

L. H. ROGERS.  
Letter-Sheet Envelope-Machine.  
No. 212,268. Patented Feb. 11, 1879.

Fig. 1

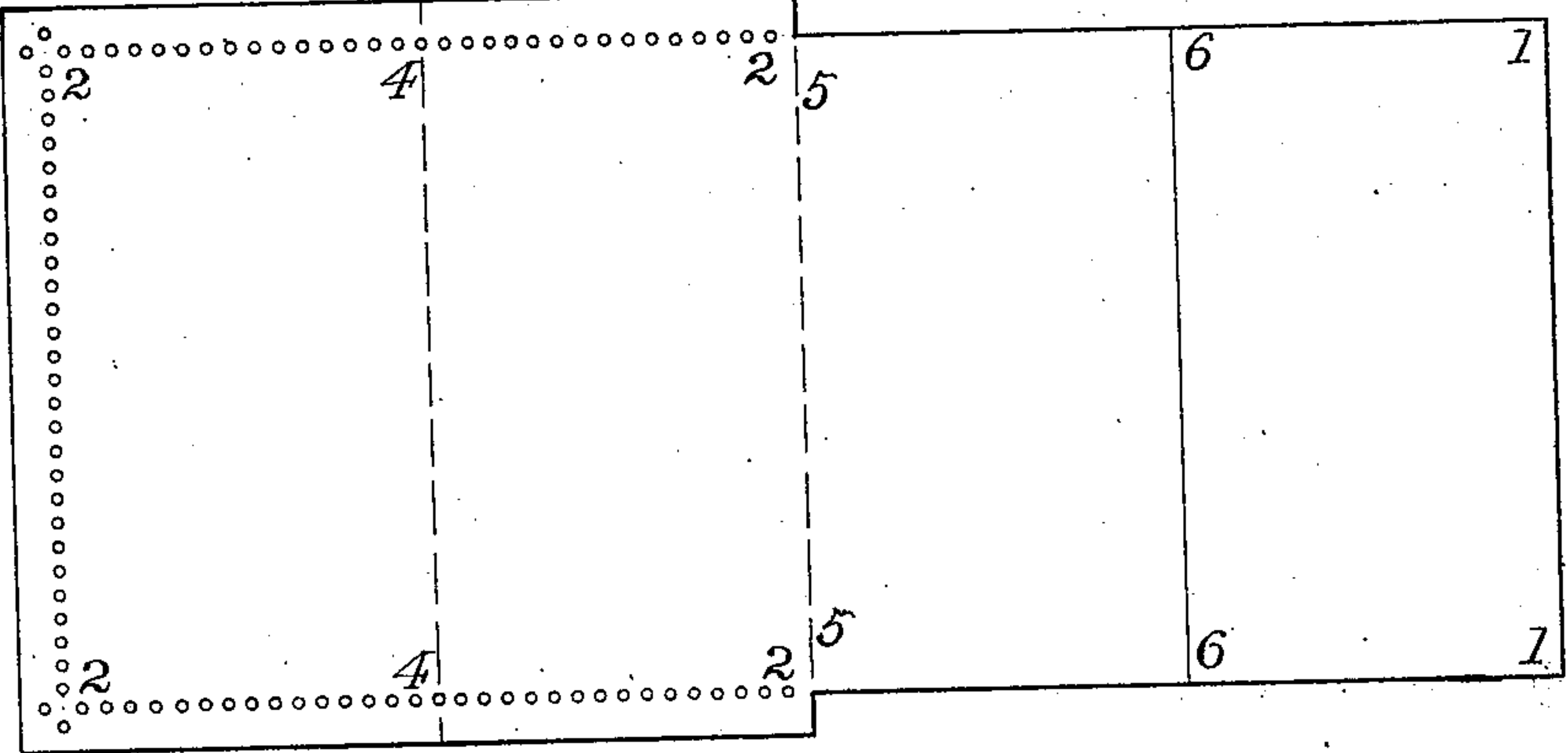


Fig. 2

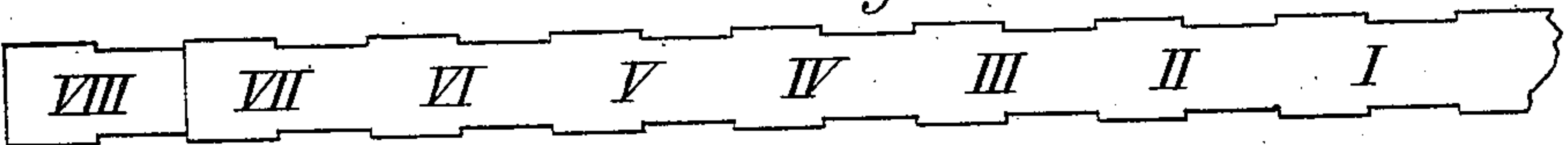


Fig. 3

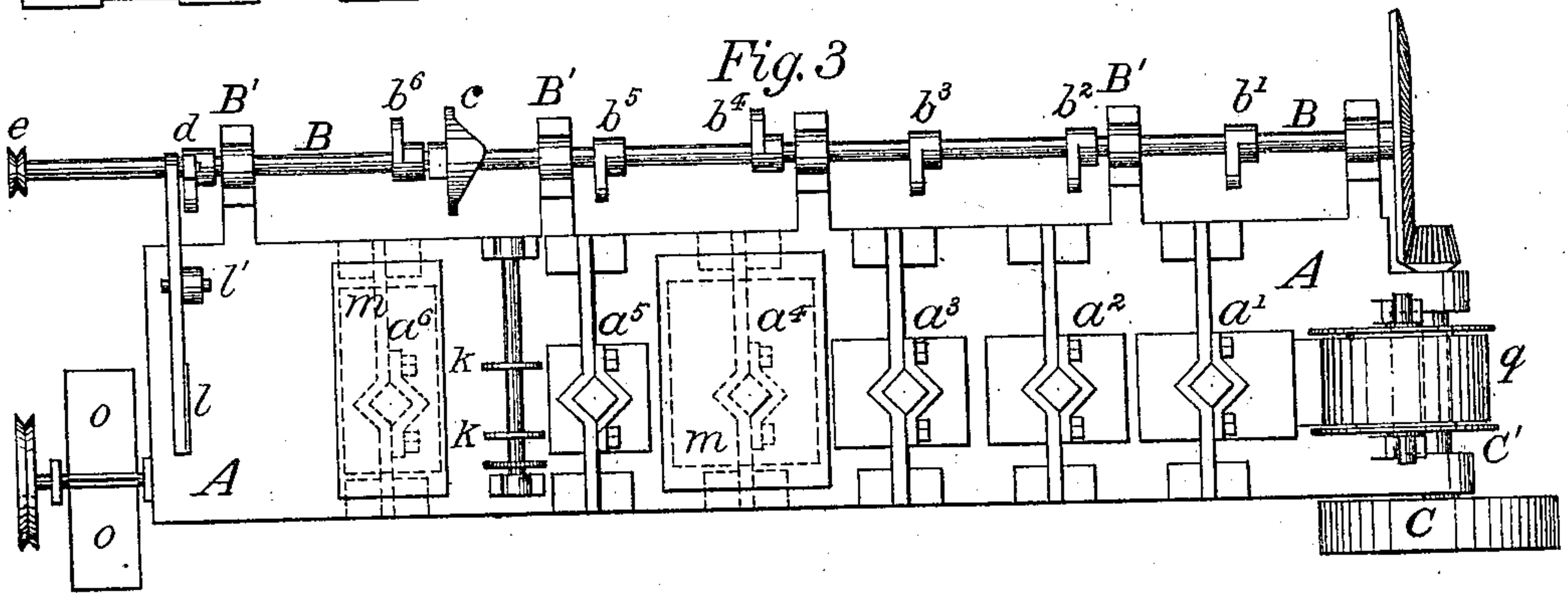
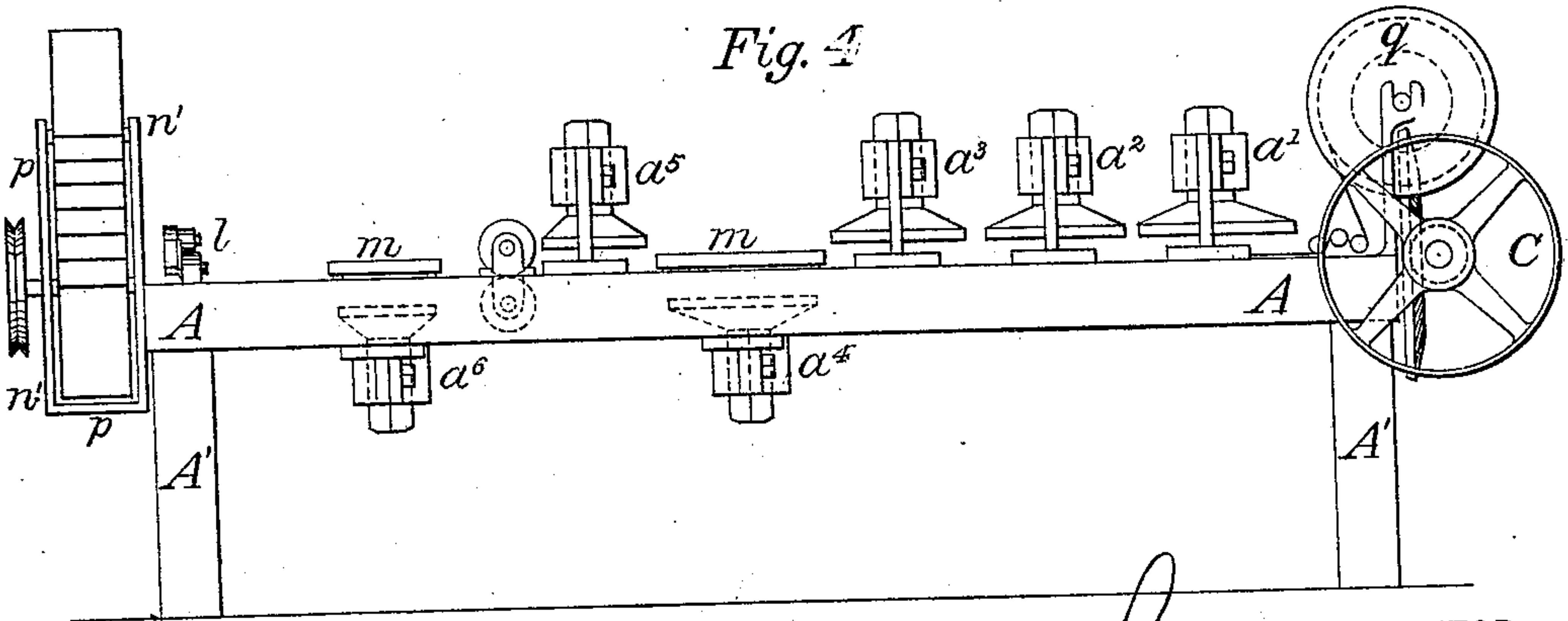


Fig. 4



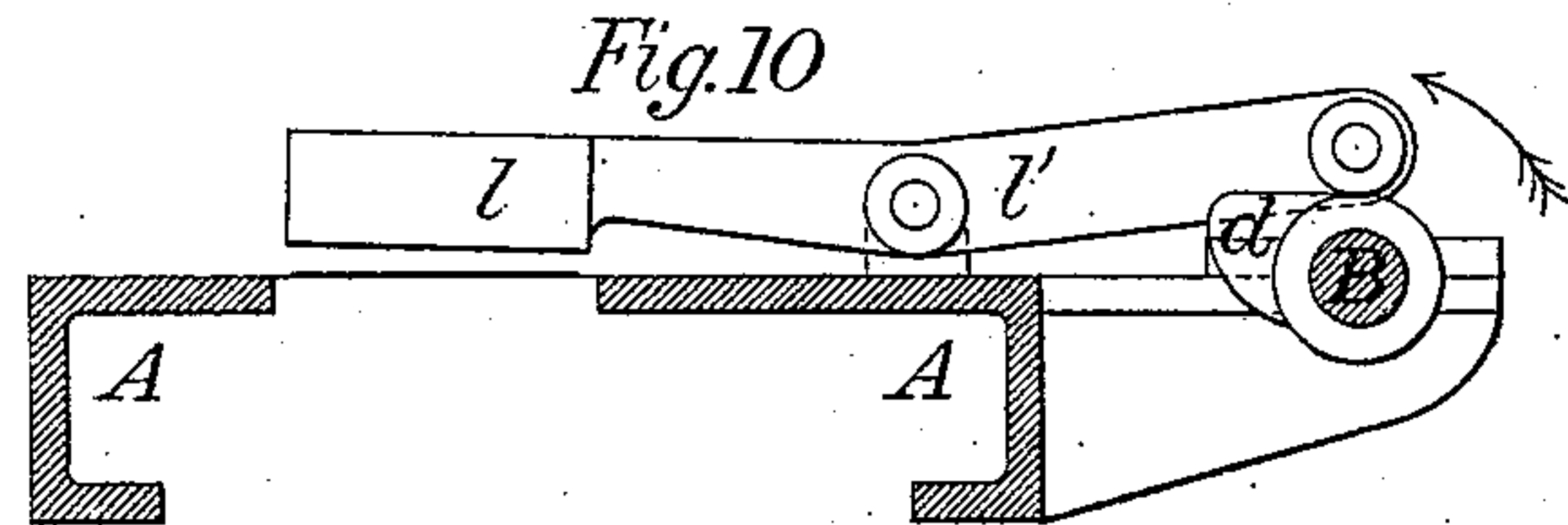
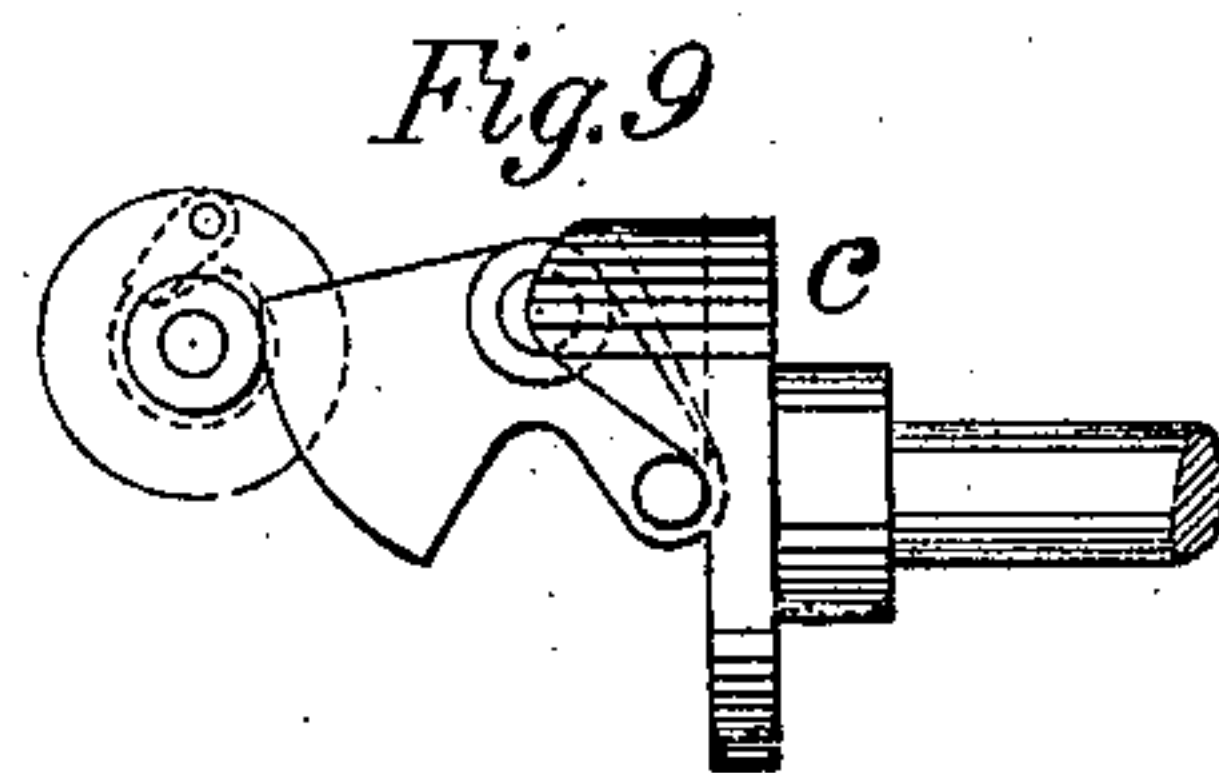
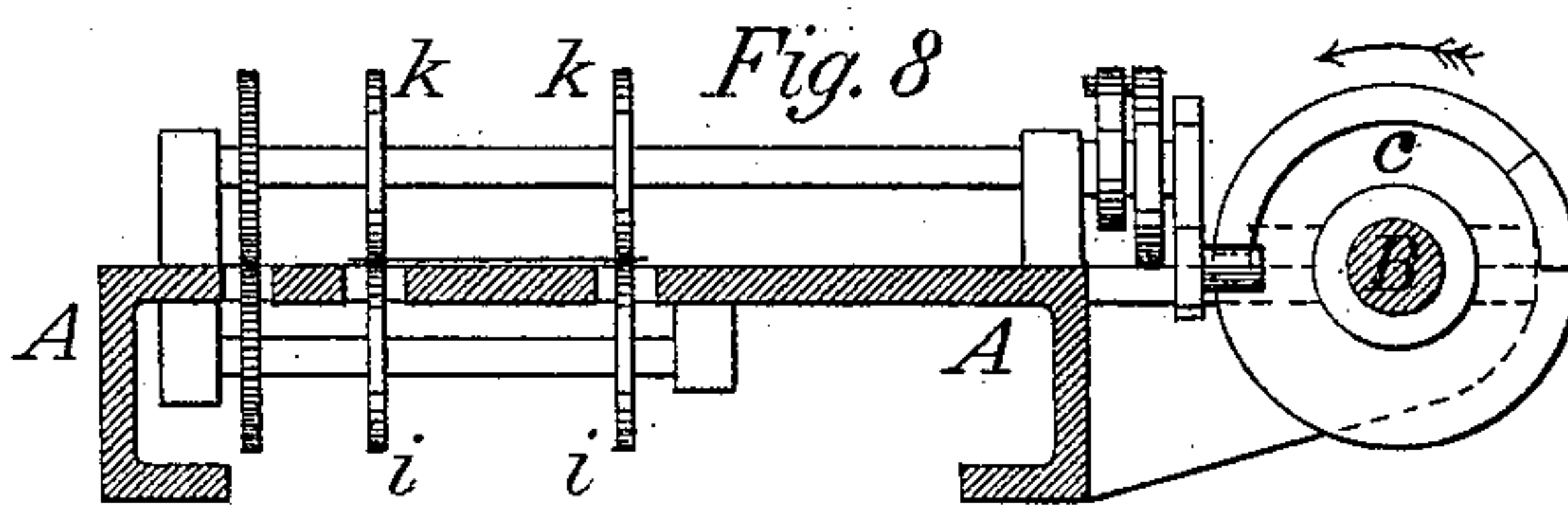
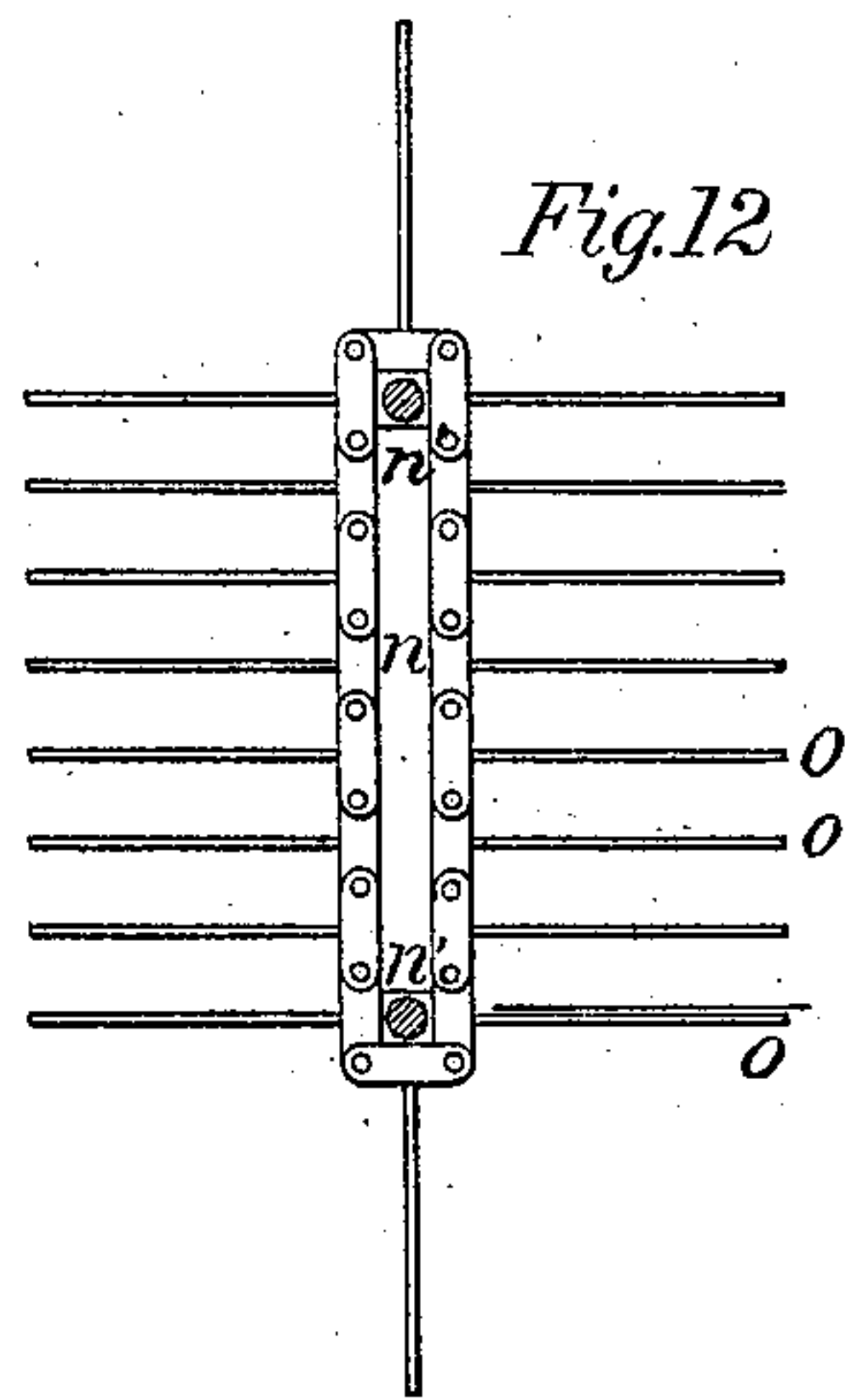
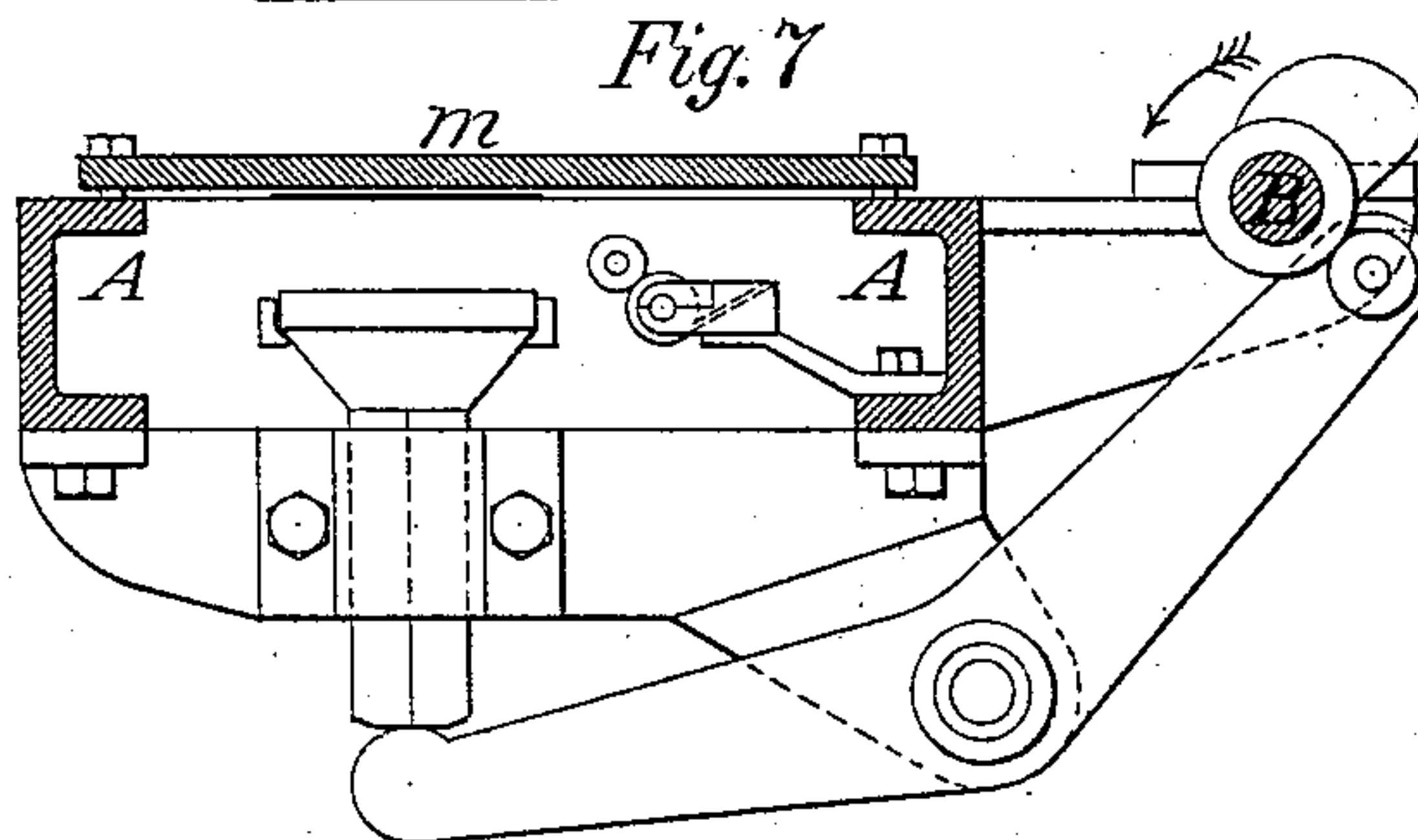
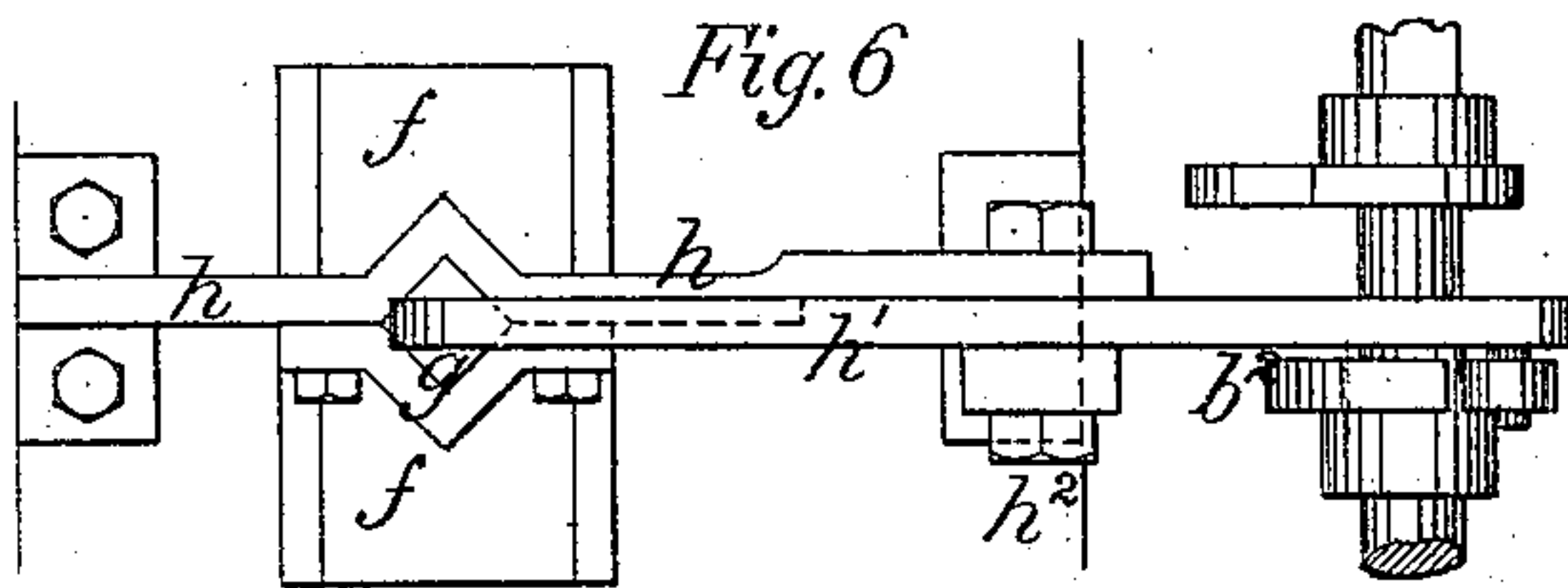
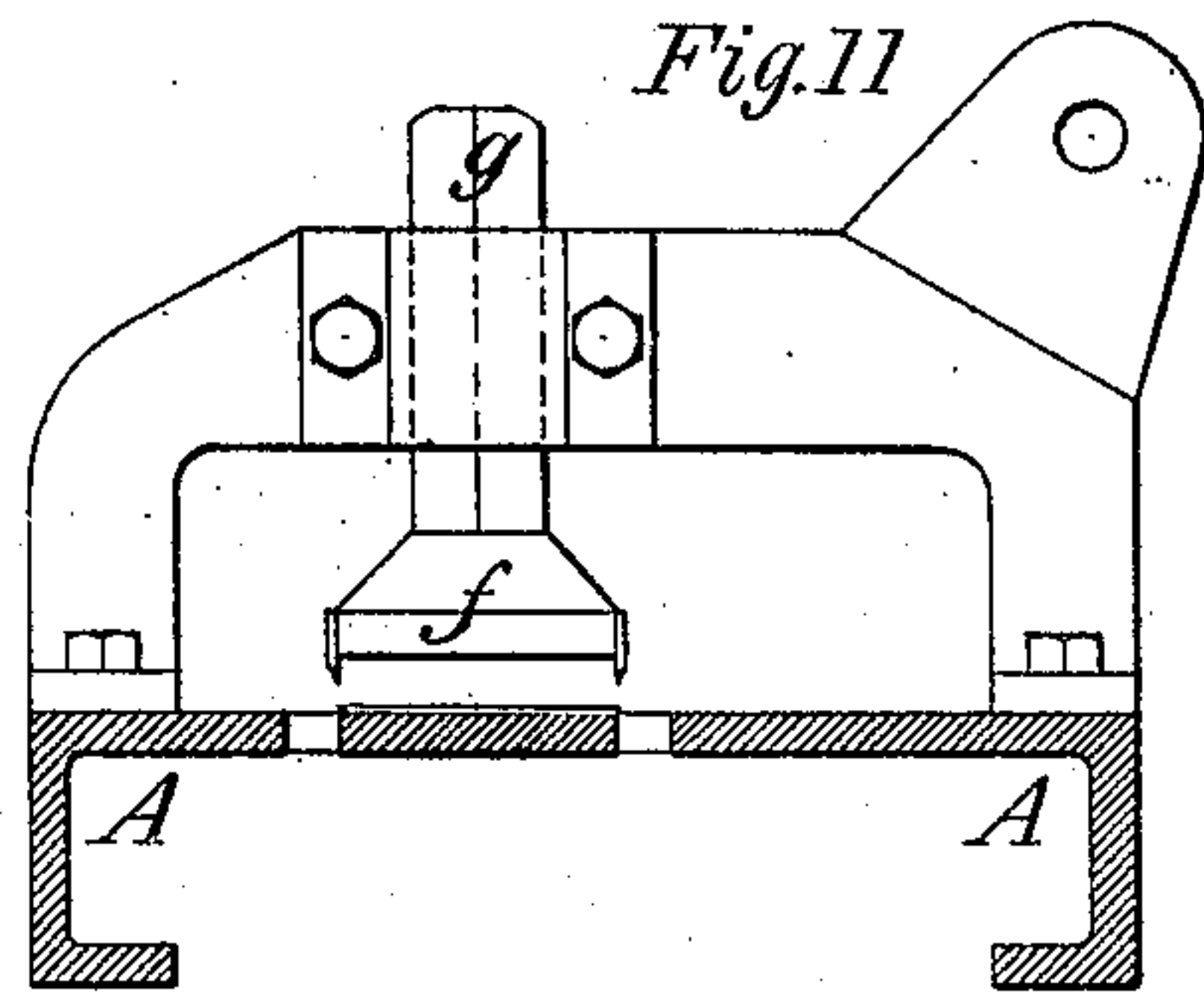
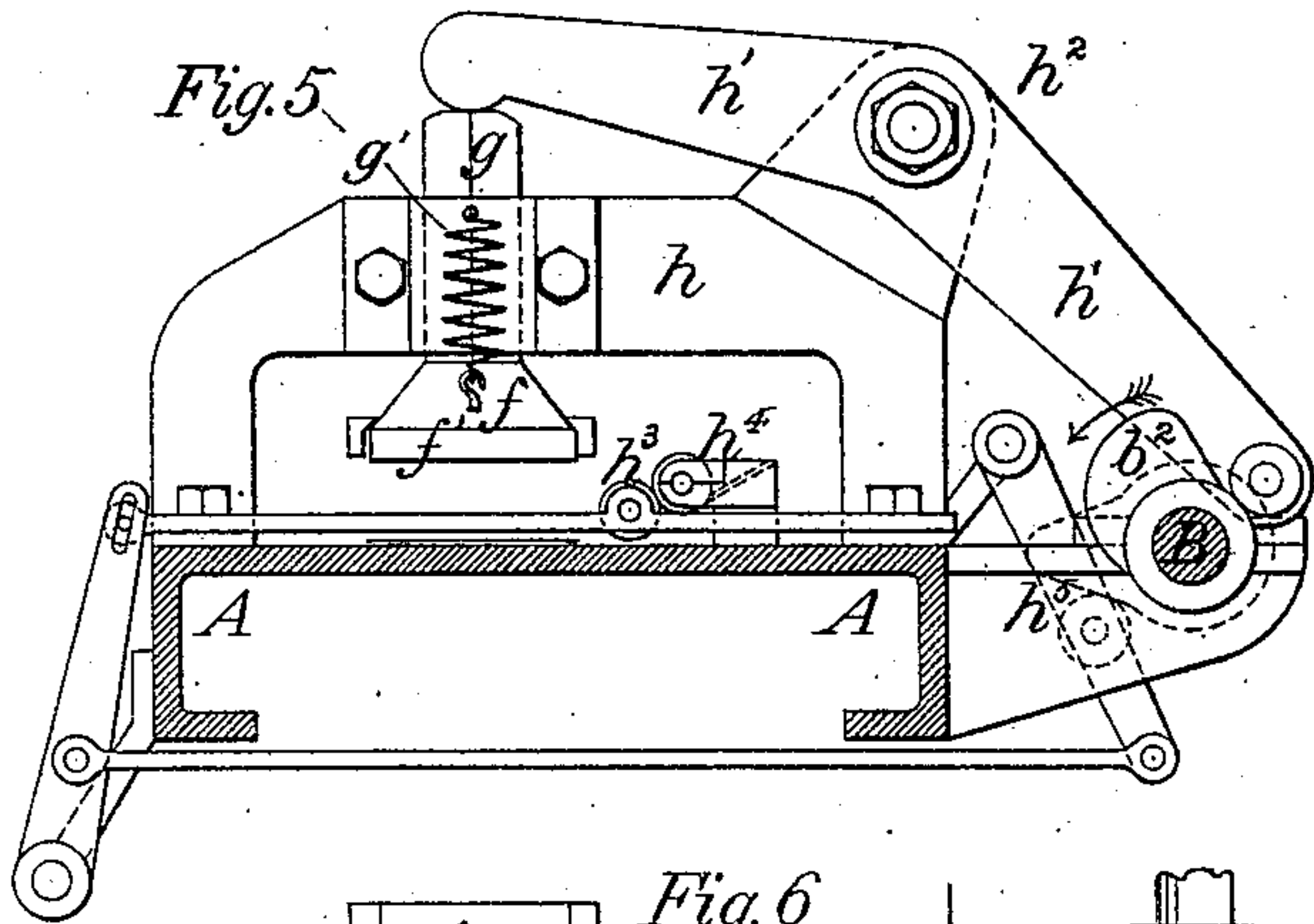
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# UNITED STATES PATENT OFFICE.

LEBBEUS H. ROGERS, OF NEW YORK, N. Y.

## IMPROVEMENT IN LETTER-SHEET-ENVELOPE MACHINES.

Specification forming part of Letters Patent No. **212,268**, dated February 11, 1879; application filed June 12, 1878.

*To all whom it may concern:*

Be it known that I, LEBBEUS H. ROGERS, of New York, in the county of New York and State of New York, have invented a new and useful Improvement in Machinery for Manufacturing Letter-Sheet Envelopes, which improvement is fully set forth in the following specification.

This invention relates to a machine for making letter or note sheet envelopes, more especially of the kind for which Letters Patent No. 202,874 were granted to me April 23, 1878.

The invention consists in the combination and construction of parts, as hereinafter set forth.

The following description will enable those skilled in the art to which it appertains to make and use my invention.

In the drawings, Figure 1 represents the letter or note sheet envelope as patented to me, the printing thereon not being shown. Fig. 2 represents a strip of paper numbered according to the successive operations in manufacturing the note-sheet envelope. Fig. 3 is a top-plan view. Fig. 4 is a side-plan view. In these figures (3 and 4) some of the connecting-levers and operating mechanism are not shown. Fig. 5 represents one of the machines for printing the upper side of the envelope-strip, as seen in elevation at the end, the bed-plate of the machine being shown in section. Fig. 6 represents a top view of the press. Fig. 7 represents a view of the mechanism for printing or gumming the lower side of the envelope-strip. Fig. 8 represents the feed mechanism for giving an intermittent motion to the envelope-strip. Fig. 9 is an end view at right angles to view in Fig. 8, showing the cam for actuating the feeding devices. Fig. 10 represents the shearing device for severing each letter or note sheet envelope from the strip. Fig. 11 represents the punching and cutting devices, the operative mechanism being omitted. Fig. 12 represents the drying apparatus.

My patented envelope, as represented in Fig. 1, consists of an oblong piece of paper or blank, the width of the lower half being somewhat less than that of the upper, the margin on the upper portion thus extended being gummed on the under side, and perforated at

its inner edge with rows of perforations 2 2. Furthermore, this blank is creased transversely in three lines, 4 4, 5 5, and 6 6, the creases 4 4 and 5 5 being creased by knives underneath the sheet, and the crease 6 6 by a knife above the sheet.

The sheet can be printed on both sides, and the upper side may be printed in two different colors.

The machine consists of a bed-plate or frame, A, supporting the following mechanism: a reel for holding and unwinding the strip of paper from which the letter-sheet envelopes are to be made, a series of presses for perforating and cutting the edges of the letter or note sheet envelope and for printing the upper side of the letter-sheet envelopes in different colors, a press for printing the under side, arranged beneath frame A, creasing mechanism, feeding devices operating intermittently an apparatus for gumming the under side of the margin, devices for severing the letter or note sheet envelopes from the strip, and an apparatus for drying the finished letter-sheet envelopes.

These devices and apparatus, with their arrangement relatively to each other, are shown in the plan views, Figs. 3 and 4.

The bed-plate A is supported by suitable legs A'. (See Fig. 4.)

A shaft, B, runs lengthwise of the machine, and rests in bearings B', which extend out from the side of the bed-plate, the shaft being driven through the medium of bevel-gears and transverse shaft C' by a pulley, C, as clearly shown in Fig. 3.

The shaft B carries the cams which give motion to the various printing and other presses, for punching and cutting the edges, creasing, and gumming, above and below the bed-plate, also to the feed apparatus, to the shearing device, and to the drying apparatus.

The cam  $b^1$  gives motion to the perforating and edge-cutting press  $a^1$ .  $b^2$  and  $b^3$  give motion to the two upper printing-presses,  $a^2$   $a^3$ .  $b^4$  operates the lower printing-press,  $a^4$ . Cam  $b^5$  operates the creasing-press  $a^5$ . Cam  $b^6$  operates the gumming apparatus  $a^6$ , below the bed-plate. Cam  $c$  gives motion to the feed-rollers  $k$ ; and cam  $d$  works the separating-knife  $l$ .

A small pulley,  $e$ , at the end of the shaft B



operates the drying apparatus *o o*. The same shaft B also carries other cams, which give transverse sliding motion to the various ink-rollers, and also to the gumming-rollers of the gumming-press, which cams are shown in Figs. 5 and 6, but not in Fig. 3.

The upper printing-presses are constructed alike, and the following description of the first will serve for both.

A platen, *f*, Fig. 5, at the lower end of a vertical shank, *g*, carries the type *f'*, the said shank sliding in a suitable frame, *h*, which is bolted to the top of the bed-plate A. A lever, *h'*, having its fulcrum at *h''*, and receiving its vibrating motion from a cam, *h''*, forces the shank and platen downward, while a spiral spring, *g'*, brings them up again when the lever is left free by the revolution of the cam.

An ink-roller, *h''*, traveling across the type, and receiving its ink from an ink-fountain, *h''*, supplies the type with ink. A cam, *h''*, on shaft B (shown in dotted lines in Fig. 5) gives the transverse sliding motion to the ink-roller. The roller is returned to the position represented in the drawings by a spring or weight, or by positive-motion mechanism. As it will be readily perceived how such retracting mechanism can be made to operate, it has not been shown in the drawings. This transverse motion is communicated from the cam to the frame which carries the ink-rollers by means of two pivoted levers, connected with each other by a link, the one being operated by the cam, and the other operating the roller-frame by means of a pin working in a slot or other suitable connection.

The press for perforating the margin of the blank and for cutting the edges is constructed, in general, like the press just described, the changes being such as to adapt it to the different purpose. The platen is provided with punches and cutting-knives, and the bed-plate has suitable openings therein to allow of the proper operation of the cutting-edges, as shown in Fig. 11. The inking-rollers and operating mechanism connected therewith are not, of course, employed.

The lower printing-press is arranged below the bed-plate, there being an opening therein above the platen of the press, which opening is covered by a plate, *m*, raised sufficiently above the surface of the bed-plate A to allow of the letter-envelope strip's passing thereunder. The use of this plate is to support the strip against the printing-surface as the platen is pressed upward.

The position of the platen with the operating-lever therefor, and of the inking-rollers and of the plate *m* relatively to each other and to the bed-plate, is shown in Fig. 7.

The inking-rollers are operated in substantially the same manner as set forth for the upper press; but for the sake of clearness the operating devices are there omitted.

The creasing mechanism is constructed like the press for perforating and cutting the edges of the blanks, the platen being, however, fit-

ted with creasing-knives instead of punches and cutting-knives. The creasing-knives are arranged one on the platen and two on the bed-plate, the platen and bed-plate being each grooved to receive the knives on the other. If desired, a second platen may be combined with the bed-plate, to be operated like the platen of the lower press, the bed-plate having an opening to correspond.

The disposition of knives may be varied, the object being to form two creases upward and one downward in the paper strip, or vice versa, as desirable.

The essential features of the gumming apparatus, which is located beneath the bed-plate, are the same as above set forth for the lower printing-press, the platen being, of course, changed, and mucilage-rollers used instead of inking-rollers.

The feed mechanism, located preferably between the creasing and gumming apparatus, is of the class known as "roller-feeds," and it consists of two rollers, *i i*, Fig. 8, on a lower shaft, and two rollers, *k k*, on an upper shaft, the two sets of rollers acting in conjunction with each other to take hold of the strip of paper near its edges and to propel it at each revolution the length of one envelope.

For operating the feed to cause an intermittent revolution of the rollers, a side cam, *c*, is used. The connection of this cam with the shaft of the upper feed-rollers is in a manner well known, which needs no explanation. It is shown in detail in Fig. 9.

The apparatus for severing the envelopes from the strip consists of a knife, *l*, Fig. 10, attached to a lever, whose fulcrum is at *l'*, and which is operated by a cam, *d*, on shaft B. The knife *l* acts in conjunction with a stationary knife attached to the bed-plate.

The drying apparatus, Fig. 12, consists of an endless chain, *n*, each link of which carries a light wire frame, *o*, arranged to receive an envelope and carry the same upward.

The chain runs over a pair of square shafts, *n' n'*, which are hung in a suitable frame, *p*, attached to the end of the bed-plate. The lower shaft *n'* receives, by means of the pulleys shown in Fig. 3, a motion of a quarter of a turn each time an envelope is cut off, thus presenting a fresh wire frame or shelf for each finished envelope as it comes from the machine.

By the operation of this machine the strip of paper as it is wound off the reel *q*, Fig. 4, is passed successively to the apparatus for perforating and cutting the edges, for printing on both sides, for creasing, for gumming the proper edges, for severing the letter-sheet envelope from the strip, and for drying, motion being imparted to the strip intermittently by suitable mechanism.

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

1. The herein-described machine for making letter or note sheet envelopes, consisting of mechanism, substantially as herein set forth,



for cutting the edges and for perforating the envelope with one or more lines of perforations at a suitable distance from the edges to leave a margin for transversely creasing the envelope, gumming the margins, and severing the letter or note sheet envelopes, the various mechanisms being adapted to operate successively upon a strip of paper or similar material, substantially as specified.

2. The combination, with the mechanism, as herein set forth, for perforating and cutting the paper fed from a roll, as described, for creasing the same transversely, and for gumming the margins thereof for the manufacture of letter or note sheet envelopes, of mechanism, as described, for printing the said paper on one or both sides, in one or more colors, substantially as specified.

3. The drying mechanism, as described, in combination with mechanism, as set forth, for making letter or note sheet envelopes from a continuous strip of paper by perforating and cutting the edges, by creasing the strip transversely, by gumming the margins, and by severing the envelope from the paper strip, substantially as specified.

4. In a machine of the character described, the combination of the bed-plate shaft, a series of presses above and below the bed-plate, for the various purposes as specified, feed mechanism, and cutting-knife operated by cams upon said shaft, substantially as set forth.

5. In a machine of the character described, the combination of the bed-plate, the frame secured thereto, the platen having a vertical shank moving in guides in the said frame, and operated through the medium of a lever fulcrumed on a projection on said frame by a cam on a rotating shaft extending lengthwise of the bed-plate, with rollers arranged to travel across the face of the platen, operated, through the medium of suitable devices, by a cam on said rotating shaft, substantially as described.

6. In a machine of the character described, the combination, with the bed-plate having a suitable opening therein, and having secured thereto a plate covering the opening, but elevated above the surface of the bed-plate for the passage under it of a strip of paper, and a frame, fixed to the under side of the bed-plate, of a platen having a vertical shank moving in guides in said frame and a bent lever fulcrumed on a projection thereon, the end of the vertical shank resting in contact with one arm of said lever, and the other arm being arranged to be operated upon by a cam on a rotating shaft, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

LEBBEUS H. ROGERS.

Witnesses:

E. A. DICK,  
A. POLLOK.