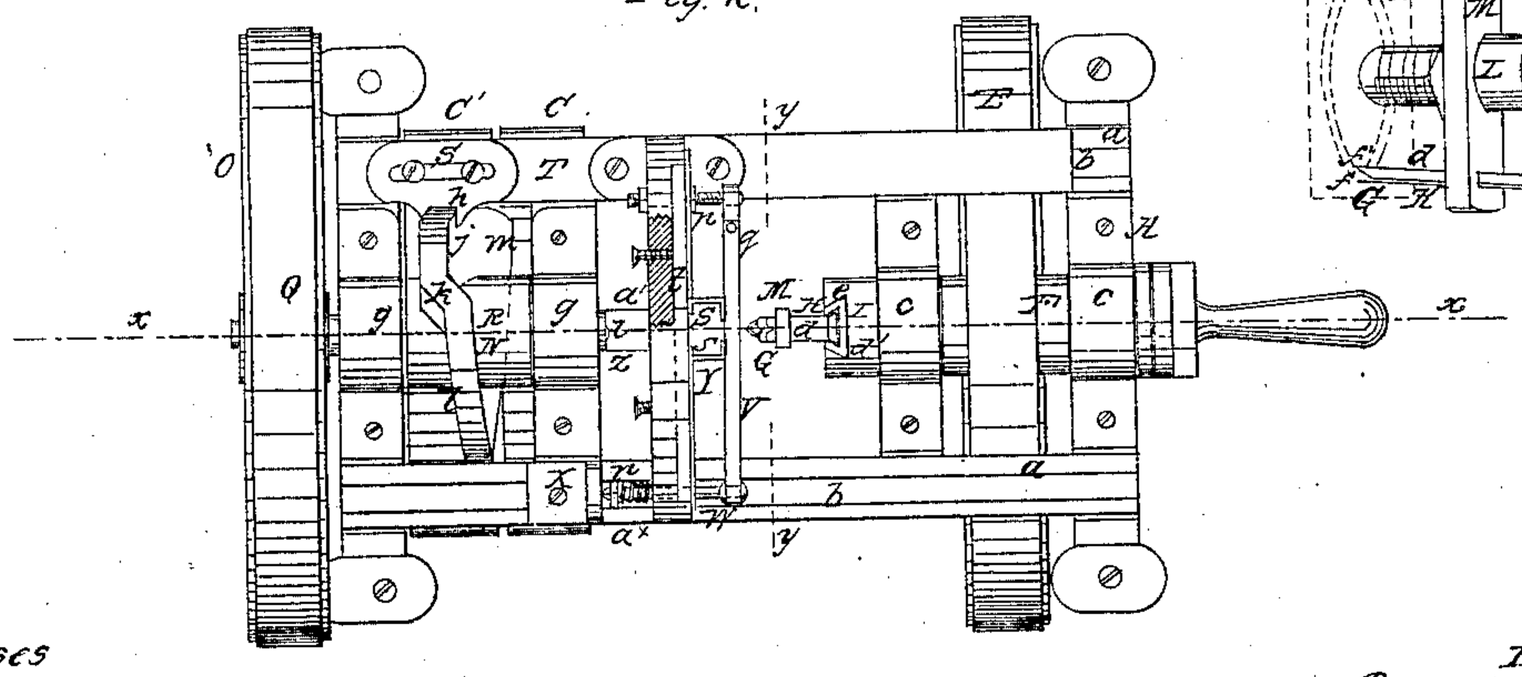
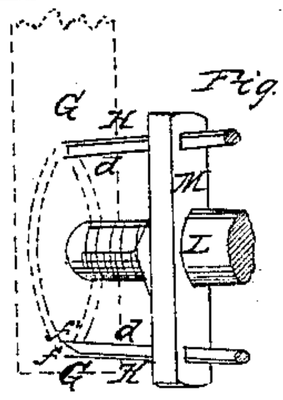


Fig. 5.



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UNITED STATES PATENT OFFICE.

PETER HAYDEN, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR CUTTING BUNGS OR CORKS.

Specification forming part of Letters Patent No. **41,506**, dated February 9, 1864.

To all whom it may concern:

Be it known that I, PETER HAYDEN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Machine for Cutting Bungs and Corks; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side sectional view of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of the same; Fig. 3, a transverse section of the top part of the same, taken in the line *x x*, Fig. 2; Fig. 4, a detached perspective view of the cam pertaining to the feeding device; Fig. 5, an enlarged detached view of the cutters.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to obtain a machine for cutting bungs for barrels and corks for bottles which will be automatic in its operation throughout, no manipulation being required on the part of the attendant, except the applying of the bolts to the machine.

The invention consists in an improved feeding device for feeding the bolt to the cutters, and also in a means for holding the bolt while being cut. The invention further consists in an improved cutting arrangement for cutting the bungs or corks, all being arranged, as hereinafter set forth, to effect the desired end.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a framing, having two longitudinal and parallel bars, *a a*, at its upper part, each of which has a dovetail groove, *b*, made in it extending its whole length. B represents a driving-shaft, which is placed in the framing A, and has two pulleys, C C′, upon it, one, C, being a working, and the other, C′, a loose, or idle, pulley. D is a pulley which is keyed on the shaft B and by means of a belt, E, communicates motion to a mandrel, F, which works in suitable bearings *c c* on the framing A, and has a longitudinal position on the framing.

To the mandrel F the cutting device is attached, the same being composed of two cutters, G G′, which are formed at the ends of bars H H, bent so as to have the parts *d d′*, which form an angle with each other, rather greater than a right angle, as shown in Figs. 1 and 5, the cutters G G′ being at the outer ends of the part *d* of the bars H, and the parts *d′* of said bars being fitted in a dovetail groove, *e*, in a cross-head, I, attached to the inner end of the mandrel F. The parts *d′* of the bars H H also have dovetail sides to correspond to the dovetail groove *e* in the cross-head I. By this arrangement the parts *d′* of the bars H are allowed to slide freely in the groove *e*, without casually slipping out from the same.

The mandrel F is tubular, and within it there is fitted a cylindrical slide, J, the inner end of which bears against a spiral spring, K. The slide J has a cylindrical extension, L, which is rather smaller in diameter than the slide and projects outward from the inner end of the mandrel F, said extension L having a cross-bar, M, permanently attached to it a short distance from its end, and which cross-bar has two oblique mortises made in it for the parts *d* of the cutter-bars H to pass through.

From the above description it will be seen that by moving the slide J, and consequently the extension L and cross-bar M, the cutter-bars H H will be made to approach and recede from each other, and this movement of the cutter-bar gives the conical or taper form to the bung or cork while the same is being cut. The spring K has a tendency to keep the slide J forced outward to the extent of its movement and the cross bar M near the outer ends of the parts *d* of the cutter-bars, so that the cutters will be at their greatest distance apart at the commencement of each operation of cutting, and when the cutter-bars are in this position the end of the extension L of the slide J will project a trifle beyond the cutters G G′, as shown in Fig. 1.

The cutter G is constructed with two fleam-shaped projections *f f*, arranged somewhat like two saw-teeth, while the cutter G′ is of chisel form, and takes out the core left by the cutter G. This operation of the cutters will be fully understood by referring to Fig. 5, in which the wood or cork operated upon is shown in red.

N is a mandrel, which works in suitable bearings *g g* on the upper part of the framing A

and in line with the mandrel F. The mandrel N has a pulley, O, on its outer end, around which and a pulley, P, on the driving-shaft B a belt, Q, passes. The pulley O is much larger in diameter than the pulley P, and the mandrel N consequently is rotated at a considerably less speed than the shaft B, while the cutter-mandrel F is rotated at a much greater rate of speed than shaft B.

On the mandrel N there is keyed a cam, R, the periphery of which works in a notch, *h*, made in a plate, S, attached to a slide, T, by screws or otherwise in such a manner as to admit of a longitudinal adjustment of said plate on slide T. (See Fig. 2.) This slide T is provided with a dovetail projection, *i*, at its under side, and said projection works in the dovetail groove *b* of one of the bars *a* of the framing A. (See Fig. 3.)

The cam R gives a reciprocating motion to the slide T and the parts attached to it; but said motion is variable, owing to the peculiar shape or formation of the cam R, which I will now describe.

The cam is a circle, but different portions of its periphery are in different planes. (See Figs. 1, 2, and 4.) There are four distinct parts of the cam, one, *j*, comprises one-sixth of the periphery of the cam, and this part *j* is at righ angles to the axis of the mandrel N, and consequently communicates no motion to the slide T. Another part, *k*, is one-eighteenth part of the periphery of the cam, and is the smallest part of the four. The part *k* has an oblique position relatively with the axis of the mandrel N, extending in an operating-machine about one inch toward the cutters, and moves the slide T toward the mandrel F and cutters. Another part, *l*, of the cam comprises two-thirds of its periphery and has a gradual oblique position, but does not extend more than one inch toward the cutters. The remaining part, *m*, of the cam has an oblique position from the cutters, extending two inches from them, and comprising one-ninth of the periphery of the cam.

The slide T has one end of a semicircular slide, U, attached to it at right angles. This plate U has its side which is opposite the cutters G G′ faced with wood, as shown at *n* in Fig. 1, and the free or disengaged end of the plate U is provided with a dovetail projection, *o*, which works in the dovetail groove *b* of the other bar, *a*. (See Fig. 3.)

V represents a clamp-bar, one end of which is attached by a bolt, *p*, to the plate U just above the slide T. This clamp-bar is provided with a joint, *g*, which is near the bolt *p*, said joint admitting of the bar V working or moving laterally or toward and from the plate U. The free end of the bar V is slotted and fitted in a groove in a rod, W, which passes loosely through the plate U, and has a nut or hub, *a**, on its back, and between which nut or hub and the plate U a spiral spring, *r*, is placed, which spring has a tendency to keep the bar V near the plate U.

X is a stop which is attached to the bar *a* back of the rod W. The use of this stop will be presently shown.

Y is a socket in which the bolts of wood or cork to be operated upon are placed. This socket is formed of two vertical parts, S S, bent or otherwise formed like a trough or gutter, (see Fig. 2,) and each part *s* is attached to a horizontal slide, *t*, in the upper part of the plate U, said slides being fitted in dovetail grooves in the plate U, and screwed at the desired point by screws *u*, which pass into the rear side of plate U. (See Figs. 1 and 2.)

Z represents a metal plate which is bent in right-angular form and has its upright portion attached by a screw, *v*, to a cross-bar of the framing behind the plate U, the screw *v* passing through an oblong slot, *w*, in the upright part of the plate Z. The horizontal part *a′* of the plate Z is a trifle below the plate U.

The operation is as follows: The wood or cork is cut in slabs or bolts of the required size, and the parts *s s* of the socket Y are adjusted at such a distance apart that the bolts may be fitted between them. At the commencement of the operation the front part of the portion *j* of the cam is in the notch *h* of the plate *s*, and a bolt being placed in the socket Y, its lower end rests on the front end of the horizontal part *a′* of the plate Z, and the bolt is clamped by the bar V with a pressure due to the strength of the spring *r*, the lower portions of the parts *s s* of the socket being hollowed out at their front sides to admit of the bar pressing against the bolt just above the path or the cutters G G′. The power-shaft B being put in motion, the mandrel F and cutters G G′, are rotated, and also the mandrel N and cam R. The part *k* of the cam moves the slide T and plate U quickly toward the cutters, so that the bolt will come in contact with the latter. The part *l* of the cam then acts upon the slide T, and gives the regular feed movement to the plate U. While the cutters G G′ are performing their work the extension L of the slide J is gradually pressed toward the mandrel F, under the advance of the bolt, and the cross-bar M will gradually force the cutters G G′ toward each other, and cause the bung or cork to be cut in taper form.

By referring to Figs. 1 it will be seen that the cutters incline inward, or toward each other, and the bung or cork cut from its larger to its smaller end; but if the cutters were inclined outward from each other the bung or cork would be cut from its smaller to its larger end, as in the latter case the cutters G G′ would be expanded under the advance of the bolt.

It is designed to have the bolts or slabs from which the bungs or corks are cut of such a width that no side strips will be left, the cutters cutting entirely across it. When the bung or cork is cut, the part *m* of the cam acts upon the slide T, and draws the plate

U and bolt from the cutters, the lower part of the bolt below the cut bung or cork falling by its own gravity, but the bung or cork is retained by the extension L until it is drawn back free from the cutters, when it falls, and the bolt is retained or held by the clamp-bar V until the rod W strikes the stop X, when the bolt drops its lower end, striking the horizontal part *a'* of the plate Z. The bolt is now ready for a succeeding operation, the clamp-bar V grasping it just before it passes off from the part *a'* of the plate Z.

Thus it will be seen that the bolt, after being placed in the socket Y, feeds itself in proper position, no manipulation being required on the part of the operator until it is all cut into bungs or corks. The cam R may be regulated relatively with the slide T, as may be desired by adjusting the plate S.

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

1. The combination of the two cutters G G', bent bars H H, groove *e*, head I, and yoke or cross-bar M with the hollow mandrel F, slide J L, and spring K, arranged and operating substantially as and for the purposes specified.

2. The plate U, with adjustable sockets Y and clamp-bar V, attached in connection with the stop X, arranged substantially as and for the purpose set forth.

3. The bolt-sustaining plate Z, when used in connection with the plate U, clamp-bar V, and stop X, as and for the purpose specified.

4. The combination of the rotary cutters G G', plate U, with the socket Y, and clamp-bar V, attached the stop X, cam R, and slide T, all arranged substantially as and for the purpose herein set forth.

PETER HAYDEN.

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