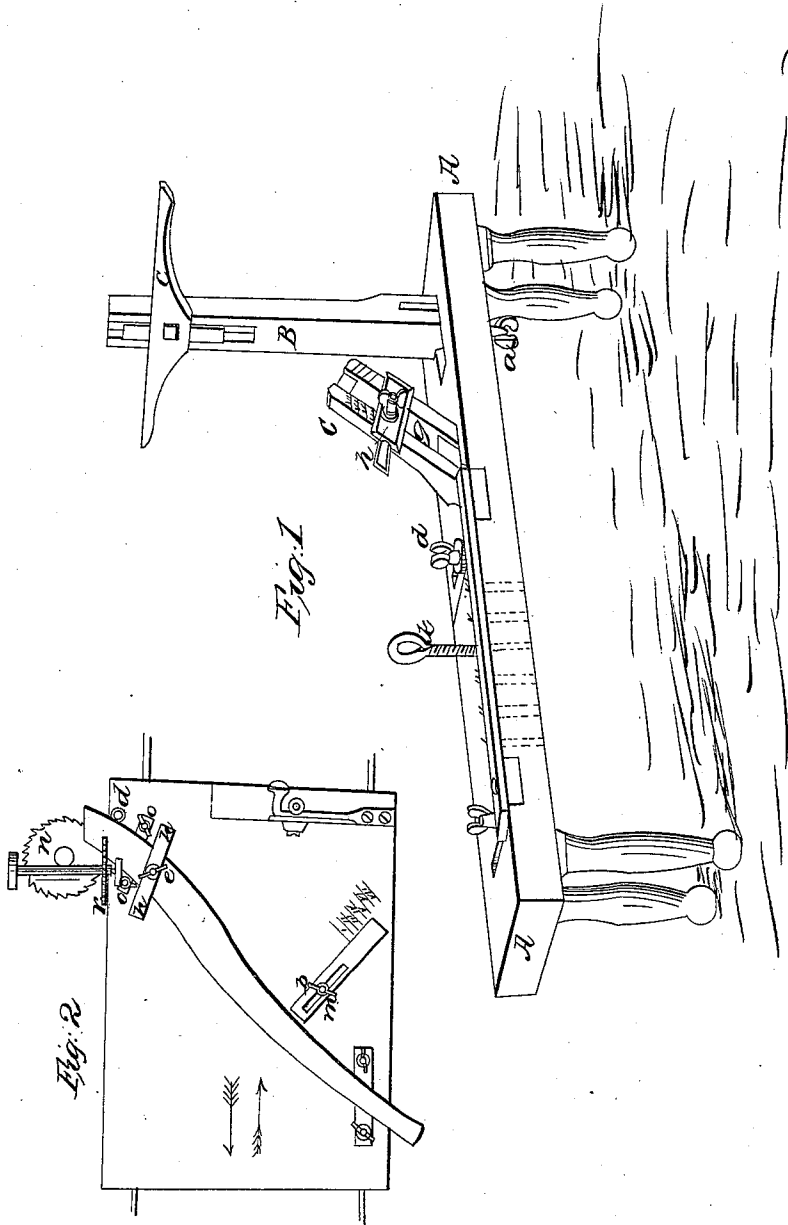


E. G. Matthews, *Sheet 1-2 Sheets.*

Wood Molding Machine,

No. 1,993,

Patented Feb. 23, 1841.



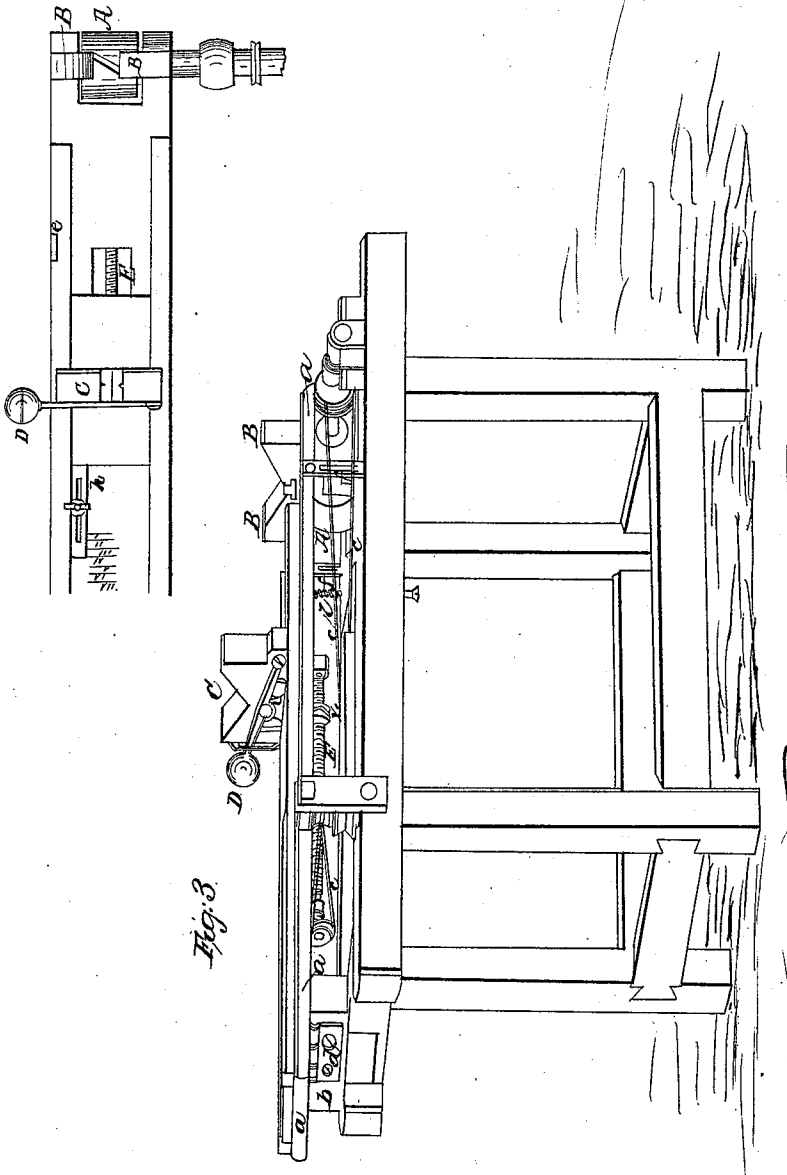
Sheet 2 of 2 Sheets.

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UNITED STATES PATENT OFFICE.

ELBRIDGE G. MATTHEWS, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO DRAPER RUGGLES, JOEL NOURSE, AND J. C. MASON, OF WORCESTER, MASSACHUSETTS.

MANUFACTURE OF PLOWS.

Specification of Letters Patent No. 1,993, dated February 23, 1841.

To all whom it may concern:

Be it known that I, ELBRIDGE G. MATTHEWS, of Worcester, in the county of Worcester and State of Massachusetts, have
5 invented a new improvement in the manufacture of plows, by which uniformity is given to the pitch of plows of varying sizes and an accurate and proper tendency to the land, true and perfect adjustment of beams, irons,
10 and handles to each other of different sizes readily effected, and a great saving of labor acquired, as well as durability and good workmanship.

The nature of my invention consists in
15 giving, by appropriate machinery, a uniform tenon and shoulder to the bearer of each sized plow without the use of square, compass or bevel; a method of cornering the beams in a manner befitting each size, and
20 also a method of setting out the mortise in the handle and bringing all the parts together with an accurate fit, in conformity with such preparatory operations; altogether tending to the results above mentioned. I describe the machinery and process as follows:

Figure 1, A A, represents a workbench or form standing on legs at about two feet in height.

30 B is an upright with a tenon at the lower end, entering a long mortise or slot lengthwise in the bench in which it may be moved. It is held fast to its place, by a screw-bolt inserted in the lower end with a thumb screw, *a*. Near the upper end is a slide *l*
35 moving in a groove to which is confined the crosspiece *c*. The slide and cross piece are held in place by a bolt, washer and thumb screw. These are movable to give the
40 handles more or less slope and height.

On the bench, at the front edge is a land side-gage *e, e*, about three feet in height fastened at each end to the slides *f f*, let into the top of the bench transversely, even with
45 its upper surface. The gage is connected with the slides by central wood screws which serve as pivots on which the gage turns when the slides are moved one more than the other. They are made fast by
50 bolts and thumb-screws *d d*, passing up through the bench and slots in the slides.

C is the heel block fixed in the bench at about the inclination of the left hand plow handle. The front side is in a range with
55 the inner edge of the landside gage, and is

grooved to receive the slide *g* to which is fixed transversely the tenon and mortise gage *h*. This slide is also held in place by a thumb screwbolt passing through the block and moving up and down when loosed,
60 in a slot. Near the inner edge of the landside gage about an inch distant from it, are several holes through the bench indicated by the dotted lines on the front edge of the bench, and are marked I, II, III, IV, V, VI,
65 corresponding with the number of different sized plows. *k* is a bolt or wooden pin which may be inserted into either hole at pleasure.

This invention is applied to use in the following manner. The share, mold board and
70 land side of a plow, being confined together, are placed on the bench with the point at the pin *k*, inserted in the hole corresponding with the number or size of the plow; and the heel next to the heel block C. The land-
75 side is brought up in contact with the landside gage, that being so placed by means of the slides *f f* as to give the plow a greater or less inclination to land at pleasure. The near handle is then hung by its upper and
80 crooked part over the cross piece *c*, its lower end brought to the heel of the landside and fitted to it and bored for the bolts, the upright B having been placed at suitable distance to give the handles the desired slope,
85 and the cross piece *c* adjusted to the proper height. The handle is also brought against the inside of the mortise gage *h* and marked for the mortise, the upper edge of the gage being first placed at the line of the members
90 corresponding with the size of the plow, being marked I, II, III, IV, V, VI, on the margin of the block. These numbers correspond with those on the bench, as well as with those on the platform Fig. 2, and those
95 on the carriage Fig. 3. When the handle is thus brought to the landside and the mortise gage, its side is fitted to both and the front edge at the mortise is then squared
100 to the side that it may fit the shoulder of the tenon on the beam. There are mortise gages which replace one another suited to the plows of different size or number, as the width of the tenon varies in each corresponding with the thickness of the beam.
105 The off handle is then hung over the cross-piece (which serves to keep both handles at a proper and equal height and suitable position) and is fitted to the mold board and marked for boring to receive the screwbolts
110

which fasten it to the moldboard. I make all the beams of the same sized plow of a uniform shape and curve, in respect to the upper and under surface, by means of my hewing machine which it is not necessary to describe here.

A preparatory step necessary to the proper fitting of the beam and handle together by means of the above described contrivance, is to saw the tenons to a uniform cant, in bevel and shoulder according to the number of the plow. This I effect by means of the carriage represented in Fig. 2. It is made to move in the direction of the arrows, on ways attached to a bench of convenient height, by means of a stationary feeding screw underneath the carriage, which is embraced by an opening and closing female screw clutch attached to the carriage, and worked in any of the common methods, being opened to slide the carriage back.

The beam B is placed on its side upon the carriage, the end to be tenoned projecting at C and brought up against a rest at *d*, where it is held fast by the thumb screw *e* passing through the staple *h h*. The obliquity of the shoulder is regulated by the gage *m*, which is set to any number of plows by the marks I, II, III, IV, V, VI, on the carriage, corresponding to the numbers on the working bench before described. This gage is held in place by a thumb screw *b* with a broad head or shoulder, which being loosened permits the gage to move by means of a slot therein. Near the end to be tenoned is a bed-piece *o o* on which that end of the beam rests and which, by means of thumb screws is raised or depressed at one end or the other to give the beam the right cant to bring the face of the tenons parallel with the side of the handle. This is further effected by a similar head piece under the other end of the beam which is raised or depressed by thumb screws on each side of the beam, as shown in the drawing at *i i*. Thus secured and adjusted in conformity with the size of the plow, the projecting end, by the motion of the carriage is passed along and against circular saws *n*, revolving on a vertical shaft, which saw the tenon, and another circular saw *r* which cuts the shoulder on one side, revolving on a horizontal shaft. I have three saws on the vertical shaft to saw two tenons at once on each beam leaving a balk between to be taken out with a chisel. One tenon passes through the center of the handle, the other is continuous with the outside of the beam and lies against the outside of the handle. This gives greater strength at a weak point.

A further preparation of the plow beam, is beveling the corners in a manner conforming to the common design of the opera-

tions before described, and the fitting and finishing of the same. Fig. 3, represents a frame supporting the necessary mechanism for cornering the beam. *a a a* is a platform one end resting on the block *b* to which it is attached only by the hinge *d*. The other end rests on supports *f, f*, one on each side. The lower ends of these supports are confined to the timbers of the bench by tightening screws with broad shoulders, which by means of slots in the supports admit of raising or depressing that end of the platform to cut the bevel more or less deep. This end is further supported by the screw *i*. A is a revolving cylinder in the periphery of which is fixed two cutters or planing irons, set obliquely to the plain of its axis. B, B, are blocks fixed to the platform, and are placed over the cutting cylinder. They are beveled toward each other and of sufficient distance apart to expose the corner of the beam to the cutters, and guide it in its motion. C is a block notched on the upper side to receive the other end of the beam, and has small points or pins projecting sufficiently to prevent the beam from slipping. This block is attached to a carriage which is moved along the platform on suitable ways by a stationary feeding screw E which is seized by a female screw clutch *x* that is attached to the carriage, and which is made to open and close by means of the lever D, whose fulcrum is at *o*, by a common contrivance, by which the motion of the beam is stopped at the desired point, and the carriage run back by hand. The block C has also a sliding transverse motion on the carriage by which motion, to be given by the operator, the beam, however crooked, is presented in every part to the cutting cylinder at right angles to its axis. The shaft of the cylinder rests in gudgeon boxes fixed to the frame, and carries a cord or band *c, c, c*, which drives the feeding screw. The forward motion of the carriage is stopped at the required point by means of the trip *e* which trips a button that sustains the lever D, which falls by its own weight, opening the clutch. The extent of the back motion of the carriage is governed by a check gage *h*, movable by means of a slot in it and a hold fast screw with a shoulder. This is set to the number or size of the plow as marked I, II, III, IV, V, VI, in conformity with the gages before described.

Now what claim as my invention, and for which I ask Letters Patent, is—

1. The arrangement of the landside gage and slides, mortise gage, heelblock and movable upright and crosspiece shown in Fig. I, in their adaptation to the purposes before mentioned, as particularly set forth in the foregoing description and explanation.

2. The arrangement of the bed pieces, tenon gage and the platform with the saws

shown in Fig. 2, in their adaptation to the purpose of presenting the end of the plow beam to the saws in such a manner as to give to the tenons and shoulder a proper twist, inclination and obliquity, to suit plows of different sizes and number in conformity with the mortise gage, as above described.

3. The arrangement of the platform
10 a, a, a, Fig. 3, and of the carriage and

blocks B, B, and C, in their adaptation to the purpose of presenting the plow beam to the cutters for beveling the edges in a manner suitable to the size and number of the plow as set forth in the foregoing description and explanation. 15

ELBRIDGE G. MATTHEWS.

Witnesses:

I. RUGGLES,
E. C. DYER.