

No. 716,691.

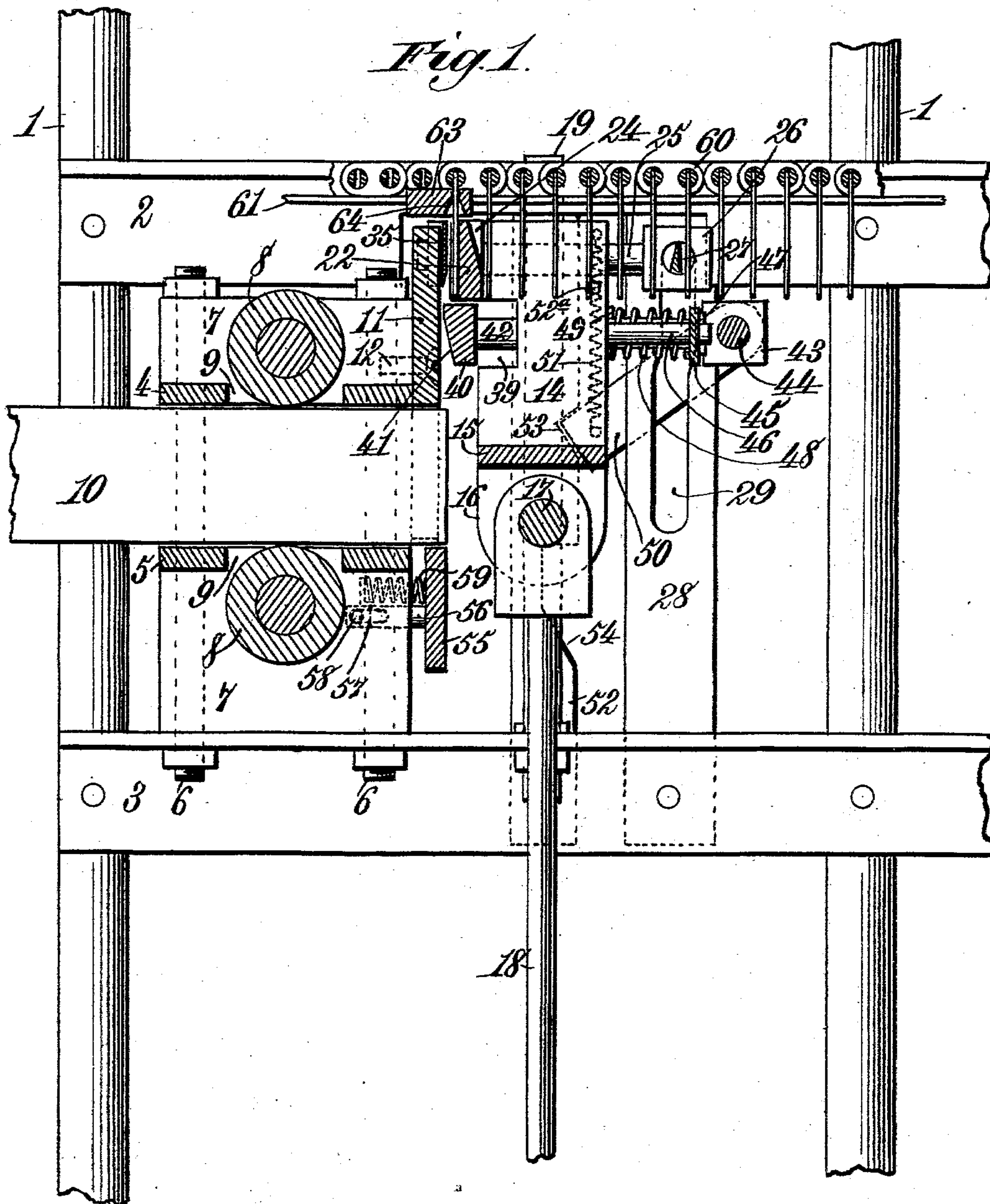
Patented Dec. 23, 1902.

E. H. EISENHART.
MATCH MAKING MACHINE.

(Application filed Jan. 22, 1902.)

(No Model.)

4 Sheets—Sheet 1.



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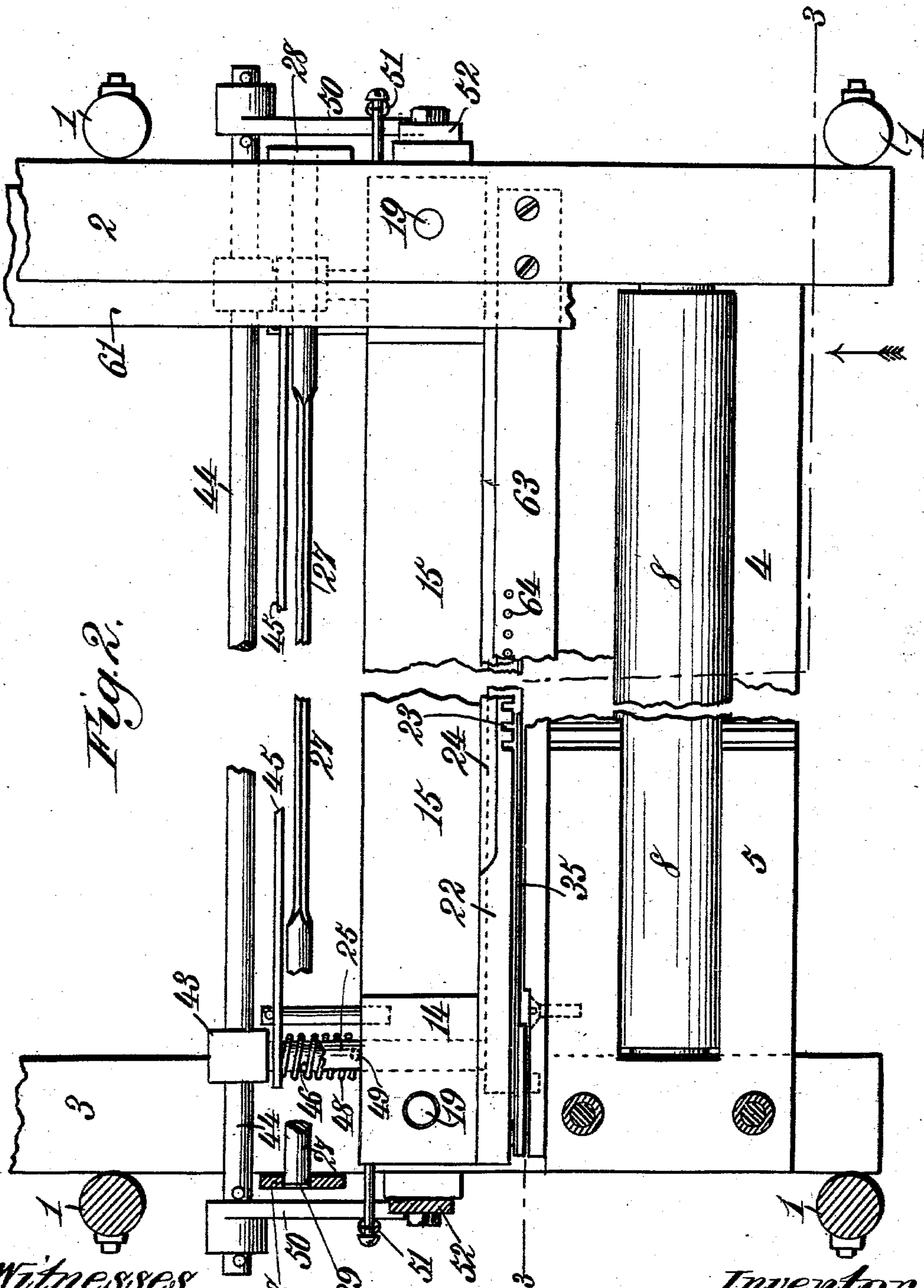


Fig. 2.

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4 Sheets—Sheet 3.

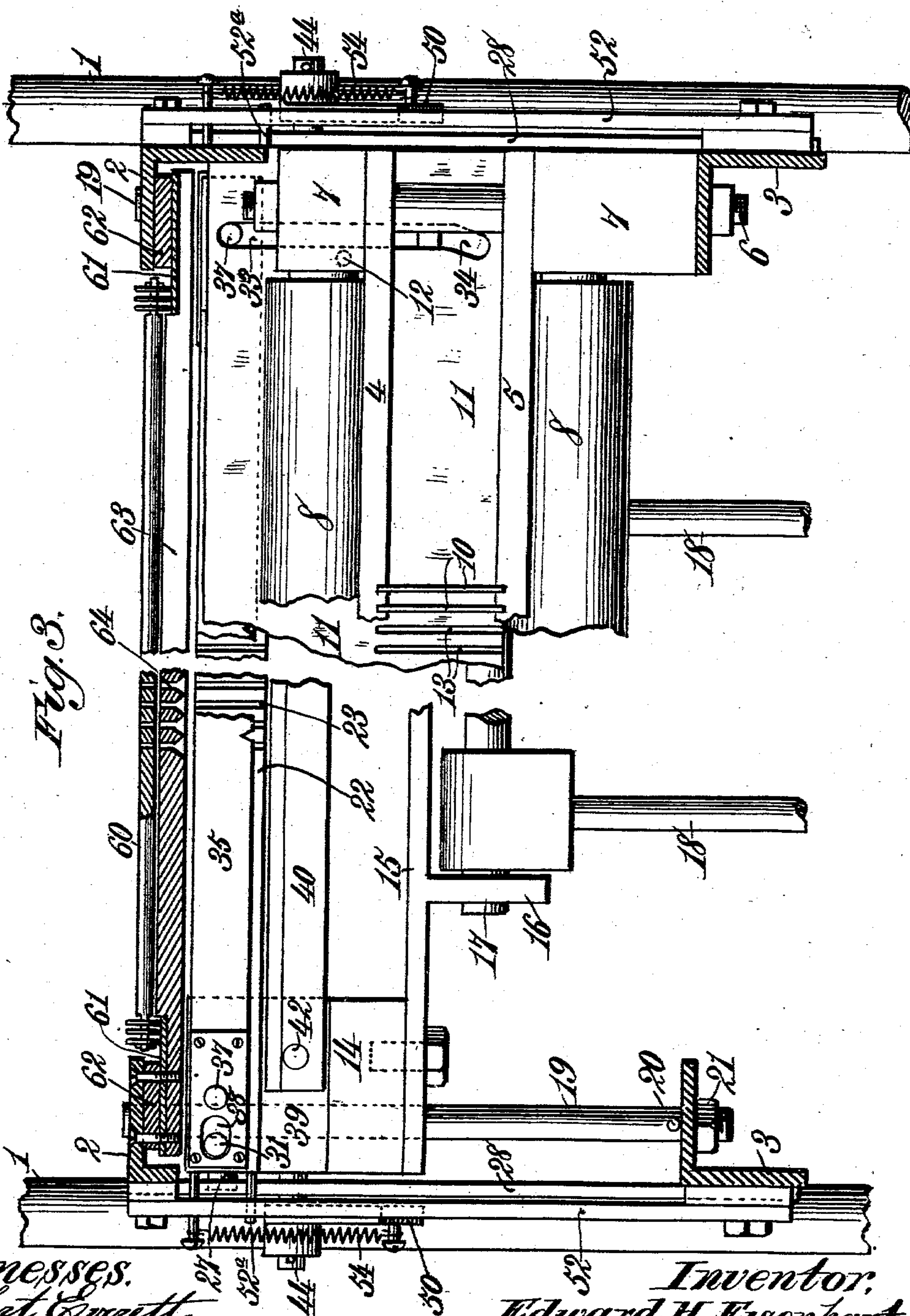


Fig. 3.

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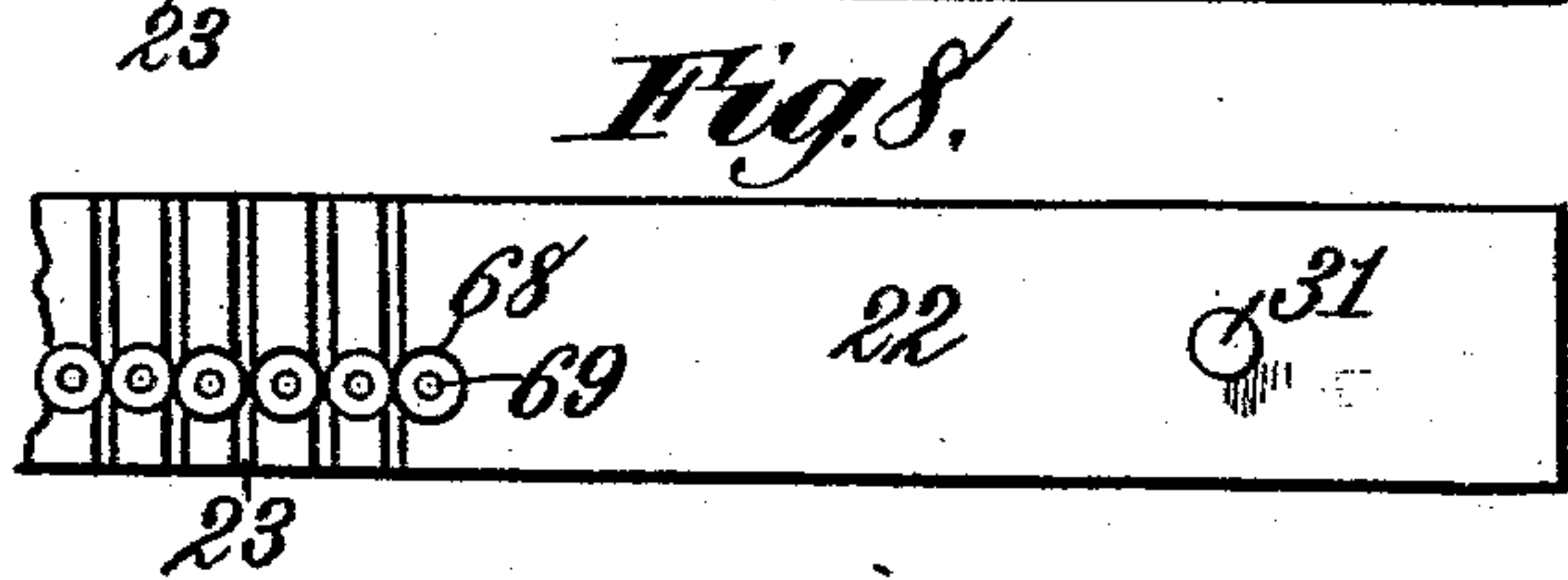
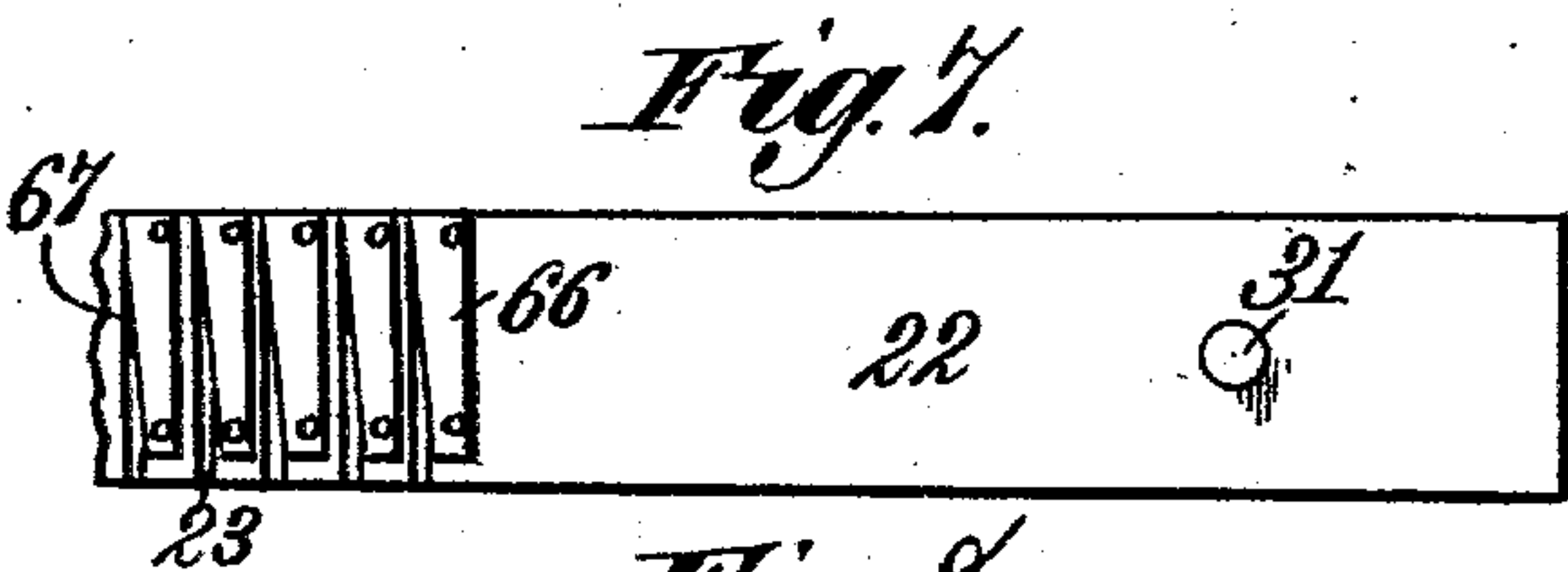
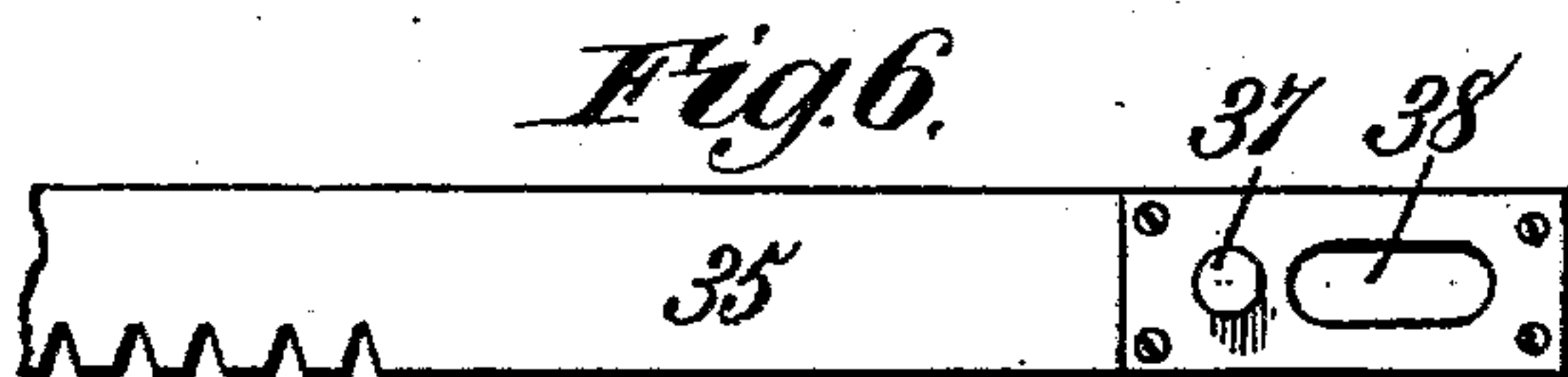
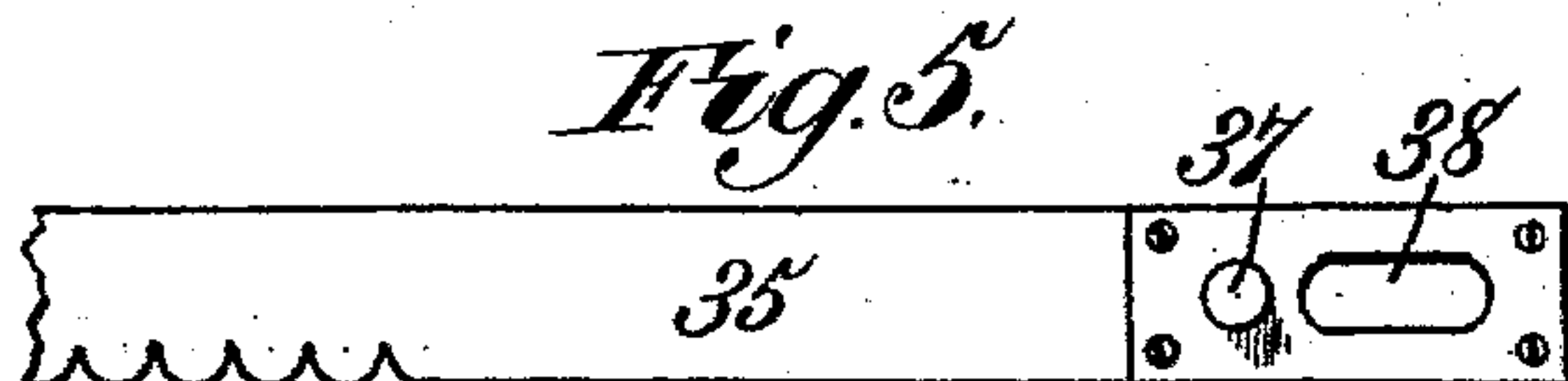
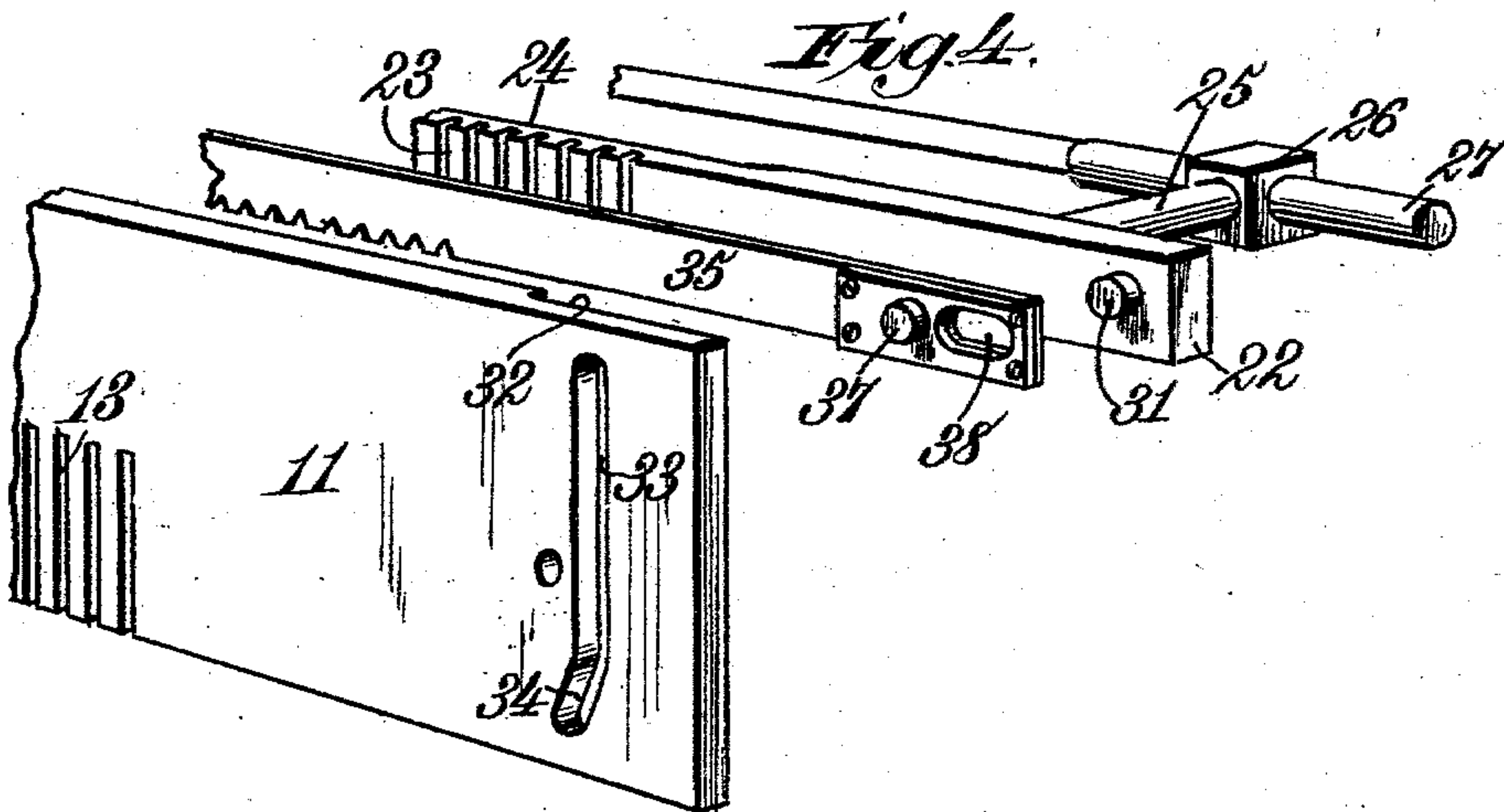
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

EDWARD H. EISENHART, OF NEW YORK, N. Y.

MATCH-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 716,691, dated December 23, 1902.

Application filed January 22, 1902. Serial No. 90,819. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. EISENHART, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Match-Making Machines, of which the following is a specification.

This invention relates to match-making machines, and particularly to that class of such machines wherein the splints are cut from strips or sheets of veneer set up edgewise and are inserted in an endless carrier, by which they are successively presented to the different parts of a match-making machine to convert the splints into finished matches.

My present invention has for its objects, first, to provide improved mechanism for feeding the veneer strips to the cutting mechanism; second, to provide improved cutting mechanism for cutting off the splints from the veneer strips; third, to provide improved means for holding the splints after they have been severed; fourth, to provide improved mechanism for inserting the splints in the perforated carrier-bars of the endless carrier; fifth, to provide improved mechanism for freeing the splints while they are inserted in perforated carrier-bars of an endless carrier; sixth, to provide improved means for expelling defective splints, and, finally, to improve and simplify this class of machines generally.

To these ends my invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a vertical central longitudinal sectional view of my improved machine. Fig. 2 is a plan view, partially in section. Fig. 3 is a sectional front elevation taken on the line 3 3 of Fig. 2 looking in the direction of the arrow. Fig. 4 is a detail perspective view showing the comb-plate, cutter, and cell-plate separated; and Figs. 5 to 8 are detail views showing different forms of cutters.

The frame of my machine may be of any preferred or suitable construction and is shown in the present instance as consisting

of four upright posts 1 and an equal number of side rails 2 and 3, two of said side rails being arranged on each side of the machine and one above the other. Said side rails preferably consist of angle-irons, as most clearly shown in Fig. 3 of the drawings, and are bolted to the posts 1.

Arranged transversely of the front end of the machine are two flat horizontal tables 4 and 5, which are secured to the side rails by nuts and bolts 6, the bolts also passing through bearing-blocks 7, arranged on each side of the frame and in which are journaled the ends of two feed-rollers 8, said feed-rollers projecting slightly through slots 9, formed in the tables 4 and 5. The tables 4 and 5 are arranged at such distance apart that they will permit the veneer strips 10, which are stood upon edge parallel to one another, to be fed between them. The feed-rollers engage the upper and lower edges of said veneer strips and feed them forward toward the cutting mechanism hereinafter to be described, suitable driving mechanism (not shown) being provided for imparting the necessary motion to said feed-rollers.

Arranged in front of the rear ends of the tables 4 and 5 is a vertical comb-plate, which extends in front of the ends of the veneer strips. This comb-plate consists of a flat rectangular plate 11, which is secured by screws 12 to the upper feed-table and is provided on its lower portion with a series of vertical slots 13, said slots being preferably formed of a width approximately equal to the thickness of a match-splint. The slotted portion of the comb-plate rests directly in the rear of the space between the tables 4 and 5, and as the veneer strips are fed forward by the rollers 8 they pass through the grooves 13, which operate to maintain them at a uniform distance apart and to properly present them to the action of the cutter. The cutter-head consists of two blocks 14, respectively arranged on each side of the machine, and bolted to the bottoms of said blocks is a plate 15, provided with two pendent lugs 16, in which is journaled a shaft 17, and to the latter are connected the pitmen 18, that serve to impart a vertical reciprocatory movement to the cutter-head. Vertical rods 19 are arranged on opposite sides of the frame and at their lower

ends extend through perforations formed in the side rails 3. Pins 20 are passed through said rods immediately above said rails, and nuts 21 are screwed on the lower ends of the rods beneath the rails and in connection with said pins serve to rigidly hold the rods in place. The upper ends of the rods may pass through perforations formed in the side rails 2, as shown most clearly in Fig. 3. The rods 19 pass loosely through the blocks 14 and serve as guides on which said blocks reciprocate.

Loosely attached to the upper front ends of the blocks 14 is the cell-plate 22, consisting of a rectangular metallic plate provided on its front side with vertical grooves 23, said grooves being in alinement or in the same vertical plane with the slots of the comb-plate and each of said grooves being of a size to receive a match-splint. The rear side of the cell-plate is upwardly beveled, as at 24, to permit the cell-plate to readily pass between the rows of splints inserted in the carrier-bars without interfering with said splints. Projecting horizontally rearward from the opposite ends of the cell-plate are two rods 25, which pass loosely through the blocks 14 and terminate at their rear ends in perforated heads 26, and through the latter passes a transverse rod 27, said rod between the heads 26 being flattened or reduced in thickness, so that it may readily pass between two adjacent rows of splints carried by the carrier. Vertical plates 28 are fastened to the outsides of the side rails 2 and 3 in rear of the blocks 14, and each of said plates is provided with a vertical slot 29, the upper end of each of said slots being offset or disposed slightly to the rear of the lower portion thereof. The ends of the rod 27 project into the slots 29 of the plate 28, and as the cutter-head reciprocates up and down the cell-plate will be moved toward and from the comb-plate in the manner hereinafter set forth. Formed on the front face of each end of the cell-plate 22 is the stub-pin 31. The rear face of each end of the comb-plate 11 is reduced in thickness, as at 32, and formed in each end of said comb-plate is a vertical groove 33, provided at its lower end with an inclined extension 34.

The numeral 35 indicates the cutter, consisting of a flat steel blade sharpened at its lower edge and having said sharpened edge beveled on its rear side or that side adjacent to the cell-plate. The sharpened edge of the cutter is serrated—that is to say, it is provided at uniform distances apart with upwardly-extending notches, which diverge from their apices downwardly, the walls of said notches being sharpened. These notches may be V-shaped, as shown in Fig. 6, or they may be shaped so as to give a fluted configuration to the edge of the knife, as shown in Fig. 5, or may be of any shape provided the walls of the notches diverge from one another downwardly. Attached to the front face of each end of the cutter is a bearing-

plate, consisting of a rectangular metallic plate rigidly fastened to the cutter and provided with a stub-pin 37, which projects into the adjacent slot 33 of the comb-plate. Elongated slots 38 are formed in the bearing-plates and in the cutter, and into said slots project the stub-pins 31, carried by the cell-plate, as most clearly indicated in Figs. 3 and 4 of the drawings. It will be evident that by means of the stub-pins 31 the cutter will be caused to move with the reciprocating blocks 14, and as the stub-pins 37 project into the slots 33 of the comb-plate it will be obvious that for a greater part of the movement of the cutter the latter will move in a true rectilinear or perpendicular direction; but when said stub-pins 37 reach the inclined portions 34 of the slots the knife will be given, in addition to its vertical reciprocatory movement, a transverse movement, the combined movements imparting to the knife a shear or draw cut, such movement of the knife being permitted by the elongated slots 38.

Formed in the front faces of the blocks 14 are recesses 39, and adapted to move in and out of said recesses is a lifter-bar 40. This lifter-bar consists of a bar substantially rectangular in cross-section, but slightly beveled on its front face, as indicated at 41. Fixed to and projecting horizontally from the rear face of said lifter-bar are two rods 42, said rods being attached to the opposite ends of the lifter-bar. The rods 42 pass loosely through the blocks 14 and terminate at their rear ends in perforated heads 43, through which passes a transverse shaft 44, that projects beyond the sides of the frame of the machine. A plate 45 is arranged on the rod 42, said plate being perforated at its opposite ends and the rods 42 passing through said perforations. Bracket-arms 46 are fixed to and project horizontally rearward from the blocks 14 and pass through plate 45, pins 47 being inserted in the rear end of said bracket-arms in the rear of the plate 45, operating to prevent rearward movement of said plate. Coiled springs 48 are arranged on the rods 42 and each bears at one end against the plate 45 and at its opposite end against a pin 49, inserted in the said rod. These springs are under compression and operate normally to thrust the lifter-bar forward toward the comb-plate. Pawls 50 are journaled at their upper ends on the outer ends of the rods 44, each of said pawls consisting of a rectangular bar having square ends, as most clearly shown in Fig. 1. The free ends of the pawls are normally held elevated by coiled springs 51, which at their lower ends are attached to the free ends of the pawls and at their upper ends to the blocks 14.

Attached on the opposite sides of the frame of the machine to the side rails 2 and 3 are plates 52, the rear edge of each of which is provided with two rabbets or recesses, arranged one above the other and respectively

indicated by the numerals 53 and 54. When the parts are in the position shown in Fig. 1—that is to say, when they are elevated to their highest positions—the ends of the pawls will rest in the notches 53. As the cutter-head descends the pawls still resting in said notches will be caused to swing in the arc of a circle, and hence the pivoted ends of the pawls will be gradually thrown farther rearward of the cutter-head, and hence through the medium of the shaft 44 and the rods 42 will retract the lifter-bar and draw the latter into the recesses 39. Pins 52^a are inserted in the outer sides of the blocks 14, and as the cutter-head descends and moves the pawls into substantially horizontal positions said pins engage the upper sides of the pawls and upon the continued descent of the cutter-head force the ends of the pawls out of the notches 53, and when the cutter-head approaches the limit of its downward movement said pawls approach the notches 54 and immediately spring therein, thus permitting the springs 48 to project the lifter-bar forward beneath the ends of the veneer strips. Arranged beneath the projecting ends of the veneer strips is the upper edge of a transverse supporting-bar 55, which is provided on its forward face at its opposite ends with tenons 56, each projecting loosely into a socket formed in the bearing-block 7. The tenons at their ends are provided with elongated slots 57, into which project pins 58, that are inserted in the ends of the bearing-blocks and which operate to limit the movement of the supporting-bar 55. Coiled springs 59 are arranged in mortises formed in the front faces of the bearing-block 7 and bear against the front face of the supporting-bar 55, said springs operating to normally project said supporting-bar forward and outward underneath the extreme forward edges of the veneer strips. When the coiled springs 48 operate to project the lifter-bar forward, when the ends of the pawls enter the notches 54 in the manner before described, said lifter-bar forces the supporting-bar 55 rearwardly and takes its place beneath the ends of the veneer strips. As the cutter-head rises the pawls slip idly over the edges of the plate 52 and the springs continue to hold the lifter-bar projected forward until the cutter-head has reached the limit of its upward movement.

The numeral 60 indicates the endless splint-carrier, consisting of two endless chains in which are inserted transverse carrier-bars, each of which is provided with a series of perforations of a size adapted to receive and hold a match-splint. The chains travel over and are supported on two guide-rails 61, consisting of metallic strips or plates bolted to the under sides of the side rails 2, spacing-block 62 being inserted between the under side of said side rails and the said guide-rails. Attached to the side rails 2 by the same screws that operate to secure the guide-rails in place is a transverse guide-bar 63, provided with

openings 64, which are arranged in alinement with the grooves in the cell-plate, the lower ends of the perforations in said guide-bar being flared outwardly or bell-shaped to facilitate the entrance of the splints therein.

The operation of my improved machine is as follows: The veneer strips 10 are set up on edge parallel to one another between the feed-tables 4 and 5, and the feed-rolls 8 operate to feed said veneer strips forward at a distance equal to the thickness of a match-splint with a step-by-step or intermittent movement. As the veneer strips are fed forward they pass through the grooves 13 of the comb-plate 11, which operates to hold said strips at the proper distance apart, and the extreme ends of said strips rest on the upper edge of the supporting-bar 55. After the strips have been fed forward the proper distance the cutter-head descends and the cutter 35 engages the upper edges of the strips. The notches of the cutter are so spaced and disposed that a notched portion of the cutter will engage the upper edge of each strip, and as the cutter descends the sharpened edges of the cutter will score the opposite sides of the veneer strips, and the more contracted portions of the notches will cut the strips from opposite sides, thus preventing the splint from splitting off unevenly, owing to the irregularity of the grain of the veneer, as is often the case where a straight-edge cutter is used. As the cutter-head descends the pawls 50 operate to retract the lifter-bar 40 and withdraw it into the recesses 39, whereby said lifter-bar will not strike the ends of the veneer strips or displace them or interfere with them in any manner whatsoever. Before the cutter engages the veneer strips the ends of the rods 27 will enter the lower portion of the slots 29, and hence the cell-plate will be moved up into proximity to the cutter, so that as the cutter severs the splints from the ends of the veneer strips said strips will be guided by the beveled edge of the cutter into the cells or grooves 23 of the cell-plate and will be nested therein. During the operation of severing the splints from the strips the supporting-bar 55 provides a firm and rigid support for the strips. Owing to the notched or serrated formation of the cutter, it will be impossible for said cutter to entirely sever the splints, as the lower edge of said cutter would strike the supporting-bar 55 before the walls of the notches had cut entirely through to the lower edge of the veneer strips; but as the cutter reaches the limit of its downward movement the stub-pins 37, carried by the cutter, enter the inclined portions 34 of the slots 33 in the comb-plate, and the cutter is thereby given, in addition to this downward reciprocatory movement, a transverse movement, thus imparting to the cutter a shear or draw cut, which operates to completely sever the splints from the strips. Just before this occurs, however, the ends of the pawls 50 will have entered the notches 54

and the springs 48 will have forced the lifter-bar 40 against the supporting-bar 55, displacing the latter and causing the lifter-bar to assume its place beneath the ends of the veneer strips. The lifter-bar will project beneath the veneer strips to a distance equal only to the thickness of a match-splint, and as the cutter-head rises the match-splint will rise with it, the splints being retained in the cells or grooves of the cell-plate and supported at their bottoms on the top of the lifter-bar 40. As the cutter-head approaches the limit of its upward movement the upper ends of the splints enter the bell-shaped apertures in the guide-bar 53 and are guided by the latter into the perforations of the carrier-bars, the lifter-bar serving to force the ends of the splints into the perforations of said carrier-bar. As the cutter-head approaches the limit of its upward movement, however, the ends of the rod 27 enter the offset portions of the grooves 29, whereby the cell-plate is retracted, so that the cutter-head may again descend without liability of withdrawing the splints from the carrier-bar. It is evident that as the cutter-head starts to descend the lifter-bar recedes, as stated, and the cell-plate is retracted and allows defective splints to drop down and be expelled. After the series of splints has been inserted in the carrier-bar the feed-rolls 8 operate to feed the veneer strips forward the distance equal to the thickness of a match-splint, the cutter-head descends to cut another series of splints, and the endless carrier is fed forward a distance sufficient to bring another carrier-bar over the perforations in the guide-bar.

I have described the cutter as consisting of a notched or serrated blade. This blade, however, may be entirely dispensed with and a series of cutters loosely fitted to the cell-plate 22, and such an arrangement I have shown in Figs. 7 and 8 of the drawings. In Fig. 7 I have shown the cell-plate provided with a plurality of cutters 66, one for each groove or cell 23, said cutters in Fig. 7 being shown as consisting of flat vertical blades 66, fitted directly to the grooved face of the cell-plate, each of said cutters having an inclined sharpened edge 67, which extends diagonally across an adjacent cell or groove 23 of the cell-plate, the arrangement being such that as the cell-plate descends the grooved portions of the cell-plate straddle the ends of the veneer strips and the cutters 66 act after the manner of a draw-knife to slice off the splints from the strips. In Fig. 8 I have shown the cutters as consisting of disks 68, having sharpened peripheries and secured to the face of the cell-plate by pivot-pins 69, the disks being of such diameter that each disk will extend across one-half of each two adjacent cells or grooves 23. As the cell-plate descends the grooved portions 23 of the cell-plate straddle the ends of the veneer strips and the rotary disks cut the strips simultaneously on opposite sides, and thus sever the

splints therefrom. In the arrangements shown in Figs. 7 and 8 the cell-plate is provided with stub-pins 31, so arranged or located on the cell-plate that they will project into the grooves 33 of the comb-plate, so that as the cell-plate reaches the limit of its downward movement said stub-pins will enter the inclined portions 34 of said groove and the cell-plate, with its cutters, will thereby have imparted to it a transverse or endwise movement, so as to give to the cutters a draw or shear cut, so as to complete the severance of the splint from the veneer strips. In all other respects the operation is precisely the same as that before described.

Having described my invention, what I claim is—

1. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to move transversely to said strips in the direction of their width, a cutter movable with said cutter-head, means for actuating said cutter-head to simultaneously slice off splints from the ends of all the strips, and means for imparting to the cutter a transverse movement toward the end of the cutting operation to impart thereto a shear or draw cut, substantially as described.

2. In a match-machine, the combination with means for intermittently feeding forward a plurality of veneer strips set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to move transversely to said strips in the direction of their width, a cutter movable with said cutter-head, means for actuating said cutter-head to simultaneously slice off splints from the ends of all the strips, and means for imparting to the cutter a transverse movement independently of the cutter-head toward the end of the cutting operation to impart thereto a shear or draw cut, substantially as described.

3. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to move transversely to said strips in the direction of their width, a cutter movable with said cutter-head, and provided with cutting edges arranged to simultaneously cut the veneer strips on opposite sides to slice off splints therefrom, substantially as described.

4. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to move transversely to said strips in the direction of their width, a cutter movable with said cutter-head and provided with cutting edges arranged to simultaneously cut the veneer strips on opposite sides to slice off splints therefrom, and means for imparting to the

cutter a transverse movement toward the end of the cutting operation to impart a draw or shear cut thereto, substantially as described.

5 In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to move transversely to said strips in the direction of
10 their width, a cutter movable with said cutter-head and provided with serrations on its lower edge, the edges or serrations being sharpened, and operating to simultaneously cut the veneer strips on opposite sides to
15 slice off splints therefrom, substantially as described.

6. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips,
20 set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to move transversely to said strips in the direction of their width, a cutter movable with said cutter-head, and provided with serrations on its
25 lower edge, the edges of the serrations being sharpened, and operating to simultaneously cut the veneer strips on opposite sides, to slice off splints therefrom, and means for imparting to the cutter a transverse movement toward the end of the cutting operation to impart a draw or shear cut thereto, substantially
30 as described.

7. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a fixed comb-plate, through which the ends of the strips are fed, a vertically-reciprocating cutter arranged to reciprocate in close proximity
40 to the comb-plate, and slice off the ends of the veneer strips projecting therethrough, and a supporting-bar arranged beneath the lower edge of the comb-plate and projecting slightly beyond the latter, said supporting-bar operating to support the lower edges of the forward ends of the veneer strips, substantially as described.

8. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a fixed comb-plate through which the ends of the strips are fed, said comb-plate being provided at its ends with vertical slots terminating at
55 their lower ends in inclined extensions, a vertically-reciprocating cutter-head, a cutter movable with said cutter-head and having an independent endwise movement thereon, said cutter being provided with stub-pins which
60 project into said slots, whereby when the cutter approaches the end of its downward movement it has imparted to it a transverse movement, substantially as described.

9. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a fixed

comb-plate through which the ends of the strips are fed, said comb-plate being provided at its ends with vertical slots terminating at
70 their ends in inclined extensions, a vertically-reciprocating cutter-head, a plate movable with the cutter-head and provided at its ends with laterally-projecting stub-pins, and a cutter provided at its ends with horizontally-
75 elongated slots, and with stub-pins which project into the slots in the comb-plate, the stub-pins movable with the cutter-head and projecting into the slots in the cutter, substantially as described. 80

10. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to
85 reciprocate in front of the ends of the veneer strips, a cell-plate carried by the cutter-head and comprising a plate provided on its face with a series of vertical cells or grooves, a cutter arranged in front of the grooved face
90 of the cell-plate and vertically movable with the latter, and means for moving the cell-plate toward and from the cutter, substantially as described.

11. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, and an endless carrier, of a vertically-reciprocating cutter-head arranged to reciprocate in front of
100 the ends of the veneer strips, a cell-plate carried by the cutter-head and comprising a plate provided on its face with a series of vertical cells or grooves, a cutter arranged in front of the grooved face of the cell-plate and vertically
105 movable with the latter, and means for automatically moving the cell-plate away from the cutter, to prevent the withdrawal of the splints from the carrier, substantially as described. 110

12. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips, set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to
115 reciprocate in front of the ends of the veneer strips, a cell-plate carried by the cutter-head, and comprising a plate provided on its face with a series of vertical cells or grooves, a cutter arranged in front of the grooved face
120 of the cell-plate, and vertically movable with the latter, rearwardly-projecting rods carried by the cell-plate and loosely passing through the cutter-head, a transverse shaft mounted on the rear ends of said rods, and vertical
125 plates fixed on opposite sides of the machine and provided with vertical slots rearwardly offset at their upper ends, the ends of the said shaft projecting into said slots, whereby the cell-plate is moved rearwardly from the cutter when in its raised position, substantially
130 as described.

13. In a match-machine, the combination with means for intermittently feeding for-

ward a plurality of separated veneer strips, set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to reciprocate in front of the ends of the veneer strips, a cell-plate carried by the cutter-head and comprising a plate provided on its face with a series of vertical cells or grooves, a cutter arranged in front of the grooved face of the cell-plate and vertically movable with the latter, rearwardly-projecting rods carried by the cell-plate and loosely passing through the cutter-head, a transverse shaft mounted on the rear end of said rods, said shaft being flattened or reduced in thickness between its ends, and vertical plates fixed on opposite sides of the machine and provided with vertical slots rearwardly offset at their upper ends, the ends of the said shaft projecting into said slots, whereby the cell-plate is moved rearwardly from the cutter when in its raised position, substantially as described.

14. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to reciprocate in front of the ends of the veneer strips, a cell-plate carried by the cutter-head, and comprising a plate provided on its face with a series of vertical cells or grooves, a cutter arranged in front of the grooved face of the cell-plate and vertically movable with the latter, means for moving the cell-plate toward and from the cutter, a lifter-bar arranged beneath the cell-plate and normally projecting beyond the latter, and means for retracting the lifter-bar during the downward movement of the cutter-head, substantially as described.

15. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to reciprocate in front of the ends of the veneer strips, a cell-plate carried by the cutter-head, and comprising a plate provided on its face with a series of vertical cells or grooves, a cutter arranged in front of the grooved face of the cell-plate and movable with the latter, a horizontally-yielding supporting-bar arranged to support the ends of the veneer strips, a lifter-bar arranged beneath the cell-plate and normally projecting beyond the latter, means for retracting the lifter-bar during the downward movement of the cutter-head, and means for thrusting forward the lifter-bar against the supporting-bar and displacing the latter when the cutter-head reaches the limit of its downward movement, substantially as described.

16. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to reciprocate in front of the ends of the veneer strips,

a cell-plate carried by the cutter-head, and comprising a plate provided on its face with a series of vertical cells or grooves, a cutter arranged in front of the grooved face of the cell-plate and movable with the latter, a horizontally-yielding supporting-bar arranged to support the ends of the veneer strips, and comprising a rectangular bar provided with tenons loosely arranged and longitudinally movable in sockets formed in the fixed part of the machine, coiled springs operating to force the supporting-bar outward, a lifter-bar arranged beneath the cell-plate and normally projecting beyond the latter, means for retracting the lifter-bar during the downward movement of the cutter-head, and means for thrusting forward the lifter-bar against said supporting-bar and displacing the latter when the cutter-head reaches the limit of its downward movement, substantially as described.

17. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to reciprocate in front of the ends of the veneer strips, a cell-plate carried by the cutter-head and comprising a plate provided on its face with a series of vertical cells or grooves, a cutter arranged in front of the grooved face of the cell-plate and movable with the latter, a lifter-bar arranged beneath the cell-plate and normally projecting beyond the latter, rods projecting rearwardly from the lifter-bar and passing loosely through the cutter-head, a transverse shaft fixed on the rear ends of said rods, springs arranged on said rods and operating to thrust the lifter-bar forward, pawls pivoted at their upper ends on the ends of said shafts, plates fixed on the opposite sides of the machine, and each provided on its rear edge with two notches, arranged one above the other, the arrangement being such that as the cutter-head descends, the pawls engage the upper notches and are thereby moved in the arc of a circle, thus retracting the lifter-bar, the means carried by the cutter-head for forcing the pawls out of the upper notches, said pawls slipping into the lower notches when the cutter-head approaches the end of its downward movement, and permitting the coiled springs to force forward the lifter-bar, substantially as described.

18. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips, set up on edge in parallel rows, of a vertically-reciprocating cutter-head, arranged to reciprocate in front of the ends of the veneer strips, a cell-plate carried by the cutter-head, and comprising a plate provided on its face with a series of vertical cells or grooves, a cutter arranged in front of the grooved faces of the cell-plate and movable with the latter, a lifter-bar arranged beneath the cell-plate and normally projecting beyond the latter, rods pro-

jecting rearwardly from the lifter-bar and passing loosely through the cutter-head, a transverse shaft fixed on the rear ends of said rods, springs arranged on said rods and operating to thrust the lifter-bar forward, pawls pivoted at their upper ends on the ends of said shaft, plates fixed on the opposite sides of the machine and each provided on its rear edges with two notches, arranged one above the other, springs for drawing the ends of the pawls into said notches, and means carried by the cutter-head for forcing the pawls out of the upper notches, substantially as described.

19. In a match-machine, the combination with means for intermittently feeding forward a plurality of separated veneer strips set up on edge in parallel rows, of a vertically-reciprocating cutter-head arranged to reciprocate in front of the ends of the veneer strips, a cell-plate carried by the cutter-head and comprising a plate provided on its face with a series of vertical cells or grooves, a cutter arranged in front of the grooved face of the cell-plate, and movable with the latter, a lifter-bar arranged beneath the cell-plate and normally projecting beyond the latter, rods projecting rearwardly from the lifter-bar and passing loosely through the cutter-head, a transverse shaft fixed on the rear ends of said rods, springs arranged on said rods and operating to thrust the lifter-bar forward, pawls pivoted at their upper ends on the ends of said shaft, plates fixed on the opposite sides of the machine, and each provided on its rear edge with two notches, arranged the one above the other, springs for drawing the ends of the pawls into said notches, and pins carried by the cutter-head and operating to engage the upper edges of the pawls and force the latter out of the upper notches, substantially as described.

20. In a match-machine, the combination with means for intermittently feeding forward a plurality of veneer strips set up on edge, of a cutter-head arranged to reciprocate opposite the ends of the strips, a yielding

supporting-bar arranged beneath the ends of the strips, a lifter-bar carried by the cutter-head, and mechanism for actuating the lifter-bar to cause it to engage and displace the supporting-bar, substantially as described.

21. In a match-machine, the combination with means for intermittently feeding forward a plurality of veneer strips set up on edge, and a reciprocating cutter for cutting splints from the ends of the strips, of a laterally-yielding supporting-bar arranged beneath the ends of the strips to receive the thrust of the cutter, substantially as described.

22. In a match-machine, the combination of a vertically-reciprocating cutter-head, a cutter carried thereby, means for feeding a plurality of veneer strips to the cutter, a cell-plate vertically movable with the cutter-head, a flat plate arranged opposite to and parallel with the cell-plate, and operating to hold the splints in the cell-plate, and mechanism for moving the cell-plate to and from the said plate and cutter-head, substantially as described.

23. In a match-making machine, the combination of mechanism for forming the splints, means for receiving the splints after they have been formed, a lifter-bar, means for projecting said lifter-bar beneath the severed splints and for raising it to force the splints into the splint-receiver, and means for causing said lifter-bar to laterally recede from beneath splints, which failed to enter the splint-receiver on the initial part of its return movement to permit such defective splints to drop by gravity from the machine, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD H. EISENHART.

Witnesses:

THOMAS MULLEN,
ALEX. REID.