

S. CLINE.
CUTTER AND MATCHER HEAD.
APPLICATION FILED NOV. 5, 1908.

933,695.

Patented Sept. 7, 1909.

4 SHEETS—SHEET 1.

Fig. 1.

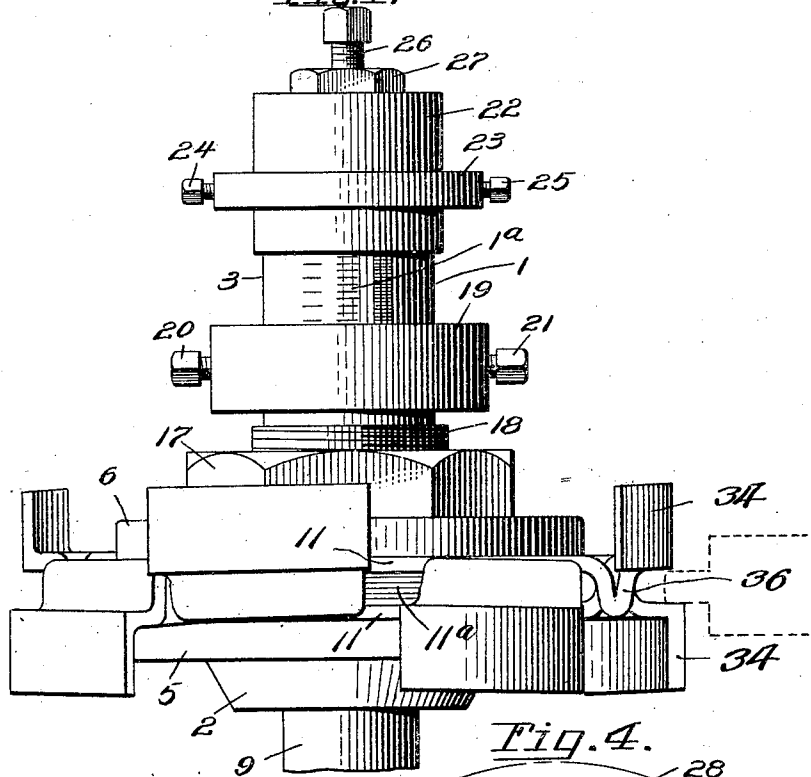


Fig. 4.

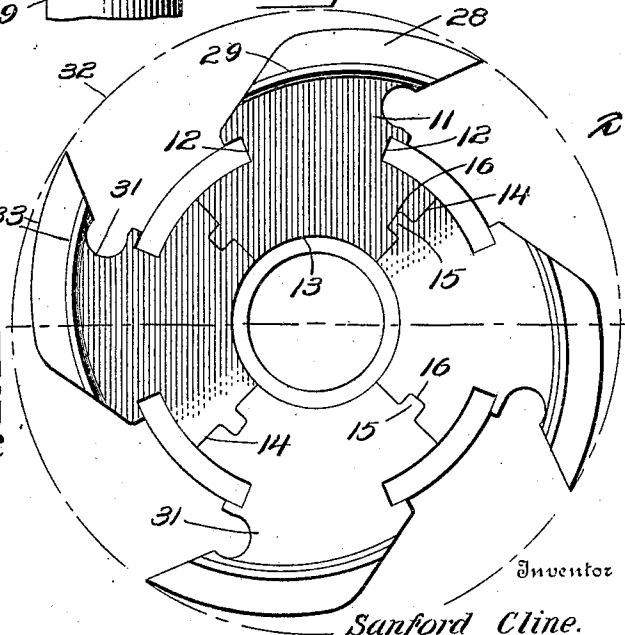
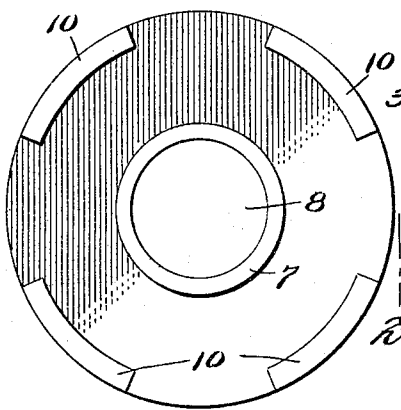


Fig. 3.



Inventor

Sanford Cline.

Witnesses

G. L. Gibson.

R. M. Smith.

By Victor J. Evans

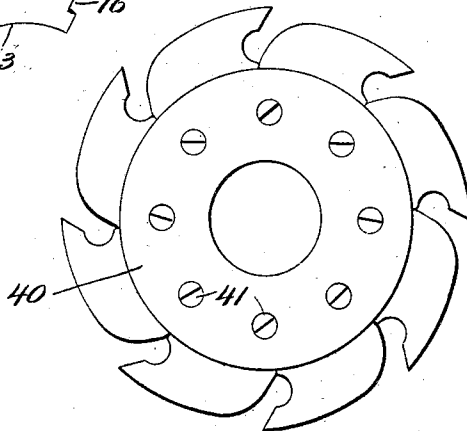
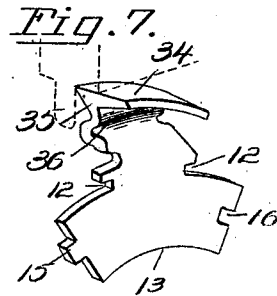
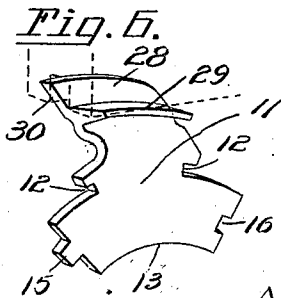
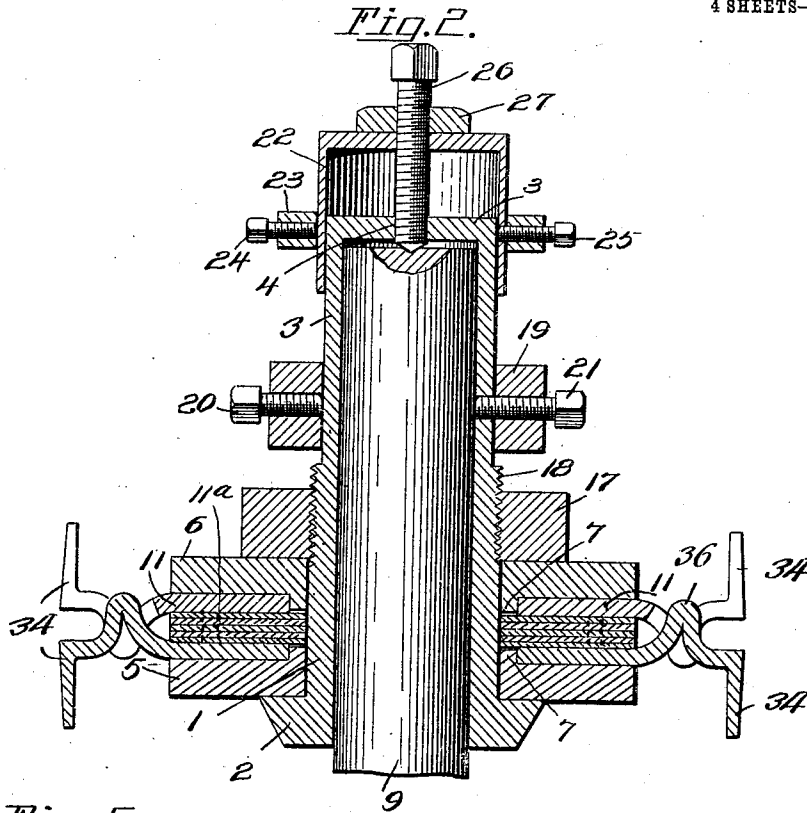
Attorney

S. CLINE.
CUTTER AND MATCHER HEAD.
APPLICATION FILED NOV. 5, 1908.

933,695.

Patented Sept. 7, 1909.

4 SHEETS—SHEET 2.



Witnesses
F. L. Gibson.
R. M. Smith.

Inventor
Sanford Cline.

By Victor J. Evans
Attorney

S. CLINE.
CUTTER AND MATCHER HEAD.
APPLICATION FILED NOV. 5, 1908.

933,695.

Patented Sept. 7, 1909.

4 SHEETS—SHEET 3.

Fig. 8.

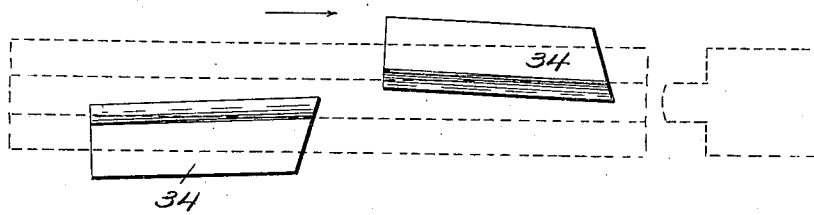


Fig. 9.

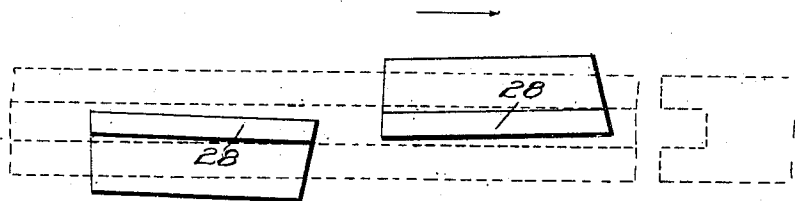


Fig. 10.

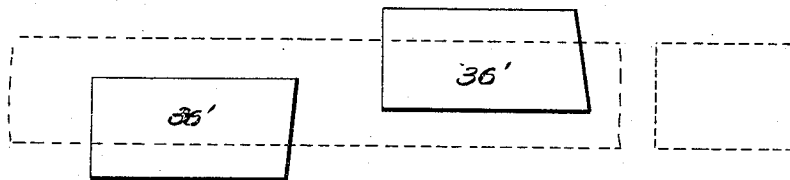
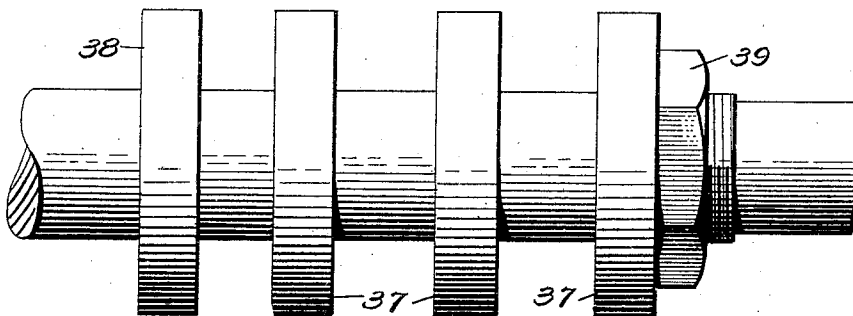


Fig. 11.



Inventor
Sanford Cline.

Witnesses

F. L. Gibson.

R. M. Smith.

By Victor J. Evans

Attorney

S. CLINE.
GUTTER AND MATCHER HEAD.
APPLICATION FILED NOV. 5, 1908.

933,695.

Patented Sept. 7, 1909.
4 SHEETS—SHEET 4.

Fig. 12.

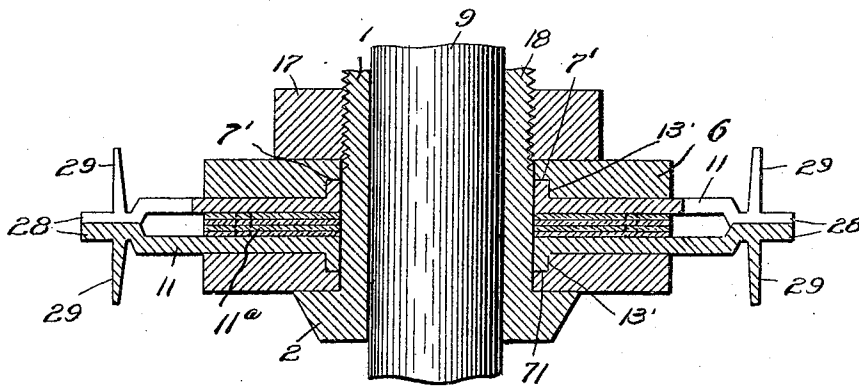


Fig. 13.

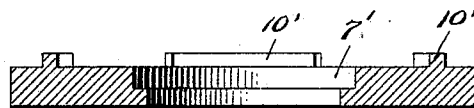
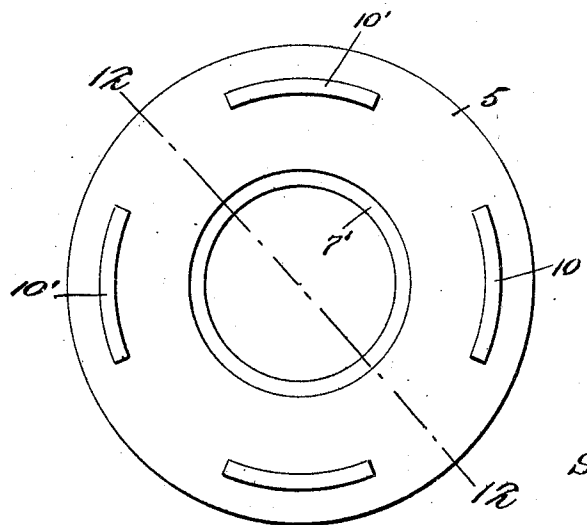


Fig. 14.



Witnesses
F. L. Gibson.
R. M. Smith.

Inventor
Sanford Cline.

By Victor J. Evans
Attorney

UNITED STATES PATENT OFFICE.

SANFORD CLINE, OF HENRY, NORTH CAROLINA.

CUTTER AND MATCHER HEAD.

933,695.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed November 5, 1908. Serial No. 461,179.

To all whom it may concern:

Be it known that I, SANFORD CLINE, a citizen of the United States of America, residing at Henry, in the county of Lincoln and State of North Carolina, have invented new and useful Improvements in Cutter and Matcher Heads, of which the following is a specification.

This invention relates to cutter heads and the object of the invention is to provide a cutter head and bit therefor of improved construction whereby the bit may be readily secured to the head against the possibility of accidental or casual movement and thereby prevent the same from being out of adjustment.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as hereinafter fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a side elevation of a cutter head complete and illustrating the present invention. Fig. 2 is a central longitudinal section through the same on the line 2—2 of Fig. 4. Fig. 3 is an inner face view of one of the bit planing members. Fig. 4 is a plan view showing the plurality of bits applied to one of the clamping members. Fig. 5 is a plan view of a complete cutter head applicable to an ordinary arbor. Fig. 6 is a detail perspective view of one of the grooving bits. Fig. 7 is a similar view of one of the tongue forming bits. Fig. 8 is a diagrammatic view illustrating the disposition of the tongue forming bits relative to the work. Fig. 9 is a similar view of the grooving bits. Fig. 10 is a similar view of the planing and jointing bits. Fig. 11 is a plan view of a cutter head body especially adapted for holding planing, heading or molding bits. Fig. 12 is a sectional view similar to Fig. 2, on the line 12—12 of Fig. 14 illustrating the modified forms of clamping members. Fig. 13 is a diametrical section through one of the modified clamping members. Fig. 14 is a plan view of the same.

The cutter head which is best illustrated in Figs. 1 and 2 comprises essentially a tubular body 1 having formed integrally therewith at one end a flange 2 and having the other end closed as shown at 3 with the exception of a central threaded opening 4 which will hereinafter appear. The body

of the cutter head thus far described is of a construction adapting it to be drop-forged thereby adding greatly to the strength and durability of the cutter head as a whole.

Associated with the body 1 of the cutter head and encircling the same are bit clamping members 5 and 6 which are the counterparts of each other, each of said clamping members embodying a plain outer surface while the inner surface thereof comprises a flange 7 encircling the central opening 8 thereof through which the cutter shaft or arbor 9 passes, and outer flanged segments or bit holding shoulders 10, the outer surfaces of which are flush with the outer edge or periphery of the clamping members, as shown in Fig. 3; while the opposite extremities of the segments 10 are adapted to engage the cutting bits as will hereinafter appear.

Each of the cutting bits as shown in Figs. 4, 6 and 7 embodies a shank 11 which is flat and provided at its opposite edges with notches 12 in which the opposite extremities of the flange segments 10 are received as shown clearly in Fig. 4. The inner edge of each shank 11 is cut away on a curve or concave as shown at 13 to fit snugly against the inner annular flange 7 of its respective clamping members 5 or 6. Furthermore, the meeting edges 14 of the shanks are provided with interlocking tongues 15 and recesses 16 and it will thus be seen that the cutting bits are not only interlocked with the clamping members 5 and 6 but they also have an interlocking engagement with each other thereby preventing possibility of casual relative displacement between the bits and the clamping members of the cutter head.

17 designates a clamping nut which is arranged at the sides of the clamping members 5 and 6 opposite the flange 2 and by means of which the clamping members are forced tightly against the flange 2 and securely held, at the same time securely clamping the cutting bits between the members 5 and 6, the nut 17 screwing upon a threaded portion 18 on the body of the cutter head. Spacing washers 11^a in any number and in any suitable thickness may be interposed between the two sets of bits 11 to cause the latter to cut a groove or a tongue of the desired width.

To one side of the clamping nut 17 there is a clamping collar 19 which encircles the body 1 loosely but is held securely thereon

by means of a set screw 20. Opposite the set screw 20 the collar 19 is provided with a hole through which is inserted a clamping screw 21 said screw passing through a hole in the body 1 to tighten against the shaft or arbor 9 whereby the cutter head is secured to the shaft to rotate therewith.

On the closed end of the body 1 there is fitted a cap 22 which encircles the end of the body as shown in Fig. 2 and is held thereon by means of a cap collar 23 secured around the cap by means of a set screw 24. Opposite the set screw 24 is a clamping screw 25 passed through the collar 23 and binds at its inner end against the body 1 of the cutter head thus rendering the cap 22 adjustable on the body 1. Passing through the outer end of the cap is an adjusting screw 26, said screw being threaded in the cap and adapted to be locked by means of a jam nut 27 which bears against the outer end of the cap. The cutter head 1 is graduated as shown at 1^a to provide for an accurate up and down adjustment of the cutter head. The screw 26 is turned until the proper registration on the scale 1^a has been obtained when the jam nut 27 is tightened. The cap or thimble 22 may then be loosened by screw 25 and run downward until its bottom edge registers with the desired graduations at 1^a whereupon said cap is fastened by the screw 25 and the head is clamped to the arbor by the screw 21, the scale 1^a showing how high the head is cutting. The raising and lowering adjustments for different jobs of work are effected in the aforesaid manner. The inner end of the screw is pointed, as shown in Fig. 2 and bears against the shaft or arbor 9.

In Fig. 6 I have shown a grooving bit which in addition to the shank 11 hereinbefore particularly described comprises a groove forming peripheral portions 28 and an edge dressing extension 29 disposed substantially at right angles to part 28. The cutting edge 30 or point of the bit is inclined as shown in Figs. 4 and 6 and merges into a clearance notch or space 31 in the forward edge of the tongue while the outer edges of the parts 28 and 29 are inclined inwardly as best illustrated in Fig. 4 wherein the dotted circle 32 coinciding with the extreme points of the bits indicates the path of movement of such points of the bits, 33 indicating the inward pitch of the outer edges of the parts 28 and 29 of the bit. By this arrangement only the extreme points or edges of the bits perform the cutting operation, ample clearance being left for the remainder of the outer edge portions of the bits.

In Fig. 7 I have illustrated a tongue forming bit which comprises an outer or peripheral portion 34 which cuts and dresses one side of the tongue, as indicated by dotted

lines in Fig. 7. From the advance or cutting edge of the part 34 the forward edge of the bit inclines backward or is undercut as shown at 35 to cut the side of the tongue. The bit is offset inwardly as shown at 36 in Fig. 7 to cut the extreme edge of the tongue and round off one of the corners thereof.

In addition to the inward pitch of the outer edges of the bits, the outer portions of the bits are set at diverging angles as shown in Figs. 8 and 9 whereby only the extreme cutting point of each bit is used in forming a groove or tongue, the angular lateral pitch illustrated in Figs. 8 and 9 giving the necessary clearance. In the case of ordinary planing bits 36' this lateral pitch is not necessary and the outer portions or edges of the bits may be arranged in line with the path of movement of the cutter head as illustrated in Fig. 10. Where more than one circular series of bits is to be mounted on the same cutter head, a plurality of bit clamping members 37 in the form of slide collars may be placed on the body of the cutter head as illustrated in Fig. 11 and suitable planing or beading or molding bits may be mounted between the said clamping members or collars to be formed in the direction of a fixed collar 38 on the body of the head and held by means of a clamping nut 39 threaded on the cutter head.

An economical form of cutter head is illustrated in Fig. 5 in which the cutting bits are held between a pair of clamping members 40 which are secured together by screws 41 or their equivalent passing through the opposite clamping members and engaging and interlocking with the bits held between the clamping members. The form of cutter head shown in Fig. 5 is well adapted for use in connection with the construction illustrated in Fig. 11, which provides for the mounting of a plurality of individual cutter heads on a common body.

Instead of providing segments 10 immediately adjacent to the outer peripheral edge of the clamping members, said segments may be set inward a suitable distance from the outer edges as shown at 10' in Figs. 13 and 14. Furthermore, in lieu of providing the clamping members with the flanges 7 surrounding the central openings therein, said members may be rabbeted around their central openings as shown at 7' in Figs. 12, 13 and 14 and the cutting bits may be provided at their inner edges with segmental flanges 13' which fit into the rabbet 7' and secured to hold said bit against outward movement while the segments 10' properly position the bits against lateral circumferential movement relative to the clamping members.

I claim:—

1. A head of the class described comprising clamping members one of which is mov-

able toward and away from the other and provided with concentric segmental shoulders, and bits having shanks held flatwise between the clamping members and provided
5 with notches with which said shoulders engage.

2. A head of the class described comprising bit clamping members one of which is movable toward and away from the other,
10 concentric segmental bit holding shoulders clamping said members, and bits having their shanks held flatwise between said

clamping members and provided at opposite places with notches to receive the extremities of the bit holding shoulders and also provided with means whereby said bits have an
15 interlocked engagement with each other.

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

SANFORD CLINE.

Witnesses:

J. C. VANSTORY,
DAVID A. GOODNOW.