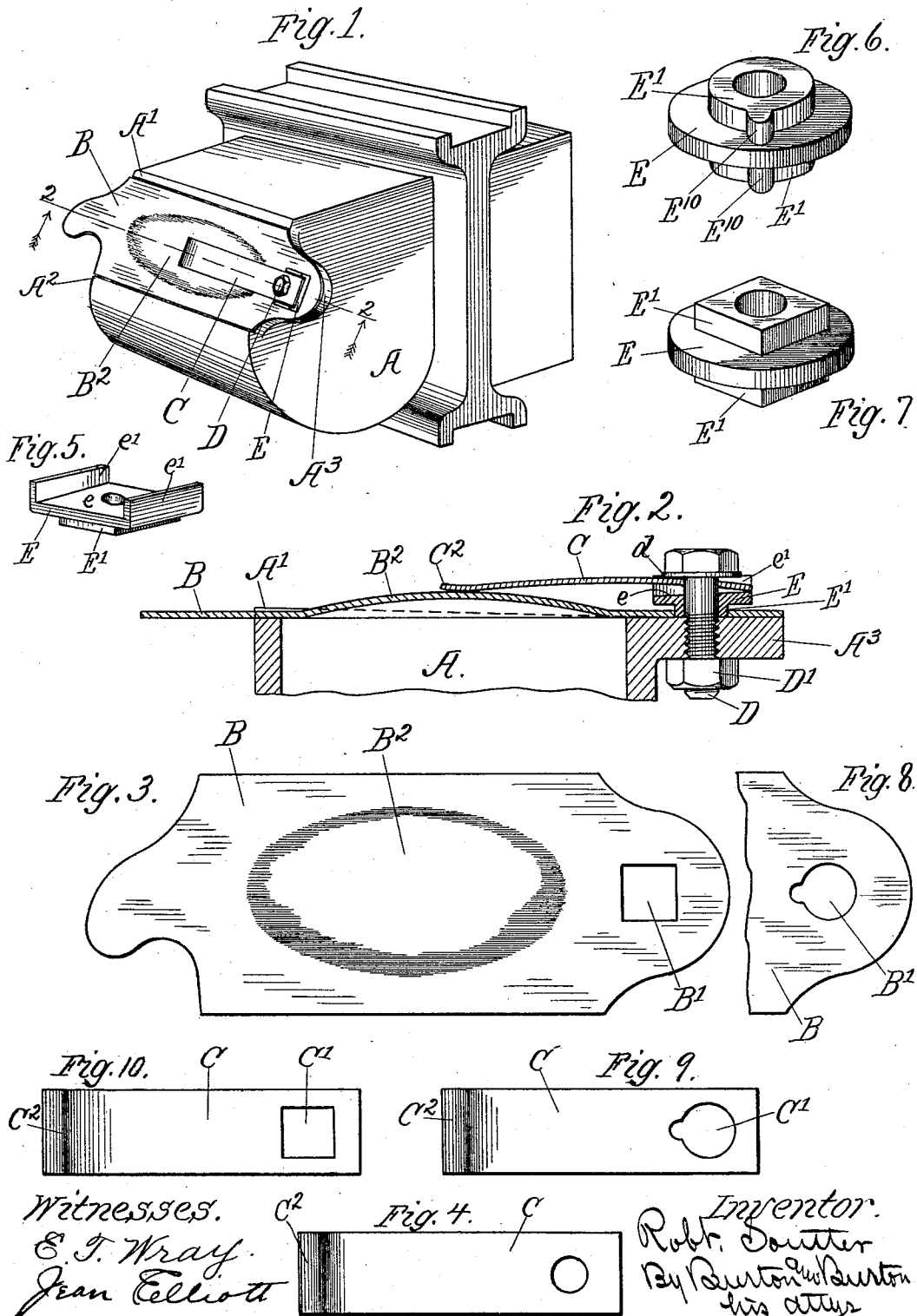


(No Model.)

R. SOUTTER.
AXLE BOX LID.

No. 484,471.

Patented Oct. 18, 1892.

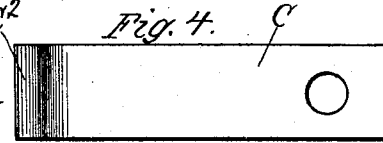


Witnesses.

E. J. Wray.

Jean Elliott

Fig. 4.



Inventor.

Robt. Sautter
By *Burton* *Burton*
his attys

UNITED STATES PATENT OFFICE.

ROBERT SOUTTER, OF CHICAGO, ILLINOIS.

AXLE-BOX LID.

SPECIFICATION forming part of Letters Patent No. 484,471, dated October 18, 1892.

Application filed May 25, 1892. Serial No. 434,314. (No model.)

To all whom it may concern:

Be it known that I, ROBERT SOUTTER, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in a Car-Axle-Box Lid, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

This invention is an improvement in car-axle-box lids of a class which are adapted to swing edgewise to cover and uncover the box and to be retained seated upon the margin of the box by the pressure of a spring held in place by the pivot-bolt.

In the drawings, Figure 1 is a perspective of a car-axle box having my improved lid. Fig. 2 is a section through the line 2 2 on Fig. 1 in a plane at right angles to the lid. Fig. 3 is a plan of the lid. Fig. 4 is a plan of the spring. Fig. 5 is a perspective of a sleeve or bushing which I employ on the pivot-bolt to form a fulcrum for the heel of the spring. Figs. 6 and 7 are perspectives of two modified forms of said bushing. Fig. 8 is a detail of a modification of the lid in respect to the aperture which receives the bushing corresponding to the form shown in Fig. 6. Figs. 9 and 10 show springs provided with holes adapted to fit different forms of bushing.

A is the box; B, the lid; C, the spring; D, the pivot-bolt; E, the bushing referred to.

The box A has marginal flanges A' and A² at the upper and lower edges, between which the lid is lodged, so as to make a tight seat by its inner surface upon the margin of the box and exclude dirt. The upper flange is tapered off toward the pivoted end of the box, so that the cover being lifted at the free end may be swung over said upper flange without being deflected against the tension of the spring more than necessary to clear the flange at the end where it is the highest.

The bolt D is preferably adapted to be made rigid with the box, as by screwing into it, and being secured by a lock-nut D' at the back side of the lug A³, which is provided on the box for the purpose of pivoting the cover thereto.

The sleeve or bushing E is non-circular at the lower end and projects through a non-

circular aperture in the lid to the box, so that it is non-rotatable with respect to the lid, but is engaged and rotated with the latter. As illustrated, and preferably, the part which thus projects and engages the lid is of the form of a hub E', being reduced in cross-area from that of the body of the bushing, so as to leave the body, of flange-like form, overhanging the lid when the parts are assembled. Two non-circular forms of the hub are shown—to wit, square, as in Fig. 7, and circular with a projecting tongue, as in Fig. 6—the aperture in the lid of corresponding forms being shown in Figs. 3 and 8, respectively. The sleeve or bushing is adapted to carry the spring with it in its rotation by having the seat e formed at its upper end to receive the spring between the flanges e' e', as shown in Figs. 1, 2, and 5, or by the same device as that by which the sleeve is engaged with the lid—to wit, a non-circular hub. The latter device in the two forms already described is illustrated in Figs. 6 and 7, the corresponding forms of aperture in the spring being shown in Figs. 9 and 10, respectively. The form which involves the non-circular aperture in the spring is not so desirable as the other form, because the spring is weakened by the hole, which in the modified forms is larger than would be necessary merely to accommodate the bolt, and the form in which the spring is seated on the bolt is also preferable, because it permits greater range of adjustment of the bolt to vary the tension of the spring.

The parts are assembled by lodging the lid on the box, inserting one hub of the bushing in the aperture of the lid, lodging the spring in the seat e of the bushing or with the hub of the latter in the aperture of the spring, and inserting the bolt through the central aperture of the hub and making it fast in the box with the head binding upon the upper surface of the spring, as seen in Figs. 1 and 2. The bolt will be adjusted to secure the desired tension of the spring, whose free end C² rests upon the lid at a point remote from its pivoted end, as at the crest of the swell B², about midway in the length of the lid. In this construction the heel of the spring, resting upon the upper surface of the body of the bushing, obtains a fulcrum at that point and acts as a lever with its free end operating downward

upon the lid, the force being applied intermediate the two ends—to wit, at the point *d* at the edge of the head of the bolt on the side of the axis of the bolt toward the free end of the spring. The lid thus receives the pressure of the spring only at a point where the free end of the spring rests upon it, which, being substantially the middle point of the length of the lid, holds the lid upon its seat with equal pressure at all points of the seat. When the lid is swung aside, it carries the bushing with it by virtue of the engagement of the hub of the bushing in the aperture of the lid, and the bushing in turn by its engagement with the spring carries the spring. In practice the friction of the parts will cause them to move together in the same manner; but the devices described for effecting engagement of the bushing with the spring and with the lid insure positively such co-operation. The bolt at its lower margin, where it bears upon the spring, is preferably circular, even though the head above that margin may be made polygonal for the purpose of receiving a wrench or key to tighten it. The purpose of making the bolt-head thus circular at this margin is so that there will not be any angle which would tend to engage the spring as the lid is swung aside and resist such movement of the spring or tend to prevent its being carried with the bushing, since such resistance would tend to wear the hub or the spring at the aperture in the latter and diminish the perfection of the engagement of the parts together by their non-circular form. The height of the lower hub of the bushing should be such as to allow between the surface of the lid and the under surface of the body or flange of the bushing only space to permit the lid to be lifted sufficiently to clear the flange at the margin of its seat. This will prevent the overstraining of the spring which would be caused by springing the lid out farther than necessary, as might be done in the absence of such a stop as that which is afforded by the flange or body of the bushing.

I claim—

1. In a car-axle box, a lid pivoted thereto at one end and adapted to swing edgewise about said pivot to uncover the box, the bolt by which it is so pivoted, and a sleeve or bushing thereon extending through the lid of the box, and a spring retained between the bushing and the bolt-head and bearing upon the surface of the lid at a point remote from the pivoted end of the latter, substantially as set forth.

2. In a car-axle box, a lid pivoted thereto

at one end and adapted to swing edgewise about said pivot to uncover the box, the bolt by which it is so pivoted, and a sleeve or bushing thereon extending through the lid to the box, and a spring which bears upon the lid only at a point remote from the pivoted end, said spring being engaged by the sleeve or bushing, so as to rotate therewith about the pivot of the lid, substantially as set forth.

3. In a car-axle box, a lid pivoted thereto at one end and adapted to swing edgewise about said pivot to uncover the box, a sleeve or bushing on the pivot-bolt, overhanging the lid, and a spring retained on the bolt between the bushing and the bolt-head and bearing upon the lid at a point remote from the pivoted end of the latter, substantially as set forth.

4. In a car-axle box, a lid pivoted thereto at one end and adapted to swing edgewise about said pivot to uncover the box, a sleeve or bushing on the pivot-bolt, extending through the lid to the box and having a flange which overhangs the lid, and a spring retained on the bolt between the bushing and the bolt-head and bearing upon the lid at a point remote from the pivoted end of the latter, substantially as set forth.

5. In a car-axle box, a lid pivoted thereto at one end and adapted to swing edgewise about said pivot to uncover the box, a sleeve or bushing located and rotatable on the pivot-bolt and extending through the lid to the box and engaged with the lid and non-rotatable relatively thereto, and a spring retained on the bolt between the bushing and the bolt-head and bearing upon the lid at a point remote from the pivoted end of the latter, substantially as set forth.

6. In a car-axle box, a lid pivoted thereto at one end and adapted to swing edgewise about said pivot to uncover the box, a pivot-bolt and a sleeve or bushing thereon which is non-circular at the lower end and extends through a non-circular aperture in the lid, such sleeve being provided at its upper end with a seat to receive the spring, and a spring lodged in such seat and retained therein by the bolt-head and bearing on the lid at a point remote from the pivoted end of the latter, substantially as set forth.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 18th day of May, 1892.

ROBERT SOUTTER.

Witnesses:

JOHN YORKS,
AUG. HOGBERG.