

(No Model.)

2 Sheets—Sheet 1.

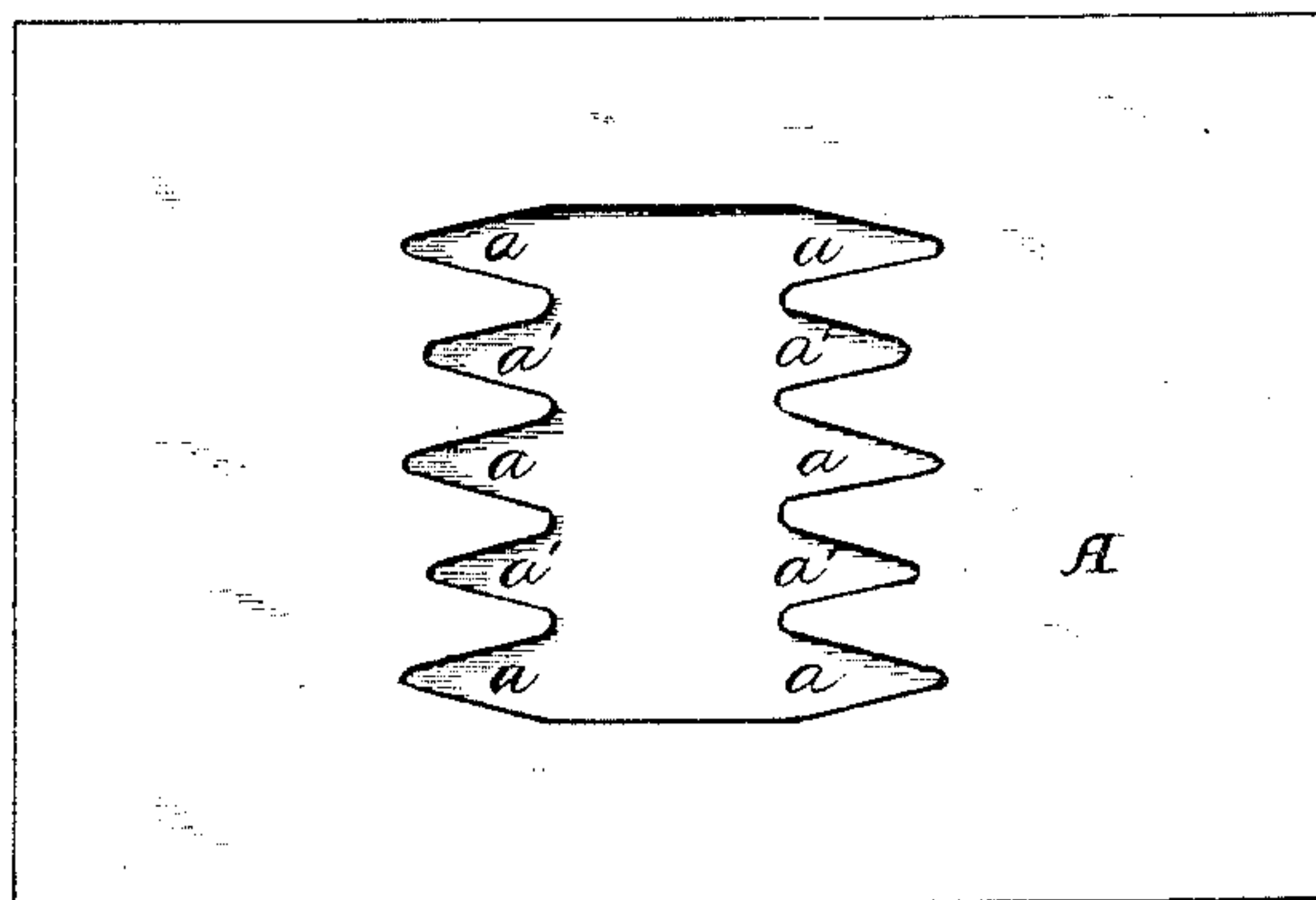
G. P. KENEHAN.

PROCESS OF AND DIE FOR MAKING BELT FASTENERS.

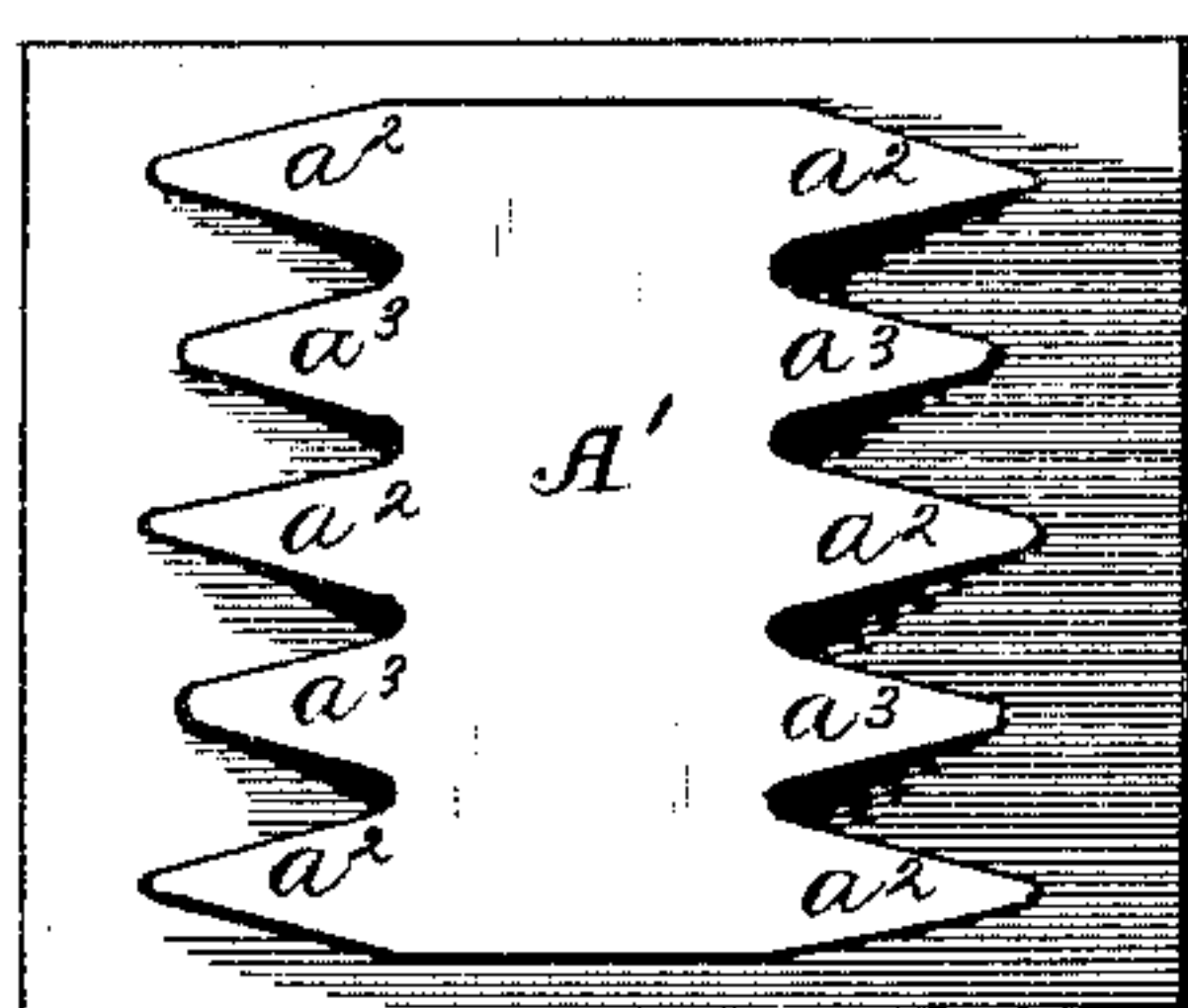
No. 462,260.

Patented Nov. 3, 1891.

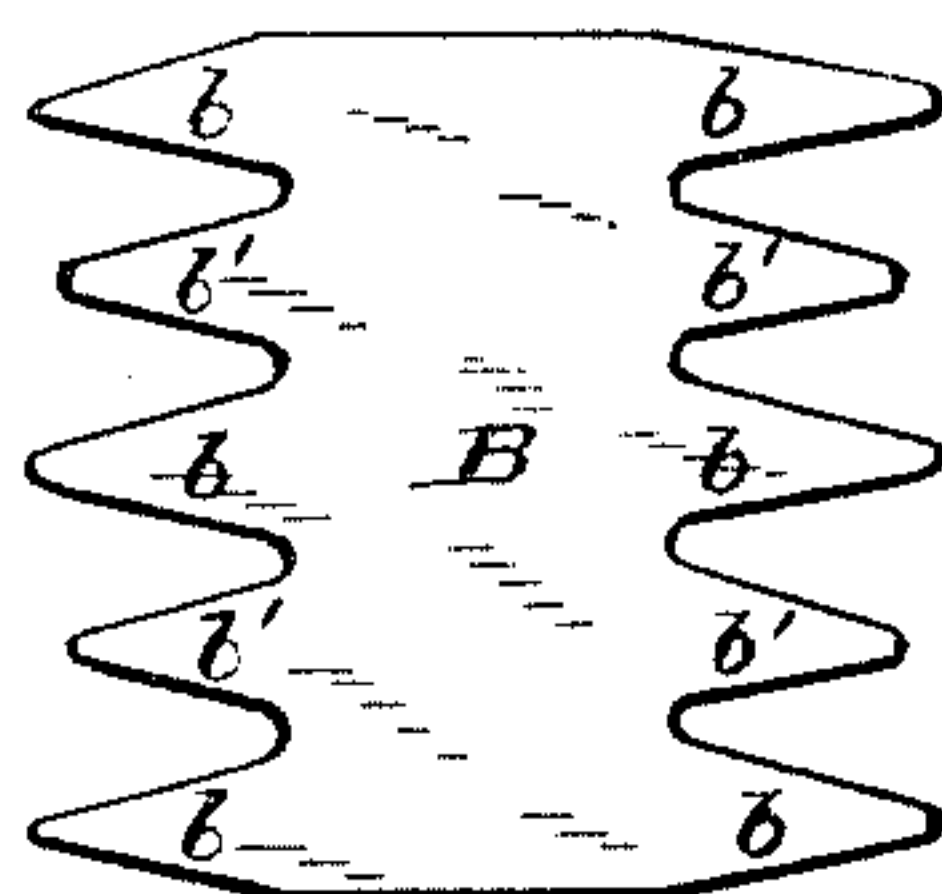
—FIG. I—



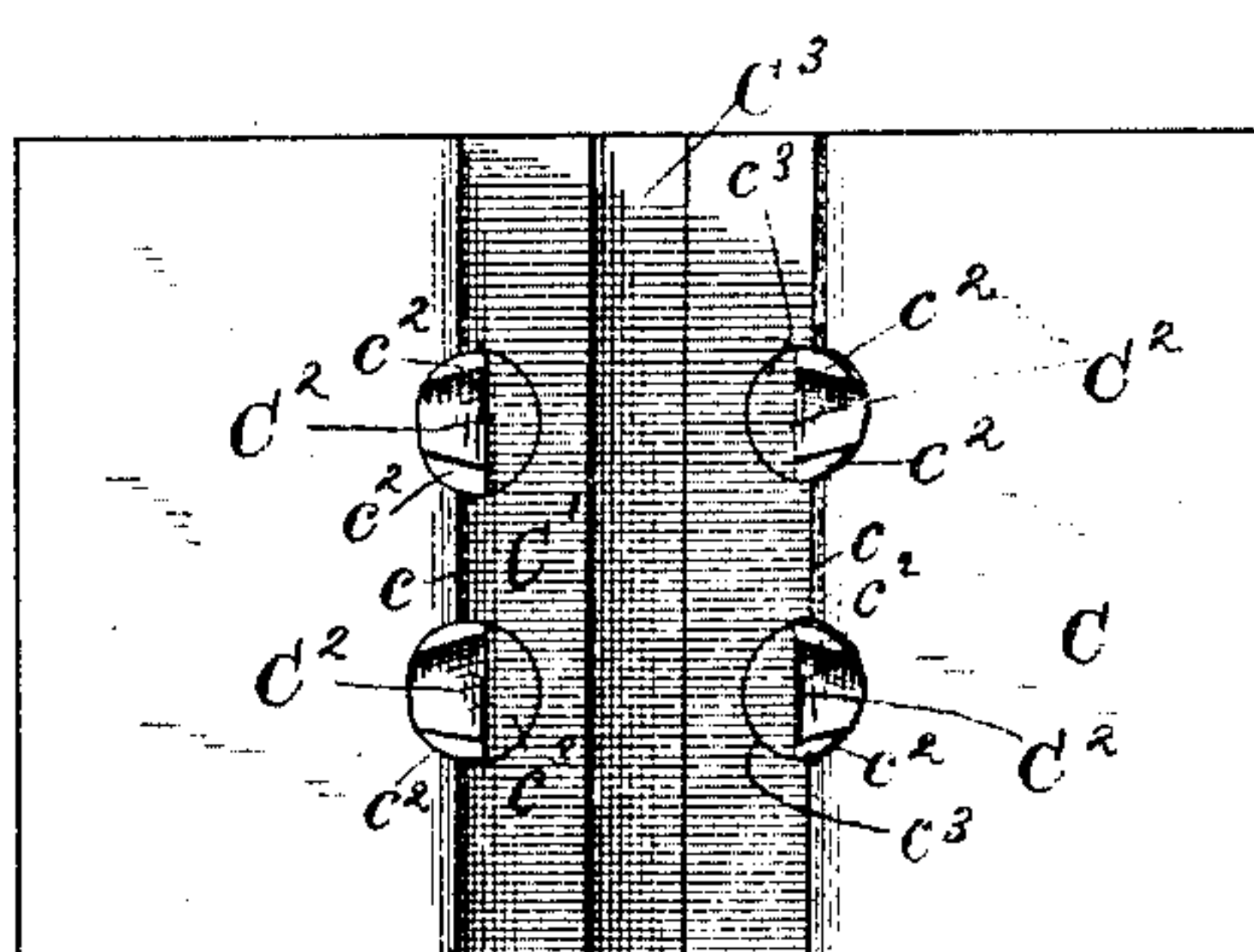
—FIG. II—



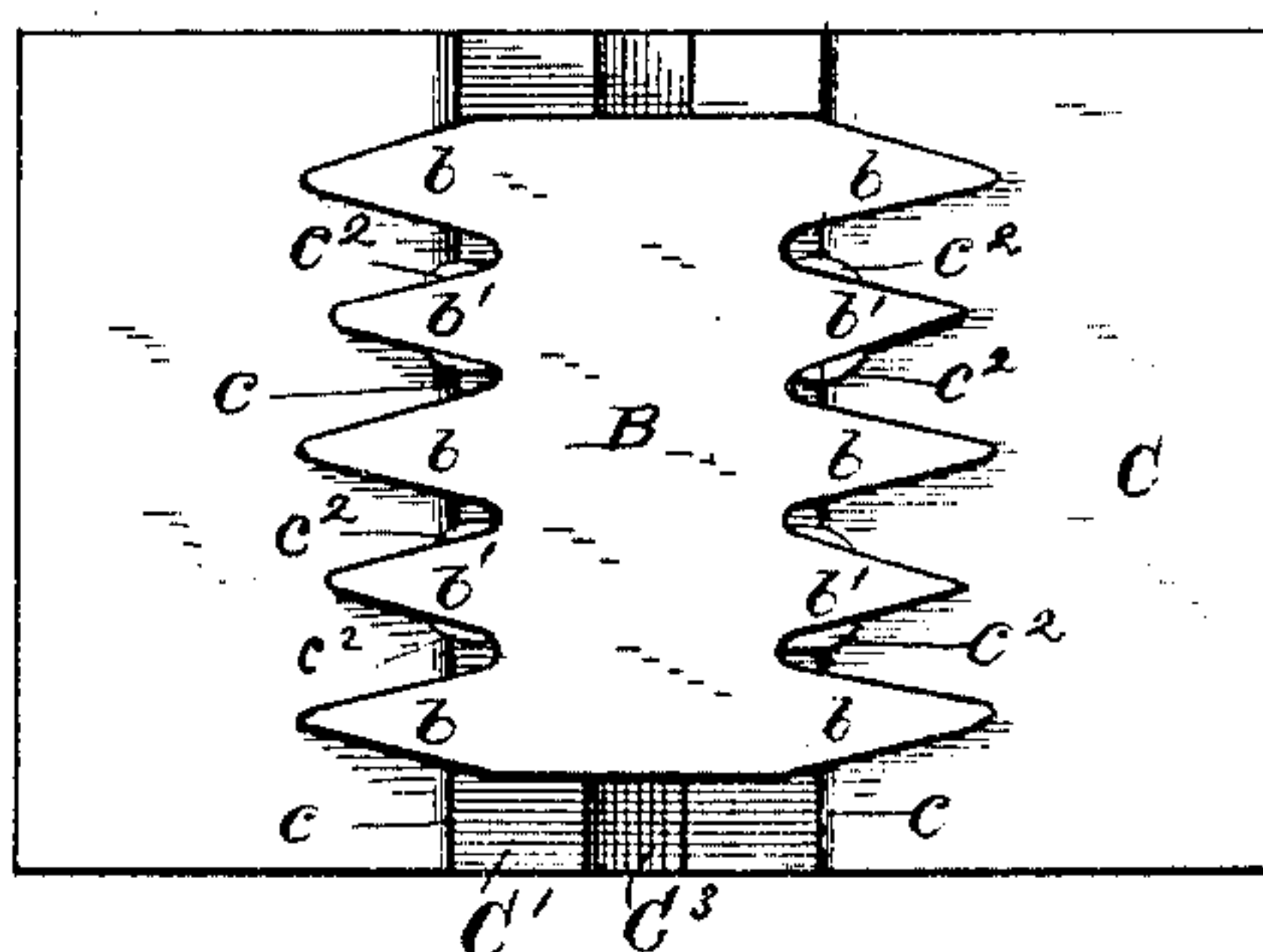
—FIG. III—



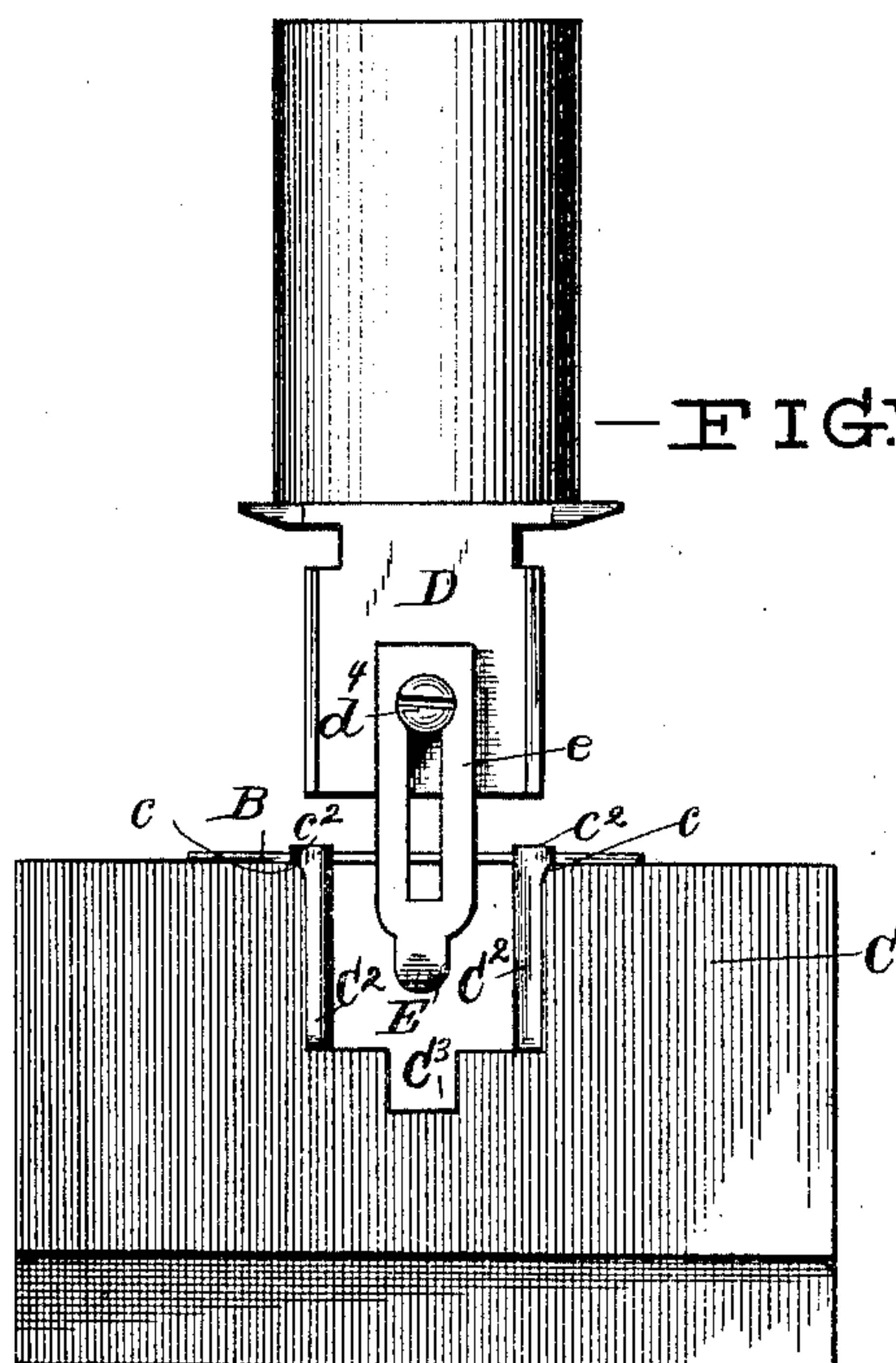
—FIG. IV—



—FIG. V—



—FIG. VI—



WITNESSES:

J. C. Turner  
J. M. Lecher

INVENTOR.

G. P. Kenchan

BY

Hall & Fay

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

G. P. KENEHAN.

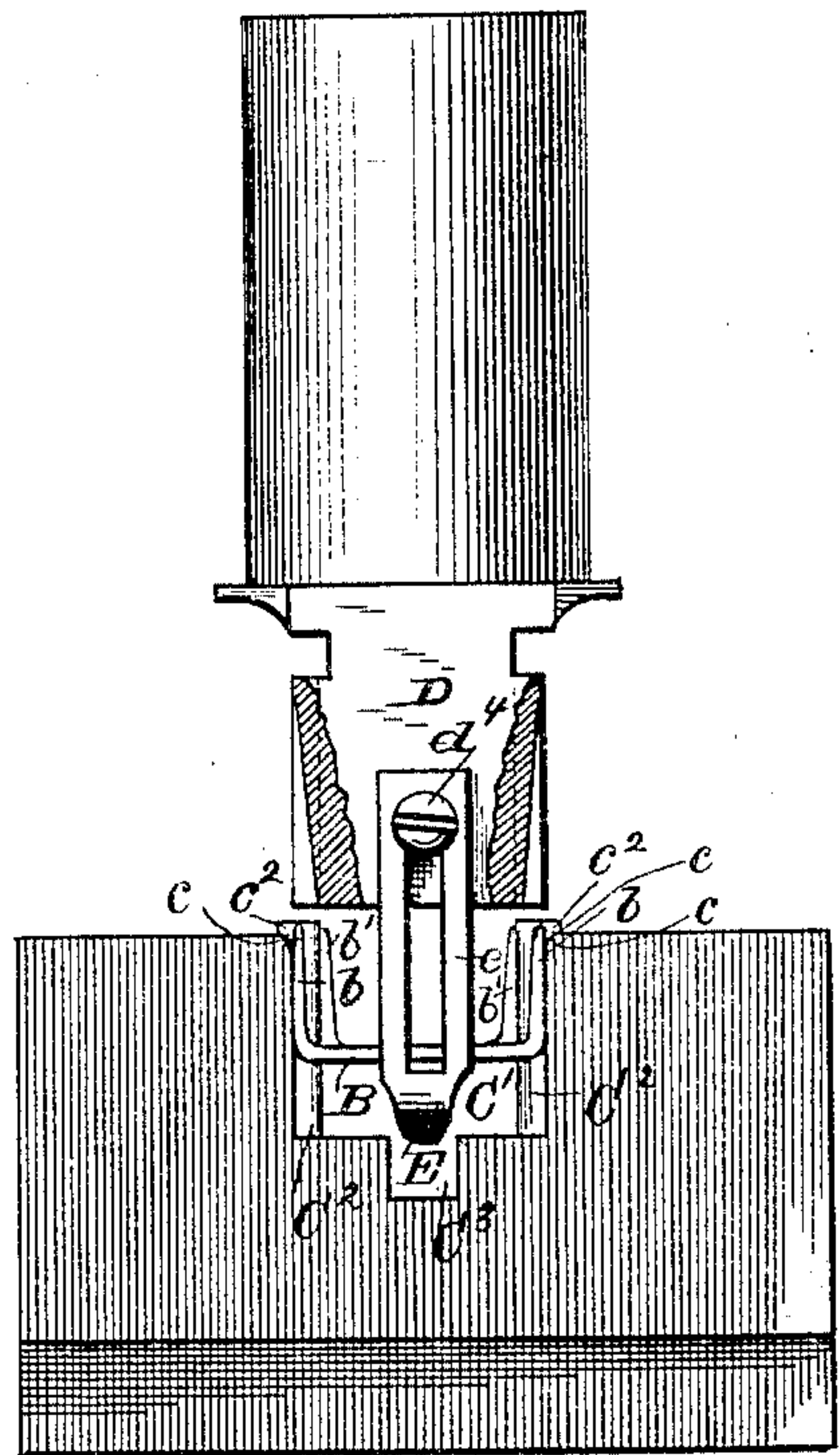
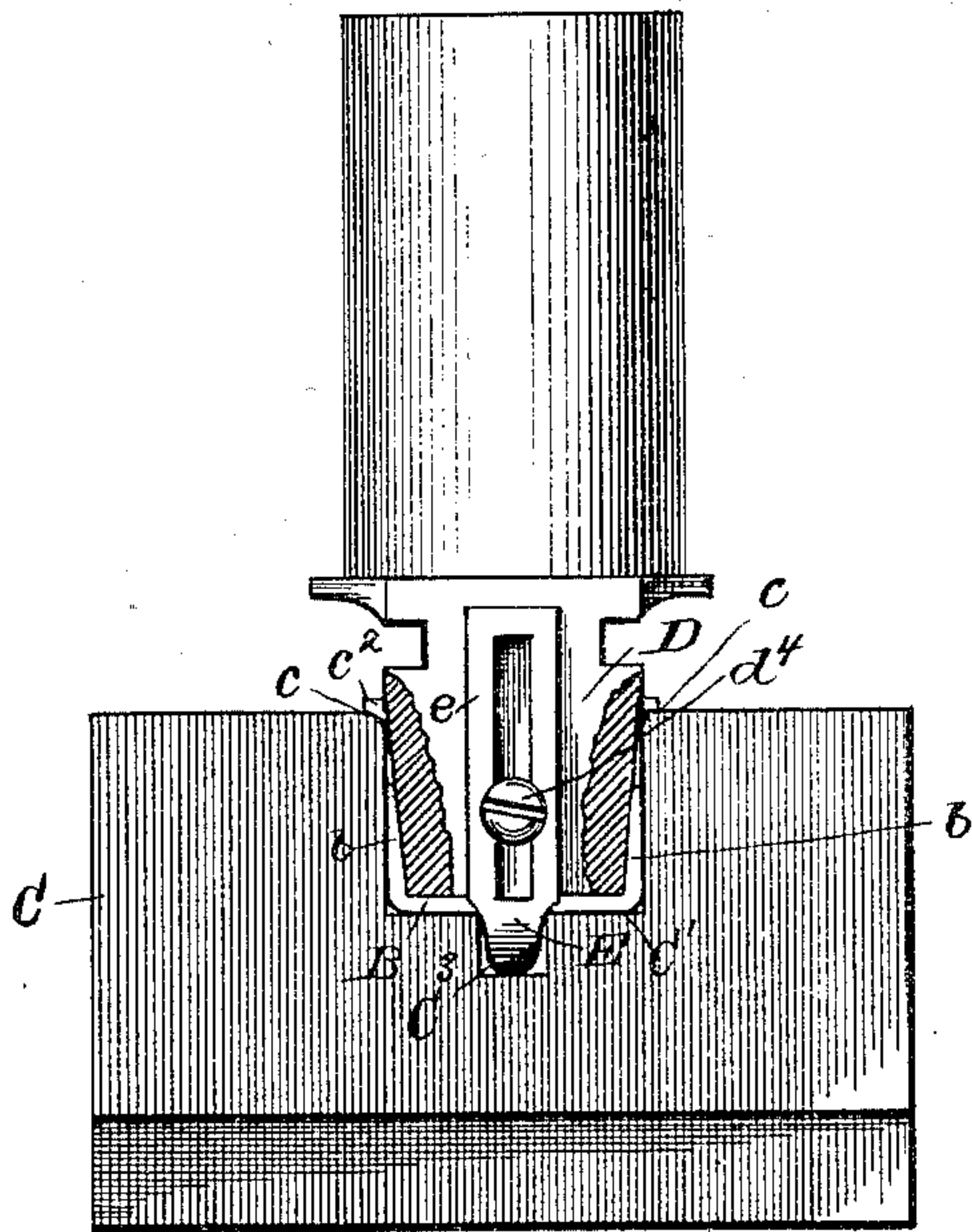
PROCESS OF AND DIE FOR MAKING BELT FASTENERS.

No. 462,260.

Patented Nov. 3, 1891.

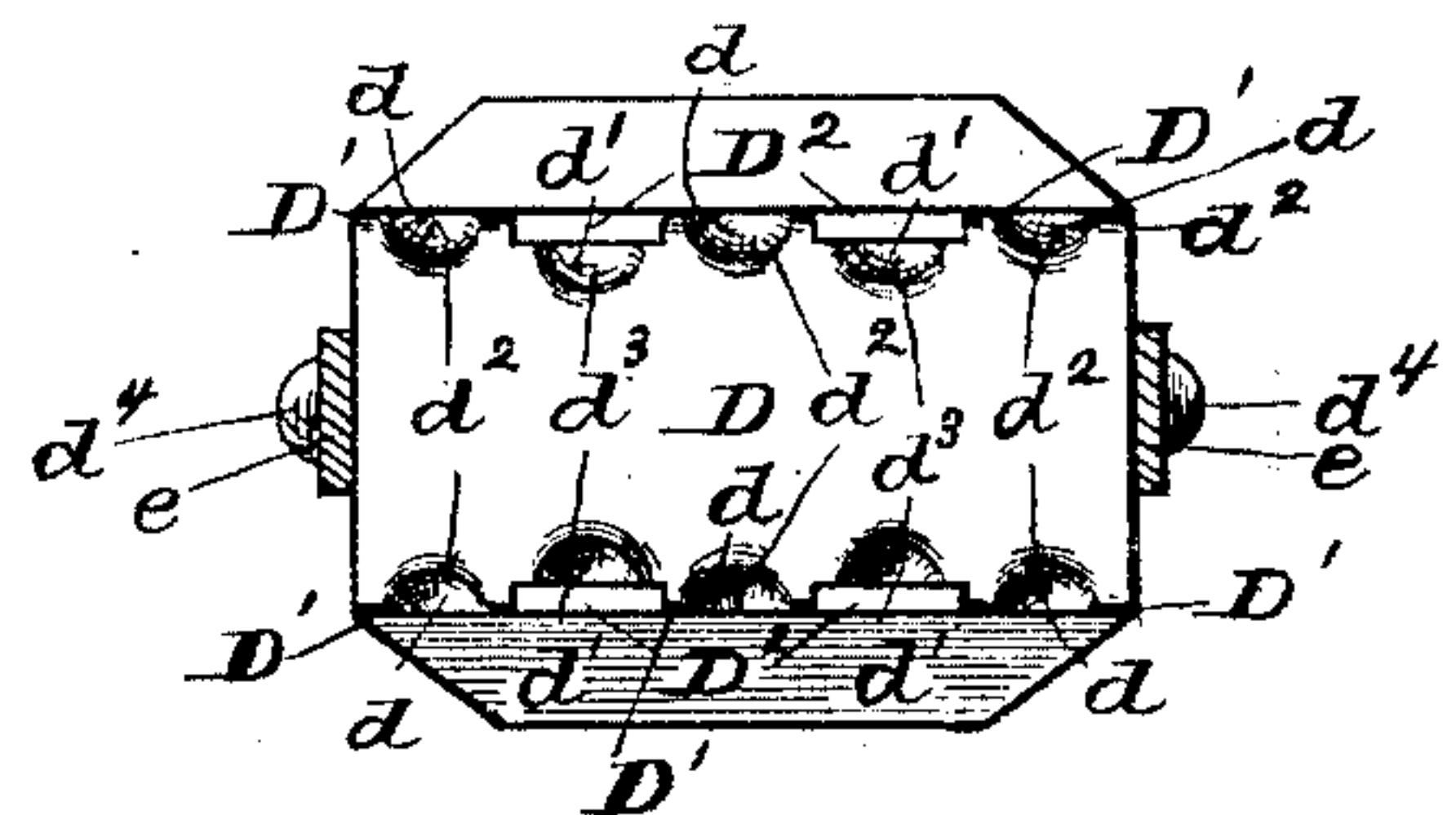
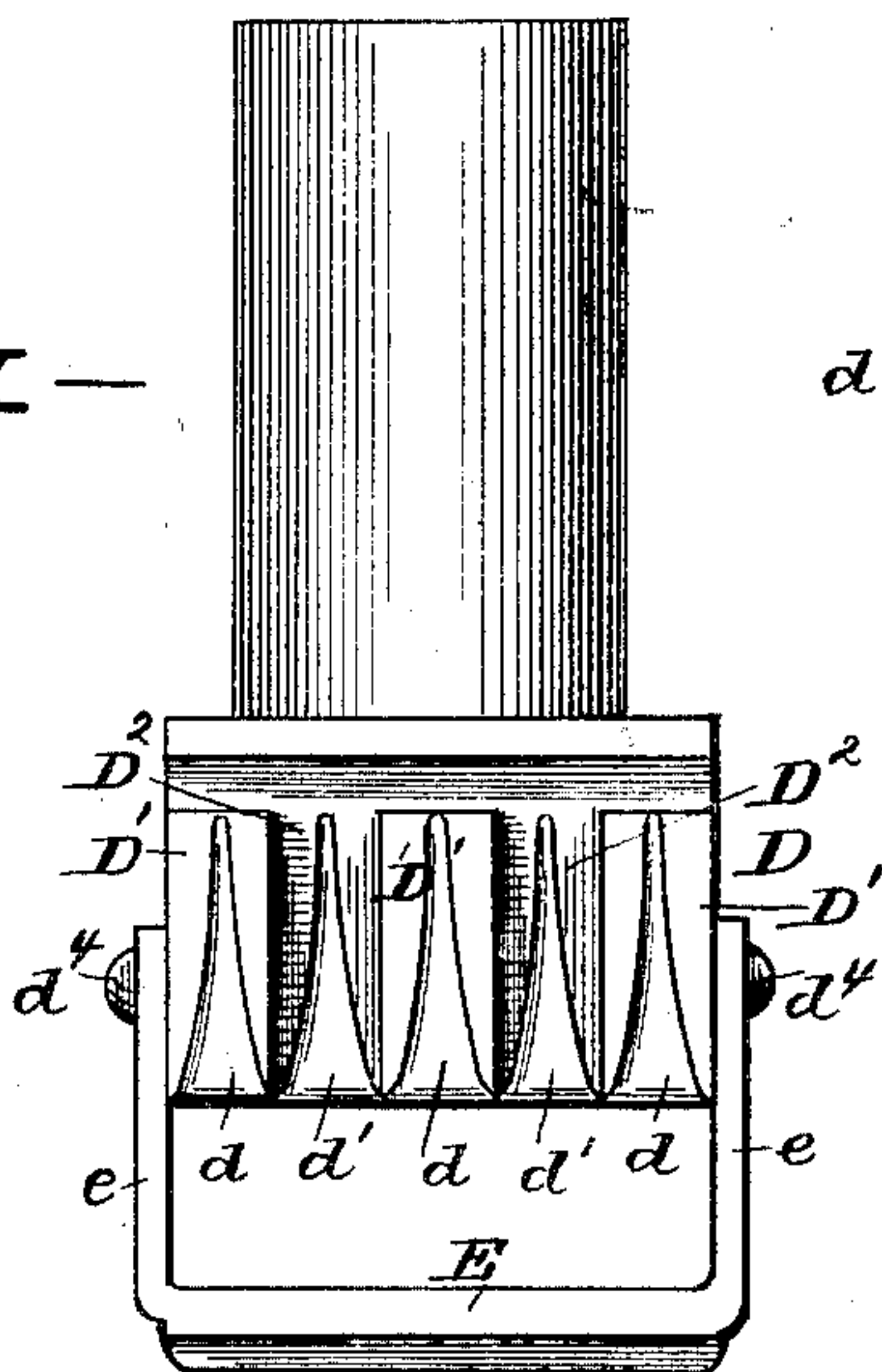
— FIG. VIII —

— FIG. VII —

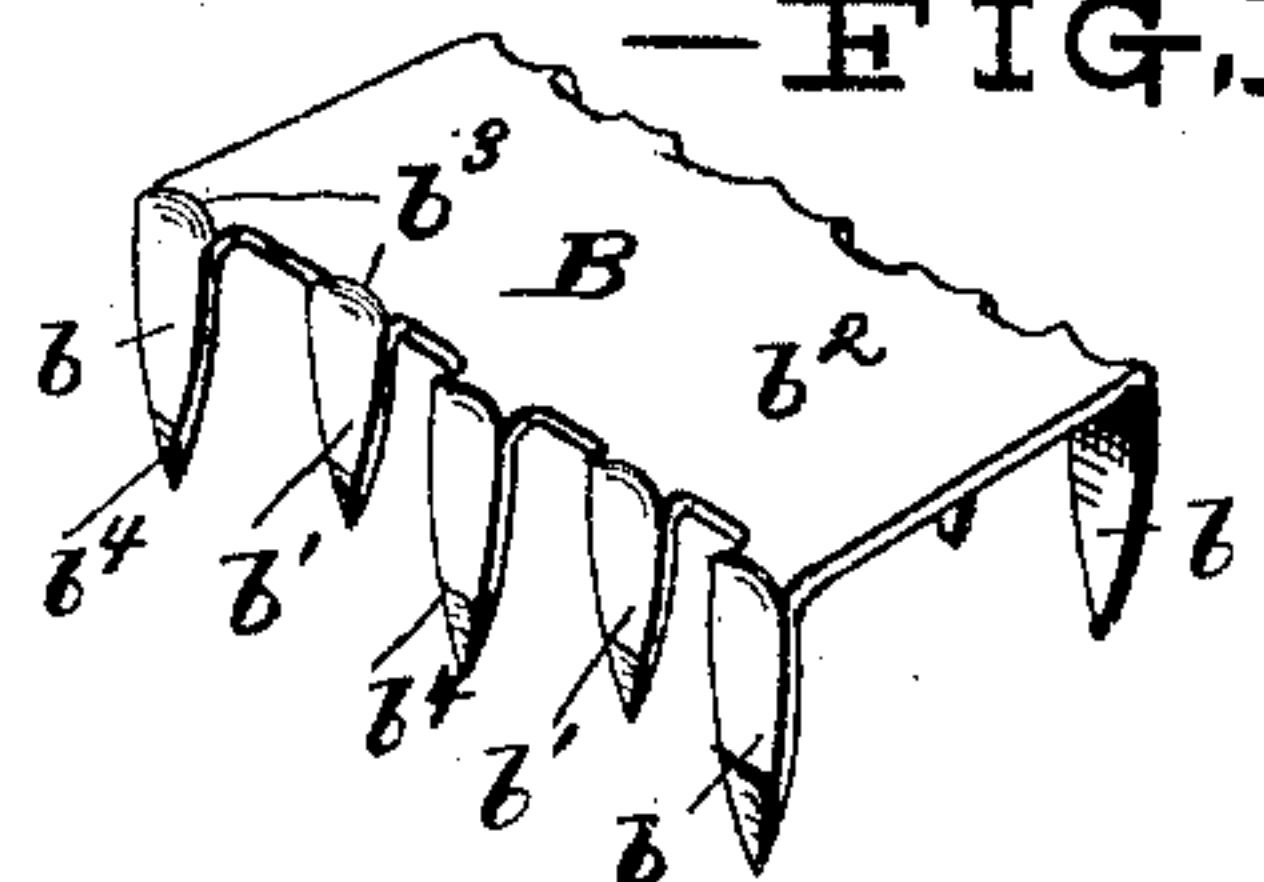


— FIG. IX —

— FIG. IX —



— FIG. XII —



WITNESSES:

J. C. Turner  
J. M. Secher

INVENTOR.

G. P. Kenahan  
BY Hall and Fay  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

GILBERT P. KENEHAN, OF CLEVELAND, OHIO, ASSIGNOR TO THE STEET  
BELT FASTENER COMPANY, OF SAME PLACE.

## PROCESS OF AND DIE FOR MAKING BELT-FASTENERS.

SPECIFICATION forming part of Letters Patent No. 462,260, dated November 3, 1891.

Application filed April 30, 1891. Serial No. 391,093. (No model.)

*To all whom it may concern:*

Be it known that I, GILBERT P. KENEHAN, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Processes of and Dies for Making Belt-Fasteners, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

The objects of my invention are to provide an improved process of making belt-fasteners and to provide an improved die for carrying out a part of said process.

The annexed drawings and the following description set forth one mode of carrying out the invention, such specific mode being but one of various ways in which the principle of the invention may be used.

In such annexed drawings, Figure I represents a top plan view of the female die for cutting belt-fastener blanks; Fig. II, a bottom plan view of the male die for said female die; Fig. III, a view of the blank; Fig. IV, a top plan view of the female die for bending and shaping the blank; Fig. V, a top plan view of said die, showing the blank in position upon the die; Fig. VI, an elevation of the dies for bending and shaping the blank, showing the blank upon the die and the dies ready for operating upon the blank; Fig. VII, an elevation of the dies, showing portions of the male die broken away and illustrating the dies as having bent and shaped the blank; Fig. VIII, an elevation of the dies, showing portions of the male die broken away and illustrating the male die as being raised to withdraw the bent and shaped blank; Fig. IX, a side elevation of the male die for bending and shaping; Fig. X, a bottom plan view of said die, and Figs. XI and XII perspective views of the bent and shaped blank and of the finished belt-fastener.

In the drawings, the letter A indicates the female die, and A' the male die, by means of which the first step in my improved process is carried out—viz., the cutting of the blank. The female die has long notches  $a$  and short notches  $a'$  in the sides of its opening, and the male die has correspondingly-shaped long

teeth  $a^2$  and short teeth  $a^3$  upon its sides, by means of which the long prongs  $b$  and short prongs  $b'$  of the belt-fastener blank B may be formed by cutting or stamping the blank from sheet metal, preferably sheet-steel. When the blank has been cut or stamped it is placed upon a female bending and shaping die C, which is formed with a straight-sided rectangular recess C', of the same width as the fastener to be formed. The upper edges  $c$  of the recess are rounded, so as to admit of the metal of the blank being smoothly drawn down between the sides of the recess. Two ribs C<sup>2</sup> are secured in each side of the recess, have rounded upper edges  $c'$  and guide projections  $c^2$  at their upper ends, between which the short prongs of the blank may be placed. The ribs are preferably formed from round pins or bolts having their lower ends fitted into corresponding cylindrical holes  $c^3$  in the bottom of the recess, said holes forming continuations of cylindro-segmental grooves in the sides of the recess, said grooves and holes being drilled at the same time in making the die. A portion of the outer sides of the pins which form the ribs is cut off flat, so as to form the flat faces of the ribs. The bottom of the recess C' has a longitudinal groove C<sup>3</sup>, the purpose of which will be explained. A male die D is formed with vertical ribs D' upon its sides, having vertical grooves D<sup>2</sup> between them, the grooves fitting so as to slide upon the ribs of the female die. The faces of the ribs D' of the die are formed with upwardly-tapering rounded recesses  $d$ , corresponding in shape to the curvature to be given to the inner sides of the long prongs of the fastener, and the bottoms or faces of the grooves D<sup>2</sup> have upwardly-tapering rounded recesses  $d'$ , corresponding in shape to the curvature to be given to the inner sides of the short prongs of the fastener. The lower ends  $d^2$  and  $d^3$  of said recesses are rounded. When this male die is forced down upon the blank which rests upon the upper side of the female die with its short prongs between the guide-projections  $c^2$ , the blank will be drawn down into the female die, bending the prongs at right angles to the body  $b^2$  of the fastener, the short prongs being bent on lines inside of the lines upon which the long prongs are bent. The



tapering and rounded recesses in the sides of the male die will shape the prongs rounded upon their inner sides and will give the prongs the inward curve  $b^3$  upon the outer sides of their points of bending, and the straight sides of the recess and ribs of the female die will shape the outer faces of the prongs straight and flat.

For the purpose of easily withdrawing the bent and shaped blank from the female die, an expeller E, of stirrup shape, is pivoted with its longitudinally-slotted sides  $e$  upon pins  $d^4$  upon the ends of the male die, the expeller fitting into the groove  $C^3$  in the bottom of the recess when the male die is forced to the bottom of said recess. The pins  $d^4$  may slide in the slotted sides of the expeller when the male die is within the recess and the expeller will draw the bent blank out of the female die when the male die is raised after having bent the blank.

The outer sides of the prongs of the bent and shaped blank are chamfered or beveled, as shown at  $b^4$ , by grinding or other suitable process, and the blank is finished as a complete belt-fastener ready for use.

Other modes of applying the principle of my invention may be employed for the mode herein explained. Change may therefore be made as regards the steps herein set forth, provided the principles of operation respectively recited in the following claims are employed.

I therefore particularly point out and distinctly claim as my invention—

1. A step in the process of making belt-fasteners, which consists in simultaneously bending and shaping the prongs of the fastener-blank, substantially as set forth.

2. A step in the process of making belt-fasteners, which consists in simultaneously bending the prongs of the fastener-blank along two lines at each side of the blank and shaping said prongs, substantially as set forth.

3. The process of making belt-fasteners, which consists in first cutting the blank and thereupon simultaneously bending and shaping the prongs, substantially as set forth.

4. The process of making belt-fasteners, which consists in first cutting the blank, thereupon simultaneously bending and shaping the prongs, and finally chamfering the outer sides of the ends of the prongs, substantially as set forth.

5. A set of dies for bending and shaping the prongs of belt-fastener blanks, consisting of a recessed female die and a correspondingly-shaped male die, one of said dies having shaping-recesses in its sides for the prongs of the blank, substantially as set forth.

6. A set of dies for bending and shaping the prongs of belt-fastener blanks, consisting of a straight-sided and right-angled female die having ribs upon the sides of its recess, and a correspondingly-shaped male die having corresponding grooves and ribs in and upon its sides formed with prong-shaping recesses in their faces, substantially as set forth.

7. The combination, with a pair of dies for bending and shaping belt-fastener blanks, of an upwardly-movable expeller fitting in the bottom of the female die, substantially as set forth.

8. The combination, with a male die and a female die for bending and shaping belt-fastener blanks, said female die having a longitudinal groove in its bottom, of an expeller shaped to fit into said groove and connected to be withdrawn by the male die, substantially as set forth.

9. The combination, with a male and a female die for bending and shaping belt-fastener blanks, said male die having projecting pins upon its ends and said female die having a longitudinal groove in the bottom of its recess, of a stirrup-shaped expeller fitting in the groove of the female die and having longitudinally-slotted sides sliding upon the pins of the male die, substantially as set forth.

In testimony that I claim the foregoing to be my invention I have hereunto set my hand this 14th day of April, A. D. 1891.

GILBERT P. KENEHAN.

Witnesses:

WM. SECHER,  
HORACE F. PARKS.