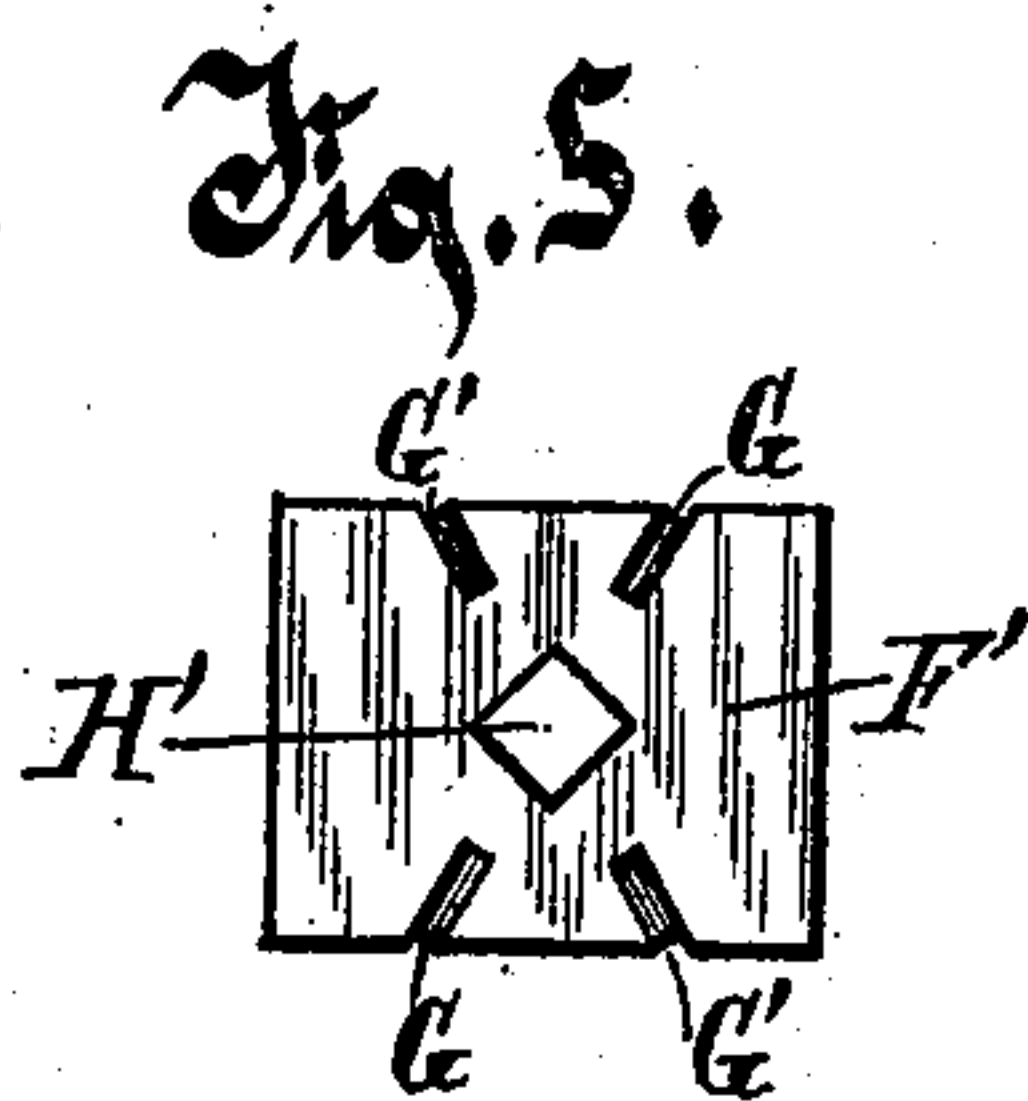
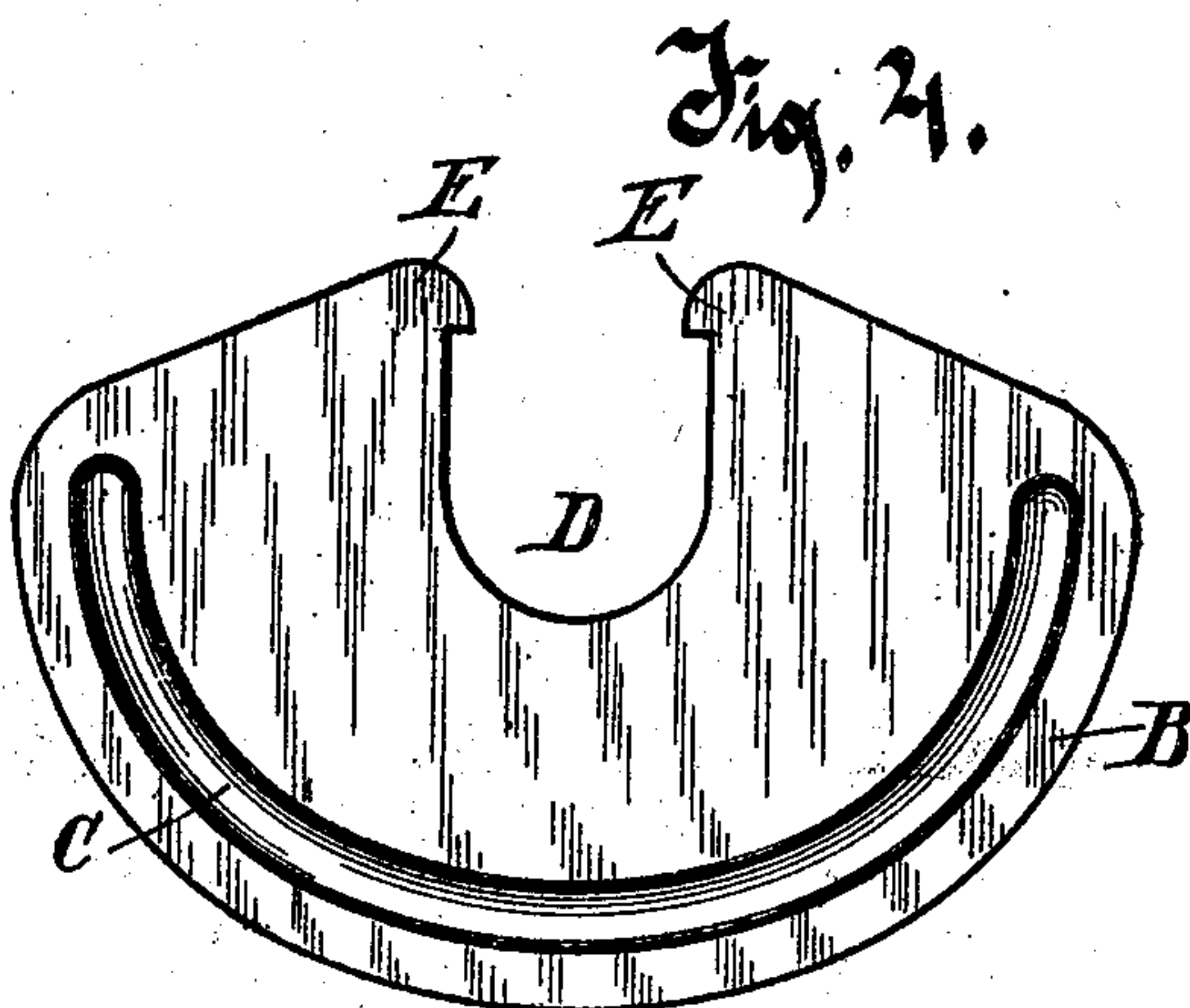
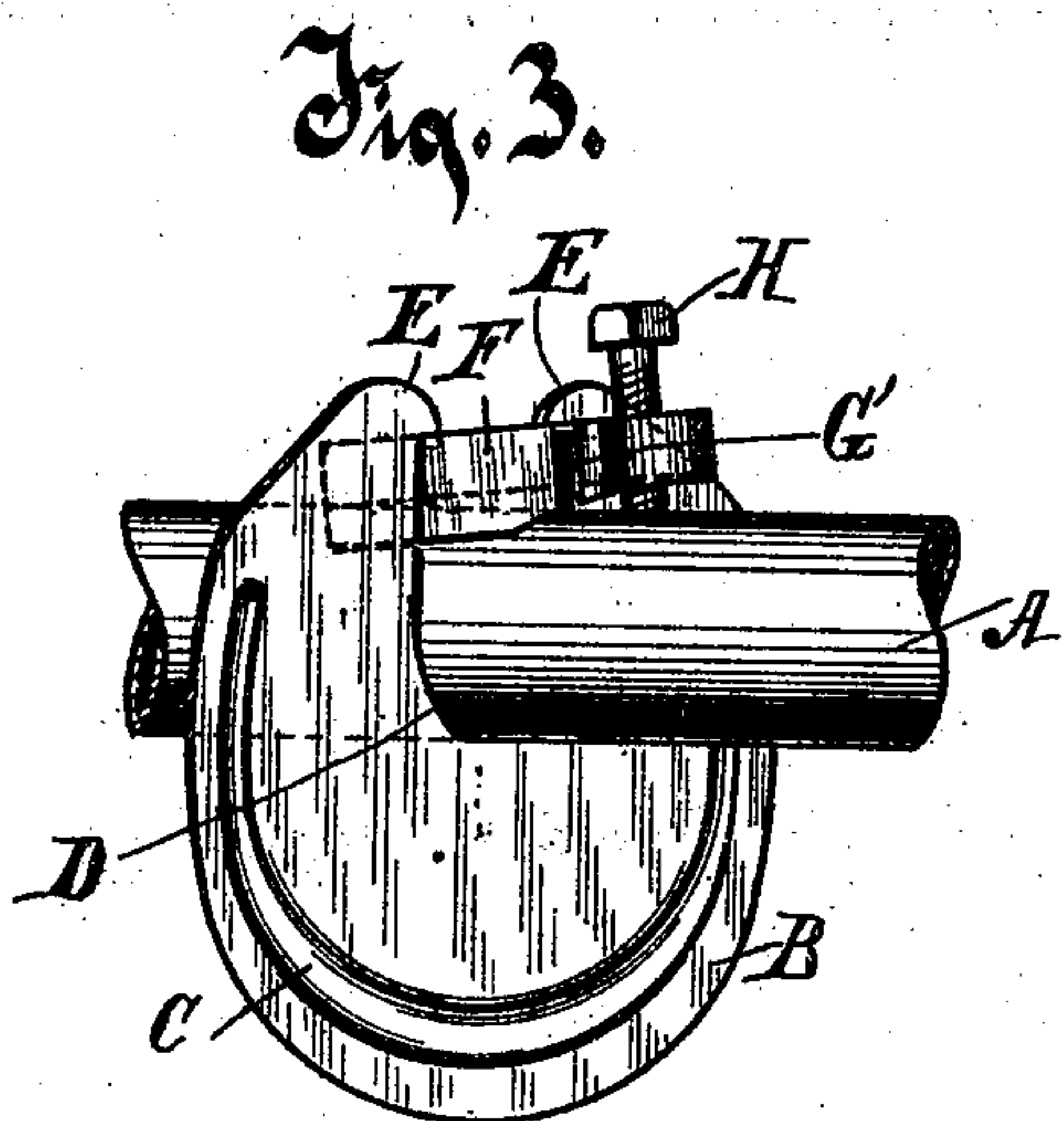
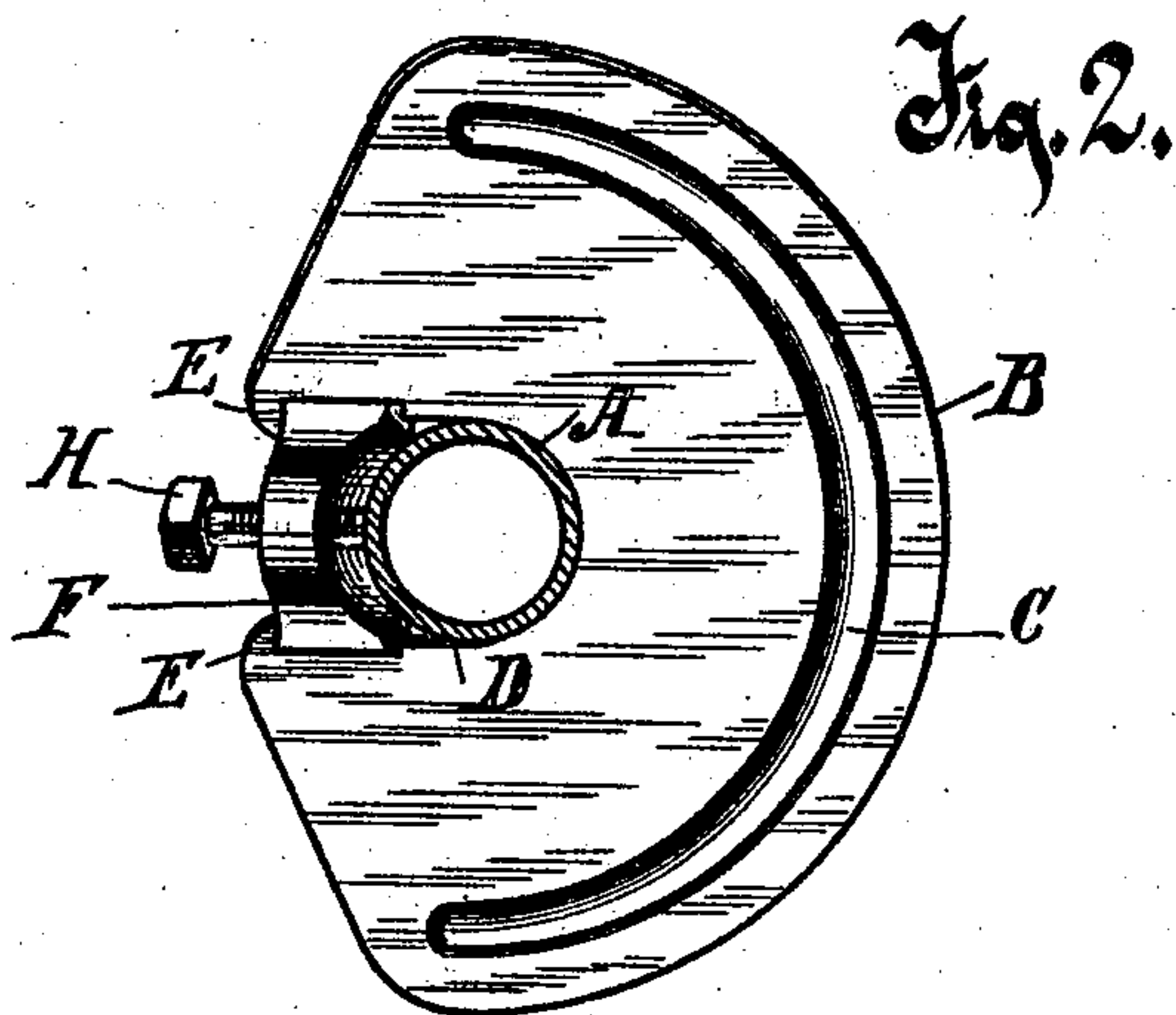
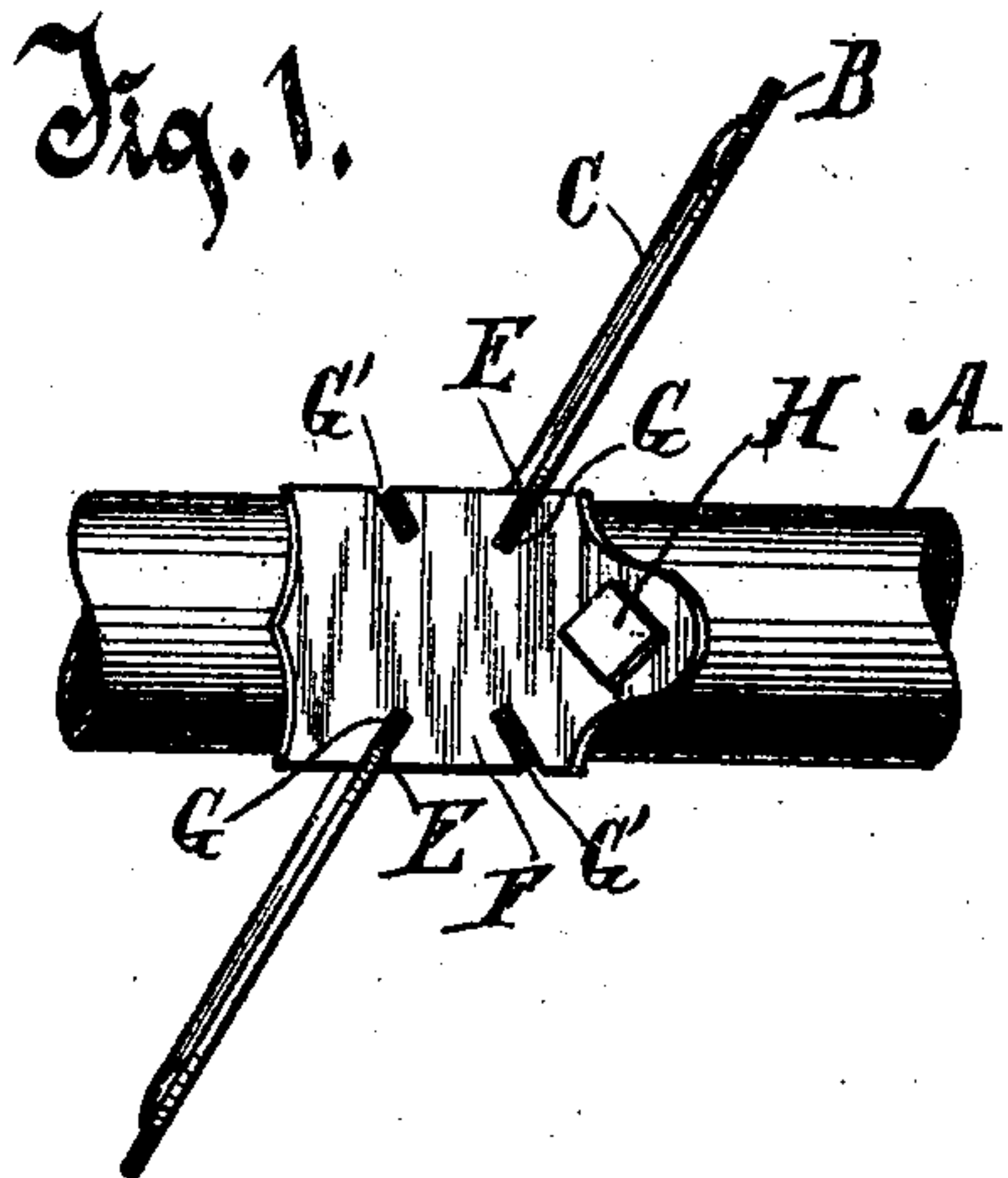


(No Model.)

A. E. BAXTER & A. G. MATHER.
SPIRAL CONVEYER.

No. 504,193.

Patented Aug. 29, 1893.



Witness.

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UNITED STATES PATENT OFFICE.

ALFRED E. BAXTER AND ALLAN G. MATHER, OF MILWAUKEE, WISCONSIN.

SPIRAL CONVEYER.

SPECIFICATION forming part of Letters Patent No. 504,193, dated August 29, 1893.

Application filed May 16, 1893. Serial No. 474,444. (No model.)

To all whom it may concern:

Be it known that we, ALFRED E. BAXTER and ALLAN G. MATHER, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Spiral Conveyers, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

Our invention relates to that class of spiral conveyers, which consist in a general way, of a case and a revoluble shaft therein, the shaft having a screw, spiral blade or flights thereon; which conveyers are especially adapted for moving grain, flour, bran, sawdust or other dry comminuted or plastic material.

The invention consists in the novel construction of the blade or flight, and in the means for securing it removably and reversibly to the shaft, and their combinations, and equivalents.

Figure 1, is a view of the edge of our improved flight, in combination with a fragment of its shaft, and the novel means and method of securing the flight thereto. Fig. 2, is an end view of the improved conveyer, including the shaft, the flight and the means of securing the flight on the shaft. Fig. 3, is a view of the same devices shown in Figs. 1 and 2, the view in the figure being of the device at a quarter revolution or right angle to the view in Fig. 1. Fig. 4, is an elevation of our improved semi-elliptical conveyer flight. Fig. 5, is a modified form of the gib, by the aid of which the flight is attached to the shaft.

The shaft A to which our improved flight is attached, may be hollow or solid, cylindrical or angular in cross section, as most convenient or desirable, for the purpose and in the location in which it is used. For convenience we have shown a hollow shaft, which may be simply a piece of gas pipe or similar tubing.

Our improved flight B may be constructed of cast metal, but is preferably made of sheet steel conveniently produced in the form shown by cutting it as a blank or planchet from a sheet of steel and swaging, or striking it up in the form shown. The blade or flight B is in its general outline, of the semi-elliptical form shown in Fig. 4. The flight in this form, when secured to the shaft A at an oblique angle thereto as shown in Figs. 1 and 3 is such

that its semi-elliptical perimeter, describes a true circle about the axis of the shaft, when revolved therewith. Preferably a curved bead or corrugation is struck up in the flight around near its outer edge, forming a reinforcing rib C, adapted to prevent twisting or buckling of the blade.

The flight B is provided with a central recess D in which the shaft is received and seated when the flight is secured thereto. The recess D is deeper and somewhat wider laterally than the diameter of the shaft, to provide for skewing the flight on the shaft. Those parts of the flight or blade at the two sides of the recess D extend rearwardly of the shaft and project inwardly beyond the general line of the side walls of the recess D forming fingers E E at the rear of the shaft or on the other side of the shaft to that at which the central or principal part of the blade is located. The space between the opposing ends of the fingers E E is just sufficient to allow the blade to be slipped on to the shaft when at right angles thereto.

For securing the flight removably and reversibly to the shaft we provide a gib F, the under surface of which is preferably hollowed out to fit nicely on the shaft, at least at one end. This gib has recesses G G in its outer surface, one at each side, arranged at an oblique angle to the axis of the shaft, to receive therein the fingers E E. The gib is also provided with a reversely oblique set of recesses G' G', otherwise corresponding with the recesses G G, by means of which the flight can be secured to the shaft in the reversely oblique direction, the device being thus adapted for arranging the flight to serve either as a right hand or left hand conveyer. The size and form of the recess D, and of the inwardly projecting fingers E E, with reference to the shaft A, are such, that the gib F can be readily inserted in the recess D about the shaft, between it and the fingers E, and thereupon by lifting or forcing the gib away from the shaft to such extent as to cause the fingers E E to enter the recesses G or G', and at the same time locking the gib to the shaft, the flight is drawn tightly against and is securely fixed detachably to the shaft, in the oblique position required. This gib may be raised from the shaft, seating the fingers E E in the

recesses therein, and at the same time locking it to the shaft by any suitable key or means, and we preferably use therefor a set screw H turning through one end of the gib 5 against the shaft. By this means the gib is lifted at one end in the manner illustrated in Figs. 2 and 3, so as to seat the fingers E E in the recesses therefor in the gib and at the same time to so clamp the members of the device together, as to secure the blade firmly to 10 the shaft. It will be understood that to reverse the flight, it is only necessary to loosen the gib by releasing the set screw, so as to permit the fingers E E to escape from the recesses 15 G G, and to shift the blade so that the fingers will enter the recesses G' G', and in this position, to fix them again on the shaft, by turning down the set screw.

A conveyer constructed with our improved 20 devices, may have a large number of flights, each of which is independent of all the others, and one or more may therefore be readily removed for repairing or replacing it, or for converting one or more of the flights from a 25 right hand to a left hand conveyer, or vice versa.

In Fig. 5 we show a modified form of the gib F', in which the set screw H' is located centrally. In this form of device the set 30 screw is adapted to lift the gib bodily away from the shaft instead of converting the gib into a lever, or wedge as in the form shown in Figs. 1, 2 and 3.

What we claim as our invention, and desire 35 to secure by Letters Patent, is—

1. The combination with a conveyer shaft, of a semi-elliptical flight provided with a central shaft-seating recess deeper than the diameter of the shaft, and fingers projecting 40 into the recess at the rear of the shaft-seat, a gib having recesses arranged obliquely to its axis in its outer face adapted to be inserted between the rearwardly extending

parts of the flight and interposed between the shaft and the fingers of the flight the fingers 45 being adapted to enter the recesses at the rear of the shaft and thus to lock the flight to the shaft, substantially as described.

2. The combination with a conveyer shaft, of a semi-elliptical flight provided with a central shaft-seating recess deeper than the diameter of the shaft, fingers projecting into the recess at the rear of the shaft-seat and at the rear of the shaft, a gib having a plurality of recesses in its outer surface arranged in 55 sets reversely oblique to its axis, inserted at the rear of the shaft between the shaft and the fingers of the flight in such manner that the fingers engage the gib at the rear of and within the planes extending rearwardly from 60 the sides of the shaft, and means for forcing the gib into engagement with the fingers of the flight and locking it to the shaft, substantially as described.

3. The combination with a conveyer shaft, 65 of a semi-elliptical flight provided with a central shaft-seating recess deeper than the diameter of the shaft, fingers projecting into the recess at the rear of the shaft, a gib having recesses in its outer face arranged oblique 70 to its axis inserted in the flight recess between the shaft and the fingers which enter the recesses and engage the gib at the rear of the shaft, and a set screw turning through the gib near its end against the shaft and 75 tilting the gib so that one end bears against the shaft while it is forced medially against the fingers of the flight, substantially as described.

In testimony whereof we affix our signatures 80 in presence of two witnesses.

ALFRED E. BAXTER.

ALLAN G. MATHER.

Witnesses:

C. T. BENEDICT,

ANNA V. FAUST.