

(No Model.)

2 Sheets—Sheet 1.

C. J. L. MEYER.
PLANNER.

No. 559,396.

Patented May 5, 1896.

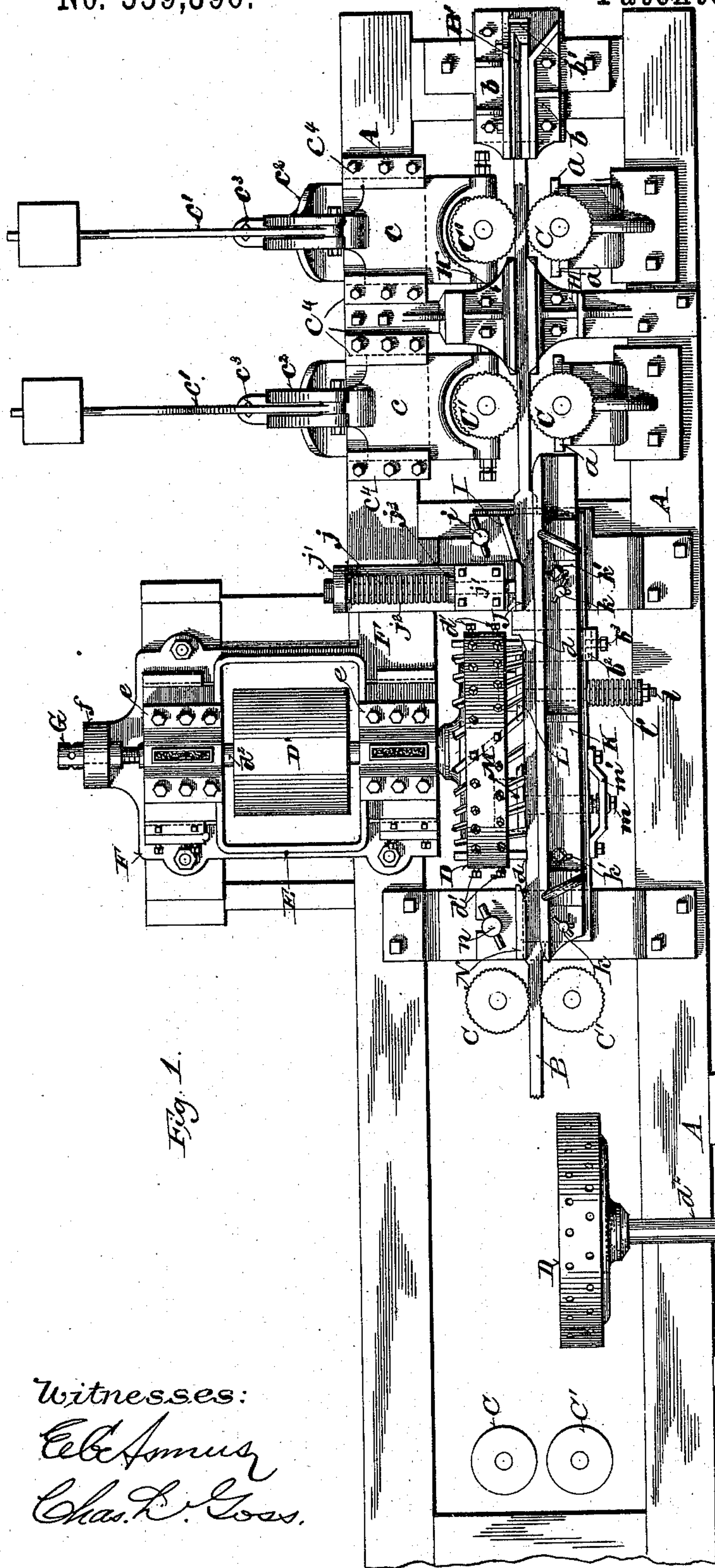


Fig. 1.

Witnesses:

Elk Amory
Chas. K. Goss.

Inventar.

Charles J. L. Meyer;

By *Wm. L. Chandler South Boston Mass*

Attorneys.

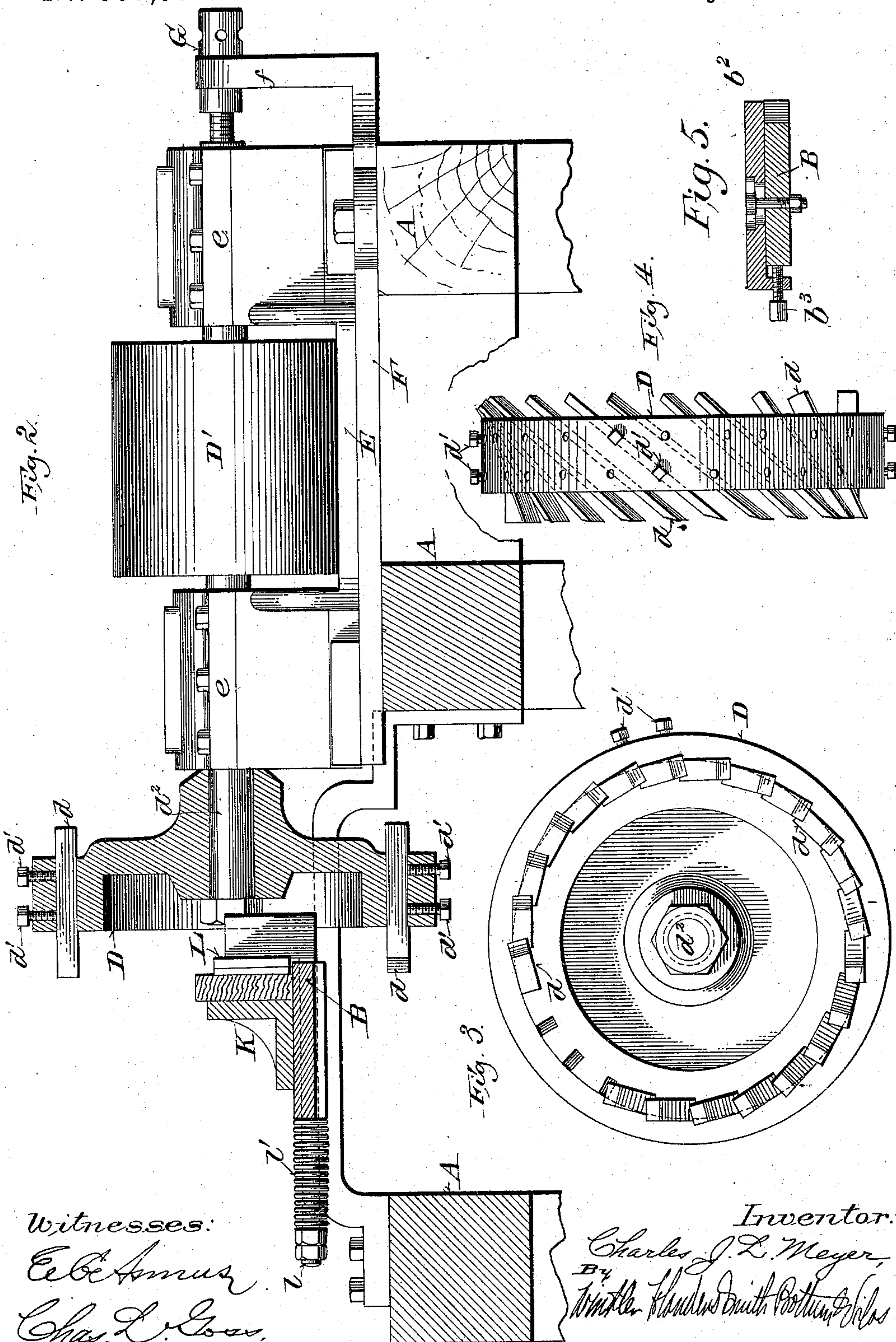
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2 Sheets—Sheet 2.

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Witnesses:

E. C. Amus
Chas. L. Gos.

Inventor:

Charles J. L. Meyer,
By
Wm. H. Smith & Co.

Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES J. L. MEYER, OF FOND DU LAC, WISCONSIN.

PLANER.

SPECIFICATION forming part of Letters Patent No. 559,396, dated May 5, 1896.

Application filed April 4, 1891. Serial No. 387,714. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. L. MEYER, of Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Planers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The main object of my invention is to reduce flooring and other lumber to the desired thickness, and to dress and smooth the same on both sides in one passage through the machine.

It consists of certain peculiarities in the construction and arrangement of the parts of which the machine is composed, hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a plan view of a machine embodying my improvements. Fig. 2 is a vertical cross-section, on an enlarged scale, cutting one of the cutter-heads axially. Fig. 3 is a front elevation; Fig. 4, a side elevation of one of the cutter-heads; and Fig. 5 is a vertical cross-section of the bedway, cutting the transversely-adjustable section thereof.

A represents the frame of the machine, which may be made of any suitable material and construction to support and furnish bearings for the essential working parts of the machine.

B is a horizontal bedway supported lengthwise of the frame A and arranged to support and guide the stuff in the proper position to be operated upon by the feeding and cutting mechanism.

B' represents a guide at the receiving end of the machine, constructed and arranged to facilitate the entry of the stuff upon the bedway B between the first pair of feeding-rollers. It is formed or provided with two upright flanges *b b*, one on each side of the bedway, one of said flanges being turned out-

wardly at its outer end to present a wider opening for the reception of the stuff.

b' is a top guide bolted to one of the flanges *b*, and formed at its outer end with an up-turned oblique flange to facilitate the entry of the stuff thereunder. The guide B' is adjustably attached to a cross-girth of the frame by bolts passing through transverse slots in its base-plate, so as to permit of a lateral adjustment of said guide with reference to the bedway B and other parts of the machine co-operating therewith.

C C' represent upright feeding-rollers placed in pairs at suitable intervals along the bedway B, one of each pair being on one side and the other on the opposite side of said way. The rollers C are supported in fixed bearings *a a*, and the upper bearings of the rollers C' are carried by slides *c c*, movable in suitable ways *c⁴ c⁴* provided therefor on frame A, transversely to the bed B. Weighted bell-crank levers *c' c'*, fulcrumed to brackets, *c²* are pivoted to said slides and tend to force the rollers C' toward corresponding fixed rollers C. The downward movement of the weighted arms of said levers is limited by adjustable stops *c³*, consisting of bolts tapped into arms on brackets *c²*.

D D represent the cutter-heads mounted upon the inner ends of horizontal shafts *d²*, one on each side of the bedway B.

I have shown in the drawings but one of the cutter-heads and its associated parts in detail, the other cutter-head with the corresponding and associated parts for dressing the opposite side of the stuff being a duplication thereof. The shaft *d²* of each cutter-head is supported in boxes *e e*, formed with or attached to a yoke or frame E, which is adjustably mounted upon a bed-plate F and movable lengthwise of said shaft in gibbed ways on said bed-plate. An adjusting-screw G, having a fixed bearing in an ear *f* on the outer side of the bed-plate F, engages with the adjacent end of the frame or yoke E and serves to adjust the cutter-head laterally with reference to the work. Each shaft *d²* is provided between its bearings with a driving-pulley D'. The cutter-head is preferably cast in a single piece and formed with a recess in the face toward the work, as shown in

Fig. 2, to admit of pressure-feet inside of the knives and between the cutter-head and the work, as hereinafter explained. It is also formed near the periphery with a circular series of transverse openings oblique to the plane of rotation for the reception of the knives or cutters d d , which are held in place therein by set-bolts d' , passing radially through the periphery of the cutter-head into the outer edges of the knife-openings. The knives or cutters are made similar to an ordinary plane-iron, as shown in Figs. 3 and 4.

Between the guide B' and the first cutter-head I prefer to employ two pairs of feeding-rollers, and between these rollers provide guides H H , with vertical flanges or guiding-surfaces adjacent to and on opposite sides of the bedway B . These guides are bolted to a cross-girth of the frame and are made adjustable transversely with reference to the bedway B .

The guides B' and H H serve to direct the stuff in the proper position and direction to the feeding-rollers, the space between which is normally a little less than the thickness of the thinnest stuff to be dressed. Without them the stuff, particularly thin material, is liable to be deflected vertically or laterally from its proper course through the machine, especially when engaged by a single pair of rollers only, and thus the exercise of much greater care is necessitated in entering the material in the proper position and direction between the first pair of rollers.

K is a gage having a vertical flange or bearing-surface and unyieldingly and adjustably attached to a cross-girth of the frame, opposite the cutter-head D and parallel with the bedway B , which is preferably extended horizontally adjacent thereto to provide a better bearing-support for said gage. It is rigidly held in place when adjusted by means of the thumb-screws k k and set-bolts k' k' , passing through transverse slots in the base of said guide and tapped into the extended portion of the bedway B . The thumb-screws k k afford means for partially fastening the gage in place when it has been approximately adjusted, and the set-bolts k' serve to rigidly secure it when the adjustment is completed. The gage preferably extends some distance beyond the cutter-head D , at both sides thereof, as seen in Fig. 1.

Opposite the end of gage K toward the receiving end of the machine I provide a guide I , which is adjustably attached to a horizontal extension of the bedway by means of a set-screw i . This guide has a vertical flange oblique to the gage K and serves to direct the material against the gage K and between it and the yielding presser-foot J , which is located near the side of the cutter-head D toward which the material advances. This presser-foot is formed or provided with a stem j , which is supported horizontally and at right angles to the work in suitable bearings j' on a

cross-girth of the frame. A spiral spring j^2 , surrounding the stem and bearing at one end against the rear bearing j' and at the other end against the collar j^3 , fixed on said stem, forces the presser-foot J against the work and holds the same snugly against the gage K in position to be operated upon by the knives of the cutter-head.

It being essential in the production of accurate work to hold the stuff firmly in place against the fixed gage K while the knives of the cutter-head are operating upon the same, I provide inside of the knives d d and between the cutter-head D and bedway B , as shown in Figs. 1 and 2, a yielding presser-foot L , which is formed or provided with a stem l , supported at right angles to the work in a bearing provided therefor on the under side of the bedway. Upon the outer projecting end of this stem is placed a spiral spring l' , which bears at one end against the outer end of its bearing and at the other end against the washer and adjusting-nut on the outer end of said stem and forces the presser-foot against the stuff, holding it adjacent to the inner edges of the knives of the cutter-head snugly and firmly against the gage K .

A little inside of the knives, at the opposite or delivery side of the cutter-head and between it and the bedway B , I provide a rigid guide M , which is formed or provided with a stem supported horizontally and at right angles to the work in a bearing provided therefor on the under side of the bedway. Into this stem is tapped an adjusting-screw m , which has a fixed bearing in a bracket m' , attached to the outer side of said bedway or to any other suitable fixed support. By this means the guide M may be accurately adjusted at right angles to the bedway B .

Outside of the cutter-knives, at the delivery side of the cutter-head and on the opposite side of the bedway B from the gage K , I provide a guide N , which is adjustably attached by a set-screw n to a cross-girth of the frame, so as to permit of its being moved at right angles to said gage K .

It will be observed that by the construction and arrangement of the guiding and holding devices just described the work is firmly held in place on both sides of the cutter-knives as it approaches and leaves the cutter-head. The accuracy and uniformity of the work are thus insured.

To prevent splintering or slivering of the stuff, it is necessary that the cutter-knives should approach as closely as possible in their descent the bed on which the work is supported. To this end I provide a transversely-adjustable section b^2 in the bedway B , as shown in Figs. 1 and 5. By means of an adjusting-screw b^3 this section may be set so that the knives d d will just clear it and afford a support at that point for the work up to the line of the cut.

The main part if not the entire work being

done by the cutter-knives on the descending side of the cutter-head, the stuff is reduced to a definite thickness before it reaches the knives on the ascending side of the cutter-head, and in their ascent said knives have very little if any work to do. For this reason the guide M, placed adjacent to the inner edges of the cutter-knives at the ascending side of the cutter-head, may be rigidly held in place, there being little if any variation in the thickness of the stuff at this point.

It will be observed that the recess in the front or inner face of the cutter-head D affords the necessary space for the presser-foot L and guide M.

The stuff having been reduced to the desired thickness and dressed on one side by the mechanism hereinbefore described passes by a second cutter of the same construction and arrangement and is dressed in like manner on the other side, it being guided and held during the operation by devices like or similar to those hereinbefore described.

Various changes may be made in the details of the machine within the scope of my invention.

I claim—

1. In a planing-machine, the combination of a horizontal bedway, a rotary cutter-head provided adjacent to said bedway with a series of knives having their cutting edges in the plane of rotation, an unyielding gage opposite said cutter-head, and yielding presser-feet located opposite said gage adjacent to the descending side of the cutter-head, one outside and the other inside of said knives, and suitable mechanism for feeding the stuff to be planed upon said bedway between the cutter-head and gage, substantially as and for the purposes set forth.

2. In a planing-machine, the combination of a bedway, a rotary cutter-head provided with a series of knives projecting toward said bedway, a rigid gage opposite said cutter-head and parallel with said bedway, yielding presser-feet opposite said gage and adjacent to the descending side of the cutter-head, one being outside and the other inside of the knives, and unyielding guides opposite said gage and adjacent to the ascending side of the cutter-head, one outside and one inside of said knives, substantially as and for the purposes set forth.

3. In a planing-machine, the combination of a rotary cutter-head provided with a series of knives having their cutting edges in the plane of rotation, and a work-supporting bedway extending parallel past and adjacent to the working face of said cutter-head and having a transversely-adjustable section adjacent to the cutting edges of said knives, whereby said section may be brought as closely as possible to the knives, and a support provided for the work close to the cut, substantially as and for the purposes set forth.

4. In a planing-machine, the combination of a horizontal bedway, upright feeding-rollers, placed in pairs on opposite sides of said bedway, one roller of each pair being capable of yielding away from the other, a vertical rotating cutter-head, provided adjacent to said bedway with a series of knives having their cutting edges in the plane of rotation, an unyielding vertical gage opposite said cutter-head, and yielding presser-feet placed opposite said gage adjacent to the descending side of the cutter-head, one outside and one inside of said knives, substantially as and for the purposes set forth.

5. In a planing-machine, the combination of a horizontal bedway, a receiving-guide having vertical flanges on opposite sides of said bedway and a top guide by which the material is directed in proper position upon said bedway, upright feeding-rollers placed in pairs on opposite sides of said bedway, one roller of each pair having a laterally-yielding bearing, transversely-adjustable unyielding guides placed between the first two pairs of feeding-rollers and provided with vertical flanges or bearing-faces on opposite sides of said bedway, a vertically-rotating cutter-head provided with a series of knives having their cutting edges in the plane of rotation and presented toward said bedway, an unyielding vertical gage opposite said cutter-head, and a yielding presser-foot located between said cutter-head and bedway opposite said gage, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHARLES J. L. MEYER.

Witnesses:

F. C. BUDD,
CHAS. L. GOSS.