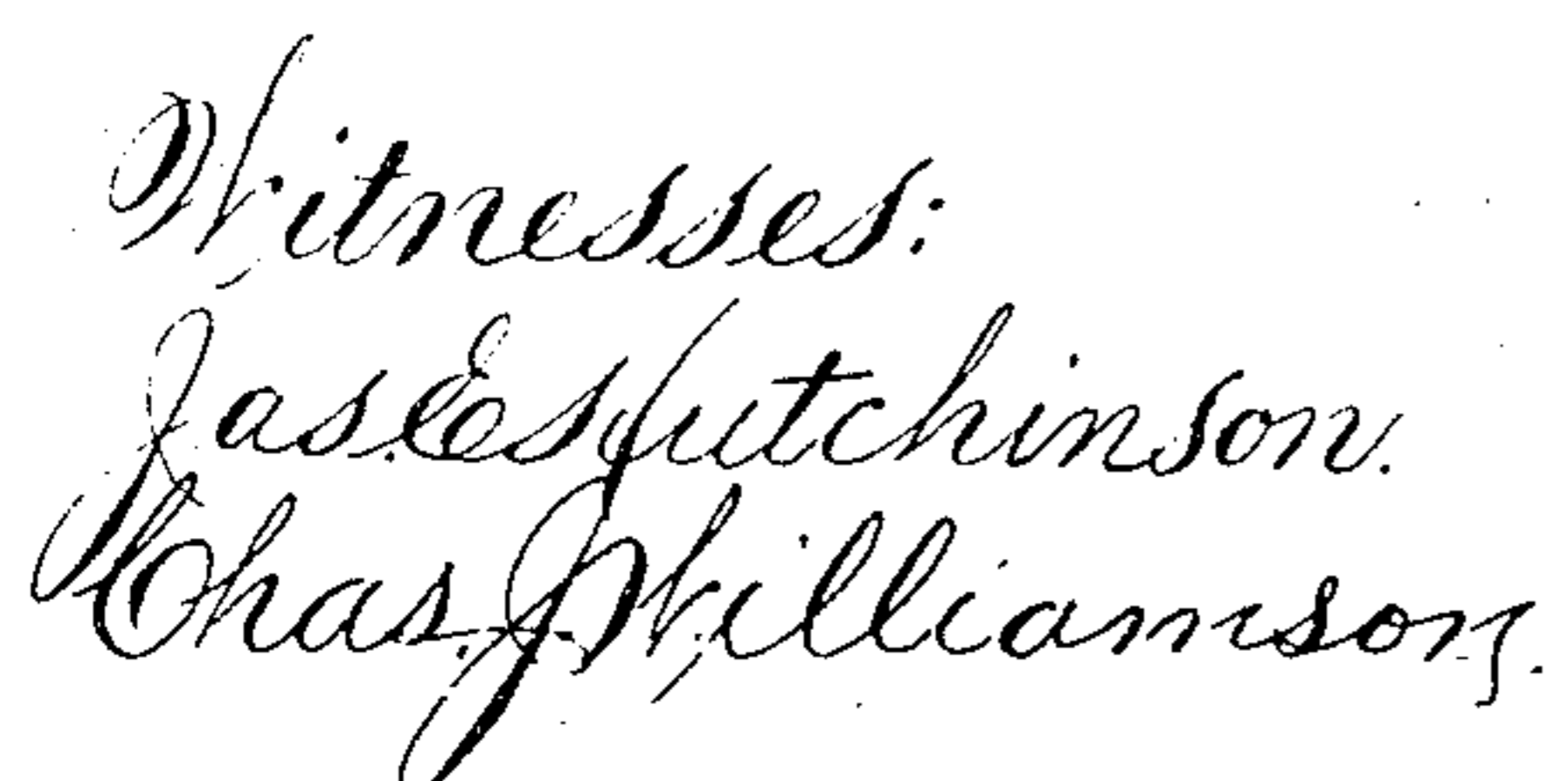


912,027.

Patented Feb. 9, 1909.



Inventor.
Edwin J Prindle, by
Prindle & Russell, his Attys

UNITED STATES PATENT OFFICE.

EDWIN J. PRINDLE, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO THE PREMIER LAST COMPANY, OF GREAT RIVER, LONG ISLAND, NEW YORK, A CORPORATION OF NEW YORK.

ART OF FORMING LASTS.

No. 912,027.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed June 6, 1900. Serial No. 19,293.

To all whom it may concern:

Be it known that I, EDWIN J. PRINDLE, of the city of Washington, in the District of Columbia, have invented certain new and useful Improvements in the Art of Forming Lasts, and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, in which—

Figure 1 is a dog adapted for use in carrying out my method; Fig. 2 is a front elevation of such dog; Fig. 3 is a side elevation of a wedge which is adapted for use in securing fore parts of lasts or the blocks from which such fore parts are to be formed to the dog illustrated in Fig. 1; Fig. 4 is a side elevation of the dog illustrated in Fig. 1, and a block from which a fore part of a last is to be formed, such block being secured on said dog; and, Fig. 5 is a side elevation of the dog illustrated in Fig. 1, and a fore part of a last, such fore part being secured on said dog.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention has been to devise an improvement in the art of forming lasts, by the use of which the foot-shape contour of lasts, or the parts of lasts, can be readily formed, particularly at the extremities, and by the use of which the surfaces of divided lasts that are within the outlines of the last can be formed in accurate relation to the foot-shape contour thereof, so that the parts of the last, when assembled, shall have precisely the desired relation, and together shall form a last of precisely the desired contour, and to such ends my invention consists in an improvement in the art of forming lasts, substantially as hereinafter specified.

In all methods of forming lasts, prior to my invention, so far as known to me, the model last and the last being formed have been supported both by the toe and heel, while the body of the last is shaped, and before the toe and heel could be shaped, the relation between the model and the last being formed has had to be destroyed. It is difficult and expensive to finish the extremities of the last either by a cutter not guided from the model, or by again placing the model and partially completed last in proper relation and supported so as to expose the extremities, in order that a cutter

may be guided from the pattern and may act on the extremity of the unfinished last.

By my method, I support both the model and the block from which the last or last part is to be formed entirely from one end, so that the body of the model and of the last or last part, and also one extremity of each of them, is exposed, the one to serve as a guiding surface, and the other to be acted upon by a cutter guided from such surface. I am thus able to finish all but one extremity of the last, without destroying the relation between the model and the last being formed.

As one means of carrying my method into practice, an ordinary sliding-jaw chuck can be secured to the model head-stock spindle of a last turning lathe, and a similar chuck can be secured to the work head-stock spindle of such lathe. The model can be clamped either by the toe or heel by such chuck to its head-stock spindle, leaving the opposite extremity exposed, and the block from which the last is to be formed can be secured by its chuck to the work head-stock spindle, leaving its opposite extremity exposed. The model and block can then be revolved on the same axis, and the guide wheel can travel along the body of the model and over the entire exposed extremity thereof, thus guiding the cutter to form the body of a last from the block and to complete one extremity thereof. The model and the partly finished last can then be removed from the chucks and the unfinished extremity of the last completed in any desired manner.

In the construction of divided lasts it has heretofore been difficult to so form the surfaces thereof, which are within the outlines of the last, that the parts of the last, when assembled, shall have the desired relation and that their foot-shape contour shall constitute the desired form, and it is practically impossible, by the methods known before my invention, to so form the abutting or the fastening surfaces on the corresponding parts of divided lasts, that such parts shall be interchangeable. As my invention, in respect to its practice for the attainment of both of the objects stated, to-wit,—the formation both of the body and of one of the extremities of a last or last part without destroying the relation between the model and the block from which the last or last part

is to be formed, and the formation of the surfaces of divided lasts that are within the outlines of the last in accurate relation to the foot-shape contour of the last, can be clearly illustrated in its application to the interchangeable fore part A shown in my Patent No. 648,525, granted May 1st, 1900, to which reference is made for a full description of such part, I have selected for illustration and description the manufacture of such a fore part by the practice of my method. To attach the model fore part to the model head-stock spindle of the ordinary last turning lathe, I provide a dog B, consisting of a tapered shank b having a screw thread b' at its larger end, and beyond such thread having a plate b^2 formed thereon, substantially perpendicular to the axis of the shank b . A plate b^3 projects from the face of the plate b^2 in a plane perpendicular thereto, and such plate corresponds to the portion of the fore-part plate of the last which is received in the fore part A thereof, past its rear surface A' . Such plate b^3 has an arc-shape forward edge b^4 along which extends an arc-shape flange b^5 , said plate being adapted to fit into the slot A^2 of the fore part and to have its flange b^5 received in the arc-shape groove A^3 thereof which reference letters A^2 and A^3 are found in the said patent. In the plate b^2 , an opening b^6 is formed to permit the passage of the wedge E of the last therethrough, and a notched ear b^7 is formed on the rear face of the plate b^2 to engage the spring E^3 of the wedge E of the last of the said patent, as does the notch C^3 of the fore part plate C of the last.

In forming a fore part according to the method illustrated in the drawings, the model fore part A is passed over the plate b^3 until its rear face A' bears squarely on the front face of the plate b^2 , and is then moved laterally until the flange b^5 is seated in the arc-shape groove A^3 of such fore part of the said patent. The wedge E is then inserted from the rear, through the opening b^6 and into the slot A^2 in the fore part of the said patent until its spring E^3 engages the notched ear b^7 , such action wedging the plate b^3 against a wall of the said slot A^2 and fastening the fore part firmly to the dog. If the dog be not already screwed or driven into its socket in the model head-stock spindle, it is secured in such socket, and the fore part is thus firmly mounted on the spindle and in such position that its entire foot-shape contour is exposed to the action of the guide wheel.

To attach the block D from which the new fore part is to be turned to the work head-stock spindle of the lathe, a true plane surface d is formed at one end thereof, which surface is to constitute the rear surface A' of the finished fore part. A slot A^2 as in

the said patent is then formed in such surface, such slot having an arc-shape groove A^3 of the said patent and an inclined wall A^4 of the said patent precisely as in the fore part A. The block D is then attached to its dog in the same manner as was the model fore part attached to the dog B. The dog is then secured to the work head-stock spindle of the lathe, and the block D is thus supported in the lathe so that its entire surface, except the surface d , is exposed to the action of the cutter. On setting the lathe in motion, the new fore part can be entirely finished, including the toe, since the toe of the model and the portion of the block which is to form the toe of the new fore part are completely exposed to the action of the guide wheel and of the cutter, respectively. The slots of the two fore parts corresponding to the slots A^2 of the said patent will also bear precisely the same relation to the foot-shape contour of such fore parts and to the rear surfaces thereof, so that, if they be of the same size, they can be used interchangeably with the same heel part and will both fit both the hinge mechanism of the last and the outlines of the heel part with the same degree of precision.

It will be seen that I first form the dividing or attaching surfaces of the last part and then form the foot-shape contour in proper relation to such dividing or attaching surfaces, which is the reverse of the methods in use, previous to my invention. By such methods the foot-shape contour is first formed and the dividing or attaching surfaces are then sought to be formed in proper relation to the dividing or attaching surfaces.

It is obvious that dogs corresponding to other forms of hinge mechanism for lasts can be used to support the corresponding last parts in the lathe, and that such parts can be reproduced by my method. It is also obvious that heel parts or other last parts can be made so that their foot-shape contour shall bear proper relation to the surfaces which are within the outlines of the last by following substantially the method I have invented.

It is important that the foot-shape contour should have a predetermined geometric relation to a surface which has a useful function in the last, and I therefore form said contour in such relation to a surface having a definite geometric relation to said first-mentioned surface, and such geometric relation may be that of identity or any other geometric relation.

Having thus described my invention, what I claim is:—

1. As an improvement in the art of forming lasts or last parts, the method which consists in supporting a model of the desired form and also the work, each by means

which are contained within the peripheral outlines of the model or of the last to be formed, and which engage surfaces intermediate the toe and heel thereof so that a body portion and an extremity of each shall be exposed, and then operating on the work by a tool guided from the model, substantially as and for the purpose described.

2. As an improvement in the art of forming lasts or last parts, the method which consists in forming a surface other than the foot-shape contour of the last or last part, such surface having a definite geometric relation to a surface having a useful function in the last, supporting the last or last part solely from said first-mentioned surface, and forming the said contour of the last or last part in a predetermined relation to such surface, substantially as and for the purpose described.

3. The herein described method of making a divided last, consisting of severing the last block before it is turned, finishing the secant end thereof to the ultimate shape of the joint end of the last-part, providing in said finished end a union receiving recess for subsequently receiving the union which joins the parts of the last together, securing said last-block in the last lathe at and with reference to said recess and secant end only, and then turning the entire surface of the last-part with relation to said secant end.

4. The herein described method of turning lasts, consisting of finishing an unturned last-block to the same shape which the joint end of the ultimate last-part requires, securing said last-block at its finished end in a last lathe in definite position with relation to a point or location of said finished end which is unvarying in all similar lasts, and then turning the entire surface of the last-part with relation to said secant end.

5. As an improvement in the art of forming lasts or last parts, the method which consists in forming a surface other than the

foot-shape contour of the last or last part, such surface having a definite geometric relation to a surface having a useful function in the last, and then forming the said contour in a predetermined relation to such first-mentioned surface substantially as and for the purpose described.

6. As an improvement in the art of forming divided lasts, the method which consists in forming a standard surface on each of several last parts, which surfaces bear a definite relation to each other, forming the foot-shape contours of such last parts in proper relation to such standard surfaces, and then assembling the parts substantially as and for the purpose described.

7. The method of forming last parts, which consists in providing a model having a toe and heel part, each having a regular surface, said surfaces having a definite geometrical relation to each other in the complete last, preparing a last part by providing a block with a regular surface, and turning a foot-shaped surface thereon by a cutter guided from the foot-shaped surface of the model, the cutter which last performs its operation on the block moving in a path having the same relation to the axis of revolution of the block as the corresponding surface of the model bore to its axis of revolution.

8. The herein-described method of making a divided last consisting of severing the last-block before it is turned, finishing the secant end thereof to the ultimate shape of the joint end of the last block and then subsequently turning the block.

In testimony that I claim the foregoing I have hereunto set my hand this sixth day of June, A. D., 1900.

EDWIN J. PRINDLE.

Witnesses:

HENRY C. HAZARD,
CHAS. J. WILLIAMSON.