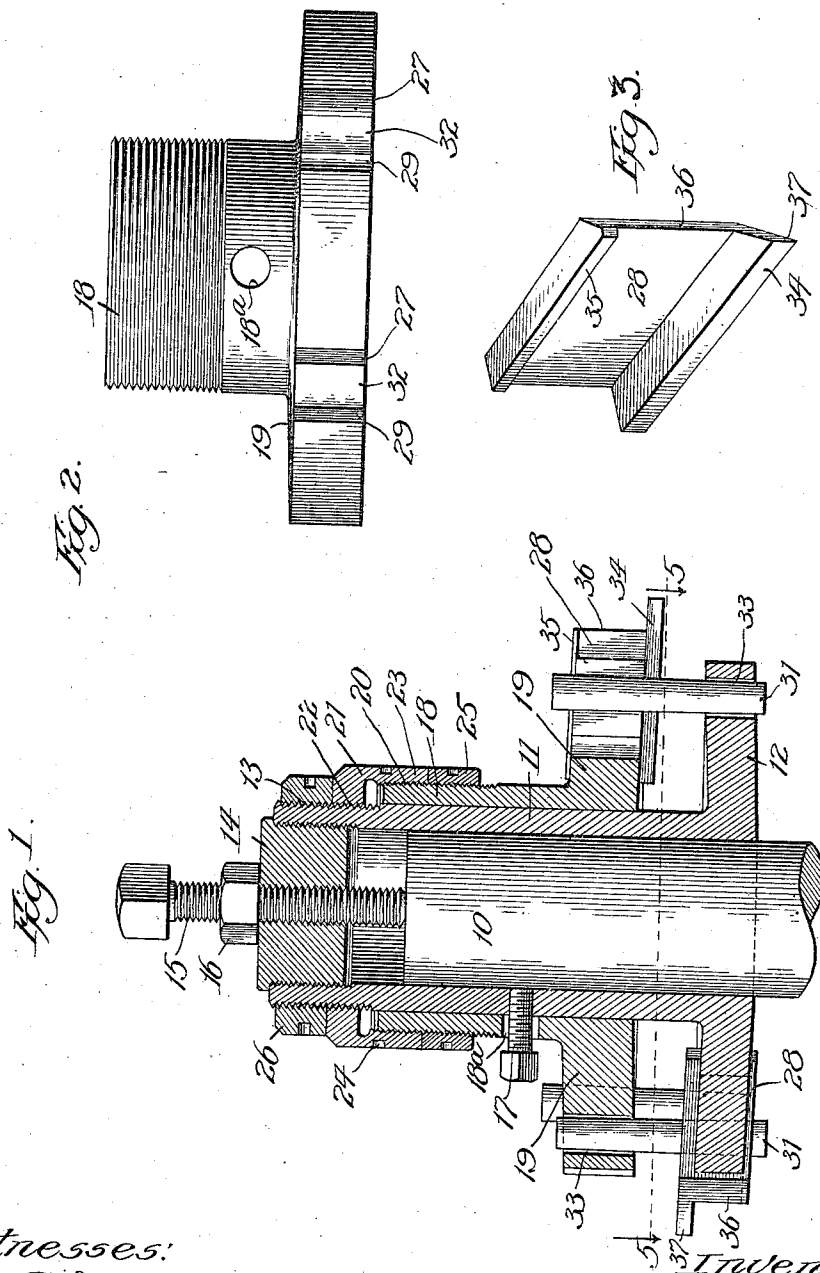


H. J. MITCHELL.
EXPANSION CUTTER HEAD,
APPLICATION FILED JULY 6, 1910.

987,479.

Patented Mar. 21, 1911.

2 SHEETS-SHEET 1.



Witnesses:
Ed. C. Johnson,
Henry M. Schuyler

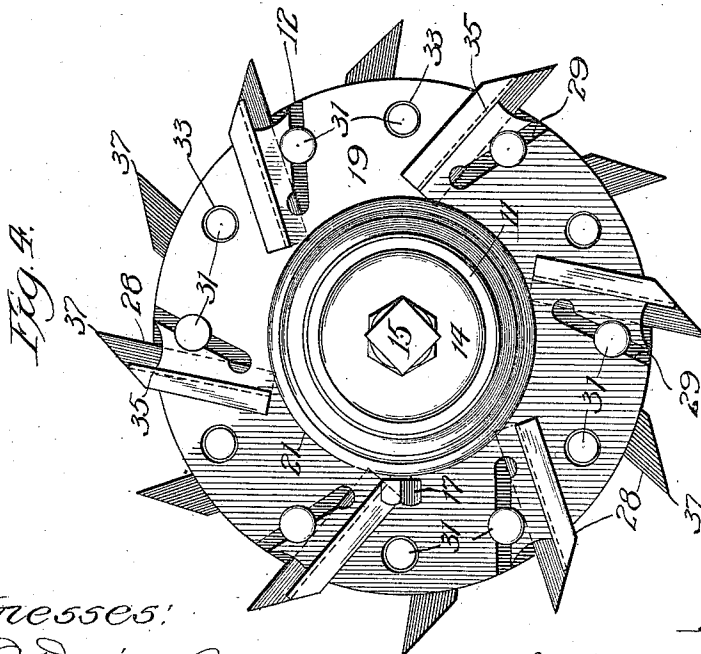
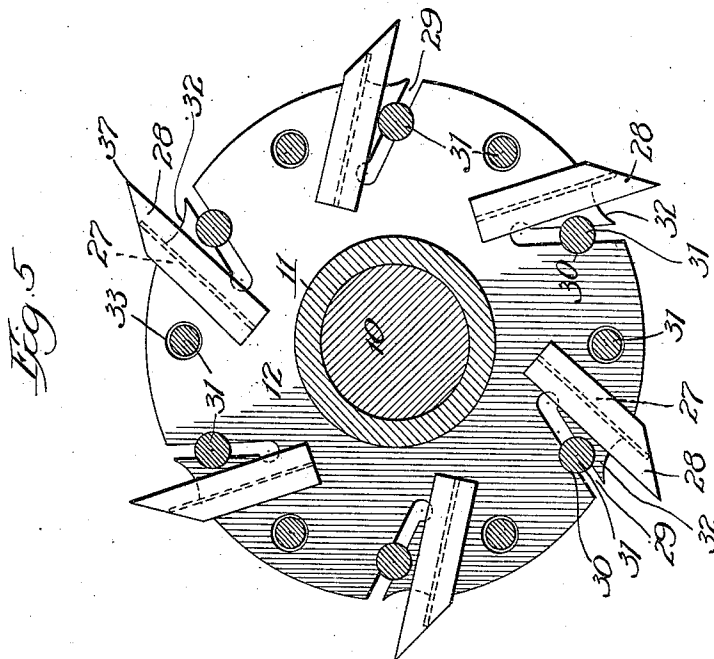
Inventor:
Harrison J. Mitchell,
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2 SHEETS—SHEET 2.



Witnesses:
Geo. C. Davison
Henry M. Shurley

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UNITED STATES PATENT OFFICE.

HARRISON J. MITCHELL, OF BELOIT, WISCONSIN, ASSIGNOR TO THE BERLIN MACHINE WORKS, OF BELOIT, WISCONSIN, A CORPORATION OF WISCONSIN.

EXPANSION CUTTER-HEAD.

987,479.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed July 5, 1910. Serial No. 570,363.

To all whom it may concern:

Be it known that I, HARRISON J. MITCHELL, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Expansion Cutter-Heads, of which the following is a specification.

My invention relates to expansion cutter heads, and has particular reference to a cutter head which is adapted to retain knives for forming tongues and grooves in boards.

In my improvement I mount on the end of a shaft, a pair of collars fitting one within the other, each of these collars having a flange which forms part of the cutter head. Each of these flanges is provided with a plurality of knife retaining grooves in its periphery, and adjacent to each of such grooves, is a second groove, thereby leaving a body of metal between the two grooves or slits which may be forced against the cutter knife when a tapered pin is driven into a tapered hole in the second groove. Registering with each hole in each of the flanges above mentioned, is a second hole in the flange of the other cutter head member, so that the tapered pin may be readily driven out by insertion of a suitable tool through such second holes.

A second feature of my invention consists in the use of an internally threaded collar which engages the threaded ends of the two hollow stems which are integral with the flanges forming the cutter head. The pitch of the threads on these stems is different although preferably in the same direction, so that by turning the internally threaded collar a very delicate adjustment of the two flanges of the cutter head may be obtained.

Still another feature of my invention consists in the special form of knife which I employ. Each knife extends across the width of the periphery of the flange in which it is mounted, and has portions which abut against each side of the flange thereby preventing the turning of the knife and its displacement from its correct position.

These and other advantages of my invention will be more readily understood by reference to the accompanying drawings which show a preferred embodiment of my improvements and in which:

Figure 1 is a longitudinal section through

the various parts forming the cutter head. 55
Fig. 2 is an elevation of one of the collars with its integral flange which forms one portion of the cutter head. Fig. 3 is a perspective view of one of the cutter knives. Fig. 4 is an end elevation of the cutter head. 60
Fig. 5 is a section and partly elevation view on the line 5—5 of Fig. 1.

Mounted on the shaft 10, is the collar 11 provided with the flange 12 and having a threaded end 13. Having threaded engage- 65
ment with the inside of the end of collar 11 is the plug 14 through which passes the bolt 15 held in adjusted position by means of the lock-nut 16, the end of the bolt 15 being adapted to engage the end of shaft 10. The 70
collar 11 is securely attached to shaft 10 by means of the set-screw 17.

Fitting on the outside of collar 11 is the collar 18 having the flange 19. The end 20 of the collar 18 is threaded, these threads being of a different pitch from the threads 13 of the collar 11, but preferably having their pitch in the same direction. An adjusting collar 21 has its outer end 22 threaded to engage the threaded portion 13 of the collar 11 and its portion 23 threaded to engage the threaded portion 20 of the collar 18. The adjusting collar 21 is provided with the holes 24 which may be engaged by a suitable key so that the collar may be turned. 85
It will be apparent that inasmuch as the pitch of the threads on the threaded portion 13 of the collar 11, and the threaded portion 20 of the collar 18 are different, rotation of the adjusting collar 21 will move the collar 18 on the collar 11 in a longitudinal direction. 90

Set-nuts 25 and 26 are provided so that the collars 11 and 18 will be held in an adjusted position with relation to each other. 95
The collar 18 has the aperture 18^a through which the set-screw 17 passes.

Each of the flanges of the collars 11 and 18 is provided with slits or grooves 27 each of which is adapted to receive a cutter knife 100
28. Adjacent to each of the slits 27 is a second slit 29 which is provided with a tapered hole 30. A tapered pin 31 may be driven into each of the holes 30 so that the body of metal 32, lying between each slit 105
27 and its companion slit 29, is forced toward the cutter knife 28 and thus serves to hold the same securely in position.

The smaller end of the tapered pin 31, which is driven into each of the holes 30 in grooves 29, passes into a registering hole 33 in the flange of the other collar. For example, a pin 31 driven into a hole 30 in the flange 12 of the collar 11 passes into the registering hole 33 in the flange 19. It will thus be evident that any one of these pins 31 may be readily driven out of the tapered hole 30 by the use of a suitable tool passing through the hole 33.

Each of the cutter knives 28, as most clearly shown in Fig. 3, has a flange 34 which abuts against one side of the flange of the collar of the cutter head in which it is mounted, and also has a second flange 35 which abuts against or engages the opposite side of the flange of the cutter head. The edge 36 of the cutter knife is sharpened in order to perform the planing operation, and the edge 37 of the flange 34 is also sharpened in order to cut the groove in the board which is to be planed. It will now be clear that when the board is passed beneath the cutter head, the cutting edges 36 of the knives on the flanges 12 and 19 will cooperate in planing the board and the edges 37 on the flanges 34 will cooperate to form the groove.

By a slight modification in construction making the cutter edge 36 on the outside of the cutter knife 28 instead of on the inside, and providing a suitable depression, the same style of planer head may be used to form tongues instead of grooves.

It will be evident to those skilled in the art that many changes may be made in the detailed construction of the device which I have described without departing from the spirit of my invention.

What I claim is:

1. In a cutter head, the combination of a pair of sleeved head members, the sleeve of one member fitting over that of the other, said sleeves being provided with threads of different pitches, and a threaded adjusting member engaging the threaded portions of said head members and adapted to effect

relative movement of said head members, substantially as described.

2. In a cutter head, the combination of a pair of sleeved head members, the sleeve of one member fitting over that of the other, said sleeves being provided with threads of different pitches but in the same direction, and a threaded adjusting member engaging the threaded portions of said head members and adapted to effect relative movement of the same, substantially as described.

3. In a cutter head, the combination of a pair of head members, one of said members having a pair of slits in its periphery, a cutter knife fitting in one of said slits, and a wedging member fitting into the second of said slits, the second head member having an opening therethrough registering with said wedging member, substantially as described.

4. In a cutter head, the combination of a pair of head members, each of said members provided with a plurality of pairs of slits in its periphery, a cutter knife fitting in one of the slits of each pair, and a tapered wedging member fitting in the second slit of each pair and adapted to force the metal between said slits against the cutter knife thereby holding the latter securely in position, each of said head members being provided with a plurality of openings registering with the tapered wedge members of the opposing cutter head, said wedge members thereby adapted to be removed by insertion of a suitable tool in said openings, substantially as described.

5. A cutter knife for planer heads comprising a body portion and a pair of flanges on its sides, said flanges adapted to engage the sides of a cutter head thereby preventing the turning of the cutter knife, one of said flanges having a cutting edge on a different plane from that on the body portion of the knife, substantially as described.

HARRISON J. MITCHELL.

Witnesses:

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TILLA SOLIEN.