

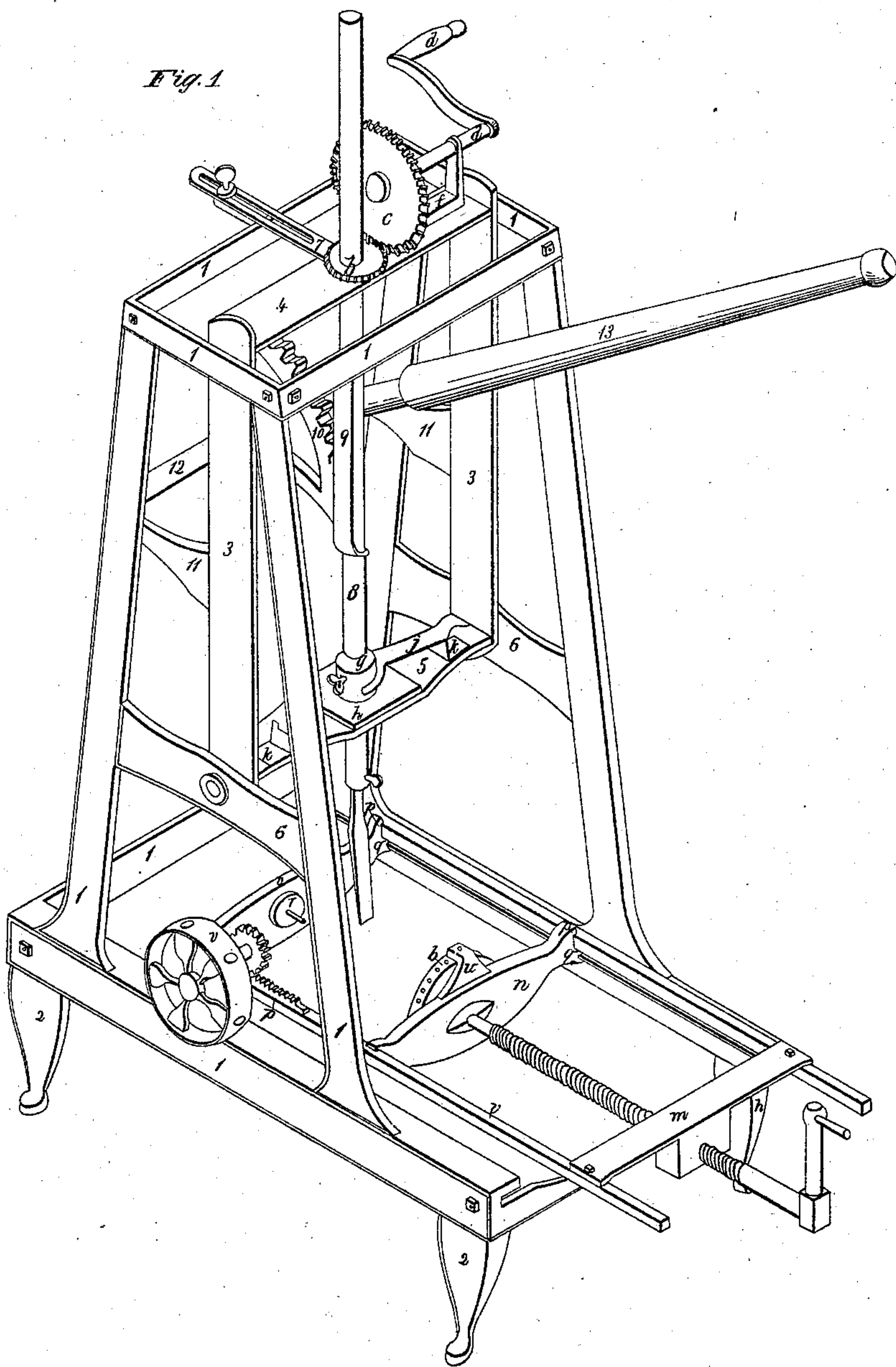
Sheet 1 of 2 Sheets.

*Hoys & French,  
Mortising Machine,*

*No. 3,891,*

*Patented Jan. 23, 1845.*

*Fig. 1*

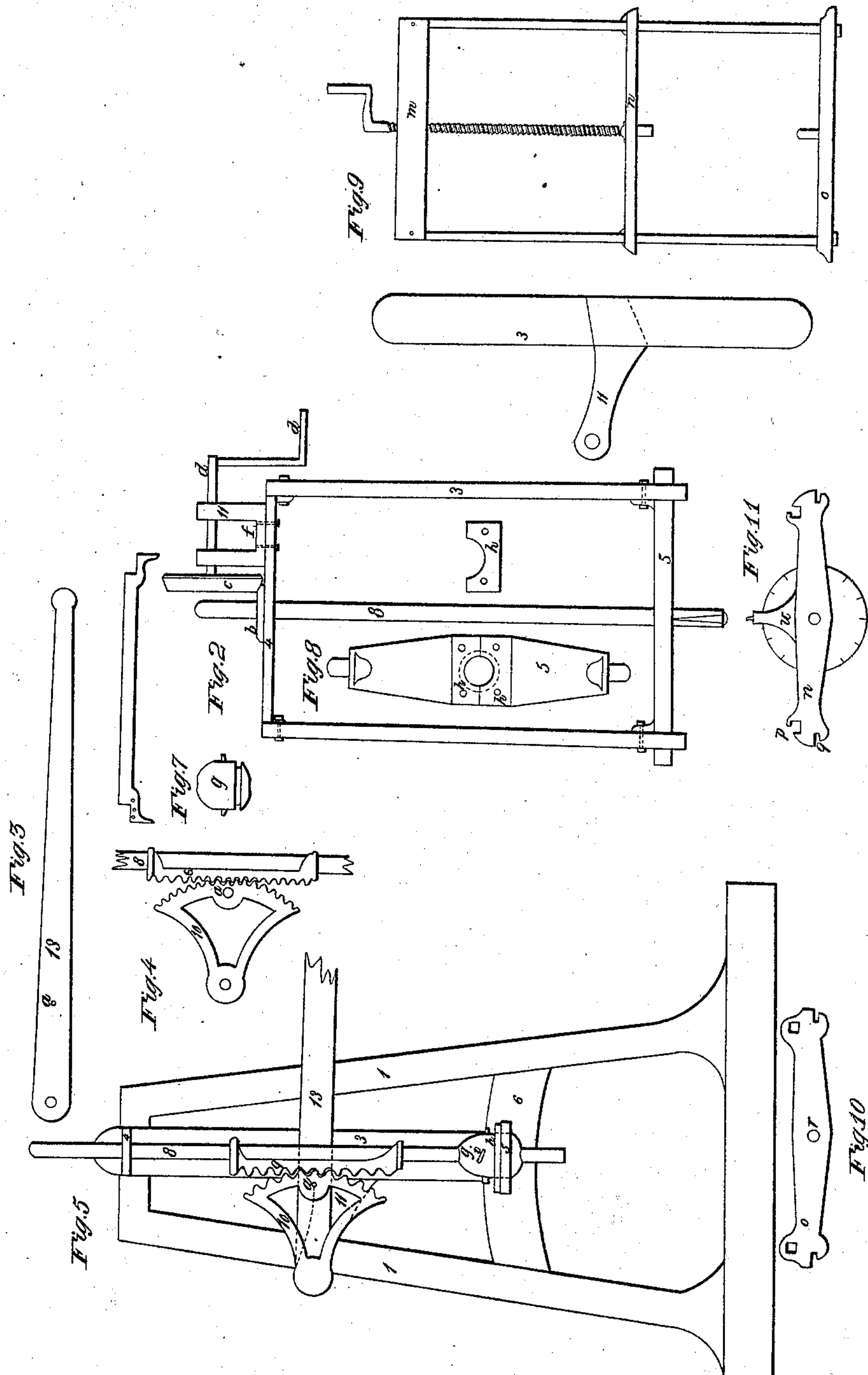


*Roy & French,  
Mortising Machine,*

*Sheet 2 of 3 Sheets.*

*No. 3,891,*

*Patented Jan. 23, 1845.*





# UNITED STATES PATENT OFFICE.

REUBEN D. ROYS AND NEWELL FRENCH, OF DETROIT, MICHIGAN.

## MACHINE FOR BORING AND MORTISING.

Specification of Letters Patent No. 3,891, dated January 23, 1845.

*To all whom it may concern:*

Be it known that we, REUBEN D. ROYS and NEWELL FRENCH, of Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Machine for Boring, Mortising, and Drilling; and we hereby declare the following to be a full and exact description thereof.

Our improvement consists in the so arranging of the parts of the machine as to give the mandrel a rotary and vertical motion either separately or combined and a vertical or inclined position; and in the so arranging of the carriages as to receive hubs varying in size, or, any other form of stuff which it may be desirable to work. We construct the machine chiefly of wrought and cast iron.

In the drawing here referred to, Figure 1, is a perspective view of the machine in working form. The other figures represent the different parts of it in detail.

1, 1, represent the frame of the machine standing upon legs 2, 2. Within the frame there is a vibrating gate centrally in which is the mandrel. The gate consists of two side pieces 3, 3, and a top and bottom 4 and 5 (see also Fig. 2.) 5 is the axis of the gate, having a journal on each end, which run in braces 6, 6, of the frame. Plate 4 is made with an arm 7 extending backward and so formed as to be clamped to the frame, by which means the top of the gate may be set so as to give to the mandrel a vertical or inclined position.

8 is the mandrel on the center of which there is a rack, 9, into which meshes the cogs of the quarter circle 10.

From the side pieces 3, 3, of the gate extend back arms 11, 11, in the ends of which runs the axle 12 of the quarter circle 10. The lever 13 receives the axle through the end as a fulcrum and is connected to the circumference of the quarter circle by a bolt *a* Figs. 3, 4 and 5, of which 3 represents the mortising lever, 4 the quarter circle and rack and 5 the three parts as combined in the machine. By means of the lever thus connected with the mandrel, the latter is worked up and down for the purpose of mortising. The manner of hanging and holding the gate fits the machine for cutting a perpendicular mortise or one beveling at one or both ends.

*b*, is a bevel gear wheel, fastened to the mandrel by a feather and slot. It meshes

into *c* a larger cog wheel which is turned by the shaft and winch *d d*. The shaft runs in two posts which are fastened to plate 4 by a connecting plate *f* shown in Fig. 2 which is a front view of the gate. By this arrangement of parts the mandrel is revolved for the purposes of boring and drilling; and, the parts being wholly attached to the top plate of the gate, as that is moved forward or back, they are carried with it, which fits the machine for boring and drilling inclined as well as perpendicularly.

*g* is a box of brass or iron fastened in plate 5 for the mandrel to run in. It is seen in place in Fig. 5 and by itself in Fig. 7. A groove is cut in it entirely around the lower half, into which is fitted a plate *h*, consisting of two parts, Figs. 1 and 8, which is bolted to plate 5 and which holds the box in place. In the side of the box a slot is cut for receiving a key. The key stands a little within the bore of the box, and, the surface of the mandrel where it plays against the key is flattened, by which means the mandrel is held from turning in mortising. In boring and drilling the key is removed which allows the mandrel to revolve. In mortising the mandrel has a single action or moves perpendicularly; in boring and drilling its action is two-fold or perpendicular and rotary. The box is turned with a collar just above plate *h* to which is attached latch *j* Fig. 1. Upon plate 5 is fastened a circular cast plate, at the outer edge of which on the upper side, there is a flanch in which are cut the notches *k k* for receiving and holding latch *j*. The latch being fastened to the bore which is connected firmly by its key to the mandrel, carrying the latch from one notch to the other, revolves the mandrel half around and changes faces of the chisel. The plate is extended to an entire circle, in order that notches may be cut in any part of it, by which means any mechanic can give such positions to his chisel as shall cut any form of mortise which his work shall require.

*l, l*, are the side pieces of a sliding carriage for holding hubs to be mortised, Figs. 1 and 9. The pieces are connected together by the cross bar *m*, and by the two blocks *n* and *o*. The blocks are to hold the hub in the process of boring and mortising. They are made at the end with a notch *p*, Figs. 10 and 11, which guides them on the side pieces, and, also with a shoulder which rests on the frame of the machine, and a notch *q* below



the shoulder, which receives a flanch on the frame. Block *o* is firmly attached to the end of the side pieces and is made with an arbor *r* at the center for receiving and holding the end of the hub. Block *n* slides on the side pieces and is moved by screw *s* which passes through bar *m* and fastens to the center of the block. It also has an arbor at the center for holding the hub.

10 *t* is an index plate which is to be nailed to the end of the hub. It is made with a flanch on the circumference in which are small holes, equal in number with the mortises to be made in the hub. It passes on the arbor 15 of the block and is held in position for the mortises by a pin in the standard *u* and the holes in the flanch. To put in a hub, take the index plate from the head block and fasten it to the end of the hub, then put the 20 other end of the hub on the arbor of the other block and run up the head block by the screw till the index plate is in place and insert the pin.

The length of the mortise is obtained by 25 moving the carriage, which is done by means of the pinion *v* cog wheel *w* and rack *x* on the side piece—holes being bored into the pinion radially from the circumference for receiving the lever. In mortising a hub a 30 single hole is first bored perpendicularly in

the center of each mortise, the workman revolving the mandrel with one hand and gagging the feed by means of the mortising lever with the other; the chisel then takes the place of the auger and half each mortise is 35 cut; the faces of the chisel are then reversed by turning the mandrel half around and the mortises finished. The workman uses the mortising lever with one hand and the lever of pinion *v* with the other. The carriage is 40 taken out and put into the machine from the front by removing the index plate; and in like manner, also, is the carriage which is suited to the various other kinds of mortising. 45

Having thus fully described our machine, what we claim therein as new and desire to secure by Letters Patent are as follows, to wit:

We claim the combination in the mandrel 50 of a rotary motion for the purposes of boring and drilling with a vertical motion, for the purpose of mortising, the mandrel taking both motions in the former operations and the vertical only in the latter.

REUBEN D. ROYS.  
NEWELL FRENCH.

Witnesses:

J. R. GROUT,  
JOHN JONES.