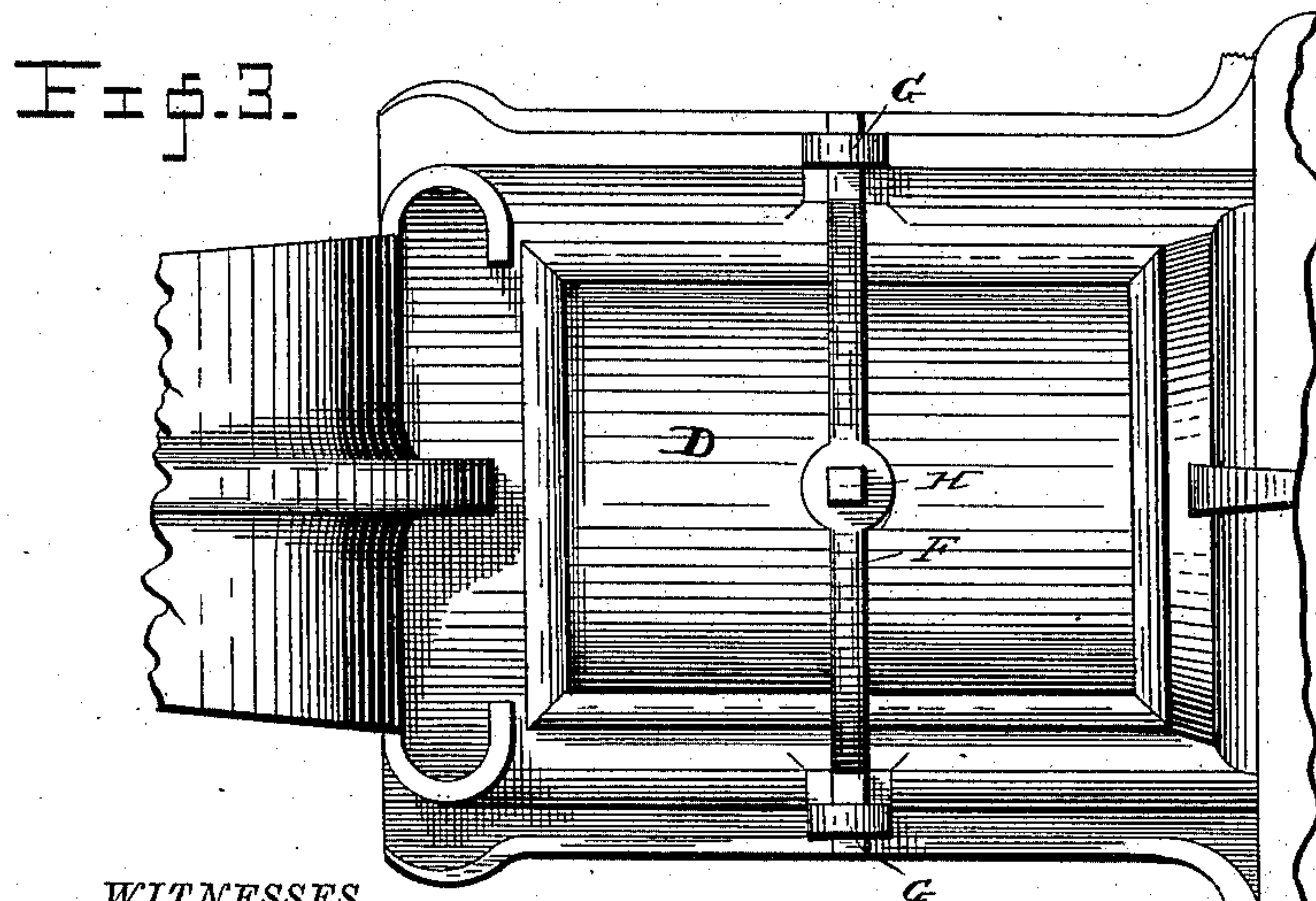
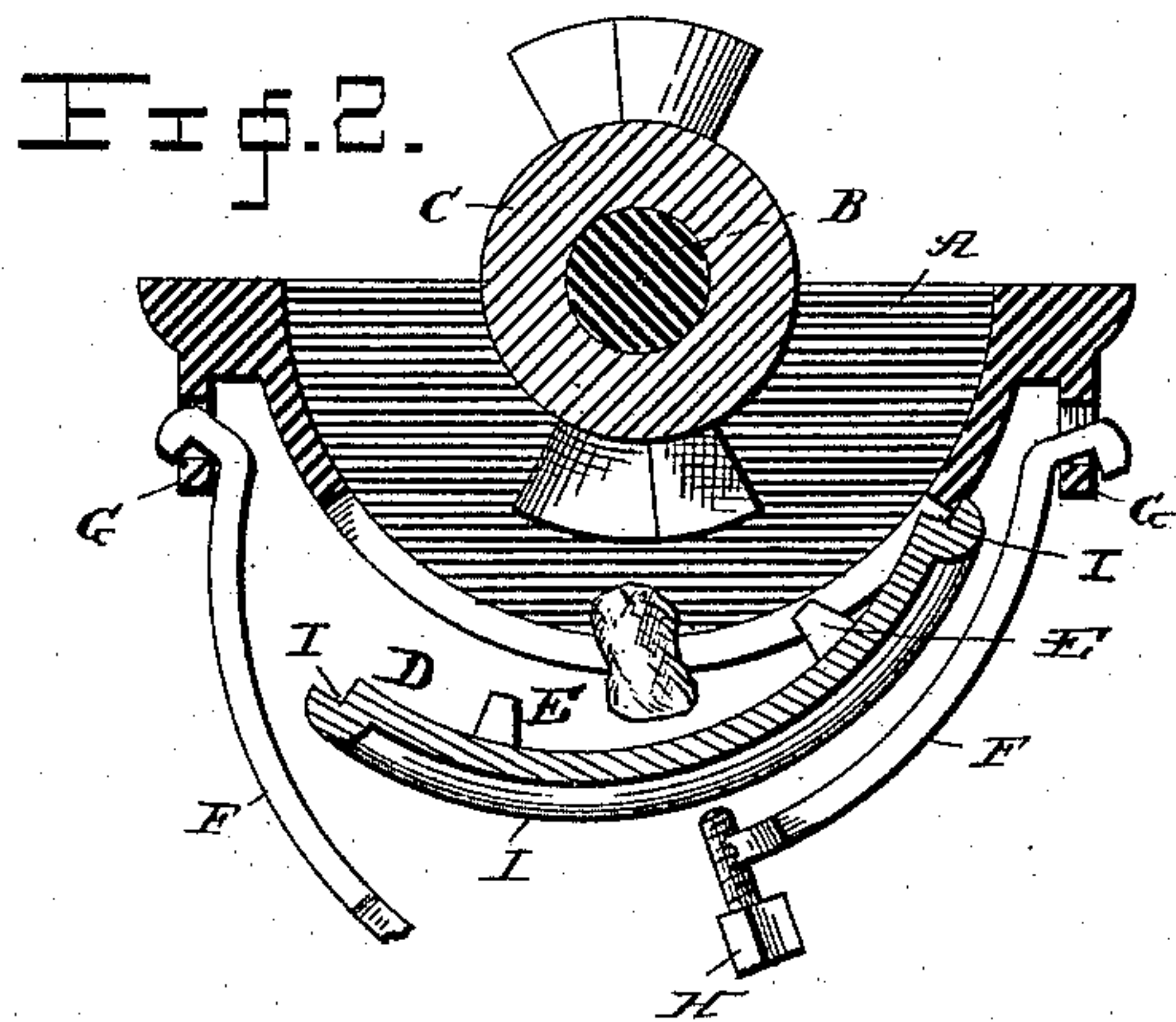
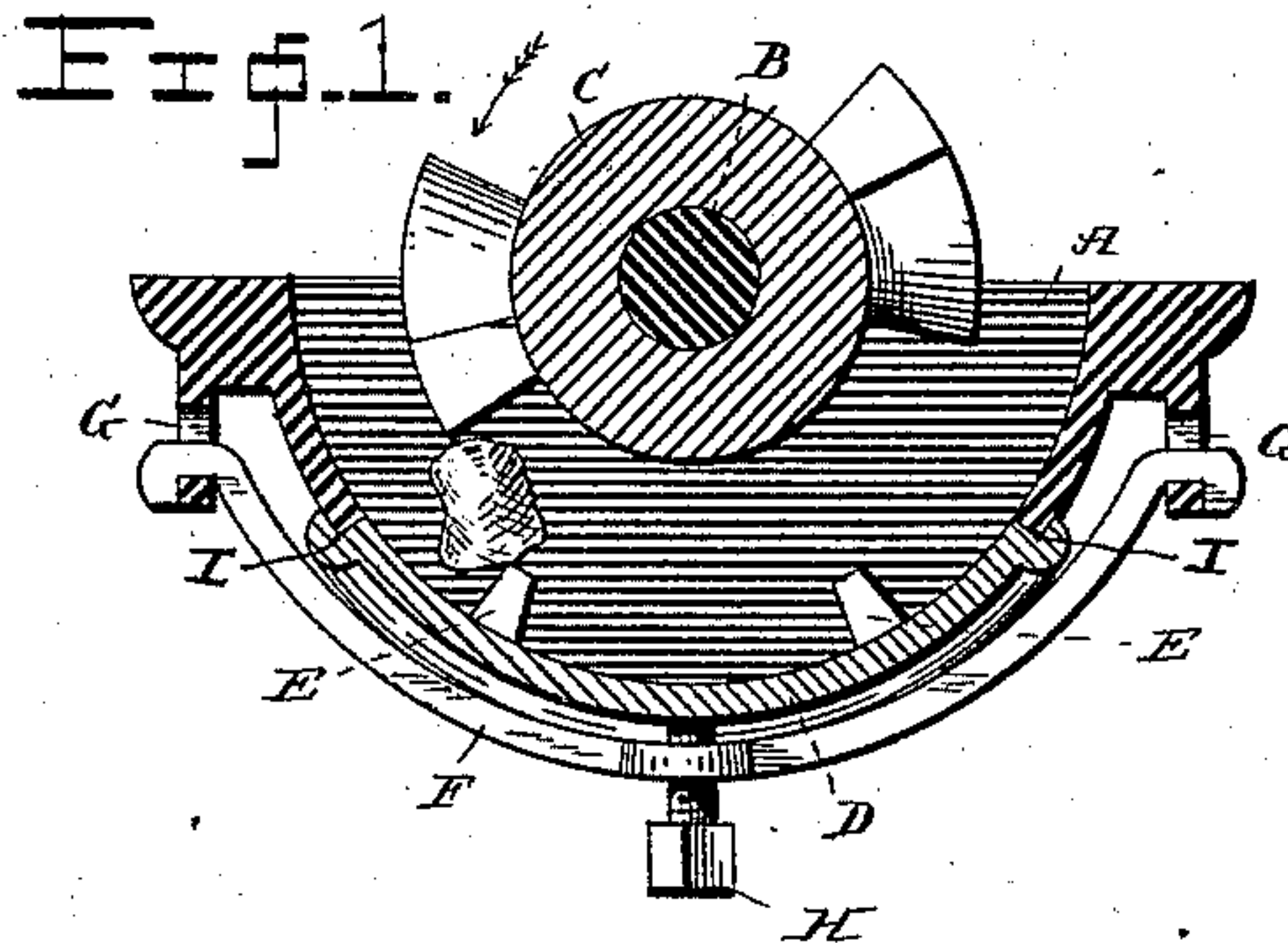


(No Model.)

J. F. WINCHELL.
CRUSHING AND GRINDING MILL.

No. 365,718.

Patented June 28, 1887.



WITNESSES

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JAMES F. WINCHELL, OF SPRINGFIELD, OHIO.

CRUSHING AND GRINDING MILL.

SPECIFICATION forming part of Letters Patent No. 365,718, dated June 28, 1887.

Application filed September 18, 1886. Serial No. 213,888. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. WINCHELL, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Crushing and Grinding Mills, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in crushing and grinding mills, having special reference to the crushing-chamber thereof, and is designed to provide for automatically allowing of the escape of foreign substances—such as metal, stones, &c.—
15 in the manner more particularly hereinafter pointed out.

20 In the accompanying drawings, forming a part of this specification, and on which similar letters of reference indicate the same or corresponding features—

Figure 1 represents a transverse sectional view of a crushing-chamber and crusher, showing my improvement applied thereto and a foreign substance caught between the two;
25 Fig. 2, a like view showing the result in the position of the yielding part and the escape of the foreign substance, and Fig. 3 an inverted plan view of the crushing-chamber.

30 The letter A designates the crushing-chamber of a grinding-mill of the usual or any approved construction, usually constructed of cast-iron. The shaft B carries the crusher C, and also the grinding-heads. (The latter not shown.) The material is fed into the chamber in any approved way.

40 The letter D designates a plate or portion of the chamber, the same being constructed of the same material, preferably, as the chamber and adapted to fit an opening formed therein. The plate, by preference, is of such length as to extend the entire, or as near as practicable the entire, length of the crusher or that part of the machine which does the
45 actual crushing, and is generally provided with longitudinal ribs E, which serve to hold the material under operation against the action of the crusher, so as to more readily effect its reduction.

50 The letter F designates a yoke or other bar, which extends beneath the plate D and connects with a support at either end, as the

chamber, by means of the slotted lugs G. The ends of the yoke are turned down, so as to maintain the yoke within the slots in the lugs, 55 while at a convenient point, preferably about the middle thereof, it is provided with a screw-threaded opening and a binding-nut, H, the function of which is to engage the under side of the plate and to force and hold it in place 60 against the chamber proper, the edges of the plate being shouldered or otherwise constructed to bind against the edges of the aperture into which it is fitted. The ends of the plate are also shouldered, the metal consti- 65 tuting the same being shown in Figs. 2 and 3, and designated by the letter I. The yoke is constructed either of cast-iron or other material, or an alloy, or of any material which is comparatively fragile; or, if not a material of 70 this character, then of such size as will withstand a given amount of pressure, and beyond which that will break or yield sufficiently to give room for the passage of the substance which occasions the unusual strain. I con- 75 template, however, making the yoke itself of ample capacity to stand the excess of strain, and its points of support—as the lugs G—of such size and material as will withstand only the strains incident to the usual operation of 80 the machine, but which will give to the undue pressure which is brought to bear in the chamber by the presence of foreign substances of the character already alluded to.

As illustrated in Fig. 1, an obstructing sub- 85 stance, as a stone, is seen caught between one of the ribs E and an adjacent portion of the crusher.

It is obvious that the crusher must instantly cease its rotation, (which is in the direction 90 of the arrow in this example,) or that the substance must be crushed or the rib yield. As it is impossible for the crusher to immediately come to a stop, and as such substances will not ordinarily give, or if they do their frag- 95 ments would be in the way, it results that the parts must be broken unless one or the other will yield. By my invention the portion of the chamber against which the substance is forced—as the plate D—yields, as seen in Fig. 2. 100 In this illustration the yoke is seen to have broken about the middle and the plate to have consequently dropped and permitted of the passage of the obstructing element.

The plate D may be constructed of one or more parts, and may constitute such portion of the chamber as is found necessary to meet the particular circumstances. I do not confine myself to any particular construction or material, the essential idea of the invention being the yielding wall.

I am aware that concaves in thrashing-machines have been constructed in parts supported by springs, and which were adapted to yield to obstructions; and I am also aware that mills have been made in which the shell was composed of a series of movable plates held in normal position by springs and adapted to yield when unduly pressed upon, and I therefore disclaim such devices, the distinction between them and mine being essentially this, to wit, that my crushing-chamber is composed of a fixed and non-yielding part having an opening therein, and of a removable part fitted to said opening and sustained by a bar or other means sufficiently strong to withstand the strain of ordinary operation, but not strong enough to stand strains in excess thereof, and which, upon giving, allows the obstructing element to escape from the chamber through the opening occupied by the removable part.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a crushing-chamber having an opening therein, of a removable plate fitted to said opening, and a yoke of frangible material, by which said plate is supported against the ordinary strains and released when undue pressure is exerted. 35

2. The combination of the crushing-chamber having slotted lugs depending from the sides thereof, an opening in the bottom portion, a plate having shoulders extending around it and fitted to said opening, ribs projecting inwardly from the plate, and a cast-iron yoke supported by said lugs and having a set-screw about the middle thereof, which binds against said plate and holds it in place. 40 45

3. The combination, with a crushing-chamber composed of a fixed portion having an opening therein and a removable plate having shoulders at its edges and ribs projecting into the chamber, of a fragile yoke secured at its ends to the chamber and provided with a binding-screw at an intermediate point, which bears against said plate, and a crusher mounted to operate in the chamber. 50

In testimony whereof I affix my signature in presence of two witnesses. 55

JAMES F. WINCHELL.

Witnesses:

M. A. BALLINGER,
EDWIN L. BRADFORD.