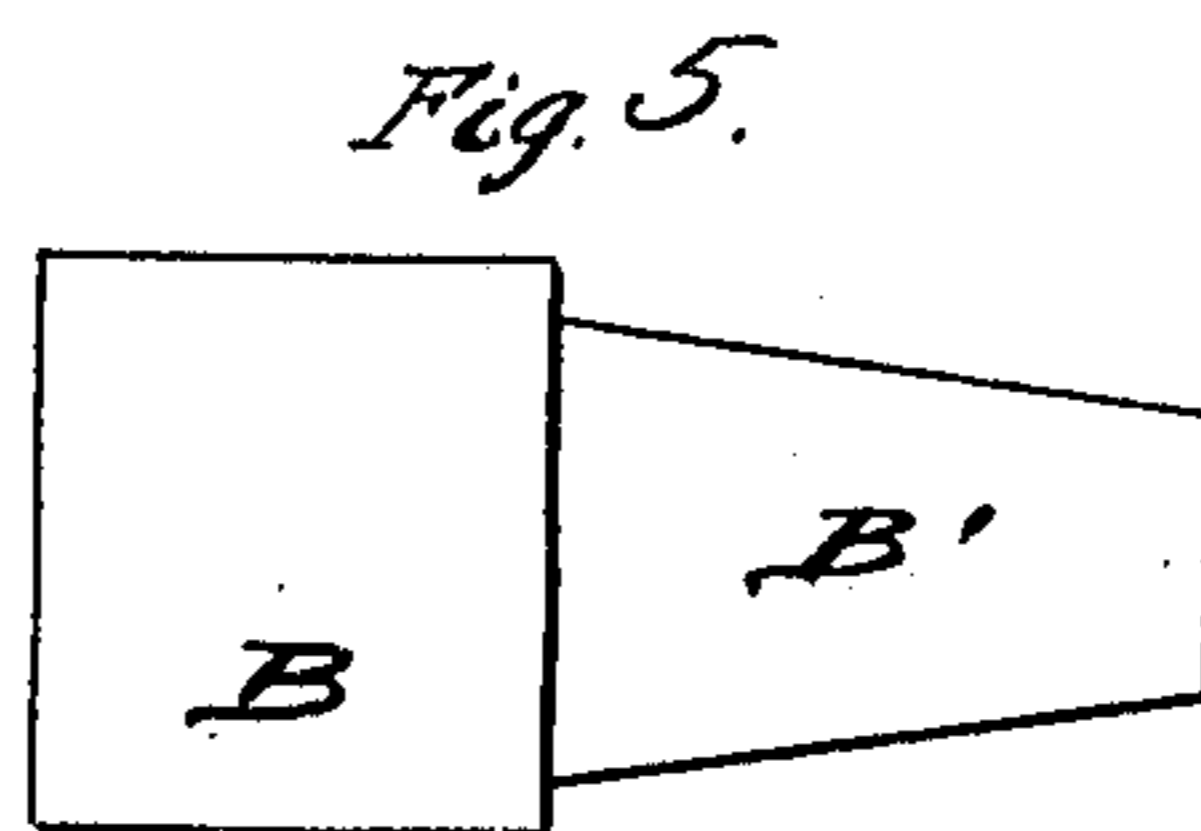
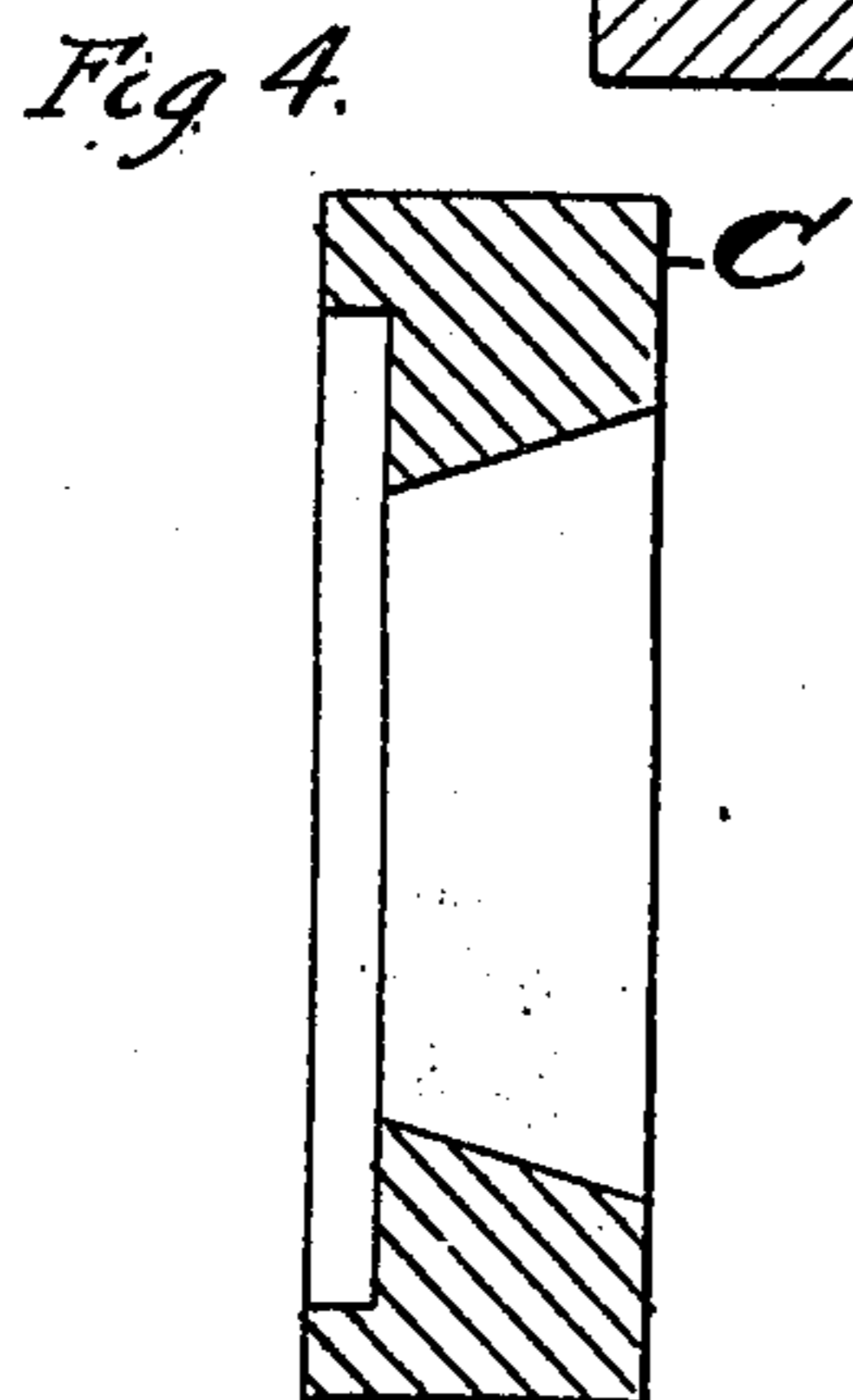
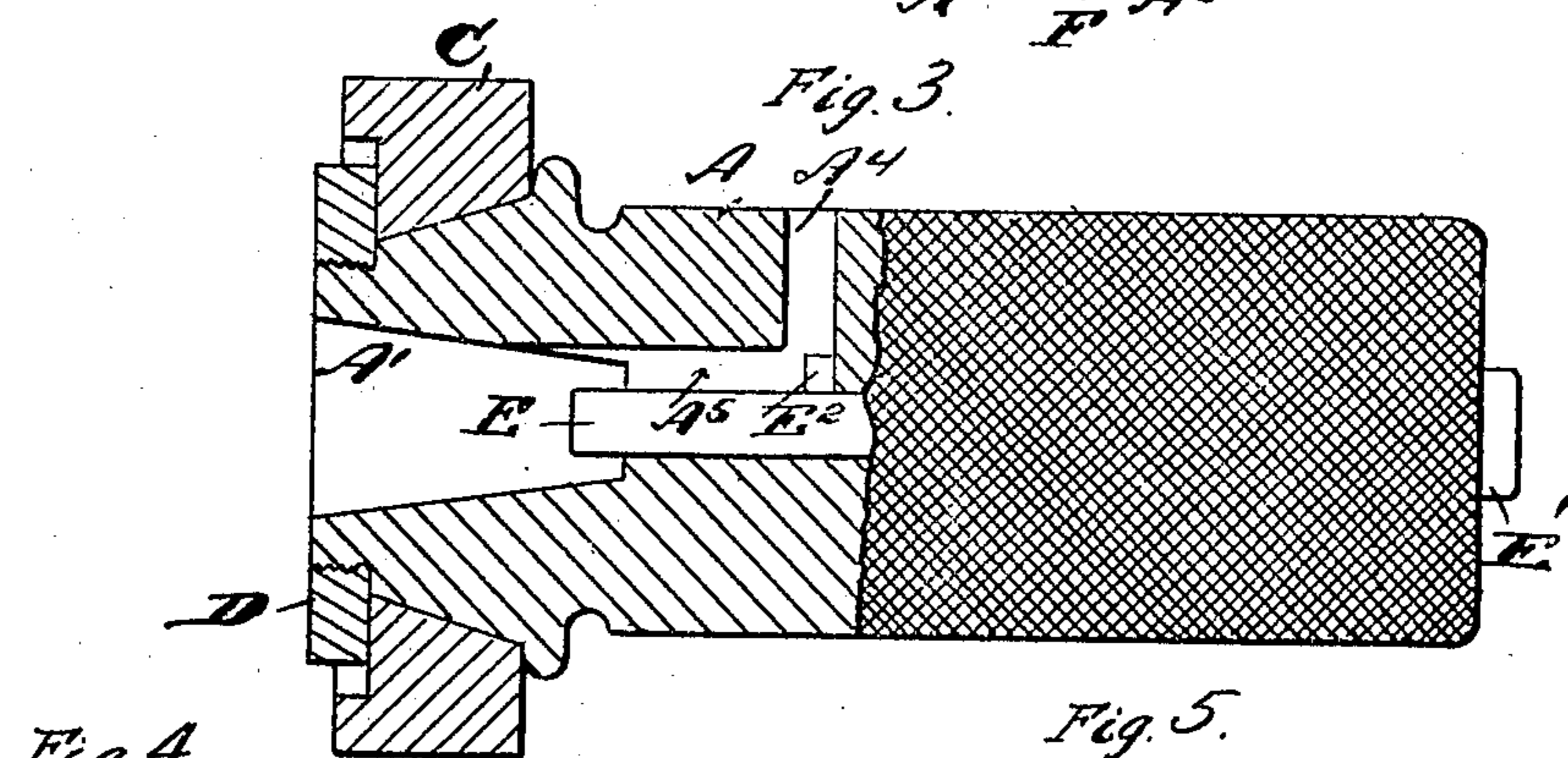
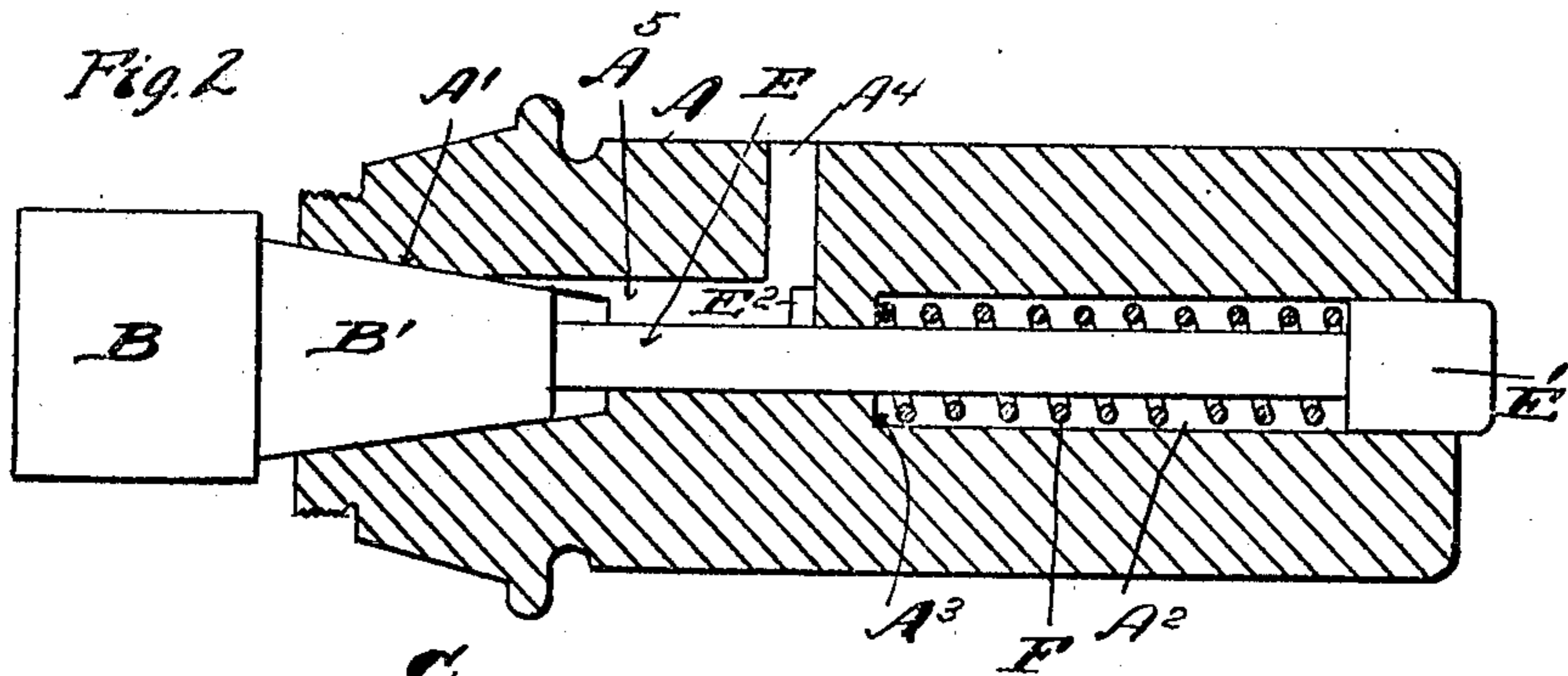
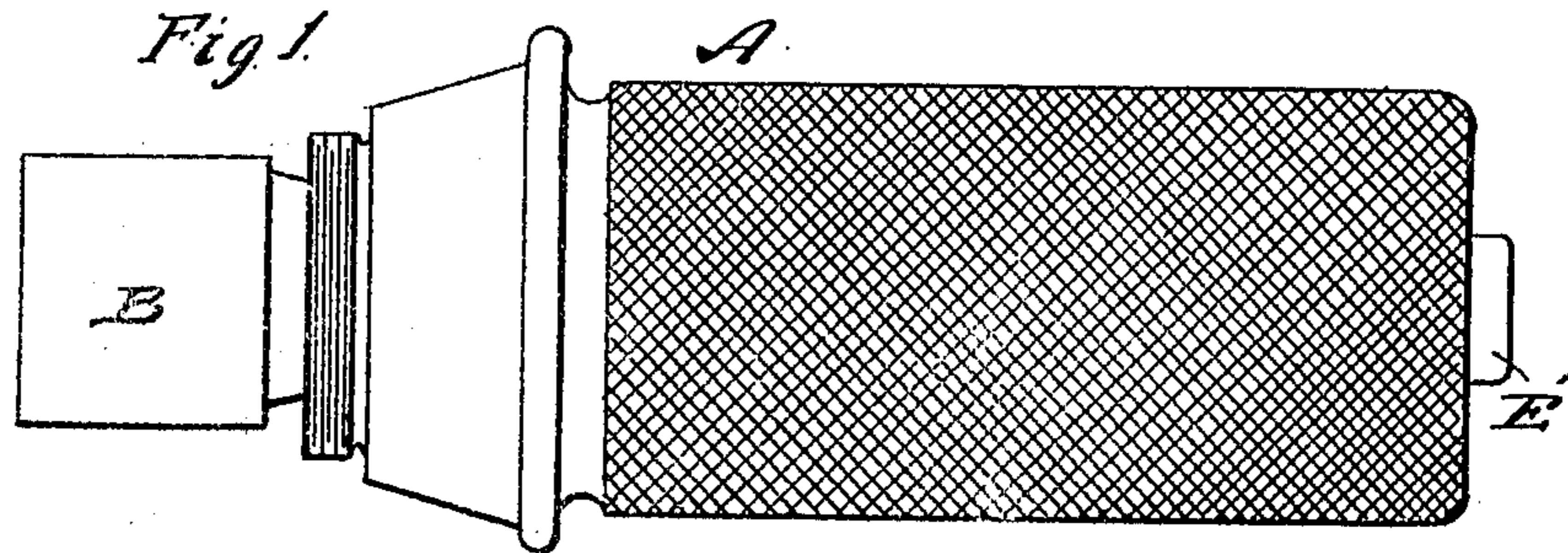


E. GAIRING.
PLUG GAGE,
APPLICATION FILED MAY 31, 1918.

1,298,197.

Patented Mar. 25, 1919.



Emil Gairing Inventor

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UNITED STATES PATENT OFFICE.

EMIL GAIRING, OF DETROIT, MICHIGAN, ASSIGNOR TO THE GAIRING-NEEDHAM TOOL CO., INC., A CORPORATION OF MICHIGAN.

PLUG-GAGE.

1,298,197.

Specification of Letters Patent.

Patented Mar. 25, 1919.

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To all whom it may concern:

Be it known that I, EMIL GAIRING, citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have
5 invented a certain new and useful Improvement in Plug-Gages, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and
10 use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to plug gages, shown in the accompanying drawings and
15 more particularly pointed out in the following specification and claims.

It is well known among those who employ plug gages to determine the accuracy of their work that the gages rapidly become
20 worn through use making it frequently necessary to discard the gages that they may be replaced by others. This item in some machine shops involves a considerable outlay and it is therefore one of the objects
25 of this invention to reduce the cost by providing plugs of varying diameters, with a suitable holder which is adapted to receive any of the different gages or plugs, the construction of the holder being such that
30 one plug may be readily removed to be replaced by another plug of the required size.

It will be seen that a great variety of sizes of plugs may thus be carried, each of which may be mounted in the holder when
35 required for use and when worn may be replaced by another of the proper gage at a nominal cost.

With the foregoing and other objects in view which will appear as the description
40 proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes may be made in the precise
45 embodiment of the invention herein disclosed without departing from the spirit of the same.

In the drawings accompanying this specification.

50 Figure 1 is a side elevation of the device with a plug in position.

Fig. 2 is a longitudinal central sectional view through the holder with the plug in position.

55 Fig. 3 is an elevation with parts in sec-

tion, showing an annular plug of relatively large diameter mounted upon the outer peripheral tapering end of the holder.

Fig. 4 is a detail cross sectional view of an annular plug.

Fig. 5 is a detail view in elevation of a plug adapted to enter the tapering socket of the holder.

Referring now to the letters of reference placed upon the drawings.

A, denotes a plug holder provided with a knurled handle to facilitate the manual holding of the device. The holder is provided with a tapering socket A', at one end adapted to receive the tapering shank
60 B', of a plug gage B. The outer peripheral wall near the end of the holder is also of tapering form to receive an annular plug gage C, held in place by a nut D, threaded upon the end of the holder. While in some
65 cases it may not be necessary to employ the nut to secure the annular plug to the holder this is considered the preferable construction for the reason that the annular plug gage,—being of relatively large di-
70 ameter,—is more apt to stick when withdrawing the gage from the hole in which it is inserted than the smaller sizes of plugs and thereby become separated from the
75 holder.

Extending centrally through the holder is a bore A², opening into the tapering socket at one end. This bore is relatively larger at the opposite end of the holder for a
80 portion of its length and thereby forms a shoulder A³. E, indicates a plunger rod fitted in the bore A², one end of which is adapted to bear against the shank end of the gage plug B. E', is an enlarged head
85 formed on the opposite end of the plunger rod fitted to the enlarged portion of the bore in the holder and extending beyond the end of the latter for a short distance when in its normal position. F, denotes a spring
90 coiled around the plunger rod, one end of which bears against the enlarged head of the rod and the other against the shoulder A³, of the holder. E², indicates a transverse pin screwed into the plunger rod and projecting laterally into a radial hole A⁴,
95 formed in the holder to receive it. A⁵, is a longitudinal groove extending from the hole A⁴, into the tapering socket A', to receive the pin E², when the plunger is actuated to drive out the plug gage.

110

Having indicated the several parts by reference letters the construction and operation of the device will be understood.

Plugs of varying gage formed with a tapering shank are inserted in the tapering socket of the holder, and when it is desired to remove the plug for the purpose of inserting one of different gage it is only necessary to tap the projecting head of the plunger upon a table or like surface to drive the plug out of the socket of the holder;—the spring acting to force the head of the plunger beyond the end of the holder after each operation of the plunger.

Relatively large annular gage plugs are fitted over the tapering end of the holder and are held in place by the nut engaging its threaded end.

When it is desired to remove or replace these gage plugs the nut is first removed and the projecting wall of the plug tapped lightly to force it from the tapering end of the holder.

Having thus described the invention what I claim is:—

1. In a device of the character described, a holder having at one end a tapering socket, a removable plug gage having a shank fitted to the tapering socket of the holder, and manually actuated means adapted to act upon the plug gage, whereby the latter may be forcibly ejected from the holder.

2. In a device of the character described, a holder having at one end a tapering socket and a bore communicating with the socket extending the length of the holder, a removable gage plug having a shank fitted to the tapering socket of the holder, and a plunger lodged in the bore of the holder, adapted to be manually forced into the tapering socket to eject the gage plug from the holder.

3. In a device of the character described, a holder having at one end a tapering socket and a bore communicating with the socket extending the length of the holder, a removable gage plug having a tapering shank fitted to the socket of the holder, a movable plunger lodged in the bore of the holder and adapted to act upon the shank

of the gage plug to eject the latter from the holder, and a spring to return the plunger to its initial position following the discharge of the gage plug from the holder.

4. In a device of the character described, a holder having a tapering end to receive an annular gage plug, also a tapering socket to receive the shank of another gage plug, and a central longitudinal bore communicating with the socket to receive a movable plunger rod, a removable annular gage plug fitted to the tapering end of the holder, a nut screwed to the holder to secure the annular gage plug in position, a removable gage plug of relatively different diameter having a tapering shank fitted to the tapering socket of the holder, a movable plunger housed in the central longitudinal bore of the holder, adapted when manually actuated for forcibly ejecting the last named gage plug from the tapering socket of the holder, and a spring to return the plunger to its initial position following its operation.

5. In a device of the character described, a holder formed with a tapering end to receive an annular gage plug, and with a tapering socket and a central bore communicating with the socket and extending throughout the length of the holder, an annular gage plug fitted to the tapering end of the holder, a nut screwed to the holder to secure the annular gage plug thereto, a gage plug of relatively different diameter having a shank fitted to the tapering socket of the holder, a movable plunger lodged in the central bore of the holder and adapted to enter its tapering socket having an enlarged head projecting beyond the end of the holder, a spring coiled around the plunger and bearing at one end against the holder and at the other end against the enlarged end of the plunger, and a transverse pin supported by the plunger and extending into a radial opening in the wall of the holder to limit the return movement of the plunger.

In testimony whereof, I sign this specification in the presence of two witnesses.

EMIL GAIRING.

Witnesses:

S. E. THOMAS,

JOHN CONSIDINE, Jr.