

F. O. Tucker.

Improvement in Looms.

117698

PATENTED AUG 1 1871.

Fig. 1.

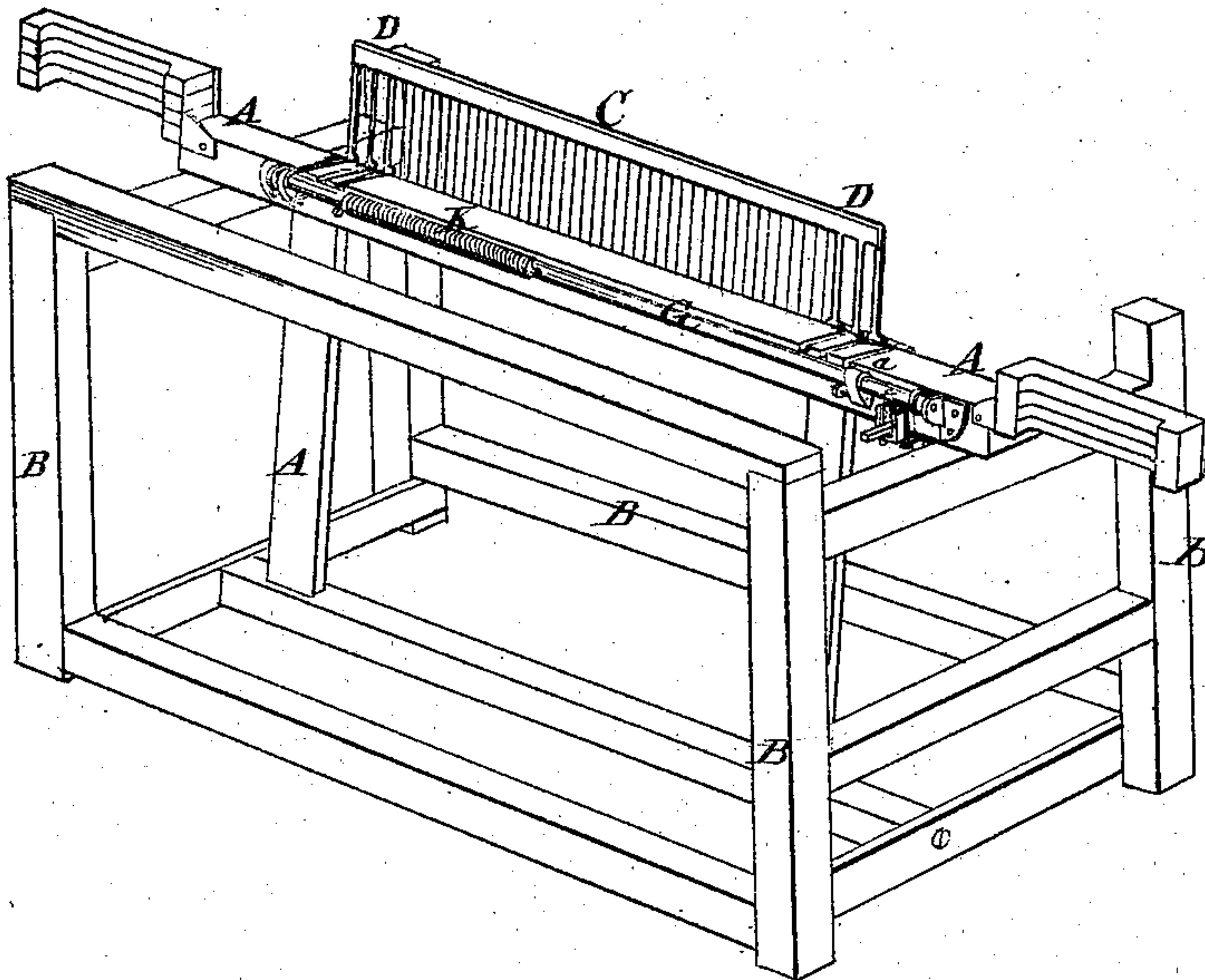


Fig. 2.

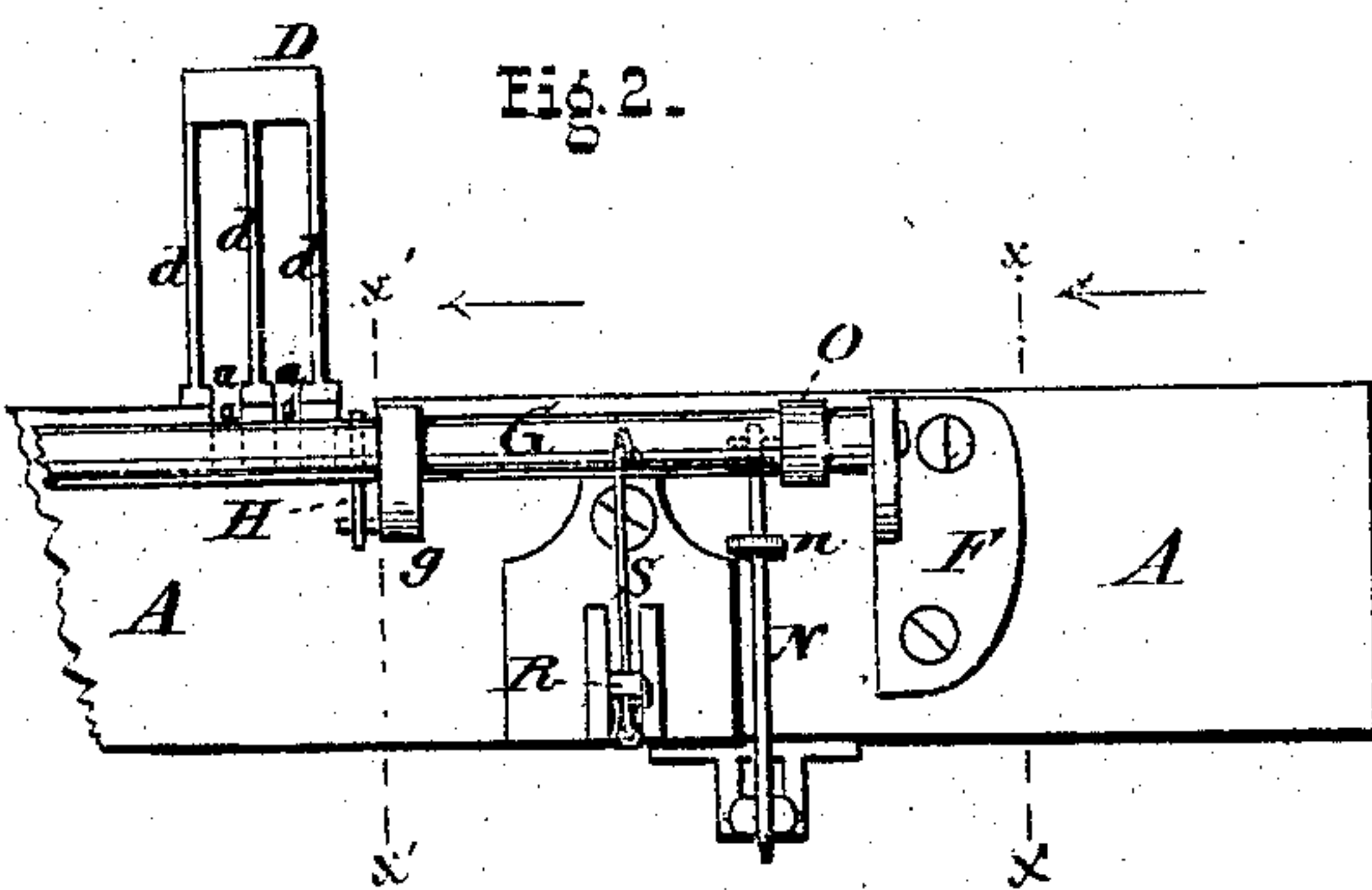


Fig. 3.

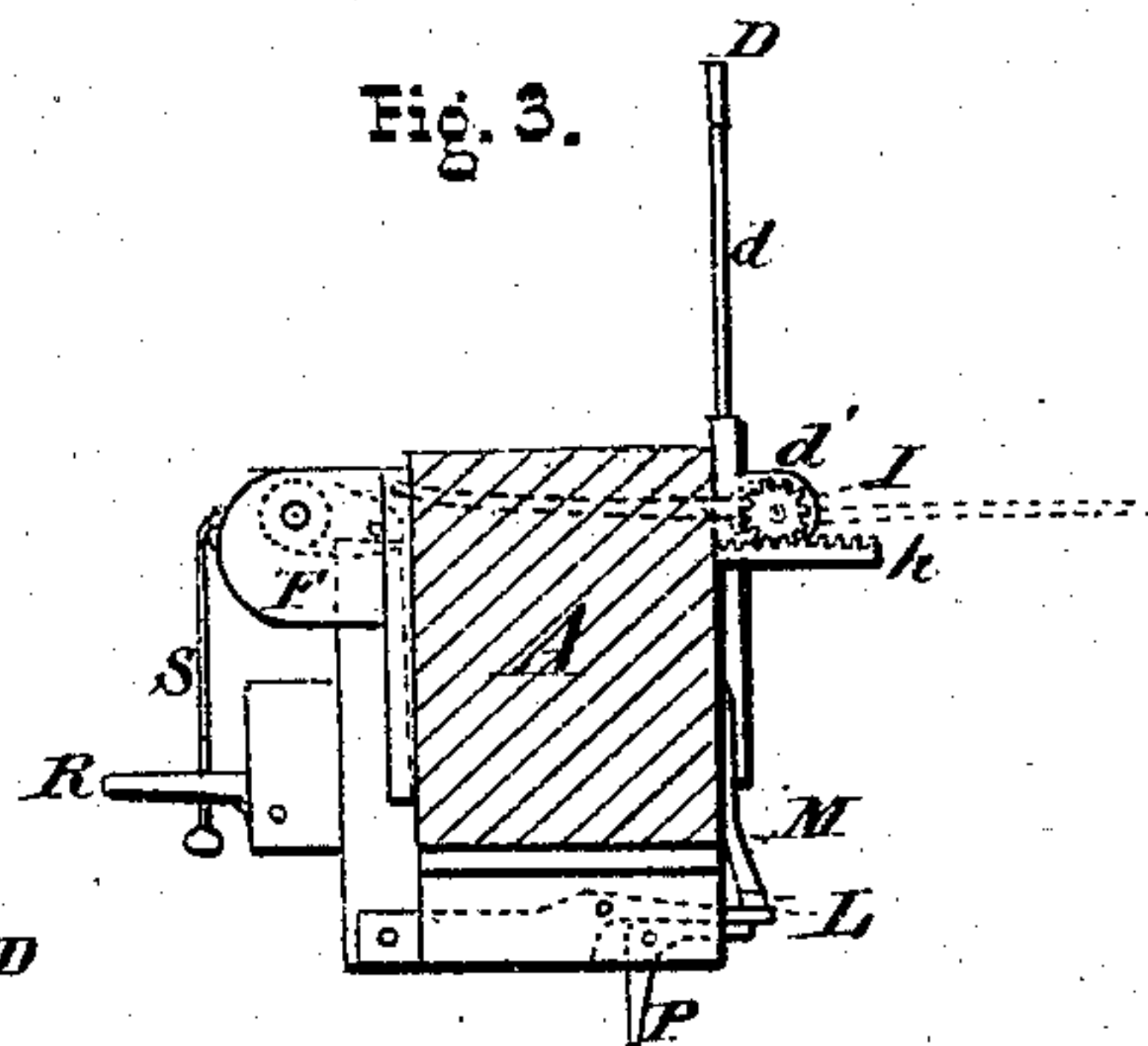
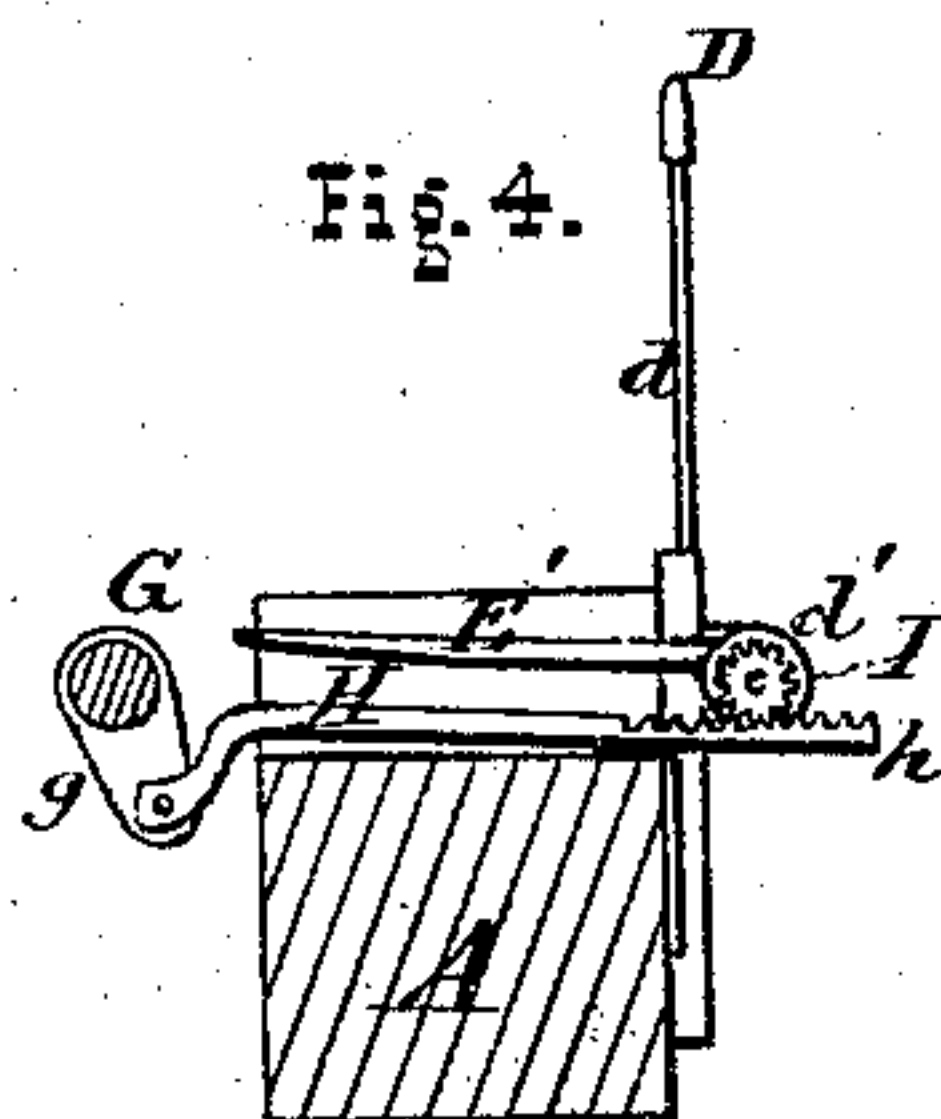


Fig. 4.



Witnesses.

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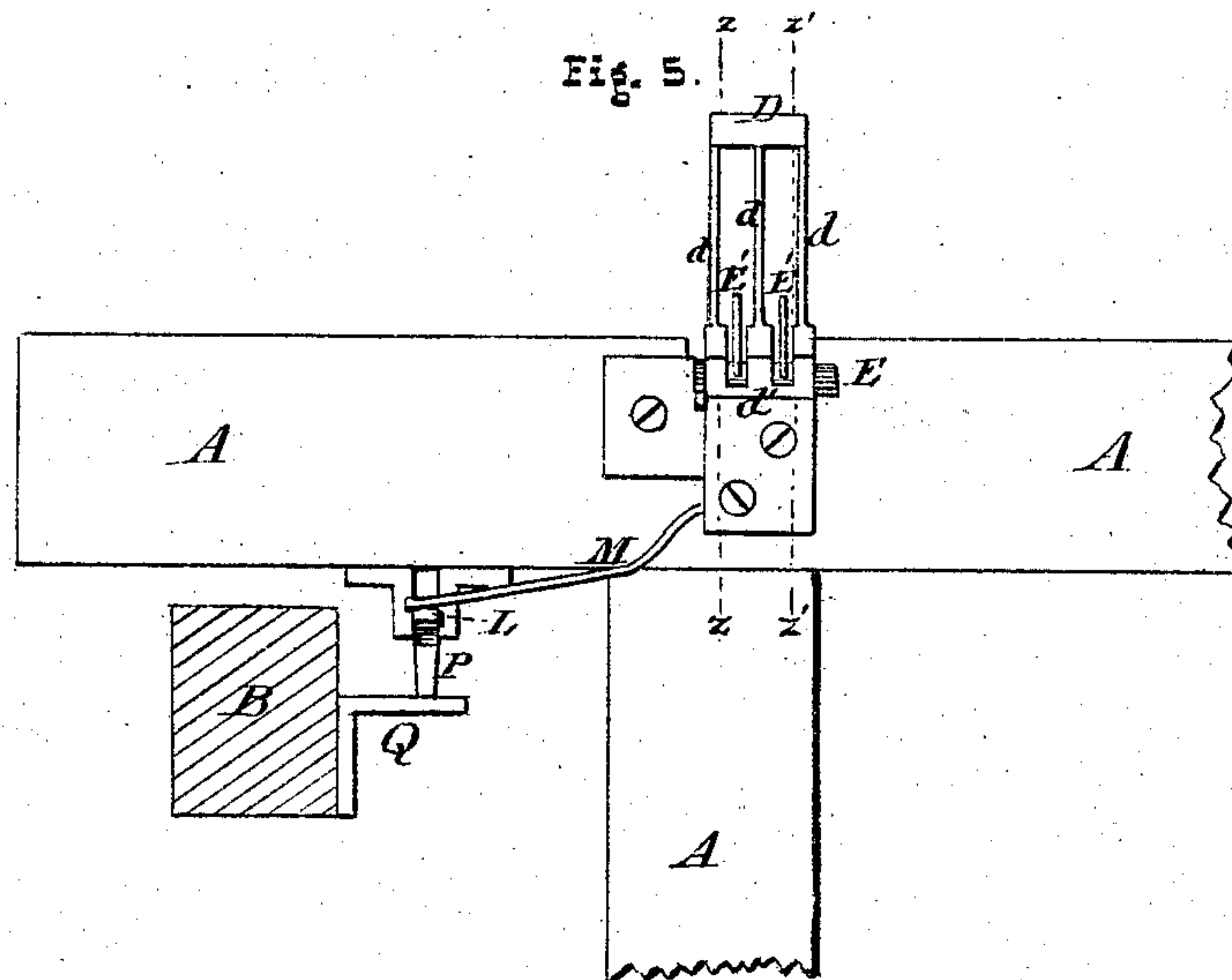


Fig. 6.

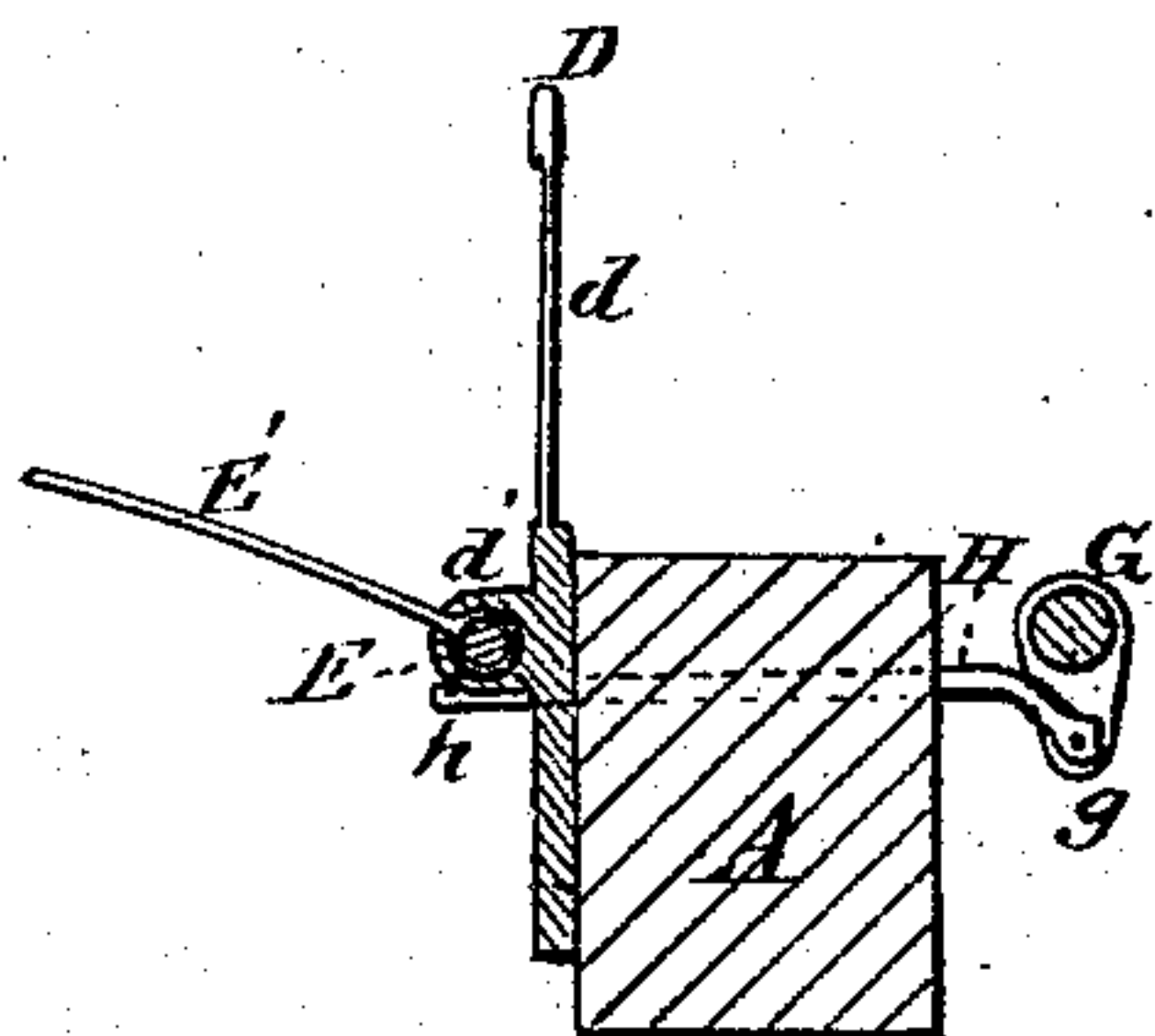
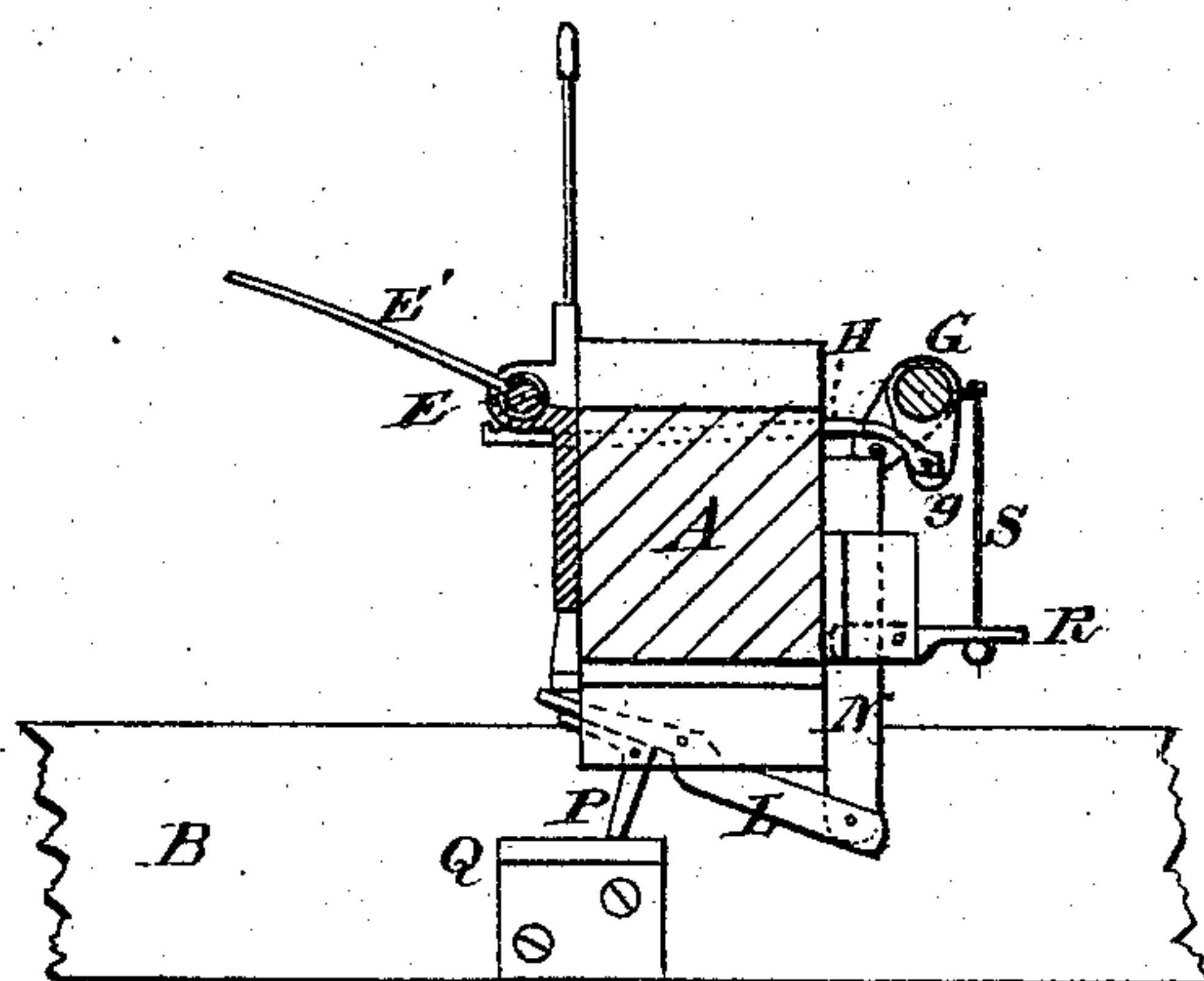


Fig. 7.



Witnesses.

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UNITED STATES PATENT OFFICE.

FREDERICK O. TUCKER, OF WESTERLY, RHODE ISLAND, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO THOMAS ISHERWOOD AND AMOS MALLORY, OF STOUGHTON, CONNECTICUT.

IMPROVEMENT IN WEFT STOP-MOTIONS.

Specification forming part of Letters Patent No. 117,698, dated August 1, 1871.

To all whom it may concern:

Be it known that I, FREDERICK O. TUCKER, of Westerly, in the county of Washington and in the State of Rhode Island, have invented certain new and useful Improvements in Looms; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a perspective view of a portion of a loom containing my improvements. Fig. 2 is an enlarged front elevation of a section of the sley, having attached thereto my mechanism for arresting the motion of the loom. Figs. 3 and 4 are vertical cross-sections on lines xx and $x'x'$, respectively, of Fig. 2. Fig. 5 is a rear elevation of said section of the sley; and Figs. 6 and 7 are vertical cross-sections of the same on the lines zz and $z'z'$, respectively, of Fig. 5.

Letters of like name and kind refer to like parts in each of the figures.

My invention belongs to a class of automatic "stop-motion," which, whenever the filling is broken, through suitable mechanism shifts the driving-belt of the loom and arrests the motion of the latter; and it consists principally in the means employed for communicating the motion of the operating-shaft to the pivoted fingers, substantially as is hereinafter set forth. It consists, further, in the peculiar construction and combination of the various portions of the mechanism for communicating the motion of the sley to the pivoted fingers, substantially as is hereinafter specified.

In the annexed drawing, A represents the sley, constructed in the usual form and pivoted within a frame, B, and operated in the ordinary manner. Secured upon and extending vertically upward from the rear side of the upper beam of the sley, immediately outside of each end of the reed C, is a frame, D, composed of two or more bars, d , joined together at their upper and lower ends so as to leave between each pair of the same an intervening space having a width equal to about four times that of a bar. Pivoted horizontally within suitable bearings d' upon the rear side of the frame D, and immediately below the upper edge of the sley A, is a shaft, E, from which extends radially outward a number of arms, E' , that correspond in length and position to the

spaces between the bars d , and when said shaft is partially rotated in opposite directions, passes back and forth through said spaces and between said bars. A series of grooves, a , corresponding in size and position with the arms E' , are cut within the upper face of the sley A, and receive and contain said arms when turned forward, so as to leave said face of the sley entirely clear from obstructions, and permit the shuttles to pass freely along the same and over said arms or fingers. Journaled horizontally within suitable bearings F, upon the forward face of the sley, is a shaft, G, having a length somewhat greater than the distance between the outer sides of the frames D, and provided with two arms, g , that extend radially downward immediately outside of said frames. A bar, H, having the form shown in Fig. 4, is pivoted at one end to or upon each arm g , and from thence, extending rearward through a suitable groove cut in the upper side of the sley, has its opposite end provided with a toothed rack, h , which is placed immediately beneath and meshes with a corresponding pinion, I, that is secured upon the end of the shaft E, the whole being so arranged as that a semi-rotary movement of the shaft G will produce a longitudinal movement of the rack-bar H, which movement of the latter will be communicated through the pinion I to the shaft E and cause a rotary movement of the same and its fingers E' . A spiral spring, K, coiled around the shaft G, with one end secured to the sley and the opposite end to said shaft, turns the latter forward so as to throw the fingers E' to the rear, except when prevented from so doing by the following-described means: A lever, L, having a length somewhat greater than the breadth of the upper beam of the sley, is pivoted horizontally beneath the same in a line with its plane of motion. A spring, M, attached to the rear face of the sley-beam, with one end bearing downward upon the rear end of the lever L, holds the front end of the latter against the lower side of said beam, while from the front end of said lever extends vertically upward through a guide-loop, n , a pivoted bar, N, the upper end of which bears against an arm, O, that projects horizontally rearward from the shaft G. As thus arranged, it will be seen that the spring M, through its intervening mechanism, presses the shaft G in an opposite direction from

that given by the spring K, so that if said spring M be made the strongest said shaft will be held in the position shown in Fig. 3; but that, if the pressure of said spring be removed, said shaft will be rotated within its bearings by the action of the spring K, so as to occupy the position shown in Fig. 7. To accomplish the latter object an elbow-lever, P, is pivoted immediately beneath the lever L, with one of its arms extending horizontally rearward against the rear end of the latter, while the second arm of said lever extends vertically downward in such a position, as that when the sley moves back and forth said vertical arm will engage with a lug, Q, that is secured to and projects horizontally outward from the frame B. As thus arranged, it will be seen that when the sley moves forward the vertical arm of the lever P is forced rearward and its horizontal arm upward, so as to raise the rear end of the lever L and depress the bar N, by which means the shaft G is left free to turn rearward and produce a corresponding motion of the shafts E and fingers. Upon passing the lug Q the lever P resumes its former position and permits the spring M to operate through the lever L and the bar N upon the shaft G and its connections and return them to their usual positions. The return or backward movement of the sley produces no other effect upon the devices described than to trip the lever P as it passes the lug Q.

In operating the loom the fingers rest within the upper face of the sley until the shuttle has passed across the same, and said sley has moved forward sufficiently to bring the elbow-lever P into contact with the lug Q, after which said fingers rise and carry the filling against the barred frame D, in which position they are held by said filling and the spring K until said elbow-lever has passed said lug, when said fingers return to their position within the sley. Should the filling break, or from any cause fail to pass across the sley, there would be nothing to prevent the fingers from passing through the barred frame; and consequently, the shaft G would have a much

greater motion within its bearings than would be the case while said filling was whole and interposed between said fingers and frames, which additional movement thus produced may be utilized by a variety of means for releasing the shipper and arresting the motion of the loom. The devices preferably employed consist of a short lever, R, so pivoted at one end upon the forward face of the sley as to rest in a horizontal position ordinarily, while capable of having its forward end elevated as may be desired. A rod, S, pivoted to or upon the shaft G directly above the lever R, and from thence extending downward through the same, with a head or nut, s, upon its lower end, completes the device. By adjusting the length of the rod S its vertical movement will not effect the lever R until the filling is broken, when the increased movement of the shaft G will cause said rod to raise the outer end of said lever so that when the sley reaches its furthest forward point, said lever will strike against and release the shipper, stopping the loom.

The special advantages obtained by this construction and arrangement of parts are ease and certainty of operation combined with great durability.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. The combination of the weft-fingers E' and shaft G with the shaft E, the bar H provided with the toothed rack h, and the pinion I, substantially as and for the purpose specified.

2. In combination with the sley A, the barred frame D, the shaft E, the pivoted fingers E', the shaft G provided with the arms g and O, the bar H, the levers L and P, the bar N, the springs K and M, the lug Q, the lever R, and the rod S, substantially as and for the purpose shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of June, 1871.

FREDERICK O. TUCKER.

Witnesses:

WILLIAM H. HAYES,
FRANCIS SHEFFIELD.