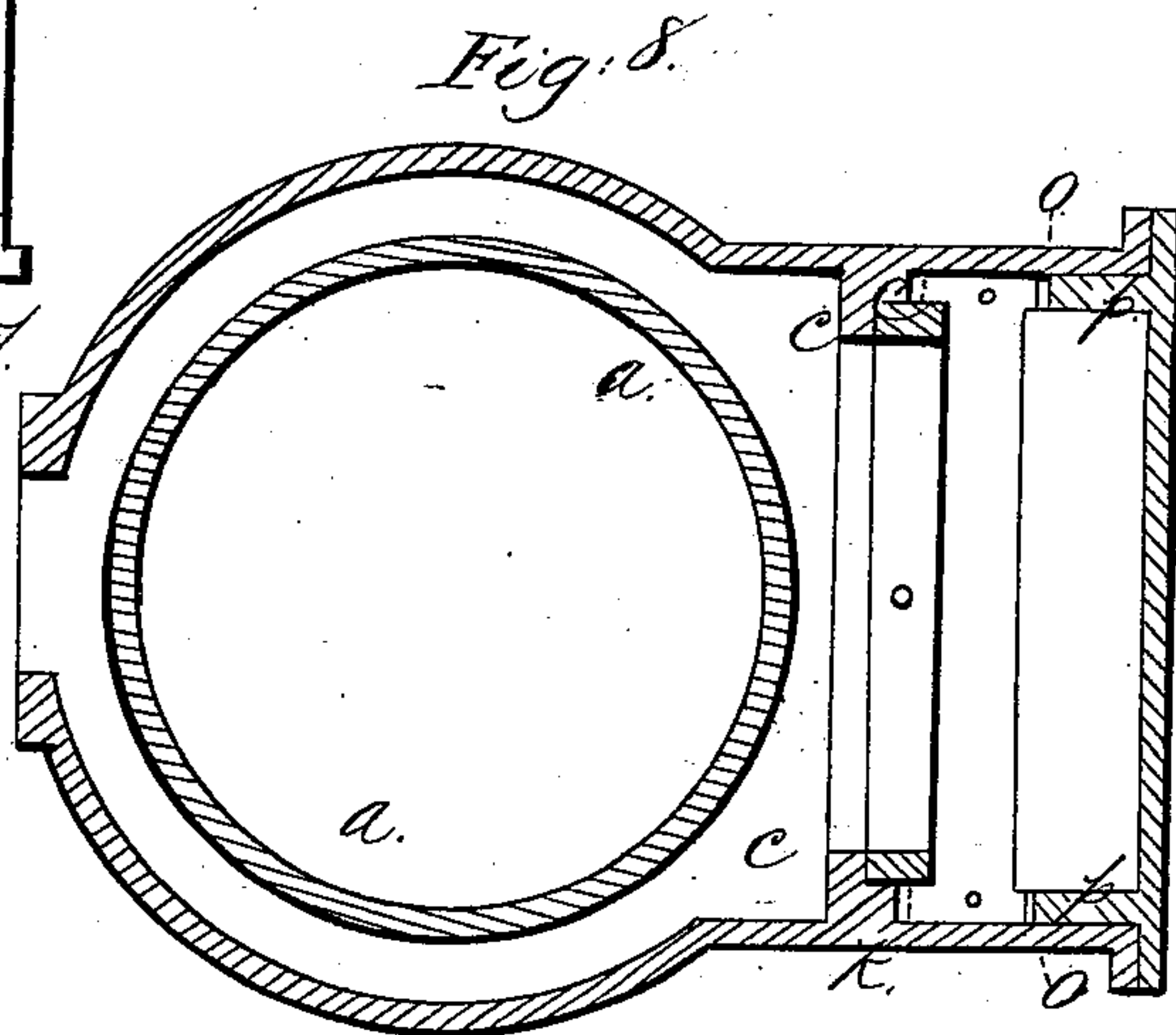
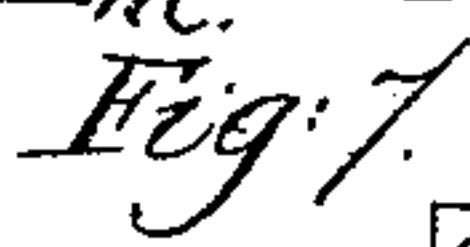
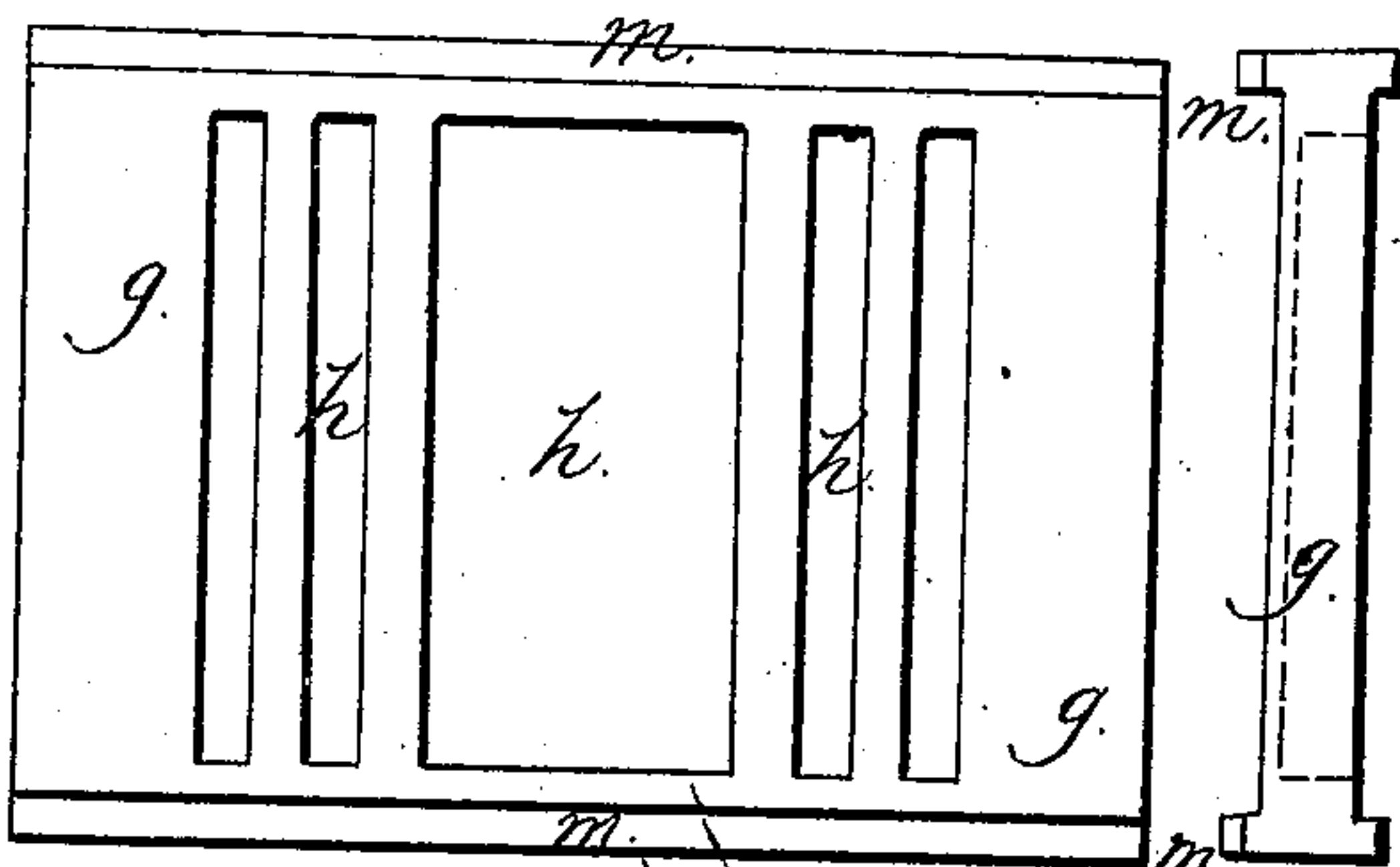
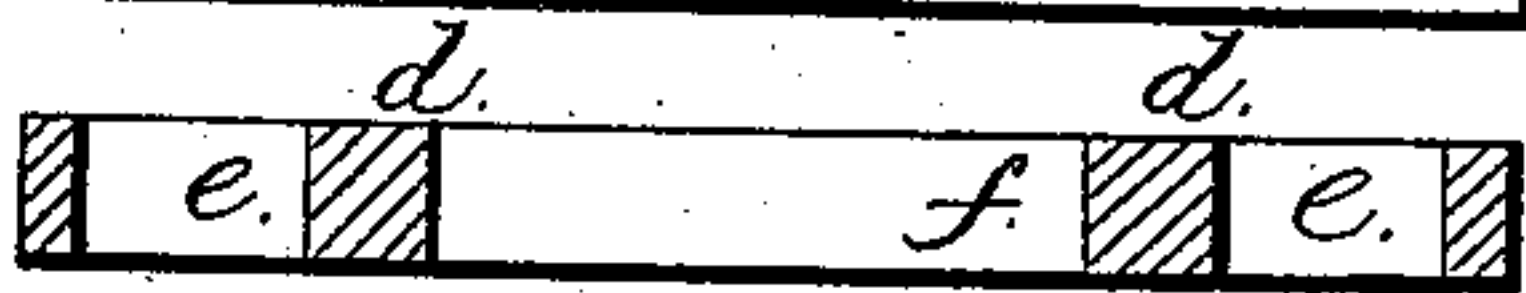
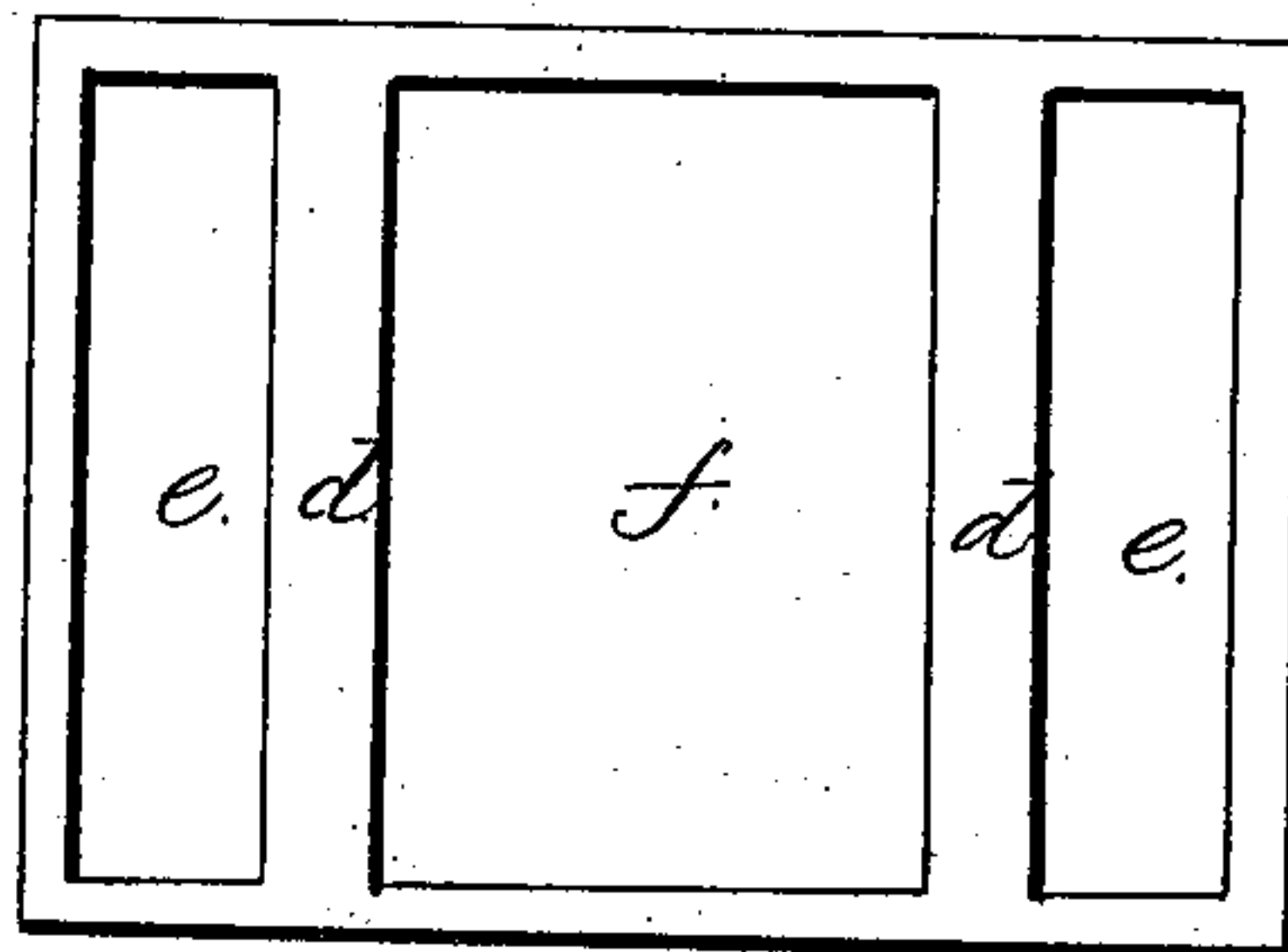
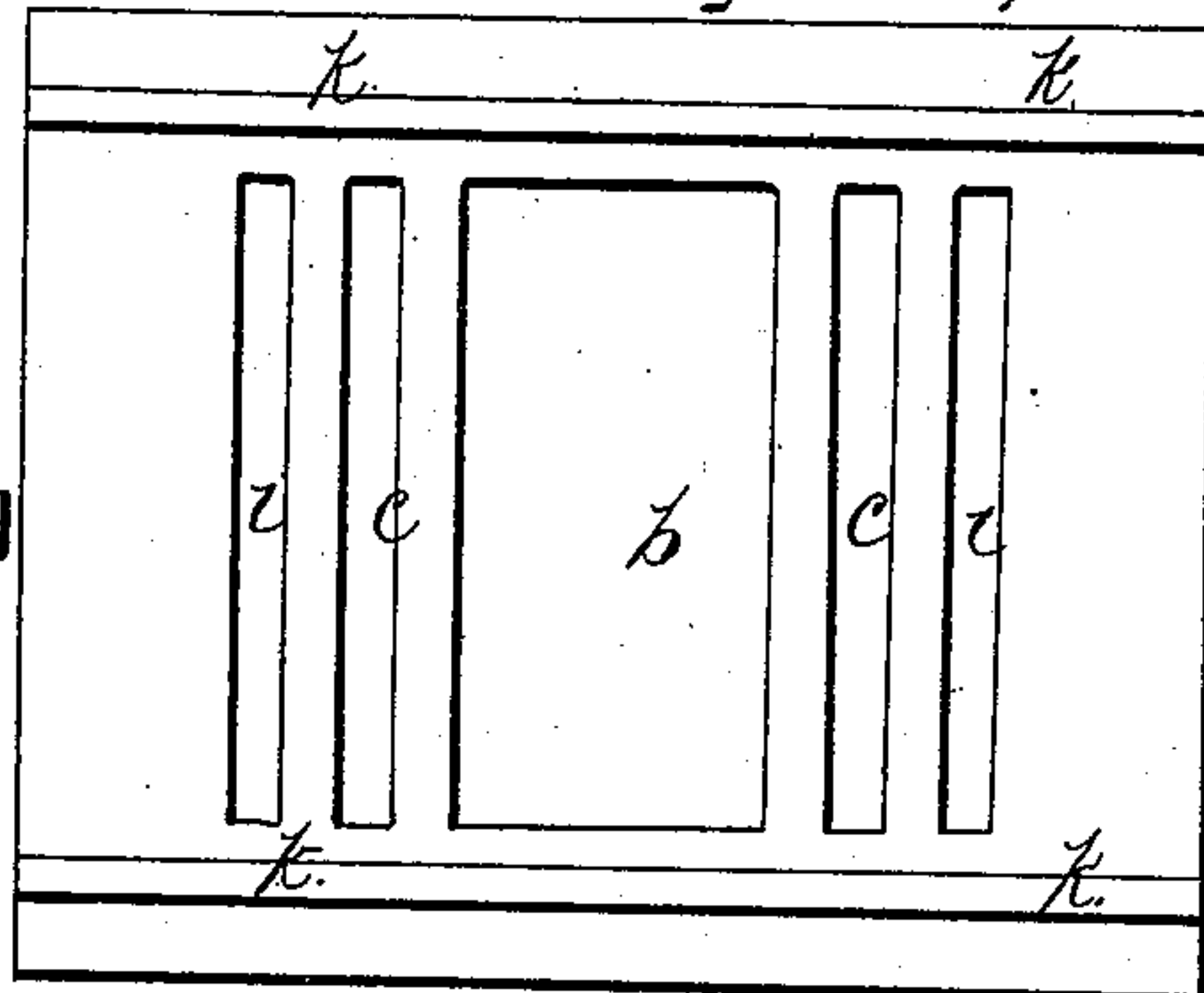
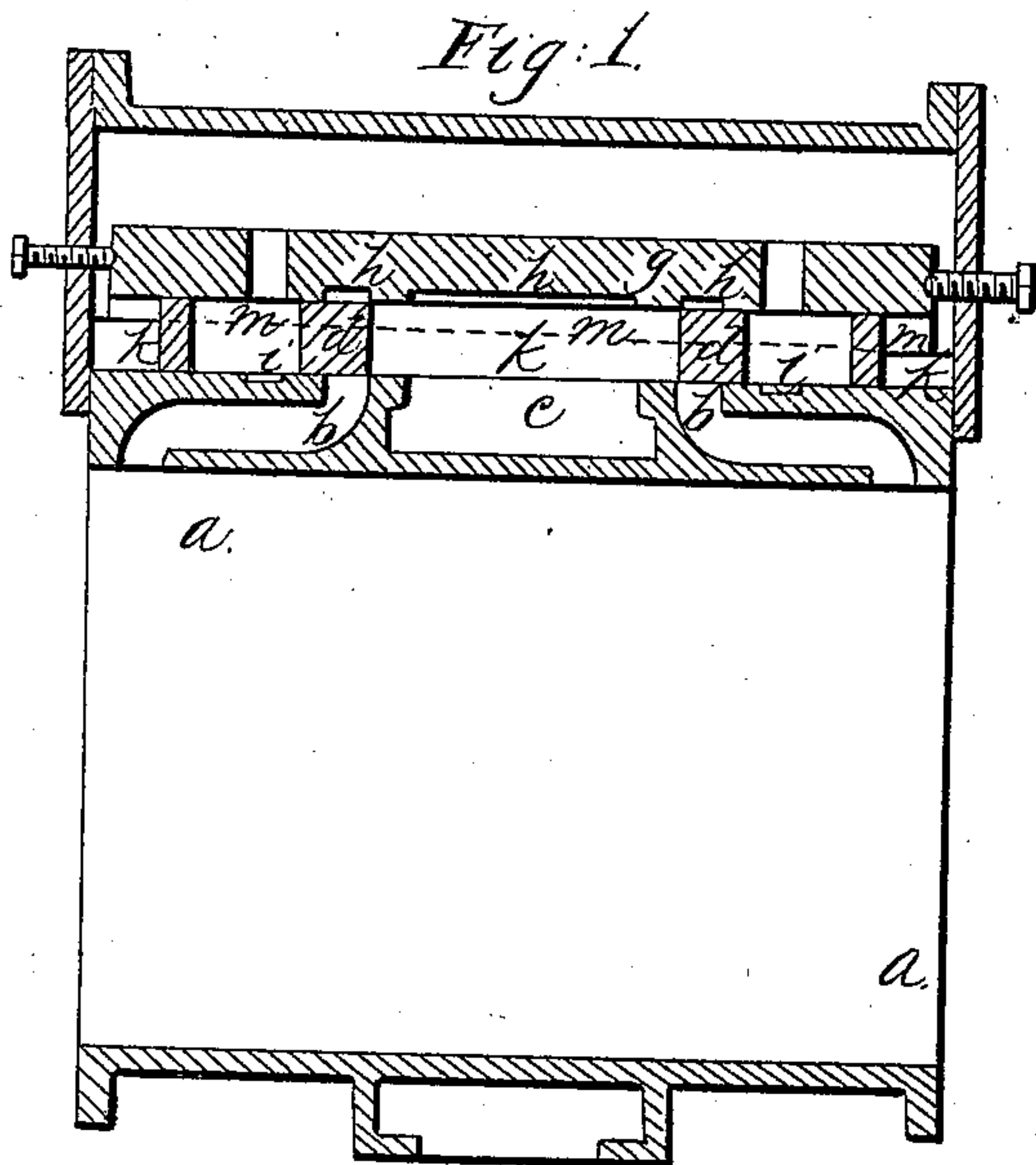


J. Baird,

Steam Balanced Valve.

N^o 42,154.

Patented Apr. 5, 1864.



Witnesses:

N. B. Bromwell
Saml. H. Schanuel

Inventor:
John Baird

UNITED STATES PATENT OFFICE.

JOHN BAIRD, OF NEW YORK, N. Y.

IMPROVEMENT IN SLIDE-VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 42,154, dated April 5, 1864.

To all whom it may concern:

Be it known that I, JOHN BAIRD, mechanical engineer, of the city, county, and State of New York, have invented certain new and useful Improvements in the Valves of Steam-Engines; and I do hereby declare that the following, taken in connection with the drawings, is a full, clear, and exact description thereof.

In the drawings, Figure 1 is a section through a cylinder, slide-valve, face-plate, and steam-chest. Fig. 2 is a plan of a valve-seat. Fig. 3 is a plan of a valve. Fig. 4, a longitudinal section through the same. Figs. 5, 6, and 7, are respectively a plan, a longitudinal section, and an end elevation of a face-plate; and Fig. 8 is a cross-section through the same parts shown in Fig. 1.

My invention consists in a new method of combining a face-plate with a slide-valve in such way, substantially as described, that a lateral or endwise motion of the face-plate shall cause the surface of said plate nearest the valve to approach or recede from the valve. By a "face-plate" I mean a plate capable of being adjusted to the back of a slide-valve so that the latter may slide steam-tight against the former, said plate not resting upon or being supported by the valve, and acting to prevent steam from pressing upon the back of the valve, thus permitting the valve to be in equilibrium, or nearly so.

In the drawings the cylinder is shown at *a a*, the steam-ports at *b b*, the passage to the exhaust-pipe or condenser at *c*, the valve at *d*, with passages through it at *ee* for steam and at *f* for exhaust. The face-plate is represented at *g*, and in the present instance is slotted, so that steam may pass through it in order to use a cut-off. On the back of the face-plate it is also in the present and preferred plan provided with equilibrium recesses at *h h*, and the seat has similar recesses at *i i*. The valve has its two sides parallel to each other, and slides in an ordinary steam-chest, and when working, by the aid of proper gear, admits steam to and permits steam to discharge from the cylinder in a manner easily comprehended by inspection of the drawings. At each side of the valve in the chest are two inclined planes, *k k*, and projecting from the acting side of the face-

plate are two wedge-shaped pieces, *m m*. These wedges rest upon the inclined planes so that the face-plate is supported without aid from the valve, and it will be seen by inspection of the drawings that an endwise movement of the face-plate will cause its acting face to approach and recede from the valve. That side of the face-plate nearest the valve is to be planed, scraped, and, if necessary, ground or so treated as to be a plane surface, and the back and face of the valve are to be treated in the same way, and the back and face are to be parallel to each other. When the contrivance is in working order, the face-plate is to touch the valve, making a steam-tight joint, the adjustment for different thickness of the valve after wear and the original adjustment for a new valve being secured by the sidewise or endwise motion of the face-plate. The face-plate may be moved endwise and held in place by any proper mechanical appliances. I prefer screws passing through the ends of the chest, as shown clearly in Fig. 1. The steam and the friction of the screws will in most cases be ample to prevent the face-plate from leaving the valve; but as a measure of precaution I intend to apply springs of metal or vulcanized rubber to hold it, the latter kind of springs being represented at *o o*, and being long strips of rubber applied between the face-plate and pieces *p p*, projecting from the cover of the valve-chest. (See Fig. 8.) If a cut-off valve be applied on the back of the face plate, the endwise motions of the latter will disarrange its adjustment; but this can be remedied by altering the length of the eccentric-rod or other rod actuating the cut-off.

I intend in some cases to make the inclined planes crosswise of the chest and the wedge-pieces on the ends of the face-plate. A lateral motion of the plate will then adjust it to and from the valve as an endwise motion now does.

The gist of the invention consists in providing the chest with inclined planes and the face-plate with wedges attached to it, so that when the face-plate is moved sidewise or endwise it shall be forced to approach or recede from the valve, thereby securing the proper adjustment of the parts, and the invention may be used with any usual or proper form of

slide-valve, so long as said valve has a back and face parallel to each other, and the face-plate may be in one or several pieces, and the steam may pass through it, as in the plan represented in the drawings, or around its ends.

I claim as of my own invention—

The combination of a face-plate with a slide-valve, by means substantially as described, whereby an endwise or lateral motion of the former causes its acting face to recede from or

approach the back of the latter, substantially as set forth.

In testimony whereof I have hereunto subscribed my name on this 16th day of April, A. D. 1863.

JOHN BAIRD.

In presence of—

H. B. CROMWELL,
SAML. H. SEAMAU.