

No. 640,574.

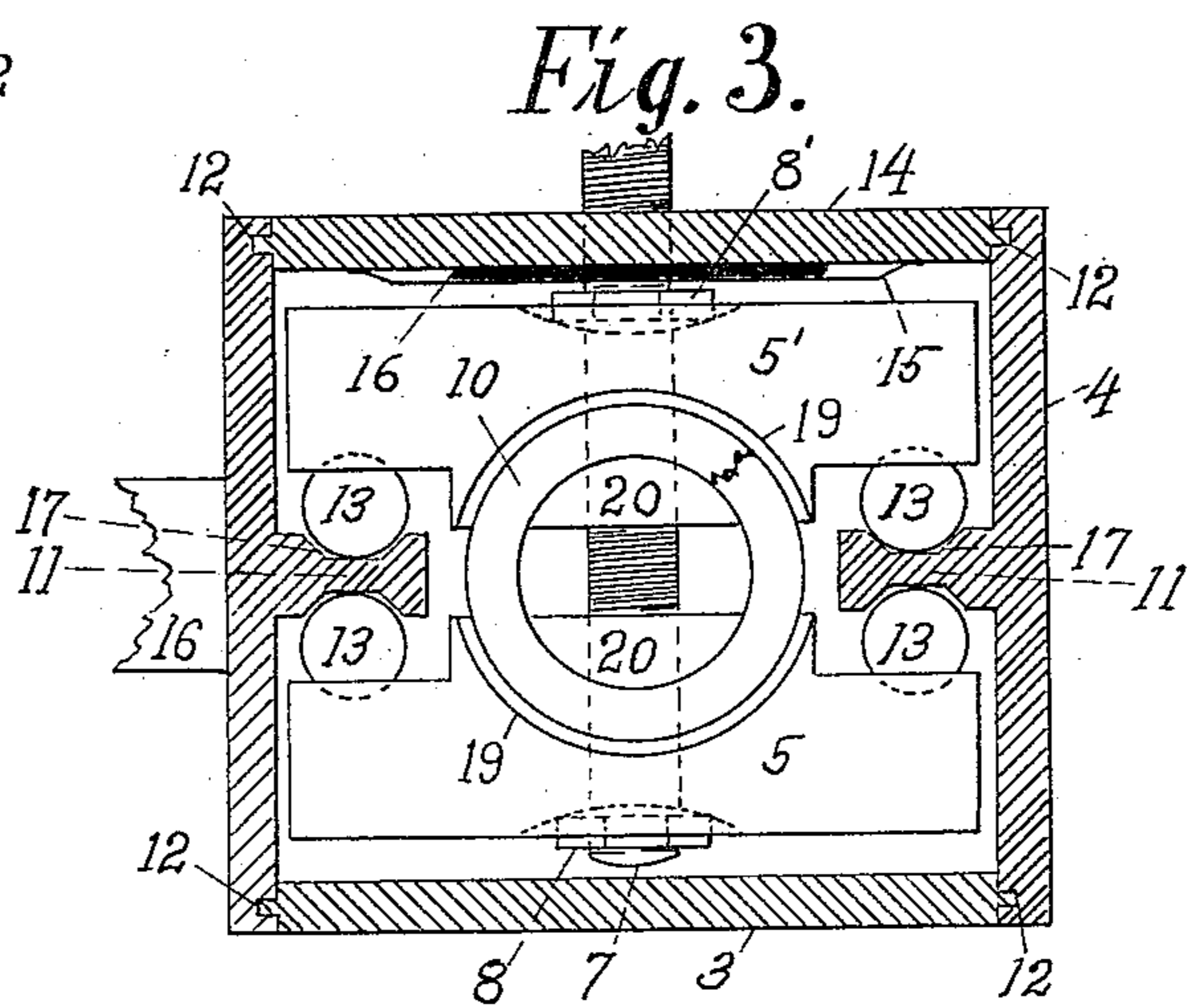
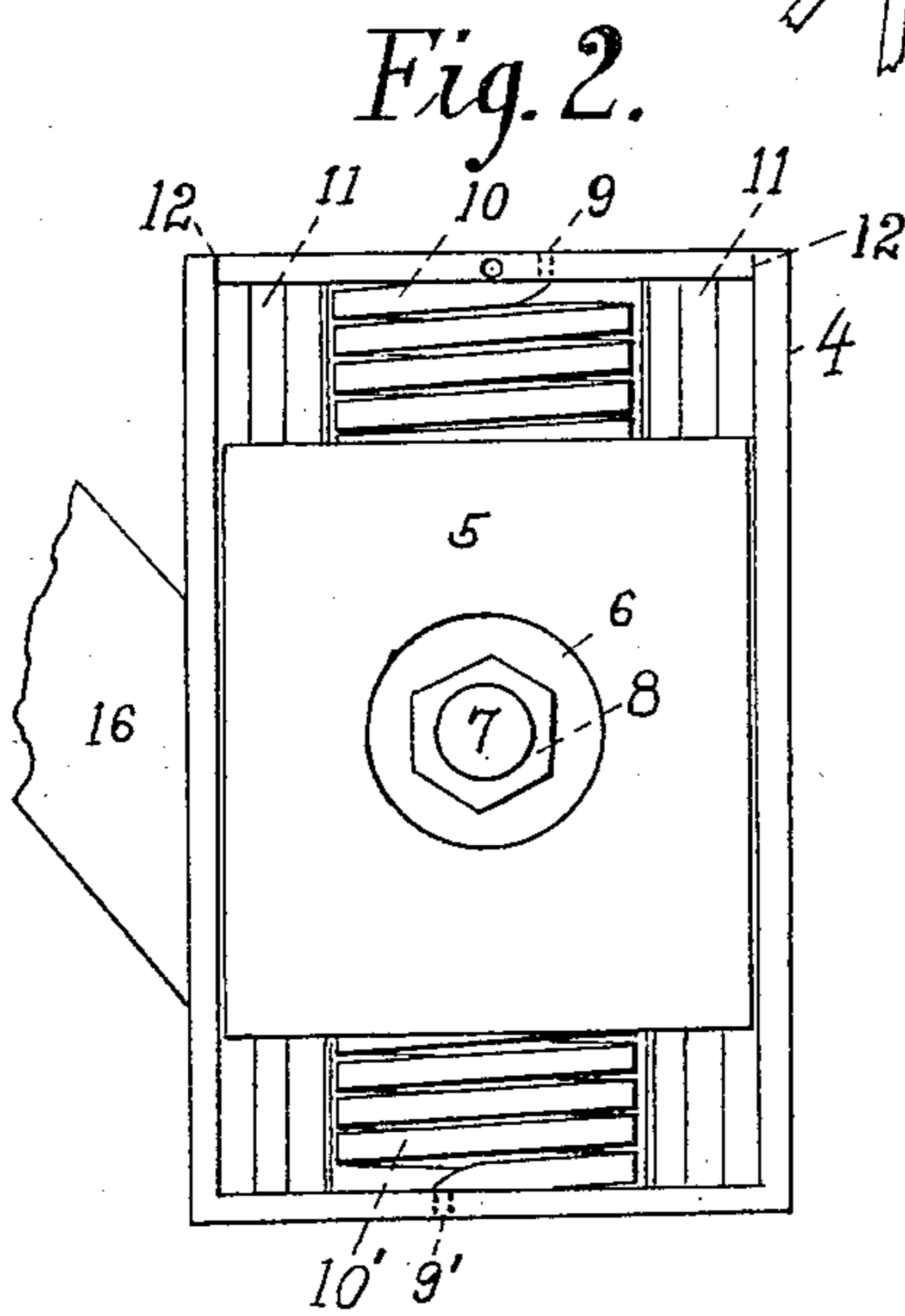
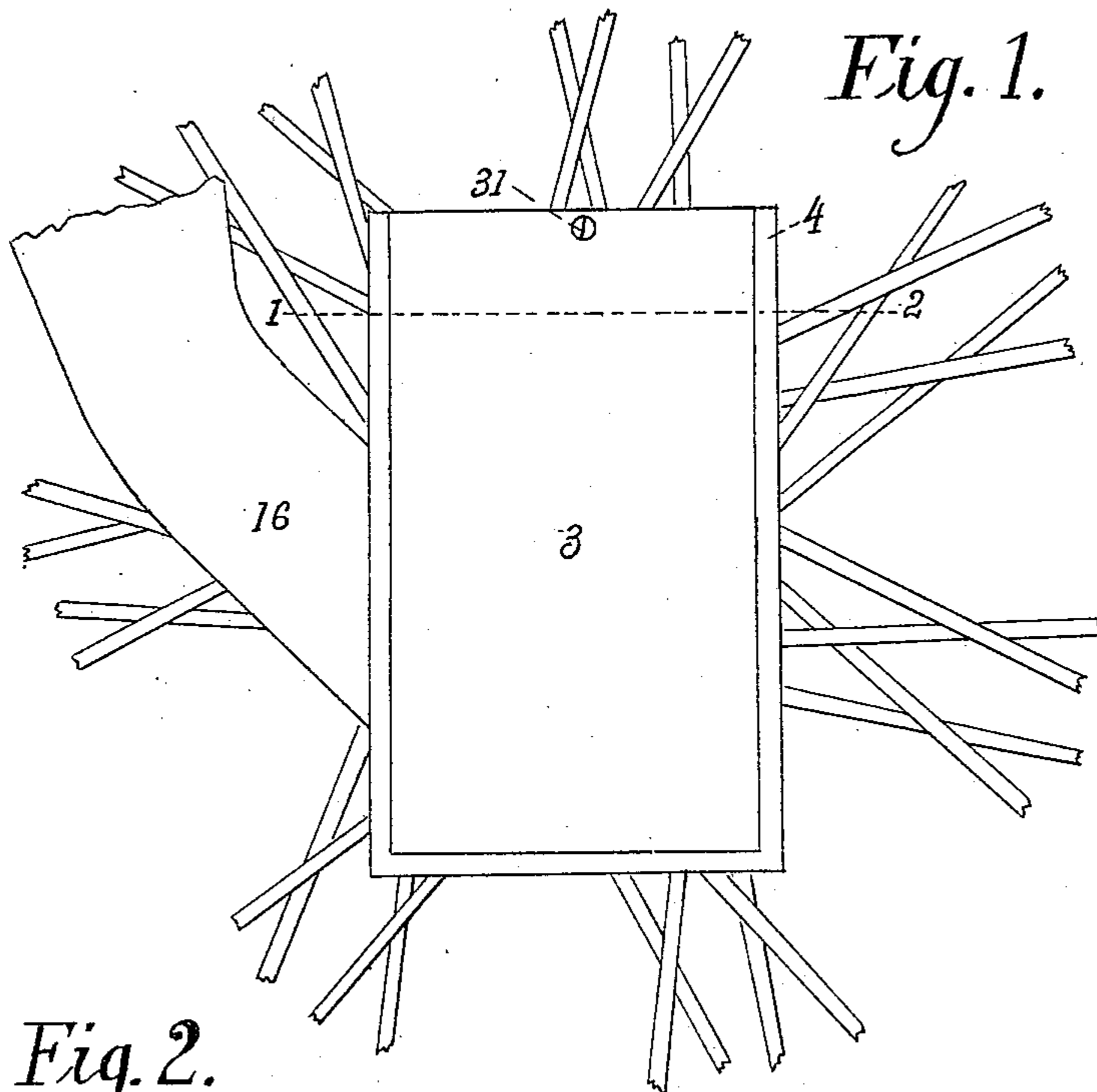
Patented Jan. 2, 1900.

E. E. LEE.
BICYCLE.

(Application filed Aug. 28, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.

W. C. Gray
Thos. J. H. H. H.

Inventor.

Edward E. Lee

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2 Sheets—Sheet 2.

(No Model.)

Fig. 4.

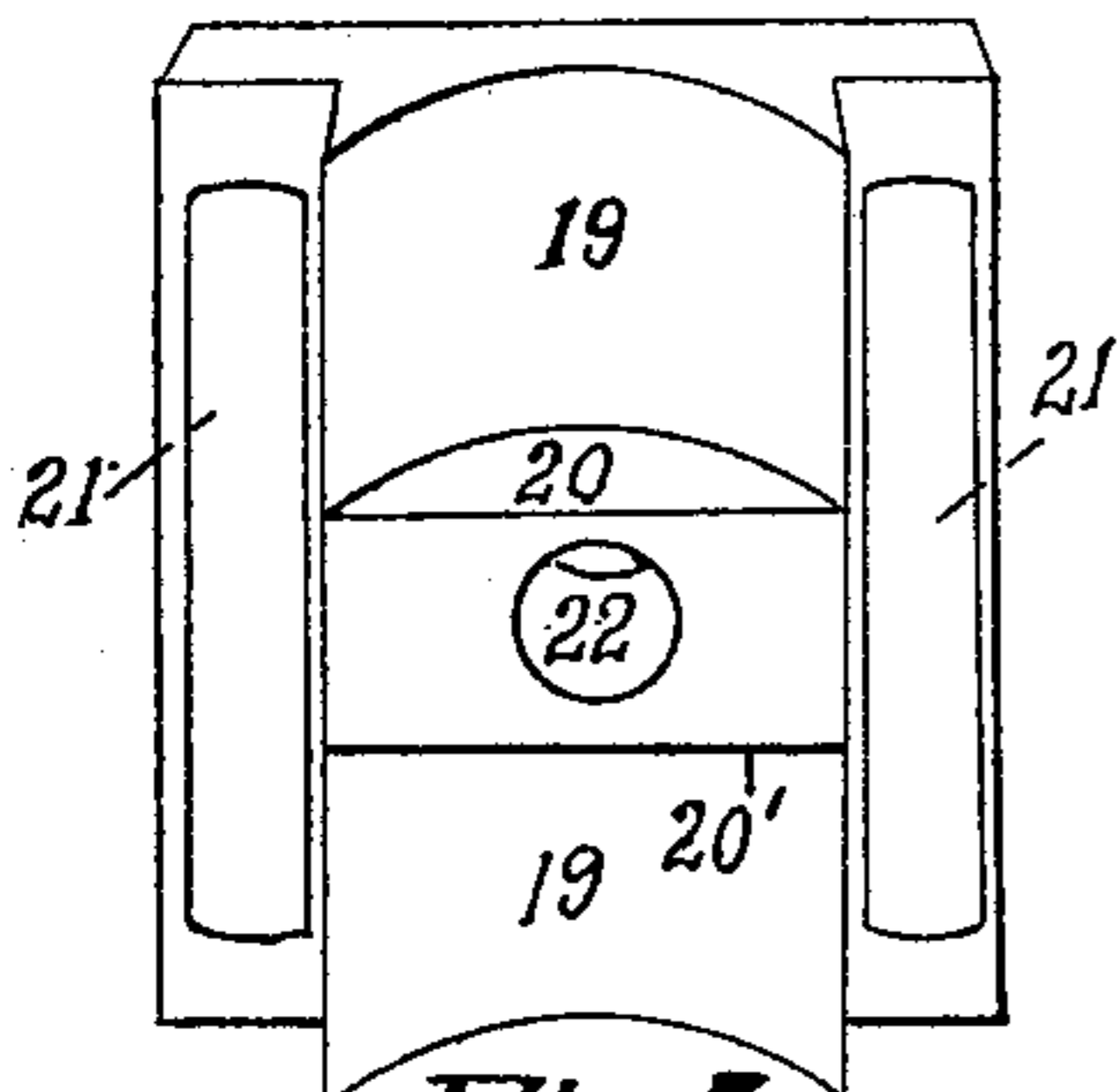


Fig. 5.

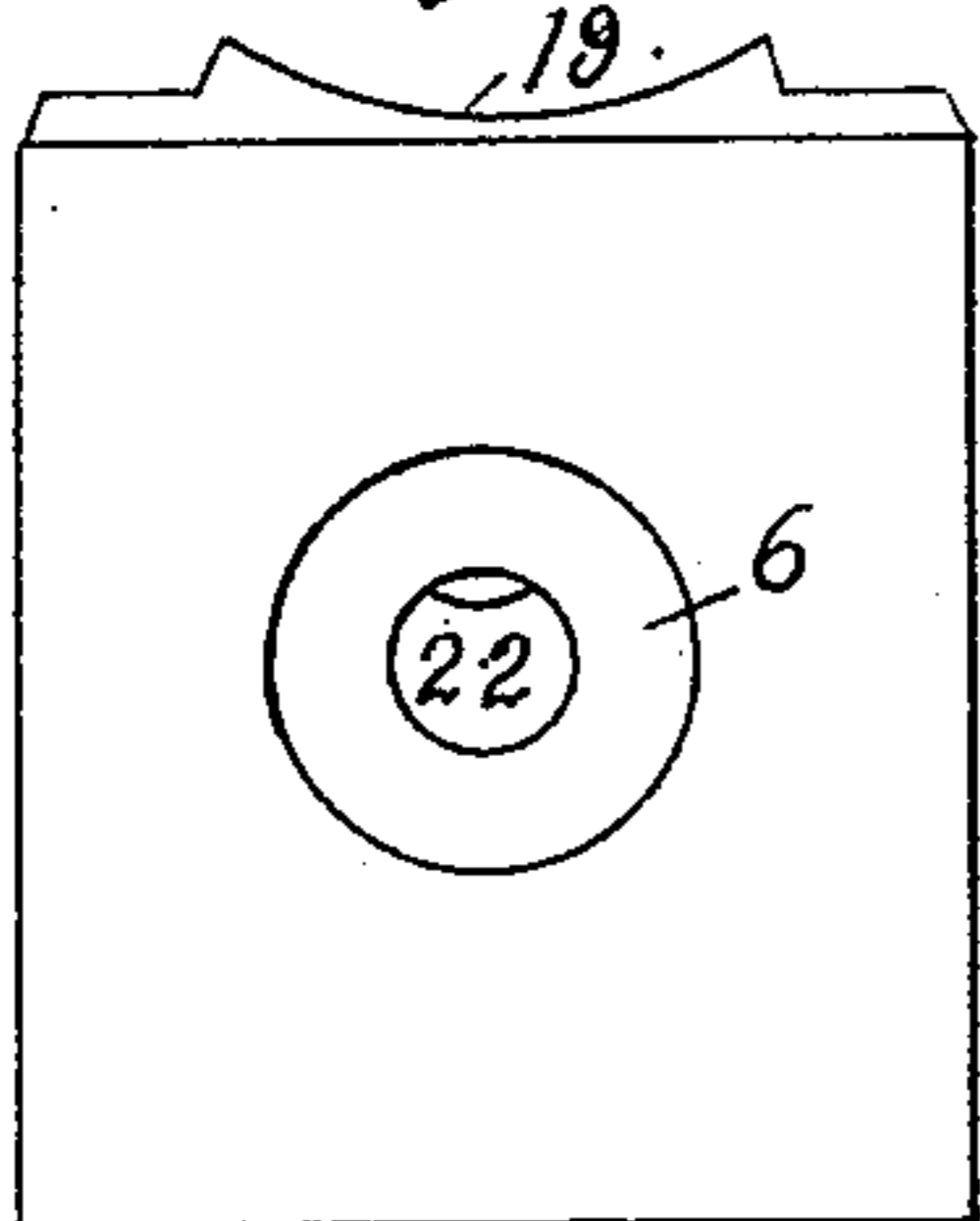


Fig. 6.

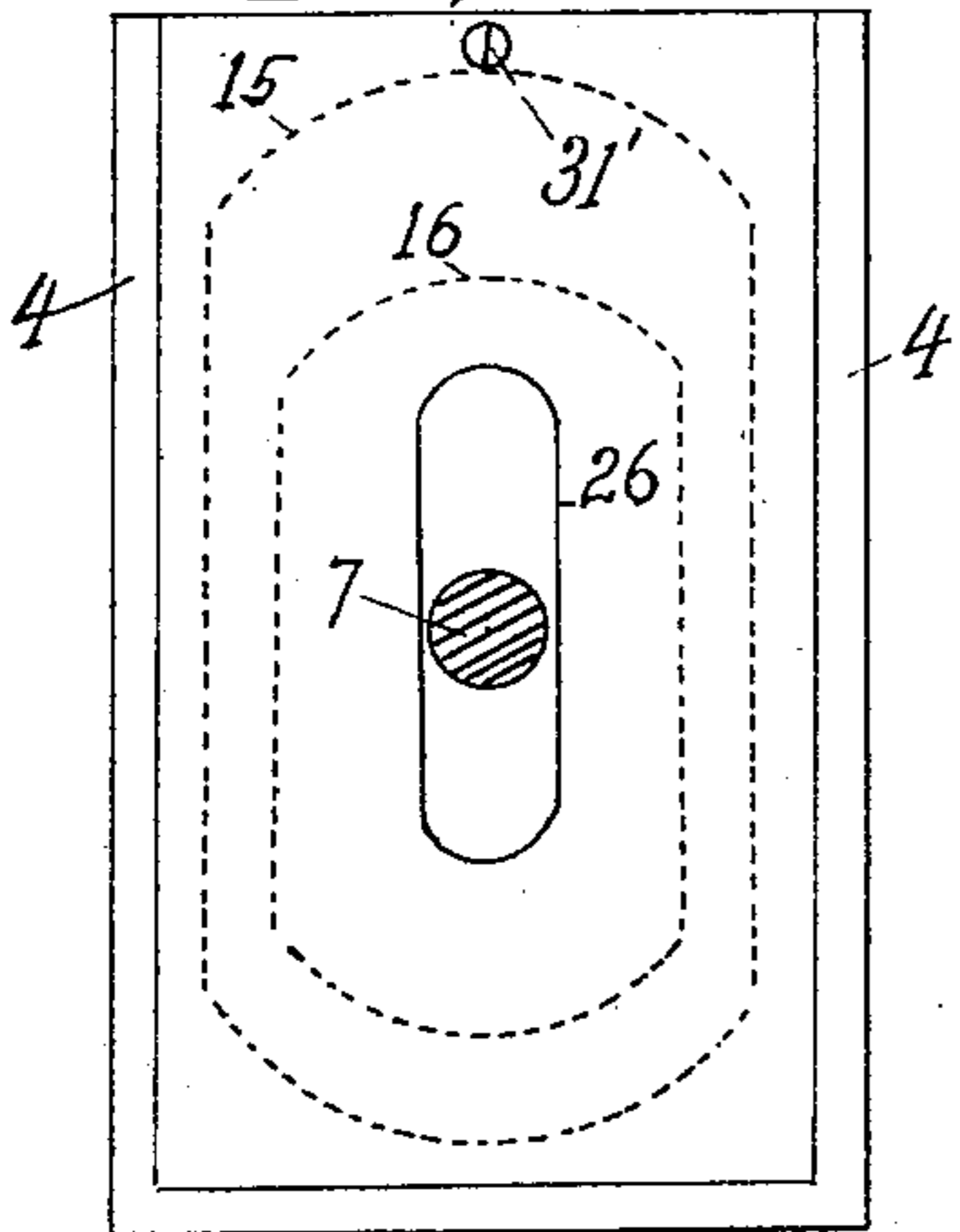


Fig. 8.

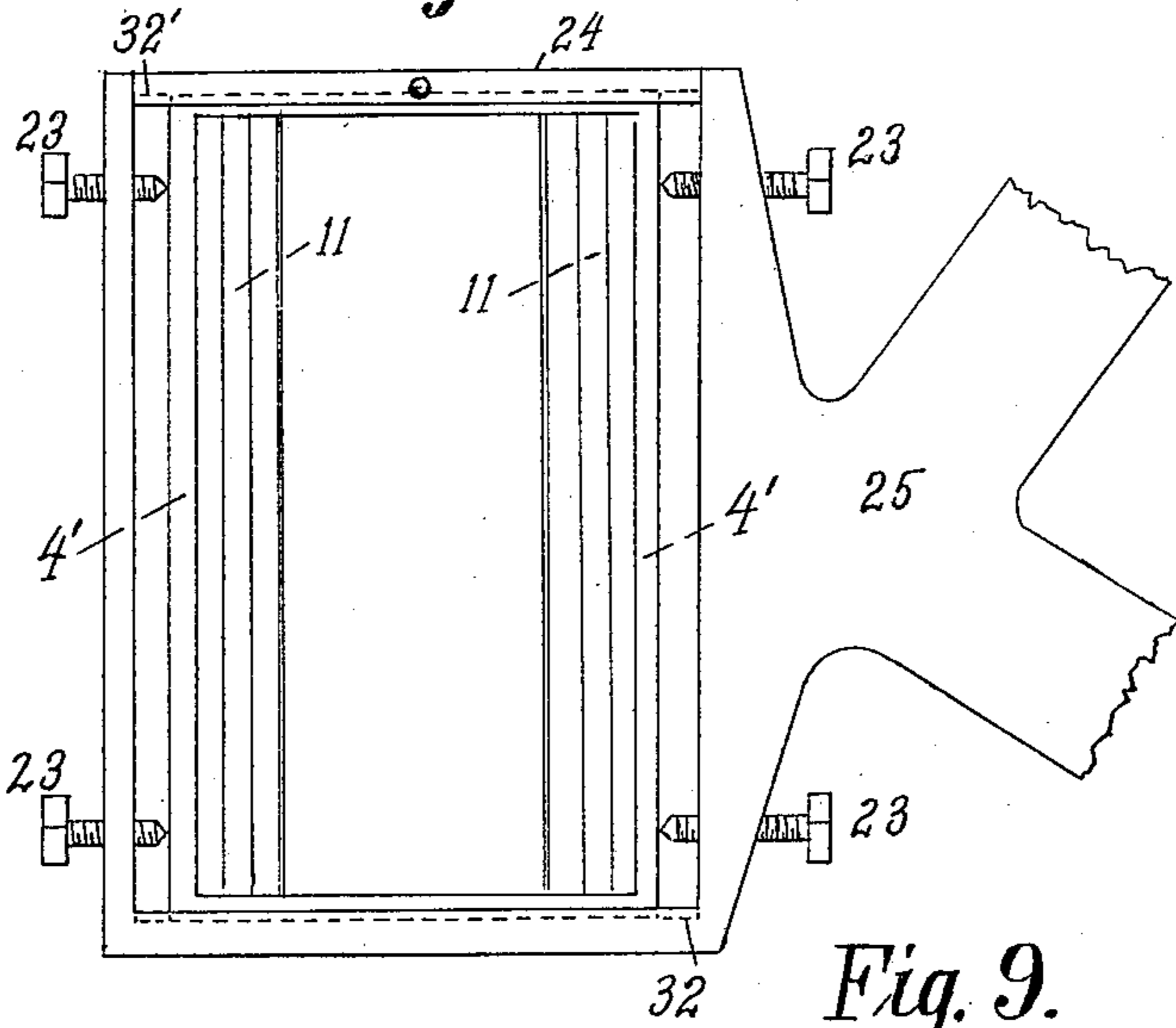


Fig. 9.

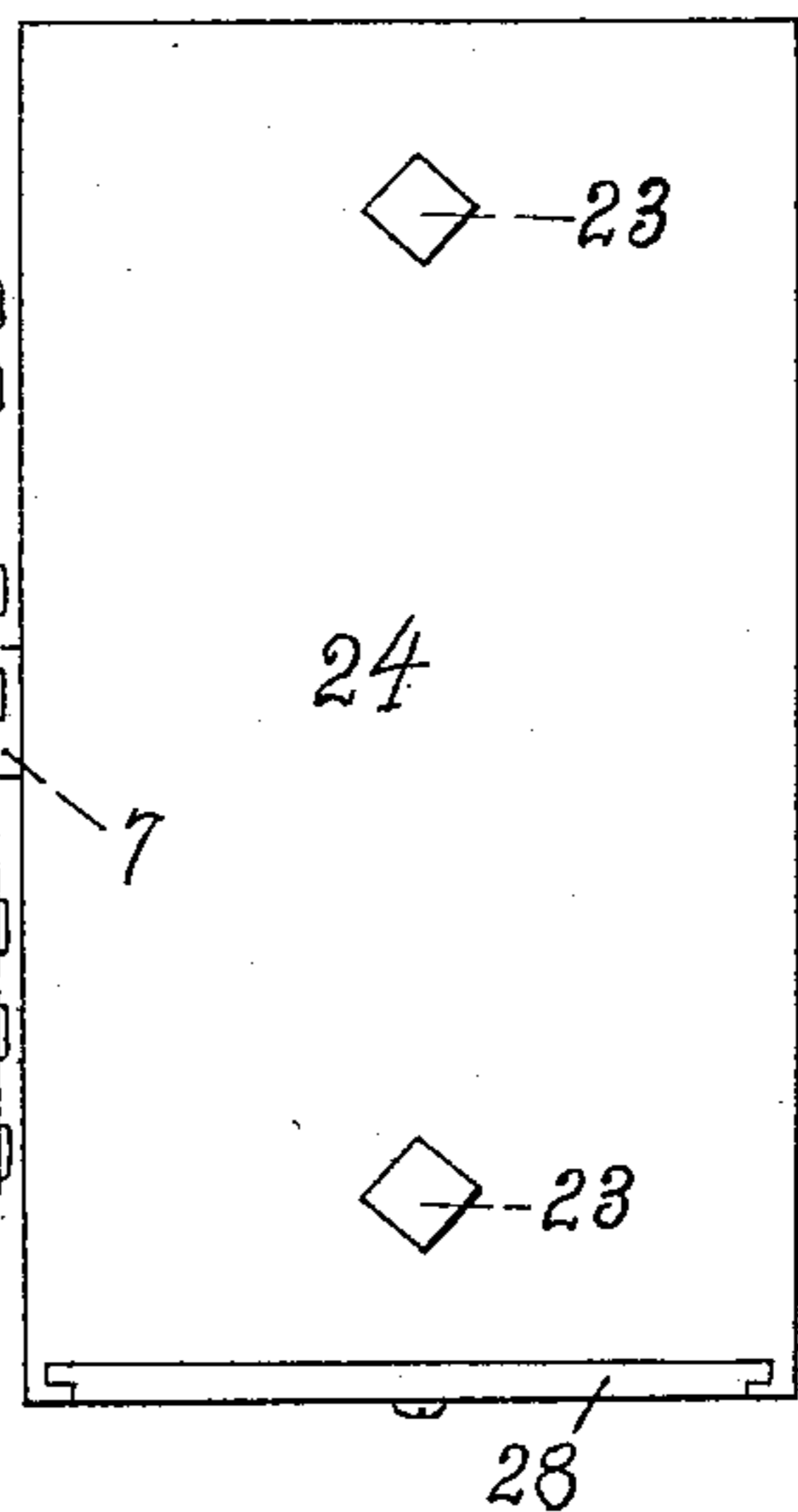


Fig. 7.

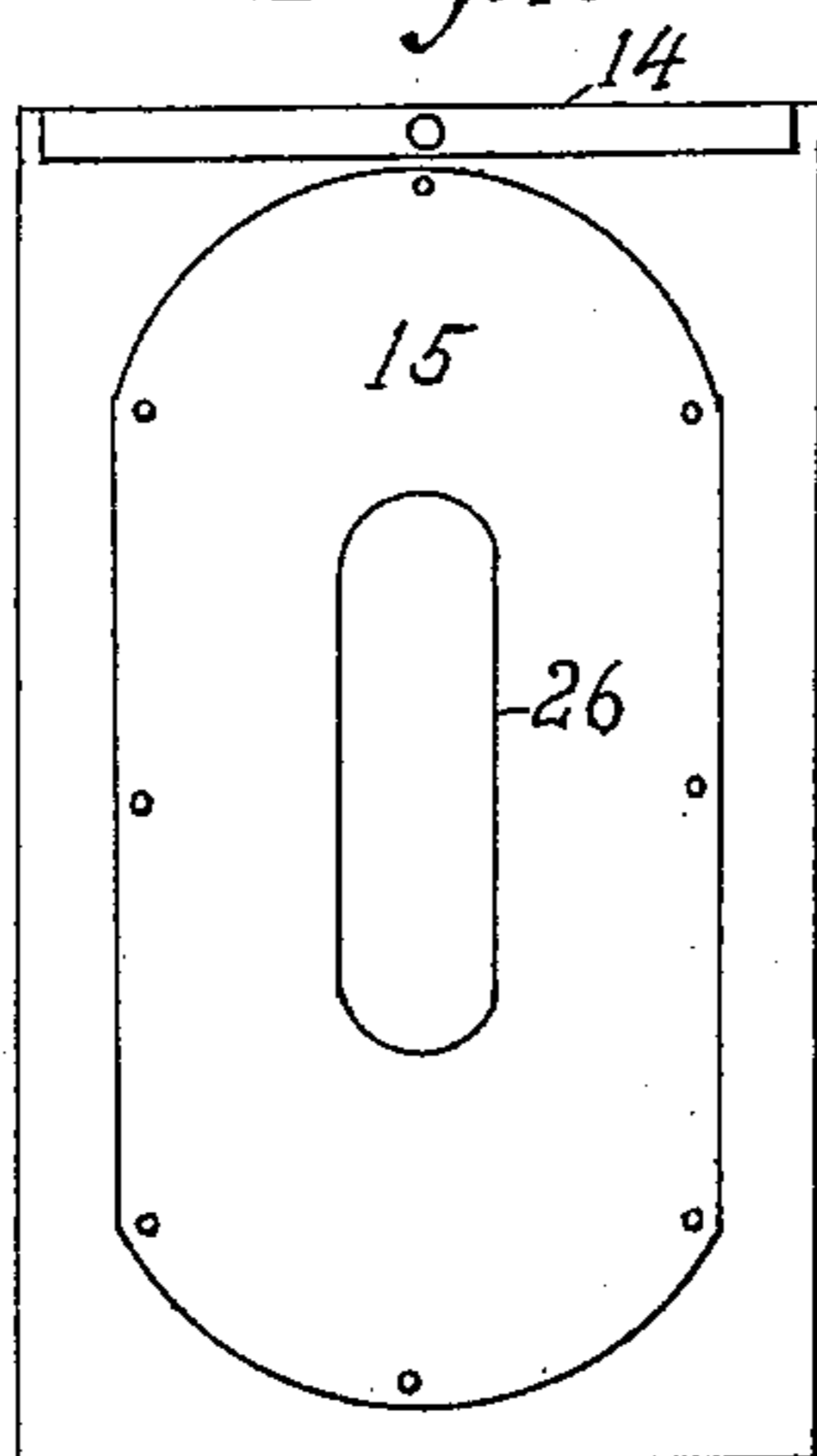
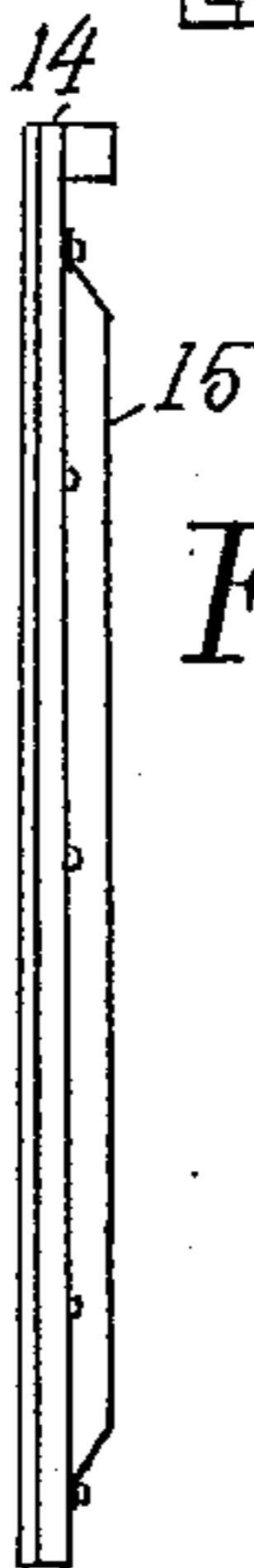


Fig. 10.



Witnesses.

W. H. Gray
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Edward E. Lee

UNITED STATES PATENT OFFICE.

EDWARD E. LEE, OF LOUISVILLE, KENTUCKY.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 640,574, dated January 2, 1900.

Application filed August 28, 1899. Serial No. 728,736. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. LEE, a citizen of the United States, residing at Louisville, county of Jefferson, State of Kentucky, have invented a new and useful Bicycle Appliance, of which the following is a specification.

My invention relates to improvements in bicycles in which the axle-rods are supported by and secured to movable blocks, said blocks supported by spiral springs moving vertically by means of a ball-bearing adjustment in a jaw or frame at the end of each front and rear fork.

The object of my improvement is to provide a cushion for ease in riding and to discard the pneumatic tire. I attain this object by the mechanism illustrated in accompanying drawings, in which—

Figure 1 is a general view of the closed jaw or frame of the right front fork of a bicycle, showing relative position to front wheel. Fig. 2 shows the block, springs, and flanges as they appear after removal of outer sliding door; Fig. 3, an enlarged top sectional view on the line 1 2 of Fig. 1; Figs. 4 and 5, a rear and front view of blocks; Fig. 6, a rear view of closed frame, showing slot for entrance and action of axle-rod; Fig. 7, an inside view of back sliding door, showing covering for dust-plate; Fig. 8, a rear outer frame open, showing detachable inner frame in position; Fig. 9, a side view of rear outer frame, showing relative position to axle and sprocket; Fig. 10, a side view of back sliding door.

Similar figures refer to similar parts throughout the several views.

This invention consists of four frames or jaws with their appliances, two similar frames or jaws being connected with the front forks of a bicycle and two similar frames or jaws being connected with the rear forks. Frame 4 is integral with the front fork of the bicycle and is vertically flanged down middle of inner sides, as at 11 in Fig. 3, said flanges being grooved on both sides, as at 17, for the reception of balls and being of sufficient strength to hold wheel firmly in position after adjustment of blocks referred to herein-after. The blocks are also grooved, as at 21 in Fig. 4, are vertically adjustable in the frame 4, and held in position by means of the

threaded axle-rod 7, which loosely passes through the perforations 22 in center of both blocks, the blocks after insertion of a series of balls, as 13 in Fig. 3, being clamped by two nuts 8 and 8' to the flanges 11, Fig. 3. Two cylindrical sockets are thus created between said blocks, one below the axle-rod and one above the axle-rod, and in said sockets spiral springs are inserted, resting in a vertical position. Spring 10 rests loosely on platform 20, but is secured to top of frame at 9, Fig. 2. Spring 10' rests loosely against platforms 20' above, but is secured to bottom of frame at 9', Fig. 2. Spiral spring 10 is depressed by weight or downward pressure applied to the bicycle. Spiral spring 10' is depressed by weight of wheels when the bicycle is raised from the ground.

To economize space, the blocks, Figs. 4 and 5, have an annular depression 6 around opening 22 of sufficient diameter to permit working of nuts 8 and 8'.

Frame 4' for the rear wheel is not integral with any part of the bicycle, but slidably mounted and closely fitted in grooves 32 and 32' of outer frame 24, which outer frame is integral with the rear forks of the bicycle, and the inner frame 4' is retained after adjustment by the four set-screws 23. Frame 4' is placed in position by inserting it through bottom of outer frame 24 and rests on bottom sliding door 28, Fig. 9. Set-screws 23 pressing against frame 4' move it either forward or backward in grooves 32 and 32', by which means the chain is slackened or tightened, as desired.

Each of the integral frames 4 and 24 is closed by means of two vertically-sliding doors 3 and 14, which enter grooves 12 from above, being retained in position by screws 31 and 31', passing through door and fastened to top of frame, as in Fig. 1.

Protection from dirt through the slots in inner door is afforded by means of felt-faced plates of metal or other suitable material resting on axle-rod 7 and held in position by casing 15, as at 16, Fig. 6, casing 15 being of sufficient size to permit a free perpendicular movement of the plate when in action, but the plate at all times is of sufficient length and breadth to keep the slot fully covered and secure protection from dirt.

Fig. 2 shows blocks adjusted midway in the frame and the springs of equal length. More play above, however, may be given by inserting a longer spring on the upper platform 20 and a shorter spring under bottom platform 20'.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In combination with the fork of a bicycle and the like, a spring appliance comprising two similar blocks with grooved wings, two half-cylindrical concavities cut in the body of said blocks, a platform between the cavities, a bore through the center of each block for insertion of axle-rod, a casing integral with the front fork of a bicycle, grooved flanges in said casing parallel with and facing grooved wings in blocks to serve as ball-races, a pendent spiral spring fastened to top of casing, and inserted between and controlled by half-cylindrical concavities in upper portion of said blocks and resting on platforms, a second spiral spring fastened to bottom of casing, inserted between and controlled by half-cylindrical concavities in lower part of said blocks and pressing against platforms, the blocks being detachably secured to axle-rod, nuts adapted to the axle-rod to retain blocks in position, adjustable sliding plates to afford protection from dust through axle-slots 26, substantially as set forth.

2. In combination with the fork of a bicycle

and the like, a spring appliance, comprising two similar blocks with grooved wings, two half-cylindrical concavities cut in body of each of said blocks, platform between said cavities, a bore through the center of each block for insertion of axle-rod, a frame slidably mounted and laterally adjustable in the grooves of the casing, a casing integral with the rear forks of the bicycle or the like, and provided with a removable bottom to permit insertion of said frame, grooved flanges in said frame parallel with and facing grooved wings in blocks to serve as ball-races, and means for securing and holding said inner frame in position; a pendent spiral spring fastened to top of frame, inserted between and controlled by half-cylindrical concavities in upper portion of said blocks and resting on the platform, a second spiral spring fastened to bottom of frame, inserted between and controlled by half-cylindrical concavities in lower part of said blocks and pressing against platforms; blocks detachably secured to axle-rod, nuts adapted to the axle-rod to retain blocks in position; adjustable sliding plates to afford protection from dust through axle-slot 26, Fig. 6, substantially as set forth.

EDWARD E. LEE.

Witnesses:

THOS. I. WOOD,
THOS. GREEN, Jr.