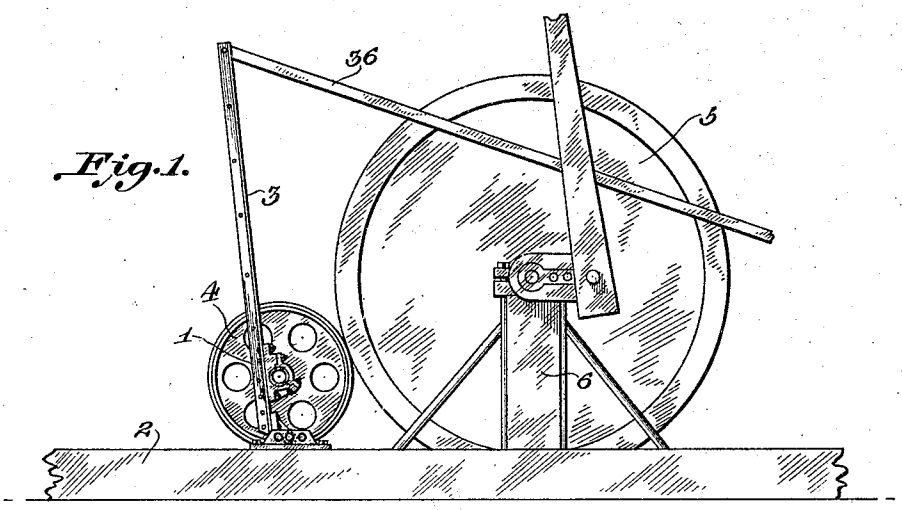
March 15, 1927. 1,621,053

C. H. BESSE

SWING LEVER FOR SAND REELS

Filed May 27, 1926 2 Sheets-Sheet 1

Fig. 1.



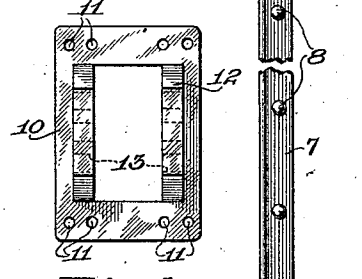


Fig. 5.

Fig. 2.

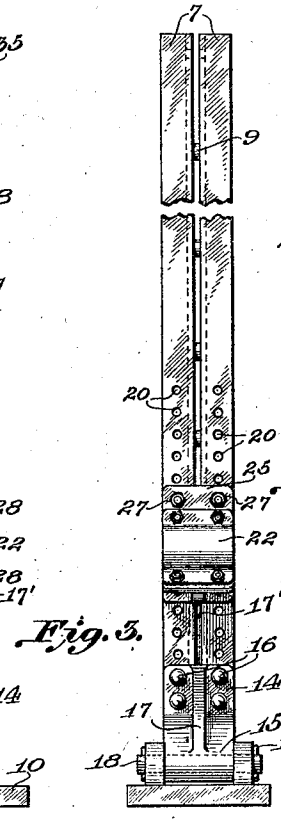


Fig. 3.

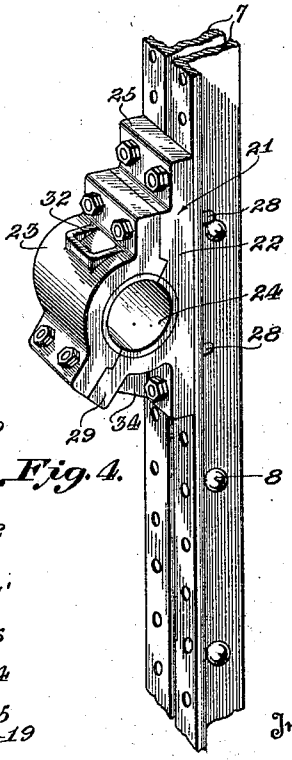


Fig. 4.

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SWING LEVER FOR SAND REELS

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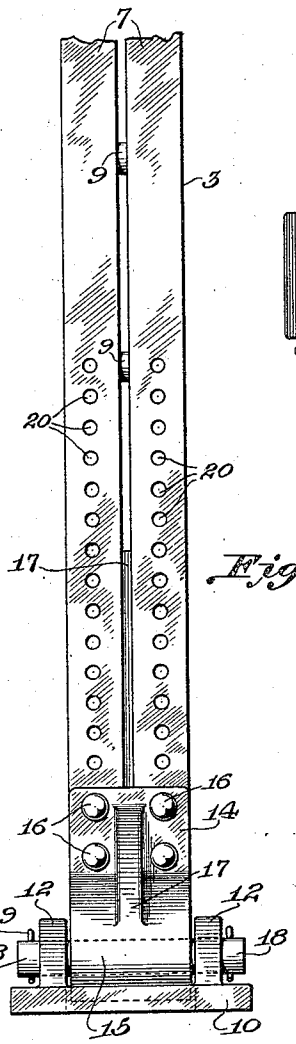


Fig. 7.

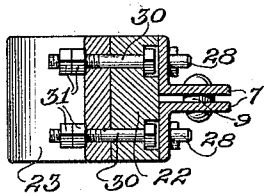


Fig. 8.

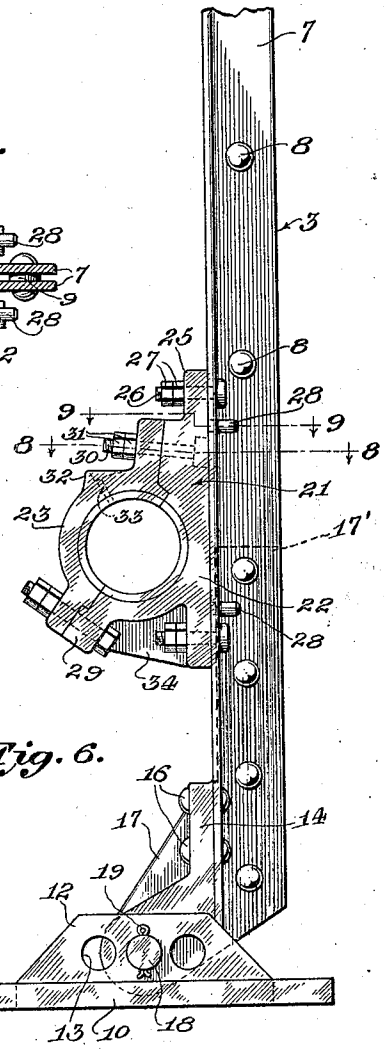


Fig. 6.

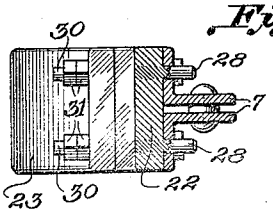


Fig. 9.

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Patented Mar. 15, 1927. 1,621,053

UNITED STATES PATENT OFFICE.

CARL H. BESSE, OF TULSA, OKLAHOMA.

SWING LEVER FOR SAND REELS.

Application filed May 27, 1926. Serial No. 112,110.

This invention relates to improvements in swing levers for sand reels of well drilling rigs, having for an object to provide a form of all metal swing lever utilizing a novel construction and arrangement of an adjustable base plate mounting and an adjustable bearing box, whereby to permit of a wide range or multiplicity of adjustments of the sand reel pulley to the face of the rig band reel to secure a maximum and proper frictional contact and hence, reduce the wear on the face of the wooden band wheel to minimum, as well as to insure the proper spooling of the sand line upon the reel drum.

It is also an object of the invention to provide a swing lever whose construction and arrangement is such as will increase the efficiency of the rig equipment during the drilling of wells as well as lower the incident operation costs, the device eliminating the necessity of periodical babbitting of bearings and complete lever replacement as is required with the now prevalent type of wood knuckle block and swing lever and further, permitting of a complete salvaging thereof, since the same may be successfully used upon any number of well drilling operations with but minimum repair and practically no replacement.

Another and equally important object of the invention may be stated to provide a device of the character mentioned wherein means are provided for effecting the constant lubrication of the sand reel shaft bearing, thereby reducing those fire hazards commonly encountered when the steel reel shafts turns in a wood bearing.

It is also among the aims and objects of the invention to provide a swing lever and shaft bearing box wherein cooperable means are provided on each for permitting of vertical adjustment of the latter, the mode of mounting and securing the bearing box in an adjusted position being such as to absolutely assure its placement upon the lever and also, to impart maximum stability thereto, such adjustable mounting being simple and readily effectible in that a minimum number of parts are employed.

Other objects of the invention will be in part obvious and in part pointed out hereinafter.

In order that the invention and its mode of operation may be readily understood by those skilled in the art, I have in the accompanying illustrative drawings and in the detailed following description based thereupon set out one possible embodiment of the invention.

In these drawings:

Figure 1 is a fragmentary side elevation of the derrick floor showing the band wheel and sand reel mounted thereon together with the improved swing lever,

Figure 2 is a side elevation of the improved swing lever,

Figure 3 is a similar view taken at substantially right angles to the Figure 2,

Figure 4 is an enlarged fragmentary detail in perspective showing the construction and mounting of the bearing box upon the swing lever,

Figure 5 is a detail in plan of the improved base plate,

Figure 6 is an enlarged fragmentary detail in side elevation of the improved swing lever showing the arrangement and mounting of the bearing box thereupon and the mode of engagement of the dowel pin therewith,

Figure 7 is a similar view taken at substantially right angles to the Figure 6,

Figure 8 is a detail in transverse section taken on the line 8—8 of Figure 6 locking in the direction in which the arrows point, and

Figure 9 is a similar view taken on the line 9—9 of Figure 6 looking in the direction in which the arrows point.

Having more particular reference to the drawings, in connection with which like characters of reference will designate corresponding parts througout, it will be understood that my improved swing lever is especially adaptable for use in connection with the sand reel of a well drilling rig, said reel consisting of a sand line drum (not shown herein) mounted upon a shaft 1, one end of which is received in a fixed bearing supported upon the base or bed 2 of the well drilling rig while the opposite end thereof is disposed for engagement in the swing lever, designated at this time for convenience in its entirety by the numeral 3. A sand reel pulley 4 is fixedly mounted upon the shaft 1 in proximity to that end of the shaft received in the improved bearing box upon the swing lever 3 and as will be understood, the peripheral portion of this pulley 4 is adapted to be moved into frictional contact with the face or peripheral portion of

the band wheel 5 of the well drilling rig, such band wheel being, as is usual, supported in suitable bearing devices generally designated at this time by the numeral 6.

The improved swing lever 3 may be stated to comprise a pair of angle iron bars designated by the numeral 7, such bars being rigidly interconnected in the manner shown in the Figure 3, through the medium of rivets engaged through the same throughout their respective lengths and generally indicated by the numeral 8; steel fillers 9 being received upon the intermediate portions of said rivets and serving to separate the adjacent portions of the angle iron bars 7, as is shown in the drawings.

A base plate or bearing 10 is provided the swing lever 3 and consists, preferably, of a metal plate having a plurality of relatively spaced pairs of fastening device receiving openings 11 formed in proximity to the various corner portions thereof while a longitudinally disposed slot is formed in the intermediate portion of said plate 10 and has certain of the sides thereof formed with relatively spaced parallel upstanding bearing pieces 12 having series of relatively spaced bearing openings 13 therein.

The lower end of the swing lever 3 is provided with a casting or attaching bracket indicated by the numeral 14, said bracket having a transversely disposed bearing sleeve 15 in its outer end while an angularly offset attaching portion is formed upon the inner extremity thereof and is adapted to lie flushly with the adjacent sides of the relatively spaced angle iron bars 7 of the swing lever 3, whereby such casting may be secured to the lever 3 through the medium of rivets 16 or similar securing devices. To brace and rigidify the casting construction 14, I may and preferably do form a rib or web 17 integral with portions of the attaching arm portion and bearing sleeve 15 of the casting 14, while the free portion or angularly offset part of the bracket 14 is provided with a medial longitudinally disposed rib or filler designated in dotted lines in the Figure 6 by the numeral 17′, said filler being adapted to be received between the angle iron bars making up the swing lever 3 in the fashion as indicated in the Figure 7; extending upwardly between said bars of the swing lever 3 to a point approximately opposite the center of the bearing block, hereinafter more fully described. The filler, as will be understood, is rigidly secured in this position between the bars 7 of the swing lever 3 by rivets 8 passed therethrough and hereinbefore described. The provision of this filler 17′ between the lower portions of the angle bars 7 and the swing lever 3 and the fact that the same is integral with the free portion of the bracket 14, obviously, serves to materially strengthen the construction and to give rigidity to the device at this point.

The width of the outer or lower end of the casting 14 having the bearing sleeve 15 therein is such as to permit of its snug arrangement between the opposed bearing pieces 12 and by consequence, with such positioning therein adjacent certain of the bearing openings 13, a shaft or pivot pin 18 passed through such bearing openings 13 and the bearing sleeve 15 will serve as means for effectually pivoting the lower end of the swing lever 3 to the base plate 10; cotter pins or the like, 19, being passed through openings formed in the outer extremities of said shaft or pin 18 whereby to prevent its displacement with respect to the pieces 12.

The intermediate portions of certain of the opposed sides of the angle iron bars 7 of the swing lever 3 are each formed with a corresponding series of longitudinally disposed openings which, it will be understood, are generally indicated by the numeral 20, the relative arrangement of these openings being such that they are disposed in opposed pairs.

With a view toward providing the free end of the sand reel shaft 1 with an adjustable bearing or mounting, a bearing box designated in its entirety by the numeral 21 is provided, said bearing box consisting of a base section 22 and a removable cap section 23, each of which are formed with semicircular bearing pockets adapted, when aligned, to provide a circular bearing for the adjacent end of the sand reel shaft 1; the bearing pockets, of course, being lined with babbitt or similar bearing metal as is indicated by the numeral 24.

The opposite extremities of the basal section 22 of the bearing box are provided with extensions 25 having relatively spaced openings formed therein adapted, at times, to receive bolts 26 therethrough, the inner extremities of said bolts being passed through certain of the adjacent opposed openings 20 in the angle iron bars 7 of the swing lever, whereupon locking nuts 27 are turned into engagement with their screw threaded extremities and thus, serve to lock or connect the basal section 22 of the bearing box to said swing lever 3.

Also, the inner plane face of this basal bearing box section 22 is provided with opposed pairs of dowel pins 28, the arrangement or placement of such pins corresponding with the arrangement of the opposed openings 20, aforesaid, so that with arrangement of the plane face of such section 22 adjacent the sides of the angle iron bars 7 having openings 20 therein, said dowel pins 28 will extend through the adjacent openings and thus afford the bearing box with a means for effectually and stably supporting the same upon the swing lever 3.

The opposite ends of the removable section 23 of the bearing box 21 are provided with apertured extensions adapted to be received upon correspondingly formed portions 29 of said section 22, whereupon connecting bolts 30 are passed through correspondingly arranged openings formed in said portions of the section 22 and through the apertured extremities of said section 23, whereby with the engagement of locking nuts 31 with their screw threaded extremities, said bolts will serve to clampingly connect the removable section 23 to the basal section 22 and thus complete the bearing box.

The constant lubrication of the sand reel shaft bearing box 21 is effected by an oil chamber or pocket 32 being formed in the upper side of the removable section 23, communicating with a duct 33 adapted to discharge lubricant onto the bearing surface of the babbitt linings 24 and the adjacent portion of the sand reel shaft received therein. By reason of the constant supply of lubricant to the sand reel shaft bearing box, it will be understood that fire hazards encountered when the sand reel shaft turns in the old style of wood bearing, will be eliminated.

In this connection, it may be also noted that a portion of the basal section 22 of the bearing box is preferably braced through the medium of an integral bracing web or rib 34, thus serving to rigidify and stabilize the construction and to avoid fracture or similar damaging of the same.

To permit of connection of the swing lever 3 to the usual hand control lever on the derrick floor 2 (not shown herein), correspondingly arranged openings 35 are formed in certain of the sides of the upper ends of the angle iron bars 7 and, obviously, permit of the pivotal connection of a reach rod or pipe 36 therebetween as is shown in the Figure 1, the opposite end of such reach rod being pivotally connected to the hand control lever aforesaid. Thus, it will be understood that by rocking the hand control lever, movement of the peripheral portion of the sand reel pulley 4 into and out of engagement with the face of the band wheel 5 may be effected.

From the foregoing, it will be understood that I have provided a simple yet highly efficient form of all metal swing lever for sand reels. By reason of the mounting of the lower end of the swing lever 3 upon the base bracket 10, it will be understood that lateral adjustment of said lever together with the pulley 4 may be effected, such as conditions or preference may dictate. Similarly, by reason of the adjustable mounting of the bearing box 21 upon the swing lever 3 through the medium of the dowel pins 28 engaging in certain of the opposed openings 20, together with the engagement of the connecting bolts 26 in said openings, it will be understood that said box may be moved vertically with respect to the swing lever whereby to permit of proper adjustment of the sand reel pulley 4 to the face or peripheral portion of the band wheel 5, thereby effecting proper frictional contact which in turn, will serve to reduce wear upon said face of the band wheel to minimum. Furthermore, by reason of the vertical adjustability of the bearing box 21 upon the lever 3, it will be appreciated that proper spooling of the sand line on the sand reel drum will be permitted. Furthermore, because of the simplified construction of the device, involving but a minimum number of parts, it will be likewise understood that it may be quickly assembled and when in use, will serve to generally increase the efficiency of the equipment. Likewise, the device, by reason of its durable construction, represents a complete salvage value, in that it is possible to use the same in connection with any number of well drilling operations with but a minimum of repair and practically no replacement.

Manifestly, the construction shown is capable of considerable modification and such modification as is within the scope of my claims, I consider within the spirit of my invention.

I claim:

1. A swing lever comprising a metal body having a plurality of relatively spaced openings formed longitudinally of one portion of the same, a bearing box, rigid means fixedly carried on one portion of said bearing box adapted to be introduced into and snugly received by certain of said receiving means, and fastening means passed through portions of said bearing box and through certain others of said receiving means whereby to connect said bearing box to the lever and to prevent displacement of such rigid means from the receiving means.

2. A swing lever comprising a metal body having a plurality of relatively spaced openings formed longitudinally of a portion of the same, a bearing box, pins carried by and extending from one portion of said bearing box receivable in certain of said openings, and fastening means passed through portions of the bearing box engageable in others of said openings whereby to connect the bearing box to the lever and to prevent displacement of said pins from the openings receiving them.

3. A swing lever comprising a metal body having a plurality of relatively spaced series of openings formed longitudinally of the same, means for pivotally supporting one end of such lever, a bearing box, pins fixedly carried by said bearing box and extended therefrom engageable in certain of said

openings, and fastening means passed through portions of said bearing box engageable in others of said openings.

4. A swing lever comprising a metal body having a plurality of series of relatively spaced openings formed longitudinally for a portion of its length, a base plate pivotally receiving one end of the lever, a sectional bearing box, means for interconnecting the sections of said bearing box, a plurality of pins extended from one side of said bearing box corresponding in arrangement to the arrangement of said series of openings and adapted to be engaged in certain thereof, and fastening means passed through portions of the bearing box and through certain others of said openings.

5. A swing lever comprising a metal body having a plurality of series of equi-spaced openings formed longitudinally therein for a portion of its length, a base plate, bearing pieces carried on said plate having horizontally arranged and relatively spaced bearing openings formed therein, means engageable with the lower end of said lever and in said bearing openings of the bearing pieces for pivotally mounting the lever, a bearing box, and means carried by said bearing box and extended from one side thereof receivable in certain of said openings.

6. A swing lever comprising a body composed of relatively parallel and spaced opposed angle irons, a bracket secured to the lower end of said lever for effecting pivotal mounting of the same upon a receiving means, a medially disposed and longitudinally extending filler fixedly and rigidly carried upon a free portion of said bracket extended from the same and adapted to be received between the lower portions of said angle bars, means for rigidly interconnecting said angle bars and said filler, and a bearing box adjustably mounted upon a portion of the lever.

7. A swing lever comprising a metal body composed of relatively parallel spaced and opposed angle irons, a base plate having bearing means thereon, a bracket secured to the lower end of said lever and pivotally received in said bearing means, a medially disposed and longitudinally extending filler fixedly carried upon the free portion of said bracket and extended from the same adapted to be received between the lower portions of said angle bars, means for rigidly interconnecting said angle bars and said filler, corresponding portions of said angle irons having a series of equi-spaced openings formed longitudinally for portions of their lengths, and bearing means adjustably receivable in the series of openings in said angle irons having the approximate center thereof opposite the upper and free end of said filler.

8. A swing lever comprising a metal body composed of relatively spaced parallel angle irons, a base plate having bearing means thereon, a bracket secured to the lower end of said lever and received in the bearing means of said plate, an elongated filler fixedly carried upon the free portion of said bracket disposed longitudinally thereof and at substantially right angles to the same, said filler being receivable between the lower portions of said angle irons, means for rigidly interconnecting said angle irons and filler, and a bearing box adjustably secured to portions of said angle irons.

In witness whereof I have hereunto set my hand.

CARL H. BESSE.