No. 827,100.

PATENTED JULY 31, 1906.

E. E. HOLDEN & A. HOVORKA.

SAWING MACHINE.

APPLICATION FILED MAY 22, 1905.

4 SHEETS—SHEET 1.

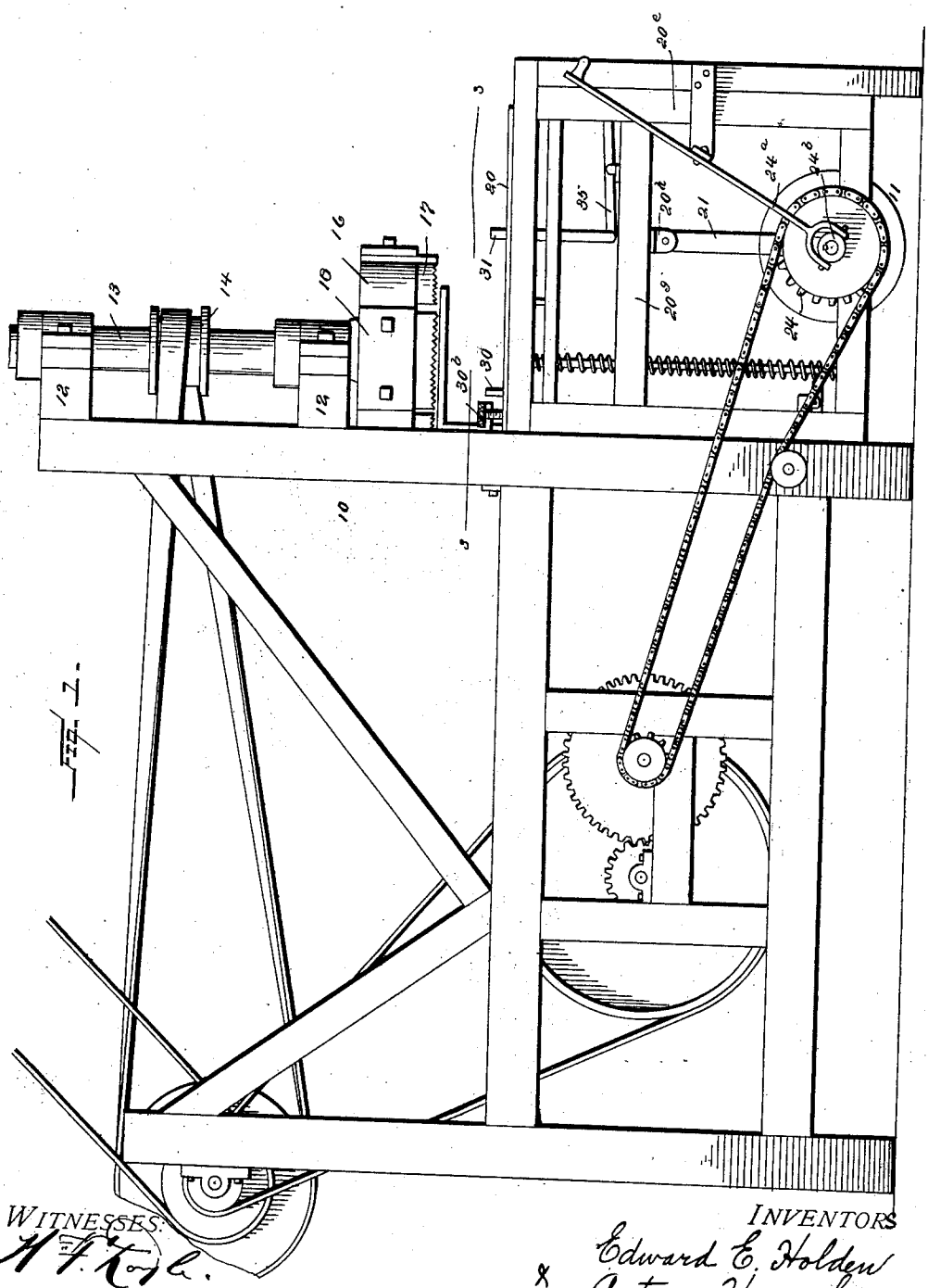


FIG. 1.

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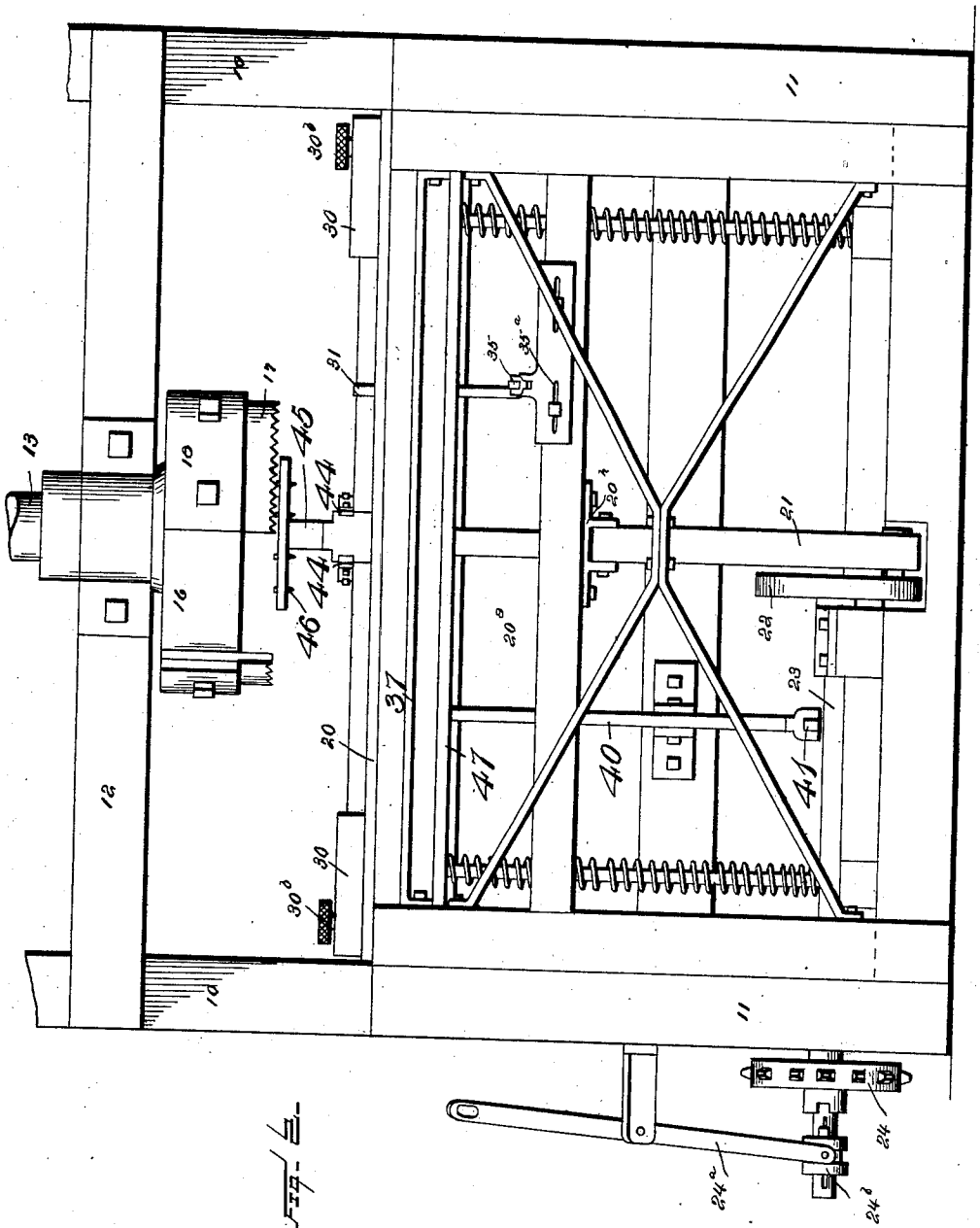


Fig. 2.

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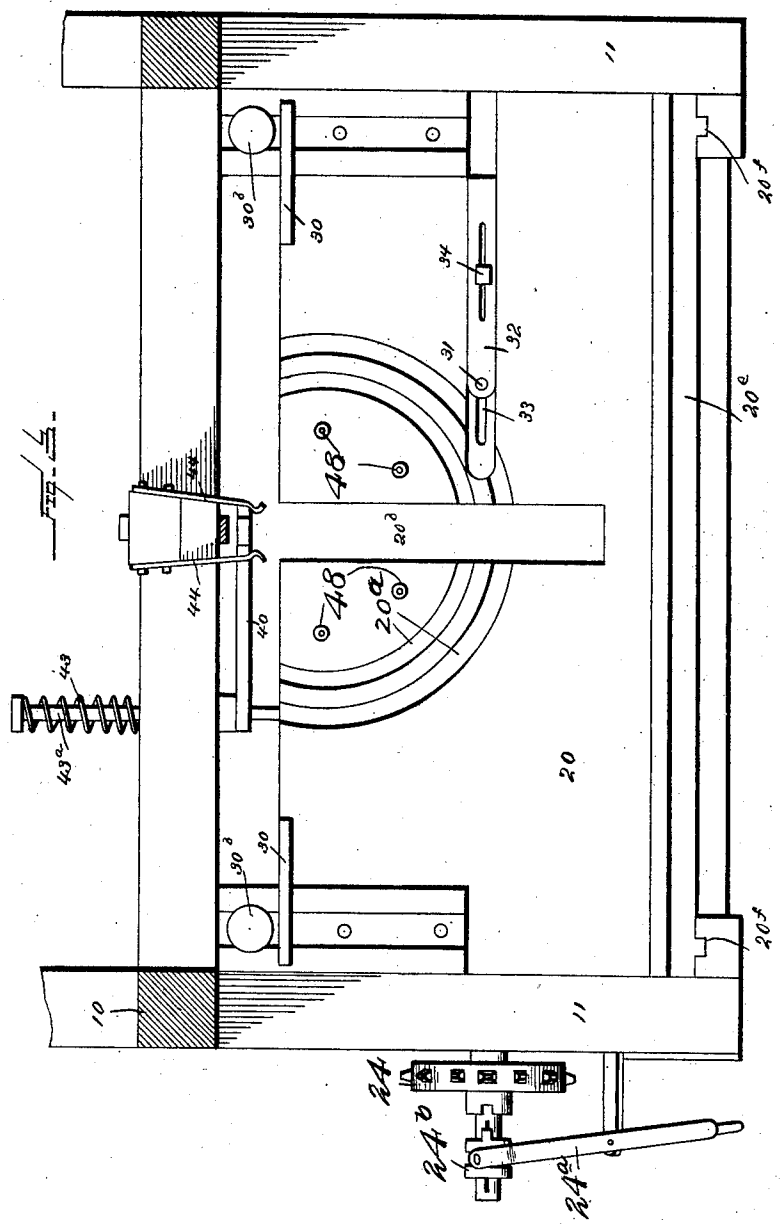


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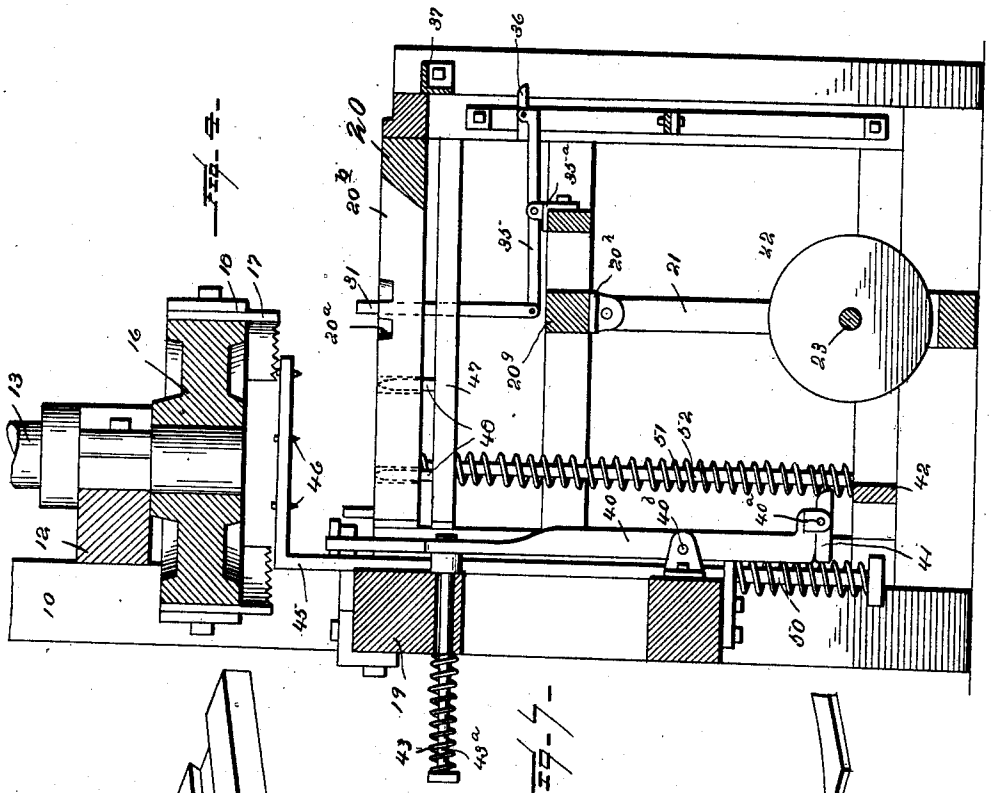

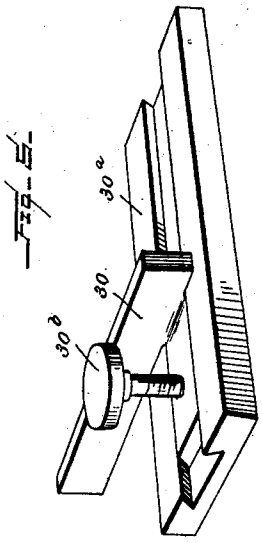

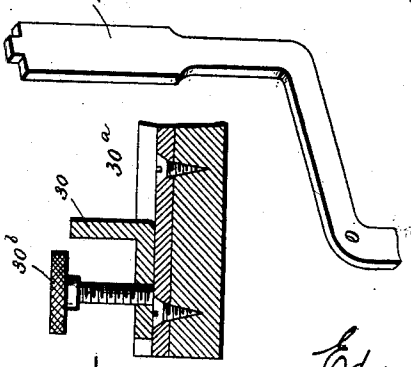

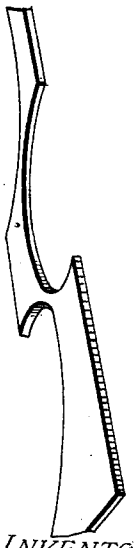



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# UNITED STATES PATENT OFFICE.

EDWARD E. HOLDEN AND ANTON HOVORKA, OF CHICAGO, ILLINOIS.

## SAWING-MACHINE.

No. 827,100. Specification of Letters Patent. Patented July 31, 1906.

Application filed May 22, 1905. Serial No. 261,611.

*To all whom it may concern:*

Be it known that we, EDWARD E. HOLDEN and ANTON HOVORKA, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Sawing-Machines, of which the following is a specification.

This invention is a machine for cutting out segmental and circular forms of wood, particularly such articles as cheese-box ends, barrel-covers, and the like. This is accomplished by a machine which does the work automatically and which is readily adjustable and is especially adapted for cutting out segments from narrow stock and with little waste of stock. An arc-saw is employed in connection with a table which lifts and drops to feed the stock to and from the saw.

In the accompanying drawings, Figure 1 is a side elevation of the machine, showing the driving mechanism or gears. Fig. 2 is a front elevation of the same, the upper part above the saw being broken away. Fig. 3 is a sectional plan taken below the saw on the line 3 3 of Fig. 1. Fig. 4 is a central vertical section through the table and saw. Fig. 5 is a perspective of one of the side gages. Fig. 6 is a section of the same. Fig. 7 is a perspective of the upper part of the ejector for throwing out each segment when sawed. Fig. 8 is a perspective of a piece of waste stock.

Referring specifically to the drawings, 10 indicates the uprights of the frame, which has a front extending frame 11, in which the table 20 is movable up and down.

12 indicates cross-beams on the uprights 10. These have journal-boxes in which is mounted a vertical shaft 13, having a pulley 14, and a belt runs from this to a drive-pulley at the rear of the machine.

The sawing device is attached to the lower end of the shaft 13 and consists of a horizontal circular head 16, having vertical segmental saws 17 placed on the rim thereof. These saws are attached by plates 18 and bolts.

The sawing device may be made to cut various sizes of circles or segments by placing washers or plates of different thicknesses under the saws.

19 is a cross-beam extending between the uprights 10 at the rear of the table.

20 indicates the table. This is mounted on a vertically-movable frame having a cross-piece $20^g$ with a bracket $20^h$, to which a pitman 21 is connected from a crank 22 on a shaft 23, having a loose sprocket-wheel 24 and a chain to a suitable drive-gear. A shifting-lever $24^a$ puts a clutch $24^b$ on the shaft 23 in or out of engagement with the sprocket 24. The top of the table is provided with one or more segmental grooves $20^a$, so as to allow the saws to cut through the wood.

30 indicates side-adjusting gages against which the board is placed while being sawed. These gages are shown in detail in Figs. 5 and 6, and each consists of a sliding guide 30, having a tongue in a grooved plate $30^a$, sunk in the table and having a suitable clamp-screw $30^b$.

31 is an adjustable end stop or gage. This is for the purpose of admitting a board to a certain length, so as to prevent waste of stock. It consists of a vertical rod passing vertically through an adjustable plate 32 and a slot 33 on the table. The plate 32 has a set-screw 34. The lower end of the rod 31 is attached to a lever 35, pivoted on a laterally-adjustable plate $35^a$ on a cross-beam of the frame of the table. This lever 35 has a tripping-finger 36, which passes a cross-bar 37 when the table is raised, but when coming down engages the same, so as to cause the rod to recede below the top of the table, and thus allow the board to be moved along and the segment to be ejected.

Each segment is ejected when cut by means of a swinging arm 40, which hits the side of the segment after being sawed and when the table has reached its lower position. This is accomplished by a tripping device 41, pivoted to the lower end of the arm 40 at $40^a$, said arm being pivoted at $40^b$ to the frame. This arm is thrown by a cross-bar 42 on the movable frame supporting the table. A spring 43, coiled around a bolt $43^c$, connected to the arm, causes the arm to go back to its original position. Spring-fingers 44 may also be employed to hold it there. The middle of the table 20 has a slot $20^b$, so as to allow the upper end of the arm or striker 40 to swing forward.

To hold the board in position while being sawed, an overhanging bracket 45 is employed having depending points or pins 46. (See Fig. 4.) This at its lower end has a spring 50, which allows the bracket to have an amount of spring-pressure on the board. Beneath the table is a plate 47, carrying pins 48, which work in holes in the top of the table

when in the lower position. The table is supported by springs 51, coiled around rods 52 between the under side of the table and the bar 42, so that the table is normally lifted above the plate 47, and the pins 48 do not project. When the frame lifts, the work strikes the bracket-pins 46, which presses down the table 20 with respect to the plate 47 and causes the pins 48 to strike into the under side of the work. Continued lift puts the saw into the work and saws the segment.

The table 20 has its supporting-frame $20^e$ mounted in guideways $20^f$ on the stationary frame of the machine. The cross-piece $20^g$ is supported on the frame $20^e$. The pitman 21 raises the table up or down by the means already mentioned.

In sawing material a board is first put in until it strikes the stop 31. This regulates the length so as to prevent waste. It is also placed against the side gages, which regulate the width. When the table rises, the segment is sawed, and as the table reaches the bottom the segment is thrown out by the forward swing of the arm 40. The board when being placed in position for the next cut is first turned over.

It will be seen that all the operations except placing the board in the machine are automatic.

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

1. In a sawing-machine, the combination with a saw, of a table movable up and down to and from the same and having a slot extending therethrough, a laterally-adjustable stop-rod which projects vertically through the said slot in the table, a lever connected to said rod and arranged to advance and retract the same, and a trip connected to the lever and arranged to strike a fixed part of the frame of the machine and move the lever.

2. In a sawing-machine, the combination with a fixed frame having a saw mounted thereon, and a work-table movable up and down to and from the saw and having a slot therein extending across under the face of the saw, of an ejecting-lever which is pivoted below the table and the upper end of which swings in the slot and projects above the table when the latter is lowered, and a trip pivoted to the lower end of the lever and which slips in one direction and engages in the other a bar movable with the table.

3. The combination in a sawing-machine, of a fixed frame having a cross-bar, a reciprocating frame therein having a cross-bar, a table spring-supported on the latter and movable toward and from the saw therewith, a yielding clamp supported on the main frame and projecting over the table and which engages the upper side of the work and depresses the table with respect to the frame when the frame and table are advanced, a gage-rod projecting through the table-top, and a lever carrying the same, mounted on the reciprocating frame, and having a trip arranged to strike the cross-bar on the fixed frame.

4. The combination with a rotary saw, of a table movable up and down to and from the same, and a laterally-adjustable gage-stop movable up and down through the table and automatically actuated by the movement of the table.

5. The combination with a rotary saw having a vertical axis, of a slotted work-table movable up and down to and from the saw, work-holders engageable with the upper and under faces of the work, and a work-ejector movable forwardly and backwardly across the table and through the slot, said holders and ejector being automatically actuated by the movement of the table to hold the work when the table is advanced and to release and eject the same when it is retracted.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

EDWARD E. HOLDEN.
ANTON HOVORKA.

Witnesses:
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H. G. BATCHELOR.