

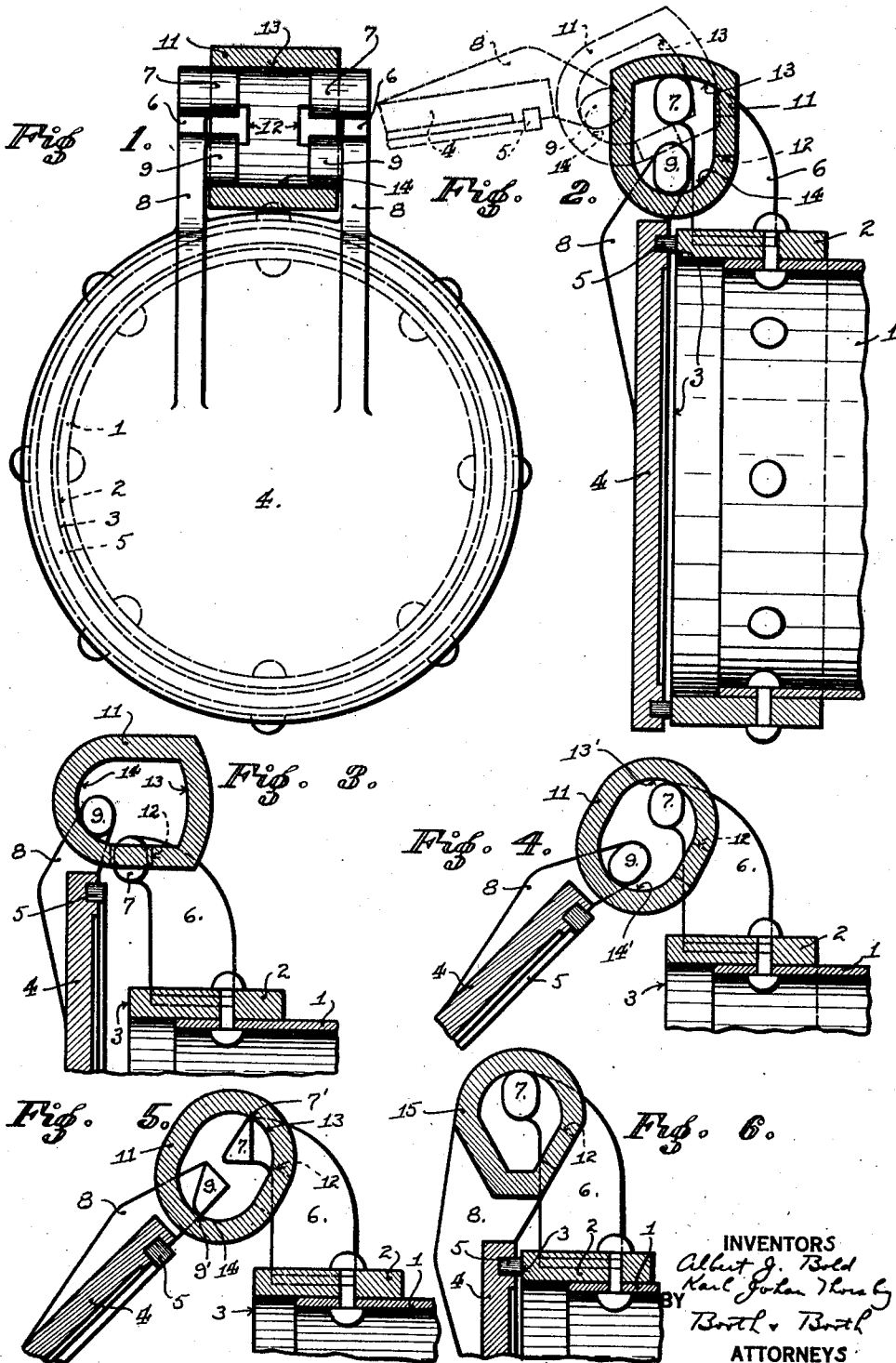
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A. J. BOLD ET AL

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CHECK GATE

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UNITED STATES PATENT OFFICE.

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CHECK GATE.

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To all whom it may concern:

Be it known that we, ALBERT J. BOLD and KARL JOHAN THORSBY, citizens of the United States, residing at the city of Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Check Gates, of which the following is a specification.

Our invention relates to automatic check gates of the type used to prevent back-flow of water into a drainage or other like conduit.

Our invention constitutes an improvement upon the flood-gate for which Letters Patent of the United States No. 1,510,033 were issued on September 30th, 1924, to Albert J. Bold, and its general objects are similar to those set forth therein, viz:—to provide a hinge connection for the swinging gate member which will permit of the greatest possible ease and freedom of movement, by eliminating friction and by preventing interference from mud or other debris which may become lodged in and around the hinge connection.

More specifically, however, the present invention provides a hinge connection of such a nature that the gate member cannot become dislodged or permanently separated from its seat member by any sudden rush of water or by floating logs or other heavy objects which may impinge against it.

Moreover, our improved construction is simple and inexpensive to manufacture and install, and enables the ready removal and replacement of the gate member in case of necessity.

Our invention will be fully described hereinafter, with the understanding that the form, proportion, and arrangement of the several parts, may be varied, within the limits of the claims hereto appended, without departing from the essential principles of the invention as set forth in said claims.

With this in view, a preferred embodiment of our invention and several modifications thereof will now be described with reference to the accompanying drawings, wherein:

Fig. 1 is a front elevation of our check gate, the link member being shown in section.

Fig. 2 is a central vertical section of the complete structure.

Fig. 3 is a sectional detail of the hinge portion of the same, showing the method of assembling and separating the parts.

Figs. 4, 5 and 6 are sectional details showing three different modifications of the device.

In the drawings, the reference numeral 1 designates the end portion of a conduit, to which is secured a seat member 2, having a seating face 3. A gate member which may be provided with suitable packing 5, is adapted normally to close the open end of the conduit 1 by contact with the face 3 of the seat member 2, as shown in Figs. 1 and 2. A hinge connection is provided between the seat member 2 and the gate 4, to permit the latter to swing outwardly to open the conduit, under the impulse or pressure of an outwardly flowing stream of water. This hinge connection, which constitutes the essential feature of the invention, is formed as follows:

A pair of spaced lugs 6, secured to or formed integrally with the seat member 2, extend upwardly therefrom, and are provided with aligned inwardly directed bearing pins 7. A pair of similar spaced lugs 8, secured to or formed integrally with the gate 4, extend upwardly therefrom, and are provided with aligned inwardly directed bearing pins 9, which, when the gate 4 is closed as shown in Fig. 1 and in full lines in Fig. 2, lie below and in substantial vertical alignment with the bearing pins 7.

A tubular link 11, positioned with its axis transverse to the direction of movement of the gate 4, connects the bearing pins 7 and 9 in the manner illustrated, serving as a hanger by which said gate is suspended and permitted to have free swinging movement away from the seat member 2. By extending substantially the full distance between the lugs 6 and 8, the link 11 prevents excessive side play of the gate 4, without in-

terfering with its free swinging movement. Slots 12 are formed in the rear side of the link 11, extending inwardly from its ends, to permit said link to be slipped over the bearing pins 7, as shown in Fig. 3, and the bearing pins 9 in a similar manner. This provides for the ready removal or assembling of the gate 4, without the necessity of dismantling the entire structure, but, on account of the shape and mounting of the link 11, and the position of slots 12, the gate 4 cannot be dislodged from its hinge connection by any sudden rush of water, nor by floating logs or other objects which may strike it. By making the bearing pins 7 and 9 oval or elliptical in cross section, as shown, and by making the slots 12 of a width less than the greatest thickness of said pins but greater than their smaller dimension, there is no possibility of the accidental separation of the gate 4 from its hinge connection, for in order to permit such separation, the link 11 must be turned to the position shown in Fig. 3.

It will be seen from Figs. 2 and 4 that the bearing pins 7 and 9 have rolling contact with the link 11, without friction. The positions of the parts when the gate 4 is open are shown in Fig. 4 and in dotted lines in Fig. 2, and from these it will be observed that, although rolling occurs between both pins 7 and 9 and the link 11, the movement about the upper or seat member pins 7, is the greater. Therefore we may form the link 11 as shown in Figs. 2 and 3, with its upper bearing face 13 having less curvature than its lower bearing face 14. In some cases, however, a reversible link may be desired, whereupon the form shown in Fig. 4 may be employed, having its upper and lower bearing faces 13' and 14' of the same curvature, similarly, the bearing pins 7 and 9 may have rounded bearing surfaces, as shown in Figs. 1, 2, 3 and 4, or they may have knife-edge bearings as indicated at 7' and 9' in Fig. 5. In either case, the movement between the pins 7 and 9 and the link 11 is without friction.

The modification shown in Fig. 6 differs from the previously described forms in that the link is replaced by a tubular hanger 15 fixed to or formed integrally with the gate lugs 8, thus eliminating the bearing pins 9. The hanger 15 rolls upon the pins 7 when the gate 4 swings, just as in the previous forms, the only difference being that said hanger is fixed to the gate member instead of being in the form of a separate link.

We claim:—

1. A check gate comprising a seat member; a gate member cooperating therewith; bearing pins carried by said seat and gate members; and a single tubular link surrounding both said bearing pins to form a hinge

connection for said gate member, the axis of said link being parallel to the axis of said pins and transverse to the direction of movement of said gate member.

2. A check gate comprising a seat member; a gate member cooperating therewith; bearing pins carried by said seat and gate members; and a single tubular link surrounding both said bearing pins to form a hinge connection for said gate member, said link being provided with slots to enable it to be passed over said bearing pins.

3. A check gate comprising a seat member; a pair of aligned spaced bearing pins carried thereby; a gate member cooperating with said seat member; a pair of aligned spaced bearing pins carried by said gate member; and a link connecting said bearing pins to form a hinge connection for said gate member; said link being provided with slots to enable it to be passed over said bearing pins.

4. A check gate comprising a seat member; spaced lugs extending upwardly therefrom; inwardly extending spaced bearing pins carried by said lugs; a gate member cooperating with said seat member; spaced lugs extending upwardly therefrom; inwardly extending bearing pins carried by said gate member lugs; and a link extending between said lugs and forming a hinge connection between said seat and gate bearing pins, said link having slots in its end portions to enable it to be passed over said bearing pins.

5. A check gate comprising a seat member; spaced lugs extending upwardly therefrom; bearing pins carried by said lugs; a gate member cooperating with said seat member; spaced lugs extending upwardly therefrom; bearing pins carried by the last mentioned lugs; and a tubular link lying between said spaced lugs and forming a hinge connection between said bearing pins.

6. A check gate comprising a seat member; a gate member cooperating therewith; a bearing pin carried by one of said members; and a bearing link connected with the other of said members and engaging said pin, the interior diameter of said link being greater than the diameter of said pin to produce a rolling action, and the axis of said link being transverse to the direction of movement of said gate member.

7. A check gate comprising a seat member; a gate member cooperating therewith; a bearing pin carried by one of said members; and a link connected with the other of said members, said link having a curved bearing surface adapted to engage said pin, the radius of curvature of said link being greater than that of said pin to produce a rolling action, and said link being provided with a slot to enable it to be passed over said pin.

8. A check gate comprising a seat member; a gate member cooperating therewith; a pair of spaced lugs extending from one of said members; bearing pins carried by
5 said lugs; and a tubular link connecting the other of said members with said bearing pins, said link being provided with slots to enable it to be passed over said bearing pins and extending between said lugs and being guided by the contact of its ends therewith. 10

In testimony whereof we have signed our names to this specification.

ALBERT JOSEPH BOLD.

KARL JOHAN THORSBY.