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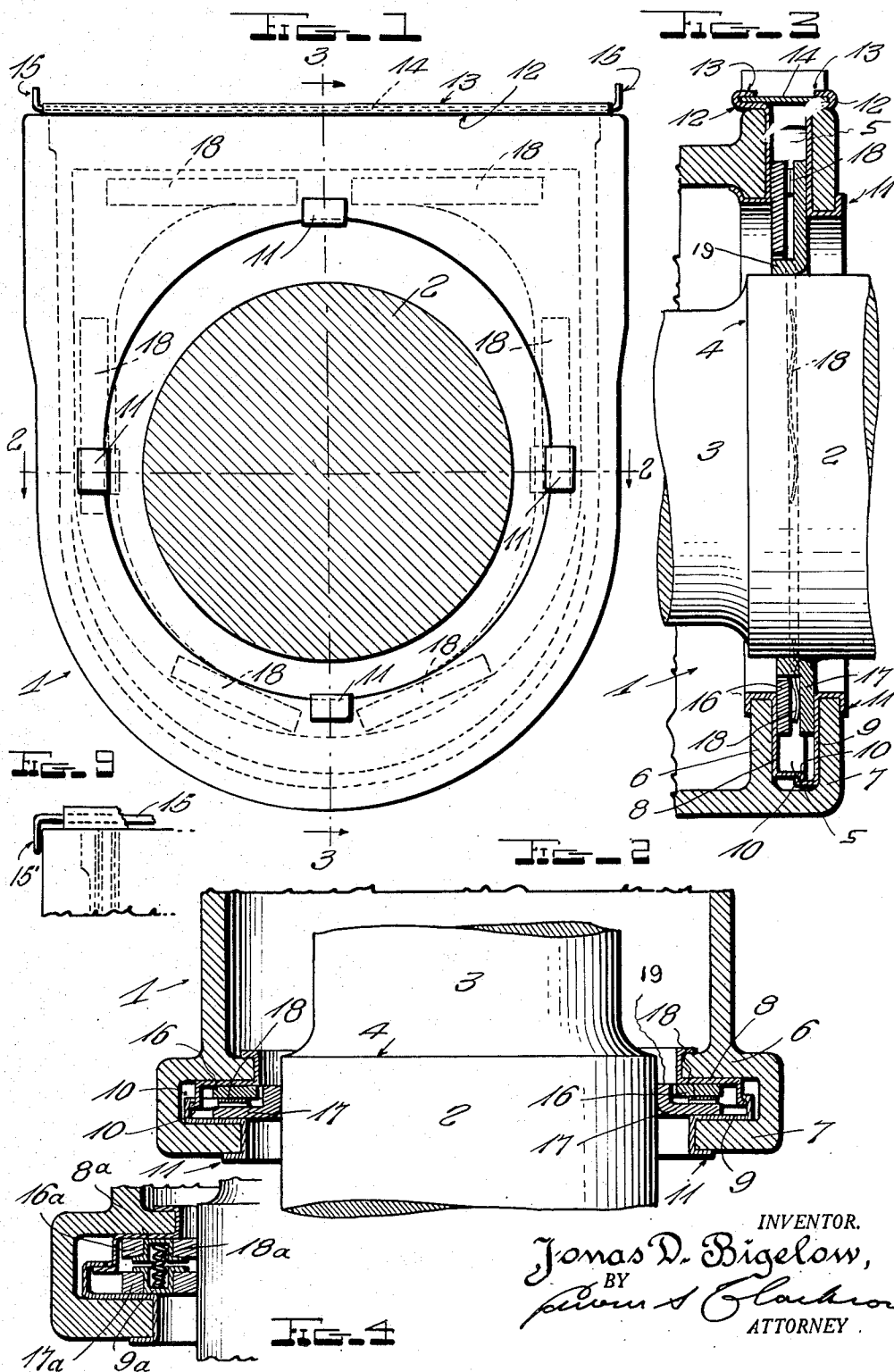
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JOURNAL BOX DUST GUARD, DUST GUARD CASING, AND CLOSURE

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2 Sheets-Sheet 1



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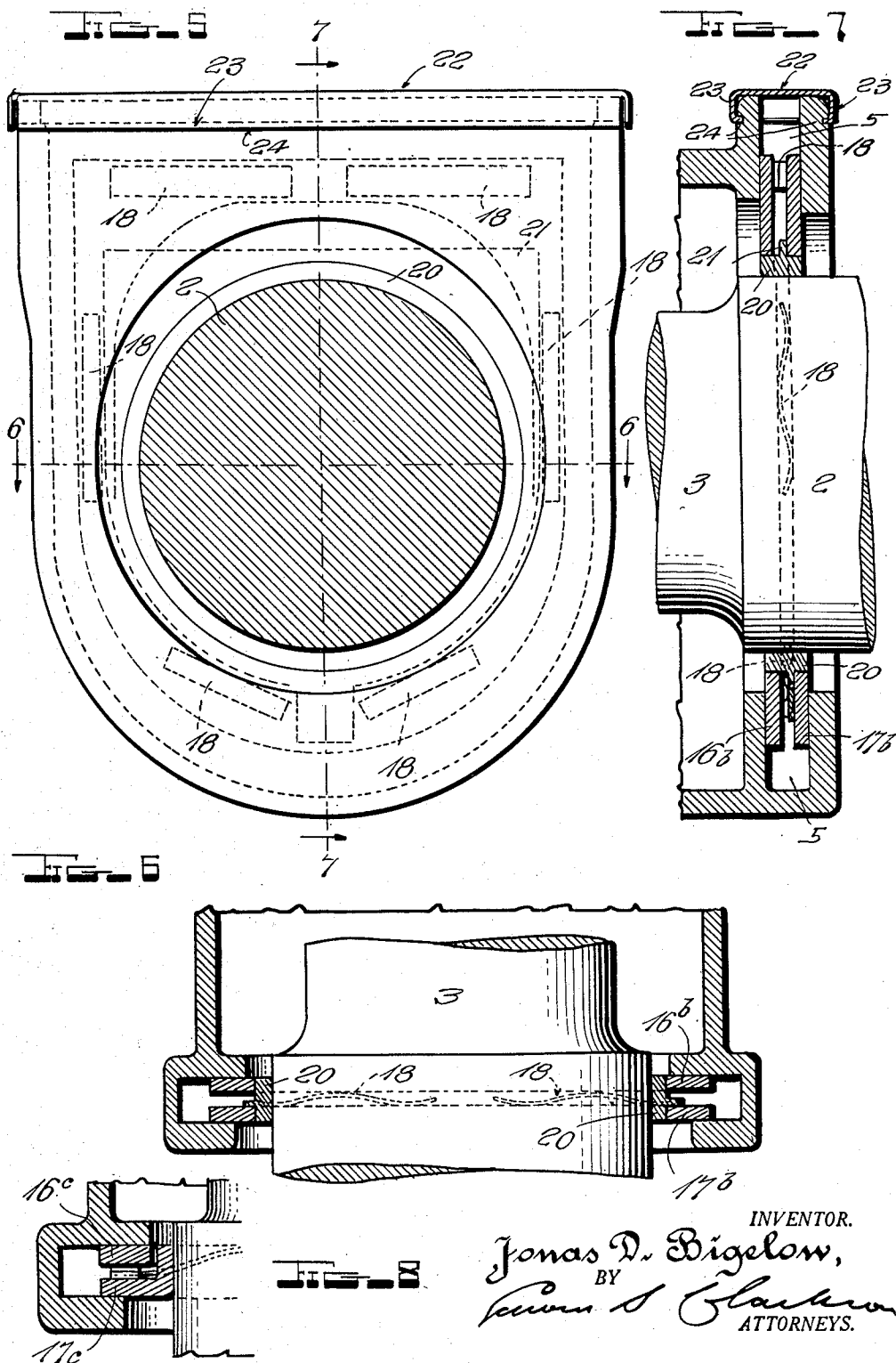
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JOURNAL BOX DUST GUARD, DUST GUARD CASING, AND CLOSURE

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4 Claims. (Cl. 286-6)

This invention relates to improvements in dust guards, dust guard castings and dust guard closure constructions for journal boxes.

The primary object of the invention is to provide an oil and dust guard seal of tight type for furnishing a positive means for retaining the oil in the journal box and preventing dust, grit and other foreign matter from entering the journal box through the dust guard well.

One feature of the invention consists in providing expanding spring-actuated dust guard inserts which will positively seal the front and rear axle openings of the journal box dust guard well by forming a sliding contact between the dust guard inserts and adjacent casings or machined inside walls of the dust guard well. This capability of expansion of the dust guard inserts permits said inserts to move with the axle so as to maintain said members on the neutral center of the axle, thus eliminating the wear which ordinarily occurs at the top side of axle fit of dust guards of the conventional type.

Another feature of the invention consists in providing an expanding seal comprising spring-pressed dust guard inserts which will effectually prevent the escape of oil from the journal box into the well and the admission of dust, grit and other foreign matter into the well and thence into the journal box.

Still another feature of the invention consists in providing a seal or closure of the character described which is adaptable for use in connection with journal box wells having either rough or smoothly finished or machined surfaces.

Still another feature of the invention consists in providing 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 being dislodged as is commonly the case in the use of journal box well top closures of conventional 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 a seal embodying one form of 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. 1.

Fig. 4 is a fragmentary horizontal cross-section through a journal box showing a modified form of the invention.

Fig. 5 is a view similar to Fig. 1 showing still another modified form of the invention.

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

Fig. 7 is a vertical front-to-rear section on the line 7-7 of Fig. 5.

Fig. 8 is a view similar to Fig. 4 showing still another modified form of the invention.

Fig. 9 is a fragmentary view showing an alternative way of bending the ends of the closure plate.

Referring now more particularly to Figs. 1, 2 and 3 of the drawings, illustrating one type of seal 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 are cast smooth or machined to a smooth finish.

The oil and dust guard seal employed in Figs. 1, 2 and 3 comprises a casing which is of sectional construction and consists of members 8 and 9 forming liners for the inner faces and sides of the walls of the well. This casing accordingly surrounds the bottom and sides of the portion of the axle dust guard seat within the axle receiving opening and may be coextensive in depth with the well so as to extend vertically from bottom to top of the well. The meeting edges of these liner or casing sections are provided with flanges or lips 10 by which a closed joint is formed between the assembled casing sections the full extent of the bottom and sides thereof. These casing sections are provided with locking lugs 11 adapted to be bent around the upper edges of the lower portions and sides of the walls of the well to hold their casing on liner sections in position. At their upper edges the casing or liner sections are bent outwardly, as at 12, over the upper edges of the top portions of the walls at the normally open top of the well and then rebent inwardly, as at 13, thereby providing guideways to receive a closure plate 14. The closure plate 14 is adapted to be slidably inserted longitudinally into the guideways to close the top of the liner casing, and thereby the normally open top of the well against the access of dust, grit and other

foreign materials. The closure plate is made of such length that after being fitted in position its ends may be bent upwardly to form locking members or stops 15 to prevent any possibility of dislodgement of the closure plate in service. However, either or both ends of the plate may be bent downwardly and into engagement with the side walls of the journal box to form stops or locking members if desired.

Front and rear sealing members or inserts 16 and 17 are arranged within the well and fitted between the casing sections 8 and 9. 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 member 16 being preferably of somewhat greater diameter than the axle to receive a bushing projection extending from the sealing member 17, 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 16 and 17 at bottom, top and sides are springs 18 of bowed ribbon spring type which operate to hold the sealing members normally spread into engagement with the walls of the casing sections 8 and 9. The sealing members are free to move vertically or laterally within the casing thus compensating for the vertical or lateral movement of the axle with relation to the journal box.

The sealing members may be made 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 their enclosing casing by the action of the spring, 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 between the sealing members and the axle in dust guards of the conventional type. It will be observed that the sectional construction of the casing is such that when the fastenings 11 are free from engagement with the journal box, said casing sections may be pressed together for contraction of the casing to permit of the ready and free introduction of the casing to or its removal from the well 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 allow said members to contract or to be pressed together, the springs operating on the introduction of the assembled parts of the seal and their introduction to expand or spread the same to working position. The described construction of the sectional casing and the seals adapts these elements to be assembled in unitary form for simultaneous introduction into the well, thus facilitating and rendering easier the application of the seal to the well, as will be readily understood. The sealing member 17 is preferably provided with a sealing flange or projection 19 projecting forwardly and laterally therefrom as a bushing into the space between the wall of the opening in the member 16 and the surface of the axle. This bushing member lies

in bearing contact with the axle and provides an elongated extent of sealing surface preventing leakage of oil or entrance of foreign matter at this point.

In Fig. 4 I have shown a modified construction in which the sealing members 16a and 17a at the points of application of the springs are provided with openings to receive separate and independent cup members 8a and 9a to receive the springs 18a which in this instance are of coiled spring type. These springs 18a may vary in position as occasion may require and when desired may be substituted for the plate or ribbon springs 18.

In Figs. 5, 6 and 7 I have shown a modified construction which dispenses with the use of a casing for the sealing members, and in which the construction is otherwise modified. In the construction the sealing members 16b and 17b are normally held spaced by ribbon springs 18 such as used in the construction shown in Figs. 1, 2 and 3, but the openings provided in said 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 ring 20 which engages the axle and sustains the wear of the bearing contact therewith. This bushing member is provided with a radially extending flange or projection 21 lying between the sealing members 16b and 17b and normally in contact with the sealing member 17b and out of contact with the sealing member 16b. This construction allows the bushing to shift longitudinally with the bearing and to permit limited 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 for introduction into and removal from the dust guard well. This construction may be employed with efficiency where the walls of the dust guard well are properly machined to accurately receive the parts and to permit of their intended movements. In this construction I have shown a modified type of means for closing the top opening of the well, the same comprising a sheet metal guard cap 22 adapted to fit down over the top of the well and having inturned flanges 23 for locking engagement with grooves 24 formed in the outer sides of the well wall, the spring metal of which cap as made providing for a secure locking connection.

In Fig. 8 I have shown a modified form of my invention in which the use of a casing for the sealing members is also dispensed with, in which the sealing members 16c and 17c are of the same construction as the sealing members 16 and 17 shown in Figs. 1, 2 and 3, said members 16c and 17c lying, however, in direct contact with the walls of the well. The construction of the modified forms of the invention shown in Figs. 4 to 8, inclusive, will be readily understood from the foregoing description.

It will be seen that my invention provides a simple and comparatively inexpensive construction of combined dust guard and oil seal which eliminates oil leakage and waste and at the same time guards the bearing surfaces against the entrance of dust, grit and other foreign material. The invention also provides a seal of unitary type or in which the members may be simultaneously introduced into or removed from the dust guard well, thus saving time and labor in fitting a journal box therewith, or in making repairs or replacements of parts of the seal when occasion requires. The construction of the seal, 75

furthermore, provides for removal of the seal parts with the axle so as to maintain the sealing point on the neutral center of the axle, and so as to reduce wear upon the parts of the seal to a material degree. My improved seal may be applied to existing journal boxes by properly machining the wells thereof and to new journal boxes in which the wells are either cast or machined smooth, and when applied for use will effectually eliminate waste of oil and reduce wear and tear upon the wearing parts by keeping the well and journal box clear of dust, grit and other foreign substances.

While the constructions shown for purposes of exemplification are preferred, it will be understood that changes in the form, construction and arrangement of the parts other than those shown may be made within the scope of the appended claims, without departing from the principle or sacrificing any of the advantages of the invention.

What I claim is:

1. A seal for the dust guard wells of journal bearings comprising a collapsible and expansible casing formed of interengaging sections fitting in the well, spaced relatively movable sealing members in said casing and respectively bearing on the sections thereof, and bowed ribbon springs disposed between the sealing members at the opposite sides of said sealing members and at the top and bottom of said sealing members adjacent to and on each side of the vertical center thereof, said springs yieldingly holding said sealing members in normally spaced relationship there-through holding the casing sections spread and

permitting movement vertically or laterally of the sealing members with the journal.

2. A seal for the dust guard walls of journal bearings comprising a casing formed of interengaging sections fitting in the well, spaced sealing members in said casing, said members being provided with seat openings therein, cups filling said openings, and springs seated in said cups and disposed between the sealing members for yieldingly holding said sealing members in normally spaced relationship and permitting movement vertically or laterally of the sealing members with the journal.

3. In a sealing means for dust guard wells of an axle journal box, an expansible and contractible casing adapted to be mounted in the well and having an open top at the top of the well, front and rear relatively movable sealing inserts mounted in said casing, resilient means between said inserts normally holding the inserts and therethrough the casing sections spread and adapted to permit relative movement of said casing sections, and a detachable closure for the top of the casing with means for locking the same against casual displacement.

4. In a sealing means for the dust guard well of an axle journal box, sealing means, and a casing for the sealing means comprising members provided with inturned L-shaped flanged portions on the sides and along the bottom to form a stop when the sections are spread and to provide a joint to allow said casing members to contract for application to and removal from the journal box well.

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