(No Model.) 2 Sheets—Sheet 1.

J. A. SLATER.

MACHINE FOR MAKING SEMICIRCULAR WOODEN HANDLES FOR SAD IRONS.

No. 456,316. Patented July 21, 1891.

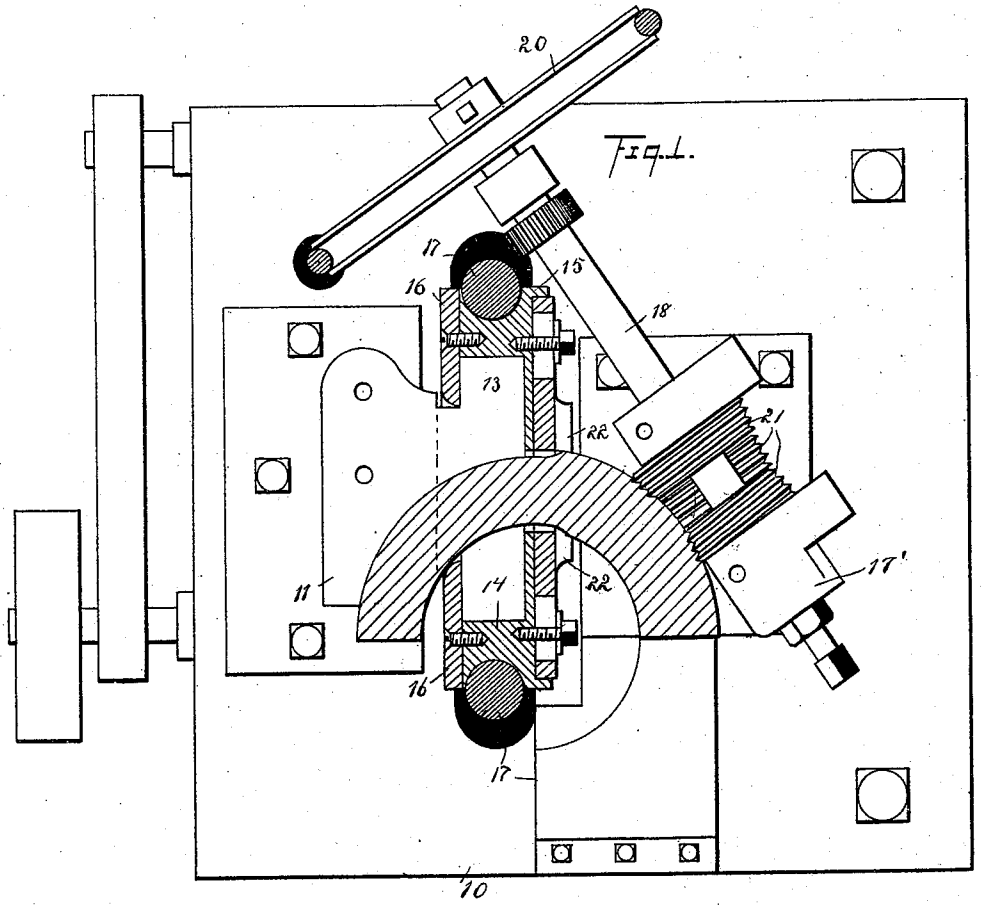

Fig. 1.

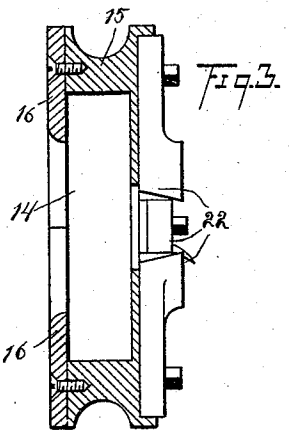

Fig. 3.

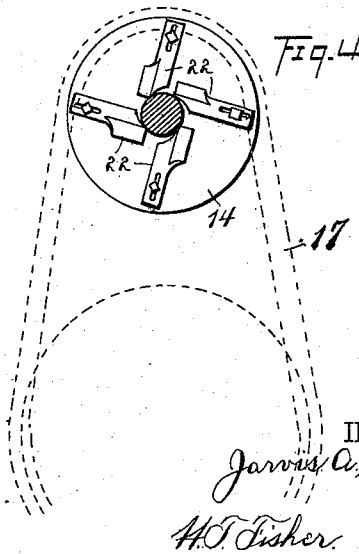

Fig. 4.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 11.

Fig. 2.

Fig. 10.

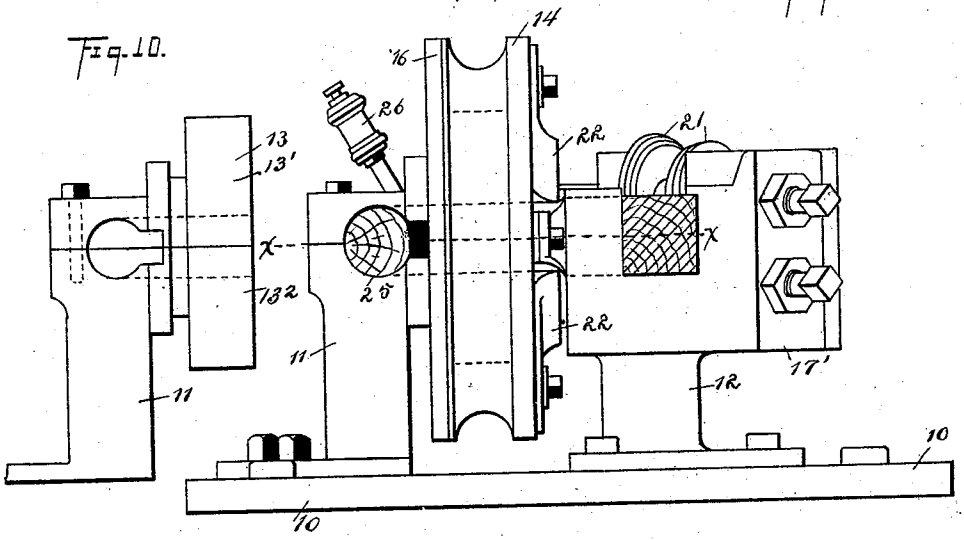


Fig. 7.

Fig. 8.

Fig. 5.

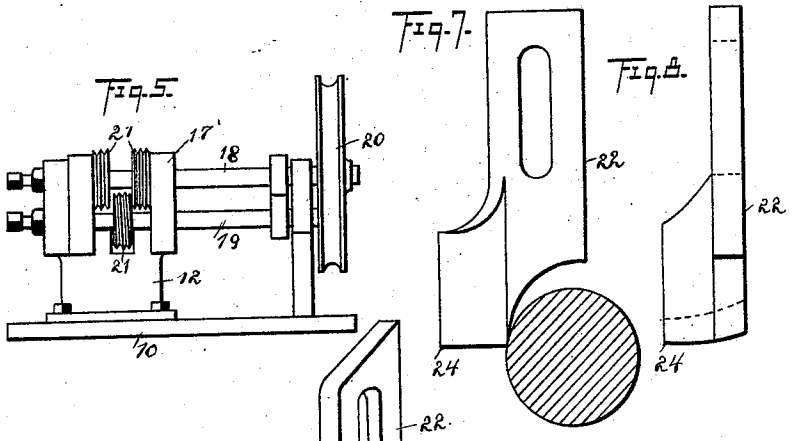
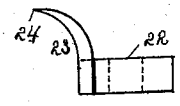


Fig. 6.

Fig. 9.



WITNESSES

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UNITED STATES PATENT OFFICE.

JARVIS A. SLATER, OF CLEVELAND, OHIO.

MACHINE FOR MAKING SEMICIRCULAR WOODEN HANDLES FOR SAD-IRONS.

SPECIFICATION forming part of Letters Patent No. 456,316, dated July 21, 1891.

Application filed August 5, 1890. Serial No. 361,074. (No model.)

To all whom it may concern:

Be it known that I, JARVIS A. SLATER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Machines for Making Semicircular Wooden Handles for Sad-Irons; 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 relates to improvements in machines for making semicircular wooden handles for sad-irons; and the invention consists in the construction and combination and arrangement of parts substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of the machine, partly in section horizontally, so as to show the relation of the parts interiorly, the horizontal section being taken on line *x x*, Fig. 2, excepting the feed-screws, which are shown in full plan view. Fig. 2 is a front elevation of the machine, looking from the bottom of Fig. 1, showing the machine as it stands before the operator. Fig. 3 is a central cross-section of the cutter-head. Fig. 4 is a side elevation of the cutter-head reduced in size and shown in connection with the belt and wheel by which it is driven. Fig. 5 is a side elevation of the screw-feed arrangement and the shaft and wheels for driving the same shown in plan in Fig. 1. Fig. 6 is a perspective view of one of the knives or cutters attached to the blade upon its side. Fig. 7 is a side elevation of the same, showing the relation of the blade to the side of the stock upon which it works; and Fig. 8 is an edge view of the blade. Fig. 9 is an end view thereof. Fig. 10 is a detached view of the bearing for the cutter-head and the support for the bearing. Fig. 11 shows a section of the stock or material partly rounded and serving to illustrate the position and operation of the knives with respect thereto, as hereinafter more fully described.

This machine operates to form a round handle out of a semicircular piece rectangular in cross-section. These pieces are cut on suitable machinery into the semicircular form and provided in quantity to run through the machine. The operator has nothing to do but to feed the stock into the machine. This done, the machine carries the stock around in the channel provided for this purpose and automatically feeds at the fixed rate and gives the desired shape to the piece, making it perfectly circular in cross-section, and giving it a smooth and even finish. The machine is small, compact, and simple in construction, as will appear from the detailed description.

In the drawings, reference-sign 10 is a bed-plate which is supported upon a suitable stand or table provided for that purpose and having such elevation as to render the machine convenient to the operator. Upon this machine are two several distinct cast-iron posts 11 and 12, which primarily form the supports for the operating mechanism. The post at the left is provided with a sectional circular wheel-shaped bearing 13 for the cutter-head 14. This bearing is formed in two sections $13'$ and 13^2 above and below, respectively, horizontally, and the upper section is fastened by screws to the lower section, thus making a head that is separable and convenient for casting. The bearing 13 has a smoothly-polished surface, and upon this bearing a cutter-head 14 is mounted and adapted to turn. The cutter-head is formed in this instance of two parts, a body portion 15, which fits closely upon the bearing 13, and an inside flange-plate 16 screwed firmly to the side of the ring portion 15, and by which the head is kept in place laterally upon the bearing. The head 15 is shown here as grooved circumferentially to adapt it to be turned by the round belt 17; but it may be driven by any other suitable means, such as gear or friction or the like, the means of turning the head not being especially important. The post 12 is provided with an enlarged feed-head $17'$, on which are suitable bearings for the two shafts 18 and 19, Fig. 5, which are provided with gear, and a wheel 20 to drive the same. Upon these shafts are feed-screws 21, two of which are upon the upper shaft and arranged to engage the upper edge of the stock, and one upon the lower shaft working between the two upper ones and set to engage the lower edge of a corner of the stock.

These screws are given such speed as to provide the necessary feed to the stock and carry the same forward through the cutter-head in a continuous and uniform movement. The means here shown for driving the shafts 18 and 19 may be employed, or other means serving the same purpose provided without departing from the spirit of the invention, and indeed differently arranged and constructed feed-screws or other equivalent means could be used and the machine still perform the essential function in which the essence of the invention resides.

On one side of the cutter-head are arranged a series of knives or blades 22. These knives are provided with slotted shanks through which they are adjustably bolted to the side of the cutter-head, and the alternate knives are arranged at equal depth, so that, say, in case there are four knives, two will be set to work to a certain depth and perform the advance cutting on the stock, while the other two will be set at a slightly-increased depth to do the finished work, and traveling after the first set of knives. These knives have circular-cutting edges 23, set diagonally to their axis, and in such relation that the cut will begin at the point 24, thus engaging the wood somewhat at an angle to its grain and shaving it down into the rounded proportions desired and shown in the finished work at 25, Fig. 2. In setting these knives care need be taken so that each will do its proper share of work, and that the work when done will be a product which corresponds to the size of the groove through which the finished work is carried. To do this work, a semicircular channel is provided through the head of standard 12, the cutter-head and bearing, and the standard 11, as clearly outlined in Fig. 1. The groove or channel in the feed-head 17 is square, like the stock or material from which the rounded handle is formed. This gives the feed-screws a corner of the stock to operate on and force it forward to the cutter-blades. These blades are revolved at a very high rate of speed, and when the stock passes them it enters a circular channel closed all around and extending nearly centrally through the bearing 13 and emerging from the left of the machine at its front, where the finished work drops down out of the way. If the knives 22 are not accurately adjusted, they will produce a ring that may be too large for the rounded groove, in which case the stock would not feed, or they might produce a ring somewhat smaller, in which case there would be vibration in the stock and the work would be unsatisfactorily done. Hence a product that fits somewhat snugly in the rounded groove is desirable, as this insures a steady and even movement and a smooth and well-finished surface from end to end. The bearing-surface for the cutter-head being quite large and the pressure on said head very considerable, there is of course a tendency to heat, and this is relieved by keeping the bearing well oiled, and an oiling device 26, Fig. 2, is provided for this purpose. In operation a sufficient amount of oil will work out of the bearing into the channel for the stock, so that there is no trouble from friction in this part of the machine, especially if the knives are properly adjusted.

In feeding the machine the operator handles only the raw material, and one piece is followed closely by another, so that there is no interval or space between the pieces. As the end of the piece that is in the machine passes the front feed-screws, another piece is immediately engaged by those screws, and thus the feed is made continuous and uninterrupted, the same as if the machine were working on an unbroken ring. It may be convenient to place a small feed-table at the front of the head 17 upon which to rest the stock preparatory to feeding.

The machine as here shown is designed to make wooden handles for sad-irons; but obviously if two of the semicircular sections produced on the machine are glued together at their ends they form a perfect ring, and of course they may be so formed and used as convenience may dictate. Obviously, also, rings of different sizes may be made in this way.

The operation of the machine will be clearly understood from the foregoing description and need not be more specifically detailed. An unskilled operator can readily turn out a thousand rounded handles in a single day, and the capacity of the machine working at its best speed is not less than twelve or fifteen hundred handles a day, as compared with not exceeding three or four hundred handles made by any other process with which I am familiar.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The revolving cutter-head provided with suitable cutters at one side, and the wheel-shaped bearing for the head having a curved channel through the center, substantially as described.

2. The revolving cutter-head provided with adjustable cutters at one side and open through its center, the support for the head having a curved channel extending through its center and coinciding with the opening in the cutter-head, the outer surface of the said head provided with driving connections, substantially as described.

3. The wheel-shaped bearing having an interior channel circular in cross-section and curved to a circle between its ends, a cutter-head supported on said bearings, and a feed-post at the side of said head having an angular groove matching the channel in said bearing, and feeding mechanism, substantially as described.

4. The sectional wheel-shaped bearing having a curved channel round in cross-section extending through its center, in combination with a cutter-head in said bearing engaging

its sides and periphery and having a series of knives on one side, and feed mechanism next to said knives, substantially as described.

5. A sectional wheel-shaped cutter-head bearing and a cutter-head on said bearing constructed on its periphery to make power connection and having knives at one side and a removable piece on the opposite side in contact with the said bearing, substantially as described.

6. The wheel-shaped bearing having a lateral extension at one side on which it is supported, and a circular opening through said head terminating at one side of its lateral extension, and a cutter-head on said bearing engaging the periphery and sides thereof, substantially as described.

7. The wheel-shaped bearing having a curved channel through its center and a revolving cutter-head thereon, and a stationary guide at the side of said head and bearing provided with a curved angular channel, and feed mechanism connected with said guide-head and entering the channel therein, substantially as described.

8. The revolving cutter-head having an opening through its center and the fixed feed-head at its side provided with a circular angular channel, and a set of feed-shafts provided with feed-screws entering said channel, substantially as described.

Witness my hand to the foregoing specification this 28th day of July, 1890.

JARVIS A. SLATER.

Witnesses:
H. T. FISHER,
NELLIE L. MCLANE.