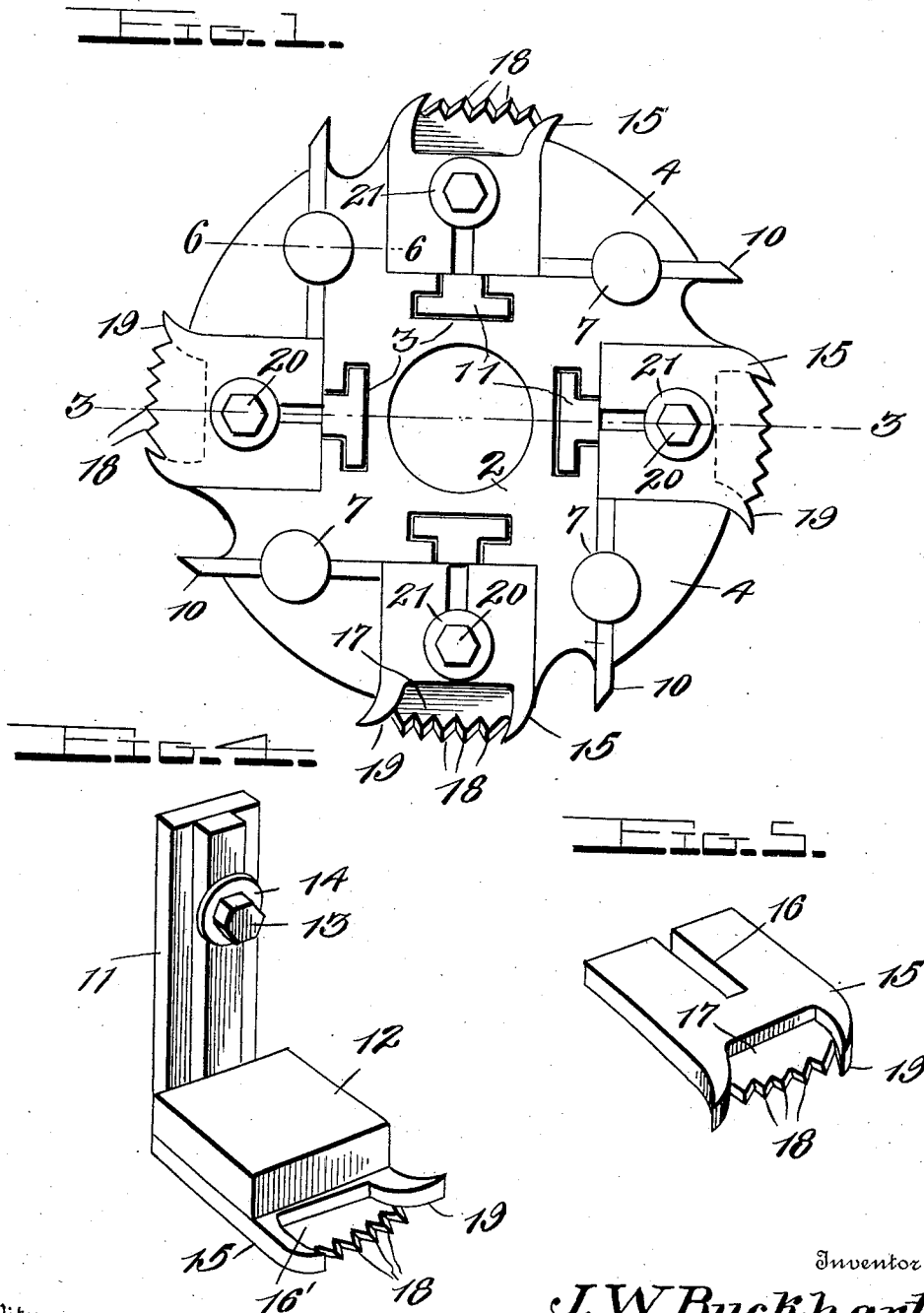


J. W. BUCKHART.
CUTTER HEAD.
APPLICATION FILED AUG. 19, 1911.

1,062,634.

Patented May 27, 1913.

3 SHEETS—SHEET 1.



Witnesses

Chas. L. Grischauer.
Herbert J. Jacob.

Inventor

J. W. Buckhart,

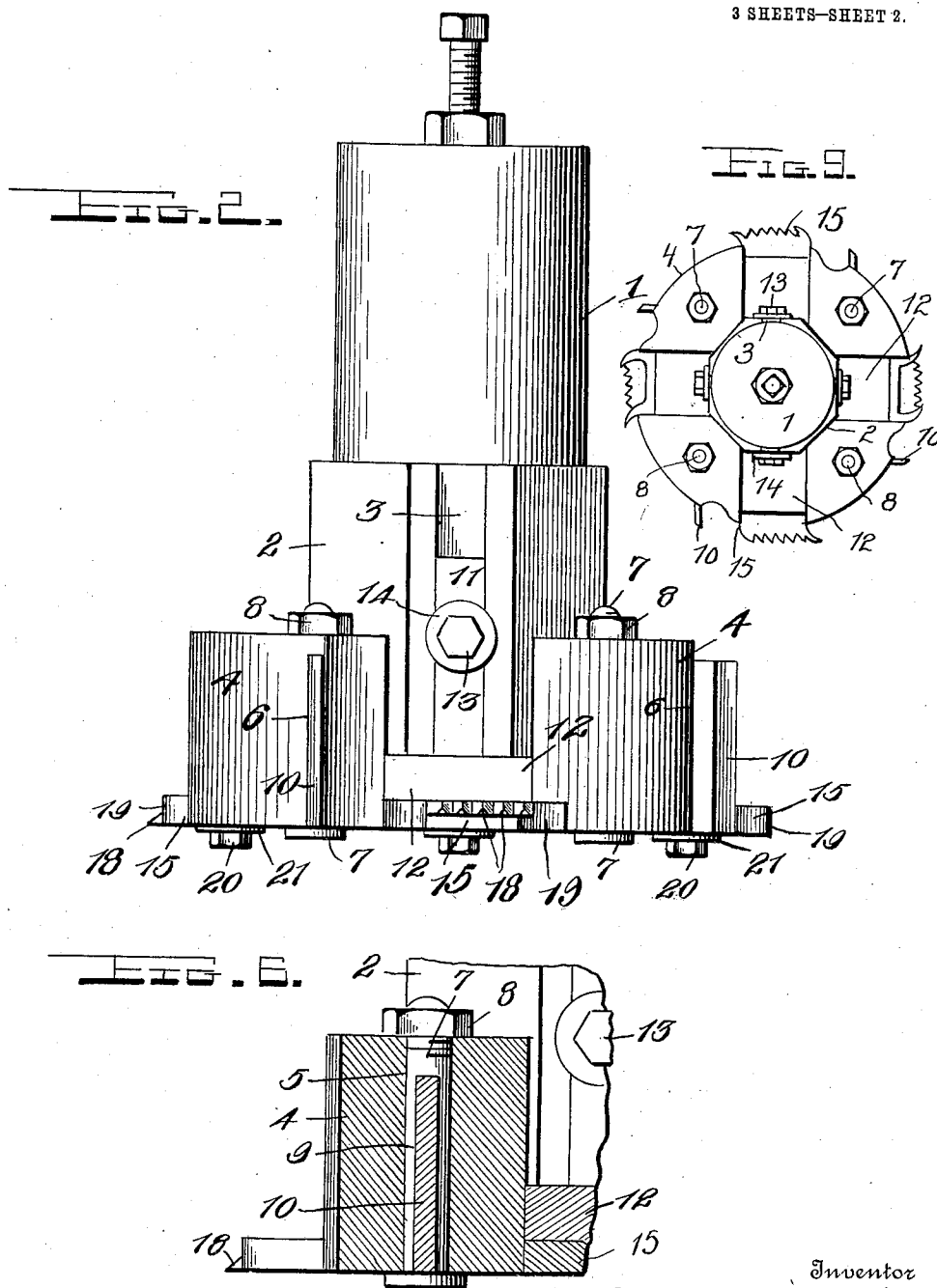
By Watson E. Coleman.
Attorney

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Witnesses

Chas. L. Grinstauer
L. H. Ellis.

Inventor
J. W. Buckhart,

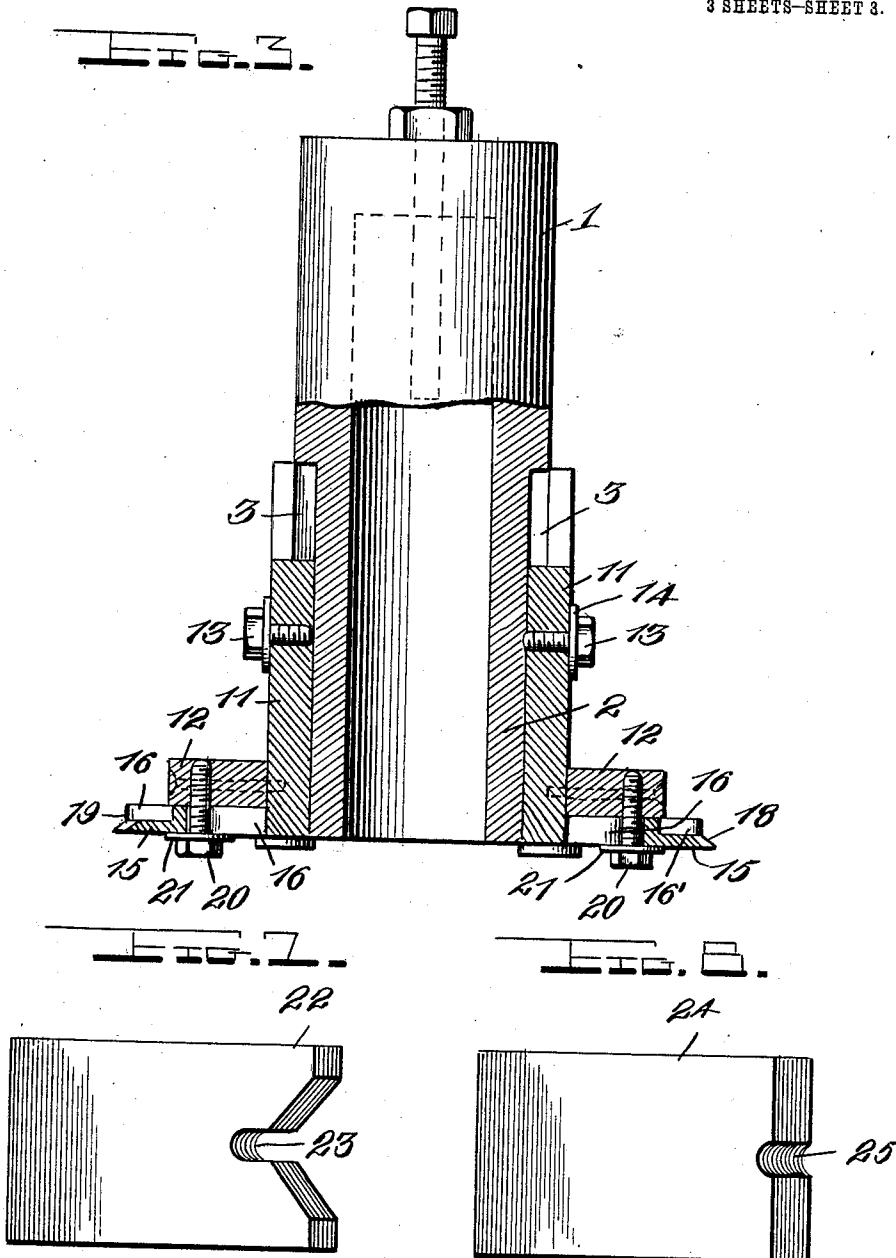
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3 SHEETS-SHEET 3.



Witnesses

Chas. L. Griebauer.
L. H. Ellis.

Inventor

J. W. Buckhart,

By

Watson E. Coleman.

Attorney

UNITED STATES PATENT OFFICE.

JAMES W. BUCKHART, OF SANTA CLARA, CALIFORNIA.

CUTTER-HEAD.

1,062,634.

Specification of Letters Patent.

Patented May 27, 1913.

Application filed August 19, 1911. Serial No. 645,004.

To all whom it may concern:

Be it known that I, JAMES W. BUCKHART, a citizen of the United States, residing at Santa Clara, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Cutter-Heads, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to new and useful improvements in the art of wood working and more particularly to a cutter or matcher head, and my object is to provide a device of this character which is provided with improved cutters or bits.

A further object of the invention resides in providing means for the adjustment of certain of the bits, both horizontally and vertically within the head, and a further object of the invention resides in providing a head so designed that the receiving portion for one style of bits acts as a bracing means or the like for the other form.

A still further object of the invention resides in providing a circular bit provided with a plurality of teeth on the cutting edge intermediate of its ends, one face of said bit being grooved or recessed, and a still further object of the invention resides in providing circular bits alternate of straight bits on the head.

Still another object of the invention resides in providing two forms of circular bits, one of which is provided with a recess on one of its faces, while the other has its recess provided on the opposed face.

A still further object of the invention resides in providing a cutter head which is comparatively simple and durable in construction, and one which is very effective and useful in operation.

With these and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawings forming a part of this application, Figure 1 is a bottom plan view of the cutter head. Fig. 2 is a side elevation thereof. Fig. 3 is a vertical section as seen on line 3—3, Fig. 1. Fig. 4 is a detail perspective of one of the

sliding members and circular bits removed from the cutter head. Fig. 5 is a similar view of the other form of circular bit. Fig. 6 is a vertical section as seen on line 6—6, Fig. 1, showing the means for retaining the straight bits on the head. Fig. 7 is a plan view of a modified form of straight bit which may be used in connection with the cutter head. Fig. 8 is a similar view of a further modified form of straight bit which may be used in connection with this device, and Fig. 9 is a plan view of the cutter head.

In carrying out my invention, I shall refer to the drawings in which similar reference characters designate corresponding parts throughout the several views and in which—

1 indicates a sleeve or hub which is enlarged in diameter from the central portion thereof toward one end to form a head or the like 2, said head portion 2 being polygonal in cross section and provided with the four vertical channels or slots 3. These channels or slots are disposed on faces of the head 2 at points diametrically opposite one another and are substantially T-shaped in cross section, and formed on the faces of the head 2 alternate of the slots 3, are the enlargements or projections 4. These projections or enlarged portions 4 are arcuately designed in cross section, and each is provided with a central channel 5 which extends the full height of the projection and is substantially circular in cross section.

The projections 4 are each provided with a slot 6 extending vertically therethrough and intersecting the central channel 5, the slot of each projection being in alinement with an adjacent face of the polygonal head 2, and fitting in the central channel 5 of each of said projections 4, is a bolt or the like 7. This bolt has a head formed at one end and the opposite end thereof is threaded to receive a nut 8, and said bolt is also provided with a vertical slot 9 which is adapted to be positioned in alinement with the slot in the projection. The flat or straight cutters or bits 10 are adapted to be entered in the slots of said projections and bolts, and when the nuts 8 are turned, said bits or cutters are adapted to be securely held therein, and it will be seen that the amount that the cutting edge of said blade

projects beyond the outer periphery of the projection 4 may be adjusted, as desired.

Mounted in the T-shaped channels or slots 3 of the head 2, are the strips 11 which are likewise designed T-shape in cross section and arranged to slide within said slots and secured in any desired manner on the outer faces of said strips adjacent one end thereof, in this instance the lower end, are the laterally extending foot pieces or supporting members 12. These members are rectangular in design and each of the strips 11 is provided with an adjusting bolt 13, between the head of which and the outer face of said strip proper, is provided a washer 14. The strips 11 are slidably arranged in the slots or channels 3, and when said strips have been adjusted to their proper positions in said slots, the same may be held by turning upon the heads of the bolts 13 until the washers 14 bind tightly against the outer faces of the portion 2 of the sleeve or hub.

Secured to the under face of the laterally extending supports 12 on the strips 11, are the circular cutters or bits 15, these bits having the side edges thereof square to aline with the side edges of the portions 12, and each is provided with a slot 16 which extends from the inner end thereof to a point adjacent the center of said bit. As shown in Figs. 4 and 5, these cutters 15 are of two different forms, that is, one is provided with a recess 16' in one of its faces, while the other is provided with a recess 17 in the opposite face, and as these recesses are formed at the cutting edges of the bits, it will be seen that certain of the same will have their cutting edges complete at the upper faces thereof, while others will have the cutting edge complete at the lower faces thereof. The outer or cutting edge of the portion of the bit which remains after the recess has been formed therein, is provided with cutting teeth 18, and these teeth are disposed angularly with respect to the member 15, while the teeth 19 formed at the ends of said bits, are somewhat curved in the direction of the inclination of teeth 18 so as to give a greater cutting effect as the head is rotated. As stated, each of the cutters 15 is provided with a slot or groove 16 which is adapted to receive therethrough a bolt 20 carried on the lower face of the laterally extending portion 12 of the strip 11 and between the head of said bolt and the lower face of said cutter, a washer 21 is formed, whereby when said bolt is turned, the head will force the washer against the lower face of said bit and secure the same against the portion 12. In this manner, it will be seen that the cutter may be adjusted to protrude beyond the head to any desired degree.

This cutter head with the various forms of cutters, may be used in any desired con-

nection, but is particularly adapted for use in connection with the forming of the tongues and grooves in flooring, ceilings and in the formation of many other similar designs in wood, and it will be seen that in view of the adjustments to which the cutters are adapted, wood of various thicknesses may be used and various sized tongues and grooves formed therein. It will be appreciated that the cutters 15 are for the purpose of forming grooves in the wood, and it will be observed that in placing these cutters, alternate cutters have the recessed portions on their lower faces. The teeth 18 which are formed on opposite faces of every alternate cutter, are adapted to shear or trim the edges of the grooves on both sides thereof so as to make the same perfectly square and clean-cut in every respect when completed, and the recessed portion of the cutter in each case allows the shavings which are cut by the teeth 18, to be passed therefrom without clogging and marring the surface of the wood.

While the cutters 15 are being used to form the grooves, the flat bits or cutters 10 may be used to clean the upper edges of the wood, but when it is desired to form the tongues in the wood, these flat bits 10 are removed and replaced by the flat bits 22, as shown in Fig. 7. The cutting edges of these bits are provided with grooves 23 of any desired shape or design, and when brought into contact with the wood, when the head is rotated, will form the particular form of tongue thereon. In this connection, it might be stated that various forms and designs of flat bits may be provided so that the device may be used for the purpose of forming many different designs in moldings, and in each instance, the blades are secured in the same manner that the blades 10 are secured, whereby they may be adjusted to project beyond the outer periphery of the head to any desired degree according to the thickness of the wood being used.

Although I have particularly described and formed the blades or cutters which are adapted to be used in this device and have specifically described the manner of securing and adjusting the same in the head, it will be readily understood that various changes in form, proportion and in the minor details of construction may be resorted to without sacrificing any of the principles or departing from the general spirit of the invention.

In Fig. 8, I have shown a still further modified form of straight bit 24 which may be used in place of the bits 10 and 22, this bit 24 being provided on its beveled or cutting edge with a simple groove or channel 25, and it will be appreciated that when this form of bit is used, a short tongue will be formed in the wood. This bit may be

readily substituted for the bit 10 shown applied in Figs. 1, 2 and 6, with little or no trouble.

From the foregoing, it will be seen that I have provided an improved cutter head wherein certain of the bits or cutters are capable of both vertical and horizontal adjustment, while others are capable of only horizontal adjustment, and it will further be seen that in view of the varied forms of cutters which are adapted to be carried on this head, several designs may be formed in the wood without replacing the head proper or without removing certain of the cutters, thereby saving considerable time and expense. Furthermore, it will be seen that as the sliding members which carry one of the forms of cutters or bits are disposed between the projections which carry the other forms of bits, portions of these sliding members will act as bracing means for the projections, and as the slot in each of the projections aligns with an adjacent face of the head, the sliding members will also act as a stop or limitation for the movement of the last referred to cutters in the projections. Furthermore, it will be seen that as the cutters or bits which are adapted to be used in forming grooves in the wood, are so arranged that alternate bits have recesses on the same faces and that the intermediate bits have recesses on opposite faces, the side edges of the grooves will be sheared or trimmed perfectly. It will still further be seen that I have provided a cutter head of comparatively simple, economical and durable construction, and one which is very effective and useful in operation.

What I claim is:—

1. In a cutter head of the class described,

the combination with a hub having a substantially circular head formed at one end thereof, said head having cut-away portions arranged at regular intervals therein, and said hub having vertical channels therein communicating with the cut-away portions of said head; of a plurality of strips adjustably mounted in the aforesaid channels, laterally extending foot pieces carried on the lower ends of said strips and snugly disposed in the cut-away portions of said head, bits adjustably carried on said foot pieces to project beyond the periphery of said head, and additional bits adjustably arranged on said head and alternating the aforesaid bits, said additional bits being so arranged as to permit the inner edges thereof to abut the aforesaid foot pieces when said bits are disposed in one position.

2. In a cutter head, a hub, an enlarged head formed at one end thereof, a plurality of bits carried on said head and projecting radially beyond the periphery of the latter, the outer edges of said bits being provided with pairs of curved teeth arranged at the ends of said edges, successive bits having the portions between said curved teeth reduced in thickness from opposite faces thereof and the edges of said reduced portions provided with teeth inclined in the direction toward the curvature of the aforesaid teeth, and means for the adjustment of said bits radially and vertically of said head.

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

JAMES W. BUCKHART.

Witnesses:

F. O. ROLL,
W. C. SMITH.