

J. DAYKIN & W. B. CASE.
Chain-Machines.

3 Sheets--Sheet 1.

No. 143,968.

Patented Oct. 28, 1873.

Fig. 1.

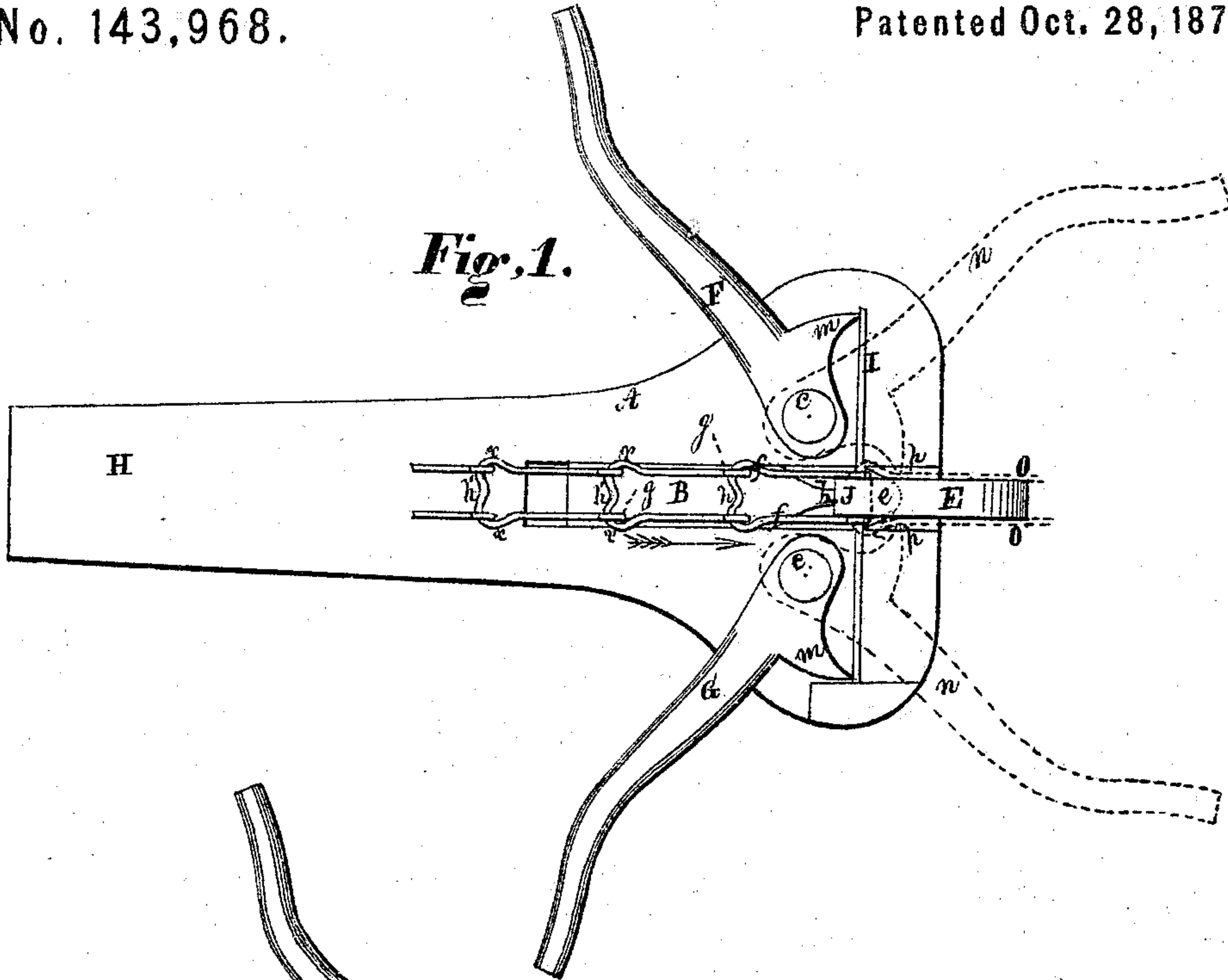


Fig. 2.

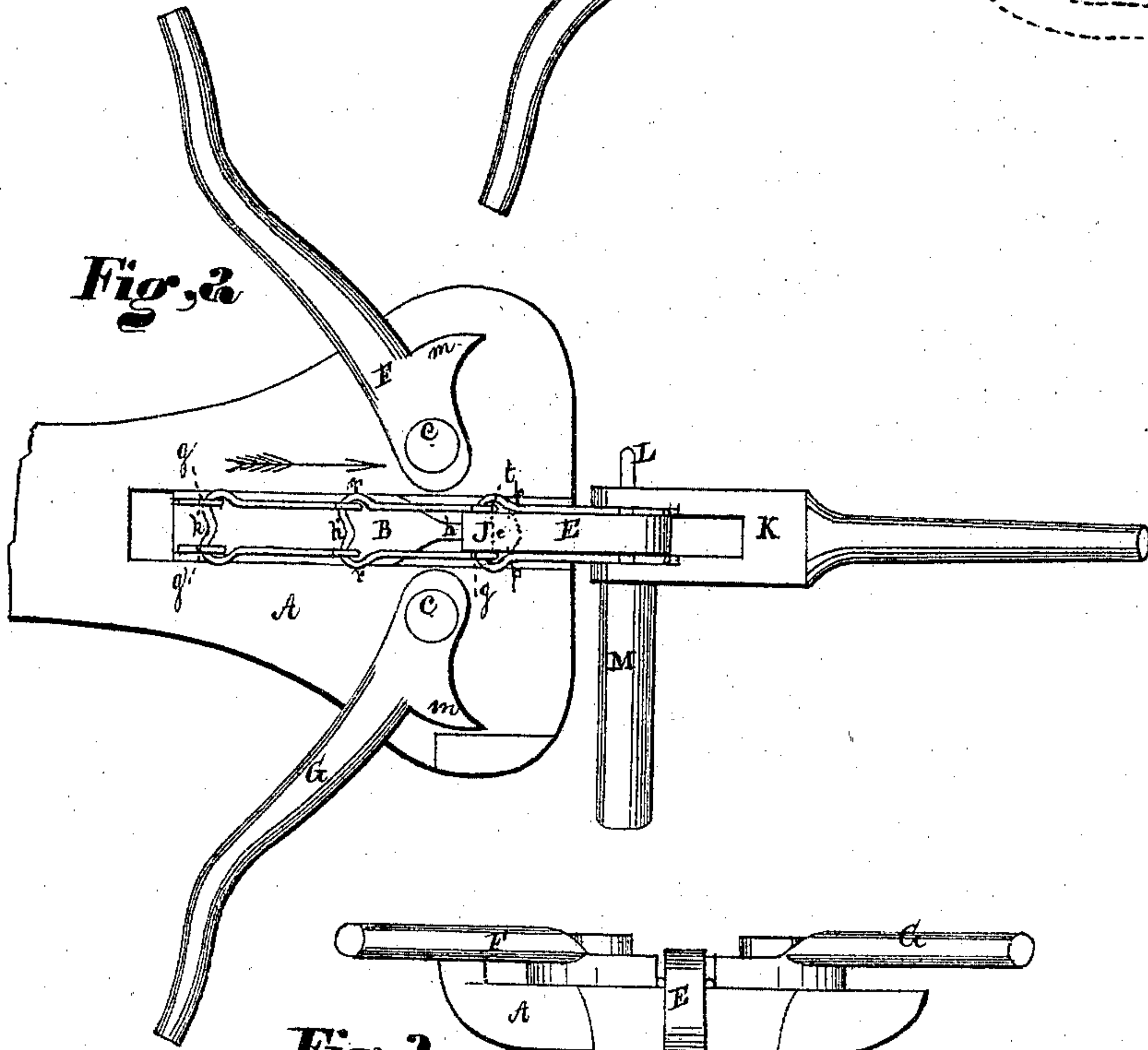
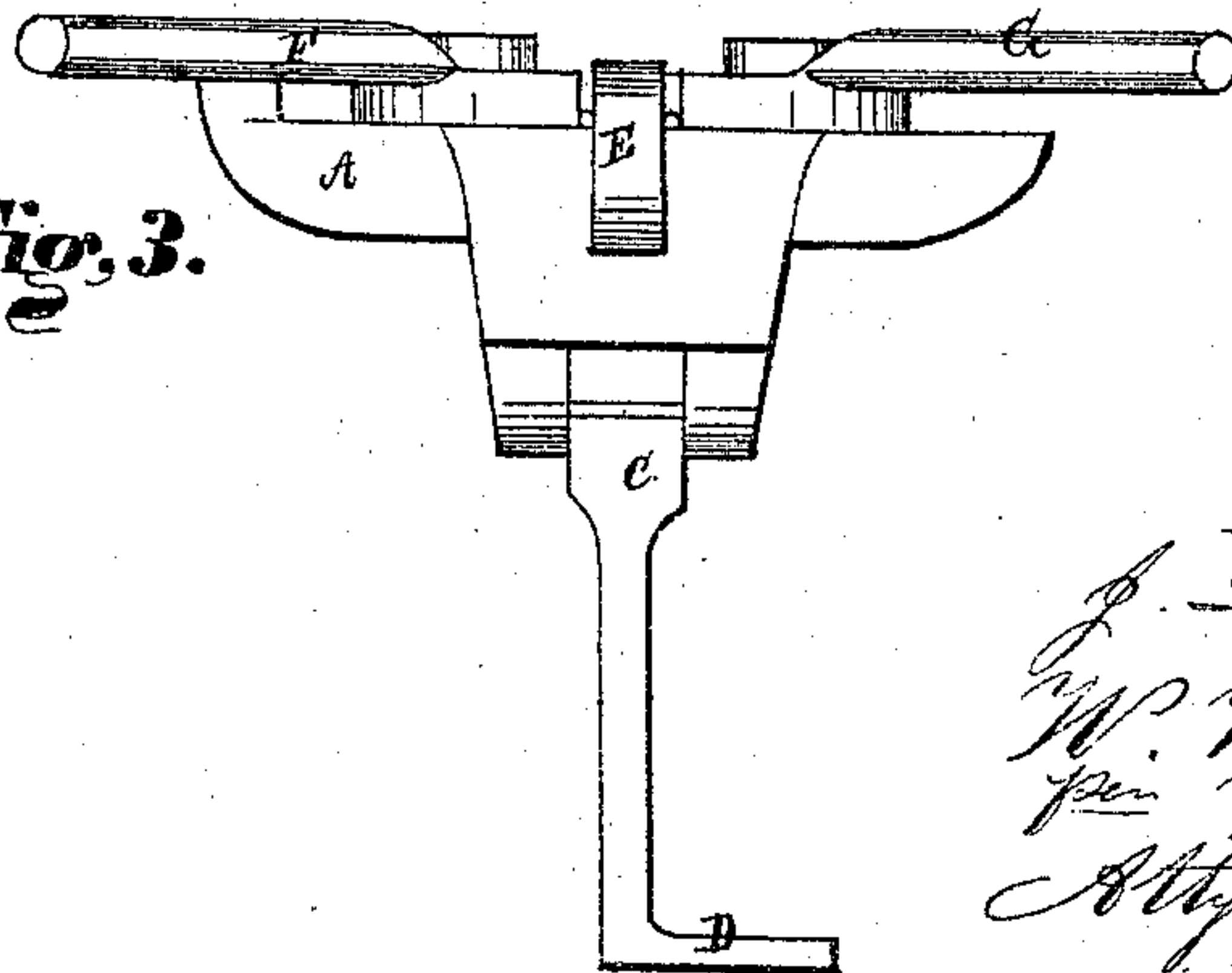


Fig. 3.



Witnesses
J. H. Burridge
L. L. Humphrey

Inventors.
J. Daykin.
W. B. Case.
per Burridge & Co
Atty

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Fig. 4.

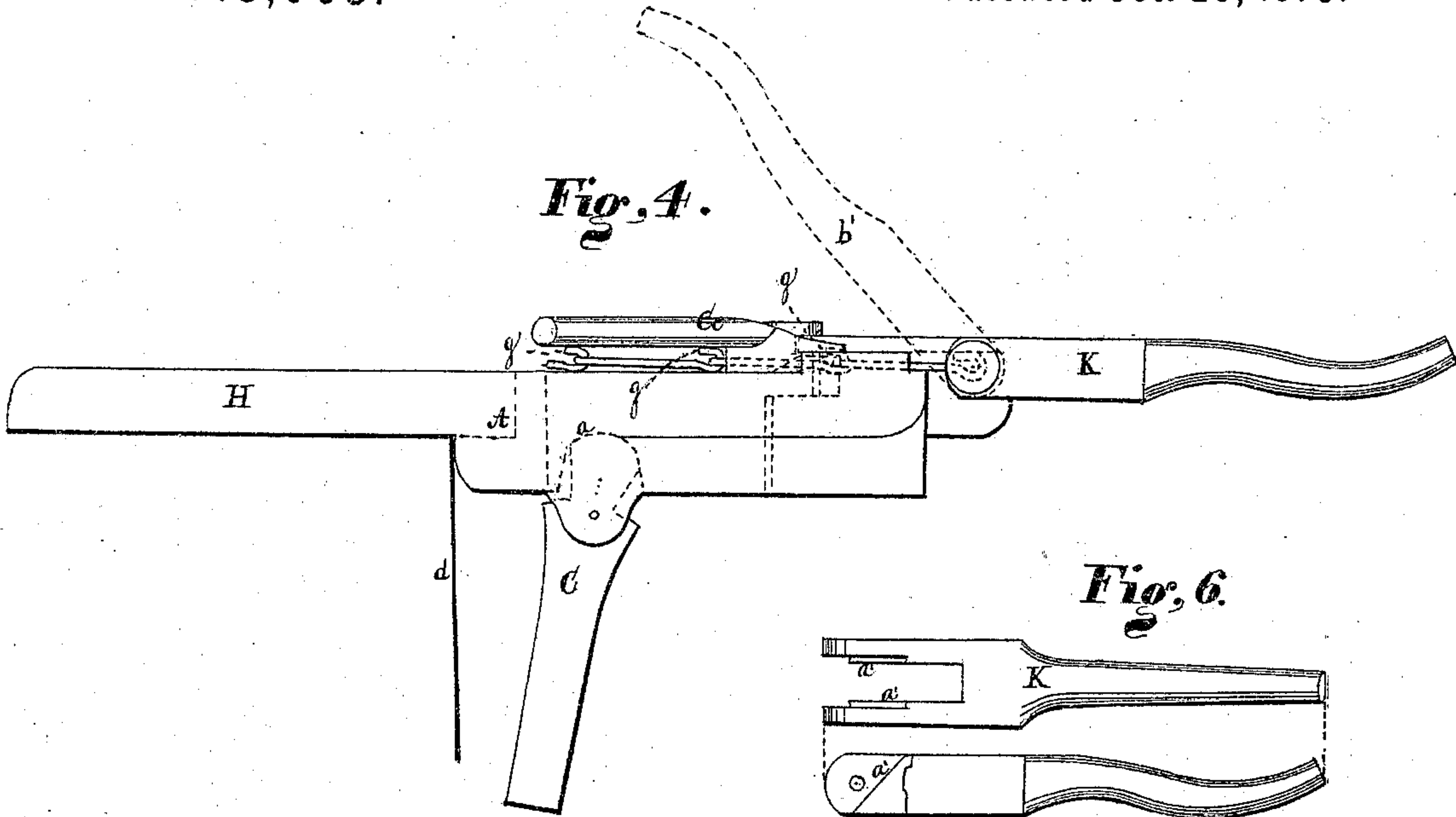


Fig. 6.

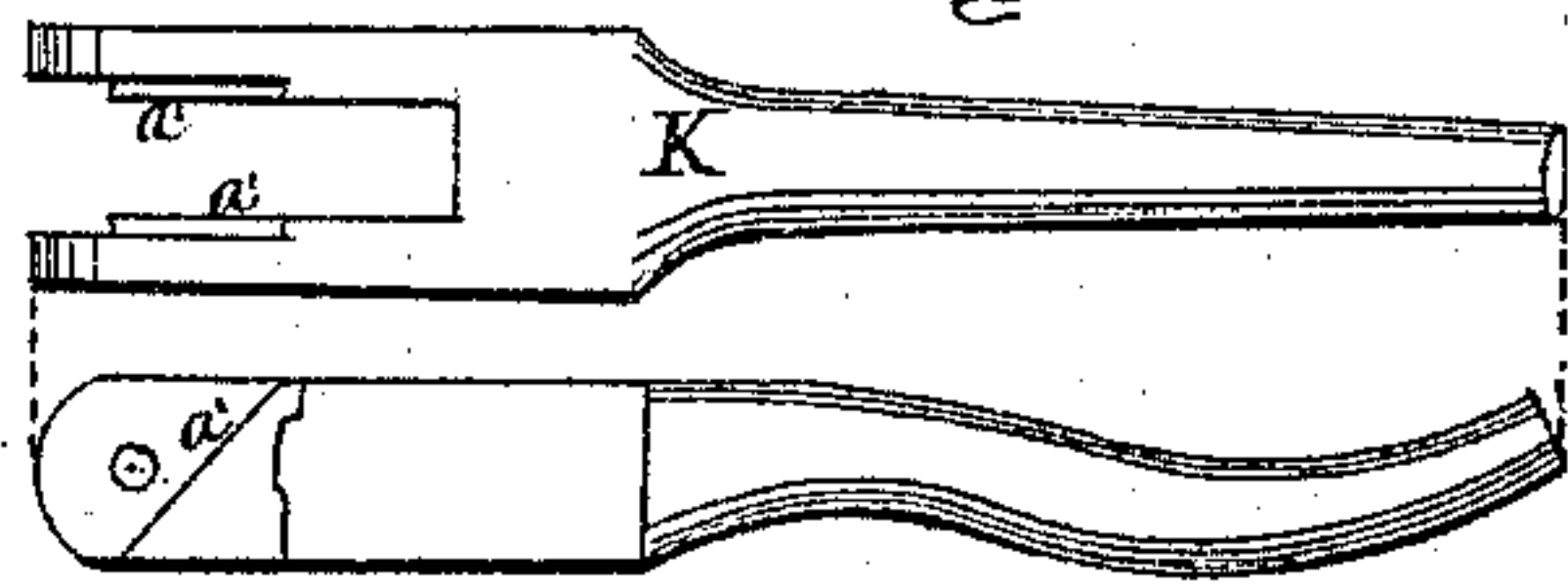


Fig. 5.

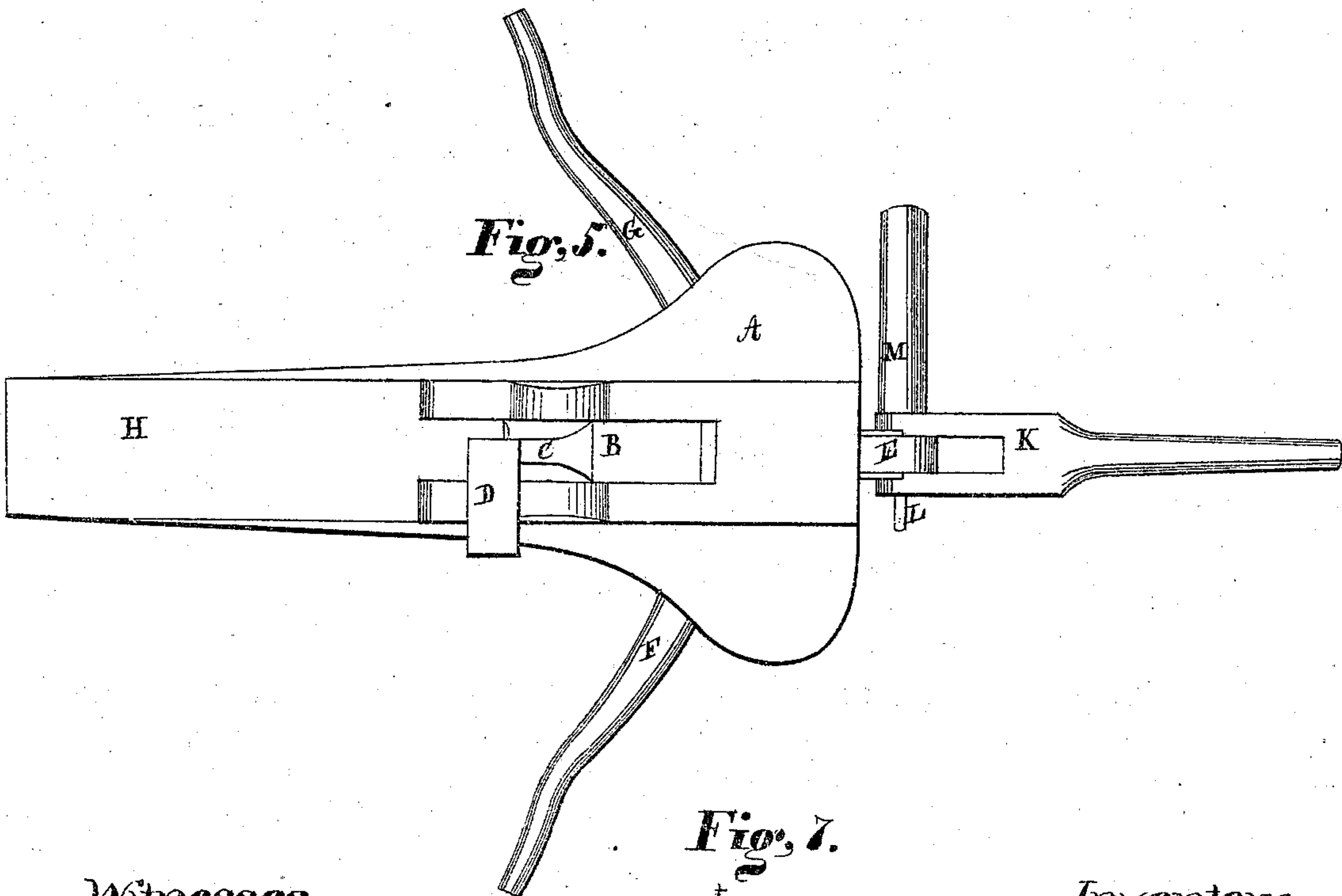
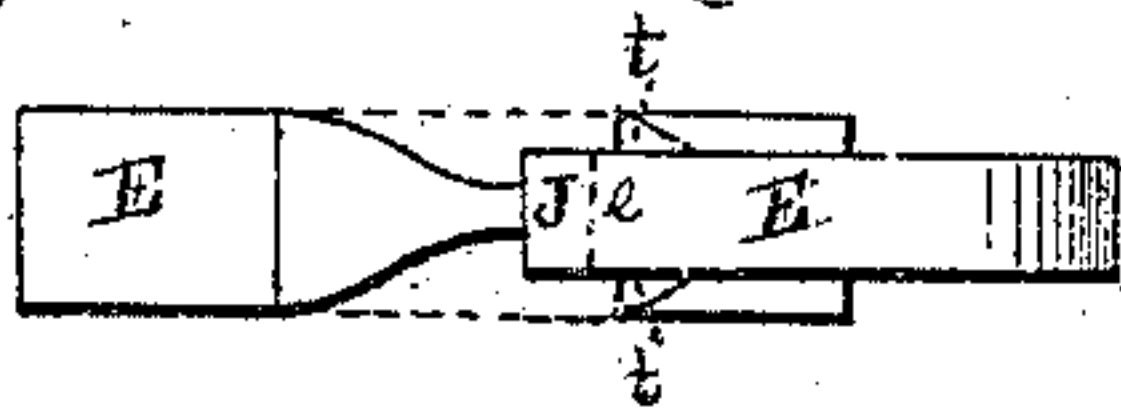


Fig. 7.



Witnesses.

J. H. Burridge.
E. L. Humphrey.

Inventors.

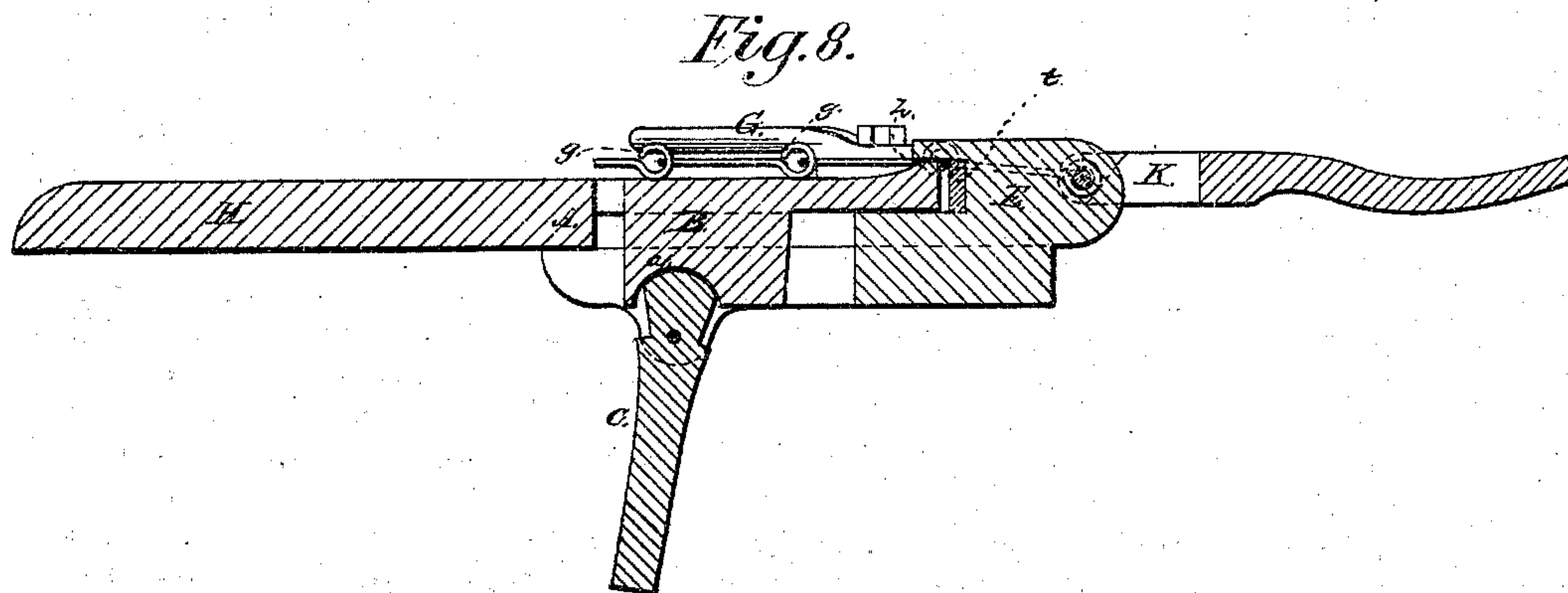
J. Daykin.
W. B. Case.
per Burridge & Co.
Atty

3 Sheets--Sheet 3.

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Witnesses

H. Clay Smith
C. A. Boham

Inventor's

J. Daykin
Wm B Case
By their attys
Jo S Pond.

UNITED STATES PATENT OFFICE.

JAMES DAYKIN AND WILLIAM B. CASE, OF CLEVELAND, OHIO.

IMPROVEMENT IN CHAIN-MACHINES.

Specification forming part of Letters Patent No. **143,968**, dated October 28, 1873; application filed December 4, 1871.

To all whom it may concern:

Be it known that we, JAS. DAYKIN and WM. B. CASE, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Machines for Making Flat Chain; and we do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawings making part of the same.

Figures 1 and 2 are plan views of the machine. Fig. 3 is an end view. Fig. 4 is a side view. Fig. 5 is a view of the under side. Figs. 6 and 7 are detached sections. Fig. 8 is a vertical section, showing the slide B and die *t*.

Like letters of reference denote like parts in the different views.

The nature of this invention relates to a machine for the manufacture of flat chain for the especial use of water-drawers; and the object of said invention is to make the chain in a less expensive way than can be done by the use of the ordinary machine.

A full and complete description of said invention is as follows: A in the drawings represents a bed-plate, in and on which are arranged the following-described devices: B is a slide fitted in a groove cut in the bed-plate A, and in which it is made to slide backward and forward longitudinally by means of a treadle-lever, C, Figs. 3 and 4, pivoted to the under side of the bed-plate. The short arm of said lever is made to engage the slide, as indicated by the dotted lines *a*, Fig. 4, for operating it when the long arm of the lever is actuated by the foot placed upon the rest D, Fig. 3, as will hereinafter be shown. It will be observed that the front end of the slide is narrowed down to a thin point, *k*, of harder material than the slide *b*, which, as the slide moves forward in the direction of the arrow, strikes against the die *t* of hard steel situated against the head E, secured in and projecting from the end of the bed-plate. F G, Figs. 1 and 2, are side levers, pivoted at the point *c* to the face of the bed, and arranged in relation to the slide B and head E as shown in said Figs. 1 and 2. These levers are provided with a projection, *m*, which presses the wire firmly against the side of the die and elevated part of the head E. In practice, these projections

are very important, as they effectually prevent the wire from slipping, and insure a uniform size and conformation of the links. The die *t* is made of hard or tempered steel, and is removable. The wire is pressed against it by the slide B. This gives a graceful curve to that part of the link, and is especially advantageous over any machine known to us, from the fact that when the die is worn, or rendered unfit for use from any cause, it may be removed and replaced by another at little cost or trouble; otherwise the entire head E would have to be removed.

The practical operation of this machine is as follows: It is secured to a bench by means of the tail-piece H, thereby allowing the end A, with its arrangement of devices, to project over the edge of the bench, as shown in Fig. 4, in which the line *d* indicates the front of said bench. A piece of wire, I, Fig. 1, of the proper length for making one link of the chain, is placed in the machine under the inner end of the head E referred to, the upper side of which inner end projects back a little beyond the lower part, as shown in Figs. 1 and 2, in which the dotted line *e* indicates the face of the die *t*, against which the piece of wire I rests under the projecting lip or end J of the head. The purpose of said lip is to hold the wire down while being operated upon. At the time of inserting the wire I, a link of chain, *f*, is allowed to remain in the machine in the position shown in Fig. 1, in which it will be seen that the hooks or eyes *g*, Figs. 1 and 4, whereby the several links are attached together, are in such relation to the head E as to allow the length of wire I to pass through them when being inserted under the head, as above described. In thus passing the wire through the eyes, the eyes resting against the die *t*, it will be obvious that said wire will not touch the face of the die, as it is held therefrom by the side of the eyes through which the wire passes, but, on pressing forward the slide B by the treadle end of the lever C, the point *h* of the slide will strike that part of the wire I between the two eyes and bend it forward against the removable die *t*, which is fitted closely against the end of the head. This operation of the slide will give the curve *h*, Fig. 2, to the bar of the link, and at the same time will hold the

piece of wire firmly in position by clamping it against the end of the head. The curve in the bar of the link being formed, the wire is then bent round against the sides of the head by means of the side levers F G, the points *m m* of which touch the extreme ends of the wire, as shown in Fig. 1. It will be obvious that, on pulling the levers forward, as indicated by the dotted lines *n*, the ends of the wire will thereby be bent round against the sides of the head, as indicated by the dotted lines *o*, Fig. 1. The points *m m*, as the levers are being pulled forward, slide down along the wire and press it hard against the sides of the head at the points *p*, at which points is formed a swell or bow, *r*, Fig. 2, by forcing the wire around over the removable die *t*, Fig. 8, which projects slightly from each side of the head, as shown in the detached view of the head, Fig. 7, and which bow forms the rests for the hooks of the next succeeding link, as shown in Figs. 1 and 2. The bar and sides of the link being thus formed, with their respective curve or dent *h* and bow *r*, the eyes *g* are, next in order, formed by means of the bifurcated lever K, Fig. 2, a detached view of which is shown in Fig. 6. Said lever is made to fit the projecting end of the head, as shown in Fig. 2, and is secured thereto by a pintle, L, having attached thereto a handle, M. A section of the inside of the end of the arms of the lever K is rabbeted out, forming an oblique shoulder, *a'*, on the inside of each arm, as shown in Fig. 6. The ends of the wire are bent into hooks or eyes by attaching the bifurcated lever K to the head by means of the pintle M, so that the shoulders *a'* will be upward, and the ends of the wire I, now a partially-made link, will rest upon them, and at the same time be under the pintle, around which the ends are bent on pushing upward and over the lever to the position indicated by the dotted lines *b'*, Fig. 4. This turning upward of the lever carries with it on the shoul-

ders *a'* the ends of the partially-formed link, turning them over and around the pintle and down upon the link forming the eye *g*, into which the bar of the next link in the chain is hooked, as shown in Figs. 1 and 2. The eyes of the link having been thus formed, the pintle is withdrawn, and the link is then drawn so far back as to bring said eyes within range of the inner end of the head, to receive within them another piece of wire, inserted under and in front of the head, as described, which piece of wire is then treated as was the piece aforementioned, and so on for each subsequent piece, as the length of the chain may require.

In this manner of forming or shaping the several links it will be seen that the links leave the machine attached to each other, and that the hooks are closed up upon the bar of the next link, so that the chain leaves the machine in a completed condition.

This machine is operated entirely by the workman, and requires no particular skill and strength to work it. Each link is made in perfect shape and with great rapidity by those accustomed to working it.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The removable die *t*, arranged relatively to the head E and slide B, as shown and specified.
2. The levers F G, provided with projections *m m*, in combination with head E and removable die *t*, as specified.
3. In a chain-machine, the levers F G, provided with projections *m m*, treadle C, and slide B, in combination with removable die *t*, head E, and lever K, when combined, arranged, and operating as herein specified and set forth.

JAMES DAYKIN.
W. B. CASE.

Witnesses:

W. H. BURRIDGE,
E. CLAY BRIGGS.