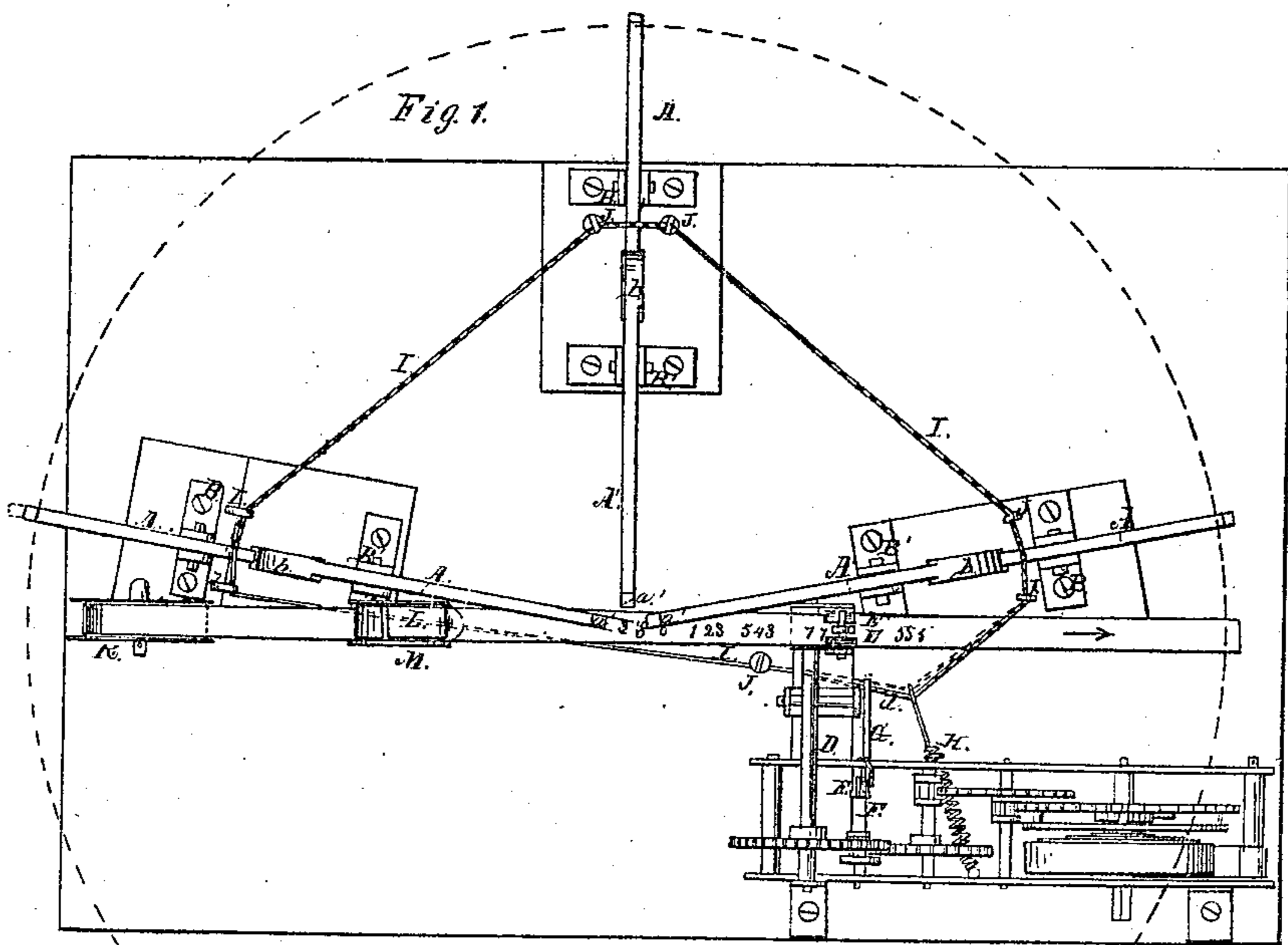
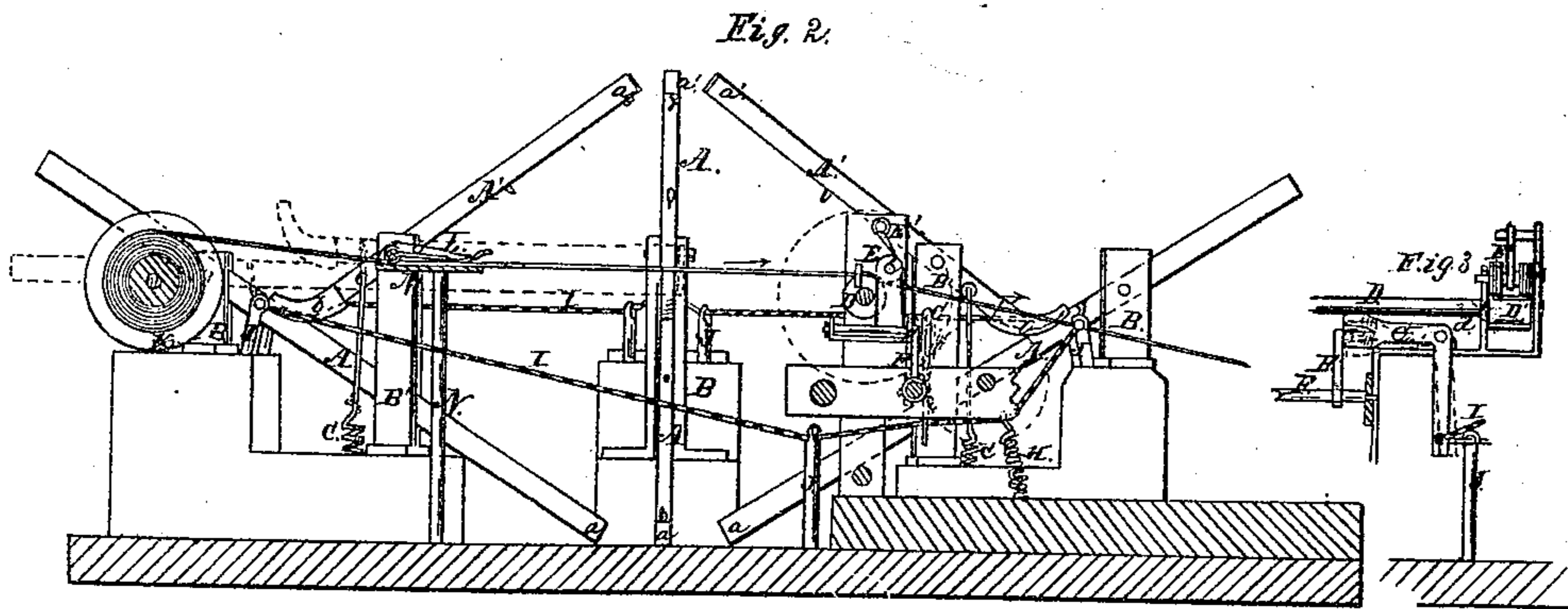
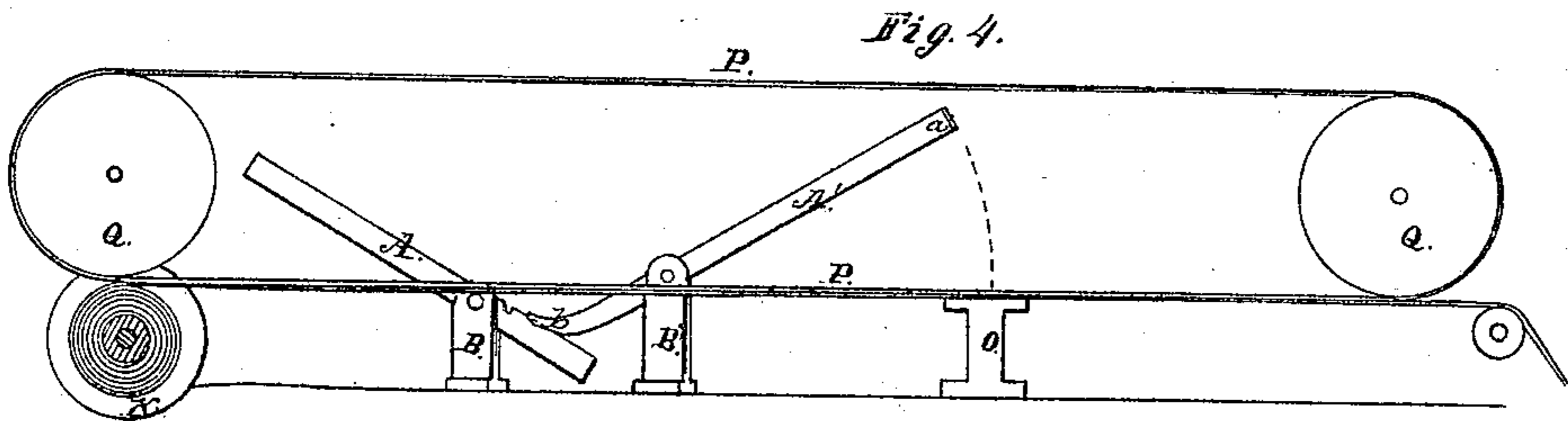


A. E. BEACH.
PRINTING INSTRUMENT.

No. 15,164.

Patented June 24, 1856.



Inventor.
A. E. Beach

UNITED STATES PATENT OFFICE.

A. ELY BEACH, OF STRATFORD, CONNECTICUT.

IMPROVEMENT IN PRINTING-INSTRUMENTS FOR THE BLIND.

Specification forming part of Letters Patent No. 15,161, dated June 24, 1856.

To all whom it may concern:

Be it known that I, A. ELY BEACH, of Stratford, county of New Haven, State of Connecticut, have invented a new and useful Improvement in Printing-Instruments for the Blind; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a top view or plan of my improvement. Fig. 2 is a side sectional elevation of the same; Fig. 3, an enlarged section of clock-work escapement; Fig. 4, a diagram for reference.

Similar letters of reference indicate similar parts in all the figures.

My invention consists in the arrangement of a series of types placed upon keys or their equivalents in such a manner that the types may be made to strike at a common center and leave an impression upon a strip of paper, which is drawn along between or beneath them for that purpose.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation minutely.

A A' are the type-keys, pivoted, respectively, upon the standards B B'. The inner ends of the keys *a a'* are furnished with types, respectively male and female, or raised and intaglio, so that when the two types of each pair of keys come together a raised letter will be produced upon the paper.

In Figs. 1, 2, and 3 the paper is indicated by blue lines.

The short ends of A' are fashioned into caps *b*, which rest upon A. The spiral springs C serve to keep A' in contact with A. When the outer end of A is depressed, the inner ends, *a a'*, of both keys will meet and produce a raised impression upon the paper. Springs C also serve to keep the inner ends of the keys open and to restore them to the open position after they have been depressed. The keys A A' are all so arranged that their inner ends, *a a'*, will invariably strike a common center and leave a raised impression or letter upon the paper at each stroke, thus enabling the operator to form words by merely pressing the proper type-keys.

The necessary space between the letters is obtained by moving the paper along for a short distance after each letter is printed. This is

done by means of an ordinary clock-work, the shaft of one of whose wheels, D, is furnished with a roller, D', on which another roller, E, is made to press by the spring E'. The paper passes between the rollers D E, so that when D is turned, the paper is drawn along in direction of the arrow.

Attached to the pinion-shaft F of the clock-work is a crank, F', which comes in contact with the escapement G and prevents the clock-work from moving, except as hereinafter described.

The escapement G is shaped like a bell-crank, and pivoted at *d*. One end of G is forked, and when this forked end is pressed down, and then restored again, it will in the act of returning to its original position liberate the crank F' and permit the pinion F to make one revolution. This movement of the clock-work will cause roller D' to move correspondently and feed the paper along.

H is a spiral spring connected with cord I near the lower end of escapement G. This spring serves to restore G when it has been pressed down.

All of the keys A are connected with the lower end of escapement G by means of cord I, and whenever any one of the keys is pressed the forked end of escapement G will be also depressed. The clock-work will then be liberated and the paper fed along as before described. All the keys are thus properly connected with the escapement by a common connection, which is far simpler than if a separate connection for each key were employed. Cord I passes through grooves on the tops of the keys A, and also through perforated guides J, which conduct the cord I in the suitable direction.

The paper is supported on reel K, and on its route to the types the paper passes under a spring, L, which presses it upon a small table, M, supported on standard N. Spring L serves to maintain a proper tension on the paper, preventing it from curling, &c.

When it is desired to print black or common letters, instead of raised, the types upon A' are made to strike upon a standard, O, (see diagram, Fig. 4,) the paper and also an endless belt, P, being interposed. The outer surface of belt P is smeared with a lamp-black composition, which serves as a species of ink, so that when a type descends it presses the belt

P upon the paper, and a distinct impression of the letter is left. Q Q are rollers, over which the belt P moves. One of these rollers is intended to be geared in any suitable manner to the clock-work, and the belt is thus slowly moved, so that the same type will never strike twice in the same spot upon it. When the belt P is used, the levers A will need to be short, as shown in the diagram, Fig. 4.

My improvement is particularly useful for the blind, as it will enable them to print raised letters, which, by the sense of touch, they can read as fast as produced.

What I claim as my invention and as new in printing-instruments is—

1. Causing the types to strike at a common center, substantially in the manner and for the purposes set forth.

2. Connecting each of the type-keys or their equivalents with the escapement by means of a common connection, substantially as described.

A. ELY BEACH.

Witnesses:

M. S. BREWSTER,
J. MALLERDUR.