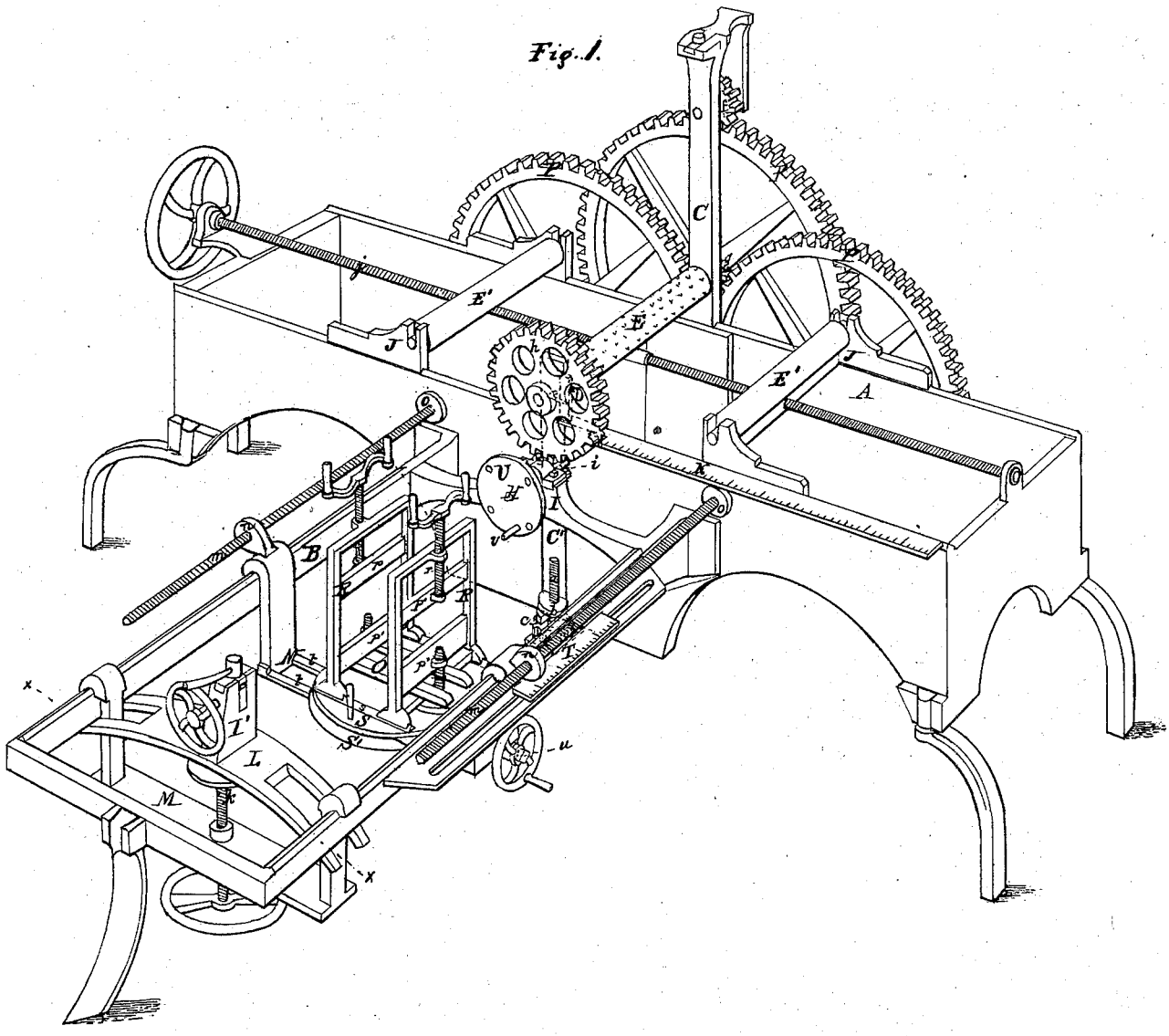
M. & T. R. WAY.

MACHINE FOR TURNING, BORING, &c.

No. 7,977. PATENTED MAR. 11, 1851.

Fig. 1.



UNITED STATES PATENT OFFICE.

MARTIN WAY AND THOS. R. WAY, OF PAINTERSVILLE, OHIO.

MACHINE FOR TURNING, BORING, &c.

Specification of Letters Patent No. 7,977, dated March 11, 1851.

To all whom it may concern:

Be it known that we, MARTIN WAY and THOMAS R. WAY, of Paintersville, in the county of Green and State of Ohio, have invented a new and useful Machine for Bending, Drilling, Boring, and Turning Wood and Metals; and we do hereby declare that the following is a full, clear, and exact description of our invention, reference being had to the accompanying drawing, which forms part of this specification and in which—

Figure 1 represents a view in perspective of our improved machine. Fig. 2 is a front elevation of the same, and Fig. 3 is a transverse section at the line *x x* of Fig. 1.

Our machine is constructed to bend metals to curves of any required radius, and to bore, drill, and turn both wood and metals.

It is particularly applicable to the business of carriage-making as it embodies in a single machine the means of effecting many of those mechanical operations which are required in constructing wheel carriages, and which have heretofore been effected in separate machines.

The various moving portions of our machine are mounted upon two strong frames or beds A, B, which cross each other at right angles in the form of a T and are firmly bolted together. The upper edges of the side pieces of each frame are Λ shaped to support and guide the various carriages which are required for different kinds of work. A standard C sliding vertically in dove-tailed grooves is fitted to the front of the machine at its middle, and a corresponding shorter sliding standard C′ is fitted to the opposite side piece of the bed A. These standards are each raised and depressed in an equal degree by means of a screw *a* which turns in a lug projected from the side piece of the bed, and whose threads engage in a female screw cut in a lug *b* projected from the standard above it. The head of each screw is fitted with a pinion *c*, the two being of equal size and both gearing into an intermediate wheel *d*, so that when one screw is turned to raise or depress one standard the other screw is turned with equal velocity to move the other standard equally in the same direction. The screw *a* at the front of the machine is fitted with a hand wheel *e* by means of which it may be turned with facility and a scale D is secured to the side piece of the machine to show the distance to which the standards are to be raised in bending metals of various thicknesses. The standards C, C′, support a roller E which crosses the bed A, its gudgeons being supported in boxes in the standards. The gudgeons at each end of the roller are prolonged beyond the standards. The prolonged extremity at the front of the machine is fitted with a cog-wheel F and with a pinion *g*. The cog-wheel gears into a pinion *f* whose shaft is supported by the standard C and is fitted with a crank G by means of which it can be turned. The hinder prolonged extremity of the roller journal is also fitted with a cog-wheel *h* which gears into a pinion *i* on a lathe mandril H which is supported by a stationary head stock I on the bed B. Two carriages J J are mounted upon the Λ shaped edges of the bed A. These each support a roller E′ and are moved in an equal degree to and from the center roller E by means of a right and left screw *j* which acts upon nuts fixed to each carriage. The head of this screw is fitted with a hand wheel by means of which it can be turned with facility to set the rollers E′ at any desired distance from the middle roller E. A scale K′ is attached to one of the side pieces of the bed by means of which the curvature of any piece of metal which is bent by passing it under the center roller and over the two lateral ones, is shown by the position of the carriage with respect to the divisions of the scale.

A movable head-stock I′ is mounted upon a saddle L which is secured by means of a clamp screw *k* to a carriage M which is constructed to slide to and fro upon the Λ edges of the side pieces of the bed B. An intermediate sliding carriage N is also constructed to slide upon this bed and is moved to and fro by means of a pair of feed screws *m*, *m*, which act upon a pair of nuts *n*, *n*, secured to the opposite sides of the carriage. These screws are prevented from moving endwise by collars *o*, and their heads are fitted with a pair of equal cog-wheels P P whose teeth engage with those of the pinion *g* on the roller E. This sliding carriage supports a pair of tool holders R R which are also used to clamp any piece of wood or metal which is to be drilled or bored. The tool holders each consist of an upright frame with two sliding blocks *p p′* which are moved up and down at will by screws *r r′*. They are made fast by a cross bar O and clamp

screw q to a disk S which turns upon a lower disk S′; the latter is constructed to slide transversely upon Λ shaped guides t t; the tool holders are also constructed to slide toward or from each other on guides s secured to the upper disk S; and the arrangement of the various moving parts thus described is such that the clamp-screw q not only secures the tool holders R R to the disk S on which they stand, but also secures this disk to the lower one and makes fast the latter to the carriage. The lower disk with the various devices mounted upon it is moved to and fro on the carriage by means of a screw u to whose head a hand wheel is fitted. An adjustable scale T is fitted to one of the side pieces of the bed, by means of which the distance to which the carriage N is moved, is shown.

When the machine is used for turning, a face plate U or a chuck is fitted to the shaft H of the stationary head stock; when used for boring a boring bar is inserted between the stationary and movable head-stocks; when the drilling is to be done the drills are fitted to a socket in the end of the mandril.

When iron, such as wheel tire for example is to be bent with this machine, the carriages J J are moved by the screw j to such a distance from the center roller as is shown by the scale K to be the proper one for giving the required cuvature to the tire, the center roller is then raised by raising the standards by means of their screws a a until the bar can be passed over the side rollers and beneath the center roller E, which is then depressed upon the bar by the action of the screws a and is turned by applying the hand to the crank G. The turning of the roller, whose barrel is roughened, carries the iron to and fro between the under side of the upper roller and the upper sides of the lateral roller. As the bar is bent, the central roller is gradually depressed until it arrives at the lowest position required to give the bar the proper curve; this lowest position varies with the thickness of the bar and is shown for each thickness of iron by the scale D.

When iron is to be drilled, it is supported by the tool-holders R R, and is acted upon by a drill fitted to the end of the mandrel H; or it may be secured in a chuck on the mandril and be bored by a stationary drill secured to the tool holder and advanced against the article.

If a hub is to be bored to receive the boxes, it is clamped between the tool holders and is fed by the action of the feed screws m against a boring bit secured to a boring bar inserted through the hub between the movable and stationary head-stocks; the boring bar is driven by a pin v in the face plate V, and the distance to which the bit enters the wood is shown at any moment by the scale T.

When the machine is used for turning, the tools are secured in the tool holders R R, which may be placed in any required position to suit the work.

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

The tool and block holder herein described consisting of two upright frames capable of movement toward each other and of being clamped at a greater or less distance apart as may be required to adapt them to holding blocks of different sizes and tools of different lengths or forms, each frame being provided with upright parallel guides carrying adjustable jaws for holding boring or turning tools at different heights and angles and to aid in holding blocks of irregular forms; these frames being mounted upon a carriage capable of being turned or moved right or left so as to hold the tool or present the substance to be bored in the required position, substantially as herein set forth.

In testimony whereof we have hereunto subscribed our names.

MARTIN WAY.
THOMAS R. WAY.

Witnesses:
HARVEY F. CONKLIN,
WASHINGTON S. HARTSOOK.