No. 802,531. PATENTED OCT. 24, 1905.

J. W. STEPHENSON.

JOURNAL BOX LID.

APPLICATION FILED SEPT. 16, 1904.

3 SHEETS—SHEET 1.

Fig. 10.

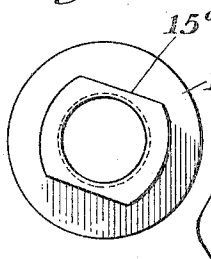



Fig. 11.

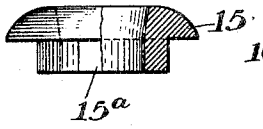



Fig. 1.

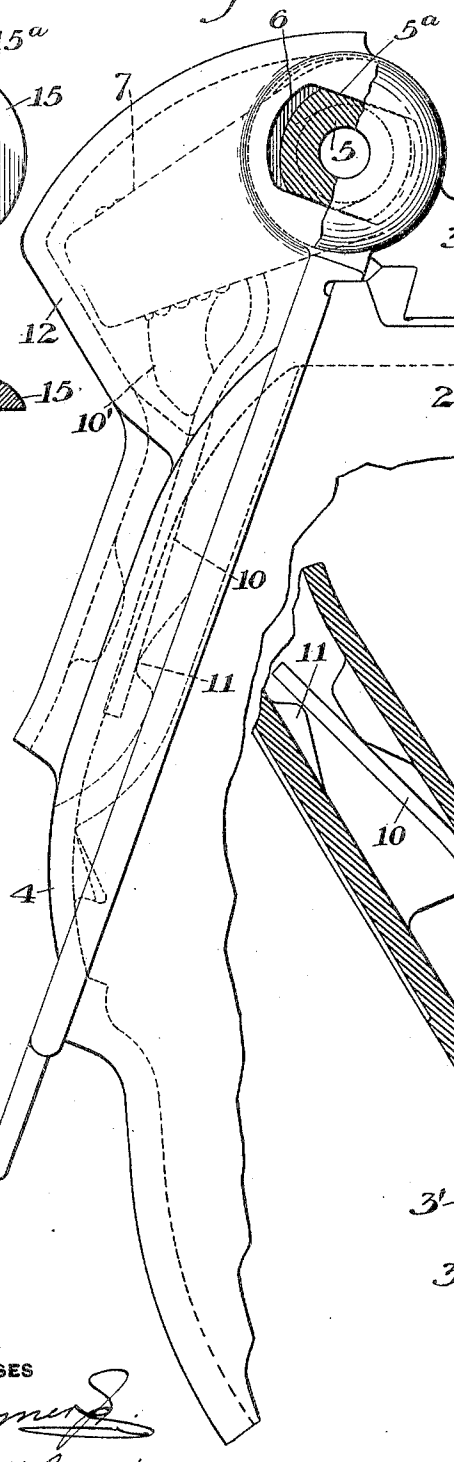



Fig. 8.

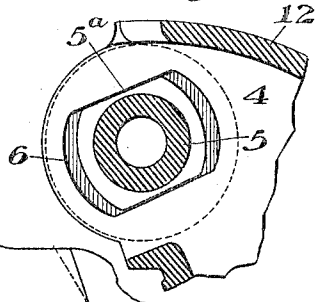



Fig. 9.

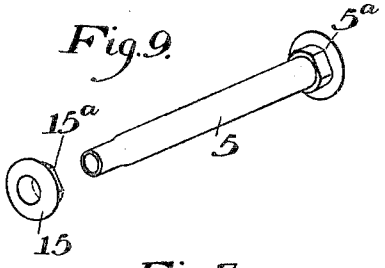
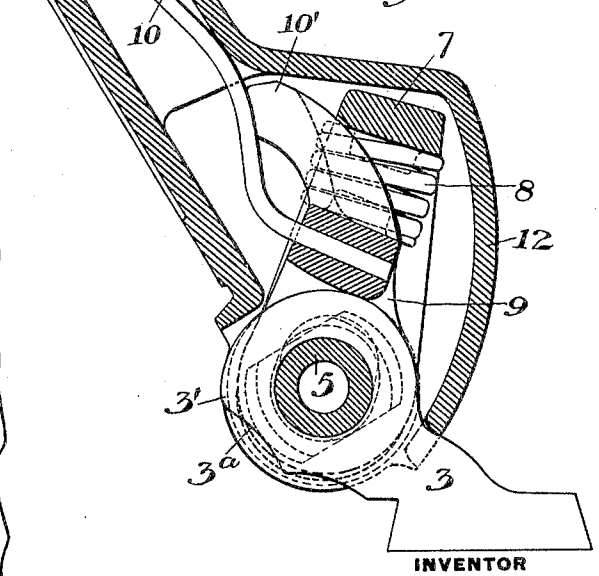



Fig. 7.




WITNESSES

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3 SHEETS—SHEET 2.

Fig. 2.

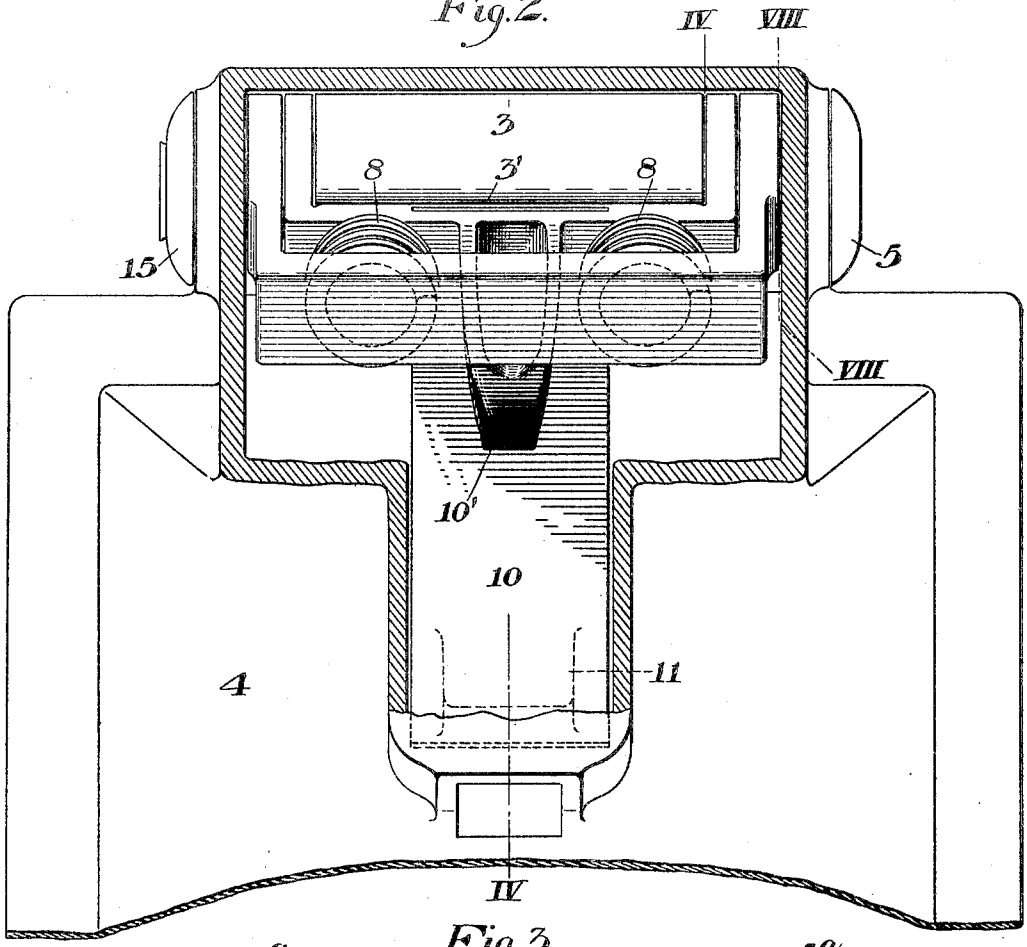
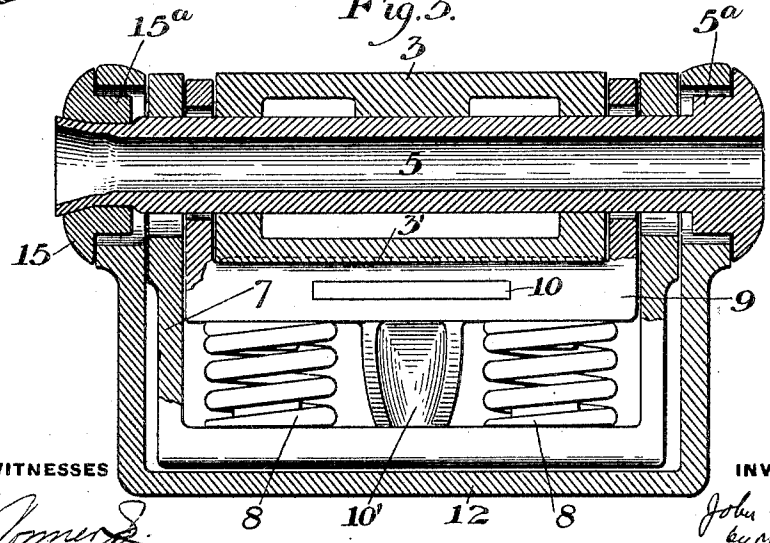



Fig. 3.




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3 SHEETS—SHEET 3.

Fig. 4.

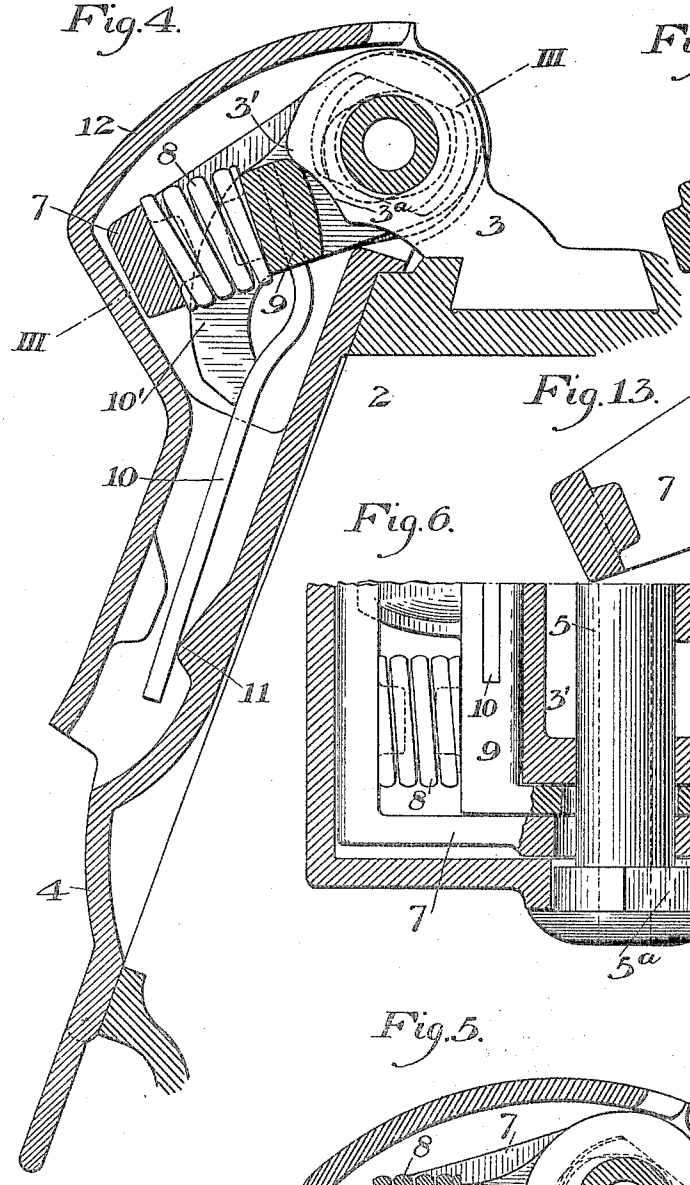



Fig. 12.

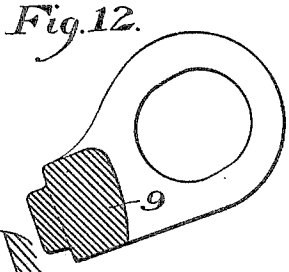



Fig. 13.

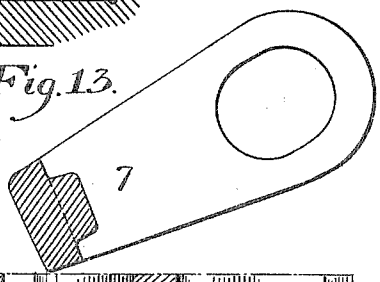
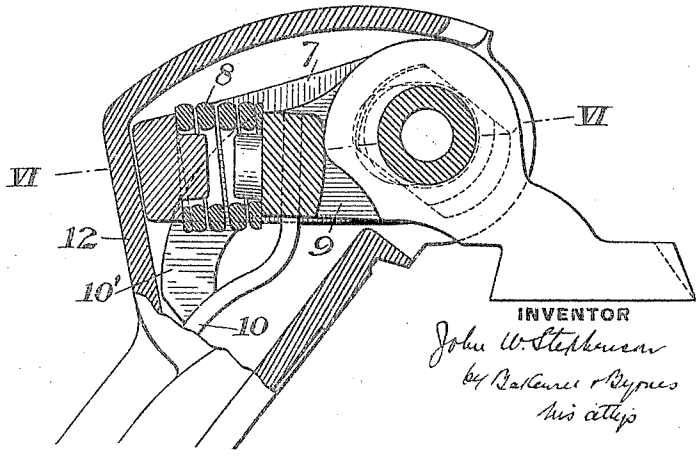



Fig. 6.




Fig. 5.




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# UNITED STATES PATENT OFFICE.

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## JOURNAL-BOX LID.

No. 802,531. Specification of Letters Patent. Patented Oct. 24, 1905.

Application filed September 16, 1904. Serial No. 224,671.

*To all whom it may concern:*

Be it known that I, JOHN W. STEPHENSON, of Toledo, Lucas county, Ohio, have invented a new and useful Journal-Box Lid, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, partly broken away, showing a journal-box having a lid constructed in accordance with my invention. Fig. 2 is a front elevation of the lid, partly broken away. Fig. 3 is a horizontal section on the line III III of Fig. 4. Fig. 4 is a vertical central section on the line IV IV of Fig. 2. Fig. 5 is a view of the lid and lug detached, showing the lid partly open. Fig. 6 is a horizontal section on the line VI VI of Fig. 5. Fig. 7 is a view similar to Fig. 5, showing the lid fully open. Fig. 8 is a section on the line VIII VIII of Fig. 2. Fig. 9 is a perspective view on a smaller scale of the hinge-pin and washer. Figs. 10 and 11 are detail views of the washer, and Figs. 12 and 13 are detail sectional views of the members constituting the spring-carrier.

The object of my present invention is to improve the construction of the journal-box lid described in my application for Letters Patent Serial No. 192,570, filed February 8, 1904. The purpose of that device, as stated in said application, was to provide a journal-box lid especially adapted for use on the axle-boxes of railway-cars, which will adjust itself automatically to its seat on the box and will fit tightly thereon even when the hinge-pin by reason of defect in the casting is not in accurate alinement with the plane of the box. The importance of securing an accurate fit between the journal-box lid and the face of the box is well understood, and in my invention this is satisfactorily accomplished without complication of the parts.

My present invention improves that device by providing means by which if the lid-closing spring should lose its resiliency it would not destroy the operation of the lid, automatic means being provided for compensating for such loss of resiliency.

My present invention also provides for the prevention of wear of the lid at its hinge, to which lids are specially subject when applied to fast-running cars.

In the drawings, 2 represents a car-axle box, and 3 is a lug on the box, which is either made integral therewith or is cast separately and attached to the box, as shown.

4 is the lid hinged to the lug with a pin 5, which passes through enlarged holes 6 in the lid, so as to afford to the lid freedom of motion independently of the pin, which will allow it to adjust itself when closed to fit neatly against the face of the box irrespective of the accuracy of the alinement of the pin or lug. In order that this freedom of adjustment of the lid to the box may not be impaired by the operation of the spring mechanism, I employ the following devices: 7 is a spring-carrier or stirrup, the lateral arms of which fit around the pin 5, preferably having slots, as shown, and this stirrup carries a spring or springs 8, preferably coiled springs, which bear at their inner ends against a leaf-spring carrier 9, which is also preferably made in the form of a stirrup and is hinged to the pin 5, the holes in the arms of the stirrup 9, through which the pin passes, being enlarged to afford loose motion to the arms. The end or body portion of the carrier 9 bears against the forward side of the lug 3, which is shaped with a cam-like prominence 3′ and with a receding portion $3^a$ back of the carrier and against which the carrier bears when the lid is closed. The carrier has a lid spring-arm 10, which is fixed, preferably, by riveting at its upper end to the carrier and at its lower end bears slidingly against a boss 11 on the lid, which affords a rocking bearing between the spring-arm and the lid. The lid has an integral cover portion or hood 12, which covers the parts above described.

When the lid is closed, the parts occupy the position shown in Figs. 1 and 3, in which the carrier 9 bears against a portion $3^a$ of the lug and is pressed firmly against the same by the pressure of the spring 8, which presses upon the carrier 9 and holds the spring 10 under tension, causing it thereby to press the lid firmly against its seat. This pressure, however, is exerted only on the middle portion of the lid where the spring-arm 10 is in contact with the lid, and as the lid is loose on the pin

5 it will adapt itself to the surface of the box whether the lug and pin be accurately located in parallel relation with the face of the box or not.

When the lid is lifted, the connection of the spring 10 with the spring-carrier 9 causes the latter, together with the spring-carrier 7, to turn with the pin 5 on the lug 3 and the carrier 9 to ride over the cam or prominence 3′ on the lug of the box until at middle position, as shown in Fig. 6, the spring-carrier 9 has been pressed forwardly by the prominence 3′ and has relieved the spring 10 from exerting tension on the lid. When the lid is moved to its full-open position, as shown in Fig. 7, the spring-carrier 9 passes the prominence 3′, permitting the spring 8 to relax somewhat and to hold the lid in open position because of the tension which must be exerted upon it to move the lid back and to carry the part 9 past the prominence 3′ toward closed position. When the lid is again moved to closed position, the carrier 9 passes the prominence 3′, and when it has done so the spring 8 forces the carrier back to the position shown in Fig. 4, thus applying tension to the spring 10 and causing it to close the lid firmly against the face of the box. The spring, therefore, which acts primarily to hold the lid closed is the spring or pair of springs 8, the operation of which is controlled by the lug of the box, and the spring 10 operates to transmit the compression of the spring 8 to the lid of the box. The flexibility of the lid, due to its loose pivoting on the pin 5, enables it to find its seat no matter how defective the original relation of the parts may be or the condition to which they may be brought by wear.

In the device illustrated in my said application, Serial No. 192,570, the spring-carrier 9 had when closed a flat bearing $3^a$ against the lug 3, and if for any reason—for example, because of defect in the spring—the spring 10 should lose its resiliency the device would not operate properly, because the force required to hold the lid to its seat on the box would be lacking. I provide means for automatically compensating for such lack of resiliency, providing a space between the spring-carrier and the face $3^a$ of the lug, so that in the event of loss of tension of the spring 10 the coiled spring 8 would simply force the spring-carrier 9 rearwardly in such manner that its more rearward position relatively to the spring 10 of the spring upon the lid would increase its tension, and thus cause it to exert the required holding pressure. The device would render the parts operative and useful even if the part 10 were a rigid one with no spring action or resiliency whatever. I do not limit myself to the specific mode described for accomplishing this result, but intend to cover any equivalent means for automatically imparting pressure thereto and increasing its tension in the event of its original resiliency becoming impaired.

An additional feature of my invention consists in improving the means by which the leaf-spring 10 is held to the carrier 9. Instead of holding it simply at the extreme upper end, as shown in my former application, I provide the carrier with a projection 10′, which extends along the outer surface of the spring and has a bearing against the same, as shown in Fig. 4, thus increasing the rigidity of the spring and making its closing action more forcible.

The device which I employ for preventing wear of the lid at its hinge is illustrated in Figs. 1, 3, 8, and 9. Instead of having a hinge-pin 5 circular in cross-section from end to end I form at one end a portion oblong in cross-section, having flat sides $5^a$, and I make the hole in the lid within which this portion of the pin fits of correspondingly oblong shape. At the other end of the pin I provide a washer 15, which fits on the pin and which also has flat sides $15^a$ fitting within a correspondingly-shaped hole in the lid. These flat sides afford an extending bearing-surface between the pin and the lid, and thus prevent rapid wear which round pins would cause on the contacting portions of the lid. The oblong holes in the lid are made longer than the registering portions of the pin and washer, so as to afford the necessary loose motion and self-adjustment of the lid.

Within the scope of my invention as defined in the claims the parts may be modified, since what I claim is—

1. The combination of a journal-box lid, a pivoted spring-carrier, a spring held by the carrier at the end next to the hinge of the lid, a lug, and means for pressing the held end of the spring toward the lug to impart tension thereto and for automatically increasing the extent of such pressure when the resiliency of the spring fails; substantially as described.

2. The combination of a journal-box lid, a spring-carrier, a spring carried thereby, and a second spring pressing the carrier against the lug, there being a free space back of the carrier at the closing position of the lid; substantially as described.

3. A journal-box lid having a pivot-pin provided with flat bearing-faces laterally fitting in oblong holes in the lid; said lid-holes being longer than the greater transverse dimension of the pivot-pin, to provide for relative movement of the lid and pin; substantially as described.

4. A journal-box lid, having a pivot-pin provided with flat bearing-faces fitting in oblong holes in the lid and a washer applied to the pin, one of said bearing-faces being constituted by said washer; substantially as described.

5. A journal-box lid having a pivoted

spring-carrier and a spring held thereby at its end next to the hinge of the lid and adapted to be put in tension by closing of the lid, said carrier having an extending portion bearing against the spring; substantially as described.

6. The combination of a journal-box lid, a loosely-pivoted carrier, an arm carried thereby and bearing on the lid, and a spring acting on the carrier, there being a free space back of the carrier at the closing position of the lid; substantially as described.

7. A journal-box lid, a lid-spring, a loosely-pivoted lid-spring carrier, and means other than the lid-spring for holding said carrier against a lug on the box; substantially as described.

8. A journal-box lid, a lid-spring and means, other than the lid-spring, controlled by the hinge-lug of the box for putting the lid-spring under tension when the lid is being closed; substantially as described.

9. A journal-box lid, a lid-spring, and a second spring controlled by a lug on the box for putting the lid-spring under tension when the lid is being closed; substantially as described.

10. A journal-box lid having a spring-stirrup pivoted coaxially with the lid, a spring carried thereby, and a lid-closing member acted upon by said spring and bearing on the lid; substantially as described.

11. A journal-box lid having a spring-stirrup pivoted coaxially with the lid, a spring carried thereby, and a lid-closing member acted upon by said spring and bearing on the lid, said member being loosely pivoted to the box; substantially as described.

12. A journal-box lid having a spring-stirrup pivoted coaxially with the lid, a spring carried thereby, and a lid-spring member, said lid-spring member being pressed by the stirrup-spring against a lug on the box and having its tension controlled thereby; substantially as described.

13. A journal-box lid, a lid-spring, and means controlled by a lug on the box for putting the lid-spring under tension when the lid is being closed, said lid having a hood covering said parts; substantially as described.

14. A journal-box lid having a pivoted stirrup, and a loosely-pivoted carrier for a lid-closing member, a spring interposed between said stirrup and carrier, a lug bearing against the loosely-pivoted carrier, and a lid-closing member carried by said carrier; substantially as described.

15. A pivoted journal-box lid arranged to have lateral movement on its pivot, and a plurality of lid-closing spring mechanisms inclosed by said lid; substantially as described.

16. A pivoted journal-box lid and an independent, pivoted, lid-closing spring-arm, each being arranged to have lateral movement on its pivot; substantially as described.

17. A pivoted journal-box lid, an independent, pivoted, lid-closing spring-arm, each being arranged to have lateral movement on its pivot, said arm having at its free end a sliding bearing on the lid; substantially as described.

18. A pivoted journal-box lid, an independent, pivoted, lid-closing spring-arm, each being arranged to have lateral movement on its pivot, said arm having at its free end a rocking bearing on the lid; substantially as described.

19. A journal-box lid, a lid-spring, and a coiled spring controlled by a lug on the box for putting the lid-spring under tension when the lid is being closed; substantially as described.

20. A loosely-pivoted journal-box lid, a spring member bearing loosely on the lid, a lug, and means adapted to press the spring member against the lug and to exert tension thereon when the lid is being closed; substantially as described.

21. A loosely-pivoted journal-box lid, a spring-carrier, and a spring member bearing loosely on the lid, a lug, and means coacting with the lug auxiliary to the spring member and adapted to impart tension thereto; substantially as described.

22. A journal-box having lugs, in combination with a lid and closing member, a hollow pivot-pin passing through said lugs, lid and closing member, said pin having a washer over which one end of the pin is expanded; substantially as described.

23. A loosely-pivoted journal-box lid and an independent loosely-pivoted spring-carrier, and a spring held thereby at the end next to the hinge of the lid; substantially as described.

24. A loosely-pivoted journal-box lid and an independent loosely-pivoted spring-carrier, a spring held thereby at the end next to the hinge of the lid, and means for increasing the tension on the spring when the lid is closed; substantially as described.

25. A pivoted journal-box lid, arranged to have movement transversely of said pivot and adapted to swing out of the plane of its closed position toward and from the face of the box, and a leaf-spring held at the end next to the hinge and free at the end which bears on the lid; substantially as described.

26. A journal-box lid having a spring, a box having a lug shaped to force the spring away from the box as the lid rises and to permit its approach as the lid closes and a second spring which holds the first-named spring against the lug; substantially as described.

27. A journal-box lid having a leaf-spring held at the end next the hinge of the lid and free at the end which bears against the lid, a lug and an auxiliary spring arranged to impart tension to the first-named spring as the

lid closes and to remove the tension therefrom as the lid opens; substantially as described.

28. A pivoted journal-box lid arranged to have movement transversely of its pivot and mounted to swing out of the plane of the face of the box, an independent pivoted spring-carrier arranged to have movement transversely of its pivot and a lid-closing member having a free bearing on the lid; substantially as described.

In testimony whereof I have hereunto set my hand.

JOHN W. STEPHENSON.

Witnesses:
J. J. MANNING,
THOMAS W. BAKEWELL.