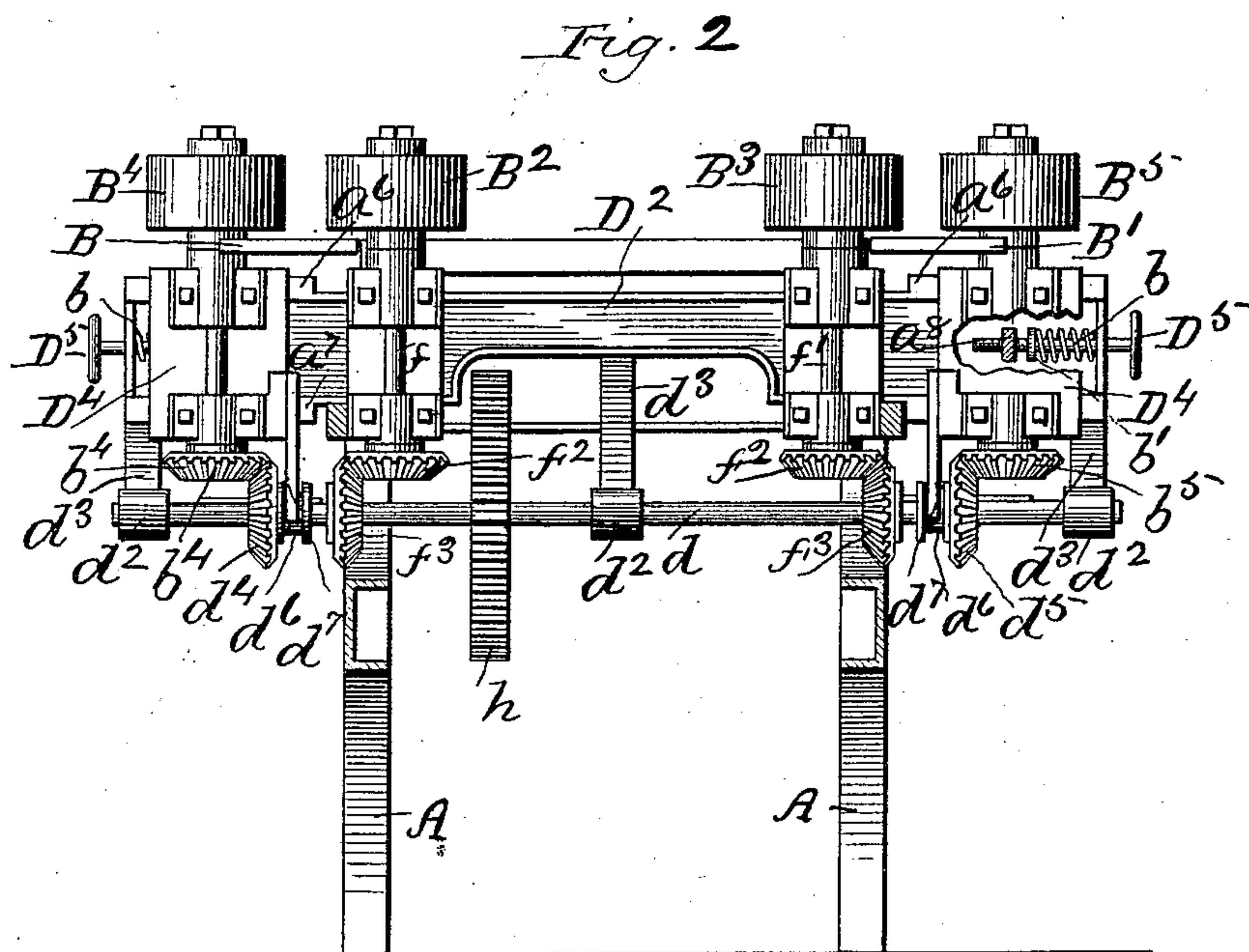
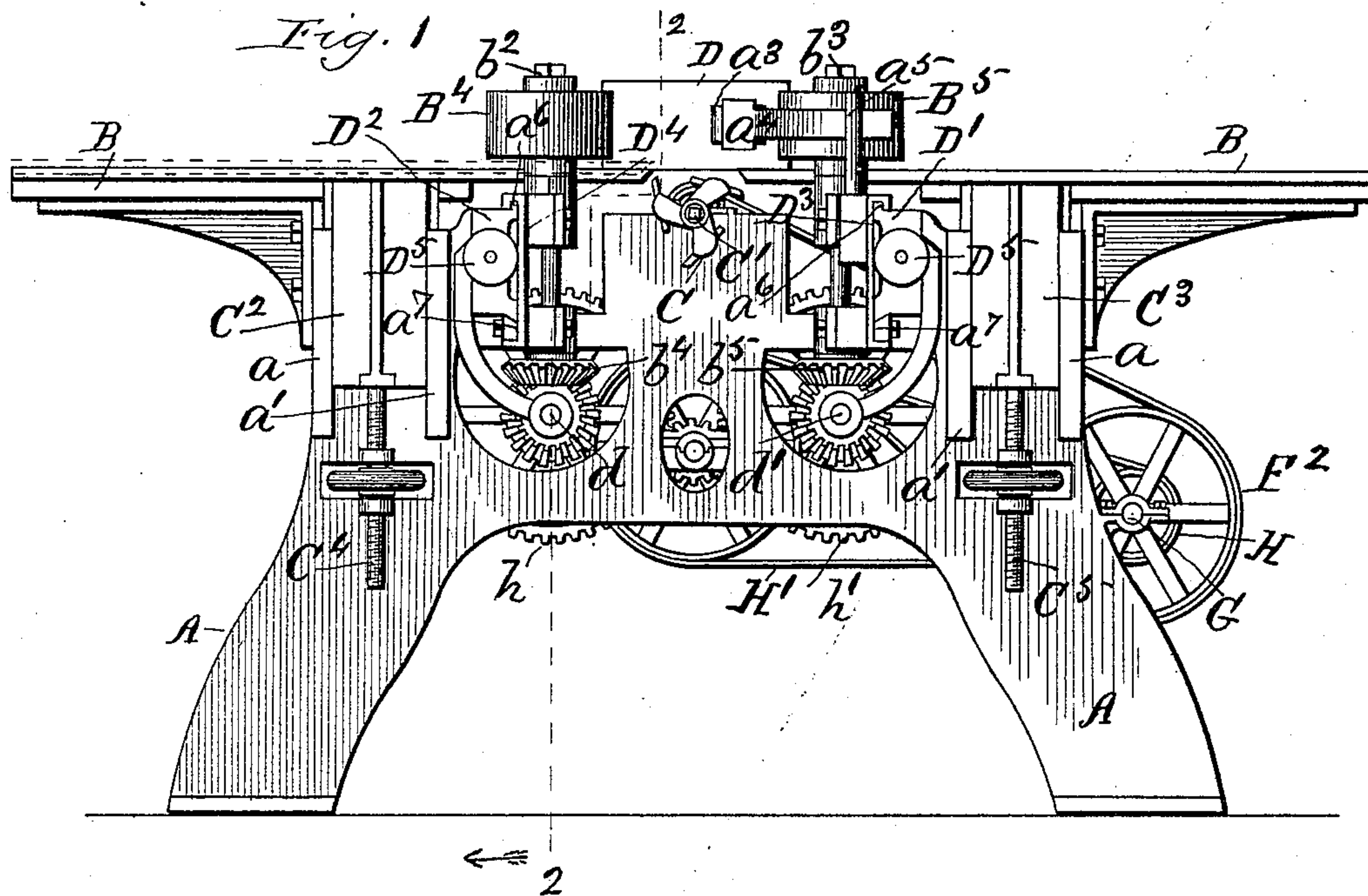


E. FISCHER.  
BOX BOARD MATCHER AND JOINTER.

No. 481,752.

Patented Aug. 30, 1892.



Witnesses  
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(No Model.)

2 Sheets—Sheet 2.

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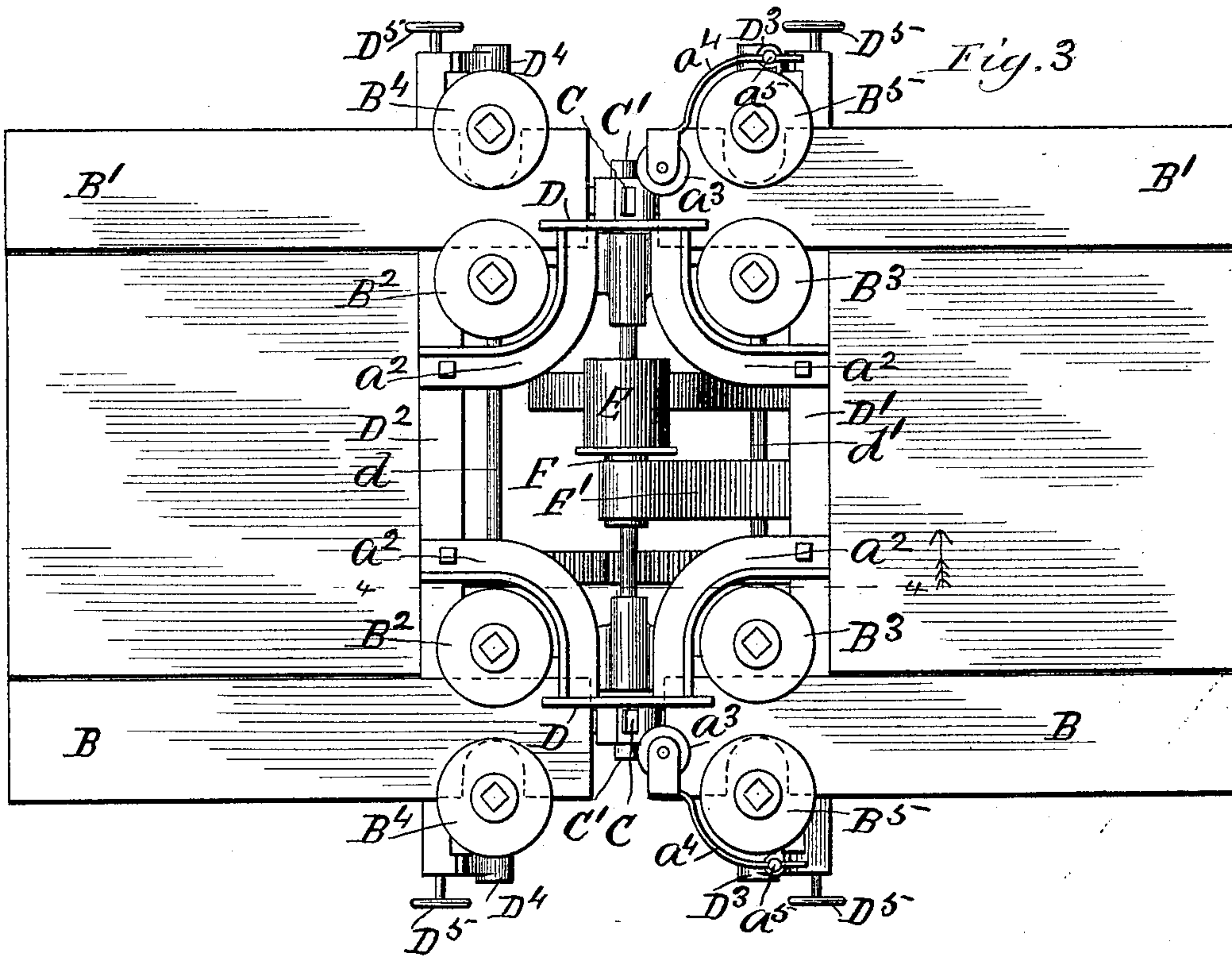
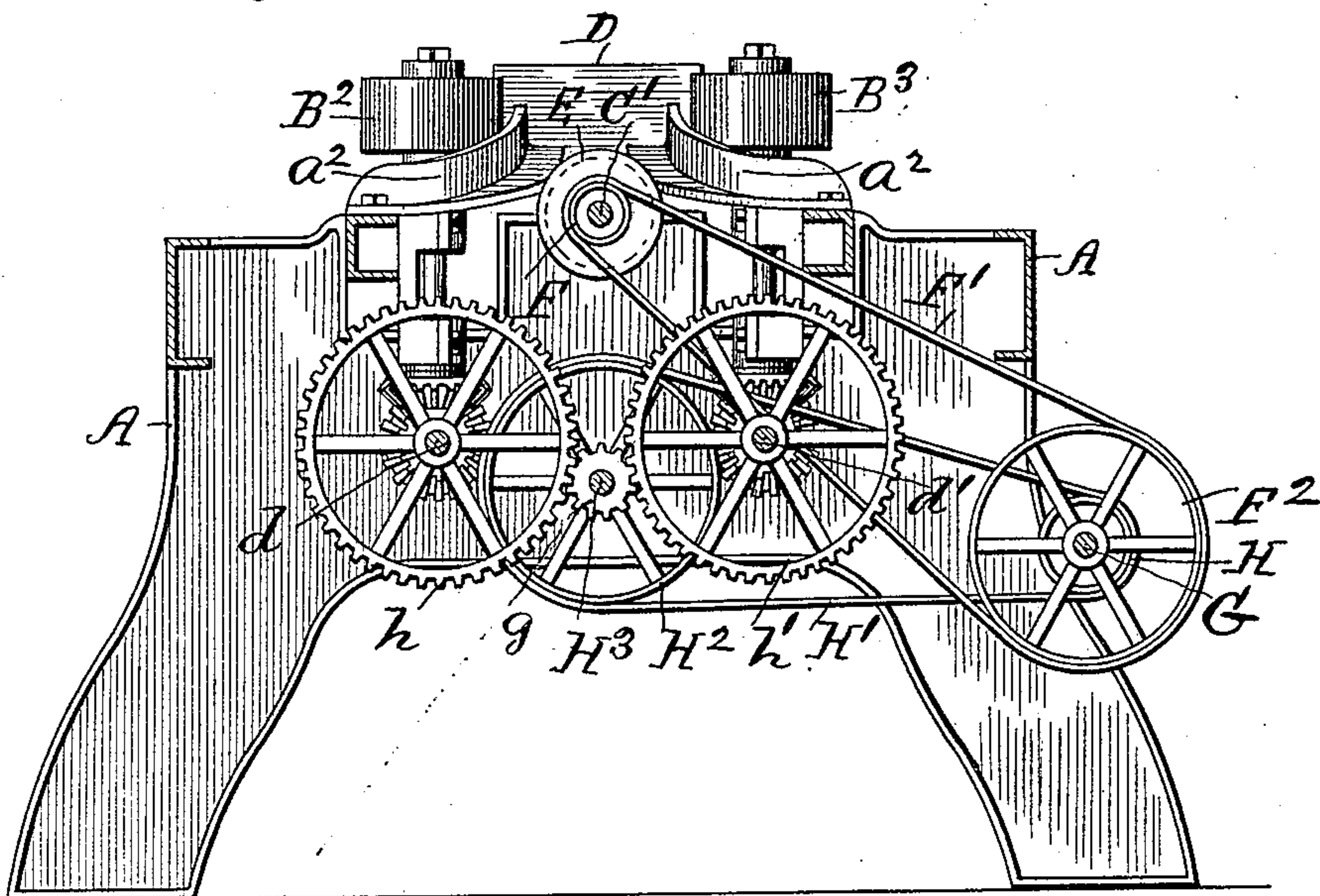


Fig. 4



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# UNITED STATES PATENT OFFICE.

ENGELBERT FISCHER, OF CHICAGO, ILLINOIS.

## BOX-BOARD MATCHER AND JOINTER.

SPECIFICATION forming part of Letters Patent No. 481,752, dated August 30, 1892.

Application filed March 7, 1890. Serial No. 343,044. (No model.)

*To all whom it may concern:*

Be it known that I, ENGELBERT FISCHER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Box-Board Matchers and Jointers, of which the following is a full, clear, and exact description, that will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in machines for matching and jointing box-board stuff, and has for its object to provide improved features for adjusting the feed-tables and carriages and means for transmitting motion to the different parts, as will be hereinafter set forth.

This machine is a double one, both sides being alike and the same reference characters being used on duplicate parts.

Figure 1 is a side elevation of a machine embodying my improved features; Fig. 2, a vertical transverse section in plane 2, Fig. 1, looking in the direction indicated by the arrow; Fig. 3, a plan; and Fig. 4, a vertical transverse section in plane 4, Fig. 3, looking in the direction of the arrow.

Referring to the drawings, A represents the side parts of the supporting-frame; B B', the feed-tables; B<sup>2</sup> B<sup>3</sup>, the inside feed-rollers; B<sup>4</sup> B<sup>5</sup>, the outside feed-rollers; C, the cutter-heads, and C' the driving-shaft journaled in the frame, the cutter-heads being mounted on the respective ends of the same.

The feed-tables on the respective sides of the machine are in two parts, the cutter-head being located between the inner adjacent ends, as shown in Figs. 1 and 3. The vertical slide-plates C<sup>2</sup> C<sup>3</sup> are secured to the under side of the feed-tables and move in the guides a a' a'. The hand-screws C<sup>4</sup> C<sup>5</sup> engage with the lower end of the slide-plates, and thus provide for a vertical adjustment of the feed-tables with reference to the cutter-heads in taking off a light or heavy cut from the material. The gage-plates D are rigidly secured to the outer ends of the curved arms a<sup>2</sup> a<sup>2</sup>, the opposite ends of said arms being bolted to the cross-bars D' D<sup>2</sup> of the frame, as shown in Figs. 3 and 4.

The material or stuff, as it is fed through

the machine, is automatically held against the gage-plates D by means of the presser-roller a<sup>3</sup>, journaled between the bifurcated ends of the spring-arm a<sup>4</sup>, the opposite end of which is secured in the post a<sup>5</sup>, inserted in the upper side of the carriage D<sup>3</sup> on the feed side of the cutter-heads.

There are two carriages D<sup>3</sup> D<sup>4</sup> at each side of the machine, both having an automatic and a hand adjustment in a horizontal plane—that is, toward and away from the gage-plates against which the material or stuff is compressed on its passage through the machine. The object of this arrangement is to set the carriages with reference to the thickness and irregular thickness of the material—that is, an automatic adjustment within a certain limit and by hand when the limit is greater—as will now be explained. The top parts of the carriages D<sup>3</sup> D<sup>4</sup> rest upon and slide along on the guide-rib a<sup>6</sup>, formed on the upper side of the cross-bars D' D<sup>2</sup>, (see Figs. 1 and 2,) and the lower parts bear upwardly against the companion rib a<sup>7</sup>, formed on the under side of said cross-bars, which arrangement retains the carriages in their proper position and permits of a horizontal adjustment.

The hand adjustment is accomplished through the medium of the hand-screws D<sup>5</sup>, which pass through the flanged ends of the cross-bars and have a threaded engagement with the lug a<sup>8</sup>, formed on the respective carriages, as shown by the broken-away part at the left side of Fig. 2. By turning these hand-screws the carriages may be moved in or out, as required.

On each of the four hand-screws D<sup>5</sup> is placed the coiled springs b, which are compressed between the inner face of the outer end of the cross-bars and the shoulder b', formed on the hand-screws, as shown in the broken-away part on the left side of Fig. 2. This arrangement provides for the automatic adjustment of the carriages—that is, suppose the carriages are set by hand for boards that have a uniform thickness of one-half of an inch. Now suppose a board is placed in the machine the thickness of which varies from one-half of an inch at one end to three-fourths of an inch at the other. The carriages will expand or yield in an outward direction



to freely allow the passage of the thicker end and then be automatically returned to their normal position by means of the coiled springs on the hand-screws. The presser-roller  $a^3$  maintains a uniform tension on the material by reason of the spring-arm carrying the same being connected to and moving with the carriages.

The vertical shafts  $b^2 b^3$ , carrying the outside feed-rollers  $B^4 B^5$  on their upper ends and the bevel-pinions  $b^4 b^5$  on their lower ends, are provided with suitable journal-bearings in their respective carriages  $D^3 D^4$ . The horizontal shafts  $d d'$  extend clear across the width of the machine under the carriages (see Figs. 2 and 3) and are provided with the journal-bearing  $d^2$  in the hangers  $d^3$ , supported from the cross-bars. The bevel-pinions  $d^4 d^5$  are feathered (see Fig. 2) on the shafts  $d d'$ , and are provided on their rear sides with the extended hubs  $d^6$ , having an annular groove in which loosely rests the lower forked end of the vertical arm  $d^7$ , the upper end of said arm being rigidly secured to the inner side of the respective carriages, whereby the pinions  $d^4 d^5$  are adapted to have a longitudinal movement, as well as a rotary one, on their shafts and follow the movement of the carriages, remaining in engagement with the companion pinions  $b^5 b^6$  and transmitting the required motion to the feed-rolls.

The vertical shafts  $f f'$  are provided with suitable journal-bearings in the cross-bars  $D' D^2$  and carry the inside feed-rollers  $B^2 B^3$  on their upper ends and the bevel-pinions  $f^2$  on their lower ends. The pinions  $f^2$  engage with the companion pinions  $f^3$ , mounted on the shafts  $d d'$ , by which means the required motion is transmitted to the sets of inside feed-rollers. The driving or cutter-head shaft  $C'$  has the band-pulleys  $E$  and  $F$  (see Fig. 3) mounted thereon. The pulley  $E$  takes the belt from the motive power. The machine-belt  $F'$  connects the pulley  $F$  with the band-pulley  $F^2$ , (see Fig. 4,) mounted on the counter-

shaft  $G$ , provided with journal-bearings supported from the frame. A second pulley  $H$  is mounted on the counter-shaft  $G$  and carries the belt  $H'$ , running over the pulley  $H^2$ , mounted on the central shaft  $H^3$ . The pinion  $g$  is mounted on the shaft  $H^3$  and engages with the gear-wheels  $h h'$ , located on each side of the same and mounted on the shafts  $d d'$ , by which arrangement the required motion is transmitted from the driving or cutter-head shaft to all the other parts and shafts journaled in the machine.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a matching and joining machine, the combination, with the feed-tables, the inner fixed feed-rollers, the outer feed-rollers having a positive movement toward the fixed rollers as well as a spring movement toward the same, of gage-plates located between the pairs of inner feed-rollers, curved arms rigidly supporting said gage-plates at their outer ends, cross-bars to which said arms are attached, the spring-arms  $a^4$ , adjustably mounted on the frame, and the rollers  $a^3$ , carried by said arms, substantially as described.

2. In a matching and joining machine, the combination, with the feed-tables, the inner fixed feed-rollers, the outer feed-rollers having a positive movement toward the fixed rollers as well as a spring movement toward the same, and rigid gage-plates located between the pairs of inner feed-rollers, of the posts  $a^5$ , mounted on the carriages of the movable feed-rollers, spring-arms  $a^4$ , carried thereby, and the rollers  $a^3$ , carried by the inner bifurcated ends of the spring-arms, thereby giving a positive as well as a spring adjustment to said rollers, substantially as described.

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Witnesses:

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