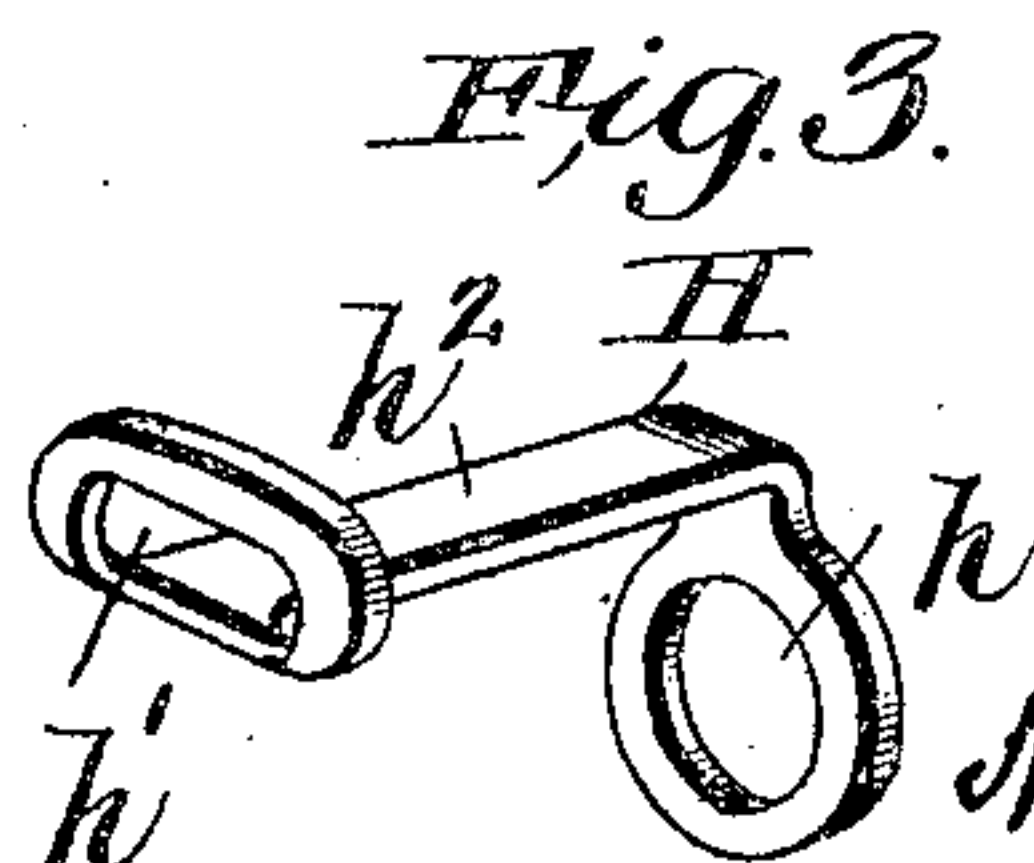
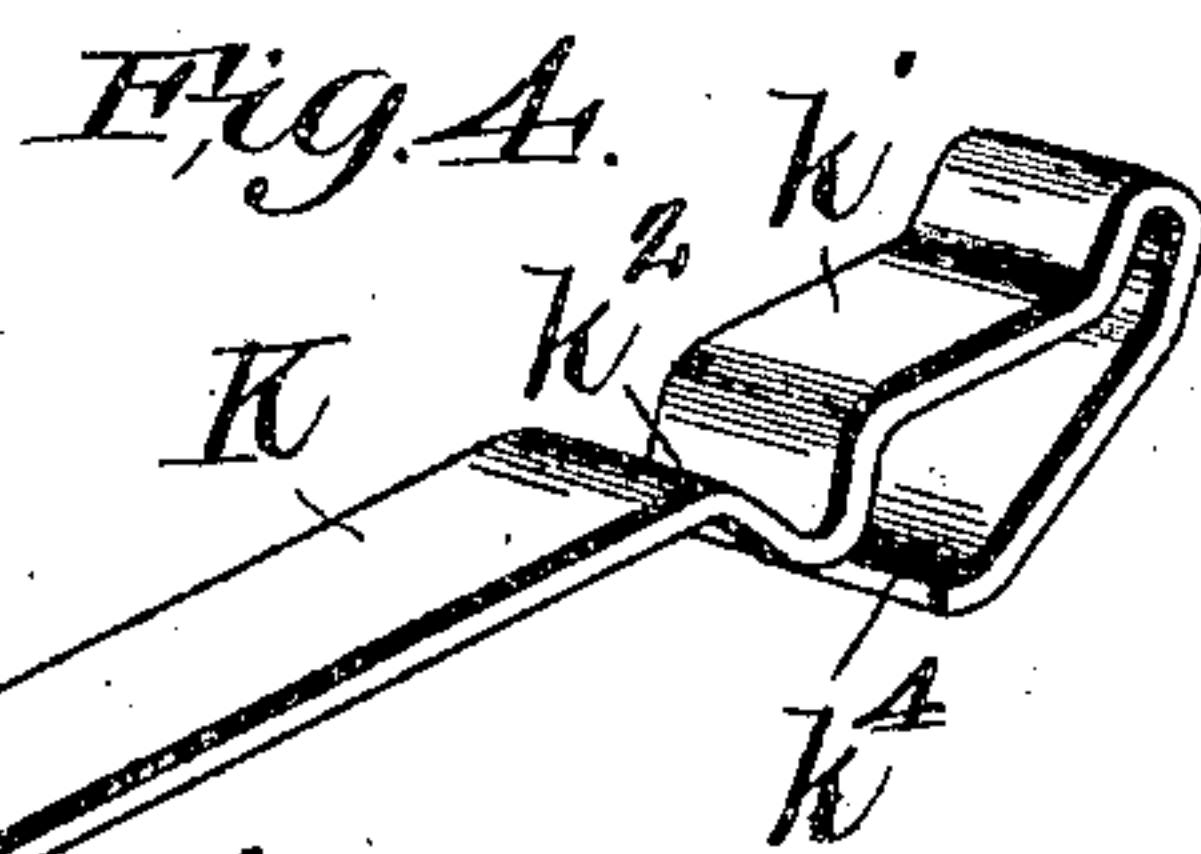
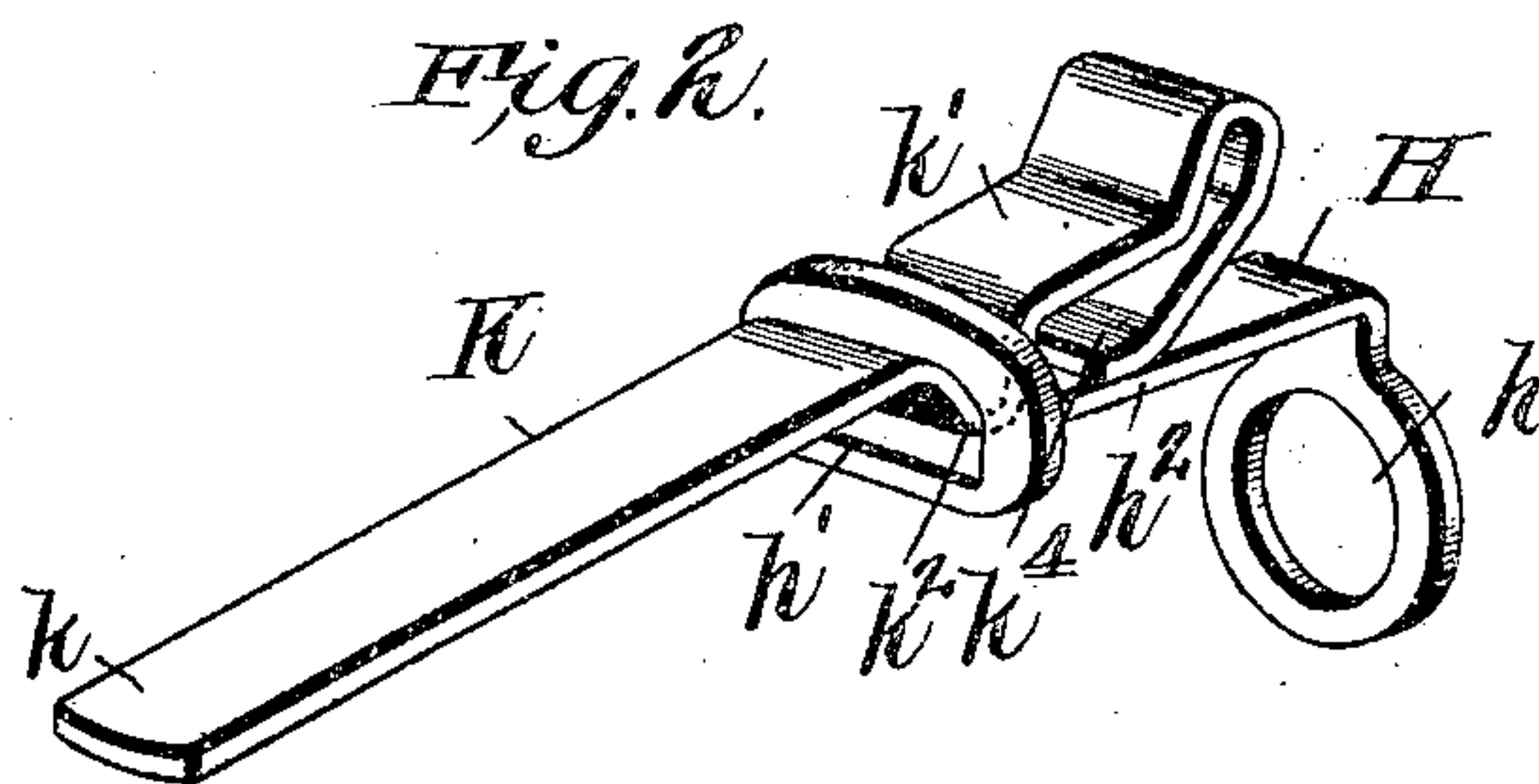
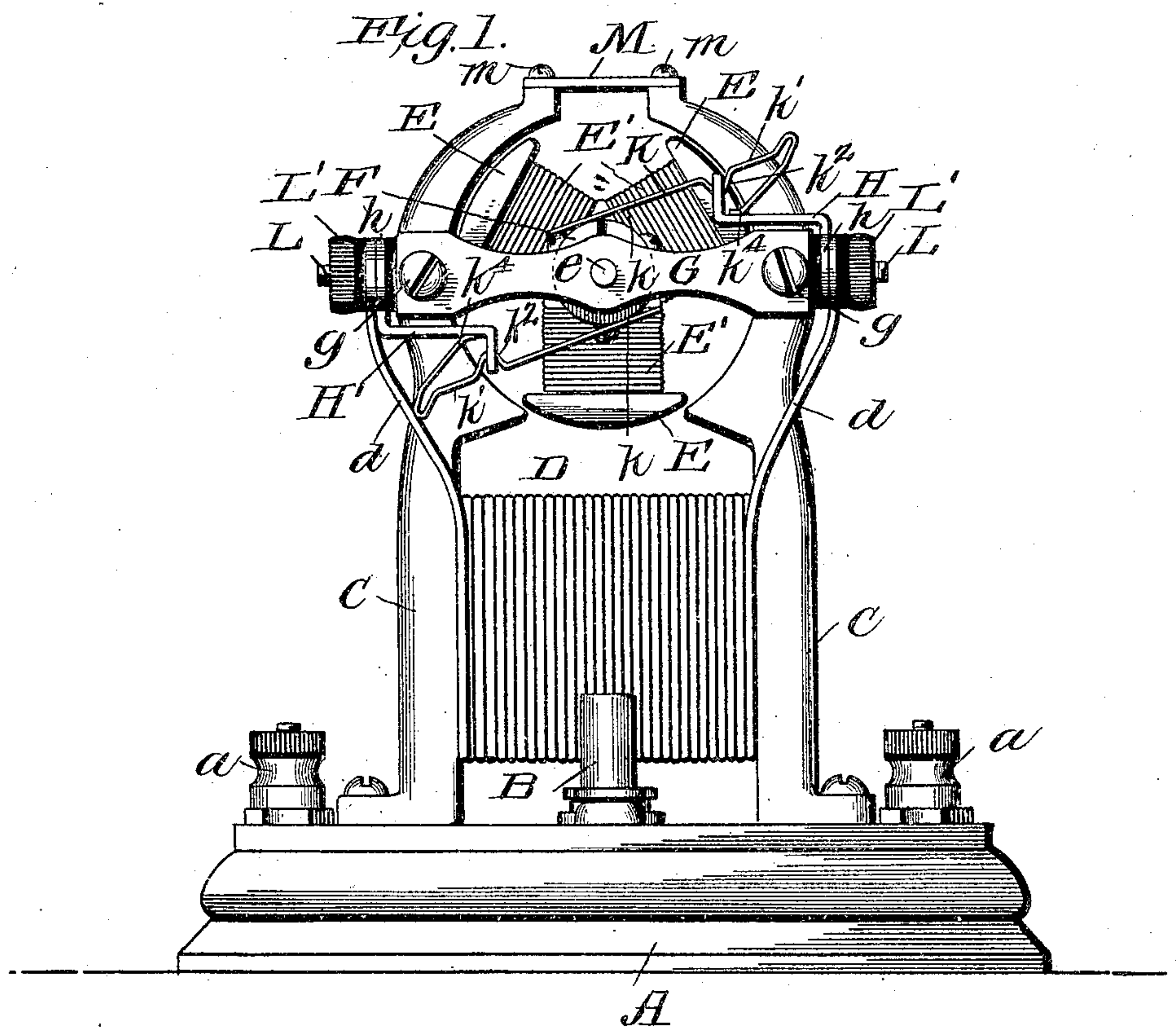


No. 837,213.

PATENTED NOV. 27, 1906.

M. E. FULD.  
ELECTRIC MOTOR.

APPLICATION FILED FEB. 6, 1906.



Witnesses  
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# UNITED STATES PATENT OFFICE.

MANES E. FULD, OF BALTIMORE, MARYLAND.

## ELECTRIC MOTOR.

No. 837,213.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed February 6, 1906. Serial No. 299,816.

*To all whom it may concern:*

Be it known that I, MANES E. FULD, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Electric Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in electric motors; and it is more especially intended to apply to very small motors of simple and cheap construction.

My invention will be understood by reference to the accompanying drawings, in which the same parts are indicated by the same letters throughout the several views.

Figure 1 is an end view of the motor complete. Fig. 2 is a perspective view showing the improved brush-holder and brush. Fig. 3 is a detail showing the brush-holder in perspective, and Fig. 4 is a detail showing the brush in perspective.

A represents the base or pedestal on which the motor is mounted, which is provided with the usual binding-screws *a*.

B represents the switch for turning the current off and on.

C represents an iron or steel casting which serves as the field-magnet and part of which is wound with the field-coils D.

E represents the armature, E' the armature-coils, and F is the commutator.

G represents one of two bearings for the armature-shaft *e*, the other bearing being on the opposite side of the machine. This bearing is made of brass or other diamagnetic material secured to the field-magnet by means of the screws *g*.

The field-coils D are connected by the terminals *d* to the eyes *h* of the brush-holders H and H', respectively, which eyes are mounted over and insulated from the studs L, having the nuts L'. The brush-holders are shaped as shown in Fig. 3 and are provided with the eye *h*, already referred to, the flattened eye *h'*, and the bearing-arm *h*<sup>2</sup>, against which the resilient end *k*<sup>4</sup> of the brush K bears, as shown in Fig. 2.

The brush is composed of a strip of copper or other resilient conducting material terminating in a contact end *k*, adapted to bear upon the commutator, notched, as at *k*<sup>2</sup>, to engage the eye *h'* of the brush-holder and

having its inner end bent in the form of a resilient loop, as shown at *k'* in Fig. 4. This resilient loop serves to rock the brush about its notched portion *k*<sup>2</sup>, causing the contact end *k* to bear on the commutator.

It will be evident that the brush may be readily removed from the holder and another one substituted therefor when desired and that the brush and holder may be readily connected together and as readily mounted on the motor.

A suitable name-plate M, of brass or other diamagnetic material, may be attached to the ends of the field-magnet, as by the screws *m*, if desired.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In an electric motor, the combination with the field-magnet, provided with arms, of studs connected to said arms, reversely-disposed brush-holders mounted on said studs and provided with elongated eyes, and brushes each composed of a single strip of elastic material notched to fit in one of said eyes and terminating in a resilient loop, the free end of which bears against the corresponding brush-holder, substantially as described.

2. In an electric motor, the combination with the field-magnet provided with arms, of studs connected to said arms, reversely-disposed brush-holders, each provided with reversely-disposed arms, with a circular eye in one arm and an elongated eye in the other, the annular eye being slipped over and held on one of said binding-posts, and brushes each composed of a single strip of elastic material notched to fit in said elongated eye and terminating in a resilient loop, the free end of which bears against the corresponding brush-holder, substantially as described.

3. A brush for use in electric motors, consisting of a single strip of resilient material, having one end plane, and the other end bent to form a resilient loop, and provided with a notch in front of said loop, substantially as described.

4. A brush for use in electric motors, consisting of a single strip of resilient material, having one end plane, and the other end bent to form a resilient loop, and provided with a notch in front of said loop, in combination with a brush-holder consisting also of a single strip of metal having reverse arms, and an

eye in each arm, one eye being adapted to engage a binding-post and the other eye engaging said notch in the brush, substantially as described.

- 5 5. In an electric motor, the combination with the field-magnet provided with arms, of studs connected to said arms, reversely-disposed brush-holders, each consisting of a single strip of metal having reverse arms and  
10 an eye in each arm, one eye being adapted to engage over one of said studs, and the other eye being elongated, with a brush consisting of a single strip of resilient material having

one end plane, and the other end bent to form a resilient loop, and provided with a 15 notch in front of said loop adapted to engage the elongated eye of the brush-holder, and the free end of the loop bearing against said brush-holder, substantially as described.

In testimony whereof I affix my signature 20 in presence of two witnesses.

MANES E. FULD.

Witnesses:

G. HOWARD DEVERELL,  
C. B. HANCOCK.