J. Greenwood,

Making Barrel Heads.

No. 46,661, Patented Mar. 7, 1865.

Fig. 2.

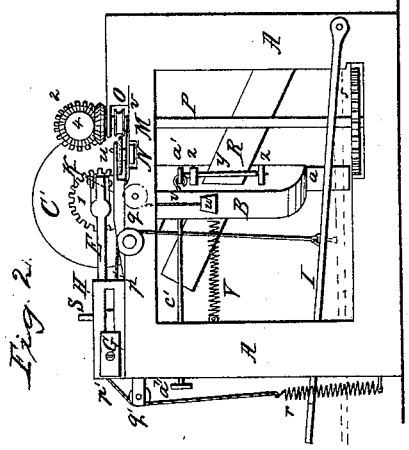


Fig. 5.

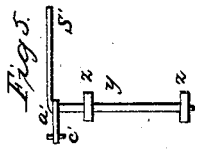


Fig. 4.

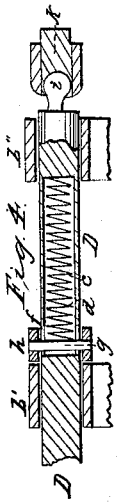


Fig. 3.

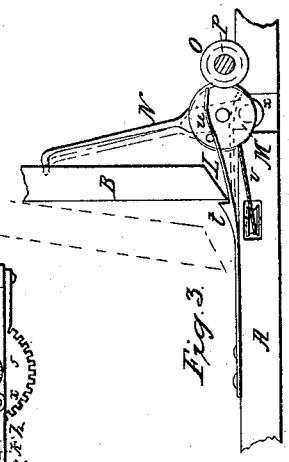
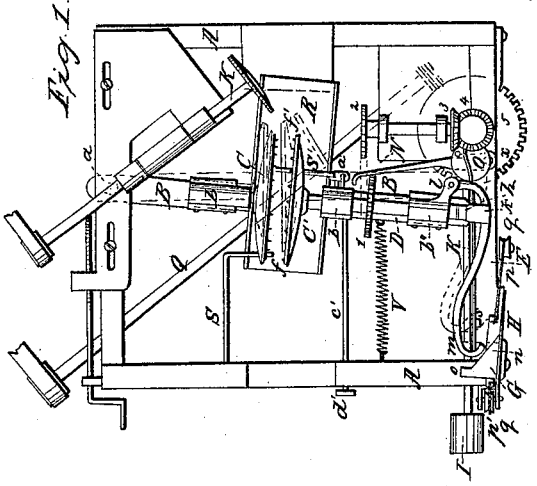


Fig. 1.



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UNITED STATES PATENT OFFICE.

JOHN GREENWOOD, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN MACHINES FOR MAKING HEADS TO BARRELS.

Specification forming part of Letters Patent No. **46,661**, dated March 7, 1865.

To all whom it may concern:

Be it known that I, JOHN GREENWOOD, of Rochester, in the county of Monroe and State of New York, have invented new and useful Improvements in Machines for Making Barrel-Heads; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a plan of my improved machine; Fig. 2, a side elevation thereof; Fig. 3, a diagram representing the arrangement for releasing the swing-frame after the barrel-head has been cut; Fig. 4, a central section of the shaft and connecting parts, combined with the movable clamp-heads, and showing more particularly the reaction of said shaft to hold the clamp-heads apart for inserting the boards to be cut; Fig. 5, a view of the swing-arm on which the boards rest when inserted between the clamp-heads.

Like letters of reference indicate corresponding parts in all the figures.

My invention consists, essentially, in an arrangement of mechanism on a swing-frame in such a manner that when said frame is swung forward so as to bring its operating parts in communication with the driving-machinery, the clamp-heads will be moved together to hold the boards to be cut, and the latter will be moved up to the cutter; also, in the arrangement of parts for releasing the swing-frame after the barrel-head has been cut.

It further consists in the combination and arrangement of several devices of minor importance, that will be specifically described.

As represented in the drawings, a suitable main frame, A, is provided, in which is jointed at *a* on one side a swing frame or bar, B, that supports on its top boxes or bearings *b b′ b″*. In the box *b* rests the shaft of a clamp head, C, that is fixed in position, and in the boxes *b′ b″* rests the shaft D of a clamp-head, C′, that is movable endwise, to bring it nearer to or farther from the clamp-head C, so as to hold or discharge the pieces of board placed between the clamps to form the barrel-head.

The device for producing the reaction of the shaft D to throw the clamps apart is clearly represented in Fig. 4. The shaft is provided with a hollow or cavity, *c*, in which rests a spring, *d*. It is also provided with a slot, *f*, through which passes a pin, *g*, of a collar, *h*, next the box *b″*. The collar and pin revolve with the shaft. The constant pressure of the spring against the pin will force the shaft outward, as indicated by black arrow, the box *b″* in this case acting as a fulcrum to the collar. For producing the opposite action of the shaft to force the clamps together to hold the board, as indicated by red arrow, Fig. 4, the following device is employed: The outer end of the shaft has a ball, *i*, which fits into a steel socket, *k*, whose head is connected with a lever, E, Figs. 1 and 2, jointed at *l* to the box *b″*, and extending backward, having its rear end, *m*, bent, as shown, (or provided with a friction-roller,) resting against a sliding cam, G. The cam G consists of a wedge, *n*, in front and a shoulder or catch, *o*, in the rear. It is secured to a way, H, in any desirable manner, so as to move forward and backward. To produce the forward movement, I secure a cord or chain, *p*, in front, passing over a pulley, *q*, and downward, attaching to a tread-lever, I. To produce the backward movement, I secure a cord or chain, *p′*, passing over a pulley, *q′*, and downward, attaching to a spring, *r*, secured to the main frame. When the tread-lever is depressed, the cam is carried forward, and when the pressure is removed the reaction of spring *r* carries it back to its former position, and at the same time raises the tread-lever.

It is obvious that the first action of the forward movement of the wedge-cam G will be to force the lever E inward laterally, which, of course, will correspondingly move the shaft D, and consequently its clamp C′, in such a manner as to hold firmly the boards placed between the clamps to be cut. As soon as this is accomplished the shoulder or catch *o* of the cam strikes the end of the lever and carries the same bodily forward, and consequently moves the swing-frame up or forward from the position indicated in black lines to that indicated in red, Fig. 1. In this position the end of the lever E strikes against a projection, *s*, on the inside, which holds it against outward lateral movement, and therefore keeps the clamps together while the barrel-head is being cut by the cutter K. This arrangement for producing the end action and reaction of the clamp is very simple, effective, and convenient. The clamps first close to fasten the material and then move it up to the cutter to be cut, and as soon as this is accomplished and the swing-frame moves back again, (as will presently be described,) the clamps separate and the finished head drops out, and

the apparatus is ready for another similar action. By the employment of the spring *d* within the shaft and the slot *f* and pin and collar *g h*, Fig. 4, the desired reaction is produced without in any manner interfering with the revolutions of the shaft, the whole being situated within it. The ball and socket *i k* also allow the shaft to turn freely. I am not aware that such a device was ever employed prior to my invention.

While the cutting is being performed it is also necessary to hold the swing-frame B rigidly in place, and as soon as the action is completed to release it. I accomplish this automatically by the following means:

At the proper position to the side of the main frame I secure a spring, L, Figs. 2 and 3, having a catch, *t*, which yields to the end of the swing-frame in its forward movement, but prevents it from moving back unless depressed. The forward end of the spring rests over a disk-wheel, M, which has a pin, *u*, projecting up from its surface in such a manner that when the wheel is turned in the proper direction it will strike the spring and depress it. A cord or chain, *v*, is wound around the shaft of the disk-wheel once or twice, having a small weight, *w*, at its opposite end. The disk-wheel is mounted on a spring bearing or arm, N, which is jointed at *x* to the main frame, the opposite end projecting inward in such a position and to such an extent that when the swing-frame is moved forward it will strike it and press the disk-wheel back against a grooved friction-wheel, O, on the main driving-shaft P. This, of course, gives motion to the disk-wheel, which is carried around till the pin *u* strikes the spring L and presses it back so as to release the swing-frame, as before described. The disk-wheel, in thus turning to release the swing-frame, winds up the cord *v*, and when this wheel is released from contact with the wheel O, the weight *w* causes the cord to unwind and the disk-wheel to turn back to its original position, ready to act again. The action is thus automatic. The swing-frame is drawn back by a spring, V, or equivalent. The shaft D receives its revolving motion by means of a gear-wheel, 1, secured to it, which meshes with a pinion, 2, when the swing-frame is moved forward, the latter pinion receiving motion by bevel-gears 3 4 from main shaft P, driven by means of a cog-wheel, 5, into which meshes a worm-wheel on the shaft Q, or in some equivalent manner. Beneath the clamp-heads C C′ is situated a trough or spout, R, for discharging the barrel-heads as they are cut. Below the clamps and above the trough in the rear is a right angled arm S, projecting under the clamps. In front is a similar arm, S′, but attached to a shaft, *y*, resting in bearings *z z*, and having a projection, *a′*, at its top, with which is connected a rod, *c′*, extending backward through the main frame, and provided with a head, *d′*, without.

When the swing-frame is drawn back and the clamps stand in the angular position indicated by black lines, Fig. 1, the arms S S′ will both project sufficiently under the clamps to catch and sustain the boards that are placed within; but when the boards have been clamped in the manner before described, and the clamps have swung round to the position indicated by red lines, the boards will swing clear of the rear arm, S, and at the same time, when the forward movement of the swing-frame commences, it will draw upon the rod *c′*, bringing the head *d′* against the main frame, and will consequently turn the arm S′ back into the position indicated by red lines, Fig. 1. The boards being thus clear of the arms are allowed to revolve against the cutter. This arrangement is very simple and effective.

I bevel the inner edges of the clamp-heads C C′, as shown at *f′*, in order to guide the boards more easily in entering. In ordinary devices the edges are made square, and it is difficult to enter the boards between them.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. So arranging the clamp-heads C C′ upon the swing-frame B, and combining therewith the sliding shaft D, that the said heads first clamp the boards in place and then move up to cut the barrel head, substantially as herein set forth.

2. In combination with the sliding shaft D and clamps C C′, the lever E and wedge-cam G, operating substantially as and for the purposes specified.

3. The combination of the spring *d*, pin *g*, and collar *h*, with the shaft D, provided with the cavity *e* and slot *f*, the whole so arranged as to produce the reaction of said shaft to separate the clamps, and so as not to interfere with the turning of the shaft, substantially as described.

4. The disk-wheel M, mounted on the arm N, and both used in combination with the swing-frame B and friction-wheel O, in such a manner that the forward motion of said swing-frame will bring the two wheels in contact and the back motion of the frame will disengage them, substantially as herein specified.

5. In combination with the subject-matter of the preceding clause, the spring-catch *t*, substantially as specified.

6. The arms S S′, in combination with the clamp-heads C C′ and swing-frame B, to operate in such a manner that when the swing-frame is drawn back the said arms will rest under the clamps to sustain the boards, but when moved forward the clamps will clear from them, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN GREENWOOD.

Witnesses:

R. F. OSGOOD,

JAY HYATT.