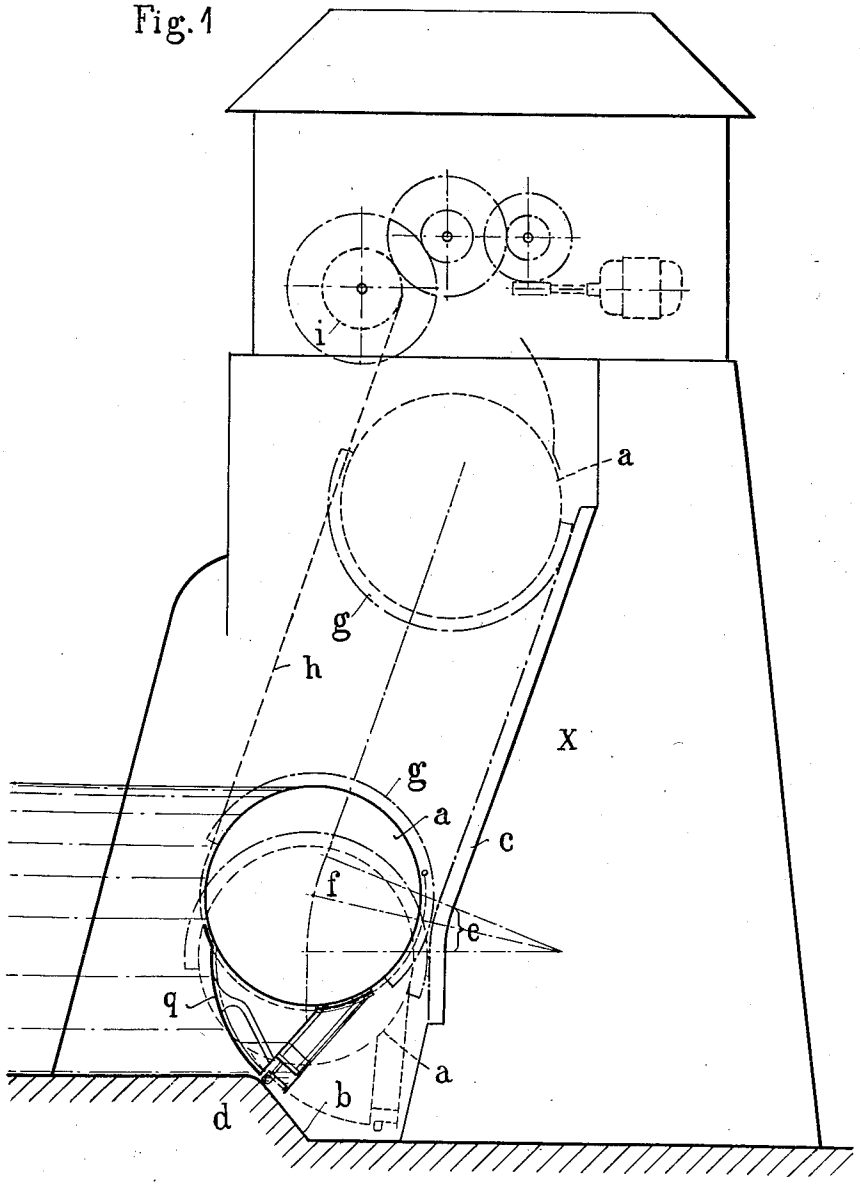
March 31, 1925. 1,531,474

T. BECHER

FLOOR PACKING FOR MOVABLE CLOSURES OF ALL KINDS FOR USE IN WATER

Filed Dec. 18, 1922 2 Sheets-Sheet 1

Fig. 1




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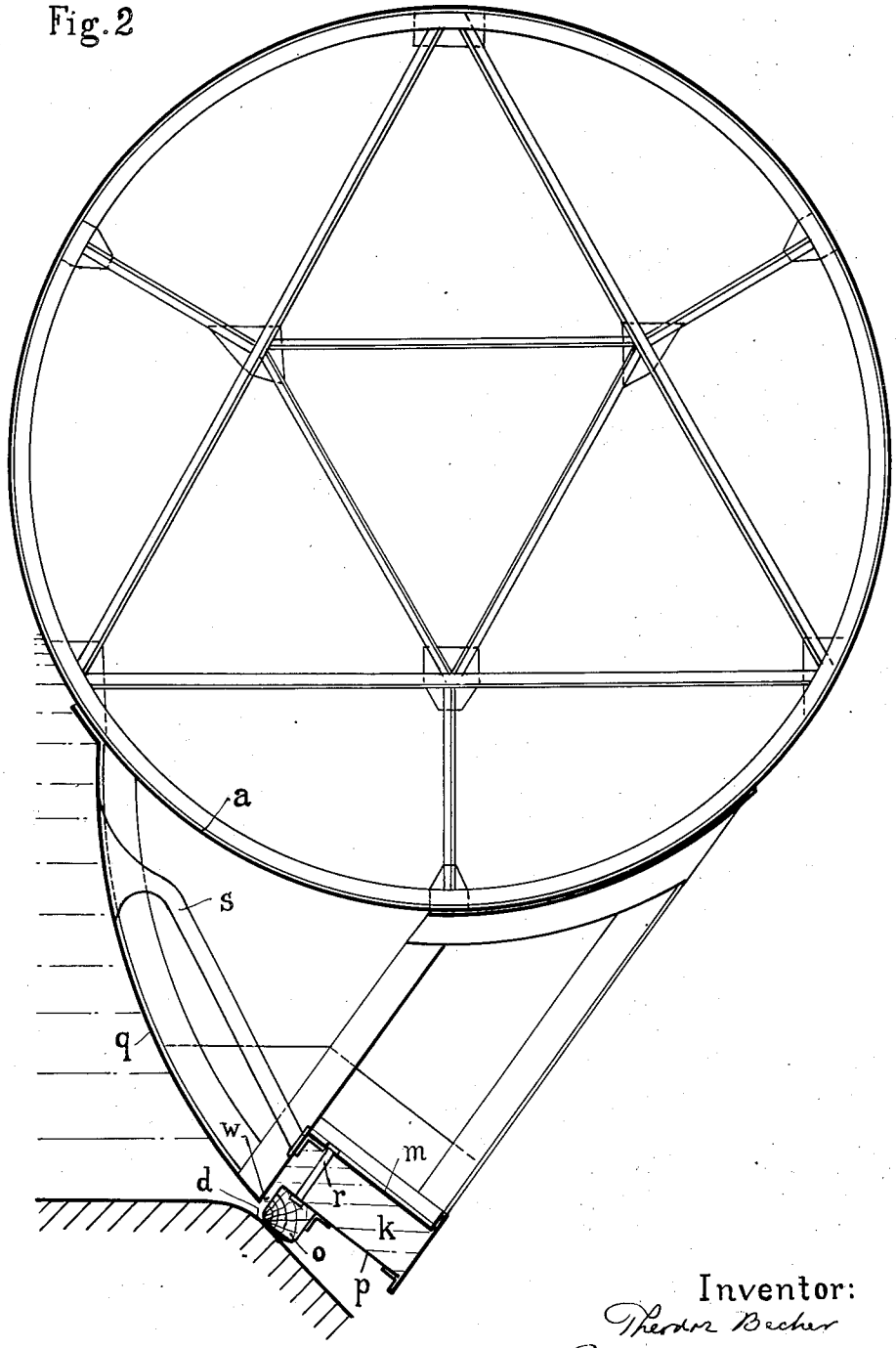
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Fig. 2




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# UNITED STATES PATENT OFFICE.

THEODOR BECHER, OF GUSTAVSBURG, GERMANY, ASSIGNOR TO MASCHINENFABRIK AUGSBURG-NUERNBERG, A. G., OF NUERNBERG, BAVARIA, GERMANY, A CORPORATION OF GERMANY.

## FLOOR PACKING FOR MOVABLE CLOSURES OF ALL KINDS FOR USE IN WATER.

Application filed December 18, 1922. Serial No. 607,465.

*To all whom it may concern:*

Be it known that I, THEODOR BECHER, residing at Gustavsburg, Germany, have invented certain new and useful Improvements in a Floor Packing for Movable Closures of All Kinds for Use in Water, of which the following is a specification.

This invention relates to a floor packing for movable closures of all kinds for use in water, as for instance sluices, sector-shaped closures, segment-shaped ones, and the like, and consists in the feature that a packing beam is attached to the respective closing member by means of an elastically movable plate in such a manner that it is capable of elastically yielding in a direction practically contrary to the direction of the pressure of the water, the arrangement being such that said beam is pressed by this pressure towards the place to be tightened.

The invention is suited chiefly for immersible closing members, and offers especially in connection with the closing rollers of roller weirs the possibility of constructing these rollers in such a manner that the objections raised in many an instance against roller weirs may be dropped.

Packing ledges attached to elastic sheet-metal plates have already been employed in connection with weirs, it is true, but neither have they been used hitherto as packing members for channel floors in the manner forming the subject-matter of this invention, nor have they been connected with a roller weir in the manner described hereinafter and shown by way of example in the accompanying drawings, in which Figure 1 is a transverse section, in diagrammatical representation, through the chief members of the arrangement and combination of parts forming in its entirety a roller weir with the packing combined therewith, and Figure 2 is a transverse section, on an enlarged scale of the roller weir and the packing is attached.

The packing consists of a packing ledge *o*, Fig. 2, and of an elastic sheet-metal plate *p*, to the upper rim of which said ledge is affixed. The plate *p* is at its inner surface subjected to the pressure of the head water and is acted on by it practically in the direction from the tail water to the head water so that the packing ledge is pressed against the floor-portion *d* located between the head water and the tail water. In the form of construction shown as an example the elastic sheet-metal plate *p* forms a movable wall of a box *k* having oppositely to *p* a rigid wall *m*. The movable wall *p* which extends upwards from the bottom of that box does not extend to the top of it but a slot *w* is left through which the water may enter into the box *k*, or may keep it filled respectively. The water in the box transmits the pressure of the head water to the movable wall *p*, or to the elastic sheet-metal plate p respectively, whereby the packing ledge *o* is pressed against the floor portion *d*, as already mentioned.

To obviate unduly strong bending of the plate *p* bolts *r* are secured to the ledge *o* and extend through holes of the wall *m* behind which the heads of the bolts serve as stops and the wall *m* serves as an abutment for these stops.

In order to keep the box filled even if the slot *w* should have been obstructed by mud or foreign bodies carried along by the water, pipes *s* establishing a direct communication between the head water and the box may be provided. The entrance openings of these pipes lie between the upper water level and the floor, that is to say, in the clean water, viz. below foreign bodies floating in the water.

The tubes *s* may be employed also for clearing the box *k*, provided, the sides of this latter be slidable in guides, or form slides respectively.

The weir, in the example illustrated in Figures 1 and 2, is a roller weir, of which *a* is the roller, to which is secured a (preferably curved or bulged, viz. in the direction to the head water) strong plate *q*, to the free rim of which are affixed the parts forming the box *k*. This is a particularly advantageous combination of a roller weir with the packing device described. The arrangement of the plate *q* at the roller *a* is such that when this latter is in its normal closing position (as shown in full lines in Figure 1, in which the upper dotted circle indicates the uppermost position of the roller *a*, and the lower dotted circle indicates the lowermost position of the same) the box *k* lies adjacent to a step *b*, or to the side of an appropriately large transverse groove or cavity, provided in the floor, the packing

ledge being then in close proximity to the place *d*, or practically in contact with it, especially under the pressure of the head water, as already described. At any rate, there remains no unduly wide passage between the ledge *o* and the place *d*, and this is the case when the roller *a* is in its lowermost position. This effect is due partly to the shape of the plate *q*, partly to the shape of stationary oblique racks *c* affixed to the side walls *x* of the plant and co-operating with cogged rims *g* of the roller and being bent off at their lower ends, at *e*, Figure 1, into vertical direction, the relative position of the parts concerned being such that there is hardly any gap between the plate *q* and the place *d* of the step or transverse groove or cavity of the floor.

*f* indicates the axis of the weir roller *a*. *h* is a chain or the like affixed at its lower end to the roller *a* and at its upper end to a drum *i*, i. e. a chain drum or the like, which is rotated by suitable means, for instance by an electric winch, as indicated by the dotted lines in the top of Figure 1.

I claim:

1. The combination, with a movable closing member for use in water, of an elastic plate attached to said member, a packing ledge secured to said plate, and means whereby the latter is subjected to the pressure of the water, in a direction contrary to the direction of the pressure of the same when said closing member is in its working position and said ledge is pressed into sealing position, as set forth.

2. The combination, with a movable closing member for use in water, and with a plate-shaped extension projecting from its closing side, of an elastic plate attached to said extension, a packing ledge secured to said plate, subjected to the pressure of the water, in a direction contrary to the direction of the pressure of the same when said closing member is in its working position and said ledge is pressed into sealing position, as set forth.

3. The combination, with the roller of a roller weir, and with a plate-shaped extension projecting from the closing side of said roller, of an elastic plate attached to said extension, a packing ledge secured to said plate, and means whereby the latter is subjected to the pressure of the water, in a direction contrary to the direction of the pressure of the same when said roller is in its working position and said ledge is then pressed into sealing position, as set forth.

4. The combination, with the roller of a roller weir for damming a channel, and with a plate-shaped extension projecting from the closing side of said roller and being bulged in the direction to the head water, of an elastic plate attached to said extension, a packing ledge secured to said plate, and means whereby the latter is subjected to the pressure of the water and said ledge is pressed into sealing position said channel being provided with a cavity located below the weir and adapted to receive said elastic plate with its ledge, as set forth.

5. The combination, with a movable closing member for use in damming water, of a box carried by said member and having a rigid rear wall and a movable elastic front wall affixed only at one of its longitudinal edges, said movable wall being of such dimensions as to leave a gap at its free edge, through which the water being dammed has access to said box and to the inside surface of said elastic front wall, and a packing ledge at the free rim of said movable wall, arranged to be forced into a sealing position by the pressure of the water upon said inside face of the front wall, as set forth.

6. The combination, with a movable closing member for use in water, and with a plate-shaped extension projecting from the closing side of said member, of a box carried by said plate and having a rigid rear wall and a movable elastic front wall affixed only at one of its longitudinal edges and leaving a gap at its free edge, a packing ledge at the free rim of said movable wall, and pipes extending from the rear surface of the said plate into said box, as set forth.

7. The combination, with the roller of a roller weir, and with a plate-shaped extension projecting from the closing side of said roller, of a box carried by said plate and having a rigid rear wall and a movable elastic wall affixed only at one of its longitudinal edges and leaving a gap at its free edge, a packing ledge at the free edge of said movable wall; and pipes extending from the rear surface of the said plate into the said box, as set forth.

8. The combination with the roller of a roller weir, and with a plate forming a circumferential extension of said roller and being bulged in the direction to the head water, of a box attached to the end of the plate and having a rigid rear wall and a movable elastic front wall affixed only at its outward edge and leaving a gap at its other edge, a packing ledge attached to said last named edge and pipes extending from the concave surface of the said plate to the top of the said box, as set forth.

9. The combination, with a movable drum-shaped closing member for use in water, and with a plate extending approximately tangentially from the drum, of a box attached to the free edge of said plate and having an elastic front wall located

oppositely to the head water when said closing member is in its closing position and leaving a gap between its free edge and the opposite wall of the box; and slides forming the frontal sides of the said box, as set forth.

10. The combination of a movable member constructed and arranged to dam a flow of liquid, a packing device carried by said member and means whereby the pressure of the liquid being dammed is transmitted to said device in a direction contrary to the direction of flow of said liquid to force said packing device in a direction contrary to said flow into its sealing position.

11. The combination of a movable member constructed and arranged to dam a flow of liquid, a box carried by said movable member and having a movable wall, a packing device carried by said movable wall and means whereby the liquid being dammed is conducted to said box to exert a pressure upon said movable wall in a direction contrary to the flow of said liquid whereby said packing device is pressed in a direction contrary to said flow into its sealing position.

In testimony whereof I affix my signature in the presence of two witnesses.

THEODOR BECHER.

Witnesses:
C. C. L. B. WYLES,
G. FLESCH.