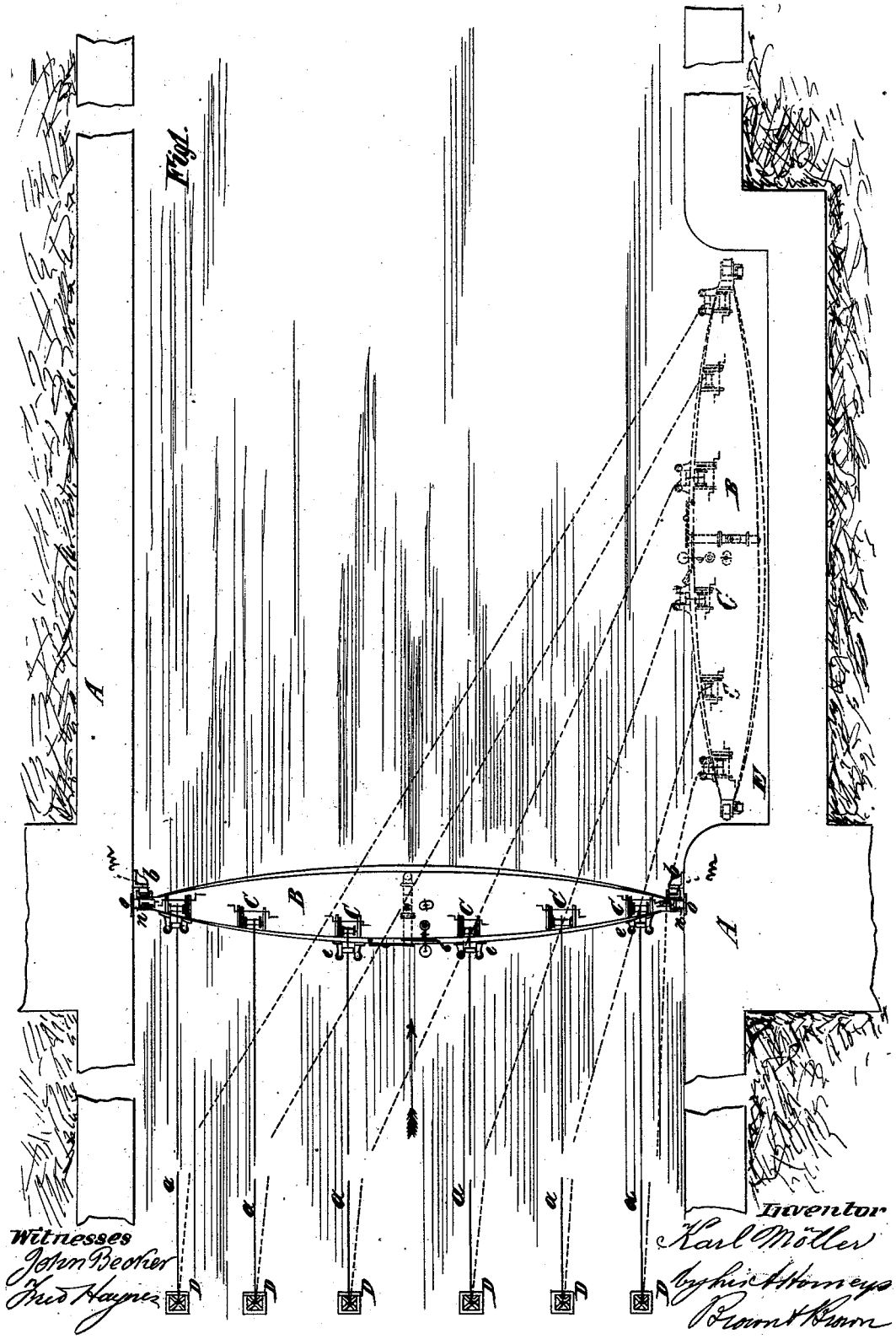
3 Sheets—Sheet 1.

K. MÖLLER.

Floating Weir or Caisson.

No. 215,148. Patented May 6, 1879.



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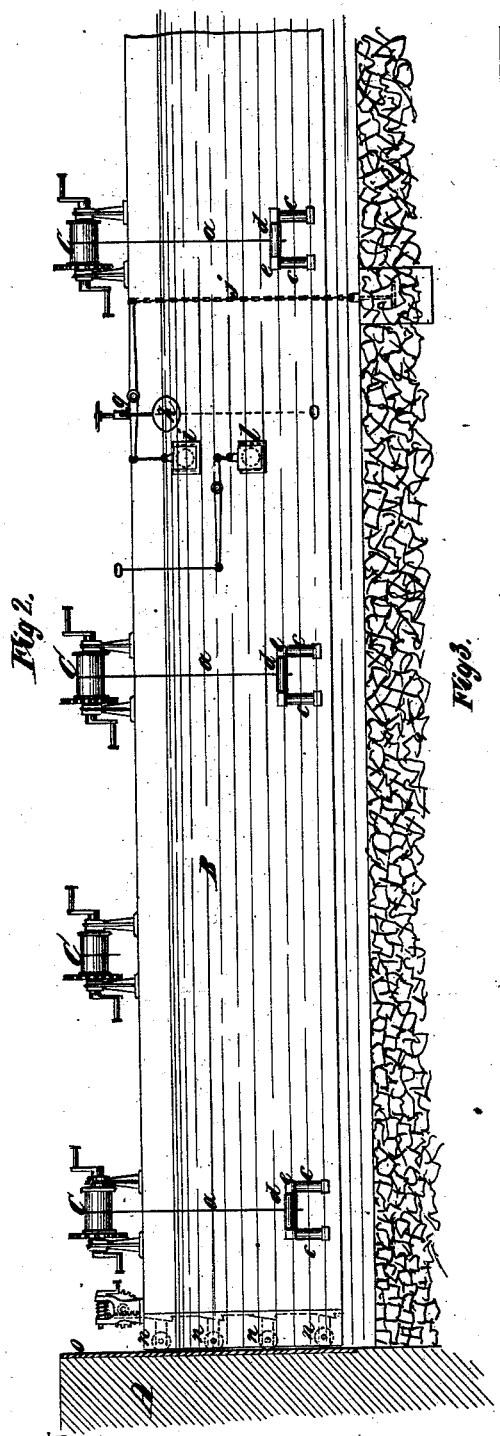

Fig 2.

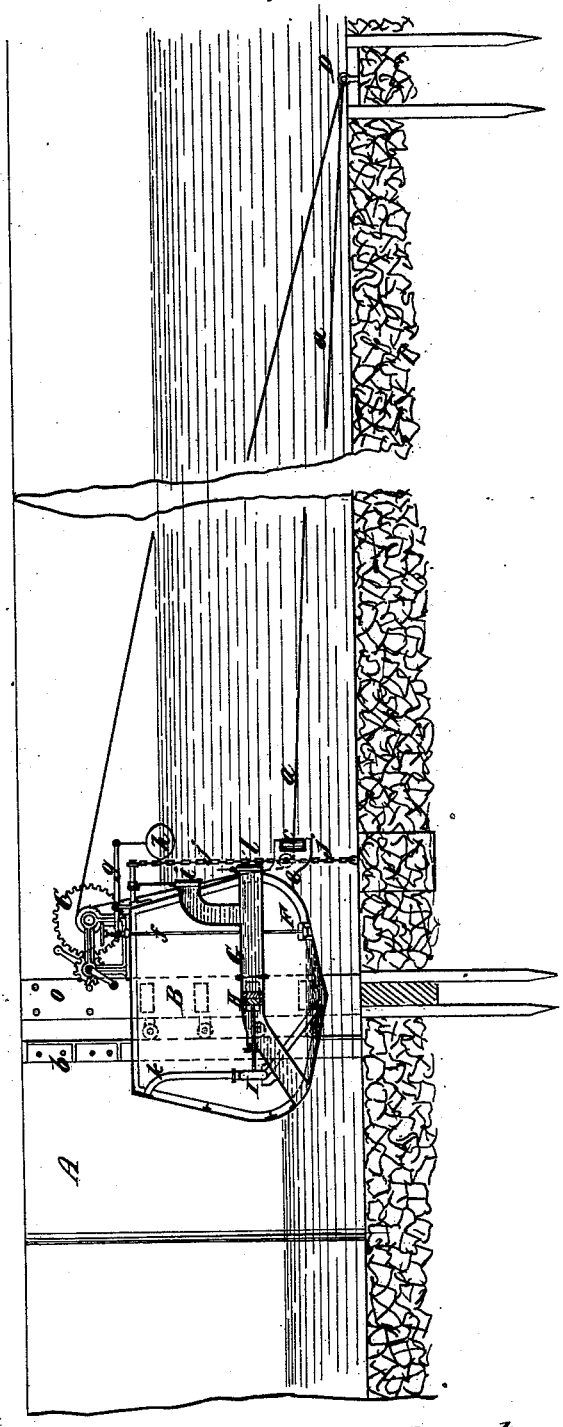

Fig 3.

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by his Attorneys
Brown & Brown

3 Sheets—Sheet 3.

K. MŐLLER.

Floating Weir or Caisson.

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Fig4.

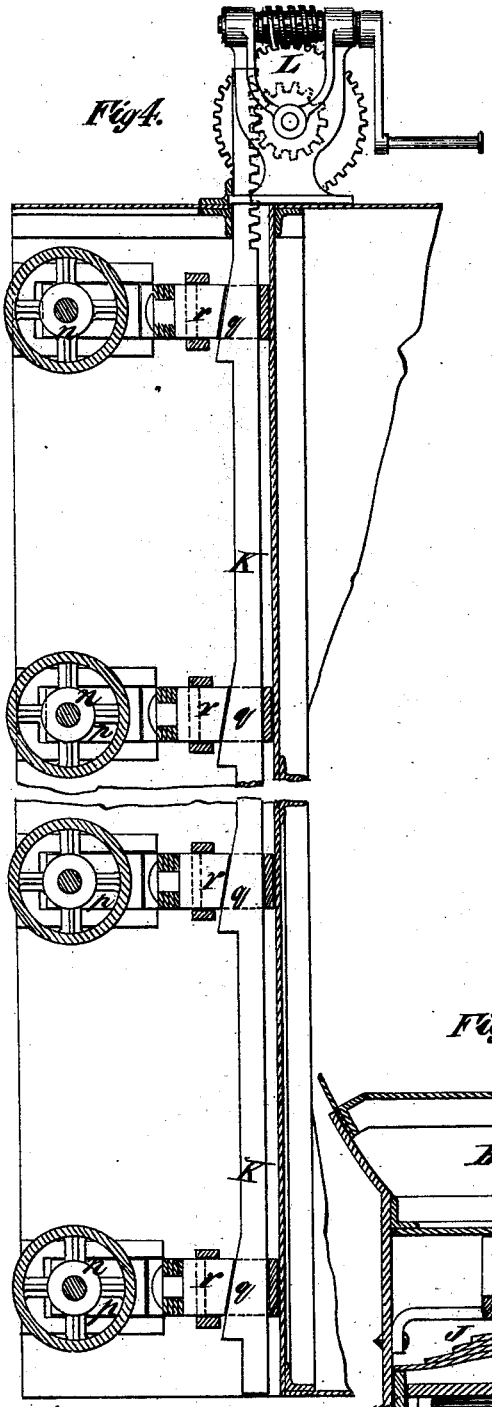


Fig6.

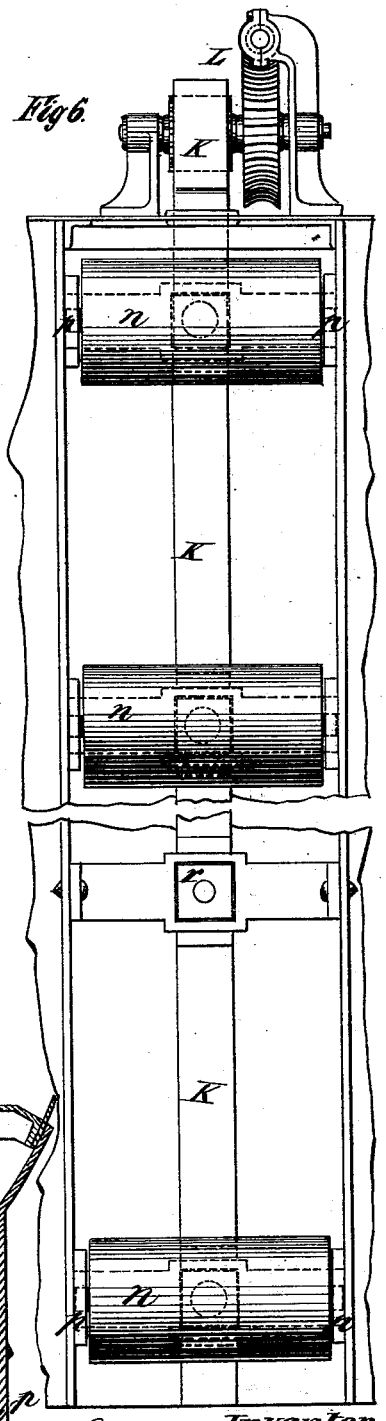
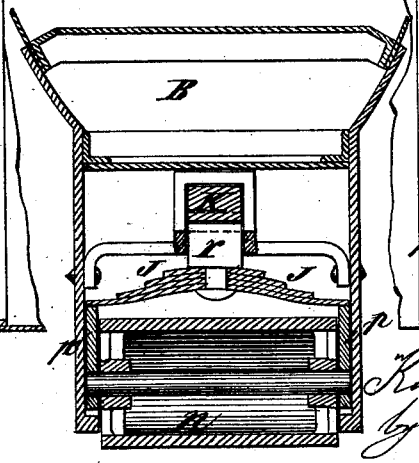


Fig5.



Witnesses
John Becker
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Inventor
Karl Möller
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UNITED STATES PATENT OFFICE.

KARL MÖLLER, OF KUPFERHAMMER, NEAR BRACKWEDE, GERMANY.

IMPROVEMENT IN FLOATING WEIRS OR CAISSONS.

Specification forming part of Letters Patent No. **215,148**, dated May 6, 1879; application filed February 12, 1879.

To all whom it may concern:

Be it known that I, KARL MÖLLER, of Kupferhammer, near Brackwede, in the Empire of Germany, have invented certain new and useful Improvements in Floating Weirs or Caissons, of which the following is a specification.

My invention relates to floating weirs or caissons designed for use in rivers or streams, one of which may be placed transversely across a river or stream, so as to stop the flow and cause an accumulation of the water above it, or which may be drawn up parallel with the bank of the river or stream, so as not to intercept the current.

My improvements consist in the combination, with a weir or caisson having vertical ends, of rollers arranged in horizontally-adjustable bearing-boxes upon said ends, vertically-adjustable bars carrying inclines for forcing said rollers outward, and springs interposed between said bearing-boxes and inclines, so as to compensate for any inequalities in the surface upon which said rollers bear; in means whereby water may be admitted to the weir or caisson to form ballast for the purpose of sinking it, and in means whereby the water-ballast may be pumped out by the head of water accumulated upon one side of the weir or caisson.

In the accompanying drawings, Figure 1 represents a plan of the two banks of a river or stream having my weir or caisson placed transversely across it, and showing in dotted outline the position of the weir or caisson when drawn in along the bank. Fig. 2 represents a transverse section of a portion of the bed and one of the banks of the river or stream and the up-stream side of the weir or caisson. Fig. 3 represents a longitudinal section of a portion of the bed of the river or stream and a transverse section of the weir or caisson. Fig. 4 represents a vertical section of rollers placed at the ends of the weir or caisson for guiding it in its rise and fall, and means whereby the rollers may be forced outward. Fig. 5 represents a horizontal section thereof, and Fig. 6 a face view thereof.

Similar letters of reference designate corresponding parts in all the figures.

A A designate the banks of a river or stream, which are built up with masonry or timber, so as to form vertical walls, between which the water flows. If the river or stream has a rocky bed, the same should be leveled off, or, if of earth, the bed may be leveled and made firm by paving with concrete or any suitable material.

B designates the weir or caisson, which consists of a hull of wood or metal similar to that of a vessel, and which is preferably pointed at both ends. It has upon the deck or upper surface several windlasses or crab-winches, C, from which chains or cables *a* pass to anchors D, which are firmly fixed in the bed of the stream at some distance above the caisson. When not in use, the caisson rests in a niche or recess, E, in the bank, as represented in dotted outline in Fig. 1. When it is desired to place the caisson across the stream, the windlasses or crab-winches C are operated to wind up the chains or cables *a* until the caisson is drawn sufficiently far up stream, when it is allowed to float down transversely across the stream until its two ends rest against the vertical abutments *b*, as clearly shown in Fig. 1, by which its further downward movement is prevented.

In order that the pull of the cables *a* shall not cause the caisson to careen or turn upon its side, the said cables are carried down from the windlasses C over guide-rollers *c d*, which are held in brackets *e*, projecting from the side of the caisson.

In order to cause the caisson to sink low in the water, so as to nearly stop the flow, I admit water into it to form ballast; and when it is desired to lighten the caisson, so as to allow more water to pass, I force out the water within it by means of a pump driven by a water-wheel, the head of water accumulated above the caisson forming the motive power. Both these operations are preferably effected automatically by means of the rising and falling of the caisson. I will first proceed to describe the means whereby the inflow of water is regulated.

F designates a valve in the bottom of the caisson, which is connected by a rod, *f*, with one end of a lever, *g*, to the other end of which a float, *h*, is attached. After the caisson is placed in position the valve F is kept open by

the weight of the float *h* until the inflowing water has caused the caisson to sink, so that the head of water accumulated above it buoys up the float and closes the valve F, thereby preventing any more water from entering the caisson. The water above the caisson continues rising, and as no more water can enter the caisson it rises until the valve *i* is opened by the chain *j* (which is secured in the bed of the river) becoming taut. The opening of the valve *i* allows the water to flow through the pipe G to the other side of the caisson.

H designates a turbine water-wheel arranged in the pipe G, which is caused to rotate by the flow of water through the pipe, and which imparts motion to a rotary pump, I, by which water contained in the caisson is pumped out through the pipe *k*. When the caisson rises so that the valve *i* is above the level of the water, the valve *l* may be opened by hand and the operation of the water-wheel H and pump I continued until the water on both sides of the weir reaches the same level.

It is obvious that, as the inflow of water to the caisson and the discharge therefrom are both automatically regulated, the caisson will be maintained at the proper level.

In order that the caisson may meet with little friction in rising and falling, I employ rollers *m*, which bear upon the abutments *b*, and rollers *n*, which are carried upon the ends of the caisson, and bear against plates *o*, which are secured to the banks A.

In order that the caisson may not have any play endwise when in position, the rollers *n* are preferably capable of horizontal adjustment. They are here represented as carried in bearing-boxes *p*, (see Figs. 4, 5, and 6,) which are horizontally adjustable. Springs J are arranged so as to bear against the bearing-boxes *p* and press the latter outward.

K designates a bar capable of vertical movement in guides, and carrying inclines *q*, which bear against blocks *r* fastened to the springs J.

L designates gearing whereby the bar K may be raised or lowered. It is obvious that by raising or lowering the bar K the rollers *n* may be forced outward through the springs J and blocks *r*, so that the caisson shall entirely fill the space between the banks, or may be drawn inward when it is desired to move the caisson.

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

1. The combination, with a weir or caisson having vertical ends, of rollers arranged in horizontally-adjustable bearing-boxes upon said ends, vertically-adjustable bars carrying inclines for forcing said rollers outward, and springs interposed between said bearing-boxes and said inclines, substantially as and for the purpose specified.

2. The combination, with a weir or caisson, of a valve in the bottom thereof, whereby water may be admitted to the weir or caisson, a rod connected to said valve, and a float, whereby the level of water outside the weir or caisson regulates the admission of water to the interior thereof, substantially as specified.

3. The combination, with a weir or caisson, of a pipe or passage extending transversely through it, a valve whereby the flow of water through said pipe is regulated, and a chain or cable connecting said valve to an anchor, whereby the said valve is caused to open upon the rising of the weir or vessel, substantially as described.

4. The combination, with a weir or caisson, of a pipe extending transversely through it, and having on one side two inlets controlled by valves, and situated one above the other, substantially as specified.

5. The combination, with a weir or caisson, of a pipe extending transversely through it, a water-wheel within said pipe actuated by water passing through it, and serving to impart motion to a pump, whereby water within the weir or caisson may be pumped out, substantially as specified.

In testimony that I claim the foregoing I have hereunto set my hand.

DR. K. MÖLLER.

Witnesses:
MATTHAUS FEACH,
FRITZ GRONEMEYER.