

No. 721,392.

PATENTED FEB. 24, 1903.

W. C. RICHARDSON.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 17, 1902.

NO MODEL.

6 SHEETS—SHEET 1.

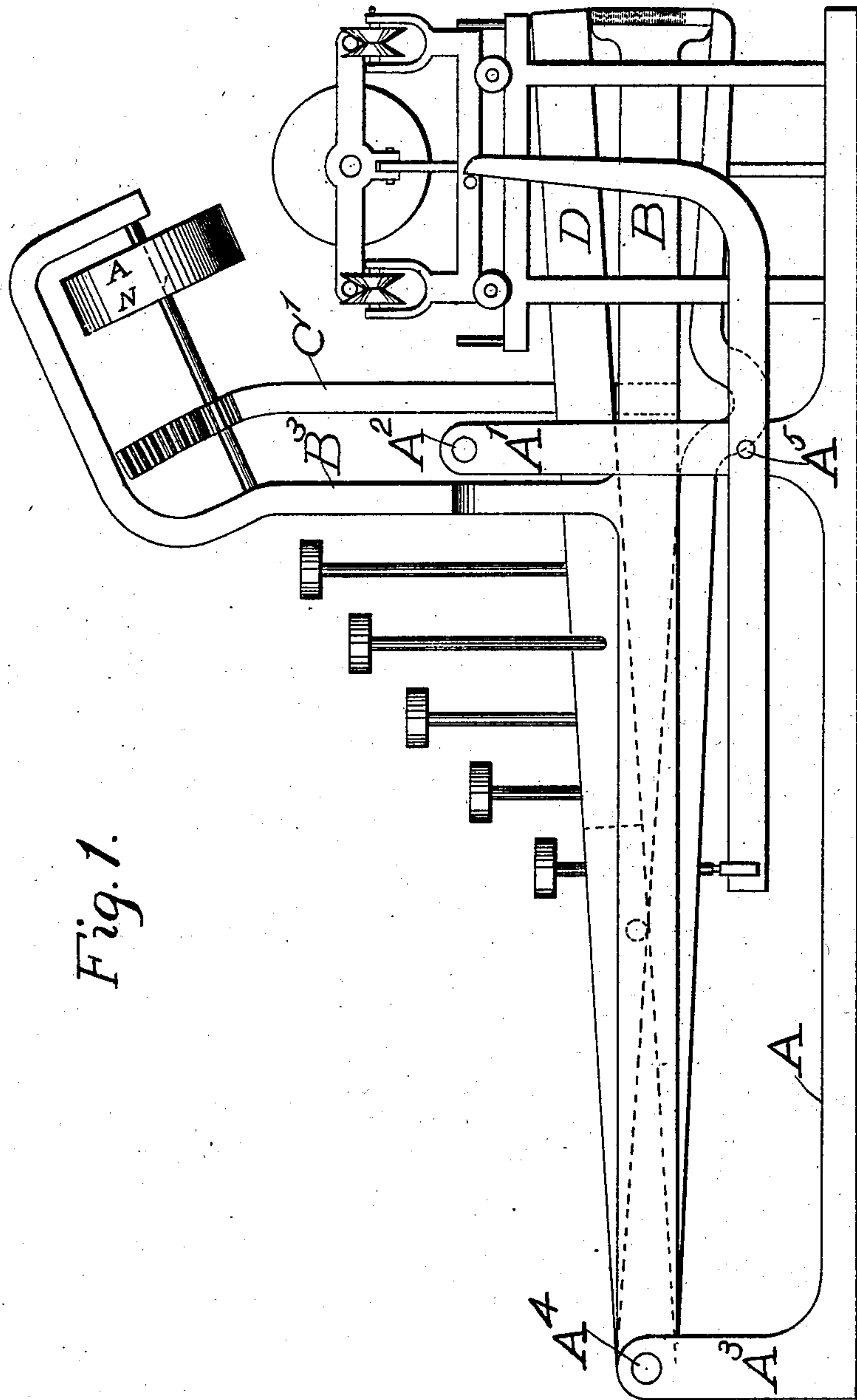


Fig. 1.

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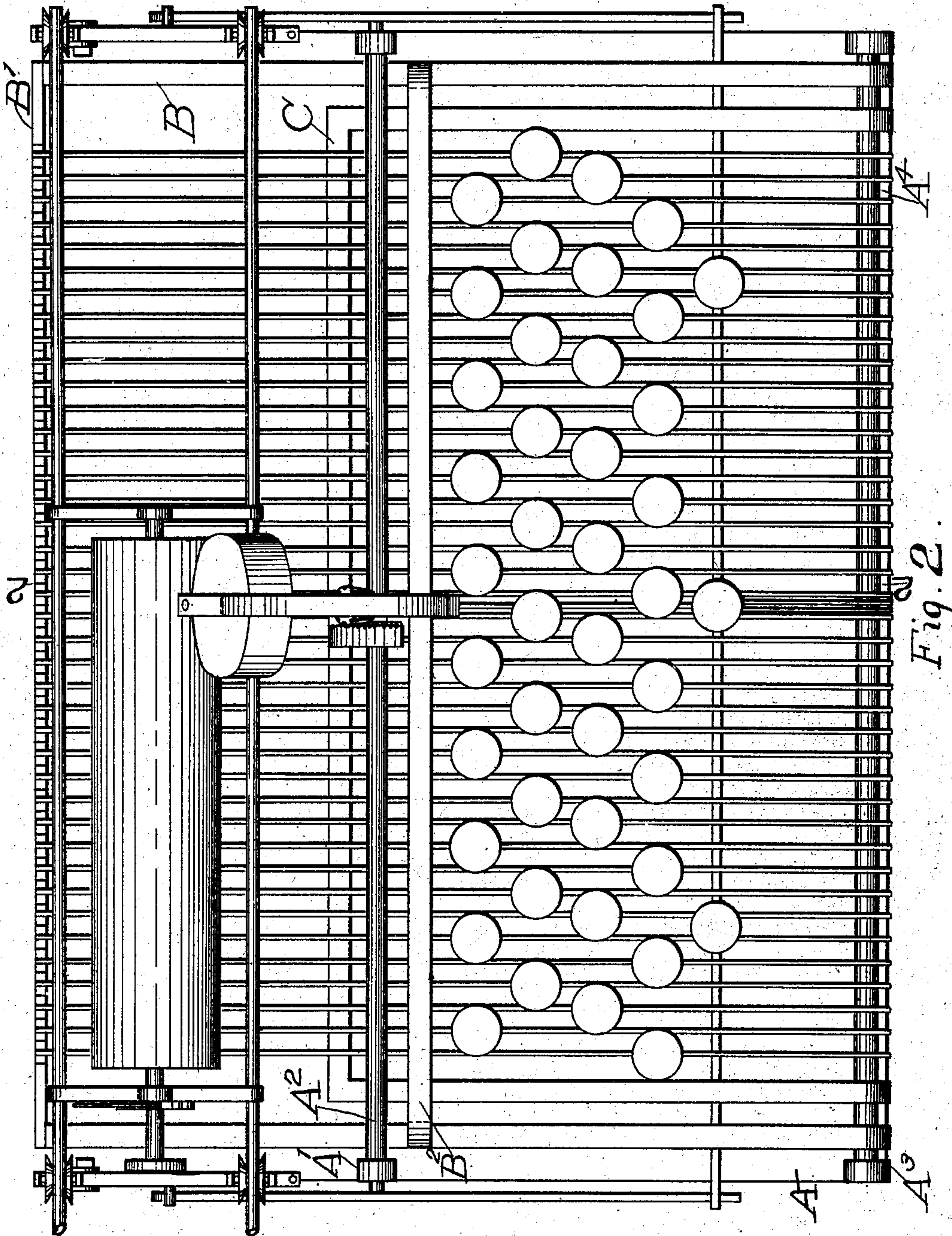
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5 SHEETS—SHEET 2.



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5 SHEETS—SHEET 3.

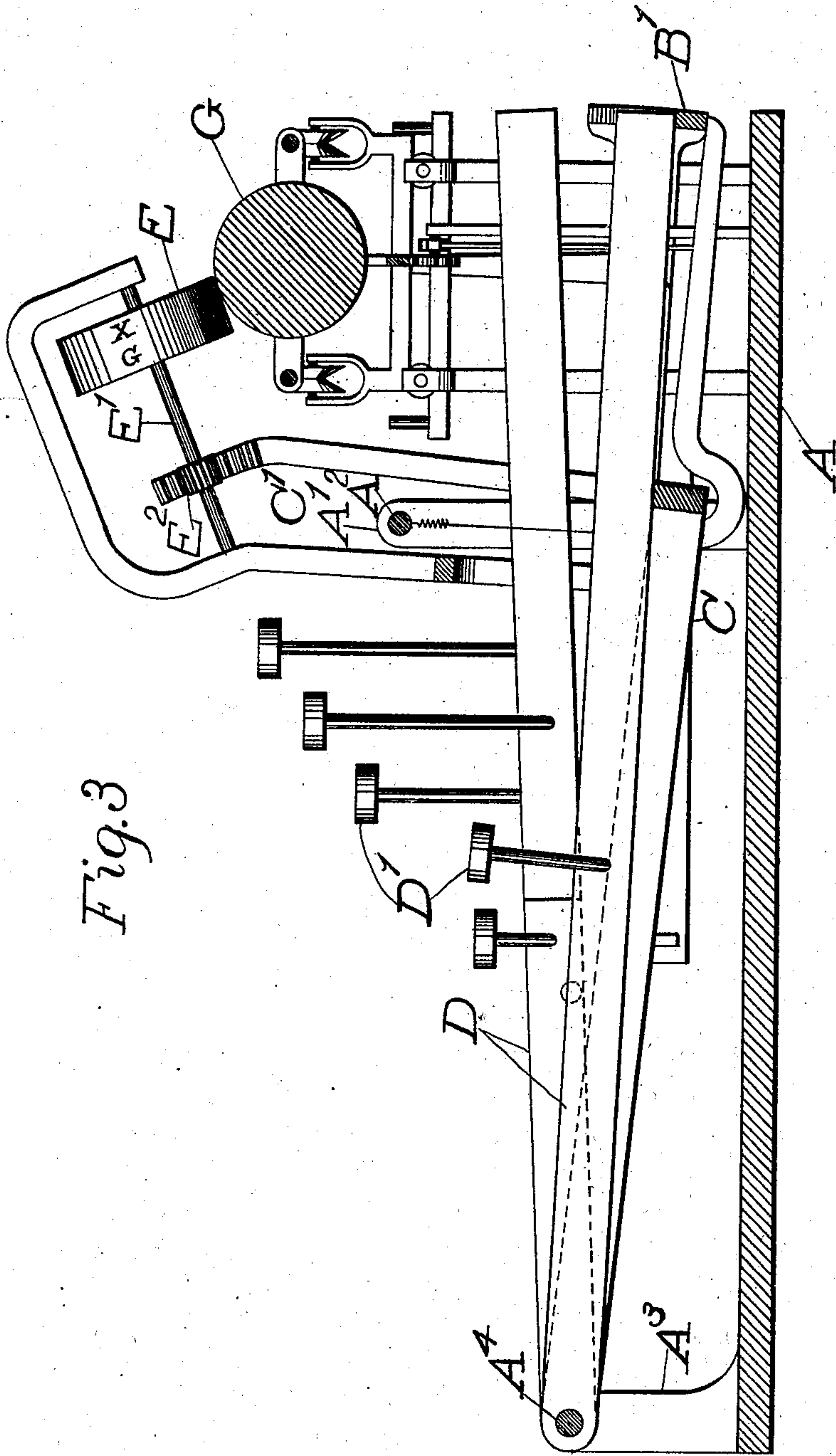


Fig. 3

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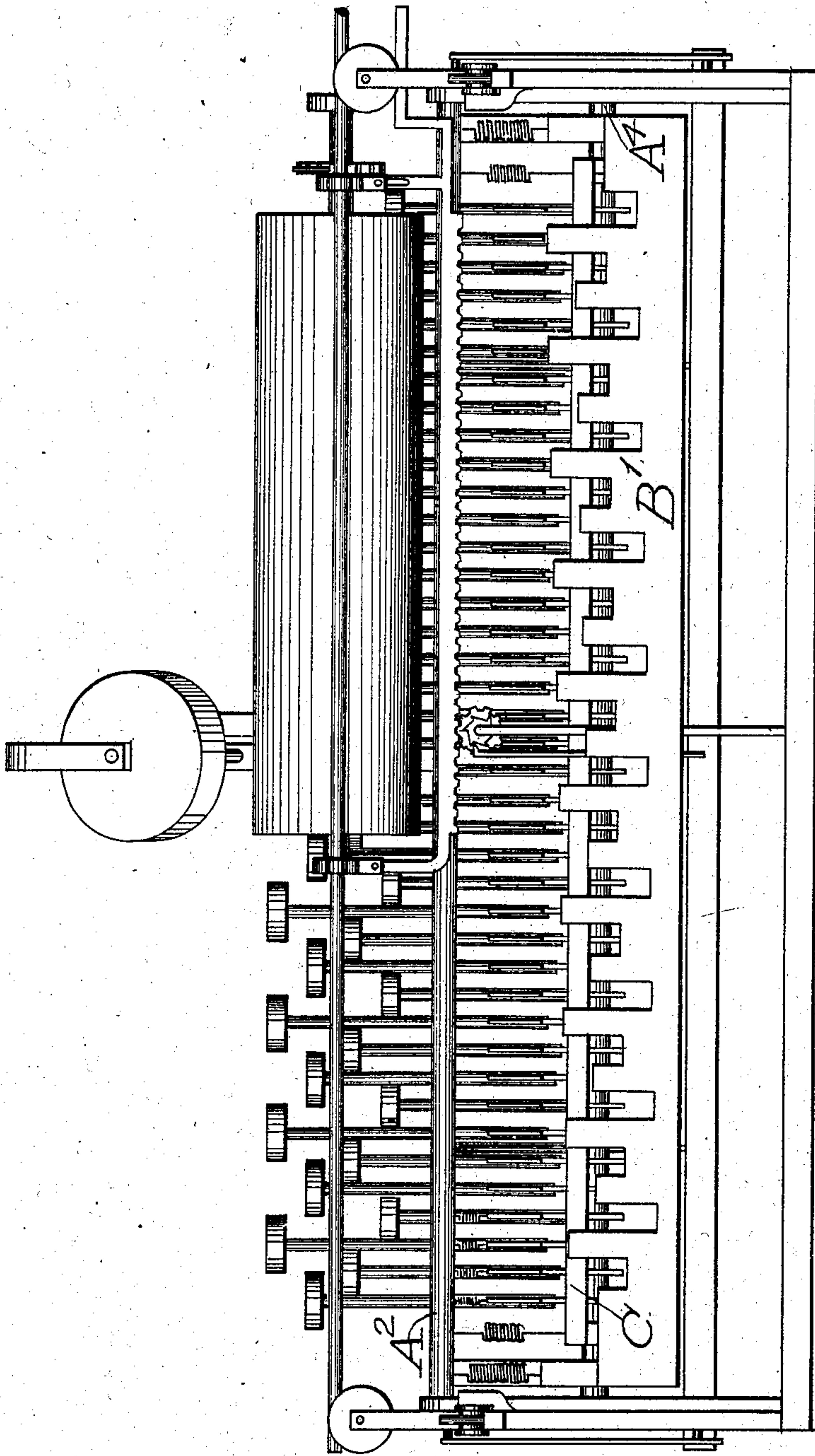
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5 SHEETS—SHEET 4.

Fig. 4.



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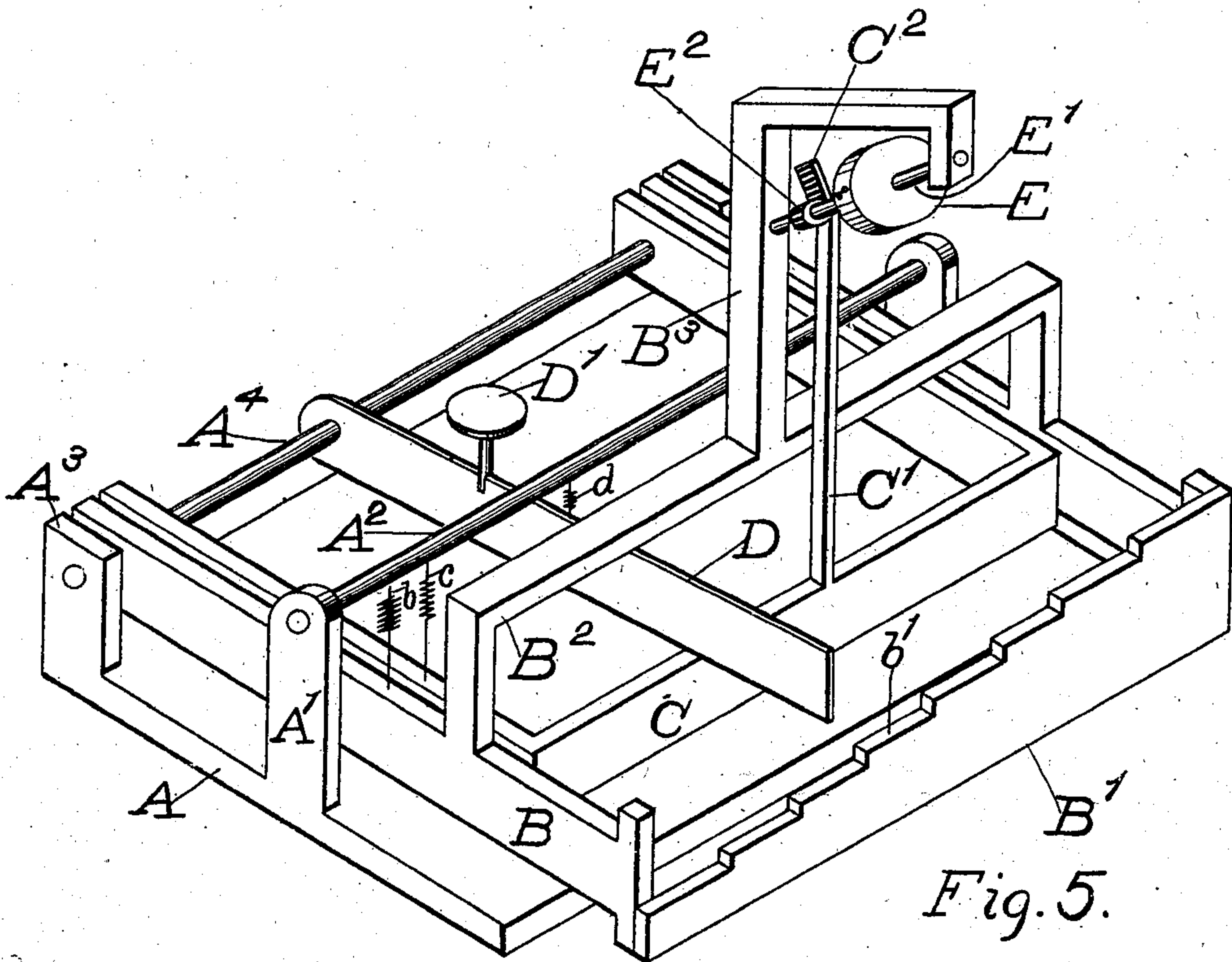
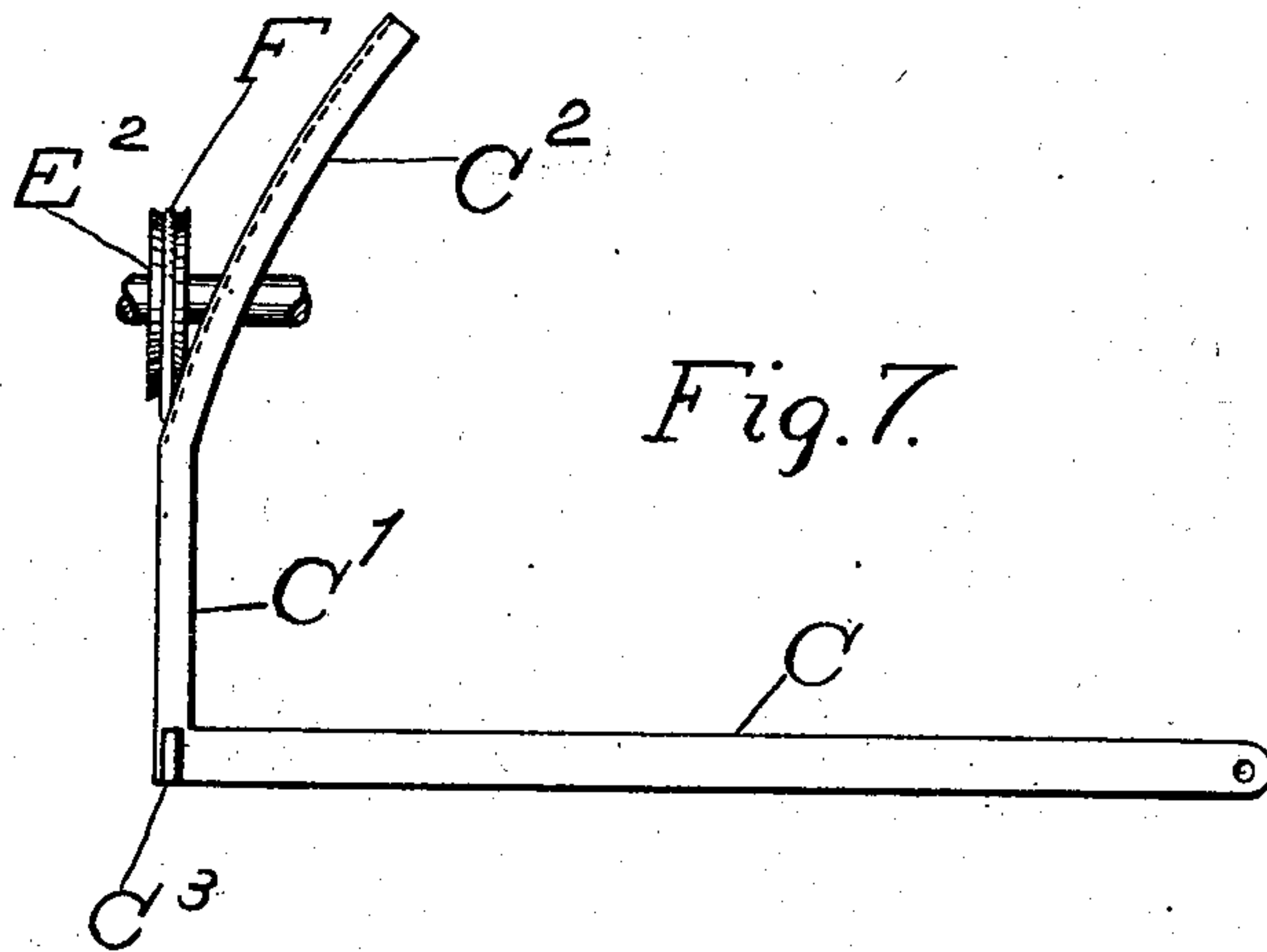
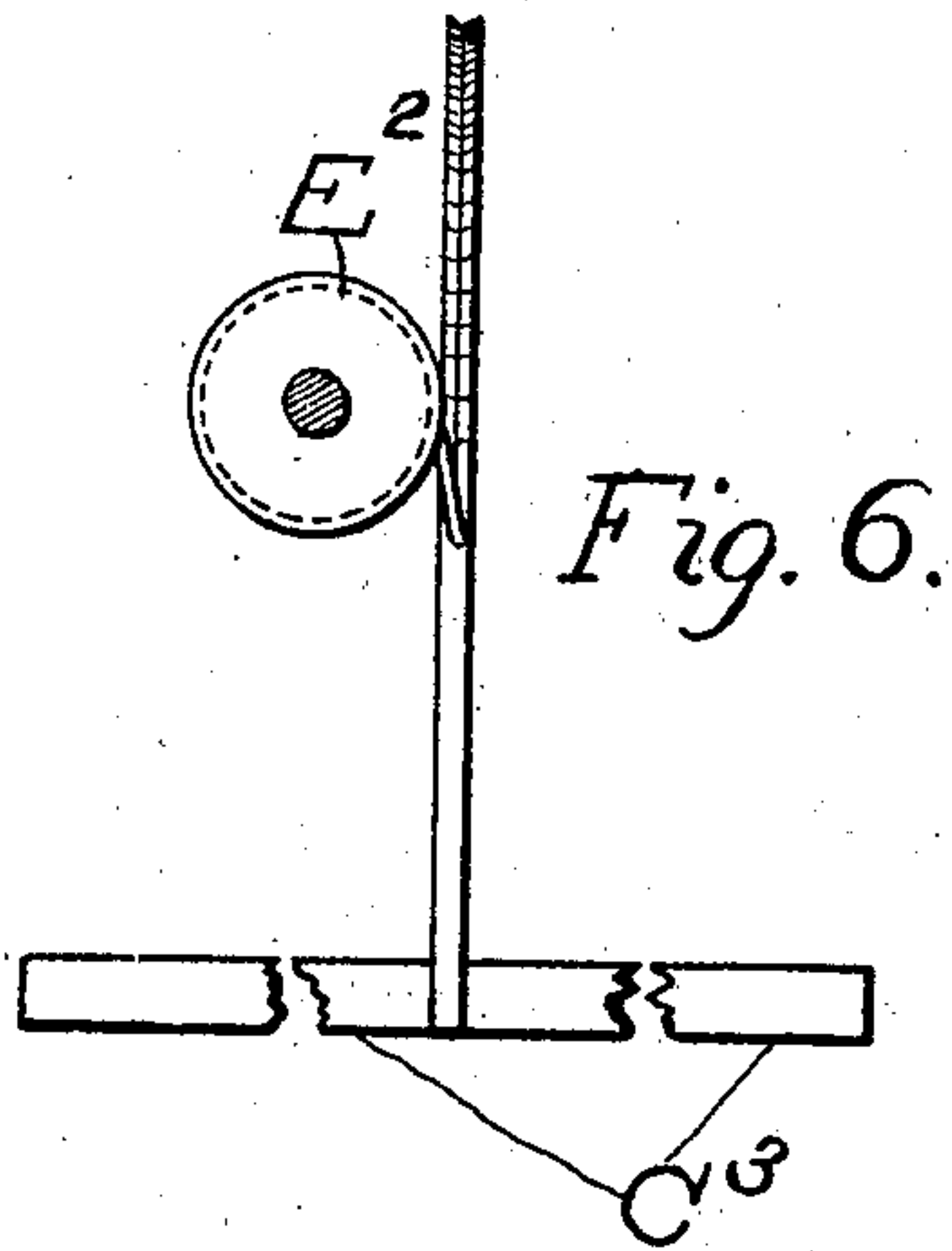
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5 SHEETS—SHEET 5.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM C. RICHARDSON, OF MYSTIC, CONNECTICUT.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,392, dated February 24, 1903.

Application filed May 17, 1902. Serial No. 107,870. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. RICHARDSON, a citizen of the United States, residing in Mystic, county of New London, State of Connecticut, have invented a new and useful Improvement in Type-Writing Machines, of which the following is a specification.

My invention relates to improvements in type-writing machines in which key-levers operate in conjunction with selecting means and printing means; and the objects of my improvement are, first, to provide a simple and compact structure; second, to reduce the number of parts, and, third, to attain a positive positioning of the printing means, followed by a positive movement of said means to produce an impression. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the entire machine. Fig. 2 is a top plan view of the machine. Fig. 3 is a vertical section on the line 2 2 of Fig. 2. Fig. 4 is a rear elevation showing also a view of a modified form of selecting and printing bail. Fig. 5 is a detail view of the operating mechanism with the platen and its carriage removed. Fig. 6 illustrates a modification of the operating mechanism for the printing means. Fig. 7 is a side elevation of the same.

Similar letters refer to similar parts throughout the several views.

The base A is provided on each side with the standards A', in which is mounted the cross-bar A². Standards A³ are located at the forward end of the base A and support a pivot-bar A⁴. Upon the pivot-bar A⁴ are preferably mounted the type-operating bail C and the selecting and printing bail B. Also preferably mounted on the cross-bar A⁴ are the key-levers D, provided with the keys D'. It is obvious, however, that the parts B, C, and D may be mounted upon different centers without departing from the spirit of my invention, it being only necessary that the key-levers D contact both with the operating-bail C and the printing and selecting bail B to depress the same. The bails B and C and the type-levers D are normally held in raised position by springs b, c, and d, which are suspended from the cross-bar A², mounted in standards A' of the base A. A suitable abut-

ment may be provided to limit the upward movement of the parts B, C, and D. Extending upwardly from the printing and selecting bail B is the frame B², provided at its center with a standard B³, in which is suitably mounted the printing mechanism proper, E. The frame B² may be located either in front or to the rear of cross-bar A², as shown. The cross-bar B' of this printing and selecting bail B is provided with a number of stop-surfaces b', corresponding to the number of key-levers. These stop-surfaces are formed at different heights either in the manner shown in Fig. 5 or in Fig. 4. These stop-surfaces determine the extent of depression of the key-levers, and consequently the movement of the operating-bail C, and this in turn determines the amount of movement to be given to the printing mechanism proper. Each of the groups of steps or stop-surfaces on the member B' is so arranged that none of the stop-surfaces of one group exactly correspond to any of the stop-surfaces of the other groups. In other words, the differentiations in the levels of the stop-surfaces, while so slight as to not be readily illustrated in the drawings, are nevertheless well defined and are so arranged as to permit of a different printing position of the type-wheel for each key-lever contacting therewith. The type-operating bail C is provided with a standard C', having a bent portion at its upper end, upon which are formed ratchet-teeth C². These teeth engage a gear-wheel E² on the shaft E' of the type-wheel E. At the rear of the machine, below the type-wheel, is mounted the carriage mechanism, as shown in Figs. 1, 2, 3, and 4, said carriage mechanism being provided with suitable shift and feed mechanism.

By referring to Fig. 5 it will be seen that the operation of my improved type-writer is as follows: Upon depressing a key-lever D by means of the key D' said lever engages the cross-bar of the bail C, depressing the same, causing the gear-teeth C² to engage the gear E². Further depression of the lever D causes the type-wheel E to rotate until said lever D contacts with the stop in the bail B, when upon further depression of said key-lever D the type-wheel contacts with the platen G and makes the impression. Upon releasing the key-lever D the parts resume their normal

raised position by reason of the springs *b*, *c*, and *d*.

In the operation of the preferable form of mechanism shown it is to be noted that inas-
 5 much as the parts B, C, and D are mounted upon the same center there will be no rubbing friction between the key-lever D and the bails B and C; but the parts will directly contact, and consequently there will be substantially
 10 no wear between the part D and the parts B and C.

In Figs. 6 and 7 is shown a modification of the operating part C. In this construction instead of the bail C the machine is provided
 15 with a bar C, preferably mounted at one end upon the cross-bar A⁴ and having a standard C', provided with a grooved segmental portion C². At the lower extremity of this seg-
 20 mental portion is attached a cord F, which passes around and is fastened at one end to a pulley E², corresponding to the gear E² of Fig. 5. Laterally-projecting arms C³ are
 25 mounted upon either side of said standard C'. These arms provide contact means for the key-levers D, corresponding to the cross-bar of the bail C. Many modifications of the parts of my device may be made without de-
 parting from the spirit of my invention.

What I claim as my invention, and desire
 30 to secure by Letters Patent, is—

1. In a type-writing machine, an oscillating member; printing mechanism mounted on said member; a second oscillating member; means on said second member to position the
 35 printing mechanism; key-levers pivotally mounted and arranged to directly contact with and oscillate said members when depressed.

2. In a type-writing machine, an oscillating
 40 member; printing mechanism mounted on

said member; stop-surfaces on said member; a second oscillating member; means on said second member to position the printing mechanism; key-levers pivotally mounted and arranged to oscillate said members and to con- 45
 tact with said stop-surfaces.

3. In a type-writing machine, an oscillating member; printing mechanism mounted on said member; a second oscillating member; means on said member to position the print- 50
 ing mechanism; key-levers pivotally mounted and arranged to oscillate said members when depressed; said members and key-levers being pivoted concentrically.

4. In a type-writing machine, the oscillating 55
 member; printing mechanism mounted on said member; a second oscillating member; means on said member to position the printing mechanism; key-levers pivotally mounted and arranged to directly contact with and os- 60
 cillate said members when depressed; and means to hold said members and key-levers normally raised.

5. In a type-writing machine, a base; a pivot-bar mounted in said base; a printing 65
 and selecting bail mounted on said bar; printing mechanism on said bail; a second bail mounted on said bar; means on said bail to position said printing mechanism; key-levers mounted on said pivot-bar to operate said 70
 bails.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Boston, in the county of Suffolk, State of Massachusetts, this 10th day of May, A. D. 75
 1902.

WILLIAM C. RICHARDSON.

Witnesses:

RICHARD P. ELLIOTT,
 H. M. KELSO.