

(No Model.)

2 Sheets—Sheet 1.

G. C. GARDNER.
DOOR HANGER AND SUPPORTING TRACK.

No. 581,710.

Patented May 4, 1897.

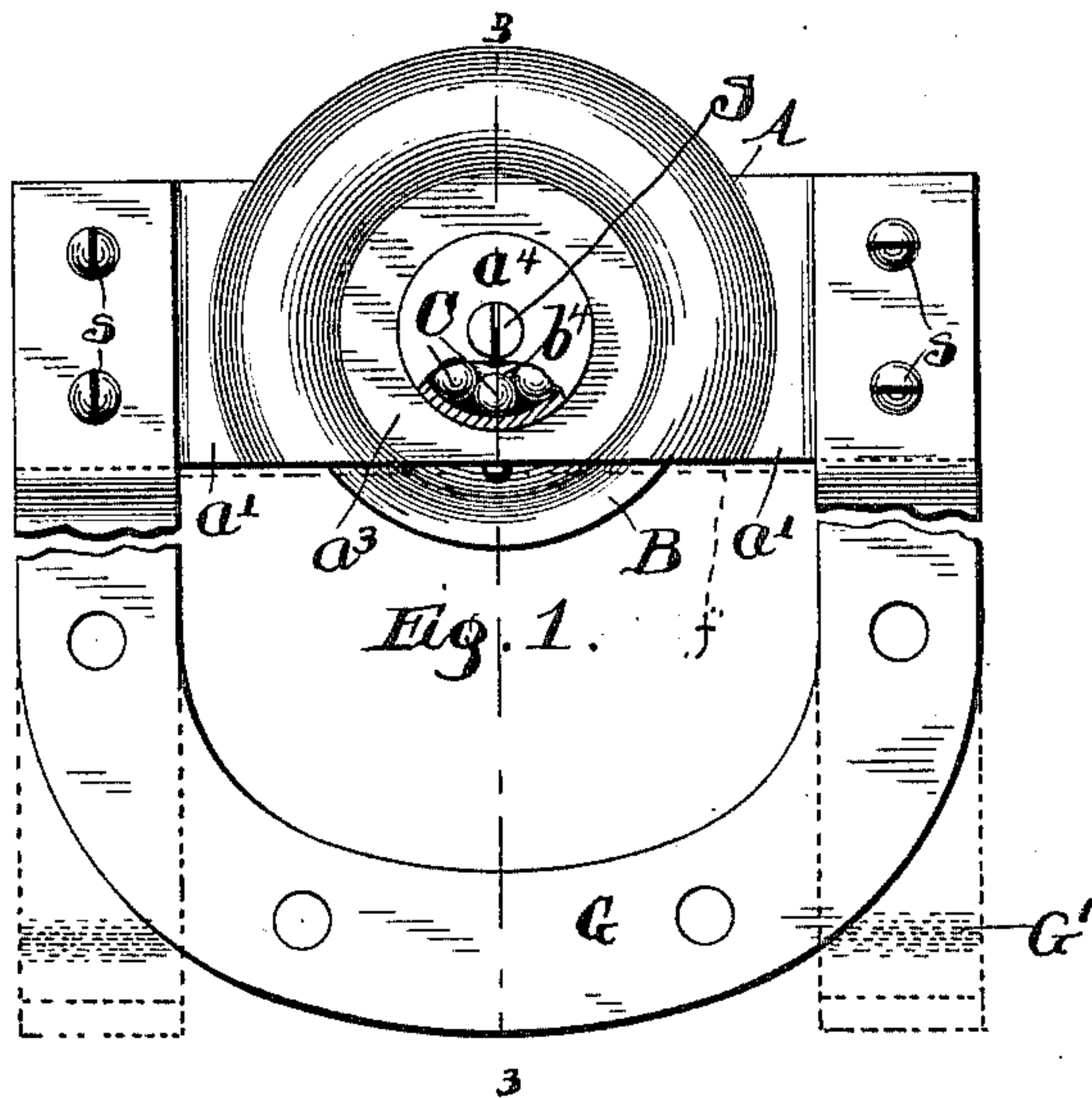


Fig. 2.

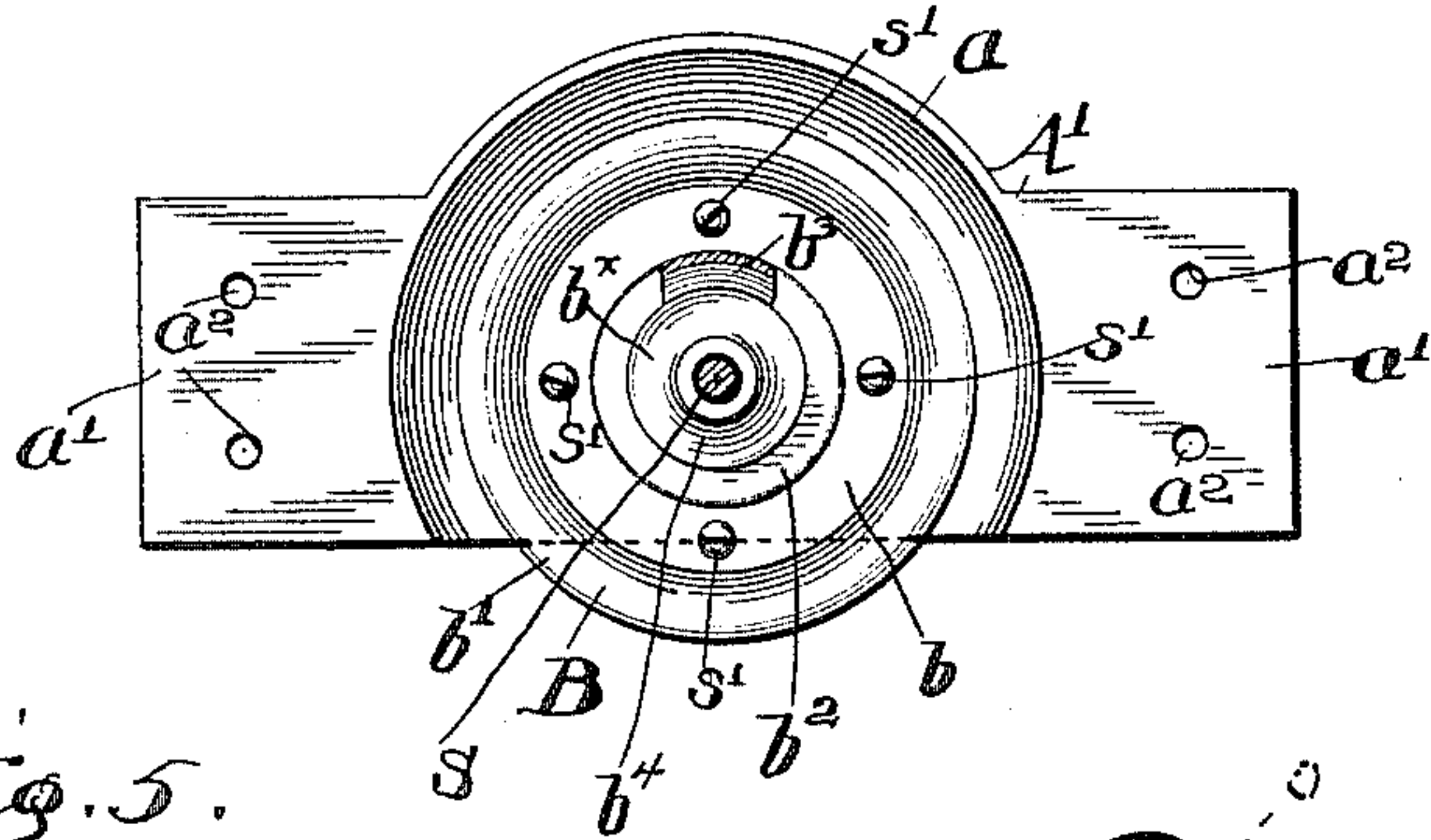


Fig. 3.

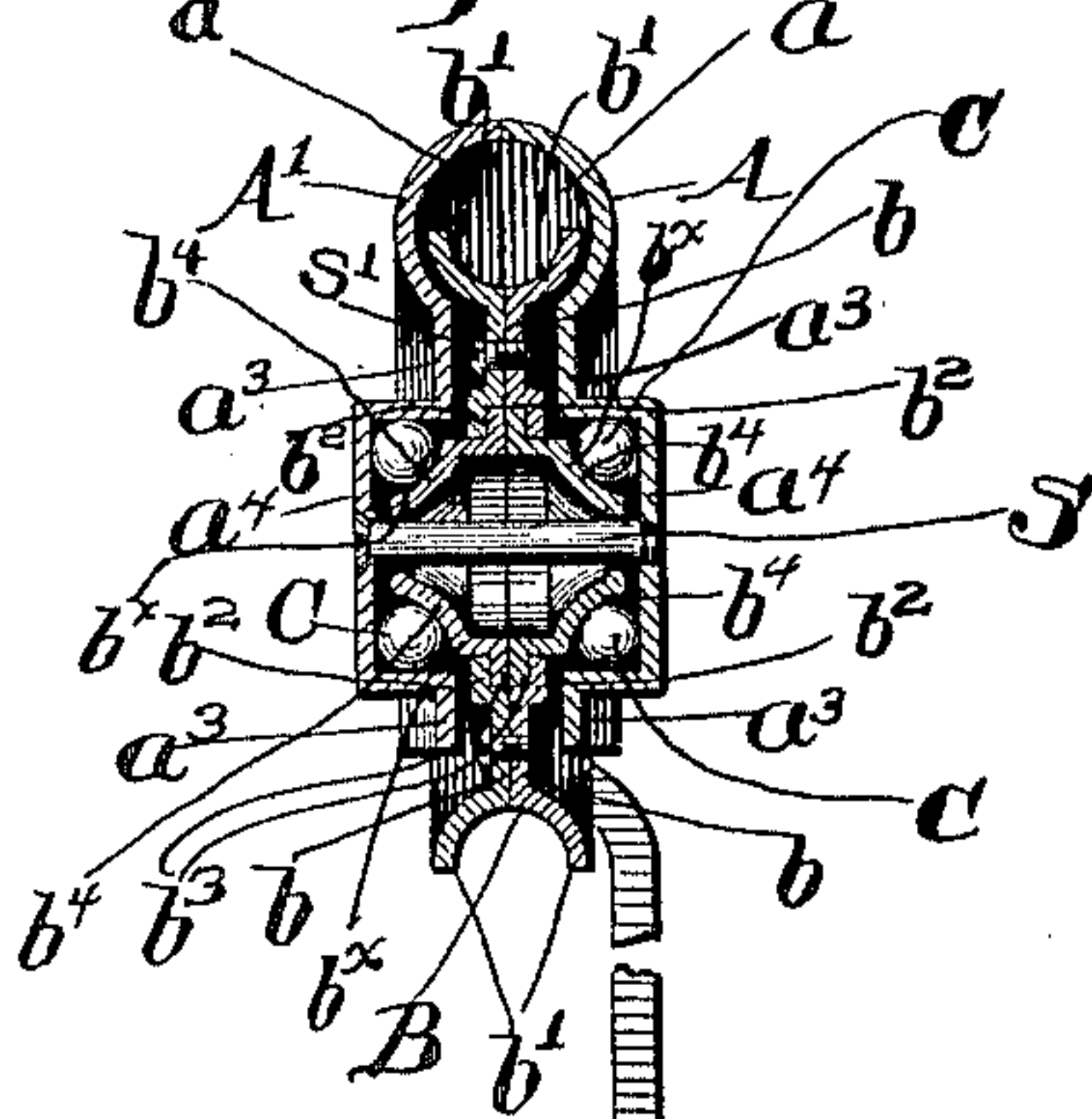


Fig. 5.

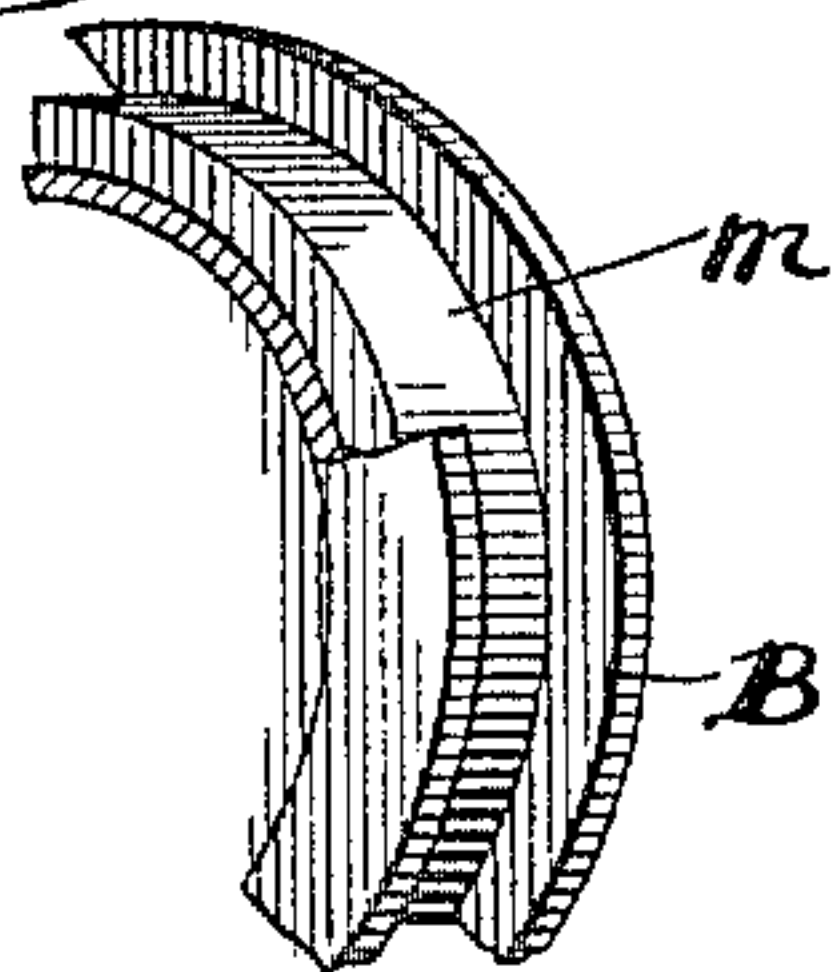


Fig. 4.

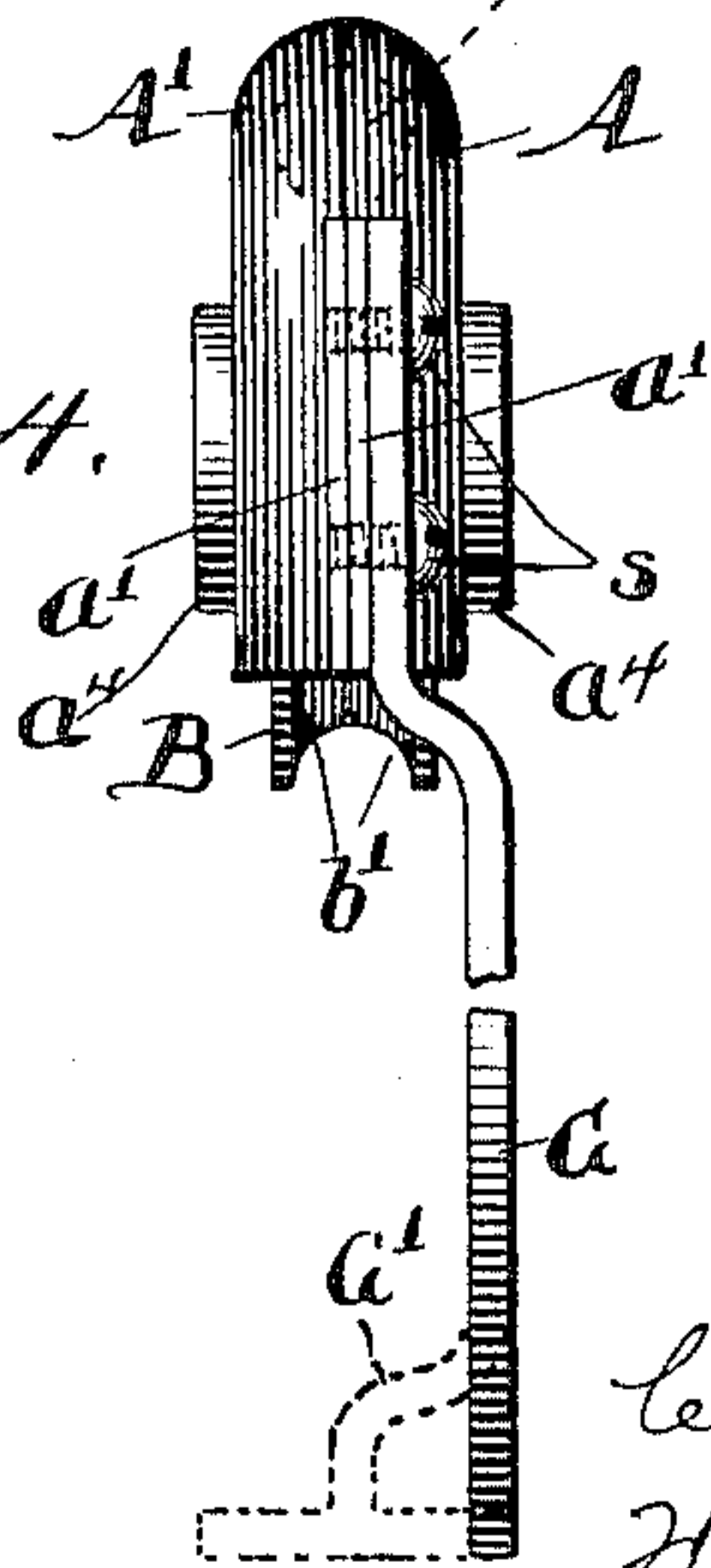
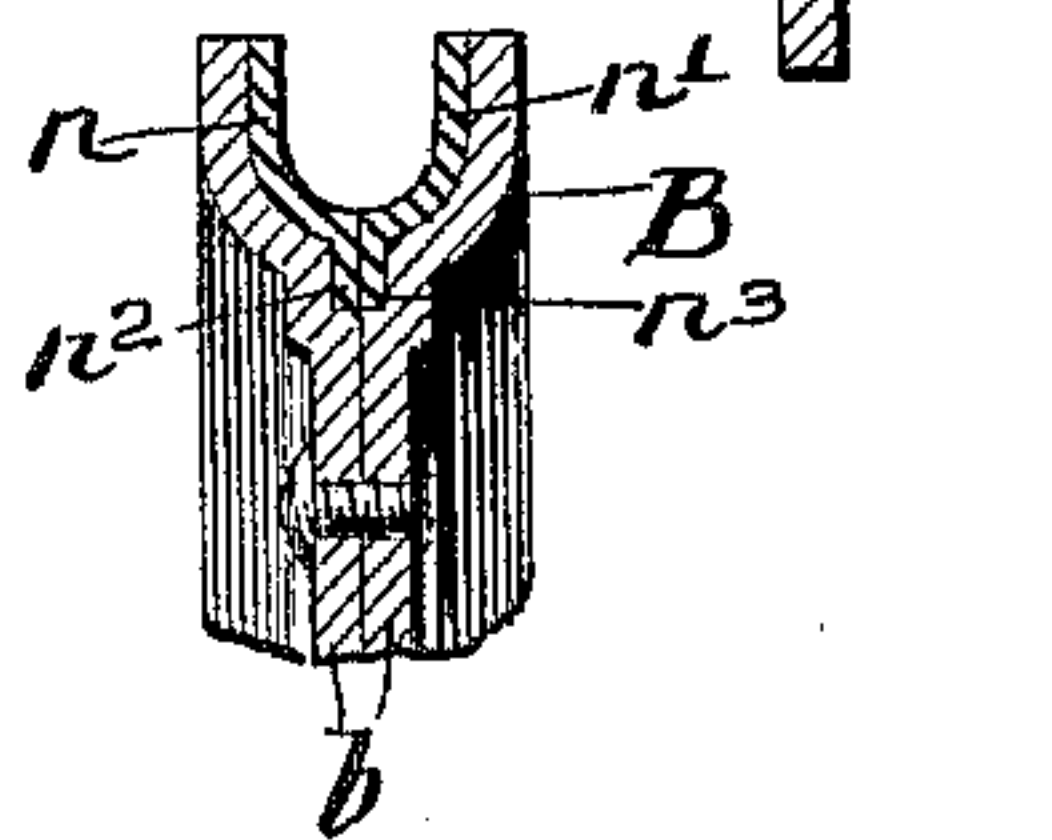


Fig. 6.



Witnesses:
Chas. O. Shervey.
M. L. Sheahan.

Inventor:
George C. Gardner
by
Hessmeyer & Putnam
Attys.

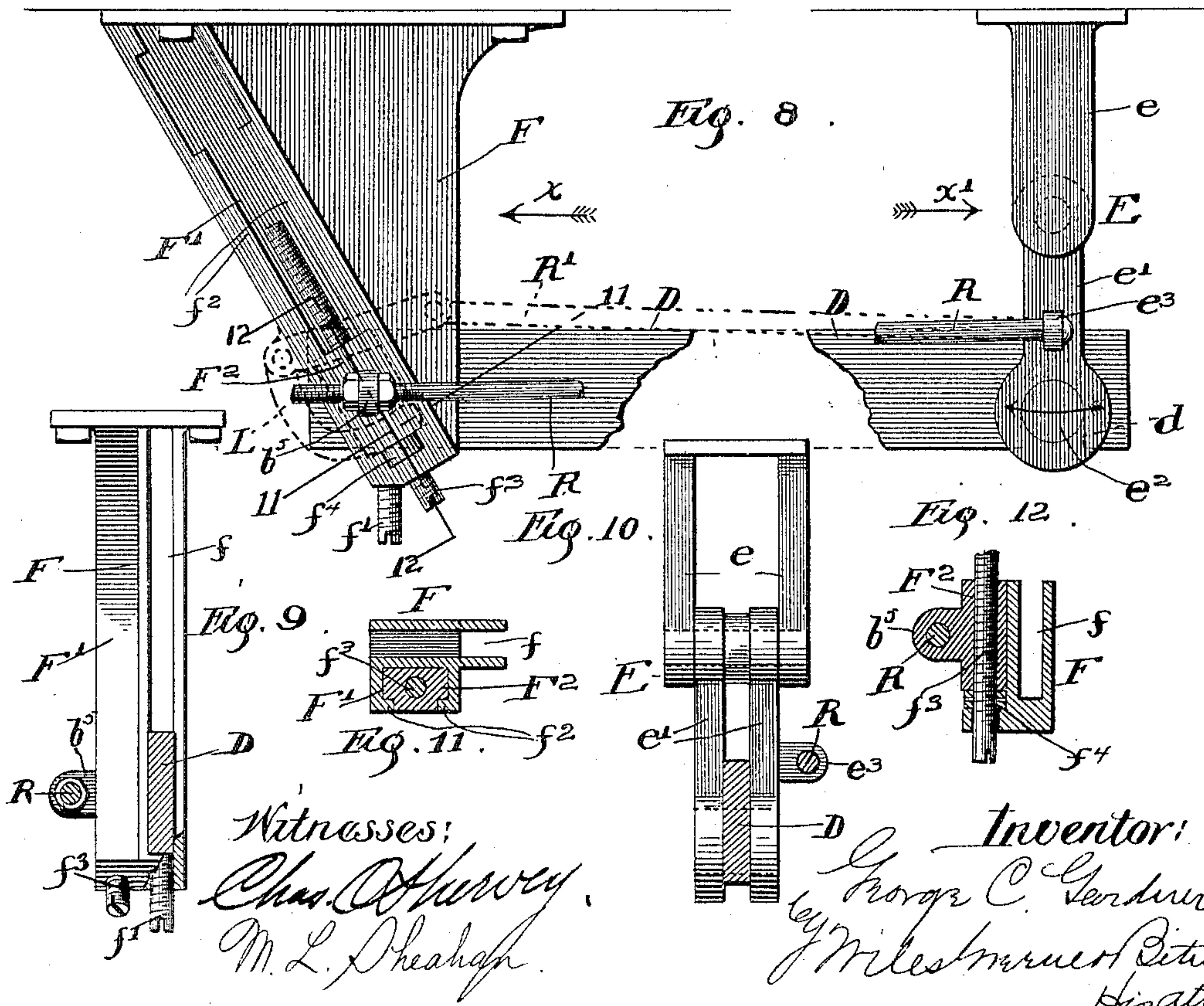
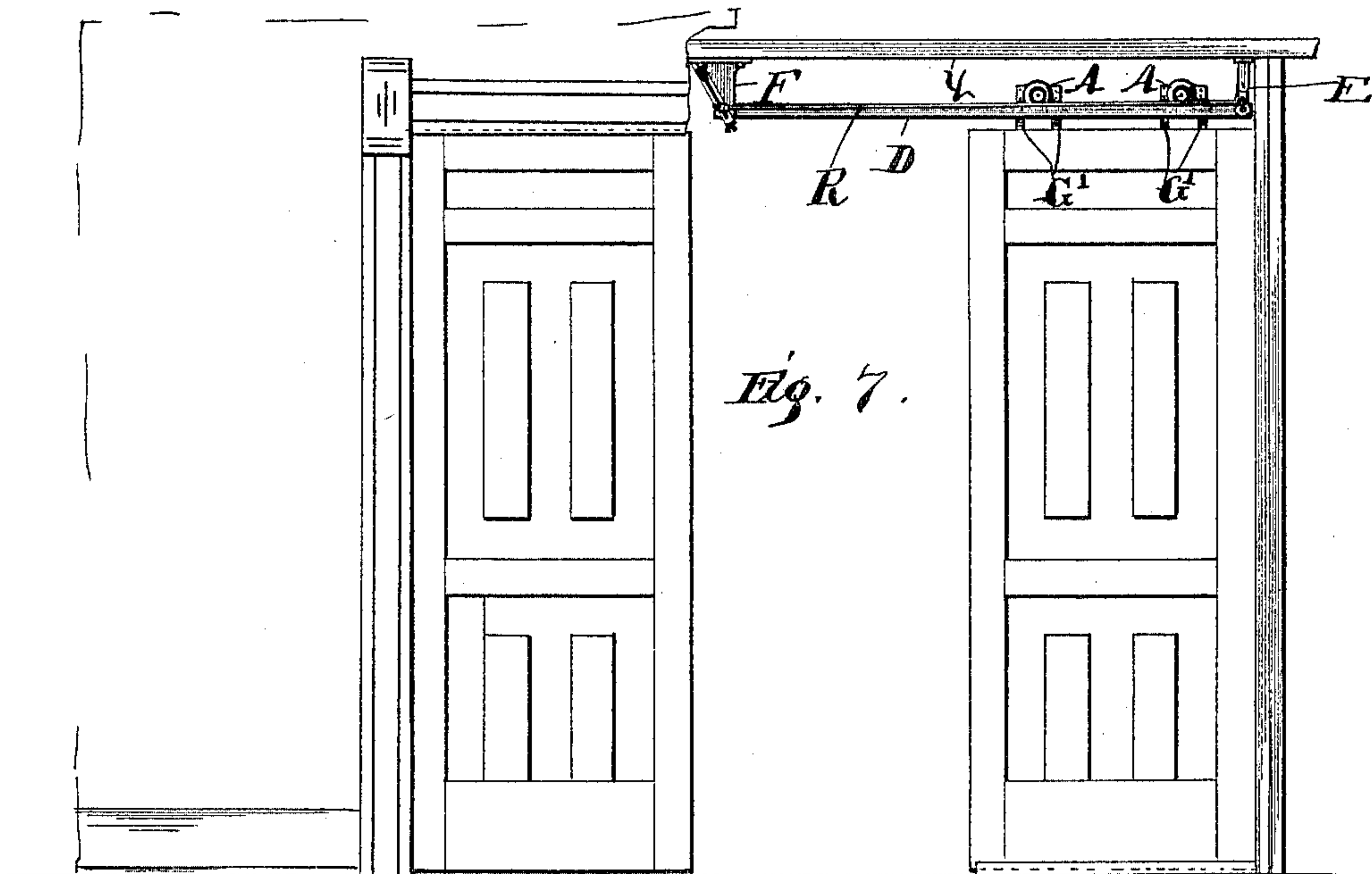
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2 Sheets—Sheet 2.

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DOOR HANGER AND SUPPORTING TRACK.

No. 581,710.

Patented May 4, 1897.



UNITED STATES PATENT OFFICE.

GEORGE C. GARDNER, OF CHICAGO, ILLINOIS.

DOOR-HANGER AND SUPPORTING-TRACK.

SPECIFICATION forming part of Letters Patent No. 581,710, dated May 4, 1897.

Application filed October 9, 1896. Serial No. 608,388. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. GARDNER, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Door-Hangers and Supporting-Tracks Therefor, of which the following is a specification.

My invention relates to certain improvements in door-hangers and supporting-tracks therefor, the object being to provide a hanger which shall have the least possible friction and be of simple and substantial construction. The object is also to produce a supporting-track therefor which shall be adjustable in order to overcome the inconvenience caused to sliding doors by the settling of the house.

This invention is equally applicable to barn-doors as well as sliding doors in general, the only change necessary being in the yoke by which the hanger is secured to the door.

I am well aware that various attempts have been made to produce an antifriction-hanger and an adjustable track therefor; but the peculiar construction and arrangement of this device I believe to be new, and the essential features thereof will be definitely pointed out in the claims appended hereto.

The invention is fully described in this specification and shown in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved hanger applied in the form of a barn-door hanger. Fig. 2 is an inner face view of one of the shells which form the roller-casing, the roller being shown in side elevation. Fig. 3 is a central vertical section through the line 3 3, Fig. 1. Fig. 4 is an end view. Fig. 5 is a detail perspective view, partly broken away, of the roller and showing the additional feature of a wooden rim applied thereto. Fig. 6 is a detail cross-section of the pulley and showing one way of securing the rim thereto. Fig. 7 is a view in side elevation, partly broken away, and showing the hanger applied to a sliding parlor-door, the track being also shown in side elevation. Fig. 8 is an enlarged detail side elevation of the track and supporting portions, the track being broken away so as to shorten the view as much as possible. Fig. 9 is an end view of one of the supports for the track, looking in the direction indi-

cated by the arrow x , Fig. 8, the track itself being in cross-section. Fig. 10 is an end view of the opposite support for the track, the view being in the direction indicated by the arrow x' . Fig. 11 is a detail section in the line 11 11, Fig. 8; and Fig. 12 is a detail cross-section through the line 12 12, Fig. 8.

Referring to the drawings, A A' represent two similarly-shaped elastic shells, forming the roller-casing of the hanger, which are preferably stamped up out of sheet metal. The shells are each formed into a truncated annulus a , which, in cross-section, is almost a semicircle, as clearly illustrated in Fig. 3, and the outer boundary or periphery of the annulus is in a plane passing longitudinally through the center of the pulley. Two wings $a' a'$ extend longitudinally from the periphery and are provided with holes a^2 , through which screws or rivets s are passed, whereby the two parts of the casing may be firmly clamped together. As shown in Fig. 3, the inner periphery of the annulus is not in the same plane as the outer periphery, but is set out slightly in order that the web of the pulley may lie between the two ring-like portions $a^3 a^3$, which extend from the inner boundaries or peripheries of the annuli, and a small space be left between the case and the pulley. These ring-like portions $a^3 a^3$ are formed into annular recesses $a^4 a^4$ at the center, which form the bearing-cups for the balls, as is clearly shown in Fig. 3.

The roller B is formed of two annular web portions $b b$, having annular flanges b' , which, when the roller is assembled, form a groove adapted to roll upon the track and thereby guide the hanger in its course upon the same. The two web portions of the roller are countersunk slightly (see Fig. 3) to form overhanging portions b^2 , and in the space formed between these overhanging portions are held two flanges b^3 upon two bearing-cones b^x . As shown, these bearing-cones are each provided with a bearing-face b^4 , adapted to roll upon the antifriction-balls C in the cups a^4 of the casing. The bearings are secured to the web of the roller by means of flanges b^3 , which are held between the flanges b^2 of the web portions and the same clamped firmly between the latter. Screws or rivets s' are provided to clamp the two portions b of the web to-

gether, and when these are sufficiently tightened the flanges b^3 will be firmly held therein. The antifriction-balls C are confined in the annular recesses a^4 of the casing and are adapted to roll therein and upon the cone-bearings, thereby forming an antifriction-bearing between the roller and the casing. To take up any wear caused by the operation of the roller, I have provided an adjusting device which is extremely simple, yet practical for the purpose to which it is applied. A screw S is passed through the casing and through the center of the pulley, openings being provided in the bearing-cones through which said screw may pass, and said openings are large enough to allow the screw to be readily passed therethrough without coming in contact with the same. This screw, in connection with the elastic plates, affords a perfect adjustment. If the bearings become loose, the screw may be tightened slightly, thereby taking up any play and adjusting the bearings to the proper point. If the bearings become tight, the screw may be merely loosened, when the elastic case will be spread and relieve the balls.

By forming the bearing-cones separate from the other portions of the roller I am able to make the cones of one grade of steel and harden the same, while the remainder of the roller may be of the ordinary sheet-steel, which requires no hardening.

The track is shown at D in Figs. 7 to 10, inclusive, and is supported at one end by a hanger E. This hanger is preferably composed of a standard e , secured, as usual, to a beam y . A pair of links e' are pivoted to the lower extremity of the standard e , and a pin e^2 connects their lower ends. The track is hooked upon the pin e^2 , a notch d being provided near its end which embraces the pin and connects the track to the link. The opposite end of the track is supported in a bracket F, also secured to the beam y in any suitable manner. A slot f is formed in one side of the bracket, and in this slot rests the free end of the track, as clearly seen in Fig. 9. A set-screw f' is seated in the bottom of the standard and when turned in the proper direction forces the free end of the track D upward, which may be done when the building has settled in such a manner that the free end of the track is somewhat below its hinged end.

Upon one side of the standard F is formed an inclined guideway F' , in which slides a block F^2 . The guideway is formed with overhanging edges f^2 , which retain the block F^2 , the overhanging edges being cut away at the top to form an enlarged opening through which the block may be inserted or removed. A screw f^3 extends through the guide-block and loosely passes through the end of the standard F, a collar f^4 being rigidly secured thereto, as clearly seen in Fig. 10. It is evident that when this screw is rotated it must force the block upward in the guiding-channel,

thereby increasing the distance between the block and the hinged end of the track. A lug b^5 is formed upon the block, a similar lug e^3 being also formed upon the link e' , and a rod R connects the lugs e^3 b^5 , so that when the screw f^3 is rotated and the slide-block moved upward in the inclined guideway the link is swung in the direction indicated by the arrow thereon and evidently raises the hinged end of the track. This is done in order to properly level the track when the building settles in such a manner as to lower this end. As shown in Fig. 8, the rod R is headed at one end and screw-threaded at the other end, nuts being provided upon either side of the lugs b^5 to secure the rod to the same.

The yoke G (shown in Fig. 1) is secured to the casing by the screws S, which are also used to fasten the casing together. Thus no extra screws are required to fasten the yoke thereto. This yoke is preferably adapted for use in connection with barn-doors, but when the hanger is intended for sliding doors the yoke is made slightly different and shown in dotted lines in Figs. 1 and 4 at G' , where it is adapted to be secured upon the upper edge of the door instead of at the side thereof.

I have found that by using a rim of wood or other like material a very smooth action may be obtained and the noise attendant upon doors of this class greatly reduced. Fig. 5 shows a simple wood ring m , fitted to the tread of the roller. Fig. 6 shows an improvement thereon, being a complete lining for the circumferential groove of the roller. This lining is composed of two parts n n' , each having an inwardly-extending flange n^2 n^3 , and the two flanges placed face to face are embraced by the sides of the roller, which are preferably slightly offset for this purpose. Wood, leather, fiber, or other material may be used for this lining, the only requisite being that it shall run noiselessly upon the track.

In place of the sliding block F^2 a bell-crank lever, as shown in dotted lines in Fig. 8 at L, may be connected to the rod R' and the set-screw f^3 used to swing the bell-crank lever in such a manner as to draw the link e toward it, thereby raising the pivoted end of the track.

I am aware that other alterations and modifications of this device are possible, and I do not therefore limit myself to the exact construction shown and described.

I claim as new and desire to secure by Letters Patent—

1. In a device of the class described, the combination with a roller having suitable bearing-faces, of an elastic casing formed with the cup portions a^4 , antifriction-balls C, interposed between said cups and bearing-faces, and a screw connecting said cups and adapted to draw them toward each other; substantially as described.

2. In a device of the class described, the combination with a roller composed of a web portion having a suitable periphery and sepa-

rate bearing-cones secured to said web portion, of an elastic casing having the recessed cup portions a^4 , antifriction-balls C, interposed between said bearing cones and cups, and a screw connecting said cups and adapted to draw them toward each other; substantially as described.

3. In a device of the class described, the combination with a grooved roller having suitable bearing-faces, of an elastic casing comprising two shells formed with the annular recessed portions a^4 , adapted to serve as bearing-cups, antifriction-balls interposed between the bearing-faces on the roller and said cups, and a screw connecting the cups whereby they may be drawn toward each other to take up the wear; substantially as described.

4. In a device of the class described, the combination with a roller formed of two web portions b , flanged at their peripheries and having the overhanging flanges b^2 , and the bearing-cones b^4 , having the flanges b^3 , held between the overhanging flanges b^2 , of a casing formed with suitable bearing-cups, and antifriction-balls C, interposed between the bearing cones and cups; substantially as described.

5. The combination with suitably-supported ball-cups of a roller or pulley composed of two annular sheet-metal pieces secured together having their outer and inner edges offset in opposite directions to form grooves around the outer and inner margins and two

inner circular pieces, the combined outer edges of which just fill said inner groove and are firmly held therein and whose inner portions are offset in opposite directions to form suitable bearing-surfaces for the balls opposed to the said cups whereby the main portion of the roller and the portions upon which the balls are to run may be made of such material as is best adapted thereto.

6. The combination with a track loosely supported at one end and connected with a link e , at the opposite end, said link being pivoted to a suitable support, of the rod R, connected to said link and extending toward the free end of the track, and a suitably-guided block F^2 , connected with the rod R, and means for moving the block toward or away from the pivoted end of the track whereby said end of the track may be lowered or raised; substantially as described.

7. The combination with the track connected at one end with a link e' , pivoted to a suitable support, of the standard F, adapted to receive the free end of the track and having the inclined guideway F' , the slide-block F^2 , sliding in said guideway, a rod connecting said block with the link e^2 , and the set-screw f^3 , adapted to move said slide-block in said guideway and thereby raise the pivoted end of the track; substantially as described.

GEORGE C. GARDNER.

Witnesses:

CHAS. O. SHERVEY,
M. L. SHEAHAN.