

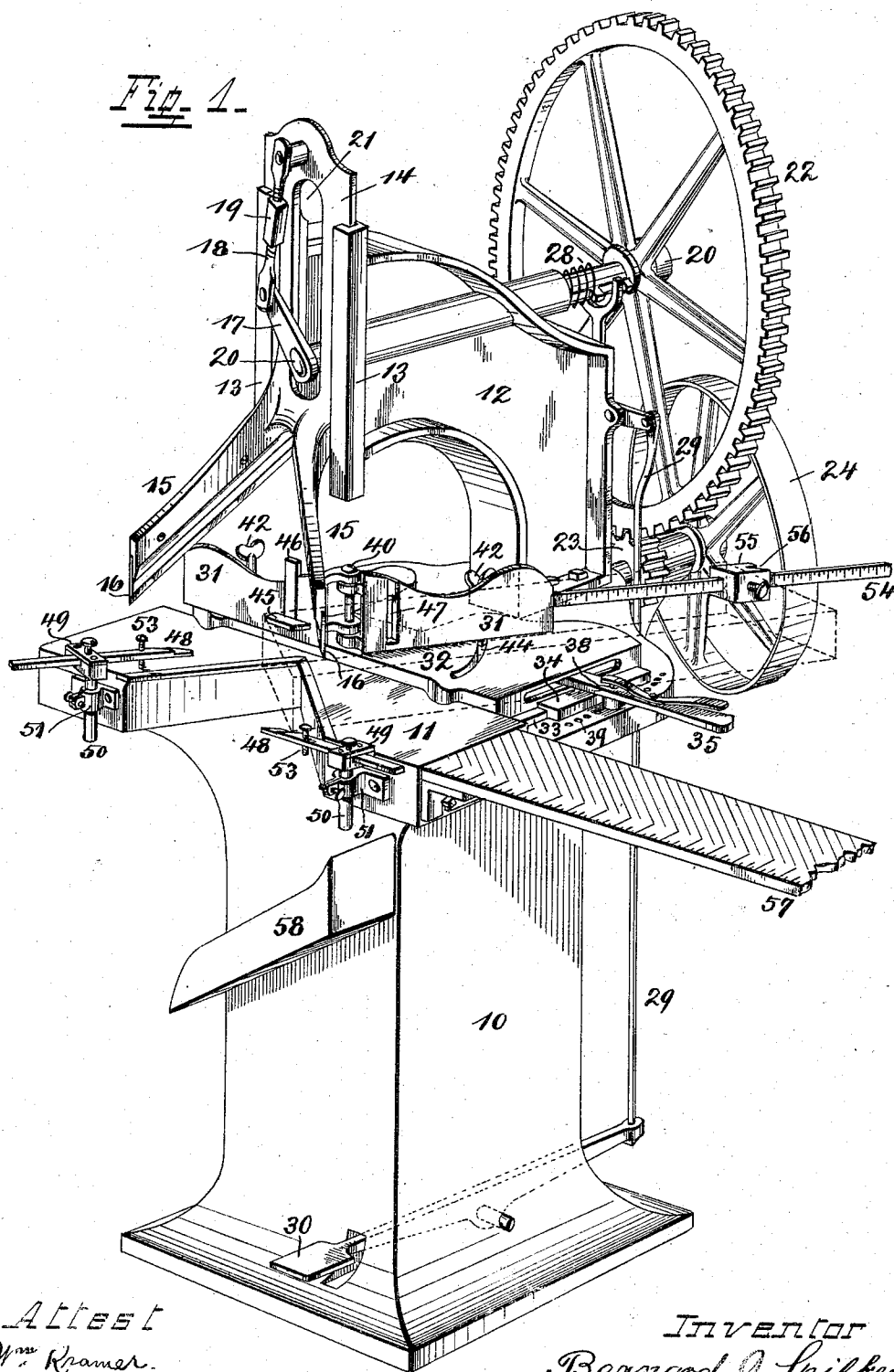
(No Model.)

2 Sheets—Sheet 1.

B. J. SPILKER.
JOINT CUTTER.

No. 541,952.

Patented July 2, 1895.



Attest
Wm. Kramer.
R. Decker

Inventor
Bernard J. Spilker
by C. Spongel Atty.

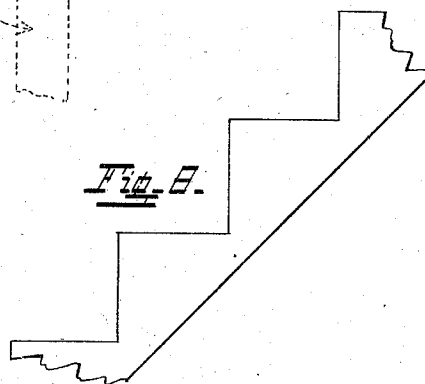
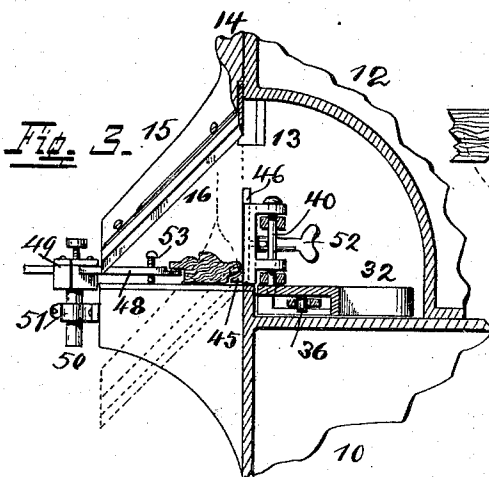
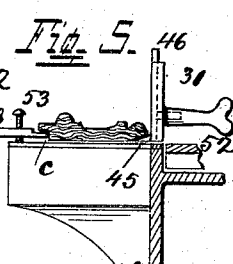
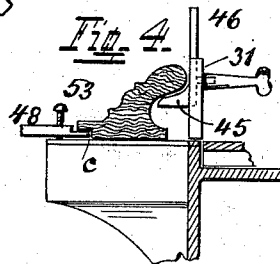
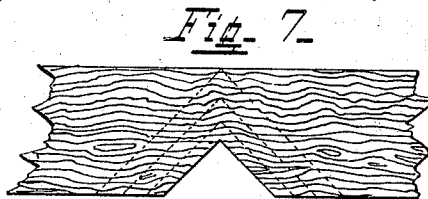
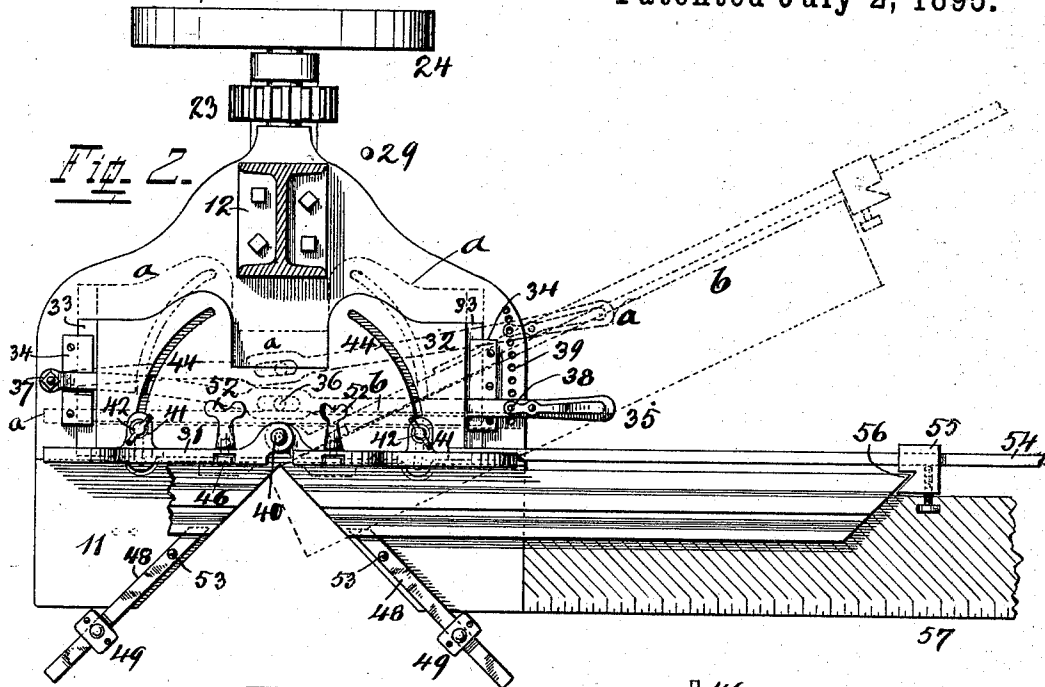
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

BERNARD J. SPILKER, OF CINCINNATI, OHIO.

JOINT-CUTTER.

SPECIFICATION forming part of Letters Patent No. 541,952, dated July 2, 1895.

Application filed May 21, 1894. Serial No. 511,913. (No model.)

To all whom it may concern:

Be it known that I, BERNARD J. SPILKER, a citizen of the United States, and a resident of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Joint-Cutters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, attention being called to the accompanying drawings, with the reference letters and numerals marked thereon, which form a part of this specification.

This invention relates to improvements in joint-cutters, which are machines for cutting the ends of frame-sections for picture frames, moldings, &c., in such a manner that said sections are ready to be joined together at the proper angle to form frames. This angle is usually a right angle, for which purpose the ends of the sections are cut off at an angle of forty-five degrees to form what is called a miter-joint. The material for the frames comes in long strips which are fed to the machine and cut by it to the proper lengths, the lines of separation being so that the adjoining ends of each of the two separated pieces receive at the same time the proper angle for joining. The improvements on such machines and which form the subject of this invention relate to means to support the work in a manner that, when intricate moldings are cut which have rabbets or are under-cut and lack substance for support at such points, such weak parts are prevented from being broken down or splintered by the knives while they do the work and to details of construction and minor accessories, which will be referred to at the proper time.

In the following specification and particularly pointed out in the claims, is found a full description of my invention, its operation, parts and construction, the latter being also illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the machine complete and adjusted for cutting off square ends. Fig. 2 is a horizontal section of the same, taken above the bed-plate and adjusted for cutting miter-joints, other adjustments being shown in dotted lines. Fig. 3 is a ver-

tical central section of the bed-plate and adjacent parts. Figs. 4 and 5 show in views similar to Fig. 3 manner of supporting under-cut and rabbeted moldings while being cut. Figs. 6, 7, and 8 show the lines on which the machine cuts.

10 is the base of the machine.

11 is the bed-plate and 12 is a standard or bracket on it, provided at its front face with guides 13 in which the knife-carrier 14, slides. This latter at its lower end divides in two branches 15, symmetrically arranged extending from the center line of the machine and are at right angles to each other. These branches carry the knives 16, also at right angles to each other, resting against shoulders on said branches and coming together at the apex of the angle. They are also inclined, the inner ends being higher than the outer ones, so that they act with a shearing cut, which causes less strain on the machine and produces a smoother cutting surface. The vertically reciprocating motion of the knife-carrier and its knives is produced by a crank 17, connected by a link 18 to the carrier. The link is in two parts, the ends of which are screw-threaded, one right and the other left, which ends are connected by a nut 19 correspondingly threaded, so that by an operation of such nut, the length of link 18 may be adjusted. Its principal adjustment consists of a gradual lengthening of said link whereby the knife-carrier descends lower and is enabled to carry, within reasonable limits, the knives always to the same point thus compensating for their wear. Crank 17 is operated by a shaft 20, passing through a slot 21, in the knife-carrier and into standard 12, which supports it. It extends out of the latter and carries a cog-wheel 22 driven by a pinion 23 on a stud shaft which is rotated by a pulley 24 receiving its motion from a motor. A suitable clutch-mechanism 28, connected by a rod 29 to a treadle 30, serves to disconnect shaft 20 from the power-mechanism, whenever it is desirable to stop the motion of the knife-carrier.

31 is a fence rising at right angles from the bed-plate and when in its normal adjustment for miter-joint cutting (see Fig. 2) is at right angles to a line which bisects the angle between the knives, or which is the same, the

cutting-edge of each knife forms an angle of forty-five degrees with the fence. When a molding, frame, &c., is placed against the latter while in this position, a cut results, as shown in Fig. 6, the piece being completely separated and each end cut off at an angle of forty-five degrees, so that the pieces, when joined together, will form a right angle as shown by dotted lines in same figure. When the stuff to be cut is of considerable thickness, the cut may be divided, to lessen the strain on the machine, so that the first cut removes only a part of the wood (see Fig. 7), in which case successive cuts are applied, as shown by dotted lines in same figure, until the wood is completely severed. This is done by moving the fence first back to the desired position as for instance at *a*, indicated by dotted lines in Fig. 2, after which the stuff is laid against it and the first cut made. The two, that is the fence and the stuff are now moved successively forward as many times as intermediate cuts are necessary, until a final cut accomplishes the separation. For the purpose of this adjustment, a sliding bed-plate 32 is provided, the top of which is on a level with bed-plate 11, and which sliding bed-plate carries the fence. It has slides 33 guided by ways 34, on each side, so that during its movement its angular relation to the knives is not disturbed. For its movement a lever 35 is provided, having a slot mid-length which engages with the stud 36, on the under side of the sliding bed-plate. It is pivoted at 37 and has near its handle-portion a spring-actuated locking-pin 38 which normally engages with any one of a number of holes 39 by which engagement the sliding bed-plate with the fence may be locked in any particular position. The adjustment just now described may also be used to cut risers for stairs, (see Fig. 8,) where a complete separation of the wood is not desired.

A further adjustment for cutting ends off at right angles, or any other angle, is obtained by making fence 31, in two parts, each swinging in a horizontal plane on a center-post 40, to which they are hinged. Such an adjustment of the right half of the fence is shown in dotted lines by position *b*, in Fig. 2, where the end is cut off at an angle other than forty-five degrees. In Fig. 1, the right half of the fence is adjusted to cut off the ends square. By this form of adjustment only one piece can be cut at a time. For the purpose of holding either fence-section in the position to which it has been adjusted, they have lugs 41, which carry set-screws 42, passing through slots 44, in the sliding bed-plate and engage with nuts below, whereby they are locked to the bed-plate. This is one form of locking parts to adjusted positions, well understood by machinists and may be accomplished in other similar ways. Moldings are sometimes undercut (see Fig. 4) while such stuff which is used for picture-frames is always provided with a rabbet at *c* (see Figs. 4 and 5) which

receives the glass when the frame is completed. The unsupported wood at such points and especially when the grain is short (see Fig. 4) is liable to be crushed down by the knives, unless provision is made to prevent it. I guard against this objection by two sets of supports, one set 45, affixed to guides 46, and carried in grooves 47 of the fence. The other set 48 is held in boxes 49 having shanks 50 clamped in position by brackets 51. Both sets are vertically adjustable, as may be readily understood. Set 45 is held in position by set-screws 52 passing in from the rear through slots 47 in the fence. This latter set is also interchangeable so that different shapes may be used to conform to the formation of the moldings at the particular point where they support them. (See Figs. 1, 3, 4, and 5.) To prevent supports 48 from springing or bending down when narrow stuff is cut and they as a consequence have to be pushed quite far out of their supporting boxes 49, to reach such stuff, I provide screws 53 which pass through them and rest on the bed-plate. They may be screwed in or out according to the height of the support and by resting always on the bed-plate hold up the support. For square stuff, as shown in Fig. 1, no supports are required and supports 45 are altogether removed, while supports 48 are turned in their brackets 51 and swung out of the way. A graduated rod 54 is affixed to the fence which carries a stop 55 which by means of a set-screw is secured in the required position and determines the length of the pieces when one of their ends is put against it before cutting. This length is the distance from the stop to the point where the knives come together. The stop is cut out at 56 to receive the pointed end when miter joints are cut, (see Fig. 2,) while for square ended work it is reversed as shown in Fig. 1.

57 is another measuring-scale extending out from the bed-plate and may be used for thin work and in cases where the scale on rod 54 is not available.

58 is a chute which receives the chips and prevents them from accumulating at the operator's feet where they would interfere with the manipulation of the treadle.

Having described my invention, I claim as new—

1. In a joint-cutter, the combination of the vertically reciprocating knife-carrier and knives, the supporting table below, a sliding bed-plate 32, capable of linear adjustment toward or from the path of motion of the knives and in a plane at right angles to said path, a centerpost rising on said bed-plate, two fence-sections hinged thereto, and each section capable of radial adjustment toward or from this path of motion of the knives and in a plane at right angles to said path means to lock these fence-sections to the bed-plate after their adjustment, slides 33 on the sliding bed-plate and ways 34, whereby the latter is guided during adjustment, an operating lever 25,

passing transversely below the bed-plate, engaging with the latter about midway, pivoted at one end and having its other end adapted to be locked in position, to hold all parts to their adjustment.

2. In a joint-cutter the combination of the vertically reciprocating knife - carrier and knives, the supporting table below, a fence for the purpose of placing the stuff in its proper angular position to the knives to produce the proper cut and supports 48 adjustably secured to the bed-plate to hold up undercut and rabbeted work, to prevent it from being broken down and splintered by the action of the knives and supporting screws 53 resting on the table to prevent supports 48 from springing or bending and breaking during the cutting-operation.

3. In a joint cutter, the combination of the

vertically reciprocating knife - carrier and knives, the supporting table below, a fence for the purpose of placing the stuff in its proper angular position to the knives to produce the proper cut, a frame to support all these parts, brackets 51 secured thereto, boxes 49, vertically adjustable thereon, supports 48 horizontally adjustable within the latter and screws 53, to support the outer ends of supports 48 on the table to prevent the latter from being bent or broken down during the cutting operation of the knives.

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

BERNARD J. SPILKER.

Witnesses:

C. SPENGEL,
WM. KRAMER.