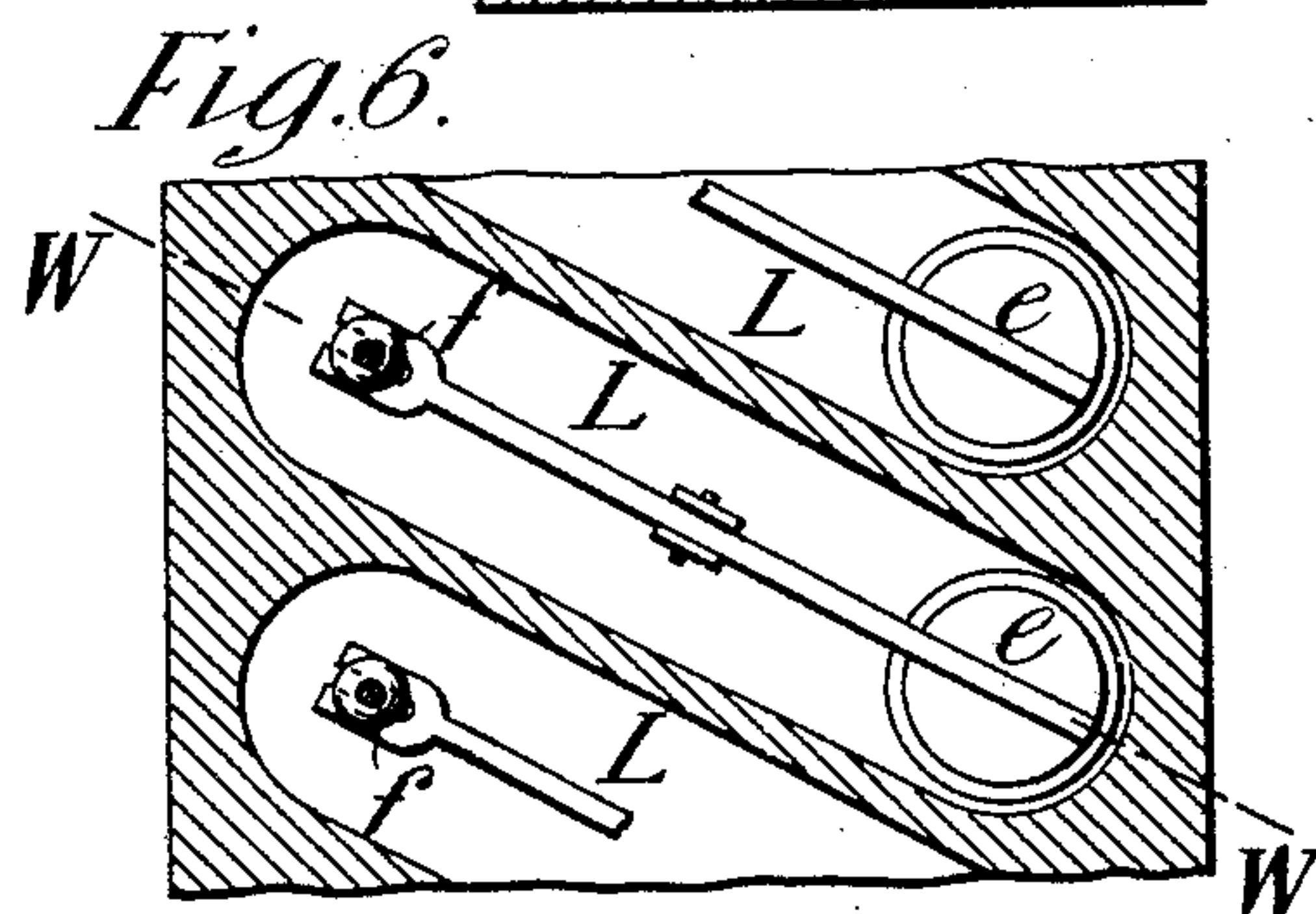
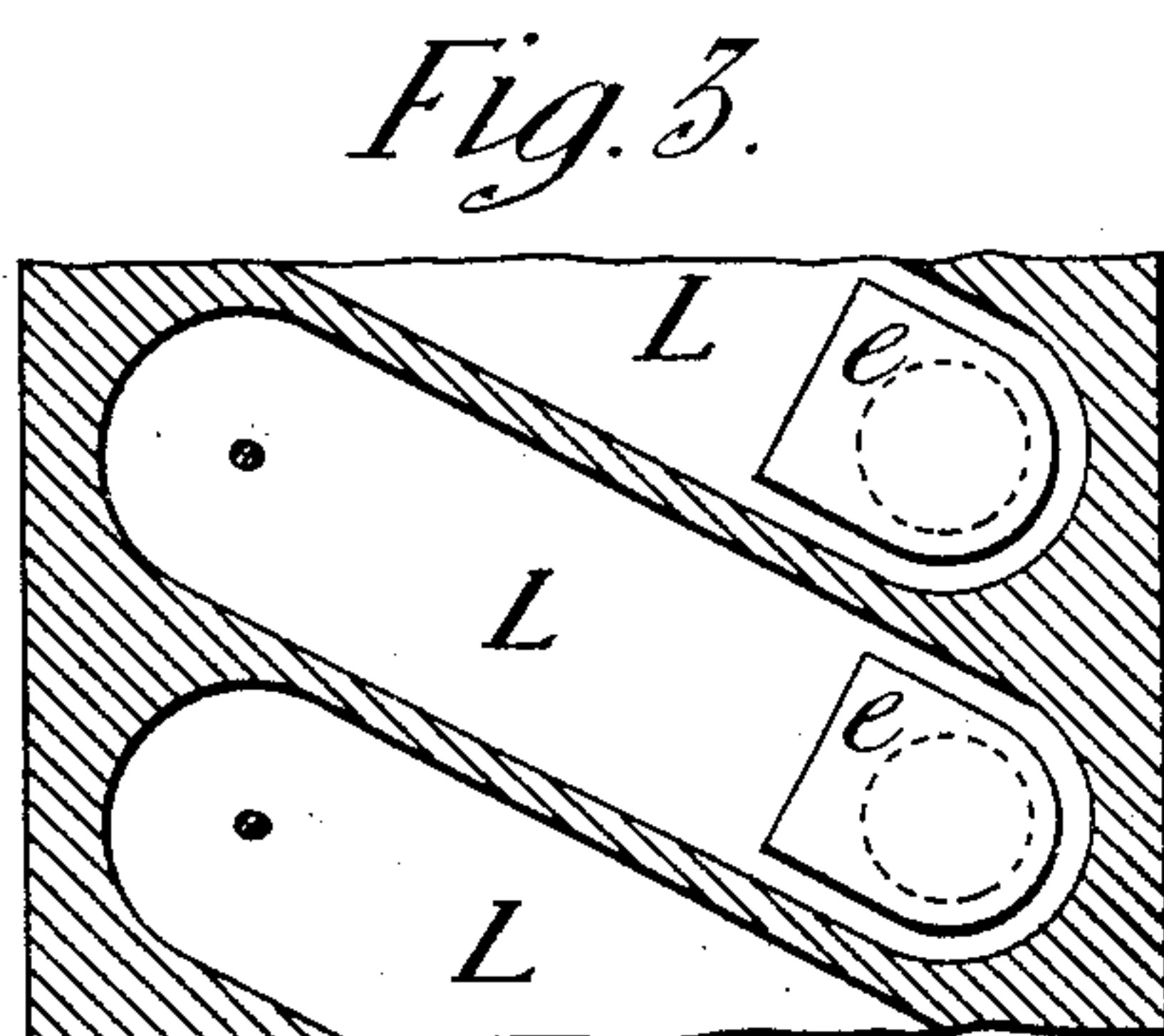
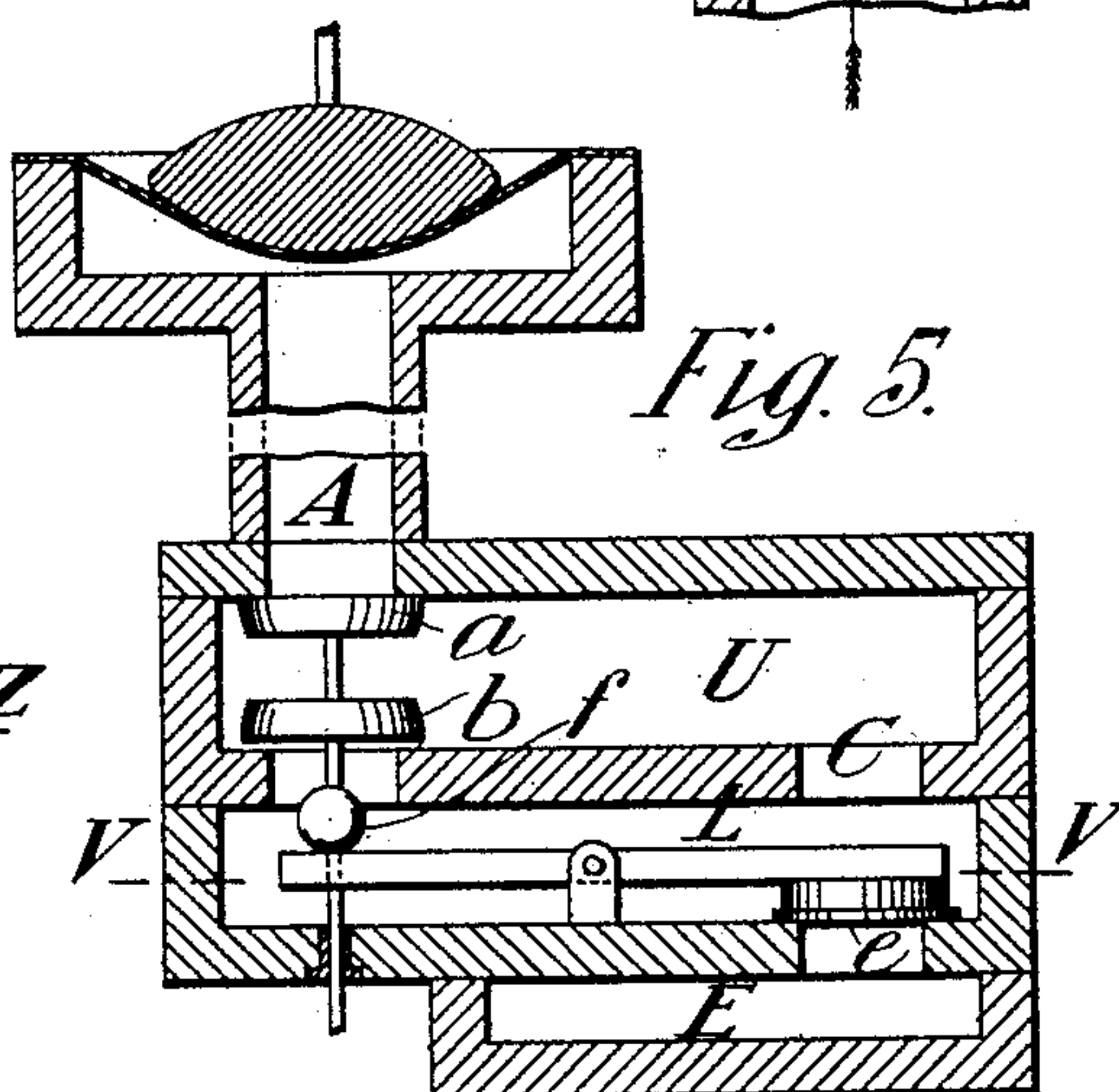
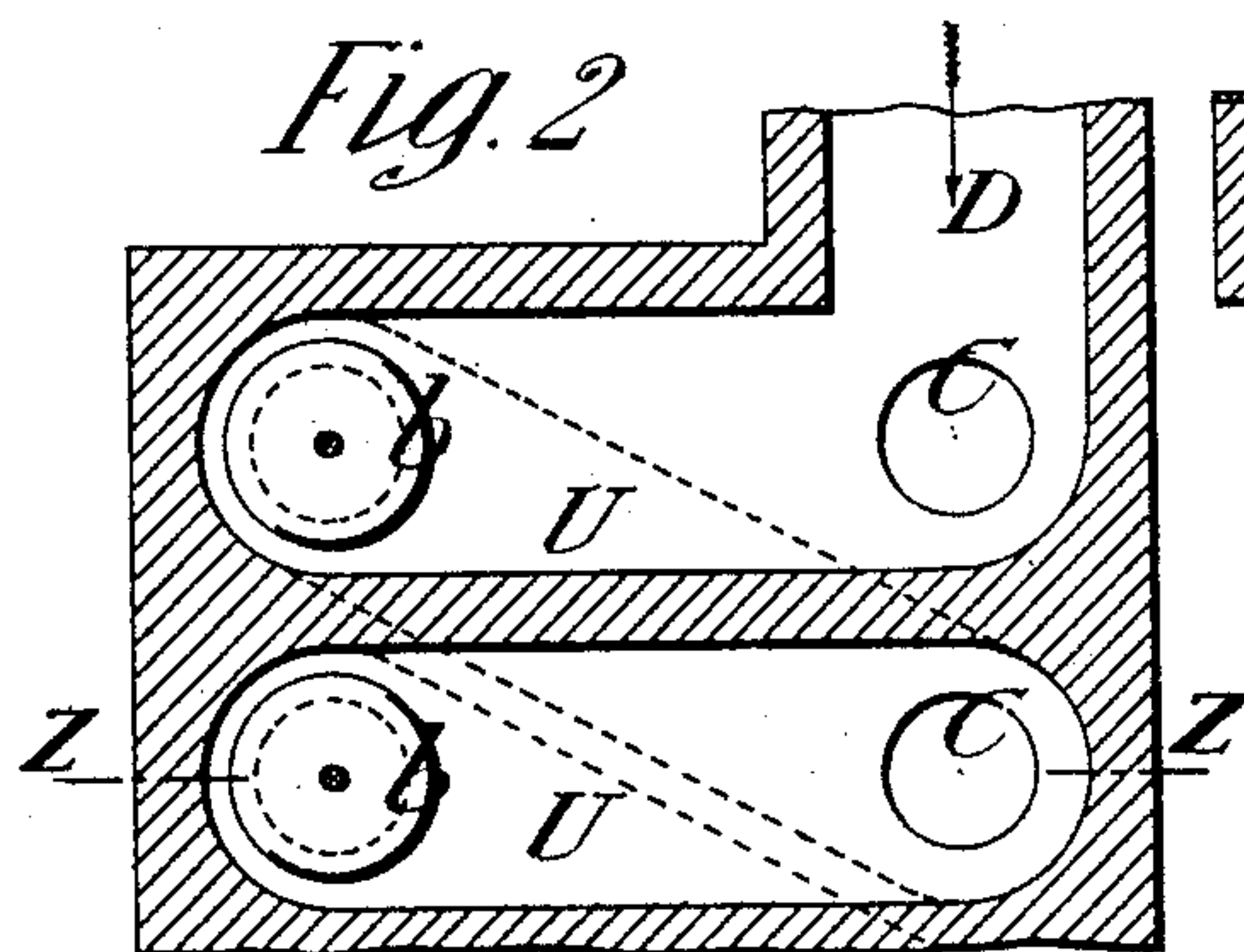
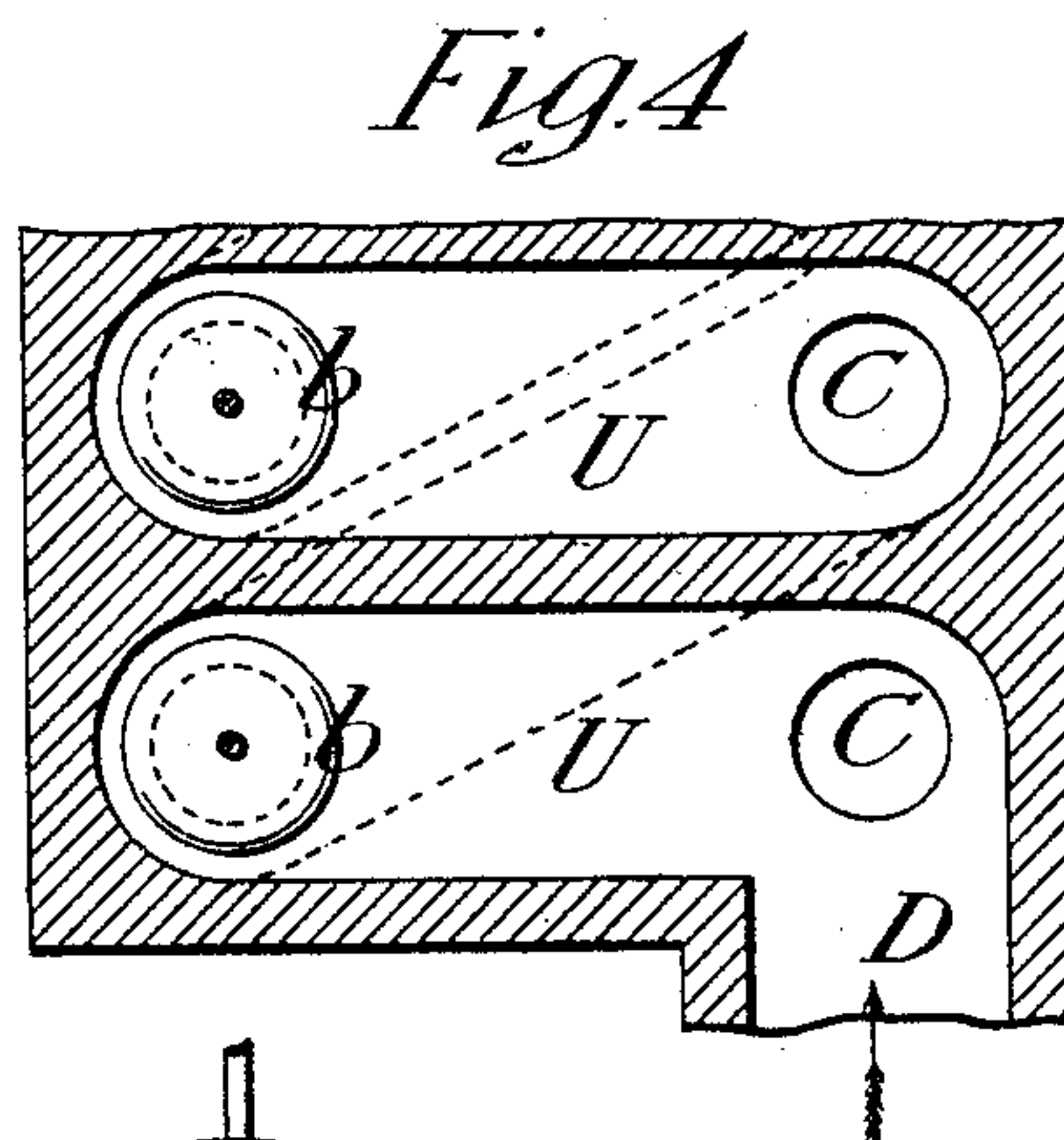
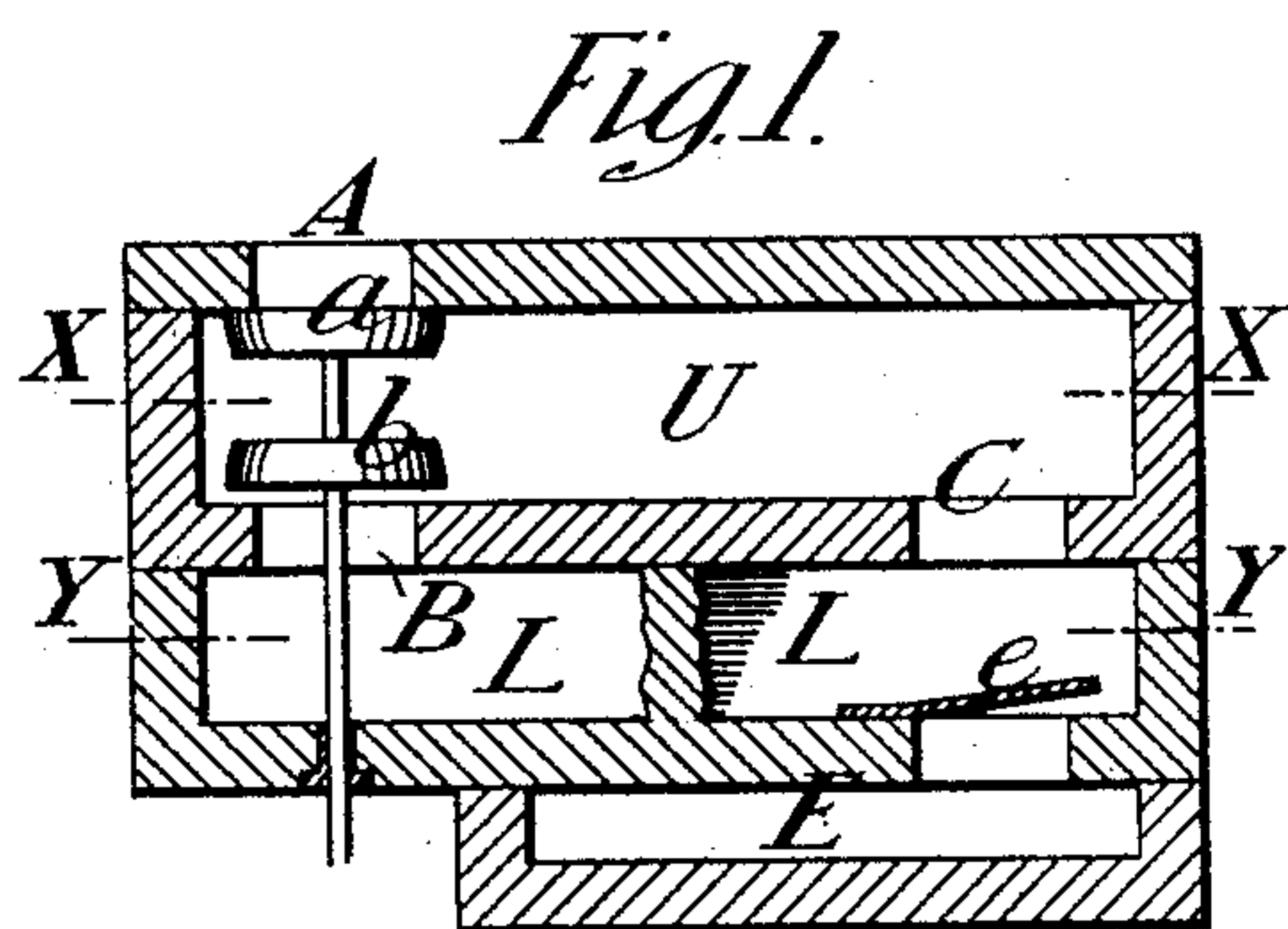


(No Model.)

T. CASSON.
ORGAN.

No. 584,624.

Patented June 15, 1897.



Witnesses.
Albert B. Norris.
Robert G. Smith.

Inventor.
Thomas Casson.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

THOMAS CASSON, OF LONDON, ENGLAND, ASSIGNOR TO WILLIAM RAEBURN
ANDREW, OF SAME PLACE.

ORGAN.

SPECIFICATION forming part of Letters Patent No. 584,624, dated June 15, 1897.

Application filed September 23, 1896. Serial No. 606,733. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CASSON, a citizen of England, residing at 15 High Road, Kilburn, London, England, have invented certain new and useful Improvements in Organs, of which the following is a specification.

In organs, whether those having pipes or those having reeds, and whether in the case of reeds they are sounded by air under pressure passing them outward or by air drawn in past them by partial vacuum, it is desirable to provide means of emphasizing some parts of the music performed by causing the lowest or the highest of a number of notes having a special set of pipes or reeds to sound along with the notes of the piece performed. For this purpose the special set of pipes or reeds is arranged so that their valves or pneumatic levers which work these valves are operated in the usual way by keys or couplers. Besides providing this set with a conduit for supply or exhaust (as the case may be) communicating with all their valve-chambers, so that any one is sounded when its valve is opened, I also provide another conduit, which is not continuous like the former, but which leads from the valve-chamber of each pipe or reed to the valve-chamber of the next higher in pitch. This communication is furnished with a valve which is closed when the valve for sounding the lower pipe or reed is opened. Thus when by moving a suitable stop air is supplied, not to the continuous conduit, but to the valve-chamber, for lowest of the pipes, reeds, or pneumatic levers of the special set, although a number of valves for these may be opened at a time only the lowest of the notes will sound, because the opening of the valve for this note closes the opening to the valve-chamber for the next higher note, and consequently cuts off the supply for all the higher notes. In like manner, when the supply is given to the valve-chamber for the highest note of the set and the valves and chambers are so arranged that the opening of any one closes the opening to the valve-chamber of the next lower note, then only the highest of a number of the notes can be sounded. In the case of reeds or pneumatic levers operated by suction or exhaust the valves may

be similarly arranged with the necessary inversions.

The construction and arrangement of the valves, their chambers, and communications for the special set of pipes, reeds, or pneumatic levers to operate as above set forth may be varied in many ways.

By way of illustration I show on the accompanying drawings an arrangement adapted for pipes, reeds, or pneumatic levers operated by air under pressure.

Figure 1 is a transverse sectional view taken on the line $z z$, Fig. 2. Fig. 2 is a part sectional plan view taken on the line $x x$, Fig. 1. Fig. 3 is a part sectional plan view taken on the line $y y$, Fig. 1. Fig. 4 is a part sectional plan view taken on the line $x x$, Fig. 1, showing the arrangement of supply when only the highest of the set of notes is to sound. Fig. 5 is a sectional view taken on the line $w w$, Fig. 6; and Fig. 6 is a part sectional plan view taken on the line $v v$, Fig. 5.

Referring first to Figs. 1 and 2, the opening A to each pipe, reed, or pneumatic lever from an upper chamber U is governed by a valve a , which may be opened in the usual way by a pull connected to key-coupler or pneumatic lever. On the pull is fixed another valve b , which governs the opening B to a lower chamber L. From each of the lower chambers L there is an opening C to an upper valve-chamber U above it, but as the chamber L extends not directly across but diagonally inclined from the opening B of the valve-chamber belonging to one note the opening C leads to the valve-chamber belonging to the note next higher in pitch. The first of the upper chambers U, that for the lowest note, being supplied with air by a conduit D, it follows that as every upper chamber U has openings A, B, and C and valves a and b similarly arranged, when any one of the valves a is opened the valve b , attached to valve a , is closed, cutting off air-supply for the next higher note, and consequently for all the higher notes, each of these receiving supply of air only from the valve-chamber of the next lower note.

In order that the set of pipes, reeds, or pneumatic levers may be operated in the usual

way, a separate conduit E is provided, communicating by an opening having a check-valve *e* with each of the lower chambers L. When by moving a suitable stop air is supplied by E, then all the notes of which the valves *a* are opened are sounded. When it is desired that only the note of the highest pitch of the set shall sound, a similar arrangement of chambers, valves, and communications is adopted, except that the lower chambers are inclined in the opposite way. Thus the opening of any valve *a* by closing the valve *b* below it, and thus closing the communication with the valve-chamber of the next lower note, prevents all the lower notes from being sounded. The line of communication for the special set of pipes, reeds, or pneumatic levers may have its lower portion—that is to say, the portion for the notes of lower pitch—arranged as shown in Figs. 2 and 3 and its upper portion arranged as shown in Fig. 4, so that the lowest and highest of a number of notes of the special set the valves for which are simultaneously opened, and only those, are allowed to sound for the purpose of emphasizing notes of the piece sounded by pipes or reeds of other sets of the instrument.

When the action is by vacuum—that is to say, when air is drawn out instead of being forced in by the conduits D and E—the valves *a*, *b*, and *e* have necessarily to be inverted in their positions and movements. Thus *a* might be situated above the opening A, opened by a push upward, *b* being situated below B, so as to close by the opening of *a*, *e* also being below the opening from E.

When on opening the valve *a* the air under pressure passes to one of a set of pneumatic levers instead of directly to a pipe or reed, it is of advantage to provide for the rapid exhaust or discharge of any of the pneumatic levers that had been previously inflated. For this purpose, as shown in Fig. 5, the valve *e*, while it is free to open automatically when there is pressure in the conduit E, has a lever-arm such that when the valve *a* is opened, closing *b*, a tappet *f* on the valve-pull causes *e* to open. If, then, the conduit E has been put by a suitable stop in communication with the open air, the opening of any one of the valves *a*, so as to inflate one of the pneumatic levers, opens the communication of the valve-chamber for the next higher note to the at-

mosphere, allowing escape of air from any pneumatic lever belonging to a note of higher pitch than that for which the valve *a* is opened, although the valves of the higher note be in position to inflate it, owing to the key being still held down. In like manner when the arrangement of the valves and communications is as shown in Fig. 4 the opening of a valve *a* allows escape of air from any pneumatic lever belonging to a lower note.

Although I have shown the upper valve-chambers directly transverse and the lower chambers oblique, obviously this construction might be inverted or both the upper and lower chambers might be made oblique.

It is to be understood that the set of pipes or reeds operated either directly or through pneumatic levers by the arrangement which I have described for giving emphasis to the music played by other parts of the instrument may be of any desired pitch or quality, and when the arrangement is applied to one part of the set for emphasizing the low notes and to another part of the set for emphasizing the high notes the pipes or reeds for these two parts may give notes of different quality as well as of different pitch.

Having thus described the nature of this invention and the best means I know of carrying the same into practical effect, I claim—

In combination with the ordinary sets of pipes reeds or pneumatic levers of an organ a special set of these, having, besides its ordinary air-conduit for supplying the whole set controlled by a stop, a secondary conduit also controlled by a stop this conduit leading into or out of the valve-chamber for the lowest note of the set, the valve-chamber for each note having an opening to the valve-chamber for the note next higher in pitch, this opening being provided with a valve connected to the valve for the lower note and adapted to close the opening when the valve for the lower note is opened, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of September, A. D. 1896.

THOMAS CASSON.

Witnesses:

HAROLD IMRAY,
JNO. P. M. MILLARD.