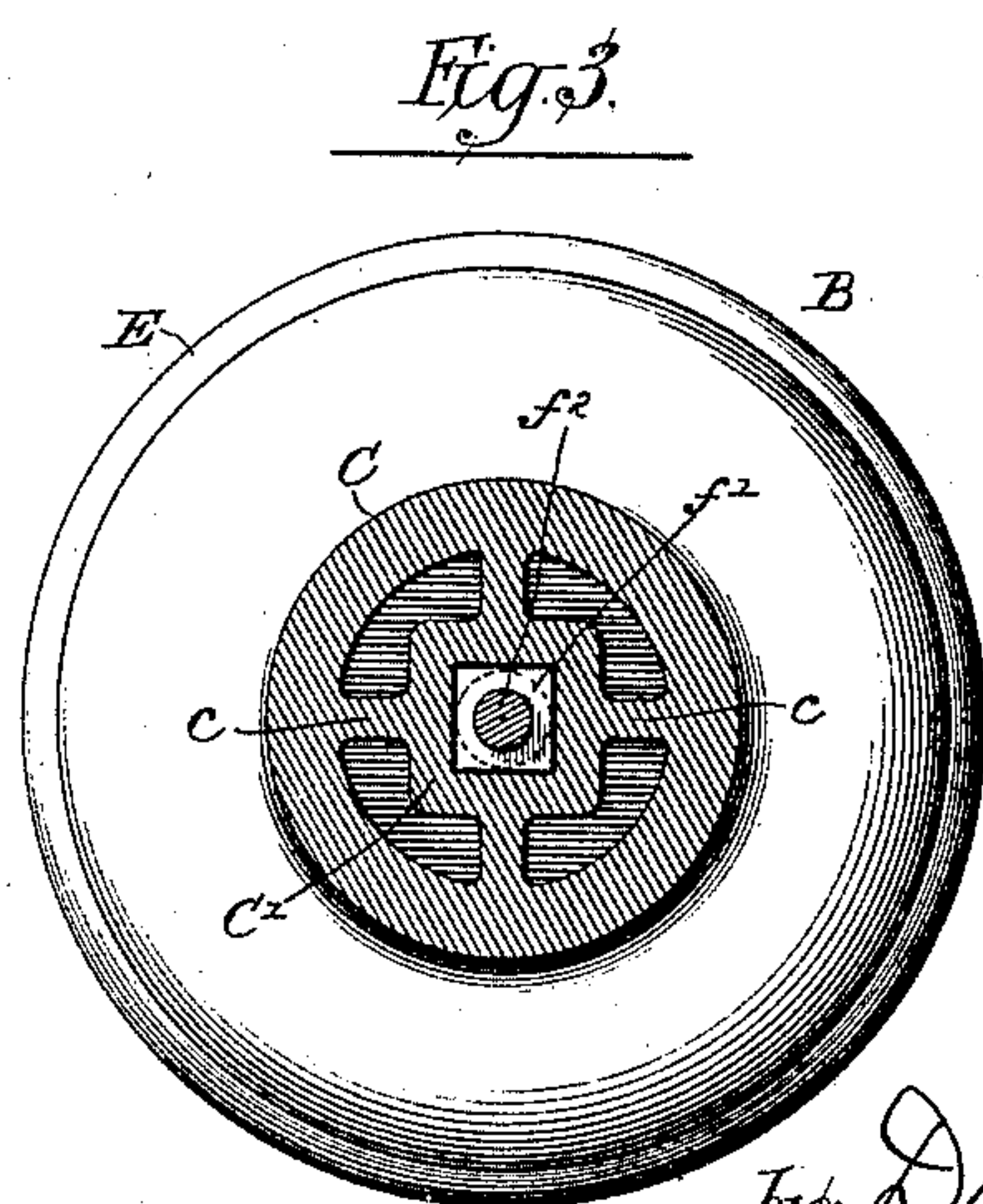
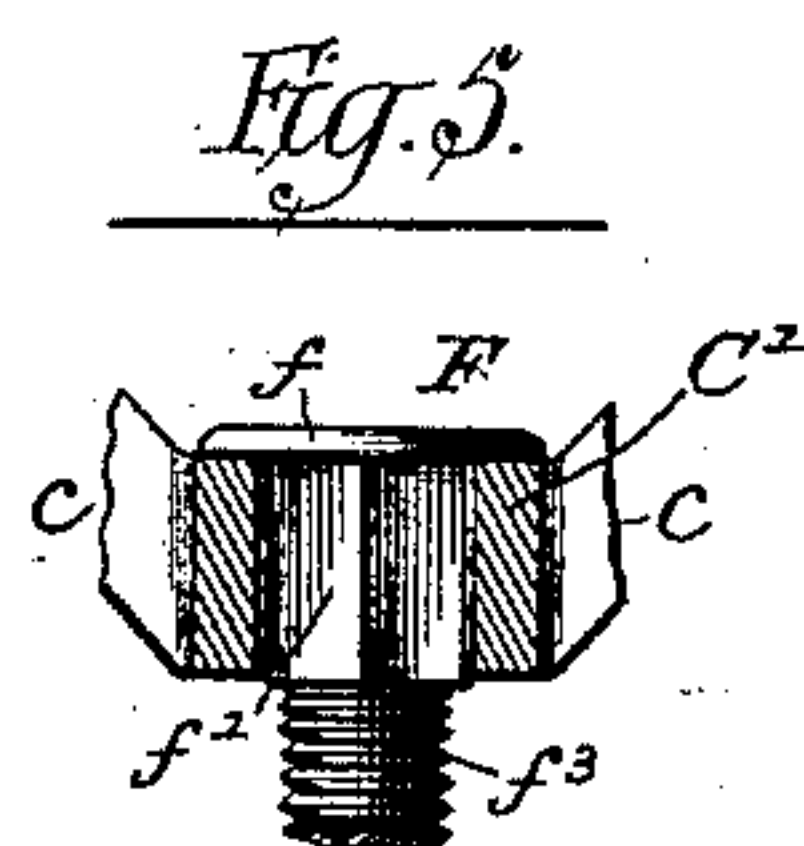
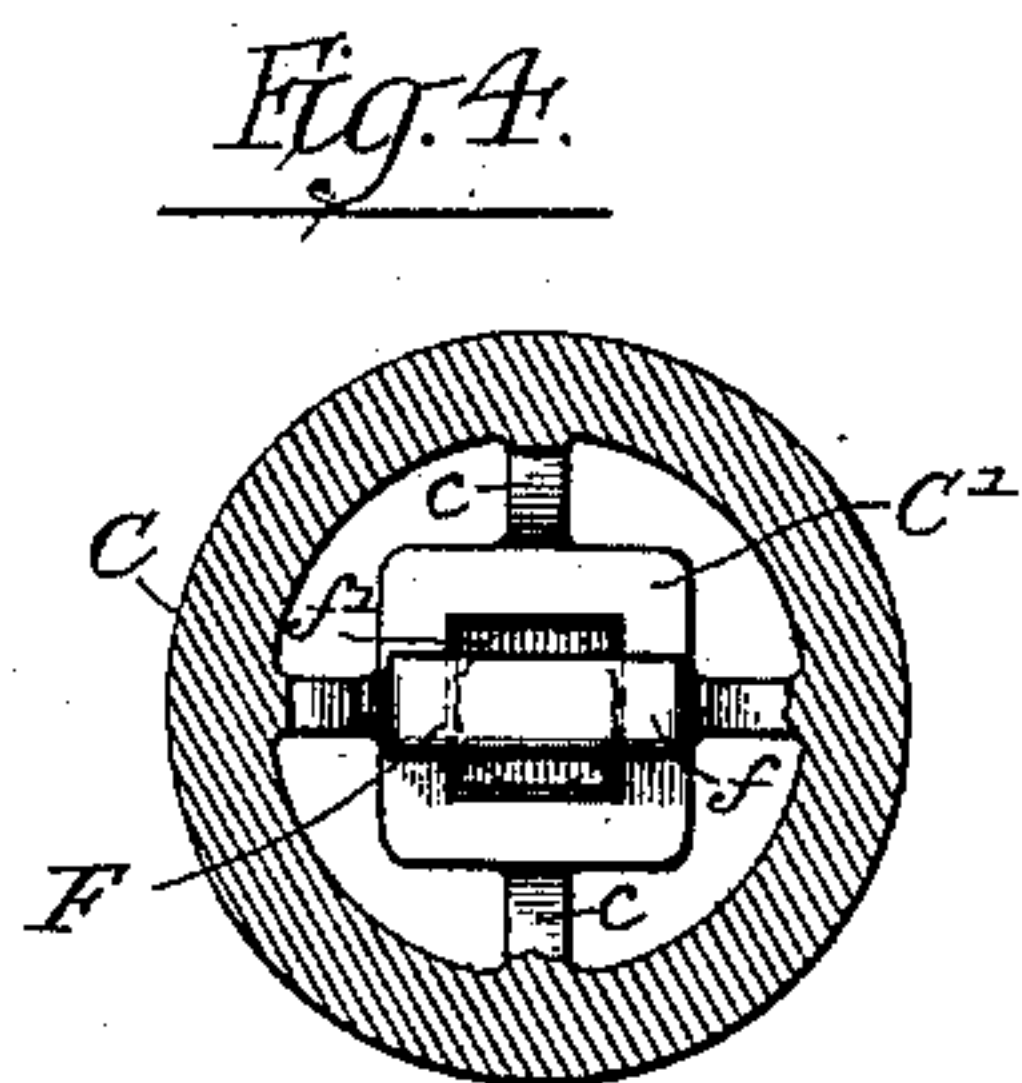
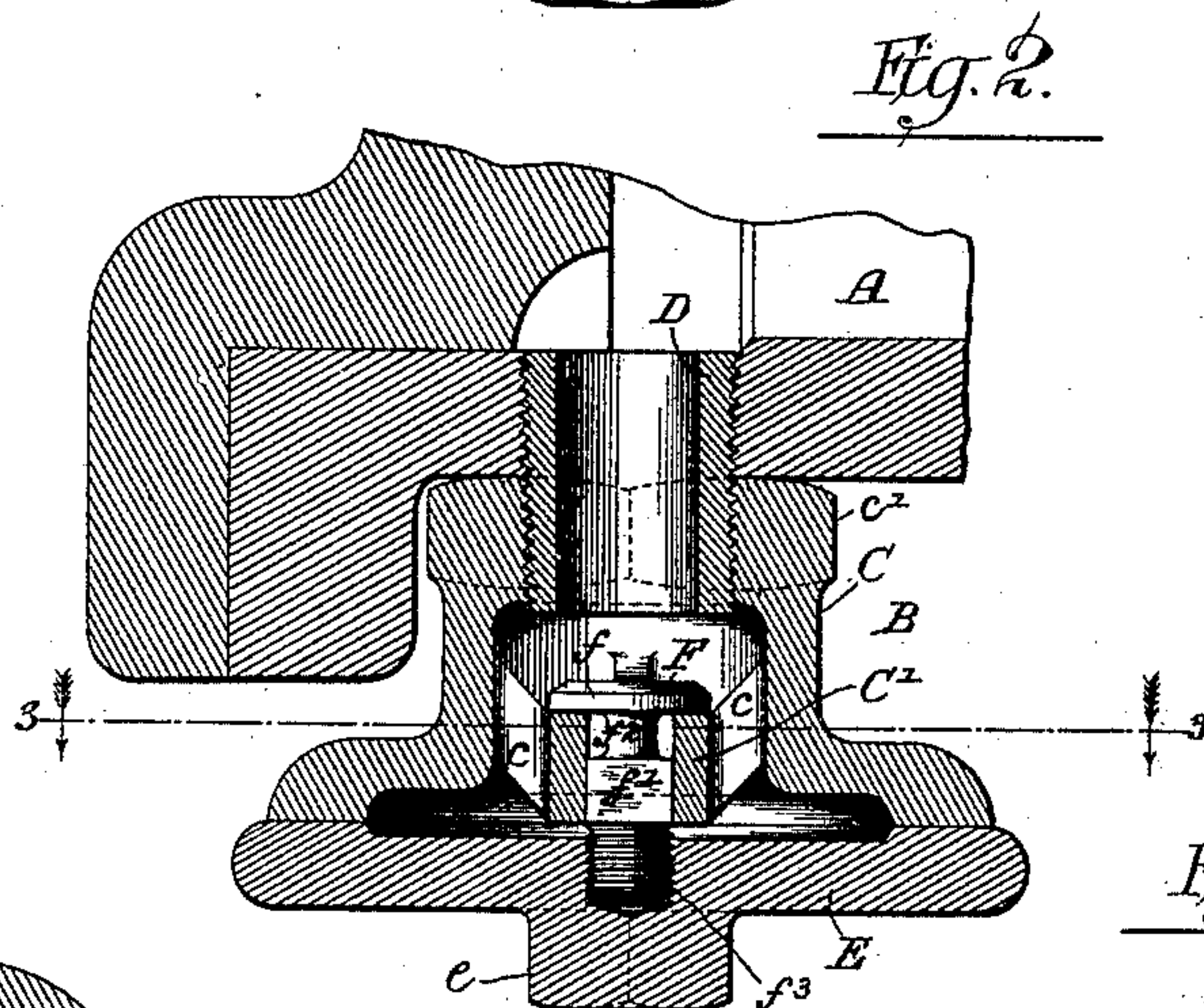
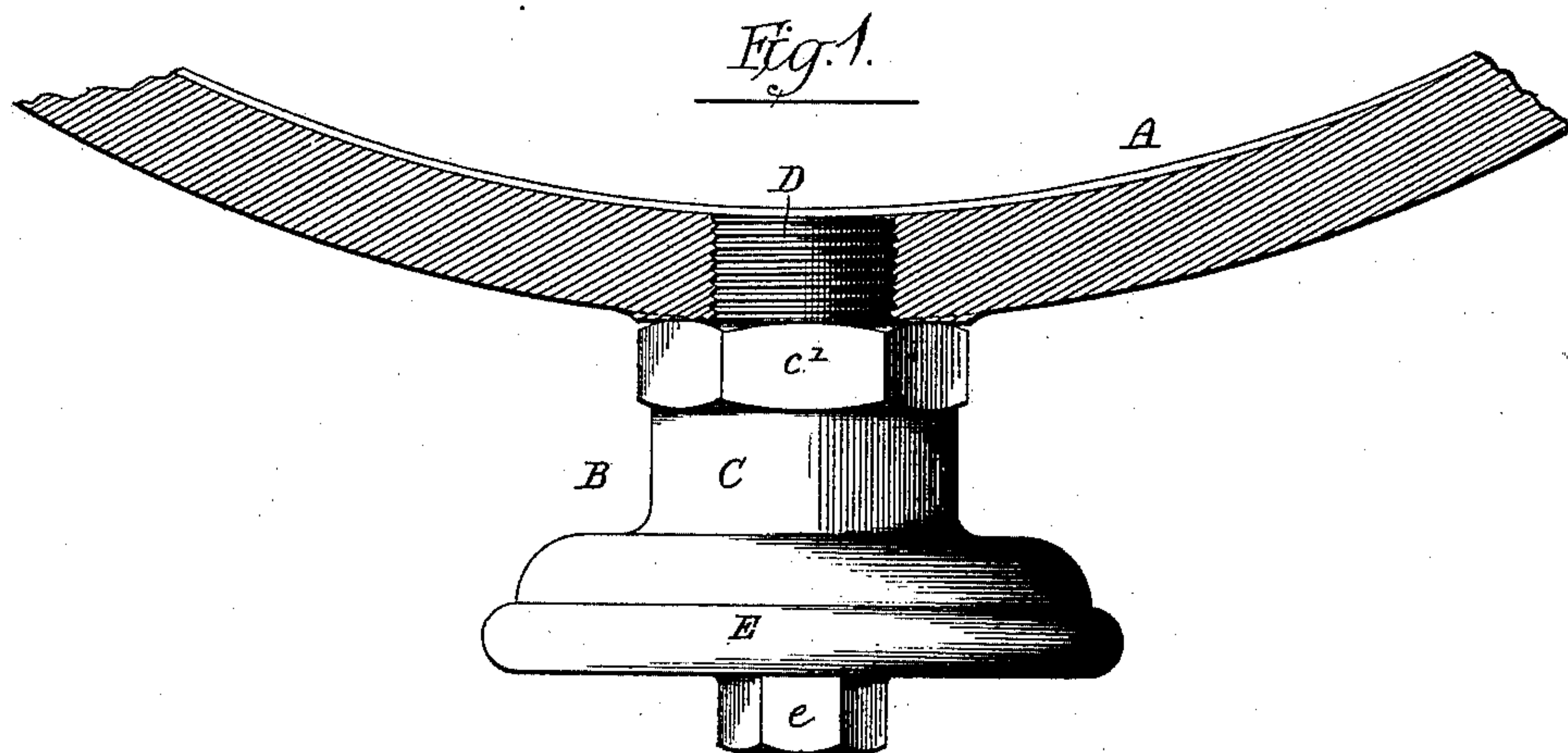


(No Model.)

W. B. PEARSON.  
SAFETY CUP FOR STEAM ENGINES.

No. 418,357.

Patented Dec. 31, 1889.



*Witnesses:-*

*Louis M. F. Whitehead.*

*Wm. L. Hemming.*

*Inventor:-*

*Walter B. Pearson.*

*by Dayton, Poole & Mann.*

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# UNITED STATES PATENT OFFICE.

WALTER B. PEARSON, OF CHICAGO, ILLINOIS.

## SAFETY-CUP FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 418,357, dated December 31, 1889.

Application filed February 21, 1889. Serial No. 300,724. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER B. PEARSON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful  
; Improvements in Safety-Cups for Attachment to Engine-Cylinders and other Situations; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to safety devices for attachment to steam-engine cylinders and  
15 other vessels or chambers liable to be subjected to a sudden excessive pressure, and is intended to provide a device adapted to break or yield under such excessive pressure, and thus save the walls of the chamber—as,  
20 for example, the head of a steam-engine cylinder—from rupture. In the devices heretofore employed for this purpose the supplemental chamber or cup has been made with one of its walls readily frangible under such  
25 excessive pressure.

In this invention a frangible wall is not used; but a rigid part of the wall is removably connected with the remainder or body of the structure by a frangible connection.

30 Describing the invention with reference to the drawings, Figure 1 is a transverse fragmentary section of a steam-engine cylinder or other chamber subject to steam or other pressure with my improved safety attachment  
35 shown in side elevation. Fig. 2 is a fragmentary longitudinal section of the cylinder, and also of the safety device connected therewith. Fig. 3 is a horizontal section of the safety device in the plane of the line 3 3 of  
40 Fig. 2, looking downward. Figs. 4 and 5 show alternative constructions of the frangible connecting-bolt.

A represents a steam-engine cylinder, and B the safety-cup. This safety-cup consists of  
45 a body C, which is connected with the cylinder A by means of the tubular nipple D, or otherwise, and a removable head E, connected with the body C by means of a single central frangible bolt F. For the purpose of best  
50 adapting the head E and body to be so connected by means of the bolt the body C is

provided with an interiorly-squared or polygonal ring C', connected with the body by means of arms c c. Through this ring C' drops the bolt F, having a head f, which rests  
55 on the top of the ring, and a central squared or polygonal portion f', which fits loosely within the ring C'. The head f and squared portion f' are in the construction shown in Fig. 2 joined by a reduced portion f<sup>2</sup>, which  
60 is intended to break under the excessive strain. Said bolt F, below or beyond the squared portion f', is provided with a screw-threaded part f<sup>3</sup>, which enters a tapped orifice in the head E. The size of the neck f<sup>2</sup>  
65 may be varied in diameter to yield at any predetermined strain.

The body C is provided with a squared or hexagonal portion c', and the head E is provided with a squared or hexagonal projection  
70 e. By means of this construction the parts of the safety device may be joined firmly to each other, and said device may be joined to the cylinder A by means of the nipple D.

In Figs. 4 and 5 the connecting-bolt F is  
75 shown adapted to more readily break at its head. In Fig. 4 the head is shown in the form of a cross-bar, the ends of which rest on the support C'. If made weaker than the  
80 tensile strength of the shank, it will of course be the part to break under the excessive pressure to be guarded against. In Fig. 5 the head bears on all parts of the ring C', and the shank being of full size next the head the latter will yield by a shearing action under the  
85 strain referred to. The construction shown in Fig. 2 is, however, the preferable one, because subjected to tensile strain, the resistance of which can be more readily determined in a particular diameter of the bolt.  
90

I claim as my invention—

1. The combination, with the rigid parts of a safety-cup, of a single central frangible connection uniting said parts.

2. In combination with the separable body  
95 and cap of a safety-cup, a support having a polygonal aperture belonging to one of said parts, and a polygonal frangible bolt fitting said aperture, having a head at one end which rests upon the support and its opposite end  
100 screw-threaded into the opposite part of the cup.

3. In combination with the cap E and body  
C, provided with the polygonal apertured sup-  
port C', a frangible bolt F, having a head *f*, a  
polygonal part *f'*, and a reduced portion be-  
5 tween the polygonal part and the head, said  
bolt being screw-threaded into the cap.

In testimony that I claim the foregoing as

my invention I affix my signature in presence  
of two witnesses.

WALTER B. PEARSON.

Witnesses:

M. E. DAYTON,

C. CLARENCE POOLE.