(No Model.) 2 Sheets—Sheet 1.

# D. H. BURRELL & J. NAYLOR, Jr.

## Machine for Cutting Barrel Hoops from the Log.

**No. 233,472.** **Patented Oct. 19, 1880.**

*Fig. 1.*

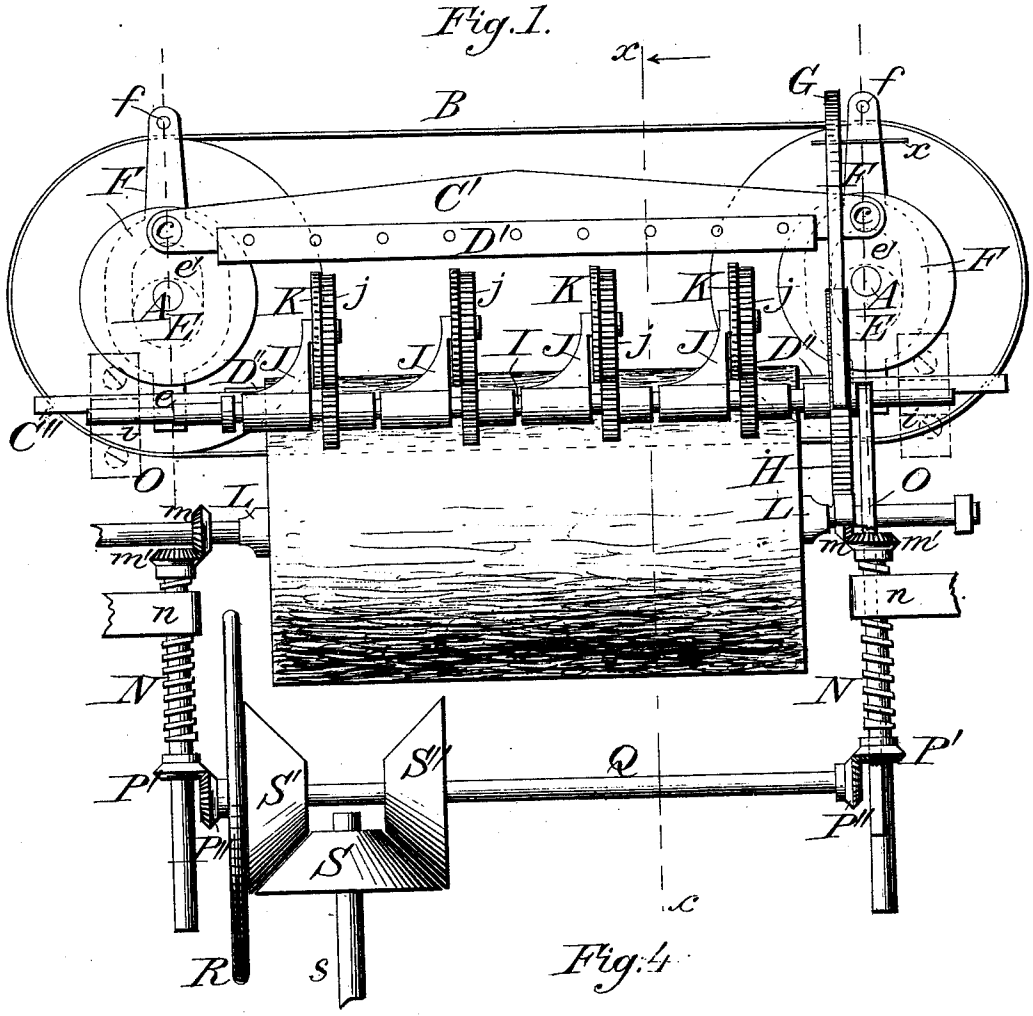
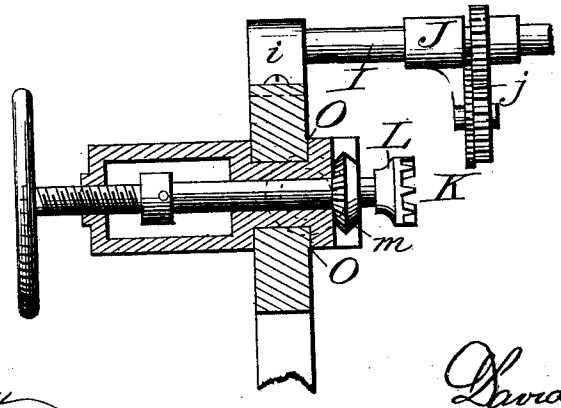



*Fig. 4.*




Attest:
H. C. Schott
A. R. Brown

Inventor:
David Hamlin Burrell.
James Naylor Jr.
per J. C. Fairbanks Atty

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

# D. H. BURRELL & J. NAYLOR, Jr.

## Machine for Cutting Barrel Hoops from the Log.

**No. 233,472.** **Patented Oct. 19, 1880.**

*Fig. 2.*

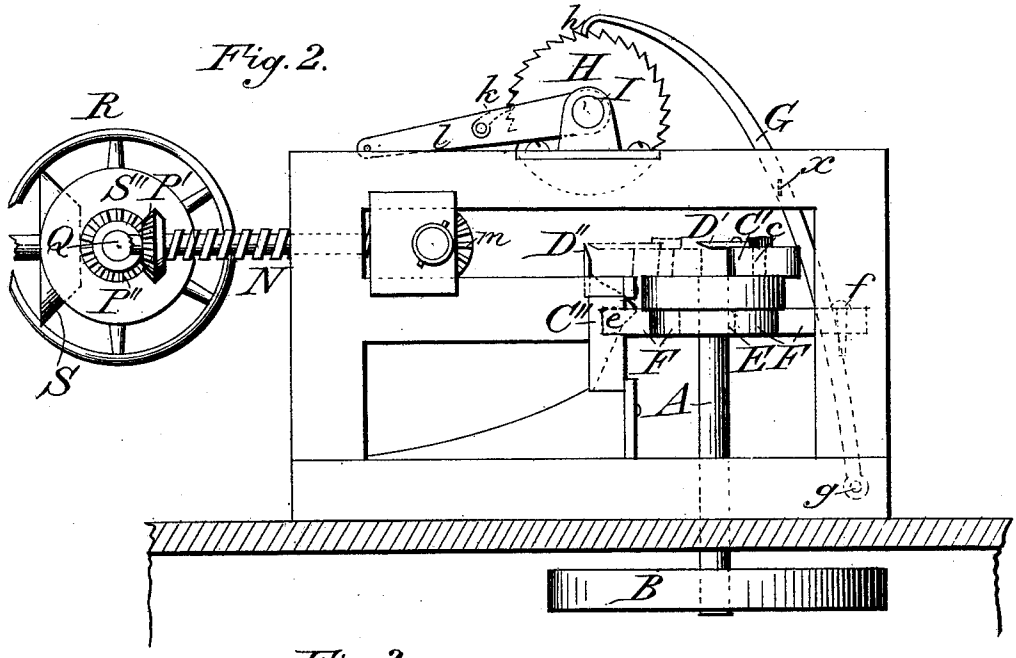
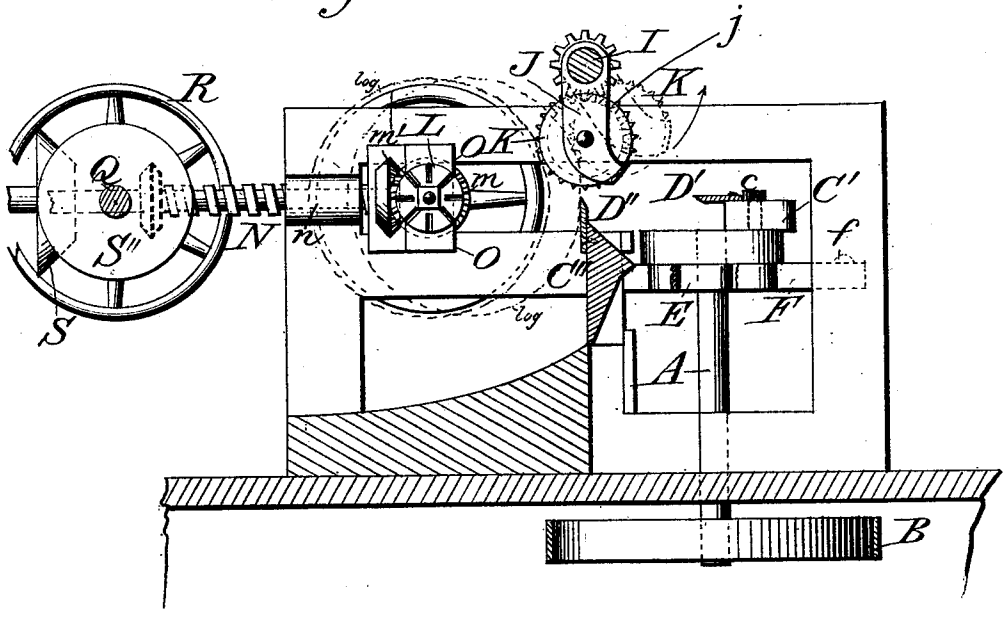



*Fig. 3.*




*Attest:*
*F. H. Schott*
*A. R. Bonn*

*Inventor:*
*David Hamlin Burrell*
*James Naylor Jr.*
*per J. C. Tasker atty*

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

DAVID H. BURRELL, OF LITTLE FALLS, AND JAMES NAYLOR, JR., OF ROCHESTER, ASSIGNORS TO WHITMAN & BURRELL AND DAVID H. BURRELL, ALL OF LITTLE FALLS, NEW YORK.

## MACHINE FOR CUTTING BARREL-HOOPS FROM THE LOG.

SPECIFICATION forming part of Letters Patent No. 233,472, dated October 19, 1880.

Application filed August 31, 1880. (No model.)

*To all whom it may concern:*

Be it known that we, DAVID HAMLIN BURRELL, of Little Falls, in the county of Herkimer, and JAMES NAYLOR, Jr., of the city of Rochester, in the county of Monroe, both in the State of New York, have invented certain new and useful Improvements in Machines for Cutting Barrel-Hoops from the Log; and we hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, together with the letters of reference thereon, which also form a part of this specification.

Figure 1 is a plan view of the machine. Fig. 2 shows an end elevation of the same; Fig. 3, a cross-section on line *x x* of Fig. 1. Fig. 4 is a detailed view, showing the feeding mechanism.

Our invention relates to improvements on the aforenamed machines now in present use which practice has deemed of so much importance, and without these improvements the aforenamed machines, known by Patents Nos. 203,429, 211,715, and 219,296, would not properly perform their respective functions.

In the drawings the frame-work is for the most part not shown, in order that the working parts can be shown more clearly.

The operation is the same as in the aforenamed patents—viz., the alternate action of the knives on the log, the periphery feed, and the movement of the centers toward the knives. These features are the same in all the above cases. It is in the manner and means by which these respective features are operated that our improvements consist.

A A are upright shafts revolving in stationary bearings. Power is applied to either or both in any devised way. Both shafts, however, are connected so as to work in unison, as shown, by the belt B. Other devised means for connecting these shafts may be used, and by the use of a heavy balance-wheel on the driven shaft no connection would be necessary except that given by the knife-bar C′. This knife-bar C′ is attached at both ends to the cranks *c c*. Thus the knife D′, which is secured to the bar C′, has a circular motion all along its edge. This is for the purpose of quickening the cut and the withdrawal of the knife from the log, so as to allow more time for feed to operate. At the same time the draw-cut, without reversing, is also maintained.

The knife D″, cutting vertically the thickness of strip and secured to the bar C″, is vibratory, moving back and forth in the same straight horizontal line. This is operated by the eccentrics E E on the shafts A A through the medium of the arms F F, pivoted at *f f*, and acting loosely into recesses in the knife-bar C″ at *e e*. The eccentrics E E revolve in the slots *e′ e′*. Thus the arms F F are moved back and forth, which, in turn, give this motion to the knife-bar C″, to which is secured the vertical cutting-knife D″. Other mechanism can be used to give to this knife the vibratory cut without interfering with the other movements of the machine.

Pivoted at *g* is the arm or bar G. This is for the purpose of communicating motion from the knife-bar C′ to the ratchet-wheel H, secured to the shaft I. This arm G is acted on by the knife-bar C′ when at its most outward position by coming directly in contact. The arm G being forced outward, the pawl *h* pulls one tooth of the ratchet-wheel H. On the further movement of the knife-bar C′, the spring *x* forces the arm G to its original position. Thus to the shaft I is given by the knife-bar an intermittent motion. This shaft I revolves in stationary bearings *i i*, (shown in dotted lines,) and loosely swinging on it are the arms J J J J, which carry the feed-wheels K K K K, the same being connected by gearing to the shaft I, on which is secured the ratchet-wheel H. This arrangement is to provide for all the feed-wheels to self-adjust to the uneven surface of the log in first beginning to cut, and however much the shaft I may spring, it cannot interfere with the hold of the feed-wheels on the surface of the log.

We have also discovered that by proper adjustment of the axis of shaft I and feed-wheels K K K K at a certain inclination to the axis of the log (which is continually changing its position as the log is cut up) we can and do

dispense with any weights or springs to force feed-wheels to bite into the log. This is of much importance, as by not forcing the feed-wheels they readily jump out of the holes and hollows which are often on the logs. The immediate cause of this is in the swinging arms J J J J and gearing *j j j j*, through which a reversion of motion is given to the ratchet-wheel H to what has been done heretofore. Thus when the knife-bar C′ is at its outward stroke it is causing all these parts to operate. Each stroke feeds one tooth, which is the thickness of required strip.

To hold the ratchet-wheel H from retracting is the pawl *k*, attached to the lever *l*, having its fulcrum on the shaft I, with the end thereof resting on the frame-work of the machine. This also serves another important purpose—that of more expeditiously trimming the log. By its use any number of teeth may be fed at a stroke, which is done by hand, the pawl *h* of the bar G doing the holding. By this device the capacity of the machine is much increased.

It may here be observed that the power applied to the machine when no log is introduced will only cause the aforenamed parts to operate.

The centers L L have a movement toward the knives; but this is given, as in other machines, through the medium of the log. The log is chucked between the centers L L, as shown, to which are attached the bevel or miter gears *m m*, which engage with corresponding gears *m′ m′*, secured to the right-and-left screws N N, said screws working in the stationary nuts *n n*, secured to the frame-work. The ends of screws are attached to the boxes carrying the centers, so that the gears *m m m′ m′* are always in gear. By this means the rotation of the log causes its movement toward the knives, the lead or pitch of the screws and gears governing the width of the strips cut. Screws have been used for this purpose heretofore; but it is in the way we apply them that our improvement consists.

In chucking a log immense pressure is brought to bear against the sides of frame at O O, there being none at the outside. Consequently the power to move the log in a moment overcomes this friction caused by the sides of the frame, and at right angles with the axis of the log. The means by which this is accomplished is as shown. The center of the stationary nuts *n n*, screws N N, and gears *m′ m′* are in a direct line with this resistance, the log turning at both ends the same way, and the screws being located as shown necessitates the use of a right-and-left-hand screw working in stationary nuts *n n*, corresponding thereto. These right-and-left screws N N give motion to the gears P′ P′ by means of a groove in the screws acting on a feather in the gear. This is when the gears are loose on the screws, for the gears may be keyed; then the grooves and feathers are dispensed with. The gears P′ P′ give motion to gears P″ P″, secured to the shaft Q. Thus by these means a connection of the centers is effected. Power applied to the shaft Q will rotate the centers L L in unison when no log is in the machine. This connection of the centers is made for the following reason: Logs are not always sound, particularly at the core. Ofttimes it happens that one center has no hold to drive, yet enough to hold in place. This being the case, it is evident that but one end of the log would be fed up to the knives. It would therefore be impossible to cut up such a log without this improvement. Previous to this these machines were operated without this connection of the centers, the result being waste logs. Too much attention cannot be paid to this part of our improvement, as without it the machine would be of no practical value.

We are aware that machines are now in use where logs are chucked between centers, and that these centers are connected; but in all these cases the centers are the drivers, the log the driven, and also the log in all these cases is acted upon by one knife or a series of knives cutting in one direction. We distinctly confine ourselves to this connection of the centers L L, where the log acts as driver, the centers L L and their connecting parts the driven, and also when it applies to machines with knives working angularly to each other on the surface of the log.

Secured to the shaft Q is the hand-wheel R, for manipulating the centers by hand. There are also the friction-wheels S′ S″ secured thereto. Power is applied by frictional contact through the medium of the driver S. If the shaft Q has an in-and-out motion with the centers, then this driver S goes with it, and the shaft *s* provided with a groove to allow this; but if the feathers and grooves are used in gears P′ P′, then this is not needed.

When the driver S is not in contact, as shown, the machine is supposed to be operating. When brought in contact with S′, then the centers are forced toward the knives. When brought in contact with S″ the order is reversed. Here it must be borne in mind that ofttimes a log weighing over two tons has to be revolved on the centers in order to get it up to the action of the feed-wheels; hence the application of power, and to do this suddenly by any positive means has always resulted adversely. We have demonstrated that nothing but powerful frictional contact will answer, and which we apply in the manner as described. By this means the log, when on the centers, is under perfect control of one operator, while previous to this great difficulty was experienced, from the fact it always took more than one to move it.

The operation of the machine as improved by our invention is as follows: A log is chucked between the centers, then forced by the frictional arrangement herein described to the feed-wheels. This can be done carelessly, as

when the surface of the log strikes the feed-wheels they readily recede without fear of damage. The feed-wheels thus engage and feed the log the speed of a strip each stroke. This is slow work for trimming the log. So our improvement is used. The lever *l* is operated by hand, the log is forced so as to trim the log quickly and the waste to come off in as large pieces as possible, so as to be in better shape, both for the fire and fireman. As soon as good strips are being cut the machine runs automatic until the log is cut up, excepting the core, which is removed for fuel. The centers are then retracted and the machine is ready for another log.

Having thus described our invention, we claim and desire to secure by Letters Patent—

1. In a machine for cutting logs into strips, the centers L L and their connecting mechanism, in combination with the smooth friction-gears, operated substantially as and for the purpose specified.

2. In a machine for cutting logs into strips, the combination of the centers L L, gears *m m m' m'*, and right-and-left screws N N with the connecting mechanism, when so arranged that one center will revolve the other and move the log forward at the same time, as herein set forth.

3. The shaft I, revolving in stationary bearings *i i*, and provided with swinging arms carrying the feed-wheels, said feed-wheels being driven by gearing from the shaft I, the whole arranged at a proper inclination to feed the log, in combination with the centers L L, for holding the log so fed, all arranged substantially as shown, and for the purpose specified.

4. The combination of the shaft I, ratchet-wheel H, and pawl *h*, arranged to be automatically operated by the cutting mechanism of a hoop-machine, with the lever *l* and pawl *k*, pivoted thereto, when said lever *l* is attached as described, to be at rest during the automatic action of the machine, but capable of use for the purpose of expeditiously trimming the log, as set forth.

5. In a machine for cutting logs into strips, the knife D', attached to the bar C', said bar connected directly to shafts A A by the cranks *c c*, in combination with the vertical cutting-knife, the feeding mechanism, and the centers L L, all arranged and operated substantially as set forth.

6. The knife D'', attached to the bar C'', vibrating in the line of its cutting-edge, in combination with the feed-wheels K K K K, acting upon the periphery of the log to move it forward upon the knife, as herein shown and described.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

DAVID HAMLIN BURRELL.
JAMES NAYLOR, JR.

Witnesses:
H. BUCHANAN,
S. W. DILLENBECK.