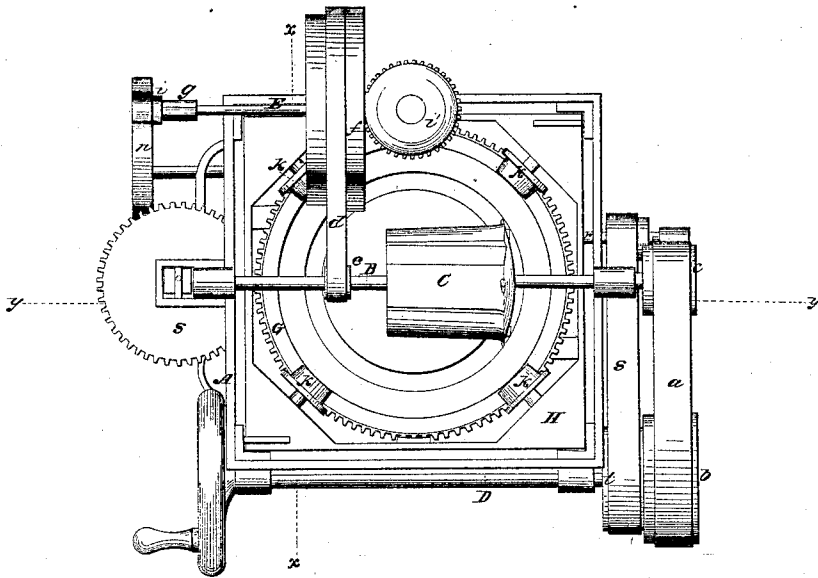


*A. Benster,*  
*Making Barrel Heads.*

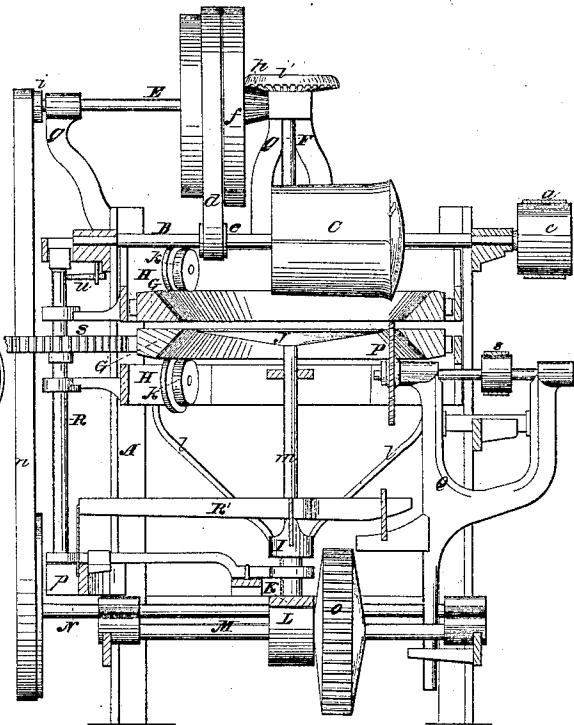
*N<sup>o</sup> 41,356.*

*Patented Jan. 26, 1864.*

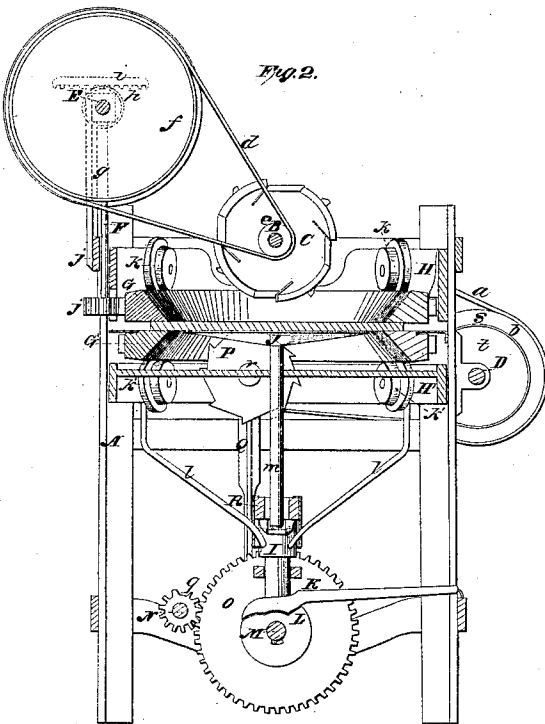
*Fig. 1.*



*Fig. 3.*



*Fig. 2.*



*Witnesses:*  
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# UNITED STATES PATENT OFFICE.

ALFRED BENSTER, OF DETROIT, MICHIGAN.

## IMPROVED BARREL-HEAD MACHINE.

Specification forming part of Letters Patent No. 41,316, dated January 26, 1864.

*To all whom it may concern:*

Be it known that I, ALFRED BENSTER, of Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Barrel-Head Machine; 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, forming a part of this specification, in which—

Figure 1 represents a plan or top view of my invention. Fig. 2 is a transverse vertical section of the same, taken in the plane indicated by the line *x x*, Fig. 1. Fig. 3 is a longitudinal vertical section of the same, the line *y y*, Fig. 1, indicating the plane of section.

Similar letters of reference indicate corresponding parts in the three views.

The object of the machine which forms the subject of this invention is to plane the upper surface of a barrel-head to the desired oval shape, make the upper and lower chamfers impart to said head the desired elliptic shape, revolve, clamp, and loosen the same automatically, without the assistance of the operator, who has nothing else to do but to arrange the pieces for a head on a table in front of the machine, and push the same in, and in doing so the finished head is pushed out on the opposite side of the machine and deposited on a table situated in a convenient position to receive the same.

To enable those skilled in the art to make and use my invention, I will proceed to describe it.

A represents a frame made of wood, or any other suitable material of sufficient strength to sustain the bearings of the different working parts of my machine. Across the top of this frame extends the shaft B, to which the revolving planer C is rigidly attached. The shaft B is rotated by means of a belt, *a*, extending from a pulley, *v*, on the driving-shaft D, over a pulley, *c*, on its end, and a belt, *d*, which extends from a small pulley, *e*, on said shaft over a drum, *f*, transmits the motion from the shaft B to a shaft, E, which has its bearings in standards *g*, rising from the frame A. The shaft E bears a bevel-pinion, *h*, on one end and a small pulley, *i*, on the other end. The pinion *h* gears into a bevel-wheel, *i*, on the top end of a vertical shaft, F, and by a pinion, *j*, on the lower end of this shaft the motion is transmitted to the toothed ring G. This ring

rotates under four flanged rollers, *k*, in a frame, H, and it forms the upper jaw of the clamp, between which the pieces of wood are clamped which are to be formed into a barrel-head. The lower jaw of this clamp consists of a toothed ring, G', similar in every respect to the ring G. The ring G' rests on flanged rollers *k'*, and it rotates in a frame, H', which is supported by braces *l*, radiating from the rising and falling standard I. This standard forms the step for the vertical arbor *m*, to the top of which the turn-table J is firmly secured, and it is supported by a hinged board, K, the loose end of which rests upon the circumference of the cam L. This cam is secured to a shaft, M, to which a rotary motion is imparted by a belt, *n*, extending from the pulley *i* on the end of the shaft E round a pulley, *p*, on the end of a shaft, N, which connects by a pinion, *g*, and gear-wheel O with the shaft M. By imparting to the cam L a rotary motion the standard I is raised, and the frames H H', with the toothed rings G G', and also the turn-table J, are raised, and the wood, which is clamped between the rings and supported by the turn-table, is gradually forced up against the planer C, and its surface is thereby smoothed off, and the desired oval shape is given to it, and at the same time the edge is chamfered off from above. Simultaneously with this operation the rotary cutter P is also raised, and as the wood rotates by the action of the gear *h i'* and pinion *j* on the toothed ring G its edge is trimmed. The cutter P is secured to an arbor, *r*, which has its bearings in a sash, Q, to which a rising and falling motion is imparted by the action of the cam L on the standard I and on a lever, R'. The arbor *r*, with the cutter, receives its motion by a belt, *s*, from a pulley, *t*, on the driving-shaft. The barrel-head receives the desired eccentricity or ellipticity by the action of a vertical shaft, R, which carries a cog-wheel, S, gearing into the lower ring, G'. The bearings of the shaft R are eccentric, and as the ring G' revolves with the upper ring, G, it imparts a rotary motion to the cog-wheel S, and by the eccentricity of the shaft R both rings with the wood are made to deviate from the true circular motion. When the ring G' has reached its lowest position, the cogs on its circumference pass below the edge of the cog-wheel S, throwing the latter out of gear, and

a spring, *u*, which projects from the shaft *R*, serves to carry said cog-wheel back what distance it will be caused to move beyond the extremity of its stroke. The boxes of the shaft *R* are self-adjusting in a lateral direction to neutralize the side motion of the same. When it is desired to cut the head round, the cog-wheel *S* can be thrown out of gear with the ring *G'*.

The operation of this machine is quite simple, all its parts being made to work automatically. The wood required for a head is put in the machine on the top of the lower ring, *G'*, and as this ring rises by the action of the cam *L* the wood is clamped between the two rings and forced up against the planer far enough to form the oval and the upper chamfer. In the meantime a rotary motion is imparted to the rings *G G'* with the wood and the lower edge is chamfered by the action of the revolving cutter *P*. By the action of the eccentric shaft *R* the head is caused to move eccentrically under the planer and over the rotary cutter, and the desired ellipticity is imparted to it. When the head has made a complete revolution, the frames *H H'* drop down. The finished head is released by the rings *G G'*, and by introducing a new head on one side of the machine the finished head is pushed out on the opposite side and deposited on a table that may be arranged for this purpose in a convenient position.

The planer *C* may be so arranged that it can be adjusted on its shaft in a longitudinal direction, thus giving the machine the capacity for cutting different-sized heads. In this case the revolving cutter *P* and sash *Q* must be so constructed that they move in and out with the planer *C*, for the purpose of varying the size of the head.

The upper ring, *G*, is designed to be furnished on its under side with fine teeth or a rib of india-rubber, so as to clasp more firmly the uneven head-pieces.

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

1. The employment or use of the revolving planer *C*, as described, for the purpose of turning, planing, and chamfering barrel-heads at one operation.

2. The revolving toothed rings *G G'* and rising and falling frames *H H'*, in combination with the planer *C*, constructed and operating in the manner and for the purpose substantially as described.

3. The turn-table *J*, in combination with the toothed rings *G G'* and cam *L*, constructed and operating substantially as and for the purpose specified.

4. Imparting to the rings *G G'*, turn-table *J*, and revolving cutter *P*, a rising and falling motion by the action of the cam *L*, as and for the purposes set forth.

5. The rising and falling standard *I*, linged board *K*, and lever *R*, in combination with the cam *L*, frames *H H'*, and sash *Q*, all constructed and operating substantially as and for the purpose described.

6. The eccentric shaft *R*, with cog-wheel *S*, in combination with the toothed ring *G'*, constructed and operating substantially as and for the purpose set forth.

7. Imparting to the head to be turned an eccentric motion under the planer, as and for the purposes specified.

ALFRED BENSTER.

Witnesses:

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THOS. W. LOCKWOOD.