

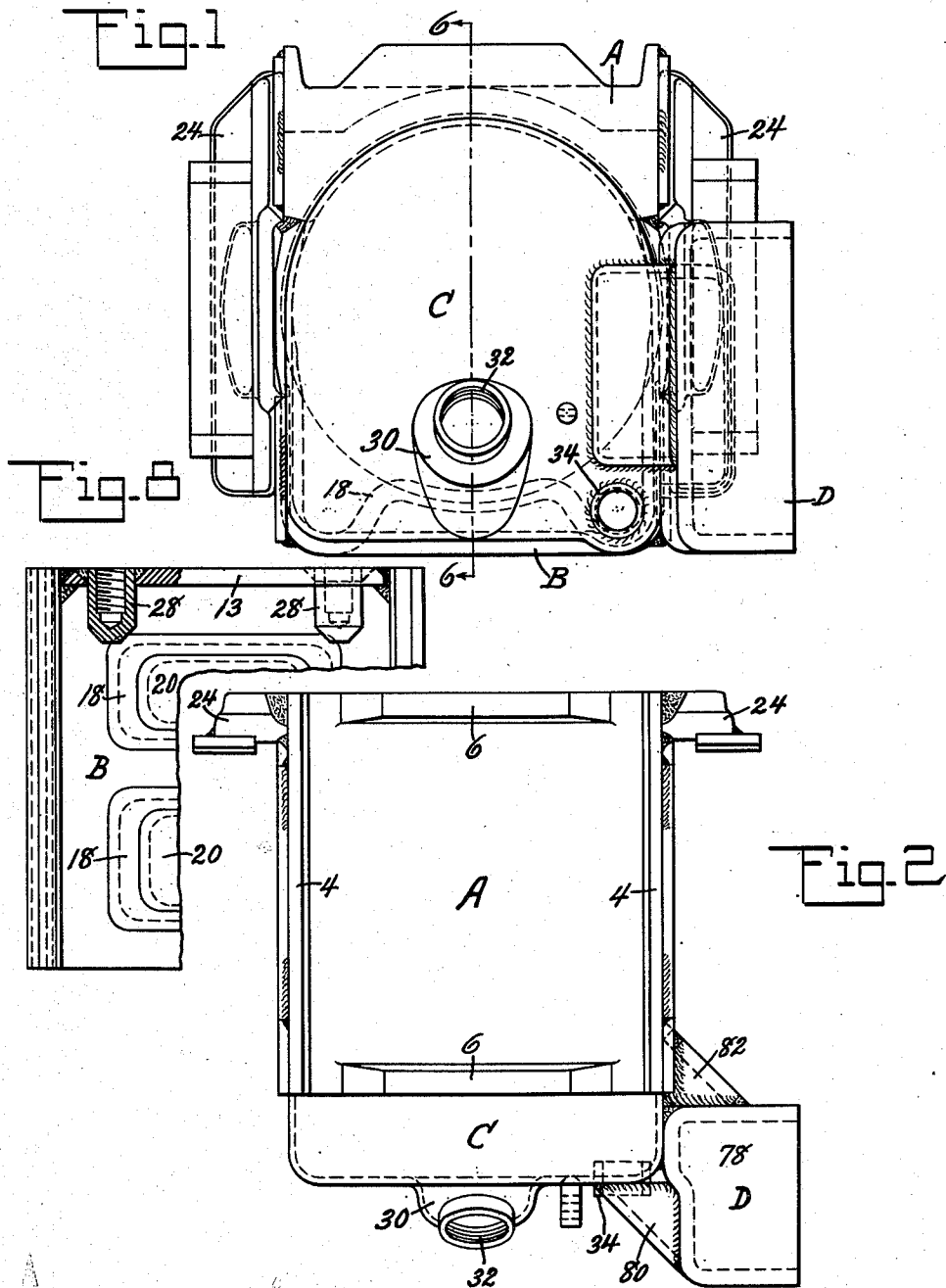
April 24, 1951

J. MIKULAK ET AL  
WELDED JOURNAL BOX

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4 Sheets-Sheet 1



INVENTORS  
*John Mikulak*  
*John A. Sober*  
*Edwin B. Sult*  
ATTORNEY

BY *Robert A. Shields*

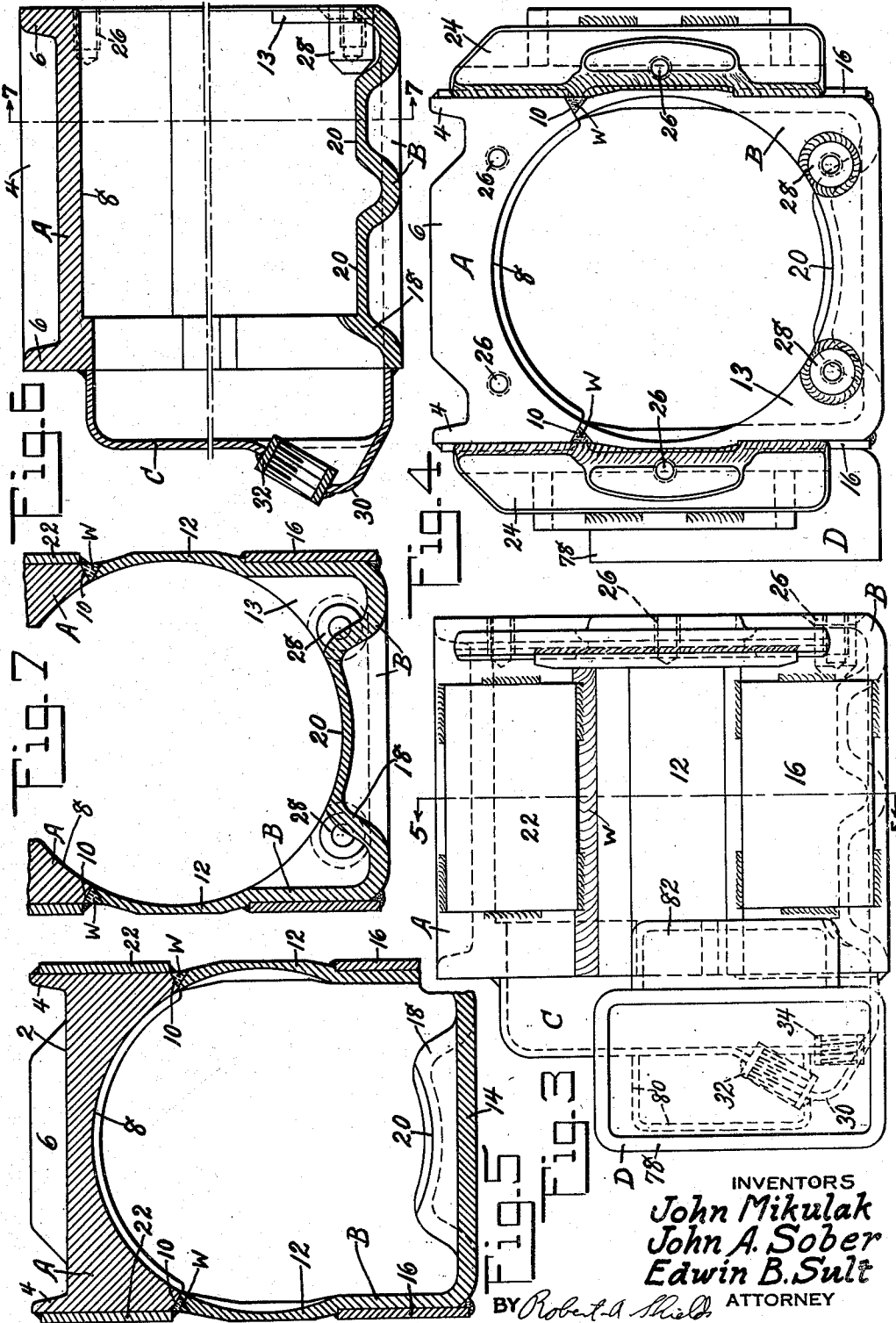
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Fig. 10

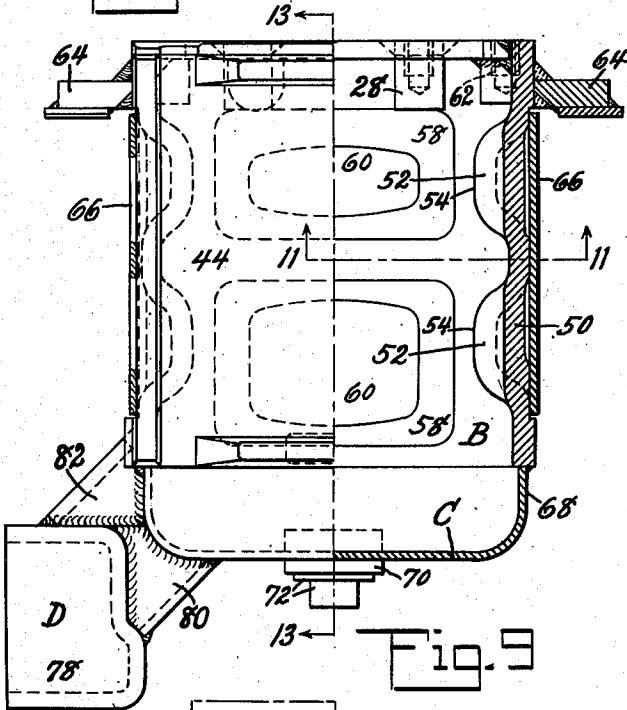


Fig. 12

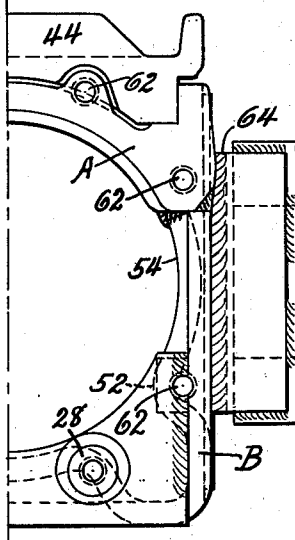


Fig. 9

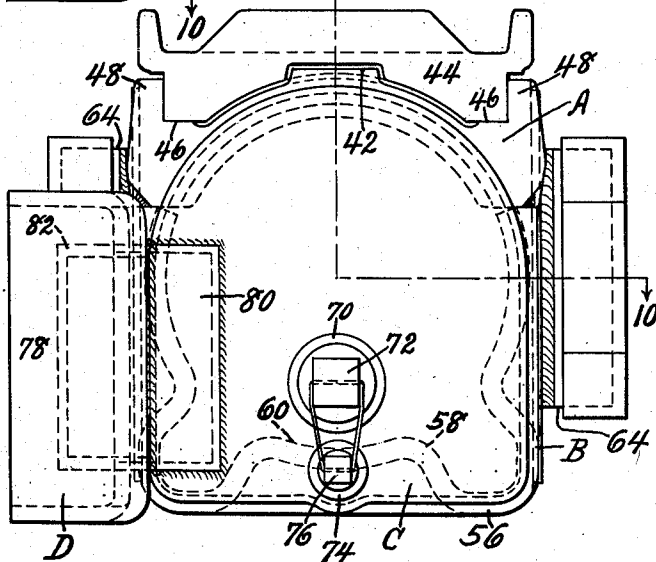
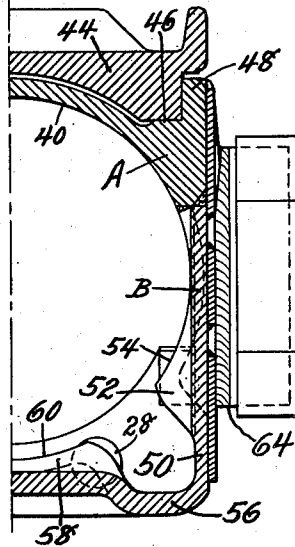


Fig. 11



INVENTORS  
John Mikulak  
John A. Sober  
Edwin B. Sult

BY *Robert A. Shield*

ATTORNEY



# UNITED STATES PATENT OFFICE

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## WELDED JOURNAL BOX

John Mikulak, Nescopeck, John A. Sober, Bloomsburg, and Edwin B. Sult, Berwick, Pa., assignors to American Car and Foundry Company, New York, N. Y., a corporation of New Jersey

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11 Claims. (Cl. 308—39)

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This invention relates to journal boxes in general and in particular to welded journal boxes for use with railway type cars.

Practically all railway type journal boxes now in use are cast in one piece and necessarily are extremely heavy since even in the portions of the box which carry no load the metal must be sufficiently thick to permit proper pouring. Since the journal boxes are mounted directly on the axles, they must of necessity be unsprung and while the added unsprung weight of cast boxes is not particularly harmful at low speeds, it becomes extremely harmful at the higher speeds and particularly at the harmonic speeds which depend principally on the rail lengths. By proper use of forgings and pressings a journal box can be built at a weight saving of slightly more than fifty pounds per box. In other words, the unsprung weight per axle can be reduced slightly more than one hundred pounds. It is an object, therefore of the present invention to provide a light weight journal box made up of forgings and pressings welded together.

A further object of the invention is the provision of a welded journal box in which bearing positioning projections are pressed in the oil well section.

A still further object of the invention is the provision of a journal box formed of forged and pressed sections welded together and additionally tied by the outer closure plate and pedestal guide straps.

These and other objects of the invention will be apparent to persons skilled in the art from a study of the following description and accompanying drawings, in which

Fig. 1 is an outer end elevation of one form of the journal box;

Fig. 2 is a plan view of this journal box;

Figs. 3 and 4 are respectively side and inner end elevations;

Fig. 5 is a sectional view taken on line 5—5 of Fig. 3;

Fig. 6 is a sectional view taken substantially on line 6—6 of Fig. 1;

Fig. 7 is a sectional view taken substantially on line 7—7 of Fig. 6;

Fig. 8 is a plan view of the oil well section with parts broken away to better disclose the construction;

Fig. 9 is an outer end elevational view similar to Fig. 1 but disclosing a slightly modified type of box;

Fig. 10 is a sectional view taken on line 10—10 of Fig. 9;

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Fig. 11 is a sectional view taken on line 11—11 of Fig. 10;

Fig. 12 is an inner end elevational view of the box of Fig. 9;

Fig. 13 is a sectional view taken substantially on line 13—13 of Fig. 10, and

Figs. 14 and 15 are sectional views taken substantially on lines 14—14 and 15—15 of Fig. 13.

Referring now to the drawings in detail, it will be seen that the journal boxes are made up of three principal main parts, namely, a roof section A, an oil well section B and a pan-shaped closure C. The journal boxes chosen for illustration are of the type generally used on subway or other cars deriving current from a third rail and accordingly they have been shown with the third rail or contactor pocket D attached. It is to be understood, of course, that for other types of boxes these contactor pockets may be eliminated and pedestal guide bars added where necessary.

The roof section A of Figs. 1 to 8 inclusive is formed as a drop forging having a flat upper surface 2 from which extend upwardly side flanges 4 and end flanges 6 for the reception of equalizer pads (not shown). The lower surface of the roof section is curved as at 8 to closely engage and bear on the bearing races (not shown). The lower side edges of the roof section are beveled as at 10 in order to receive weld metal to produce a good weld joining the roof and oil well sections together.

The oil well section B of Figs. 1 to 8 inclusive is formed as a pressing generally U-shaped in cross-section and having side walls 12 and a bottom wall 14 joined at the inner end by segmental end wall 13. The side walls are formed with slight recesses in order to receive hardened or other wear resisting plates 16 welded to the sides in such a manner that they can be renewed when necessary. Upwardly of the rear plate location the sides are bulged outwardly, thence inwardly to contact with the lower edges of roof section A to which they are welded as at W. In order to stiffen the bottom wall 14 a pair of dome-shaped projections 18 is pressed upwardly and these projections are formed with an upwardly concave top surface 20 adapted to conform with and closely engage the bearing races, thus preventing downward displacement of the races in the boxes. In order to protect the sides of the drop forged roof section A, wear resisting plates 22 are welded thereto and have their outer surfaces in the same planes as the outer surfaces of wear plates 16. After welding the roof section A and oil well section B together, pedestal guide bars 24 are welded

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to each of the sections, thus stiffening the box and tying the sections A and B together. The inner ends of pedestal bars 24, roof section A and oil well section B are tapped as at 26 to permit attachment of an oil seal preventing discharge of oil along the axle. In order to obtain a good attachment for the oil seal to section B it has been found necessary to weld reinforcements or tapping lugs 28 to the inner wall of the oil well section B.

The outer end of the journal box is closed by the pan-shaped pressing C which has its rim welded to the sections A and B, thus effectively sealing and closing the outer end of the journal box. In order to facilitate filling of oil in the box a portion of the pan is pressed outwardly as at 30 and pierced to receive a tube 32 internally threaded for reception of a closure plug. Drainage of the box is accomplished through a similarly adapted tube 34 (Fig. 1) welded to the pan member adjacent its lower edge.

In the journal box shown by Figs. 9 to 15 inclusive the roof section A is formed as a drop forging having a bearing engaging lower surface 40 and a curved upper surface provided with a projecting lug 42 adapted to be engaged by an equalizer receiving saddle member 44. This saddle member is designed to be held against longitudinal displacement relative to the box by projections 42 and bear on the side shoulders 46 of the drop forged roof section A. Lateral displacement of the saddle relative to the box is prevented by means of flanges 48 extending upwardly above the side shoulders 46.

The oil well section B of Figs. 9 to 15 is very similar in cross-section to that described in connection with Figs. 1 to 8. In this form, however, the side walls 50 each have pressed inwardly thereof a pair of projections 52, which projections are provided with inwardly concave surfaces 54 adapted to laterally position the bearing races. These projections extend upwardly into engagement with the lower edge of roof section A, thereby stiffening the sides of section B and increasing the amount of weld which can be deposited joining the sections A and B together. As in the first form, the bottom wall 56 has a pair of projections 58 pressed upwardly thereof and the top surfaces 60 of these projections are concave upwardly to engage the lower surface of the bearing races and prevent their downward displacement. In order to receive the necessary dust seal (not shown) the inner end of section A and section B is tapped as at 62 to receive fastening means retaining the seal in position. After sections A and B are welded together pedestal bars 64 are rigidly welded to sections A and B, thereby additionally tying these sections together. Wear resisting plates 66 are welded to walls 50 and span the projections 52 to give a large wearing surface engageable with the truck pedestals.

The pan-shaped pressing C has its flanges 68 welded to the outer edges of sections A and B, thus effectively tying these sections together and closing the box against ingress or egress of matter. In order that the bearing may be lubricated, the pan member C is pierced to receive a tube 70 welded together to the pan and closed by a plug 72 threaded into the tube. Drainage of the box may be accomplished by a similar tube 74 piercing the pan and welded thereto and normally closed by a drain plug 76 threaded in the tube 74.

Since the boxes of Figs. 1 to 8 and 9 to 15 inclusive are illustrated for use with a third rail type of vehicle, each is provided with a contactor

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pocket 78 welded to the pan pressing or closure by means of buttressing gussets 80 and also welded to the pan closure and oil well section B by buttressing gussets 82. These buttressing gussets, as clearly shown in Figs. 3 and 13, are of generally channel cross-section, thereby effectively tying the contactor pocket to the box. In cases where a third rail contactor is not required these pockets and braces can be eliminated and if desired or necessary pedestal guides similar to plates 24 and 64 can be welded to the sections A and B adjacent the pan closures C. In both forms of the journal box it will be seen that the roof section A is the load transmitting member and is formed as a drop forging capable of being readily welded to the upstanding sides of the oil well section B. In both forms the bearings (not shown) are held in vertical position by dome shaped projections extending upwardly from the bottom wall of section B and a transverse taken through these projections produces an outline similar to a flattened M, as clearly shown in Figs. 6 and 13. In the form shown in Figs. 9 to 15 the side walls of section B are additionally stiffened by these projections of flattened M section, thereby positioning the bearings, stiffening the sides and giving added welding area for attachment to roof section A.

While the invention has been described more or less in detail, it will be obvious that various modifications and rearrangements of parts may be made and all such modifications and rearrangements of parts are contemplated as will fall within the scope of the appended claims defining our invention.

What is claimed is:

1. A journal box comprising a drop forged load transmitting roof section, a pressed metal oil well section welded thereto, and a pan shaped closure member having the flanged rim thereof welded to said roof section and oil well section to reinforce the same and form the outer closure completely closing the outer end of the journal box.

2. A journal box comprising a drop forged load transmitting roof section, a pressed oil well section welded thereto, and a pair of upwardly concave dome-shaped projections pressed upwardly in the lower wall of said oil well section to stiffen the same and retain bearings in contact with said roof section.

3. A journal box comprising a drop forged load transmitting roof section, a pressed metal oil well section welded thereto along a substantially horizontal line, vertically extending pedestal guide members projecting laterally from the sections and welded thereto to stiffen and tie the sections together, and a pan shaped pressing having a flanged rim edge welded to the outer end of each of said sections to additionally tie the sections together and provide an outer closure for completely closing the outer end of the box.

4. A journal box comprising a drop forged load transmitting roof section, a pressed metal oil well section welded thereto, and inwardly concave dome-shaped projections pressed inwardly from the bottom and side walls of said oil well section to stiffen the same and serve as bearing positioners.

5. A journal box comprising a drop forged load transmitting roof section, a pressed metal oil well section welded thereto, inwardly concave dome-shaped projections pressed inwardly from the bottom and side walls of said oil well section

to stiffen the same and serve as bearing positioners, and wear resisting metal plates welded to the outer side surfaces of said oil well section and spanning said dome-shaped projections.

6. A journal box comprising a drop forged load transmitting roof section, a pressed metal oil well section welded thereto, and inwardly concave dome-shaped projections pressed inwardly from the bottom and side walls of said oil well section to stiffen the same and serve as bearing positioners, said dome-shaped projections being of flattened M shape in transverse cross-section.

7. A journal box comprising a drop forged load transmitting roof section, a pressed metal oil well section welded thereto, a pan shaped closure member having the rim thereof welded to said roof section and oil well section to reenforce the same and form a complete outer closure for the journal box, and a contactor bracket projecting to one side of the box and welded to said oil well section and closure member to mutually reenforce and brace the same.

8. A journal box comprising a drop forged load transmitting roof section, a pressed metal oil well section welded thereto, a pan shaped closure member having the flanged rim edge thereof welded to said roof section and oil well section to reenforce the same and form the outer closure completely closing the outer end of the journal box, and tubular means projecting through said pan shaped member and welded thereto thereby providing filling and drain openings for said box.

9. A pressed metal oil well for journal boxes comprising a bottom wall and integral upstanding side walls, and a pair of dome-shaped projec-

tions pressed upwardly in said bottom wall and having an upwardly concave top surface to position a bearing.

10. A pressed metal oil well for journal boxes comprising a bottom wall and integral upstanding side walls, and a pair of dome-shaped projections pressed inwardly in each of said side walls and bottom wall, said projections stiffening said walls and formed with inwardly concave inner surfaces to position a bearing.

11. A journal box comprising a drop forged load transmitting roof section, a pressed metal oil well section welded thereto, and inwardly concave dome-shaped projections pressed inwardly from the side walls of said oil well section to stiffen the same and serve as bearing positioners extending to the top edge of the side walls whereby increased weld area is obtained between said oil well and roof sections.

JOHN MIKULAK.  
JOHN A. SOBER.  
EDWIN B. SULT.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
969,933	Woods	Sept. 13, 1910
1,910,518	Brittain	May 23, 1933
2,133,024	Gibbons	Oct. 11, 1938

#### FOREIGN PATENTS

Number	Country	Date
39,443	Sweden	Jan. 20, 1913