No. 778,691. PATENTED DEC. 27, 1904.

A. T. MIRZA.

AUTOMATIC SLUICE GATE.

APPLICATION FILED AUG. 1, 1904.

2 SHEETS—SHEET 1.

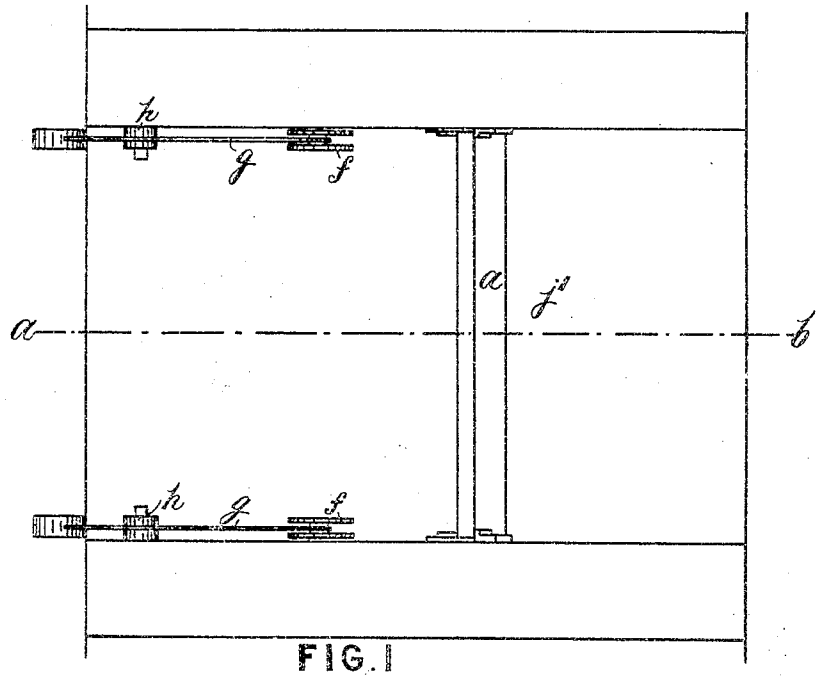

FIG. 1

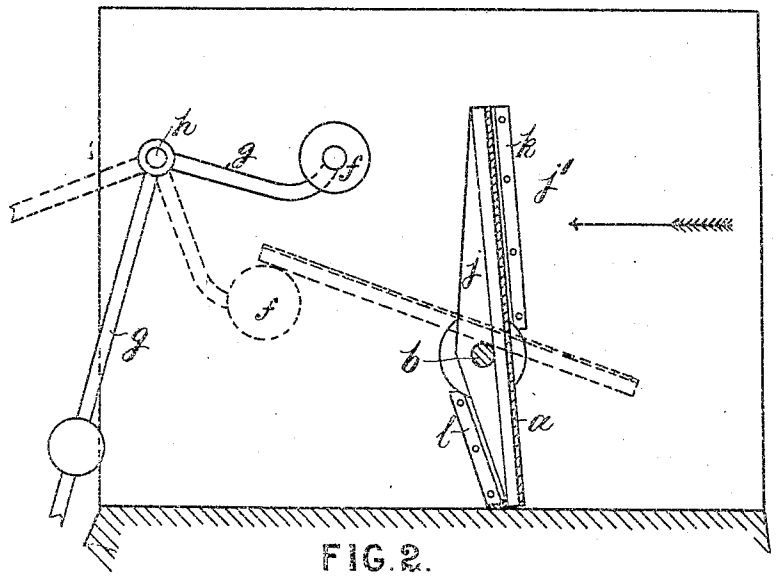

FIG. 2.

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2 SHEETS—SHEET 2.

FIG.3.

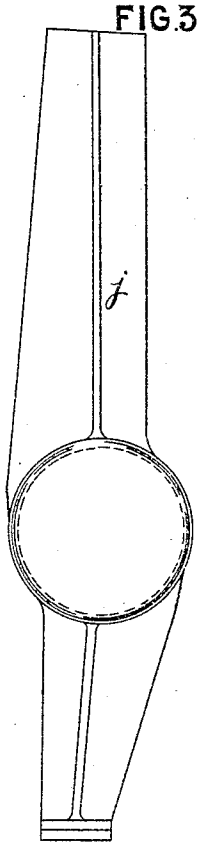


FIG.4.

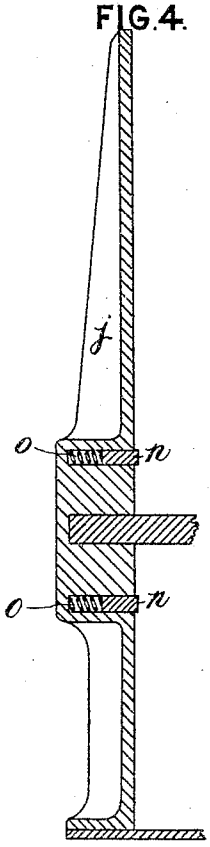
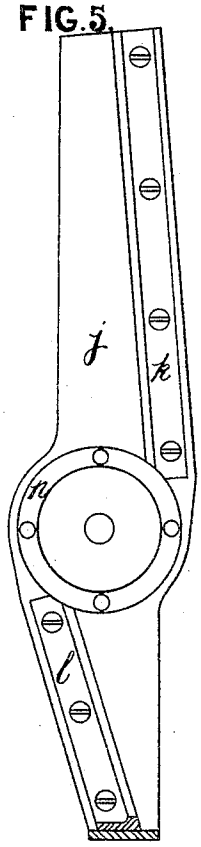


FIG.5.



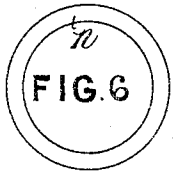


FIG.6.

FIG.7.

FIG.8a.

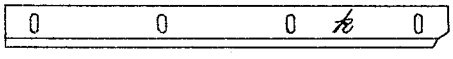


FIG.8.

FIG.9a.

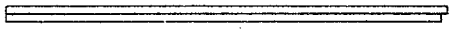


FIG.9.

Witnesses.
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No. 778,691. Patented December 27, 1904.

UNITED STATES PATENT OFFICE.

ARDESHIR TEMULJI MIRZA, OF JAMNAGAR, KATHIAWAR, INDIA.

AUTOMATIC SLUICE-GATE.

SPECIFICATION forming part of Letters Patent No. 778,691, dated December 27, 1904.

Application filed August 1, 1904. Serial No. 219,088.

To all whom it may concern:

Be it known that I, ARDESHIR TEMULJI MIRZA, a subject of the Emperor of India, and a resident of Jamnagar, Kathiawar, India, have invented a certain new and useful Automatic Sluice-Gate, (for which I have filed application for British Patent No. 10,227, dated May 4, A. D. 1904;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My said invention relates to an improved barrier or sluice-gate for maintaining the level of water in a river, canal, lake, pond, or the like in order to keep it at a suitable height for discharge into irrigating-channels, mill-races, or for other purposes.

A barrier or sluice-gate made in accordance with my said invention will in case of floods open automatically and again close when the flood has subsided.

In the drawings, Figure 1 is a plan of the sluice-gate in position when closed. Fig. 2 is a sectional elevation on *a b* of Fig. 1. Fig. 3 is a front elevation of one side of the frame in which the sluice-gate is suspended. Fig. 4 is a section of one of the side frames. Fig. 5 is an elevation of one of the side frames as seen from the inside. Figs. 6 and 7 are respectively elevation and section of the joint-rings. Figs. 8, 8ª, 9, and 9ª are detached views of the strips used to make a water-tight joint.

In its main features my said invention consists of a sluice-gate *a*, swinging in a suitable sluiceway *j'* upon horizontal gudgeons *b*. The axis of the gudgeons is somewhat below the center of the surface of the gate, so that up to a certain height the pressure of the water in the direction of the arrow tends to close the gate and keep it closed. As the water rises above a certain point the superior pressure on the upper part of the gate will cause the latter to turn on its axis into the position indicated by dotted lines in Fig. 2, thus opening the sluice and allowing the water free flow both above and below the gate. As the variation of the level of water between the points of opening and closing the sluice is more than is desirable, one or more weighted bell-crank levers *g*, pivoted at *h*, are provided on the downstream side of the gate in such a manner that while accelerating the closing movement on a fall of water-level no resistance is offered to the free opening during floods.

The lever *g* carries a roller *f*, against which the upper edge of the gate takes when it has opened a certain distance. During the first thirty degrees or so of tilt when opening the gate does not touch the roller *f;* but afterward in proportion as the gate turns over the rising balance-weight offers a gradually-increasing resistance to the opening of the gate.

To make a water-tight joint at the sides, the side frames *j*, which are let into the masonry at the sides of the sluice, may have annular recesses, into which are fitted joint-rings *n*, normally impelled outward by springs *o*. Corresponding grooves are formed in the gudgeons of the sluice-gate for the reception of the joint-rings. The rings *n* are also in working contact with the abutment-strips *k* and *l*, which are secured to the side frames for the ends of the gate to bear against when the gate is closed. By these means an elastic and practically water-tight joint is formed between the walls of the channel and the gate.

It will be understood that any number of such sluice-gates may be fixed in series.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination in a sluiceway of the sluice-gate *a* hung on horizontal gudgeons with the weighted bell-crank lever *g* substantially as set forth and shown.

2. The combination with a sluice-gate of horizontal annularly-grooved gudgeons correspondingly annularly grooved side frames and spring-impelled joint-rings inserted in the said grooves substantially as set forth and shown.

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

ARDESHIR TEMULJI MIRZA.

Witnesses:

CLARENCE E. FEE,

JEHANGIE M. RUTNAGUR.