J. R. THOMAS.

CUTTER HEAD.

APPLICATION FILED SEPT. 25, 1909.

988,227.

Patented Mar. 28, 1911.

2 SHEETS—SHEET 1.

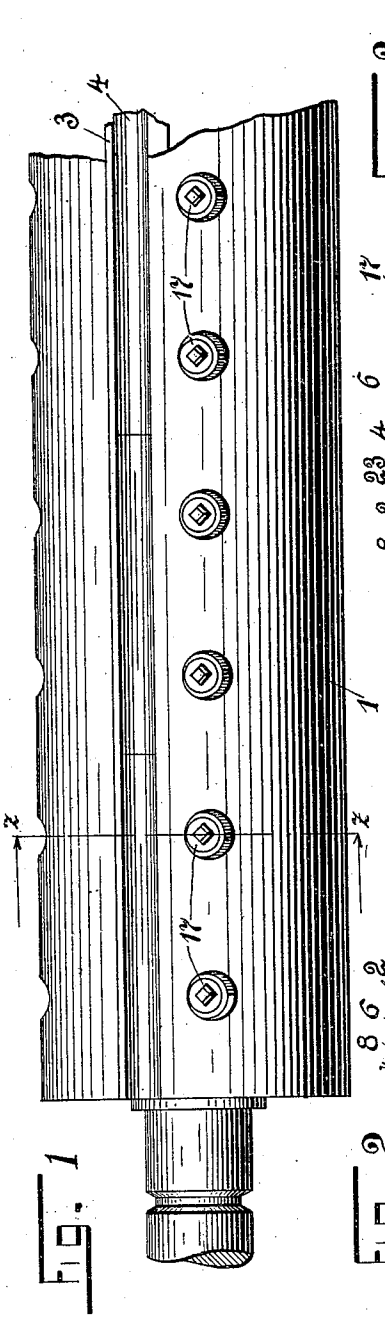

FIG. 1

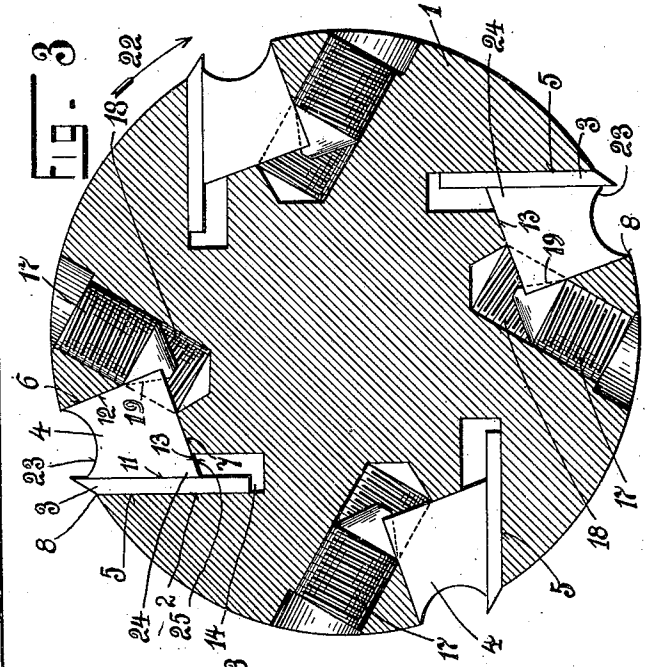

FIG. 3

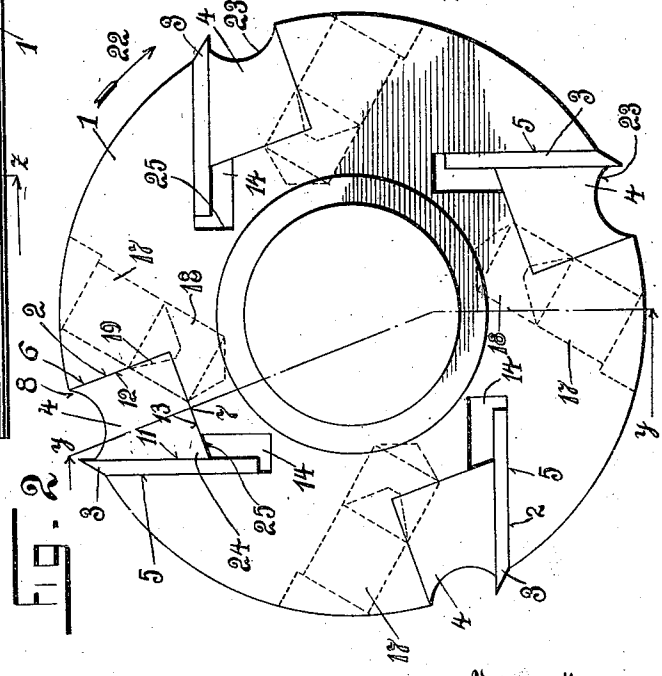

FIG. 2

Witnesses:
C. Klostermann
Lillian Burnett

Inventor.
John R. Thomas,
by A. F. Derby & Co. His Attorney.

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GUTTER HEAD.

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2 SHEETS—SHEET 2.

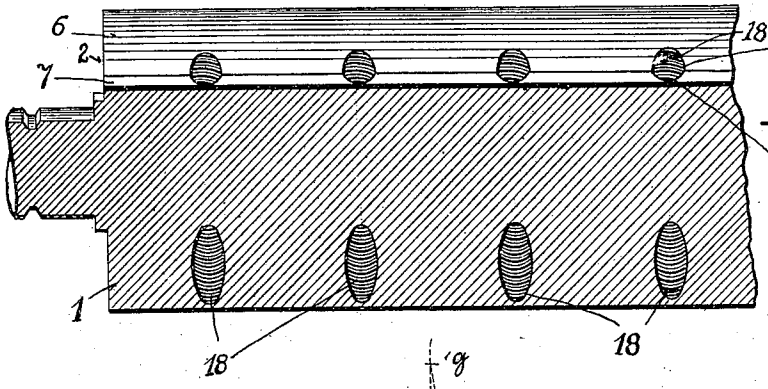


Fig. 5.

Fig. 4.

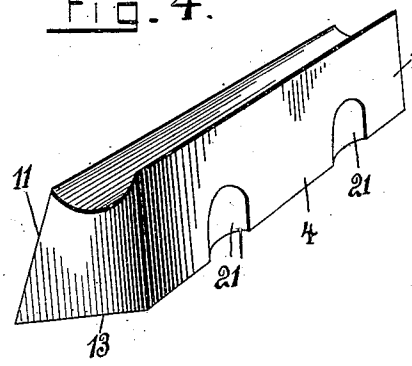
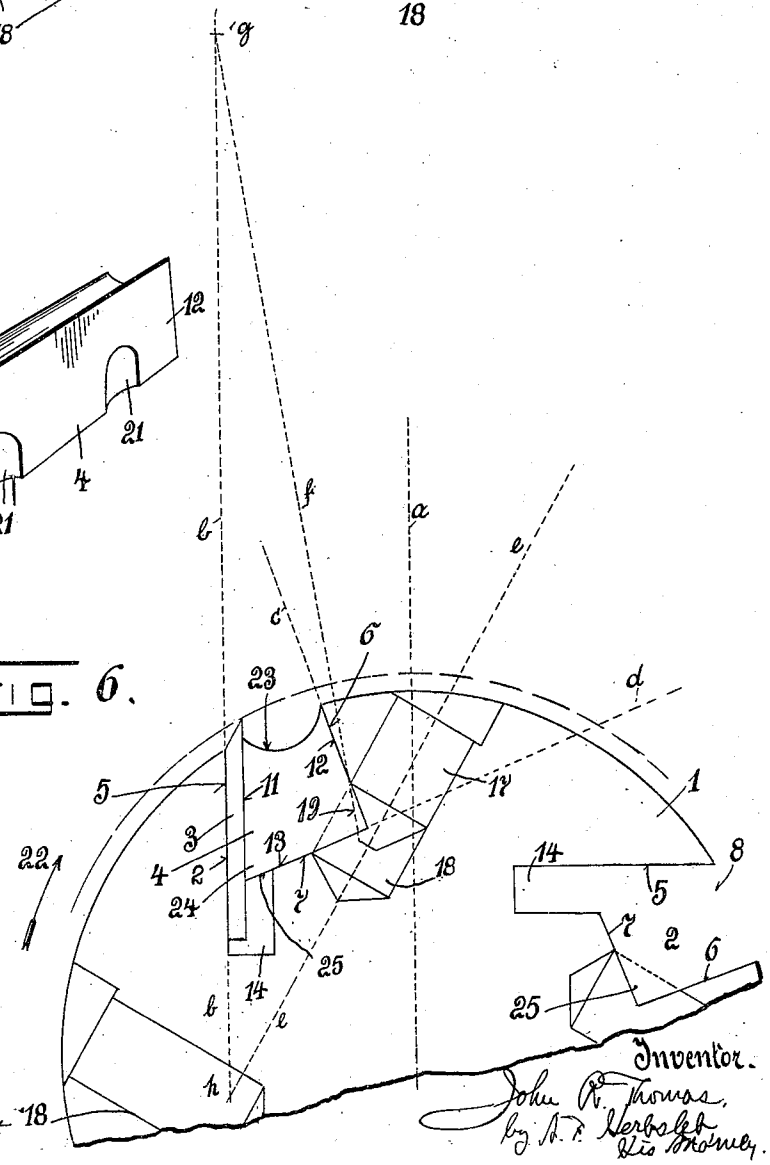


Fig. 6.



Witnesses:
C. Klostermann.
Lillian Burnett

Inventor.
John R. Thomas.
by A. F. Herbolsheimer
His Attorney.

UNITED STATES PATENT OFFICE.

JOHN R. THOMAS, OF CINCINNATI, OHIO, ASSIGNOR TO J. A. FAY & EGAN COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF WEST VIRGINIA.

CUTTER-HEAD.

988,227. Specification of Letters Patent. Patented Mar. 28, 1911.

Application filed September 25, 1909. Serial No. 519,567.

To all whom it may concern:

Be it known that I, JOHN R. THOMAS, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Cutter-Heads, of which the following is a specification.

My invention relates to cutter-heads of the character of those used principally in wood-working machines, such as planing machines, matching machines, molding machinery, and the like.

It is the object of my invention to provide a solid backing for the knife so that the impact of the blow of the knife upon the stock may be received by the metal of which the cutter-head is composed, the cutter-head being provided with a recess in which the knife is placed, and to provide novel means for securing the knife in place.

The invention will be readily understood from the following description and claims, and from the drawings, in which latter:

Figure 1 is a side elevation of my improved device. Fig. 2 is an enlarged end view of the same. Fig. 3 is a similar view of the same, with the cutter-head in cross-section on the line *z*—*z* of Fig. 1. Fig. 4 is a perspective view of one of the clamping blocks. Fig. 5 is a detail in longitudinal section on the line *y*—*y* of Fig. 2, with the knives and clamping means removed; and, Fig. 6 is a diagrammatic representation of the clamping means.

The cutter-head is shown at 1. It may be of suitable length and comprise one or more of the wedging agencies hereinafter described, a plurality of the latter being shown. The cutter-head is provided with longitudinal recesses 2, of which a suitable number may be employed, and which are parallel with the rotary axis of the cutter-head. A knife 3 and a block 4, or a series of said blocks, are received in the respective recesses. One of the side-walls of the recess indicated at 5, forms a backing-face against which the impact of the blow exerted on the knife in the cutting operation is received, 6 being the opposed side wall of said recess. The recess also has a bottom face 7 which preferably extends at an acute angle with relation to the backing-face 5. The recess has a mouth 8 opening toward the periphery of the cutter-head, the side-walls of the recess receding from each other rearwardly for forming a recess which is of tapering form in cross-section which is wider at its rear than at its mouth. A series of blocks are preferably employed in each recess when a long cutter-head is employed. Each of the blocks is provided with a side-face 11 arranged to be urged toward the knife, and may be termed a knife-face, and with an opposed face 12, as well as a bottom face 13. The knife-face 11 of the block is substantially parallel with the backing-face 5 of the recess, the opposed faces 6 and 12 of the recess and block respectively being substantially parallel, and the bottom faces 7 and 13 of the recess and block respectively being substantially parallel. The rear part of the block is shown wider in cross-section than the mouth of the recess to prevent accidental removal of the block from the recess in a direction transverse to the rotary axis of the cutter-head. The block is inserted into the recess from the end thereof. The recess is provided with a rearward extension 14 for receiving a knife of greater width than the depth of the recess.

Suitable means are provided for forcing the block toward the knife with a lateral and rearward pressure for causing the knife to be securely clamped between the backing-face of the recess and the block. I have shown these means as comprising a bolt 17, of which one or more may be employed, depending on the length of the cutter-head. The bolt is threaded into an internally threaded aperture 18 in the cutter-head. It is provided with a wedging face 19, forming a wedging part. This wedging face is shown as a frusto-conical end of the bolt which is received through an aperture 20 in the side wall 6 of the recess against the block, being received in a transverse groove 21 in said block for preventing unintentional removal of said block in a direction parallel to the rotary axis of said cutter-head. The aperture 20 is shown as merging into an aperture 20′ in the bottom face 7.

The direction of rotation of the cutter-head is indicated by the arrow 22. The outer face of the block is preferably provided with a curved chip-discharging groove 23.

Referring to Fig. 6, the dotted line *a* represents a radial line of the cutter-head, the dotted line *b* represents the facial plane of the backing-face 5, the dotted line *c* the

facial plane of the opposed face 6, the dotted line *d* the facial plane of the bottom face 7, the dotted line *e* the axial plane of the bolt 17, and the dotted line *f* of the wedging or contact line of the wedging face 19. From this it will be noted that the bottom face 7 is at an acute angle to the backing-face 5, that the axial plane *e* of the clamping part is at an acute angle to both the side walls of the recess and at an obtuse angle to the bottom faces of said recess and block, that the facial plane of the backing-face and the wedging or contact line of the wedging part, when extended, intersect each other outside the cutter-head, as at *g*, and that the axial plane of the wedging part, when extended, intersects the facial plane of the backing-face 5 outside the recess and within the cutter-head, as at *h*. The arrangement of the parts stated will cause the block to be forced rearwardly and laterally by the wedging-part, causing the bottom face 13 of the block to move across and be pressed toward the bottom face 7 of the recess, and the knife-face 11 of the block to be forced toward the backing-face 5 of the recess, crowding the wedge-shaped corner 24 of the block into the rear wedge-shaped corner 25 of the recess, and crowding the block with great pressure toward the knife for firmly holding the latter in place.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination, a solid-back cutter-head provided with a recess having a backing-face, a knife and a block received in said recess, and a wedging-part in said head for said block movable toward and from said block, the axis of said wedging-part which is parallel to its line of movement and the facial plane of said backing-face when extended intersecting each other to rear of and outside said recess.

2. In combination, a solid-back cutter-head provided with a recess having a backing-face, a knife and a block received in said recess, and a wedging-part in said head for said block movable toward and from said block, the axis of said wedging-part which is parallel to its line of movement and the facial plane of said backing-face when extended intersecting each other to rear of and outside said recess, and the wedging line of said wedging-part and said facial plane of said backing-face when extended intersecting each other outside said head.

3. In combination, a solid-back cutter-head provided with a peripheral recess having side walls which spread rearwardly as they recede from the periphery of said cutter-head, a knife and a block received in said recess, one of said side walls forming a backing-face for said knife, and a bolt whose rotary axis extends at acute angles to both of said side walls and is provided with a wedging end contacting said block the contacting line whereof when extended intersects the facial plane of said backing face when extended, outside said head.

4. In combination, a solid-back cutter-head having a recess provided with a backing-face, a knife and a block received in said recess, and a bolt for clamping said block and knife in said recess, the axial plane of said bolt and the facial plane of said backing-face when said planes are extended intersecting each other to rear of and outside said recess, substantially as described.

5. In combination, a solid-back cutter-head having a peripheral recess provided with a backing-face and a bottom face at an acute angle to said backing-face, a knife and a block received in said recess, and a bolt provided with a wedging end for clamping said block and knife in said recess, the axial plane of said bolt being at an acute angle to the facial plane of said backing-face and at an obtuse angle to the facial plane of said bottom face of said slot, and the wedging line of said wedging face and the facial plane of said backing-face when extended intersecting each other outside said head, substantially as described.

6. In combination, a solid-back cutter-head provided with a peripheral recess having side walls which spread rearwardly as they recede from the periphery of said cutter-head, and a bottom face, a knife and a block received in said recess, one of said side walls constituting a backing-face for said knife, said bottom face being at an acute angle to said backing-face, said block having a bottom face riding upon said bottom face of said recess and a clamping-face presented to said knife, and a bolt whose axial plane extends at an acute angle to said backing-face and at an obtuse angle to said bottom faces, said bolt provided with a wedging-face for said block, and the wedging line of said wedging-face and the facial plane of said backing-face when extended intersecting each other outside said head, substantially as described.

7. In combination, a solid-back cutter-head provided with a peripheral recess having side walls which spread rearwardly as they recede from the periphery of said cutter-head, a knife and a block received in said recess, one of said side walls forming a backing-face for said knife, said recess further having a bottom face at an acute angle to said backing-face, said block having sides respectively substantially parallel with the respective side walls of said recess and a bottom face which rides upon the bottom face of said recess and a bolt whose rotary axis when extended intersects the facial plane of said backing-face when ex-

tended, outside said recess, and is at acute angles to both of said side walls and at obtuse angles to said bottom faces and provided with a wedging face for forcing said block toward said backing-face and bottom face of said recess, substantially as described.

8. In combination, a solid-back cutter-head provided with a peripheral recess having a backing-face for a knife, an opposed face and a bottom face, a knife and a block received in said slot, said block having a knife-face, an opposed face and a bottom face substantially parallel with said respective faces of said recess, said opposed face of said block having a groove in its rear part, and a bolt provided with a wedging-face received through said opposed face of said recess into said groove and said bottom face of said recess provided with a clearance aperture for said bolt, said bolt movable in a direction toward said bottom face of said recess, the wedging line of said wedging face and the facial plane of said backing-face when extended intersecting each other outside said cutter-head and acting to force said block toward said backing-face and bottom face of said recess, substantially as described.

9. In combination, a solid-back cutter-head provided with a recess having a mouth at the periphery of the cutter-head and side walls slanting rearwardly away from each other for forming a recess tapering toward said mouth, a block and a knife received in said recess, one of the side walls of said recess forming a backing-face for said knife, the said block having tapering sides which are respectively substantially parallel with said side walls of said recess, the rear portion of said block between said tapering walls being wider than said mouth of said recess, whereby said block is retained against accidental displacement from said recess by movement transverse to the rotary axis of the cutter-head, said recess and block having mating bottom faces which extend at acute angles to said backing-face, and a wedge-clamp for said block having a wedge-face received through the other of said side walls, the wedging-line of said wedge-face and facial plane of said backing-face when extended intersecting each other outside said cutter-head, and acting to force said block toward said backing-face and said bottom face of said recess, substantially as described.

10. In combination, a solid-back cutter-head provided with a peripheral recess, a blade and a block received in said recess, said recess and block having side walls which recede from each other rearwardly, the said side walls at the respective sides of said recess and block being substantially parallel, said recess and block having substantially parallel bottom faces, and a wedge-clamp for said block received through one of the side walls of said recess, the line of movement of said wedge-clamp being at an acute angle to all said side faces and at an obtuse angle to said bottom faces, the axis of said wedge-clamp parallel to said line of movement and the facial plane of said backing-face when extended intersecting each other outside said recess, and constructed and arranged for forcing said block toward the other of said side walls and the bottom face of said recess, substantially as described.

In testimony whereof, I have signed my name hereto in the presence of two subscribing witnesses.

JOHN R. THOMAS.

Witnesses:
RICHARD D. COAN,
HARPER G. ROSS.