

No. 633,696.

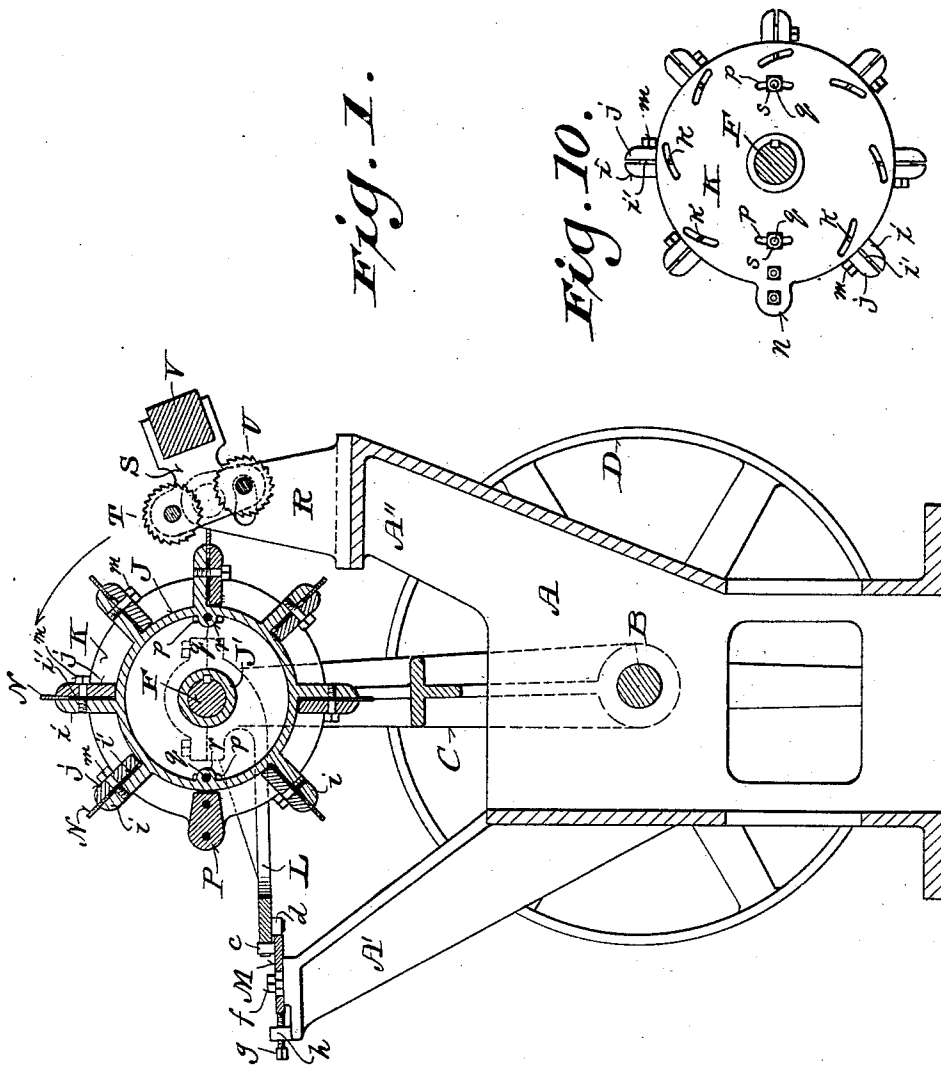
Patented Sept. 26, 1899.

J. KOENIG & N. DEDRICK.
COMB CUTTING MACHINE.

(Application filed Feb. 13, 1899.)

(No Model.)

5 Sheets—Sheet 1.



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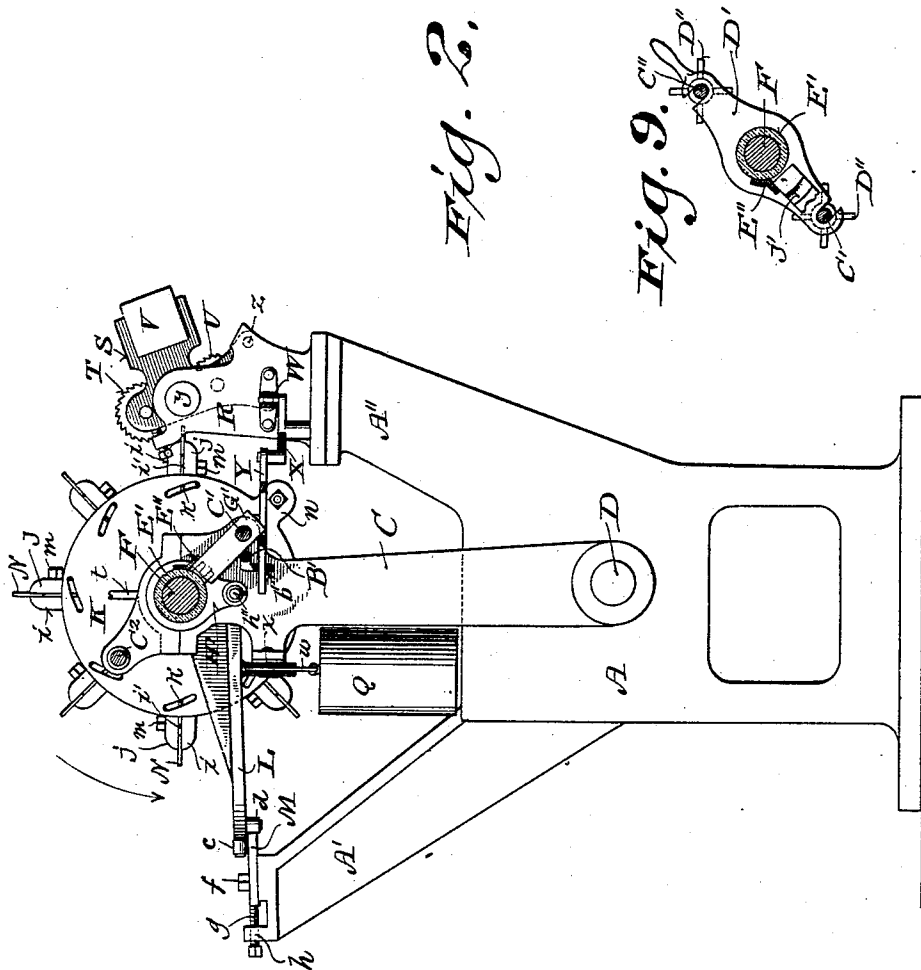
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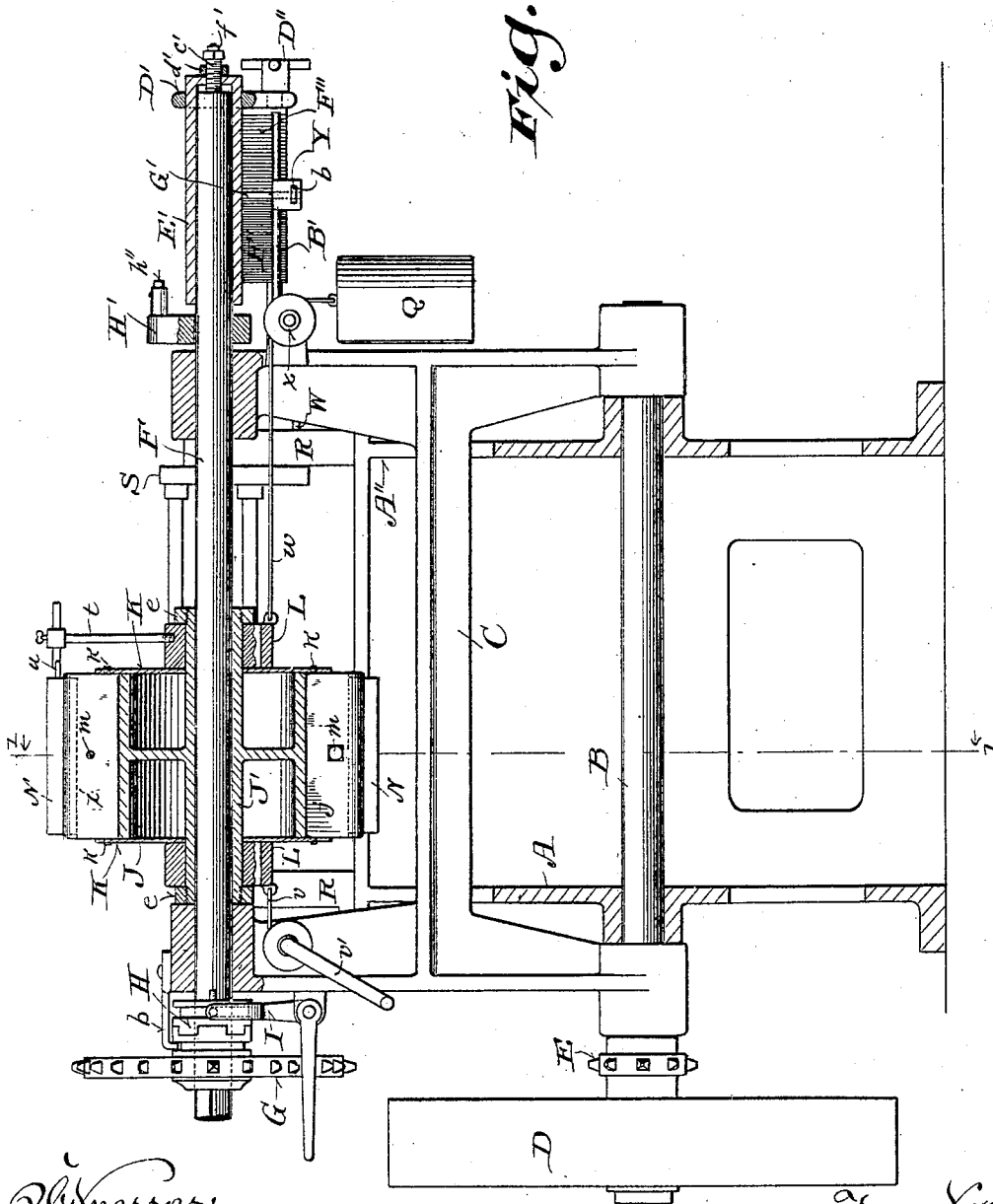
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Fig. 3.



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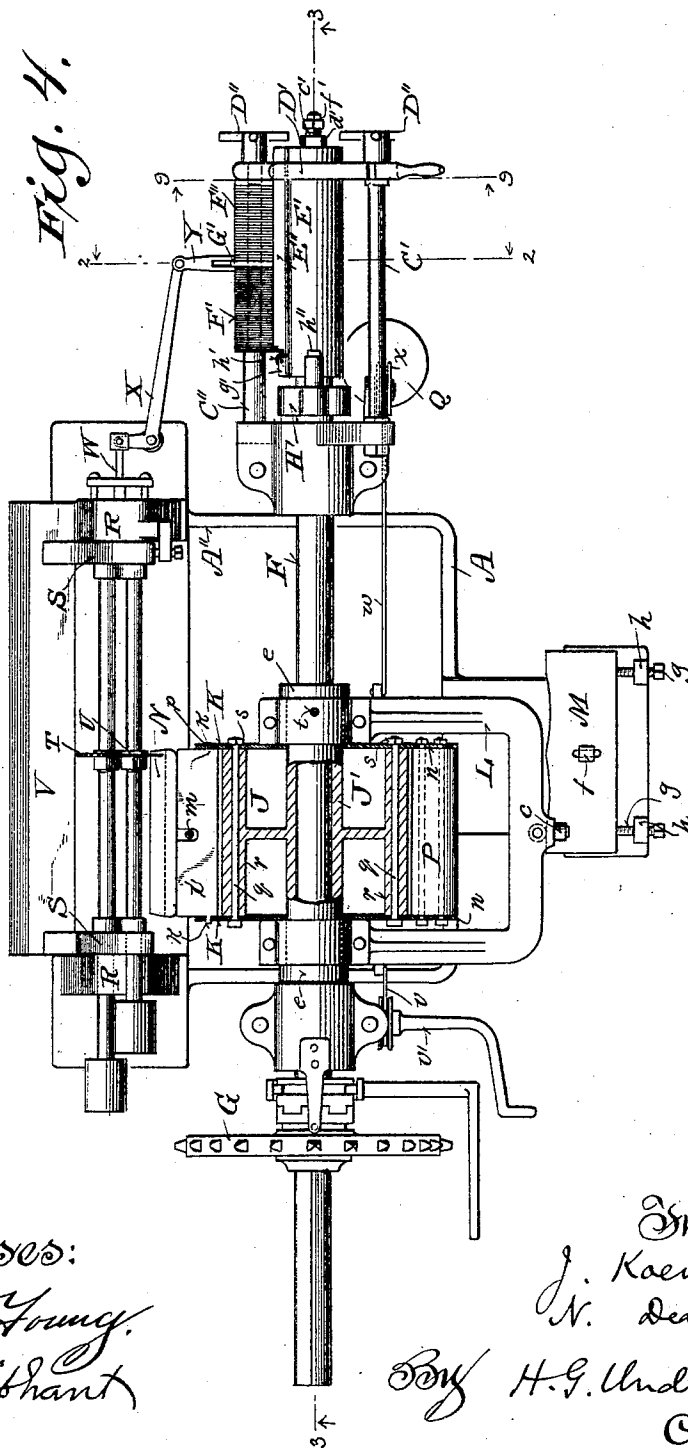
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5 Sheets—Sheet 4.



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Fig. 6.

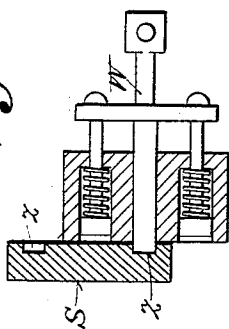


Fig. 8.

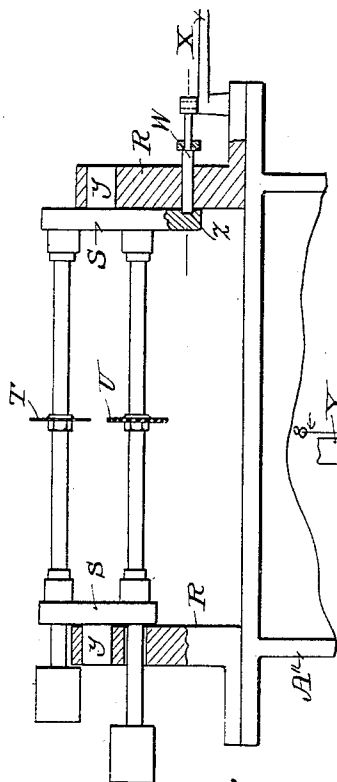
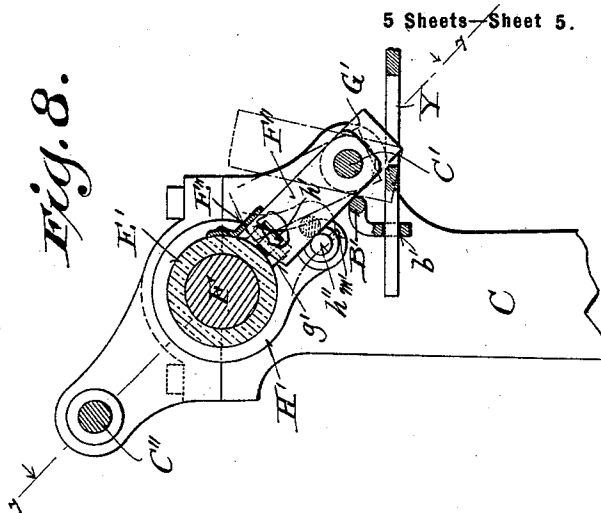


Fig. 5.

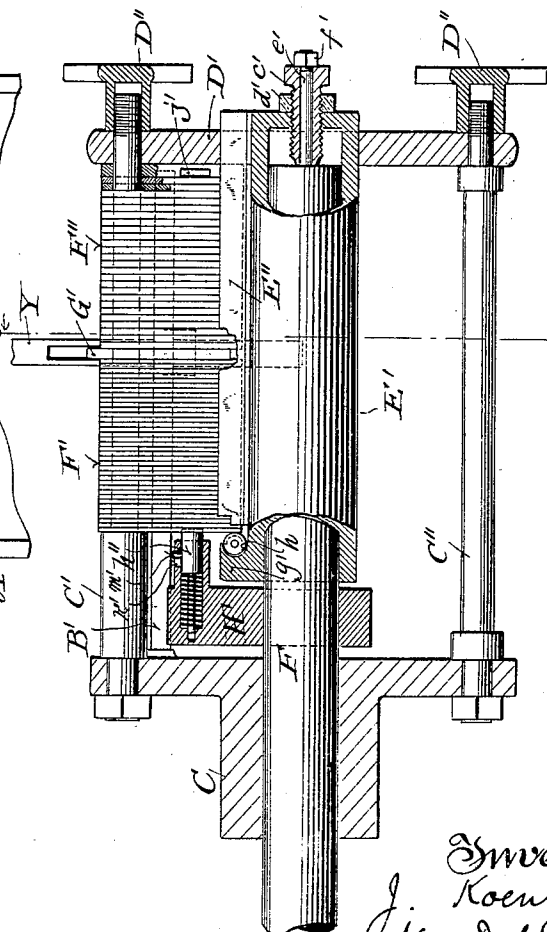


Fig. 7.

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UNITED STATES PATENT OFFICE.

JOSEPH KOENIG, OF TWO RIVERS, AND NICHOLAS DEDRICK, OF MANITOWOC, WISCONSIN; SAID DEDRICK ASSIGNOR TO THE ALUMINUM MANUFACTURING COMPANY, OF TWO RIVERS, WISCONSIN.

COMB-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 633,696, dated September 26, 1899.

Application filed February 13, 1899. Serial No. 705,415. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH KOENIG, a resident of Two Rivers, and NICHOLAS DEDRICK, a resident of Manitowoc, in the county of Manitowoc and State of Wisconsin, citizens of the United States, have invented certain new and useful Improvements in Comb-Cutting Machines; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention has for its object to provide a self-feed comb-cutting machine; and it consists in certain peculiarities of construction and combination of parts hereinafter particularly set forth with reference to the accompanying drawings and subsequently claimed.

Figure 1 of the drawings represents a transverse section of our machine, indicated by line 1 1 in the third figure of the series; Fig. 2, an end view of the machine, partly in transverse section, as indicated by line 2 2 in the fourth figure; Fig. 3, a longitudinal section of the machine, indicated by line 3 3 in the succeeding figure; Fig. 4, a plan view of the machine, partly in horizontal section; Fig. 5, a detail partly-sectional view illustrating a saw mechanism; Fig. 6, a detail section indicated by line 6 6 in the preceding figure; Fig. 7, a detail plan view, partly in horizontal section, illustrating part of a self-feed mechanism, the sectional part of the view being indicated by line 7 7 in the succeeding figure; Fig. 8, a detail transverse section indicated by line 8 8 in the seventh figure; Fig. 9, a similar view indicated by line 9 9 in the fourth figure, and Fig. 10 a detail end view of a rotary comb-blank holder.

Referring by letter to the drawings, A represents the cast-metal main frame of our machine, having front and rear oppositely-inclined extensions A' A'', and fast in the frame, longitudinally thereof, is a shaft B, constituting a pivot for a tilt-frame C and a bearing for a driver, the latter being shown as comprising a belt-pulley D and a sprocket-wheel E, rigid with the hub of said pulley. Loose in the tilt-frame C is another shaft F, upon which a sprocket-wheel G has revolution, and in practice this sprocket-wheel is in link-belt connection with the one constituting part of

the aforesaid driver. The sprocket-wheel G has one end of its hub made to engage a clutch H, splined on shaft F, and an annular groove in said hub is engaged by a stay-bracket b of the aforesaid carrier.

Clutch H is moved on shaft F by a bell-crank spanner-lever I to come in and out of engagement with the hub of sprocket-wheel G, and being engaged with said hub said shaft will have revolution simultaneous with an intermittent travel longitudinally of the machine.

Fast on the shaft F is the hub J' of a cylindrical shell J, having movable heads K centered on said hub, the latter being loose in box-terminals of a bracket L in the form of a yoke provided with a horizontal antifriction-roller c and a depending antifriction-roller d in contact with a templet M, supported on the front extension A' of the machine-frame. Stay-nuts e are run on the ends of shell-hub J' against the box-terminals of bracket L, and the templet M has a transverse center slot engaged by a set-bolt f, that turns in frame extension A', adjustment of said templet being maintained by said set-bolt and screws g, having their bearing in lugs h, rising from said frame extension.

Extending radially from the periphery of shell J are flanges i, and in set-bolt connection with these flanges against interposed spacers i' and comb-blanks N are plates J, said spacers being provided with end lugs k, that engage eccentric slots in the heads K of said shell. Each spacer i' is provided with a transverse recess engaged by the set-bolt m, by which the adjacent clamp-plate j is held to place, and the heads K of shell J have ears n, bolted or otherwise fastened to a hand-bar P, the latter being equidistant between two of the radial flanges of said shell. Circumferential slots p of the heads K are engaged by bolts q, extending through inner ribs r of shell J, and by adjustment of said heads on said bolts the spacers i' are moved in or out in proportion to the depth the comb-blanks are to have between the shell-flanges i and clamp-plates j, it being understood that these comb-blanks abut said spacers and that said cylinder-heads are maintained in their rotary

adjusted position by set-nuts *s*, run on the bolts *q* aforesaid.

To determine the proper longitudinal set of the comb-blanks in the rotary holder above specified, one box-terminal of yoke *L* is provided with a standard *t* for a horizontally-adjustable gage *u*, as best illustrated in Fig. 3.

Fast to one arm of the yoke *L* we show a strap *v* in connection with a winch *v'*, with which tilt-frame *C* is provided, and connected to the other arm of said bracket is another strap *w*, that runs on a sheave *x*, supported by said carrier. Hung from the latter strap is a weight *Q*, the latter and said strap constituting draft mechanism that operates by gravity to travel shaft *F* and parts in connection therewith. While we show a winch in flexible connection with yoke *L* as a means for retracting the shaft *F* and parts in connection therewith, other draft mechanism may be utilized for the same purpose.

Mounted on the rear extension *A''* of frame *A* are standards *R*, provided with bearings for studs *y*, extending laterally from a pair of heads *S*, in which the arbors of saws *T* *U* are journaled, one of the standards being segmentally slotted to obtain clearance for one of the saw-arbors. Each saw-arbor is fast in a belt-pulley, by which it is driven, and the heads *S* are connected by a gravity-bar *V*, so as to have automatic tilt in one direction. One of the heads *S* is provided with recesses *z* for the engagement of a spring-controlled slide-bolt *W*, guided in the adjacent standard *R* and joined to one arm of a bell-crank lever *X*, loose on a stud rising from the foot of said standard. The other arm of the bell-crank is joined to a slotted slide *Y*, loose in a guide *b'*, depending from a rod *B'*, extending from the weight side of carrier *C*, this rod being a support for a gang of kerf-marker plates loose on a shouldered rod *C'*, that also extends from said carrier. Engaging rod *C'* and another shouldered rod *C''* against the kerf-markers is a plate *D'*, clamped in place snug against said markers by set-nuts *D''*, this plate being also apertured to fit a sleeve *E'*, having a wing *E''*, this sleeve being loose on shaft *F* above specified.

As shown in Fig. 7, the headed outer end of sleeve *E'* is engaged by a hollow adjusting-screw *c'*, that abuts shaft *F*, this screw being provided with a set-nut *d'* to lock it in adjusted position. Loose in the screw *c'* is a spindle *e'*, that has its inner end against shaft *F*, and run on the screw-threaded outer end of the spindle is a nut *f'*, that impinges the head of said screw.

The sleeve-wing *E''* has a notched inner end and normally opposes all but the innermost kerf-marker. The plate *D'* is recessed in opposite direction to form notches engaging the rods *C'* *C''*, as best shown in Fig. 9, and by loosening the nuts *D''* sleeve *E'* and its wing may be partially rotated to permit of displaced kerf-markers being brought back to normal position.

We have shown a series of thin kerf-markers *F'* separated from a series of thicker kerf-markers *F''* by a plate *G'*, also loose on the same rod as said kerf-markers, this plate being engaged with the slot in slide *Y* aforesaid; but said markers may be all thin or all thick, according to the cut of a comb, in which case the plate *G'* is omitted.

The sleeve *E'* is provided with a slotted lug *g'*, in which an antifriction stop-roller *h'* is positioned, and this stop or roller is normally against the innermost kerf-marker at rest against the rod *B'* aforesaid.

Fast on shaft *F* is a crank *H'*, carrying a spring-plug *h''*, arranged to operate against all but one of the plates loose on rod *C'*, the outermost of these plates being notched, as best shown at *j'* in Fig. 7, to permit passage of said plug. The crank is provided with a slot *k'*, and a lug *m'* on the spring-plug engages the slot. Therefore it is evident that this plug yields when said crank, the shaft *F*, and parts in connection therewith have intermittent travel in a direction longitudinally of said shaft, as hereinafter more particularly specified.

In the operation of the machine organized as herein shown the shaft *F* is revolved incidental to its being in clutch with the driving mechanism, and the sawing mechanism is tilted to bring the fine saw in working position, the bolt *W* operating to hold said saw mechanism in adjusted position. As the blank-holder revolves each blank is sawed on one kerf, and the machine is timed so that during the interim the hand-bar *P* of said holder is passing the saw the spring-plug carried by the crank *H'* displaces the innermost kerf-marker at rest against rod *B'*, and simultaneous with this operation the shaft *F* and parts in connection therewith move forward the space of one comb-tooth to bring the comb-blanks in position for another cut. The plate *G'* is shorter than the kerf-markers with which it is loose on the same rod and has clearance through the notch in the sleeve-wing *E''* to operate at its lower end as a pusher against the slide *Y*. Therefore when said plate is displaced the bolt *W* is retracted to permit automatic tilt of the saw mechanism, whereby the coarser saw *U* is brought into working position. The templet *M* determines the depth of the kerfs in the comb-blanks, and all the kerfs having been made the feed of said blanks is stopped, owing to the clearance provided in the outermost kerf-marker for the spring-plug carried by crank *H'* on shaft *F*. Therefore the machine may run indefinitely without damage.

For another operation similar to that above described the shaft *F* and parts in connection therewith, as well as the displaced kerf-markers, are reset by hand.

In matters of detail the machine herein specified may be variously modified without departure from our invention.

Having thus described our invention, what

we claim as new, and desire to secure by Letters Patent, is—

1. A comb-cutting machine comprising a saw, a rotary longitudinally-movable shaft, a comb-blank holder rigid on the shaft, draft mechanism for the shaft and blank-holder, a gang of kerf-markers in the path of a stop carried by said shaft, and means for an automatic predetermined displacement of kerf-markers in successive order.

2. A comb-cutting machine comprising a saw, a rotary longitudinally-movable shaft, a comb-blank holder rigid on the shaft draft mechanism for the shaft and blank-holder, a gang of pivotal kerf-markers in the path of a stop carried by said shaft, and a striker on the aforesaid shaft operative to displace kerf-markers in successive order.

3. A comb-cutting machine comprising a pair of interchangeable saws differing in thickness, a rotary comb-blank holder having automatic intermittent travel in a direction transverse to the plane of the saws, and means for holding either saw in working position.

4. A comb-cutting machine comprising a pair of interchangeable saws differing in thickness, a rotary comb-blank holder having automatic intermittent travel in a direction transverse to the plane of the saws, and means for effecting automatic predetermined shift of the saws.

5. A comb-cutting machine comprising a pair of interchangeable saws differing in thickness, a rotary comb-blank holder having automatic intermittent travel in a direction transverse to the plane of the saws, means for varying the depth of cut on the part of either saw, and other means for effecting automatic predetermined shift of the saws.

6. A comb-cutting machine comprising a pair of interchangeable saws of different thickness, a tilt-frame, a rotary shaft having longitudinal play in the tilt-frame, a comb-blank holder rigid on the shaft, a bracket carried by said shaft and blank-holder, a templet-guide for the bracket, a gang of kerf-markers in the path of a stop carried by the aforesaid shaft, means for an automatic predetermined displacement of the kerf-markers in successive order, and other means cooperative with one of the kerf-markers to permit predetermined automatic shift of the saws.

7. A comb-cutting machine comprising a pivotal gravity-frame and a bolt for normally securing the same in adjusted position against the power of weight, a pair of different-gage saws having their arbors rotative in said frame, a rotary comb-blank holder having intermittent travel in a direction transverse to the plane of the saws, and means for effecting predetermined automatic retraction of said bolt.

8. A comb-cutting machine comprising a pair of pivotal heads connected by a gravity-bar, a spring-bolt engageable with recesses in

one of the heads, the gravity-bar being normally elevated, a pair of different-gage saws having their arbors rotative in said heads, a rotary shaft having intermittent travel in a direction transverse to the plane of the saws, a bolt-retracting mechanism, and means for effecting predetermined automatic action of the bolt-retracting mechanism.

9. In a comb-cutting machine, a pair of interchangeable saws of different gage, a tilt-frame, a rotary longitudinally-movable shaft having free longitudinal movement in the tilt-frame, a comb-blank holder fast on the shaft, a bracket loose on hub extensions of said holder, draft mechanism in connection with the bracket, a templet-guide for said bracket, a gang of kerf-markers in the path of a stop carried by said shaft, a striker on the aforesaid shaft operative to displace kerf-markers in successive order, and means in conjunction with one of the kerf-markers operating to effect an automatic predetermined shift of the saws.

10. A comb-cutting machine comprising a comb-blank holder consisting of a cylindrical shell provided with radial flanges and eccentrically-slotted rotarily-adjustable heads, spacers parallel to said flanges and having lugs engaging the eccentric head-slots, a hand-bar connecting the heads, and clamp-plates bolted to said flanges against the spacers.

11. A comb-cutting machine comprising a fixed support and a pivot, a gang of kerf-marker plates loose on the pivot and normally at rest against the support, a rotarily-adjustable device provided with a wing that normally overlies all but the innermost kerf-marker, a rotary longitudinally-movable shaft constituting a center for the adjustable device, a comb-blank holder fast on the shaft, draft mechanism for the shaft and parts in connection therewith, a stop on the aforesaid rotarily-adjustable device impinging the innermost kerf-marker in place against said support, and a striker rotative with said shaft to displace the kerf-markers in successive order.

12. A comb-cutting machine comprising a fixed support and a pivot, a gang of kerf-marker plates loose on the pivot and normally at rest against the support, a rotarily-adjustable device provided with a wing that normally overlies all but the innermost kerf-marker, a rotary longitudinally-movable shaft constituting a center for the rotarily-adjustable device, a comb-blank holder fast on the shaft, draft mechanism for the shaft and parts in connection therewith, a stop on the rotarily-adjustable device impinging the innermost kerf-marker in place against said support, a striker rotative with said shaft to displace the kerf-markers in successive order, a pivotal gravity-frame, a bolt for normally securing the same in adjusted position against the power of its weight, a pair of different-gage saws having their arbors rotative in said frame, and a bolt-retractive mechanism cooperative with one of said kerf-markers.

13. A comb-cutting machine comprising a
comb-blank holder consisting of a cylindrical
shell provided with radial flanges and clamp-
plates bolted to the flanges against radially-
5 adjustable spacers, a fixed standard and a
comb-blank gage in connection with the
standard.

In testimony that we claim the foregoing we

have hereunto set our hands, at Two Rivers,
in the county of Manitowoc and State of Wis- ro
consin, in the presence of two witnesses.

JOSEPH KOENIG.

NICHOLAS DEDRICK.

Witnesses:

W. J. WRIETH,

PETER SCHROEDER.