

Aug. 18, 1925.

1,550,194

C. F. ZIMANSKY

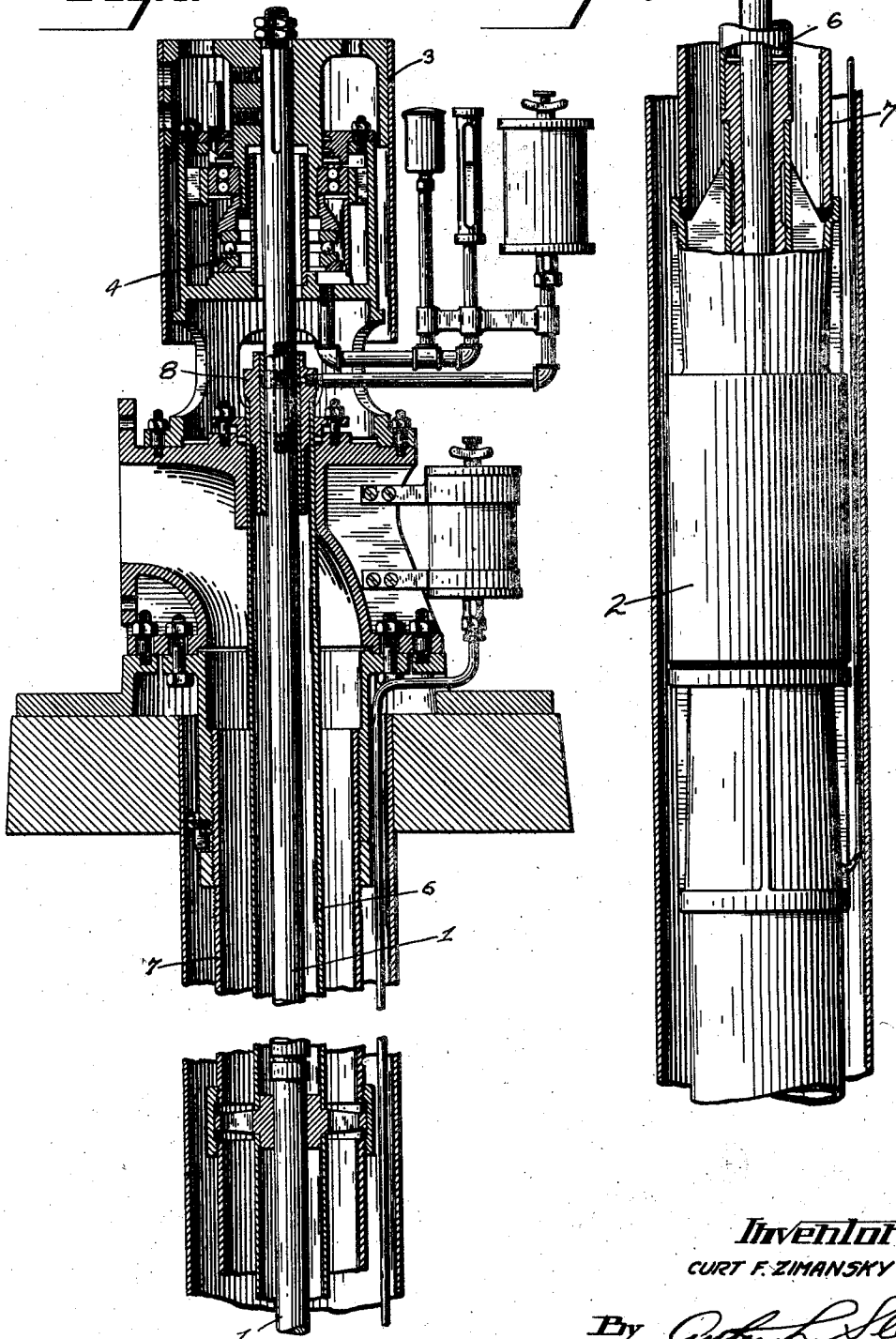
PUMP SHAFT CASING COMPRESSOR

Filed Feb. 11, 1924

2 Sheets-Sheet 1

Fig. 1.

Fig. 1a.



Inventor

CURT F. ZIMANSKY

By

Arthur L. Slee
Att.

Aug. 18, 1925.

1,550,194

C. F. ZIMANSKY

PUMP SHAFT CASING COMPRESSOR

Filed Feb. 11, 1924

2 Sheets-Sheet 2

Fig. 2.

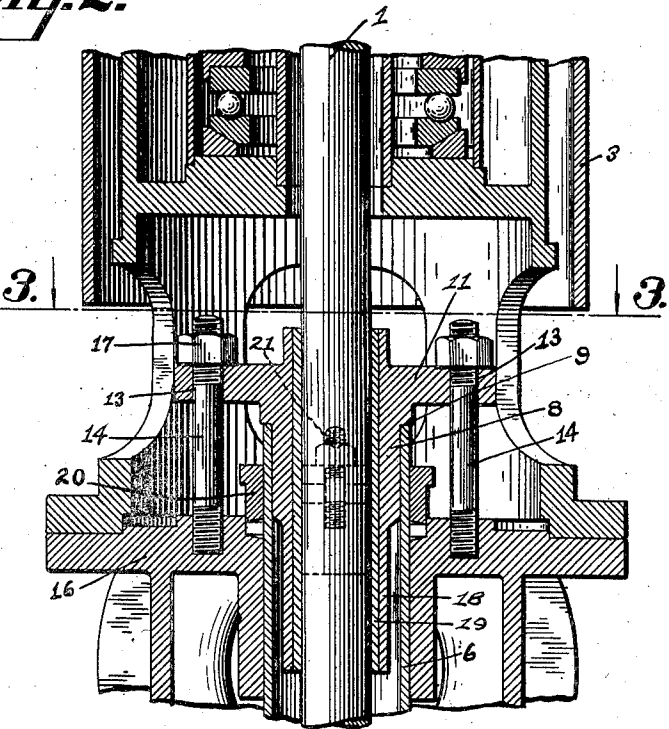
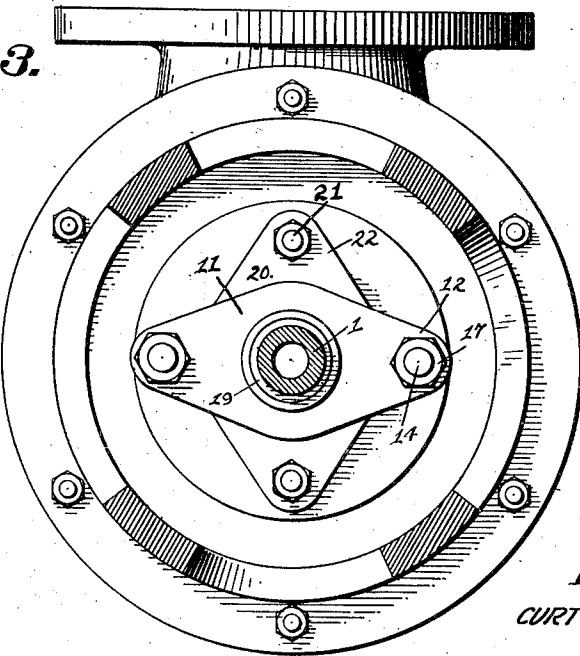


Fig. 3.



Inventor

CURT F. ZIMANSKY

By *Arthur L. Allen*
Att.

UNITED STATES PATENT OFFICE.

CURT F. ZIMANSKY, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO G. W. PRICE
PUMP AND ENGINE COMPANY, OF SAN FRANCISCO, CALIFORNIA.

PUMP-SHAFT-CASING COMPRESSOR.

Application filed February 11, 1924. Serial No. 692,025.

To all whom it may concern:

Be it known that I, CURT F. ZIMANSKY, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented a new and useful Improvement in a Pump-Shaft-Casing Compressor, of which the following is a specification.

My invention relates to improvements in well pumps and particularly to an improved means for placing a shaft casing under compression.

This invention is an improvement upon my former invention, Serial No. 471,457, filed May 21st, 1921, reference to which is hereby made, in which application I have disclosed an improved construction including a shaft casing placed under compression in order to give rigidity to the structure and to prevent whipping of the shaft within the well.

In my former invention the upper end of the shaft casing was engaged by the main head bearing of the shaft, the entire head bearing and mounting therefore being moved downwardly against the top of the shaft casing to exert a pressure thereagainst and thereby place the casing under compression. Experience has shown that in operation this construction causes any vibration present in the head bearing to be communicated to a large extent directly to the shaft casing. Furthermore, the play present in the shaft and head bearing prevents the application of a constant pressure upon the shaft casing. My present invention is therefore drawn to an improved means for applying pressure to the shaft casing, the objects being to simplify the construction, to facilitate the assembly and adjustment of the compressing means, to eliminate vibration from the head shaft, and to permit a constant pressure to be applied independently of the head bearing of the pump, and also to prevent the admission of oil from the shaft casing into the main head bearing.

I accomplish these and other objects by means of the device disclosed in the drawings forming a part of the present specification wherein like characters of reference are used to designate similar parts throughout said specification and drawings, and in which:

Figs. 1 and 1^a show a vertical section of

a well pump showing the application of my invention thereto.

Fig. 2 is a broken vertical section of the head of the pump taken at right angles to the section shown in Fig. 1 and showing the construction of my improved means for placing the shaft casing under compression.

Fig. 3 is a horizontal section taken upon the line 3—3 of Fig. 2 in the direction indicated.

Referring to the drawings the numeral 1 is used to designate in general a pump shaft connected between a well pump 2 and the top of a well and provided with the usual pulley 3 and head bearing 4. The shaft 1 is enclosed within a shaft casing 6 extending from the pump to the top of the well, said pump and shaft casing being in turn enclosed in a pump casing 7.

As stated in my former application above referred to, it is desirable in many cases to subject the pump casing 7 to tension and to place the shaft casing under compression so that the stresses in each member will combine to form a rigid construction such as will effectually resist the tendency of the shaft to whip within the well. In my present invention the shaft casing 6 is subjected to a compressive stress in the following manner. The shaft casing 6 is continued to a point above the top of the well but slightly below the head bearing 4 of pump. A member 8 provided with an annular shoulder 9 arranged to engage the end of the casing 6 is applied over the shaft below the head bearing, and entirely independently thereof. The member 8 is also provided with a flange 11 having lateral extensions 12 upon opposite sides of the shaft. Apertures 13 are formed in the extensions 12 to receive bolts 14 connected to the discharge housing member 16 at the top of the well. Nuts 17 are threaded onto the upper ends of the bolts 14 and arranged to bear against the extensions 12 whereby the member 8 may be moved downwardly to cause the shoulder 9 to apply the desired amount of pressure upon the shaft casing 6. A stuffing gland 20 actuated by bolts 21 is mounted below the member 8 upon the casing 6, said bolts 21 being arranged to engage extensions 22 disposed at right angles to the extensions 12 as best shown in Fig. 3 of the drawings.

The member 8 is preferably made as an

auxiliary bearing to give additional bearing support for the shaft, a reduced extension 18 being arranged to extend into the top of the casing 6 to give additional bearing surface. A bushing 19 is fitted into the member 8 to receive the shaft. The additional bearing surface thus obtained greatly reduces the vibration imparted to the shaft from the drive pulley and thus reduces the tendency to whip.

The above construction materially facilitates the assembly of the pump, as the member 8 may be adjusted entirely independently from the main head bearing and the possibility of causing the head bearing and drive pulley to be moved out of true alignment by virtue of an unequal tightening against the top of the shaft casing is entirely eliminated. A further advantage of particular importance is the fact that by eliminating the connection between the top of the shaft casing and the head bearing I have insured against the passage of oil from the casing into the head bearing, which is sometimes caused by back pressure within the shaft casing. As dirt and grit is sometimes accumulated and carried into the head bearing by such oil with much damage to the bearing the advantage of my improved construction in this respect will be readily seen.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a well pump, the combination with a shaft casing and a pump shaft therein provided with the usual head bearing, of a member mounted upon the shaft in engagement with the casing; and means for moving said member independently from the head bearing to place the casing under compression.

2. In a well pump, the combination with a shaft casing and a pump shaft therein provided with the usual head bearing, of means movable independently from the head bearing for placing said shaft casing under compression.

3. In a well pump, the combination with a shaft casing and a pump shaft mounted therein and provided with the usual head bearing, of an auxiliary bearing mounted upon the shaft independently from the head bearing, said auxiliary bearing being arranged to engage the upper end of the shaft casing; and means for moving said auxiliary bearing to place the shaft casing under compression.

4. In a well pump, the combination with a shaft casing and a pump mounted therein and provided with the usual head bearing of a member mounted upon the shaft independently from the head bearing, a shoulder formed upon said member to engage the upper end of the shaft casing; and means for moving said member to exert a pressure against the top of said casing under compression.

5. In a well pump, the combination with a shaft casing and a pump shaft mounted therein and provided with the usual head bearing, of an auxiliary bearing mounted upon the shaft adjacent the head bearing but independent thereof; a shoulder formed upon the auxiliary bearing to engage the upper end of the shaft casing; and means for moving said auxiliary bearing to exert a pressure against the top of the casing and thereby place said casing under compression.

6. In a well pump, the combination with a shaft casing and a pump shaft mounted therein and provided with the usual head bearing, of a member mounted adjacent the head bearing and movable independently therefrom; a shoulder formed upon said member to engage the upper end of the shaft casing; a flange formed upon the member and extending laterally therefrom upon opposite sides thereof; and bolts engaging said flange for forcing the shoulder against the shaft casing for placing the same under compression.

In witness whereof I hereunto set my signature.

C. F. ZIMANSKY.