

(No Model.)

3 Sheets—Sheet 1.

A. C. BRANTINGHAM.  
DUST COLLECTOR.

No. 527,940.

Patented Oct. 23, 1894.

Fig. 1.

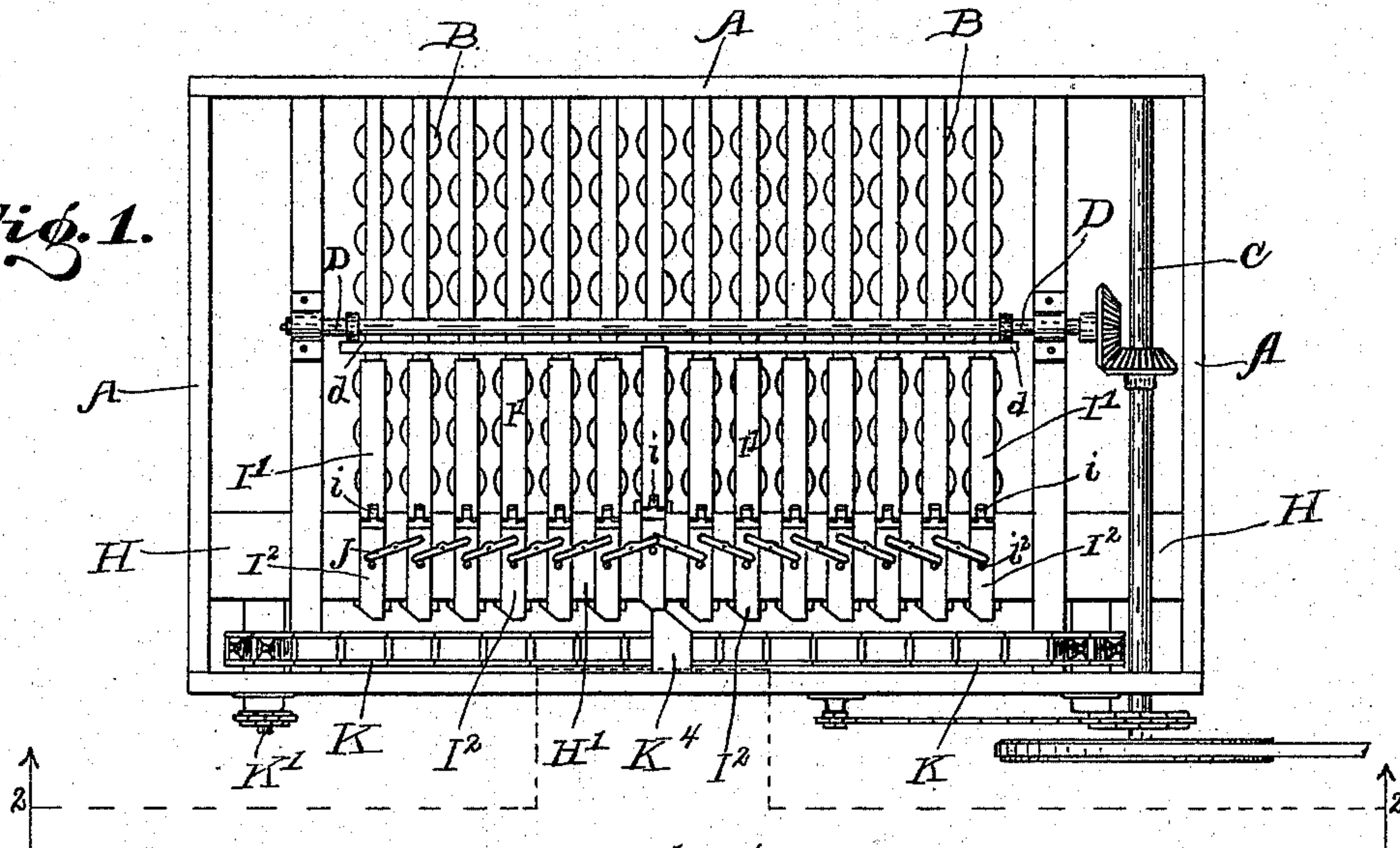
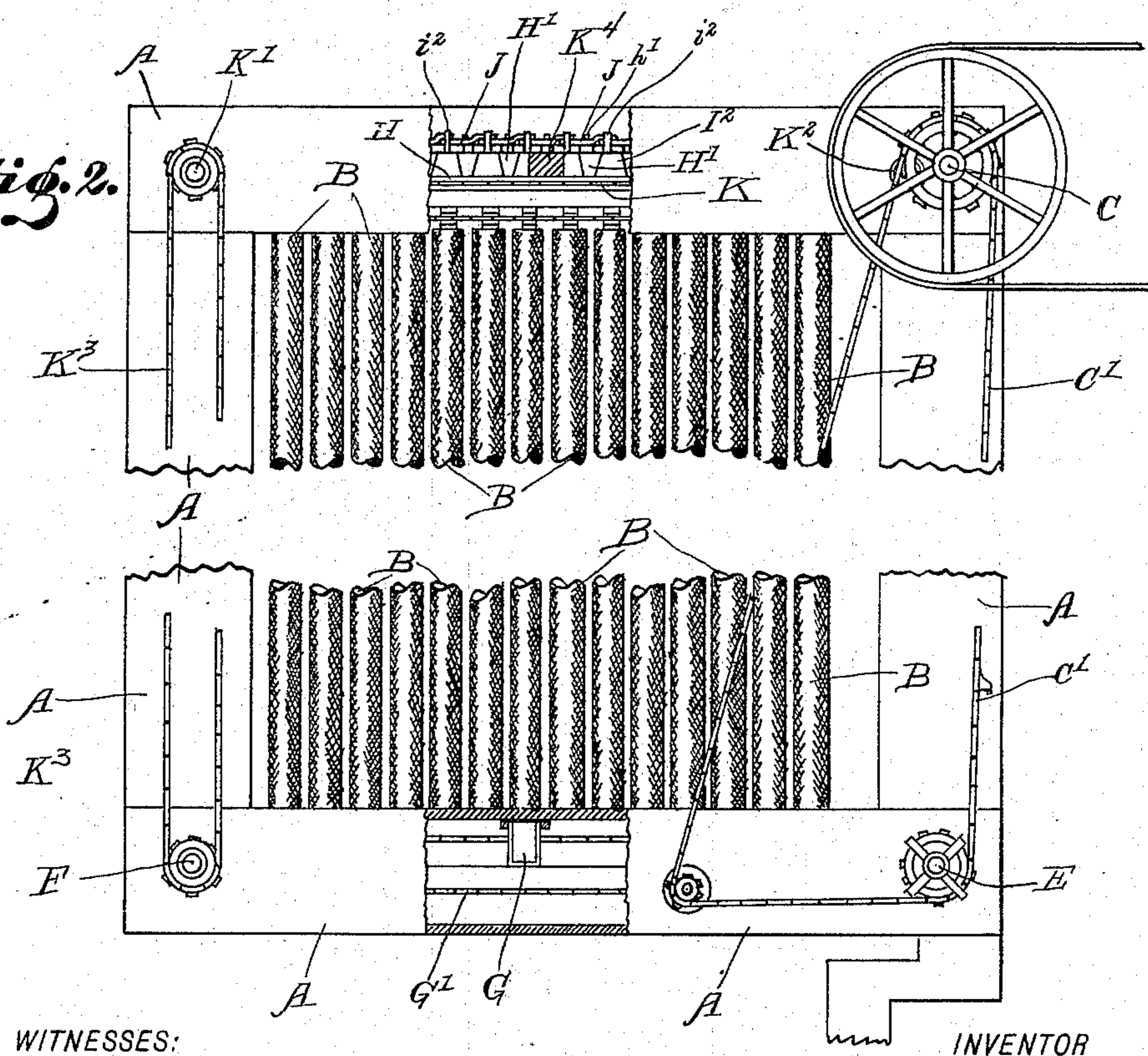


Fig. 2.



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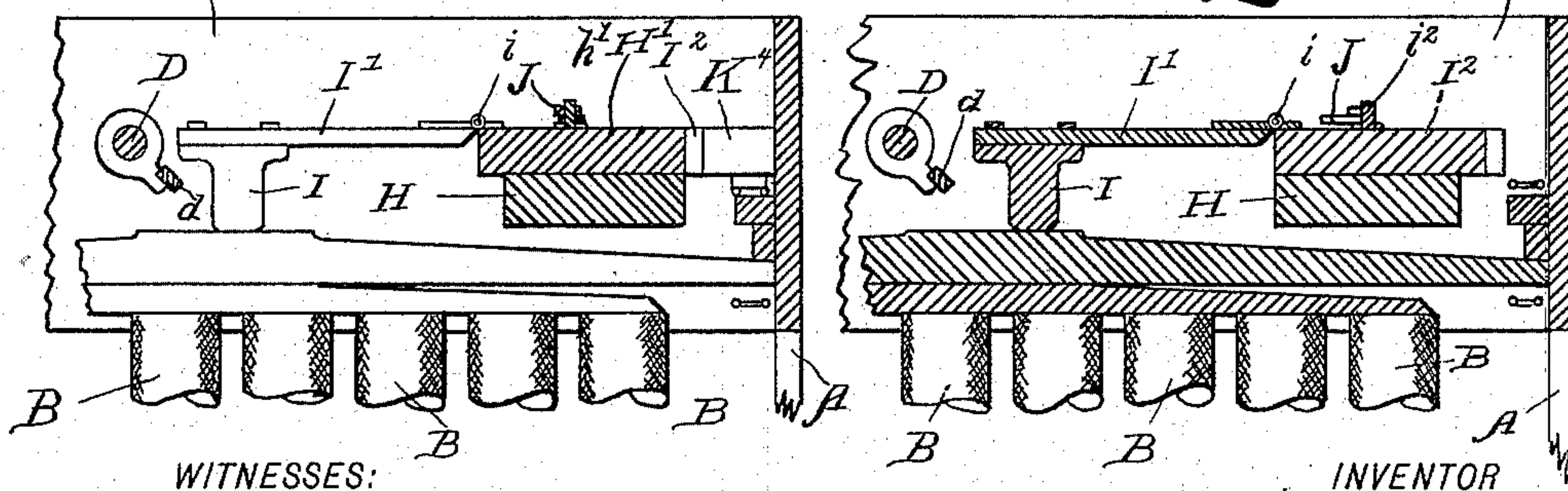
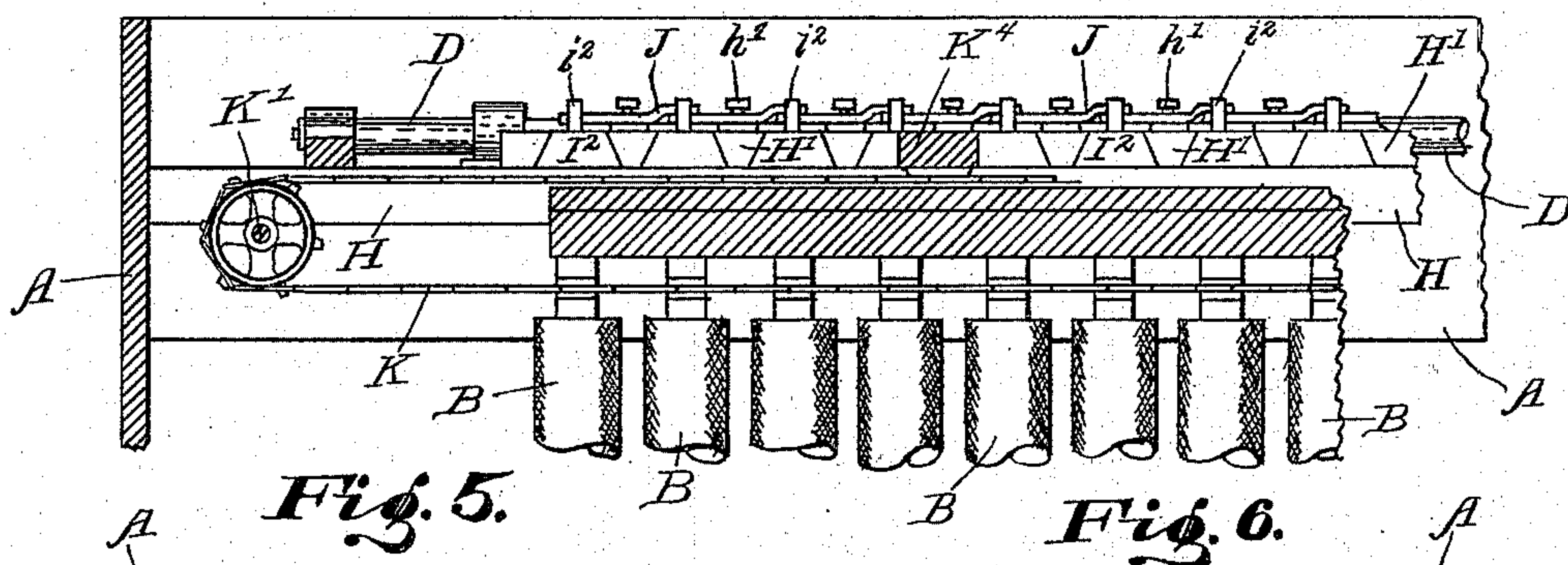
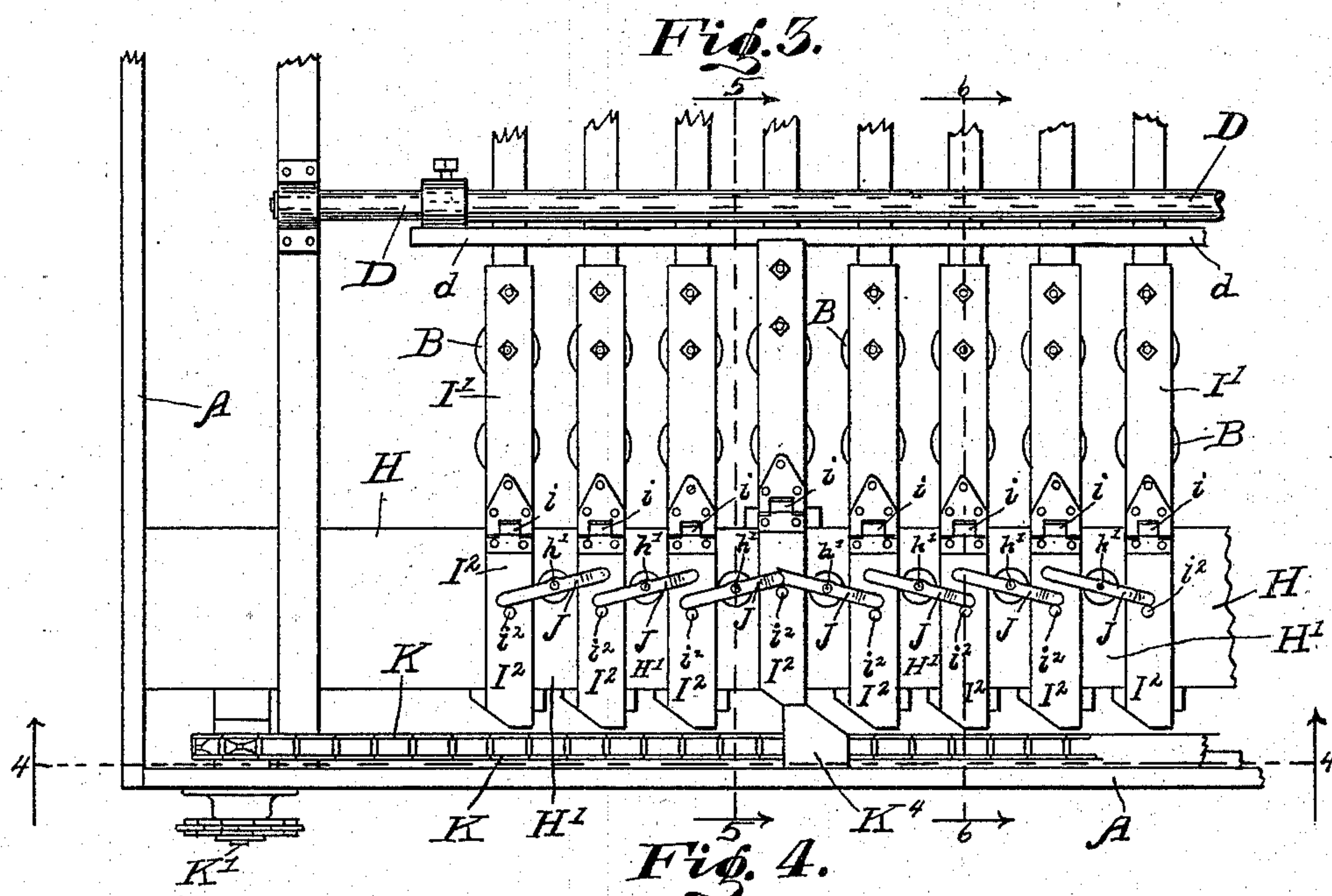
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3 Sheets—Sheet 3.

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Fig. 7.

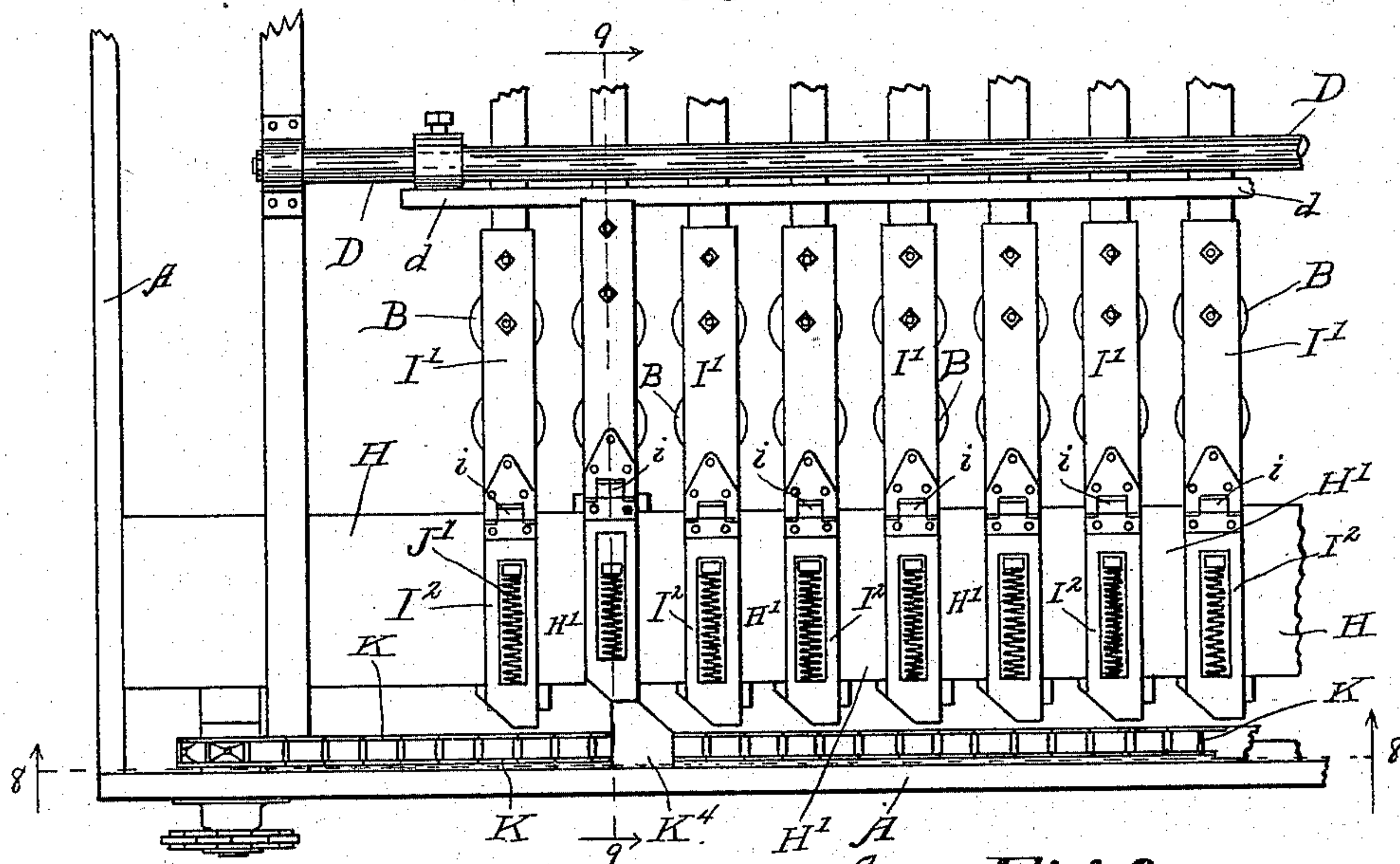


Fig. 8.

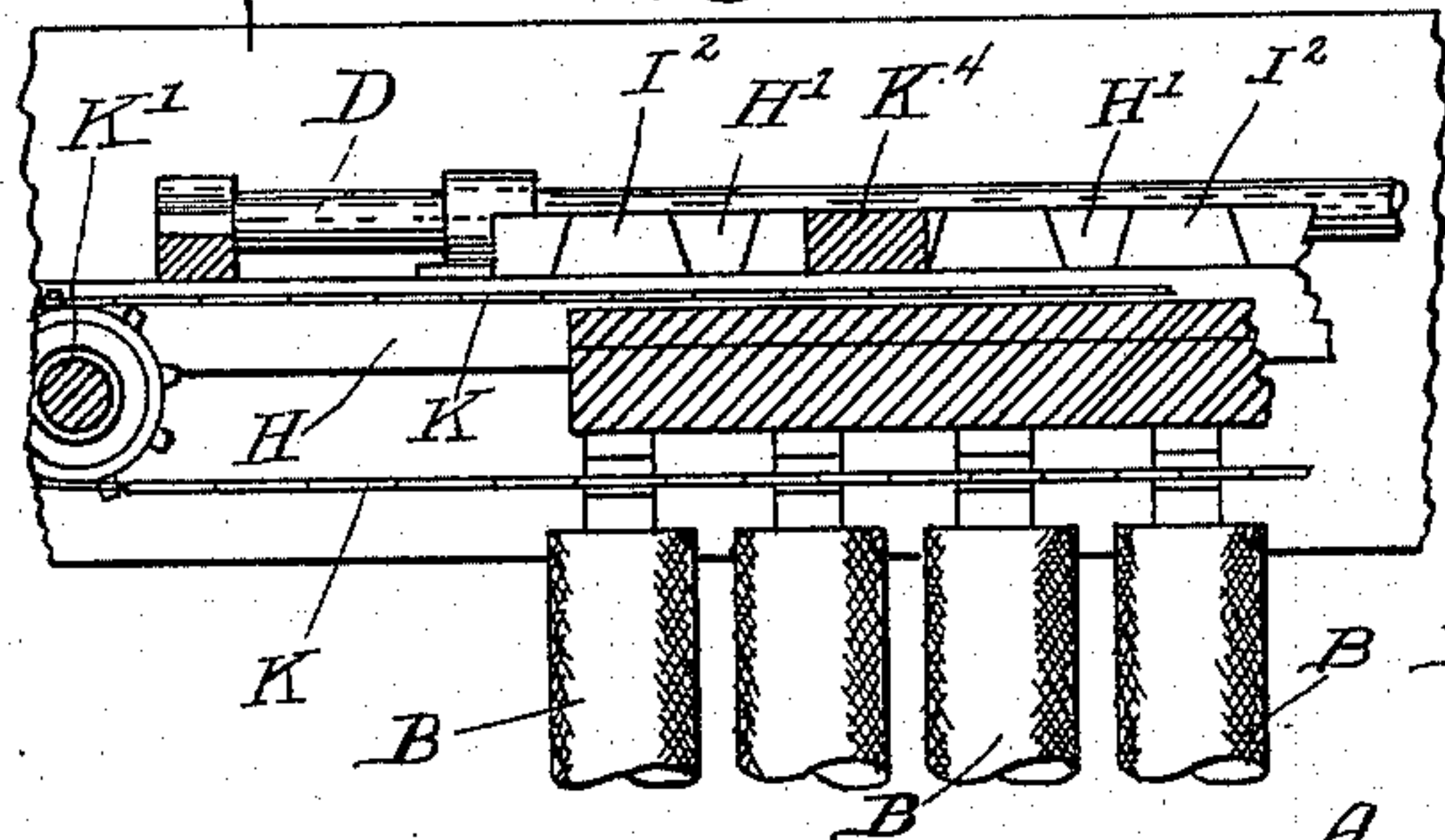


Fig. 9.

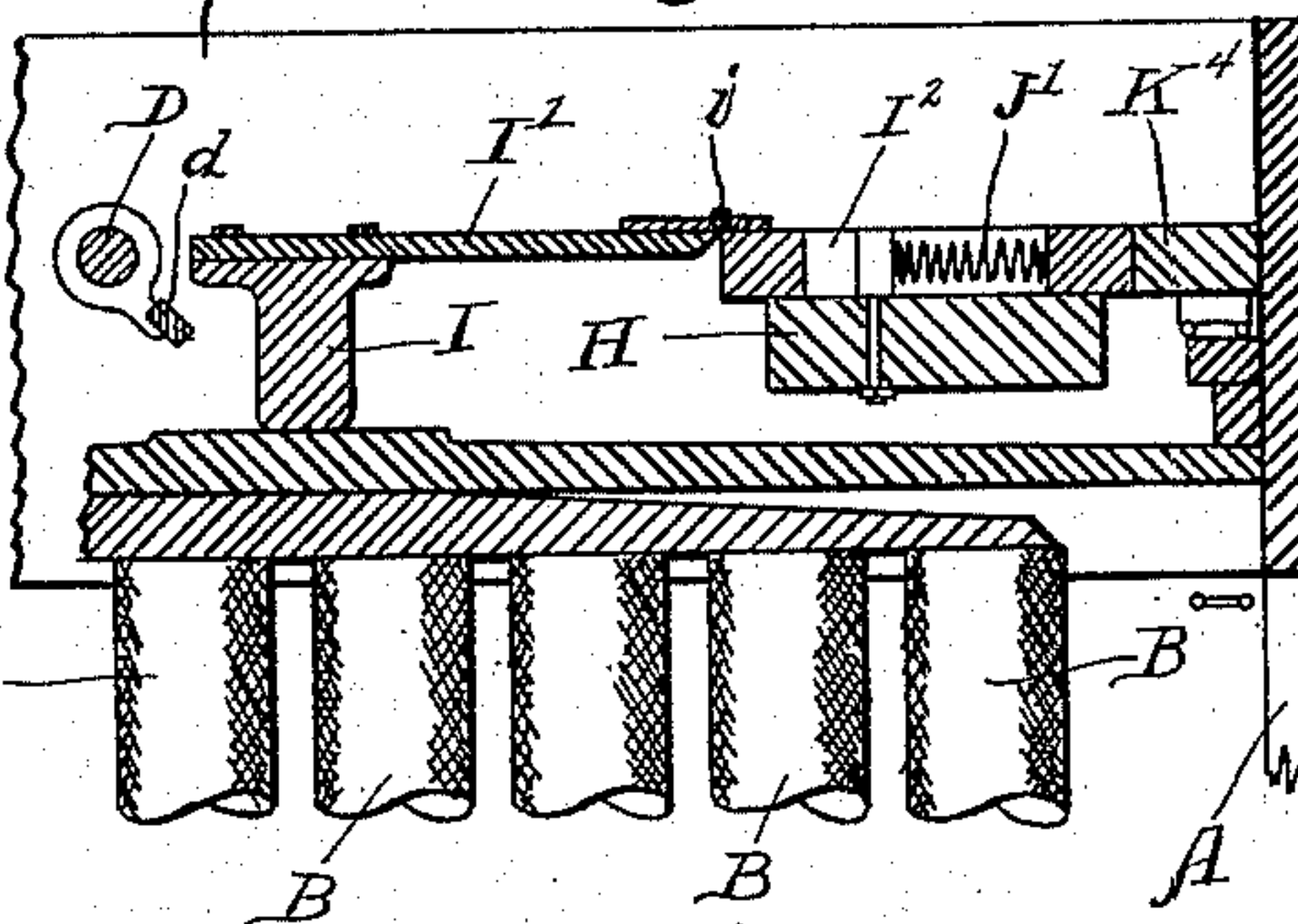
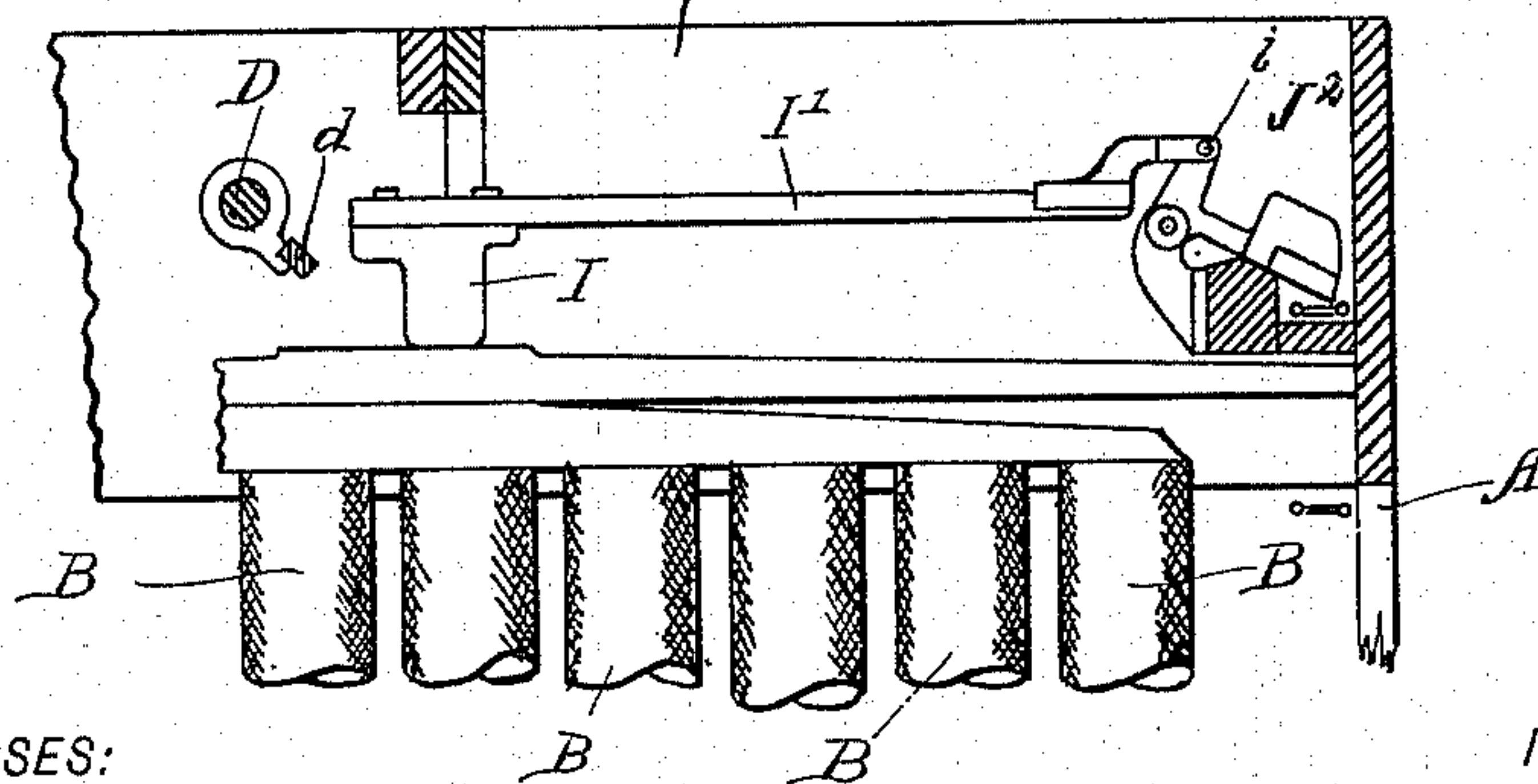


Fig. 10.



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# UNITED STATES PATENT OFFICE.

ALLEN C. BRANTINGHAM, OF TOLEDO, OHIO, ASSIGNOR TO THE NORDYKE & MARMON COMPANY, OF INDIANAPOLIS, INDIANA.

## DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 527,940, dated October 23, 1894.

Application filed August 18, 1894. Serial No. 520,650. (No model.)

*To all whom it may concern:*

Be it known that I, ALLEN C. BRANTINGHAM, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Dust-Collectors, of which the following is a specification.

My present invention consists in certain improvements upon that shown and described in my application, Serial No. 505,294, filed March 22, 1894, whereby the hammer structures are moved bodily into and out of position to be operated, instead of being pivoted as shown in said application; the hammer-handles also preferably being hinged instead of formed of spring material, and the hammers thus enabled to operate by their own gravity instead of under spring force.

Said improvements will be first fully described, and then specifically pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a top or plan view of a dust collector embodying one form of my present improvements; Fig. 2, a side elevation of the same, the central portion being broken away; Fig. 3, a fragmentary top or plan view similar to a portion of Fig. 1, on a larger scale; Fig. 4, a detail sectional view on the dotted line 4 4 Fig. 3; Fig. 5, a detail sectional view on the dotted line 5 5 Fig. 3; Fig. 6, a detail sectional view on the dotted line 6 6 Fig. 3; Fig. 7, a view similar to Fig. 3 showing an alternative construction; Fig. 8, a detail sectional view on the dotted line 8 8 Fig. 7; Fig. 9, a detail sectional view on the dotted line 9 9 Fig. 7, and Fig. 10 a view similar to Fig. 9 illustrating another alternative construction.

In Figs. 1 to 6 inclusive the movement is secured by pivoted straight levers operated by the hammer structures themselves from one another as they are respectively moved by the wedge.

In Figs. 7 to 9 inclusive a spring is substituted for the levers, and in Fig. 10 a weighted bell-crank lever is substituted for the straight lever, and the traveling wedge is positioned to operate vertically instead of horizontally.

The springs of Figs. 7 to 9 are merely a substitute for the levers, and are regarded for this purpose as mechanical equivalents thereof, and the lever shown in Fig. 10 is simply a lever of another form from those shown in Figs. 1 to 6, with the consequent re-arrangement of the operating wedge. All the forms, therefore, I regard as clearly equivalent to each other, as all accomplish the same purpose, viz: the movement of the hammer structure bodily back and forth, into and out of the path of the hammer-operating device.

In said drawings the portions marked A represent the frame-work; B, the dust-collecting tubes; C, the driving shaft; D, the hammer-operating shaft; E and F, shafts for chain belts carrying the dust receptacles; G, said dust receptacles; H, a support for the hammer structure; I, the hammers; J, levers for throwing the hammers into and out of operative position, and K the chain-carrying wedges for operating the hammer structures.

The various parts A B C D E F and G, and also the various gears, pulleys and belts, are substantially the same as corresponding parts shown and described in my above-mentioned application, and, as their construction and operation are plain and easily understood, need not be further described herein, except incidentally in describing the invention, and such incidental description will be made sufficient for the purposes of this application.

The support H for the hammer structures is a plain flat bar or timber of considerable width which extends from end to end of the machine, and upon which all the hammer structures and the pivots, pins and levers or springs are mounted or secured.

The hammers I are mounted upon the forward or swinging end of the two-part hammer-handle I' I<sup>2</sup>, said two parts being united by the hinges i. The parts I<sup>2</sup> are secured between blocks H' on the bar H which are preferably recessed or dovetailed at their lower corners to receive wings or flanges on said parts I<sup>2</sup>, and these parts are thus rigidly secured from any but a reciprocating movement. As above stated, the parts I' are hinged to the parts I<sup>2</sup> by hinges i, and are thus free to be raised and let fall at appropriate times by



the wing  $d$  of the hammer-operating shaft D as the hammer structures are successively thrown forward in position to be so operated.

The levers J are centrally pivoted on studs  $h'$  on the blocks  $H'$  and the ends extend out alongside pins  $i^2$  projecting up from the upper surfaces of the parts  $I^2$ . The operation is, as one of the hammer structures is thrown forward by the traveling wedge that the pin thereon will come in contact with two of these levers, one extending out in each direction, and the other ends of said levers will come in contact with the corresponding pins on the adjacent hammer structures, thus forcing either or both structures back out of engagement with the hammer-operating shaft, as may happen to be the case. Usually in the regular operation of the machine the only hammer structure which is affected in this way is the one which has just been in operation, and this is drawn out of operative position by this means as the succeeding one is forced into such operative position, as will be readily understood.

The chain K is mounted on suitable sprocket wheels on the shafts  $K'$  and  $K^2$ , and is driven by the chain belt  $K^3$ , which in turn is driven by a corresponding sprocket wheel on the shaft F, said shaft being driven by the chain belts  $G'$  which carry the dust receptacles, and these in turn driven from the shaft E, which is driven by the chain belt  $C'$  from the driving shaft C. The chains K and  $G'$  thus having a simultaneous movement, and the various wheels are of such a size as to insure an equal movement, so that the dust receptacles and the hammer-operating wedges shall always be in vertical planes. Said chain K carries the hammer-operating wedges  $K^4$  which pass along in appropriate ways provided therefor, as shown, behind the ends of the hammer structures, and force one after another of said structures forward into position to be operated by the hammer operating shaft, and, as has just been explained, through the levers J, returning the others to a position where they will not be operated. Both the front end of the wedge and the rear ends of the hammer structure parts  $I^2$  have inclined faces where they come together, to facilitate the operation.

The operation may be briefly stated as follows: The hammer-operating shaft D is in a continual rotation. The dust receptacles G and the wedge blocks  $K^4$  are simultaneously periodically moved from set to set of the dust-collecting tubes. Said dust receptacles cover the lower ends of the set of tubes being operated upon, and receive the dust, and that one of the wedges which is at the time passing behind the hammer structures forces the cor-

responding hammer structure forward, so that its front end is within the sweep of the wing  $d$  on the shaft D, and, during the operation of the parts fully described in my other applications, the hammer is raised by said wing and permitted to fall by its own gravity upon the bar carrying the set of dust-collecting tubes, and dislodging the dust, which is precipitated into the dust receptacle. As the wedge  $K^4$  passes along, the hammer structure is withdrawn out of the path of the wing  $d$ , either by the appropriate lever J, or the corresponding spring  $J'$ , or the corresponding weighted bell-crank lever,  $J^2$ , the movement being the same in each case, and the forward movement being in each case effected by the traveling wedge, and the swinging part of the hammer being in each case hinged or pivoted upon the hinge pivot  $i$ .

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

1. The combination, in a tubular dust collector, of a supporting frame, the dust-collecting tubes, a series of hammers, a hammer-operating shaft having a wing, and devices for moving the hammer-structures longitudinally back and forth, and thus throwing said hammers successively into the path of said wing and withdrawing the same therefrom.

2. The combination, in a dust collector, of a series of dust-collecting tubes, a hammer-operating shaft having a wing or projection on one side, a pivoted hammer for each set of tubes, a traveling wedge adapted to move each hammer-structure successively into the path of the wing on the shaft, and suitable devices for returning said hammer-structure to position, substantially as set forth.

3. The combination, in a dust collector, of a series of sets of dust collector tubes suitably supported at the upper ends, a hammer positioned over each set of tubes—the hammer-handle being hinged or pivoted at a suitable point, a traveling wedge for throwing the hammers forward successively, blocks between the hammer structures, levers pivoted on studs on said blocks, and pins on the hammer structures themselves which engage with and operate said levers and whereby each hammer structure is withdrawn as the succeeding one is thrown into position to operate, substantially as shown and described.

In witness whereof I have hereunto set my hand and seal, at Toledo, Ohio, this 14th day of August, A. D. 1894.

ALLEN C. BRANTINGHAM. [L. S.]

Witnesses:

R. C. WHITTLESEY,  
GEO. J. RUDD.