

(Model.)

2 Sheets—Sheet 1.

H. W. MASTERS.  
COMBINATION LOCK.

No. 438,353.

Patented Oct. 14, 1890.

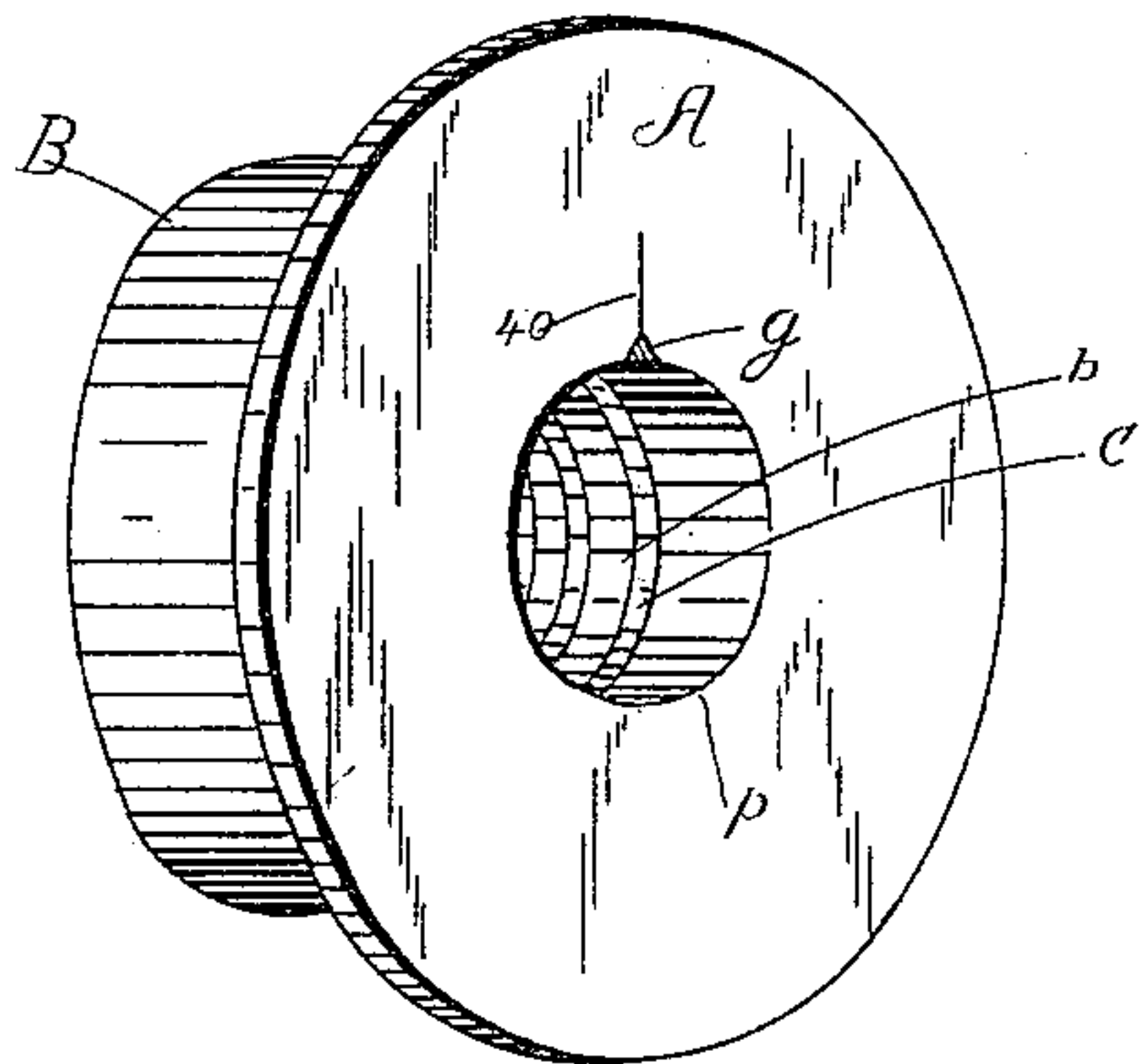


Fig. 1.

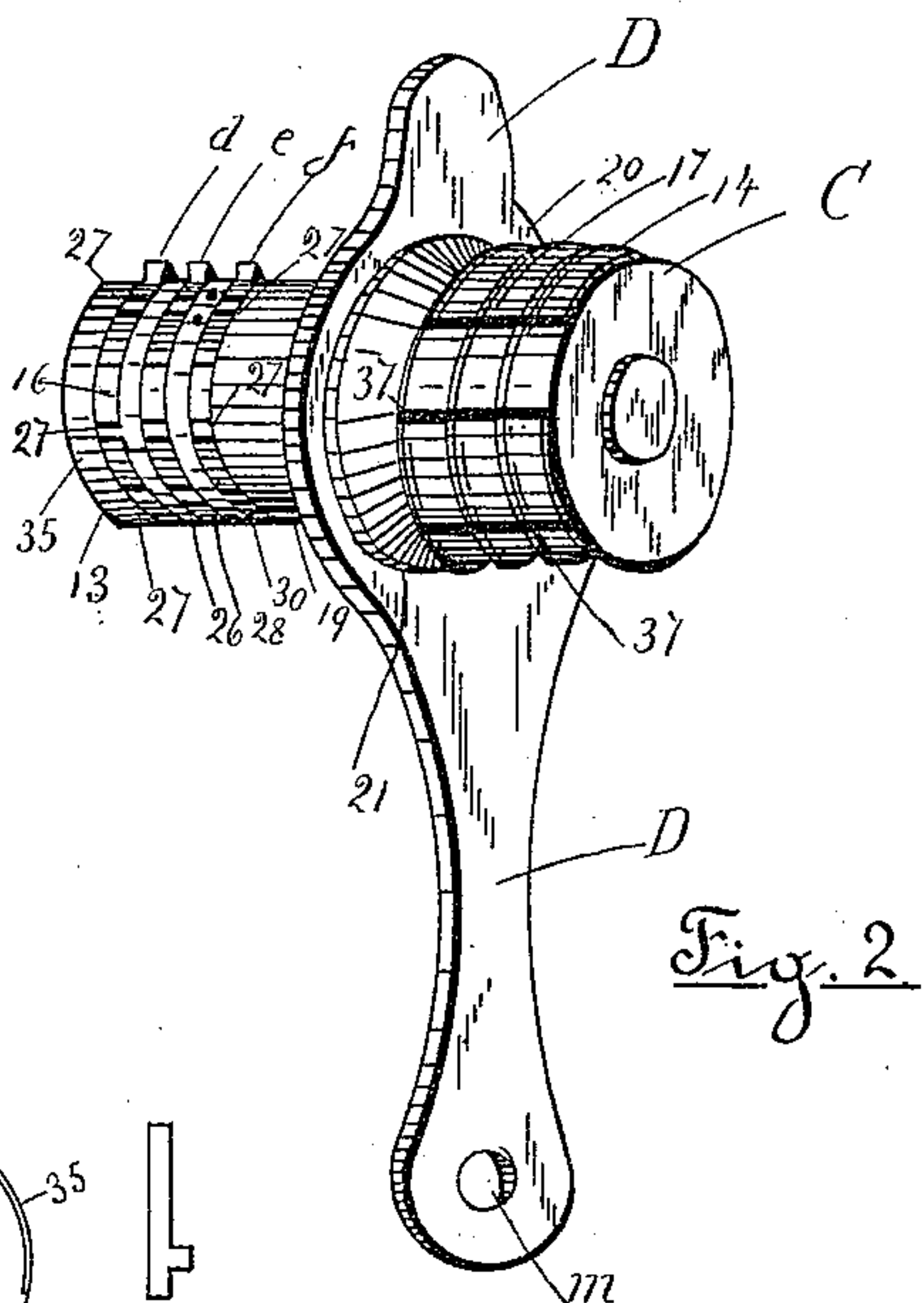


Fig. 2.

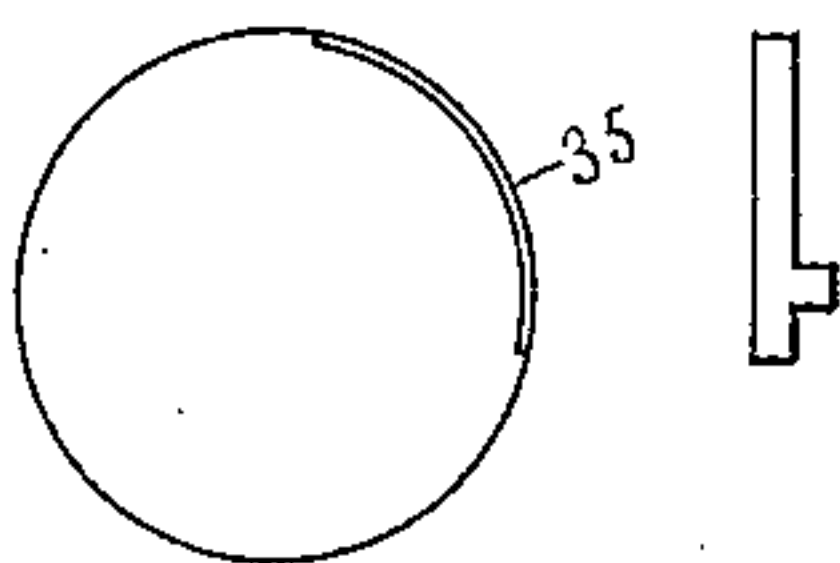


Fig. 5.

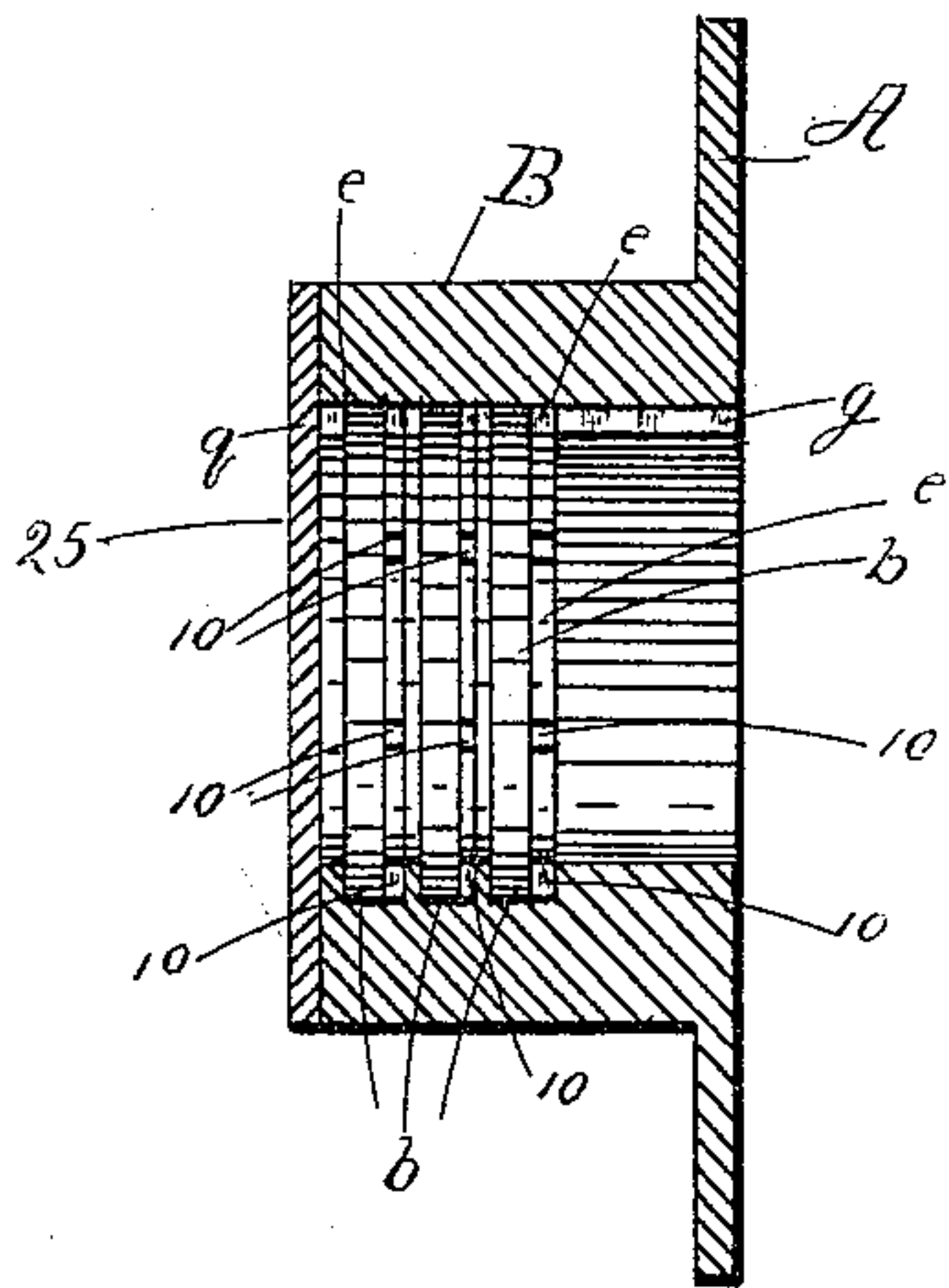


Fig. 3.

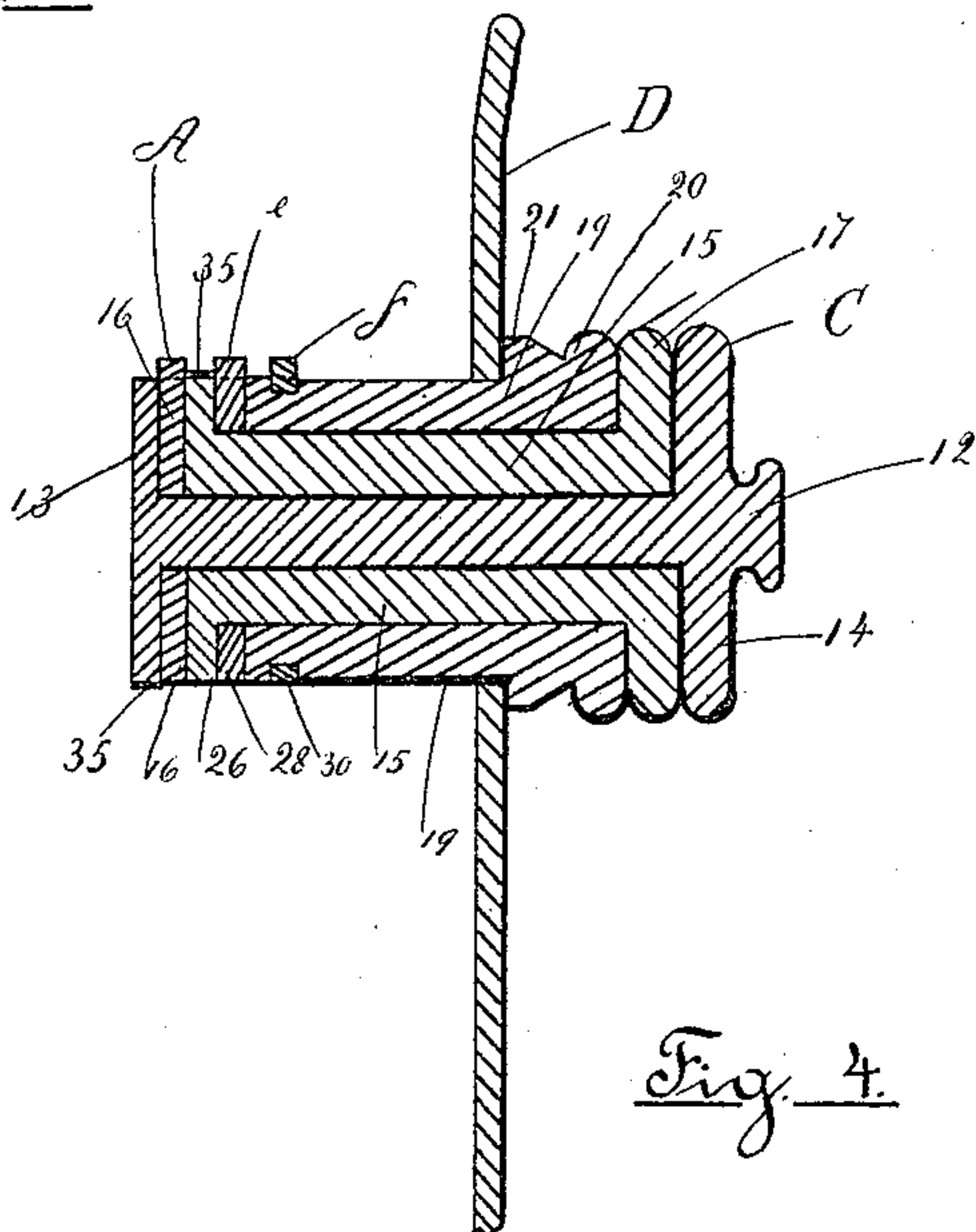


Fig. 4.

Witnesses.  
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(Model.)

2 Sheets—Sheet 2.

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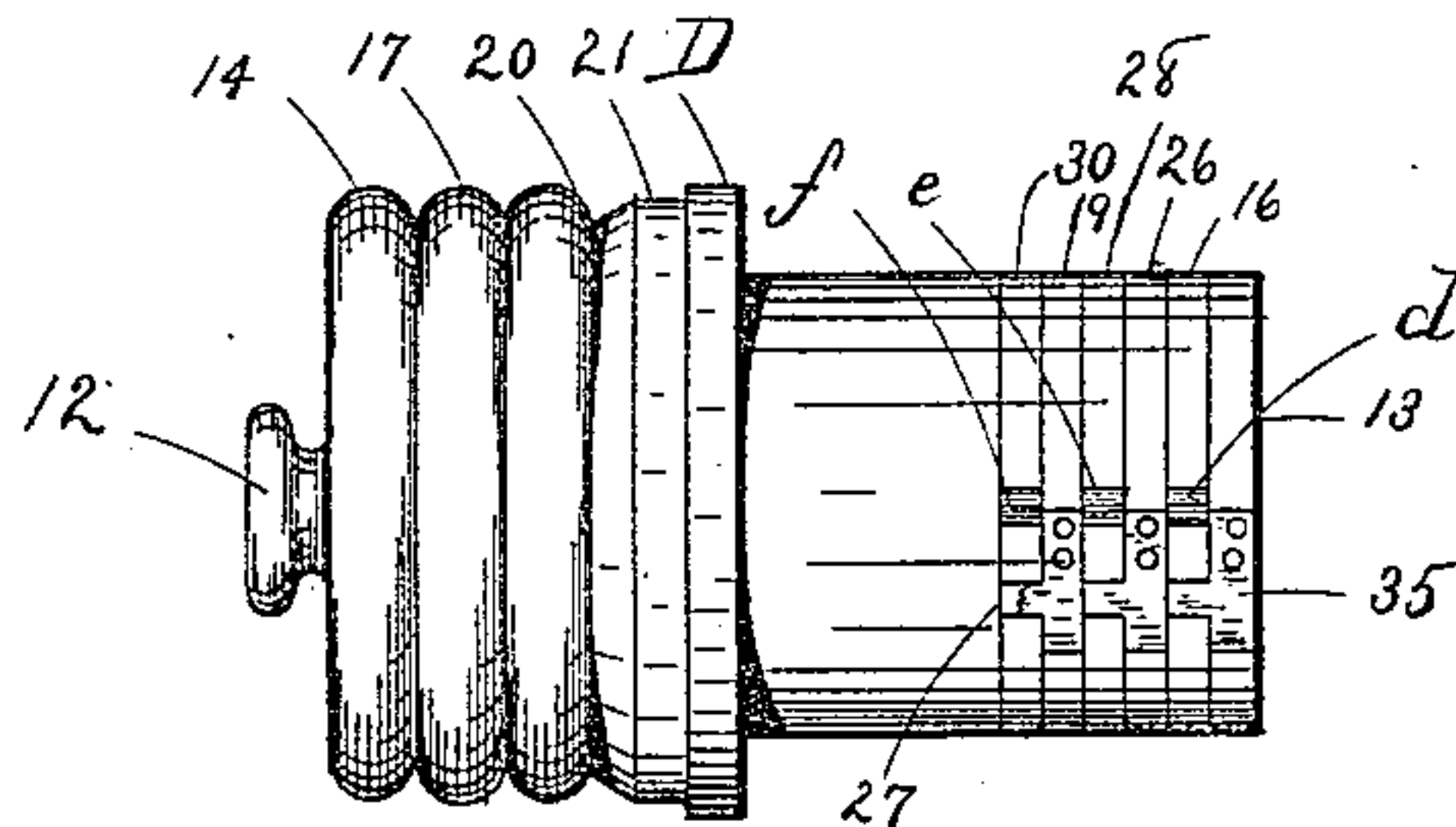


Fig. 6.

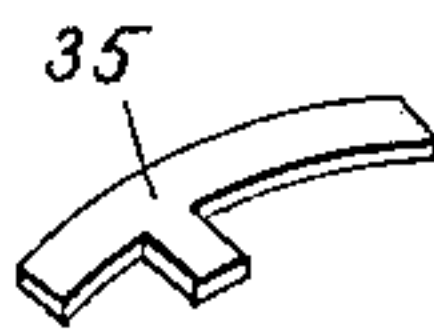


Fig. 7.

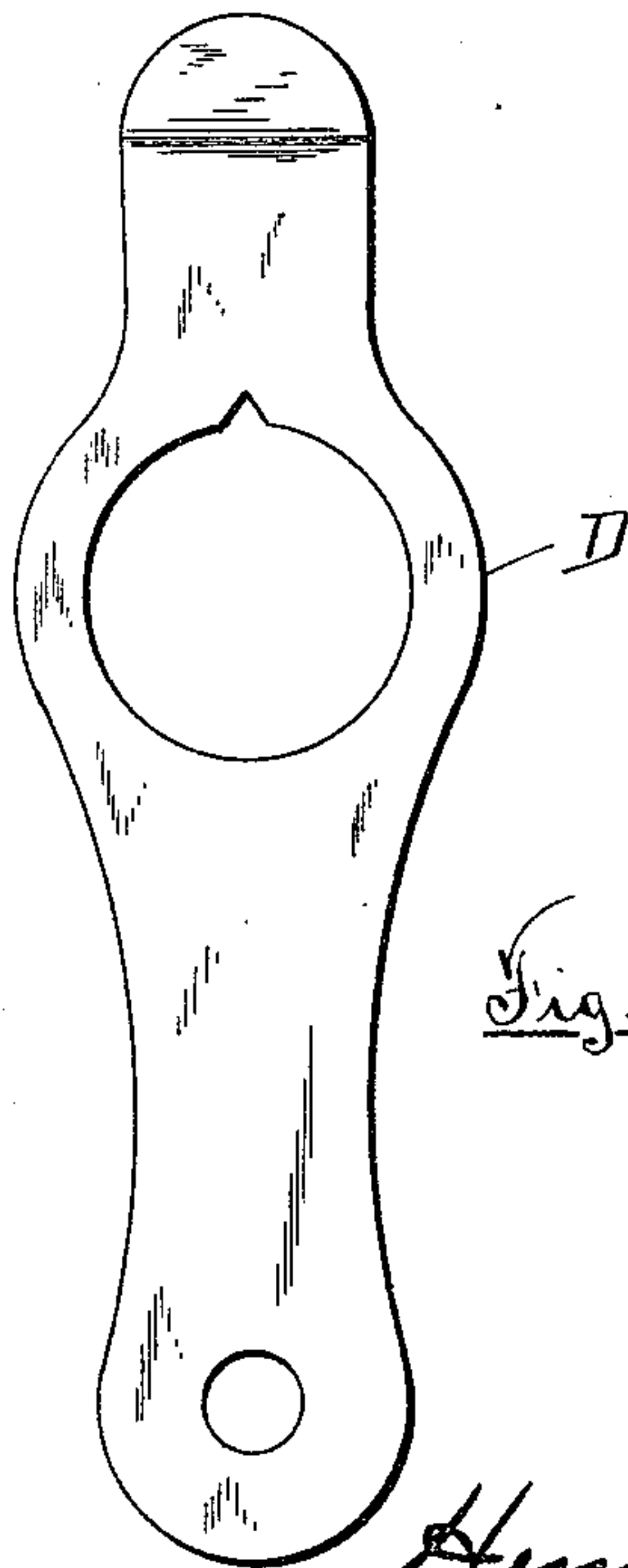


Fig. 8.

WITNESSES  
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# UNITED STATES PATENT OFFICE.

HENRY W. MASTERS, OF BOSTON, MASSACHUSETTS.

## COMBINATION-LOCK.

SPECIFICATION forming part of Letters Patent No. 438,353, dated October 14, 1890.

Application filed March 14, 1890. Serial No. 343,858. (Model.)

*To all whom it may concern:*

Be it known that I, HENRY W. MASTERS, of Boston, in the county of Suffolk, State of Massachusetts, have invented certain new and  
5 useful Improvements in Combination-Locks, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the  
10 same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of the socket of my improved lock; Fig. 2, a like view of  
15 the key and hasp; Fig. 3, a vertical transverse section of the socket; Fig. 4, a similar view of the combination-key; Fig. 5, an elevation illustrating certain details of construction; Fig. 6, a side elevation of the key; Fig. 7, a  
20 perspective view of one of the locking-springs detached, and Fig. 8 an elevation of the hasp.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

25 My invention relates especially to a combination-lock for locking trunks and similar articles, provided with a lid and hasp; and it consists in certain novel features hereinafter fully set forth and claimed, the object being  
30 to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following  
35 explanation:

In the drawings, A represents the face plate or flange of the socket, and B the body or casing. The body is cylindrical in form and  
40 has its inner end closed by a plate 25, said body being set into the frame or body of the trunk or other article.

A series of annular grooves *b* is formed in the interior of the socket, and a series of lateral slots or indentations 10 is formed in the  
45 annular rings or partitions *c* between said grooves. A V-shaped groove *g* extends outwardly through the upper wall of said socket and across each of the partitions *c*. The  
50 groove *g* also extends rearwardly to the back plate 25 of the socket.

The key C is cylindrical in form and consists of a central spindle 12, provided at its inner end with a flange 13 and at its outer  
end with a flange 14. 55

A loose collar or sleeve 15 is disposed on the spindle 12, and is provided with an annular flange 17, which is in contact with the flange 14 of said spindle. An annular flange 26 is  
60 formed on the opposite end of said sleeve.

A loose ring 16 is disposed on the spindle C between the flange 26 of the sleeve 15 and said flange 13, said ring being provided on its periphery with a series of indentations 27,  
65 and with an outwardly-projecting stud or boss *d*, V-shaped in end elevation and adapted to work in the groove *g* of the key-socket when in use. A similar ring 28 is fitted to rotate on the sleeve 15 adjacent to its flange 26, said  
70 sleeve being provided with a V-shaped boss *e* and indentations 27 in the same manner as the ring 16.

A sleeve 19 is loosely disposed on the sleeve 15 between the ring 28 and annular flange 17, said sleeve being provided with a flange 20,  
75 the edge of which is flush with the edges of the flanges 17 and 14.

A ring 30 is fitted to slide in a suitable groove in the sleeve 19, and is provided with indentations 27 and a V-shaped stud *f* in the  
80 same manner as the rings 16 and 28, said rings being fitted to rotate independently and in parallel planes.

The hasp D consists of a plate provided with an opening *m*, whereby it may be pivoted  
85 to swing laterally from the cover or lid. The body of the hasp is provided with an opening adapted to register with the mouth *p* of the key-socket when in position and is fitted to receive said key. An annular flange 21 on  
90 the sleeve 19 engages the face of said hasp. A V-shaped notch is formed in the key-opening on the hasp (see Fig. 8) in position to register with the groove *g* in the socket.

A flat spring 35 (shown detached in Figs. 5  
95 and 7) is secured to the periphery of each flange 13 and 35 and to the sleeve 19 (see Fig. 6) between the rings 28 and 30, said springs having a laterally-projecting arm adapted to enter a slot 27 in the adjacent rings 16, 28,  
100 and 30 and hold said rings in position.

The peripheries of the flanges 14, 17, and



20 have laterally-arranged grooves 37, the grooves of each flange being numbered or otherwise marked to identify them and said grooves corresponding to the slots 27 in the rings 16 28 30, which may be numbered in like manner.

In the use of my improvement the studs *d e f* are arranged in alignment with each other, and the number of the slot 27 in each wheel, into which the arm of the adjacent spring 35 is disposed, is noted, the same numbers being in line upon the upper groove 37 of the flanges 20 17 14. The key may now be inserted through the hasp-opening and into the key-socket, the studs *d e f* passing readily through the V-shaped groove thereof until they come in line with the grooves *b* in said socket. By rotating either of the flanges 17, 20, or 14 the spindle 12 or the sleeves 15 or 19 are thereby moved, and the springs 35, respectively secured thereto, cause the adjacent rings to rotate therewith, moving the ring-studs in the grooves *b* and preventing the key from being withdrawn.

To unlock the device, the flanges 20, 17, and 14 are rotated until the numbers on their grooves 37, indicating the combination to which the key has been adjusted, register with each other. These flanges are then held in position and the whole key rotated until said numbered grooves are in alignment with a mark 40 on the face-plate A, drawn from the apex of the V-shaped groove *g*. This indicates to the operator that the studs *d e f* are all in alignment and disposed in said groove, after which the key may readily be withdrawn.

The slots 10 in the partition *c* of the socket-grooves are false or dummy grooves, into which the studs *d e f* will pass when other than the proper combination is employed in endeavoring to operate the key.

It will be seen that by changing the position of the spring-arm in the grooves of their adjacent rings the combination may be at any time changed, and by this arrangement of parts a large number of combinations may be formed.

It will be understood that any desired number of inclosing-sleeves and locking-rings of the character described may be employed to increase the number of combinations.

I do not confine myself to forming the

groove *g* and studs *d e f* V-shaped, as they may be rectangular or in any other suitable form.

Having thus explained my invention, what I claim is—

1. In a lock of the character described, a tubular socket provided interiorly with a longitudinally-arranged groove and a series of annular grooves, combined with a key comprising a spindle, a series of loose inclosing-sleeves thereon, rings adjustably disposed, respectively, on said spindle and sleeves and provided with bosses or projections adapted to be brought into alignment as the spindle and sleeves are independently rotated, substantially as described.

2. In a lock of the character described, the combination of a socket provided interiorly with a longitudinal groove and a series of annular grooves, lateral slots in the partitions thereof, a key comprising a spindle, a loose sleeve thereon, a loose outer sleeve, rings disposed on said spindle and sleeves and provided with a radial boss, and springs for adjustably securing said rings to their respective sleeves and spindle, substantially as and for the purpose set forth.

3. In a lock of the character described, a cylindrical socket combined with a key fitted to enter said socket and provided with a series of independently-rotatable rings having projections adapted to enter grooves in the socket, substantially as described.

4. In a lock of the character described, the socket B, provided with grooves *c g* and slots 10, combined with a key fitted to enter said socket and having independently-movable projections adapted to work in said grooves, substantially as described.

5. In a lock of the character described, the key C, comprising the spindle 12, and a series of loose inclosing-sleeves, as 15 and 19, rings, as 16, 28, and 30, independently adjustable on said spindle and sleeves, respectively, and provided with projections adapted to enter grooves in a key-socket, substantially as described.

HENRY W. MASTERS.

Witnesses:

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K. DURFEE.