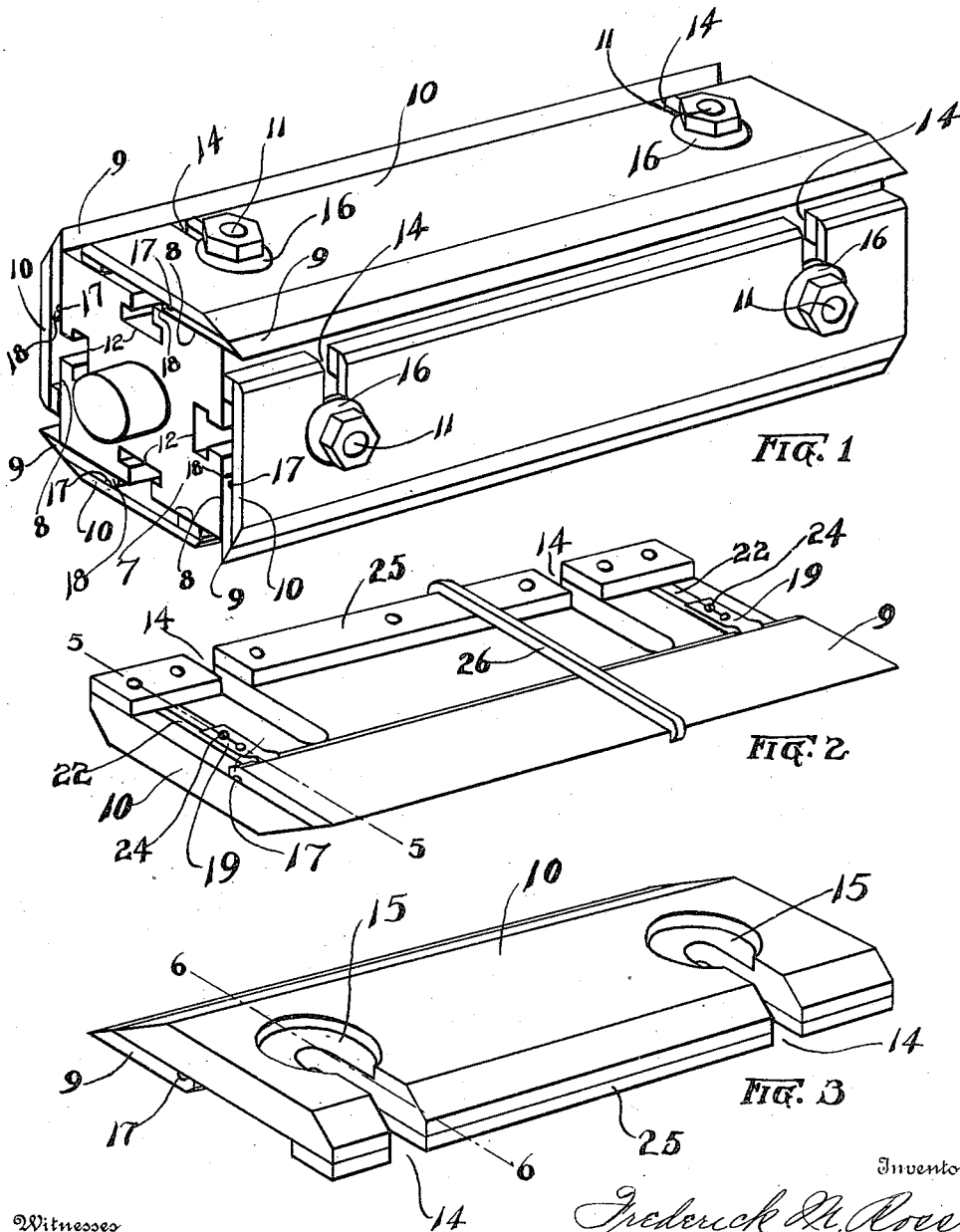


F. M. ROSS.
CUTTING HEAD AND BIT.
APPLICATION FILED OCT. 21, 1909.

976,301.

Patented Nov. 22, 1910.

2 SHEETS-SHEET 1.



Witnesses

W. Thornton Bogert
E. M. Callister.

Inventor

Frederick M. Ross

By

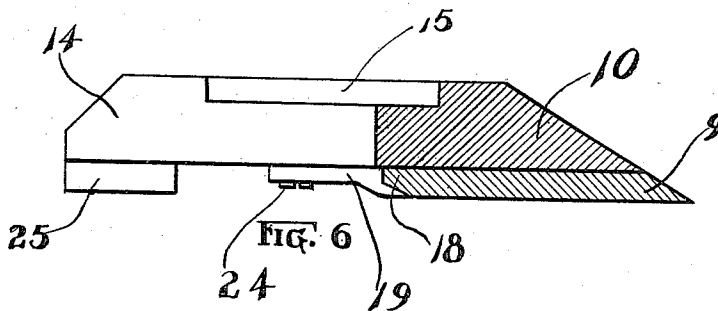
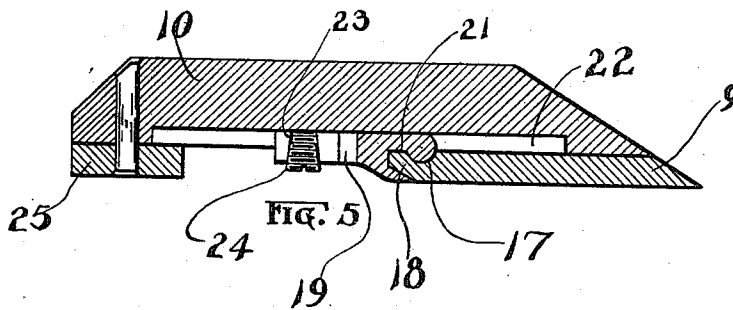
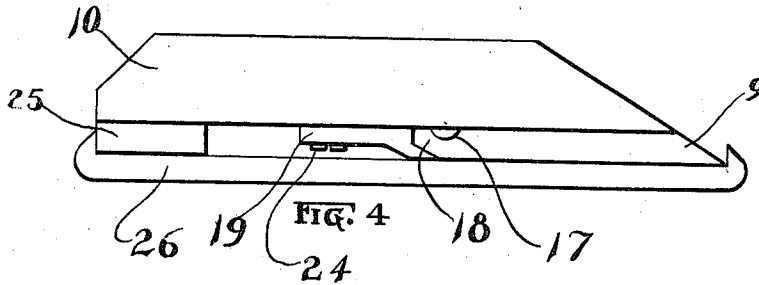
Walter J. Murray
Attorney

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UNITED STATES PATENT OFFICE.

FREDERICK M. ROSS, OF NEWPORT, KENTUCKY, ASSIGNOR TO ACME HIGH-SPEED KNIFE AND MANUFACTURING COMPANY, OF OAKLEY, OHIO, A CORPORATION OF OHIO.

CUTTING HEAD AND BIT.

976,301.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed October 21, 1909. Serial No. 523,764.

To all whom it may concern:

Be it known that I, FREDERICK M. ROSS, a citizen of the United States of America, and resident of Newport, Campbell county, State of Kentucky, have invented certain new and useful Improvements in Cutting Heads and Bits, of which the following is a specification.

This invention relates to cutting heads for wood working and similar machines and particularly to means for mounting the bits or knives.

In carrying out my invention, I employ high-speed steel knives, and such steel can only be obtained in certain widths. The steel is rolled to the desired shapes and cannot, because of its characteristics, be stamped.

An object of my invention, therefore, is to provide simple and effective means for mounting high-speed steel knives, which adapts itself to the necessary construction of the knives.

A further object is to produce a cutting head, in which means are employed for keeping the bit the same width, irrespective of the decrease in width of the knives, due to grinding away in the operation of sharpening.

A further object is to produce means whereby the cutting edges of the knives are always maintained at the same distance from the mounting bolts, so that the leverage on the bolts is maintained constant, as the positions of the knives are varied to take up the decrease in width resulting from the sharpening operation.

A further object is to produce means for mounting the knives on the cutting head, so that they may be shifted longitudinally of the head.

These and other objects I attain in an apparatus embodying the features herein described, and illustrated in the drawings accompanying this application and forming a part thereof.

In the drawings, Figure 1 is a perspective view of an assembled cutting head for a planer or similar machine, with the knives secured in place. Fig. 2 is a perspective view of a clamp-plate and knife, in connection with a gage located in the position for setting the knife. Fig. 3 is a perspective view, showing the opposite side of the clamp-plate illustrated in Fig. 2. Fig. 4 is an end

elevation of a clamp-plate in connection with a knife, means for securing the knife to the plate, and a gage in position for adjusting the knife on the plate. Fig. 5 is a sectional view taken along the line 5—5 of Fig. 2. Fig. 6 is a sectional view taken along the line 6—6 of Fig. 3.

The apparatus consists of a cutting head, clamp-plates to which knives are adjustably secured, and which are adapted to be secured to the cutting head in such a way, that the knives are held rigidly in position.

Referring to the drawings: A cutting head, 7, is provided with four mounting faces, 8, on each of which a knife, 9, is mounted by means of a clamp-plate, 10.

Each knife is adjustably mounted upon its corresponding clamp-plate prior to mounting the plate on the head, 7, and each plate may be secured to the head by means of T-head bolts, 11, the heads of which engage under-cut channels, 12, formed in the head, 7, and extending longitudinally across each mounting face, 8. Each clamp-plate, 10, is provided near each end with a slot, 14, which extends transversely of the plate to about its center line and terminates in a circular recess, 15, formed on the outer face of the plate. The slots, 14, are adapted to receive the shanks of the bolts, 11, and the recesses, 15, are adapted to receive washers, 16, provided for the bolts, so that each plate always occupies the same relative position when mounted on the head, 7.

The knives, 9, are made of high speed steel and, consequently are limited to a shape which can be rolled. Each knife is provided at its rear edge with a longitudinally extending groove, 17, so located as to form a dove-tailed tongue, 18, on the rear edge of the knife. Adjusting clamps, 19, are provided for securing the knives to their corresponding clamp-plates. Each clamp, 19, is provided at one end with a slot, 21, which is adapted to engage the tongue, 18, and to secure the clamp to the knife. Each clamp is located in a channel, 22, which extends across the inner face of the clamp-plate. The rear end of each adjusting clamp is provided with a tapered hole, 23, which is adapted to receive a tapered screw, 24. Each clamp, 19, is split from its rear end to a point beyond the hole, 23, so that it will be spread to grip the walls of the channel, 22, when the tapered screw, 24, is screwed into

the hole, 23. Each clamp-plate is provided with two channels, 22, and consequently each knife is secured to its corresponding clamp-plate by means of two clamps, 19. With this arrangement, the knives can be moved laterally of the clamp-plate to adjust the position of their cutting edges.

A gage plate, 25, is mounted on the inner face of each clamp-plate, 10, at its rear edge. The rear face of each plate, 25, is carefully planed and is employed as an adjusting face for the knife edge. A gage bar, 26, is provided for use in adjusting the knife edge. The gage bar fits over the adjusting face of the plate, 25, and the cutting edge of the knife, and when the knife is in position, it may be secured in place by means of the adjusting clamps, 19. With this arrangement, the knife edges will always be maintained at the same distance from the adjusting faces of the plates, 25, irrespective of the width of the knives, and the width of the cutting bit will always be the same. Moreover the distance from the cutting edges of the knives to the bolts, 11, will always be the same and the leverage on the bolts will not vary, as the knives decrease in width, due to the operation of sharpening.

After the knives are properly adjusted and secured to the clamp-plates, the clamp-plates are firmly secured to the cutting head, 7. When the clamp-plates are in place on the cutting head, each knife is firmly gripped between its corresponding clamp-plate and the cutting head and held firmly in place.

If during the operation of the cutting head the knives should come in contact with a nail or other substance which would nick their cutting edges, the knives may be shifted longitudinally, so that the nicks in the separate knives are not in alinement. This may be done by loosening the clamp-plates and shifting the knives through the under-cut slots, 21, of the adjusting clamps, without destroying the adjustment of the knives. When the clamp-plates are again firmly secured to the cutting head, the knives are ready for operation without any other adjustment.

What I claim is:

1. A cutting head, a clamp-plate, a knife, means for positively mounting said knife on said plate whereby it is capable of a purely longitudinal motion along the plate, and means for mounting said plate and said knife on said head.

2. A cutting head, a knife, a clamp plate, an adjusting clamp mounted on said clamp

plate and engaging said knife, and means for securing said clamp plate and said knife to said head.

3. A cutting head, a clamp plate provided with a transversely extending channel, an imperforate knife, means mounted in and movable along said channel and engaging said knife for mounting said knife on said plate, and means for securing said plate and said knife to said head.

4. A cutting head, a clamp-plate, provided with a transversely extending channel, a knife, means mounted in said channel and engaging said knife for securing said knife to said plate and for permitting it to move longitudinally of said plate without changing its transverse adjustment, and means for rigidly mounting said plate and said knife on said head.

5. A cutting head, a knife, a clamp plate for securing said knife to said head, bolts for securing said plate to said head, and clamps seated in the plate and having a sliding connection with the knife and adapted to permit a lateral adjustment of the knife, without changing its transverse adjustment.

6. A cutting head, a clamp-plate provided with a transversely extending channel, an imperforate knife, an adjusting clamp engaging said knife and movable longitudinally there along, means for expanding said clamp to grip the walls of said channel to secure said knife on said plate, and means for mounting said plate on said head.

7. A cutting head, a clamp-plate, an imperforate knife, adjusting clamps for securing said knife to said plate and means for securing said plate to said head.

8. A cutting head, a clamp plate provided with a transversely extending channel, an imperforate knife, an adjusting clamp engaging said knife, means for locking said clamp at different positions along said channel to secure said knife to said plate, and means for mounting said plate on said head.

9. A cutting head, a knife, a clamp plate for securing said knife to said head, bolts for securing said plate to said head, adjusting clamps seated in transversely extending channels in said plate and having a sliding connection with said knife, and means for expanding said clamps to positively lock them to said plate.

FREDERICK M. ROSS.

Witnesses:

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