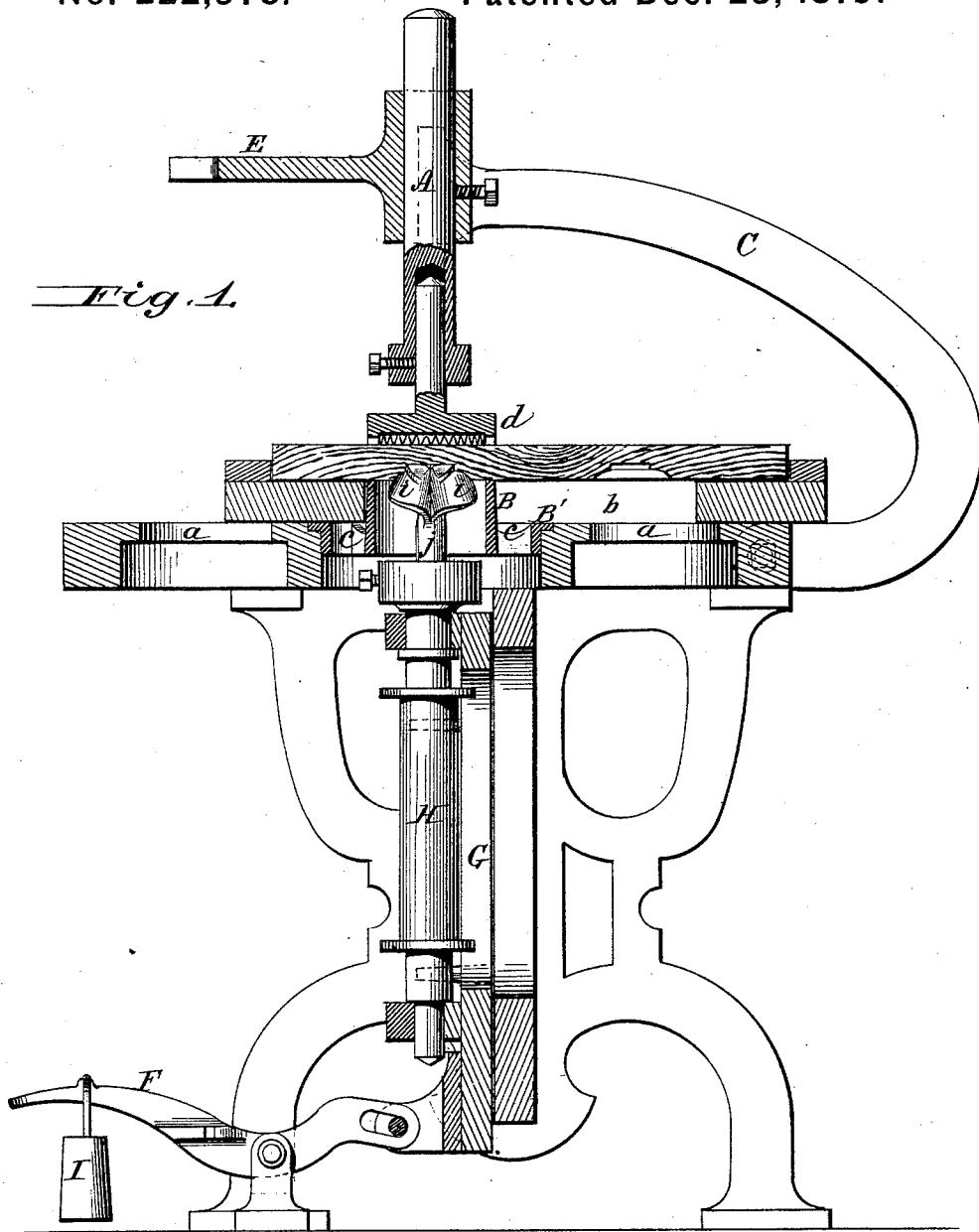
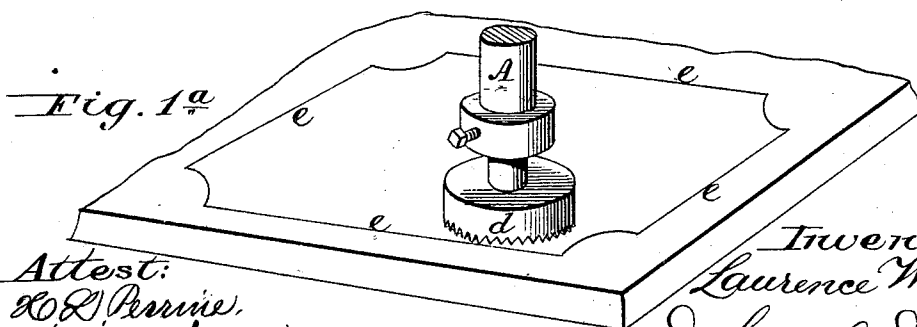


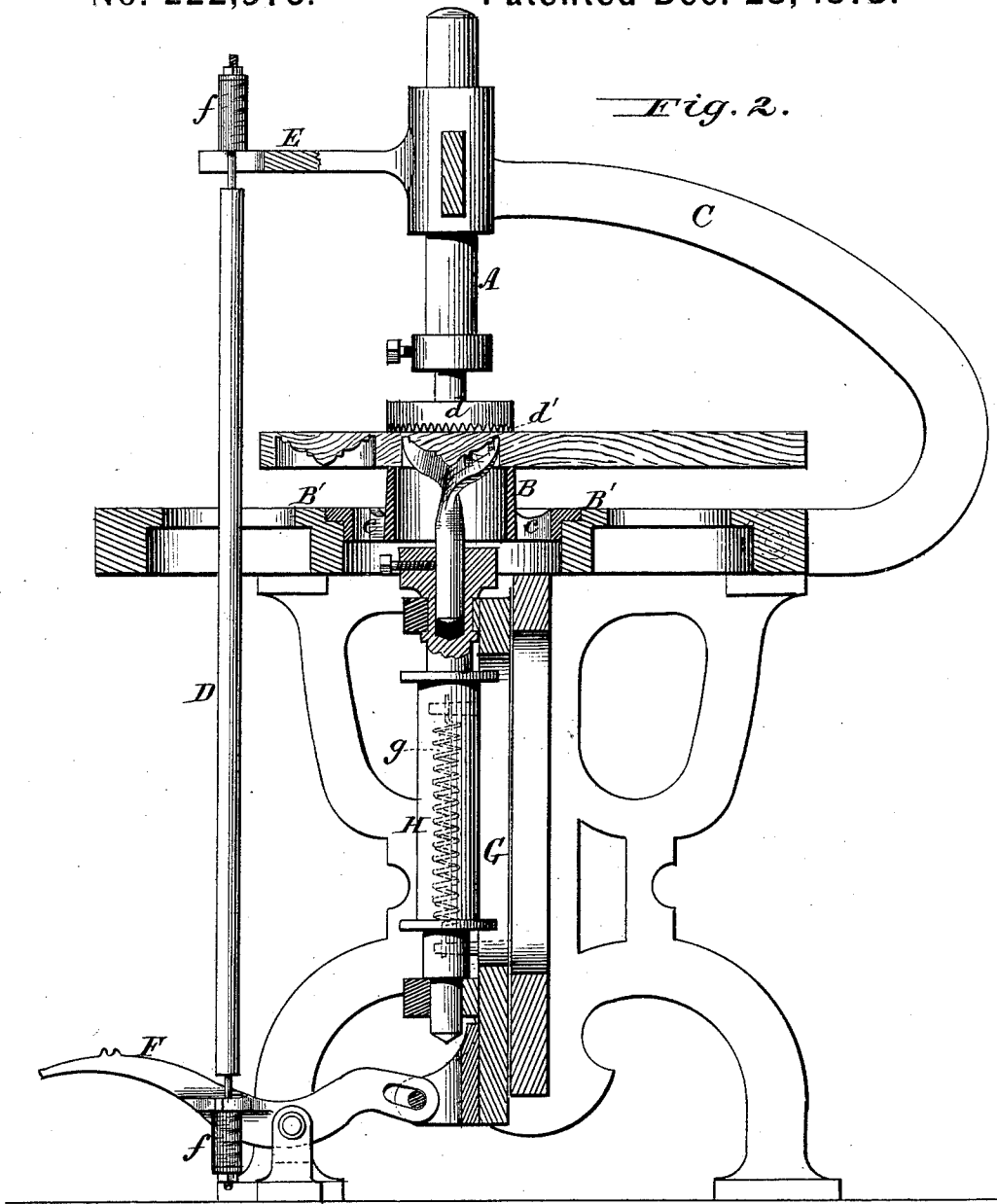
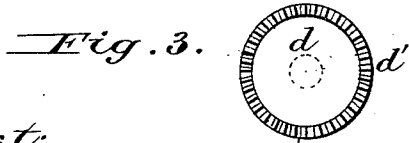
L. WENCHEL.
Wood-Molding Machine.
No. 222,970. Patented Dec. 23, 1879.



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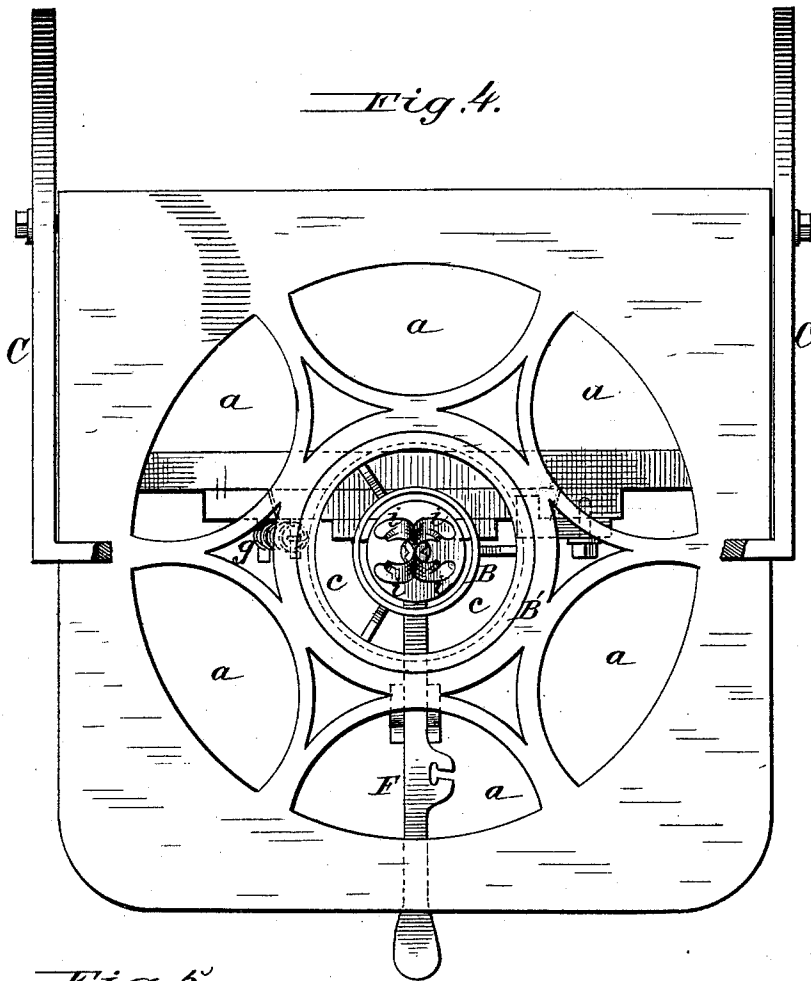


Fig. 5.

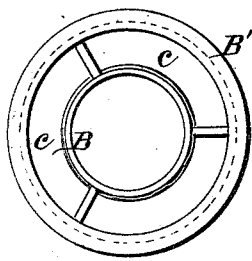
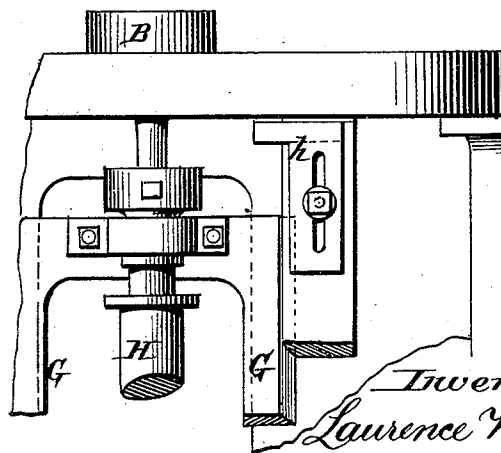


Fig. 6.



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Fig. 7.

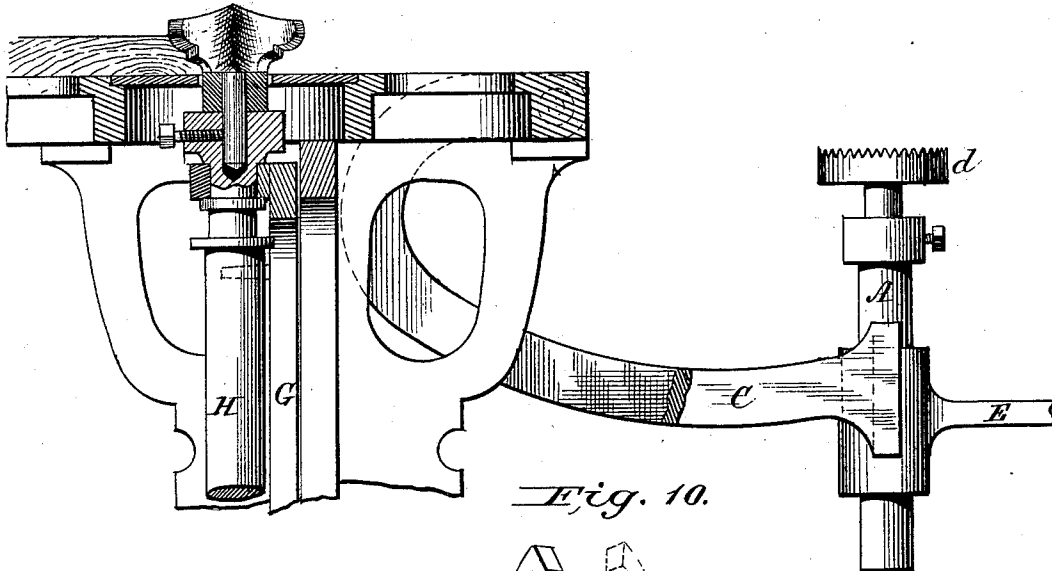


Fig. 10.

Fig. 8.

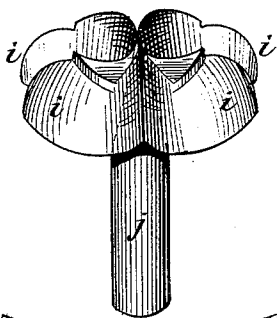
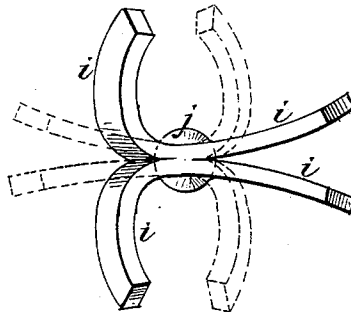


Fig. 11.

Fig. 12.

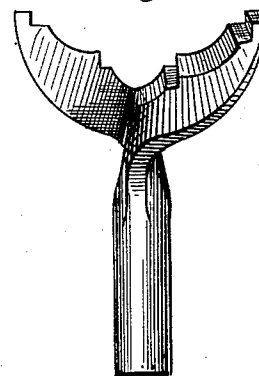
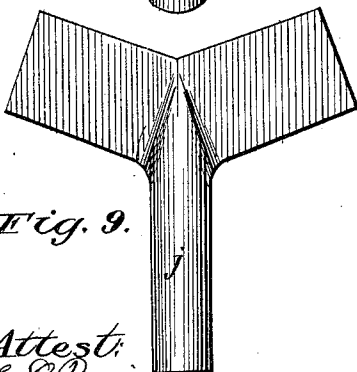


Fig. 9.



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UNITED STATES PATENT OFFICE.

LAURENCE WENCHEL, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN WOOD-MOLDING MACHINES.

Specification forming part of Letters Patent No. **222,970**, dated December 23, 1879; application filed August 28, 1879.

To all whom it may concern:

Be it known that I, LAURENCE WENCHEL, of Baltimore city, in the State of Maryland, have invented certain new and useful Improvements in Wood-Molding Machines, of which the following is a specification.

The subject-matter of this invention embraces particulars of construction and combinations in a molding-machine, and in which certain adaptations are made for sinking panels, cutting rosettes for ornamentation of wood-work, and for edge-molding.

The specific matters of invention will be fully presented in the following description, and embraced in the claims.

Referring to the drawings, Figure 1 represents a vertical section of a machine embracing my invention as adapted for panel-work, a panel-piece being shown in its relation to the cutter, the pattern-guide, and the indicator above the work to show the relation of the work to the cutter and the pattern at all times. Fig. 1^a shows this indicator, and its relation as such to the pattern, the form of which is indicated by an outline marked upon the top surface of the panel-piece; Fig. 2, a vertical section of the machine as adapted for rosette-cutting, and in which the indicator serves to hold the work and to indicate on its back by a circular impression the complete outline of each rosette cut on the under side; Fig. 3, a face view of the rosette-outline marker; Fig. 4, a top view, showing the skeletonized table and the skeletonized work-support and pattern-guide; Fig. 5, a top view of the skeletonized work-support and pattern-guide; Fig. 6, a front detail view; Fig. 7, a vertical section of a part of the machine as adapted for edge-molding, the top indicator being turned back out of the way; Fig. 8, a reversible panel-sinking cutter of four wings; Fig. 9, the blank for such cutter; Fig. 10, a top view of such cutter-blank, showing the wings split and partially turned into form for the cutters; Fig. 11, a panel-sinking cutter of two wings, and Fig. 12 a rosette-cutter of two

wings. In molding-machines, especially for panel-sinking, in which the pattern moves upon the table with the work over the cutter, the fine

cuttings and light shavings pass from the trail of the work into the pattern-space, and are carried therein upon the table as the work is moved over the cutter, and thereby clog the action of the pattern against the sides of the guide and cause irregular work. This I avoid by providing a skeletonized table, as shown in Fig. 4, the opening *a* in which surrounds the work-support and pattern-guide, and forms thereby an open bottom to the pattern-space *b*, as shown in Fig. 1, through which pass the light shavings and cuttings forced out from the trail or cut of the work, and thus keep the table and the guide clear of accumulating fine shavings. This skeletonized surrounding may be formed with a cast table-top; but I prefer to form it of a set-in plate, as being more easily and cheaply made.

As a guide for the pattern and a support for the work, I use an open collar fixed upon and rising from the table, and within which a rotary cutter is adapted for operation and vertical adjustment with its carrying-spindle, as embraced in my patent dated July 1, 1879, and numbered 217,183, whereby, while the pattern is supported against the outer side of the guide, the work is supported independently of the spindle upon the open end of said guide, leaving an unobstructed opening within and through the guide for the escape of the shavings beneath the table. These collar-guides are interchangeable with different sizes, and they are formed with a base-rim seated in a recess in the top of the table, so as to maintain said guide in proper relation to the cutter. It is important that the base-rim of this collar-guide should also be skeletonized, in order to give an open way below at the joining of the pattern with the sides of said guide in panel-sinking, to prevent the accumulation of fine cuttings or shavings between these parts, as shown in Fig. 1, and for this purpose the base-rim *B'* of the collar-guide *B* forms a spider, *c*. (Shown more clearly in Figs. 4 and 5.) These collar-guides are of different sizes for different-sized cutters, and to allow the pattern to make the required short turns at the corners; but the base-rims are of the same diameter, to fit the table recessed opening. By this skeletonized open collar-guide I obtain both a cen-

tral and an outside down escape for the shavings and fine cuttings, in connection with supporting the work upon the top of said guide and the pattern against its sides.

In the manipulations of the work over the cutter, I find it of great advantage to have an indicator above the work to show the constant relation of the cutter with the outline of the pattern which is beneath the work, and secured to it in the usual manner. This is effected by a cylindrical head, *d*, secured in a stem, *A*, which is adjustably mounted in a yoke-frame, *C*, hinged at the rear and on each side of the table or its frame in such relation to the cutter as to bring and maintain the indicator centrally therewith, and in such manner that said indicator will rest upon the upper surface of the work, as shown in Fig. 1. To give the indicator this function, however, the outline of the pattern is marked upon the back or top surface of the panel-piece, as shown by the line *e* in Fig. 1^a, whereby the workman is enabled to manipulate the pattern with greater control and rapidity, as the pattern-line *e*, in connection with the indicator *d*, will show the relation of the cutter and the collar-guide with the pattern the same as if the panel-piece were transparent. In fact the work is manipulated between an under pattern-guide and a top panel-guide. For this purpose the indicator may have a smooth under surface; and it rests only by the weight of its carrying-frame upon the panel-piece, so that the latter can be moved freely under it. For cutting rosettes, however, this indicator serves to hold the work firmly upon the open collar *B* while under the action of the cutter. When so used, as shown in Fig. 2, it is provided with an annular line of points, *d'*, as shown in the drawings, whereby to indicate by a surface circular impression the exact location of the cut rosette on the under side of the work. For this purpose the diameter of the indicator is about equal to that of the open-work support and a little greater than that of the cutter, thereby giving the advantage of using blocks or irregular pieces from which to cut rosettes in nests by adjusting the block only with reference to the indicator and the rings of marks made thereby on the back of the block, so as to bring each cut clear of the others at every point, and this can only be done by having the circumferential back-marks coincident with the cut rosettes, as they show at once the cut and the uncut surface. This requires pressure to be applied to the indicator, which is effected by an attachable rod, *D*, passing through the table and connecting a frontward-projecting arm, *E*, of the hinged frame *C* with the treadle *F*, such connections being cushioned by springs *f f*, so that after the full pressure is made upon the work the treadle is free to be further depressed to elevate the cutter the proper height for producing the rosette, and during which the work is firmly held in place until the treadle is released. This connecting-rod *D* is remov-

able, being held in place by slots in the arm *E* and treadle *F*, with the rubber or other springs at the ends of the rod, so that, only being used in rosette-cutting, it can be easily applied and removed.

The indicator being adapted to the size of the cutter, it is therefore made removable and secured by a shank and a clamp-screw.

The cutter, especially such as I use, in entering the work, is carried quickly into it, and endangers the pulling out of the rosette-forming core, as well as breaking the cutter-wings; and to prevent this I use an attachable spring, *g*, attached by one end to the table-frame, and by the other to the slide-frame *G* of the cutter-spindle *H*, as shown by dotted lines in Fig. 2, so as to exert a constant downward force upon the cutter-spindle, and against which force the cutter is gradually raised by the pressure of the foot upon the treadle, thus making the cut gradual, and in which its ascent is limited by the adjustable stop *h*. (Shown in Fig. 6.) As the spring is only used in this way, and as my machine is adapted for work of different kinds, the spring is connected so that it can be easily removed. Its position is shown in Fig. 4, although it is not used with the panel-sinking cutter. It may be applied to the treadle.

The mounting of the rosette-marker in a hinged frame, *C*, allows the work to be clamped and released by the treadle. This hinged frame also allows the work holder and marker to be turned back, as in Fig. 7, to adapt the machine for edge-molding, in which case the cutter is set to project the proper height above the table by means of the adjustable stop *h*, (shown in Fig. 6,) the cutter and spindle being held up by a weight, *I*, upon the treadle, sufficient to counterbalance the cutter, the spindle, and its slide-frame. In this adjustment the connecting-rod *D* and the open pattern-guide are not used. The guide is placed upon the cutter-stem, and the cutter is placed with its cutting-edges standing downward. For this work the central space in the table caused by removing the open guide is closed by a separate cover fitting the table-recess.

The treadle is connected to the spindle-slide frame as shown, or in any suitable way, and the weight is used in panel-sinking, in which the operator also uses the treadle.

The cutters work within the guide with suitable clearance—that is, for panel-sinking and rosette-cutting; and they are secured in the socket of the driving-spindle *H*, which has also the usual band-pulley, which *H* may also represent.

Of the forms of these cutters shown, that represented in Fig. 8 is for panel-sinking, and has four wings, *i*, produced, without drilling or milling, from a swaged blank of steel with a stem-shank, *j*, and two wings standing out on each side, but having an upward inclination to each other, approximating the form of the letter *Y*. These wings are split, by sawing or

otherwise, in the direction of their length, the split terminating at or near the center, and forming two parts of equal thickness, as in Fig. 10. The split parts are opened, each being bent or turned over in opposite directions, forming the cutting-wings *i*, with the openings between them for the escape of the shavings, and with the clearance back of their cutting-edges. The outer face of each wing is then formed to correspond with the molding to be made, the cutting-edges produced in a lathe, and the backs of the cutters properly reduced by hand-filing. The wings bent into form in this way give the cutting-edges on the same plane to form the flat surface between the moldings, and make the cutter reversible.

The wings can be of curved or of angular form, and they are sharpened from their inner sides. The wings are formed separately over a cone-former, as in my patent dated July 1, 1879, No. 217,182, said wings being first brought to a bending-beat.

In this way the cutters are made rapidly and cheaply, and without loss of steel. They can be formed of cast-steel; but I prefer swaging as producing a better cutter.

The full and dotted lines in Fig. 10 show the manner of forming the cutting-wings, and from which it will be seen that when so bent there will be a clear space on the back at the junction of the split, making the cutters comparatively free from friction.

The cutters shown in Figs. 11 and 12 are of two wings only, formed substantially as in my said patent, but with a stem-shank. The cutters are secured in the spindle by a clamp-screw, and the form and action of the cutting-wings are such as described in my said patent, giving a smooth and clear cut, and relieving the operator of much labor in manipulating panel-work.

It will thus be seen that by my several improvements in construction and adaptation, in connection with the proper form of cutter, I produce a single machine with a capacity for the three kinds of molding-work stated, and in which the changes are readily and conveniently effected.

The downward pulling of the spring *g* is to counteract the upward screw-like action of the cutter in rosette-cutting, for, the work being bound tightly upon the open collar *B*, (which for this work has no function of a guide,) the cutter, by its peculiar formation of cutting-wings, (shown in Figs. 2 and 12,) would enter so quickly the wood as to gouge or pull out the piece intended for the rosette; but the action of the spring keeps the cutter back and allows it to be raised gradually by the operator pressing upon the treadle. This gouging-out action of the cutter is produced by its wings standing out from the hub spirally in opposite directions, with clearing-spaces, and in which the course of the cutting-edge from the axis of the spindle is such as to give a much longer cutting-edge than the width of the molding. These wings stand up

and are the counterpart of the rosette to be formed, as described in my said patent, and by using a spring strong enough to overcome this gouging action of the cutter the operator has full control over its action in rosette-cutting. In panel-sinking the spring is not required, and the cutter is held to its work by a weight.

I am aware that rosette-cutting machines have been provided with a presser-bar for holding the work under the action of the cutter, and adapted to exert a downward force upon the work by a spring-connection with the treadle, and in which the treadle at the same time elevates the cutter to the work, and that such presser-bar has been provided with a single adjustable marking-point to indicate the cut rosette; but in such machine there is no provision for removing such treadle-spring connection or the work presser-bar to adapt the same machine for other and different work, and that such marking-point is not adapted for indicating rosettes cut in nests in an irregular-shaped block.

Double reversible cutters have also been variously constructed, and a cutter of two wings has been formed of a split blank in different ways; but my improvements differ from these things in particulars embracing new characteristics of construction and combinations, which are fully presented in the description, and pointed out in the claims.

I have made no claim to the cutter which I have shown and described, as such matter will form the subject-matter of a separate application for a patent.

In a machine for ornamentally working wood I claim—

1. The combination, with the fixed guide *B*, over the open top of which the work is supported and manipulated, the cutter working within and discharging the shavings through said guide, and the inclosed panel-pattern *b*, substantially as herein set forth, of a skeletonized table forming the spaces *a*, upon and over which space the pattern *b* is manipulated, whereby an open bottom is formed for the inclosed pattern-space *b* for the escape of the light shavings and cuttings forced into said inclosed pattern-space *b* from the trail or surface-sink on the under side of the work.

2. In a panel-molding machine, the combination, with a panel-pattern, *b*, of a fixed guide, *B*, having a skeletonized rim or spider base, *B'* *c*, over which the inclosed pattern-space *b* is manipulated, the cutter working within and discharging the shavings through said guide, and the work manipulated over its open top, whereby the pattern-space is kept free from accumulations of light shavings and cuttings at the joining of the inclosed pattern sides with said guide, substantially as herein set forth.

3. In a panel-molding machine, the combination, with a skeletonized table, *a*, of a fixed guide, *B*, having a skeletonized rim or spider base, *B'* *c*, and a panel-pattern, the inclosed

space *b* whereof is manipulated over said table and spider-rim openings *a c*, the work being manipulated over the top of said guide, and the cutter working within and discharging the shavings through the same, whereby the inclosed pattern-space and the outer wall of the guide are kept free from accumulations from the trail or surface-sink on the under side of the work, substantially as herein set forth.

4. The combination, in a molding-machine, of the fixed guide *B*, over the open top of which the work is supported and manipulated, and a cutter working within and discharging the shavings through said guide, with the indicating and work-holding device *d*, for use in paneling and rosette work, and the hinged yoke-frame *C*, carrying said device *d*, whereby said device may be turned back over the table and out of the way to adapt the machine for edge-molding, substantially as herein set forth.

5. For rosette-cutting, the yoke-frame *C*, hinged as described, provided with the front arm, *E*, and carrying the indicating and work-holding device *d*, in combination with the removable cushioned rod *D*, connecting said hinged yoke with the treadle, whereby the pressure may be relieved from the work-holding device to use it to indicate the pattern only in sinking panels, substantially as herein set forth.

6. For cutting rosettes, the work-holding device *d*, formed with a circumferential line of face-markers, *d'*, whereby to indent on the back of the work a ring of marks coincident with each cut rosette, as a means by which irregular blocks or cuttings may be utilized from which to produce rosettes in groups, as described.

7. The removable spring *g*, connecting the cutter-spindle slide with the table-frame, in combination with the removable cushioned rod *D*, the work-holding hinged frame *C* *d'*, the treadle, and the cutter, substantially as and for the purpose herein set forth.

8. For rosette-cutting, the combination, with the work-holding and indicating device *d d'*, the spindle-slide *G*, the cutter, and the treadle, of the removable spring *g*, connecting the spindle-slide with the table-frame, and the frame-

stop *h*, to limit the ascent of the cutter, said spring being adapted to exert a constant downward force upon said slide in opposition to the quick upward screw-like action of the cutter, substantially as herein set forth, thereby preventing the rosette from being torn out by the action of the cutter.

9. The combination, with the fixed guide, over the open top of which the work is supported and manipulated, and the cutter working within and discharging the shavings through said guide, substantially as herein set forth, of the pattern operating beneath the work against said open guide, the surface-pattern *e* upon the back of the work, and the indicating device *d*, co-operating with said surface-pattern to indicate the position of the under pattern in relation to the cutter and the fixed guide during the operation of panel-sinking.

10. In a panel-molding machine, the guide *D*, through the open bottom of which the shavings are discharged from a cutter working within its open top, the openings *c* in the base-rim of said guide and around its outer wall for the free escape at that point of fine cuttings, and the table-openings *a*, outside of said open base-rim, whereby to effect the escape of the shavings direct from the cutter within the guide, and of the fine cuttings from the pattern-space *b* outside of said guide.

11. A panel-molding machine having the following instrumentalities, to wit: a fixed guide, *B*, over the open top of which the work is supported and manipulated, a cutter working within and discharging the shavings through the bottom of said guide, a pattern secured on the under side of the work, a surface-pattern, *e*, on the back of the work, an indicator co-operating with said surface-pattern, a skeletonized table, *a*, and a skeletonized or spider base-rim, *B' c*, of the guide, the said openings *a c* communicating with the inclosed pattern-space *b*, all adapted for co-operation in panel-sinking, substantially as herein set forth.

In testimony whereof I have hereunto set my hand this 8th day of July, A. D. 1879.

LAURENCE WENCHEL.

Witnesses:

A. E. H. JOHNSON,
J. W. HAMILTON JOHNSON.