

(No Model.)

4 Sheets—Sheet 1.

G. H. MILLEN & A. DEROUIN.

DOVETAILING MACHINE.

No. 336,130.

Patented Feb. 16, 1886.

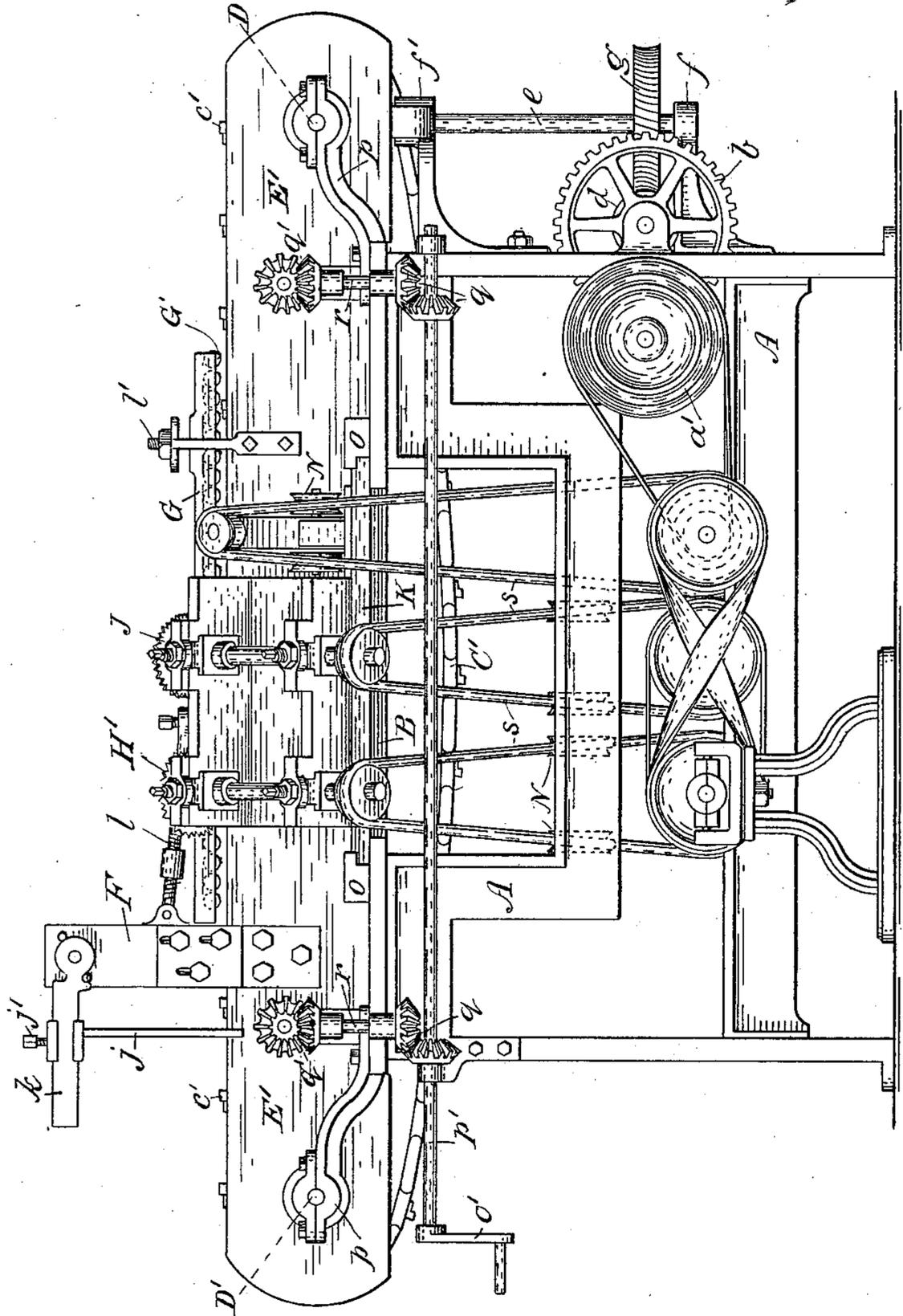


Fig. 1

Witnesses.
 Wm. C. Shipley
 J. A. Kennedy

Inventors.
 G. H. Millen
 Alfred Derouin
 By P. T. Dodge
 Atty.

(No Model.)

4 Sheets—Sheet 2.

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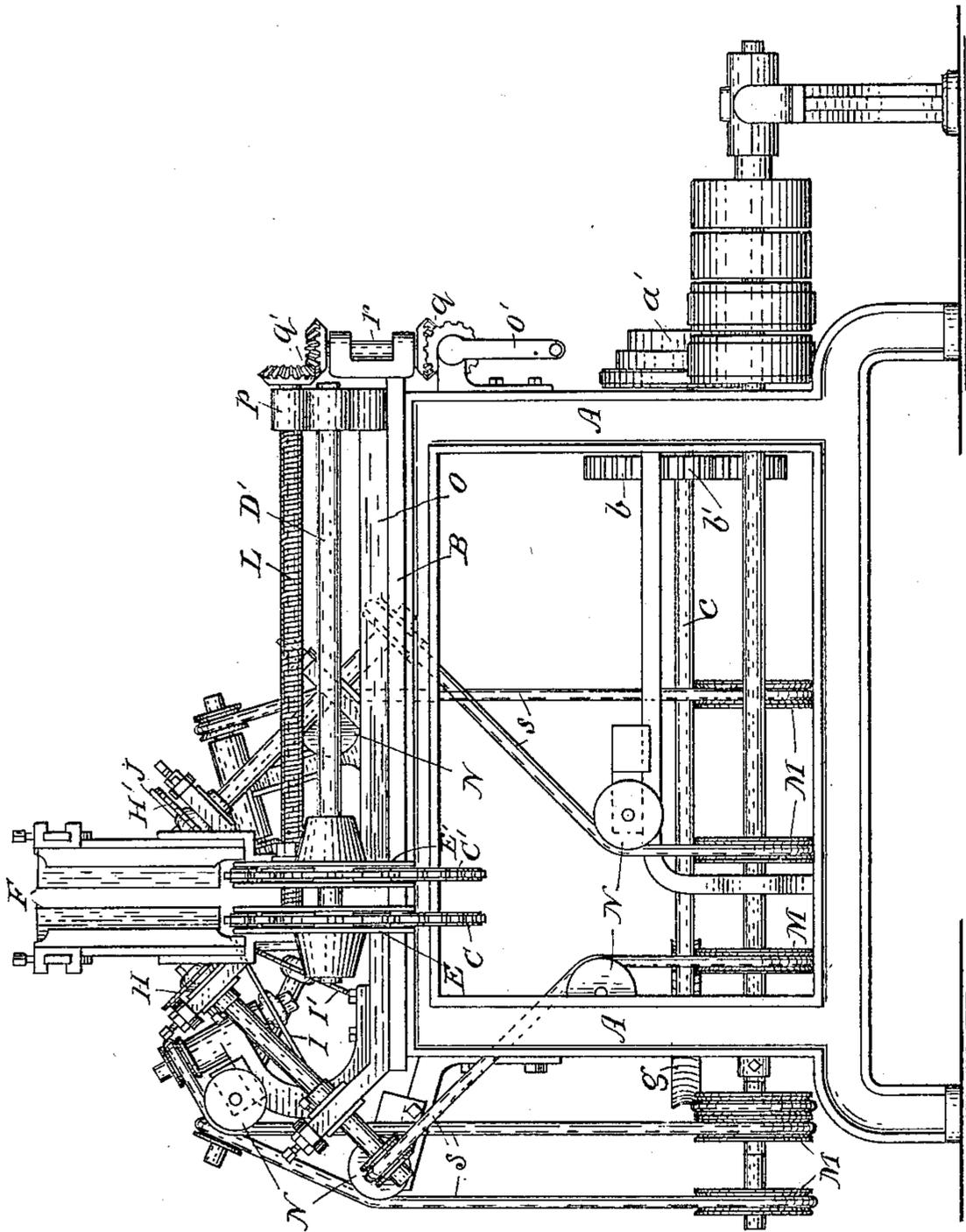


Fig. 2

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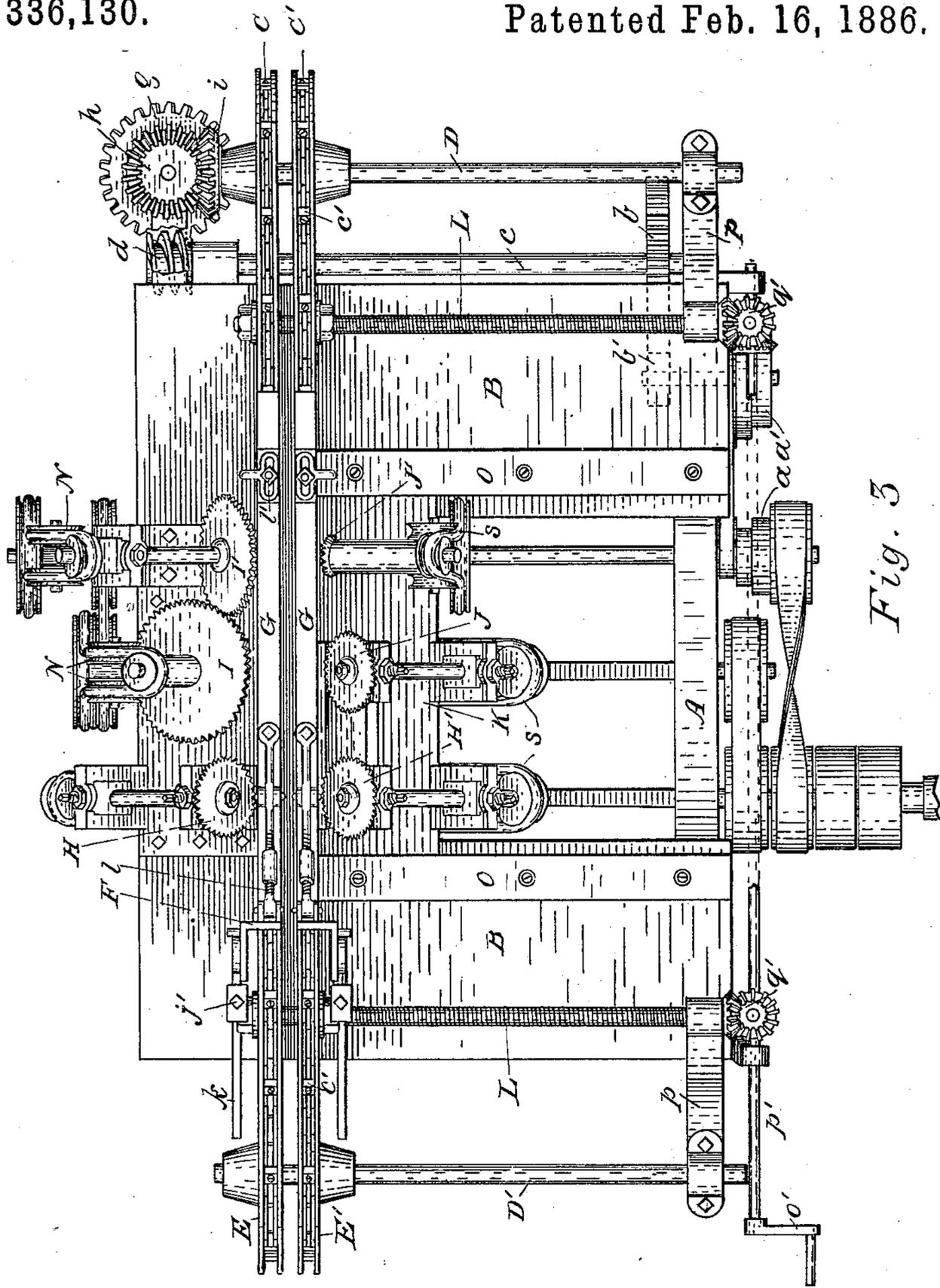


Fig. 3

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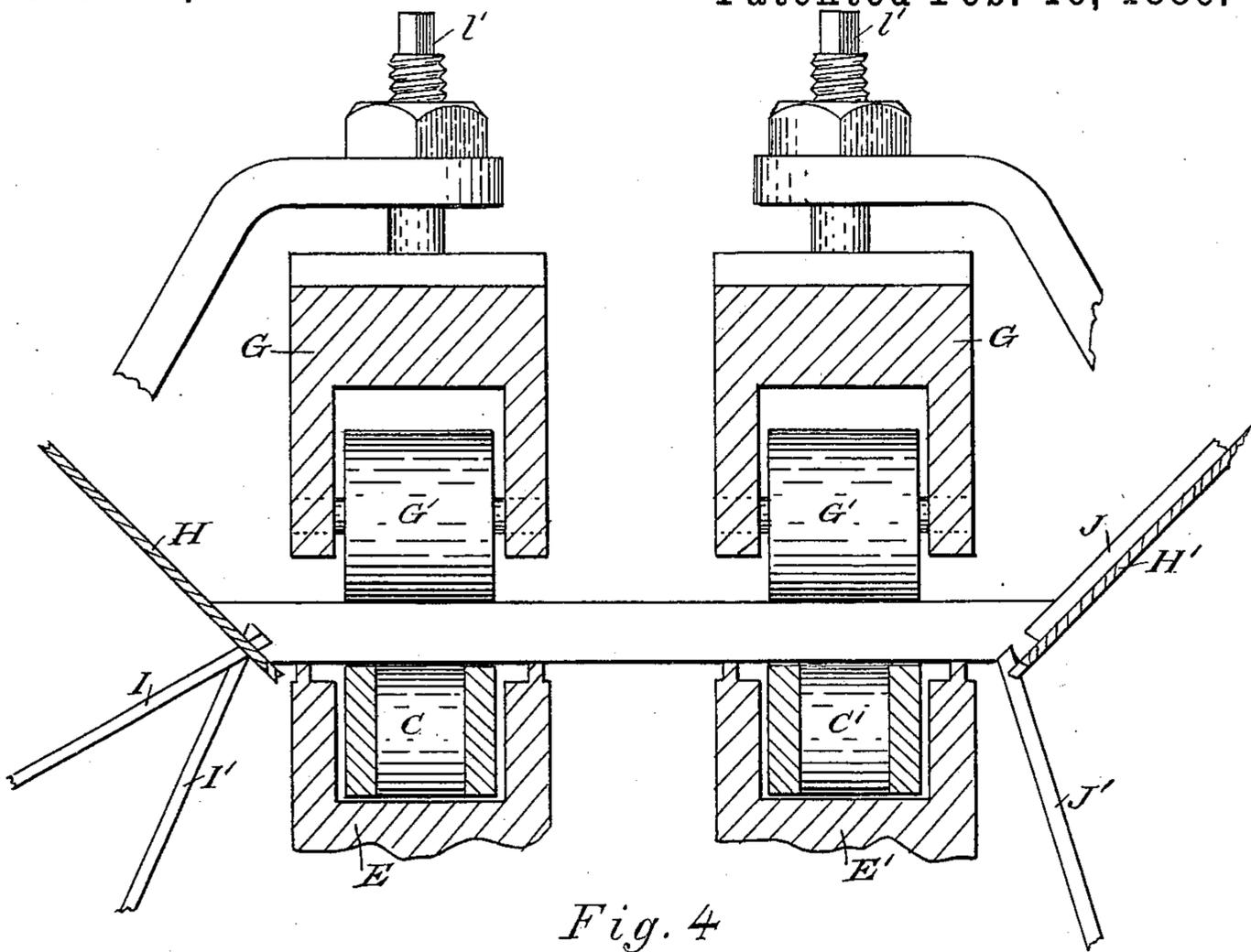


Fig. 4

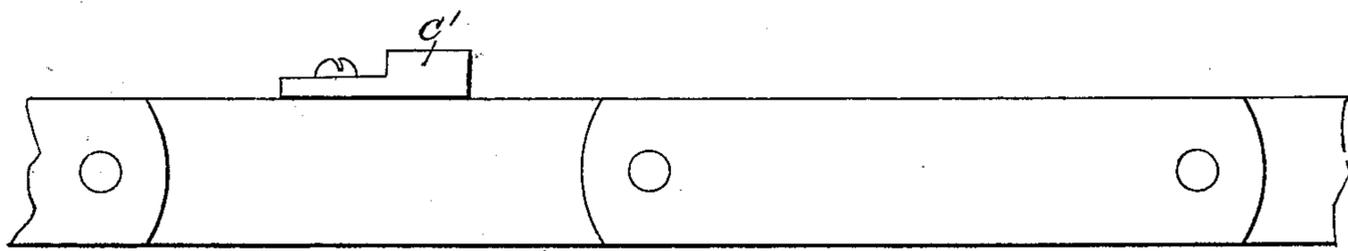


Fig. 5

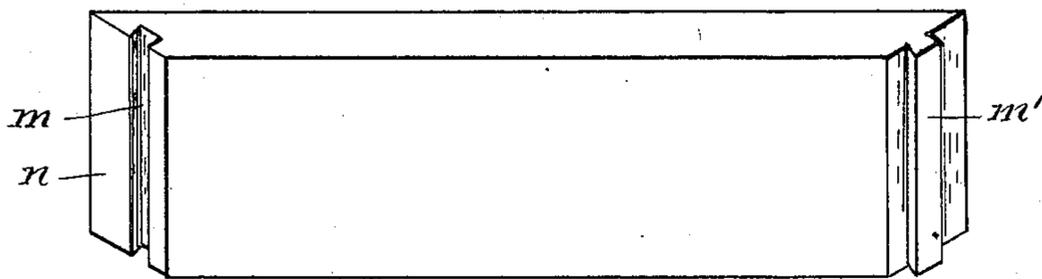


Fig. 6

Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE H. MILLEN AND ALFRED DEROUIN, OF HULL, QUEBEC, CANADA.

DOVETAILING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 336,130, dated February 16, 1886.

Application filed September 29, 1885. Serial No. 178,526. (No model.) Patented in Canada October 7, 1885, No. 22,600.

To all whom it may concern:

Be it known that we, GEORGE HENRY MILLEN and ALFRED DEROUIN, of Hull, in the county of Ottawa, in the Province of Quebec, Canada, have invented certain Improvements in Boxing-Machines, of which the following is a specification.

Our invention relates to an improved machine for the manufacture of rectangular wooden boxes; and it consists in a peculiar combination and organization of parts, as hereinafter described and specifically claimed, whereby the boards or pieces of lumber to form the sides of the box are acted upon and finished at the two ends simultaneously.

Among the advantages offered by our invention are, first, a large saving, not only of the material required in the construction of the boxes, but also of the time required for putting the parts of the boxes together; and, second, being able to work hard, knotty, or cross-grained woods, and at a much faster rate than similar work can be done by any other machine at present known or used.

In the following description of our improved boxing-machine reference is had to the accompanying drawings, in which—

Figure 1 is a side elevation, Fig. 2 an end elevation, and Fig. 3 a plan view, of a machine embodying our invention. Fig. 4 is an enlarged detail drawing showing the different positions of the saws and cutters by means of which the required shapes are given to the ends of the pieces; Fig. 5, a full-size view of a part of the feed-chain; and Fig. 6 is a perspective view of a box side or end as finished by our machine.

A represents the frame or body of the machine. B is a top or cover secured on the frame A and carrying the saw-brackets and feed-works, which we will now proceed to describe.

The feed-works, by which the "stocks"—as the unfinished sides and ends of the boxes are called—are carried past the saws, consist, mainly, in the two endless pitch-chains C C', running over horn-wheels on the head-shaft D and tail-shaft D', and through planed channels in the upper parts of the chainways E E'. The head horn-wheels and the head-shaft D, on which they are placed, are oper-

ated by the same power which drives the saws and cutters, through the cone-pulleys *a* and *a'*, spur-gears *b* and *b'*, which are journaled in bearings in the frame A, the shaft *c*, carrying the spur gear-wheel *b* and the screw-pinion *d*, the spindle *e*, journaled in the brackets *f f'* and carrying the screw-wheel *g* and bevel gear-wheel *h*, and the bevel gear-wheel *i*, which latter is keyed on the head-shaft D.

An arrangement for instantly starting or stopping the feed while the saws are running consists in allowing the miter gear-wheel *h* to slide down on the spindle *e* and out of gear with the wheel *i*. The wheel is held up in gear by a crotched lever, which is brought conveniently under the control of the operator.

To the alternate links of the pitch-chain C are attached the dogs *c'*, which project above the top edges of the chainways E and E', so as to move the stocks before them past the saws and cutters.

F is a three-sided upright case standing on the chainways E and E', and which serves as a magazine for holding the stocks, which have been previously brought to the required thickness and width and to a suitable length to allow of the subsequent dressing of their ends by the saws and cutters. The stocks, being piled on each other in the case, are prevented from falling outward by the adjustable keepers *j*, which are held by the set-screws *j'* where placed on the arms *k*, which are pivoted to the sides of the case F, and may be thrown backward when filling the case. The lower stock in the case is drawn out toward the saws by the dogs *c'*, which pass under them, when its place is immediately filled by the next one above it. After passing out from the rear side of the case the stocks are drawn under the binders G, which are themselves held adjustably by the screws *l* and *l'*, and which are for the purpose of holding the stocks down against the top edges of the chainways while being dressed by the saws and cutters, as shown in Fig. 4. A rolling surface is provided for contact with the stocks by means of the rollers G', which are journaled in the binders. The bearings of these rollers may be held by springs, or the rollers themselves may be faced over with rubber, by which al-

lowance is made for any unevenness in the thickness of the stocks.

The opposite ends of each stock are exact counterparts of each other—that is to say, while both are cut mainly to a miter-angle, one of the ends has formed in it the dovetailed groove *m*, while the opposite end has formed on it the dovetailed tongue *m'*, which is intended to fit accurately into the groove *m*, by which means the sides and ends of the box are held square and firmly together.

Both ends of the stock are operated upon at the same time, which necessitates the employment of a differently-arranged gang of saws and cutters for each end, those on the left-hand side, as shown in the drawings, forming the groove end, and those on the right-hand side forming the tongue end of the box side or end. The saws *H* and *H'* cut, respectively, the grooved face *n* and the beveled face of the tongue *m'*. The cutters above mentioned are simply extra thick saws, each having all of its teeth beveled to the same side, as shown in Fig. 4. The cutters *I* and *I'* have their teeth so formed as to cut the opposite sides of the groove *m* and dress out its inner face to the required depth and parallel with the outer beveled face. The cutters *J* and *J'* have their teeth formed so as to cut the sides of the tongue *m'* and the adjacent shoulders of this end of the stock.

This machine may be adjusted to make box ends and sides of various sizes by changing the height of the binders and the distance between the chainways *E* and *E'*, and between the two gangs of saws and cutters.

The chainway *E* and the brackets which carry the spindles of the saw *H* and the cutters *I* and *I'* are fixed permanently to the top *B*, while the chainway *E'* and the brackets which carry the spindles of the saw *H'* and cutters *J* and *J'* are all formed on or attached to a base, *K*, made to slide laterally on the top *B* and between the guide-strips *O*, and which may be moved up to or withdrawn from the chainway *E* by the screws *L*, journaled in the chainway *E* and the brackets *p*. These screws are turned simultaneously by the crank *o'* through the shaft *p'*, bevel-gears *q* and *q'*, and spindle *r*.

The horn-wheels which carry the endless chain *C'* slide freely endwise on the shafts *D* and *D'*, but are held to revolve with them by a key or feather fixed in the eyes of the wheels and projecting into keyways extending along the shafts.

The saws and cutters are driven, preferably, by the round belts *s* from the pulleys *M*, (shown in the lower part of the machine.) *N* are adjustable guide-pulleys, and are for the purpose of giving a proper direction to the belts *s*.

The form of our machine and the details of its construction may be varied from those herein shown and described, provided it retains essentially the characteristics above named.

We are aware that two saws have been ar-

ranged in planes oblique to each other for the purpose of cutting dovetail-grooves, and also that a saw designed to sever lumber at right angles to its face has been combined with channeling heads or cutters.

We are further aware that endless feed-chains have been combined with a receptacle from which they deliver staves at the bottom, one at a time, and to such features, separately considered we lay no claim.

We believe ourselves to be the first, however, to produce an organized machine, such as herein described, adapted to simultaneously bevel the two ends of the stock and provide one with a dovetail groove and the other with a dovetail tenon. We also believe ourselves to be the first to dress the saws in the peculiar manner and arrange them in the peculiar relations shown in the drawings. We further believe ourselves to be the first to so organize the parts that one feed-chain and an adjacent series of saws may be moved at will to and from a second feed-chain and a second series of saws.

What we claim as our invention in the above-described machine, and desire to secure by Letters Patent, is—

1. In a machine for producing box-stuff tenoned at one end and grooved at the other, the combination of the main frame, endless carrying-chains *C C'*, the saws *H*, *I*, and *I'*, located at one side of the chains in the relative positions described and shown, to bevel the end of the stock and form the groove therein, and the saws *H'*, *J*, and *J'*, located on the opposite side of the carriers in the particular relations described and shown, to bevel the opposite end of the stock and form the dovetail tenon thereon.

2. In a machine for forming box-stuff, the two groups of saws located at opposite sides thereof to operate on opposite ends of the lumber, one group embracing the beveling-saw *H* and the adjacent obliquely-arranged saws *I I'*, acting beyond the plane of the inner face of saw *H* to groove the bevel-face produced thereby, and the second group consisting of the beveling-saw *H'* and the two obliquely-arranged saws *J J'*, acting within the plane of the saw *H'* to form a tenon on the beveled face produced thereby.

3. In a machine for producing box-stuff, the combination of a guide or support for the lumber, a saw, *H'*, arranged in a plane oblique thereto to effect the beveling of the end of the lumber, a second oblique saw, *J*, to form a rabbet or shoulder on the beveled end, and a third saw, *J'*, inclined in the opposite direction, as described, to form a second shoulder or rabbet on the opposite edge of the bevel end, whereby the lumber is finished with a bevel end having a dovetailed tenon thereon.

4. In a machine for preparing box-stuff, the combination of a guide or support for the lumber, and the three saws *H' I I'*, the first acting in advance of the others and in a plane oblique to the surface of the lumber to bevel its end,

and the last two acting in planes oblique to each other and to the plane of the first saw, their edges projecting inward beyond the plane of the first saw to groove the beveled end of the lumber, as described and shown.

5. In a machine for making box-stuff, the combination, with a main frame, of the three beveling and grooving saws H, I, and I', arranged in the peculiar relations described and shown, the beveling and tenoning saws H', J, and J' in the peculiar relations described and shown, the two feed-chains and their driving-pulleys, and a laterally-movable supporting-frame, K, having the last-named saws and the guide for one of the carrier-chains attached thereto, whereby the distance between the two sets of saws and the two guides may be varied at will.

6. In combination with the feed-chains C C' and their respective guides E E', one of said chains and guides movable laterally with respect to the other, as described, the stock-holder F, consisting of the two parts or sides connected with the respective chain-guides, substantially as described, whereby the width of the receptacle is varied to correspond with the changes in the distance between the chains.

7. The main frame, the series of saws mounted in stationary bearings thereon, the feed-chain C, and the supporting-pulleys for said chain, also mounted in stationary bearings, in combination with the sliding frame K, the series of saws mounted thereon, the second feed-chain, C', the supporting-pulleys for said chain, arranged to slide upon their driving-shafts, and the guide for said chain connected to and movable with the frame K.

8. The feed-chains and their guides, adjustable to and from one another, in combination with the two-part stock-receptacle F, having its parts connected to the respective chain-guides, and the two stock-confining arms k, attached to the respective sides of the receptacle, whereby they are caused to retain their positions in relation to the receptacle, and thus adapted to act upon lumber of different lengths.

GEO. H. MILLEN.

ALFRED ^{his} × DEROUIN.
mark.

Witnesses:

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