Sheet 1, 2 Sheets

Ohlemacher & Kromer.

Dovetailing Mach.

No. 87,586. Patented Mar. 9, 1869.

Fig 1.

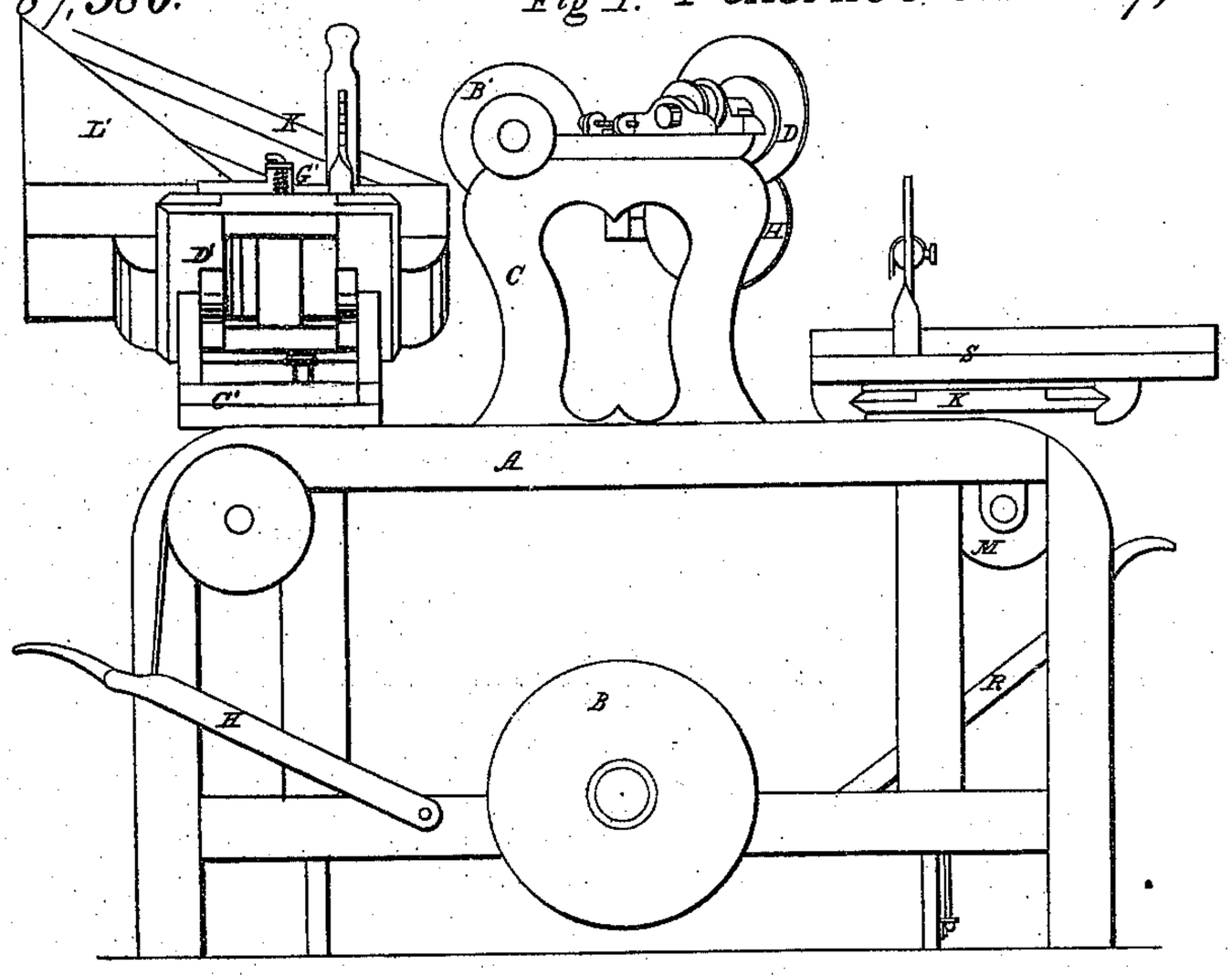
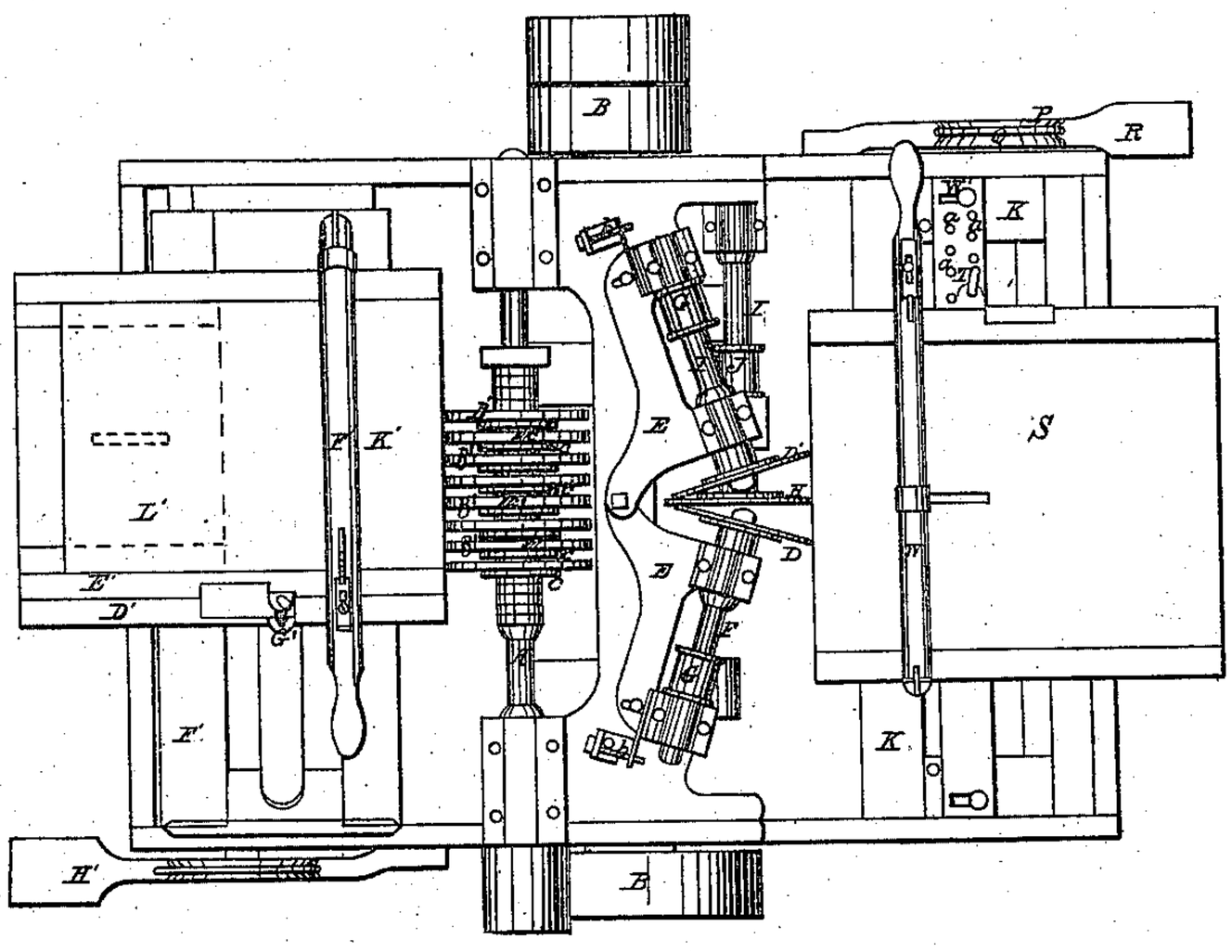


Fig 2.



Witnesses,
J. W. Burridge
K. Coon

Inventors,
C. Ohlemacher
C. Kromer.

Sheet 2, 2 Sheets.

Ohlemacher & Kromer.

Dovetailing Mach.

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Fig. 3

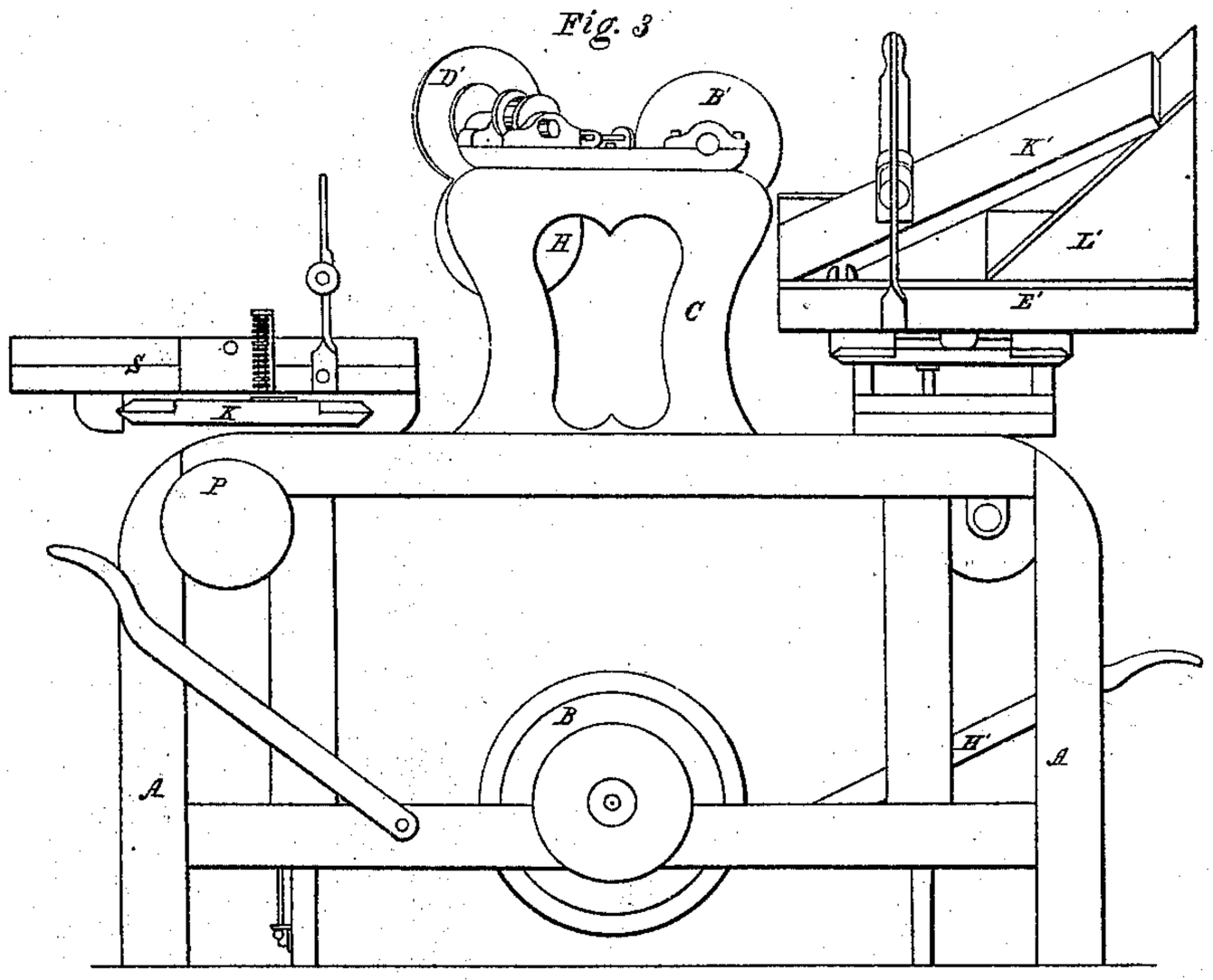


Fig. 6.

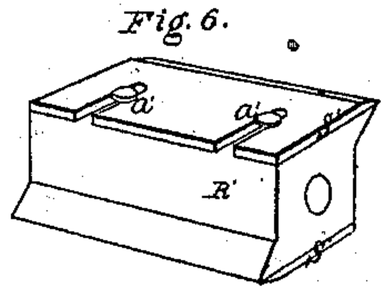


Fig. 4.

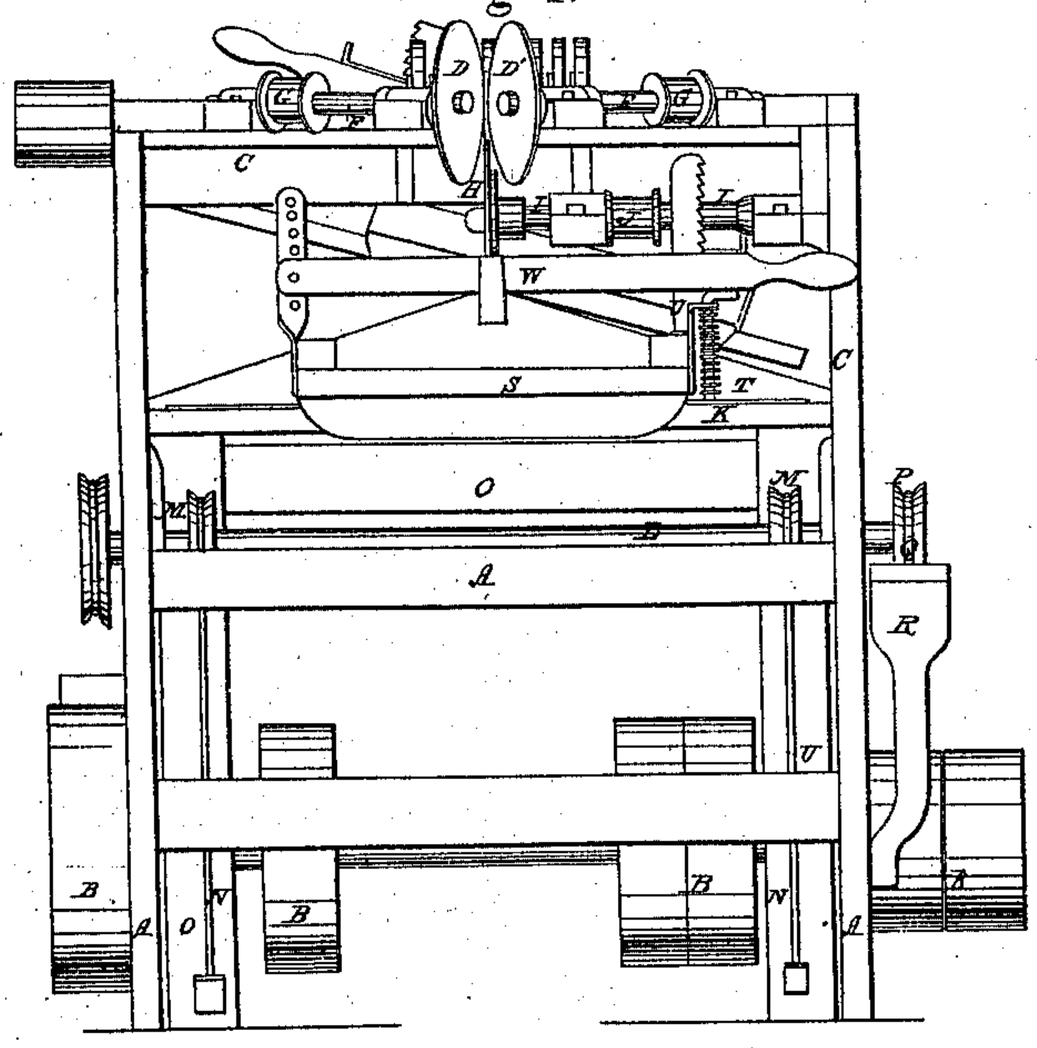
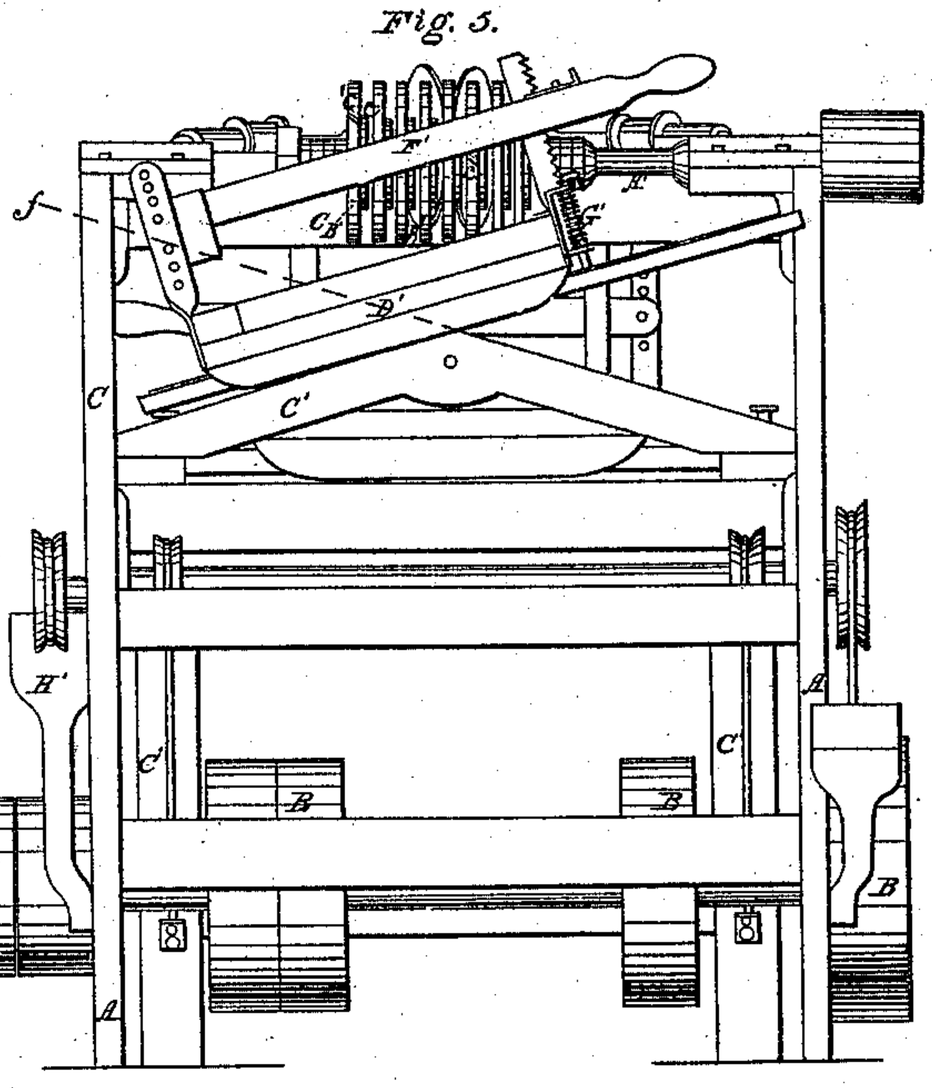


Fig. 5.



Witnesses,
J. H. Brundige
K. Coon

Inventors,
C. Ohlemacher
C. Kromer

United States Patent Office.

CHARLES OHLEMACHER AND OTTO KROMER, OF SANDUSKY, OHIO.

Letters Patent No. 87,586, *dated March* 9, 1869.

IMPROVEMENT IN DOVETAILING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, CHARLES OHLEMACHER and OTTO KROMER, of Sandusky, in the county of Erie, and State of Ohio, have invented a certain new and useful Improvement in Dovetailing-Machines; and we do hereby declare that the following is a full and complete description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, plate 1, is a side view of the machine.

Figure 2, a view of the top.

Figure 3, plate 2, a view of the opposite side of fig. 1.

Figure 4 is an end view.

Figure 5, a view of the opposite end of fig. 4.

Figure 6, a detached section.

Like letters of reference refer to like parts in the several views presented.

In fig. 1, plate 1, A represents a rectangular frame in and across the lower side of which is mounted a gang of driving-pulleys, B.

On the top of said frame is secured a supplementary frame, C, to which are attached the saws, or cutters D D′, fig. 2, plate 1, hung in the adjustable stays E, on the shafts F, to which are also secured pulleys G.

The position of these cutters, in relation to each other, is such that the plane of their face forms an acute angle from their inner edges outward, as shown in fig. 2, but which angle may be varied by the adjusting-screws and stays, for a purpose hereinafter shown.

Immediately below the cutters referred to, is hung the saw, or cutter H, on the shaft I, to which is also secured a pulley, J. The position of this saw, or cutter, in relation to the saws, or cutters D D′, is such as to bisect the angle formed by the two saws, as shown in the drawings, figs. 2 and 4.

Below and in front of these saws, or cutters, is a table, K, so arranged within the frame A, that it can be moved upward or downward as follows:

L, fig. 4, plate 2, is a shaft, on which are secured the grooved pulleys M.

To said pulleys is attached one end of a chain, N, whereas the other is fastened to the lower side of the frame O, by which the table referred to is supported.

P is also a grooved pulley, secured to the shaft L.

To this pulley is also connected one end of a chain, Q, whereas the other is attached to a lever, R. Now, on depressing the free end of said lever, the result will be to draw up the frame and table by the chain winding around the pulleys referred to, but which will again descend by their own weight.

To the top of the table is fitted an adjustable table, or carriage S, fig. 2, so arranged that it can be moved transversely across the frame A, and which is secured in any one position on the table by the bolt T, fig. 4, plate 2, said pin being secured in a stay, U, and enclosed in a spiral spring, whereby the bolt is forced back into the holes *a*, after being withdrawn from them for adjusting the carriage, on which the work is placed, and secured by a binder, W.

The practical use of this section of the machine is for cutting the mortises of the work, into which the tenons are fitted, and which is done in the following manner, viz:

The board is placed on the carriage S, and thereon secured by the binder referred to. The position of the edge of said board is such, in relation to the saws, or cutters, that it projects under them more or less, according to the depth that the dovetailing is to be cut, which will be governed by the thickness of the stuff. The board, on being properly adjusted, is then brought in contact with the saws, or cutters, by elevating the table in the manner as above described, thereby carrying the board upward to the saws D D′, cutting the sides of the mortise, and of any such angle that may be required, by adjusting the stays in which the cutters are hung, to the required angle.

The central cutter H, as will be seen, cuts into the board at a right line, between the side saws, and as it leads in the cutting, the central portion of the mortise is cut away, the side saws, as they follow, cutting away the remainder, leaving a clean, angular mortise for the admission of the tenon.

As above said, the mortise can be cut to any required angle or size, by adjusting the stays E, thereby making the angle formed by the plane of the cutters D D′ more or less acute, giving, by this means, a greater or less angle to the mortise.

The adjusting-screws D, fig. 2, are for the purpose of thus regulating the angle of the work.

Having thus described that section of the machine for cutting the mortises, the other section, for cutting the tenons, is as follows, viz:

In the supplementary frame C, above referred to, is journalled a shaft, A′, fig. 2, on which is secured a series of disks, B′.

These disks are kept separate from each other by the intervention of washers, *c*, placed between them on the shaft.

The distance said disks are apart, and the number, are determined by the size and number of the tenons.

In the periphery of the disks are secured cutters, *c′*, by which the cutting of the tenons is accomplished, as will hereinafter be shown.

C′, fig. 5, is a vertically-sliding frame, operated in the same way as the frame O and table K, above described.

It will be observed that the upper side of the frame is so constructed as to slant upward from each side to the centre, to the apex of which is pivoted a top, or table D′, whereby it is made to vibrate, for a purpose hereinafter shown.

To this table is attached a carriage, E′, on which is laid the board for cutting, and thereon secured by the binder F′, applied and operated in like manner as the binder W.

The carriage is also fixed to any one place on the table by a bolt and spring, G′, fig. 5, constructed and arranged in like manner as the bolt and spring T.

The practical operation of this section of the machine is as follows:

The board is laid upon the carriage E′, and thereto secured by the binder referred to. The edge of the board is allowed to project beyond the edge of the carriage so far as is required for the length of the tenon. The proper angle to be given to the side of the tenon, so that it shall fit the mortise, is obtained by the angle given to the vibrating table, which is gauged to the special angle given to the saws. The inclination given to the frame and carriage, as shown in fig. 5, is such as to conform to the angle given to the saws, or cutters, so that, on cutting the tenon, it will properly and closely fit in the mortise.

The board, on being rightly secured in the carriage, is then brought to the cutters, by depressing the free end of the lever H′, fig. 1, the result of which will be to elevate the frame and table, thereby feeding the board to the cutters from below, as the board was fed to the saws, one side of the tenons being cut at a time, together with a portion of the wood between them, which, being done, the opposite side of the tenon is cut, and the remainder of the wood between them, by changing the position of the carriage from that shown in fig. 5 to that indicated by the dotted line *f*, thereby bringing the table down upon the opposite angle of the frame C′. The centre of vibration being undisturbed, and the two angles of the frame on which the table rests being alike, it will be obvious that both sides of the tenon will have the same angle, and be of a uniform size, greater or less, according to the angle to which the table may have been adjusted.

The work of dovetailing, thus far described, is such as is known as the open-joint work, viz, where the mortise is cut through, the stuff and the ends of the tenons, when inserted, show; but that other style of work, known as blind dovetailing, where the mortises are not cut through, and the joint, instead of being square, or right-angled, is a mitre, so that the ends of the tenons are hid by the face of the stuff, as may be seen in the fronts of bureau-drawers, &c.

In order to do this kind of work, the joint is mitred, or, rather, the end of the tenon is cut mitring, and so also is the bottom of the mortise, for mutual adaptation.

To produce this kind of work, the board to be mortised is laid upon an inclined plane, K′, fig. 1. The proper angle for the work is obtained by elevating or depressing the outer end of inclined plane, by means of the angular chair L′, on which the plane rests. It will be obvious, that by this means any necessary angle can be given to the plane, or table, by simply moving the chair inward or outward, as the case may be, and hence to the board placed upon it, and which is so adjusted to the cutters B′ as to bring the edge within the proper range.

The table C′ is then raised, in the manner as above described for the open style of dovetailing, but not so high as to cause the cutters to cut through the board, but to a certain depth only, leaving the outer lower edge uncut, thereby leaving a bottom to the mortise.

The tenons to fit these mortises are cut in the same way as for the open work, but which, when cut the required bevel to fit the angle given to the bottom of the mortise, is done by removing the gang of cutters B′, and replacing them by the cutter, fig. 6, consisting of the head R′ and the cutters S′.

The tenoned board is then laid upon the inclined plane, on which the mortising was done. The corners of the tenons are then cut off by the cutters referred to, which, as will be evident, must be of the same angle given to the bottom of the mortise; hence, when the two parts are put together, they will properly fit each other.

This machine can be used for cutting the mitre for the joints of picture-frames, and other similar work where dovetailing is not required for the joint.

The size of the mortise for dovetailing can be varied by increasing the distance between the disks more or less, by interposing washers, of variable thickness, or in numbers, between them.

The holes *a*, in the plate W′, fig. 2, are arranged to a scale, so as to cut different-sized mortises and tenons, by adjusting the carriage from one hole, or a number of holes, to others, thereby affording a ready and exact scale for the number of mortises and tenons in a given length, saving, by this means, the time and trouble of laying out the work.

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

1. The adjustable cutters D D′, and cutter H, the upright reciprocating table, or carriage S, arranged with relation to each other, and to operate in the manner substantially as described.

2. The adjustable pivoted stays, or yokes E E, carrying shafts F and adjusting-screws *b*, arranged with relation to and affecting the position of cutters D D′, in the manner and for the purpose set forth.

3. The series of disks B′, cutting-blades C′, adjustable washers *c* on shaft A, the upright reciprocating and vibrating table D′, all constructed and arranged to operate in the manner and for the purpose described.

CHARLES OHLEMACHER.
OTTO KROMER.

Witnesses:
W. H. BURRIDGE,
J. H. BURRIDGE.