Sheet 1 - 2 Sheets.

T. Christian,

Cutter Head.

No. 29,768. Patented Aug. 28, 1860.

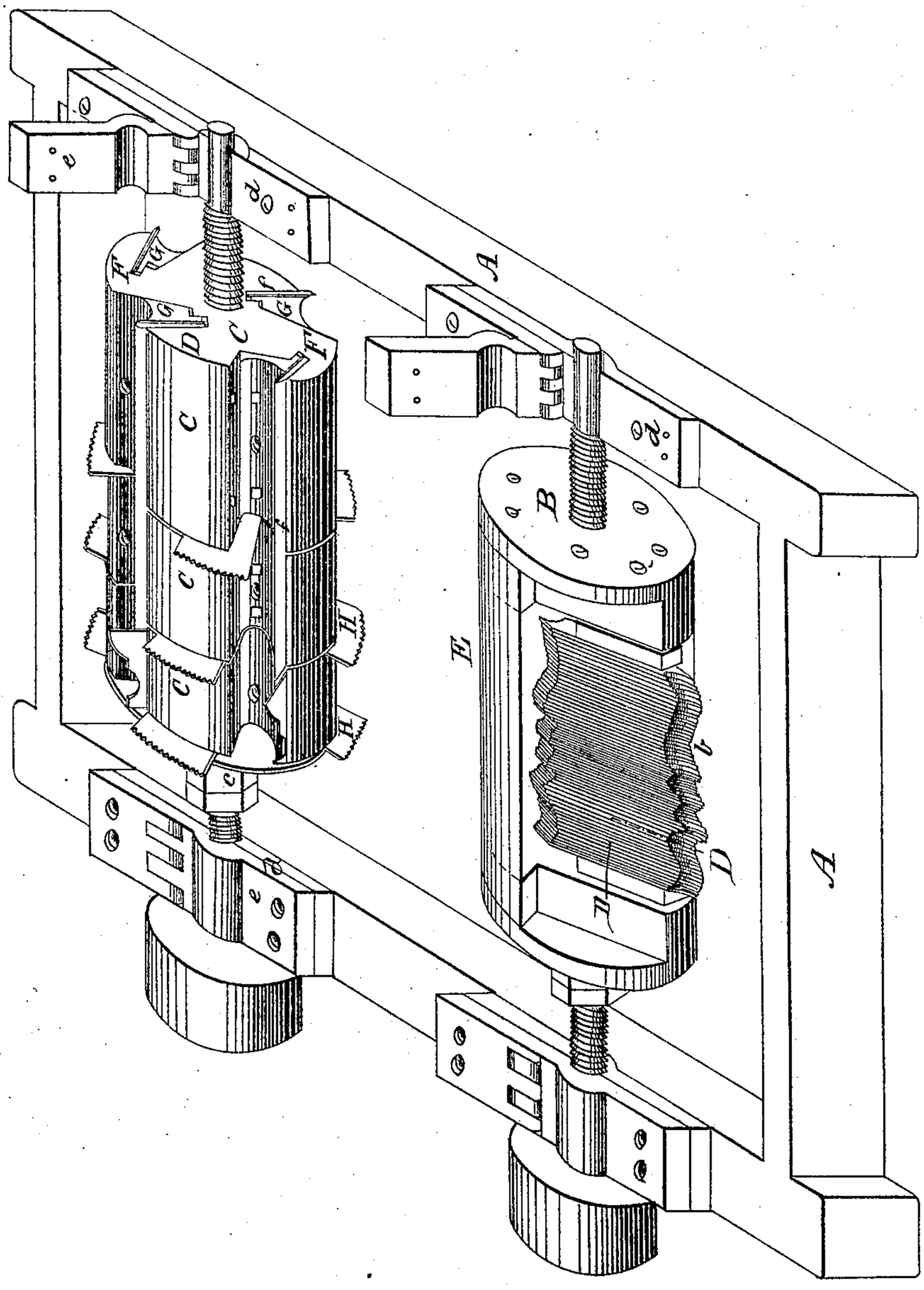

Fig. 1.

Witnesses

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J. Moore Hendricks

Inventor

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Sheet 2 - 2 Sheets.

T. Christian

Cutter Head.

No. 29,768. Patented Aug. 28, 1860.

Fig. 1

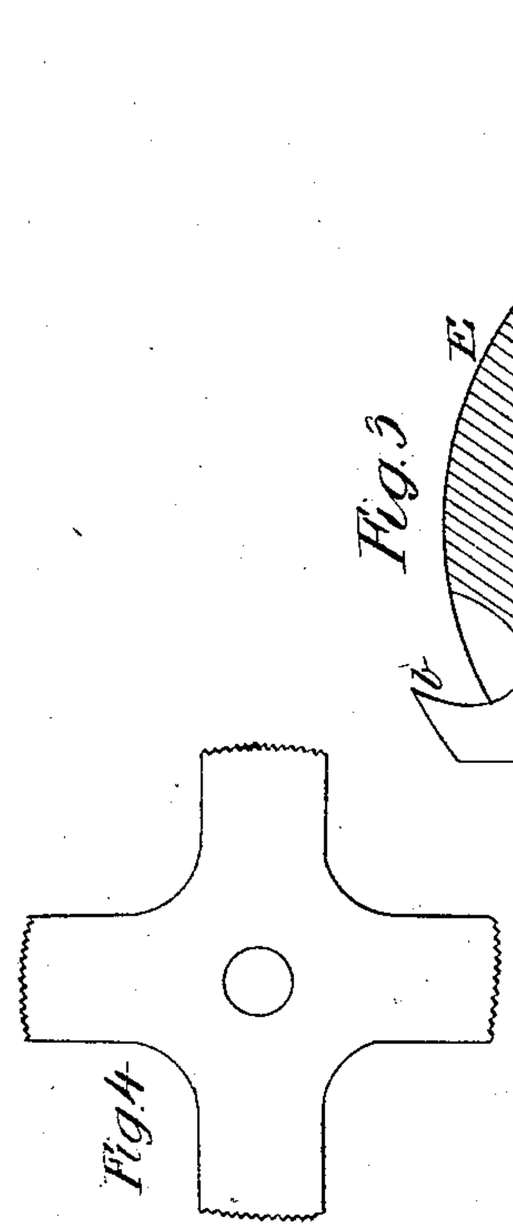

Fig. 3

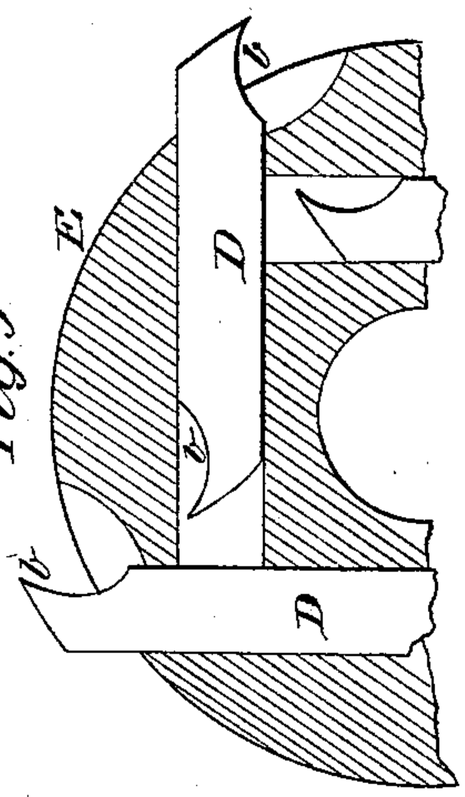

Fig. 7

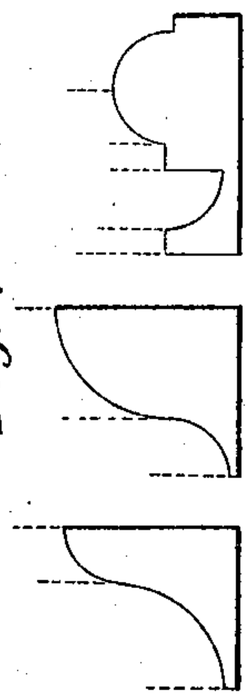

Fig. 4

Fig. 2

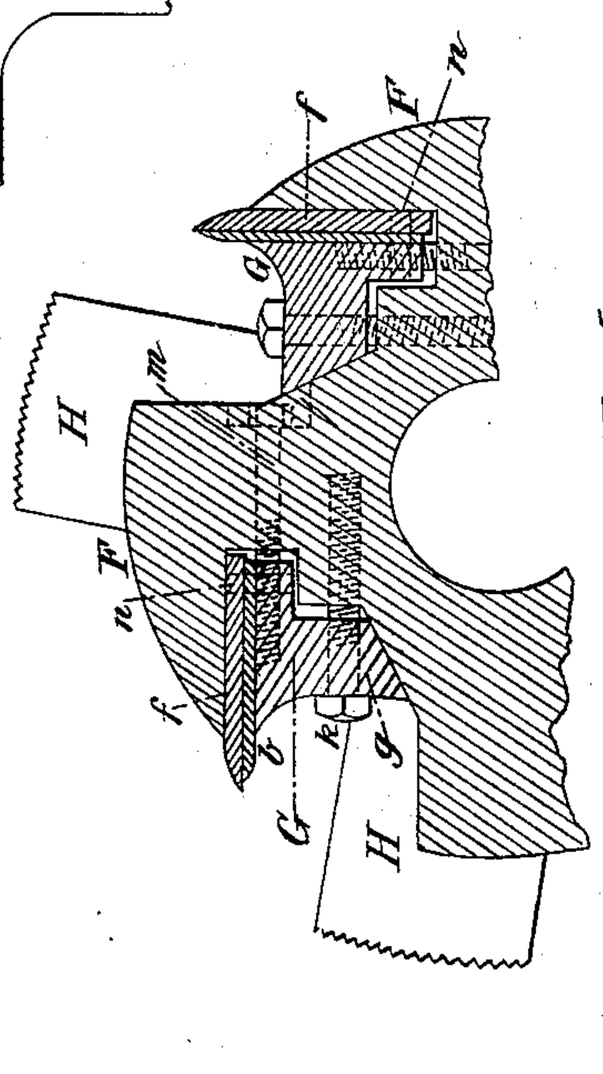

Fig. 5

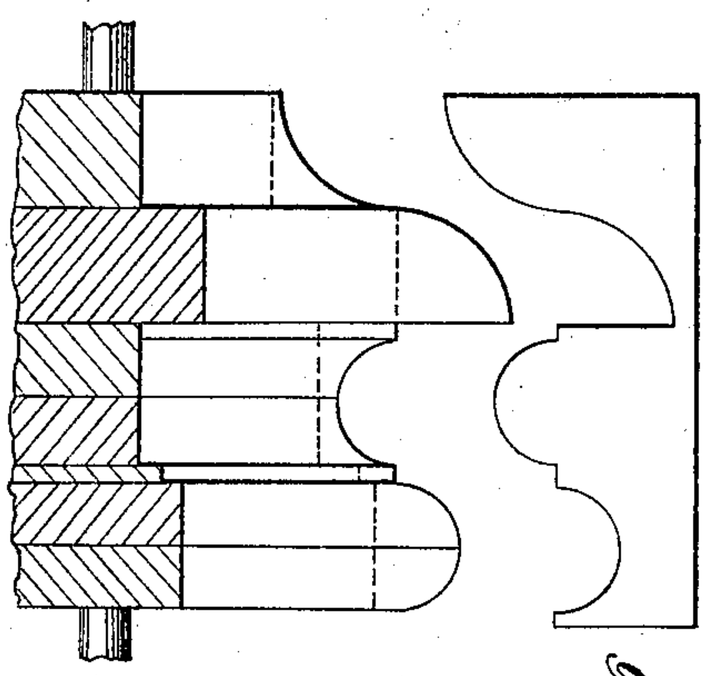

Fig. 6

UNITED STATES PATENT OFFICE.

THEODORE CHRISTIAN, OF NEW YORK, N. Y.

ROTARY CUTTER-HEAD FOR PLANING-MACHINES.

Specification of Letters Patent No. 29,768, dated August 28, 1860.

To all whom it may concern:

Be it known that I, THEODORE CHRISTIAN, of the city, county, and State of New York, have invented certain new and useful Improvements in Planing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a perspective view of the fore or roughing, and smoothing cutter heads and knives, embracing my improvements. Fig. 2 represents a transverse section through the smoothing cutter head. Fig. 3 represents a transverse section through the roughing cutter head. Fig. 4 represents a plan of the dividing saws on the finishing cutter head. Fig. 5 represents some of the different arrangements of compound molding cutters in order to produce various forms of moldings. Figs. 6 and 7, represent different forms of moldings produced by changing the position of the cutters in relation to each other.

The object of my invention is to facilitate the removal of the wood in forming heavy moldings; to prevent the cutters from tearing out the fiber of the wood in cross grained material; to facilitate the adjustment and give increased support to the cutters; to arrange the dividing saws so that their position can be changed in relation to the knives; and also to facilitate the compounding of the cutters to produce various forms of moldings.

My invention for effecting these objects consists, first, in the application to a cutter head of an adjusting mechanism, so arranged as to throw out, and draw in, the cutters, in order to adjust them accurately in relation to each other; second, in confining the cutters to the heads, by means of wedges arranged to move in the longitudinal direction of the knives, and transverse to the axis of the head, and give support to the underside of the cutter, so that one set of knives may be adjusted without changing the position of the opposite set, as is the case with the wedges moving in the direction of the axis of the cutter head; third, in arranging on one shaft a series of independent cutter heads, and a series of independent knives, so that both the heads and knives abut, and form a continuous line of cutters, and also, so that the position of the knives and heads, may be changed in relation to each other on the shaft, in order to produce a great variety of perfect compound moldings with a few varieties of knives; fourth, arranging on the cutter-head shaft, and between, or at the end of the different heads, a cruciform saw, so that it may be turned on the shaft independent of the heads, and its position changed in relation to the cutters as required.

In the accompanying drawings is represented a planing machine embracing my improvements, which consists of a strong frame (A) in which is arranged two sets of cutter heads (B) (C), the one (B) for roughing out the material, and bringing it nearly to the required form, and the other (C) for finishing, and giving it a smooth and perfect surface. Both of these heads are armed with knives or plane irons, and those (D) in the fore or roughing cutter, are punched or cut out from thin plates of steel and placed edgewise side by side in the bed of the cutter head, and held by a cap (E) and by set screws (*a*) passing through the ends of the head. The extreme thinness of these irons admits of their being arranged in relation to each other in the cutter head, so that their cutting edges will give any required form of outline, to produce any form of molding. Both ends of these knives are beveled off to form cutting edges and may be reversed in the head. The upper side of the knives is beveled off in the usual manner, to form a cutting edge, but on the under side extending back from the cutting edge, is a curved recess (*b*). made so as to give a more acute cutting edge to the knife, which greatly facilitates the cutting out and the removal of the chip.

The finishing cutter head is composed of several sections or independent heads (C) all attached to a central shaft by means of clamp nuts (*c*). This shaft runs in boxes (*d*) the caps (*e*) of which are hinged to the box so that they can be raised to remove the cutter head and shaft, without being disconnected from the box. The heads are provided with a series of arms (F) against which the knives (*f*) are clamped by means of clamping plates (G). The outer face of the arms is curved, and the inner face against which the knives rest is a plane whose direction corresponds to a chord of the circle of revolution of the cutters, and the position of the planes in the different heads, correspond and are in line with each other

throughout so that the edges of the knives in the different heads are also in line. Any number of these sectional heads, varying in form for plane or molding knives, may be placed upon the cutter shaft at the same time. The arrangement of the heads may be varied in relation to each other as desired, to receive cutters of various width or forms for planing different description of moldings.

The face of the clamping plate (G) is parallel to the plane of the arm, and the lower end (*g*) is beveled off to correspond to an inclined plane (*h*) forming the back of the next succeeding arm. The clamping plate is held by a screw (*k*) by which it is tightened or loosened in order to clamp or unclamp the knives. This clamping plate forces the knives outward from the center and the knives are held between two planes almost their entire length, and supported on both sides which gives to them additional strength and prevents them from springing while at the same time one knife can be loosened and taken out, without changing the adjustment of the other knives.

On the back or under side of the knives, is an adjustable iron (*l*) to assist in breaking the shaving and prevent its running with the grain of the wood. Extending through the back of the cutter head is an adjusting screw (*m*) for the knives. On the inner end of this screw is a nut (*n*) with an elongated shank which enters a hole made in the knife to receive it. By means of this screw and nut the knife can be either thrown out or drawn in as required and thus adjusted with the greatest precision. Between the cutter heads is placed a dividing saw (H) to be used when required to divide the board into strips, while it is being planed. These saws (H) consist of a plate with radial arms which correspond in number with the sets of knives in each head. The outer end of these arms are riveted, a hole is made in the center of the plate, through which the cutter head shaft passes and the position of these arms or saws are adjustable by turning the plate on the shaft so that the position of the saws in relation to the cutters may be adjusted as required.

The open space between the saws allows the chips of the cutters and also the sawdust to escape and prevents them from clogging the knives or the saws.

It will be seen from the construction and arrangement of the sectional heads, that with a few cutters and heads, their position, as will be seen by reference to Figs. 3, 6, and 7, may be changed in relation to each other, so as to produce a great variety of moldings perfect in form and outline, as the cutters are so arranged in the different heads, that they may be brought in juxtaposition at the cutting point and a continuous unbroken line formed, as a portion of the curve formed with one of the cutters joins the curve of the next succeeding cutter and neither overlaps or falls short, as is the case when the compound heads are formed with disks whose ends are slotted to receive the sides of the cutter.

Having thus described my improvements in planing machines, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of a rotary cutter, and planing iron, with an adjusting screw and nut, arranged to pass through the iron, substantially as described whereby the cutters may be drawn out or thrown in, as required to adjust them to each other.

2. The combination of a rotary cutter head a planing iron, and a clamping iron, arranged as described, to hold the iron to the head and prevent its springing.

3. The combination of a series of cutter heads and a series of cutters, constructed and arranged on one shaft, substantially as described, so as to abut, and form a continuous line of cutters, and also so that the position of the heads and cutters may be changed in relation to each other on the shaft, in order to produce a great variety of perfect compound moldings with a few varieties of cutters.

4. The combination of a cutter head with a cruciform dividing saw, arranged on the same shaft, so that it can be turned and the position of its arms in relation to the cutter knives changed as required for the purpose as set forth.

In testimony whereof I have subscribed my name.

THEODORE CHRISTIAN.

Witnesses:
ADOLPH BROWN,
JAMES W. POE,
ALEX M. PRICE.