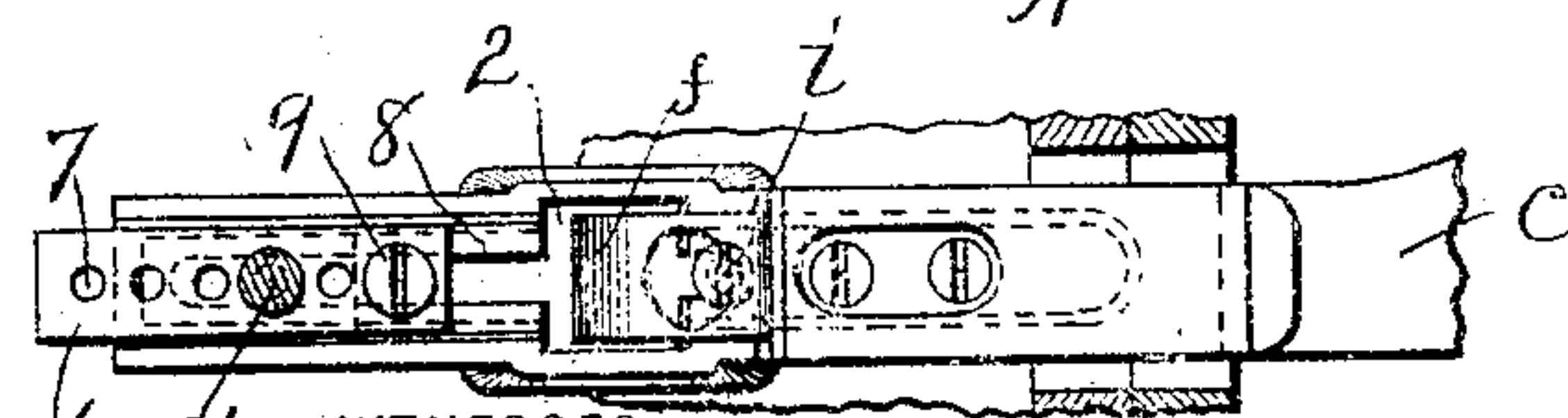
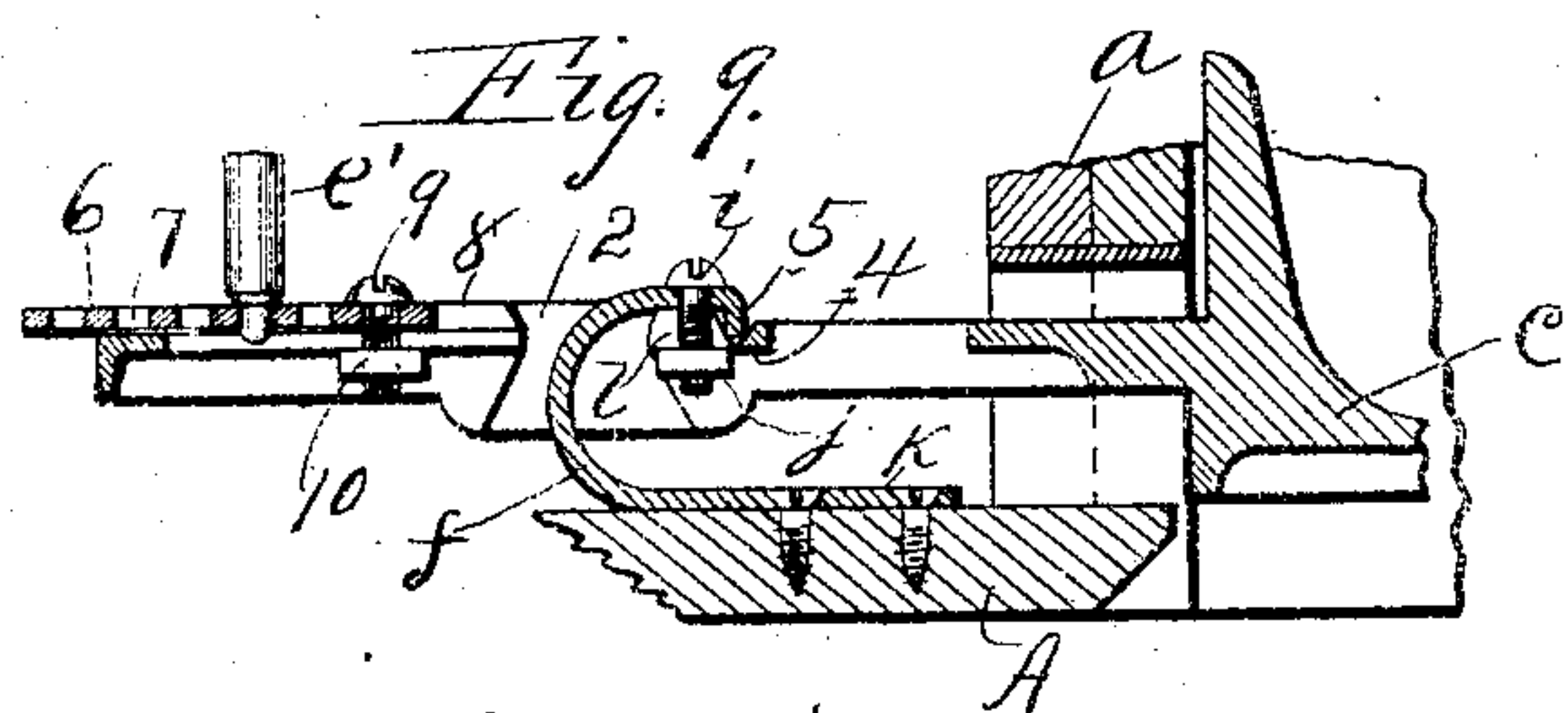
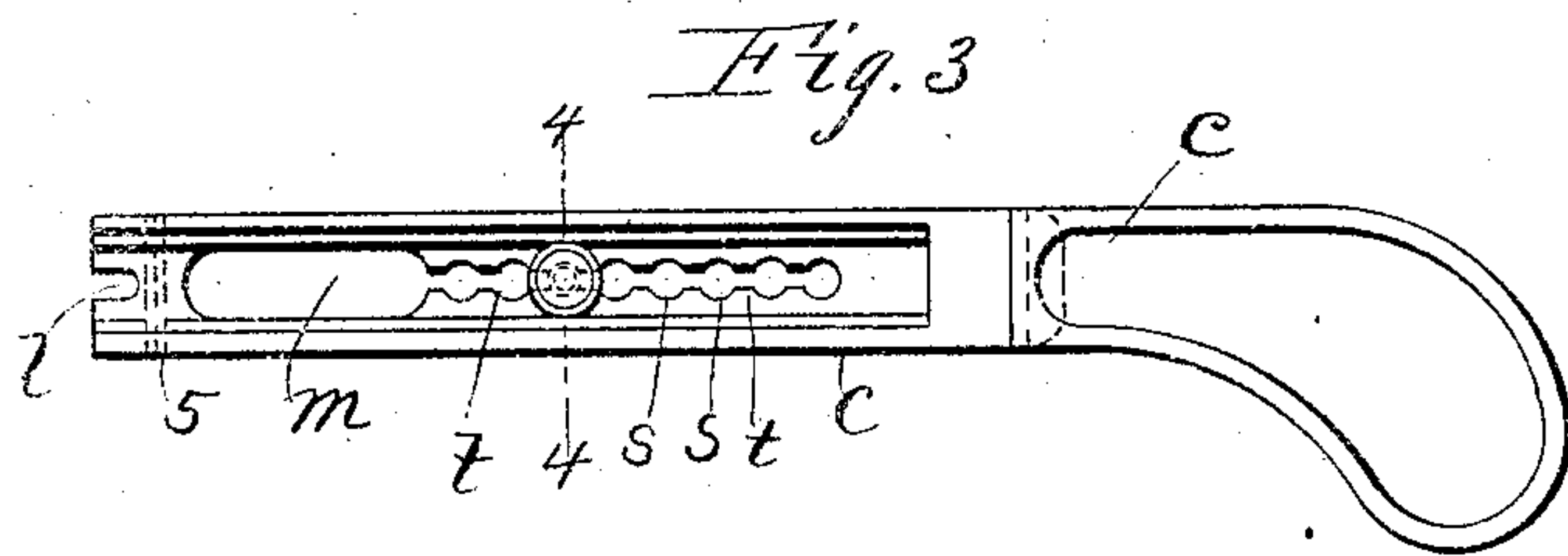
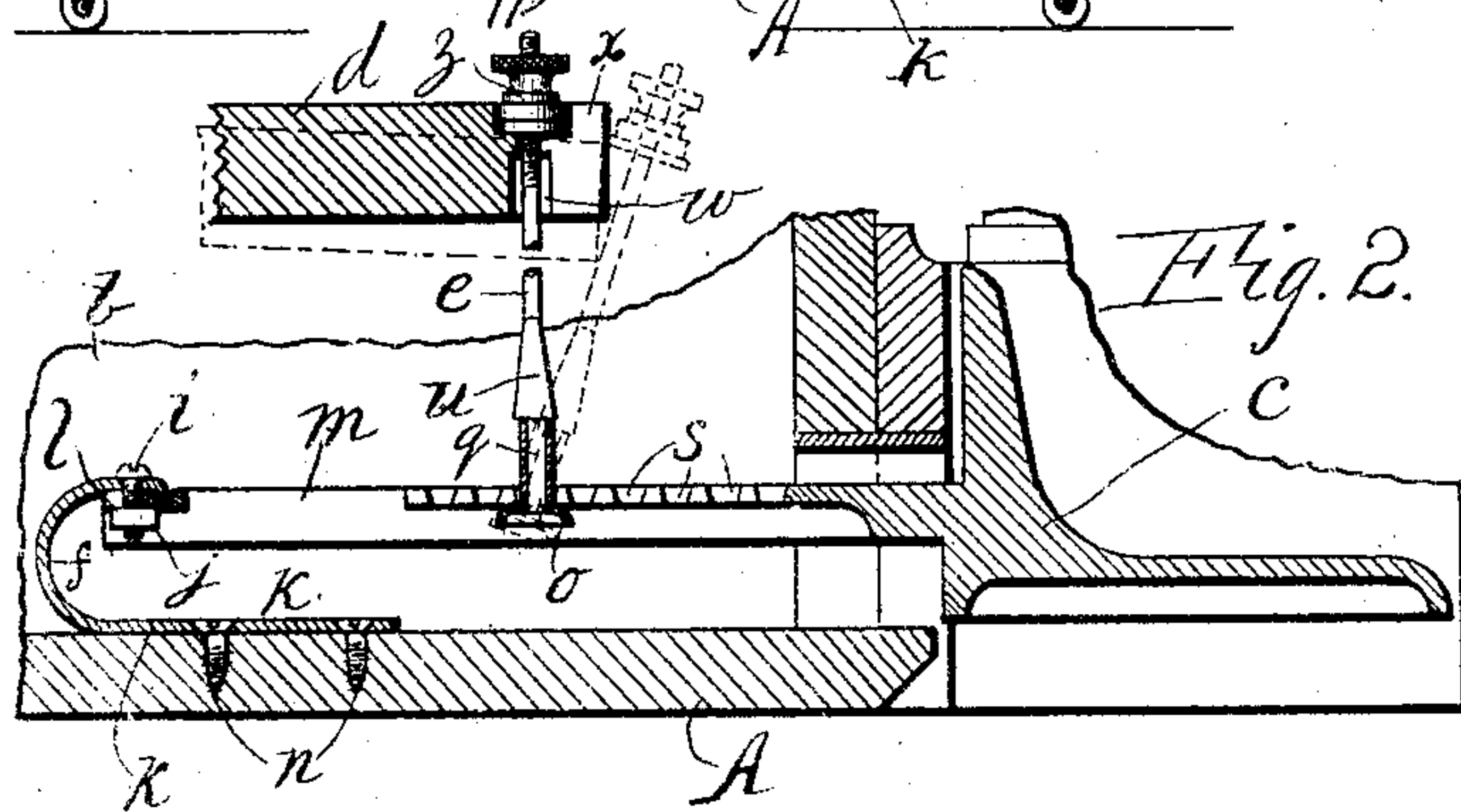
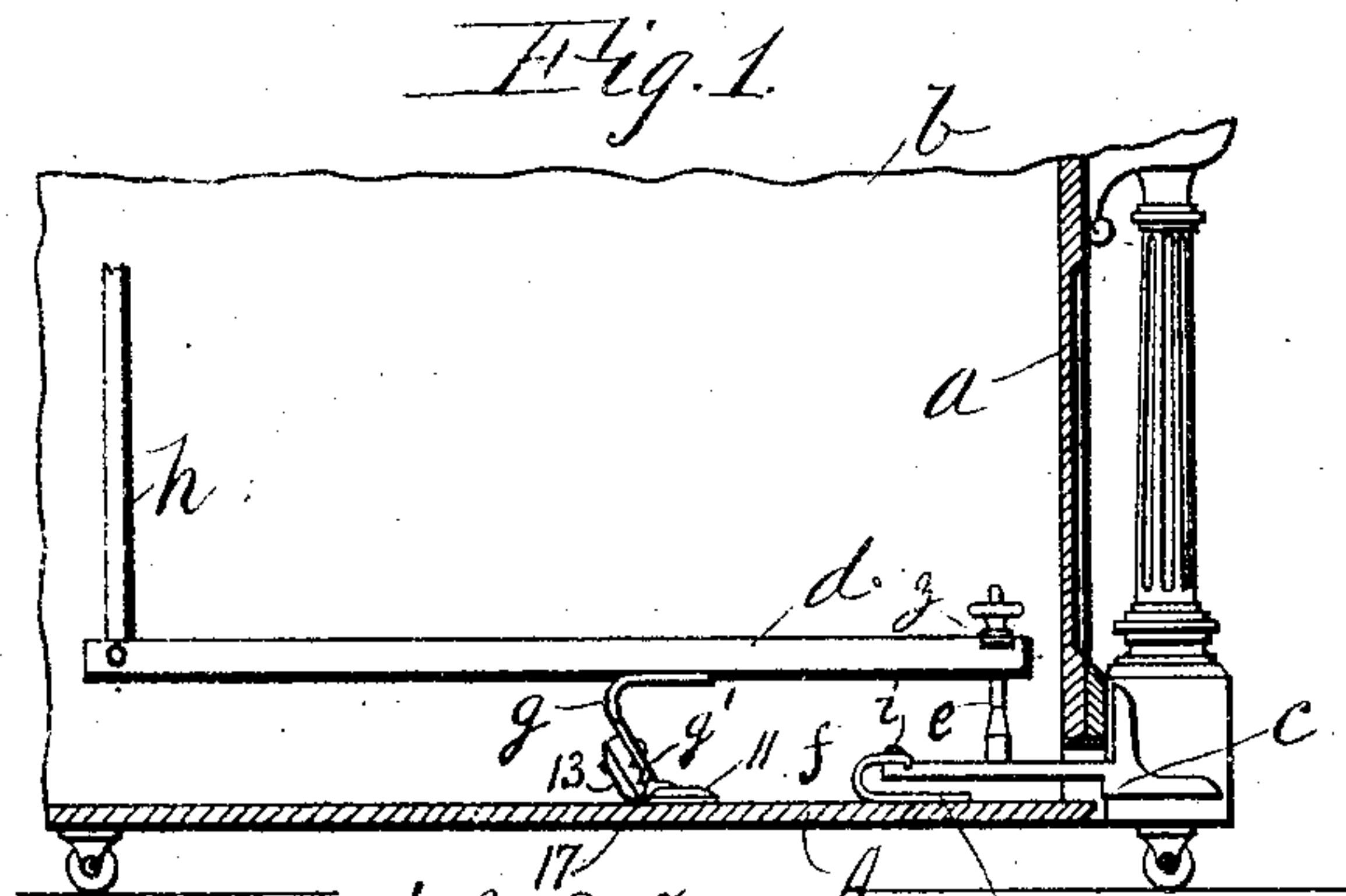


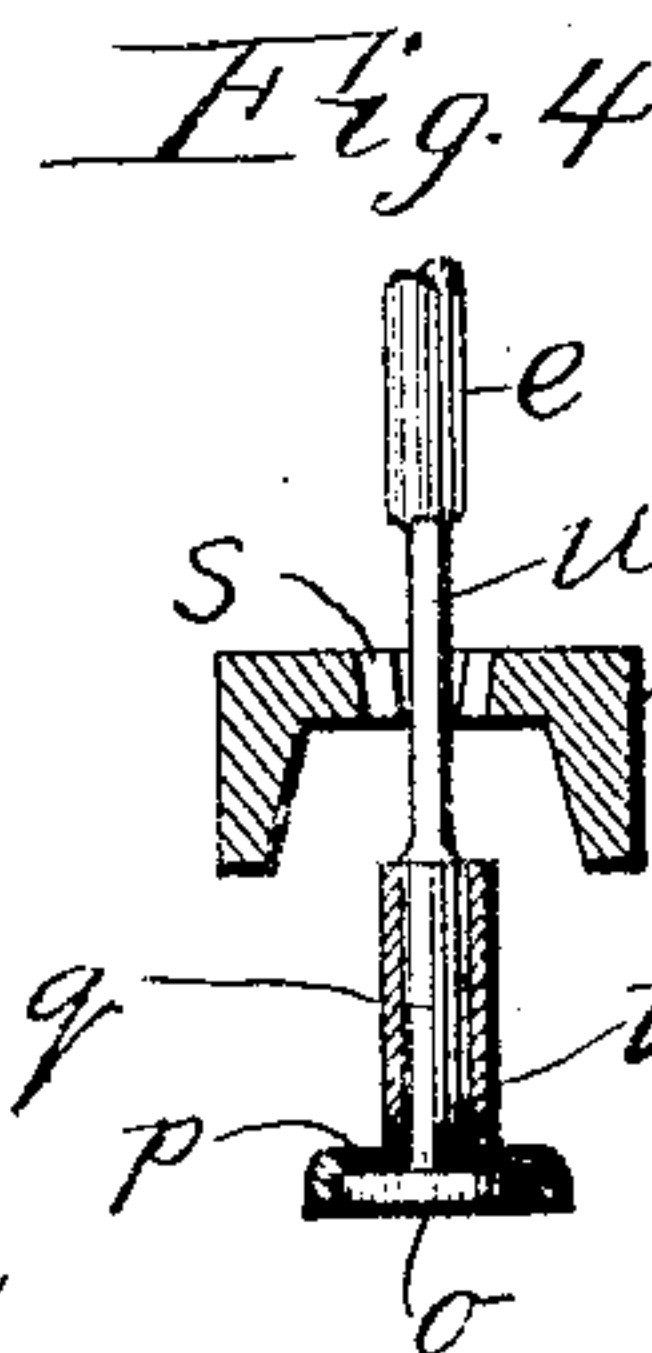
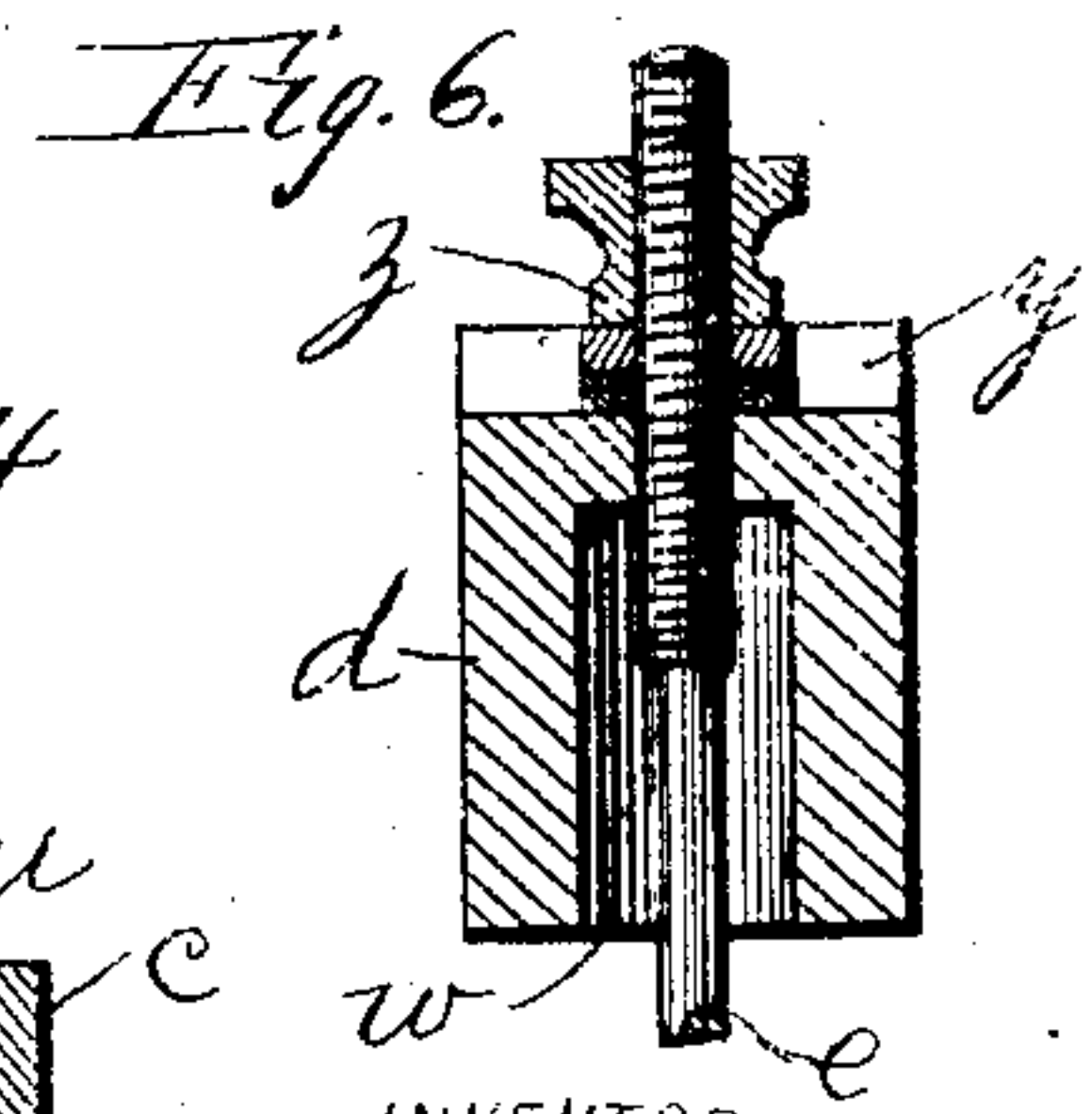
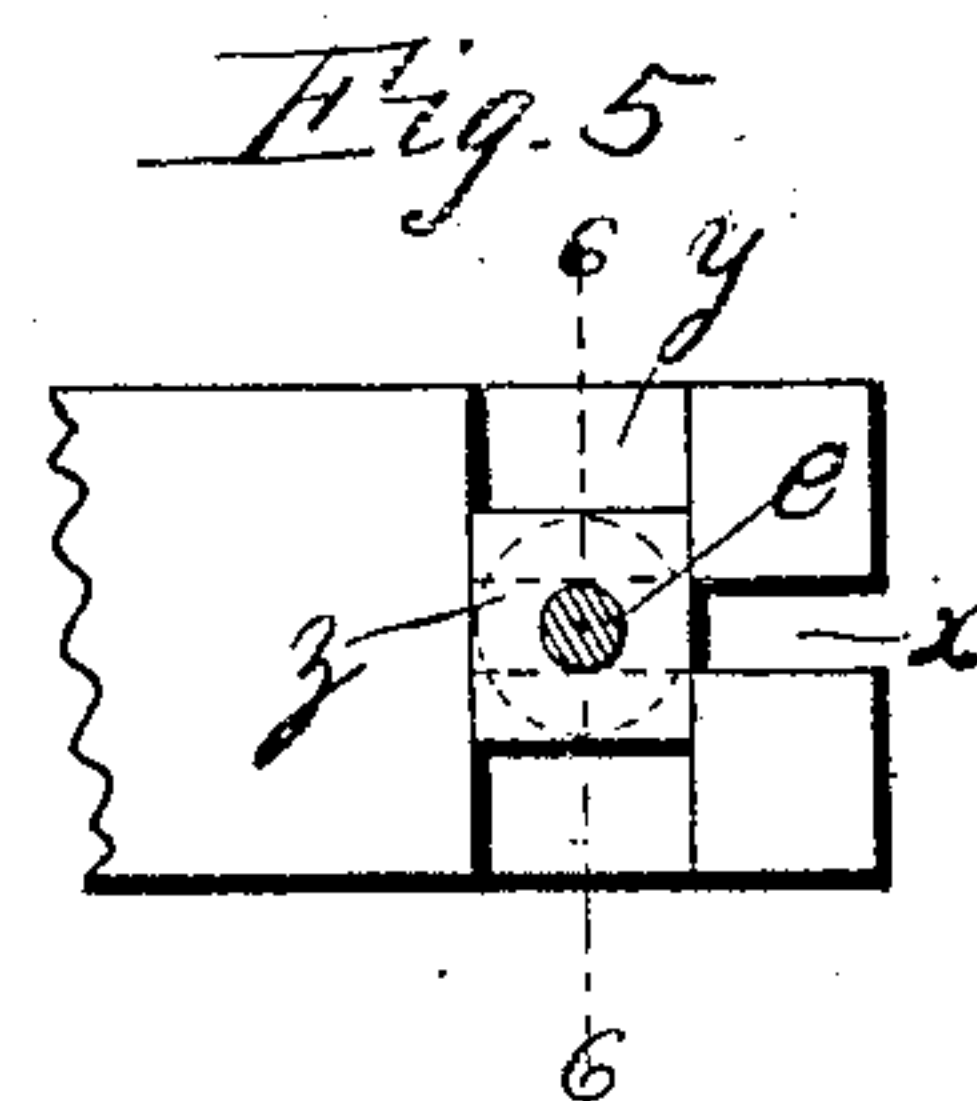
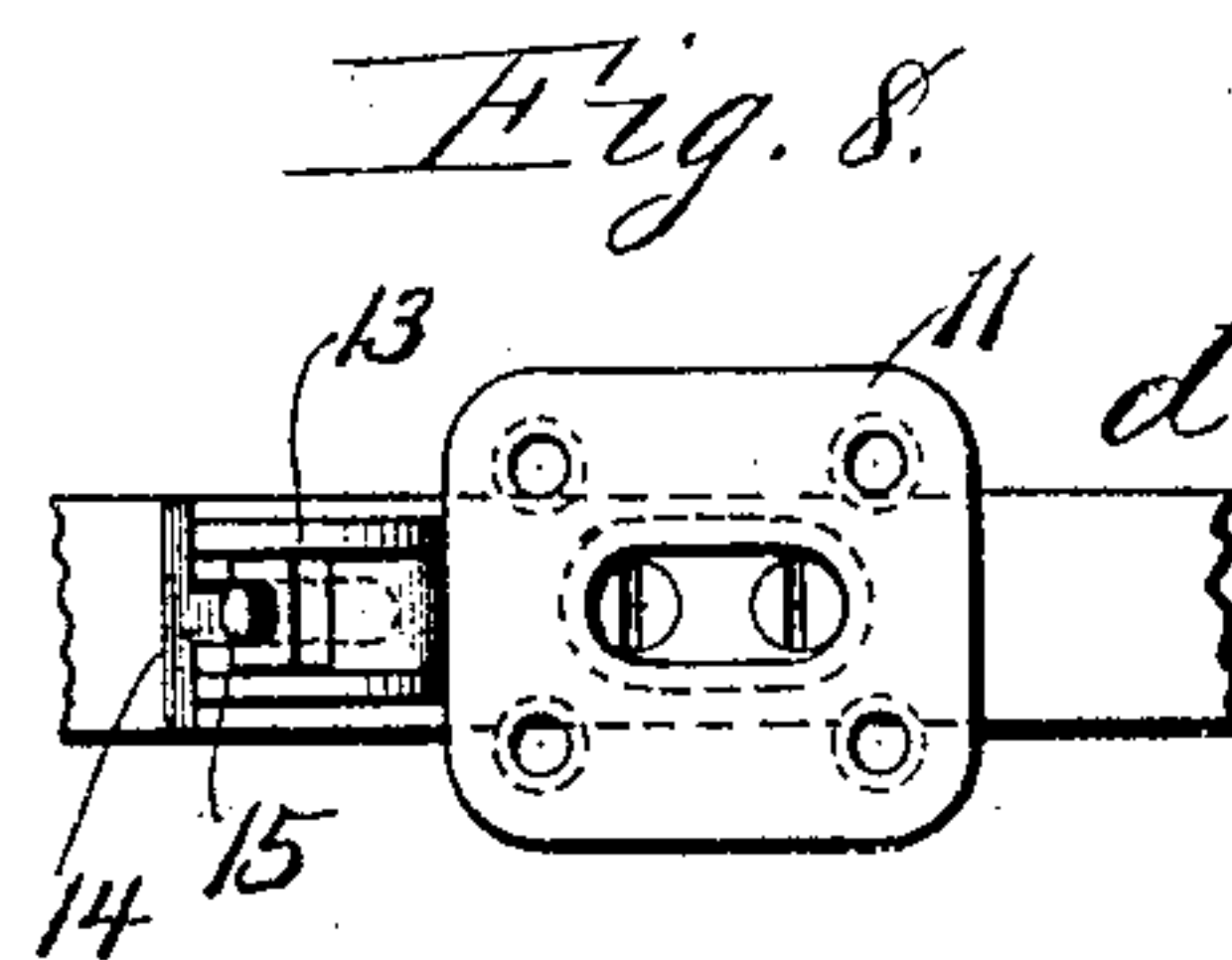
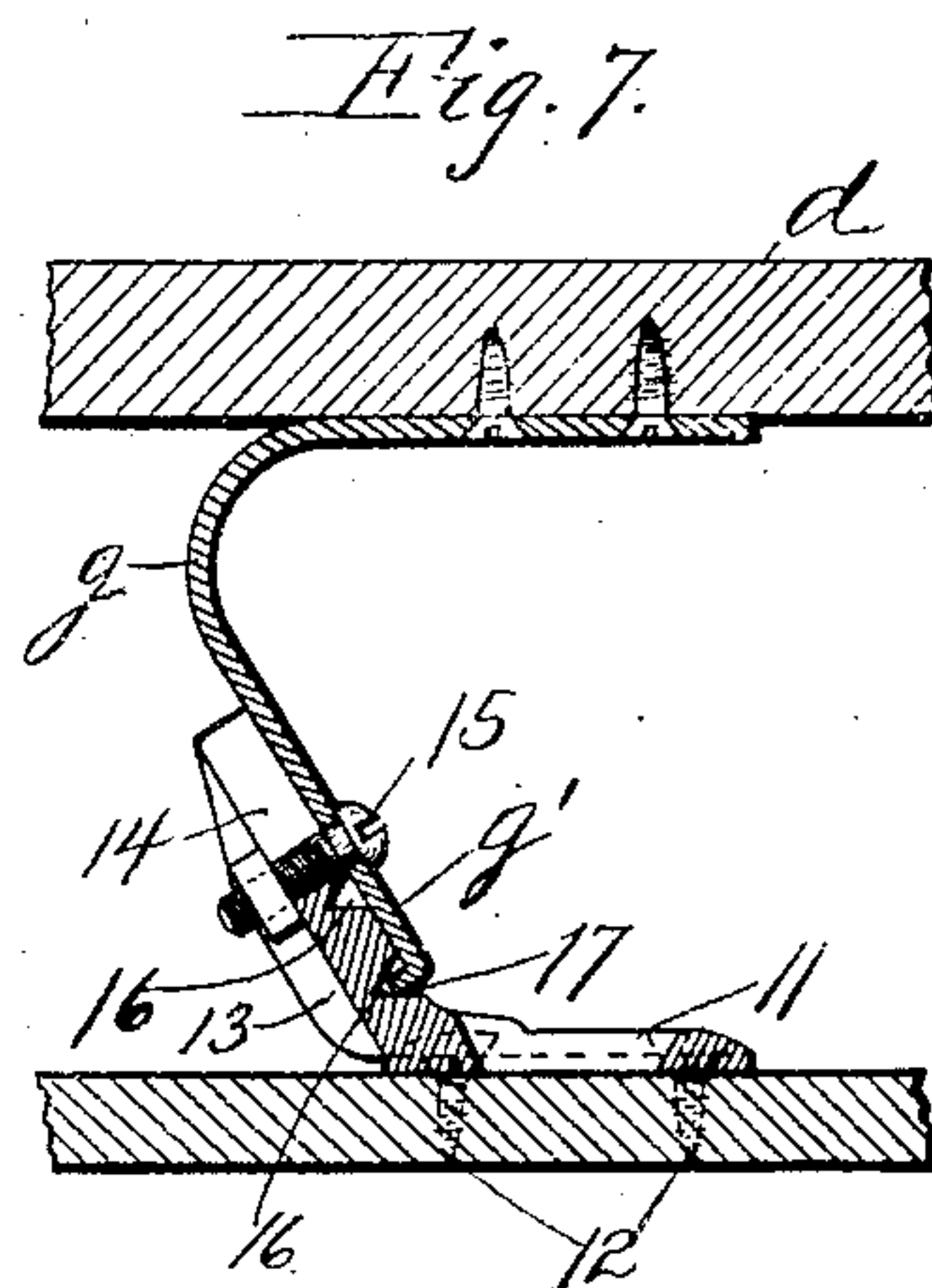
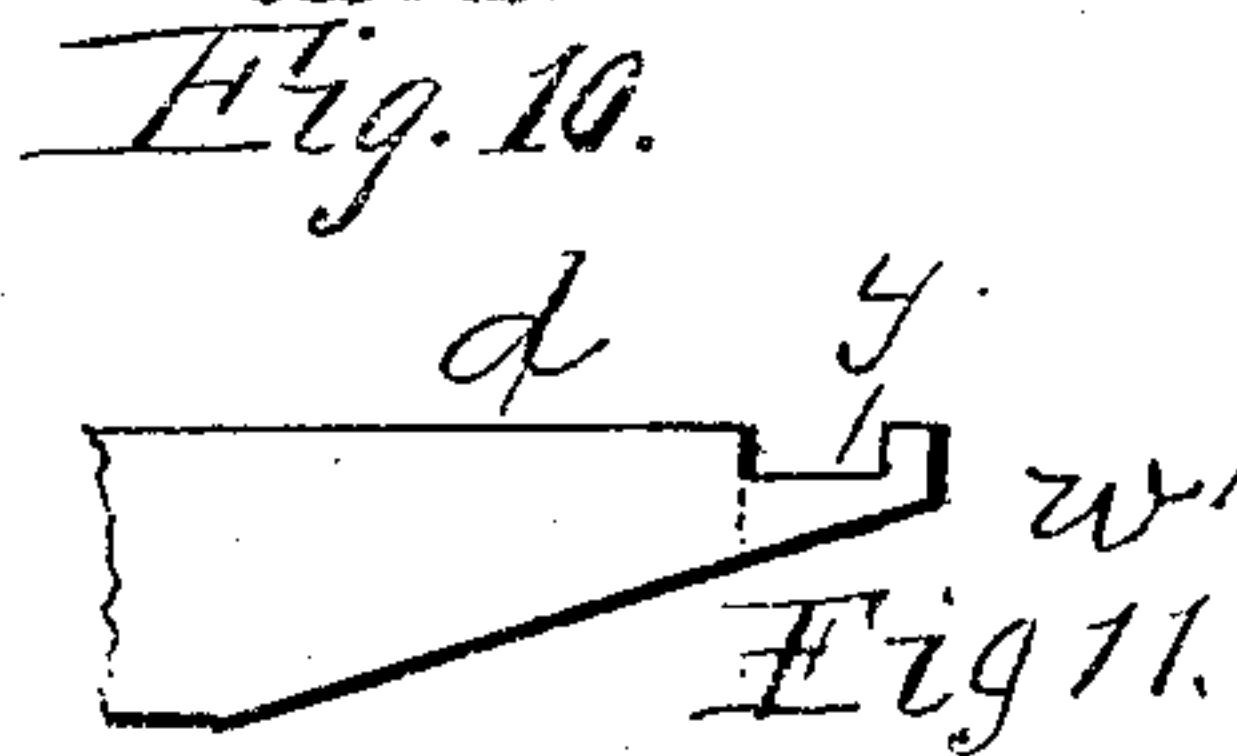
No. 844,655.

PATENTED FEB. 19, 1907.

G. BJORKLUND.  
PIANO PEDAL ACTION.  
APPLICATION FILED SEPT. 2, 1904.



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# UNITED STATES PATENT OFFICE.

GUSTAVE BJORKLUND, OF NEW YORK, N. Y.

## PIANO-PEDAL ACTION.

No. 844,655.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed September 2, 1904. Serial No. 223,073.

*To all whom it may concern:*

Be it known that I, GUSTAVE BJORKLUND, a citizen of the United States of America, and a resident of the borough of Brooklyn, New York city, and State of New York, have invented certain new and useful Improvements in Piano-Pedal Actions, of which the following is a specification.

My invention relates to the pedal apparatus for working the dampers in piano-actions, and consists of improvements in the constructions and arrangements of the fulcrum-spring attachments of the pedals and pedal-levers and connections of the pedals and pedal-levers whereby said parts are more durable, more uniform in action, less noisy, and may be more easily and substantially set up in action in working position, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a sectional elevation of part of a piano-case, showing the damper-working apparatus on a diminutive scale. Fig. 2 represents in vertical longitudinal section a pedal, part of a pedal-lever, rod connecting pedal and pedal-lever, and parts of the case on a larger scale. Fig. 3 is a plan view of the pedal of Figs. 1 and 2 inverted. Fig. 4 represents details of the pedal and the rod connecting the pedal and pedal-lever in cross-section of the pedal. Fig. 5 is a top view of an end piece of the pedal-lever and cross-section of the rod connecting the pedal and pedal-lever. Fig. 6 is a transverse section of the pedal-lever in the plane of the connecting-rod. Fig. 7 is a detail in longitudinal section of the pedal-lever, its fulcrum-spring, and the base-support. Fig. 8 is a plan of the devices of Fig. 7 inverted and with the base-support detached. Fig. 9 is a longitudinal section of a pedal, showing a modified connection of its fulcrum-spring and the arrangement of the rod connecting the pedal and pedal-lever when the damper apparatus is arranged to be operated by an upthrust of the pedal. Said figure also shows an additional adjusting device for the connecting-rod for varying the leverage of the pedal. Fig. 10 is a plan view of the pedal apparatus of Fig. 9. Fig. 11 is a detail of the pedal-lever, showing a modified adaptation as compared with Fig. 6 for avoiding cramp-

ing of the connecting-rod in the hole for said rod.

A represents the base, *a* the front, and *b* one side of a piano-case.

*c* represents a pedal; *d*, the pedal-lever; *e*, a pedal and pedal-lever connecting-rod; *f*, the fulcrum-spring of the pedal; *g*, the fulcrum-spring of the pedal-lever, and *h* the damper-working rod.

The pedal-fulcrum spring *f* is practically the same as in my prior application for a patent, Serial No. 204,708, allowed June 16, 1904; but in that case it is bolted on the end of the pedal through a hole near the end of the pedal with a bolt *i* and nut *j*, which necessitates the application of the nut to the bolt after the bolt has been inserted through the hole, which is very difficult to do because of the limited space between the under side of the end of the pedal and the attaching and supporting part *k* of the spring. My present improvement in this connection consists in providing a slot *l* in the end of the pedal in lieu of the said hole, whereby the bolt may be first inserted through the hole in the end of the spring, and the nut may then be screwed on the bolt far enough to hold it. Then the spring may be placed in position on the pedal end by entering the bolt in the slot sidewise, and the bolt may be screwed "home" without any such hindrance as characterizes the other arrangement.

The pedal herein is, like the one in the aforesaid application, slotted at *m* to admit the screw-driver for inserting the fasteningscrews *n* conveniently. I now take advantage of this device for the application of a pedal and pedal-lever connecting-rod *e*, having a round head *o*, flat under side *p*, and round stem-section *q* next thereto by slotting the pedal for a suitable distance from the end of slot *m*, which is sufficiently wide to permit inserting said head through it freely by a series of holes *s* at suitable intervals apart connected by narrow slots *t*, whereby said rod *e*, also having a flattened section *u* next to the round section *q*, may after passing head *o*, through slot *m*, and a suitable distance beyond be shifted along the pedal from hole to hole *s*, as desired, for varying the leverage and the length of throw as well, also for ad-



justing the connection along the pedal to adapt the pedal for instruments usually requiring longer or shorter pedals. The flat under side of head *o* affords substantial bearing on the pedal, which of course has corresponding surfaces, and in addition I provide a like flat-headed elastic sleeve *v* on the rod *e* to cushion the bearings of the rod with the pedal for noiseless action.

The hole *w* through the pedal-lever *d* for connecting the rod *e* is when said lever is of full breadth at the hole, as herein shown, counterbored for the most of its length, as in Figs. 2 and 6, to avoid cramping of the rod in the hole, as would be the case if the hole were limited throughout its length to the size necessary at the upper edge of the lever for properly confining the rod; but said lever may be suitably reduced in vertical thickness for like effect, if desired, as at *w'*, Fig. 11.

Where the rod *e* is connected to pedal-lever *d*, I provide a slot *x* for swinging the rod thereinto, as indicated in Fig. 2, and box the upper surface of the lever at *y* for reception of the adjusting-nut *z* to prevent it from working slack. The slot enables the connection and disconnection of the rod without removing the nut. To adjust the nut, the pedal-lever is temporarily pressed down and the nut freed from the boxing *y*, so as to be turned and then be replaced by the rise of the lever on the rod.

In cases where the damper apparatus is of such nature that upthrust of the pedal is required I locate the fulcrum-spring intermediate of the ends of the pedal, as in Figs. 9 and 10, and for such application of my improved spring *f* in the same mode of connection as where it is connected to the end of the pedal I make a wide slot 2 in the pedal for reception of the upper end of the spring and produce the same transverse nick 4 for the turned-down end lip 5 of the spring and slot 7 for the bolt, as on the end of the pedal, and thus am enabled to use the same spring for either form of pedal.

For finer adjustment of the pedal and pedal-lever connecting-rod *e* than can be had merely by the holes *s* in the pedal and also to provide extensible connection with the pedal-lever for instruments requiring pedals of different lengths I have provided a sliding piece 6, having a series of holes 7 to receive the point of connecting-rod *e'* and fitted in a slideway 8 of the pedal with a clamp-screw 9 and nut 10 for fixing it in position. This is alike applicable also with the pedal *c* and connecting-rod *e*.

I have now made an improvement in the fulcrum-spring *g* for the pedal-lever, which consists of a separately-constructed foot-piece 11 for permanently connecting with the base A by screws 12 with an upwardly-in-

clined arm 13 on which to bolt the lower extremity *g'* of the spring, the said arm being slotted vertically at 14 for shifting the clamping-bolt 15 up and down with two or more transverse nicks 16 to receive the lip 17 of the end of the spring for substantial connection, thus enabling the height of the fulcrum-spring to be varied according to requirements, but more particularly to provide a point of disconnection of the spring, which is frequently required, that will not deteriorate, as where the foot-piece and the rest of the spring are made in one piece and the foot-piece has to be detached frequently from the wood base.

What I claim as my invention is—

1. The combination with the pedal having a notch for reception of the fulcrum-spring connecting-bolt and a slot for admission of a screw-driver, of the connecting-bolt and the fulcrum-spring, said spring having the bow-shaped end and the elongated supporting part, the upper end of the bow-spring being secured in place upon the top of the pedal and the supporting part being accessible through the slot in the pedal, substantially as set forth.

2. The combination of the pedal having the series of holes for the pedal-lever connecting-rod, and slot of lesser breadth than the holes, of the flat-headed connecting-rod, having the section next above the head fitted to said holes, and also having a flattened section above said first-mentioned section fitted to the slot.

3. The combination of the pedal having the series of holes for the pedal-lever connecting-rod, and slot of lesser breadth than the holes, of the flat-headed connecting-rod, having the section next above the head fitted to said holes, and also having a flattened section above said first-mentioned section fitted to the slot, and the headed sleeve of flexible material on the said rod.

4. A pedal having a bow fulcrum-spring support intermediate of its ends and a slot for the bow of said spring, the upper end of the bow-spring being extended through said slot and attached to the upper surface of the pedal, substantially as shown,

5. The combination with the pedal, pedal-lever and the rod connecting said pedal and the pedal-lever, of the slidably-adjustable step-piece in the pedal for seating the rod.

6. The combination with the pedal, pedal-lever, and pedal-lever fulcrum-spring, of the separately-constructed attaching-piece having an upwardly-inclined supporting-arm, the spring attached to said arm and the lever respectively.

7. The combination with the pedal, pedal-lever, and pedal-lever fulcrum-spring, of the separately-constructed attaching-piece provided with an upwardly-inclined arm having

the transverse nicks and the lengthwise slot, the spring having the lip adapted to the transverse nicks, and attached to said arm and lever respectively.

5 8. The combination with the pedal-lever and pedal and lever-connecting rod, of a perforated piece adjustably mounted upon the pedal and adapted to receive the lower end of

said connecting-rod, substantially as and for the purposes set forth.

Signed at New York this 3d day of August, 1904.

GUSTAVE BJORKLUND.

Witnesses:

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C. SEDGWICK.