(No Model.) 3 Sheets—Sheet 1.

A. E. QUINTAL.

WHEEL MAKING MACHINE.

No. 394,608. Patented Dec. 18, 1888.

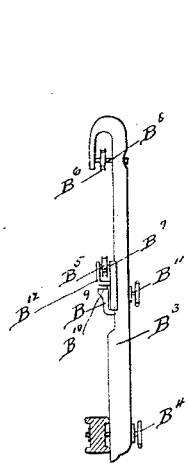

Fig. 2.

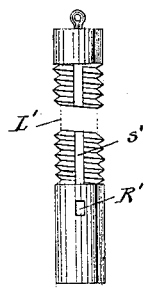

Fig. 3

Fig. 1

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(No Model.) 3 Sheets—Sheet 2.

A. E. QUINTAL.

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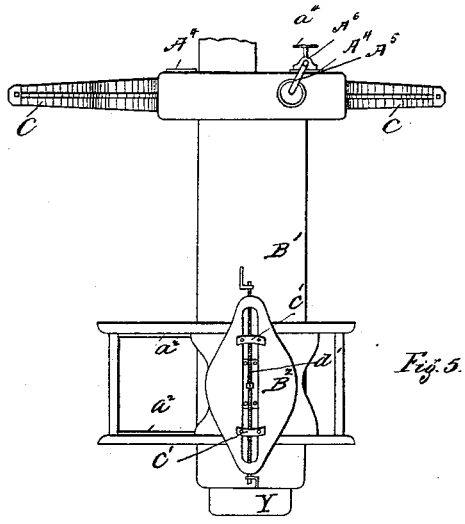

Fig. 5.

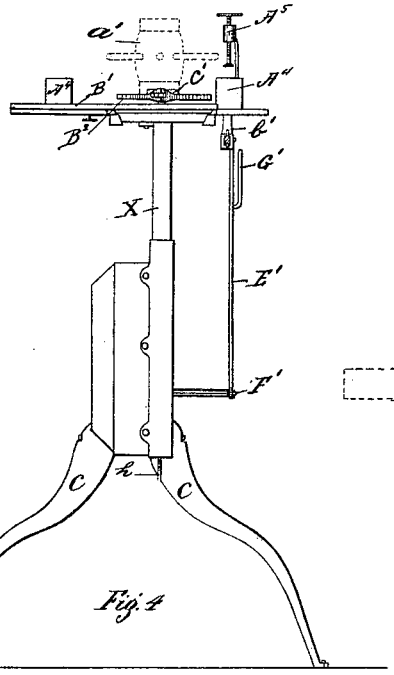

Fig. 4

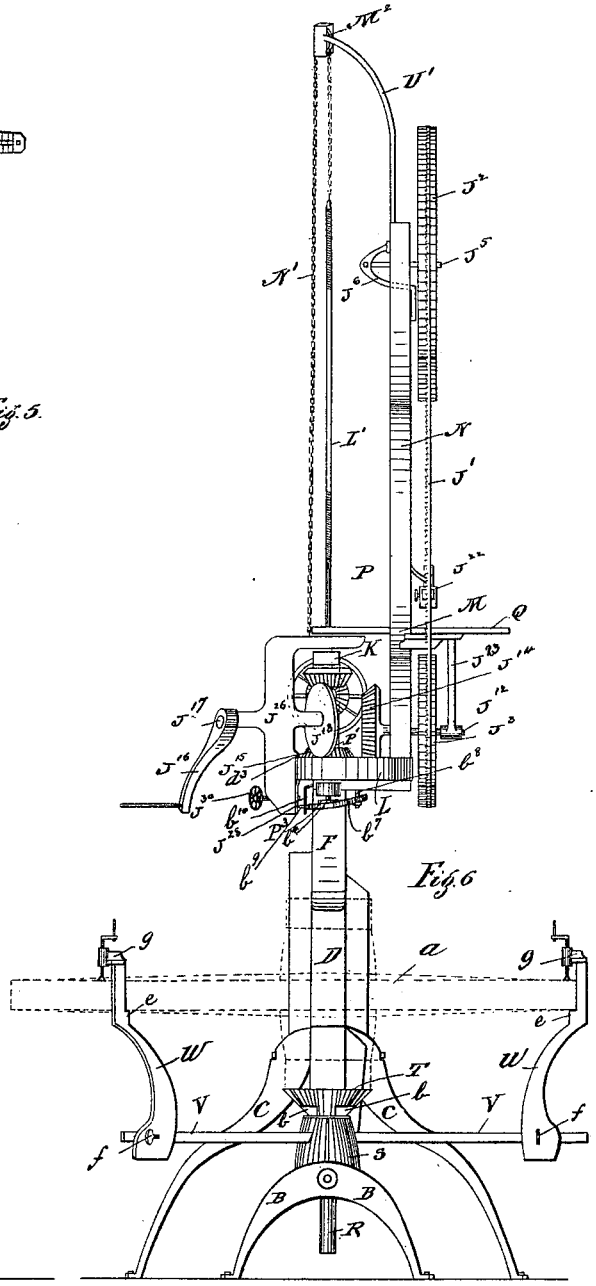

Fig. 6

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(No Model.) 3 Sheets—Sheet 3.

A. E. QUINTAL.

WHEEL MAKING MACHINE.

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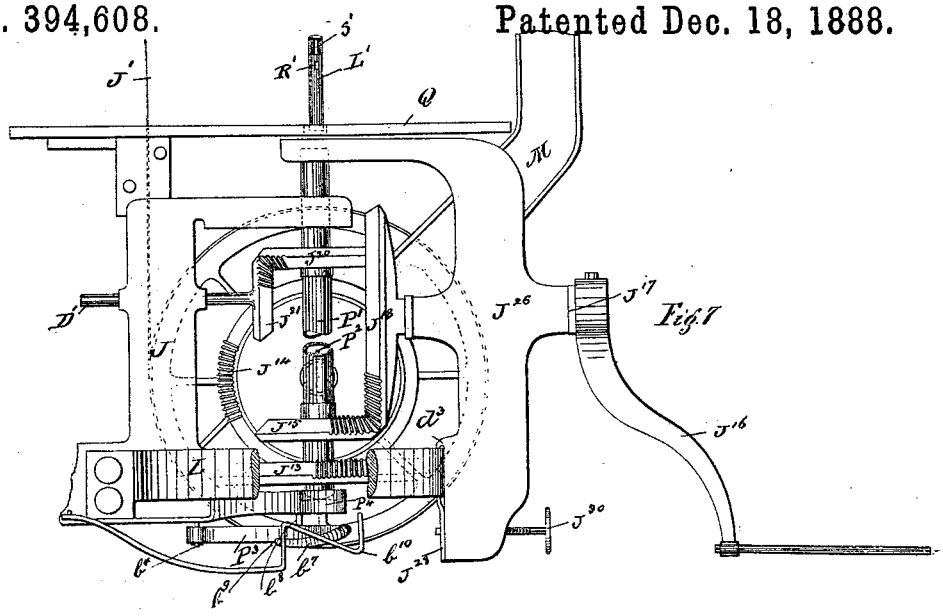

Fig. 7

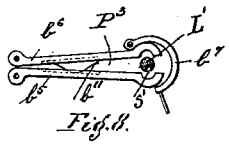

Fig. 8.

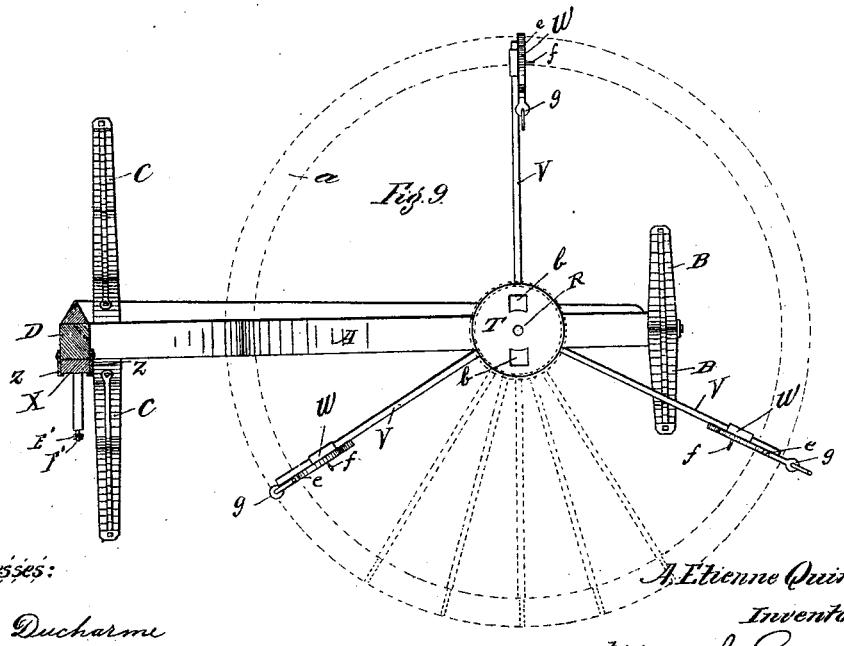

Fig. 9

Witnesses:

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UNITED STATES PATENT OFFICE.

ANTOINE ETIENNE QUINTAL, OF MONTREAL, QUEBEC, CANADA.

WHEEL-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 394,608, dated December 18, 1888.

Application filed May 14, 1887. Serial No. 238,261. (No model.)

To all whom it may concern:

Be it known that I, ANTOINE ETIENNE QUINTAL, a citizen of the Dominion of Canada, residing in the city and district of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Wheel-Making Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its main object to bore wagon-wheel hubs and make said hubs ready to receive the journal-boxes. It can also be used, as will be explained hereinafter, to cut the spokes in proper and uniform lengths and turn them to receive the felly, and, finally, to mortise the felly of the wheel.

On the annexed drawings, which represent my invention, Figure 1 is a side elevation of my machine; Fig. 2, a side view of the spoke-guide; Fig. 3, a detail elevation of the boring or screwed rod; Fig. 4, a back elevation of the machine; Fig. 5, a top view of the rear portion of the said machine; Fig. 6, a front elevation of the same; Fig. 7, a detail elevation of the working mechanism; Fig. 8, a plan view and detail of the hinged nut; and Fig. 9, a plan view of lower portion of machine, as shown in Fig. 1.

Similar letters refer to similar parts throughout the several views.

A is the lower portion of the frame holding the several parts of my machine. It is provided with two pairs of legs, B B and C C, which serve to firmly secure the machine to the floor of the wagon-shop. The portion A of the frame rises at D vertically to bend again at E and then at F and G in such a way as to leave at H and I the necessary space to bring in easily wagon-wheels of all sizes, one being shown in dotted lines at *a* in Fig. 1. Said frame from G rises again at L J K, there receiving the gearing of my machine, and at M N O, leaving there again a sufficient working-space, P, above the saw-table Q.

The portion A of the frame is provided with a hole through which is inserted a tube, R, kept firmly in position by a heavy ring, S. To the upper portion of said tube R is added a funnel, T, whose object is to center and hold the hub of the wagon-wheel *a*, Figs. 1 and 9. The funnel T is pierced with two lateral openings, *b b*, to let pass the chips coming out of the hub while being bored. To the base of said funnel T, at the outside, is a small collar, *c*, connected to a lever, U, oscillating around the pivot *d*. By working this lever U the collar *c* will raise the funnel T and the tube R out of the frame A, if needed.

The ring S is provided with holes to receive the sustaining-rods V V V, holding the wheel *a*. On these rods V V V are put the clamps W W W, which serve to maintain the wheel *a* in place while proceeding to bore the hub. These clamps are made at *e* to support the wheel, while the clamp-screws *g* are lowered to press on the said wheel, and thus keep it firmly in place, as aforesaid. As can also be seen, the screws *f* can be turned off from the wheel at will, so as to let free the wheel in or out of place. The clamps W W W, which are made to slide along the rods V V V, are secured to the latter by the thumb-screws *f*. The wheel *a* being thus centered and firmly kept in place by the clamps W W W, as aforesaid, the screwed or boring rod L′, hanging over the small pulley M^2 on top of holder U′, and kept there while not used by the chain N′, attached to the stopper O′, is lowered through the hollow shaft P′, and then through the hub of the wheel *a*, having a preliminary hole hand-bored, so as to allow the hub to dry before it is turned on the lathe, and, finally, through the rod guide or tube R. The said rod L′ is provided with a longitudinal slot, S′, and a prismatic hole, R′, to insert the ordinary cutters to perforate the hub. The object of the slot S′ is to guide the descent of the rod L′ through the hollow shaft P′ and revolve with it by catching the little corresponding projection, P^2, of the said hollow shaft P′, Fig. 7. The rod L′ also passes through the hinged nut P^3, and is thus forced to descend with the cutters gradually through the hub and perforate it, as required.

The nut P^3 is made of two halves, b^5 b^6, hinged to the under part of the frame G at b^4 b^4. A closer, b^7, made to embrace the nut P^3 and keep it close to the rod L′, is also hinged at b^8 to the said frame G. It is provided with a handle, b^9, which serves to throw the closer b^7 backward, and thus release the two halves b^5 b^6 of the nut P^3, and also the rod L′.

b^{11} is a spring which helps to the opening of the said nut P^3. It is secured to one of the halves of the nut in question, Fig. 7. b^{10} is another spring to keep closer b^7 in place over nut P^3 by catching the handle b^9. The cutters are added to the rod L′ only after its passage through said nut P^3. The boring being over, the rod L′ is pulled upward by the chain N′ and kept there, as aforesaid.

Along the portion D of the machine-frame, between guides Z Z, there is the sliding upright post X, which holds the wheel-table Y. This post is made to move upward or downward at will through the piece h^2 by means of the screw h, this being for the purpose of bringing the table Y, holding the wheel a', with its spokes, either opposite the tenoning or mortising tool m on the shaft D′ or the saw-table Q, where spokes are properly cut of required uniform lengths. When the wheel is to be put at a' for spoke tenoning and cutting, a sliding table, B′, is added over to the ordinary table, Y, and is made to slide over it toward the shaft D′ by means of a hand-lever having the portion E′ pivoting around F′ on the post X, the portion H′, connected with the table B′ by means of the little projection b', and the portion G′ close to the left hand of the operator. It can be easily understood that by pressing downward with the hand on the lever at G′ the table B′ will be brought horizontally toward the shaft D′, holding either the tenoning-tool or mortising one, (auger,) as aforesaid, or toward the band-saw J′, above the saw-table Q, if table B′ is high enough.

On top of sliding table B′ is added, whenever required, the hub holder and adjuster B^2. (Shown in plan in Fig. 5.) It is made to slide transversely, Fig. 1, between guides A^2 A^2 to center the hub and have it in line with shaft D′. The hub is placed between the clamps C′ C′, and brought together or loosened by the endless screw d', Fig. 5, at will. The hub can thus be turned between said clamps C′ C′, and the spokes in turn brought opposite the shaft D′ or above the saw-table Q to the band-saw.

On the other hand, when the felly is to be perforated with the auger—that is to say, mortised to receive the tenoned spokes—it is put on the sliding table B′ at A′ against the stoppers A^4 and kept firmly in position by the clamp A^5, already adjusted to the table B′ at A^6 by the thumb-screw a^4. This clamp A^5 is added to the table B′ only for perforation work with the auger.

Another device is also added, when required only, to the frame E by means of the thumb-screw B^4, and this is the spoke-guide B^3. This guide (shown in Figs. 1 and 2) is provided with two pulleys, one of which, B^5, is adjustable, it being on the movable frame B^9, which slides along the guide B^3, as shown in Figs. 1 and 2. The other, B^6, is stationary. Both pulleys B^5 and B^6 revolve on axles B^7 B^8, respectively. The frame B^9 is adjusted to the proper height by the clamp-screw B^{11}. A piece of rubber, B^{10}, is added under pulley-holder B^{12}, so as to provide for an elastic seat when the pulleys B^5 and B^5 are forcibly separated by the wheel-spokes passing between them and pushed with the sliding table B′ toward the tenoning-tool worked by the shaft D′. The object of the spoke-guide is thus easily understood. The spokes are thus brought to uniform height toward and in line with said shaft D′. The band-saw J′ and its mechanical arrangement (shown on the annexed drawings) has a real importance in the wagon-manufacture for wheel-work and other general scroll-cutting.

The band-saw J′ is mounted on the fly-wheel J^2 and pulley J^3 over the axles J^5 and J^{12}, respectively. The pulley J^3 is stationary, while the fly-wheel J^2 is adjustable, the adjustment consisting in the sliding frame J^6 working upward and downward between the pieces N^2 O^2 of the frame N·O. The fly-wheel J^2 is raised up by the screws J^9, J^{10}, and J^{11}, the two former, J^9 J^{10}, with the set-screws J^8 J^8, serving to bring the fly-wheel in a true vertical plane. The pulley J^3 revolves around the axle J^{12}, passing through the frame of the machine, Fig. 6, at one end and at the other through the hanger J^{23}.

A bevel-pinion, J^{14}, is secured to one end of the axle J^{12} and revolves with it. This pinion J^{14} is operated by the bevel-gear J^{13}, revolving with the hollow shaft P′ and bevel-gear J^{20}. The hand-power of the operator being applied to the crank J^{16}, and thereby to the axle J^{17} and bevel-gear J^{18}, the motion is thus transmitted to the pinion J^{15}, gear J^{13}, pinion J^{14}, and, finally, to the pulley J^3 and band-saw J′. The tool-shaft D, with fly-wheel D^2, is also operated with the hollow shaft P′ by the intermediary of bevel-gear J^{20} and pinion J^{21}, the hollow shaft P′ being supported by the frame of the machine at P^4, Fig. 7. To the frame O is also adjusted the saw-guide J^{22}, and this by means of the hanger J^{23} and thumb-screw J^{24}.

The piece J^{26}, through which the crank-axle J^{17} passes, is saddled over the circular portion L of the machine-frame at d^3. It is made to oscillate at the top around the hollow shaft P′ and slide along the edge of circular frame L at the bottom. It is also provided with a clamp, J^{28}, and thumb-screw J^{30}, in order to secure piece J^{26}, where more convenient to the operator, around the circular frame L. When the operator wants to operate on the saw-table Q, the piece J^{26}, with crank J^{16}, is thrown entirely outside of the standing place.

It can be easily understood that the operator alone can work the machine above described in most cases. A helper can be called to work the crank in other cases where more power is required. The crank could also be replaced by a pulley and a belt, and then the machine could be worked by steam or other power.

Having described my invention, what I

claim, and desire to secure by Letters Patent, is—

1. In a machine for wheel-making, the combination of a supporting-frame, A B B C C D E F G J K L, having the form shown in the annexed drawings, with tube R, ring S, funnel T, rods V V V, and clamps W W W, for the purpose of holding wheel in place, the boring-rod L′, provided with longitudinal slot S and prismatic hole R, for the insertion of cutters, the upright post X, with table Y, sliding table B′, hand-lever E′ H′ G′, and hub holder and adjuster B^2, having clamps C′ C′ and right and left screw d', the spoke-guide B^3, with its wheels B^5 B^6 and adjustable frame B^9, the piece J^{26}, with crank J^{16}, and shaft J^{17}, with bevel-gear J^{18}, operating the pinion J^{15}, gear J^{13}, pinion J^{14}, and thereby the pulley J^3, fly-wheel J^2, and band-saw J′, the hollow shaft P′, with projection P^2, which engages slot S, with bevel-gear J^{20}, pinion J^{21}, operating the tool-shaft D′ and fly-wheel D^2, the hinged nut P^3, with closer b^7, and springs b^{10} and b^{11}, substantially as and for the purposes set forth.

2. In a wheel-making machine, the combination, with the supporting-frame provided with clamps for securing the wheels thereto, substantially as set forth, of the vertical boring-rod, the band-saw supported by the said frame, the hollow revolving shaft imparting motion to the boring-rod, the horizontal mortising-tool shaft also supported by said frame, and intermediate bevel-gearing connecting the said mortising-tool and band-saw driving-shafts, respectively, with the said hollow shaft, whereby the said boring-rod, band-saw, and mortising-tool may be operated from a single source of power applied to the said hollow shaft, substantially as described and shown.

In testimony whereof I have affixed my signature in presence of the two subscribing witnesses.

A. ETIENNE QUINTAL.

Witnesses:
J. D. DUCHARNE,
J. EMILE VANIER.