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P. KRÜGER

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GEAR FOR MOVING THE BOTTOMS OF DUMPING RECEPTACLES

Filed May 18, 1922

Fig. 1.

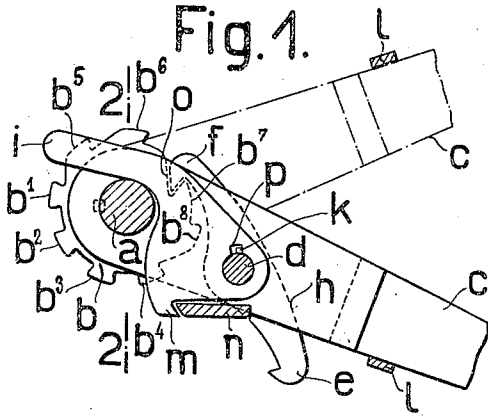


Fig. 2.

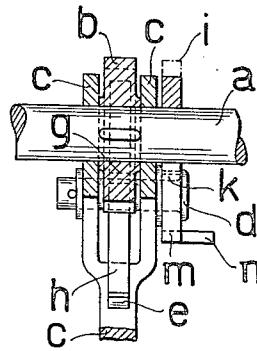


Fig. 3.

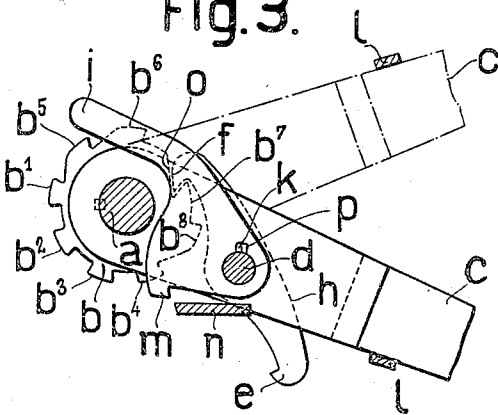


Fig. 4.

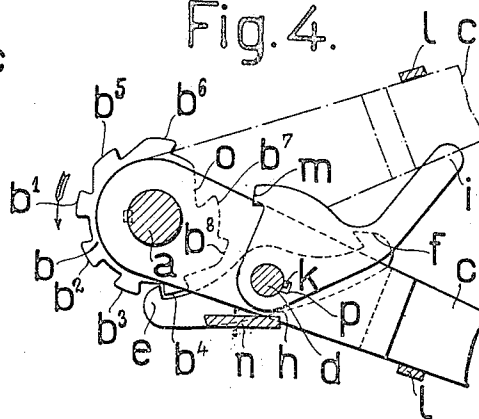


Fig. 5.

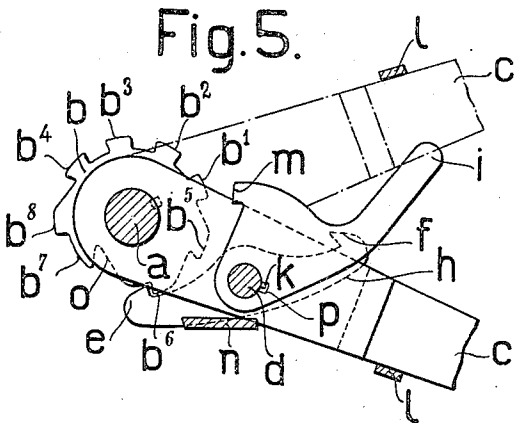
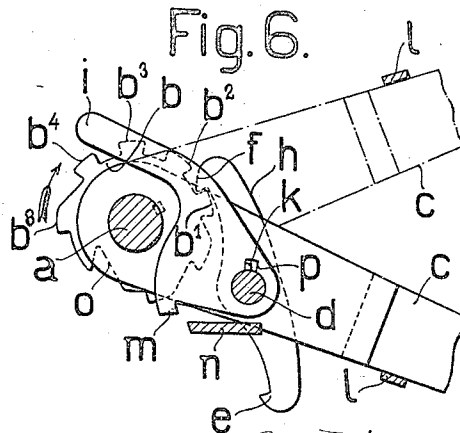


Fig. 6.



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GEAR FOR MOVING THE BOTTOMS OF DUMPING RECEPTACLES.

Application filed May 18, 1922. Serial No. 561,987.

To all whom it may concern:

Be it known that I, PAUL KRÜGER, residing at Essen, Germany, a citizen of the German Republic, have invented a certain new and useful Improvement in Gears for Moving the Bottoms of Dumping Receptacles, of which the following is a specification.

This invention relates to gears for moving the tiltably mounted bottom of dumping receptacles, the driving shaft of which gears carries a freely rotatable hand lever which is adapted to be coupled with the driving shaft in each direction of rotation.

The invention has for its object to provide a gear of the character stated in which the stroke of the hand lever is limited by a to and fro movement to a small space, so that the lever can be given a favorable position of operation and made relatively long without interfering in its movement with the bottom of the receptacle.

The accompanying drawing illustrates, by way of example, an embodiment of the subject-matter of the invention.

Fig. 1 is a side elevation of the gear in a position which it takes in the loading position of the dumping receptacle;

Fig. 2 is a section on the line 2—2 of Fig. 1, seen from the left;

Fig. 3 is an elevation, similar to Fig. 1, of the gear in an intermediate position;

Fig. 4 is an elevation corresponding to Fig. 3 and showing another intermediate position;

Fig. 5 is an elevation, similar to Fig. 1, of the gear in a position which it takes in the dumping position of the receptacle; and

Fig. 6 is an elevation, similar to Fig. 5, of the gear in an intermediate position.

Referring now to the drawing, *a* designates the driving shaft which carries a ratchet wheel *b* having successively arranged ratchet teeth *b*¹—*b*⁴ and *b*⁵—*b*⁶ of different shape and adapted to lock the driving shaft partly against rotation in one direction and partly against rotation in the other direction.

Arranged for rotation on the driving shaft *a* is also a hand lever *c*. Rotatably mounted at the same is a pin *d* on which a double pawl *h* is fastened by means of a wedge *g* (Fig. 2). The pawl *h* possesses two hooks *e* and *f* which are adapted to enter alternately into engagement with the teeth

of the ratchet wheel *b* according to the direction of rotation desired.

The reversing of the pawl is performed by means of a lever *i* arranged on the pin *d*. The pin *d* is provided with a nose *k* which engages a groove *p* of the lever *i* with a certain lost motion.

The lever *i* is of such a shape that its dead weight secures the proper position of engagement between the pawl *h* and the ratchet wheel *b* in one direction of rotation or the other in all positions of the hand lever *c* between two stops *l*, according as the centre of gravity of the lever *i* lies at the right or at the left of the axis of the pin *d*. The lever *i* further possesses a locking portion in the form of a hook *m* which is adapted to grip behind a stop *n* fixed to the under-frame, but only in case a notch *o*, arranged between the teeth *b*⁵ and *b*⁶ of the ratchet wheel *b*, is in engagement with the hook *f* of the pawl *h*.

In order to dump the receptacle, the lever *i* is at first manually lifted from its closing position (Fig. 1) until its hook *m* will have disengaged from the stop *n* (Fig. 3). In executing this operation, the hand lever *c* has to be lifted for a small amount because of the notch *o* and the hook *f* being undercut; as soon as the lever *i* will have been fully reversed (Fig. 4), the hand lever *c* will drop back into its initial position. It is thereby attained that the hook *m* cannot fall back again behind the stop *n* in case the lever *i* should be thrown back by some reason or the other, such as e. g. by a heavy shock produced on the lever *i* striking on the hand lever *c*.

In reversing the lever *i* the pawl *h* is taken along with it until the lower hook *e* will place itself against the ratchet tooth *b*⁴ (Fig. 4).

The opening of the dumping receptacle can now be performed by repeatedly lifting the hand lever *c* into the position indicated by broken lines in Figs. 3–6, thereby causing the hook *e* of the pawl *h* to engage successively the teeth *b*⁴, *b*³, *b*², *b*¹, *b*⁵, and *b*⁶. Any leading of the driving shaft *a* in the sense of the arrow indicated in Fig. 4, will remain without any influence on the hand lever. In the dumping position (Fig. 5), the driving shaft *a* and, accordingly, the bottom are locked against swinging back automatically.

For the purpose of closing the receptacle the lever *i* is reversed, as indicated in Fig. 6. By rocking the hand lever the receptacle is closed. A leading of the driving shaft *a*, which is now rotating in the sense of the arrow indicated in Fig. 6, will be without any influence on the hand lever also in this direction of rotation. The driving shaft will finally take again the position according to Fig. 1, in which the upper hook *f* has dropped into the notch *o* and the hook *m* automatically grips behind the stop *n*. The receptacle is thus locked against unintended opening.

15 Claims:

1. In a gear for moving the bottom of dumping receptacles, comprising a driving shaft and a hand lever mounted for rotation on said shaft and adapted to be coupled with the same in both directions of rotation, a reversing member swingingly mounted on the hand lever, a coupling member mounted on the hand lever for rotation and co-operation with the said reversing member, the reversing member being adapted to couple the hand lever with the driving shaft through the intermediary of the said coupling member in a limit position in the sense of the opening movement and in a second limit position in the sense of the closing movement, and being further adapted to lock the hand lever and the driving shaft against a rotation in the sense of the opening movement in a third limit position.

35 2. In a gear for moving the bottom of dumping receptacles, comprising a driving shaft and a hand lever mounted for rotation on said shaft and adapted to be coupled with the same in both directions of rotation, a reversing member swingingly mounted on the hand lever, a coupling member mounted on the hand lever for rotation and co-operation with the said reversing member, coupling means between the reversing member and

the coupling member, said means allowing a slight relative angular motion between the two members the reversing member being adapted to couple the hand lever with the driving shaft through the intermediary of the said coupling member in a limit position in the sense of the opening movement and in a second limit position in the sense of the closing movement, and being further adapted to lock the hand lever and the driving shaft against a rotation in the sense of the opening movement in a third limit position.

3. In a gear for moving the bottom of dumping receptacles, comprising a driving shaft, a ratchet wheel rigidly connected to this shaft and a hand lever mounted for rotation on this shaft and adapted to be coupled with the ratchet wheel in both directions of rotation, a reversing member swingingly mounted on the hand lever, a double pawl mounted for rotation on the hand lever and connected with the reversing member by coupling means, the reversing member being adapted to couple the hand lever with the ratchet wheel of the driving shaft through the intermediary of the double pawl, the teeth of the ratchet wheel being of a shape such as to permit a lead of the ratchet wheel with relation to the hand lever in the respective coupling directions, a notch being provided on the ratchet wheel, and the reversing member possessing a locking portion for engagement with a stop provided at the underframe of the dumping receptacle, the said notch of the ratchet wheel being adapted to allow the pawl and the reversing member to take a position permitting the last-mentioned engagement to take place.

The foregoing specification signed at Essen, Germany, this 29th day of April, 1922.

PAUL KRÜGER.