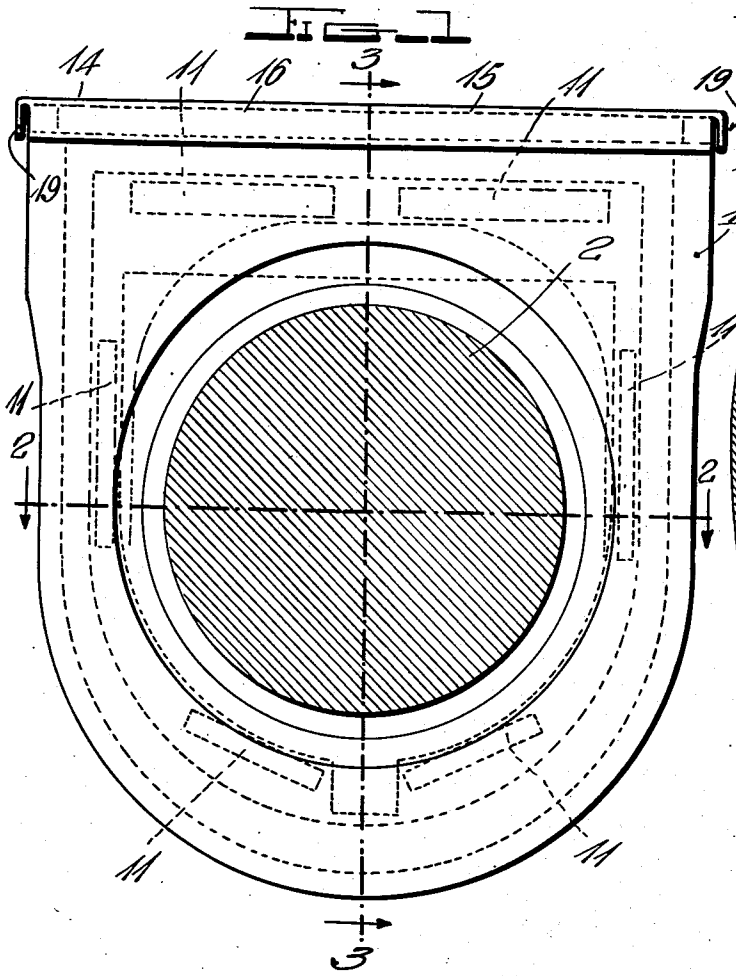
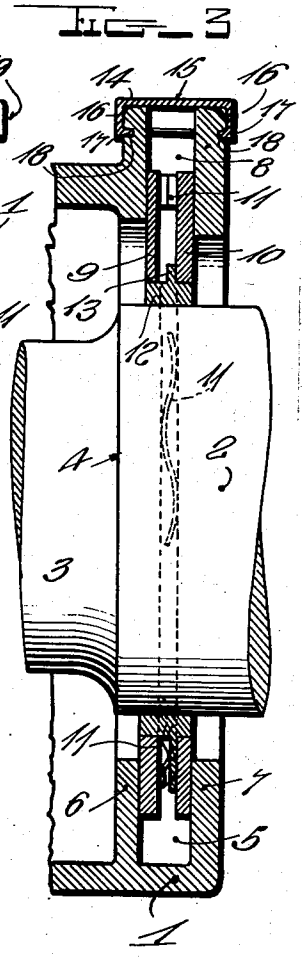
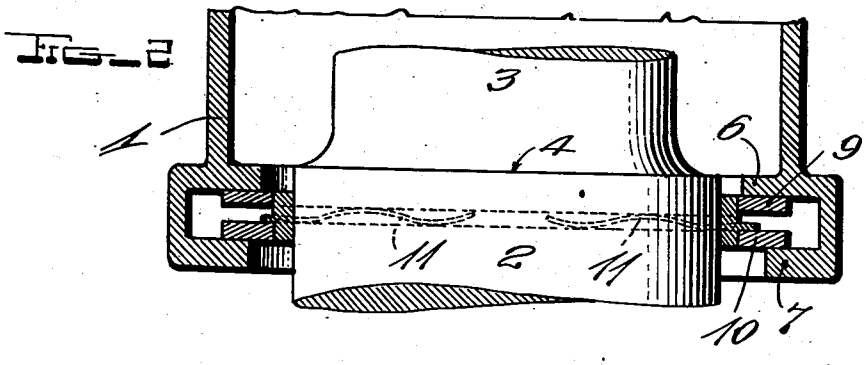
April 8, 1941. J. D. BIGELOW 2,237,287

DUST GUARD CASING CLOSURE

Filed April 26, 1938 3 Sheets-Sheet 1







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FIG. 4

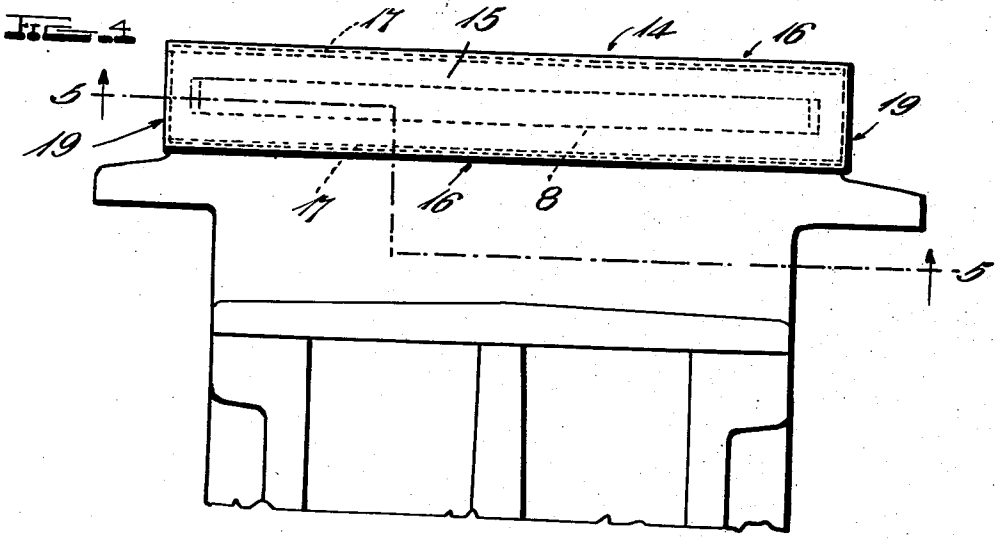


FIG. 6

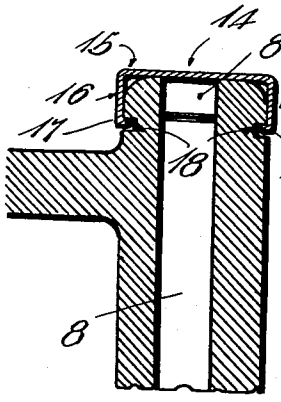


FIG. 5

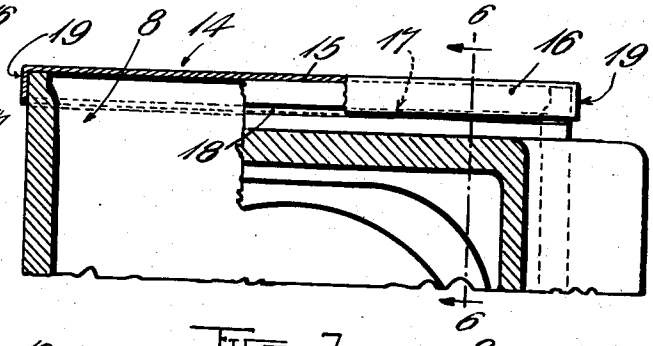


FIG. 7

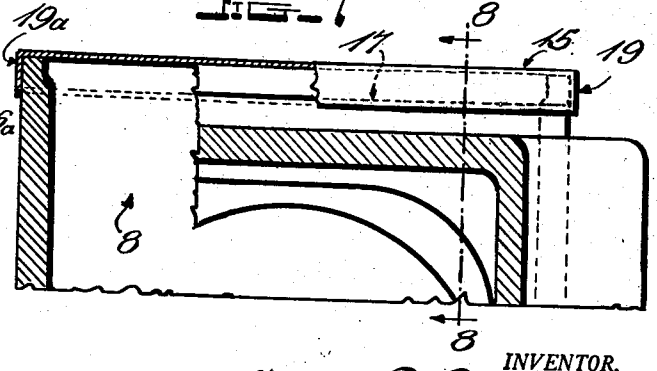
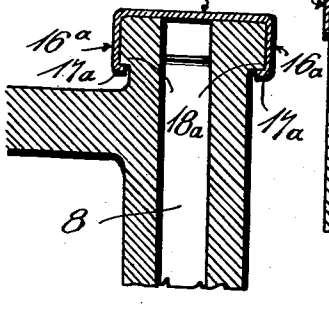


FIG. 8



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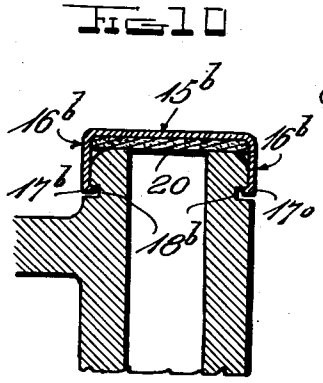


FIG. 10

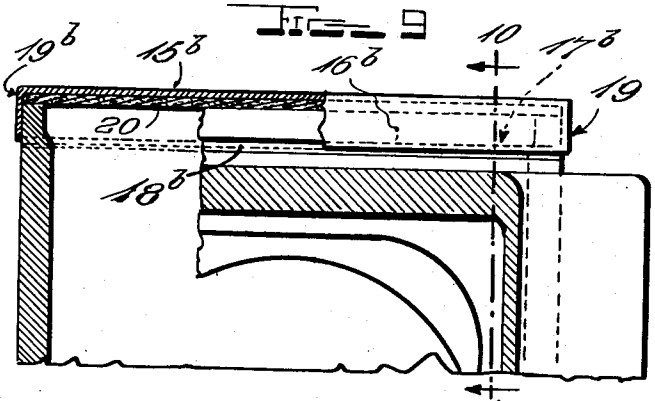


FIG. 9

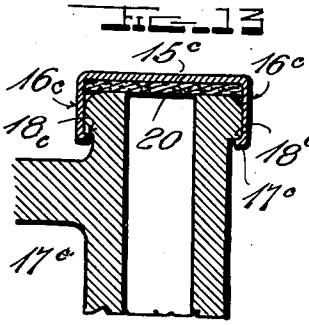


FIG. 13

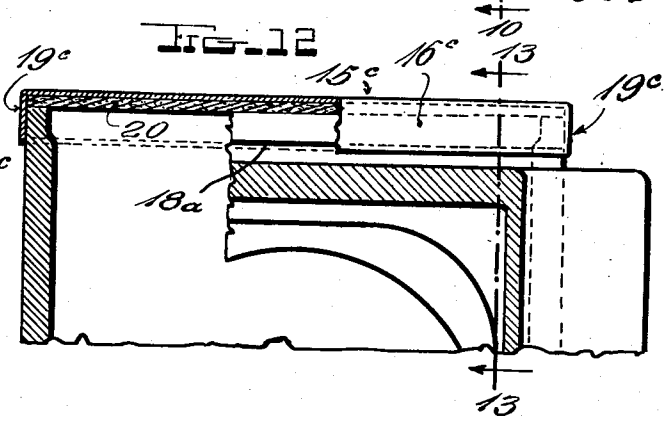


FIG. 12

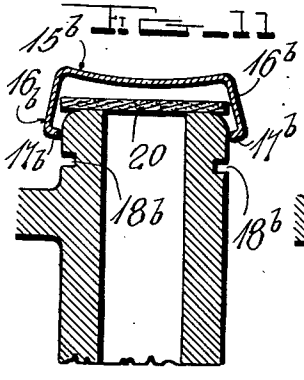


FIG. 11

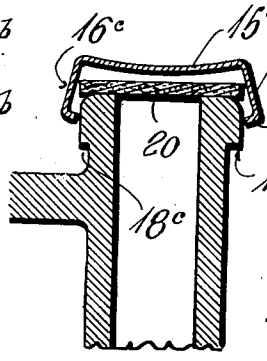


FIG. 14

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Patented Apr. 8, 1941

2,237,287

UNITED STATES PATENT OFFICE

2,237,287

DUST GUARD CASING CLOSURE

Jonas D. Bigelow, Yonkers, N. Y.

Application April 26, 1938, Serial No. 204,459

3 Claims. (Cl. 286—6)

This invention relates to improvements in dust guards, dust guard casings and particularly to top closures for the dust guard wells of journal boxes.

The primary object of the invention is to provide a closure for the top of the journal box dust guard well which is simple of construction and adapted to be readily applied in position, which will positively seal the top opening of the journal box dust guard well, and which when secured in place will be held securely in position against any possibility of movement allowing dust to enter the well or of being dislodged as is commonly the case in the use of journal box well top closures of conventional type.

A further object of the invention is to provide novel constructions of closure means for engagement with the top of a journal box well in such a manner as to allow use of dust guard inserts of any desired or approved type.

The full nature of the invention will be more fully understood and appreciated from the accompanying drawings and the following description and claims, in which drawings:—

Fig. 1 is a view in rear elevation of a journal box showing the application thereto of one form of top closure embodying my invention.

Fig. 2 is a horizontal transverse section on the line 2—2 of Fig. 1.

Fig. 3 is a vertical front-to-rear section on the line 3—3 of Fig. 2.

Fig. 4 is a top plan view of the rear portion of the journal box showing the closure in position.

Fig. 5 is a section on the line 5—5 of Fig. 4.

Fig. 6 is a cross-section on line 6—6 of Fig. 5.

Fig. 7 is a view similar to Fig. 5 showing a modified form of the invention and illustrating the closure shown therein as applied for use.

Fig. 8 is a cross section on line 8—8 of Fig. 7.

Fig. 9 is a view similar to Fig. 7 showing another modified form of the invention.

Fig. 10 is a cross-section on line 10—10 of Fig. 9.

Fig. 11 is a view similar to Fig. 10 showing the mode of applying the closure shown therein.

Fig. 12 is a view similar to Fig. 7 showing still another modified form of the invention.

Fig. 13 is a cross-section on line 13—13 of Fig. 12.

Fig. 14 is a view showing the manner of applying the closure illustrated in Figs. 12 and 13.

Referring now more particularly to Figs. 1 to 6, inclusive, of the drawings, illustrating one type of seal which may be used and one form of top closure embodying my invention, 1 designates a journal box of standard type, which is designed to receive the end of the axle 2, the axle having the usual journal portion 3 and the shoulder portion 4, which latter extends through the axle receiving opening formed in the dust guard well portion 5 of the box. This well portion 5 may be that of ordinary type except that the inner surfaces of its inner or front and outer or rear walls 6 and 7 may be cast smooth or machined to a smooth finish. This well portion is open at the top or provided with a passageway 8 for the insertion and withdrawal of sealing means, as hereinafter described.

The sealing means employed may be of any suitable or preferred type, but, as herein shown, comprises front and rear sealing members or inserts 9 and 10 which are arranged within the well. These sealing members are in the form of plates or disks surrounding the bottom and sides of the axle and are provided with openings for the passage of the axle therethrough, the opening in the sealing members being preferably of somewhat greater diameter than the axle to receive a bushing element, as hereinafter described. The upper portions of these sealing members terminate below the top of the well and conform to the general conformation of this part of the well. Interposed between the sealing members 9 and 10 at the bottom, top and sides are springs 11 of bowed ribbon spring type which operate to hold the sealing members normally spread into engagement with the inner and outer walls of the well. The sealing members are free to move vertically or laterally within the well to compensate for the vertical or lateral movements of the axle with relation to the journal box.

The sealing members may be of any suitable strong and durable material and close the well securely against the escape of oil from the journal box and against the entrance of dust, grit and other foreign matter into the well and thence into the journal box. They are, as stated, normally pressed apart and against the sides of the well by the action of the springs, but are permitted by the springs to have movement relative to each other to compensate for expansion and contraction and to have sliding contact movement with the axle journal in the endwise movements of the latter. By this means the sealing members will be maintained on the neutral center of the axle, thus eliminating the excessive wear which occurs at the points of contact with the sealing members and the axle in dust guards of the conventional type. It will be observed that the arrangement of the sealing members is such that they may be pressed together against the

resistance of the springs to permit of their conjoint ready and free introduction into or removal from the well through the opening or passageway 8 in initially applying the seal or in removing the same for repairs or replacement of worn parts. In this action the springs between the sealing members will allow said members to contract or to be pressed together to reduce the width of the seal, the springs operating on the introduction of the sealing elements to expand or spread the same to working position. The springs in practice may be fastened to either one of the sealing members so that their proper working positions may be maintained. The seal, comprising the front and rear sealing members, may thus be removed in neutral form for simultaneous introduction into the well, thus facilitating and rendering easier the application of the seal to the well, as well as their removal from the well for repairs or other purposes, as will be readily understood. The construction of seal described dispenses with the use of a casing for the sealing members, but, if desired, a casing of sectional construction may be employed, as disclosed in my prior application for patent Serial No. 168,811, filed October 13, 1937, now Patent No. 2,177,606 issued October 24, 1939.

As stated, the openings provided in the sealing members for the passage of the axle are made of sufficiently large diameter to permit of the introduction between the same and the axle of a bushing member. This bushing member may consist of a bushing ring 12 which surrounds the axle and sustains the wear of the bearing contact therewith. This bushing member is provided with a radially extending flange or projection 13 lying between the sealing members and normally in contact with the sealing member 10. This construction allows the bushing to shift longitudinally with the bearing and to permit limited conjoint shifting movements of the sealing members, and also allows a sufficient range of movement of the sealing members relative to each other to adapt the sealing unit thus formed to be contracted in the manner described for introduction into and removal from the dust guard well. As previously described, any suitable form or type of sealing means may be employed, but the construction disclosed may be used with great efficiency where the walls of the dust guard well are properly machined or formed to accurately receive the parts and to permit of their intended movements.

The opening or passageway at the top of the well is designed to be closed when the journal box is in service for the purpose of preventing access of dust, dirt and other foreign materials thereto. In Figs. 1 to 6 I have shown one form of closure 14 for this purpose, this sheet metal closure comprising a closure plate 15 adapted to rest upon seat surfaces formed on the side and end walls of the top opening or passageway 8 and provided with depending side walls or portions 16 having inturned flanges or locking projections 17 to engage the overhanging shoulders of grooved guideways 18 formed in the side walls of the top opening. These grooves provide keepers for cooperation with the flanges to hold the closure tightly in position and adapt the closure to be applied and removed by sliding movements longitudinally from either end of the well top. This closure plate is provided with downbent end portions 19 either one or both of which may be of tongue form and adapted to be bent downward from the plane of the body of the closure into engagement with abutment shoulders formed by the end walls of the well top to hold the closure plate against sliding movement and displacement. The side walls 16, guideways 18 and overhanging shoulders of the guideways are coextensive in length with each other and extend the full length of the well mouth or opening between and intersect the end abutment shoulders or walls of the well mouth. The walls 16 closely fit or embrace the outer surfaces of the side walls of the well mouth to prevent as far as possible leakage of dust past the same into the well mouth. The function of the flanges 18 is three-fold, firstly, to adapt the walls 16 and the flanges to mutually brace and stiffen each other against bending or otherwise getting out of shape, secondly, to form slidable guide connections between the closure and side walls of the well, and thirdly, to seal the spaces between the lower edges of the walls 16 and the side walls of the well mouth as far as possible against leakage of dust and to hold the cover at all points throughout its length against upward displacement and to maintain the top 16 in close sealing engagement with the seat surfaces of the wall of the well mouth and against up and down vibratory movements in the travel of the car. By this means any possibility of the closure becoming dislodged or of its top moving out of sealing position and allowing dust to enter the well under shocks and jars due to car movements are effectually avoided and the construction described, in which the side walls and their flanges mutually brace and reinforce each other for the purposes described, permits of the manufacture of a sheet metal closure cap at a comparatively low cost, and one which will effectually perform its intended functions and is not liable to be easily bent or otherwise gotten out of shape.

In Figs. 7 and 8 I have shown a closure plate 15*a* of a type similar to that of the plate 15, but in which the inturned flanges 17*a* on the side portions of the plate are adapted for engagement with keeper shoulders 18*a* on the side walls of the well top. The closure plate 15*a* is adapted to be slidably applied and removed and like the closure plate 15 may be similarly provided with retaining tongues 19*a* at its ends to engage the end walls of the top opening.

In Figs. 9, 10 and 11 I have shown another form of closure plate 15*b*, which is formed of spring metal and the resilient sides 16*b* of which are provided with inturned locking flanges 17*b* for engagement with keeper grooves 18*b* in the side walls of the well top. The end walls or portions 19*b* of this sealing member 15*b* may be of tongue form like the tongues 19 and 19*a* adapted to be bent downwardly into retaining position. The side portions 16*b* are normally so spaced as to adapt the closure member to be forced or sprung downward into closure position from an applying position, as indicated in Fig. 11, to the closing position shown in Figs. 9 and 10. With this type of closure is also shown the use of a sealing strip 20 of suitable material which is adapted to rest upon the upper edges of the side walls of the closure top and to be clamped downward upon the same by the closure member when the latter is applied, this sealing strip affording a greater security against the entrance of dust, dirt and other foreign particles to the well.

In Figs. 12, 13 and 14 I have shown a type of closure which embodies the use of keeper shoulders 18*c* similar to shoulders 18*a* shown in Figs. 7 and 8 with a closure member 15*c* having resilient side walls 16*c* having locking projections

17c and used in conjunction with a sealing strip 20, similar to the closure member and strip illustrated in Figs. 9, 10 and 11. Fig. 14 shows the manner in which this closure member is applied. This closure member 15c may also be provided with end retaining tongues 19c similar to tongues 19, 19a and 19b.

From the foregoing description, taken in connection with the drawings, it will be seen that my invention provides a journal box dust guard well adapted to receive an insertible and removable dust guard seal, and having a top opening or passage through which the seal may be applied or removed, and that this passage is adapted to be closed by a closure member of simple type which when applied will prevent entrance of dust, dirt and other foreign materials and will be held firmly in position against accidental displacement. The construction of the closure cap or member, however, is such that it may be readily removed when desired to permit insertion and removal of the sealing means and then reapplied for use, so that one and the same closure cap or member may be employed for an indefinite period. The use of the seal will effectually eliminate the waste of oil and reduce wear and tear upon the bearing parts by keeping the well and journal box clear of dust, grit and other foreign substances ordinarily entering through the axle opening, while the closure member provides a means for closing the top opening against access of foreign materials under service conditions, while permitting of the ready and convenient application and removal of sealing members when occasion requires.

This application is a continuation in part of my said application Serial No. 168,811, filed October 13, 1937, now Patent No. 2,177,606 issued October 24, 1939.

What I claim is:

1. An axle journal box having a well provided with an oblong rectangular mouth portion having end walls provided with transverse abutment shoulders and having side walls formed with upper seat surfaces and below the same with external locking shoulders extending continuously along said side walls between said ends walls, and a closure for said mouth portion comprising an oblong rectangular channeled sheet metal member having a top wall coextensive in length with the well top and adapted to rest on said seat surfaces, depending side walls to embrace the side walls of the mouth, said side walls being coextensive in length with the top wall of the closure member, depending tongues at the ends of the top wall of the closure member free from connection with the side walls and normally arranged in the plane of the top wall and adapted to be bent downwardly therefrom into engagement with the abutment flanges to hold the closure from endwise movement on the well mouth, and inturned stiffening and locking flanges at the lower edges of the side walls coextensive in length therewith and adapted to engage under and interlock with said locking shoulders to prevent up and down vibratory movements of the top wall throughout its length under shocks and jars falling on the journal box and to maintain said top wall in engagement with said upper seat surfaces of the well mouth.

2. An axle journal box having a well provided with an oblong rectangular mouth portion having end walls provided with transverse abutment shoulders and having side walls formed with upper seat surfaces and below the same with longitudinal guide grooves having overhanging locking shoulders, said grooves and shoulders extending longitudinally of the well top continuously between said end walls, and a sliding sheet metal closure for said mouth portion comprising an oblong rectangular channeled member having a top wall coextensive in length with the well top and adapted to rest upon said seat surfaces to close the mouth of the opening, depending tongues at the ends of the top wall of the closure member free from connection with the side walls and normally arranged in the plane of the top wall and adapted to be bent downwardly therefrom into engagement with the abutment shoulders to hold the closure from sliding movement on the well mouth, and inturned stiffening and locking flanges at the lower edges of the side walls coextensive in length therewith and adapted to engage said grooves to guide the closure in its sliding movements and to interlock with said locking shoulders to lock the closure from upward movement and displacement, said flanges thereby operating to hold the top wall tightly down against its seat surfaces and to prevent vibratory movements of the top wall and its movement out of sealing engagement with said seat surfaces.

3. An axle journal box formed with an oblong rectangular well top having end walls provided with transverse abutment shoulders and side walls provided with upper seat surfaces and beneath the same with longitudinal locking shoulders extending continuously therealong between said end walls, a spring sheet metal closure cap for the opening comprising a top plate coextensive in length with the well top and adapted to rest on said seat surfaces, depending tongues at the ends of the top wall normally arranged in the plane of said wall and adapted to be bent downward therefrom into engagement with the transverse shoulders of the end walls to hold the closure cap from longitudinal displacement, side walls depending from said top plate and coextensive in length therewith and adapted to closely bear against the side walls of the well top between its end walls, and inturned stiffening and locking flanges at the lower edges of the side walls coextensive in length therewith and adapted to project under and engage said locking shoulders from end to end of the top, said flanges operating to seal the spaces between the side walls of the cap and side walls of the well mouth and to prevent up and down movements of the top wall throughout its length from shocks or jars falling upon the axle parts and to hold said top plate always in clamping engagement with the seat surfaces, said side walls and flanges of the cap being so spaced as to adapt the cap to be applied by forcing it downwardly upon the well top and to cause the flanges to ride downwardly on the side walls of the well and to spring inwardly when the flanges are brought into position to engage under the locking shoulders to thereby hold said parts applied under spring tension.

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