C. H. Guard,

Tenoning and Boring Machine,

No. 34,300, Patented Feb. 4, 1862.

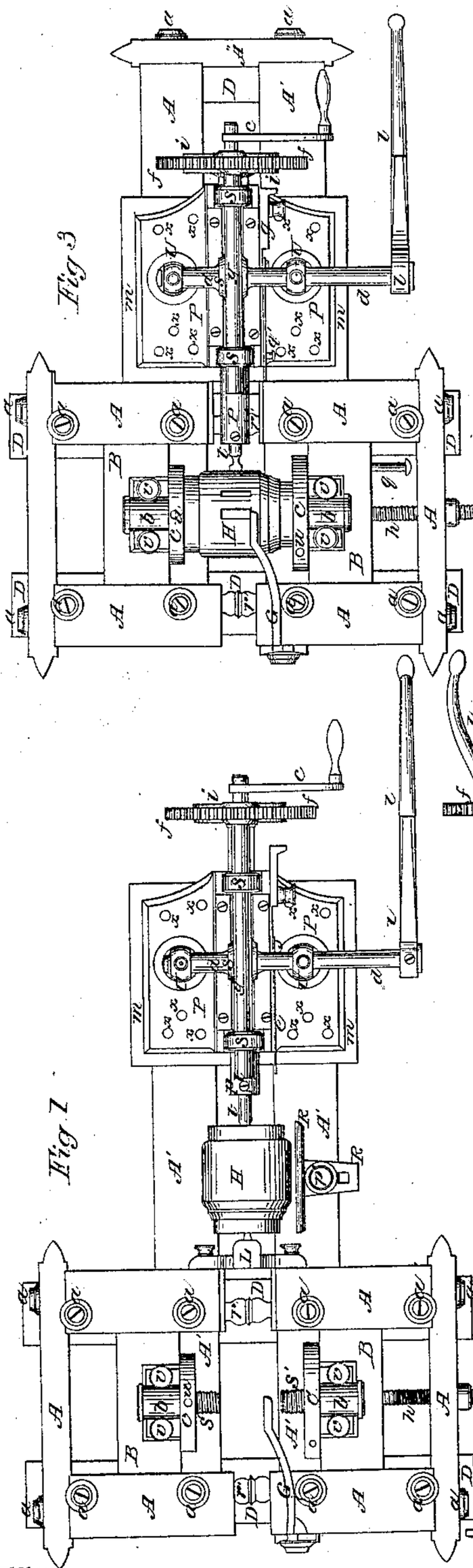
Fig 3

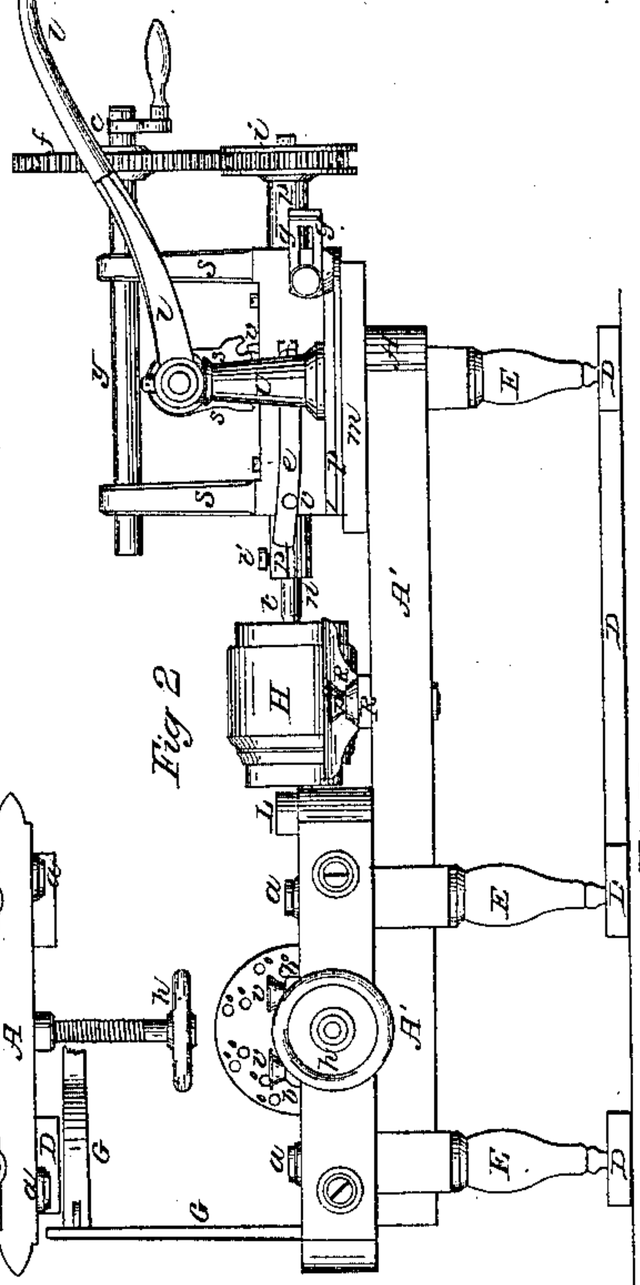
Fig 2

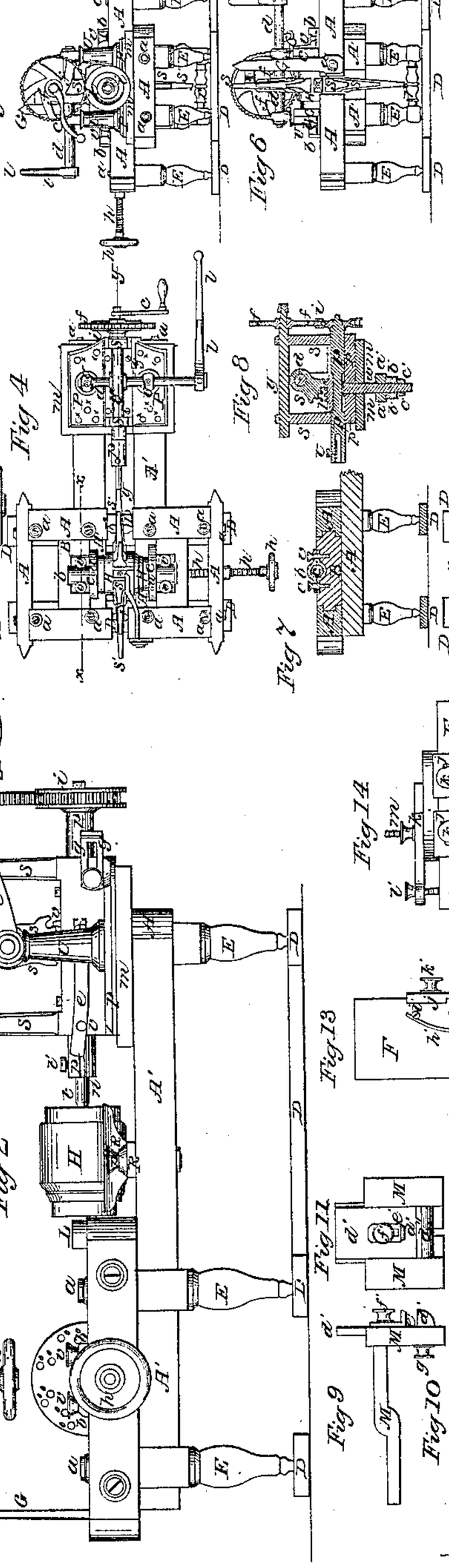
Fig 5

Fig 6

Fig 4

Fig 8

Fig 7

Fig 15

Fig 1

Fig 2

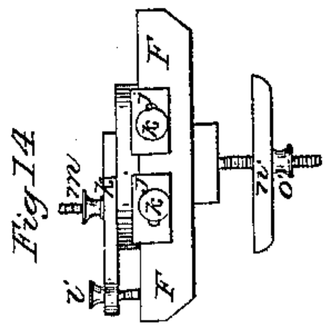
Fig 14

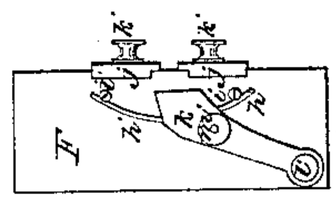
Fig 13

Fig 11

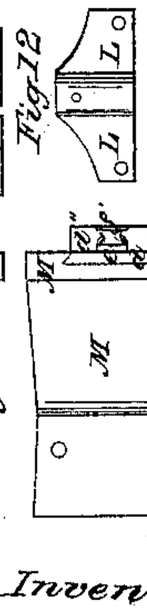
Fig 12

Fig 9

Fig 10

Witnesses:
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By his Attorney
J. C. Robbins

UNITED STATES PATENT OFFICE.

CHAUNCEY H. GUARD, OF TROY, NEW YORK.

IMPROVED MACHINE FOR MAKING CARRIAGE-WHEELS.

Specification forming part of Letters Patent No. **34,300,** dated February 4, 1862.

To all whom it may concern:

Be it known that I, CHAUNCEY H. GUARD, of Troy, in the county of Rensselaer and State of New York, have invented a new and Improved Machine for Making Wheels for Wagons, Carriages, &c.; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

Figure 1 is a top view of my machine, showing its parts in the proper position for turning the hub of a wheel; Fig. 2, a side view of my machine when its parts are in the same position as that represented in Fig. 1; Fig. 3, a top view of the said machine, representing its parts in the proper position for boring and mortising a hub; Fig. 4, a top view showing its parts in position for cutting the tenons on the spokes. Fig. 5 is a front elevation, and Fig. 6 a rear elevation, of my machine, both elevations representing the parts in the same position as represented in Fig. 4. Fig. 7 is a section in the line *x x* of Fig. 4, and Fig. 8 a section in the line *y y* of Fig. 4. Figs. 9, 10, 11, 12, 13, 14, and 15 represent detached portions of my machine.

Similar letters indicate corresponding parts in all the drawings.

The frame or body of my improved wheel-machine may be made either of timber or metal. When the said frame or body is made of timber, the various beams, posts, &c., which compose the same are securely bolted together in the manner represented in the drawings. When, however, it may be desired to make the frame of the machine of metal, the principal portions thereof may be made in two castings, one consisting of the parts indicated by A A A A′ A′, and the other of all that portion of the machine indicated by D D, &c., these two principal parts being combined with each other by means of the posts or legs E E.

The frame A A is provided with transversely-movable blocks B B, which blocks move in grooves in the inner faces of the beams A A, as represented in Fig. 7, motion being communicated to them by means of the hand-screw *h*.

The face-plates or chucks C C are used for the purpose of firmly holding the hub during certain portions of the wheel-making operation, and these chucks are secured to the blocks B B by means of the boxes *b b* and the screws *v v*.

The platform *m* may be moved to any desired position upon the frame A′ A′, and there secured by means of the bolt and nuts which are represented in Fig. 8. A metal plate P is placed upon this platform *m*, and from this plate rise the uprights U U, serving as journals to the axle *d*.

Attached to the axle *d* is a toothed segment *s*, which gears into the toothed saddle *r* upon the spindle *p*. A lever *l* is also attached to the axle *d*, by means of which, through the medium of the segment *s*, a reciprocating lateral motion may be communicated to the spindle *p*, in which spindle the cutting or boring tool is secured.

A rotary motion is imparted to the spindle *p* by means of the crank *c* and the gear-wheels *f* and *i*. The slip-gage *g* serves to regulate the length of the stroke of the spindle *p*.

R is a tool-rest, which is used only during the operation of turning the hub. It is secured in its position by means of a bolt and nut, and may be readily removed when necessary.

Having thus described the construction of my improved wheel-making machine, I will proceed to set forth the mode of operating the same.

The first step in the construction of the wheel is the turning of the hub, and in order to accomplish this the chuck L and tool-rest R are attached to the frame of the machine in the positions represented in Figs. 1 and 2. The material from which the hub is to be turned is supported at one end by the chuck L, and at the other by the tool-holding spindle *p*, the necessary rotary motion being imparted thereto by means of the crank *c* and gear-wheels *f* and *i*. The hub being turned it is next bored for the reception of the axle by means of an auger inserted in the spindle *p*. The hub is next bored and mortised for the reception of the spokes in the following manner, viz: The hub is firmly secured between the face-plates C C, (the screws S′ S′ entering the aperture which has been bored, as above stated, for the reception of the axle,) and by means of the hand-screw *h* is brought into proper

position before the spindle *p*. The platform *m*, together with all of the machinery connected therewith, having been placed in the position represented in Fig. 3, an auger is secured in the end of the spindle *p* and a rotary motion is imparted thereto by means of the crank *c* and gear-wheels *f* and *i*. The weight of the lever *l* supplies the necessary feed to the auger. The hub is held stationary and the intervals between the holes is regulated by means of the stop-pin *q*, which is inserted through the block B into the holes *o o* in the face-plate C. The boring being completed, a mortising-chisel is substituted for the auger. The motion necessary for mortising the hub is communicated from the operator to the chisel, and through that medium to the lever *l* and the segments *s*, the rotation of the spindle *p* being prevented by the insertion of the pin *q'*, the end of which enters the longitudinal groove *n* in said spindle. The hub is fed to the mortising-chisel by means of the hand-screw *h*. As the plate P may be turned upon the bolt *w*, Fig. 8, as a pivot, the requisite level may be given to the mortise by turning this plate to one side or the other and securing it in the proper position by the insertion of a peg or pegs in one or more of the holes *x x*. The spokes are now driven in, the guide G giving to them the necessary dish, and serving as a support during the operation of driving. The spokes being all driven home the platform *m* is withdrawn to the extremity of the frame A' A', (or to any other position on the frame, according to the length of the spokes,) a hollow auger is substituted for the mortising-chisel, the pin *q'* withdrawn, and the tenons cut on the spokes, all as represented in Fig. 4. The wheel in this stage of its manufacture is taken out of the frame and the piece F is attached to the beams A' A'. On this piece F the fellies are secured one by one in the manner represented in Figs. 13 and 14, and while held in this way they are bored for the reception of the tenons. Next, the ends of the fellies are grasped between the clamps *j j*, and prepared to be jointed together. The fellies are driven onto the tenons of the spokes by hand and the wheel is all ready for the reception of the tire.

Figs. 9, 10, and 11 represent a feature of my invention by means of which the above-described wheel-machine may be converted into a boring and mortising machine for almost any kind of work, and Fig. 15 represents said feature when attached in proper position to the frame of my machine. It will be perceived that in order to make this attachment it is necessary to remove the face-plates C C and to bring the blocks B B quite near together. This being done, the screws *v v* are used to secure the piece M to B B. The material which is to be bored or mortised is held between the clamp *e* and the rest *d''*, and may be moved horizontally before the chisel or auger by means of the hand-screw *h*, and vertically by elevating or lowering the slide *d'*, which slide may be firmly held at the desired point of elevation by means of the clamp-screw *g'*.

Having thus fully described my improved wheel-making machine, what I claim therein as new, and desire to secureby Letters Patent, is—

So proportioning and arranging certain of the parts of said machine that I am enabled by the auxiliary use of a lathe-rest R and a chuck L to temporarily convert the same into a turning-lathe of suitable proportions for shaping wheel-hubs previous to mortising the same in said machine, all substantially as herein set forth.

The above specification of my improved apparatus for facilitating the construction of the wheels of carriages, &c., signed by me this 25th day of March, 1861.

CHAUNCEY H. GUARD.

Witnesses:

WM. H. HEGEMAN,

W. D. VAN ARNUM.