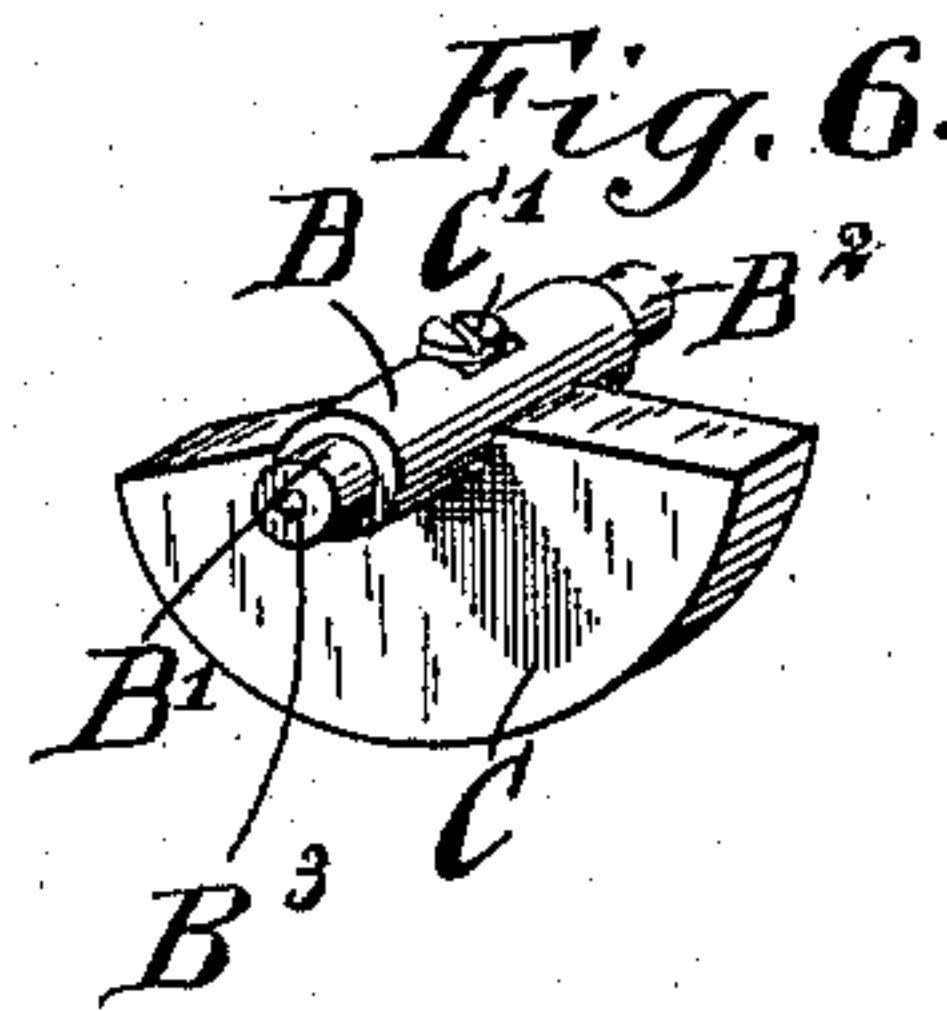
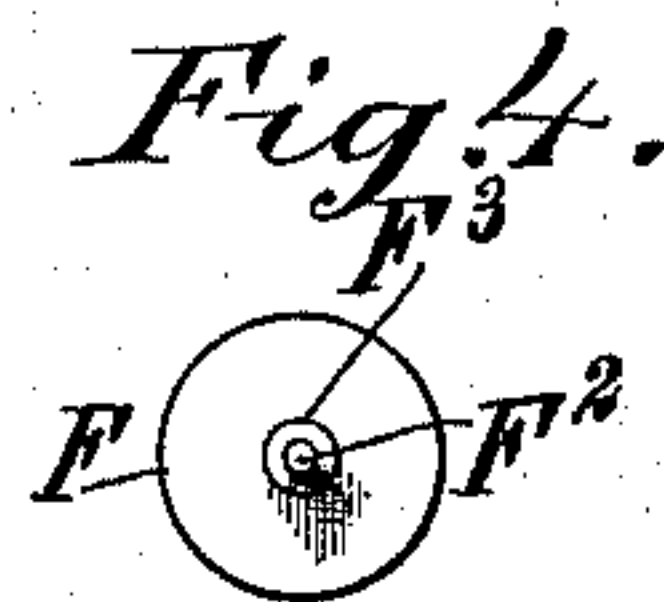
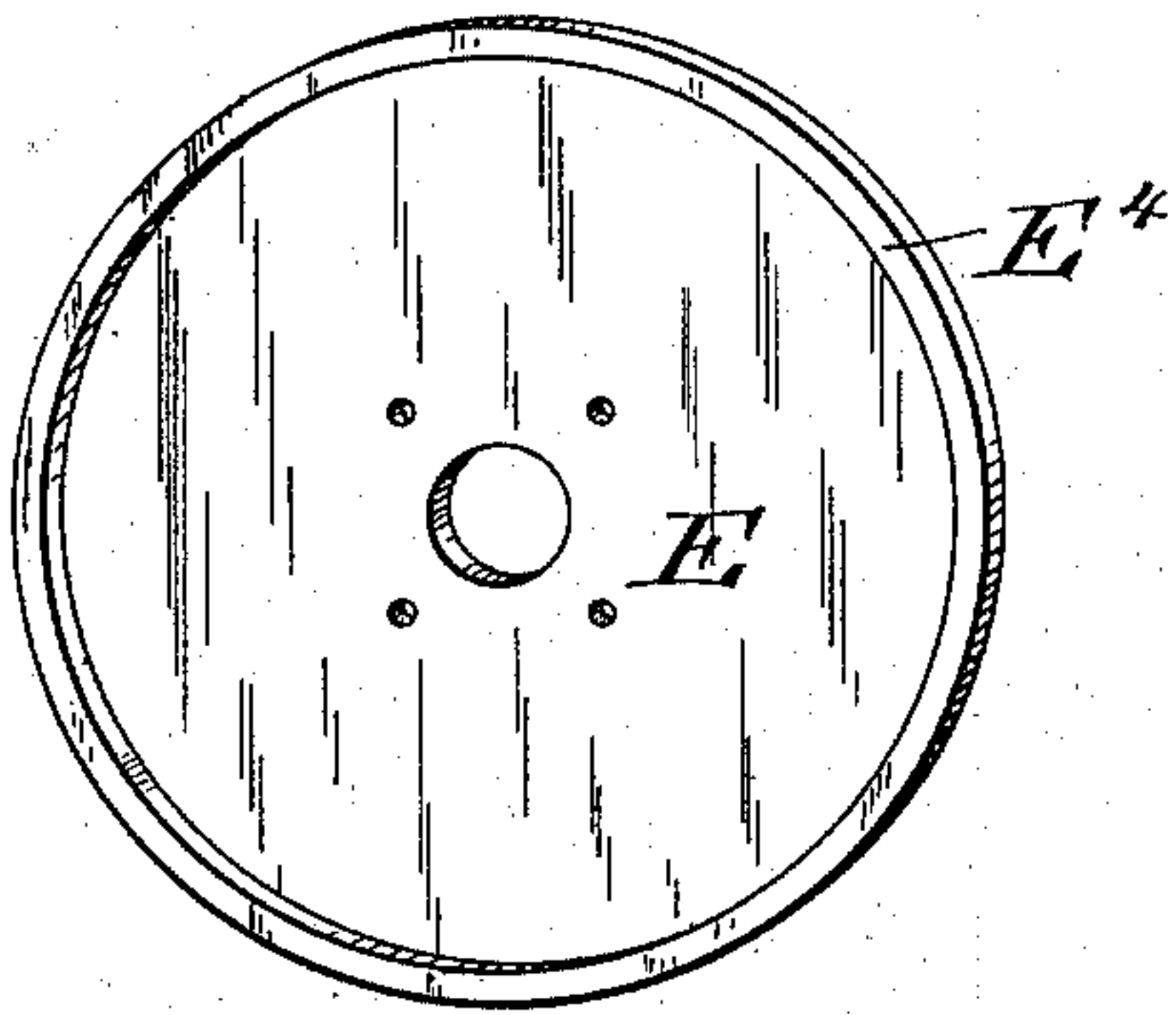
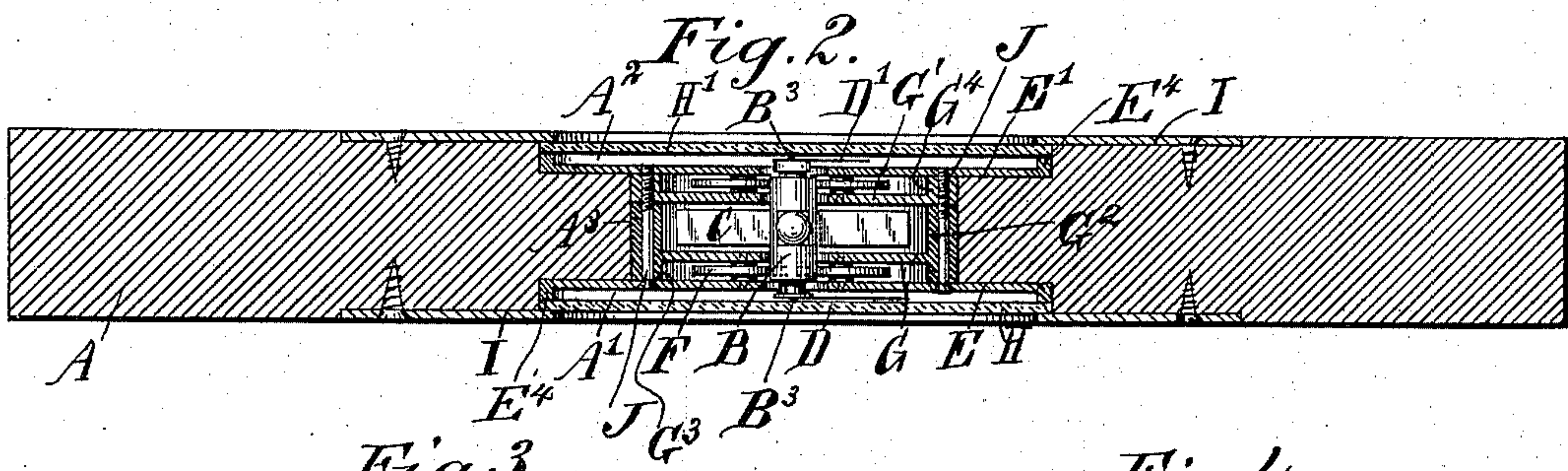
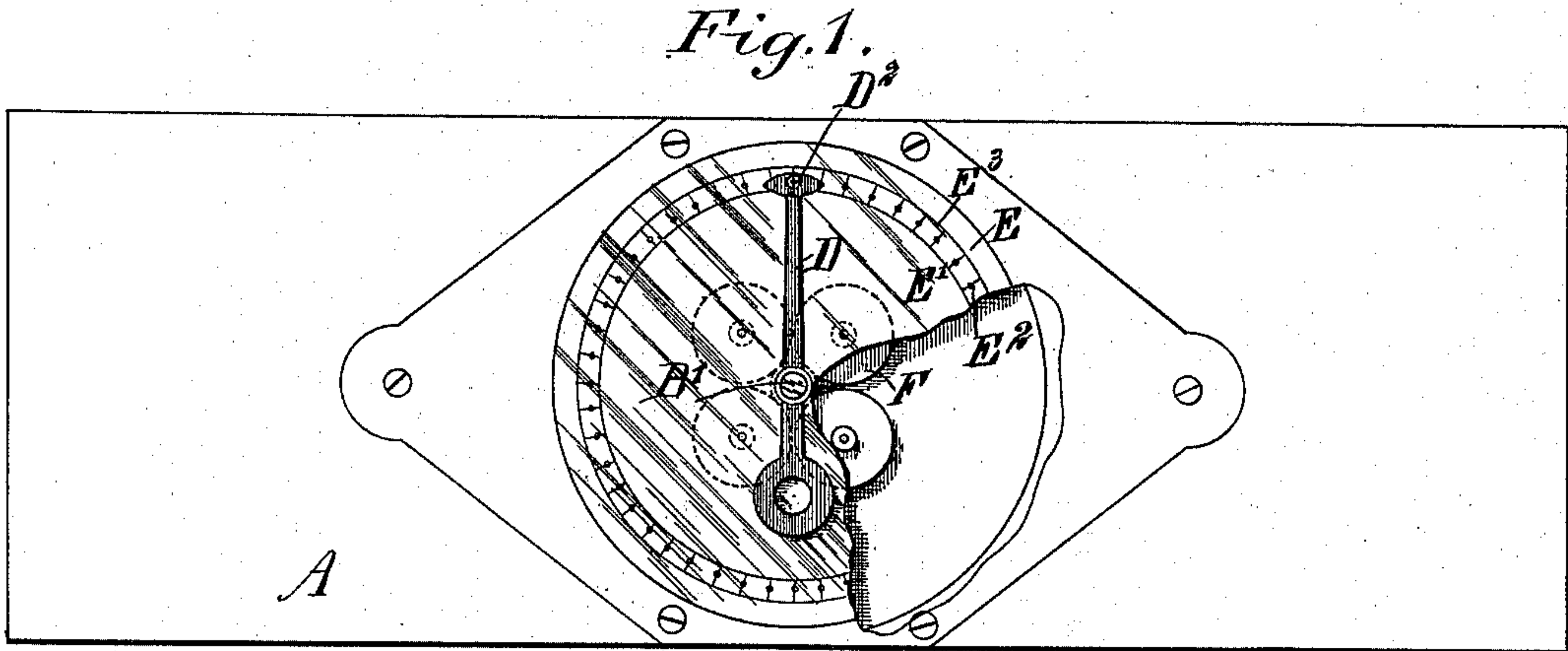


(No Model.)

T. F. DECK.
LEVEL.

No. 573,211.

Patented Dec. 15, 1896.



WITNESSES:

L. V. Legendre
New York, N. Y.

INVENTOR

T. F. Deck.

BY

Munn
ATTORNEYS.

UNITED STATES PATENT OFFICE.

THOMAS F. DECK, OF SWANTON, OHIO.

LEVEL.

SPECIFICATION forming part of Letters Patent No. 573,211, dated December 15, 1896.

Application filed March 21, 1896. Serial No. 584,266. (No model.)

To all whom it may concern:

Be it known that I, THOMAS F. DECK, of Swanton, in the county of Fulton and State of Ohio, have invented a new and Improved Level, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved level which is simple and durable in construction and arranged to automatically indicate horizontal and vertical positions and the angle of deviation when placed out of a horizontal position.

The invention consists principally of a shaft mounted to turn on friction-rollers and carrying a weight and a pointer.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement with parts broken out. Fig. 2 is a sectional plan view of the same. Fig. 3 is a perspective view of the dial. Fig. 4 is a face view of one of the friction-rollers. Fig. 5 is a plan view of the same, and Fig. 6 is a perspective view of the weighted shaft.

The improved level is provided with a stock A, made of wood or other suitable material and formed at or near its middle and on both faces with recesses A' and A², connected with each other by a transverse bore A³, as will be readily understood by reference to Fig. 2. In the central bore A³ extends centrally a transverse shaft B, carrying at its middle a downwardly-extending weight C, preferably made in the shape of a segment, as plainly shown in Fig. 6, and secured in place on the shaft by a screw C'.

On the reduced ends B' and B² of the shaft B are held the pointers D D', respectively, both preferably alike in construction and each provided at its free end with an aperture D², adapted to register with dots E², forming a graduation E³ on the dial E or E', respectively, secured to the stock in the recesses A' A², as is plainly shown in Fig. 2.

It will be seen that by the arrangement described the opening D² forms a sight for ac-

curately reading the graduation-marks E² on the graduation of the corresponding dial E or E'. The sight-opening D² is preferably about twice the size of the dots and the latter are preferably made of a different color to that of the pointer.

The shaft B is journaled at or near its reduced ends on sets of friction-rollers F, the shafts F² of which are mounted to rotate with their inner ends in bearing-plates G G' and at their outer ends in suitable bearings in the dials E E', respectively. The bearing-plates G and G' are fitted within the bore A³ and are separated from each other by an annular rim G², cast on one of the bearing-plates and forming a seat for the bearing-plate, as plainly indicated in Fig. 1.

The bearing-plates G and the dial E are separated from each other by an annular flange G³, formed on the front face of the bearing-plate G, and a similar flange G⁴ separates the bearing-plate G' from the dial E', so that both sets of friction-rollers F are free to revolve between the adjacent faces of the vertical plates and dials without touching the same, it being understood that the shafts F² of said friction-rollers are formed with shoulders F³, abutting against the faces of the bearing-plates and dials, as is plainly indicated in the drawings.

In order to protect the pointers, I provide glass covers H H', resting on annular flanges E⁴, formed on the front faces of the dials E E', as shown in Fig. 2. The glass covers are in turn held in place by apertured face-plates I, secured to the stock and set in recesses therein, as indicated in Fig. 2.

In order to hold the several parts together, I provide screws J, extending through the dials E E' and the annular flanges G² G³ G⁴ of the bearing-plates G G', as indicated in Fig. 2.

In order to prevent lateral movement of the shaft B, I provide each reduced end with a central point B³, abutting against the inner faces of the glass covers H H', respectively, so that the shaft cannot move transversely, and at the same time frictional contact between the points B³ and the glass covers is reduced to a minimum.

Now it will be seen that when the level is used either in a horizontal or vertical posi-

tion it will readily indicate by the pointers
D D' the proper horizontal or plumb position
or any degree of deviation from either of said
positions. As the friction of the movable parts
5 is reduced to a minimum, it is evident that
the weight C will readily respond to any
change of position of the stock, so that the
pointers indicate accurately the degrees on
the graduations E³ of the dials E E'.

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

A level comprising a stock having a trans-
verse bore and recesses at opposite sides of

the stock concentric with the bore, bearing- 15
plates seated in the bore, one of said plates
having an annular rim engaging with the other
plate, dial-plates secured in the recesses, roll-
ers having journal-bearings in the dials and
plates, a weighted shaft journaled on said 20
rollers, pointers on the ends of said shaft,
and transparent covers for the dials, substan-
tially as specified.

THOMAS F. DECK.

Witnesses:

JOHN REGERWALL,
GEORGE W. HUMPHREY.