

**No. 708,211.**

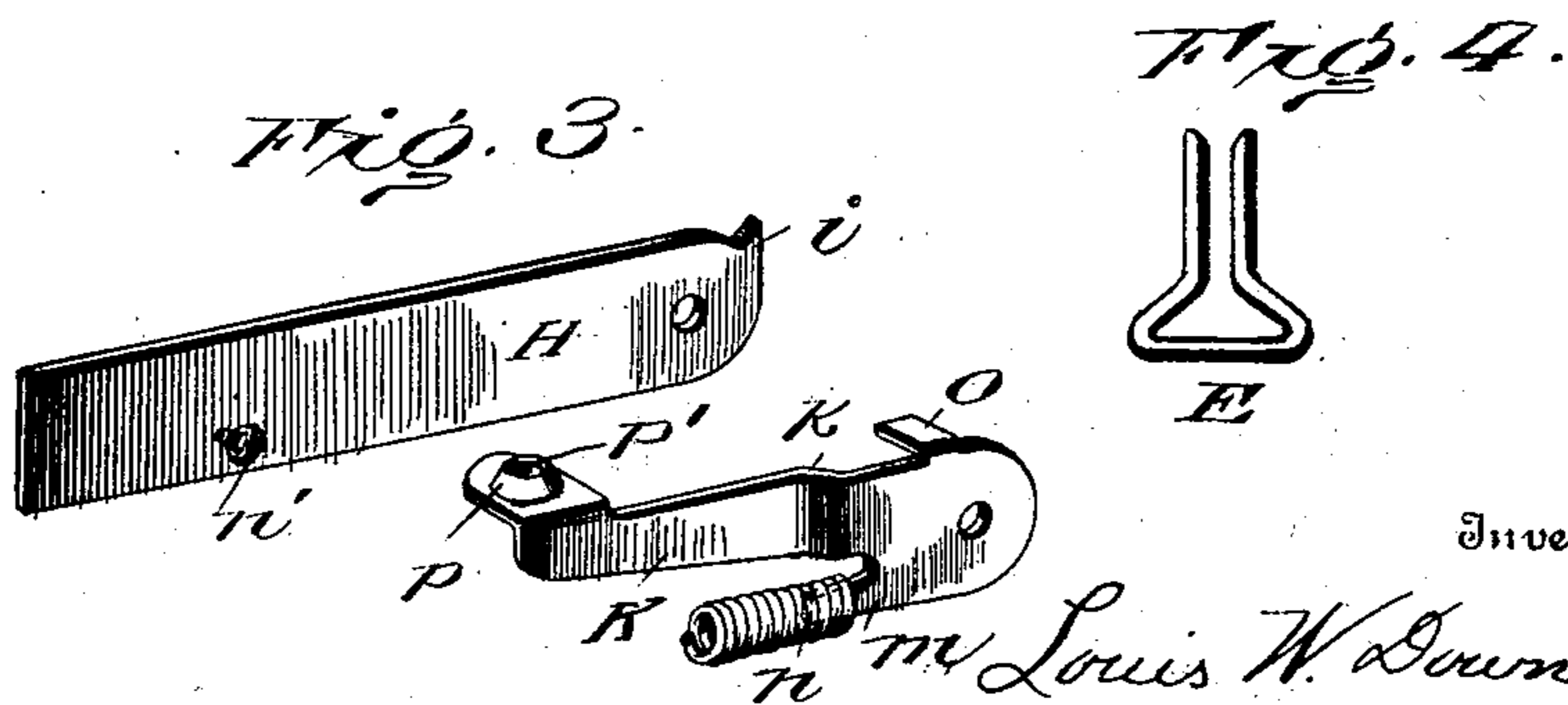
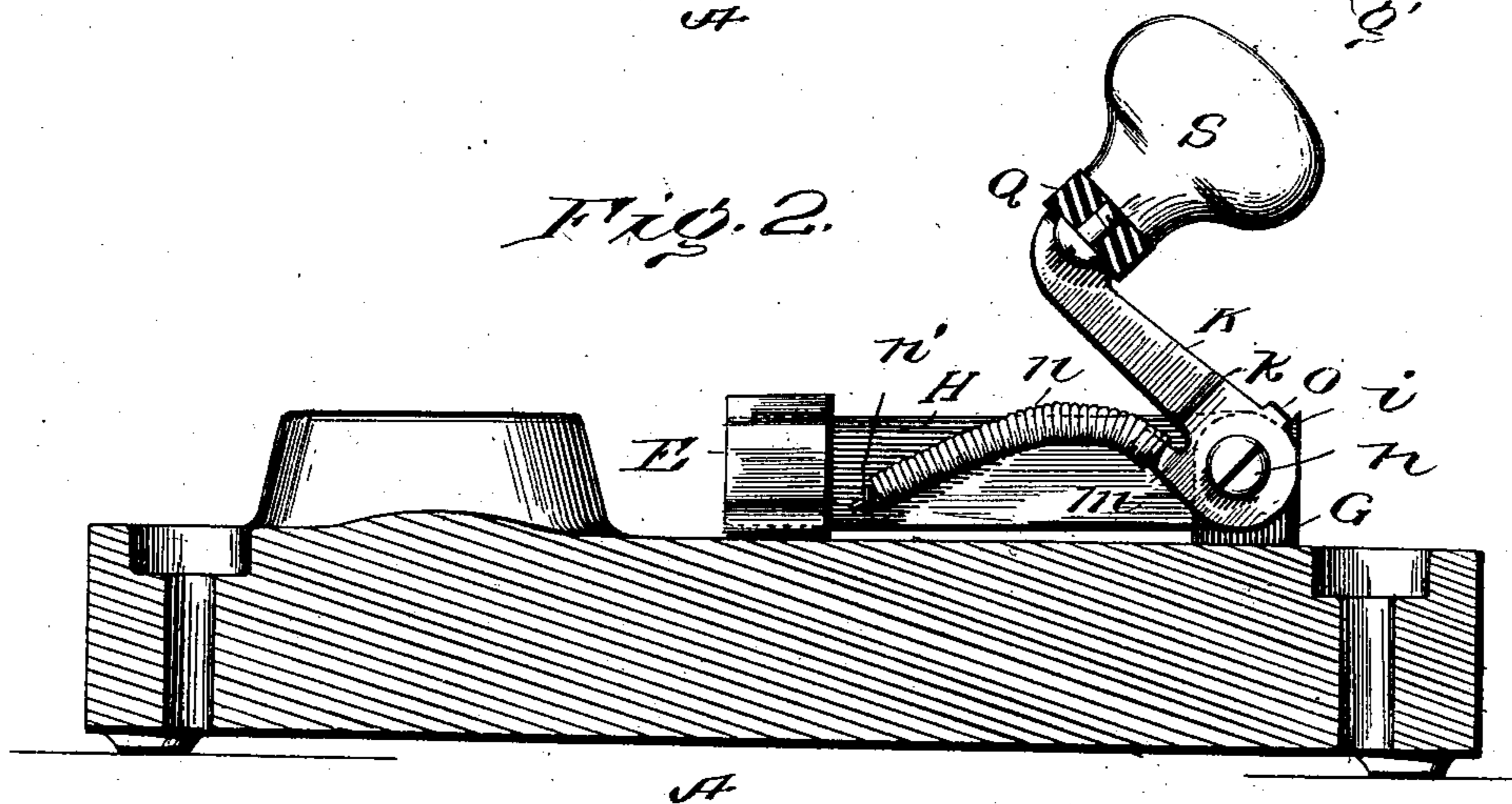
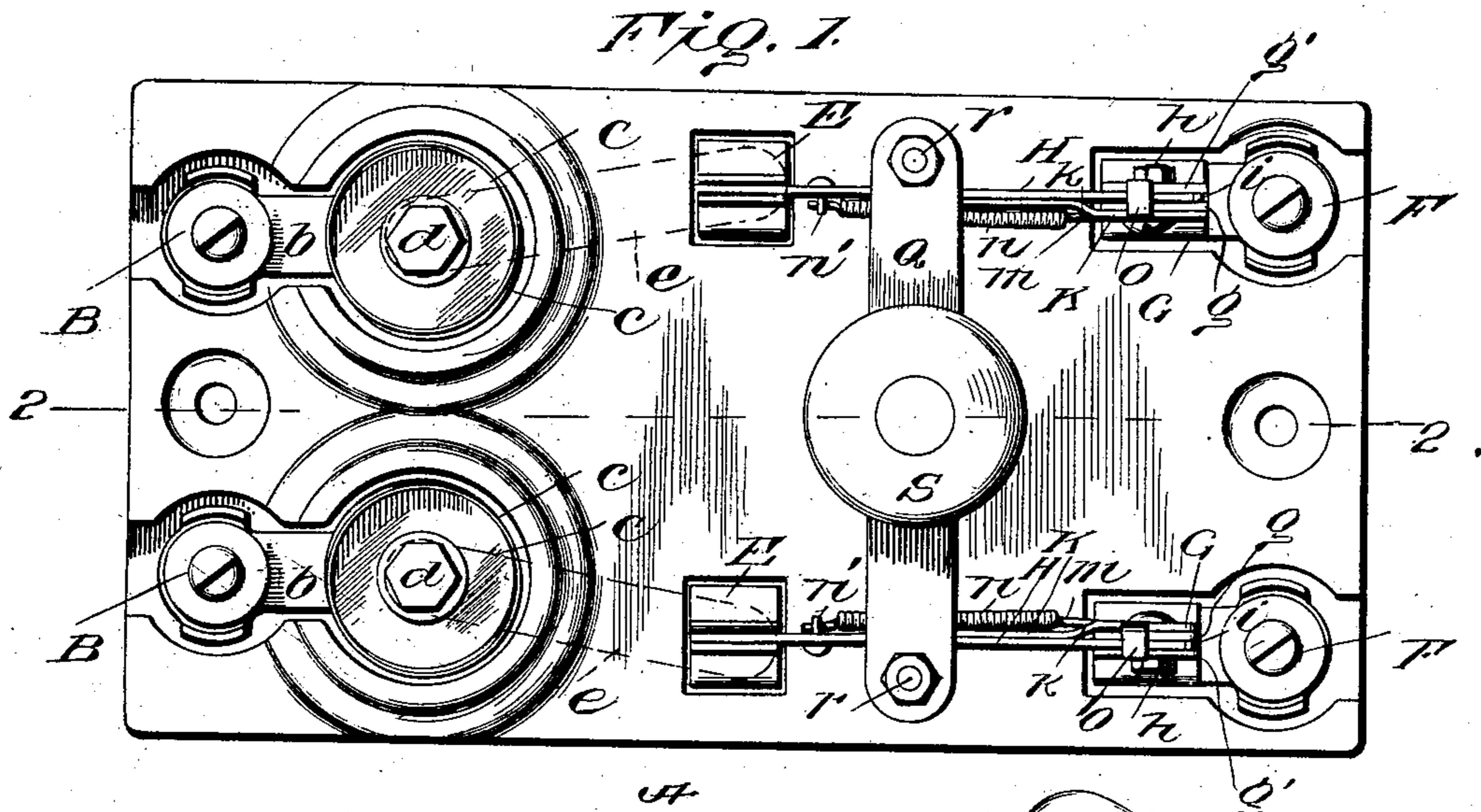
**Patented Sept. 2, 1902.**

**L. W. DOWNES.**  
**ELECTRIC SNAP SWITCH.**

(Application filed May 3, 1902.)

(No Model.)

2 Sheets—Sheet i.



Witnesses

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2 Sheets—Sheet 2.

Fig. 5.

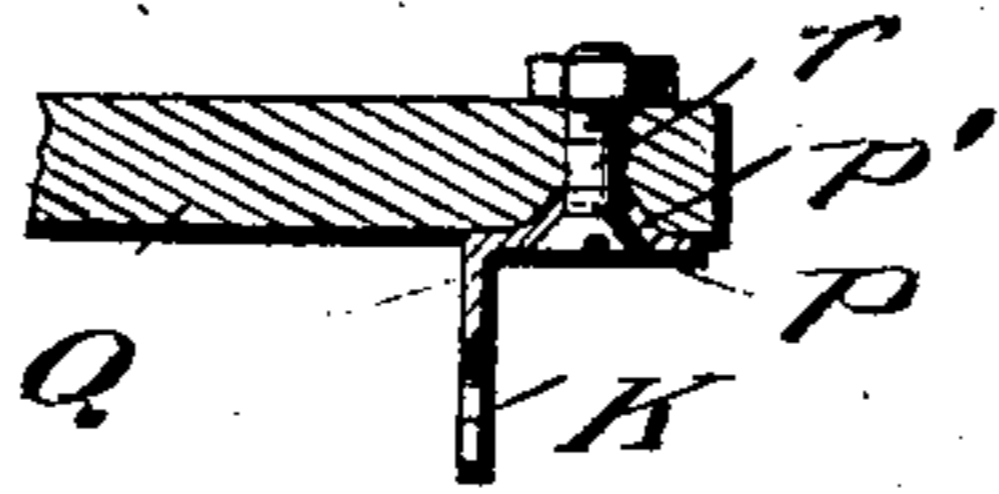


Fig. 6.

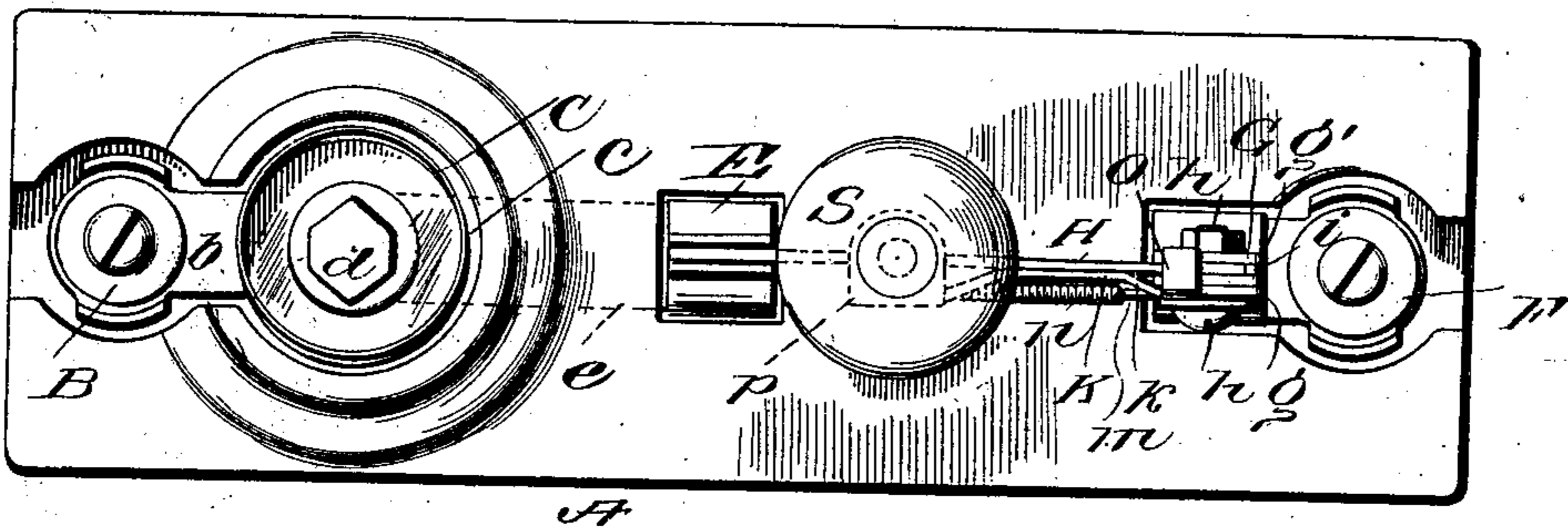
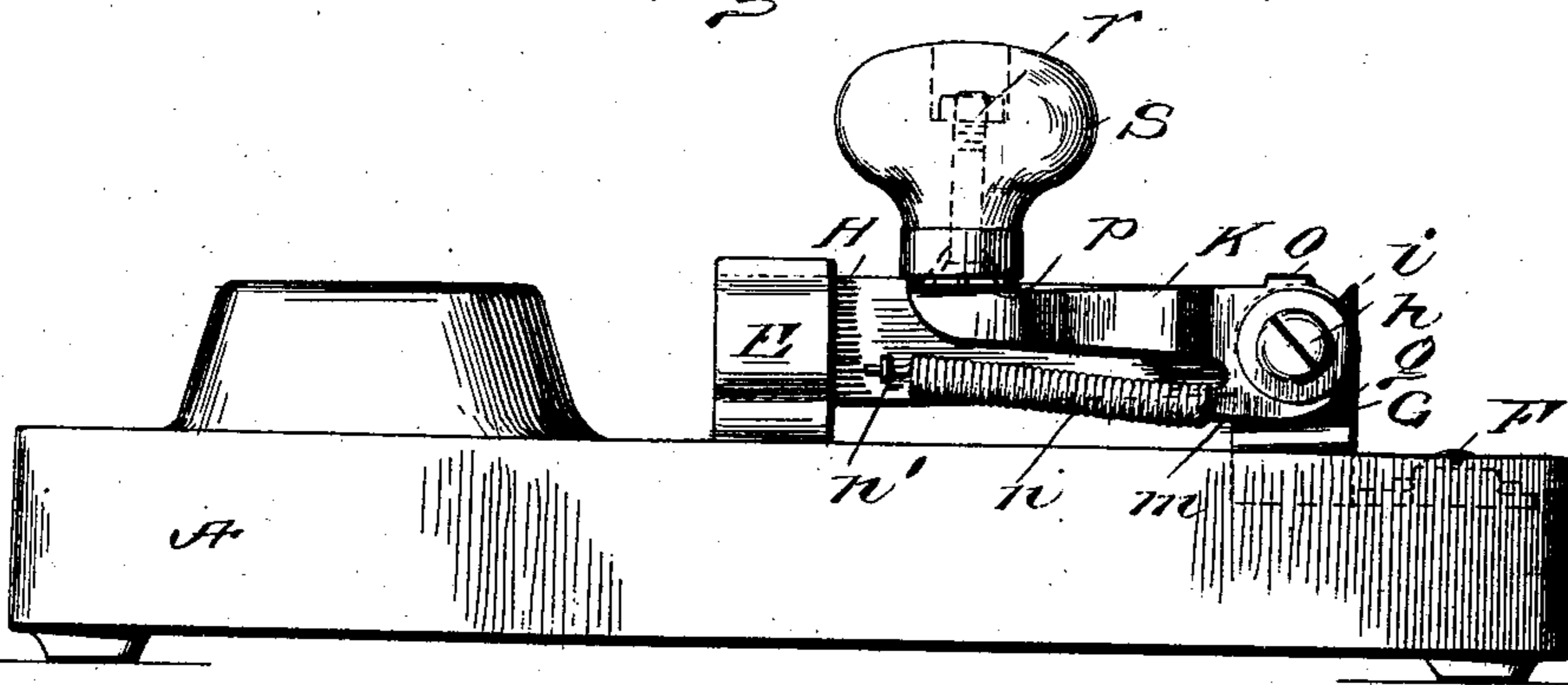


Fig. 7.



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# UNITED STATES PATENT OFFICE.

LOUIS W. DOWNES, OF PROVIDENCE, RHODE ISLAND.

## ELECTRIC SNAP-SWITCH.

SPECIFICATION forming part of Letters Patent No. 708,211, dated September 2, 1902.

Application filed May 3, 1902. Serial No. 105,813. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS W. DOWNES, a resident of Providence, Rhode Island, have invented a new and useful Improvement in Electric Snap-Switches, which invention is fully set forth in the following specification.

My invention has for its object to provide an efficient, simplified, and inexpensive electric quick-break or snap switch. A further object is to provide a switch of this type in the construction of which ordinary slow-break blade-switches may be employed, the latter being readily transformed into snap-switches of this invention by slight changes and the addition of inexpensive parts.

The invention will be best understood by reference to the accompanying drawings, illustrating preferred embodiments thereof.

Figure 1 is a plan view of a two-blade switch embodying my invention. Fig. 2 is a longitudinal section on line 2 2 of Fig. 1. Fig. 3 is a detail perspective of several parts of the switch. Fig. 4 is a detail view. Fig. 5 is a detail sectional view. Fig. 6 is a plan view, and Fig. 7 is a side elevation of a single-blade switch embodying my invention.

Referring to Figs. 1 to 4, A is a base of suitable material, such as porcelain. B B are binding-posts, to which the line-wires are connected. From posts B B the circuit extends by bars *b b* to sleeve-contacts *c c* of fuse-sockets C C, and from said contacts the circuit continues through suitable fuses (not shown) to the central contacts *d d* at the bottom of the fuse-sockets. Ordinary blade-contacts E E are electrically connected with contacts *d d* through bars *e e*, dotted lines, Fig. 1.

F F are binding-posts electrically connected to the bifurcated terminals G G, between the arms *g g'* of which the blades H H are respectively pivoted on screw-bolts *h h*. An upwardly-projecting tooth *i* on each blade H may be formed integral with the latter or soldered or otherwise attached thereto. K K are actuating lever-arms fulcrumed on screw-bolts *h h*, respectively, adjacent to the arm *g* of the terminals G G. Each actuating-lever K is offset or bent at *k* in order that it may lie close to the side of its blade H throughout the greater part of its length. At its lower edge it has a finger *m*, project-

ing into one end of a spiral spring *n*, the other end of which loosely engages an eyelet or staple *n'*, secured to the forward end of blade H. A lug *o*, projecting at right angles from the upper edge of lever K over the upper edge of blade H, is adapted to cooperate with tooth *i* in the manner hereinafter explained. At its forward end each lever K has an angular extension *p*, having a countersunk opening *p'* therethrough.

Q is a non-conducting bar, preferably of fiber composition, bridging the space between blades H H and secured at its opposite ends to the extensions *p* of the actuating-levers K, respectively, by screw-bolts *r r* passing through countersunk openings *p' p'* and openings in the ends of the bar Q. (See Fig. 5.) S is a knob secured to the bar Q at its middle.

The operation of the switch is as follows: The switch being closed, as shown in Fig. 1, to open the same the operator grasps knob S and gives the same a backward upward pull. The preliminary part of this movement, which elevates the lever-arms K to the position shown in Fig. 2, imposes a torque or lateral tension upon springs *n n*, without, however, overcoming the frictional engagement of the blades H H between the spring-arms of contacts E E. The further upward movement of the levers beyond the position of Fig. 2 causes the lugs *o o* to act against the teeth *i i*, and thus elevate the blades on their pivots. While the movement of the blades is at first comparatively slow, their final movement away from the contacts E E is very quick and rapid through the reaction of the springs *n n*. The construction of the single-blade switch of Figs. 6 and 7 is the same as that of one side of the double switch of the other figures, the bar Q omitted and the knob S secured directly to the extension *p* of lever K.

What I claim is—

1. In an electric snap-switch, two circuit-terminals, a switch-blade pivoted to one of the terminals and adapted to be moved on its pivot into and out of engagement with the other terminal, an actuating-lever normally extending along one side of the switch-blade and fulcrumed at one end on the pivot of said blade, a spring connected at one end to the lever and at the other end to the switch-blade, a lug on the pivoted end of the lever, and a

tooth or projection on the pivoted end of the blade which the lug is adapted to engage after the actuating-lever has been moved a predetermined distance and the spring thereby put  
5 under tension.

2. In an electric snap-switch, two circuit-terminals, a switch-blade pivoted to one of the terminals and adapted to be moved on its pivot into and out of engagement with the  
10 other terminal, an actuating-lever normally extending along one side of the switch-blade and fulcrumed at one end on the pivot of said blade, a spiral spring connected at one end to the blade at a point remote from its pivot,  
15 a finger on the actuating-lever adjacent to its fulcrum said finger projecting into the other end of the spiral spring, a lug on the pivoted end of the lever projecting over the edge of the switch-blade, and a tooth or projection on  
20 the pivoted end of the blade which the lug is adapted to engage after the actuating-lever has been moved a predetermined distance and the spring thereby put under tension.

3. In a double electric snap-switch, two single switches each comprising two circuit-terminals, a switch-blade pivoted to one of the

terminals and adapted to be moved on its pivot into and out of engagement with the other terminal, an actuating-lever normally  
30 extending along one side of the switch-blade and fulcrumed at one end on the pivot of said blade, a spring connected at one end to the lever and at its other end to the switch-blade, a lug on the pivoted end of the lever, and a tooth or projection on the pivoted end  
35 of the blade which the lug is adapted to engage after the actuating-lever has been moved a predetermined distance and the spring thereby put under tension; angular extensions at the free end of the actuating-levers  
40 of the several switches, and a bar of non-conducting material connecting and secured to said angular extensions so that the actuating-levers move together.

In testimony whereof I have signed this  
45 specification in the presence of two subscribing witnesses.

LOUIS W. DOWNES.

Witnesses:

JAMES H. THURSTON,  
EDWIN P. ALLEN.