No. 624,930. Patented May 16, 1899.

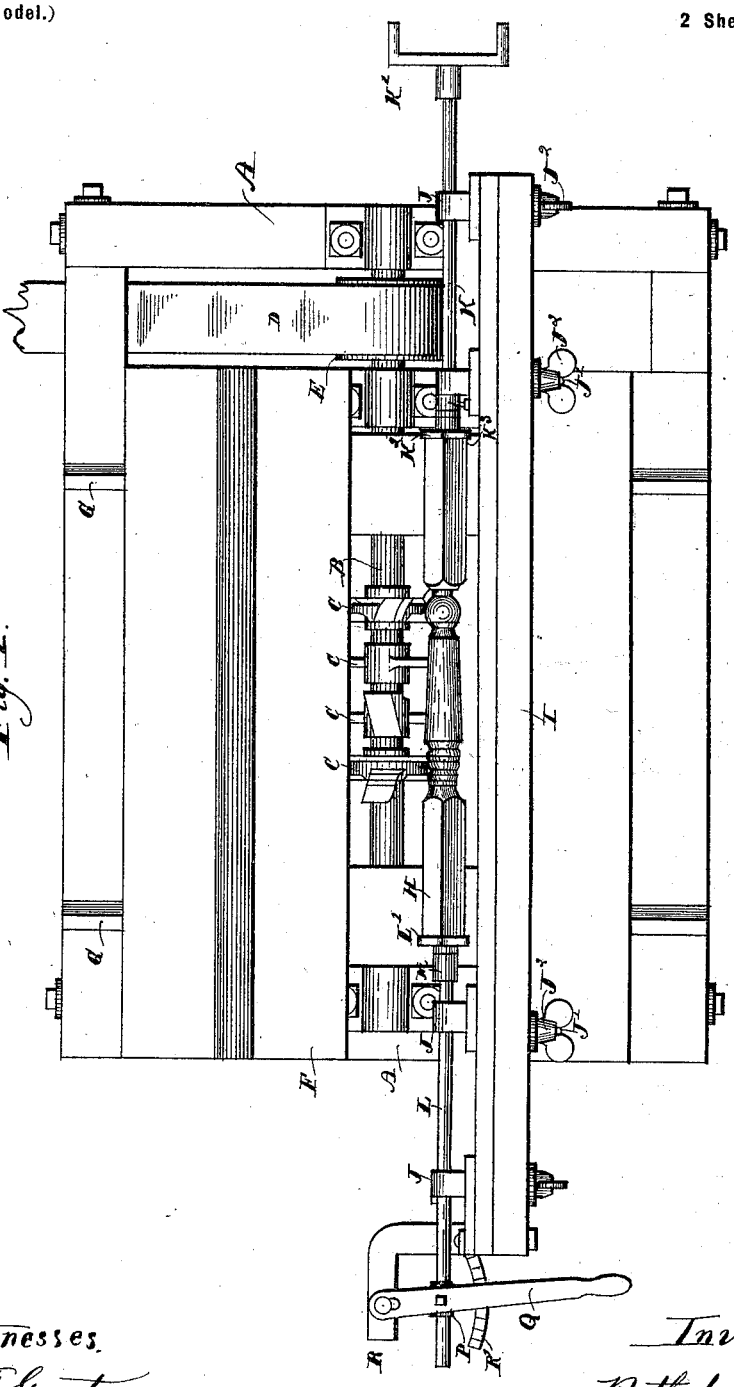
R. HARRIS.

SPINDLE TURNING MACHINE.

(Application filed Sept. 13, 1897.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses.
J. P. Grat.
Joseph Kubicek

Inventor.
Rutledge Harris
By J. McStJohn
Atty.

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Fig. 2.

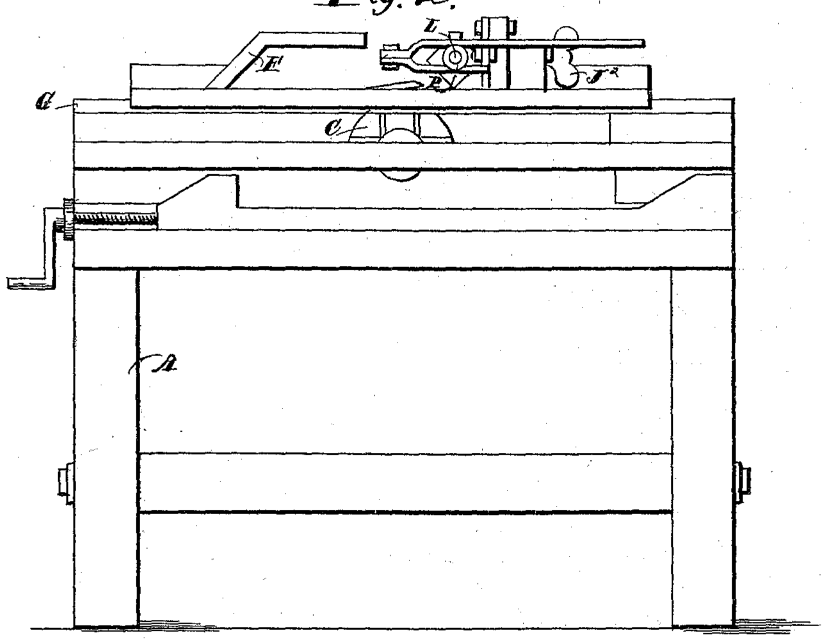


Fig. 3.

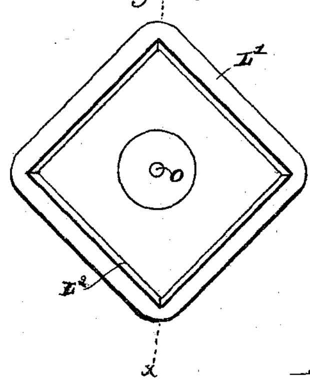


Fig. 4.

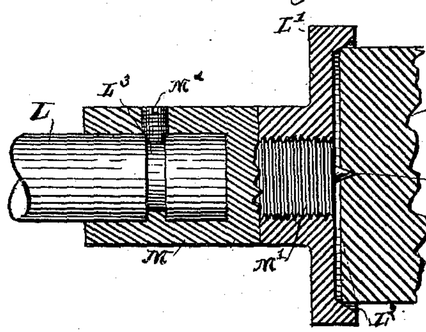
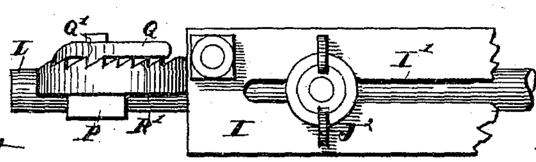


Fig. 5.



Witnesses.
J. F. Groat
Joseph Kubicek

Inventor:
Rutledge Harris.
By J. M. St. John
Atty

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UNITED STATES PATENT OFFICE.

RUTLEDGE HARRIS, OF CEDAR FALLS, IOWA.

SPINDLE-TURNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 624,930, dated May 16, 1899.

Application filed September 13, 1897. Serial No. 651,558. (No model.)

To all whom it may concern:

Be it known that I, RUTLEDGE HARRIS, a citizen of the United States, residing at Cedar Falls, in the county of Black Hawk and State of Iowa, have invented certain new and useful Improvements in Spindle-Turning Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of wood-working-machines used in the transverse cutting of balusters, spindles, and the like by the use of rapidly-revolving cutter-heads having cutters of the proper configuration to produce the desired profile.

The invention consists in an improved device for holding and turning the stick in the production of round work and will be fully hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a device embodying the invention as applied to a machine adapted for this class of work. Fig. 2, Sheet 2, is an end elevation of the same as seen from the left side of Fig. 1. Fig. 3 is a view of one of the stick-holding sockets as seen from the side presented to the stick. Fig. 4 is a section of the same in the line $x\,x$. Fig. 5 is a front elevation of the lever end of the holding apparatus.

Similar letters of reference indicate corresponding parts.

On a suitable frame A is mounted a mandrel B, carrying one or more cutter-heads C, revolved rapidly by a suitable belt D on a pulley E, near one end. A carriage F is mounted to slide back and forth on tracks G, transverse to the mandrel. These constitute the main features of a typical machine for the purpose indicated and are of such familiar construction as to require no particular description.

In the operating of machines of this nature it is desirable that they be adapted to produce round forms, as well as those square or octagonal in cross-section. In order to do so, the stick H must be held by a revoluble holder, so as to be turned slowly as it is moved back over the revolving cutter-heads. As the sticks to be turned vary greatly in length, the holder should be adjustable thereto and the apparatus should be of such a nature as to admit of rapid manipulation of the work. These features I have sought to attain in the device which will now be described.

To a longitudinal bar I, secured to the sliding carriage F, are attached bearing-blocks J by suitable bolts J′ and thumb-nuts J^2. The bar I is provided with slots I′, through which said bolts pass, and provision is thus made for their adjustment along said bar, as desired.

In one pair of bearings is mounted a head-stock spindle K, provided with a crank K′, which in practice is made double, as shown, so that it may be operated with both hands for greater steadiness in turning the stick, if desired. At the inner end this spindle is provided with a fixed socket-head K^2, having a shallow square depression K^3 to receive the end of the stick and corresponding substantially to the socket for the other end of the stick. (Shown in Figs. 3 and 4.) In the other pair of bearings is mounted a tail-stock spindle L, having a revoluble head L′ on its inner end, with a square socket L^2 to receive the end of the stick. The sockets in both heads are made with beveled sides, as shown in Figs. 3 and 4, so that while the end of the stick may easily enter the socket a little way its angles engage the inclined sides of the socket before the end strikes the bottom, and the stick is thus held firmly in place without any tendency to shake or twist under the severe strain to which the cutters subject it.

The socket-heads are suitably threaded for attachment to a correspondingly-threaded shank, the socket-head K^2 being threaded to the spindle K in the same manner that the head L is attached to the collar M. This collar is in the nature of a socket, with a projecting screw-threaded stud M′ to take the head L. The other end of the collar is bored to fit the end of the tail-stock spindle and revolve freely thereon and is held in place by a screw M^2, entering a groove L^3 in the spindle L.

In the center of each head when in position is a conical spur O, which in one case forms a part of the head-stock spindle, as will be

evident, and in the other case a part of the revoluble collar M. The purpose of this spur is to center the sticks as they are gripped between the head and tail stock sockets, so that when it is desired to polish the work after being formed by the cutters it may be easily and rapidly mounted in an ordinary lathe for that purpose.

Near the outer end of the tail-stock spindle is attached a collar P, and to this is pivoted a hand-lever Q, one end of which connects with a bracket R, secured to the bar F. Connected with the bracket or forming a part of the same is a notched arm R′, adapted to engage with a downwardly-projecting lip Q′ of the hand-lever and hold the lever in any desired position.

The operation of the device will be readily understood. To insert a stick, the hand-lever is thrown to the left, Fig. 1. The stick is then put in position, when by a single movement of the hand-lever to the right it is firmly clamped between the two socket-heads and accurately centered. The operator then advances the carriage toward the cutter-heads, and as they begin to cut the stick he turns it slowly, moving the carriage gradually until in its final position for work the stick is directly over the center of the mandrel. A single revolution of the stick when in this position of course completes the cutting, when it is drawn back and released by disengaging the hand-lever.

The sockets are adapted to give a broad firm bearing for the ends of the stick, without which it is impossible to produce good work on a machine of this kind, since any tendency on the part of the stick to work endwise by reason of inadequate chucking will produce a corresponding imperfection in the cutting of the desired pattern.

It is to be understood that sockets of different sizes are provided to suit various-sized stock, the changes being quickly made by unscrewing sockets of one size and screwing on other of the size required.

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

1. In a machine substantially as described, the combination with a rotating cutter-head and a carriage sliding transverse thereto, of a stick-holder composed of a revoluble head-stock mandrel with a rigidly but removably attached socket-head, and means for rotating said mandrel, a tail-stock spindle adapted to slide endwise, a revoluble collar mounted thereon having a projecting, screw-threaded stud to take a socket-head, a hand-lever to slide said spindle endwise, means for holding the lever in any desired position, and a socket-head removably attached to said revolving collar, both socket-heads having rectangular sockets with inclined sides, substantially as and for the purpose set forth.

2. In a machine substantially as specified, the combination with a rotating cutter-head and a carriage sliding transverse thereto, of a longitudinal bar attached to said carriage and slotted for the adjustment of bearings mounted thereon, bearings for the head and tail stock spindles mounted on said bar, a rectangular head-stock socket rigidly but removably attached to the head-spindle, and having internally-inclined side ribs, a similar socket removably but rigidly attached to a revolving collar mounted on the inner end of the tail-spindle, conical spurs central to each socket, a hand-lever to move the tail-spindle back and forth, and a notched arm to engage the lever, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

RUTLEDGE HARRIS.

Witnesses:
HUGH M. CARTNEY,
CHAS. L. HALE.