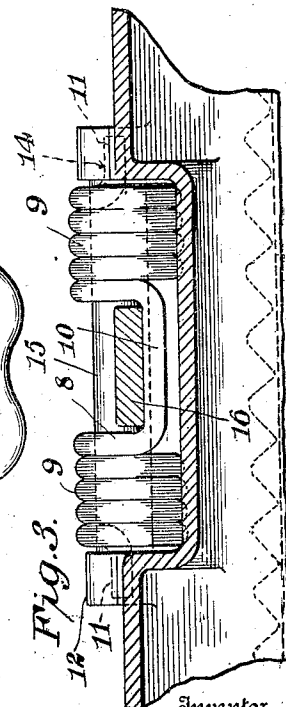
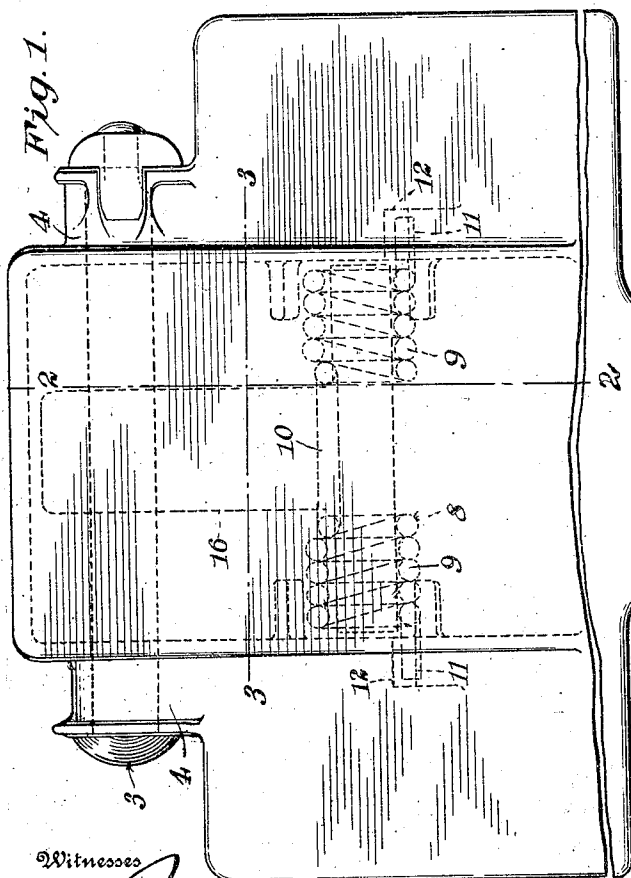
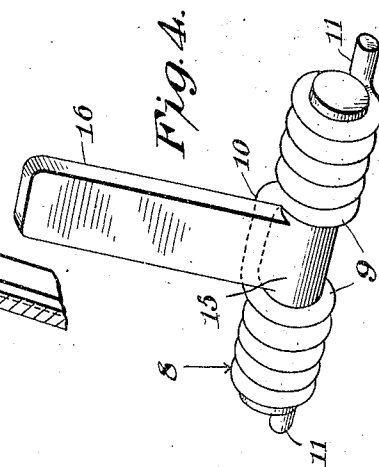
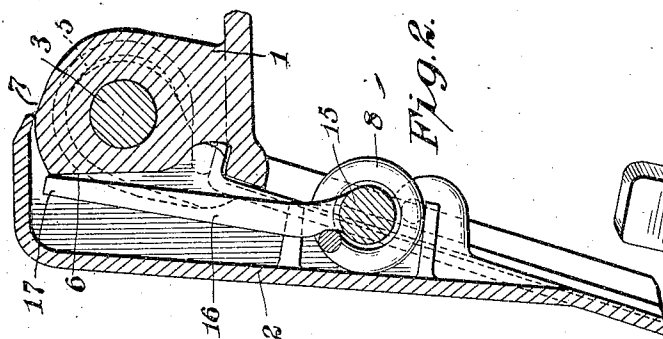


T. H. SYMINGTON.  
TORSION LID FOR JOURNAL BOXES.  
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# UNITED STATES PATENT OFFICE.

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TORSION-LID FOR JOURNAL-BOXES.

933,523.

Specification of Letters Patent.

Patented Nov. 2, 1909.

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To all whom it may concern:

Be it known that I, THOMAS H. SYMINGTON, a citizen of the United States of America, residing at the city of Baltimore, State of Maryland, have invented certain new and useful Improvements in Torsion-Lids for Journal-Boxes, of which the following is a specification.

This invention relates to journal boxes of the type in which the lid is positioned by means of a cam and follower. Such a journal box is illustrated in the applicant's prior patents Nos. 739,517 and 855,362. The lid of the box of the first patent is held in closed and open position by means of a cam carried by the lid. This cam has two flat locking or positioning surfaces corresponding to the open and closed positions respectively of the lid. A torsion spring is secured to the box. This spring is formed of two helices and the helices are connected by a portion of the spring wire bent to form a loop or arm placed tangentially to the helices. The tension of the spring presses the extremity of the arm laterally against the cam surface presented to it as the lid is opened and closed, the cam rotates and the arm which acts as a follower moves over the cam surfaces. When the flat or positioning surfaces of the cam are presented to the spring arm, the tension of the spring is exerted to prevent rotation of the cam and corresponding movement of the lid. These surfaces are so placed that the lid is held in open and in closed position. To move the cover from either of these positions, the tension of the spring must be overcome and the cover is free to swing intermediately. The second patent shows a device more similar to that to be described. The cam is stationary on the box and the follower is carried by the lid. A defect of the structures of these patents is due to the fact that the arm or loop of the spring which presses on the cam is formed of the same wire which forms the helices. The straight arm does not offer as great resistance to bending as do the helices, and the tension which is exerted is not that of the helices but of the arm. To give sufficient strength to the lever arm, the wire must be heavier than is necessary for the coil of the spring, which results in a wasteful use of metal. By use of the present device, the size of the spring wire may be reduced to the minimum necessary to give to the spring coil the desired resistance.

To transmit to the cam the full tension of the helices is the object of the present invention. This is done by substituting for the arm composed of spring wire an arm which is so rigid that it will not yield. The spring is still formed of two helices, but the wire connecting the helices is straight and in the plane of the cylinder of the helices. A rod having an arm at right angles thereto is placed in the central opening of the helices, the arm extending radially outward engaged by the straight intermediate portion of the spring. The tension of the helices is now transmitted directly to the arm which bears against the positioning cam and resilient action is confined to the helices.

Sufficient of a journal box embodying the subject matter of my invention to illustrate its operation is shown in the accompanying drawings.

Figure 1 is a fragmentary elevation of the journal box lid. Fig. 2 is a section on the line 2--2, Fig. 1, showing the torsion device of my invention and including a portion of a journal box. Fig. 3 is a section of the lid on the line 3--3, Fig. 1. Fig. 4 is a perspective of the torsion spring with the rod and arm.

Referring to the drawings, the journal box 1 is provided with the usual lid 2 which covers the opening through which packing, etc., is inserted. The lid is secured to the box to swing relatively thereto by means of a pin 3 which passes through lugs 4 on the lid and a lug 5 on the box. The latter is shown in the form of a stationary cam having substantially flat positioning or locking surfaces 6 and 7, the angle between which is a little less than 90°, though this may be varied to suit other conditions. The spring 8 to be secured to the lid consists of two spirals 9, the axes of which are aligned. The spirals 9 are spaced a suitable distance, about an inch in the embodiment shown, and are connected by a straight portion 10 of the wire forming the spring. This straight portion 10 is parallel to the axes of the helices and in the cylindrical plane of their circumference. The extremities 11 of the helices are bent nearly at right angles so that they extend in a direction parallel to the axis. The spring is placed on the inner face of the lid with the opposite ends of the helices in suitable seats 12 formed therefor, the ends 11 of the helices being placed in suitable apertures 14 of the lid. A rod or shaft 15 occupies the cylin-

drical opening of the helices, the axis of the rod being coincident with the axes of the helices. This rod 15 is provided with an arm 16 extending at right angles thereto at a point near the center of its length. This arm protrudes through the opening formed by the space between the helices 9 and is engaged by the straight intermediate portion 10 of the spring. The arm 16 extends into contact with the cam 5 and the tension of the spring 8 is so adjusted as to press the arm against the cam surface. As the lid is swung back and forth, the arm 16, the extremity 17 of which acts as a cam follower, moves over the cam 5 and as the lid approaches closed position, the follower rests on the flat surface 6 and the tension of the spring is exerted to hold the lid closed. To open the lid, the arm 16 must be rotated left-handed (see Fig. 2) against the tension of the spring. As the lid is swung backward, the arm 16 engages the positioning surface 7 and the lid is held in open position, the co-operation of the parts in this position being similar to that in closed position.

It will be noted that the tension of the spring is applied to the arm 16 at the circumference of the helix and the entire resiliency of the device is in the helix, the arm being completely rigid. In this way, the stress which places the spring under tension is evenly distributed over the helix, no particular part of the spring being subject to more stress than any other, and the pressure transmitted to the cam is the full tension of the helix.

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

1. In combination, a journal box and a hinged lid, a cam secured to one of said members adjacent the hinge, a helical torsion spring mounted on the other, a rigid lever pivotally mounted at one end within the helix and projecting therefrom to the cam surface, the lid and the lever swinging in substantially parallel planes, the spring engaging the arm to press it against the cam surface.
2. In combination, a journal box and a lid, one having positioning surfaces at an angle corresponding to the open and closed positions of the lid, a helical torsion spring mounted on the other, a rigid lever pivotally mounted at one end within the helix and projecting therefrom toward the positioning surfaces, the spring engaging the arm to press it against one surface in open and the other in closed position of the lid.
3. In combination, a journal box and a swinging lid, a cam secured to one of said members adjacent the axis about which such swinging takes place, a helical torsion spring mounted on the other member, the helix parallel to the said axis, a rod inclosed by

the helix, an arm secured to the rod and projecting radially from the helix, a portion of the spring bearing against the arm to press it against the cam surface.

4. In combination, a journal box and a swinging lid, a cam secured to one member adjacent the axis about which the lid swings provided with a plurality of positioning surfaces, a helical torsion spring mounted on the other member, a rod inclosed by the helix, an arm projecting radially from the helix and secured to the rod, a portion of the spring bearing against the arm to press it against the positioning surfaces.

5. In combination, a journal box and a swinging lid, one member provided with a positioning surface, a spring composed of two helical coils and an intermediate connecting portion mounted on the other member, a rod inclosed by the helices, and an arm projecting radially from the rod and engaged by the intermediate connecting portion of the spring whereby it is pressed against the positioning surfaces.

6. In combination, a journal box having an opening for the insertion of packing, a lid for the opening mounted to swing relatively to the box, a stationary cam on the box having flat surfaces corresponding to open and closed positions of the lid, a helical torsion spring secured to the lid, an arm pivotally mounted within the helix and projecting therefrom, a portion of the spring engaging the arm to press it against the cam so that the arm engages one flat cam surface to hold the lid open and the other to hold it closed.

7. In combination, a journal box having an opening for the insertion of packing, a lid for the opening mounted to swing relatively to the box, a stationary cam on the box having positioning surfaces corresponding to open and closed positions of the lid, a helical torsion spring secured to the lid, a rod within the helix, an arm secured to the rod and projecting radially from the helix, a portion of the spring engaging the arm to press it against the cam.

8. In combination, a journal box and a lid, one member provided with a positioning surface, a helical torsion spring mounted on the other, the spring having a portion of its length extending in the direction of the axis of the helix and lying in the cylindrical surface of the helix, an arm pivoted within the helix and projecting therefrom, the portion of the spring which is parallel to the axis bearing against the arm to press it against the positioning surfaces.

Signed by me at Baltimore, Maryland, this 15th day of December 1908.

THOMAS H. SYMINGTON.

Witnesses:

J. LE ROY HOPKINS,  
E. JOHN NICHOLS.