May 9, 1944. C. E. BRIDWELL 2,348,241

OIL WELL PUMPING MEANS

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Fig. 1

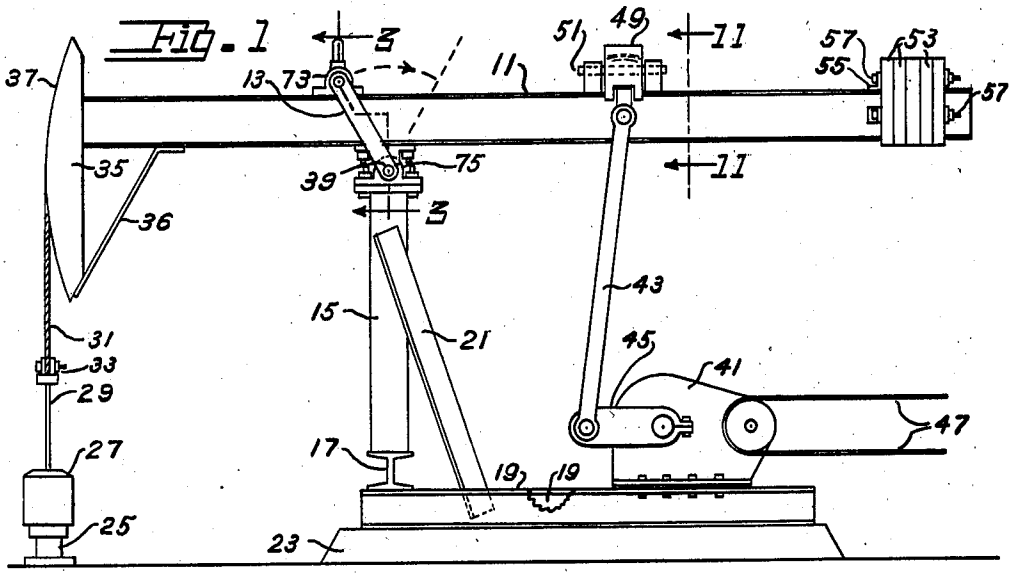


Fig. 2

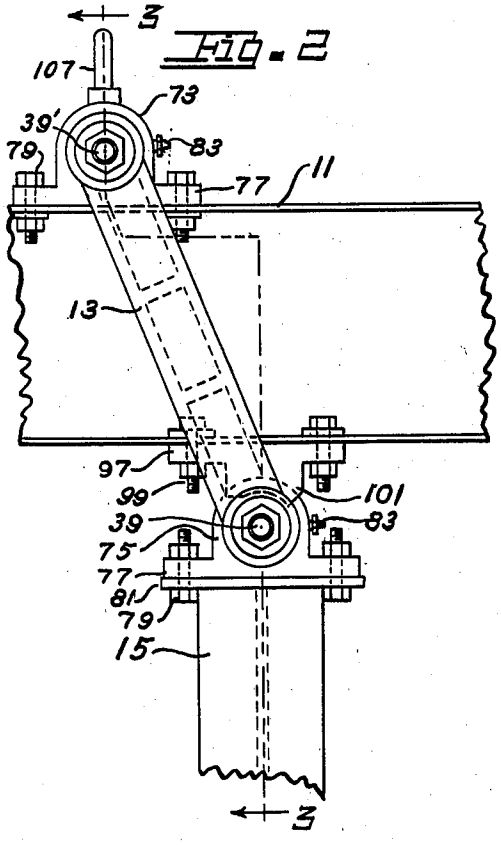
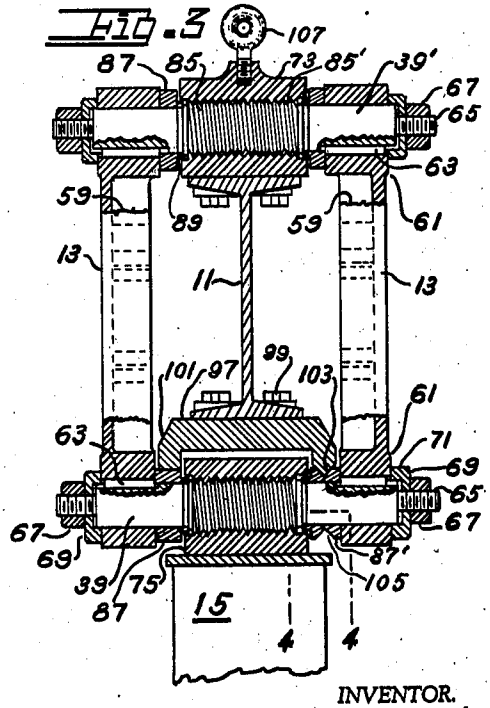


Fig. 3



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OIL WELL PUMPING MEANS

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Fig. 4

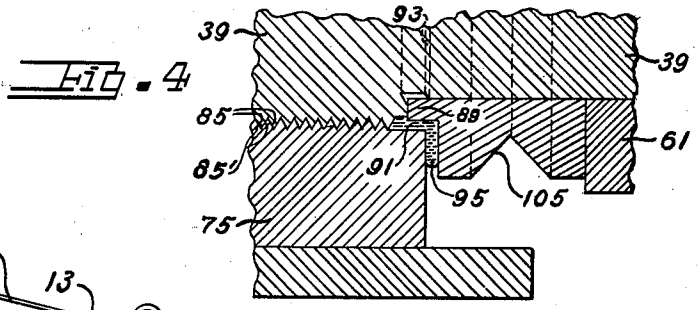


Fig. 5

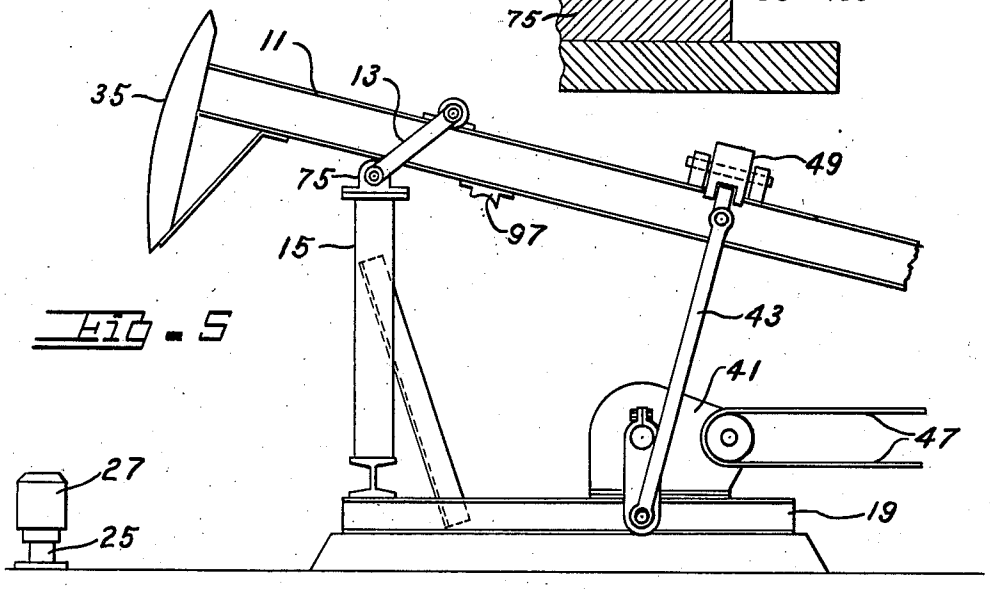


Fig. 6

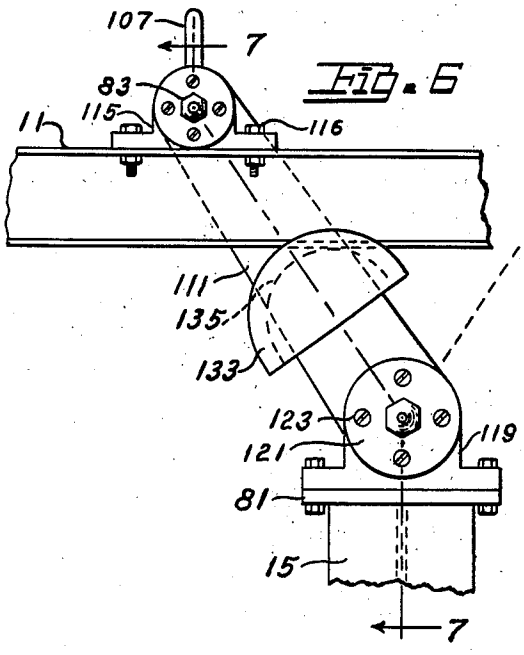
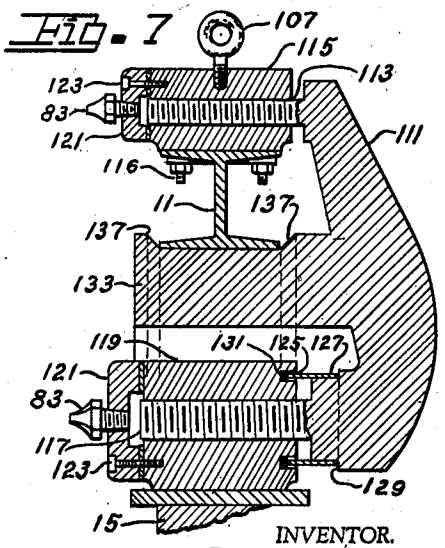


Fig. 7



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Fig. 8

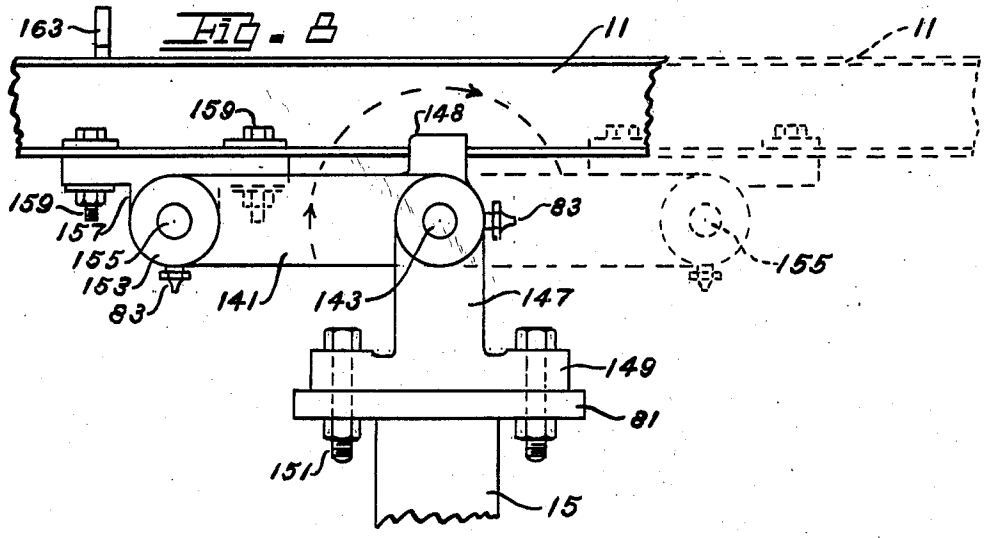


Fig. 9

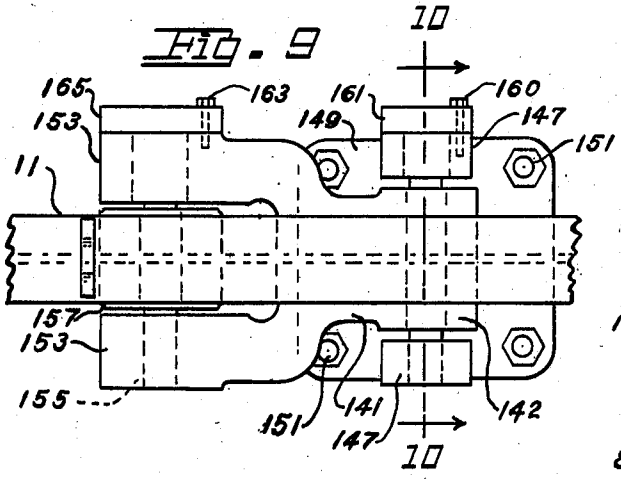
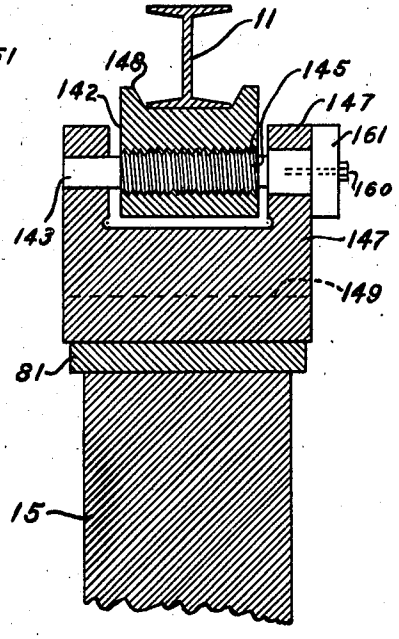


Fig. 10



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OIL WELL PUMPING MEANS

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Fig. 11

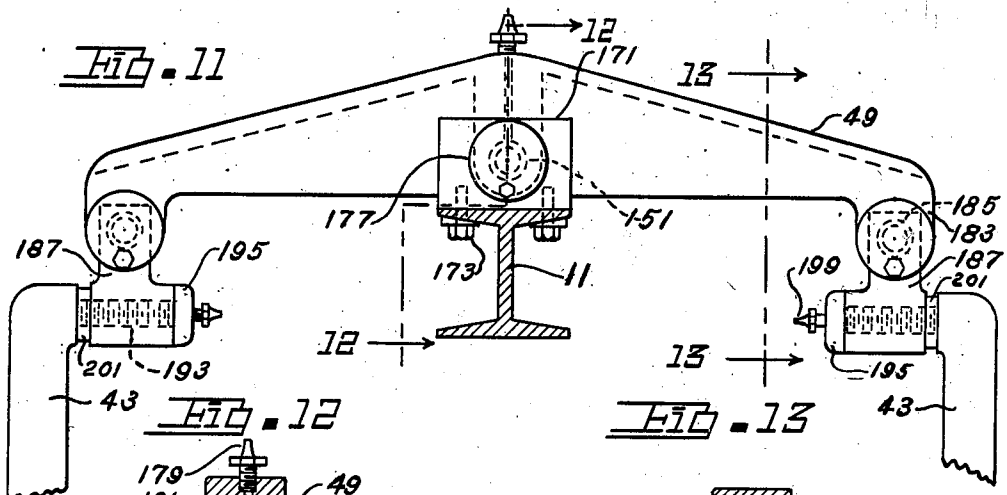


Fig. 12

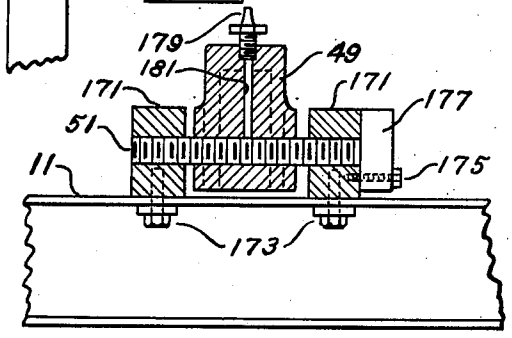


Fig. 13

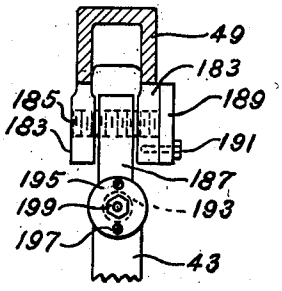


Fig. 14

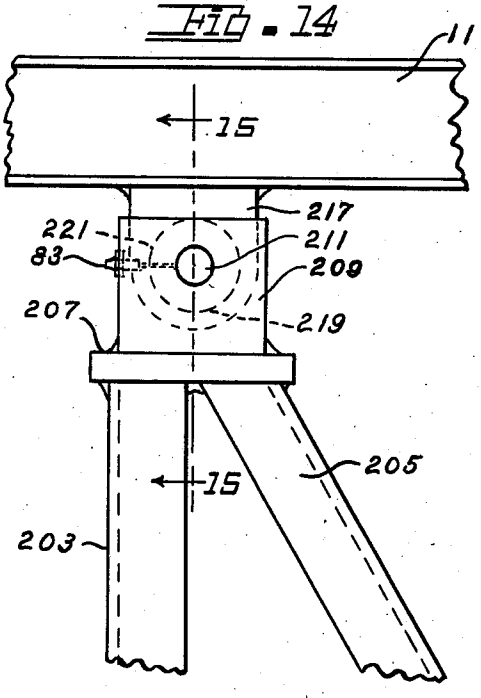
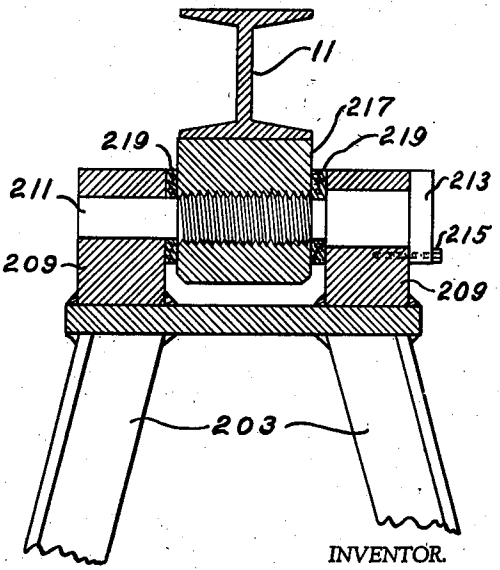


Fig. 15



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Patented May 9, 1944 2,348,241

UNITED STATES PATENT OFFICE

2,348,241

OIL WELL PUMPING MEANS

Chalon E. Bridwell, Detroit, Mich.

Application August 26, 1941, Serial No. 408,366

12 Claims. (Cl. 74—41)

My invention pertains to improved pumping apparatus especially useful for pumping oil-wells and having improved features also advantageous for use in various oil field equipment.

It is an object of my invention to provide an improved bearing for pumping apparatus which provides greater bearing surface within more compact dimensions, which may be used horizontally or vertically in various apparatus, which will retain the lubricant and control end play or side slap, and which will be convenient and economical to manufacture, install and maintain.

It is also an object of my invention to provide oil-well pumping apparatus of a simple rugged construction which is conveniently retractable for servicing the well.

It is a further object of my invention to provide oil-well pumping apparatus having an improved equalizer over-arm driving arrangement.

Further objects and advantages are within the scope of my invention, such as relate to the arrangement, operation and function of the related elements of the structure, to various details of construction and to combinations of parts, elements per se, and to economies of manufacture and numerous other features as will be apparent from a consideration of the specification in conjunction with the drawings disclosing specific embodiments of my invention, and in which:

Fig. 1 is a side elevational view of an oil-well and pumping unit arranged in accordance with the invention;

Fig. 2 is an enlarged fragmentary side elevational view showing the retractable mounting whereby the walking-beam is pivotally journalled on threaded bearings and retractable link arms;

Fig. 3 is a cross sectional view thereof, as indicated by line 3—3 in Figs. 1 and 2;

Fig. 4 is an enlarged fragmentary sectional view taken through the end of the main bearing block and shaft on line 4—4 in Fig. 3 to show bearing details;

Fig. 5 is a side elevational view showing the walking-beam and link arms turned back to retracted positilon to clear the well for servicing;

Fig. 6 is an enlarged side elevational view showing a different embodiment comprising a single retractable link arm for pivotally supporting the walking-beam;

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

Fig. 8 is a side elevational view showing still another embodiment of retractable link arm for pivotally supporting the walking-beam, shown broken away;

Fig. 9 is a plan view thereof;

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

Fig. 11 is a cross-sectional view taken through the walking-beam on line 11—11 in Fig. 1, and showing the equalizer over-arm driving connection;

Fig. 12 is a sectional view on line 12—12 of Fig. 11.

Fig. 13 is a sectional view on line 13—13 of Fig. 11.

Fig. 14 is a side elevational view showing a different embodiment utilizing my threaded bearing for pivotally supporting a walking-beam; and

Fig. 15 is a cross sectional view on line 15—15 in Fig. 14.

Referring more particularly to Fig. 1 of the drawings, I have shown an oil-well pumping outfit comprising a walking-beam 11 which is pivotally journalled upon the extended end of retractable link arms 13 the other ends of which are pivotally supported upon the upper end of a Samson post 15 so that the entire walking-beam may be conveniently and quickly retracted to clear the well for servicing, in a manner to be subsequently described.

The Samson post, which may be any type of tripod or other up-right structure useful for such a purpose, is shown as a vertical post 15 which may be a rolled steel structural member of I cross-section resting at the lower end upon a horizontal I-beam 17 extending transversely over and between two horizontal I-beams 19 disposed in horizontal spaced relation and which may be joined by suitable cross pieces (not shown) for forming a base frame, in a usual manner. The Samson post 15 is braced by means of an inclined angle iron 21 the upper end of which may be welded to the post from which it inclines diagonally down, the lower end being secured to the base frame. The base frame, of any suitable construction, may as usual rest upon a concrete foundation 23 above ground level adjacent the oil-well casing 25 and head 27.

From the oil-well casing the upper end of the polish rod 29 rises for attachment to the lower end of a steel cable 31 by means of a clamp 33. The cable 31 extends up and connects to an arcuate horses head 35 on the well end of the walking-beam 11, which may be reinforced by a brace 36 in a more permanent construction as it does not have to be removed, and the center of the curvature of the arcuate portion 37 coin-

cides with the center of the pivot shaft 39 which supports the lower ends of the link arms 13 on top of the Samson post. In this manner, the cable 31 is raised and lowered in alignment with the well casing 25 as the walking-beam 11 is rocked. The walking-beam is oscillated by unit 41 on base frame remote from the well and connected to the other end of the walking-beam as by a pair of pitman rods 43 actuated from cranks 45 on the driving unit. The driving device 41 may be a geared speed reducing unit driven by a belt 47 extending to any suitable power source (not shown) in accordance with the usual practise. The upper ends of the driving pitmans 43 connect to the ends of an equalizer over-arm 49 which is journalled transversely upon a threaded bearing shaft 51 on the walking-beam with one end projecting on each side thereof, in a manner and for a purpose to be more fully described.

Counterbalancing weights 53 are provided, in a usual manner, upon the end of the walking-beam 11 remote from the well. The counterbalancing weights 53 may be of any conventional construction and may be of a generally U-shape disposed to straddle the beam so that weights may be conveniently added or removed to provide suitable weight for balancing the weight of the sucker rods suspended in the well from the other end of the walking-beam. Angle iron brackets 55 secured on the beam may receive long bolts 57 passing through all the counter-weights 53 to clamp these securely together on the walking-beam. If desired, the walking-beam may be connected into a two well hook-up by providing a suitable take-off attachment (not shown) in a well known manner.

In accordance with my invention, the walking-beam is journalled to oscillate upon special threaded bearings to be described, which provide increased bearing surface, retain lubricant and control side slap. Also I preferably mount the walking-beam upon a retractable link arm arrangement whereby it may be quickly and conveniently retracted to clear the well for servicing. An installation embodying both of these useful features is shown in Figs. 1, 2 and 3.

The walking-beam 11 is mounted between the pair of link arms 13 which are heavy members being either of a cast or fabricated construction having sufficient strength and rigidity for this purpose. The link arms 13 may be cast members having inwardly extending flanges 59 to provide lateral rigidity and being cored out between, as represented by dotted lines in Figs. 2 and 3, to eliminate excess metal and weight. Both ends of both link arms 13 are cast with hub portions 61 having apertures for receiving the ends of massive shafts, 39 and 39' which extend therethrough. The ends of the heavy supporting shafts are firmly secured into the hubs of the link arms 13, as by keys 63 placed in aligned keyways between the shafts and the hubs, in a usual manner. The ends of each shaft are provided with outwardly projecting portions 65 of reduced diameter threaded for receiving a nut 67 securing a retaining cup or ring 69 thereon. An inwardly directed flange 71 of each retainer ring is firmly clamped against the outside of each adjacent hub on the link arm.

Before being secured between the link arms 13, the intermediate portion of the upper shaft 39' is journalled in an upper bearing block 73 and the intermediate portion of the lower shaft is journalled in a lower bearing block 75. Mounting lugs 77 extend laterally from opposite sides of the bottom of the upper bearing block for attachment to the upper flange of the I-shaped walking-beam 11 in any suitable manner, as by bolts 79 passing therethrough. The lower bearing block is similarly provided with lugs 77 and bolts 79 are passed through these lugs and suitably aligned holes in a base plate 81 to firmly mount the lower bearing block thereon. The base plate 81 is firmly attached to the upper end of the Samson post 15 in any suitable manner, as by welding for example.

In this manner the walking-beam 11 is pivotally journalled and suspended between the upper ends of the two link arms 13 and the lower ends of the link arms are pivotally supported on the shaft 39 in the bearing block 75 on the upper end of the Samson post. Through suitably connected grease fittings 83, which may be of a type known as "Alemite" or "Zerk," lubricant may be injected into the bearings under high pressure.

The journalled intermediate portions of the shafts 39 and 39' are provided with screw threads 85 which project in interfitting relation into corresponding threads 85' provided in the associated bearing blocks 73 and 75. The root diameters of the threaded intermediate portions of these shafts are selected suitably to provide the necessary strength and rigidity for supporting the walking-beam, and the threads, extending beyond the necessary diameter, provide a substantial amount of additional bearing surface more than would be possible with conventional cylindrical bearing surfaces of similar overall size. Hardening and grinding is eliminated and production is cheapened. The threaded bearing also serves to retain the lubricant and distributes it slowly and uniformly around the bearing surfaces as the members oscillate. Also the threaded bearing sustains end thrust and controls side slap. My threaded bearings may be used for supporting members for oscillation either on a vertical or a horizontal axis.

Spacer rings 87 and 87' are provided on the shafts, being disposed between the ends of the bearing blocks and the hubs of the link arms. Each spacer ring is provided with a thin annular grease retaining flange 89 which extends into an annular groove 91 provided in the respective adjacent ends of the bearing blocks 73 and 75, as may be seen more clearly in Fig. 4. Each shaft is also preferably provided with a shallow annular groove 93 inside of the flange 89 of each spacer ring. The threads 85 and 85' on the shafts and bearing blocks are machined with proper clearance to allow the lubricant to work through, and the surplus overflow of the grease 95 lodges and forms a seal between the ends of the bearing block and the adjacent spacer ring, as shown in Fig. 4, an enlarged fragmentary sectional view. In this manner the bearings are sealed and protected to retain the grease and to exclude dust and foreign matter, being capable of carrying heavy loads, and providing long bearing life.

A bearing rest 97 secured to the bottom of the lower flange of the I-beam 11, as by bolts 99, is suitably shaped and positioned to fit over the lower bearing block 75 in normal operation. The bearing rest 97 has downturned ends 101 which fit and rest upon the spacer rings at the ends of the bearing block. One of these down-turned ends is provided with a down-turned bevelled edge 103 which fits into a corresponding bevelled

groove 105 in the adjacent spacer ring, where it rests at all times during normal operation.

As the walking-beam 11 oscillates back and forth through a small angle while pumping the well, the rotation takes place entirely between the lower shaft 39 and the lower bearing block 75 in which it is journalled. The two link arms 13 merely rock with the walking-beam 11 during pumping operation, and there is no rotation in the upper bearing.

To service the well, the walking-beam is conveniently moved to a retracted position, as shown in Fig. 5, the polish rod being disconnected from the usual connection with the horses head. This is accomplished by attaching a hoist (not shown) to the lifting ring 107 and lifting the walking-beam and turning it and the link arms back, as represented by dotted lines and arrow in Fig. 1, to retracted position, shown in Fig. 5. The bearing rest 97 is lifted from the lower bearing block on which it normally rests and is turned back, and the bottom of the walking-beam merely rests directly upon the top of the lower bearing block while the well is being serviced. After the servicing of the well has been attended to, the walking-beam and the supporting link arms are again turned toward the well to normal operating position.

Figs. 6 and 7 show another embodiment of my quickly retractable mounting for the walking-beam 11, wherein only a single link arm 111 is provided, being a cast or fabricated structure of suitable strength and rigidity for the purpose. The upper end of the link arm is provided with a rigid stub shaft 113 one end of which extends laterally and is journalled in a bearing block 115 secured by bolts 116 to the upper side of the walking-beam. The lower end of the link arm 111 is provided with a stub shaft 117 which is journalled in a lower bearing block 119 mounted on the upper end of the Samson post 15, as in the previous embodiment. The shafts 113 and 117 may be either integral with the link arm 111 or may be inserted and keyed therein, as desired. On the end of each bearing block remote from the link arm a grease cap 121 is firmly secured, as by screws 123, and by means of suitable grease fittings 83 therein lubricant may be injected under high pressure into the ends of the bearings to gradually circulate therethrough around the oscillating shafts 113 and 117. As in the previous embodiment, the shafts are provided with screw threads cooperating with suitable clearance in interfitting screw threads in the bearing blocks and the screw threaded bearings having the same useful purposes and advantages as previously described.

An annular packing groove 125 is provided in the end of the lower bearing block 119 adjacent the link arm and concentrically positioned with reference to the shaft 117 for receiving the edge of a cylindrical dust ring 127, the other end of which fits snugly onto a cylindrical shoulder 129 provided on the link arm. Packing 131 is provided in the packing groove 125, and this assembly serves to retain grease and exclude dust, rain and foreign matter from the lower bearing, which is the one which oscillates during well pumping operation. If desired the upper bearing may be similarly enclosed and protected.

Projecting from the side of the link arm 111 adjacent the walking-beam is a walking-beam rest 133 which is of a semi-circular shape, as may be seen in Figs. 6 and 7, with the curved side 135 disposed toward the walking-beam. The beam rest 133 may be integral with the link arm or may be attached by welding or in any suitable manner. As may be seen, in Fig. 7, and dotted in Fig. 6, the portion of the curved surface 135 which receives the walking-beam 11 is of a smaller diameter and the end portions are of larger diameter providing end flanges or guides 137 for properly positioning the bottom of the walking-beam upon the rest in either inclined position of the link arm. The single link arm 111 with pre-assembled shafts 113 and 117 is a simple structure facilitating transportation and installation in the field.

Assuming that, as shown in Fig. 6, the walking-beam 11 is in the direction toward the well and is operating, it remains continually against the beam rest 133 and the link arm 111 rocks with the walking-beam, all the rotation or oscillation taking place in the lower bearing block 119 on top of the Samson post or upright structure. To service the well, the walking-beam is raised and the link arm 111, as viewed in Fig. 6, is turned up vertically and then inclined toward the right hand side to a position, as indicated by the dotted center line. In this position the bottom of the walking-beam again firmly engages the beam rest 133, but on the left hand side thereof, and the walking-beam is shifted to the right by a distance equal to the displacement of the shaft 113 in the upper end of the link arm. The well is thus conveniently and quickly cleared for servicing.

Figs. 8, 9 and 10 disclose a simplified embodiment of retractable mounting so arranged that the walking-beam may be quickly and conveniently retracted for servicing the oil well. A pivoted link 141 is provided which is a generally Y-shaped member having the lower or stem end thereof apertured to provide a bearing 142 journalled on the intermediate portion of a stationary shaft 143. The shaft 143 and its bearing aperture in the center bearing 142 of the link, are provided with cooperative screw threads 145 as provided in the previously described embodiments. The ends of the shaft 143 are secured in apertures in two spaced upright standards 147 rising from a bracket plate 149 which is secured by bolts 151 to the top plate 81 on the Samson post 15. The spreading arms 153 of the Y-shaped link member 141 carry a shaft 155 extending therebetween and passing through a bearing block 157 which is secured on the bottom side of the walking-beam as by bolts 159. The shaft 155 and the bearing block 157 are also preferably provided with cooperative screw threads, although in pumping operation the oscillation takes place entirely upon the shaft 143 in bearing on Samson post, the link 141 oscillating back and forth with the walking-beam 111. As shown in Figs. 8 and 10, the stem or pivoted end 42 of the Y-shaped link member is provided with a pair of guide lugs 48 projecting in spaced relation for receiving and engaging opposite sides of the walking-beam.

Suitable grease fittings 83 are provided for injecting lubricant under pressure into the threaded bearings. The shaft 143 is secured stationary in the bracket 147, as by a screw 160 passed through an end flange 161 into the bracket. The shaft 155 is secured to the link structure 141 by a screw 163 passed through an end flange 165 on the shaft and into the link member.

Assuming that the walking-beam, as shown in Figs. 8 and 10, is in the position toward the well for pumping operation, it may be retracted away from the well merely by lifting the walking-beam 11 as by a hoist (not shown) connected to the lifting ring 163, turning the link arm 141 and,

as represented by dotted arrow heads, and then setting it down turned toward the right hand side from the Samson post, as shown in dotted lines.

Figs. 11, 12 and 13 show the arrangement of the equalizer over-arm for applying equalized driving forces to the walking-beam from the pitmans, the upper ends of which are pivotally connected thereto. An over-arm **49** is provided, which is a cast or fabricated member of suitable strength or rigidity, and preferably formed with a solid central section and the end portions extending therefrom are substantially hollow, being open from the bottom to provide maximum strength and rigidity with minimum weight and material, as shown by dotted lines in Fig. 11. The over-arm is pivotally journalled upon the intermediate portion of a shaft **51** which passes through a bearing aperture in the center of the over-arm and parallel to the axis of the walking-beam. The shaft **51** is mounted on top of the walking-beam in axially parallel relation thereto so that the ends of the over-arm **49** extend transversely to opposite sides of the walking-beam. For this purpose, the ends of the shaft **51** are firmly secured and supported in a pair of brackets **171** secured on the top of the walking-beam, as by bolts **173** passing therethrough.

In accordance with my invention, I provide a screw thread on the shaft **51** which interfits a corresponding screw thread in the bearing aperture in the walking-beam **49**. The ends of the shaft **51** are secured firmly in the brackets **171** in any suitable manner, which is facilitated by threading the shaft full length and providing corresponding threads in the shaft apertures in the brackets. The shaft is firmly secured in one of the brackets **171** in any suitable manner, as by a screw **175** passing thereinto through a lateral end flange **177** on the shaft, so that the over-arm oscillates on the shaft, the latter being stationary relative on the walking-beam. A high pressure grease fitting **179** is provided on the over-arm for injecting lubricant under high pressure through a passage **181** into the threaded bearing.

The overhanging ends of the over-arm **49** each comprise two spaced bearing lugs **183** extending downwardly for supporting a shaft **185** therebetween substantially parallel to the axis of the walking-beam. A universal bearing member **187**, which is journalled on the intermediate portion of each shaft **185** between the lugs, is suspended downwardly for pivotal connection with the upper ends of the pitmans **43**. Each shaft **185** and its bearing in the universal number **187** are provided with cooperative screw threads. A lateral flange **189** is provided on the end of each shaft **185** for securement by a screw **191** passing therethrough into the adjacent lug. Each pitman **43** is provided with a screw threaded shaft **193** projecting laterally from the upper end of the pitman into a threaded bearing aperture passing through the lower end of the adjacent universal member **187**. The other end of the threaded aperture in the universal member is closed by means of a grease plate **195** secured by screws **197** and provided with a grease fitting **199** through which lubricant under high pressure may be injected into the bearing. During each stroke of the pitman **43** to oscillate the walking-beam, the threaded pitman shaft **193** oscillates in the threaded aperture in the universal member **187** due to relative rotation of the walking-beam. As a result grease gradually works through and a small quantity escapes from the walking-beam end adjacent the pitman **43**. To hold the grease and exclude dust, a felt packing ring **201** is provided on the pitman shaft **193** in the space between the universal member **187** and the pitman. Felt washers may be similarly provided on the over-arm shaft **51** in the spaces between opposite sides of the over-arm **44** and the brackets **171**.

In operation the equalizer over-arm **49** inclines slightly to one side or the other to compensate for any slight misalignment of the cranks **45** on the driving device relative to the driven end of the walking-beam. Also this arrangement has special utility in compensating for any misalignment which might be caused by sidewise movement of the walking-beam as it oscillates between its two extreme positions for pumping the well.

Figs. 14 and 15 show the application of the improved threaded bearing in an unretractable walking-beam mounting comprising any conventional Samson post structure such as vertical beams **203** and angular braces **205** welded together at the upper to a top plate **207**. On top of the top plate **207** a pair of shaft brackets **209** are secured in spaced apart relation, as by welding or in any suitable manner, for securing and supporting the ends of a shaft **211** extending therebetween. At one end the shaft **211** terminates in a lateral flange or head **213** which is secured by a screw **215** passing into the adjacent bracket.

A bearing block **217** is journalled on the intermediate portion of the shaft **211** for supporting the walking-beam **11**, which is secured thereon in any suitable manner as by welding, for example. A substantial amount of clearance space must be provided between the opposite ends of the bearing block **217** and the brackets. The intermediate portion of the shaft **211** and the bearing block **217** are provided with interfitting screw threads which cooperate in the same manner to provide the same useful advantages which were explained previously with reference to the retractable mountings. In each clearance space on opposite sides of the bearing block **217** a dust-proof felt sealing ring **219** is provided to retain grease and exclude dust and foreign matter. A grease fitting **83** on the bearing block **217** provides for injecting lubricant into the bearing through a passage **221**.

It will be seen that I have provided an improved bearing which provides greater bearing surfaces within given dimensions for pivotally journalling oscillating members and which effectively retains and uniformly distributes lubricant for long bearing life with a minimum of attention. The improved bearing also supports end thrust and controls side slap and may be utilized in various positions either on a vertical or a horizontal axis and in addition to journalling walking-beams it is also advantageous for use in horizontal swings in the rod line for pumping one well from another, in rod line holdovers or universal pendulums, stroke posts, and the like. The retractable mounting for walking-beams, that provides convenient servicing, may be a unitary or a fabricated link member.

It is apparent that within the scope of the invention modifications and different arrangements may be made other than herein disclosed, and the present disclosure is illustrative merely, the invention comprehending variations thereof.

I claim:

1. Retractable oil-well pumping apparatus having in combination, a stationary base, a Samson post mounted on said base, a link arm, bearing means journalling one end of said link arm upon the upper end of said post with the other end extending therefrom to be turned to either an operative position or to a retracted position, a walking-beam, bearing means journalling said walking-beam upon the extended end of said link arm, and means for oscillating said walking-beam and link arm together in a predetermined angular relation.

2. Retractable oil-well pumping apparatus comprising, a stationary base, a Samson post, a link arm, bearing means journalling one end of said link arm upon the upper end of said post with the other end extending therefrom, a walking-beam, bearing means journalling said walking-beam upon the extended end of said link arm for disposition either to an operative or to a retracted position, the link arm and the walking-beam being in predetermined relative angular relations both in the extended position and in the retracted position, and means for simultaneously oscillating said walking-beam and link arm together in a predetermined angular position.

3. In combination in retractable oil-well pumping apparatus, a base, an upright structure on said base, a link member, bearing means journalling one end of said link member upon the upper portion of said upright structure with the other end extending therefrom, a walking-beam, bearing means journalling said walking-beam upon the extended end of said link member so that the link arm and the walking-beam may be oscillated together in a fixed angular relation or conveniently turned to a retracted position in a different angular position, said bearing means comprising interfitting screw thread portions providing extra bearing surface and limiting side slap, and means for oscillating said walking-beam and link member.

4. Retractable oil-well pumping apparatus comprising, a stationary base, an upright Samson post structure, a link arm, a shaft projecting laterally from each end of said arm, bearing means journalling one of said shafts upon said structure with the link arm extending pivotally therefrom, a walking beam, bearing means journalling said walking-beam upon the shaft on the extended end of said link arm, and a beam rest on the intermediate portion of said link arm for engaging the beam when it is turned in either direction from perpendicular toward parallel relation with the link arm.

5. In combination in retractable oil-well pumping apparatus, base supporting means, an upright structure rising from said base, a pair of link arms disposed in spaced parallel relation, a pair of shafts each having the ends thereof secured in and between adjacent spaced ends of said pair of link arms, bearing means journalling one shaft upon the upper end of said upright structure with the other ends of the link arms extending pivotally therefrom, a walking-beam, bearing means journalling said walking-beam upon the shaft between the extended ends of said link arms for oscillation together therewith, a bearing rest secured on the bottom side of the walking beam, said bearing rest being suitably shaped and positioned to fit over the first mentioned bearing means during normal oscillating operation of the walking-beam and conveniently separable therefrom as the walking-beam and link arms are shifted to tilt away from the well in retracted position.

6. Retractable oil-well pumping apparatus in accordance with claim 5, and said second mentioned bearing means being secured to the upper side of said walking beam.

7. In combination in retractable oil-well pumping apparatus, base supporting means, an upright structure rising from said base, a pair of link arms disposed in spaced parallel relation, a pair of shafts each having the ends thereof secured in and between adjacent spaced ends of said pair of link arms, bearing means journalling one shaft upon the upper end of said upright structure with the other ends of the link arms extending pivotally therefrom, said shaft and said bearing means having screw thread portions cooperatively interfitting therebetween, a walking-beam, bearing means journalling said walking-beam upon the shaft between the extended ends of said link arms for oscillating together therewith, said bearing means being secured to the upper side of said walking beam, a bearing rest secured on the bottom side of the walking-beam, said bearing rest being suitably shaped and positioned to fit over the first mentioned bearing means during normal oscillatory operation of the walking-beam and conveniently separable therefrom as the walking-beam and link arms are shifted to tilt away from the well in retracted position.

8. Retractable oil-well pumping apparatus in accordance with claim 4, and said second mentioned bearing means being secured to the upper side of said walking-beam.

9. Retractable oil-well pumping apparatus comprising, a stationary base, an upright Samson post structure thereon, a link arm, a shaft projecting laterally from each end of said arm, bearing means journalling one of said shafts upon said upright structure with the link arm extending pivotally therefrom, said shaft and said bearing means having screw thread portions cooperatively interfitting therebetween, a walking beam, bearing means secured to the upper side of said walking beam and journalling the walking beam upon the shaft on the extended end of the link arm, and a beam rest on the intermediate portion of said link arm for engaging the lower side of the walking beam when it is turned in either direction from a perpendicular toward a parallel relation with the link arm.

10. In retractable oil-well pumping apparatus the combination according to claim 5, an equalizer arm, bearing means journalling said equalizer arm on the upper side of said walking-beam with the ends of the arm projecting on opposite sides of the walking-beam, a driving device having transversely disposed crank means, a pair of pitman rods, means connecting an upper end of each pitman rod pivotally to a projecting end of said equalizer arm, and the other ends of said pitman rods being pivotally connected to said transversely disposed crank means.

11. In retractable oil-well pumping apparatus the combination according to claim 7, an equalizer arm, bearing means journalling said equalizer arm on the upper side of said walking beam with the ends of the arm projecting on opposite sides of the walking-beam, a driving device having transversely disposed crank means, a pair of pitman rods, means pivotally connecting one end of each pitman rod to one end of the equalizer arm and the other end of each rod to the crank means, and the bearing means journalling the

walking-beam on the shaft between the extended ends of the link arms and also the equalizer arm on top of the walking-beam having screw thread portions between the relatively moving parts.

12. In combination in retractable oil well pumping apparatus, a base, an upright structure on said base, a link member of substantially a Y-shape comprising a stem and a pair of arms extending in a spaced apart relation from one end thereof, stationary bearing means pivotally journalling the stem end of the link upon said upright structure to oscillate thereon, said bearing means having screw thread portions interfitting between the relatively moving parts, a walking-beam, means pivotally mounting the walking-beam between the extended arms of the link for disposition either in a pumping position or in a retracted position on the upright structure, and a pair of guide lugs projecting in spaced apart relation from the stem of the link member for receiving and engaging opposite sides of the walking-beam.

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