

(No Model.)

3 Sheets—Sheet 1.

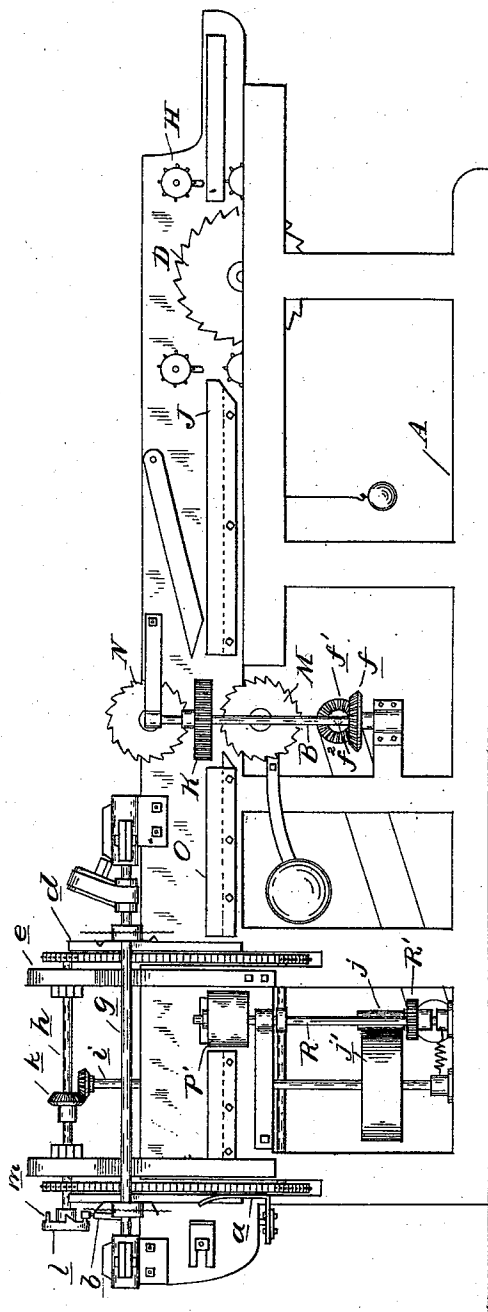
T. BRUNO.

STAVE JOINTING AND GROZING MACHINE.

No. 531,154.

Patented Dec. 18, 1894.

Fig. 1.



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3 Sheets—Sheet 2.

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Fig. 2.

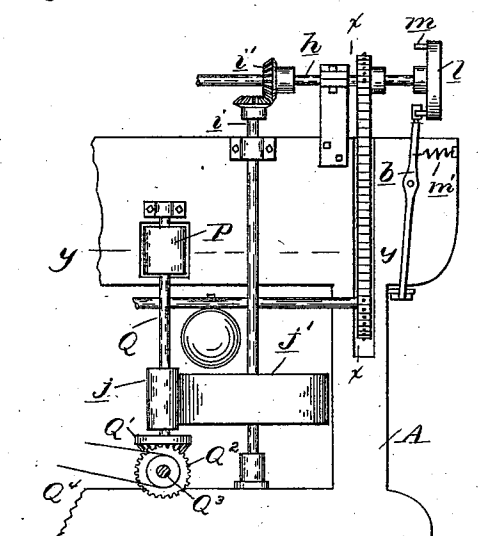


Fig. 4.

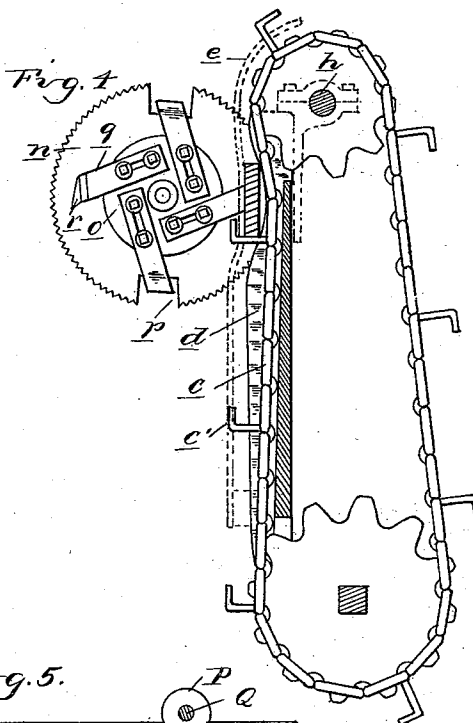


Fig. 5.

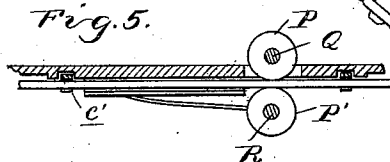
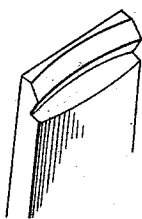


Fig. 6.



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3 Sheets—Sheet 3.

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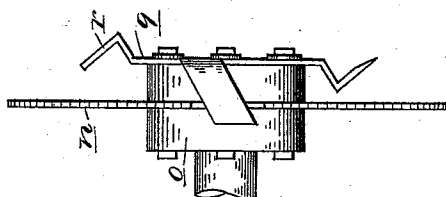


Fig. 8.

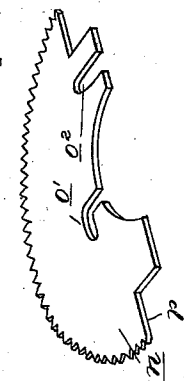


Fig. 9.

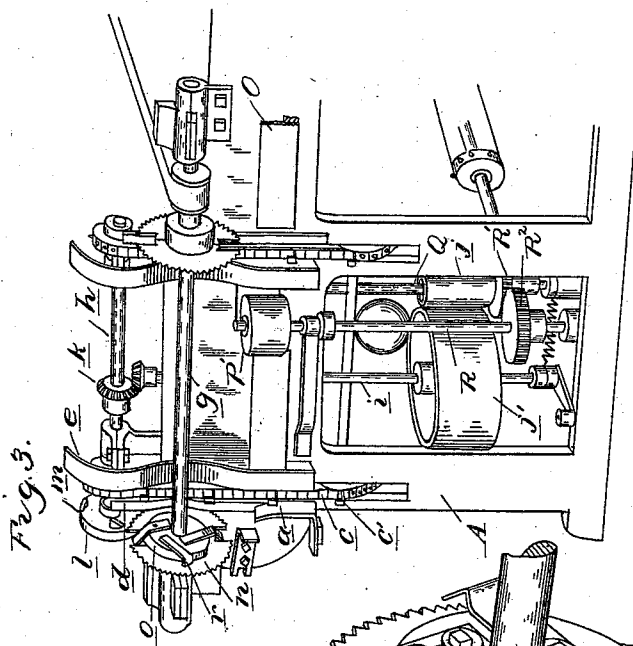


Fig. 3.

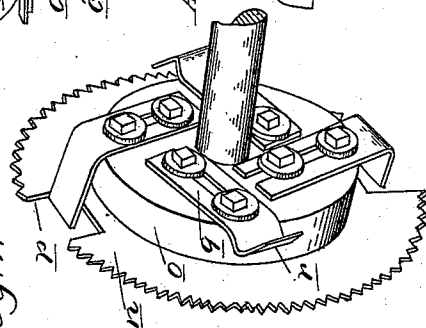


Fig. 7.

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UNITED STATES PATENT OFFICE.

THEODORE BRUNO, OF SAGINAW, MICHIGAN.

STAVE JOINTING AND CROZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 531,154, dated December 18, 1894.

Application filed January 2, 1894. Serial No. 495,362. (No model.)

To all whom it may concern:

Be it known that I, THEODORE BRUNO, a citizen of the United States, residing at Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Stave-Crozing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in the peculiar construction in a chamfering and crozing machine designed to be attached to a stave jointing machine, such as shown in my Letters Patent No. 271,682, dated February 6, 1883.

The invention particularly consists in the peculiar construction of the feed mechanism and means for operating the same intermittently, and in the peculiar construction, arrangement and combination of the various parts as more fully hereinafter described.

In the drawings Figure 1 is a side elevation of a stave jointing machine with my improved attachment applied thereto. Fig. 2 is an elevation of a crozing and chamfering attachment looking from the side opposite to that shown in Fig. 1. Fig. 3 is a perspective view thereof looking from the front. Fig. 4 is a vertical section on line *x x* in Fig. 2, showing the feeding mechanism. Fig. 5 is a horizontal section on line *y y*, Fig. 2. Fig. 6 is a detached perspective view of the end of a finished stave. Fig. 7 is a detached perspective view of the cutter. Fig. 8 is an edge elevation thereof. Fig. 9 is a perspective view of one section of the cutter saw.

In Fig. 1 I have shown in elevation at the right hand a stave jointing machine, as described in my above mentioned patent, in which A is the frame.

D is a circular saw, which cuts the staves from the bolts having suitable means for driving the same.

H are feed rolls for feeding the work to the saw D.

J is a guide way, in which the staves cut by the saw D are guided to the jointing saws M and N, these saws being of the type known as wabble saws and located upon suitable arbors, having motion communicated to them in any desired manner.

K is a feed wheel secured on the vertical shaft B, journaled in suitable supporting

bearings on the frame. At its lower end it is provided with a beveled gear wheel *f*, which meshes with a suitable pinion *f'* on the shaft *f*², to which motion is communicated in any suitable manner to drive the wheel K. Opposite the feed wheel K is an idler wheel, not shown. Staves are fed through the saws M and N between the feed wheel K and its idler wheel and delivered upon the guide way O, leading from the jointing machine to my chamfering and crozing attachment. As each succeeding stave enters the guide O it will push the previously delivered stave forward along the guide way between the drive rollers P and P', shown in detail in Figs. 2 and 5. The drive roller P is secured upon the shaft Q which is provided with a bevel gear wheel Q' meshing with the bevel gear Q² on the shaft Q³, which is driven (by a sprocket chain connection Q⁴) from the shaft *f*². The roller P' is on a vertical shaft R and is driven by means of the gear wheels R' and R² upon the shafts Q and R respectively, as shown in Fig. 3.

The feed wheels P P' feed the stave until it strikes the gage block *a* which is supported on the lower end of the lever *b* (Figs. 1 and 2).

The vertical carrier for the stave consists of the carrier chains *c*, having suitable hooks or fingers *c'* projecting into the path of the stave when fed in position by the feed wheels P P'. The stave is fed from its initial position upwardly between the stationary curved guide plates *d* and the spring guide *e*.

g is the saw arbor driven from any suitable source, and carrying at its ends the cutters for crozing and chamfering, the construction of which will be hereinafter described.

The carrier chains are supported on sprocket wheels, the upper pair of which are secured to the shaft *h*, which is the drive shaft for the carrier. This is driven from the vertical shaft *i*, in turn driven from the shaft Q by the friction wheels *j j'*. Fig. 1. The shaft *i* has a bevel gear wheel at the top meshing with a bevel pinion *k* on the shaft *h*. The shaft *h* at its end is provided with a disk *l*, having a series of lugs or stops *m* thereon, in the path of which the upper end of the lever *b* extends, being held normally in such position by the spring *m'*, and which is rocked out of engagement therewith by the incoming stave strik-

ing the gage *a* at the lower end of the lever. When this occurs, the friction wheel *j* (previously sliding upon the wheel *j'*), is free to drive it, and through the connections described to operate the carrier, until another
 5 lug *m* strikes the lever *b*, which latter is drawn in again, as soon as the stave is elevated above the gage. Thus, the carrier is intermittently driven, its motion being controlled
 10 by the incoming of the staves.

The guide plate and spring guide *d e* have a curve at the point opposite the cutters corresponding to the radius of the barrel which is to be constructed from the staves operated
 15 upon, so that the croze will be cut upon a corresponding curve, as shown in Fig. 6.

The cutters consist of a saw, preferably made in two sections *n* as shown in Fig. 9, adapted to be secured upon a hub *o* by screw
 20 bolts entering slots *o' o''* in the inner edge on the saw section. The saw sections are formed with complementary gains or cut-away portions adapted to form marginal notches *p* in the saw (Fig. 7) in which the points of the
 25 chamfering cutters engage, so as to make a perfect chamfer clear to the end of the stave. These cutters are provided with suitable means for adjusting them.

q are the crozing cutters adjustably secured
 30 on opposite sides of the head and provided with oppositely beveled portions *r*, as shown in Figs. 7 and 8.

What I claim as my invention is—

1. In a stave jointing machine, the combi-

tion with a crozing and chamfering attachment comprising feed rolls, of an endless carrying belt having a vertical portion across the cutters, a drive mechanism for the carrier, a stop for said drive mechanism, a lever connected with the stop, and a projection on the
 40 lever arranged in the path of the staves and adapted to be struck by a stave for actuating said lever, substantially as described.

2. The combination with a stave jointing machine, of a crozing and chamfering attachment, comprising feed rolls, an endless carrier having a vertical portion extending beside the cutters, a drive mechanism therefor, friction gear in said drive mechanism, a stop for said feed mechanism adapted to be struck by
 50 the incoming stave for tripping said stop, substantially as described.

3. The combination with a stave jointing machine, of a crozing and chamfering attachment, comprising feed rolls, an endless carrier
 55 having a vertical portion across the cutters, a drive mechanism therefor, a friction gear in said drive mechanism, a lever or stop for said feed mechanism adapted to be struck by an incoming stave for tripping the lock and
 60 a spring for resetting the lock, substantially as described.

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

THEODORE BRUNO.

Witnesses:

JAMES WHITTEMORE,
 M. B. O'DOHERTY.