

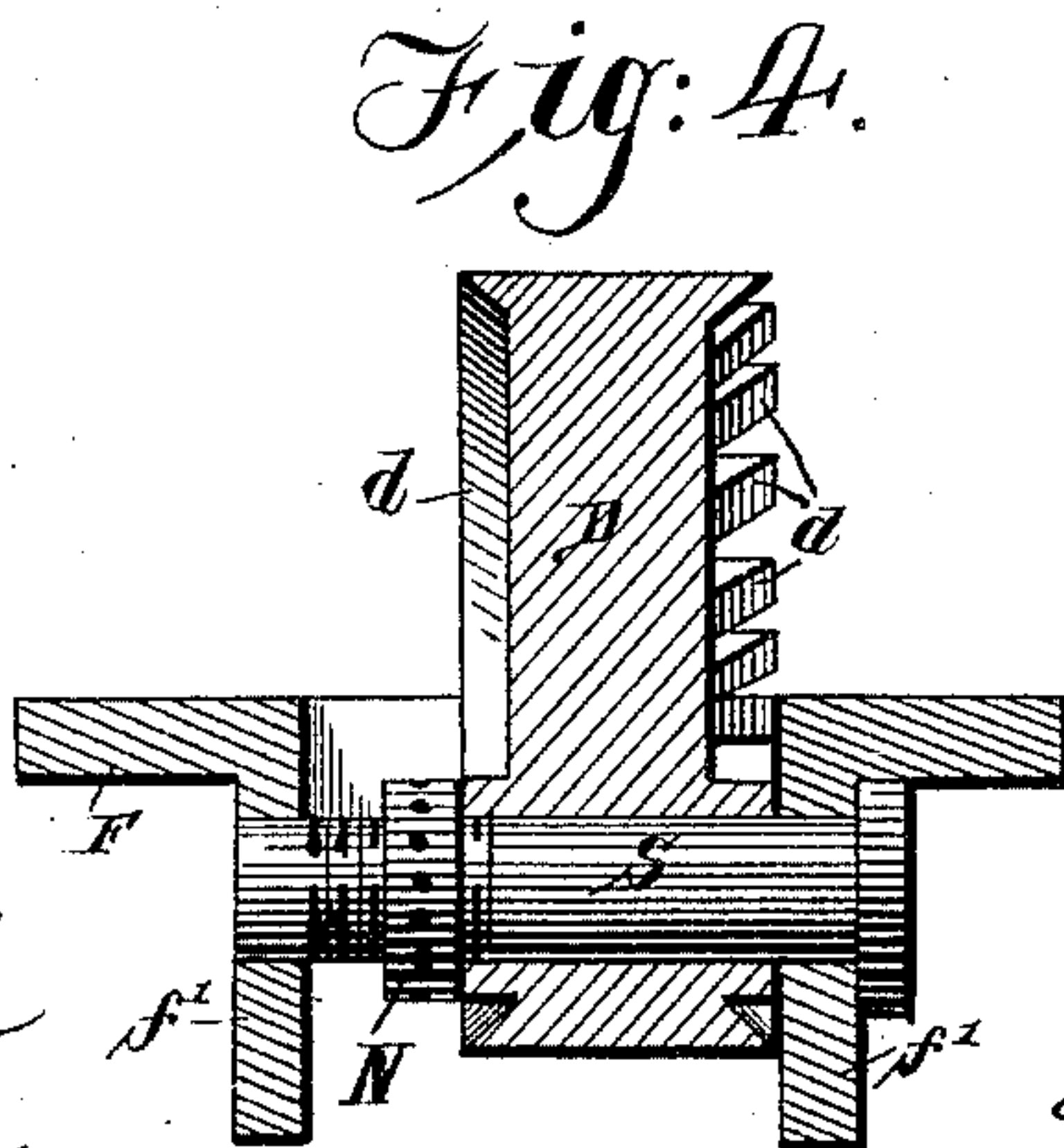
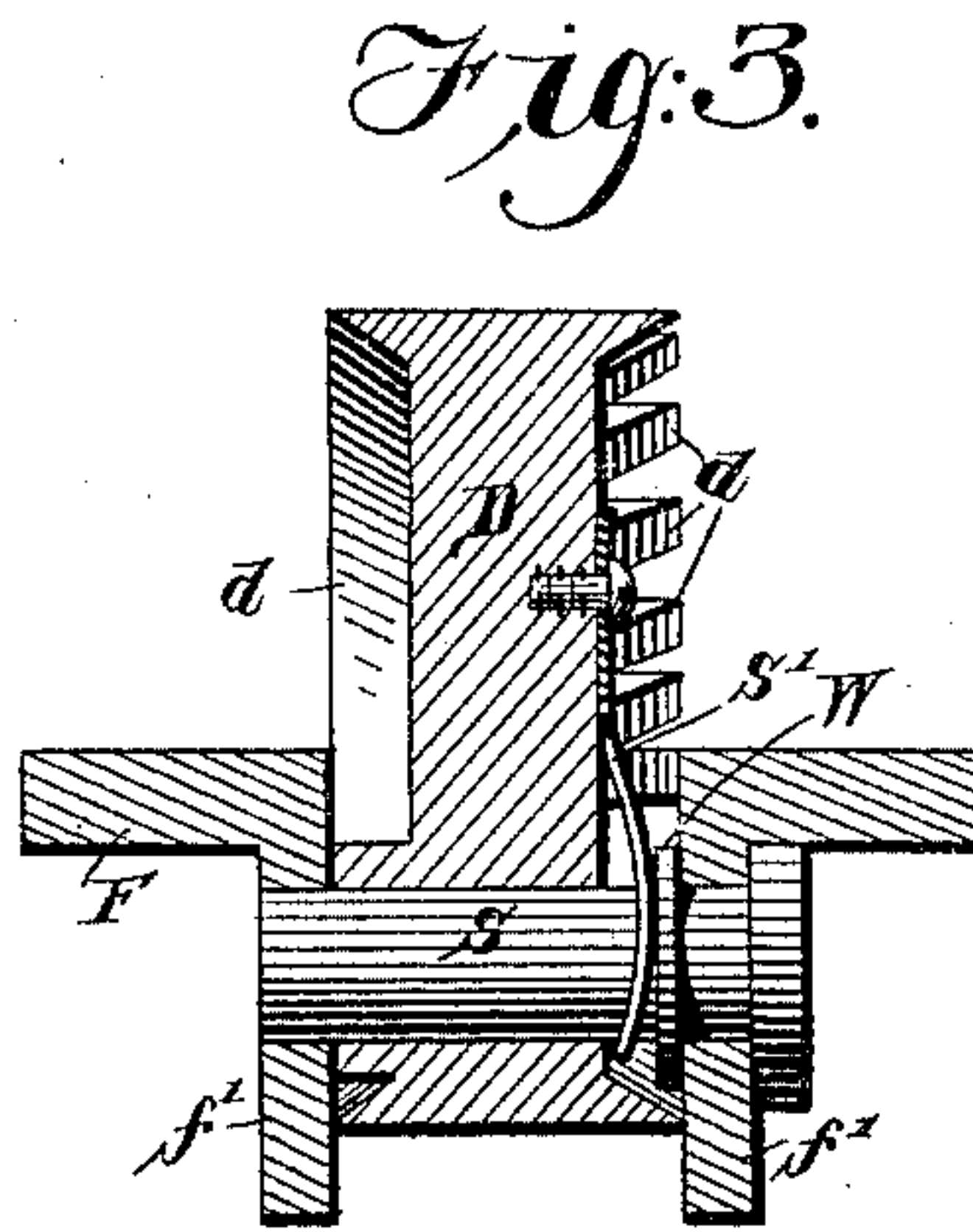
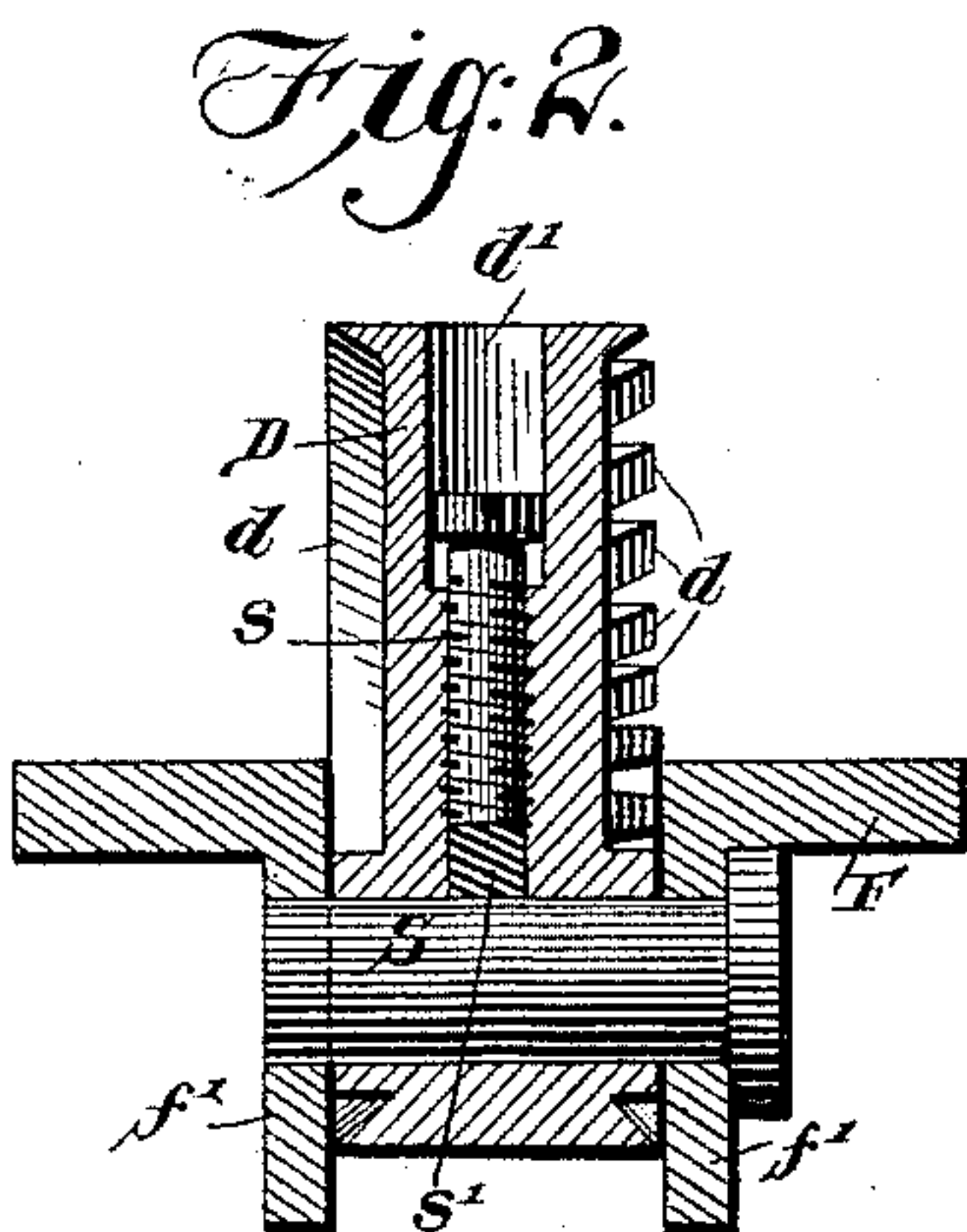
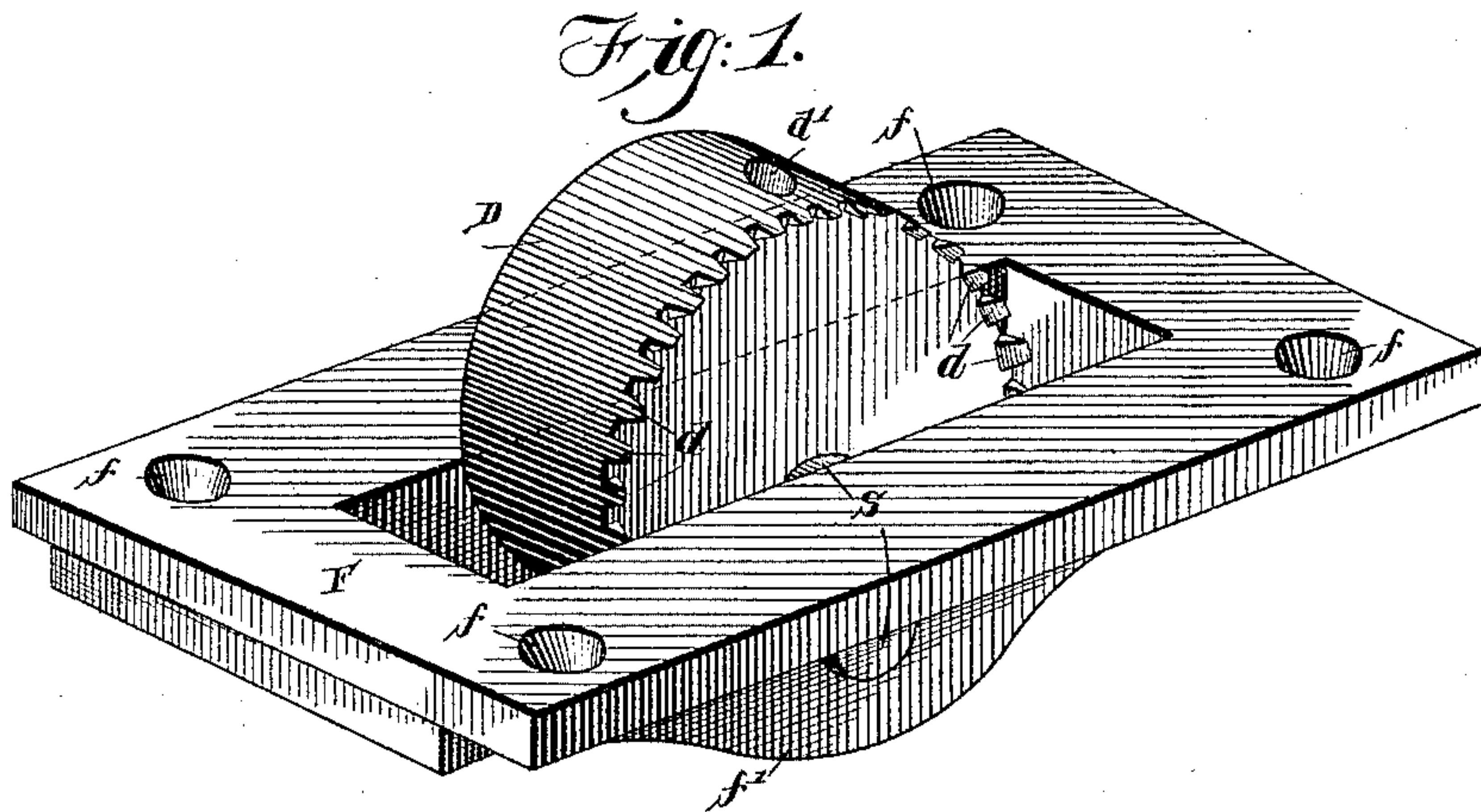
(No Model.)

2 Sheets—Sheet 1.

L. D'AURIA.  
BENCH DOG.

No. 460,047.

Patented Sept. 22, 1891.



Witnesses:  
*H. G. Dieterich*  
*J. W. Summers*

Inventor  
*Luigi d'Auria:*  
*for Henry M. M.*  
*Atty*

(No Model.)

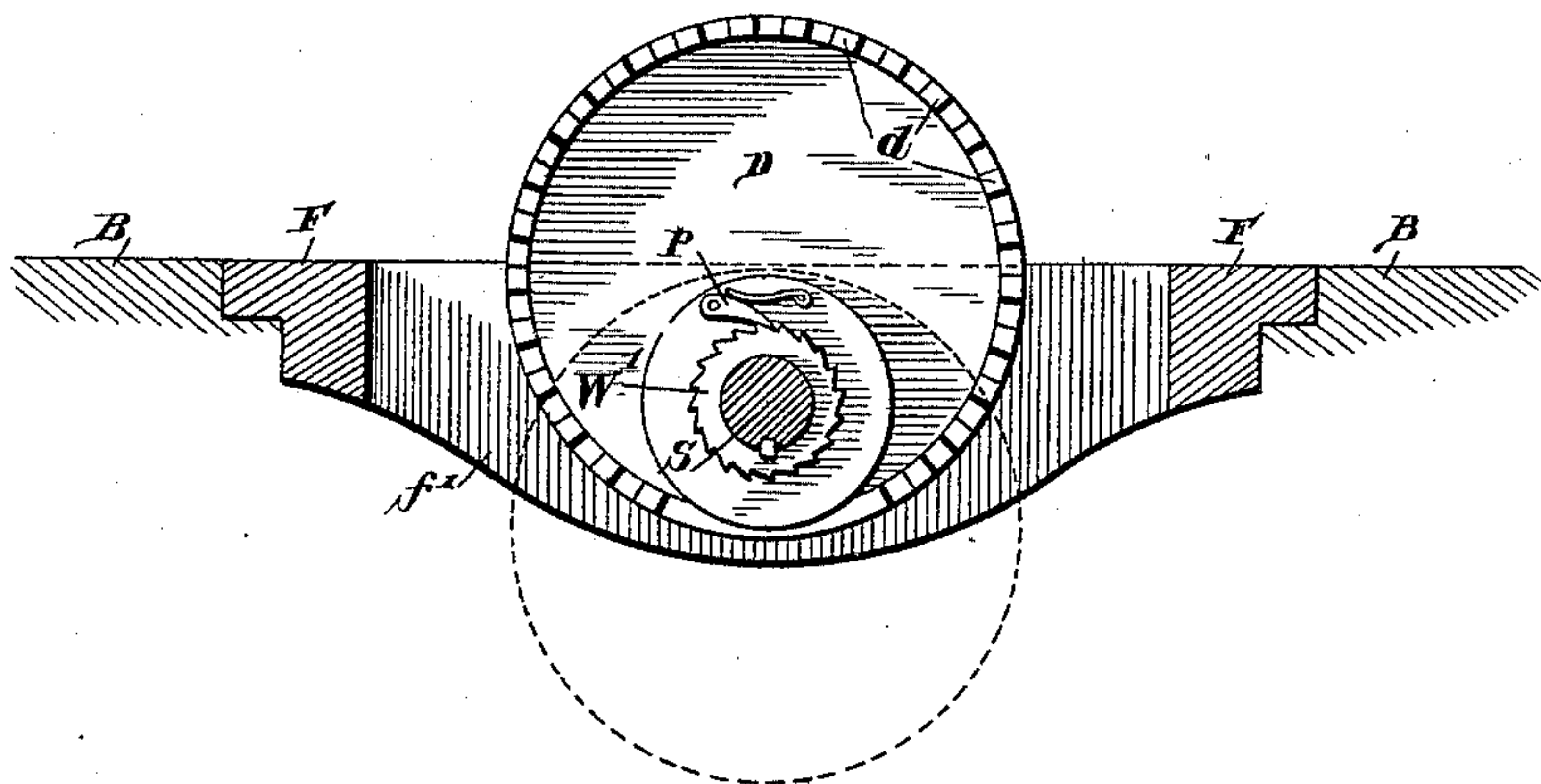
2 Sheets—Sheet 2.

L. D'AURIA.  
BENCH DOG.

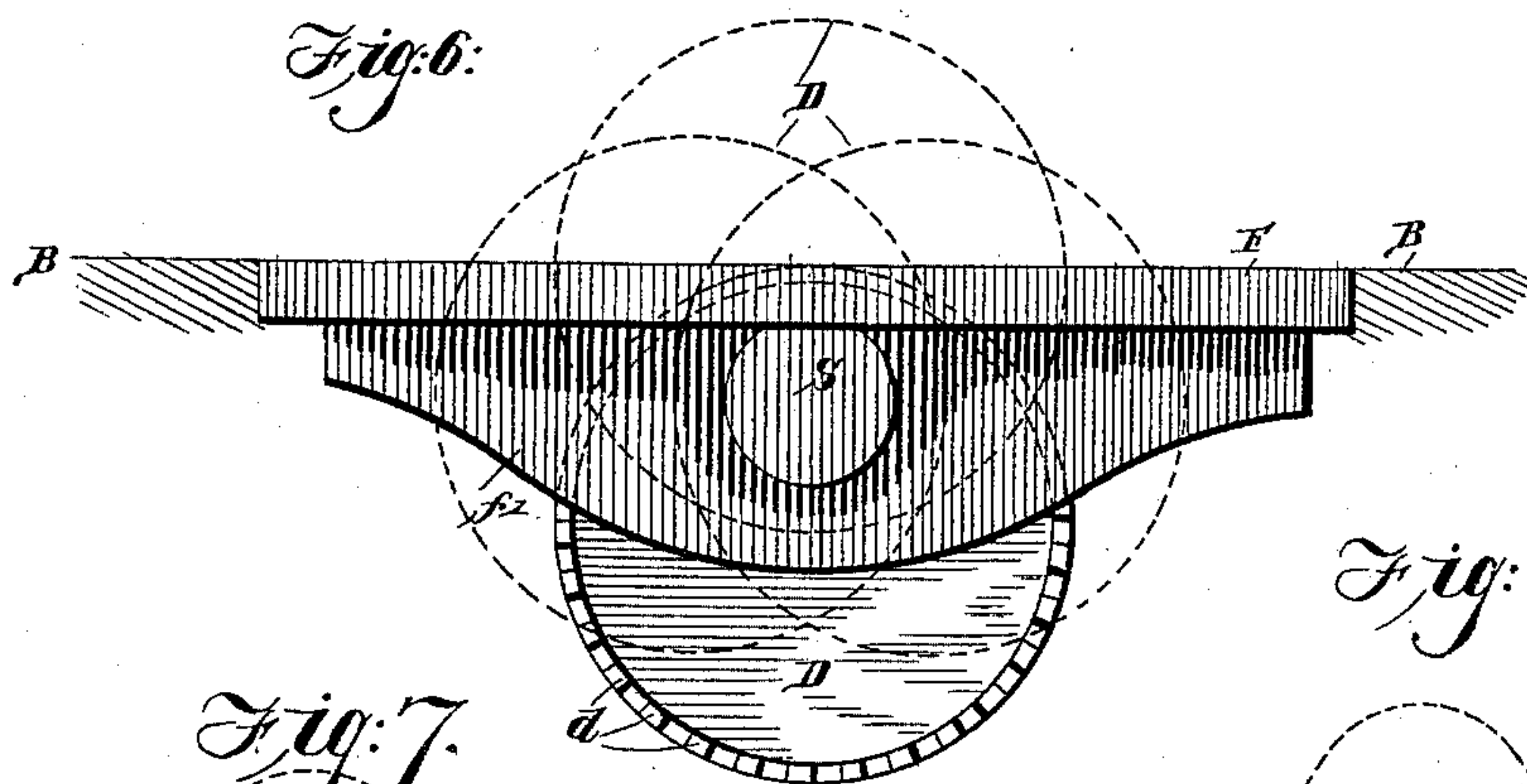
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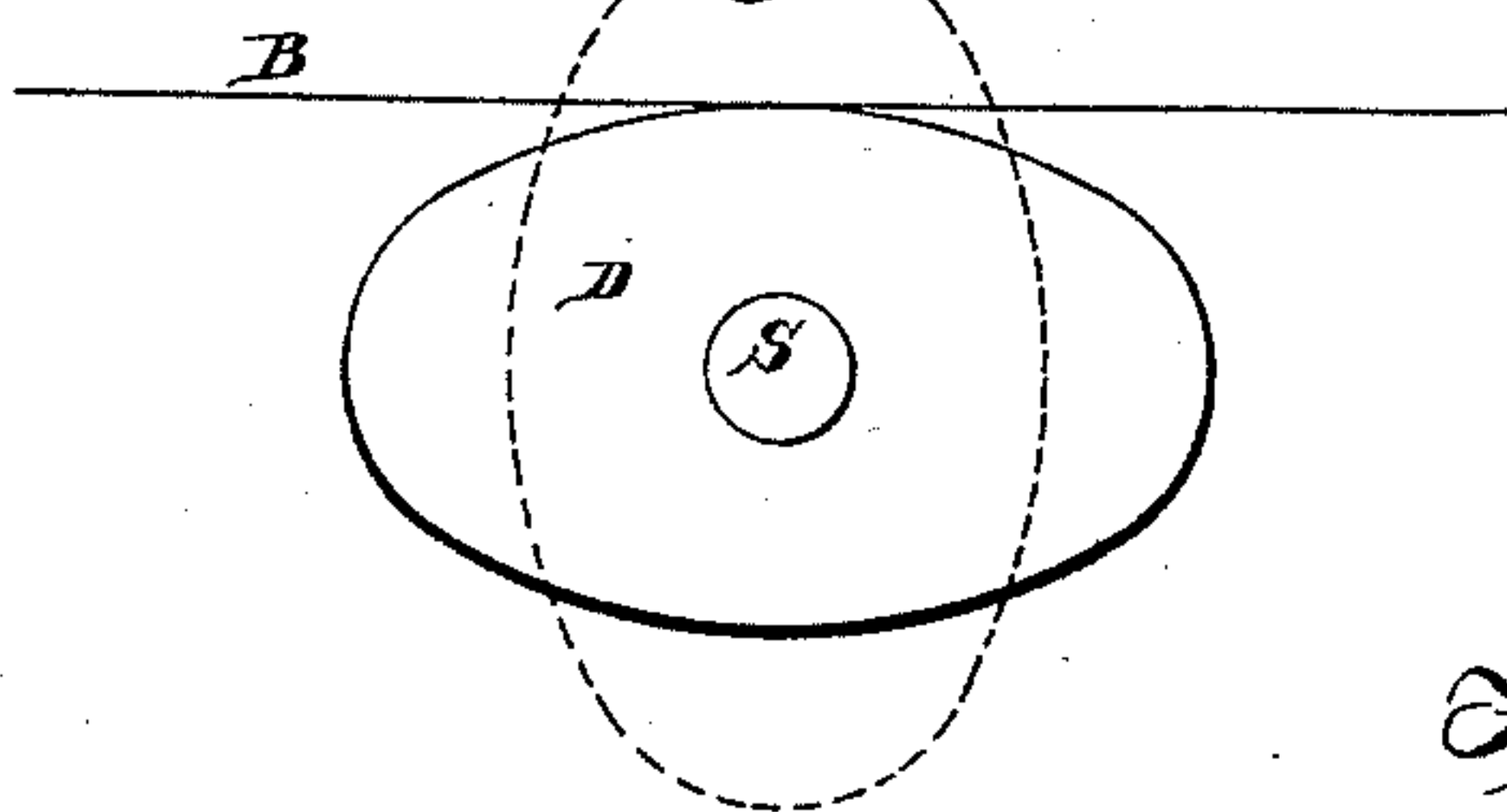
*Fig. 5.*



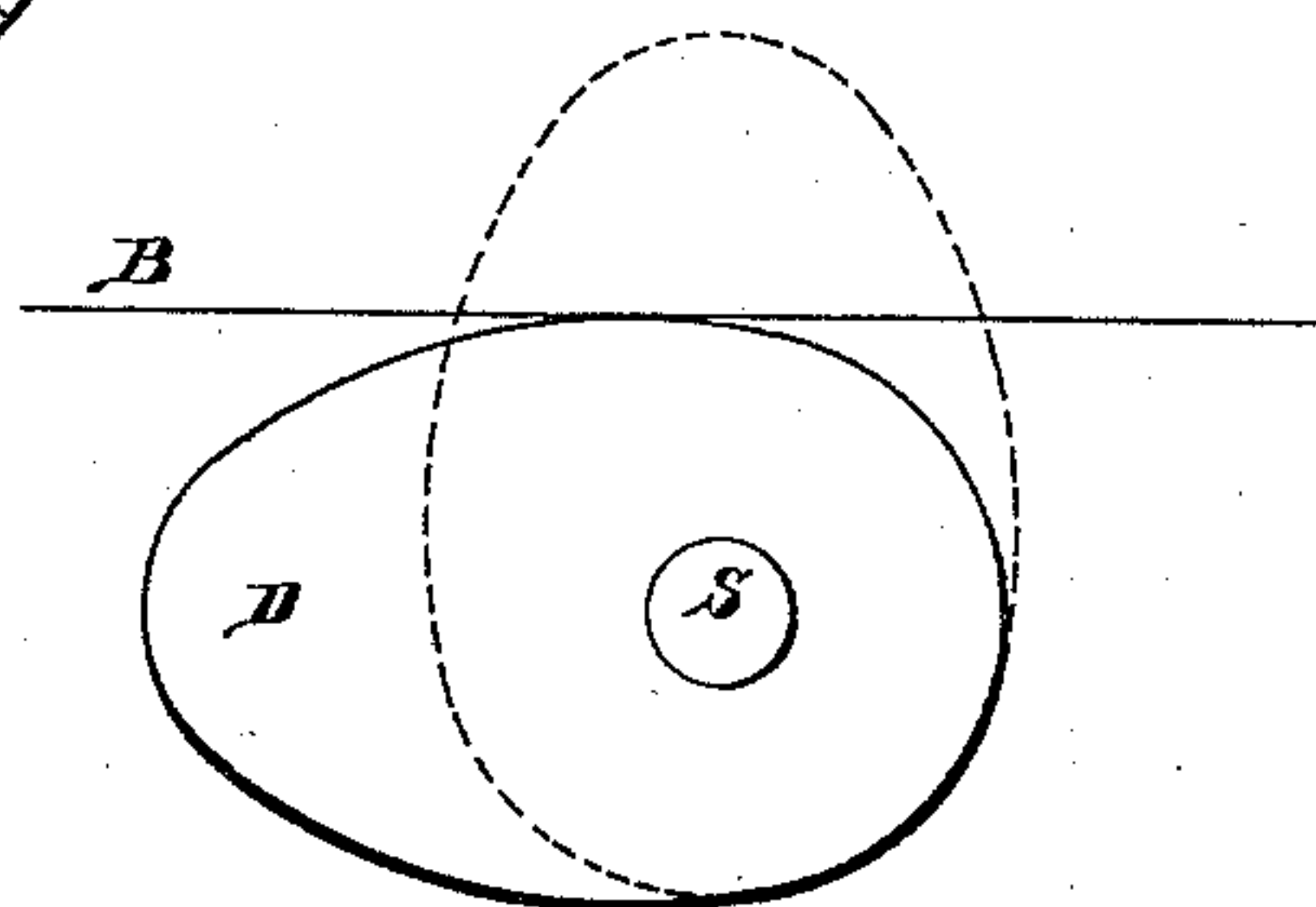
*Fig. 6.*



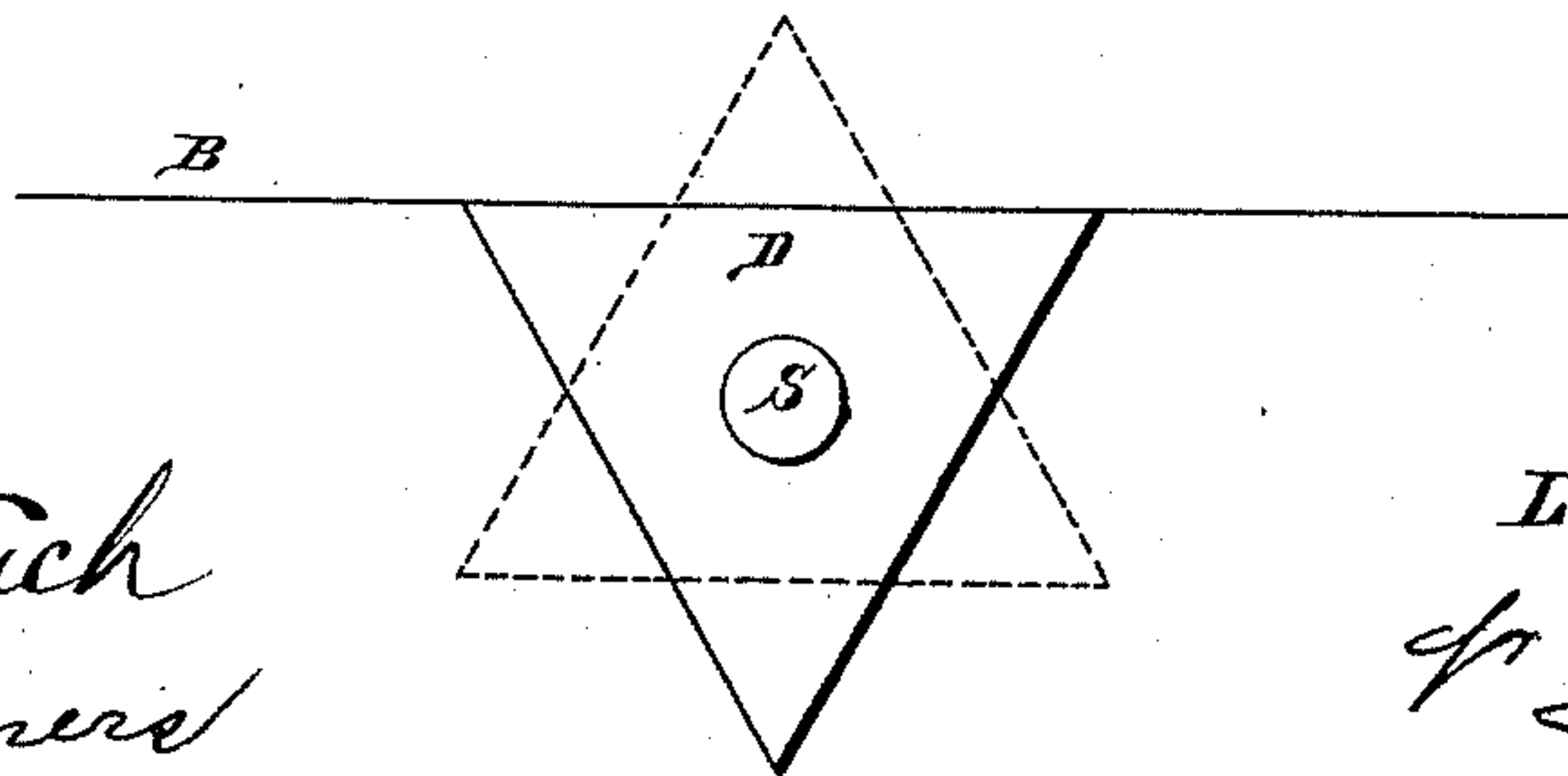
*Fig. 7.*



*Fig. 8.*



*Fig. 9.*



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# UNITED STATES PATENT OFFICE.

LUIGI D'AURIA, OF PHILADELPHIA, PENNSYLVANIA.

## BENCH-DOG.

SPECIFICATION forming part of Letters Patent No. 460,047, dated September 22, 1891.

Application filed May 16, 1891. Serial No. 392,940. (No model.)

*To all whom it may concern:*

Be it known that I, LUIGI D'AURIA, a citizen of the United States of America, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in and Relating to Bench-Dogs, (for which I have made application for Letters Patent in Great Britain and in Canada on or about May 7, 1891;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The invention relates to bench-dogs; and it has for its object a construction of bench-dog for the use of carpenters, cabinet-makers, &c., that is readily adjustable to the thickness of the work to be held thereby, and that is simple of construction and not liable to break or get out of repair.

The invention consists, essentially, in a bench-dog adapted to be adjusted about a horizontal axis, and of such form that said dog may be brought flush with or slightly below the working face of the bench or caused to project above said working face, according to the thickness of the work in hand, and this I attain by arranging the axis of rotation of the dog parallel with the direction of push or thrust, and by giving the bench-dog such a form that its perimeter or its biting or holding edge or surface will be determined by radii of different length.

The invention further consists in the combination, with a bench-dog such as hereinabove referred to, of a locking device to lock the same into the position to which it may be adjusted, as will be fully described hereinafter, and as shown in the accompanying drawings, in which—

Figure 1 is a perspective view of one form of bench-dog embodying my invention. Fig. 2 is a vertical axial transverse section thereof, illustrating one form of locking device. Figs. 3 and 4 are like views, and Fig. 5 is a longitudinal vertical sectional view illustrating other forms of locking devices. Fig. 6 is an elevation of the bench-dog shown in Fig. 4,

illustrating the principle of operation; and Figs. 7, 8, and 9 illustrate various modifications in the form of the bench-dog.

The essential feature of my invention lies in the construction of the bench-dog, which should be such as to be capable of adjustment about a horizontal axis in such manner that it may be brought flush with or slightly below the work-face of the bench or caused to project above said face, according to the requirements of the work in hand.

In carrying out my invention the form or contour of the bench-dog may be variously modified without departure from the nature or principle of my invention, and in like manner may the devices for locking the dog into the position to which it is adjusted be varied, as this may be effected positively or by friction.

Of the various forms of bench-dogs illustrated in the accompanying drawings I prefer the cylindrical form shown in Figs. 1 to 6, inclusive, as being perhaps the most convenient; but I do not desire to limit myself thereto, as a bench-dog of the form shown in Figs. 7, 8, and 9, or of other suitable forms, will work equally as well, or substantially so. Referring now to said Figs. 1 to 6, inclusive, F indicates a frame adapted to be countersunk into the work-face of the bench and secured thereto by means of screws or otherwise, said frame being provided with suitable screw-holes  $f$  and with dependent lugs  $f'$ , in which are formed the bearings for the pin or spindle S, about which the bench-dog D is adjustable. As shown in said figures of drawings, the dog D is a perfect cylinder or disk, provided on both faces with a peripheral biting-edge or with teeth  $d$  to take hold of the work, said dog being loosely and eccentrically mounted on the spindle S in such manner that when in a given position its periphery will be flush with the face of the frame F or the work-face of the bench B, as shown in full lines in Fig. 6, or that by revolving the dog about its longitudinal axis it may be caused to project more or less above the face of the bench, as shown in said Figs. 1 to 5 and as shown in dotted lines in Fig. 6, in which the dog is shown in some of the positions it may be adjusted to.

In Fig. 2 I have shown the dog D as provided with a radial opening  $d'$ , the inner pro-



tion of which is contracted and interiorly screw-threaded for the reception of a binding or set screw *s*, by means of which the dog may be locked to the spindle by frictional contact, said spindle being readily secured in its bearings, and, if desired, a washer *s'*, of any suitable material, may be interposed between the screw *s* and the said spindle. It will readily be seen that the degree of friction by which the dog is locked to its spindle may be readily adjusted, and when once adjusted needs no further attention until, from wear, the dog works loose. The same results are obtained by the use of a forked spring *S'*, secured to the face of the dog *D*, the forked end thereof straddling the spindle *S* and having a bearing against a collar *W* on said spindle, as shown in Fig. 3. A like result is obtained by threading one end of the spindle *S* for the reception of a nut *N*, by means of which the dog may be pressed with greater or less force laterally against the frame *F*, the spindle here performing also the function of a tail-screw when the work is held at both ends, the dog having endwise motion on its spindle.

Instead of locking the dog by friction, it may be positively locked to the spindle *S*, as shown in Fig. 5, said spindle carrying a ratchet-wheel *W'*, with which engages a spring-actuated pawl *P*, pivoted to the dog *D*, as shown in Fig. 5.

Other means for positively locking the dog into the positions to which it may be adjusted will readily suggest themselves to the skilled mechanic and need not be further described.

In Figs. 7, 8, and 9 I have illustrated the dog *D* of ellipsoidal, ovoidal, and triangular form, respectively, each capable of performing substantially the same functions as the discoidal dog above referred to, and it will readily be seen that various other forms may be given the said dog, whether angular or curvilinear, with equally good results, and such forms will readily suggest themselves to the skilled mechanic. It will thus be seen that my invention not only provides a bench-dog that is adapted for general use on carpenters' or cabinet-makers' and other work-benches, but by a judicious selection of the form of the dog one that is applicable for special uses, whether for wood or metal working or for working other materials. It will also be seen that according to the form of the dog it is mounted either eccentrically or axially. The spindle *S* may be dispensed with and the dog provided with trunnions or journals adapted

to fit the bearings in the frame *F*. In fact, the frame itself may be dispensed with and suitable bearings provided in the work-bench itself, as will be readily understood.

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

1. A bench-dog revoluble about an axis parallel with the direction of push or thrust and having its perimeter determined by radii of variable length, for the purpose set forth.

2. A bench-dog revoluble about an axis parallel with the direction of push or thrust and having its perimeter determined by radii of variable length, in combination with a locking device for locking the dog against revolution, for the purpose set forth.

3. A bench-dog of discoidal form fitted to revolve eccentrically about a horizontal axis, for the purpose set forth.

4. A bench-dog of discoidal form provided with a circular biting-edge or line of teeth and fitted to revolve eccentrically about a horizontal axis, for the purpose set forth.

5. A bench-dog consisting of a discoidal dog having a circular biting-edge or line of teeth and fitted to revolve eccentrically about a horizontal axis, and a locking device for locking the dog against revolution about said axis, the whole being confined in a suitable frame adapted to be secured to the work-bench.

6. A bench-dog adapted to revolve about and move endwise on a horizontal axis and of such form that when in a certain position it will be flush with or slightly below the work-face of the bench and when revolved about its axis it may be caused to project more or less above said work-face, in combination with a locking device for locking said dog against revolutions about and endwise motion on its axis, for the purpose set forth.

7. A bench-dog of discoidal form having sharp beveled edges or teeth and fitted eccentrically upon a spindle furnished with a screw-thread and a nut at one side for the purpose of imparting lateral motion to said dog upon its spindle, as well as for holding said dog in any desired position around its spindle, substantially as specified, and for the purpose set forth.

In witness whereof I have hereunto set my hand in the presence of two attesting witnesses.

LUIGI D'AURIA.

Witnesses:

B. W. SOMMERS,  
WM. H. DELACY.