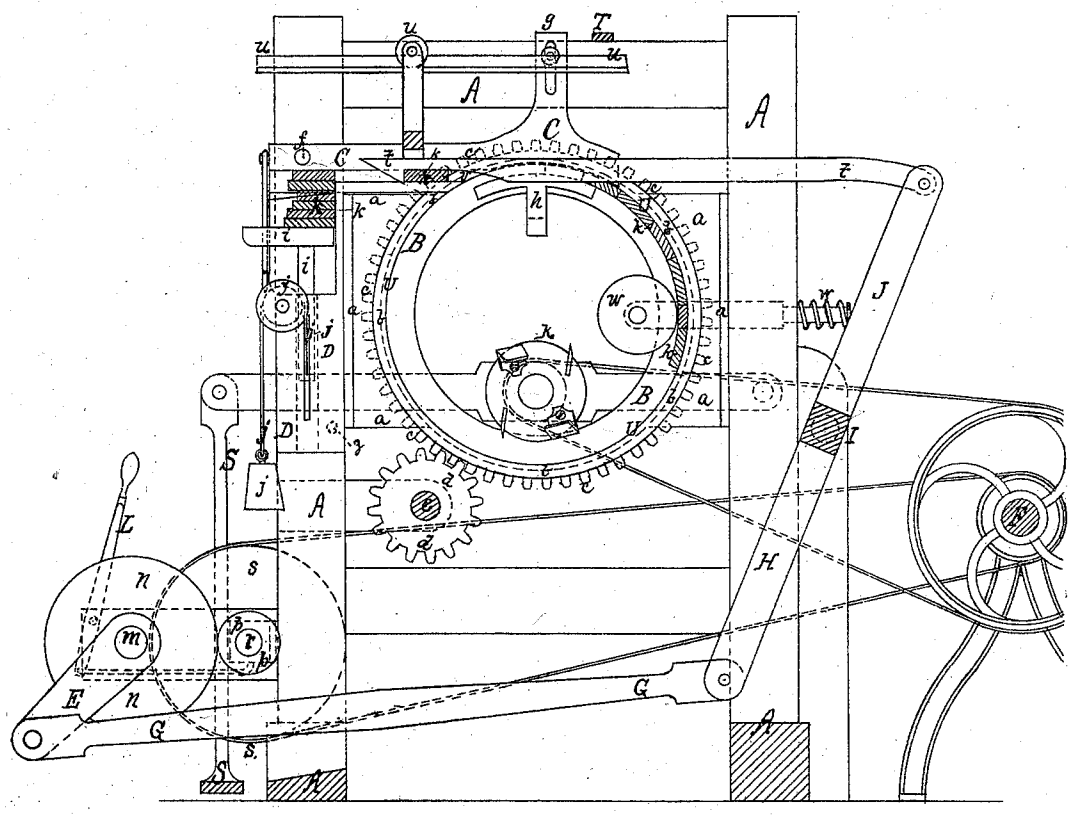
3 Sheets--Sheet 1.

H. P. HALL.

Barrel-Making Machinery.

No. 140,776. Patented July 15, 1873.

Fig. 1.



WITNESSES

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Fig. 2

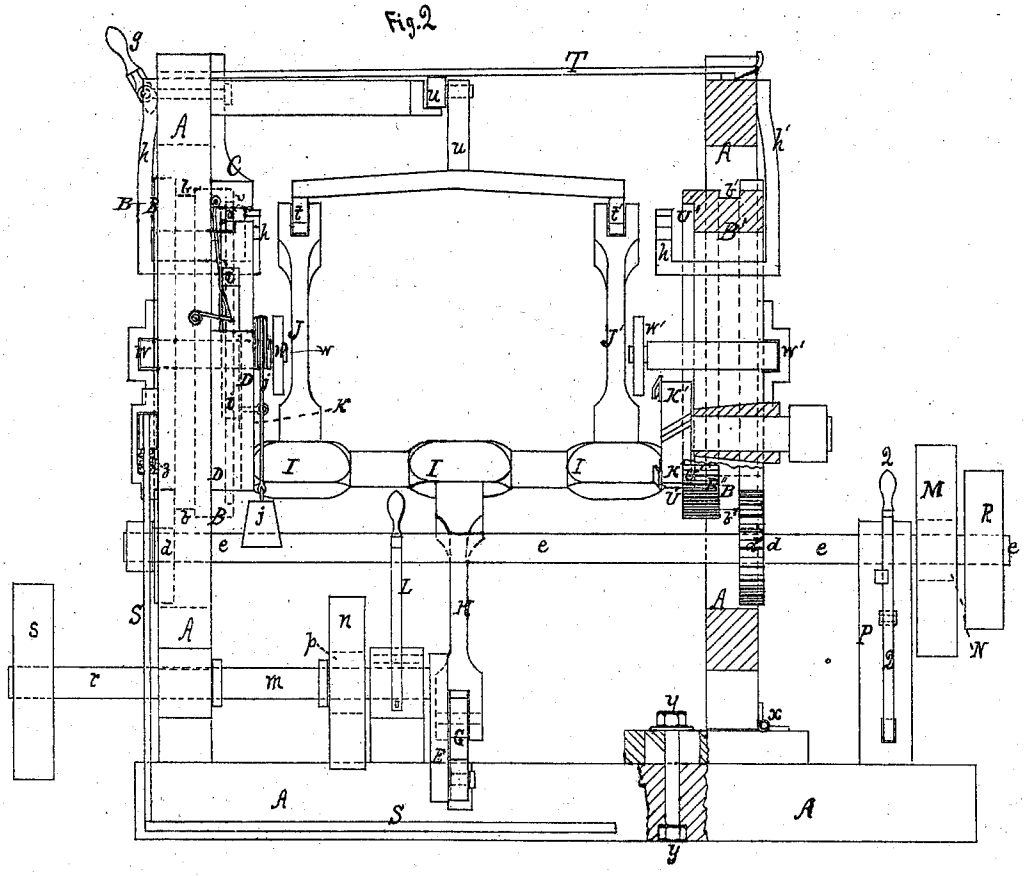

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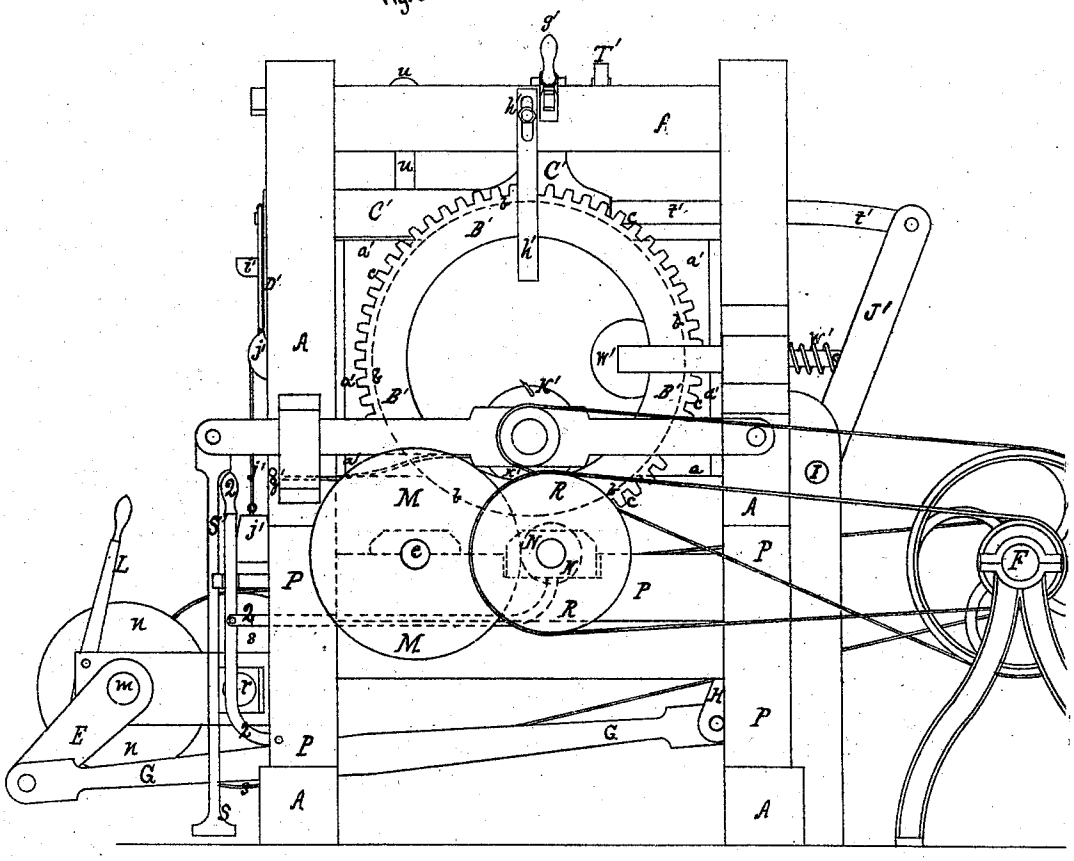
Fig. 3



Witnesses.

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Hiram P. Hall.

Inventor, By

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UNITED STATES PATENT OFFICE.

HIRAM PORTER HALL, OF AKRON, NEW YORK.

IMPROVEMENT IN BARREL-MAKING MACHINERY.

Specification forming part of Letters Patent No. **140,776**, dated July 15, 1873; application filed January 22, 1873.

To all whom it may concern:

Be it known that I, HIRAM PORTER HALL, of Akron, in the county of Erie and State of New York, have invented certain new and useful Improvements in Barrel-Making Machinery, of which the following is a specification:

The object of this invention is to produce a single machine, working automatically to "set up" the barrel and cut the "croze" and "chime" on the ends at one operation; and the invention consists of a combination and arrangement of parts, the construction and operation of which will be fully hereinafter described.

In the drawings, Figure 1 is a cross-sectional view. Fig. 2 is a front sectional elevation. Fig. 3 is an end view.

A A is the frame-work, having two circular metal holders, B, with a rim, U, on the inside. The holders are held between the sides of the frame A by two supports or guides, *a a*, secured to the frame A and setting in a groove, *b*, around the entire circumference of the holders B, (see Fig. 2,) and by which means they are allowed to revolve, but cannot get out of the frame. The outer periphery of the holders is supplied with gear-teeth *c c*, which act in conjunction with the pinions *d d* on a shaft, *e*, by which means the holders are revolved while working off the barrel ends. C C′ are the upper guides pivoted to the frame A at *f f′*, and raised to allow the holding-hoops to be placed on the holders, and are held in position by means of clamps *g g′* or their equivalents. The lower guides *h h′* aid in throwing the stave into the holders, and are made adjustable. D D′ are two boxes or frames, in which lifts *i i′* slide, being held up by cords and pulleys *j j′* or their equivalents. These are to hold the staves *k*, enough being placed thereon to form one barrel. By means of the weights *j j* and lifts *i i* the "shook" of the staves *k* is always kept pressed against the guides C C′, the object to be hereinafter explained. E is a crank upon a short shaft, *m*, carrying a friction-pulley, *n*, which is revolved by a smaller friction-wheel, *p*, upon another short shaft, *r*, having a driving-pulley, *s*, operated by a belt from the main shaft F, as shown. By this means the pitman G of the crank E, acting on the arm H on a rock-shaft, I, causes the arms J J′ on the same shaft I to oscillate a pair of hooked levers, *t t′*, which have a roller-guide, *u*, to keep them elevated. These hooks, when moved forward, catch over the top stave of the shook and draw it into the "ways" of the guides C C′, (see Fig. 1,) which are made with their inner terminations at *v* nearer together to cause the stave to be compressed endwise, and thus "crown" or "bulge" it. It then passes on into the machine until the hooks *t t′* stop, when they return after another stave and leave the first one in the center of the holders B. When the hooks *t t′* return with the second stave they press it against the first one and revolve the holders B the width of one stave, and so on until the holder is filled and the whole circumference is completed. Before the staves come in contact with the cutter they pass behind spring-wheels *w w′*, which press all the staves equally and firmly against the rims U U′ of the holders. When the full complement of staves are inserted two iron hoops, which have been previously placed upon the periphery of the circular holders B, are placed upon the ends of the barrel to hold it together while being taken from the machine previous to being hooped, as usual. K K′ are two cutter-heads driven by belts from the shaft F, and carrying two separate sets of cutters or knives, one set for cutting the chimes and another for the crozes. When the hoops are placed upon the barrel the motion of the hooks *t t′* is stopped by throwing the small wheel *p* out from the wheel *m* by a lever, L, as shown in Fig. 1, and throwing the pinions *d d′* and shaft *e* into gear by a similar series of friction-wheels M N in an independent frame-work, P, and a belt from the pulley R to the shaft F, as shown. By this means the holders B are revolved slowly, and, by pressing down upon the foot-bar S of the spring-treadle, the cutters are brought into contact with the ends of the barrel and thus cut the chimes and crozes. When this is completed the spring holding-bar T is released, and the side of the frame A next to the frame P, being hinged at *x*, can be opened or removed to allow of the removal of the barrel. This side of the frame A is also made adjustable by means of the bolts *y*, as shown, to suit any length of barrel,

or increase or decrease the bulge or convexity of the barrel.

For smaller barrels or kegs, the circular holders could be made in two pieces divided through the periphery, and smaller rims set on, whereby the same work could be done as in a large barrel-machine.

The iron holding-hoops are first put on the periphery of the circular holders B B′, and the upper pivoted guides C C′ are set down and fastened in position by means of the clamps *g g′*. The staves after they are shaped are first laid out to make the width necessary for a barrel. Usually from fourteen to sixteen staves are the required number, according to width. These are set into the spring-feeder or shook-holder *i*, the top one always coming flush with the guides C C′. The traveling-hooks *t t* then catch one (the top one always) and feed it through the grooves *v* into the circular holders B B. This works automatically until the holders are full, or the barrel circle is complete, as before stated. The operator stands in front and presses the lever L, throwing the friction-pulley *p* against the operating-wheel *n*. When the circular holders B B are full, the lever L is pulled back, disconnecting the friction-wheel. Then the operator pulls out the lever Q, which brings the friction-roller N against the friction-roller M, thus revolving the two circular holders; meanwhile the operator sets his foot upon the foot-bar S of the spring-treadle, which brings the revolving cutter-heads K against the inside of the staves, and does the chamfering and crozing. To prevent these cutting too deep, an adjustable guide, *z*, is set on the outside of the frames A A, as shown. While the cutters are in operation, the operator, with his foot on the spring-treadle, raises the movable guides C C′ and places the iron hoops which set on the holders B B onto the barrel. The barrel is now ready for removal. To do this the side A is hinged, allowing it to be swung down or removed and the barrel is taken out, set aside, and the side swung back and fastened by the spring-bar T. The machine is now ready for the reception of the next shook, which is placed in the spring-lifter and the operation continued, as before.

By this simple operation, the hooks *t t′* take in one stave a second, and a barrel can be set up, chamfered, and crozed in about one minute.

I claim—

1. In a barrel-machine, the circular holder B, provided with the rims U, substantially as and for the purpose herein described.

2. In a barrel-machine, the combination of the spring-lifts *i*, traveling-hooks *t t′*, upper and lower guides *c h*, and circular holders B, all constructed and operating substantially as and for the purpose specified.

3. In a barrel-machine, the combination, with the circular holders B and the rims U, of the spring-rollers *w w*, arranged and operating substantially as and for the purpose described.

4. The traveling-hooks *t t′* running on the guides *u*, constructed and operating substantially in the manner and for the purpose hereinbefore specified.

5. The machine, consisting of the frame A, one side hinged and made adjustable, the circular holders B B′, the holding-guides *a a′* setting in grooves *b*, the guides C *h*, the lifts *i i*, rock-shaft I, arm J, traveling-hooks *t t′*, cutters K K′, and spring-roller *w*, all constructed and operated substantially in the manner and for the purpose specified.

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

HIRAM P. HALL.

Witnesses:
J. R. DRAKE,
C. N. WOODWARD.