

No. 734,169.

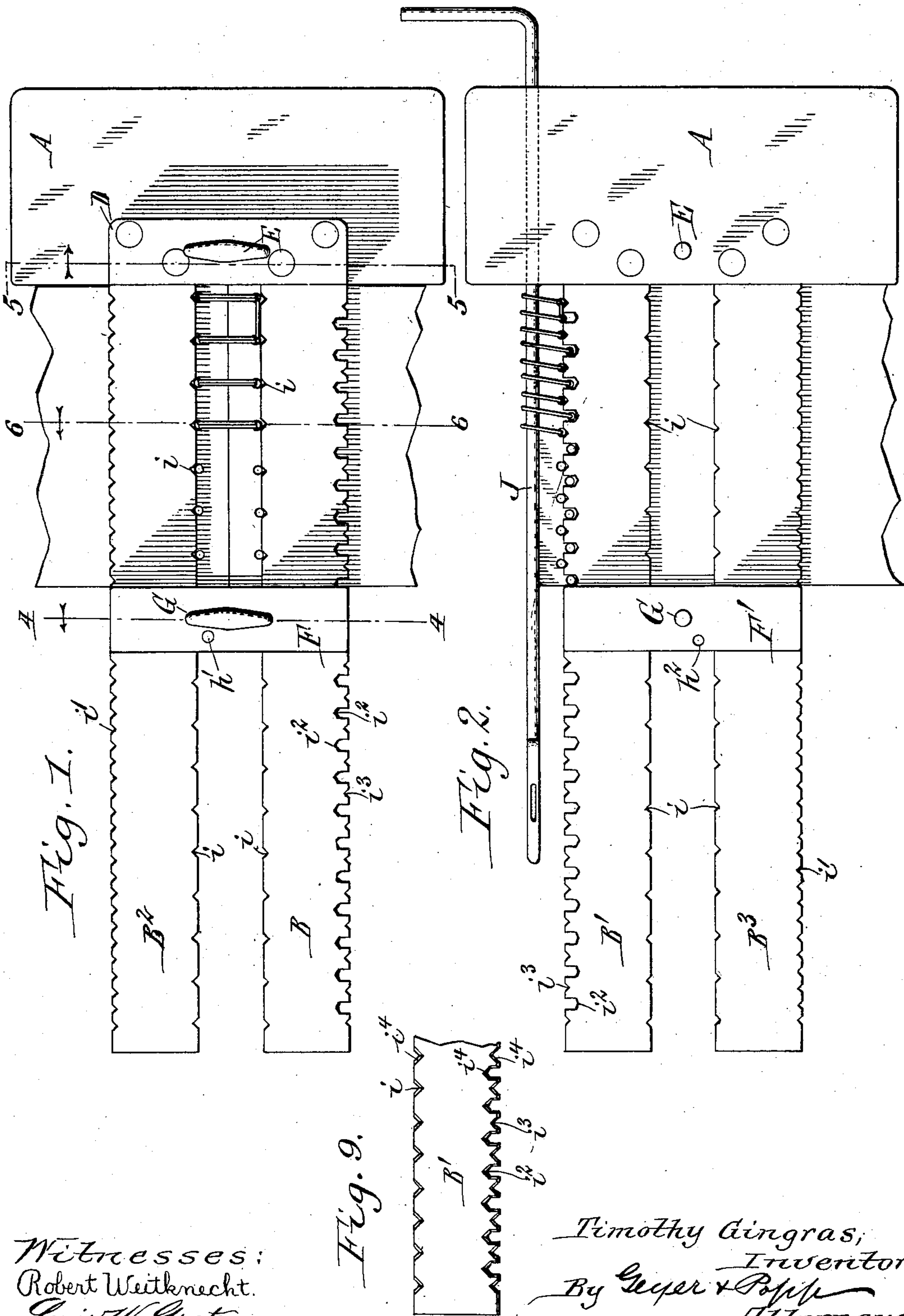
PATENTED JULY 21, 1903.

T. GINGRAS.
BELT LACING TOOL.

APPLICATION FILED FEB. 16, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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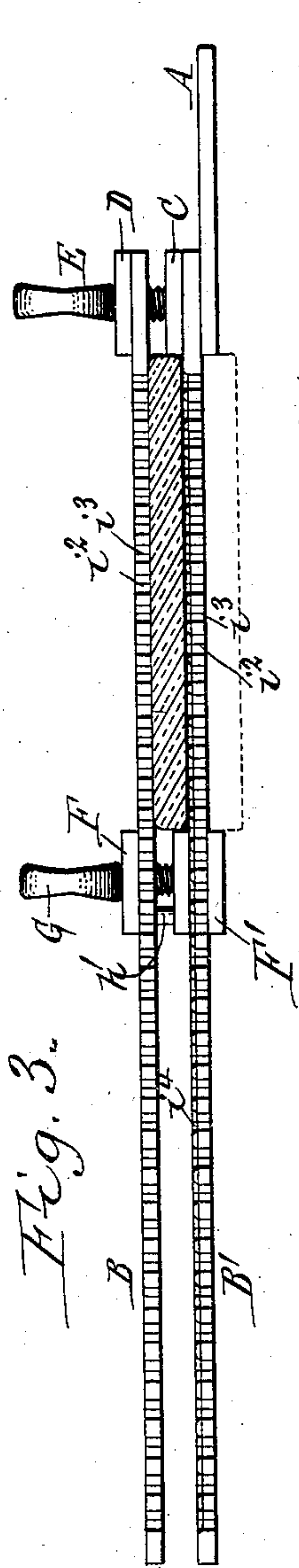


Fig. 3.

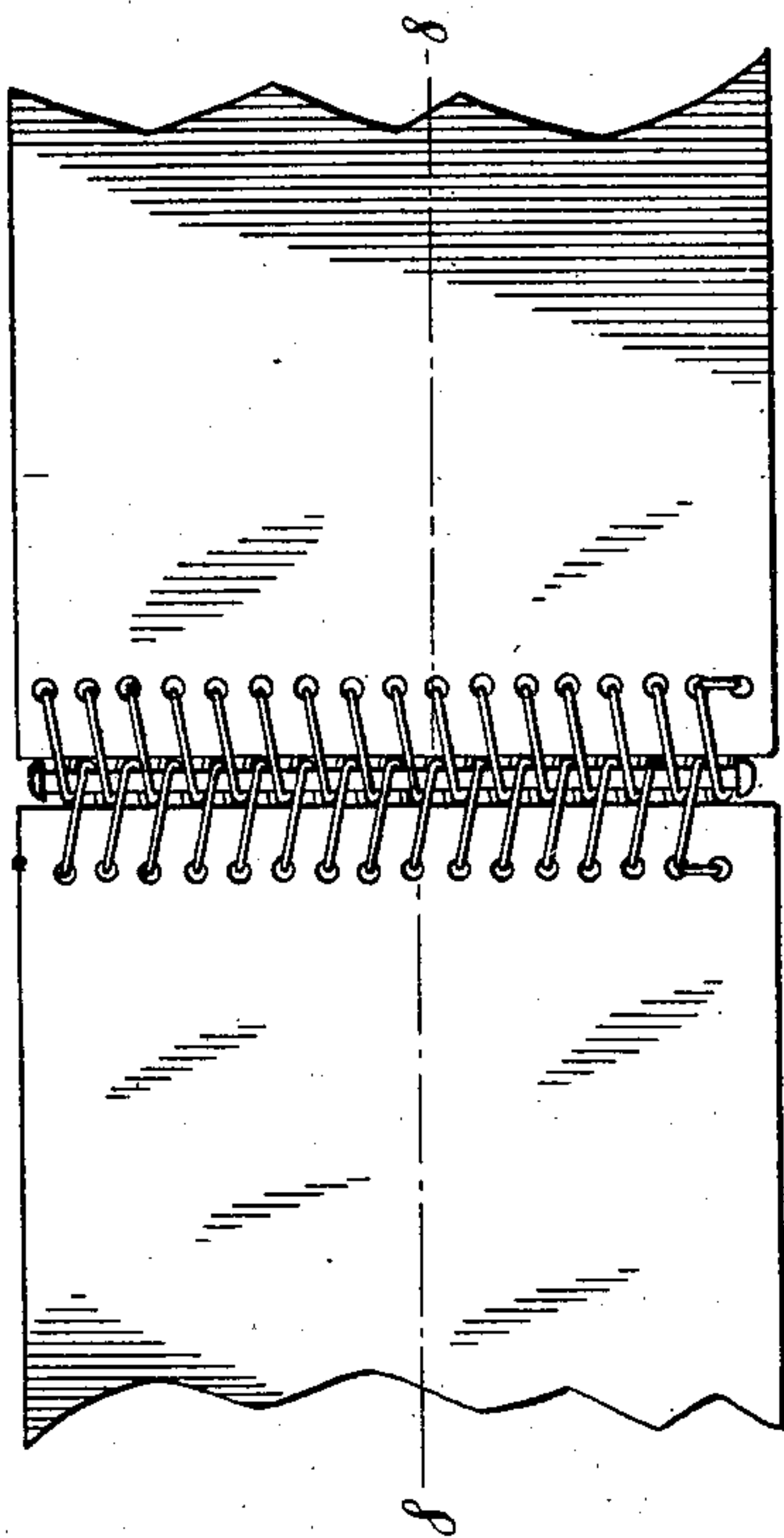


Fig. 7.

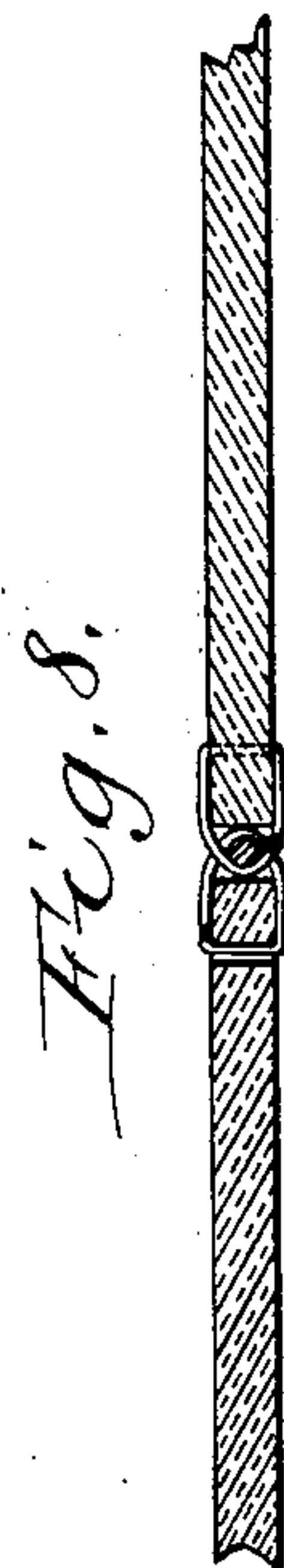


Fig. 8.

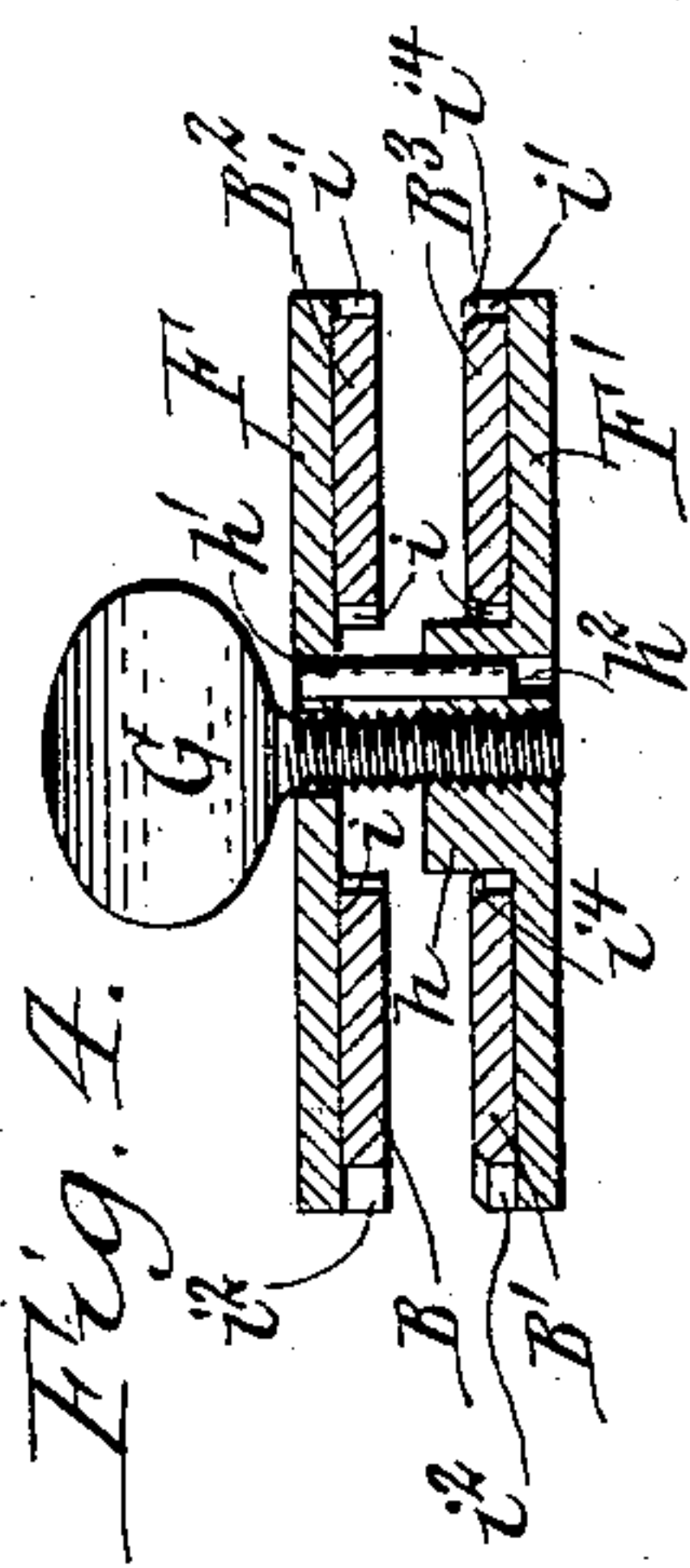


Fig. 4.

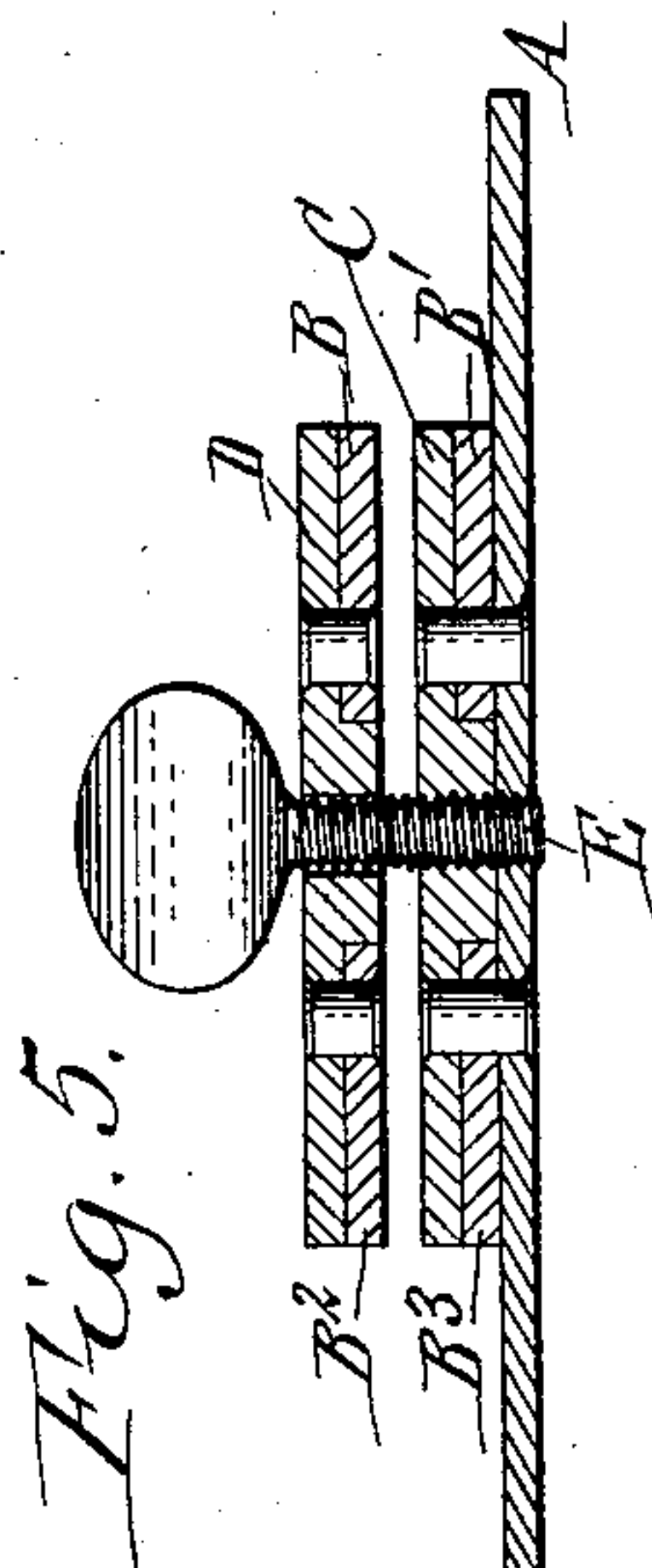


Fig. 5.

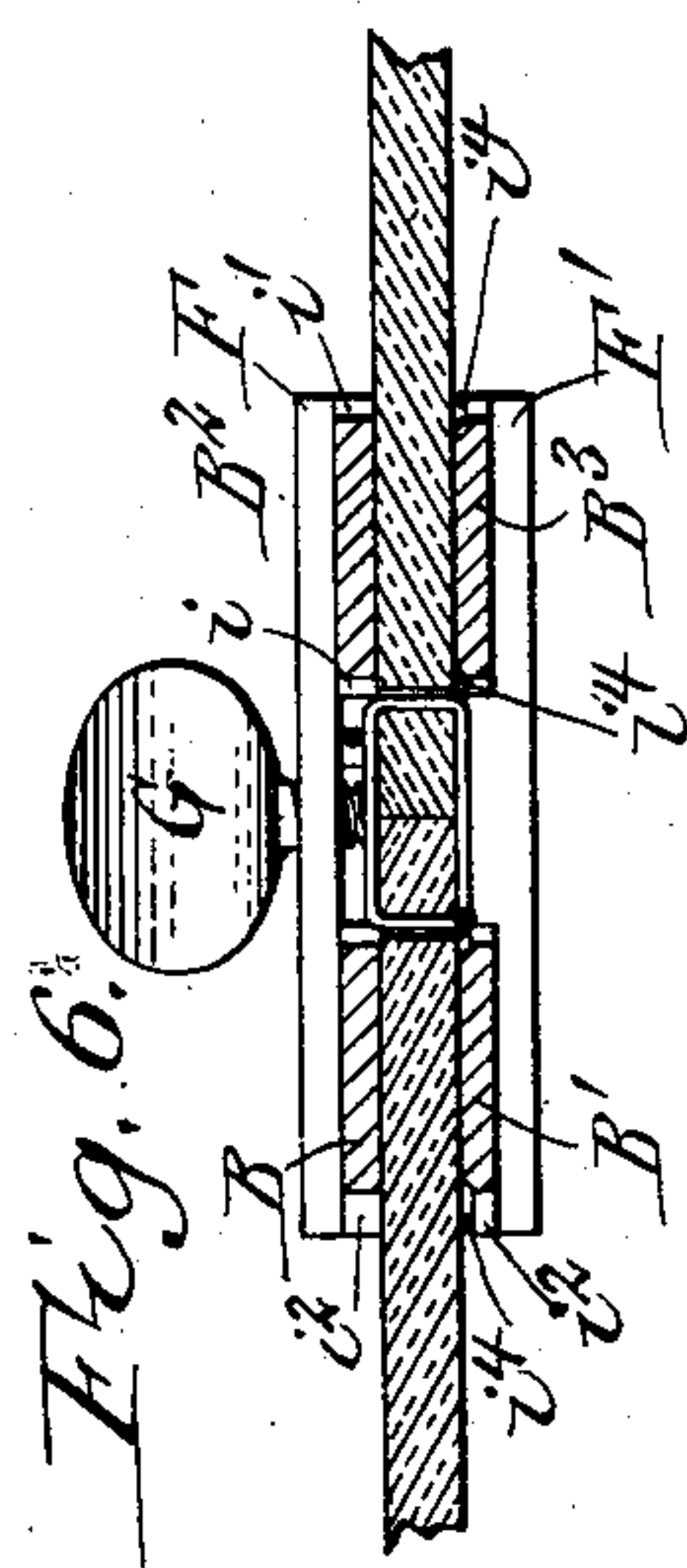


Fig. 6.

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UNITED STATES PATENT OFFICE.

TIMOTHY GINGRAS, OF BUFFALO, NEW YORK.

BELT-LACING TOOL.

SPECIFICATION forming part of Letters Patent No. 734,169, dated July 21, 1903.

Application filed February 16, 1903. Serial No. 143,521. (No model.)

To all whom it may concern:

Be it known that I, TIMOTHY GINGRAS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Belt-Lacing Tools, of which the following is a specification.

This invention relates to a tool to be used in lacing driving-belts.

It has for its principal object to provide an inexpensive and convenient device of this character which combines the features of a clamp for holding the end or ends of a belt in place and a gage for readily determining the intervals at which the perforations for the lacing are to be made, thus facilitating the lacing operation.

The invention has the further objects to produce a tool of this kind which is adjustable to different-sized belts and adapted to a variety of belt lacings or fastenings.

In the accompanying drawings, consisting of two sheets, Figure 1 is a top plan view of the tool applied to the abutting ends of a belt and showing the belt partly laced. Fig. 2 is a bottom plan view of the tool, showing its use in providing the end of a belt with one variety of coil-lacing for making a hinge-joint. Fig. 3 is a side elevation of the tool applied to a belt. Figs. 4, 5, and 6 are cross-sections in the correspondingly-numbered lines in Fig. 1. Fig. 7 is a fragmentary plan view of a belt, showing another form of the coil-lacing or hinged joint which can be made by the use of the tool. Fig. 8 is a longitudinal section in line 8 8, Fig. 7. Fig. 9 is a fragmentary top plan view of one of the lower clamping-bars.

Similar letters of reference indicate corresponding parts throughout the several views.

In its preferred form the tool comprises a base or head plate A, arranged transversely at one end of the same, and two pairs of clamping bars or jaws B B' B² B³, which extend laterally from the base-plate, like the long members of a T-square, and between which the abutting ends of a belt are adapted to be held during the lacing operation. The bars of each pair are arranged one above the other, and the two pairs of bars are arranged side

by side and separated by a space of sufficient width to afford easy access to the abutting ends of the belt for lacing the same.

The front ends of the lower bars B' B³ of the tool are tied together by a cross-bar C and are rigidly secured to the head-plate A by rivets or other suitable fastenings. The upper clamping-bars B B² are rigidly tied together at their front ends by a similar cross-bar D. A clamping or thumb screw E passes through the upper and lower cross-bars C D for drawing the front portions of the two upper bars toward the lower ones.

F indicates a movable clamping-yoke or cross-bar extending across the upper sides of the two top bars B B² at a distance from the tie-bars C D, and F' is a similar yoke extending across the under side of the bottom bars B' B³ opposite the upper yoke. These two yokes are connected together by a clamping or thumb screw G, preferably arranged midway between the pairs of clamping-bars and serving to draw the bars of each pair toward each other adjacent to the outer edge of a belt placed between the same. These clamping-yokes are adjustable lengthwise of the clamping-bars for accommodating belts of different widths. They are prevented from turning out of their proper position by any suitable means. In the preferred construction shown in the drawings the lower yoke is provided centrally with an upwardly-extending lug or tenon h, fitting between the lower clamping-bars, while the upper yoke is provided with a depending stop-pin h', which enters an opening h² in the lower yoke, as illustrated in Fig. 4.

The clamping-bars are preferably provided at their longitudinal edges with graduations or gage-notches i i' i² i³ to facilitate perforating the ends of the belt at the proper uniform intervals. To provide for uniformly perforating the abutting ends of a belt to be fastened by ordinary lacing, as shown in Fig. 1, the clamping-bars are provided in their opposing inner edges with the straight series of gage-notches i, those of each pair or set being arranged directly opposite each other. To provide for perforating the end of a belt to receive coil-lacing with uniform coils, as

shown in Figs. 7 and 8, the bars of one pair are provided in their outer edges with the straight series of gage-notches i' and to provide for perforating the belt to receive coil-lacing composed of alternating large and small coils, as shown in Fig. 2, the bars of the other pair are provided in their outer edges with series of alternating deep and shallow notches $i^2 i^3$. The notches are preferably V-shaped, as shown, for readily guiding and centering the awl or perforating-tool and also guiding the lacing into the holes of the belt without requiring special care or attention. The gage-notches of the two lower clamping-bars are arranged directly in line with the corresponding notches of the upper bars. The lower notches are hidden from view by the overlying belt, and in order to better direct the awl into them their upper edges are flared or beveled, as shown at i^4 in Figs. 3, 4, 6, and 9.

In using the tool for lacing the abutting ends of a belt the thumb-screws E G are loosened sufficiently to permit the ends of the belt to be inserted between the two pairs of jaws or bars, respectively, as shown in Figs. 1 and 6, and after squaring the ends against the lower tie-bar C the clamping-yokes F F' are shifted adjacent to the belt and the thumb-screws are tightened for firmly holding the belt in place. A row of equidistant holes is then formed in the belt on each side of the joint by an awl, which is placed successively in the series of notches i of the bars, after which the lacing is threaded through the holes in a well-known manner.

In using the tool for making a coil-lace hinged joint with alternating large and small coils, as shown in Fig. 2, one of the end portions of the belt is clamped between the pairs of clamping-bars B B³, with its ends projecting a short distance beyond the outer edges of the bars having the staggered gage-notches $i^2 i^3$. A staggered row of holes is next formed in the belt by placing the awl successively in said notches, after which a mandrel J is placed across the end of the belt and the hinge-coils are formed by threading the lacing spirally through the holes and around the mandrel, as shown in Fig. 2. The other end of the belt is then provided with a similar row of coils in the same manner, and the ends of the belt are finally connected by the usual pintle-pin or cord. The mandrel is preferably provided at its front end with an eye for the reception of the cord, as shown, so that the same may be used as a needle for conveniently drawing the cord through the coils.

If it is desired to fasten the ends of a belt with a lacing composed of uniform coils, as shown in Figs. 7 and 8, the end portions of the belt are successively clamped in the tool, with their ends projecting beyond the outer edges of the bars B² B³ having the single row

of gage-notches i' , and the belt is then perforated and provided with hinge-coils in the manner described with reference to the staggered coil-lacing.

As the clamping device formed by the yokes F F' is adjustable toward and from the head-plate A, the tool is adapted to receive belts of various widths. The spacing or gage notches of the clamping-bars also serve as guides for the end of the lacing-wire, facilitating its entrance into the holes of the belt and preventing the holes from being enlarged or torn at their edges. If desired, the shoulder formed by the front edge of this head-plate may be used as a straight edge for cutting off the end of the belt squarely by running a knife along the outer edges of a pair of clamping-bars, a belt being shown in that position by dotted lines in Fig. 3. While this head-plate is preferably employed, it is not indispensable, but may be omitted in a cheaper grade of the tool, if desired.

I have herein shown and described three different styles of belt-lacing that may be formed by the use of the tool; but the tool may also be used in forming other varieties of lacing.

The simplicity of this improved tool enables it to be used by unskilled persons. Its cost is but a small fraction of that of the lacing-machines used for the same purpose, while its portability affords an important advantage over such machines in that it permits a belt to be laced without removing it from the shafts on which the pulleys are mounted. This saves the trouble and inconvenience of removing and replacing a shaft where the belt runs around pulleys located between the parts of a frame or other structure.

I claim as my invention—

1. A belt-lacing tool, having a pair of clamping-bars arranged one above the other and provided along one edge with graduations for determining the spacing of the lace-holes, and a clamping device connecting said bars, substantially as set forth.

2. A belt-lacing tool, having a pair of clamping-bars arranged one above the other and provided at corresponding edges with gage-notches adapted to receive a perforating-tool, the notches of one bar being arranged in line with those of the other bar, substantially as set forth.

3. A belt-lacing tool having a pair of clamping-bars provided in one edge with a straight series of gage-notches, and in the opposite edge with a staggered series of gage-notches, substantially as set forth.

4. A belt-lacing tool having a pair of clamping-bars arranged one above the other, the upper bar being provided in its edge with a series of gage-notches and the lower bar being provided in its corresponding edge with similar notches having beveled upper edges, substantially as set forth.

5. A belt-lacing tool having a pair of clamping-bars arranged one above the other, the upper bar being provided in its edge with a series of V-shaped gage-notches and the lower bar being provided in its corresponding edge with like notches having beveled upper edges, substantially as set forth.

6. A belt-lacing tool, comprising two pairs of clamping-bars arranged side by side and provided in their opposing edges with gage-notches for determining the spacing of the lace-holes, the two pairs of bars being separated by an unobstructed intervening space, and means for connecting the two pairs of bars, substantially as set forth.

7. A belt-lacing tool, comprising a pair of clamping-bars arranged one above the other, a connection between said bars at one end thereof, and a clamping device applied to the bars and movable toward and from said connection, substantially as set forth.

8. A belt-lacing tool, comprising two pairs of clamping-bars, a connection between said pairs at one end thereof, and a clamping device applied to said pairs of bars and adjustable toward and from said connection, substantially as set forth.

9. A belt-lacing tool, comprising a pair of clamping-bars, a clamping device connecting said bars at one end thereof, and a second clamping device applied to said bars and adjustable toward and from the first-named clamping device, substantially as set forth.

10. A belt-lacing tool, comprising a pair of lower clamping-bars, a pair of upper clamping-bars arranged opposite said lower bars, upper and lower cross-bars connecting said pairs of bars at one end thereof, a clamping-screw passing through said cross-bars, and a clamping device applied to the upper and

lower pairs of bars at a distance from said cross-bars, substantially as set forth.

11. A belt-lacing tool, comprising a pair of lower clamping-bars, a pair of upper clamping-bars arranged opposite said lower bars, upper and lower cross-bars connecting said pairs of bars at one end thereof, a clamping-screw passing through said cross-bars, and a clamping device applied to the upper and lower pairs of bars at a distance from said cross-bars and consisting of a pair of yokes which bridge said upper and lower pairs of bars, respectively, and a clamping-screw connecting said yokes, substantially as set forth.

12. A belt-lacing tool, comprising upper and lower pairs of clamping-bars, a connection between said pairs of bars at one end thereof, and a clamping device applied to said bars at a distance from said connection and consisting of a pair of yokes which bridge said upper and lower pairs of bars, respectively, and a clamping-screw connecting said yokes, one of the yokes having a tenon arranged between the adjacent pair of bars and the other yoke having a pin which enters an opening in the first-named yoke, substantially as set forth.

13. A belt-lacing tool, comprising a head-plate, a pair of clamping-bars arranged one above the other extending laterally from said head-plate and located above the plane thereof, and a clamping device for said bars, substantially as set forth.

Witness my hand this 19th day of January, 1903.

TIMOTHY GINGRAS.

Witnesses:

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