

No. 689,035.

Patented Dec. 17, 1901.

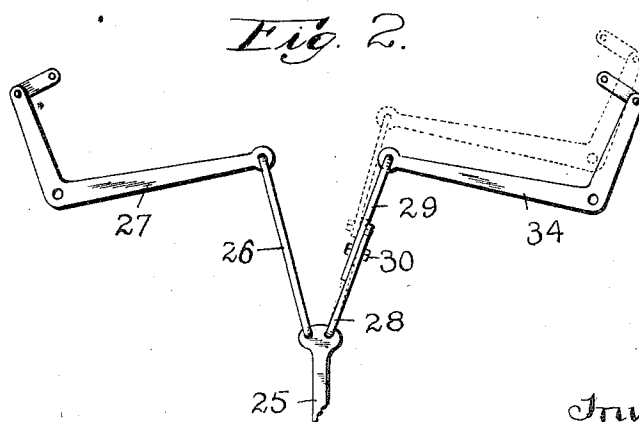
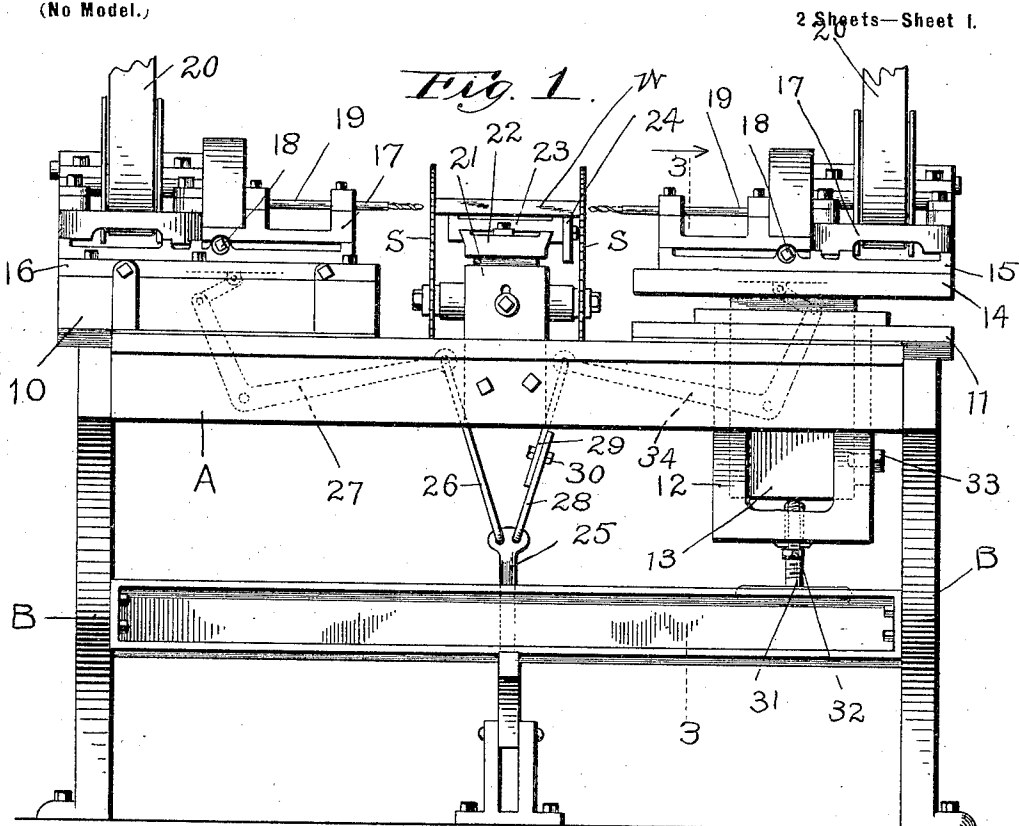
E. F. BRAINARD.

CUTTING-OFF AND DOWEL SOCKET BORING OR TENON FORMING MACHINE.

(Application filed Apr. 8, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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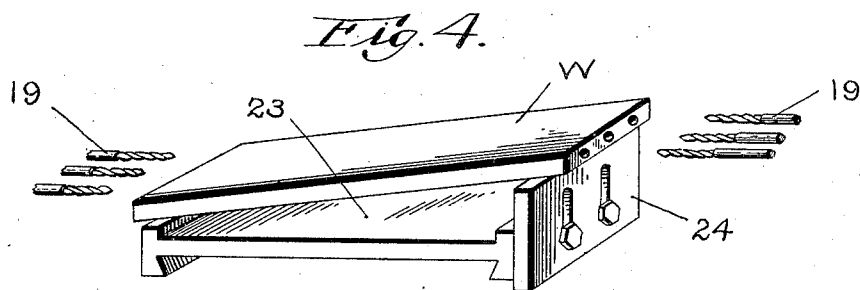
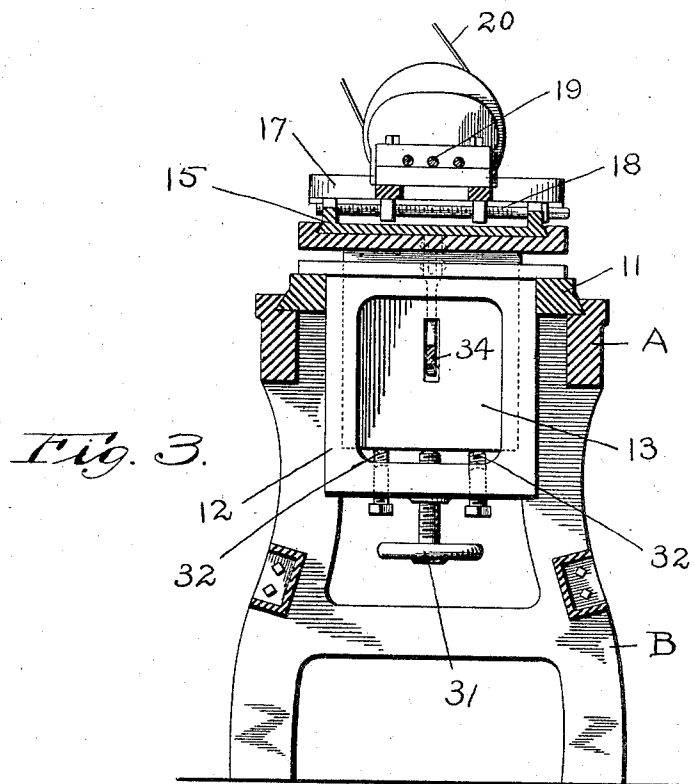
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(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

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CUTTING-OFF AND DOWEL-SOCKET-BORING OR TENON-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 689,035, dated December 17, 1901.

Application filed April 8, 1901. Serial No. 54,837. (No model.)

To all whom it may concern:

Be it known that I, EDWIN F. BRAINARD, a citizen of the United States, residing at Gardner, in the county of Worcester and State of Massachusetts, have invented a new and useful Cutting-Off and Dowel-Socket-Boring or Tenon-Forming Machine, of which the following is a specification.

This invention relates to that class of wood-working machines which are employed for cutting out pieces for making up chair-frames or similar purposes and which are designed to square off the ends of the work and bore the dowel-sockets therein or form tenons thereon; and the especial object of this invention is to improve this class of machines and enlarge the range of work for which the same may be employed by adapting the machine for the production of oblique-ended frame-pieces—such, for example, as the side pieces employed in box chair-seats or similar locations.

To this end this invention consists of the squaring-off and dowel-socket-boring machine or tenon-forming machine and of the combinations of parts therein, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying two sheets of drawings, Figure 1 is a side view of a machine constructed according to this invention. Fig. 2 is a detail view of the connections for operating the tool-carriages. Fig. 3 is a transverse sectional view of the machine, taken on the line 3 3 of Fig. 1; and Fig. 4 is a perspective view illustrating the manner in which the work is supported on the carriage and the relation of the drills or other tools thereto when the machine is adjusted to produce oblique-ended work.

In many classes of work, especially in framing box-seated chairs, the wooden strips which form the sides of the chair-seat have oblique ends or end faces which are not at right angles with their sides. None of the machines which have heretofore been employed for this class of work, so far as I am acquainted with the same, have been designed for simultaneously cutting off the ends of the oblique-ended pieces before referred to or have been capa-

ble of simultaneously boring dowel-sockets in such pieces or forming tenons thereon.

The especial object of my invention is therefore to provide a simple, efficient, and inexpensive machine which is designed to simultaneously saw or square off the ends of wooden pieces at oblique angles with their sides and to thereafter simultaneously bore dowel-sockets in the opposite ends of said pieces or form tenons thereon. To accomplish this object, a machine constructed according to this invention comprises a support for holding the work in an inclined position, so that the same may be presented to two circular saws, so that the ends thereof will be cut off at the desired angle, and two sets of tools which may be set to different relative horizontal planes and simultaneously operated to bore dowel-sockets in opposite ends of the work.

Referring to the accompanying drawings and in detail, a machine embodying this invention, as herein illustrated, comprises a frame or bed-piece A, supported on suitable legs B. Dovetailed into the bed-piece A and longitudinally adjustable thereon at one end of the frame is a supporting-carriage 10, and longitudinally adjustable on the frame A, near its opposite end, is a supporting-carriage 11.

In setting the machine to different lengths of stock the supporting-carriages 10 and 11 are set to different relative longitudinal positions on the bed-piece A. Formed integrally with or secured to the supporting-carriage 11 is a guide frame or well 12, and vertically movable in the guide frame or well 12 is a square plunger or frame 13, carrying a supporting-plate 14 at its upper end. Movably mounted in the supporting-carriage 11 and plate 14 are the tool-carriages 15 and 16. The spindles and driving-gear for turning the same in the carriages 15 and 16 are similar in construction, and a reference to one such set of parts will suffice. As herein illustrated, this mechanism comprises a screw 18 for transversely adjusting a bearing-piece 17, journaled in which are the spindles 19. As herein illustrated, there are three spindles 19 in each set, and said spindles are geared together by any of the usual connections, so

that they may be turned or driven by driving-belts 20.

Near its center the frame or bed-piece A is provided with a frame 21, vertically adjustable, in which is a support 22, and dovetailed onto the support 22 is a transversely-movable carriage 23. Adjustably secured at one end of the carriage 23, as most clearly illustrated in Fig. 4, is a jig or end piece 24 for holding the work W at different relative inclinations.

The work W may be clamped in place in its carriage 23 by any of the ordinary clamping devices, which need not be herein described or shown, and cooperating with the carriage 23 are two cross-cut circular saws S for cutting or trimming off the ends of the stock to make the same of proper length.

The operating connections for moving up the drills or other tools to bore dowel-sockets in the ends of the work or to form tenons thereon comprise a pulled-down strip 25, controlled from a treadle. Connected to the strip 25 is a link 26 for operating a bell-crank lever 27, journaled in the frame of the machine and connected to operate the carriage 16, and also connected to the strip 25 is a link 28, adjustably connected by a bolt 30 to a link 29, which is connected to operate a bell-crank lever 34, pivoted in the plunger or vertically-movable frame 13 and connected at its upper end to operate the tool-carriage 15.

In adjusting and operating a machine as thus constructed the carriage-jig 24 is first set to support the work at the desired inclination, and the vertically-movable plunger or frame 13 is raised by means of a hand-wheel 31 to bring its set of tools to a sufficiently-high elevation to properly engage the ends of the work. The vertically-movable plunger or frame 13 may be clamped in its adjusted position by a clamp-bolt 33, and threaded in the well or frame 12 I preferably employ stop-bolts or bottom screws 32, which limit the distance to which the plunger or frame 13 can be lowered, so that when the same has been lowered far enough to rest on said screws 32 the two sets of tools will be brought to the same horizontal plane, so that the machine will be adapted for use on square-ended work. In the drawings I have illustrated the spindles 19 as provided with ordinary drills or boring-bits for forming dowel-sockets in the opposite ends of the work.

If instead of forming dowel-sockets in the work it is desired to form tenons thereon, the ordinary cutting tools or chucks may be substituted for the drills, as in the ordinary practice with machines of this kind.

When the machine is properly adjusted to produce the work desired, the ends of the wooden piece being operated upon will be sawed off by the circular saws S when the carriage is moved transversely, and the carriage then being drawn back the two sets of drills may be simultaneously advanced by the treadle connections before referred to to bore dowel-sockets in the opposite ends thereof.

In the machine as herein illustrated I have shown only one of the tool-carriages supported on a vertically-movable support. It is to be understood, however, that both of said carriages may be mounted on vertically-adjustable supports if it is desired to give the machine a wider range of adjustment than herein illustrated.

I am aware that numerous changes may be made in my improved machine by those who are skilled in the art without departing from the scope of my invention as expressed in the claims. I do not wish, therefore, to be limited to the construction which I have herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a machine for simultaneously boring dowel-sockets in frame-pieces for chairs or similar purposes, the combination of a support for holding the work in an inclined position, tools for engaging the opposite ends of the work, means for setting the tools at opposite ends of the work to different elevations, and connections for operating said tools, substantially as described.

2. In a machine of the class described, the combination of a transversely-movable carriage, means for supporting the work thereon in an inclined position, saws cooperating with said carriage for cutting the work to length, cutting-tools such as drills for boring dowel-sockets in opposite ends of the work, means for setting said drills to different elevations, and connections for operating said drills, substantially as described.

3. In a machine of the class described, the combination of a bed-piece or frame, primary carriages longitudinally adjustable thereon, a longitudinally-movable tool-carriage mounted in one of the primary carriages, a vertically-movable frame or plunger mounted in the other primary carriage, an adjusting-screw for setting the same to different elevations, a second tool-carriage longitudinally movable upon the vertically-movable plunger or frame, means for supporting the work in an inclined position, and treadle connections for simultaneously operating said tool-carriages, substantially as described.

4. In a machine of the class described, the combination of a frame or bed-piece, primary carriages adjustable thereon, a tool-carriage mounted in one of the primary carriages, a vertically-movable plunger or frame mounted in the other primary carriage, an adjusting-screw for setting the same to different elevations, a clamping-bolt for holding the same in its adjusted position, a second tool-carriage carried by the vertically-movable plunger or frame, a transversely-movable work-carriage having means for supporting the work in an inclined position, circular saws cooperating therewith for cutting the work to length, and treadle-controlled connections for simultaneously operating the tool-carriages, substantially as described.

5. In a machine of the class described, the combination of a frame or bed-piece, a primary carriage longitudinally adjustable thereon, a tool-carriage mounted in one of the primary
5 carriages, a vertically-movable plunger or frame mounted in the other primary carriage, an adjusting-screw for setting the same to different elevations, a second tool-carriage carried by the vertically-movable plunger or
10 frame, an operating bell-crank for the first-named tool-carriage journaled in the frame of the machine, an operating bell-crank for the second-named tool-carriage journaled in the vertically-movable plunger or frame, and
15 a treadle mechanism for operating said bell-cranks, said treadle mechanism having an adjustable connection with the second-named bell-crank, substantially as described.

6. In a machine of the class described, the
20 combination of a frame or bed-piece, primary carriages longitudinally adjustable thereon, a tool-carriage mounted in one of said primary carriages, a vertically-movable plunger or

frame mounted in the other of said primary
carriages, a second tool-carriage supported 25
by the vertically-movable plunger or frame, a transversely-movable work-carriage, means for supporting the work in an inclined position therein, circular saws coöperating with
30 said work-carriage, and operating connections for the tool-carriages comprising a bell-crank lever pivoted in the frame and connected to operate the first-named tool-carriage, a
bell-crank lever pivoted in the vertically-mov- 35
able plunger or frame for operating the second-named tool-carriage, and a treadle mechanism having an adjustable connection with the last-named bell-crank, substantially as described.

In testimony whereof I have hereunto set 40
my hand in the presence of two subscribing witnesses.

EDWIN F. BRAINARD.

Witnesses:

THATCHER B. DUNN,

FLORENCE L. MOORE.