H. D. Storer,

Cutter Head.

No. 17,343. Patented May 19, 1857.

Witnesses.
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HENRY D. STOVER, OF BOSTON, MASSACHUSETTS.

ROTARY PLANING-CUTTER.

Specification of Letters Patent No. 17,343, dated May 19, 1857.

To all whom it may concern:

Be it known that I, HENRY D. STOVER, of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented a new and useful Improvement in Cutter-Heads; and I hereby make the declaration that the following specification, in connection with the accompanying drawings and references thereon, constitute and embody a lucid, clear, and exact description of the construction and operation of the same.

In referring to the said drawings, Figure 1, denotes a plan or top view. Fig. 2, a side elevation of the same showing the edges of the cutters and caps. Fig. 3, an opposite side elevation of it, partly showing the side of one of the cutters and holder for securing it. Fig. 4, denotes a vertical and transverse section on line A, B, Fig. 1 showing the cutting irons confined to the cutter head. Fig. 5, is a transverse and vertical section also on line A, B, Fig. 1, showing the cutting irons placed in the cutter head and ready to be confined therein. Fig. 6, is a surface, or level section on line C, D, Fig. 2. Fig. 7, is an elevation of one of the holders, for holding the iron to the cutter head. Fig. 8, is an edge view of the same.

Invention.—The nature of my invention consists in the within described method of firmly securing the double cutting irons to the revolving head, (when the head is small, and when great velocity is imparted to it) by means of curved steel plates or holders or their equivalents, their wedge shaped or beveled ends being acted upon to straighten them and hold the double irons under them firmly to the cutter head, by means of a screw and nut, and for performing the work efficiently, all being arranged essentially as set forth.

In constructing cutter heads of a large class, no difficulty is had in holding the cutting irons therein by means of set screws, but in using set screws to hold the irons renders a certain diameter necessary (say at least 4 inches) to have sufficient thread in which the set screws may be fitted to securely hold the cutting irons to the heads.

The purposes for which my cutter head is intended are more particularly for forming the ornamental edges of wood for parts of furniture, or they may be used for any purpose where regular or irregular forms are required, such parts on account of the formation of scrolls and circles of a very small radii, render it necessary that the diameter of the cutter head for so forming the work should be very small, say as small as one inch in diameter, as of course the diameter of the cutter head must be smaller than the curve which it is forming in the wood or other material. Then the next thing is to so construct and arrange the parts composing the cutter head when being so small that the cutters and caps will be held efficiently and secure to the cutter head, so as not to endanger the life or limb of the operator.

It is necessary to construct the irons of considerable length where thick stock is to be shaped and to firmly secure them to the head their whole length both to cut or shape the wood with firmness and solidity, and besides, to prevent or counterbalance the action of the centrifugal force caused by the great velocity imparted to the cutter heads which should be 3000 revolutions per minute, its velocity tending to press out the central portion of the cutters.

Construction.—To enable persons skilled in the art to or nearest to which my invention appertains, to construct and carry out the same I will describe it as follows:

I construct a steel arbor seen at A, the lower portion being formed a screw for connecting the cutter head to any shaft for operation.

Near the lower end of the shaft A, is formed a collar seen at B, which should be made a part of the arbor itself. To the upper end of this arbor is fitted a movable collar C, which otherwise (except its movability,) corresponds with the lower and fixed collar B. The movable collar C can be moved down with great force by means of the nut D which is properly threaded to the top of the shaft A, and which fits on to, and comes in contact with the top of the movable collar C. This collar on its under side, as also the fixed one on its upper side, are channeled as seen at E, on two sides of the arbor or shaft A, these channels or grooves forming a tangent to the circle of the peripheries of the collars, to receive the cutting irons L in order to give the cutting edges the right direction. On the inside of these channels E, and between them and the surface of the arbor A I form bevels seen at F which receive the caps G of the cutting irons and which have each of their ends correspondingly beveled as seen at H, in order to fit to the bevels F formed in the collars.

On the outside of the channels E, I form bevel concavities seen at I, of all that portion of the collars between the channels E, and their peripheries which receive the bevel convexities J, formed on the end of the metallic spring holders K, I form a ring or raised surface M on the shaft A, for the caps G to rest against to keep them straight as they, and the irons L are pressed against them and held by the spring holders K and bevels on their ends, and the grooves in the collars B and C and nut D. These holders are formed of steel and so curved as seen at Figs. 5 and 8 (and tempered a spring temper) that they can be placed against the irons L as seen at Fig. 5 and a small portion of their bevel convexities J, some within the corresponding bevel concavities I in the collars to allow them to catch therein. Then the nut D can be turned to force the movable collar down upon the spring holders K which presses the central portion N, of these holders K against the central portion O of the cutting irons L, with great force to hold them, and the caps G securely to the cutter head and to prevent the action of the centrifugal force caused by the great velocity of the irons.

As the collar C, is screwed down, the holders K, are gradually straightened, and the heaviest part of the pressure caused by such straightening is received by the central portion of the cutting irons L, this pressure gradually diminishes to each upper and lower extreme end of the cutting irons L and caps G, yet a portion of the pressure will be received the whole length of these irons and caps.

By continuing turning down the nut D it will bring the bevels F, in the collars B and C and the bevels H on the caps G in contact as also the concavities I in the collars B and C, and the convexities J formed on the ends of the spring holders K, which firmly press and complete the holding of the double irons, or the caps G and irons L, to the cutter heads for all the purposes before mentioned.

The holders K are tempered a spring temper both for holding firmly the central portions of the irons L and caps G to the cutter head and so that they will instantly regain their position when released from the cutter head.

The edges of the cutting irons and caps can be formed to give any desired form to the pieces receiving shape, my arrangement for holding, whereby the application of a cap to the cutting irons in cutter heads which are so small, is of the greatest importance to finish smoothly the whole surface, and particularly all the cross grained or gnarly places in the wood, in the nicest manner and that without changing ends of the piece receiving shape, as changing the ends does not avail anything in the smoothness of finish over gnarly places besides by my arrangement where the double irons or caps and irons are held and used, no change of the ends of the piece receiving shape is necessary, as it can be all formed by a continuous movement.

The caps can be set to or from the edge of the cutting irons as desired, by a light blow of a hammer after the nut D, is slightly started back.

At P, a recess is formed which is designed to receive a stationary circular guide (not shown) against which the pattern is pressed and moved, as the piece screwed or fastened to its upper surface and which is larger than the pattern, receives its shape by the revolving of the cutters all as will be readily understood.

The operation of my invention can be fully comprehended in the description of construction and the accompanying drawings.

What I claim as my invention and desire to secure by Letters Patent is—

My within described method, or its mechanical equivalent for securing double or single cutting irons to cutter heads to hold them secure when in use, essentially in the manner and for the purposes fully set forth.

HENRY D. STOVER.

Witnesses:
HENRY I. SNELL,
E. W. SCOTT.