No. 724,086. PATENTED MAR. 31, 1903.

I. F. DAVIS.

SUBMERGED GUDGEON BEARING.

APPLICATION FILED DEC. 26, 1901.

NO MODEL.

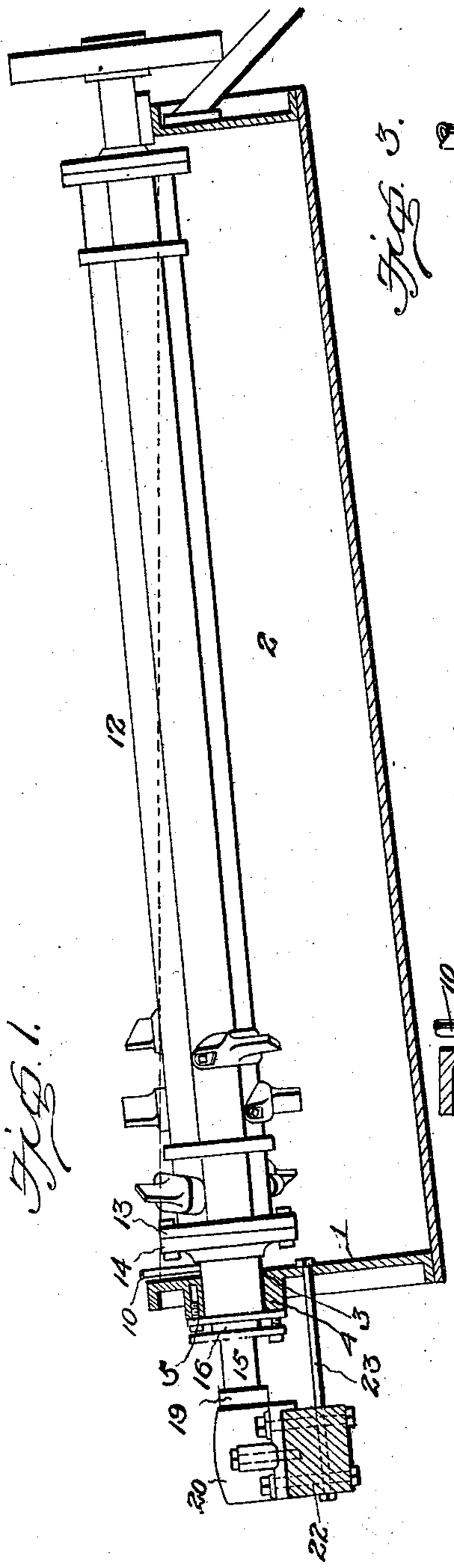

Fig. 1.

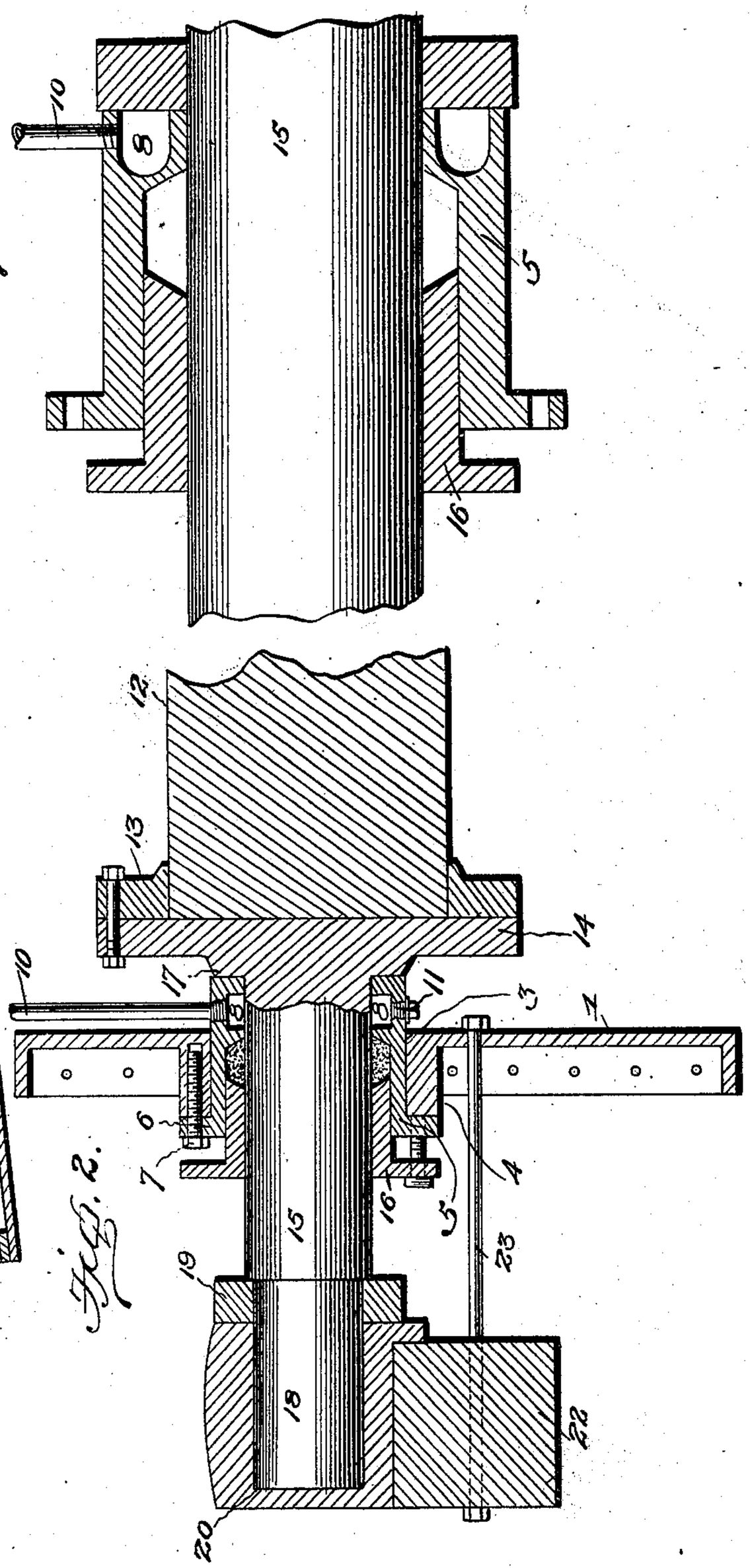

Fig. 2.

Fig. 3.

Witnesses
E. F. Stewart
Jno. Garner

Inventor
I. F. Davis
by C. A. Snow & Co.
Attorneys

UNITED STATES PATENT OFFICE.

ISAAC F. DAVIS, OF ROME, GEORGIA.

SUBMERGED-GUDGEON BEARING.

SPECIFICATION forming part of Letters Patent No. 724,086, dated March 31, 1903.

Application filed December 26, 1901. Serial No. 87,307. (No model.)

To all whom it may concern:

Be it known that I, ISAAC F. DAVIS, a citizen of the United States, residing at Rome, in the county of Floyd and State of Georgia, have invented a new and useful Submerged-Gudgeon Bearing, of which the following is a specification.

My invention is an improved bearing for a submerged gudgeon especially adapted for use in washer-boxes of the class employed for washing phosphate-rock and other ores, the object of my invention being to effect improvements in the construction of the submerged journal-box and gudgeon to prevent sand and grit from working between them and wearing out the same; and with this object in view my invention consists in the peculiar construction and combination of devices hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of an ore-washer provided with a submerged bearing embodying my improvements. Fig. 2 is a sectional view showing the bearing on a somewhat larger scale. Fig. 3 is a sectional view illustrating another construction in which the lubricant-channel is in the inner end of the journal-box and is open on the side opposite the thrust-flange of the gudgeon.

The head 1 of the washer-box 2 is provided with an opening 3, on the outer side of which is a flange 4, said opening and flange being circular or of any other suitable form. In the said opening is fitted a journal-box 5, which at its outer side has a flange 6, that bears against the flange 4 and is bolted thereto, as shown at 7, to secure the journal-box to the head. The journal-box may be cast with the head, if preferred. The said journal-box is provided with an annular channel 8. In the form of my invention shown in Fig. 2 the said channel is open on its inner side. In the form of my invention shown in Fig. 3 the said channel is open at the rear or inner end of the journal-box. A pipe 10 communicates with the upper side of the said channel to conduct air, oil, or clear water under a pressure considerably greater than the head-pressure of water in the washer-box free from grit thereto, and in the lower side of the said channel is a threaded discharge-opening in which is fitted a screw-plug 11. By this means the channel may be discharged of its contents and washed when the same becomes necessary.

The revoluble member, known as the "log" 12 in machines of this class, which is usually of octagonal form in cross-section, has its lower submerged end fitted in a sleeve 13. To the outer side thereof is bolted the flanged head 14 at the inner end of the gudgeon 15. The said gudgeon has its bearing in and extends through the journal-box, and the latter, as is indicated in Fig. 1, is submerged.

A gland 16 is fitted in the journal-box and secured thereto either by bolts, as is the usual practice, or by any other suitable means, and it will be understood that the journal-box is provided with suitable packing, which bears on the gudgeon journaled therein. The gudgeon has a flanged thrust-shoulder 17, which bears against the inner end of the journal-box.

Owing to the fact that the gudgeon 15 and journal-box 4 are submerged, the same as heretofore constructed rapidly wear out, because of the sand and grit which work between them; but by my improved construction, whereby the gudgeon is provided with a flanged thrust-shoulder that bears against the inner end of the journal-box and the latter has an annular chamber in contact with the opposing surface of the gudgeon, which chamber is kept full of clear water, air, or oil under presssure, sand, grit, and other foreign substances are excluded from between the wearing-surfaces of the journal-box and the gudgeon, and the life of the same is greatly prolonged.

It will be understood that the clear water, air, oil, or other fluid which is maintained in the channel 8 under a pressure greater than that of the muddy water in which the bearing is submerged will tend to work outwardly between the gudgeon and the journal-box and effectually prevent sand, grit, or other foreign substances from cutting the gudgeon and journal-box. Where clear water is used in said channel, it may be obtained at a point sufficiently elevated to maintain the requisite pressure in said channel 8. A force-pump or other suitable fluid-pressure mechanism may, however, be employed for this purpose. When the washer-box is supplied with water by a pump, the pipe 10 may be included in a

branch pipe that leads from the pump. Air or oil under pressure may be supplied to the said channel 8 by any suitable means. Usually clear water will be employed in the channel 8; but any suitable fluid may within the scope of my invention be used.

The outer end of the gudgeon is reduced, as at 18, has an outer thrust-flange 19, and is journaled in a bearing 20, which is secured on a flanged base, which bears and is bolted on a supporting-beam 22. To support the latter against the thrust of the gudgeon, the same is connected to the washer-box head 1 by bolts 23.

Fig. 3 of the drawings shows the lubricant channel or chamber 8 in the inner side or end of the journal-box and with its inner side open and opposed to the flange 17, which is the thrust-flange of the gudgeon, and thereby adapted to lubricate the parts where the friction is greatest.

Having thus described my invention, I claim—

1. An ore-washer box having a head provided with a submerged journal-box, a log having a gudgeon-bearing in said journal-box and having a thrust-flange engaging the inner end thereof, the journal-box having an annular chamber open on said gudgeon, means to maintain fluid in said chamber under a pressure greater than that of the water in which the bearing is submerged, and a supplemental bearing secured to the box-head at the outer end of said gudgeon, the latter having a thrust-flange engaged by said supplemental bearing, substantially as described.

2. In an ore-washer of the class described, the combination of a washer-box head, a journal-box therein, a log having a gudgeon-bearing in said journal-box, and provided with a thrust-flange engaging the inner end of the journal-box, a supplemental bearing at the outer end of said gudgeon, the latter having a thrust-flange engaged by said supplemental bearing, and both connecting said supplemental bearing and said washer-box head, to sustain the thrust of the log, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ISAAC F. DAVIS.

Witnesses:
JULIAN CUMMING,
S. B. NORTON.