

(No Model.)

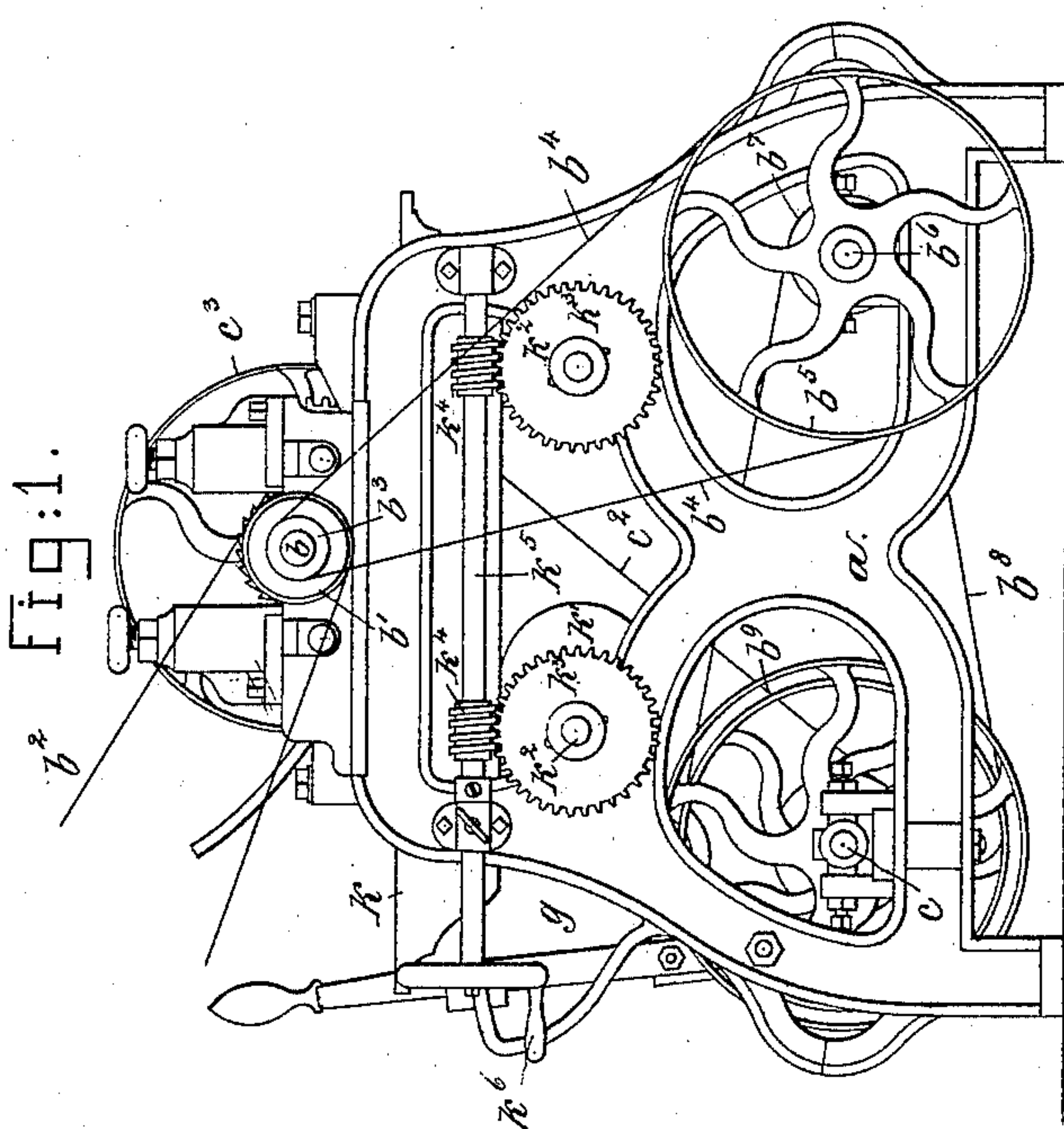
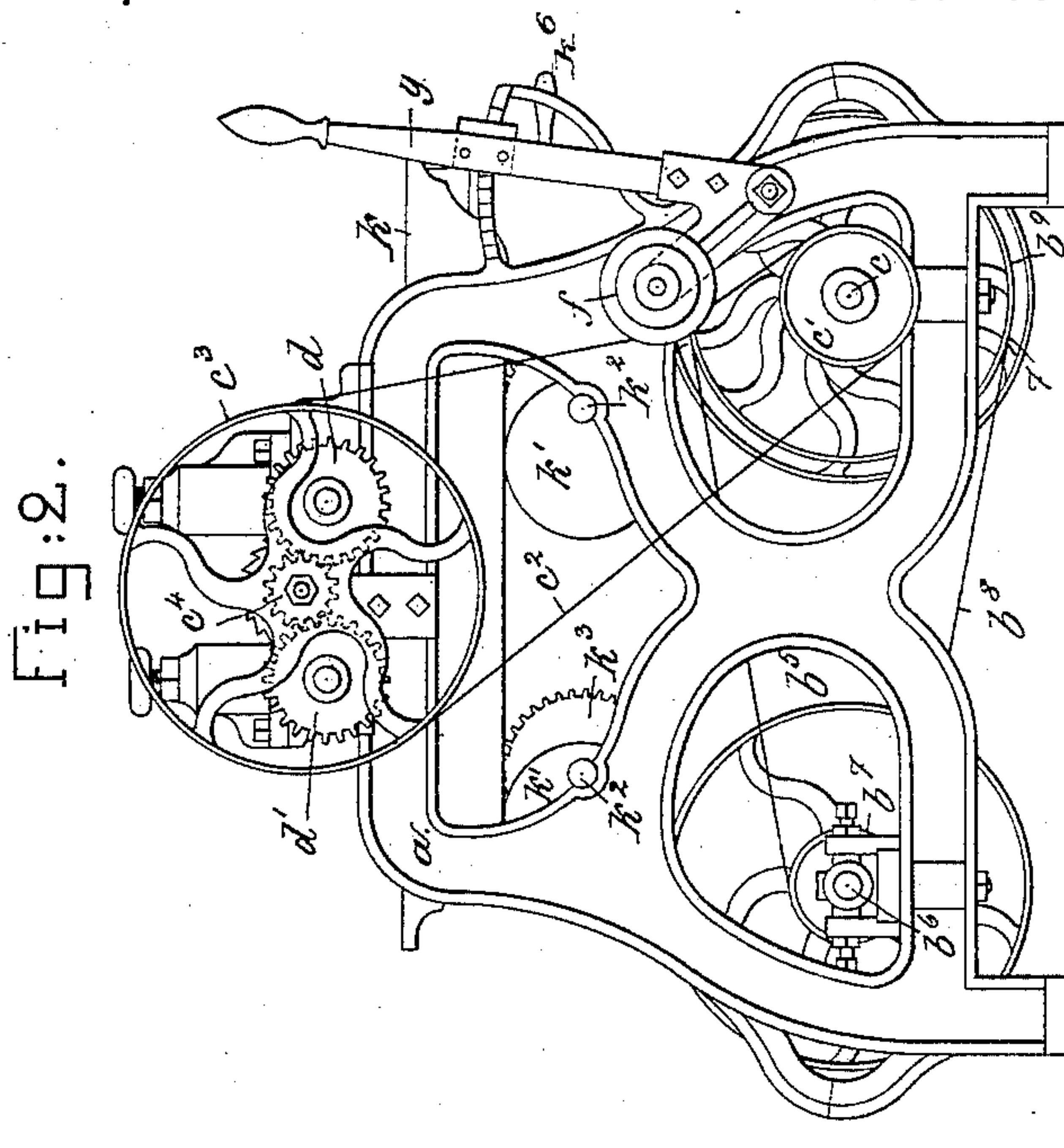
2 Sheets—Sheet 1.

C. D. SMITH.

WOOD DRESSING MACHINE.

No. 327,203.

Patented Sept. 29, 1885.



Witnesses.

Arthur Lippertsen.

B. J. Hayes.

Inventor.

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UNITED STATES PATENT OFFICE.

CALVIN D. SMITH, OF TEMPLETON, ASSIGNOR OF ONE-HALF TO AUGUSTUS, HENRY C., AND ALEC E. KNOWLTON, OF WEST GARDNER, MASS.

WOOD-DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 327,203, dated September 29, 1885.

Application filed October 27, 1884. (No model.)

To all whom it may concern:

Be it known that I, CALVIN D. SMITH, of Templeton, county of Worcester, State of Massachusetts, have invented an Improvement in Machines for Dressing Wood, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its object the production of a planing-machine for planing the curved surfaces of pieces of wood, and especially short pieces employed in chair-backs; but it may be used to advantage to plane the curved surfaces of wood employed for other purposes.

In accordance with my invention I provide a curved bed or support for the curved piece of wood to be planed, and for a cutter I employ a rotating shaft provided with a series of toothed disks placed thereon diagonally, so that the teeth of each of the said disks acting in rapid succession on different portions of the curved surface of the wood to be planed will remove therefrom a series of short chips, all the teeth of all the disks in one complete rotation of the cutter removing the surface of the piece of wood from edge to edge; but, as stated, the chips will be short rather than long, as would be the case if the cutter had long knives to cut a shaving from edge to edge of the piece of wood, or entirely across it.

A cutter or cylinder having long knives, each to cut a shaving from edge to edge of the piece of wood to be planed, cannot be practically used to plane curved cross-grained surfaces from end to end, the curved piece of wood being passed under the cutter continuously from end to end, for the long knife when it cuts into that part of the wood wherein the grain extends diagonally toward the cutter enters the wood too deeply, or splits it or breaks out splinters; hence the wood, with a cutter of the class referred to, would have to be watched very closely as to the direction of the grain and the wood be fed under the cut-

ter first with one end and then with the other end leading, the distance being variable according to the peculiarity of the grain.

By employing a cutter such as herein shown, 50 the surface being removed in short chips in rapid succession, the wood to be planed may be fed under the cutter, and between it and the curved bed or support, with either end of the piece of wood foremost, and the said piece of wood may be passed from end to end in one and the same direction without any reversal thereof, or any stopping of the machine to permit the piece of wood to be changed end for end.

In my improved machine a curved piece of cross-grained wood may be planed or dressed from end to end by one operation or handling, instead of by two operations. In the class of cutter herein employed these teeth of the series of disks which come at one and the same instant of time against the surface of the wood must, to insure an even uniform cut, be all in the same line parallel with relation to the center of the shaft or arbor carrying the toothed disks. 60

In connection with the curved bed and the cutter composed of a shaft and arbor and a series of diagonally-placed toothed disks, I employ one or more feed-rollers, which are made vertically adjustable toward and from the curved bed on which the wood rests. 75

The teeth of the toothed saw-like disks act in succession upon different portions of the width of the curved piece of wood, the teeth of each disk acting upon that portion of the surface of the wood which is untouched by the teeth of the disks at either side of it. 8c

Figures 1 and 2 are elevations from opposite sides of a wood planing or dressing machine embodying my improvements; Fig. 3, a longitudinal vertical section thereof; Fig. 4, a plan view; and Figs. 5 and 6, longitudinal and transverse sections, respectively, of the cutter on a large scale. 85

The main frame-work *a* and the cutter-actuating mechanism and the feeding mechan- 9c

ism for the board or piece to be planed or dressed may be of any suitable or usual construction.

As herein shown, the shaft or arbor *b* of the cutter, provided with a pulley, *b'*, driven by the main actuating-belt *b²*, is provided with another pulley, *b³*, it driving, by means of a belt, *b⁴*, and pulley *b⁵*, a shaft, *b⁶*, but at less speed than that of the shaft *b*, the said shaft *b⁶*, through a pulley, *b⁷*, belt *b⁸*, and pulley *b⁹*, driving a shaft, *c*, at still slower speed.

The shaft *c* is provided with a small pulley, *c'*, connected by a loose belt, *c²*, with a pulley, *c³*, on a short arbor or pin provided with a pinion, *c⁴*, meshing with gears *d d'*, which actuate the feed-rollers *e e'*, (see Fig. 3,) by which the board or piece to be planed is fed under the cutter on the cutter-shaft *b*, the boxes for the journals of the said rollers being made vertically adjustable by the screws *e³ e⁴*.

The belt *c²*, to cause the feed-rollers to be rotated, will be tightened by means of an idle-pulley, *f*, connected with a handled lever, *g*, within control of the operator.

The curved bed *h*, (see Fig. 3,) to support the curved piece of wood *i* to be planed or dressed, is detachably secured by bolts *h²* upon the table *k*, resting on eccentrics *k'*, fixed upon shafts *k²*, provided with gears *k³*, (see Fig. 1,) engaged by worms *k⁴* on a shaft, *k⁵*, provided with a suitable crank or handle, *k⁶*, by which it may be turned to rotate the eccentrics *k'* simultaneously, and thereby raise or lower and adjust the height of the table *k* and bed *h* thereon. The bed herein shown is concaved at its upper side, as the concaved face of the piece of wood *i* being acted upon is concaved.

The curved pieces of wood *i* that are to be planed are sawed out from a solid piece of wood, and consequently have the grain inclined in different directions with relation to the curved surface to be presented to the cutter, (see Fig. 3,) the grain in a portion of the piece inclining toward the acting edges of the teeth of the cutter as they enter the wood, or as the said teeth in their rotary movement strike the surface of the wood.

The cutter having, as described, a series of short cutting teeth or edges, *n*, as shown best in Fig. 5, acts on the wood at intervals in the direction of its width, each tooth or edge removing a short chip from the wood, the grain of which is supported or strengthened by the untouched portions between the said edges.

In order to cut the entire surface of the wood, the cutter is provided with a series of rows of the said cutting-edges, those of the different rows being placed in different planes of rotation, so that in a complete rotation of the cutter shaft or arbor *b* and cutter the entire surface of the piece *i* will be acted upon from edge to edge.

As herein shown, the cutter is composed of a series of independent toothed or saw-like disks, *o*, securely fastened upon the cutter

shaft or arbor *b* by a key, *p⁸*, the plane of the said disks *o* being inclined to the axis of the said shaft or arbor, so that the different cutting edges or teeth *n* of each cutting-disk *o* revolve in different circles, the space traversed by the cutting-edges of one disk overlapping that traversed by the cutting-edges of the next disk, the entire series of teeth of all the disks acting upon the whole width of a surface passing beneath them during each rotation of the said shaft, the teeth *n* of each row of disks in contact with the wood being in a line parallel with the axis of the shaft or arbor *b*. As shown, in this instance the shaft or arbor *b* is provided with an inclined shoulder, *p*, which retains the endmost disk *o* in the proper inclined position, and the remaining disks of the series are separated from one another by inclined washers *p'*, being all held tightly in place by the nut *p²*.

It is obvious that the construction of the cutter may be varied without departing from my invention; so long as the portions of the cutter acting on the wood at any one moment are composed of a series of short cutting-edges separated from one another, so that the wood being cut is supported by the uncut portions at either side of the cutting-edges.

I do not broadly claim a rotating cutter composed of a shaft or arbor with toothed elliptical disks placed thereon diagonally with relation to its axis.

I claim—

1. In a machine for planing curved surfaces, a curved bed or support to sustain one side of the curved article and a cutter co-operating therewith, composed of a shaft or arbor, and a series of toothed circular disks secured to the said shaft in a diagonal position with relation to the axis thereof, the teeth of adjacent disks in contact with the wood being in the line of the axis of rotation of the shaft or arbor *b*, the teeth of each disk at each rotation thereof acting in succession on the wood at a different point, substantially as described.

2. In a machine for planing curved surfaces, a curved bed or support to sustain one side of the curved article, the table to support the said bed, and means, substantially as described, to adjust the said table and bed vertically, combined with a cutter composed of a shaft or arbor and a series of toothed circular disks secured to the said shaft in a diagonal position with relation to the axis thereof, the teeth of adjacent disks in contact with the wood being in the line of the axis of rotation of the shaft or arbor *b*, the teeth of each disk at each rotation thereof acting in succession on the wood at a different point, substantially as described.

3. In a machine for planing curved surfaces, a curved bed or support to sustain one side of the curved article and the vertically-adjustable rolls *e e'*, combined with a cutter composed of a shaft or arbor and a series of

toothed circular disks secured to the said shaft in a diagonal position with relation to the axis thereof, the teeth of adjacent disks in contact with the wood being in the line of
5 the axis of rotation of the shaft or arbor b, the teeth of each disk at each rotation thereof acting in succession on the wood at a different point, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CALVIN D. SMITH.

Witnesses:

E. M. SMITH,
M. E. DEXTER.