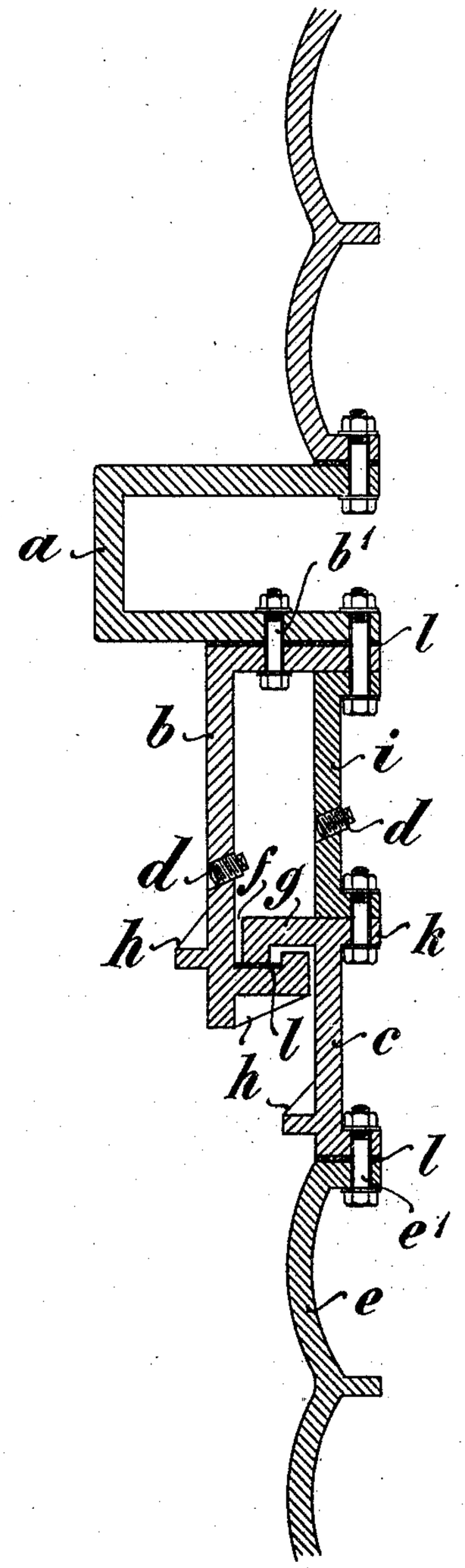
W. HUTTANUS.

TUBBING.

APPLICATION FILED JULY 7, 1909.

985,177. Patented Feb. 28, 1911.



Witnesses
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UNITED STATES PATENT OFFICE.

WILHELM HUTTANUS, OF BORTH, KREIS MOERS, GERMANY.

TUBBING.

985,177. Specification of Letters Patent. **Patented Feb. 28, 1911.**

Application filed July 7, 1909. Serial No. 506,428.

To all whom it may concern:

Be it known that I, WILHELM HUTTANUS, of Borth, a subject of the King of Prussia, whose post-office address is Borth, Kreis Moers, Prussia, German Empire, have invented new and useful Improvements in Tubbing, of which the following is a specification.

The present invention relates generally to tubbing and particularly to means for forming a watertight joint between wedge-cribs and guide rings.

In previously known methods of constructing the tubbing of shafts the joint between the wedge-crib of the upper and the guide ring of the lower set of tubbing was calked with wooden cuttings. Owing to changes in temperature, such as occur for example between summer and winter, these cuttings are not uniformly firm. They can be placed in position only with great difficulty at considerable depths on account of the increasing pressure and are always a greater or less danger for the shaft. Thus it has not seldom happened that the cuttings were the cause of serious accidents.

Now a primary object of the invention is to remedy the above defects; according to the invention the cuttings between the wedge-crib and guide ring are omitted and a special ring is provided for making the tubbing watertight.

In order that the invention may be clearly understood reference will be made to the accompanying drawing in which one embodiment is represented by way of example in vertical sectional elevation.

Referring to the drawing, when a set of tubbing has been finished as far as the guide ring a ring *b* is suspended under the upper wedge-crib *a* by means of screw-bolts b^1 which are only loosely screwed up. Said ring has a groove *f* in which is placed packing composed of lead plates *l*, the thickness of which depends on the size of the guide ring. Then the ring *c* is built in with its outward and downward extending rim *g* in the said groove *f* of the ring *b*. By tightening the bolts b^1 the ring *b* is raised, whereas the ring *c* is lowered by tightening the bolts e^1 in the ring *e*. Consequently the rim *g* will be pressed into the lead-lined groove *f* of the ring *b* and water is prevented from penetrating between the rim *g* and the groove *f* into the shaft.

Holes, which can be closed by screwed plugs *d*, are provided in the ring *b* for inserting concrete or the like behind the tubbing.

The strengthening ribs *h* projecting toward the face of the shaft are solely for enabling the rings to be embedded better in the concrete.

In order to prevent leaks forming between the rim *g* and the groove *f* in the event of the entire tubbing structure sinking, there is built into the ring *b* on the lengthened top flange of the guide ring *c* a ring *i*, the top flange of which is bolted to the ring *b* and the wedge-crib *a*, as clearly shown. The bottom flange of the ring *i* is likewise bolted to the inwardly extending flange *k* of the guide ring. In this manner it is obtained that the weight of the upper watertight portion of the lining of the shaft is not taken up solely by the ring *b*, but is distributed also onto the ring *c*, and consequently onto the rings under the ring *b*. The space between the rings *i* and *b* may likewise be filled up with concrete through holes which are normally closed by screwed plugs *d*.

The remaining tubbing may be constructed in any suitable manner, it beng immaterial to this invention whether it is smooth, ribbed or of other form.

What I claim, and desire to secure by Letters Patent of the United States, is:—

1. The combination with tubbing and a wedge-crib attached thereto; of a ring having a groove containing packing bolted to said wedge-crib, a guide ring having a flange provided with a downward extending rim resting on said packing, a ring bolted to said flange and to said first-named ring and wedge-crib, and tubbing bolted to said guide ring.

2. The combination, with tubbing and a wedge-crib attached thereto, of a ring hav-

ing a lead-lined inwardly arranged groove and an outwardly projecting rib, a guide ring, having a flange provided with a downward extending rim resting on said packing, a ring bolted to said guide ring and wedge-crib, and tubbing bolted to said guide ring, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILHELM HUTTANUS. [L. S.]

Witnesses:

OTTO KÖNIG,

WILLY KLEIN.
