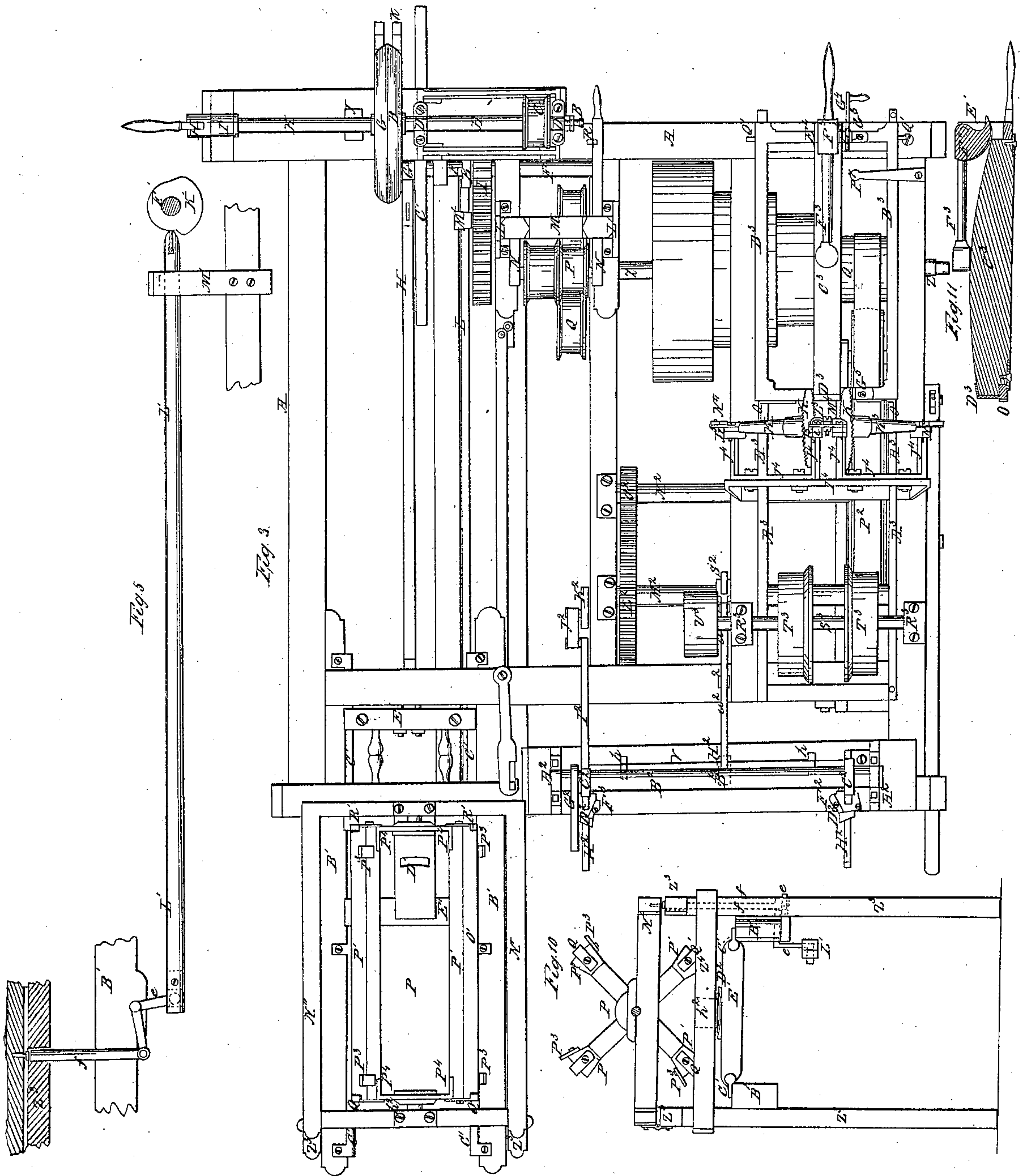


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No. 4,267.

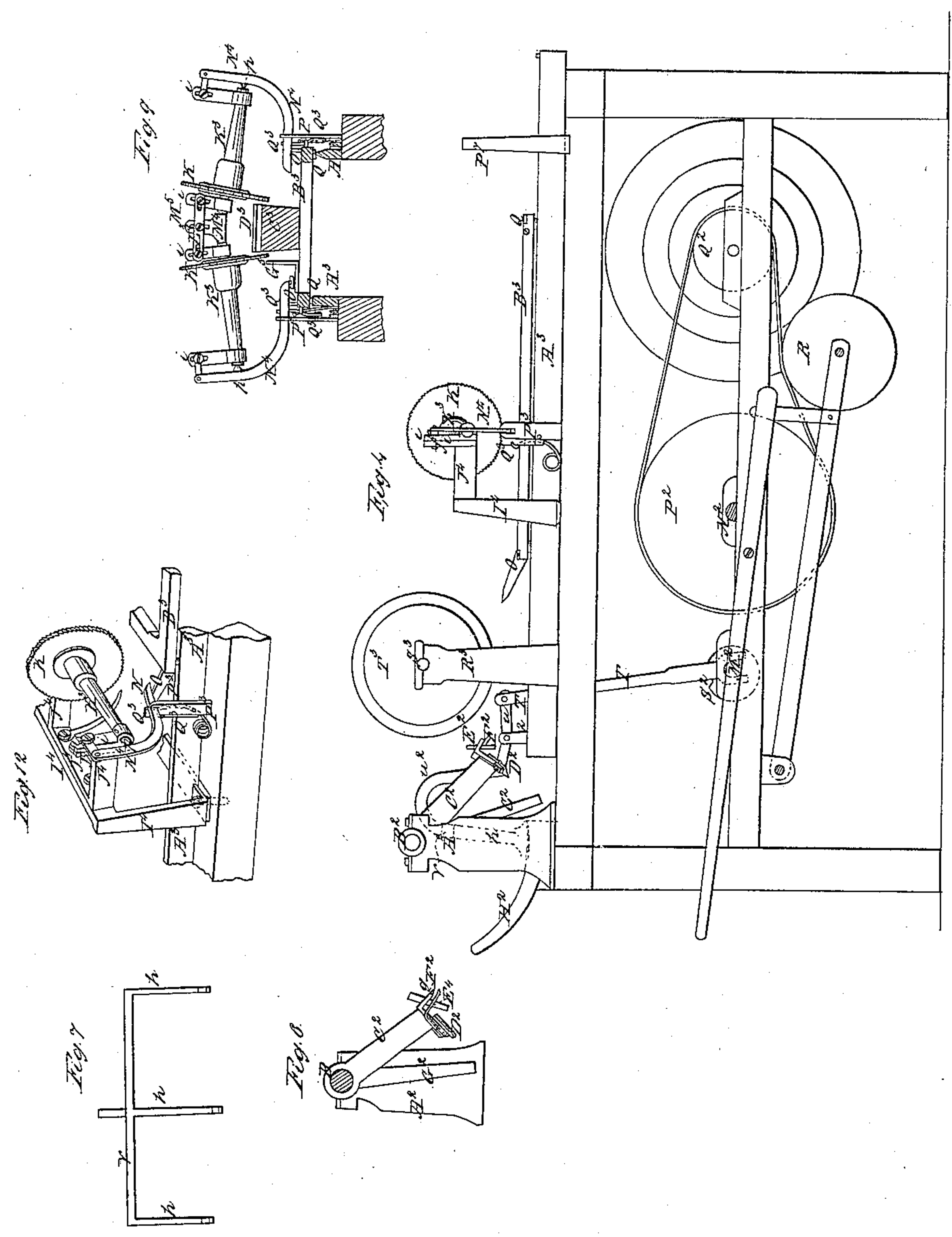
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UNITED STATES PATENT OFFICE.

JOHN MINER AND SILAS MERRICK, OF FALLSTON, PENNSYLVANIA.

MACHINE FOR DRESSING STAVES.

Specification of Letters Patent No. 4,267, dated November 12, 1845.

To all whom it may concern:

Be it known that we, JOHN MINER and SILAS MERRICK, of Fallston, in the county of Beaver and State of Pennsylvania, have
5 invented new and useful Improvements in the Construction, Combination, and Application of Machinery for Manufacturing Casks, Barrels, Kegs, &c.; and we do hereby declare that the following is a full and
10 exact description of the construction and operation of the same, reference being had to the annexed drawings of the same, making part of this specification.

Figure 3 is a top view of the machine for
15 chamfering the ends, crossing and cutting the staves to the required length; also a top view of the machine for jointing the staves. Also a top view of the machine for cutting heading (not claimed). Fig. 4 is
20 a side elevation of the part of the machine used for chamfering the ends, crossing and cutting the staves to the required length and at a single operation: and the machine for jointing the staves. Fig. 5 is a section
25 representing the connecting rod L' cam K', post M', double crank e, &c. Fig. 6 is a section showing the arm C² crossing tools, &c. Fig. 7 is a section showing bar V and posts h, h, h. Fig. 9 is a transverse section
30 showing the curved levers N'', inclined axles 3. Fig. 10 end of the reel or planing machine of which a top view is shown in Fig. 3. Fig. 11 is a longitudinal section of the bed piece C³. Fig. 12 is a perspective
35 view showing one of vertical flanges J⁵ to which the box is attached—also one of the cast iron frames J⁴—part of gallows frame I⁴, lever N⁴ one of the posts P³, spring catch Q³, inclined plane O, &c.

40 *The planing machine, Fig. 3.*—The planing machine is attached to a strong frame of suitable size, strength, and material, said frame being used in common for the crossing and jointing machines, &c., hereafter
45 described. Two way bearers B' B' Fig. 3 are firmly attached horizontally and parallel with each other, below the top of the main frame. Two cast or wrought iron parallel ways C' C' turned or dressed true, and
50 of equal size, are placed or secured by flanches, in such a manner as to project entirely within and above the upper inside corner of the ways B' B'. The plane D' is made of cast iron, about one foot in length
55 hollow or concave of proper curve, and sufficient width to plane the entire outside of the

stave. It is firmly secured (edge of the bit upward) to a carriage E' made of hard wood and nicely fitted to slide on the ways C' C'. On the opposite side of the main
60 frame A is placed a strong iron shaft F' secured to the main frame in boxes having on one end a large balance wheel G' in which is a wrist G³ firmly secured to receive one
65 end of a pitman H'; the outer end of said pitman being attached to the aforesaid plane carriage E'. On the outer end of the shaft F' is a large cog wheel I' which gears into a small pinion J' on main shaft Z. On
70 the shaft F' and between the cog wheel I' and balance wheel G' is placed a cam K' see Figs. 3 and 5 a connecting rod L' passing through a mortise in a post M' Fig. 5, attached to main frame and near the cam
75 K' the other end extending forward parallel with the pitman H', is attached to the lower end of the double crank e Fig. 5, which is secured by boxes to the under side of the way bearer B' the crank on outside
80 of way bearer being horizontal, and the one on the inside being perpendicular, or at right angles with each other. On the wrist of the horizontal crank is a perpendicular pitman f Fig. 5 extending upward through
85 a mortise for support the top of said pitman f coming against the under side of the carriage, or frame, N', containing the reel P which is made of two cast iron heads with flanches P⁴ projecting inward a suitable
90 distance on which to bolt firmly four bed pieces P' P' P' P' whereon the staves are placed for planing. The diameter and length of reel P should be the same as the diameter and height of the cask, barrel, or
95 keg to be constructed. Gudgeons or pins are placed in or cast on the centers of the heads to form a bearing on which the reel revolves, secured by boxes to the frame N' and placed central above the plane D'. On
100 the outer end of the bed pieces P' are firmly secured stops Q' Q' the ends being turned inward and projecting above the bed pieces, sufficient to hold the stave. On the back end are placed springs R' R' the top being formed
105 the same (as described for the other end) and all being sharp and cross filed so as to form teeth to hold the stave securely by the strength of the spring. Two posts Z³ Z³
110 Fig. 10, are secured near the outer end of and fixed to the way bearer, the caps of which extending horizontally to the frame A are of suitable heights to form a base

or bed for the carriage or frame N' to rest on. A cross bar Z⁴ Fig. 10 is bolted to the posts Z³ Z³ in such a position that the forward end of the reel P will be against a block or projection h² on said cross bar Z⁴, when in labor, to receive and resist the force of the cut.

On one edge of the bed pieces P' and near each end, are guides or stays P³ to put the edge of the staves against parallel with the bed pieces. The frame or carriage N' is attached on one side to the said horizontal cap of the post Z³ by means of butt or other hinges. The other side being so constructed that the cam K' and double crank e before described, will raise the frame and reel so as to clear the plane when receding, and again let the weight on the plane when required for labor.

Manner of using this machine.—Motion being given to the machine, with the hands place the edge of the stave against the guides or stays, press the end against the spring R' the other end coming in against the stop Q' the spring and stop holding the stave to its position, turn the reel P and perform the same operation with the rest, removing the planed stave and replacing another, when the machine is in motion, the plane carriage moving back and forth horizontally and longitudinally and the knife taking off a shaving from the convex side of the stave at each movement of the carriage.

Figs. 3, 4, 6, 7, show the machine for chamfering the ends crossing and cutting the staves to required length. This machine is attached to and supported by the main frame, on the same side with the planing machine. It consists first of two cast iron head blocks A² A² of sufficient height and strength, and distance from each other (parallel and at right angles with the main frame) to receive in a nicely fitted box, at the top, the extreme ends of a strong iron shaft B² at a proper distance from each end of said shaft, to give the length of stave required, and between the head blocks A² A² are secured by means of keys or wedges two strong cast iron arms C² C² projecting from the shaft B² a distance equal to half the diameter of the cask, barrel or keg to be constructed. The extreme ends of said arms C² C² are to be so fitted and prepared as to receive a cutter or bit D² D² (projecting forward of the arms a sufficient distance to prevent clogging) for chamfering or beveling the ends of the staves. Also crossing tools B² B² Figs. 4, 6 of the usual form passing through a mortise in the back part of the arms C² which arm or projection extends below the back end of the cutter or bit D², before described, and is secured by means of a screw, or wedge so as to be easily taken out, and again replaced with precision for

the purpose of sharpening. Also sharp points or knives g² for cutting the stave to the desired length are secured in the same manner, and portion of the arm with the crossing tools before described.

Springs F² F² are attached to the arms also, and so constructed as to catch the stave after it is completed, and carry it back, off of the bed pieces, when it drops to the floor below through an aperture left for that purpose in the main frame. A guide G² is also attached to the shaft B² or arms C² C² projecting downward and forward of the arms a suitable distance to put the end of the stave against, while passing it into its proper place on the bed pieces H² H² H². Near one end of the shaft B² and projecting from it is an arm I² firmly attached to and projecting back from said shaft and at right angles to the arms C² C², to which is attached a pitman J², perpendicularly, the lower end being attached to the crank K² on the inner end of the shaft M² placed below the top or main frame. A cog wheel L² of as large size as will freely run is firmly secured on the shaft M². Immediately back of and parallel with said shaft, is a shaft N² having on one end a small pinion O² and on the other a pulley or drum P² which receives motion from a pulley Q² on the main shaft z, which is placed near the opposite side of the frame, and running parallel with the shaft M², and N². A tightening pulley R Fig. 4 of the usual form and construction is attached to the main frame, under the belt passing from the main shaft z, to the shaft N². The design is to give the main shaft 160 motions and the crank shaft 20 per minute.

On the crank shaft M² and opposite the center of the shaft B² is placed a cam S² a double forked perpendicular pitman T passing down on each side of cam S². The cam working between the forks and also passing down on each side of crank shaft M², for the purpose of keeping the pitman in its proper position. The top end of the pitman which extends above the main frame, is attached by a working joint to a crooked lever u, which extends forward toward the shaft B² and at right angles to the same. The lever u being attached in a working position to a fulcrum 2 attached to the main frame, about the center thereof transversely, the forward end of said lever from the fulcrum being raised by bending it upward and then over in a half circle as at u² to admit the stave to pass back of the bed pieces. On the forward or bent end of the lever u and u² is firmly fixed a cross bar v Figs. 3, 4, 7 directly under and parallel with the shaft B². Three posts h Fig. 7 being attached perpendicularly to the cross bar v. The lower end being so formed as to fit the circle required, and the center posts being enough longer

than the end posts to give the bulge required for a cask, barrel, or keg. The whole forming a jack or lever by which the stave is held in the same position it would if placed in a cask, barrel etc. when being chamfered 5 crossed and cut to proper length. The bed pieces $H^2 H^2 H^2$ Fig. 3 are firmly secured to the main frame in a proper position, the second one being immediately under the posts and the outside ones far enough apart to admit the point which cuts off the end of the stave to pass close by its side and the cutters or bits $D^2 D^2$ for chamfering on top, directly over and parallel with them, they being 10 a hollow segment of a circle corresponding to that of the stave, with an offset to hold the stave from being forced out by the operation of the machine.

Manner of using the machine.—Pressing 20 down the lever of the tightening pulley, causes the shaft z to move the crank shaft M^2 , the cam S^2 operates on the forked perpendicular pitman, which raises the back end of the lever U pressing the jack V firmly upon the stave, at the same time the cutters on the arms $C^2 C^2$ move forward across the stave performing their office, the springs F^2 yielding and slipping over the stave and dropping down below the same 30 the cam s^2 having passed half around and come to the short radius, the jack is raised and the springs F^2 catch and carry the stave back (with the retrograde motion of the arms) off of the bed pieces H^2 at the 35 same time the operator passing a stave in, alternately with each motion of the machine, on the curved bed pieces H^2 .

Machine for jointing staves with circular saws, Figs. 3, 4, 9.—This machine consists 40 of two cast iron ways $A^3 A^3$ (connected by two or three cross-ties at equal distances from each other, with the edges upward, and firmly fastened to the main frame by bolts on the opposite side to the crossing 45 machine and on the same end of the main frame. The top edge of one way being dressed in form of a V so as to receive one side of the carriage B^3 and cause it to move with accuracy. The carriage B^3 is of cast 50 iron of sufficient length for the stave required, and nicely fitted to the ways A^3 . A bed piece of hard wood c^3 of the length and width of stave required, the top being made the shape of the inside of the stave 55 when occupying its position in the barrel) and is firmly secured to the carriage B^3 by screws or otherwise. On the forward end is a hook D^3 the same width and curve of the bed piece with the top end turned inward so as to form a lip or flanch projecting 60 above the surface of the bed piece sufficiently to receive one end of the stave. At the back end are two posts $E^4 E^4$ secured to the carriage B^3 and extending upward a suitable 65 distance to receive the lever F^3 having a

quarter circle cam formed on its fulcrum end, the surface or edge of which is concave, that is to say transversely the segment of a circle equal to the diameter of the cask, barrel, keg, &c., to be constructed the power being 70 applied at right angles to the fulcrum F^4 for pressing the stave down upon the bed piece C^3 . A strong cast iron gallows head block I^4 bolted to, and at right angles with the ways A^3 —the cross beams, to which is 75 firmly secured by bolts, three fourths of a strong cast iron rectangular frame $J^4 J^4$, having flanches J^5 projecting outward and upward, on, and at right angles with, the open end, so as to form a basis or support 80 on which is secured by means of bolts (and movable at pleasure) boxes i nicely fitted to receive the bearing of the circular saw shafts $K^3 K^3$ on which the saws are secured in the usual way as close to the inner shoulder of 85 shaft as may be. The shaft should be a trifle short between the shoulders to permit it to move slightly endwise and the bearings long enough to protrude themselves through the boxes slightly at each end of 90 the shaft, the whole being so constructed that the plane of the saws will correspond with the desired bevel of the edge of the stave.

The frames J^4 containing the saws are 95 connected at the inside boxes by means of a cross bar L^3 Fig. 9. A perpendicular steel wedge M^4 Fig. 9 with a mortise in the upper end and secured to the cross bar L^3 by a bolt M^5 which passes through the oblong 100 mortise therein and movable at pleasure, passes down between the ends of the saw shafts, the bolts holding the boxes pass through the cross bar L^3 . On the outer 105 ends of the shafts K^3 the boxes i are attached by working joints to the top of elbow levers $N^4 N^4$ Figs. 3, 4, and 9 in the same manner as the steel wedge M^4 . On the inside of each of which levers is placed a 110 center p of hardened steel on the perpendicular portion thereof in a range with the saw shaft, etc., and on the top of the side pieces of carriage B^3 , at the forward end thereof, are inclined planes $o o$ secured by 115 bolts, and in a range with the sides of the carriage B^3 and with the insides of the posts $P^3 P^3$ Fig. 4; which posts have an open mortise in top of each sufficient in height and size to receive the horizontal part of the levers $N^4 N^4$. These posts P^3 are firmly 120 secured to the main frame, in a vertical position. On each side of the ways A^3 under the levers $N^4 N^4$ on each post is a spring catch Q^3 Figs. 4 and 9 so constructed as to 125 hold the levers $N^4 N^4$ in their position when raised by the inclined planes or arms $O O$. A stop Q^1 is fastened to each side of the back end of the carriage B^3 so as to force the spring catch from its position, and cause 130 the levers $N^4 N^4$ to drop when the carriage

has passed through and the stave has been completed.

The design of the levers N^4 thus caused to drop is to let the saws recede from the stave while the carriage is being drawn back, and again force the shafts together against the steel wedge M^4 by means of the inclined plane O , before labor. On the frame and back from the saws are two posts R^3 R^3 of suitable height and distance from each other for the carriage to pass between. On the top of which is a shaft S^3 with the pulleys T^3 T^3 for driving the saws and one smaller driving pulley U^3 receiving a belt from the main shaft.

Mode of using this machine.—A driving belt being put upon the driving pulley U^3 gives motion to the machine. The end of the stave is then put under the hook D^3 at the forward end of bed piece C^3 with hollow side down and edge against the guide G^5 and the rear end against the guide G^4 ; by forcing the handle of the lever F^3 over against the back of the stave, causes the stave to bend over the bed piece C^3 to its proper shape for having the bulge formed thereon as it passes between the saws. The operator then with his hand, moves the carriage B^3 forward; the stave coming in contact with the saws as it is passed through between them the bulge is formed on its sides. When the stave has passed through, the stop Q' removes the spring catches Q^3 from the levers N^4 N^4 and causes them to drop and the saws to recede from the edge of the stave. Then draw the carriage B^3 back to the starting point, causing the inclined plane or arm O to raise the levers N^4 N^4 to their former connections with the spring catches Q^3 , with the hand now turn back the lever F^3 and the stave (being completed) is relieved from its confined position and removed and the bed prepared for the insertion of another stave to be treated in a similar manner.

The guide or gage G^4 is designed to be raised to a perpendicular position for the purpose of placing the edge of the stave

against it at that end of the carriage, or bed piece. At the other end is the guide G^5 extending upward for the same purpose (to wit) to put the edge of the stave against at that or the forward end. Both being so constructed that when the stave to be jointed is put upon the bed it will be parallel with the bed piece and at right angles with the crozer—it being crozed before jointing.

The post P^7 or arm is for the purpose of forcing the gage from its perpendicular position to a horizontal one without the aid of the tender or operator; for the reason that it might at times be neglected by him and in that case the saw on that side would strike the gage.

The right angled plate G^3 sustains the gage G^4 , and to which the latter is attached by a pivot on which it turns. The plate G^3 , as well as the gage plate G^5 , is made with an oblong slit or opening to allow it to be moved toward or from the bed over the shank of a set screw which holds it in the required position.

What we claim as our invention and desire to secure by Letters Patent is—

1. The combination of the reel P with the hinged carriage N' for holding and turning the staves to be planed as described.

2. We also claim the combination of the apparatus for crozing, chamfering, and cutting the staves to their required lengths as herein described—to wit the lever u with its holding arms h , the holding beds H^2 the swinging arms C^2 cutters D^2 E^2 G^2 and discharging springs F^2 arranged and operated substantially as set forth.

3. We likewise claim the arrangement of the circular saws K on the inclined sliding shafts K^3 for jointing the staves to the required bevel, in combination with the inclined planes or arms O , for rendering the apparatus self acting as described.

JOHN MINER.
SILAS MERRICK.

Witnesses:

JAMES CARUTHERS,
JOSEPH T. PUGH.