2 Sheets—Sheet 1.

E. B. McINTOSH.

MACHINES FOR MAKING BUNGS.

No. 184,407. Patented Nov. 14, 1876.

Fig 1.

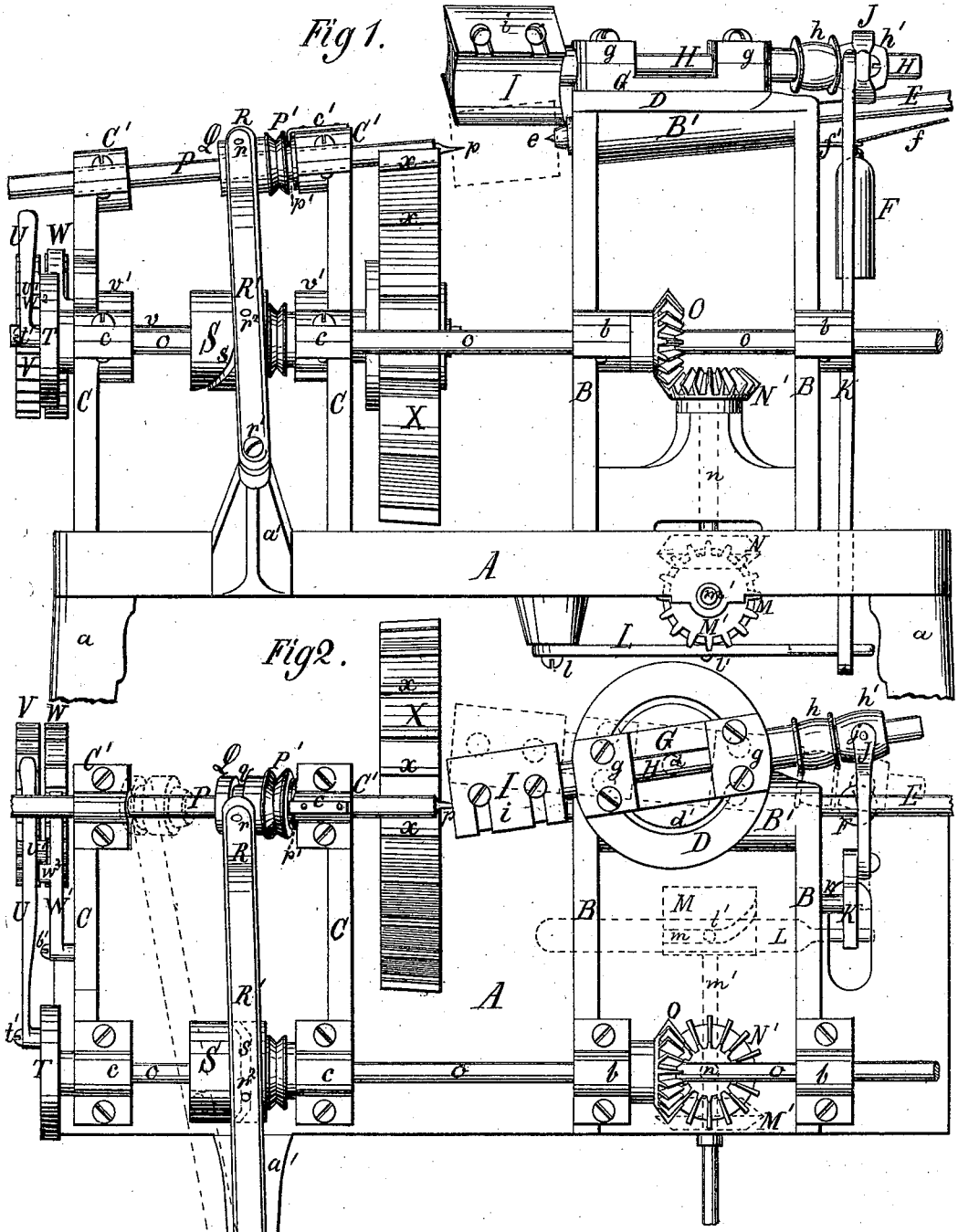
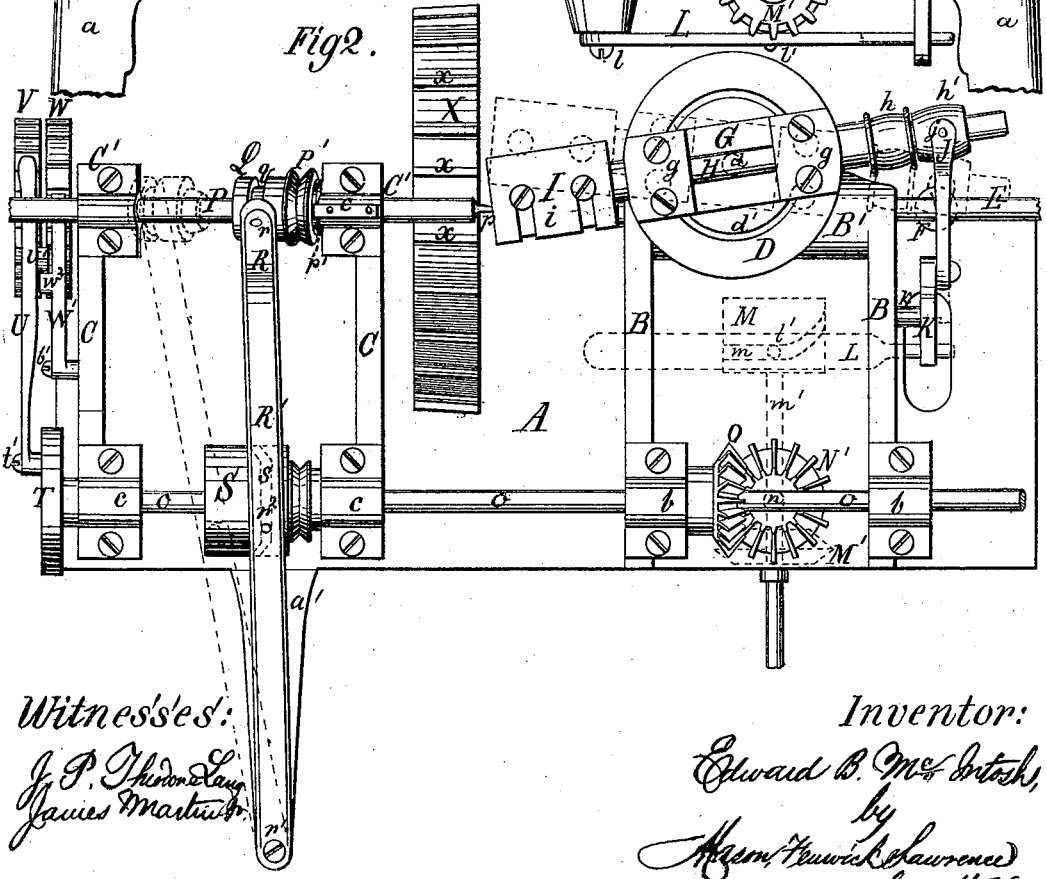


Fig 2.



Witnesses:

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James Martin Jr.

Inventor:

Edward B. McIntosh,
by
Mason, Fenwick & Lawrence
his attys.

2 Sheets—Sheet 2.

E. B. McINTOSH.

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Fig 7.

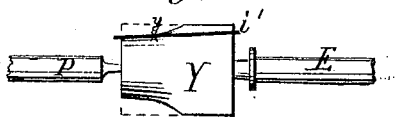


Fig 8.

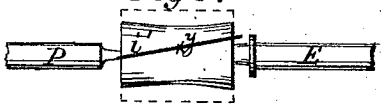


Fig 9.

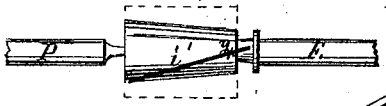


Fig 3.

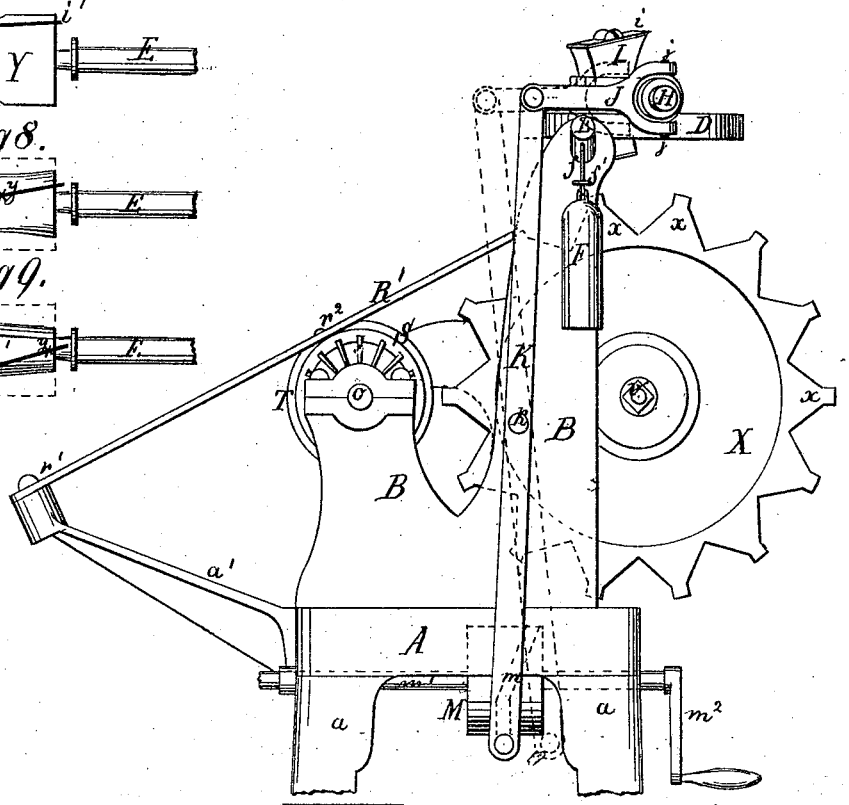


Fig 4.

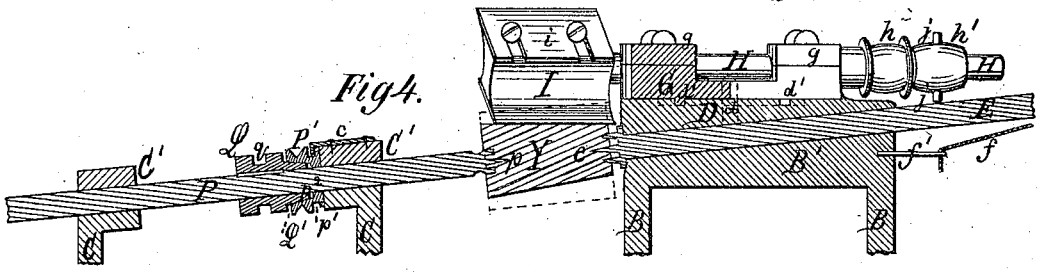
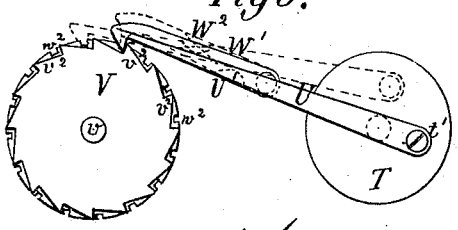


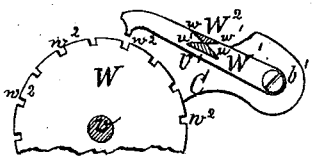
Fig 5.

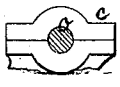


Witnesses:

J. P. Theodore Laug,
James Martin Jr.

Fig 6.





Inventor:

Edward B. McIntosh
by
Munn, Fenwick & Lawrence
his attys

UNITED STATES PATENT OFFICE.

EDWARD B. McINTOSH, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR MAKING BUNGS.

Specification forming part of Letters Patent No. **184,407**, dated November 14, 1876; application filed September 8, 1876.

To all whom it may concern:

Be it known that I, EDWARD B. McINTOSH, of the city, county, and State of New York have invented a new and useful Improvement in Machines for Making Bungs for Lager, Beer Barrels, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a back view of my improved bung-machine. Fig. 2 is a top view of the same. Fig. 3 is a side view of the same. Fig. 4 is a vertical section of the same. Figs. 5 and 6 are detailed views pertaining to the feed-motion. Figs. 7, 8, and 9 are detailed views of the bung at three selected stages of its formation, and illustrating the relative positions of the edges of the cutters.

The object of my invention is to rapidly make a tapered bung, with a very smooth surface, with the aid of revolving cutters and revolving centers, between which latter the bung is held, while the said revolving cutters remove the superfluous material therefrom in passing over it with a swinging motion, beginning at the big end and finishing at the small end.

The nature of my invention consists in certain constructions, arrangements, and combinations of parts, as hereinafter described and specifically claimed, whereby the above-mentioned results are produced.

In the drawings, A represents a suitable platform, supported by legs *a*, upon which bearing-stands B and C are fastened. The stands B are, at their highest part, connected by an inclined cylindrical bearing, B′, and a horizontal face-bearing, D. The bearing B′ serves as the support for a shaft, E, which is provided with a wood-center, *e*, and which, by means of a weight, F, and cord or chain *f*, guided through an eye, *f′*, or over a pulley fastened to one of the stands B, is moved center forward when left to itself. The horizontal face-bearing D is provided with a vertical pivot, *d*, and a thereto concentric groove, *d′*, by means of which a swinging head, G, is secured, which carries the shaft H of a cutter-head, I, in suitable bearings *g*. The said shaft H is provided with a driving-pulley, *h*, and a loose collar, *h′*, to which a forked link, J, is pivoted at *j*, and which is connected with a lever, K, pivoted at *k* to one of the stands B. The lower arm of the lever K is connected with a horizontal lever, L, having its fulcrum at *l*, beneath the platform A, and moved by means of a pin or roller, *l′*, and a cam-groove, *m*, in a revolving cylinder, M. The cylinder M receives its motion, by means of the shafts m^1 *n* and the conical wheels M′ N N′, from the conical wheel O upon the shaft *o*. The shaft *o* is mounted in bearings *b* on the stands B, and bearings *c* on the stands C. It may be operated by hand or by machinery, and in the former case a crank, m^2, is attached to the shaft *m*, to be operated by the man who feeds the machine. Upon the highest parts of the stands C are two bearings, C′, carrying an inclined shaft, P, having a pronged center, *p*, a loose pulley, P′, held to the face of the inner bearing C′ by means of a groove, p^1, and a retaining-hook, *c′*, upon the said bearing. A collar, Q, is fastened to the shaft P, between the pulley P and the outer bearing C′, which is, by means of a groove, *q*, and pins *r* on the forked end R of the lever R′, moved in an axial direction. The collar Q has a conical extension, Q′, which, when the collar is moved up to the pulley P′, enters a conical bearing, p^2, therein, and, by means of friction, acts as a coupling between the shaft P and the pulley P′. The shafts E and P are arranged in one line, like the front and back spindle of a lathe.

The lever R′ is pivoted at r^1 to a bracket, *a′*, on the platform A, and is provided with a pin or roller, r^2, which receives movement by a cam-groove, *s*, in the surface of a cylinder, S, fastened to the shaft *o*, above described. To the free end of the shaft *o* a crank or crank-wheel, T, is attached, which, by means of a crank-pin, *t*, and a pawl, U, operates a ratchet-wheel, V, upon a shaft, *v*, which has its bearings v^1 on the stands C. Next to the ratchet-wheel V a detent-wheel, W, is fastened to the shaft *v*, which, with the detent W^1, serves to keep the sprocket-wheel X, on the other end of the shaft *v*, from moving at an improper time. The detent W^1 is pivoted at *b′* to one of the stands C, and it is provided with a cam, W^2, having two bottom slopes, *w* w^1. The pawl U has a cam, U′, with top slopes *u u′*.

The cams W^2 and U' are so arranged between the pawl and detent that when the crank-pin *t* arrives at a certain point above the shaft *v*, and the pawl U is about to engage one of the ratchets v^2 of the ratchet-wheel V, the slope w^1 of the detent is met by the slope *u* of the cam U' of the pawl U, and the detent is thereby rapidly lifted from the notch w^2 of the detent-wheel W. The pawl U then moves the ratchet-wheel, and when its stroke is finished the slopes *w* and *w'*, which in the meantime have become engaged, are separated, whereupon the detent drops into the next notch w^2 of the detent-wheel, as plainly seen in Figs. 5 and 6. The sprocket-wheel X is provided with as many sprockets *x* as there are notches w^2 in the detent-wheel W, or ratchets v^2 in the ratchet-wheel V; and the said sprockets are of such shape that the blank of which the bungs are to be made will easily enter and settle therein in a diagonal position. The sprocket-wheel itself is so situated between the centers *e* and *p* of the shafts E and P that it clears both of them before they are engaged. The cutter-head I is of ordinary construction, and has straight-edge cutters *i* fastened to it. The said cutter-head receives its motion by means of the pulley *h* and a belt from the line-shafting of the shop. The shaft E is moved by means of the coupling device between the collar Q and the pulley P', which latter is also driven by means of a belt from the line-shafting.

Operation: The cutter-head I and the pulley P' being set in motion, and the sprocket or feed wheel provided with blanks, and the shaft *o* set in motion in the above-described way, the cylinder S, by means of the cam-groove *s* and the lever R', moves the shaft P toward one of the blanks Y between the sprockets *x* of the feed-wheel X. The said blank Y is thereby pushed against the wooden center *e* of the shaft E, the resistance of which, by means of the weight F, causes both centers *e* and *p* to enter into the ends of the blank sufficiently deep to insure its fastening between them. In the meantime the shaft P pushes the blank entirely out of the feed-wheel, and conjunctively therewith couples the collar Q and pulley P', thereby revolving the shaft P, which now retains its position. Directly after the beginning of the said revolutions the rapidly-revolving cutter-head I advances toward the blank Y by means of the cam-groove *m* of the cylinder M, the connecting-levers L and K, the link J, and the swiveled collar *h'*.

The center of the head G being considerably distant from the shafts E and P in a horizontal direction, the cutters *i* meet with the lower end of the blank first, and move to the higher end in accordance with the principle of shearing—*i. e.*, changing the point of action gradually from one end to the other. As the bung is finished the lever R' removes the shaft P again, thereby uncoupling it from the pulley P' and stopping its revolution. The shaft E follows the retreating shaft P until it is near the sprocket or feed wheel X, when it stops and ceases to support the bung, which now either drops between the sprockets *x*, or, in case it should still adhere to the center *p*, is easily pushed off therefrom by the moving feed-wheel. While the described operation is being performed the pawl U has finished its idle stroke, engaged the next ratchet of the ratchet-wheel V, and lifted, by means of the cams U' W^2, the detent W^1 from the wheel W. After the ratchet-wheel has been moved one tooth the detent is released and drops down into the next notch w^2 of the detent-wheel. Thus the sprocket or feed wheel X is moved one sprocket farther, and then and there is firmly held in place until the next step is to be performed.

The blanks are placed upon the feed-wheel by hand in ordinary cases; but when great expedition is desirable I prefer to put the blanks into a hopper placed tangentially upon the feed-wheel, from which the blanks would fall of their own weight, and successively into the spaces between the sprockets *x*. In this said case I also prefer to connect the shaft *o*, by means of belt and pulley, or other similar means, with the line-shafting of the shop.

For the production of very large bungs, when the cutter-head has to be large and heavy, the relations of motion may be reversed by providing stationary bearings for the cutter-head I, and fastening the bearing-stands B and C, the bracket *a'*, and the bearings of the shaft m^1 to a swinging head, similar to the head G, which must be pivoted in the same vertical plane with the pivot *d*. The levers K and L may then be omitted, and the grooved cylinder M be removed far enough from the pivot that the cam-groove *m* may, by operating on a stationary pin or roller, *l'*, swing the described head with the spindles or shafts E and P.

The operation of shaping the bung would here be precisely the same as that described and shown in the drawings. The operation of the cutter-knives upon the bung is represented in three different stages by Figs. 7, 8, and 9, the knife-edge being marked *i'*, and the point of cutting being marked *y*.

The different means of connection between the several main parts of my machine may be modified, as necessity requires, without departing from my invention. By turning of the bung from the large to the small end I avoid the catching or lifting of splinters from the bung, which is invariably the case when the turning is done from the small toward the large end, and when the wood is very dry. As the least flaw makes the bung unfit for use, the loss, for the above-stated reasons, is sometimes considerable; but the use of my improved machine avoids such altogether.

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

1. The two centering-spindles, in combina-

tion with the vertically-revolving and horizontally-swinging cutter-head, constructed, arranged, and operating substantially as set forth.

2. The combination of the cutter-head I, the swinging head G, the shaft H, the swiveled collar h', the link J, the levers K and L, and the cylinder M, having a cam-groove, m, substantially as and for the purpose set forth.

3. The combination of an inclined shaft, P, having a grooved collar, Q, with a conical extension, Q′, a loose driving-pulley, P′, with a conical friction-surface and a groove, p^1, and the retaining-hook c', substantially as and for the purpose set forth.

4. The combination of a crank-wheel, T, a pawl, U, having a cam, U′, a detent, W^1, having a cam, W^2, a ratchet-wheel, V, a detent-wheel, W, and a feed-wheel, X, substantially as and for the purpose set forth.

5. The combination of the cutter-head, the sliding spindles, and the feed-wheel X, substantially as described.

6. The shaft P, in combination with mechanism by which it is stopped and started automatically in its revolutions, substantially as described.

Witness my hand in the matter of my application for a patent for an improved machine for making bungs for lager-beer or other barrels.

EDWARD B. McINTOSH.

Witnesses:
JOE W. SWAINE,
E. H. BLUME.