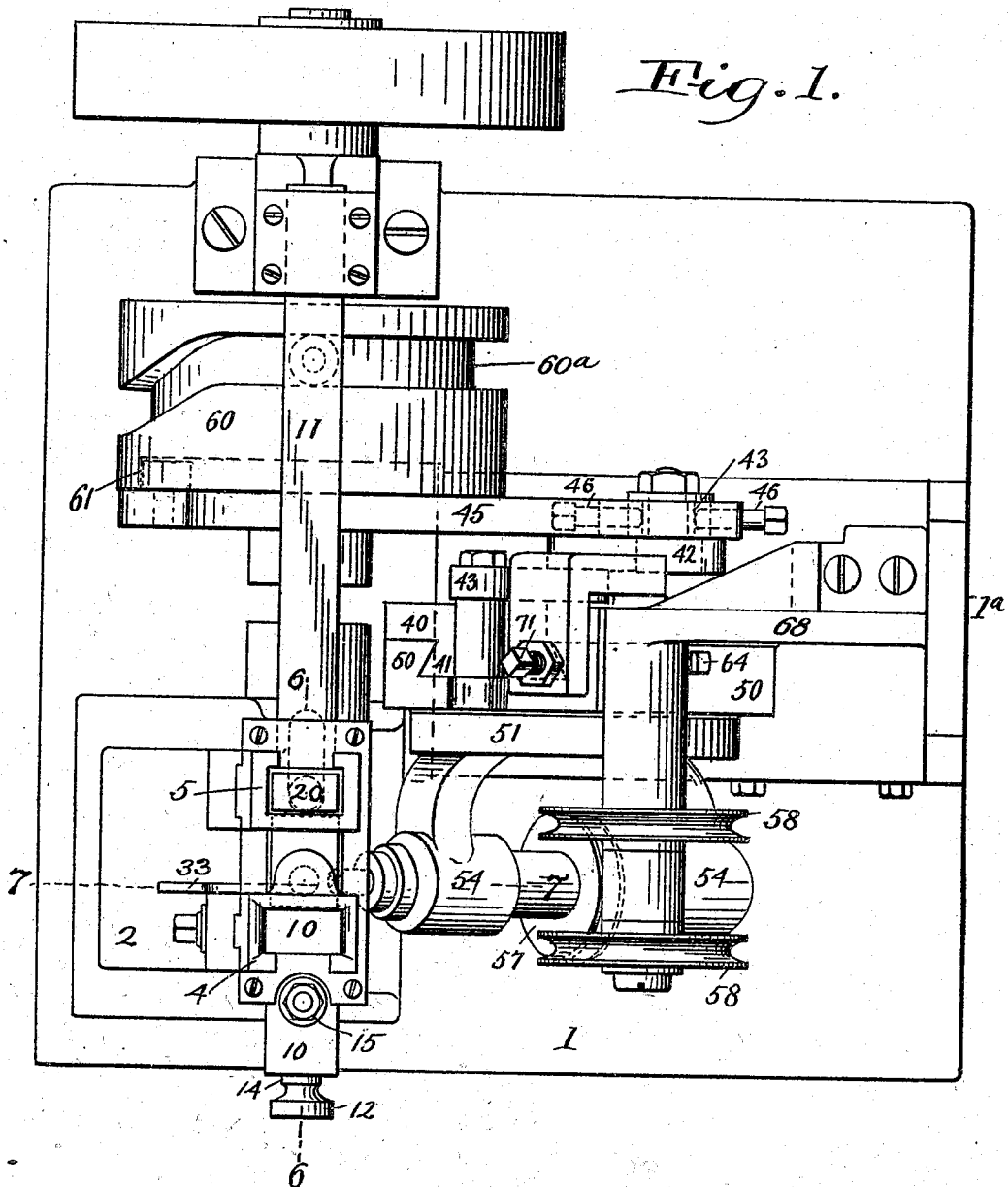


H. A. REYNOLDS.
DOVETAIL NOTCH CHAMFERING MACHINE FOR MATRICES.
APPLICATION FILED JAN. 18, 1907.

939,632.

Patented Nov. 9, 1909.
5 SHEETS—SHEET 1.



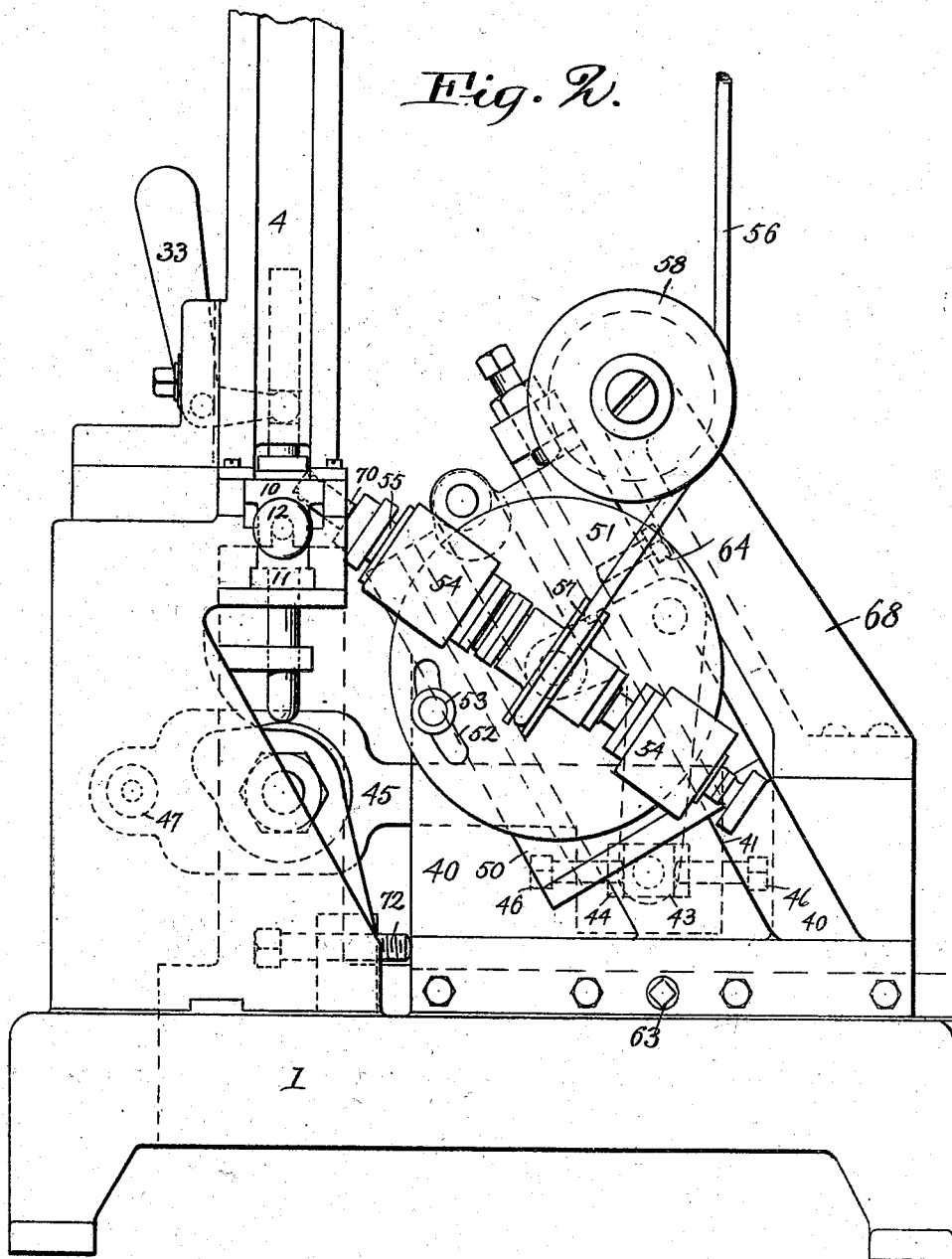
Witnesses:
E. B. Gilchrist
H. B. Sullivan

Inventor:
Horace A. Reynolds
By *Thurston Woodruff*
attorney

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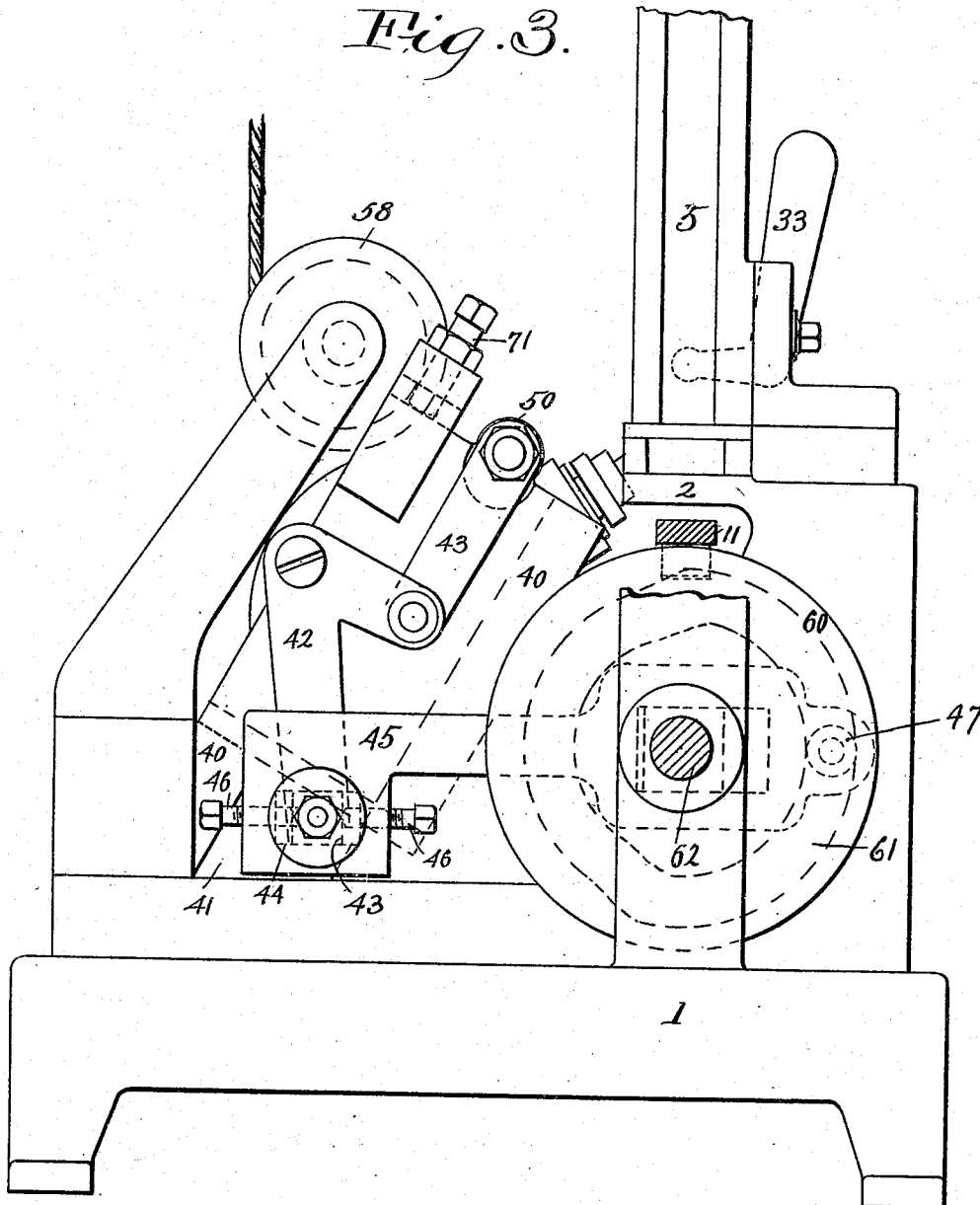
Inventor
Horace A. Reynolds
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attorney

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Fig. 3.



Witnesses
E. B. Gilchrist
H. B. Sullivan

Inventor
Horace A. Reynolds
By *Thurston Woodward*
attorney

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Fig. 4.

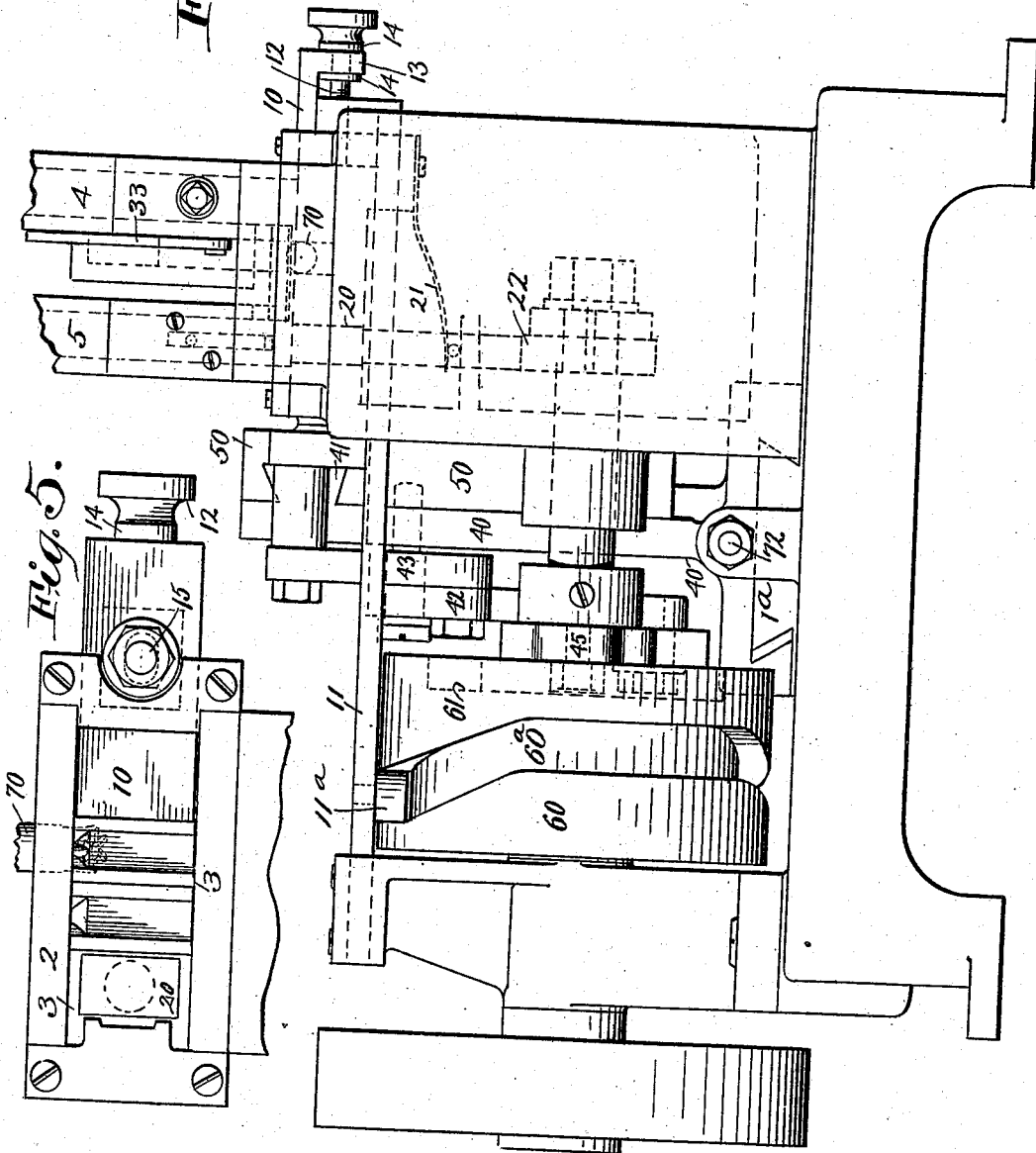


Fig. 5.

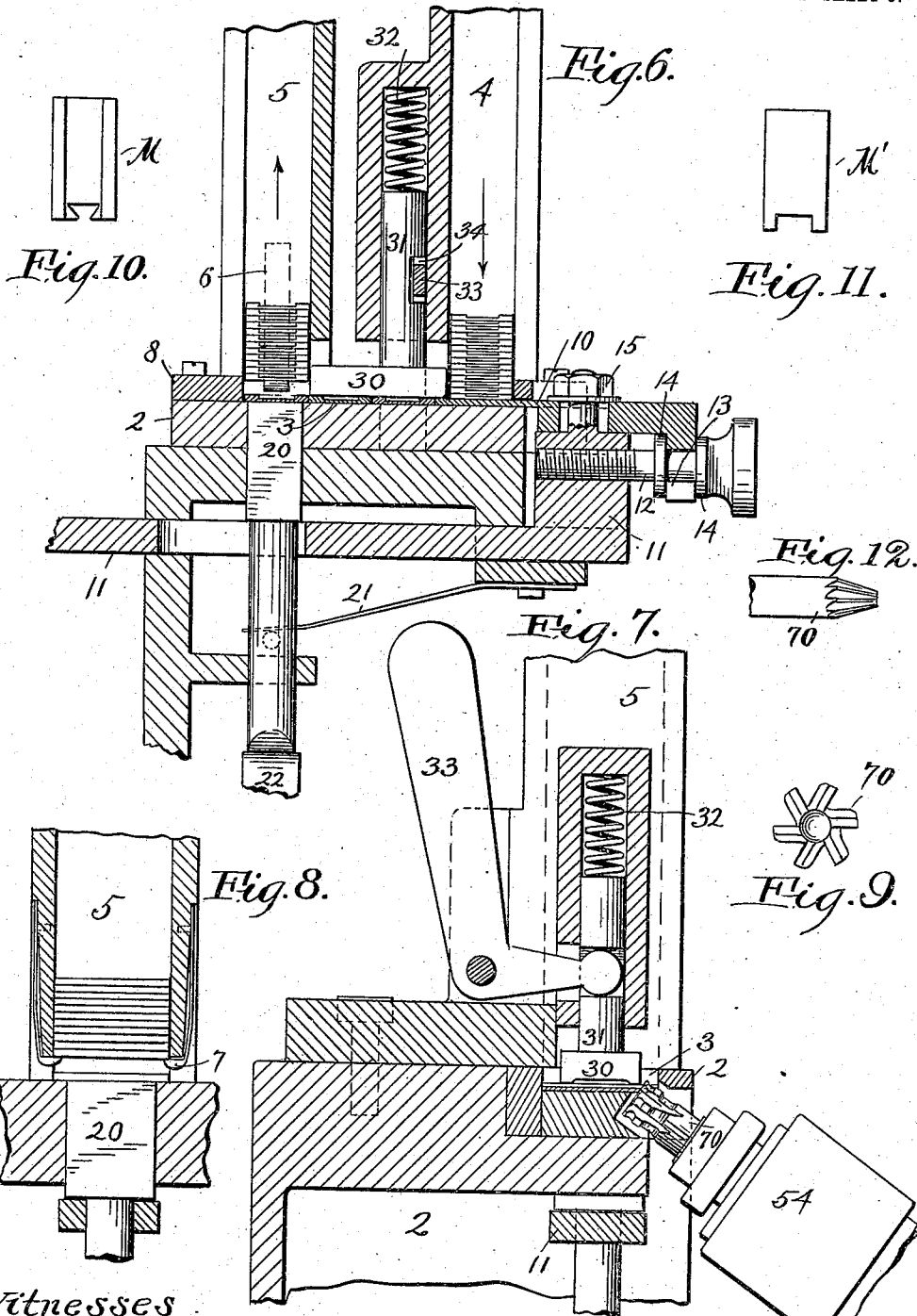
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Witnesses
E. B. Gilchind
H. B. Sullivan

Inventor.
H. A. Reynolds
By Thurston Woodward
Attorneys

UNITED STATES PATENT OFFICE.

HORACE A. REYNOLDS, OF WOONSOCKET, RHODE ISLAND, ASSIGNOR TO ELECTRIC COMPOSITOR COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

DOVETAIL-NOTCH-CHAMFERING MACHINE FOR MATRICES.

939,632.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed January 16, 1907. Serial No. 352,621.

To all whom it may concern:

Be it known that I, HORACE A. REYNOLDS, residing at Woonsocket, in the county of Providence and State of Rhode Island, have invented a certain new and useful Improvement in Dovetail-Notch-Chamfering Machines for Matrices, of which the following is a full, clear, and exact description.

Certain linotype machines employ matrices, each of which has a dove-tail notch in its lower end; and spacers, each of which has in its lower end a square notch, which is to say, one whose sides are parallel and at right angles to the bottom of the matrices. When these notches are formed in the matrices, the edges thereof will not be as smooth as they are required to be in order that the matrices and spacers may move freely through the linotype machines, as they are required to in its operation. By edges of notches is meant the angles where the sides of the matrix join the walls of the notch.

The primary object of this invention is to provide a machine with which to slightly bevel the edges of the dove-tailed notches referred to, thereby removing all burs and roughness from said edges.

Another object of the invention is to construct the machine so that it is also adapted similarly for beveling the edges of the straight notches in the lower ends of the spacers.

In the drawings Figure 1 is a plan view of a machine adapted for this purpose. Fig. 2 is an elevation thereof viewed from one end of the machine; and Fig. 3 is an elevation thereof viewed from the other end of the machine. Fig. 4 is a front elevation of the machine. Fig. 5 is a fragmentary plan view showing the channel in which the matrices move from one magazine to the other, and in which they are held while the edges of the notches are being beveled. Fig. 6 is a vertical sectional view in the plane indicated by line 6—6 of Fig. 1. Fig. 7 is a sectional view in the plane indicated by line 7—7 of Fig. 1. Fig. 8 is a sectional view of the receiving magazine; Fig. 9 is an end view of the beveling tool. Fig. 10 is a view of a matrix; Fig. 11 is a view of a spacer, which matrix and spacer have notches whose edges may be beveled by the machine shown; and Fig. 12 is a side view of the end of a cutter adapted for beveling the corners of

the notch in the bottom of the spacer shown in Fig. 11.

On a suitable base 1 there is an elevated horizontal platform 2, in the upper surface of which is a channel 3, whose width is equal to the height of the matrices. Over this channel the magazines 4 and 5 are secured, the former magazine being the feed magazine in which a pile of matrices, lying on their sides, is placed; and the latter being the receiving magazine into which the matrices are discharged after the edges of their notches have been beveled. A reciprocating push bar 10 is movable in said channel underneath the magazine 4, and is adapted, in each of its forward movements, to push the lowest matrix out of said magazine along said channel. The push bar 10, in the form shown, is a plate secured to the top of a slide 11, by means which permit the accurate adjustment of said push bar,—the adjusting means being a screw 12 which is mounted in a flange 13 secured on the plate 10, and which is prevented from moving endwise with respect to said flange by two shoulders 14, 14, and which screws into a part of the slide 11; and when the push bar 10 is properly adjusted with respect to said slide it is made fast by a clamping nut 15.

The magazines 4 and 5 are elevated a sufficient distance above the channel 3, so that matrices, sliding on the bottom of said channel, may pass out of magazine 4 under the wall thereof, and then under the wall of magazine 5 into position to be pushed up into that magazine by a plunger 20. This plunger is moved down by a spring 21 and is moved up periodically by means of a cam 22, which is shown in dotted lines in Fig. 4. Secured to the sides of the magazine 5 are spring members 6 having on their lower ends fingers 7 which project slightly into the magazine and are beveled on their lower surfaces. When the plunger 20 pushes a matrix up into this magazine, the matrix engages with these fingers and pushes them outward as it passes them, and then said fingers spring inward beneath said matrix, whereby it and all of the pile above it are sustained.

A presser foot 30 occupies a position between the two magazines 4 and 5 and above the channel 3. It has a stem 31 by which it is guided and it is subjected to the pressure of spring 32 forcing it downward so as

to hold two of the matrices in said channel 3 down upon the bottom thereof. When the first matrix is pushed from magazine 4 it is necessary to raise this presser foot to permit the matrix to pass under it, and this result may be attained by means of a lever 33 pivoted to a fixed point and engaging in a notch 34 in the presser foot stem. As the machine continues to operate, each matrix as it is pushed out of magazine 4, is pushed under this presser foot, while said foot is still upheld by the preceding matrix. The other matrices in the channel are pushed along, the third matrix passing from beneath said foot into magazine 5.

Upon the base 1 of the machine is a standard 40, whose foot is fitted over a dove-tailed guide tongue 1^a on said base, whereby said standard when moved will be guided. A set screw 63 affords means for clamping the base of the standard to this tongue and thereby prevents any movement of said standard. On one side face of this standard is an inclined dove-tailed tongue 41, which fits a corresponding groove in a slide 50, as shown in Fig. 1, and as indicated by dotted lines in Figs. 2 and 3. The slide 50 may be periodically moved up and down along the inclined guide-way furnished by said tongue by means of a bell crank lever 42 pivoted to the standard and connected by means of a link 43 with said slide 50. The downwardly projecting arm of the lever 42 is pivotally connected with a slide 45,—the means for making the connection being a block 43, to which said lever arm is pivoted,—which block is adjustably seated in a recess 44 in the slide 45, and two set screws 46 which screw into the slide against said block. The slide 45 is guided so that it must move horizontally but it is moved backward and forward by means of a pin 47 which it carries, and a cam groove 61 into which said pin projects,—said cam groove being formed in a disk 60 secured to driving shaft 62.

Secured to the side of the slide 50 is a plate 51,—said plate being primarily connected with the slide on a central axis upon which it may be turned. It contains an arc-shaped slot 52. A locking bolt 53 passes through this slot and screws into the slide, thereby connecting the plate and slide. This plate 51 carries the bearings 54 for a rotating shaft 55, which shaft is driven by means of a belt 56 passing over a pulley 57 on said shaft, which belt passes up to a suitable driving pulley, not shown, over idler sheaves 58 mounted on a standard 68.

The beveling tool 70 for use in beveling the edges of the dove tail notches is a peculiar form of cutter; and Figs. 7 and 9 show a cutter of the form required for beveling the edges of the dove tail notch. This tool has cutting blades on its ends and peculiarly shaped blades on its side. This tool

occupies a position normally in which its axis lies at an angle of about 35 degrees to the horizontal plane; and the slide 50, by which the tool shaft is secured, moves in a path which is at an angle of about 50 degrees to said horizontal plane.

Now, in the operation of the device, matrices are pushed from magazine 4 one by one along the channel 3, and they are held firmly in said channel by the presser foot 30. While the slide 10 is being retracted, the slide 50 is being moved up by the described mechanism provided for that purpose, and at the angle described. This moves the cutting tool upward and also gives it a slight endwise movement. The tool projects into a notch in the edge of the shelf 2. When the tool has been so moved upward and endwise, as it will be when slide 50 is moved it will engage the lower edges of said dove-tail and trim off a very small corner thereof all around it, thereby beveling the edge. This dove-tailed notch at the bottom thereof where it joins with the bottom of the matrix is not brought to a sharp angle, but is rounded, and the upper angles of this notch are also slightly rounded. The tool is of the peculiar shape shown so that it will, when moved to the position shown and described, engage with the entire marginal corner edge of this dove-tailed notch and uniformly bevel them. When the tool has done the work for which it is provided, the slide 50 is moved down thereby drawing the tool so far down that the matrix, which it has just been operating upon, will not touch it when moved along said channel. Then the slide 10 acts to move another matrix out of magazine 4 along the channel, and the plunger 20 moves up to push the matrix which is thereby carried beneath the magazine 5 up into said magazine, as described.

When the machine is to be used to bevel the square notches in the spacers, as shown in Fig. 11, another tool of suitable shape, substantially as shown in Fig. 12, is substituted for the tool shown. Then the set screw 45 is loosened, and a set screw is screwed in so as to clamp the slide 50 to the standard 40. When the machine is now set into operation, the slide 50 will not move on standard 40, but said standard will slide upon the base, being guided by the tongue 41, thereby moving the tool into operative position with respect to the matrix and then away from that position.

In a machine of this character great accuracy is required; and especially is it necessary that the tool be restrained from cutting away too much of the matrices. In order to prevent this, two set screws are provided, the set screw 71, which is mounted in a part of the standard 40 in a position to be engaged by the end of the slide 50, and to serve as a stop therefor when the slide is

moving toward the work. The other set screw, indicated by 72, is for the purpose of engaging with the standard 40 and to stop its movement toward the work.

5 Having described my invention, I claim:

1. The combination of a table in which is a channel, a presser foot located over said channel, with a slide mounted to move on an inclined guideway which is at an angle to the table top, mechanism for reciprocating said slide upon said guide-way, a rotatable spindle which is mounted upon said slide with its axis at an angle to the table top which is less than the angle of the path of the slide thereto.

2. The combination of a table having in its top surface a channel for the reception of matrices to be operated upon, a spring-actuated presser foot located above said channel, a reciprocating push bar operating in said channel, a fixed standard carrying an inclined guide-way, a slide mounted and movable upon said guide-way, a spindle mounted upon said slide with its axis at a less inclination to the plane of the table top than is said guide-way, means for rotating said spindle, and means for reciprocating said slide upon said guide-way.

3. The combination of a bed having a guide-way, a standard mounted to move upon said guide-way, a guide-way secured to said standard and set at considerable inclination to a plane of said bed, a slide mounted upon said inclined guide-way, a rotatable spindle mounted upon said slide with its axis at a less inclination to the plane of said bed than is the guide-way of said slide, mechanism for rotating said spindle, means for fastening the slide to its guide-way and the standard to its guide-way, and mechanism by which reciprocating motion is transmitted to either the slide or said standard when the other is fixed to its guide-way.

4. The combination of a bed plate having a horizontal guide-way, a standard mov-

ably mounted upon said guide-way, means to prevent said movement, a guide-way carried by said standard which is set at a considerable angle to a horizontal plane, a slide mounted and movable upon said guide-way, means preventing said movement, a rotatable spindle mounted upon said slide, another slide movable in a path substantially parallel with the path in which said standard may move, means imparting reciprocatory motion to said last mentioned slide, mechanism for transmitting motion from said slide to the inclined slide.

5. The combination of a bed plate having a horizontal guide-way, a standard movably mounted upon said guide-way, means to prevent said movement, a guide-way carried by said standard which is set at a considerable inclination to a horizontal plane, a slide mounted and movable upon said guide-way, means preventing said movement, a rotatable spindle mounted upon said slide, another slide movable in a path substantially parallel with the path in which said standard may move, a bell crank lever pivoted to said standard, one arm of which is operatively connected with the slide last mentioned, and a link connecting the other arm of said lever with the inclined slide.

6. The combination of a bed plate, a standard secured thereon, an inclined guide-way carried by said standard, a slide mounted and movable upon said guide mechanism for moving it backward and forward, a plate pivoted to said slide and angularly adjustable upon its pivot, means for making it fast to said slide, a spindle mounted in bearings carried by said plate, and means for rotating said spindle.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

HORACE A. REYNOLDS.

Witnesses:

G. L. HAMMOND,
T. L. CLARK.