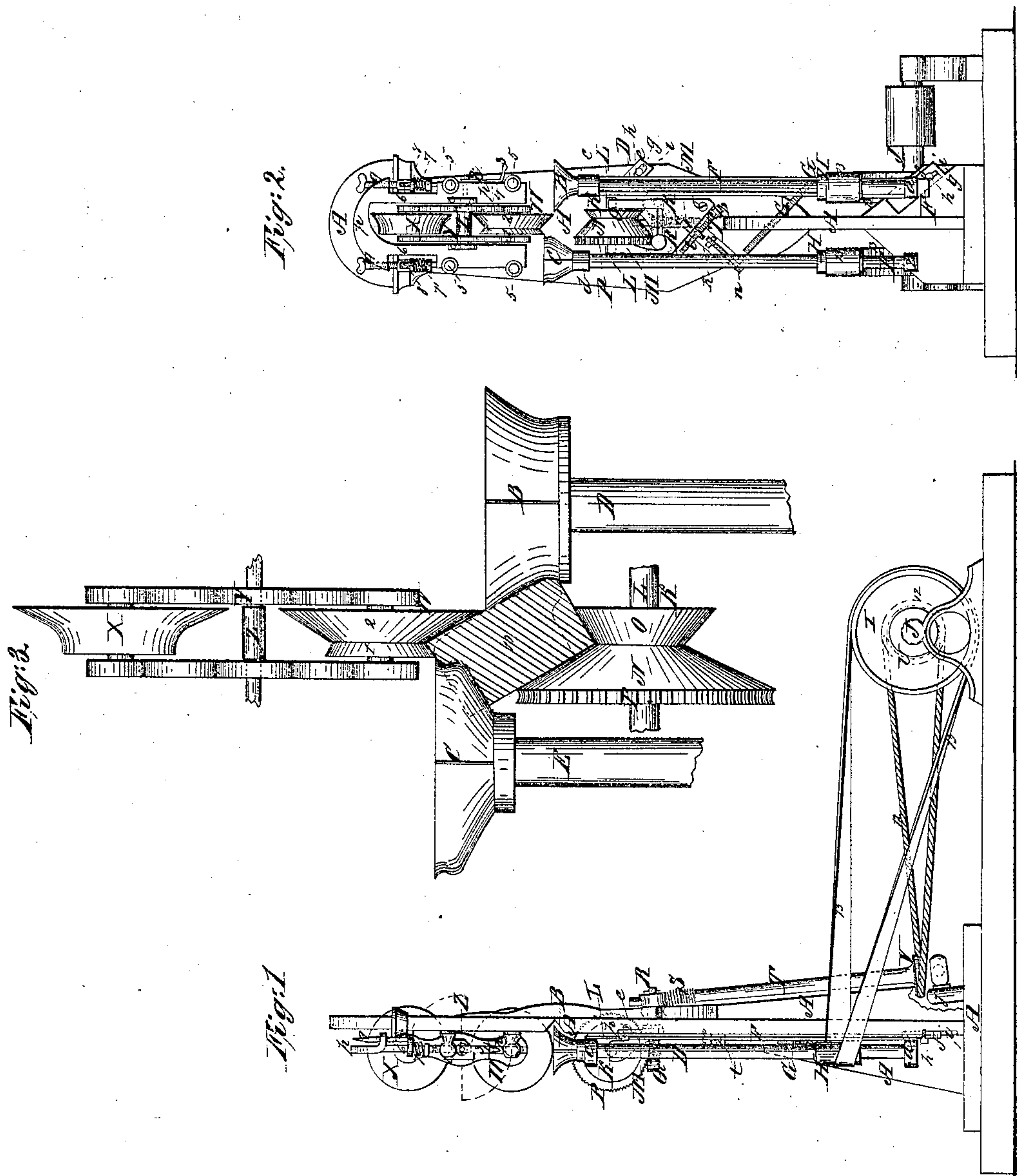


G. B. Pullinger,
Wood Molding Machine.
N^o 9,220. Patented Aug. 24, 1852.



UNITED STATES PATENT OFFICE.

GEO. B. PULLINGER, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR CUTTING HAND-RAILS.

Specification of Letters Patent No. 9,220, dated August 24, 1852.

To all whom it may concern:

Be it known that I, GEORGE B. PULLINGER, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Machine for Cutting Hand-Rails and other Irregular Forms; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a side elevation. Fig. 2, is a front elevation. Fig. 3, is a detached view, or front elevation of the cutters and feed rollers and also a strip of timber secured between the rollers, and partly formed into a rail.

Similar letters of reference in each of the several figures indicate corresponding parts. The nature of my invention consists in a novel arrangement of mechanism for cutting hand-rails and other irregular forms. The cutters are secured on the top of revolving spindles, one of which being secured firmly to the frame of the machine and the other being attached to an adjustable sliding bar which is attached to the frame of the machine by set screws; and the beveled shaped feed rollers being arranged in such relation to the cutters as to serve with them to hold the strip of timber, being operated upon, firmly in its place; the rollers also serving to feed it to the cutters as fast as they operate upon, and cut it to the desired shape. The two upper revolving feed rollers being secured, one above the other, within a revolving frame which has a small shaft passing through its center and between the two rollers: the journals of which shaft resting and turning loosely in bearings in an adjustable sliding frame attached to the top portion of the frame of the machine in the manner hereinafter described. Each of the upper rollers is made of a form to suit the shape of the irregular part of the rail or other body being cut; and either of them can be made to operate upon the piece of timber, or rather be made to feed it to the cutters, by simply revolving the frame, in which they rest and turn, on its axis, or moving the roller for holding the block when square, up to the position occupied by the roller which holds the block after it is reversed and half formed into a rail or other curved body, and thereby cause the

curved surfaced roller to occupy its proper position in relation to the cutters.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A, A, represent the main frame which may be of cast iron or other suitable material.

B, and C, Figs. 2, and 3, are the cutters and D, E, the revolving spindles to which they are secured and with which they revolve. These cutters are always made of a shape to correspond with the irregular surfaces of the rail or other article being molded. That lettered B, serving to shape the sides of a rail and that C, the top: The spindles of these cutters rest and turn in steps *a*, *b*, and the necks of the cutters rest upon collars or standards *c*, *d*, through which the spindles pass. One of these spindles D, is attached to an adjustable bar F, having inclined flanges or projections *e*, *f*, cast on or attached to it; said projecting pieces having oblong slots *g*, cut in them in which set screws *h*, work as the position of the cutter is changed, these set screws serve to keep the cutters firmly in their place after being once set: The projections *e*, *f*, slide in incline grooves *i*, *i*, cut in the frame of the machine, and thereby allow of the cutter B being moved nearer to or farther from the cutter C, as desired. G, is the set screw for moving the cutter B, in or out: This screw passes through an ear or projection of the adjustable bar F, and through a portion of the frame A, in the manner represented in Figs. 1, and 2. The cutter B and its spindle are made to revolve by a band 13, passing around the drum H, on the spindle, and over the pulley I, on the driving shaft J. The other cutter C, is secured permanently to the frame A, in the manner shown, and is made to revolve in a similar manner as the cutter B. The cutter C it will be seen, is placed somewhat higher than the cutter B; the object of this is to allow of the block being always held in an inclined position, and also to suit the bevel or inclination of the feed rollers. By holding the block or strip of timber in an inclined position it will be seen that the operation of cutting the rail can be carried on without any difficulty or inconvenience: The holding of the block in an inclined position I consider an important feature in my invention.

K, represents the lower feed roller upon

which the bottom of the rail rests—this roller is hung on a horizontal shaft L, the journals of which resting and turning in bearings in the sliding adjustable support M, shown in Fig. 2, and in dotted lines in Fig. 1. This roller has two inclined or beveled surfaces N, O, upon which the bottom and sides of the rail rest, in the manner shown in Fig. 3, the beveled surface N, serving for the bottom and that O, the side. This roller has a number of small teeth P, cut in the horizontal portion of its periphery, said teeth working in a worm or screw Q, attached to the support M, and having a worm wheel R, secured on its end; said worm wheel working in a worm S, cut on the end of the revolving shaft T, which rests in a step j, and is made to revolve by a band 12, passing from a small pulley U, on the driving shaft J, to the pulley V on the shaft T. When the shaft T revolves the feed roller K, is set in motion through the worm gearing just described. The support M, carrying the roller K, is made adjustable for the purpose of lowering or elevating the roller to any position desired.

k, is a slide connected to the support M, by means of a set screw l, for regulating the position of the feed roller K, and support. This slide is moved in and out in a groove cut in the frame A; by means of a set screw n. o, is a screw for keeping the support M, permanently in its place while the machine is operating.

W, X, are the two top or upper feed rollers. Y, the revolving frame in which they rest, Z, the shaft upon which the frame Y, turns or revolves when it is desired to change the rollers—and p, is a yielding and self adjusting frame, to which the frame Y, carrying the feed rollers is attached in the manner represented in the drawing.

The roller W, which feeds the block when square, has two inclined or beveled surfaces 1, 2, which serve as supports to the strip of timber while one side and half the top of the rail is being formed. And the roller X, or the surface upon which the rail rests is made of a curved shape to correspond with the curved part of the rail formed at the first operation of passing the strip of timber through the rollers and cutters. This roller is brought into operation after the position of the rail has been reversed, by simply pressing the finger under the spring 3, which will cause the pin 4, to be lifted out of its rest in the revolving frame Y, and then moving or revolving the said frame in the direction indicated by the red arc of a circle; and thereby causing the roller X, to assume the position occupied by the feed

roller W, and that W to assume the position occupied by X; as soon as this takes place the spring 3, and pin 4, occupy their original position again and lock the frame Y, firmly in its place.

The yielding and self adjusting frame p, slides in ways or grooves cut in small bars 5, 5, 5, 5, and also has small spiral springs 7, 7, secured around rods 6, 6, attached to the frame in the manner shown; these rods move freely in openings in the projecting pieces 8, 8, when the sliding frame p, is raised or lowered by the screws 9, 9.

10, represents the block partly formed into a rail.

The operation of this machine is as follows—The strip of timber 10, being placed between the feed rollers W, K, and motion communicated to the cutters B, C, and the worm shaft being also set in motion it will cause the feed roller K, which feeds the block to the cutters, to revolve. As soon as the block commences to move, the roller W, is caused to revolve and act in concert with the roller K, and feed the block constantly to the cutters which must be of the same shape as the irregular or curved and straight portions of the article being produced. It will be seen by referring to Fig. 3, that only one half of the top and one side of the rail is molded at the first operation of passing the strip of timber through the rollers, and that consequently it is necessary to reverse the position of the block, or cause that portion marked out in red dotted lines to assume the position shown in full red lines or to occupy the position which the molded portions occupied before the block was reversed. By thus reversing the block the square portions of the rail are brought in contact with the cutters. The roller X must now be substituted for the roller W, in the manner herein described; the curved portions of which resting on the curved portions of the rail, this being done the machine is again set in motion, and the cutters are made to operate upon the rail in the same manner as before.

What I claim as my invention and desire to secure by Letters Patent is—

Arranging the rollers W, X, one above the other within a revolving frame Y, so as to allow of the curved roller X, or its equivalent being substituted for the roller W, at the time desired and in the manner and for the purpose herein fully specified.

GEORGE B. PULLINGER.

Witnesses:

RICHD. S. CRISTIANI,
JOS. A. McMAKEN.