

(No Model.)

2 Sheets—Sheet 1.

F. W. SNOW.

SWITCH STAND.

No. 300,912.

Patented June 24, 1884.

Fig. 1.

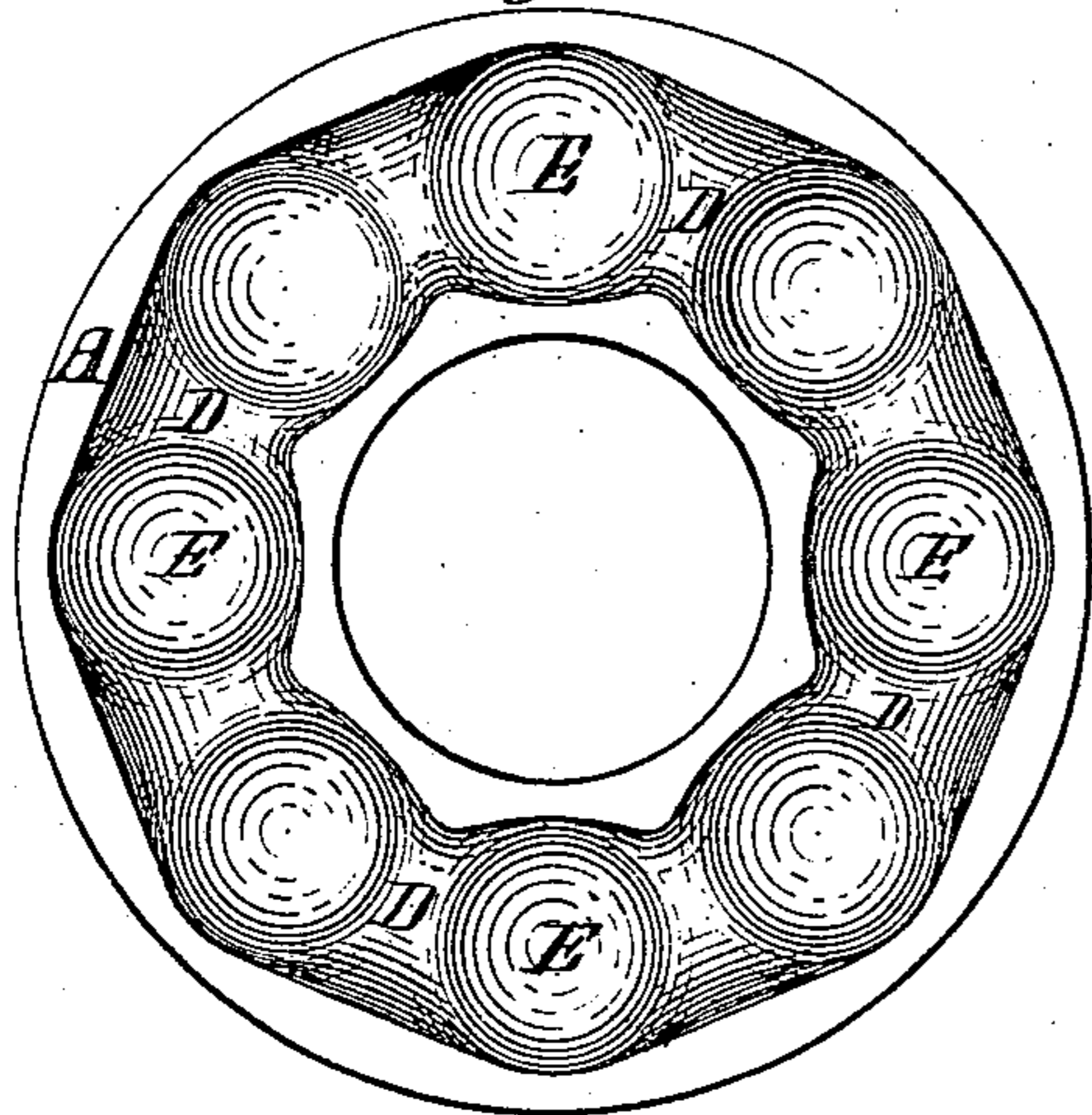


Fig. 2.

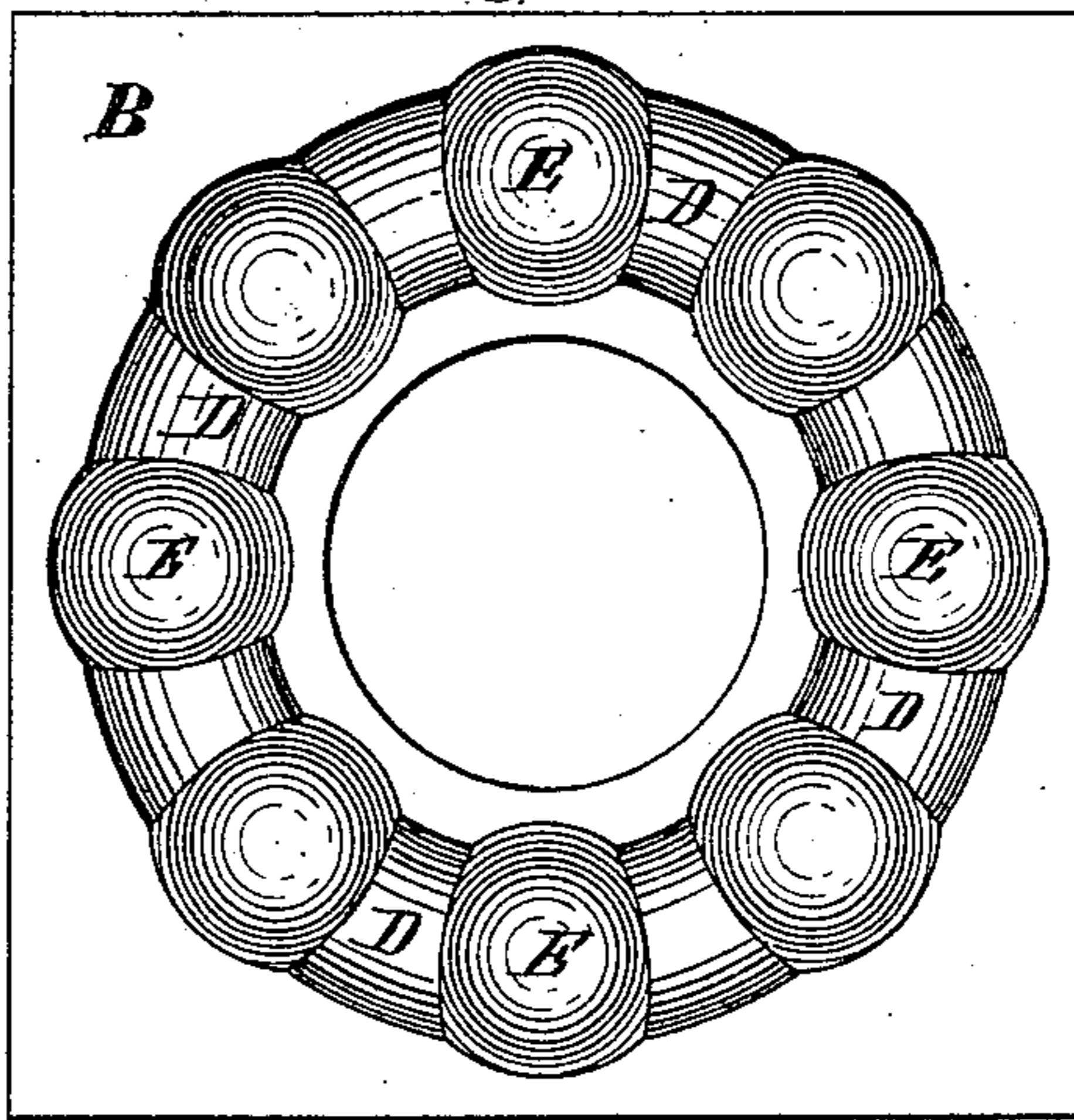


Fig. 3.

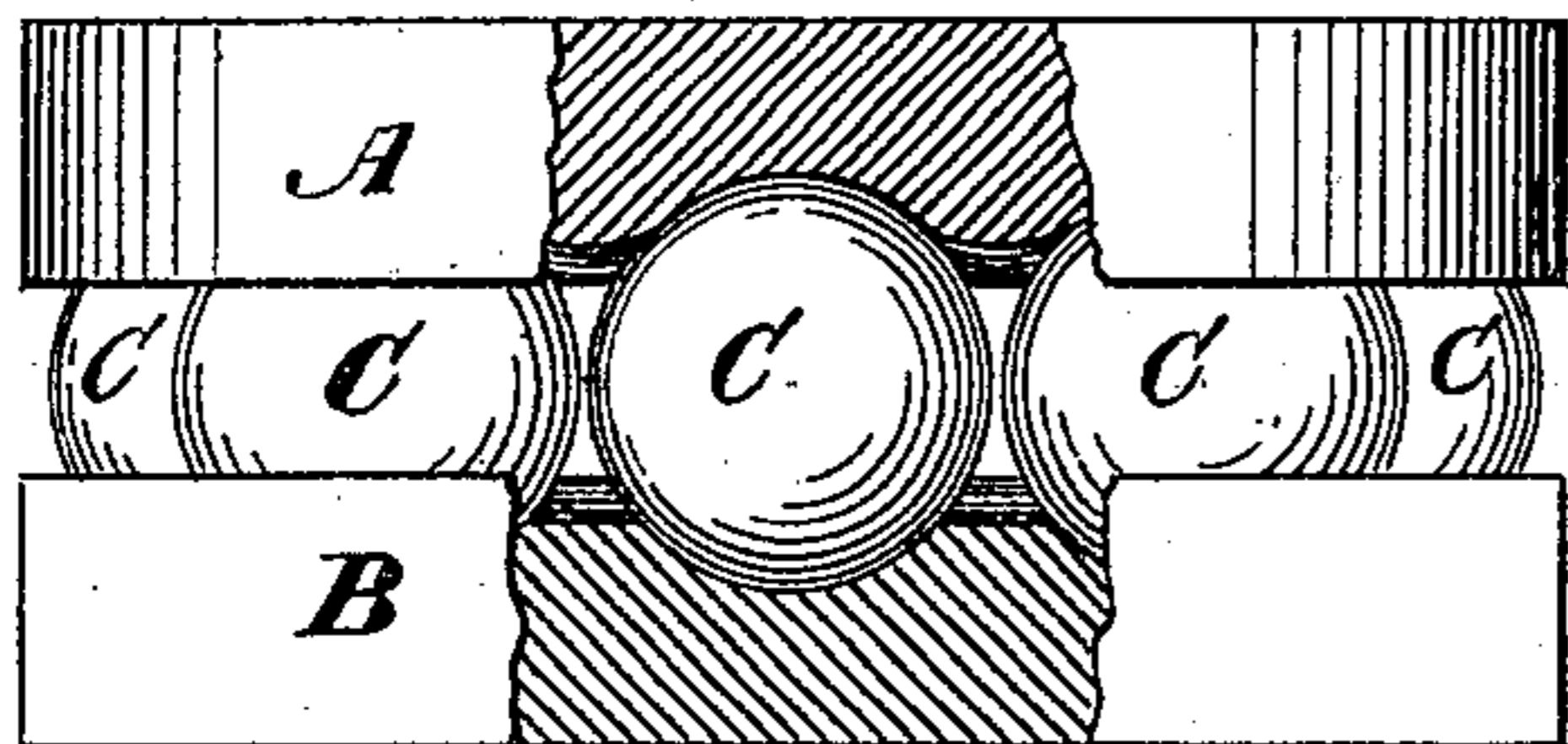


Fig. 4.

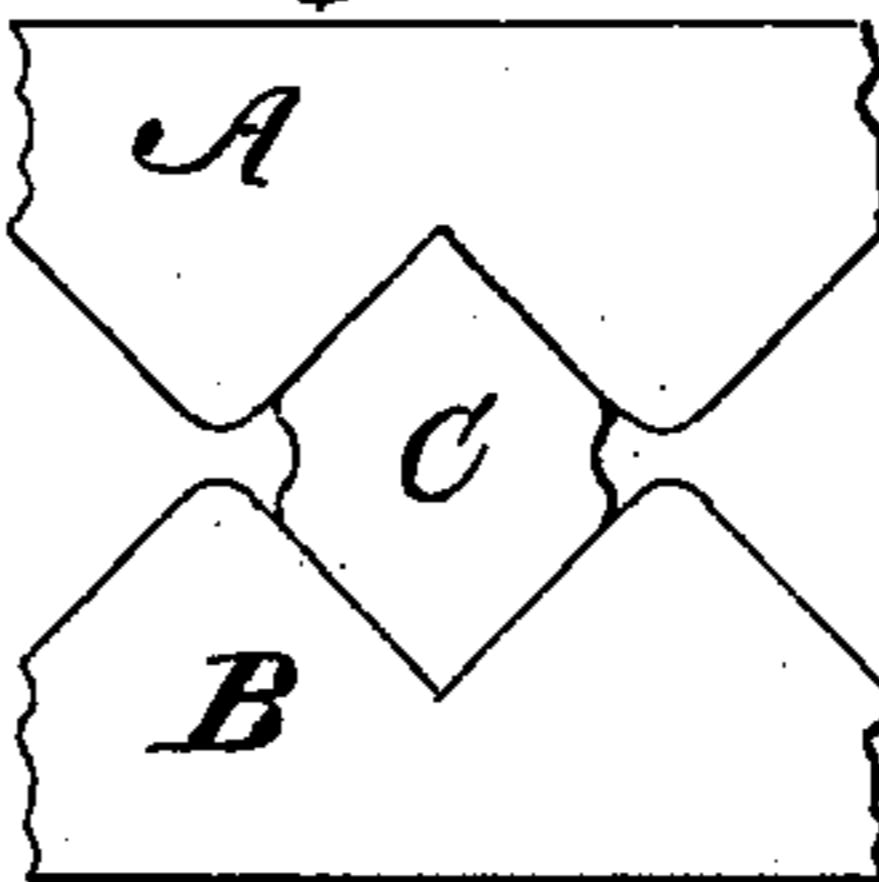


Fig. 5.

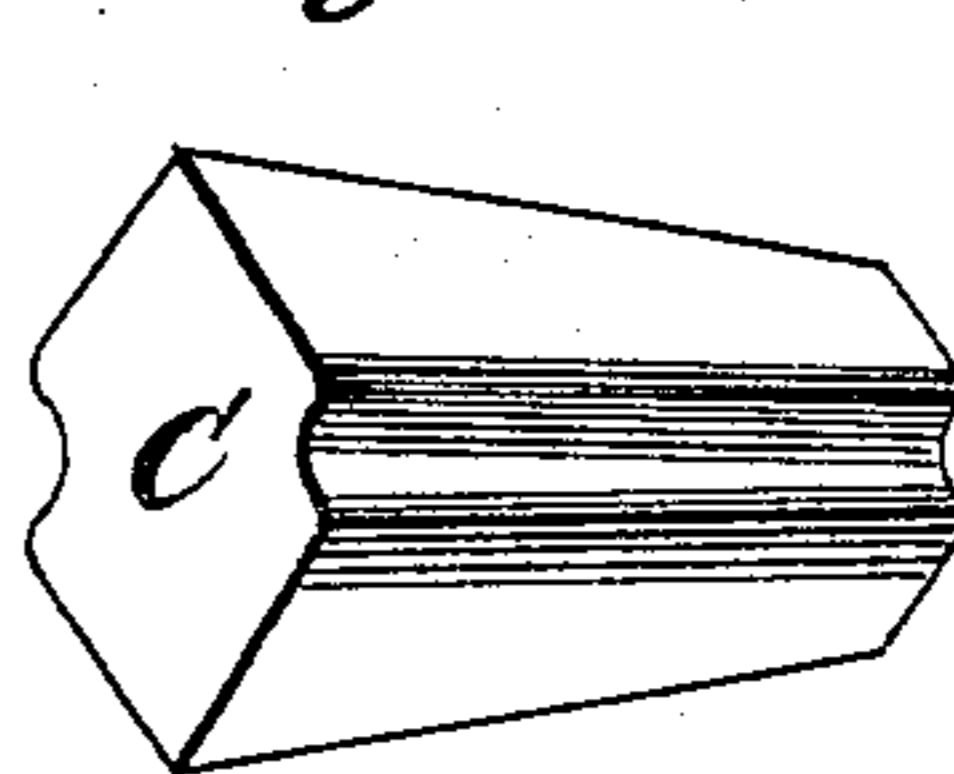


Fig. 6.

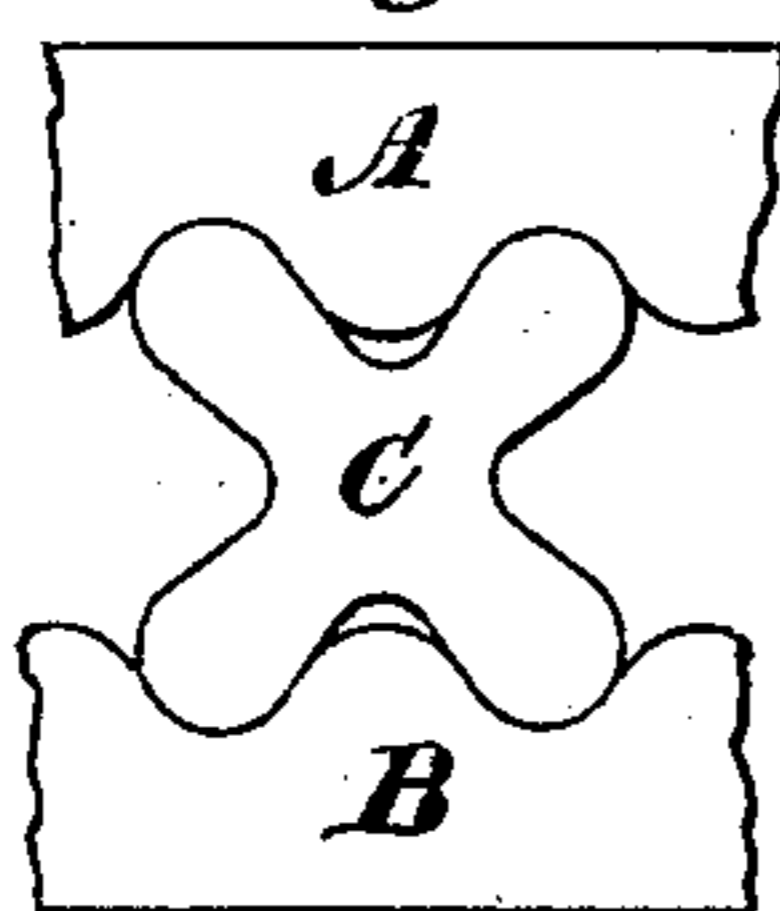


Fig. 7.

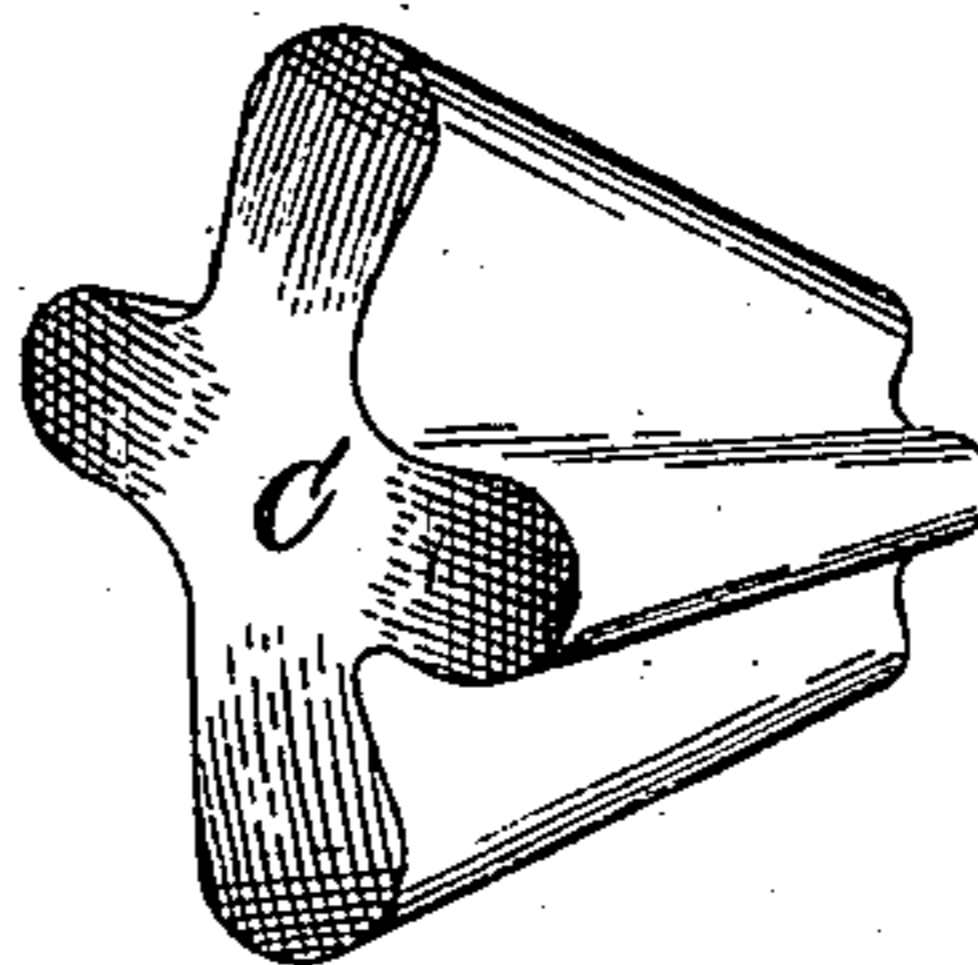


Fig. 8.

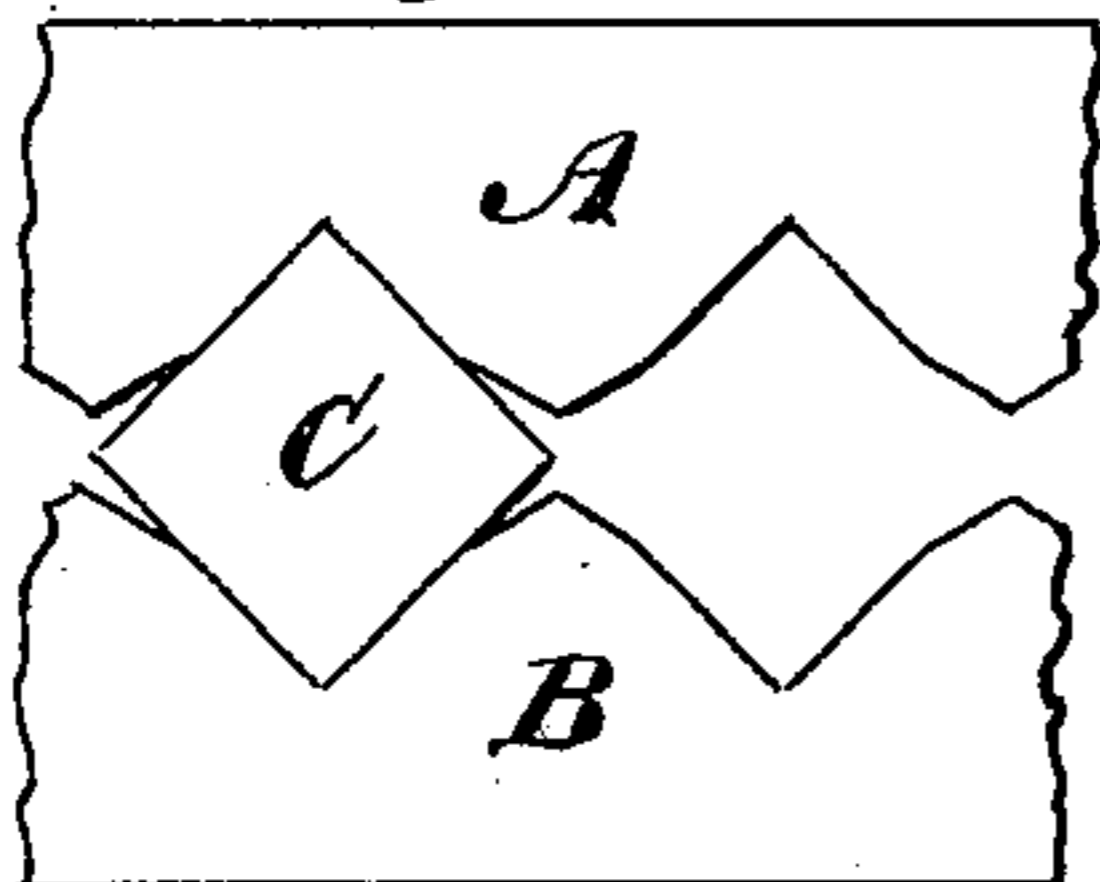
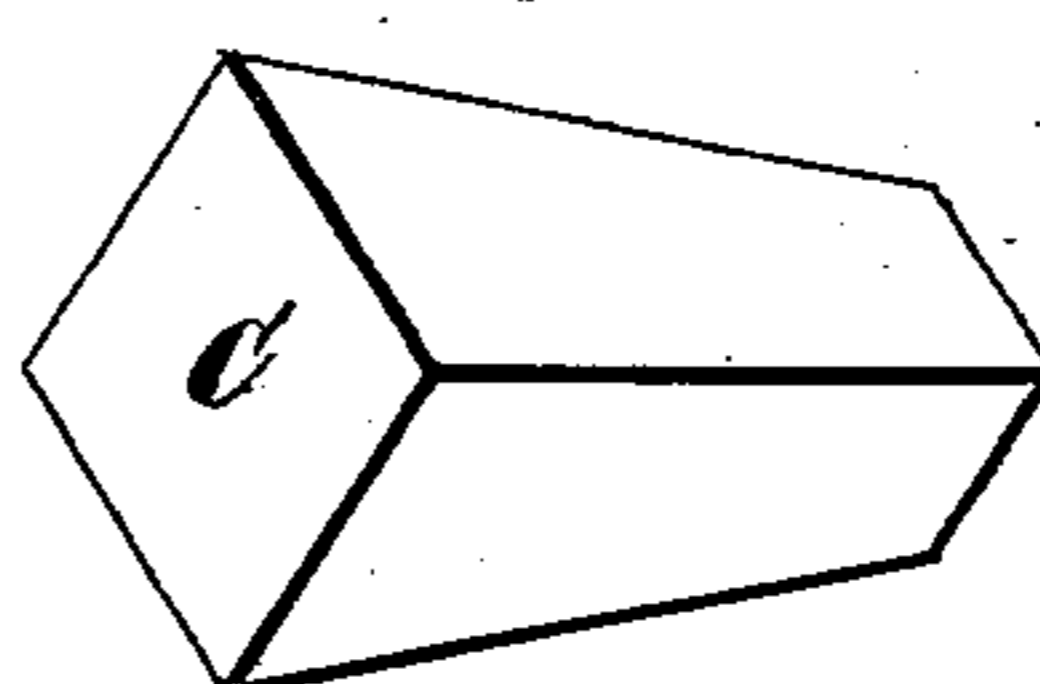


Fig. 9.



Witnesses

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Franklin & Rowe

Inventor

Fred W Snow
by W. H. Rogers atty

(No Model.)

2 Sheets—Sheet 2.

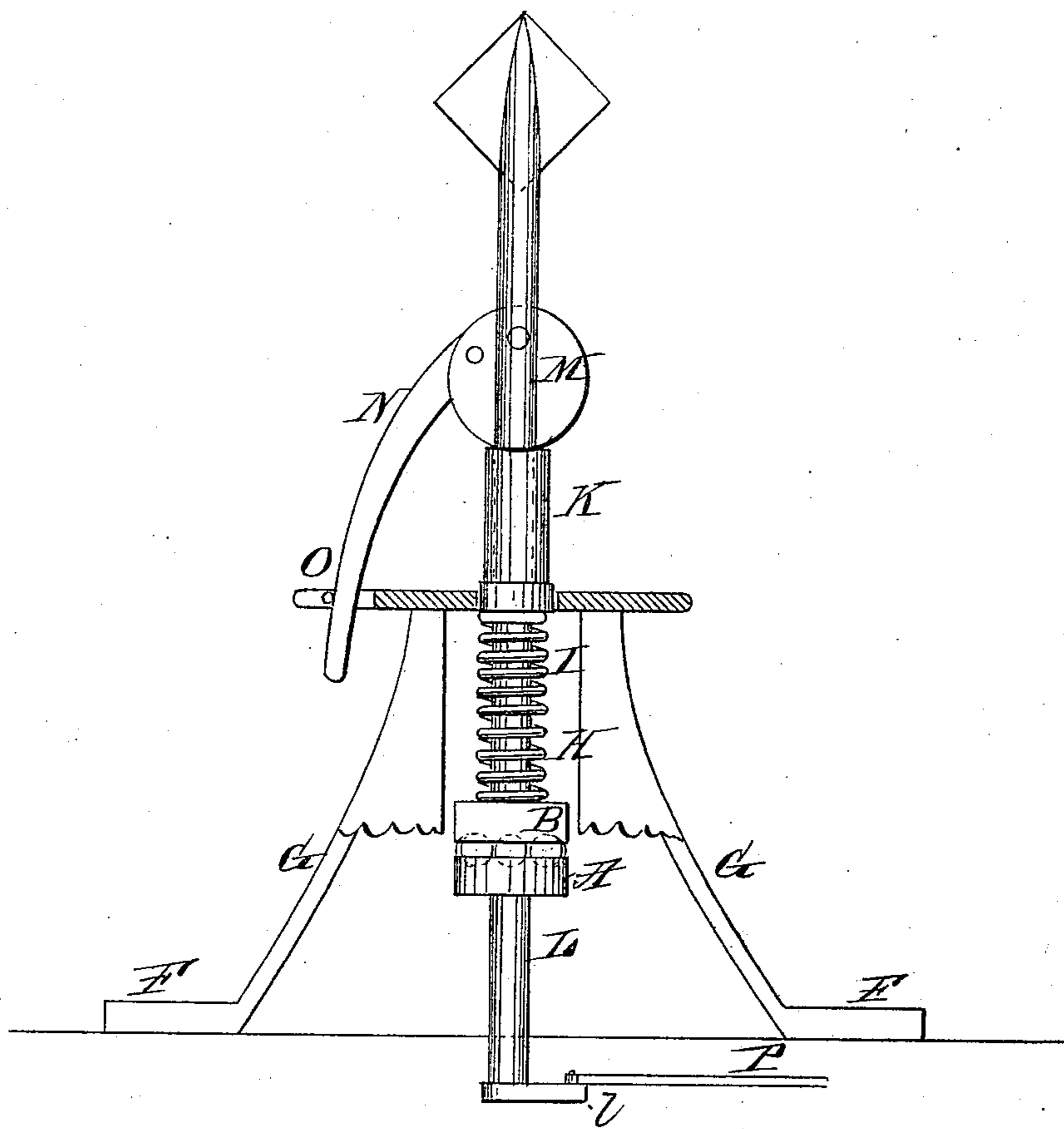
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Fig. 10.



Witnesses,
W. Colborne Brookes
Franklyn S. Rowe.

Inventor,
Fred W. Snow
by Wyllys Dodge, Atty

UNITED STATES PATENT OFFICE.

FRED. W. SNOW, OF RAMAPO, NEW YORK.

SWITCH-STAND.

SPECIFICATION forming part of Letters Patent No. 300,912, dated June 24, 1884.

Application filed November 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRED. W. SNOW, of Ramapo, Rockland county, and State of New York, have invented certain new and useful
5 Improvements in Switch-Stands, of which the following is a specification, reference being had to the drawings, in which—

Figures 1 and 2 show plan views of two parts of one form of my device detached, and Fig.
10 3 shows the whole of the device in position. Figs. 4, 6, and 8 show perspective views of two modified forms of one of the devices, and Figs. 5, 7, and 9 show the corresponding shapes and arrangement of all the parts in position,
15 as in Fig. 3. Fig. 10 shows my invention applied to a switch-stand with the working parts of the latter, the square non-rotating part B being shown in this instance as above the rotating part A; but it will be understood that
20 the position of parts is not material to my invention. Of course, if the rotating and non-rotating parts were placed in the stand in the relative position shown in Fig. 3, the position of the spring and other working parts of the
25 stand would be relatively changed.

My improvement relates to automatic or safety switches—that is to say, to those switches which can be locked in such a manner as to prevent movement by manual or other light
30 force, and yet permit the power of the wheels upon the rails to shift the switch in certain specified ways, locking it in its shifted position in the same manner as before the automatic action. In switches of this class in their
35 general form the operating devices are provided with certain projections or lugs, which engage with corresponding projections on or connected with the fixed parts of the switch, so as to prevent movement of the operating
40 devices. One of these projections is, however, arranged to yield against a spring when great power is applied, allowing the switch to shift, and the spring tends to bring the projections back into engagement again
45 after the shifting, suitable devices being also applied to enable the projections to move independently of the spring when it is desired to operate the switch by hand.

My improvement consists, specifically, in the
50 substitution for these projections of certain movable pieces interposed between the fixed and movable parts of the switch, and so shaped and related to the adjacent parts as to produce the same yielding lock, but with a more

desirable action while automatically shifting. 55
The other parts of the switch may be in any of the old forms.

For a better understanding of the invention reference is now made to the drawings.

A in the drawings represents a part of the
60 moving portions of the switch, or some construction so connected with them that to obstruct its motion will lock the switch.

In illustrating the invention I have supposed it to have a rotary motion. 65

B represents a part so placed in the standard that it is incapable of movement in the line of motion of the part A, but is, when the two parts are in position as in Figs. 3, 5, 7, and 9, pressed toward the part A by a spring of properly-adjusted power, and capable of movement from
70 the part A by compression of the spring. In the form shown in Figs. 1, 2, and 3 the contiguous faces of parts A and B are made with corresponding circular grooves, deepened by
75 a series of circular depressions, E, which are separated by ridges D and correspond in number in the two parts. Between the two are the balls C, being the movable pieces above spoken
80 of, which, when the switch is locked in position, rest in the depressions of the grooves, allowing the spring to force part B to its nearest possible position to part A. It is obvious, then, that these balls will obstruct the move-
85 ment of part A upon part B; but if sufficient force is applied to induce a rotation of part A the balls will tend to ride over the ridges separating the depressions, and thus, forcing the part B away from A, compress the spring and permit A to move until the balls reach the
90 next depression, when, if the force is removed, the switch is again “locked.” The character of this motion will be guided, in this instance, by the shape of the depressions and the spaces between them, and to illustrate this I have
95 shown the contiguous faces of parts A and B as made with different-shaped grooves in this respect. Thus in part A the spaces between the depressions form gradually-sloping ridges across the grooves, up one side of which the
100 balls will roll with a continual resistance till they pass the ridge, when they will immediately tend to descend upon the other side and continue the motion; but in part B part of these ridges is cut away, so as to form a “level”
105 space between the depression. When the balls are upon this, there will be neither resistance nor tendency to move. Thus any desired

"movement" can be given to the switch, and a proper one will be produced by giving the different faces different shapes, as in the drawings; but I do not confine myself to that, intending to produce switches of different movements.

Any of the ordinary provisions may be made for unlocking the switch for operation by hand. Thus by the movement of the handle or crank which works the switch, part A may be moved away from part B and the balls, so that they will not obstruct its motion; or it may by the same handle be disconnected from the other moving parts of the switch, so that the latter can move independently of it; or the pressure of the spring might be taken off part B, so that it can move away from part A and not obstruct the motion of the latter. I do not describe such devices in detail, because they constitute no part of this invention, and all of them that are necessary are known to persons familiar with this art.

The operation of a stand equipped with this device will be readily understood. The switch being locked, the power of the wheels upon the rails tends, through the ordinary moving rod and lever or spindle, to move all the operating devices. Their motion is obstructed by the engagements of parts A and B through the movable pieces C, but is allowed by the yielding of the spring, as before described, and when it is desired to operate by hand by unlocking the switch in the manner also above described. Other shapes may be given to the moving pieces C. Thus in Fig. 4 I show a piece C of peculiar shape, which performs the functions of the balls when placed between the parts A and B. The contiguous faces of the latter should in such case be corrugated, as will be seen in Fig. 5, which shows this piece in position between parts A and B. By inspection of this figure it will be seen that the piece C obstructs the movement of part A upon part B, but that, if sufficient force were applied, the piece C could rotate by forcing part B back upon its spring. In the same manner pieces shaped as in Figs. 6 or 8 could be used, which, when in position between properly-shaped parts A and B, would appear, respectively, as in Figs. 7 and 9. As I have assumed part A to have a rotary motion, the pieces C in Figs. 4 and 6 taper toward one end, so as to have a pyramidal or conoidal shape. The smaller end would be placed toward the axis of rotation of part A, where there is less space than upon its circumference.

For the better understanding of the invention, I have in Fig. 10 shown it applied to the spindle of a spindle-switch, where it would have such a rotary motion. In this figure, F represents a base-plate which carries the conical hollow standard G G, these being the fixed parts of the switch. In the base-plate is journaled the spindle L, carrying the crank l, by which it actuates the moving rod P, and through it the rails or points. L passes up through the square (or angular) central shaft,

H, of the standard, and at its upper end carries a semaphore. Rigidly attached to the spindle is the part A, before spoken of, and sliding upon it is the part B, corresponding to part B of the other figures. Part B is here made square and fits accurately in the square shaft H, so that it cannot rotate. The spindle, therefore, must rotate freely in it.

Between the parts A and B are the balls or other movable pieces C, elsewhere spoken of. The parts are pressed together by the spring I, the upper end of which bears against the sleeve K, also sliding on the spindle, but shown in the drawing as depressed, and compressing the springs by means of the eccentric M on the spindle. The eccentric is turned by the lever N, which is the operating-lever of the switch. It is capable of being locked, when depressed, either at O to a rotating cap or cover swiveled on the standard, as shown in the drawing, or to the spindle itself, or to the sleeve K, in which last two cases the cap need not rotate. As shown in this figure, the spindle cannot move without part A. This is checked by part B and the pieces C, and can only move by compression of the spring; but a power sufficiently great to do this would rotate part A, the spindle, eccentric, and lever.

To operate the switch by hand, unlock and raise the lever, thereby releasing the spring, when part B, rising freely, offers no resistance to the rotation of part A and the spindle.

It will be understood that this is only one form of switch to which my invention can be applied, and I do not confine myself to this form.

Instead of a spring, the parts A and B might be forced together by a weight, which would, for the purposes of this invention, be the equivalent of the spring.

From these illustrations it will be seen that I do not confine myself to any particular shape of the pieces C; but their essential features are that they should be so shaped with reference to parts A and B as to obstruct the movement of one upon the other, and only to admit of such movement by the independent motion of the pieces C, that such independent motion should necessitate the separation of parts A and B against the spring, but only at spaced intervals, so that while at one part of this movement they resist the shifting of the switch after a given point is passed, they tend to assist or at least permit its freer movement into its second or safety position.

What, then, I claim is—

A yielding switch-lock consisting of a part, A, attached to or connected with the moving parts of the switch, and a part, B, connected with the standard or fixed part of the switch, the two parts being forced together by a spring or other yielding power, and separated by movable pieces C, substantially as and for the purpose described.

Witnesses: FRED. W. SNOW.

A. U. WRIGHT,
JNO. D. SUFFERN.