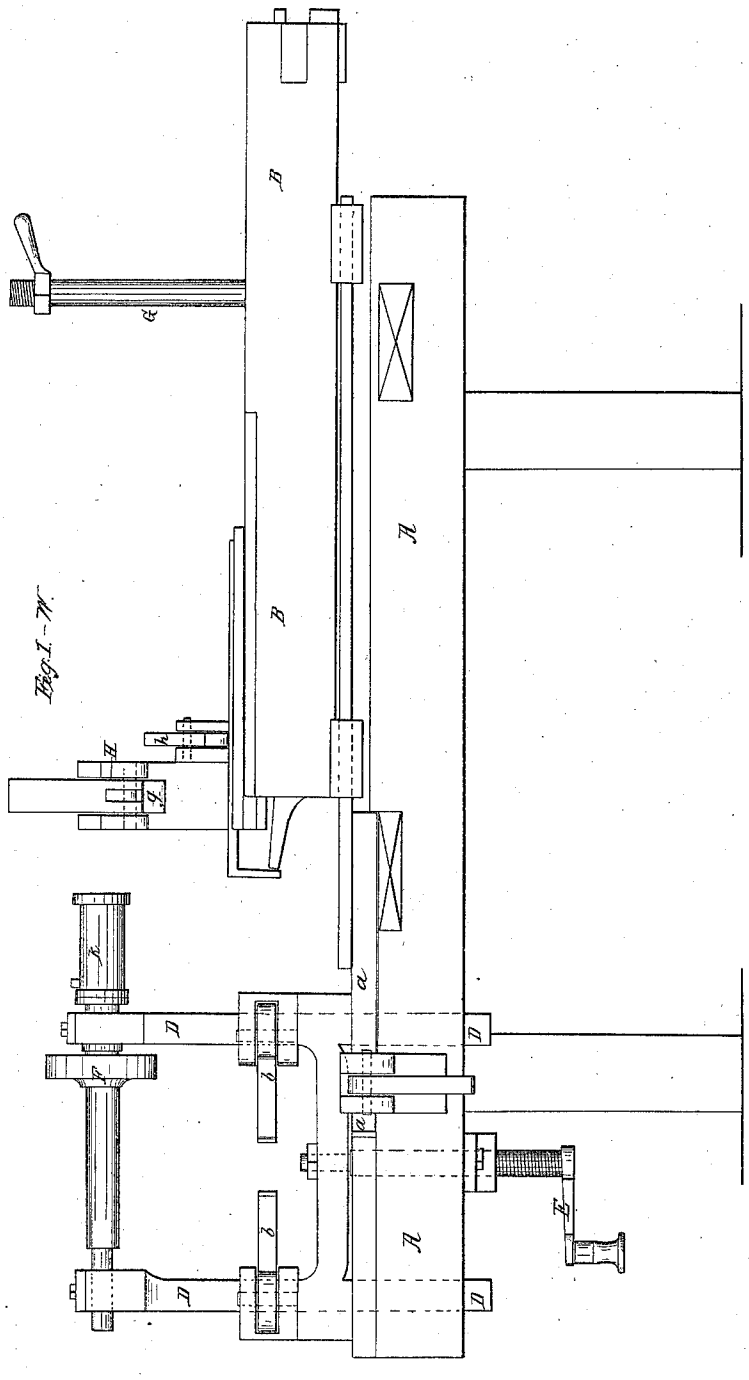
3 Sheets-Sheet 1.

W. Hinds,

Tenoning and Boring Machine.

No. 21,002. Patented July 27, 1858.



3 Sheets - Sheet 2.

W. Hinds,

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Fig. 3.

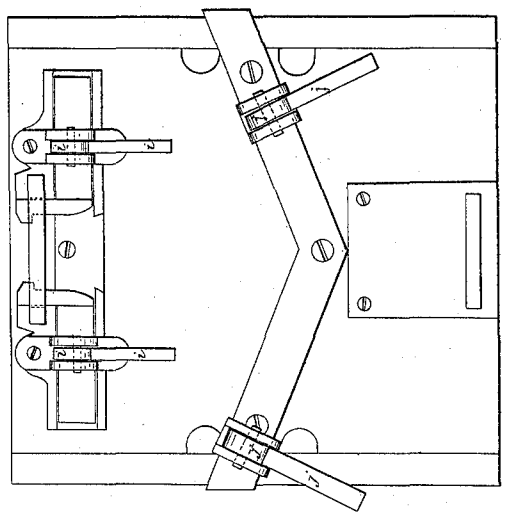
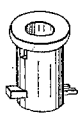
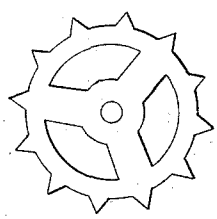


Fig. 5.

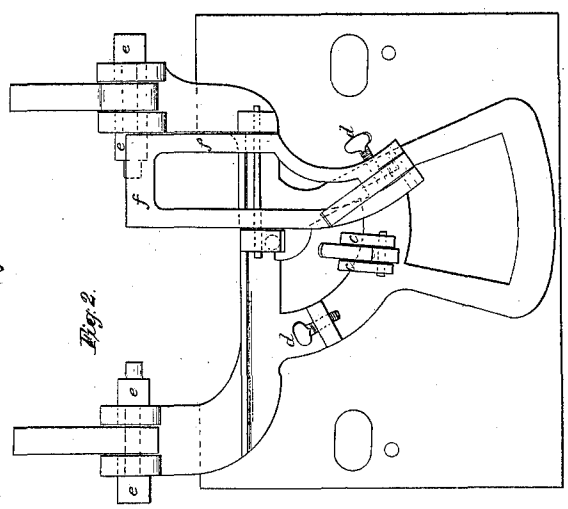


Index Wheel



Plate

Fig. 2.



3 Sheets-Sheet 3.

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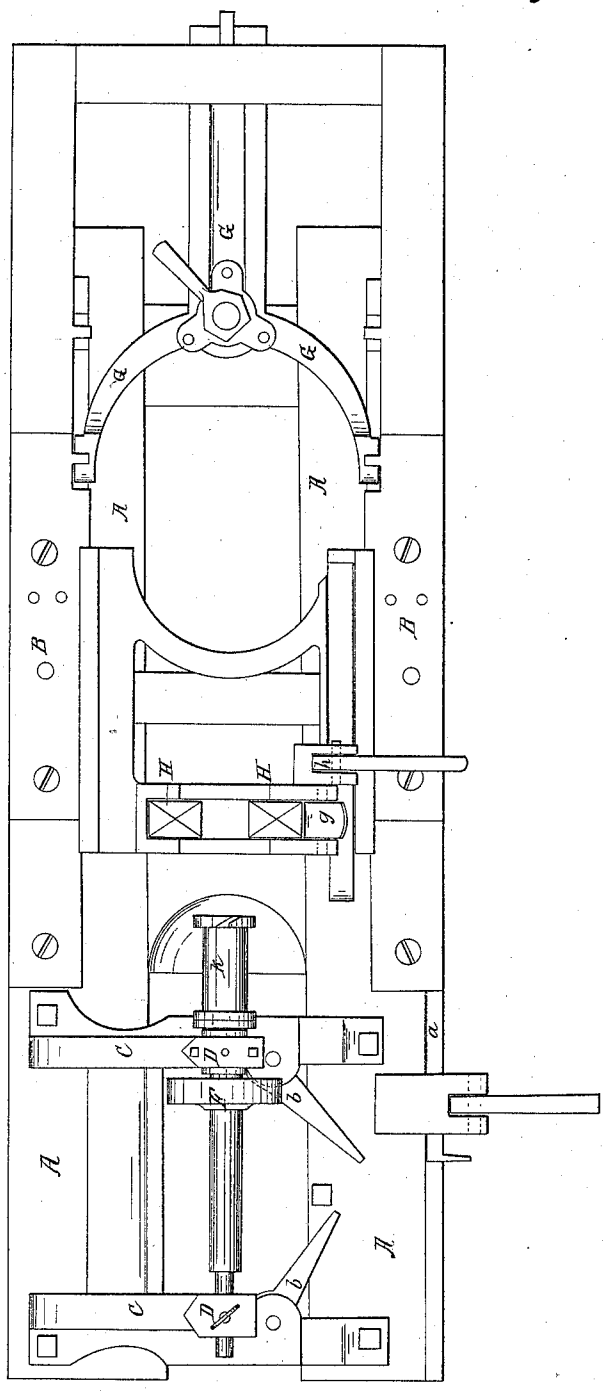

UNITED STATES PATENT OFFICE.

WM. HINDS, OF OTSEGO, NEW YORK.

WHEELWRIGHT'S MACHINE.

Specification of Letters Patent No. 21,002, dated July 27, 1858.

To all whom it may concern:

Be it known that I, WM. HINDS, of the town and county of Otsego and State of New York, have invented a new and useful Machine for Making Carriage-Wheels for Boring and other Uses, which for the sake of brevity I will name the "Boring-Machine," and I hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Figure 1 is a top plan of the main body of the machine. Fig. 1 marked W is a side elevation of the same. Fig. 2 is the hub carriage. Fig. 3 is the felly carriage, and Fig. 5 is a cap or chuck.

The same letters indicate the same things in all the figures.

The part or parts marked A is the bench or wood frame work on which the machinery is erected.

B is a sliding carriage made mostly of wood which slides on iron ways attached to the sides of the bench and is used for moving the timbers to be bored to the augers and bits. At *a* on the bench is a slide in a groove with a catch or hook at one end to be used for stopping the carriage B at any desired point and is set and fastened by an eccentric at the same place.

C, C, are head blocks of iron which are bolted to the bench and are constructed with perpendicular ways in them in which a mandrel carriage marked D is moved up and down by a crank and screw marked E for the purpose of adjusting the augers and bits to the different kinds of boring. The mandrel carriage can be stopped and held firmly at any desired point by means of the eccentrics at *b*, *b*, in the head blocks.

F is the mandrel and pulley, attached to the mandrel carriage instead of being attached to the head blocks and is to be operated by a belt, but may be operated by a crank by extending the mandrel through boxes in the back arm of the mandrel carriage.

Fig. 2 is the hub carriage used for holding and adjusting the hubs to the right positions for boring the holes for the spoke mortises. The bottom part of it is made of wood and is fastened upon the sliding carriage at the ends by wooden hand screws. It is likewise steadied in its place by pivots or pins which go into holes in the sliding carriage. There are two sets of these holes for the purpose of adjusting the carriage to set the alternate mortises in the hubs in, and out, when desired. The iron part vibrates or turns upon a pin in the central part of the hub carriage located in the right point to produce the right taper to the mortises and is set and fastened by an eccentric operated in an iron stud at *c*.

d, *d'*, are thumb screws which operate against the iron stud just mentioned for the purpose of stopping and controlling the carriage in its vibratory motion in the right places to bore the holes for the mortises.

At *e*, *e*, are gudgeons which slide to, and from each other, in grooves made in the direction of the axis on which the hubs turn and are set and fastened by eccentrics to adjust the carriage to hubs of different lengths. On these gudgeons the hubs are suspended for boring by means of index wheels and a plate of iron (see drawings) that are spiked to the ends of the hubs to keep them in a firm and central position while being revolved for boring. The index wheels should have as many cogs or spurs to them as there are mortises required in the hubs. On to these spurs the latch marked *f*, is shut and fastened by an eccentric in the rear end of the latch, operated upon a stud through which one of the thumb screws pass.

G Fig. 1 is the wheel carriage made of iron. The bottom part is crotched or has three prongs to it. The ends of the forward prongs are fitted to lock into notches in plates of iron that are fastened to the sides of the sliding carriage and are held fast in the notches by eccentrics that turn on iron pins driven into the sides of the sliding carriage immediately over the notches. The other prong passes through a mortise in the back end of the sliding carriage and is similarly fastened. In the center of this crotched iron where the prongs meet or part is an iron axle infixed in a perpendicular position or it should incline forward some, to make the tenons of the spokes gather a little to the inside of the wheel. The wheel, or the hub and spokes thereof, is rotated upon this axle in a horizontal position to bore the tenons on the out ends of the spokes to go into the fellies and the hubs are made to revolve immutably upon the axis of the same by means of iron plates spiked to the ends

of the hubs, and made to fit closely to the iron axle which passes through them. On top of the axle is a screw for the purpose of controlling the up and down motion of the hub upon the axle.

H (Fig. 1) is the spoke holder. It is similar to a vise or clamp and is embodied in a carrier that slides on iron ways attached to the sides of the sliding carriage. On either side, in the places where the arms of the vise should be are boxes or grooves into which studs or pieces of wood are inserted to form the jaws. On one side the stud is fastened by wood screws and on the other side the stud has a bolt through it at the bottom on which it turns and is forced against the spokes by an eccentric at *g*, to produce the compression. On one side of the carriage part of the spoke holder and parallel to the sliding carriage is a slide with a hook or catch at one end which slides in a groove and may be set and fastened at any point by the eccentric at *h*, so as readily to stop the spoke holder with the arms immediately within the point where the shoulders of the spoke tenons are to be made.

Fig. 3 is the felly carriage. Its wood part is similar to that of the hub carriage and is fastened to the sliding carriage in the same way and place. Midway from the ends on one side is a plate of iron attached which has a groove in it in which two stop catches slide and are fastened by eccentrics at *i*, *i*, the use of which is to adjust the ends of the fellies for boring the dowel holes. On the front side of this plate is a staple under which a lever is operated to hold the fellies from moving while boring them. In the rear of this and parallel therewith is a curved or flexed bar of iron on which two gage-blocks of iron slide and are set and fastened at any desired point by the eccentrics at *j*, *j*, operated in the blocks. On the opposite side of this carriage which is constructed to be used either side next to the augers is a staple against the prongs of which the fellies are held with a lever to bore the holes in them for the spoke tenons.

K (Fig. 1) is a hollow auger for boring the tenons on the out end of the spokes to go into the fellies. The main body of the hollow auger is cast iron and has a flange or rim on one end of it to go over the end of the mandrel and fit against a similar flange on the mandrel. It is fastened firmly to the mandrel by a wedging key that goes through both immediately back of the rim on said auger and is held permanently in line with the axis of the mandrel by the flanges or rims which are held in perfect contact on the face sides by the key. The other end of the auger is very similar to that which goes on to the mandrel and has a plate of steel riveted to the rim with a hole through the center for the tenons to pass into the auger while they are being formed. In the sides of this plate of steel the lips or cutting parts of the augers are formed. The lips however may be in separate pieces.

Fig. 5 is a cap or chuck for holding the augers, bits &c., to the mandrel. The end that goes on to the mandrel is exactly similar to that of the hollow auger and fastens to the mandrel in the same way. At the other end is a disk or face plate transverse to its axis through the center of which is a round hole to admit the shanks of the augers which are fastened with a crotched key inserted through notches on each side of the shanks and wedging against the face plate. The extreme ends of the shanks thereof go into a hole in the end of the mandrel to steady and confine them on the line with the axis of the mandrel.

My claims to the improvements embodied and combined in this machine over others for the same uses, are that it is constructed in a stronger, more compact and more durable manner and less liable to get out of repair. That the machine in all its parts is in a form to render its construction simple and cheap; and can be more speedily shifted and adapted to the different kinds of work to be performed. That it is more simple, easy and expeditious to use, and works with a precision as exact as man can think or desire.

What I claim as my invention and which I wish to secure by Letters Patent of the United States is—

1. I claim combining regular perpendicular ways, both in the mandrel carriage, and the head blocks, to operate conjointly in adjusting the augers to different positions for boring.

2. I claim the method of adjusting the hubs for boring by suspending and revolving them on gudgeons in a carriage that vibrates the other way on a pin and is set and controlled by thumb screws at *d*, *d*,—the revolving motion of the hub being set and controlled by index wheels and the latch at *f*.

3. I claim the entire construction of the spoke holder and carriage, embodied therewith, together with the catch or hook for controlling its motion.

4. I claim the wheel carriage and plates to be used on the ends of the hub to confine the motion of the wheel to the axis of the hub and axle.

WILLIAM HINDS.

Witnesses:
DANIEL NILER,
CHAS. H. METCALF.