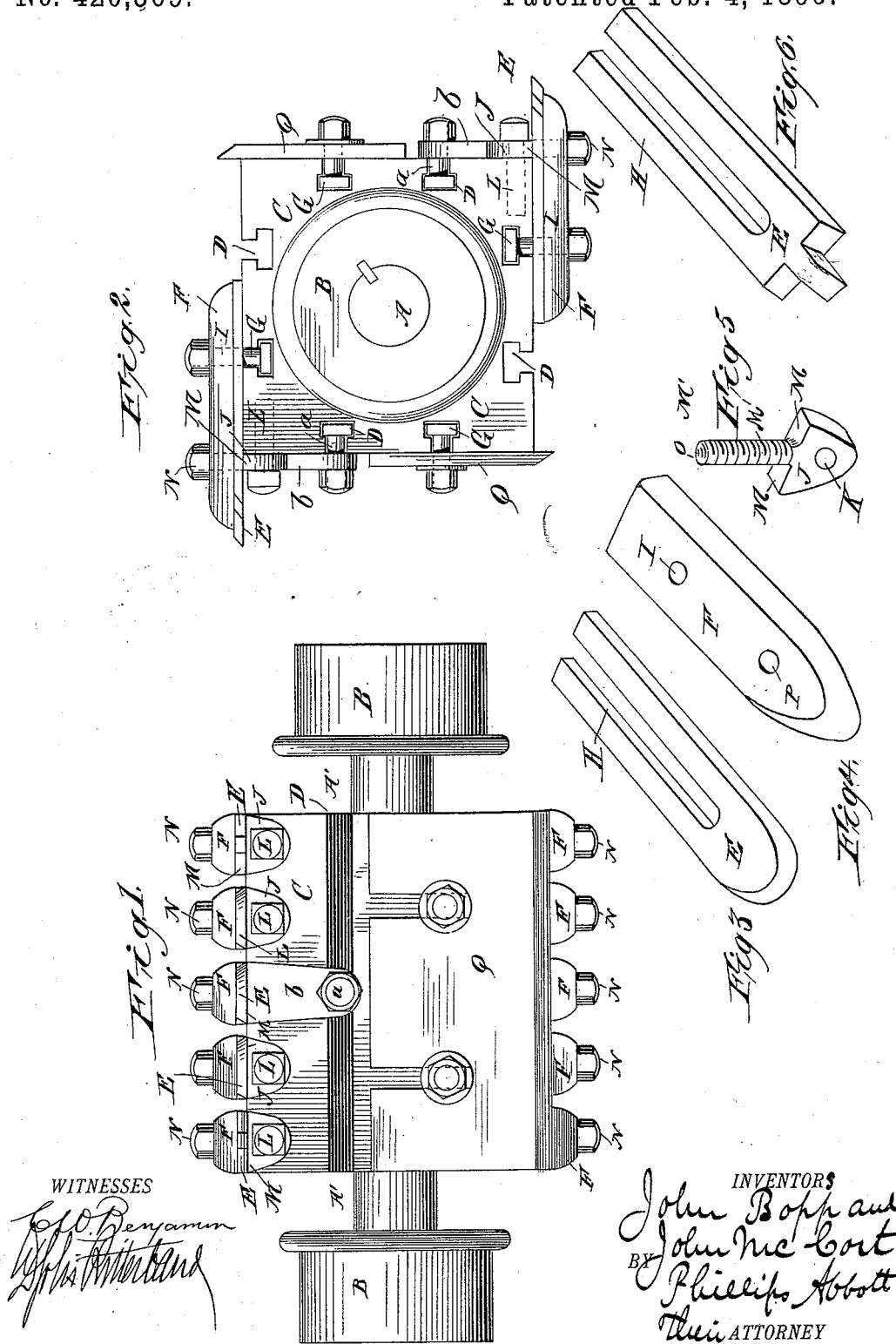


(No Model.)

J. BOPP & J. McCORT.
CUTTER HEAD FOR PLANERS.

No. 420,569.

Patented Feb. 4, 1890.



WITNESSES

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JOHN BOPP, OF BROOKLYN, AND JOHN McCORT, OF BLISSVILLE, NEW YORK;
SAID McCORT ASSIGNOR TO SAID BOPP.

CUTTER-HEAD FOR PLANERS.

SPECIFICATION forming part of Letters Patent No. 420,569, dated February 4, 1890.

Application filed June 24, 1889. Serial No. 315,331. (No model.)

To all whom it may concern:

Be it known that we, JOHN BOPP, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, and JOHN McCORT, a citizen of the United States, residing at Blissville, Queens county, New York, have invented certain new and useful Improvements in Cutter-Heads for Planers, of which the following is a specification.

Our invention relates to improvements in the construction of cutter-heads of machine-planers, whereby the knives or cutters are held firmly in their place upon the cutter-head, and are not subjected to any strain or bending action owing to their attachment to the head; also, by our improved construction we are enabled to use on the same head cutters of different construction adapted to do different parts of the work, or, if preferred, cutters all of one kind.

Our improvement is specially applicable to planers which cut square, half-round, or other shaped grooves or recesses in the face of the lumber in which separate cutters or knives are usually employed.

In the drawings the same reference-letters indicate the same parts in all the figures.

Figure 1 illustrates a side view of the cutter-head, showing alternative constructions of the clamping-bolts. Fig. 2 illustrates an endwise view of the cutter-head and coacting parts. Fig. 3 illustrates a perspective view of a knife adapted to cut a half-round recess or groove in the lumber. Fig. 4 illustrates a perspective view of the re-enforcing plate placed upon the back of the knives. Fig. 5 illustrates one form of the cutter clamping-bolt. Fig. 6 illustrates a perspective view of a knife, separated from the other parts, adapted to cut a square groove in the face of the lumber.

A is the shaft on which the cutter-head turns, the journal-boxes fitting over the shaft A at the parts marked A'.

B B are pulleys over which belts run, as usual.

C is a metallic block which constitutes the cutter-head proper.

D are undercut grooves planed out of the

metal lengthwise of the head. There are preferably two of these grooves on each side of the block, substantially equidistant from the edges or corners thereof, for the purpose herein after set forth.

E are the cutters or knives.

F are re-enforcing or stiffening backing-plates of such size and shape as to properly fit upon the backs of the knives.

G are bolts having enlarged heads adapted to fit within the undercut grooves D in the head and having screw-nuts on their other ends. In use they pass through the slot H in the knives and through the rearmost hole I in the re-enforcing piece F and project above the re-enforcing piece sufficiently far to allow of the screwing of the nuts thereon.

J (see Fig. 5) are what we designate "clamping-bolts." They are provided with a hole K in one end, through which screw-bolts L pass, entering threaded holes in the metallic head, and have also shoulders M, which project laterally from the sides of the bolt-like part M'. These shoulders are exactly flush with, or at least not lower than, the surface of the head, over which the knife which they confine extends.

N are threaded nuts which screw onto the threaded ends O of the clamp-bolts. These clamp-bolts when in position are fastened firmly to the cutter-head by the bolts L, as stated, and, projecting upward, pass through the slot H in the knives and then through the forward hole P in the re-enforcing pieces F.

Q are ordinary square-edged knives used to dress down the lumber on its face. They are arranged at opposite corners of the head, as usual, and do not require special description.

The operation of the apparatus as thus far described is as follows: The rotation of the head, the cutting action of the several forms of cutters or knives, and the effect thereof on the lumber are all well understood, and do not require explanation. The peculiar features of our invention as thus far disclosed consist in the construction and operation of the clamping-bolts J. It will be observed that the knives are clamped between the shoulders M and the back plates F, and that

they are thus held firmly in position by a simple squeezing action of the bolts, because the construction of the parts is such that the power and the resistance—in other words, the nuts N and the shoulder M—are in the same plane. Thus the knives are not sprung or put under strain by the bolts which hold them in place upon the head, as heretofore, which strain tends to their fracture and causes general flying off tangentially, endangering the lives of the workmen.

In order that the knives on our improved cutter-head may be adjustable to cut grooves, &c., in the lumber at different relative positions, and also to allow of the employment of four sets of such knives in the event that the square-edged knives are not required, we employ a modified form of clamping-bolt, as shown in the center in Figs. 1 and 2, constructed as follows: *a* is a bolt having an enlarged head and a nut substantially the same as the bolts G, and they engage in the undercut grooves D in the metallic head in the same manner that the said bolts G do in their groove. *b* is an elongated bar having the shoulders M and the threaded upper part M' and O, substantially the same as the clamp-bolt J, excepting that it is long enough to receive the bolt *a* in a hole made near its end. The operation of this modified form of the clamping-bolts will be readily understood. They may be moved longitudinally across the cutter-head either to the right or left, the heads of the bolts *a*, which confine the forward end of the knives, sliding through the undercut slots, in which they rest, and the heads of the bolts G do likewise. Thus the knives may be located at any desired point, and when so located, all the nuts being screwed up, the knives will be held firmly in place and with no strain on them.

If desired to avoid all possibility of lateral movement of the knives when cutting very hard stuff, there may be a fine-toothed rack made on the faces of the cutter-head, with which rack corresponding teeth made on the bars engage. This expedient for steadying holding devices in similar cases is well understood and does not require illustration, since it would confuse the drawings. Such a device will not ordinarily be required.

It will be seen that we not only secure the adjustable feature just described by this construction of the clamping-bolts, but also that when the square-edged cutters Q are not employed then four separate sets of "groovers" E may be used, one on each corner of the head, without any alteration of the head, one set of clamp-bolts utilizing the undercut groove on one face of the cutter-head near the corner, and the other set—to wit, those

which we designate the "clamp-bolts"—utilizing the undercut groove on the other face of the head nearest the corner.

We do not limit ourselves to the details of construction, since they may be somewhat departed from and still our invention be employed.

We claim—

1. The combination, in a cutter-head, of a knife clamped at its rearward end to the head, and a shouldered clamp-bolt at or near its forward end, the shoulders whereof are not lower than the surface of the head, across which the knife extends, and means to hold the shouldered clamp-bolt to the head and the knife upon the shoulders of the clamp-bolt, substantially as set forth.

2. The combination, in a cutter-head, of a knife clamped at its rearward end to the cutter-head, and a shouldered clamp-bolt at or near its forward end, the shoulders whereof are not lower than the surface of the head, across which the knife extends, a re-enforcing plate upon the back of the knife, and means to hold the shouldered clamp-bolt to the head and the re-enforcing plate and the knife upon the shoulders of the clamp-bolt, substantially as set forth.

3. The combination, in a cutter-head, of a knife clamped at its rearward end to the cutter-head, and an adjustable shouldered clamp-bolt adapted to engage with and to hold the forward end of the knife, substantially as set forth.

4. The combination, in a cutter-head, of a knife clamped at its rear end to the cutter-head, and an adjustable shouldered clamp-bolt adapted to engage with and to hold the forward end of the knife, the shoulders being not lower than the surface of the cutter-head, over which the knife extends, substantially as set forth.

5. The combination, in a cutter-head, of a knife clamped at its rearward end to the cutter-head, a re-enforcing plate on the back of the knife, and an adjustable shouldered clamp-bolt adapted to engage with and to hold the forward end of the re-enforcing plate and of the knife, the shoulders of the clamp-bolt being not lower than the surface of the cutter-head, across which the knife extends, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 22d day of June, A. D. 1889.

JOHN BOPP.
JOHN MCCORT.

Witnesses:

PHILLIPS ABBOTT,
FREDK. SMITH.