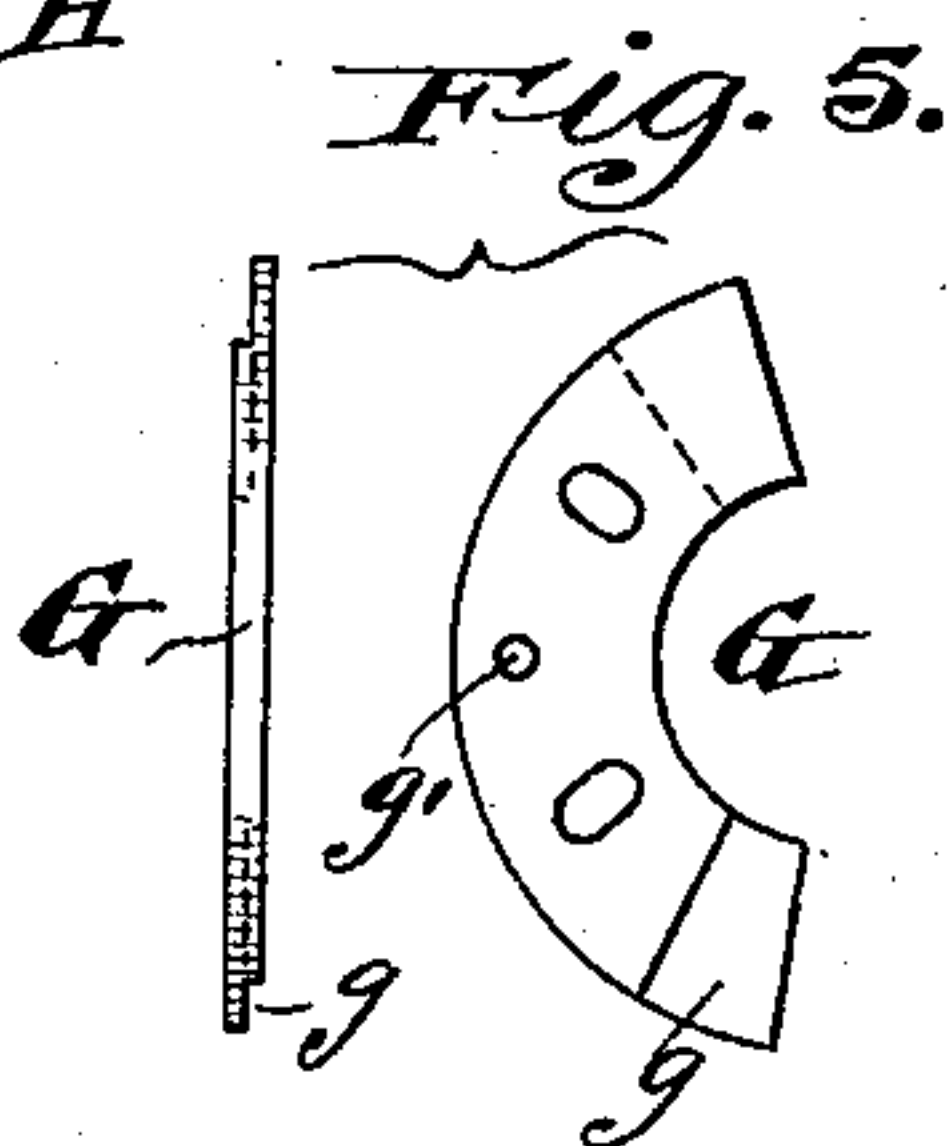
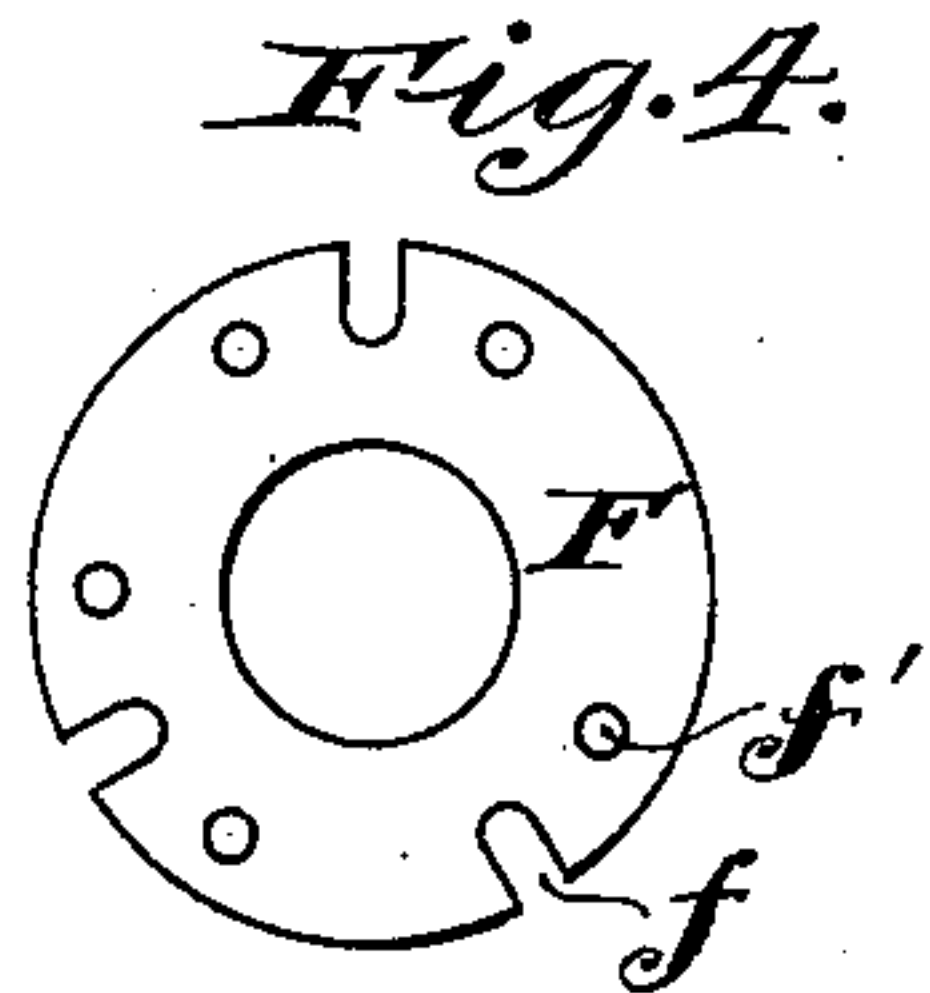
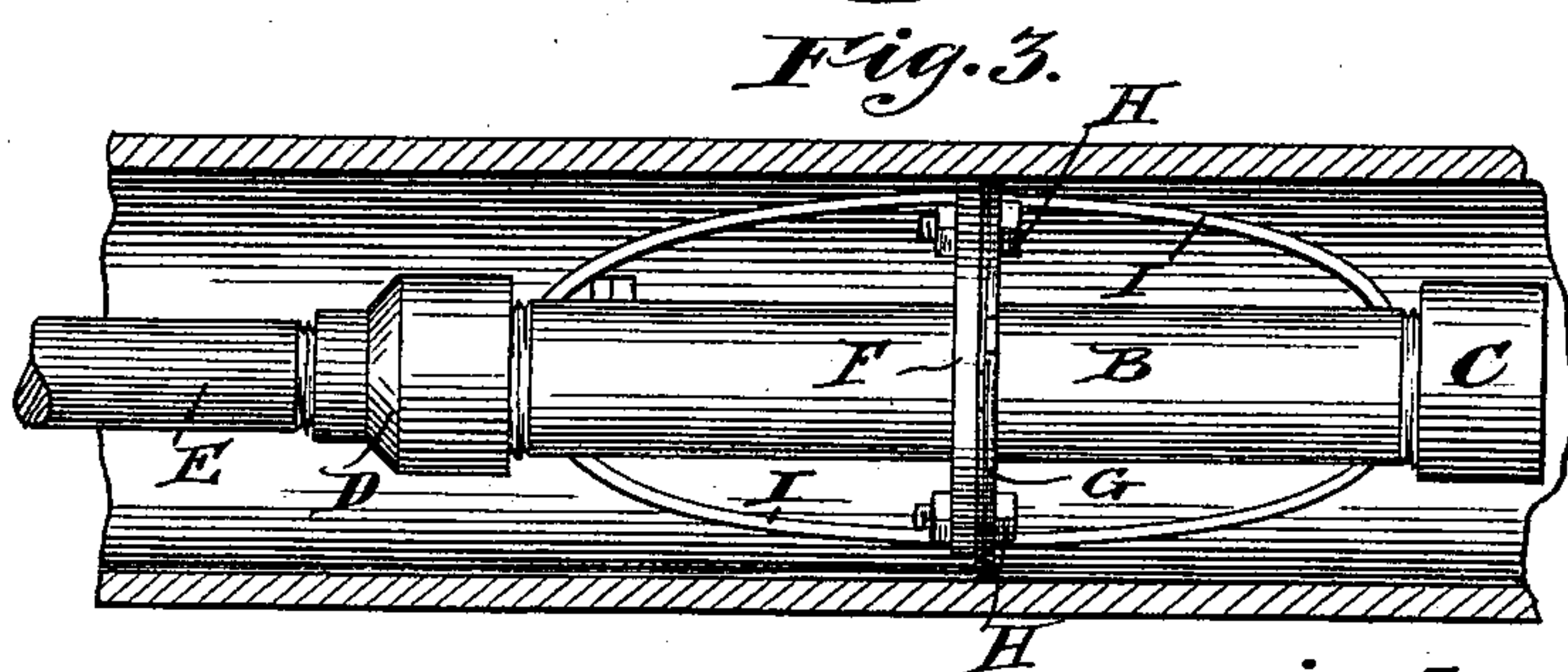
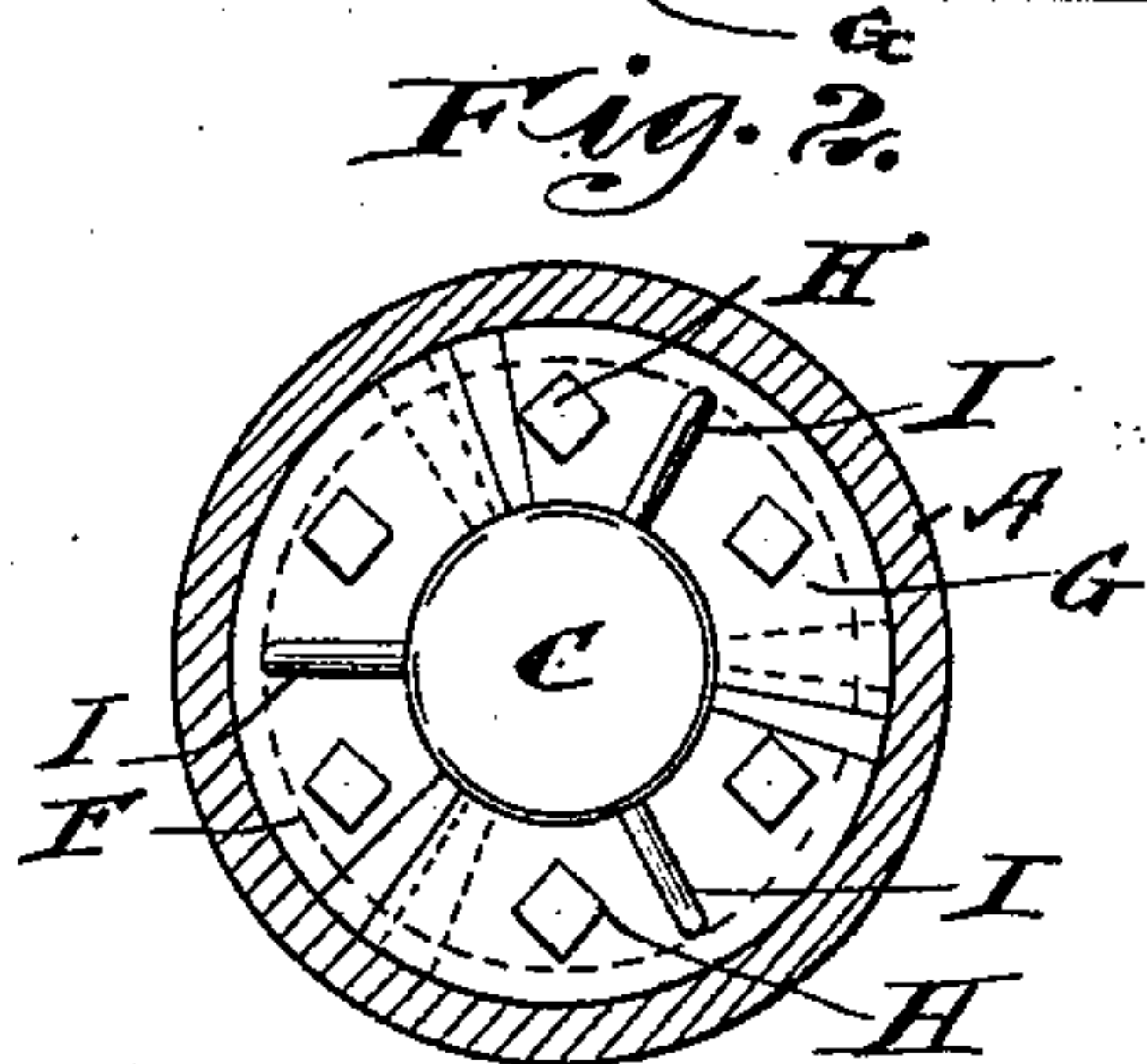
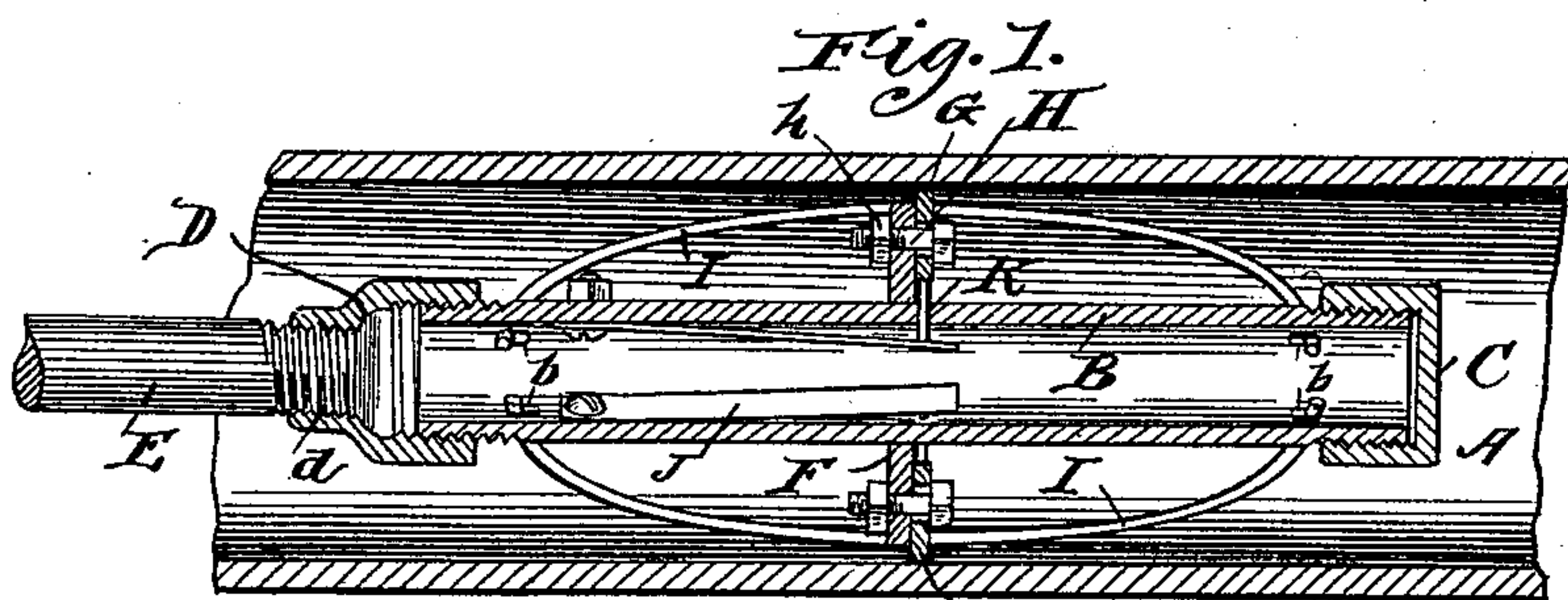


(No Model.)

G. H. FASSETT & J. ELDER.  
FLUE SCRAPER.

No. 566,973.

Patented Sept. 1, 1896.



Witnesses,  
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# UNITED STATES PATENT OFFICE.

GEORGE H. FASSETT AND JOHN ELDER, OF CHICAGO, ILLINOIS.

## FLUE-SCRAPER.

SPECIFICATION forming part of Letters Patent No. 566,973, dated September 1, 1896.

Application filed February 27, 1895. Serial No. 539,874. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE H. FASSETT and JOHN ELDER, of Chicago, Illinois, have invented certain new and useful Improvements in Flue-Scrapers, of which the following is a specification.

This invention relates to that class of devices which are used for scraping or cleaning the interior of the flues of steam-boilers; and the invention consists in a flue-scraper having a series of scraping blades, knives, or sections which are spring-supported in such manner that they are automatically thrust out into contact with the interior wall of the flue, the device being thereby automatic and the knives operating under a constant spring-pressure.

The preferred form of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of the tube or flue, showing the scraper therein, partly in section and partly in elevation. Fig. 2 is a transverse section through the tube, showing the scraper in end elevation. Fig. 3 is a longitudinal sectional view through the tube, showing the scraper in side elevation. Figs. 4 and 5 are detail views, respectively, of the knife-supporting ring and one of the knives, the latter being shown in edge and side view.

In the drawings, A represents a boiler-tube. The scraper, in the preferred construction, comprises a body B, which is conveniently formed from a section of pipe threaded on its ends and having the caps C D, the latter having an interiorly-threaded neck *d*, into which a handle E may be turned.

F represents a knife-supporting ring. (Shown detached in Fig. 4.) It may be driven or shrunk onto the body B and is provided with peripheral slots *f* and bolt-apertures *f'*.

G represents the scrapers or knife-sections, of which any suitable number may be employed, three being shown. These sections are constructed in the form of curved segments, and their ends are reduced in thickness, as shown at *g*, to adapt the sections to overlap each other, as indicated by the dotted lines in Fig. 2 and in the elevation in Fig. 3.

They are movably supported on the ring F

by the bolts H with nuts *h*. These knife-sections are spring-supported by means of the spring-rods I, which pass through apertures *g'* in the knife-sections and have their ends entering apertures *b* in the tubular body B. The spring-rods normally tend, being under tension, by reason of the engagement of their bent ends with the tubular body, to thrust the knife-sections out into contact with the inner walls of the tube, and they are sufficiently yielding to permit the implement to be thrust into the tube and to be moved back and forth for cleaning the inner surface thereof. The sections are therefore automatically adjustable to a slight degree to accommodate themselves to the variations in the sizes of the tubes, although by preference the implement will be proportioned to the particular caliber of tube with which it is employed, and the knife-sections are normally supported, *i. e.*, when free from pressure, so that their edges form a circle of slightly greater diameter than the bore of the tube, thereby making the knives operate under spring-tension.

Owing to the heat to which the implement is subjected it may be found that the spring-rods I will become inefficient by loss of temper. To guard against this, we may employ the reinforce-springs, arranged internally of the tubular body, and which, as shown, are flat strips of metal J, secured at their outer ends by screws and bearing at their inner ends upon sliding pins K which project through apertures in the wall of the tubular body and operate against the inner edges of the knife-sections. These reinforce-springs may be dispensed with. When it becomes necessary or desirable to change the springs, either to replace those which have become inefficient or for the purpose of varying the size of the scraper, by the removal of the bolts H the knife-sections may be lifted out and new springs put in place, and by applying springs of different length or, what amounts to the same, of a different curvature the effective or operative size of the implement may be varied.

Without limiting our invention to precise details of construction, we claim—

In a flue-scraper the combination with a tubular body having an operating-handle, a knife-supporting ring secured thereon, knife-sections having slotted openings therein,  
5 bolts for slidably connecting the knife-sections with the ring, spring-rods passing through apertures in the knife-sections and having their ends removably engaged with

the body, and reinforce-springs arranged within the tubular body, substantially as described. 10

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