No. 780,703. PATENTED JAN. 24, 1905.

M. CARSTANJEN.

FLOOD GATE.

APPLICATION FILED SEPT. 8, 1904.

3 SHEETS—SHEET 1.

Fig. 1.

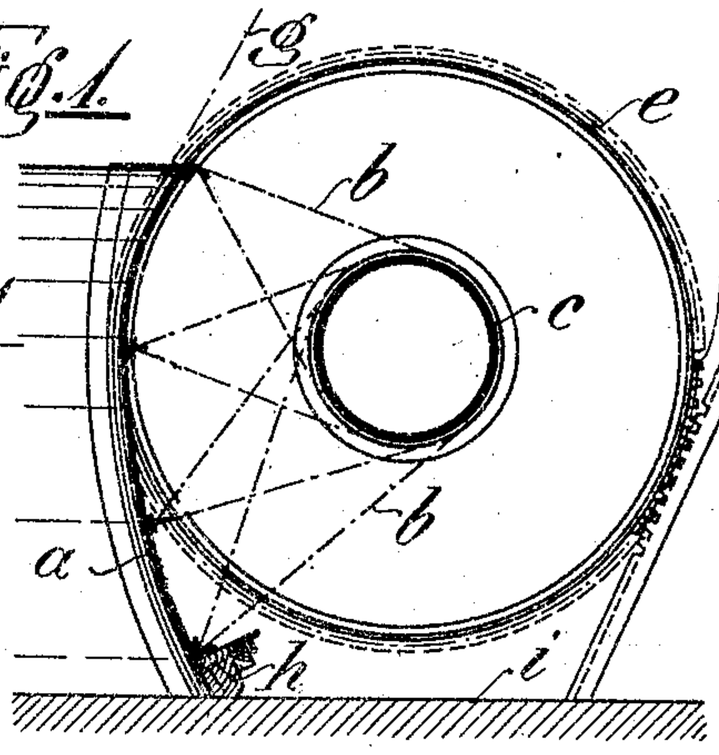
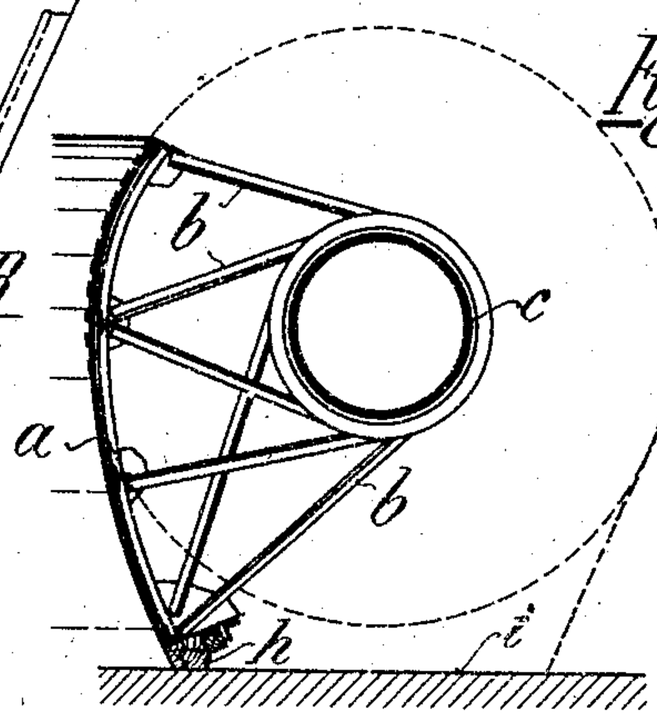


Fig. 3.



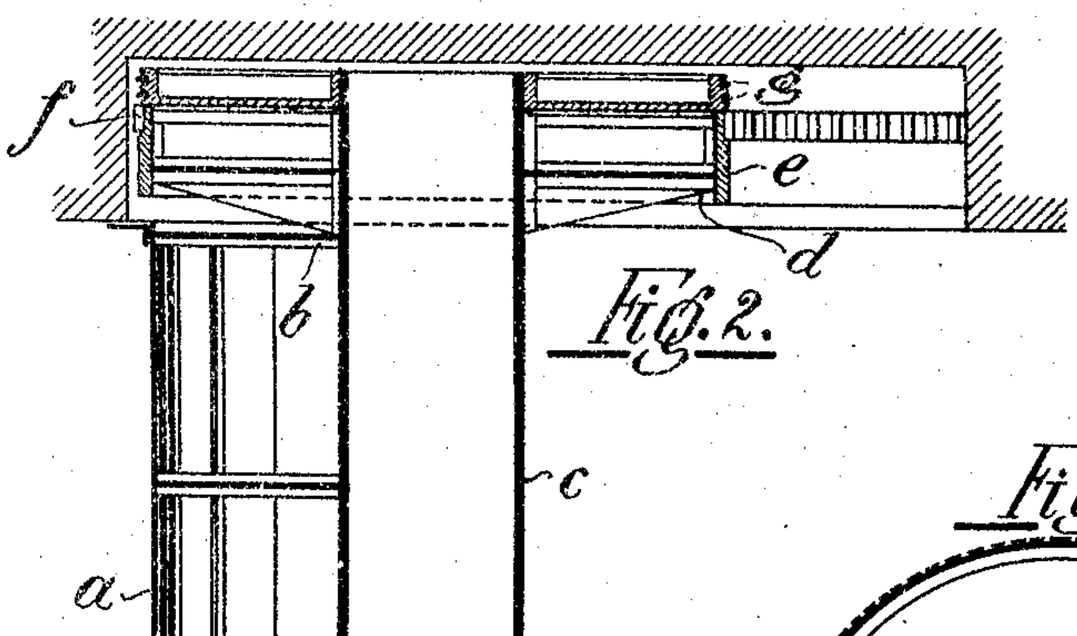
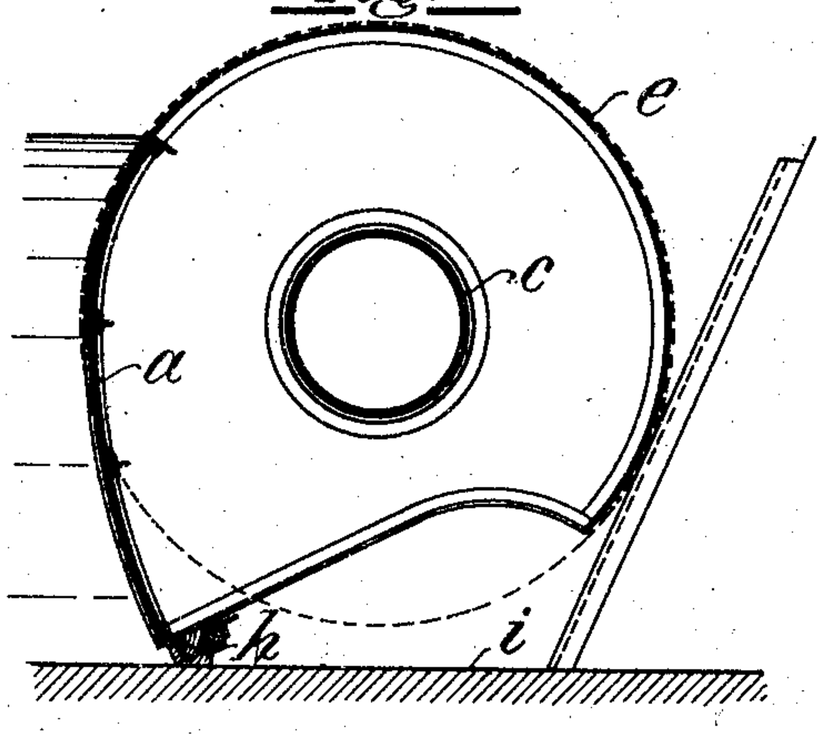


Fig. 2.

Fig. 4.



Witnesses
H. M. Kuehne
J. D. Newman

Inventor
Max Carstanjen
by Richards & Co.
Attorneys

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3 SHEETS—SHEET 2.

Fig. 5.

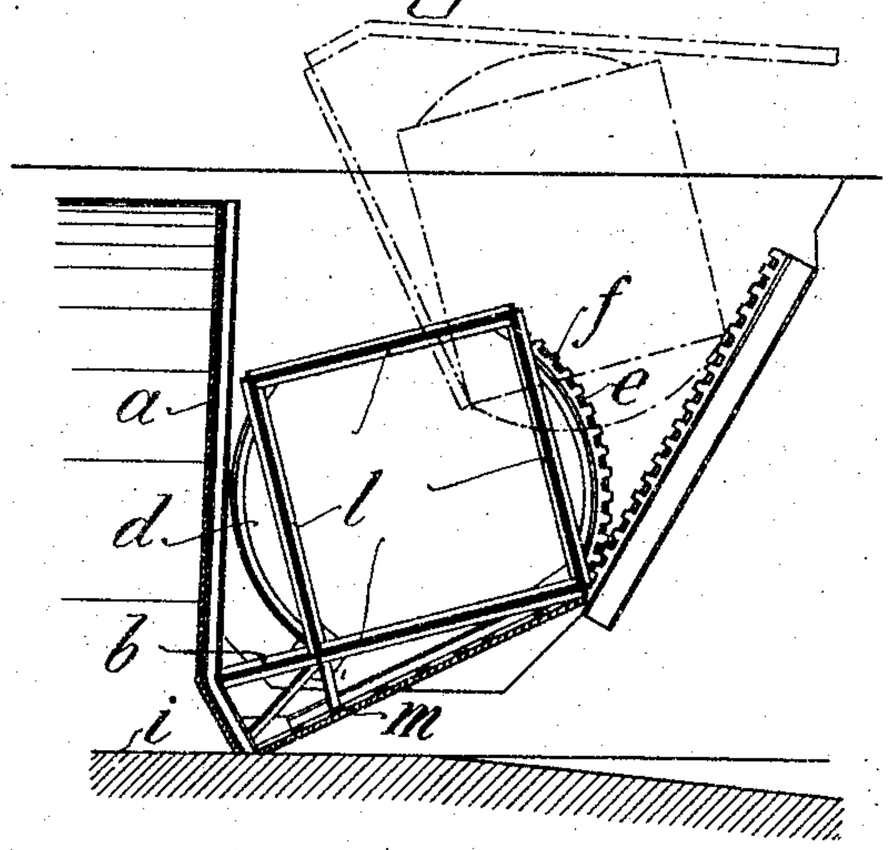


Fig. 7.

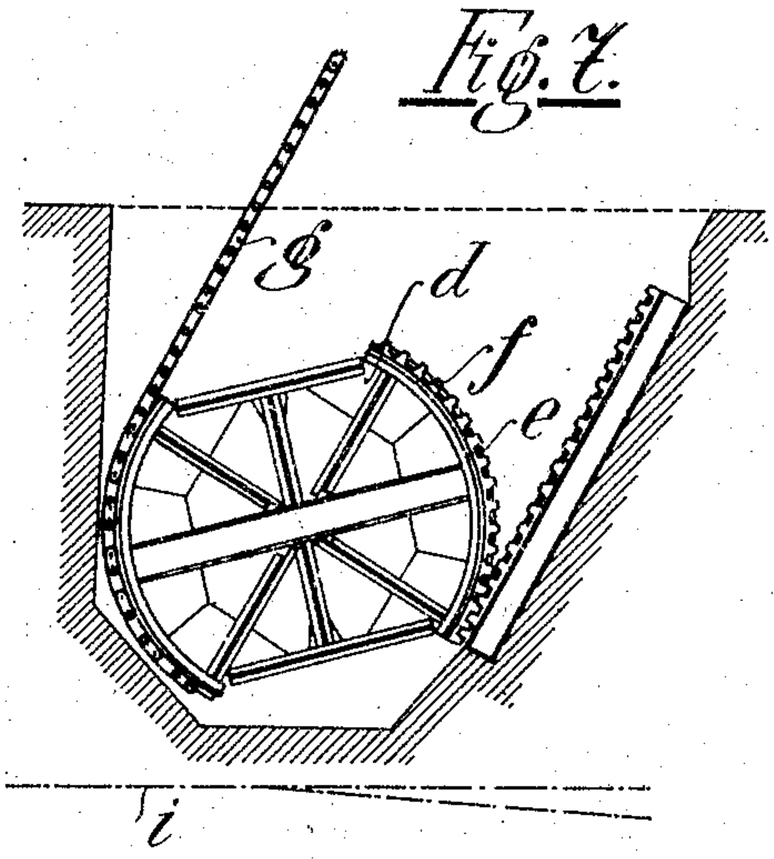
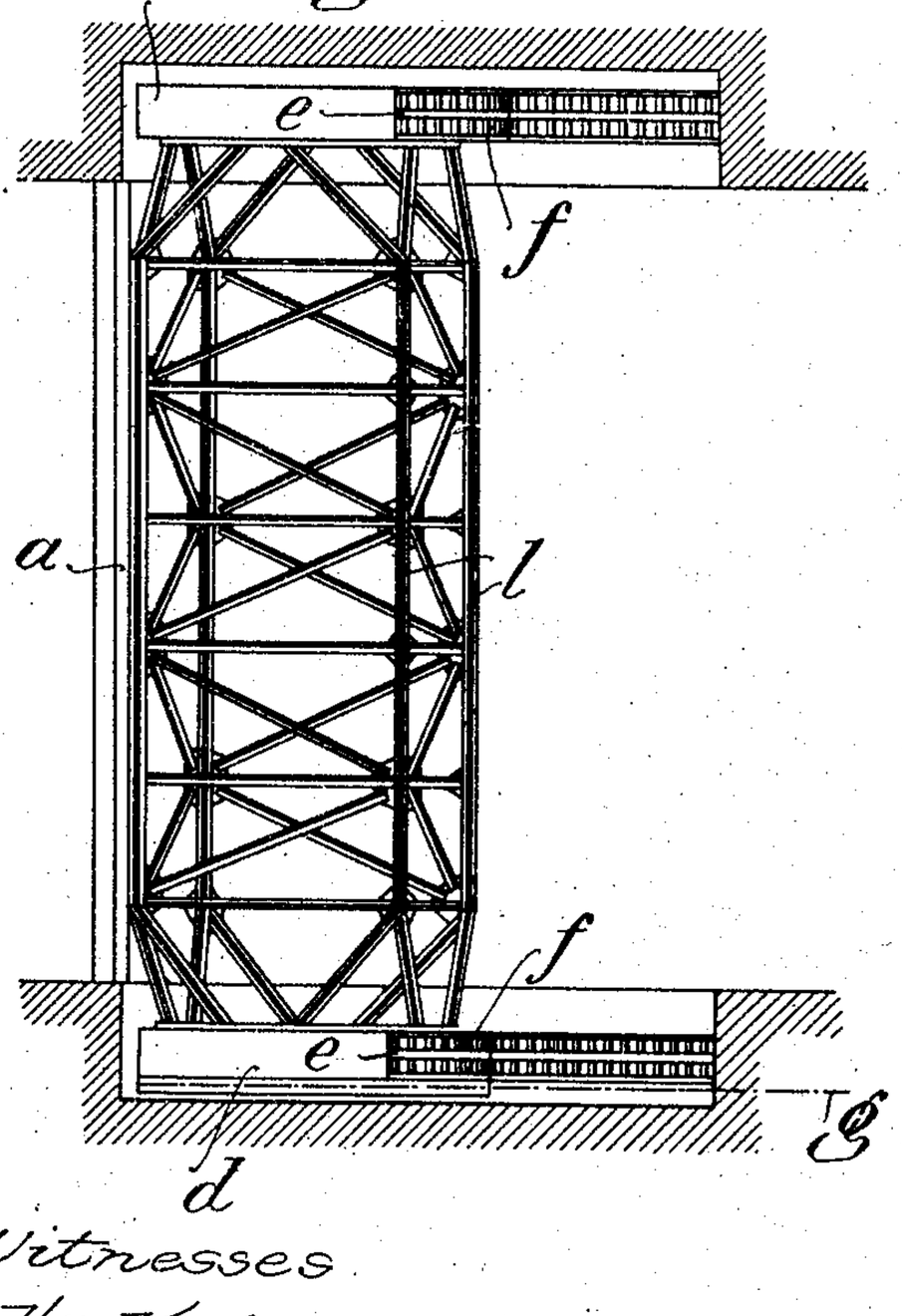


Fig. 6.



Witnesses
W. M. Kinkel
J. P. Kinman

Inventor
Mat Carstanjen
By Richards & Co
Attorneys

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3 SHEETS—SHEET 3.

Fig. 8.

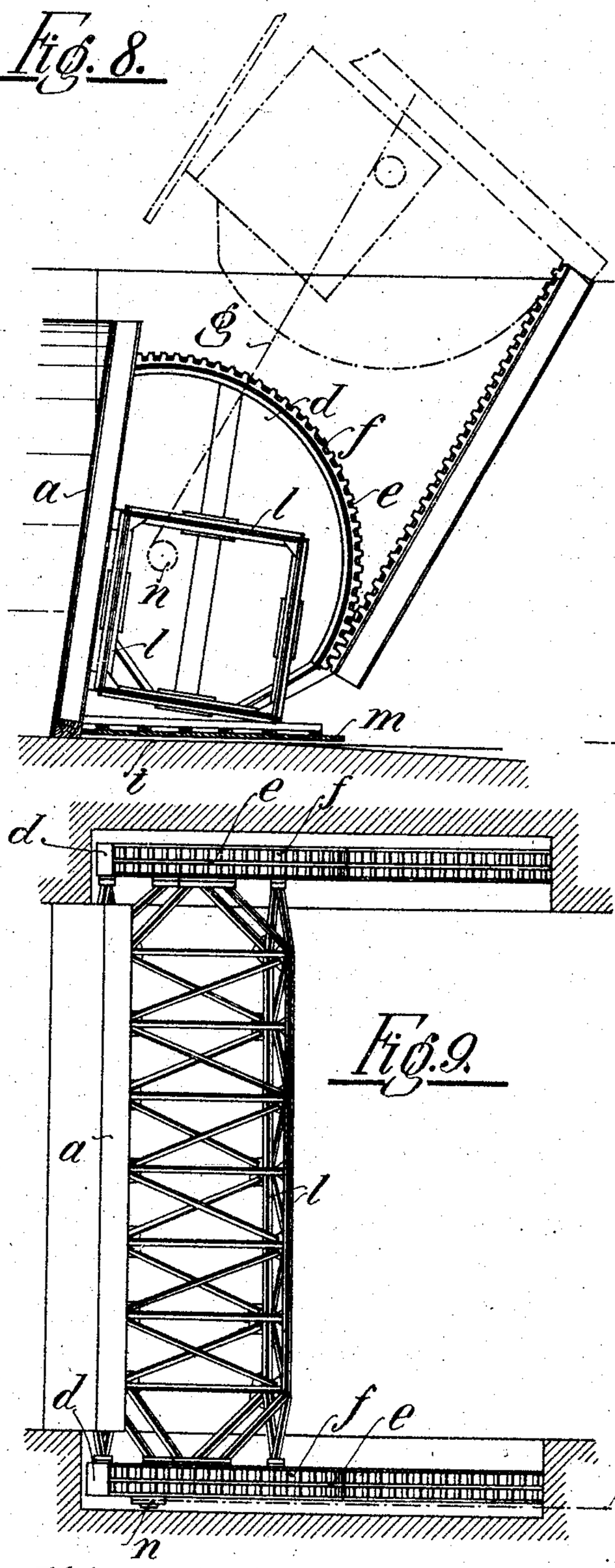
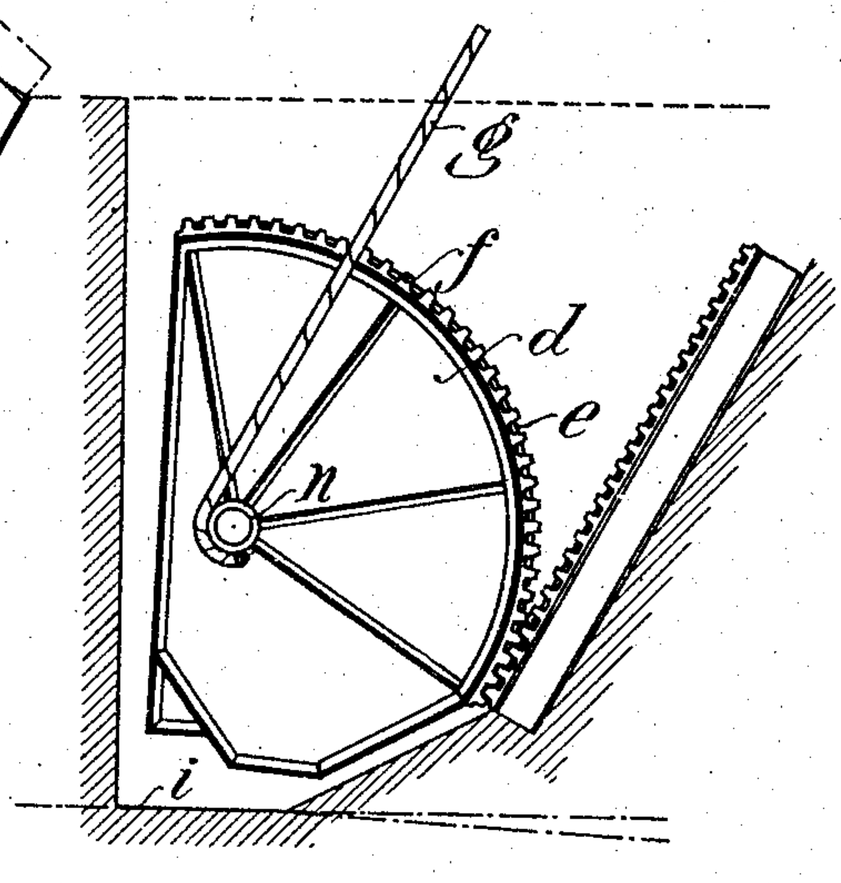


Fig. 9.

Fig. 10.



Witnesses
K. M. Kuehne
J. C. Newman

Inventor
Max Carstanjen
By Richards & Co
Attorneys

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No. 780,703. Patented January 24, 1905.

UNITED STATES PATENT OFFICE.

MAX CARSTANJEN, OF WIESBADEN, GERMANY, ASSIGNOR TO THE FIRM OF VEREINIGTE MASCHINENFABRIK AUGSBURG UND MASCHINENBAU-GESELLSCHAFT NÜRNBERG A.-G., OF NUREMBERG, GERMANY.

FLOOD-GATE.

SPECIFICATION forming part of Letters Patent No. 780,703, dated January 24, 1905.

Application filed September 8, 1904. Serial No. 223,768.

To all whom it may concern:

Be it known that I, MAX CARSTANJEN, director, a subject of the German Emperor, residing at Wiesbaden, Germany, have invented new and useful Improvements in Flood-Gates, of which the following is a specification.

In flood-gates the closing-body of which is adapted to be rolled up and down the latter has hitherto been formed like a roller, which in the closing position extended on the one hand to the bed of the weir and on the other hand to the highest water-level to be contended with. The result of these conditions where the depth of water held back is considerable and in comparison therewith the width of aperture of the weir is small is that the rolling body is to be made of very much larger dimensions than the external forces operating thereon would necessitate. Now in order in such cases to allow of a diminution of the size of the closing appliance, and thereby also of the cost of installation of the weir, according to this invention the rolling body is formed of a supporting-body of suitable dimensions within view of the required strength rigidly attached to a weir-wall and provided on its ends with rolling-disks for rolling it up and down on the rolling-track, and also for attaching the means for pulling it up or letting it down.

Three forms of construction of this improved closing mechanism are shown in the accompanying drawings, the carrying-body in the first being shown as a tubular shaft and in the two others as a framework.

Figure 1 is an end view of the first form of construction seen from the driven or operated side; Fig. 2, a section on the line A B of Fig. 1; Fig. 3, a section on the line C D of Fig. 2; Fig. 4, an end view from the opposite side to Fig. 1. Fig. 5 is a cross-section of another form of construction, and Fig. 6 a plan view of same; Fig. 7, an external view of the driven roller-disk; Fig. 8, a third form of construction in section, and Fig. 9 a plan view of same, while Fig. 10 is an external view of the driven roller-disk.

The weir or dam wall *a*, acting as the gate which is curved approximately to a cycloid, is rigidly connected by stiffeners or arms *b* with the tubular shaft or axle *c*, which transfers to the bearings the forces exerted against the weir-wall. Concentric wheel-like roller-disks *a* are shrunk on the ends of the tubular shaft *d*, which disks serve for receiving runner and toothed rings *e f*. The means *g* (cord, chain, or the like) employed for drawing the roller up and down are arranged on one of the roller-disks *d*. In consequence of its curvature the dam or weir wall when rolled up is freed from any deposits or substances which may accumulate on the upper water side and does not need to compress them, and thus the device is not impeded in its movement.

The wall *a* has, as usual, a cross-beam *h* at its lower edge, which rests tightly on the bed *i* of the weir. Leather flaps or the like fixed in the ordinary way on the wall *a* may be employed for producing a tight joint at the sides, which flaps press on the solid side walls of the weir.

The rolling body is operated only from one side, as the tubular shaft *a* has sufficient strength to resist being twisted and to transmit the driving-power from one bank to the other. Such precautions may therefore be omitted which would otherwise have to be adopted in order to insure a parallel action of two driving mechanisms.

In case less than an entire revolution of the closing-body is necessary for uncovering the full weir-aperture the runner and guiding-rings *e f* only need to extend over a suitable portion of the full periphery of the disk.

In the second form of construction, Figs. 5 to 7, the weir-wall *a* is formed of a substantially flat plate of sheet metal supported on profile iron. Its lower part is so bent toward the bottom water that the separate points of the weir-wall which when the closing-body is rolled up in the position of opening (shown in the dotted lines) naturally describe cycloids tend toward the lower water side. The support which transmits the force exerted against the weir-wall *a* to the bearings is formed as a statically-determined roomy framework *l* of four rectangular walls, Fig. 6. Consequently

the stresses of all its parts may be calculated with certainty, which is of importance in view of the large external forces which have to be contended with. The four walls of which the roomy framework is composed end on both sides in points which are connected with the roller-disks *d*.

In order to prevent when the closing-body is rolled up substances, such as branches and the like, carried by the current from being caught in the meshes of the framework, a grating *m*, of wooden beams, is provided on one side of the framework. The grating lies when the mechanism is closed near the bottom of the weir and turns against the current when the closing mechanism is rolled up.

The roller-disks *d* are provided with toothing *f* over about a quarter of their periphery, which toothing serves for engaging the toothing of the roller-tracks. A means *g* is provided on the periphery of one of the roller-disks for drawing the apparatus up.

The third form of construction, Figs. 8 to 10, only differs from the one just described in immaterial points. The weir-wall *a* is here flat over its entire extent. The roller-disks *d* are also formed in a somewhat different manner, and the means *g* for drawing the apparatus up is connected with a flying pin *n* on one of the roller-disks *d*.

I declare that what I claim is—

1. A flood-gate comprising a support rigidly connected to the gate, roller-disks secured to the ends of said support, a track and means for moving the disks on the track.

2. A flood-gate comprising a cylindrical support rigidly connected to the gate, roller-disks secured to the ends of said support, a track and means for moving the disks on the track.

3. A flood-gate comprising a statically-determined framework rigidly connected to the gate, roller-disks secured to the ends of said framework, a track and means for moving said disks on the track.

4. A flood-gate comprising a support rigidly connected to the gate, roller-disks secured to the ends of the support, a grating secured to the bottom of the support, a track and means for moving the disks on the track.

5. A flood-gate comprising a support rigidly connected to the gate, roller-disks secured on the ends of said support, an inclined track for the disks, and operating means on the disks.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MAX CARSTANJEN.

Witnesses:
JEAN GRUND,
CARL GRUND.