

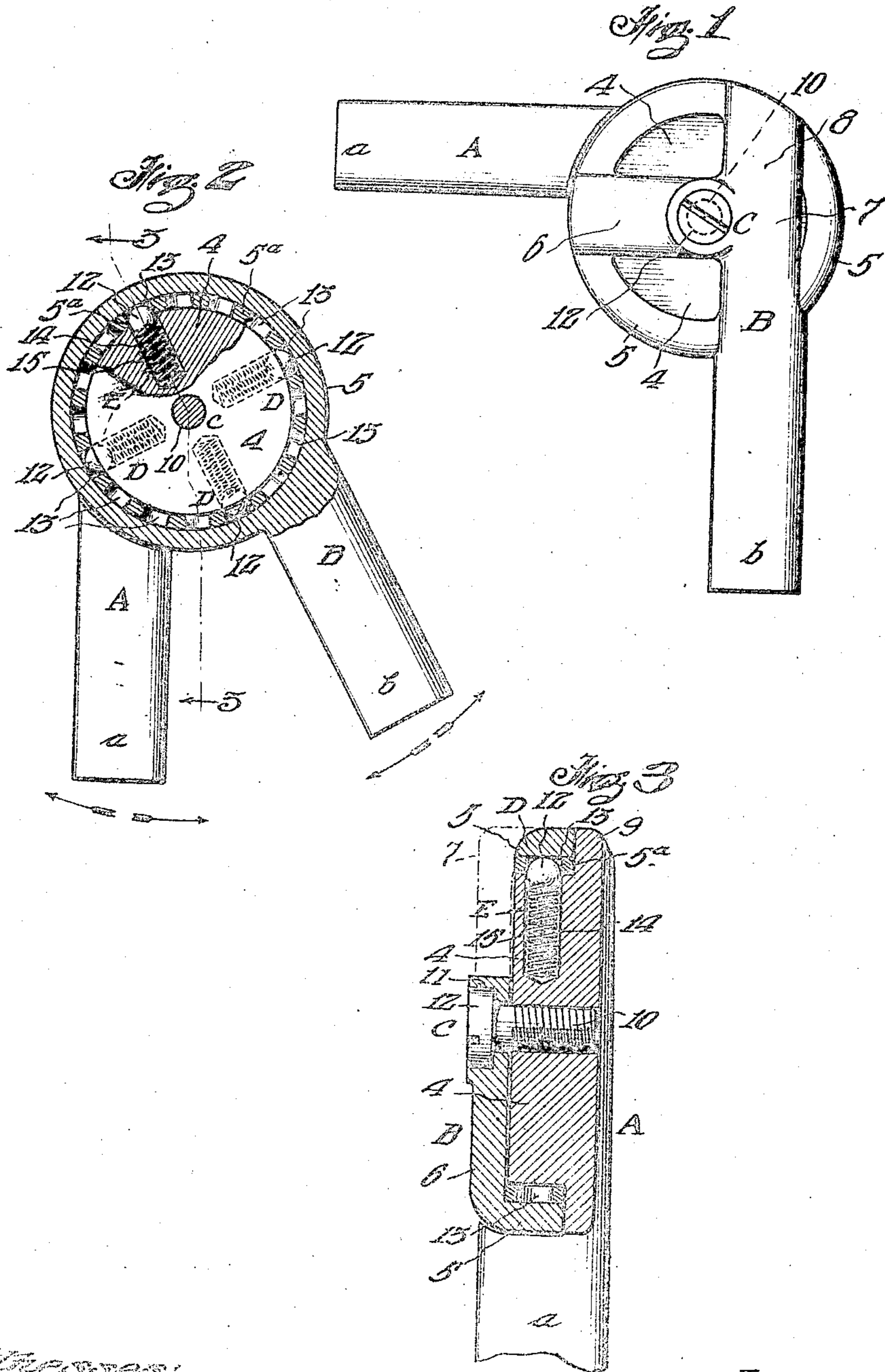
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HINGE.

APPLICATION FILED OCT. 24, 1908.

935,611.

Patented Sept. 28, 1909.



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UNITED STATES PATENT OFFICE.

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HINGE.

935,611.

Specification of Letters Patent. Patented Sept. 28, 1909.

Application filed October 24, 1908. Serial No. 459,410.

To all whom it may concern:

Be it known that I, ALONSON D. PERKINS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Hinges, of which the following is a specification.

This invention relates to hinges; and has for its objects to provide improved hinge means, or means for connecting two or more devices, things or parts for relative movement of the same, which will provide for temporarily or yieldingly locking or interlocking the same to prevent the said relative movement; and which hinge devices or hinge means, including said locking means, shall be relatively inexpensive and simple in construction, positive in operation, durable, and generally superior in point of efficiency and serviceability.

The invention consists in the provision, construction, combination, association and relative arrangement of parts, members and features as hereinafter described, shown in the drawing and finally pointed out in claims.

In the drawing:—Figure 1 is a side elevation of a hinge constructed according to the invention; Fig. 2 is a similar view of the construction shown in Fig. 1, the parts being broken away and sections in certain portions thereof to illustrate operative features of the invention; and Fig. 3 is a transverse sectional view, upon an enlarged scale, taken upon the line 3—3, Fig. 2, and looking in the direction of the appended arrows.

Corresponding parts in all the figures are denoted by the same reference characters.

Referring with particularity to the drawing, A and B respectively designate two concentric members of a hinge constructed according to the invention; said members being, in practice, combined for relative movement and provided with connection parts, *a* and *b* respectively, whereby the hinge may be connected with devices or parts of devices the hinged connection of which it is desired to provide or establish. The parts *a* and *b* may constitute in themselves portions of a hinged device; as, for instance, the arms or rods of a folding buggy top of the ordinary well-known type. The members A and B are assembled by the agency of connecting and holding means C which permits relative movement of said members and, in the specific embodiment of the

invention shown in the drawing, relative movement of pivotal or rotary nature.

D designates locking means for temporarily or yieldingly opposing or preventing relative movement of the hinge members A and B.

The hinge member A, referring now to the specific showing of the drawing, comprises a circular body 4 from which the connecting part *a* projects; and the hinge member B comprises an annular body 5 from which the connection part *b* projects. The annular body 5 is composed of a ring provided with two transverse connecting braces, 6 and 7 respectively, which connect within the circumference of said ring, as at 8. The circular body 4 is formed with the proper diameter to be housed within and completely surrounded by the flat inner face of the annular body 5 and be capable of a snug fit therein such as will permit relative play of the body 4 and the body 5. The body 4 is provided with a peripheral circular flange 9 which, when the bodies 4 and 5 are assembled, bears loosely against one edge of the annular body 5, limiting the introduction of the body 4 within the body 5.

The connecting and holding means C may comprise a bolt 10 passed through the transverse braces 6 and 7 at their junction at 8 and threaded into the circular body 4; the braces 6 and 7 being suitably chambered or counter-sunk at 11, to receive the head of the bolt 10 and permit its rotation with respect to the braces 6 and 7 and the body 5, together with the body 4.

The locking means D comprise a plurality of locking bodies 12 which are arranged and adapted to co-act with the annular body 5; said locking bodies preferably comprising balls arranged to enter recesses 13 formed in the flat inner surface of the annular body 5; and said recesses are preferably rounded to fit the balls 12 but are less than a radius of the balls in depth. A number of the recesses 13 are provided which is preferably a multiple of the bodies or balls 12, the drawing showing sixteen of the recesses 13 and four of the balls 12. To accommodate the balls 12 and permit their entrance to and withdrawal from the recesses 13, said balls 12 are preferably seated each within a receiving chamber 14 formed in the circular body 4 of the member A and radially thereof; there being shown four of such chambers arranged at intervals of

ninety degrees of the total circumference of the body 4. The balls 12, otherwise free to traverse each its respective chamber 14, are controlled each by tension means E which may comprise an expansive coil spring 15, there being one such spring housed in each of the chambers 14 and urging its respective ball outward in its chamber into engagement with the inner wall of the circular body 5 or one of the recesses 13 therein. The recesses 13 are preferably formed in a separate annulus 5^a pressed within the annular body 5 and forming the portion of the member B which is directly frictionally engaged with the body 4 of the member A.

The operation, method of use and advantages of the improved hinge constituting the invention will be readily understood from the foregoing description, taken in connection with the accompanying drawing and the following statement:—The bolt 11 firmly holds the concentric members A and B together, at the same time permitting their relative play so that the circular body 4 rotates within the annular body 5, or vice versa, either turning on a center common to the other. The circular flange 9 also holds the members against torsional strain; and the transverse braces 6 and 7 effectively reinforce the annular body 5, and both produce lightness in the structure and permit the dirt to fall out between them rather than being retained as it would be if one or both sides of the member B were closed. Any devices or parts of devices or structures connected respectively with the parts *a* and *b* are thus permitted to swing with relation to each other, toward or away from each other. In the relative pivotal movement of the bodies 4 and 5, the balls 12, pressed outwardly by the springs 15, traverse the inner surface of the body 5, entering and leaving the recesses 13 successively. While traversing the surface portions of the body 5 between the recesses 13, the devices or balls 12 exert a frictional drag upon the relatively moving bodies 4 and 5, dependent upon the potentials of the springs 15. When in the recesses 13, the balls 12 temporarily lock the bodies 4 and 5 against relative movement, there being required the application of considerable energy directed to the relative movement of the bodies 4 and 5, as through the parts *a* and *b*, to unseat and withdraw the balls 12 from the recesses 13. Because the recesses 13 are slightly less than hemispherical in depth, the application of sufficient pressure in the manner last described causes the balls to leave the recesses, under opposition by the springs 15, and permits relative movement of the bodies 4 and 5, members A and B, and devices or objects connected with the parts *a* and *b*, thus establishing hinge action. In such hinge action, it will be noted that the relative move-

ment is successively or intermittently retarded by the co-action of the balls 12 and recesses 13. This feature of my invention adapts this improved hinge particularly for use in connection with hinged devices or objects which is desired to temporarily or yieldingly lock or sustain in varying relative positions.

Having thus described my invention, I claim and desire to secure by Letters Patent:—

1. Improved hinge means, comprising relatively movable members concentrically mounted one within the other, the inner member having a peripheral flange at one side and radial chambers at the other, balls therein, and springs also therein pressing the balls normally outward; and the outer member surrounding the chambered portion of the inner member and resting at one edge against its flange, and an annulus secured within the outer member and having recesses in a plane registering with said balls.

2. Improved hinge means, comprising relatively movable members mounted on a common pivot and housed one within the other, the inner member having radial chambers, balls therein, and springs also therein pressing the balls normally outward; the outer member surrounding the inner, and an annulus secured within said outer member and having recesses of a depth less than a radius of said balls and in a plane registering with said chambers.

3. Improved hinge means, comprising relatively movable members mounted on a concentric pivot, the inner member comprising a circular body having radial chambers, and locking means pressed normally outward within said chambers; and the outer member comprising a flat ring completely surrounding said body and an annulus secured within said ring and having internal recesses in a plane adapted to register with said locking means.

4. Improved hinge means, comprising relatively movable members mounted on a concentric pivot, the inner member comprising a circular body with a peripheral flange at one side and having radial chambers, and locking means pressed normally outward within said chambers; and the outer member comprising a flat ring completely surrounding said body and resting at one edge against said flange and having internal recesses in a plane adapted to register with said locking means.

5. Improved hinge means, comprising relatively movable members mounted on a concentric pivot bolt, the inner member comprising a circular body having radial chambers, and yielding locking means therein; and the outer member comprising a ring surrounding said body and having internal recesses in a plane adapted to register with said locking

means, and two transverse braces connecting the circumference of said ring and pierced at their juncture by a countersunk hole for said bolt and its head.

- 5 6. Improved hinge means, comprising relatively movable members mounted on a concentric pivot, the inner member comprising a circular body with a peripheral flange at one side and having radial chambers, and yielding locking means therein; and the outer
10 member comprising a flat ring completely surrounding said body and resting at one edge against its flange and having internal

recesses in a plane adapted to register with said locking means, and two transverse
15 braces connecting the circumference of said ring on that edge opposite said flange and pierced at their juncture by said pivot.

In testimony whereof, I have signed my name to this specification in the presence of
20 two subscribing witnesses.

ALONSON D. PERKINS.

Witnesses:

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