

(No Model.)

J. SWAN.

MACHINE FOR CUTTING FLOOR LIPS AND SPURS ON AUGERS AND BITS.

No. 387,188.

Patented July 31, 1888.

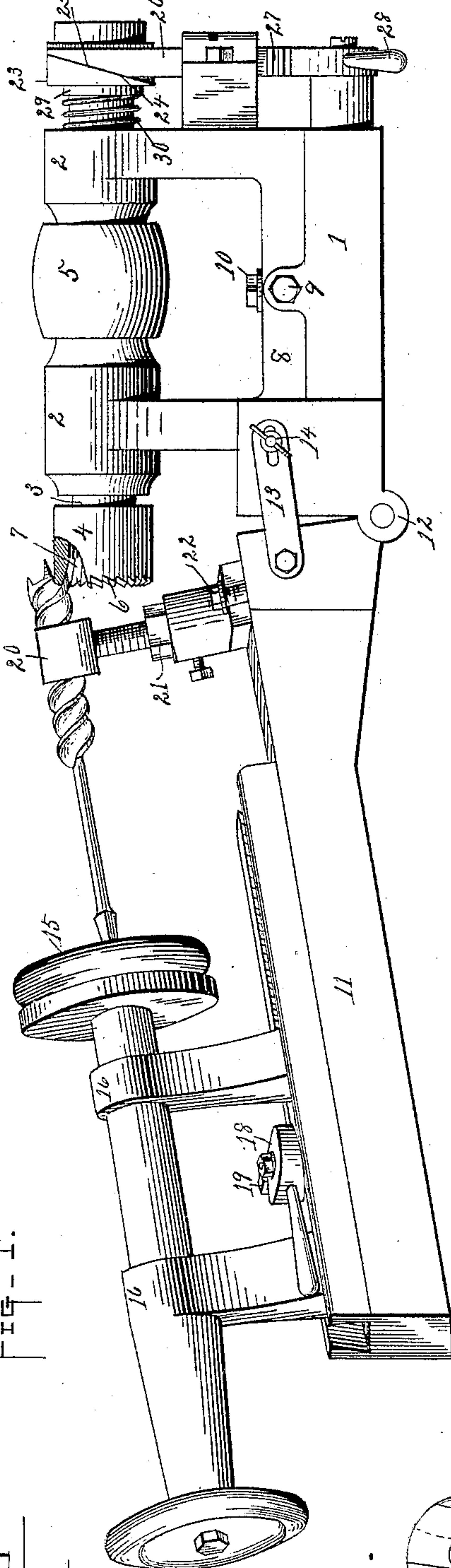


FIG. 1.

Witnesses.  
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C. M. Newman

FIG. 3.

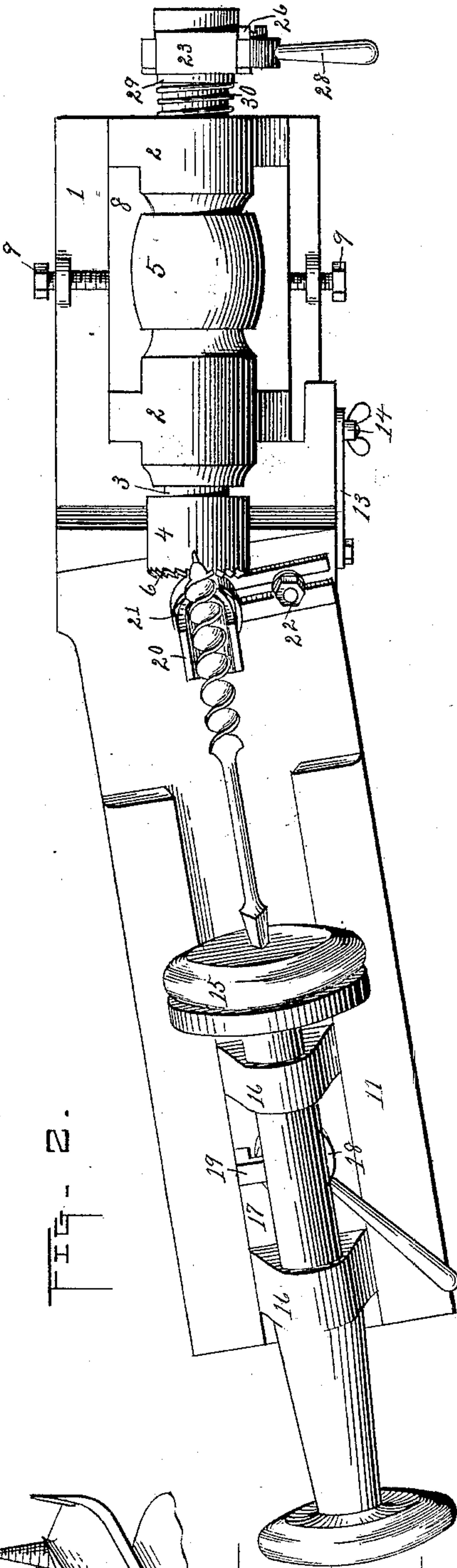
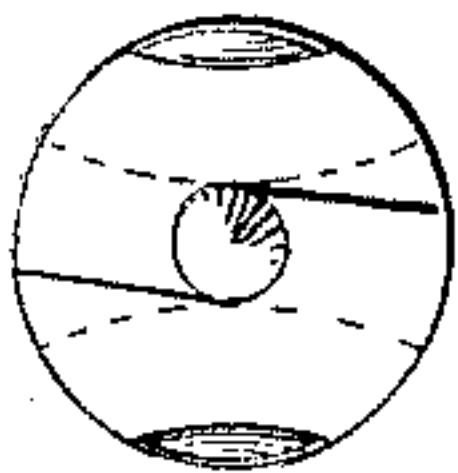


FIG. 2.

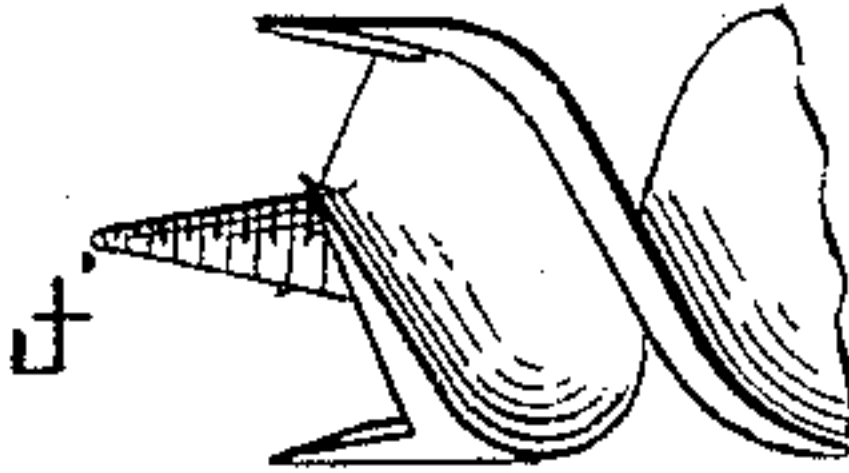


FIG. 4.

INVENTOR  
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# UNITED STATES PATENT OFFICE.

JAMES SWAN, OF SEYMOUR, CONNECTICUT.

MACHINE FOR CUTTING FLOOR-LIPS AND SPURS ON AUGERS AND BITS.

SPECIFICATION forming part of Letters Patent No. 387,188, dated July 31, 1888.

Application filed May 14, 1888. Serial No. 273,769. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES SWAN, a citizen of the United States, residing at Seymour, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Machines for Cutting Floor-Lips and Convex Spurs in Augers and Bits; 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.

My invention has for its object to produce a machine for beveling the floor-lips of augers and bits which will at the same time form cutting-spurs having convex inner faces. For certain classes of work, augers and bits having cutting-spurs with convex inner faces are preferable to all other styles. Heretofore, so far as I am aware, after being roughly formed by machinery, the beveling of these convex spurs has been performed by hand-labor with a file, for the reason that no automatic machine has heretofore been devised for doing this class of work.

My present invention is based upon my other machines employed in the manufacture of bits, as illustrated and described in my several Letters Patent of the United States, No. 302,527, dated July 22, 1884; No. 303,239, dated August 5, 1884; No. 307,074, dated October 21, 1884, and No. 313,456, dated March 3, 1885, and is an adaptation of my said former machines to the special class of work to be performed, a special organization and arrangement of parts being required for the present purpose.

With these ends in view I have devised the novel machine of which the following description, in connection with the accompanying drawings, is a specification, figures being used to denote the several parts.

Figure 1 is a side elevation of the operative parts of the machine, the milling-tool being broken away to show the inner cutting-teeth; Fig. 2, a plan view, and Figs. 3 and 4 are respectively an end view and side elevation of a bit having convex cutting-spurs.

The bed of the machine is made in two parts, which are hinged together, so that they may be set at any required angle in the vertical plane relatively to each other.

1 denotes the part of the bed seen at the right in the drawings. This part is provided with suitable bearings, 2, for the spindle 3, carrying a cylindrical milling-tool, 4. 5 denotes a belt-pulley on said spindle, whereby rotation is imparted thereto. The milling-tool used is the same as in my former patent, No. 302,527, referred to. It is provided with cutting-teeth 6 at the outer end, which give the required bevel to the floor-lip, and with inclined internal cutting-teeth, 7, which impart the desired convex form to the inner face of the cutting-spurs, as will be more fully explained. The bearings for the spindle and their standards are made integral with a plate, 8, which is laterally adjustable on part 1 of the bed by means of set-screws 9, and is locked in place, after adjustment, by a set-screw, 10. In order to form convex cutting-spurs and at the same time to bevel the floor-lip, it is necessary that the bit or auger should be set at an angle to the milling-tool both in the horizontal and the vertical plane. This I accomplish in the manner which I will now describe.

11 denotes the other part of the bed—the left as seen in the drawings. This part is connected to part 1 by a hinge, 12, and is adjustably locked thereto in any suitable manner. In the present instance I have shown a slotted plate, 13, attached to one of the parts, and a set-screw, 14, passing through the slot and engaging the other part. 15 denotes the chuck for the auger or bit, journaled in suitable bearings 16 on a plate, 17, which is longitudinally adjustable in ways in part 11 of the bed. The plate is locked in position, after adjustment, by means of a suitable cam, 18, which engages a wedge, 19.

The essential principle of my invention consists in placing plates 8 and 17 at such an angle relatively to each other in the horizontal plane that in operation the portion of the partly-made bit from which the cutting-spur is to be formed will pass within the milling-tool, and will be acted upon by the cutting-teeth 7 on the inner periphery of the milling-tool, the action of said tool, when the bit is placed in such a position relatively thereto, being to form a perfectly-beveled convex spur, and, furthermore, in placing said plates at such an angle relatively to each other in the vertical plane that the end cutting-teeth, 6, of the mill-



ing-tool will cut the floor-lip of the auger or bit at the same time that teeth 7 are cutting the convex spur. In other words, it is essential that the milling-tool spindle and the bit-chuck be placed at an oblique angle relatively to each other.

As the construction of the chuck or the spindle for the milling-tool is not an essential feature of my invention, I do not deem it necessary to illustrate or describe it in detail. It is simply required that the chuck be so constructed as to hold the shank of the bit firmly in operation. The forward end of the bit is supported by a rest, 20, which is vertically adjustable, and is locked in position, after adjustment, by a clamping-nut, 21. It is also laterally adjustable, and is secured in position, after adjustment, by a clamping-nut, 22. Should it be desired to change the angle of the floor-lip, it may be accomplished by raising or lowering part 11 of the bed by which the bit is carried. In practice either the bit may be advanced toward the milling-tool or the milling-tool may be moved forward to engage the bit. In the present instance I have shown the spindle as provided with a loose collar, 23, having a cam-wall, 24, engaged by a correspondingly-inclined wall, 25, on a bifurcated slide, 26, which embraces the spindle, as clearly shown in the drawings. The slide is provided with rack-teeth 27, which are engaged by teeth on the rounded head of a hand-lever, 28, whereby the slide is raised or lowered. 29 is a fixed collar on the spindle, which is engaged by loose collar 23, when the latter is forced forward, thereby carrying the spindle and milling-tool forward when the hand-lever is raised, and making a cut of any desired depth in the end of the partly-finished auger or bit, whereby the floor-lip is formed, and at the

same time a convex cutting-spur is formed by the action of the internal cutting-teeth of the milling-tool. A spring, 30, surrounds the spindle, the ends of which bear, respectively, against the outer face of the outer bearing and the inner face of collar 29, its action being to force the collar and with it the spindle and milling-tool backward as soon as the hand-lever is lowered. Having finished one side of the bit, the hand-lever is pressed down, which allows spring 30 to withdraw the milling-tool from the end of the bit. The chuck is then given a half-rotation, which places the other side of the bit in position to be operated upon. The hand-lever is then raised again to carry the milling-tool into operative position, as before, to cut the other floor-lip and the other convex cutting-spur. The shape of these convex cutting-spurs as formed by my novel machine is clearly shown in Fig. 3.

Having thus described my invention, I claim—

In a machine of the class described, the combination, with an adjustable plate carrying a cylindrical milling-tool with end and internal cutting-teeth, of an adjustable plate carrying a bit-chuck at an oblique angle to the milling-tool, said chuck and milling-tool being so located relatively to each other that in operation the end of one side of the bit passes within the milling-tool, causing the end teeth to cut the floor-lip and the internal teeth to cut a convex spur, substantially as described.

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

JAMES SWAN.

Witnesses:

LEWIS A. CAMP,  
SAML. P. CAMP.