

(No Model.)

T. CORSCADEN.
ANTIFRICTION HINGE.

No. 563,450.

Patented July 7, 1896.

Fig. 1.

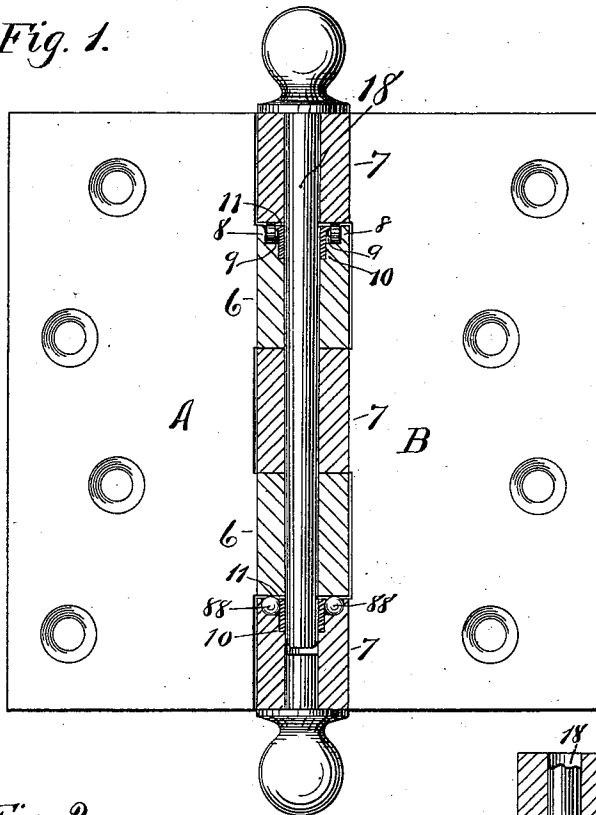


Fig. 2.

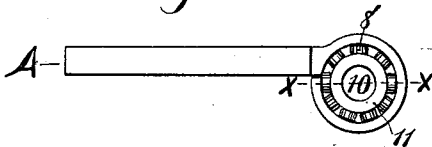


Fig. 3.

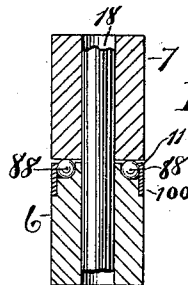


Fig. 4.

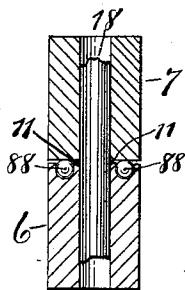
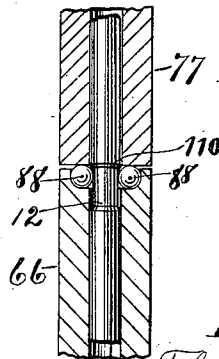


Fig. 6.



Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

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ANTIFRICTION-HINGE.

SPECIFICATION forming part of Letters Patent No. 563,450, dated July 7, 1896.

Application filed December 21, 1892. Serial No. 455,933. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CORSCADEN, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Antifriction-Hinges, of which the following is a specification.

My invention relates to improvements in antifriction-hinges, and the main object of my improvement is to secure the rolling frictional devices directly within the knuckles of the hinge, so that they will remain there when the leaves are detached from each other, no matter in what position they may be placed.

In the accompanying drawings, Figure 1 is a vertical section of a loose-pin hinge containing my improvement, the plane of section being indicated by the line *xx* of Fig. 2 and some of the parts being shown in elevation. Fig. 2 is a plan view of the left-hand leaf of said hinge. Fig. 3 is a like section of a pair of adjoining knuckles of a loose-pin hinge containing my improvement in a slightly modified form. Fig. 4 is a like view of the same in still another form. Fig. 5 is a corresponding view of a loose-joint butt, showing another form of my invention; and Fig. 6 is an enlarged side elevation of one of the friction-rollers of my hinge.

A B designate the leaves of an ordinary loose-pin hinge, the leaf A being provided with knuckles 6 6, while the leaf B is provided with knuckles 7, the same being secured together by means of the loose pintle 18, as in ordinary hinges of this class. In the upper knuckles of the left-hand leaf A is formed an annular channel for a series of antifriction-rollers 8. Each of these rollers is provided on one side with a small projection or trunnion 9, said trunnion being upon that side which faces the axis of the hinge. The bore for the pintle in this knuckle is counterbored for the reception of the sleeve 10, the same being provided at its outer edge with a holding-flange 11, which projects over the trunnions 9 of the rollers and prevents their accidental detachment. This sleeve 10 is driven into the knuckle snugly, so as to be rigid therewith, and it separates the annular channel from the pintle. The rollers 8 are

arranged in the annular channel so that their summits project beyond the end of the knuckle to receive the bearing-face at the end of the adjoining knuckle, as shown. From this description it will be seen that the holding-flange is not a bearing-surface in the sense of being a surface that supports weight during the action of the hinge, but is a mere holding-flange taking upon the lesser portion of the rolling frictional devices, while their full diameter extends from the bearing-surface proper on one knuckle to the bearing-surface proper of the companion knuckle.

In the lower knuckle of the right-hand leaf B, I show substantially the same construction, excepting that for rollers I substitute spherical balls 88, which are another known form of rolling frictional devices. I employ the same annular channel for the balls, the same counterbored knuckle, and same sleeve 10, with its holding-flange 11, taking upon the smaller portion of the balls, while their full diameter extends from the bearing-surface of one knuckle to the opposing surface of the companion knuckle. In this style of hinge when the leaf A is secured to the jamb or post the weight of the door is supported by the antifriction devices in the knuckle 6 of the leaf A. If, however, the leaf B shall be secured to the post or jamb for hanging a different-handed door, then the weight of the door will be supported by the rolling frictional devices in the knuckle 7 of said leaf B.

In Fig. 3 I have shown two knuckles and a portion of the pintle 18 with a like series of balls 88 in a like annular channel; but instead of securing them by an internal sleeve I employ an external sleeve 100, which is firmly driven upon or secured to the knuckle so as to be rigid therewith, and provided with the holding-flange 11, as in the construction before described, which flange takes upon the lesser portion of the balls and permits the full diameter to rest upon the bearing-surfaces of the hinge.

In Fig. 4 I show a like knuckle, pintle, and balls, but omit the sleeve. A sleeve-like projection, however, is formed in the knuckle itself on the inside of the balls, so as to separate them from the pintle, as before, and after the balls are seated in place this sleeve-like

projection is swaged from its center outwardly to form a holding-flange 11, like the flange hereinbefore described, for taking upon the lesser portion of the balls and holding them in place while their full diameter may extend from the bearing-face of one knuckle to that of the companion knuckle.

Each of the constructions thus far described are particularly adapted for a loose-pin hinge, and for that reason the annular chamber or recess for the balls or rollers is separated from the pintle-hole of the hinge by a solid wall, so that removing the pin will not release the balls from their confinement.

In Fig. 5 I have shown knuckles 66 and 77 of an ordinary loose-joint butt, the pintle 81 being made fast to the lower knuckle 66. This style of hinge, as is well-known, is made in rights and lefts. In the lower knuckle, which is designed to be secured to the post or jamb, I form an annular channel for a series of balls 88, the inner wall of said channel being formed by the pintle itself. The pintle is snugly driven into the lower knuckle 66, so as to be rigid therewith. In said pintle, at a point adjacent to the balls, I form the reduced portion 12, which is a little longer than the diameter of the balls. When the pintle is driven into the knuckle 66 far enough to bring the lower end of this reduced portion about even with the bottom of the annular ball channel or chamber, the balls are inserted in place, after which the pintle is driven fully in, as shown, when the upper shoulder 110, at the junction of the reduced portion and body of the pintle, becomes the holding-flange and secures the balls against accidental displacement, although the hinge-leaves and their knuckles may be detached. This shoulder or holding-flange, like the holding-flange 11 before described, is a rigid or permanent part with the knuckle in which the balls are secured, and it holds the balls by taking upon their smaller portions while their full diameters may extend from the bearing-surface at the bottom of the ball-chamber of one knuckle to the bearing-surface at the bottom of the opposing knuckle.

I am aware that prior patents show hinges with antifriction-rollers and balls when arranged in a chamber formed upon a disk or

disks, made separately from the knuckles and leaves and detachable therefrom when the leaves and knuckles are separated; also that prior patents show hinges having a series of balls in a chamber formed partly in the knuckle of one leaf and partly in the knuckle of the confronting leaf, thereby necessitating a longitudinal movement of the knuckles in putting the leaves together. All of said prior art is hereby disclaimed. By my improvement I form the frictional rolling devices directly in one of the knuckles of the hinge-leaves themselves, while the summits of said devices bear against the plain face of the confronting knuckle. This of itself is a valuable improvement, especially in loose-pin hinges, as it enables the knuckles to be fitted and slipped together by moving them transversely to their axis, after which they are secured by inserting the loose pin. A still further advantage is, however, attained by having the frictional rolling devices permanently secured within the knuckles by means of a flange that is made practically rigid with the knuckle itself.

I claim as my invention—

1. The herein-described antifriction-hinge, having in the end of one of its knuckles an annular chamber, a series of rolling frictional devices arranged within said chamber with their summits projecting beyond the end of said knuckle and a holding shoulder or flange made rigid with said knuckle and securing said rolling frictional devices therein by taking upon their lesser portions, substantially as described and for the purpose specified.

2. An antifriction-hinge having in one of its knuckles an annular chamber or recess separated from the pintle-hole by a solid wall, a series of frictional rolling devices arranged within said chamber and a sleeve provided with a holding-flange 11 rigidly secured to said knuckle with its holding-flange taking over the smaller portions of said frictional rolling device, substantially as described and for the purpose specified.

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Witnesses:

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