

**No. 746,309.**

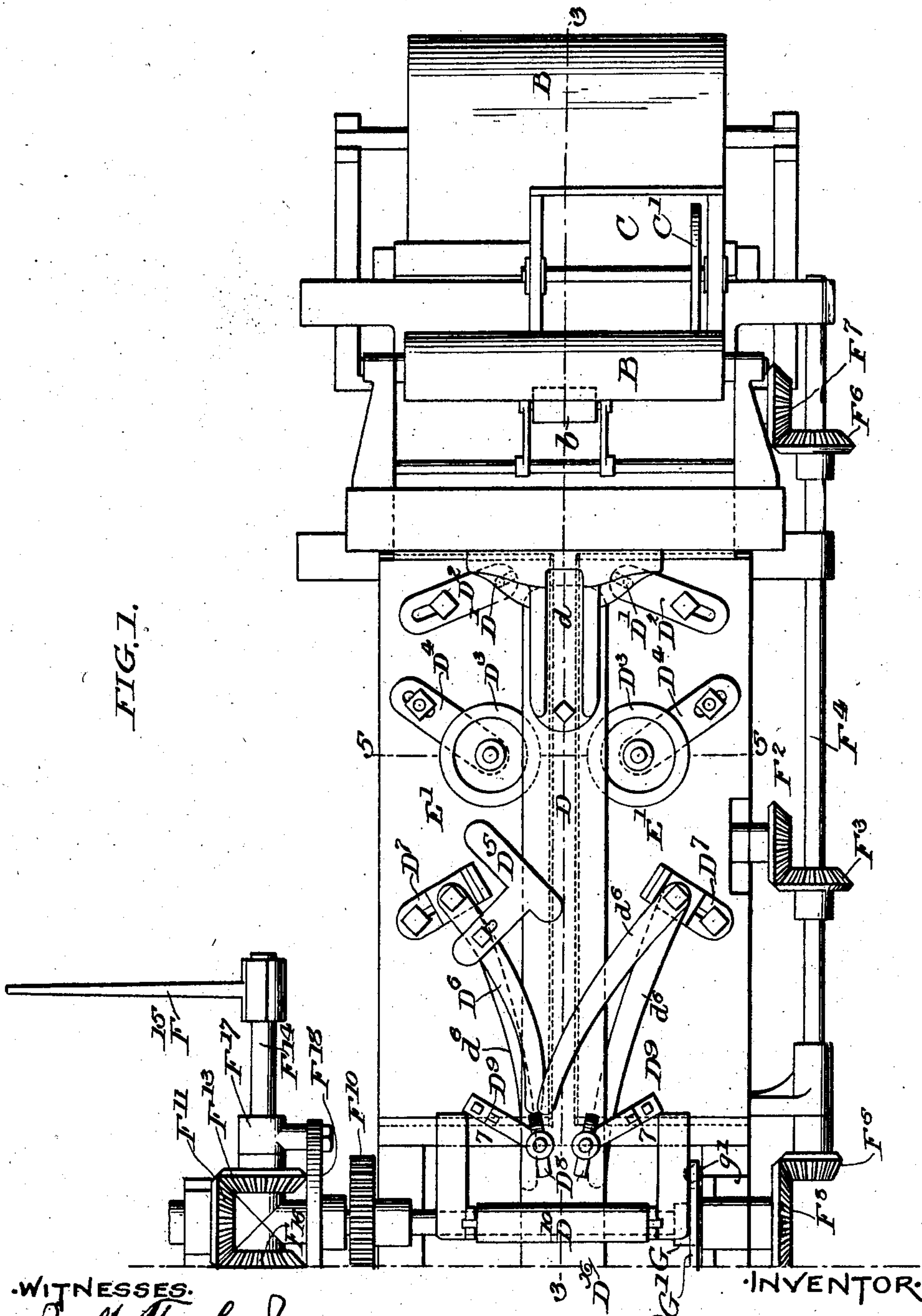
PATENTED DEC. 8, 1903.

L. P. EISENBEIS.  
PAPER BAG MACHINE.

APPLICATION FILED FEB. 14, 1901.

NO MODEL.

5 SHEETS—SHEET 1.



**WITNESSES.**

J. M. Fowler Jr  
Allan W. Goose,

•INVENTOR.

Louis P. Eschmüller  
by his attys,  
Lennie & Goldborough

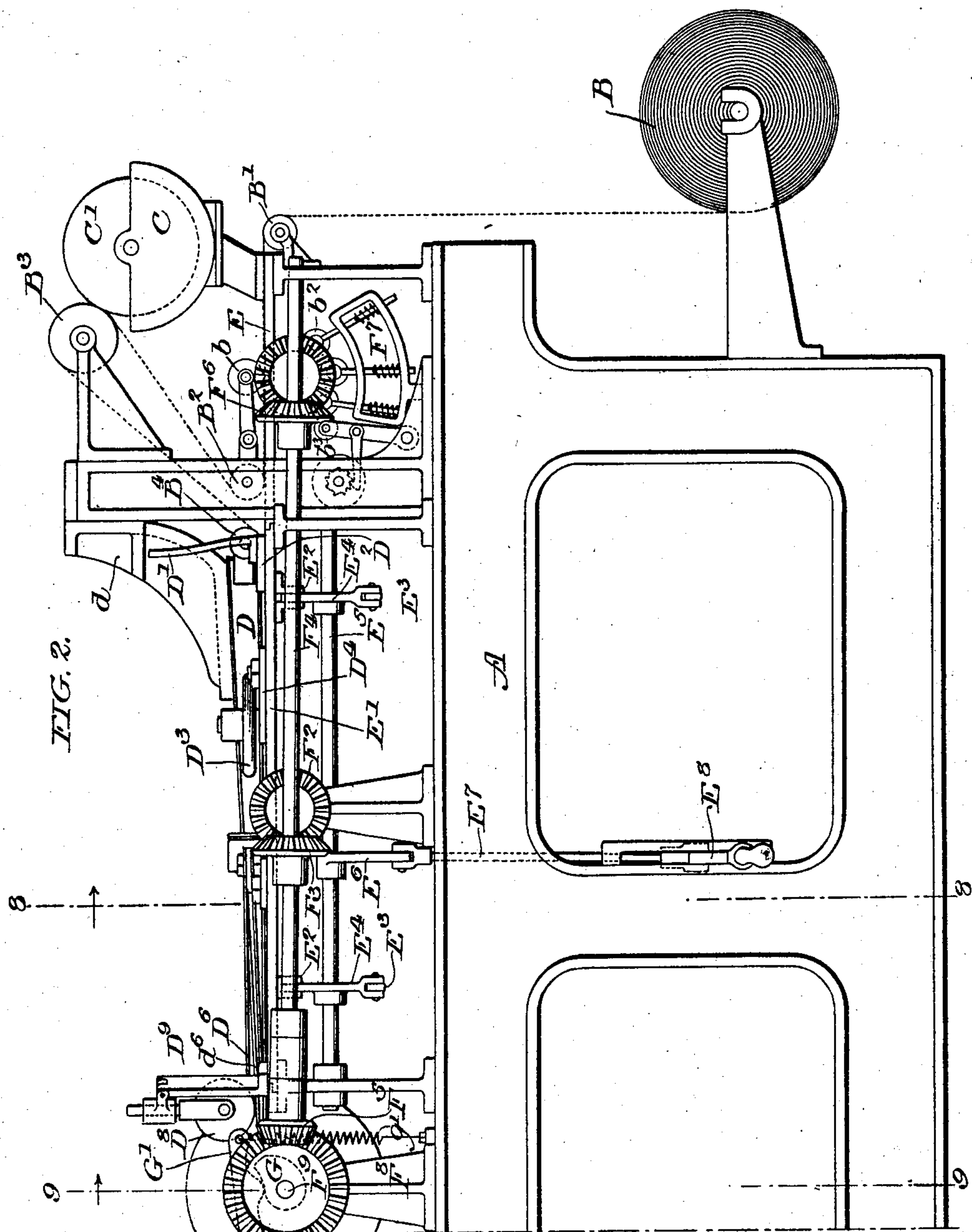
No. 746,309.

PATENTED DEC. 8, 1903.

L. P. EISENBEIS.  
PAPER BAG MACHINE.  
APPLICATION FILED FEB. 14, 1901.

NO MODEL.

5 SHEETS—SHEET 2.



WITNESSES.

J. M. Fowler  
Allan W. Foote.

INVENTOR.

Louis P. Eisenbeis  
by his attys,  
Lennie & Goldborough



No. 746,309.

PATENTED DEC. 8, 1903.

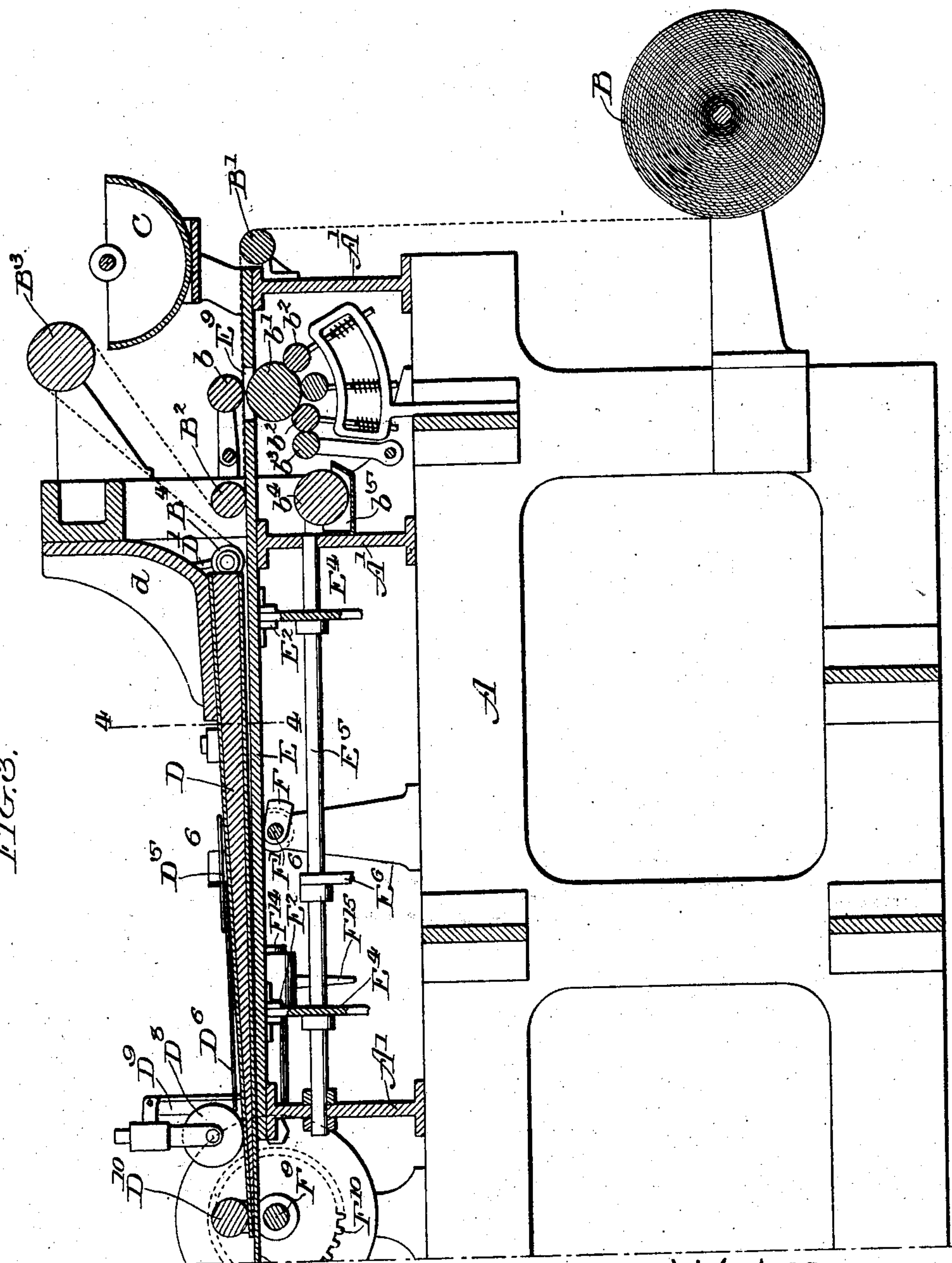
L. P. EISENBEIS.  
PAPER BAG MACHINE.

APPLICATION FILED FEB. 14, 1901.

NO MODEL.

5 SHEETS—SHEET 3.

FIG. 3.



WITNESSES.

J. M. Fowler Jr.  
Allan W. Rose.

INVENTOR.

Louis P. Eisenbeis  
by his attys,  
Lennie & Goldborough

No. 746,309.

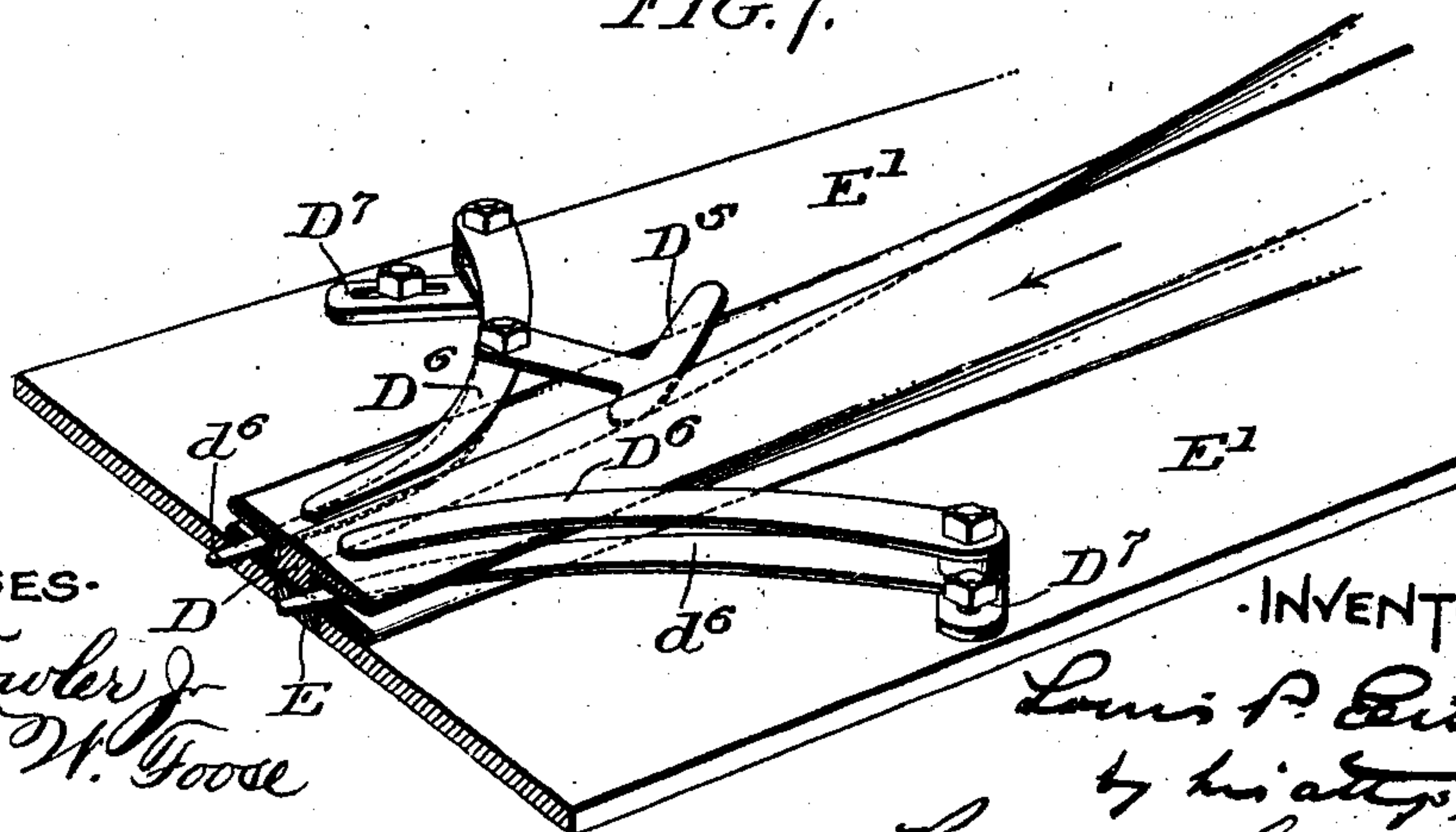
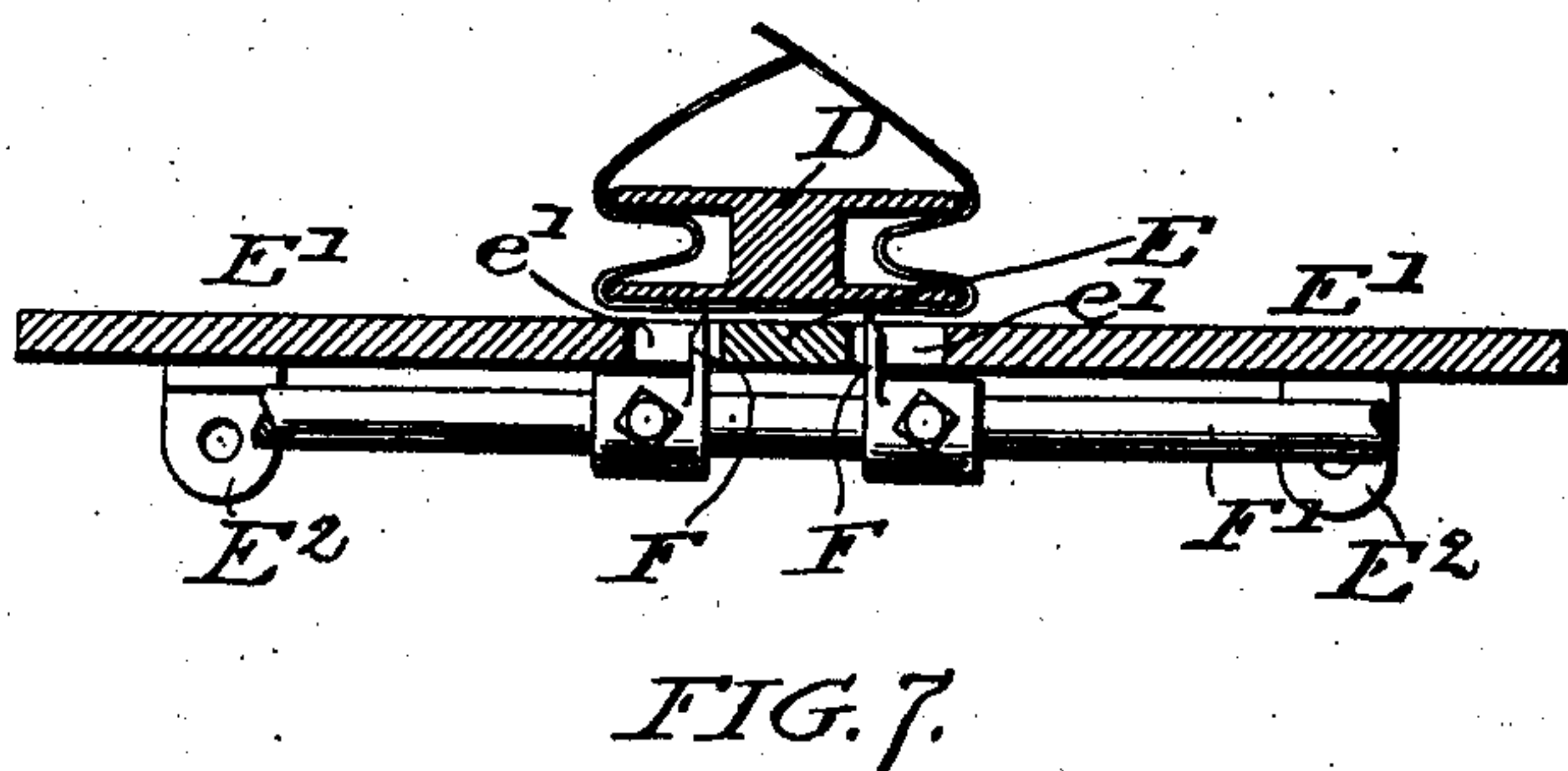
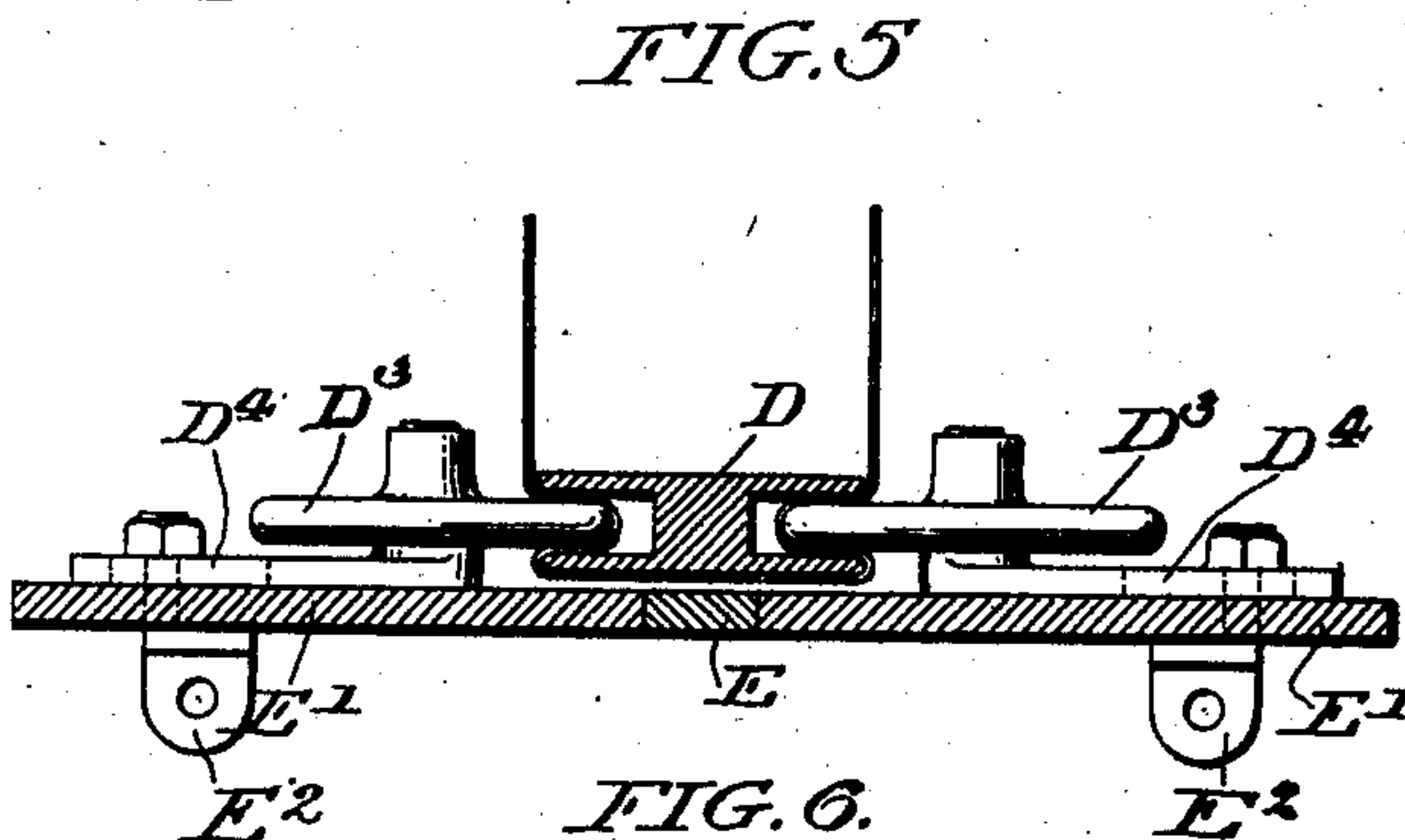
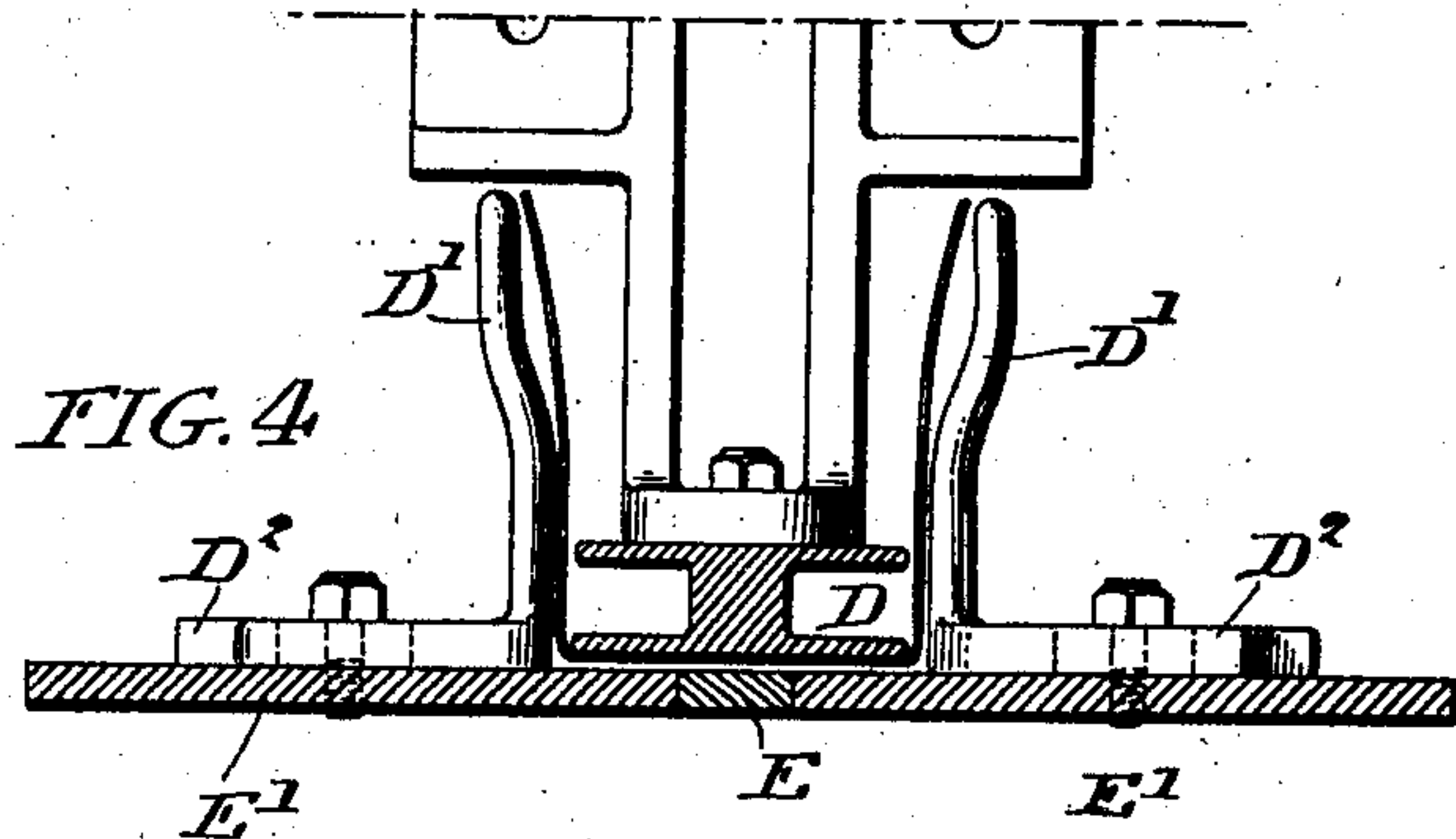
PATENTED DEC. 8, 1903.

L. P. EISENBEIS.  
PAPER BAG MACHINE.

APPLICATION FILED FEB. 14, 1901.

NO MODEL.

5 SHEETS—SHEET 4.



WITNESSES.

J. M. Fowler Jr.  
Allan H. Goose

INVENTOR.

Louis P. Eisenbeis.  
by his atty,  
Levine & Goldborough



No. 746,309.

PATENTED DEC. 8, 1903.

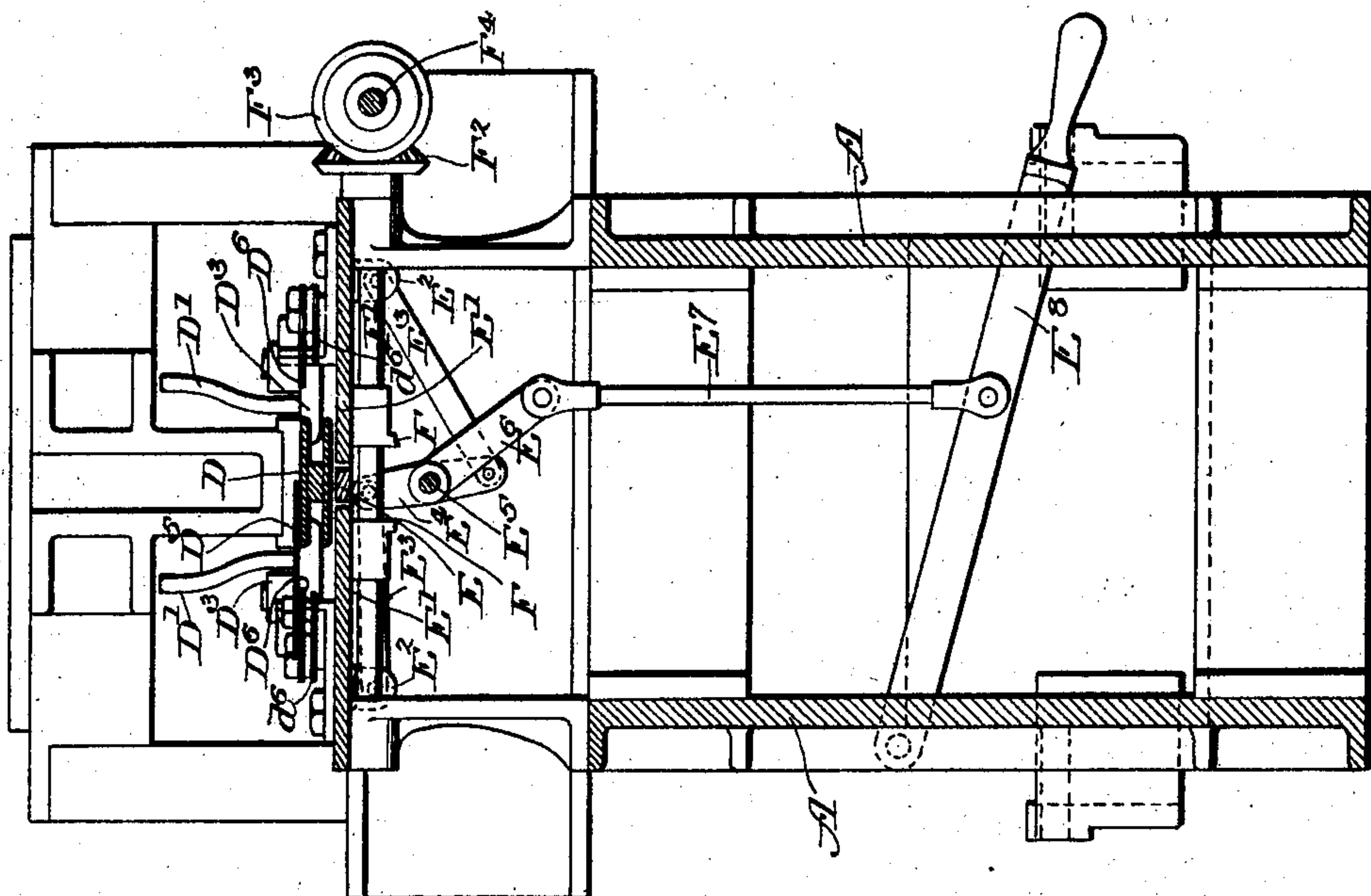
L. P. EISENBEIS.  
PAPER BAG MACHINE.

APPLICATION FILED FEB. 14, 1901.

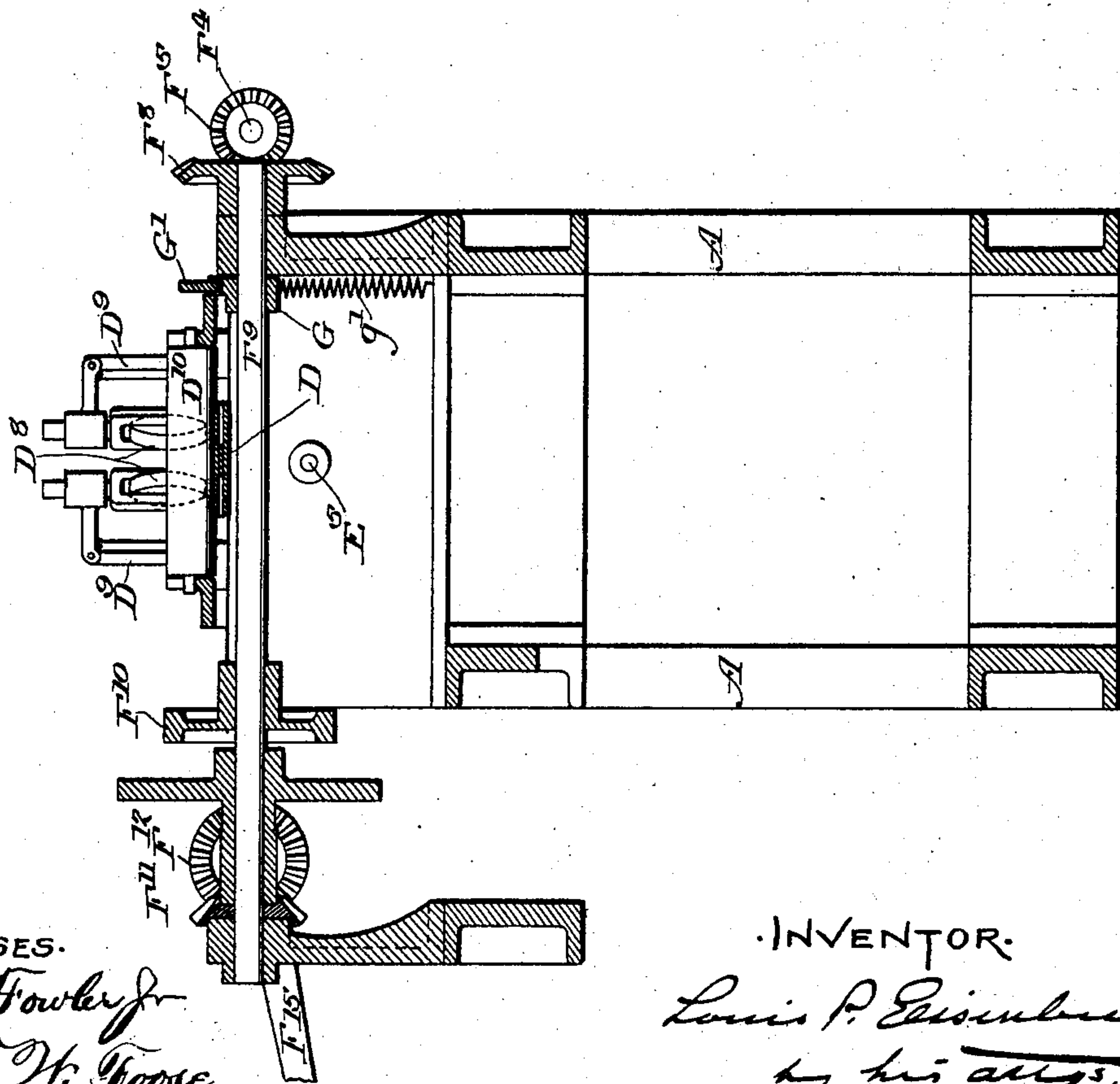
NO MODEL.

5 SHEETS—SHEET 5.

FIG. 8.



**FIG. 9.**



WITNESSES.

J. M. Fowler Jr.  
Allan W. Goose.

·INVENTOR.

Louis P. Eisenberg  
by his attys,  
Fennie & Goldborough.



# UNITED STATES PATENT OFFICE.

LOUIS P. EISENBEIS, OF OTTUMWA, IOWA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE UNION PAPER BAG MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

## PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 746,309, dated December 8, 1903.

Application filed February 14, 1901. Serial No. 47,306. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS P. EISENBEIS, a citizen of the United States of America, residing in Ottumwa, in the county of Wapello and State of Iowa, have invented certain new and useful Improvements in Paper-Bag Machines, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to machinery for making paper bags, and particularly to that part of the mechanism which has for its function the folding of a continuous web of paper into a tube adapted to be cut up into bag-blanks and converted into paper bags. In machinery of this kind the web of paper is generally folded over a device called a "former," the folding being accomplished by a series of folding devices acting successively upon the paper and in connection with the former, so as to gradually fold the paper around the former and to the designed sectional shape. These folding devices have heretofore been made individually adjustable, and sometimes adjustable in groups; but the object of my invention is, without necessarily interfering with the individual adjustability of the folding devices, to provide means by which the folding devices as a whole can be rapidly and at will retracted from or brought to operative position with regard to the former without interfering with their individual adjustment and in such manner as to give free access to the paper from below; and the leading feature of my invention consists in securing the folding devices on each side of the former to retractable supports or tables coupled to move in and out simultaneously, with which they can be moved toward or away from the former at will, the machine having no table below said retractable supports.

Other features of my invention will be best understood as described in connection with the drawings in which my invention is illustrated, and in which—

Figure 1 is a plan view of a portion of a paper-bag machine embodying my invention. Fig. 2 is a side elevation of the same portion of the machine. Fig. 3 is also a side elevation, but taken on the section-line 3 3 of Fig.

1. Fig. 4 is a cross-sectional view taken as on section-line 4 4 of Fig. 3. Fig. 5 is a cross-sectional view taken as on the section-line 5 5 of Fig. 1. Fig. 6 is a cross-sectional view taken as on the section-line 6 6 of Fig. 3. Fig. 7 is a perspective view with the end of the movable tables and former shown as taken on the section-line 7 7 of Fig. 1. Fig. 8 is a cross-sectional view taken as on the section-line 8 8 of Fig. 2, and Fig. 9 is a cross-sectional view taken as on the section-line 9 9 of Fig. 2.

A A indicate the supporting-framework of the machine.

B indicates the roll of paper from which the web is drawn for conversion into a tube, the web passing from the roll B over the roller B', thence under the roller B<sup>2</sup>, thence over the roller B<sup>3</sup>, thence under the roller B<sup>4</sup>, from which it passes beneath the former, (indicated at D.)

C indicates a paste-trough, and C' a paste-wheel running in said trough and acting to apply a line of paste to one edge of the paper as it passes over the roll B<sup>3</sup>.

The former D is preferably of the H-shaped form indicated in the drawings, with its upper and lower faces gradually converging.

D' D' indicate upwardly-extending fingers situated one on each side of the former D near its larger end, said fingers extending upward from the adjustable plates D<sup>2</sup> and being secured in place by bolts passing through slots in said plates and acting to clamp them against the tables E' E'. The action of these fingers is to turn the web of paper upward, as indicated in Fig. 4.

D<sup>3</sup> D<sup>3</sup> are folding-wheels journaled loosely on studs rising from plates D<sup>4</sup>, which plates, like the plates D<sup>2</sup>, are secured to the tables E' by bolts passing through slots in the plates. The action of these wheels is to press the paper in between the arms of the H-shaped former, as indicated in Fig. 5.

D<sup>5</sup> is a finger or plate acting to press one edge of the web down upon the top of the former in advance of the other edge. As shown, it is secured to a finger D<sup>6</sup> by means of a nut and bolt, and may be adjustable, as shown in Fig. 7.

D<sup>6</sup> D<sup>6</sup> are fingers acting to press both edges



of the web down upon the top of the former and the one edge over the other, as shown in Fig. 7, and  $d^6 d^6$  are fingers acting to press the tucked-in portions of the web well in between the upper and lower plates of the former, as shown in the same figure. Both of these fingers are, as shown, secured to plates  $D^7$ , which in turn are adjustably secured on tables  $E'$  by bolts passing through slots in the plates.

$D^8 D^8$  are presser-wheels converging toward each other in the direction of the movement of the web over the former and arranged to act upon the top of the web, the said wheels being secured in bearings which are supported on standards  $D^9 D^9$ , in turn secured to the tables  $E'$ .

$D^{10}$  is a roller situated in front of the presser-wheels  $D^8$  and acting on the top of the folded web which passes between the roller and the top of the former, as indicated in Figs. 3 and 9, and in Fig. 3 it will be observed that the lower plate of the former (indicated at  $D^x$ ) extends beyond the upper plate, as is usual in machines of this character.

$E$  indicates a narrow stationary table-section extending parallel to and beneath the center of the former  $D$ , and  $E' E'$  indicate supporting-tables for the paper-folding devices described, said tables resting upon the framework of the machine and being laterally movable thereon, so that they can be moved away from or toward the stationary table  $E$  at will, and obviously as they are moved away from the said stationary table and away from the former  $D$  they will simultaneously retract from operative position all the folding devices which coact with the former in making the tube. It is important that the folding devices should be rapidly and simultaneously retracted and brought to operative position, and this I provide for in the construction shown by forming on the tables  $E'$  the downwardly-extending lugs  $E^2 E^2$ , &c., (see Figs. 2, 3, and 8,) connecting these lugs through links  $E^3$  with the oppositely-extending arms of a lever  $E^4$ , secured to a rock-shaft  $E^5$ , which in turn is actuated through a lever-arm  $E^6$  by a link  $E^7$ , secured to a hand-lever  $E^8$ . It will be obvious (see Fig. 8) that by raising the hand-lever both of the tables  $E'$  are instantly moved out away from the former, while by depressing the hand-lever they are instantly brought back to accurate operative position.

$E^9$  (see Fig. 3) indicates an opening through the stationary table  $E$ , through which extends the upper part of a printing-roller  $b'$ , and  $e' e'$  (see Fig. 6) indicate openings in the inner edge of the tables  $E' E'$ , through which the cutter-blades  $F F$  operate.

An essential feature of my invention consists in the construction whereby no table or similar obstruction exists beneath the table-sections  $E E' E'$ , by reason of which the retraction of the sections  $E' E'$  leaves the former

and the paper accessible from below as well as from above.

The printing-roller  $b'$  operates in connection with a presser-roller  $b$ , between which 70 and the printing-roller the web of paper passes between the guiding-rollers  $B'$  and  $B^2$ . Ink is applied to and distributed on the inking-roller  $b'$  by the inking-rolls  $b^2$ , which in turn receive ink intermittently from the oscillating roller  $b^3$ , which in one position receives 75 ink from an inking-roller  $b^4$ , working in an ink-trough  $b^5$ , and in the other position imparts a layer of ink to the nearest of the stationary inking-rollers  $b^2$ , as shown in Fig. 3. 80 The printing-roller  $b'$  is driven through a bevel-wheel  $F^7$ , actuated by a bevel-wheel  $F^6$  on the shaft  $F^4$ ; but as this printing mechanism forms no part of my present invention it need not be further described or illustrated 85 with more detail.

$F F$ , as already stated, are slitting-knives, the function of which is to cut longitudinal slits in the under layer of the paper passing over the former  $D$ . These knives are secured 90 to and rotated with a shaft  $F'$ , the knives passing through the opening  $e'$  in the upward part of their revolution and of course not interfering with the in-and-out movement of the tables  $E'$ . The shaft  $F'$  is driven by a 95 bevel-gear  $F^2$ , engaged and actuated by a bevel-gear  $F^3$  on the shaft  $F^4$ , said shaft in turn being driven through a bevel-gear  $F^5$  at its end by a bevel-gear  $F^8$ , secured on the transverse shaft  $F^9$ , which shaft in turn is driven by 100 a gear-wheel  $F^{10}$  and connections not further shown in the drawings. As shown in the drawings, the shaft  $F^{10}$  has arranged opposite to its end (see Fig. 1) a stationary bevel-gear  $F^{11}$ , which engages and drives bevel-gears  $F^{13}$  105 and  $F^{16}$ , to each of which is secured a shaft  $F^{14}$ , carrying at its end a striker  $F^{15}$ . The bearings for the shafts  $F^{14}$  are indicated at  $F^{17}$  and are secured to the shaft  $F^9$  through a plate  $F^{18}$ , so that the said bearings with the 110 bevel-gears and shafts rotate with the shaft and in rotating are revolved by their engagement with the stationary bevel gear-wheel  $F^{11}$ . The result of this movement is that each of the strikers  $F^{15}$  is caused to move across 115 in front of the end of the former and in connection with knives (not shown in the drawings) sever the tube into blanks. This arrangement of the strikers does not form a part of my present invention and need not, 120 therefore, be further described or illustrated.

The operation of my machine as above described is well understood and has been sufficiently described.

The advantage of my construction, by which 125 the paper-folding devices can be rapidly retracted from and brought to operative position, will be at once appreciated, as it enables a new web to be inserted in the tube forming part of the machine or a torn web extracted 130 and straightened out with the least possible delay and disarrangement of the folding de-



vices, which, once properly adjusted, can retain their adjustment, as their retraction does not in any way disarrange it.

While my construction eliminates the usual stationary table situated below the former and which obstructs access to the former and the paper from below, I retain in the narrow stationary table-section E a sufficient portion of the ordinary stationary table to perform its most useful function—namely, the holding of the paper against the bottom of the former.

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

1. In a tube-forming mechanism, the combination with a former, over which the paper is formed into a tube, of table-sections lying on each side of the former and laterally movable with respect to it, a series of web-folding devices secured to the table-sections, and

means for throwing the table-sections in and out of operative relation with the former, the under side of the former being freely accessible from below when the sections are out of operative position.

2. In a tube-forming mechanism, the combination with a former over which the paper is formed into a tube, and a narrow stationary table-section, lying lengthwise below said former, of table-sections, lying on each side of the stationary section and the former and laterally movable with respect to it, a series of web-folding devices adjustably secured to the movable table-sections, and means for throwing the table-sections in and out of operative relation with the former.

LOUIS P. EISENBEIS.

Witnesses:

W. M. EDWARDS,  
E. R. MITCHELL.