

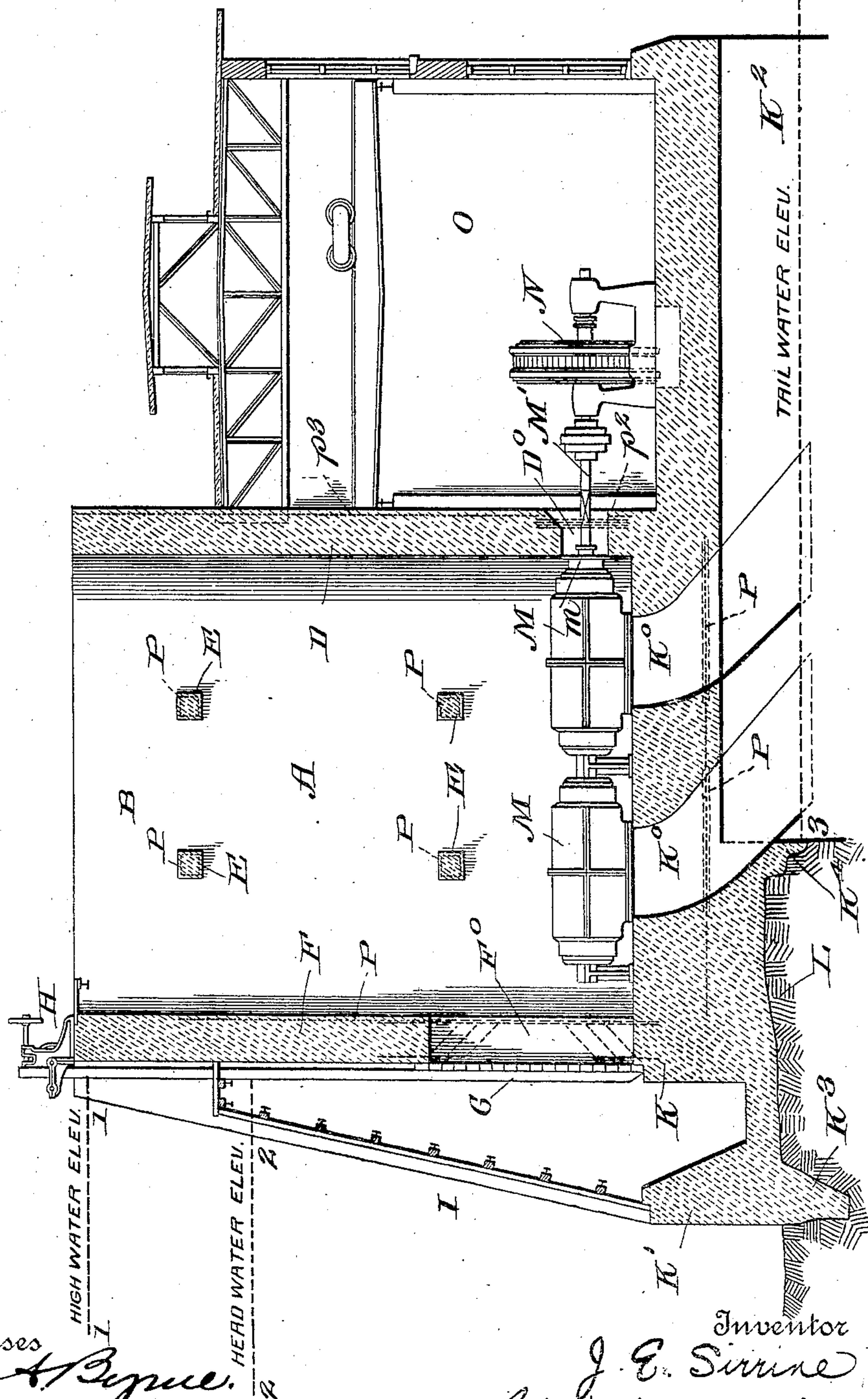
No. 854,539.

PATENTED MAY 21, 1907.

J. E. SIRRINE.
FOREBAY CONSTRUCTION.
APPLICATION FILED JAN. 30, 1907.

3 SHEETS—SHEET 1.

Fig. 1.



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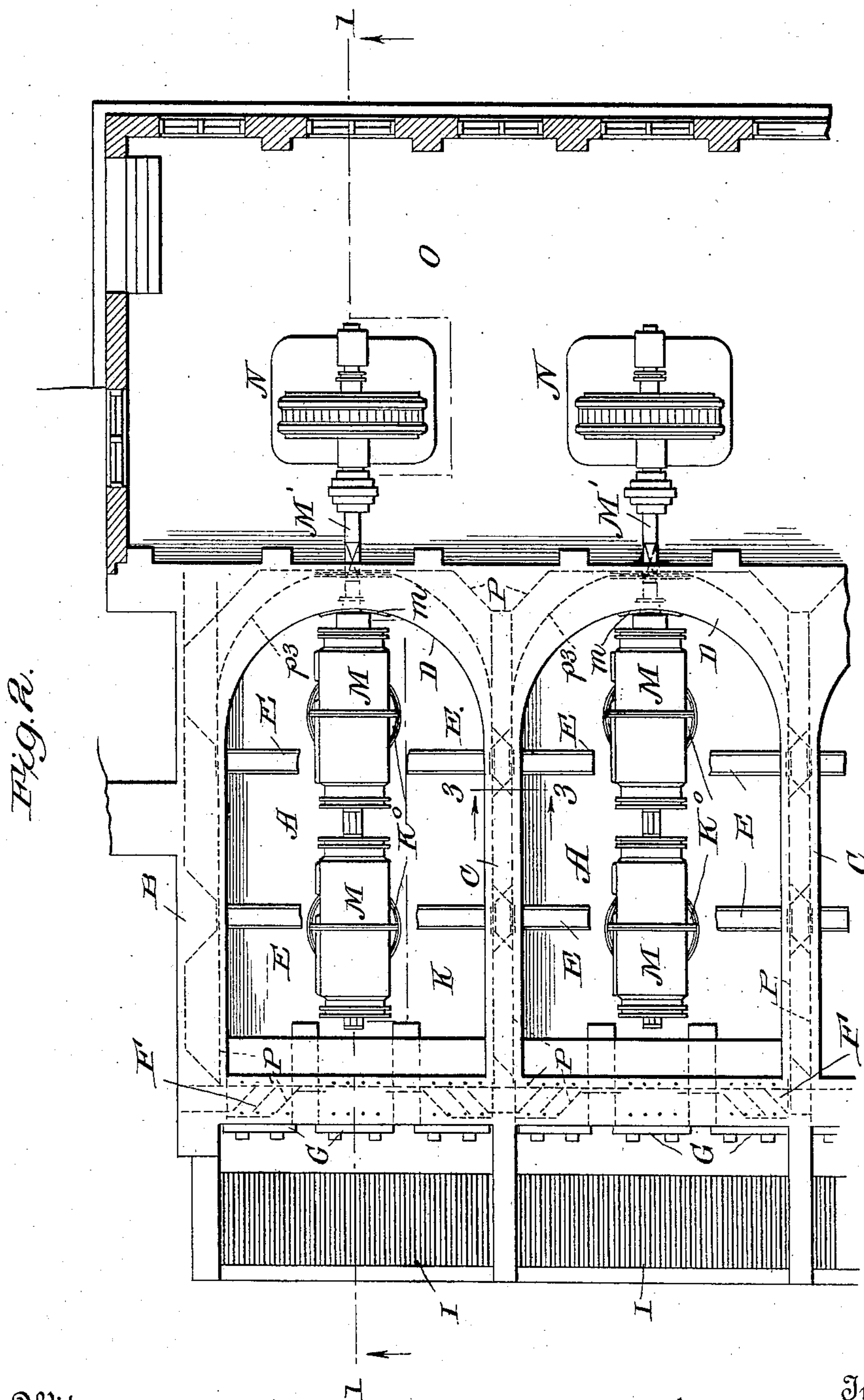
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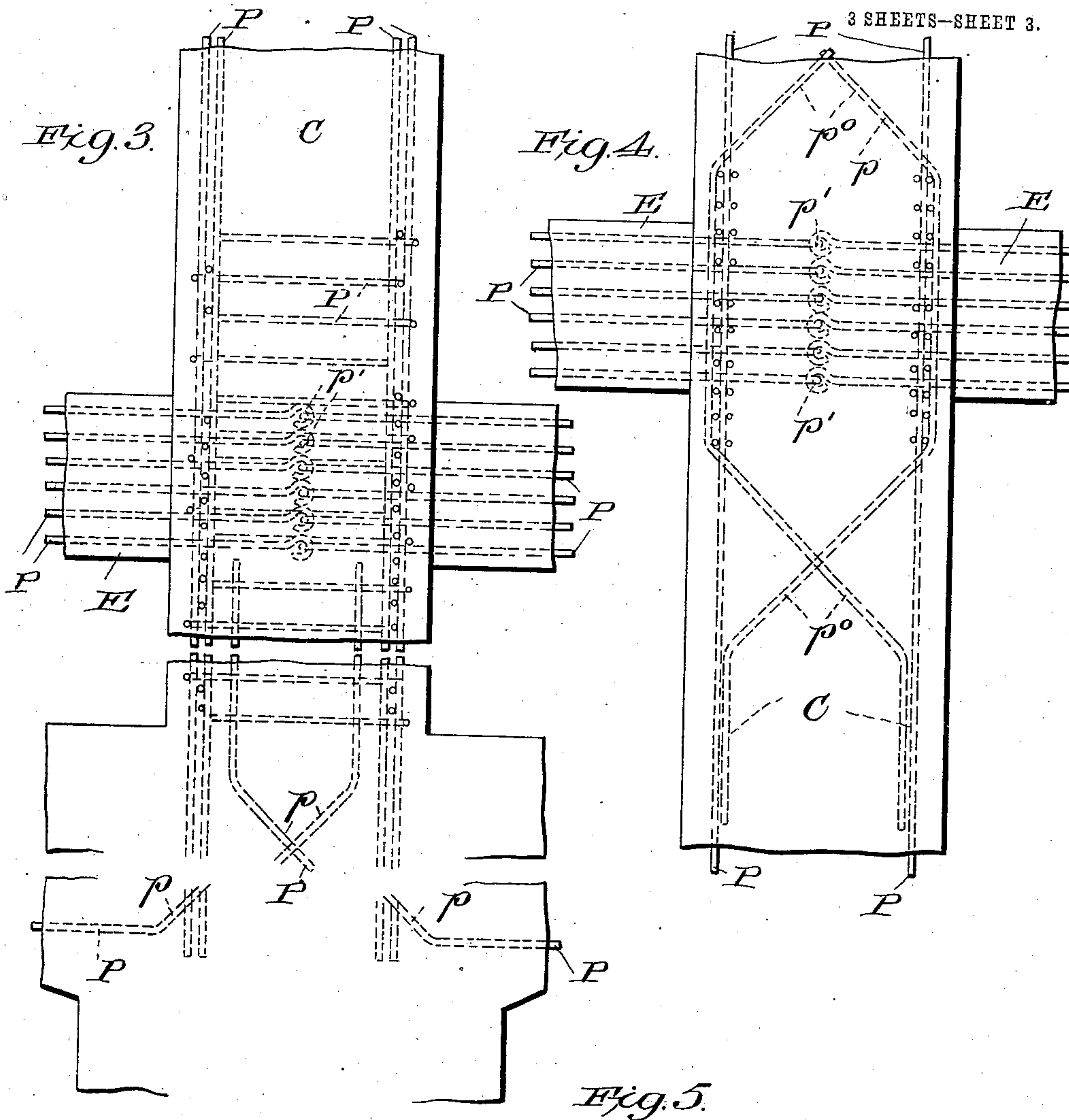
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UNITED STATES PATENT OFFICE.

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FOREBAY CONSTRUCTION.

No. 854,539.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed January 30, 1907. Serial No. 354,897.

To all whom it may concern:

Be it known that I, JOSEPH E. SIRRINE, a citizen of the United States, residing at Greenville, in the county of Greenville and State of South Carolina, have invented certain new and useful Improvements in Forebay Construction; 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 invention relates to improvements in fore-bay construction to be used in connection with water power apparatus, and the said invention consists in providing a strong and durable construction made of reinforced concrete in which great strength, durability and stability are combined, as will be hereinafter more fully described.

Reference is had to the accompanying drawings, in which the same parts are indicated by the same letters throughout the several views.

Figure 1 shows a section through the apparatus along the broken line 1—1 of Fig. 2, and looking in the direction of the arrows. Fig. 2 represents a plan view of one end of the apparatus showing two wheel chambers emptied of water. While two wheel chambers are only shown, it is intended that the number may be varied indefinitely. Fig. 3 shows a section, on an enlarged scale, on the line 3—3 of Fig. 2, and looking in the direction of the arrows; but for the sake of clearness in the drawings the cross hatching of the parts in section is omitted. Fig. 4 shows a plan of one of the partition walls with the tie beams connected thereto, also on an enlarged scale; and Fig. 5 is a detail showing a portion of the outer face of the back wall with the steel reinforcing rods shown in dotted lines.

A represents one of a plurality of wheel chambers, separated by partition walls C.

B represents one of the end walls of the apparatus, and D represents the back wall, which is horizontally arched, as shown in plan in Fig. 2.

E represents tie beams made of reinforced concrete, having rods P inserted therein.

The front wall F is perforated, as at F⁰, to admit water, which water may be shut off by sliding doors G controlled by suitable apparatus H. These doors are not part of the present invention, and will not be further described.

The elevation of high water is shown by the dotted line 1—1, the normal elevation of the head water is shown by the dotted line 2—2, and the normal elevation of the tail water, is shown by the dotted line 3—3.

I represents the usual grid placed in front of the doors G, which grid rests upon the scarp K' of the concrete floor K, which floor is provided with passages K⁰ leading to the tail race K².

The foundation preferably projects downward, as at K³, K⁴ into the bed rock, or other support L.

M, M are turbines driving the shaft M' connected to the generator N mounted in the power house O.

All of the walls, as well as the foundation K, are reinforced with steel rods P, which are embedded in the cement in the usual well known way. These rods may be hooked together, as indicated at p' in Figs. 3 and 4, to give the requisite length. The rods may be bent to form anchors, as shown at p, in Fig. 3, or may be crossed to give strength, as shown at p⁰ in Fig. 4, and when placed around openings may be arranged in hoop form, as shown at p² in Fig. 5.

In the arched ends of the chambers A, the horizontal reinforcing rods are arched, as at p³, in Fig. 2, which rods are also indicated at p³ in Fig. 5. The side, front and back walls of the chamber A are made integral with the base K and are all tied together with rods, as hereinbefore described.

It will be noted that there is a heavy unbalanced pressure owing to the height of the water on the back walls D tending to tear these walls away from the side walls of the chambers, and this pressure is resisted by the tensile strength of the curved reinforcing rods p³, and thus great strength is given to these back walls to resist this backward pressure. Furthermore, by having the side and back walls tied to the base, when the chambers A are full of water the weight of this water will serve to hold the entire structure firmly on its base, and thus the weight of the water will add stability to the structure.

It will be obvious that various modifications might be made in the herein described apparatus, which could be used without departing from the spirit of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, is:—

1. A fore-bay construction, comprising a

foundation and side, front and back walls, all made of an integral mass of concrete tied together with reinforcing rods, with outlet openings in the base of said foundation, and
5 inlet openings in the front walls, substantially as described.

2. A fore-bay construction, comprising a foundation and side, front and back walls, all made of an integral mass of concrete tied
10 together with reinforcing rods, with horizontal tie beams made of reinforced concrete connecting the side walls, with outlet openings in the base of said foundation, and inlet openings in the front walls, substantially as
15 described.

3. A fore-bay construction comprising a foundation and side, front and back walls, all made of an integral mass of concrete tied together with reinforcing rods, the rear walls
20 being in the form of horizontal arches with arch-shaped reinforcing rods tying said arches to the side walls, with outlet openings in the base of said foundation, and inlet openings in the front walls, substantially as described.

4. A fore-bay construction comprising a
25 foundation and side, front and back walls, all made of an integral mass of concrete tied together with reinforcing rods, the rear walls being in the form of horizontal arches with
30 arch-shaped reinforcing rods tying said arches to the side walls, and inlet and outlet openings for the water, substantially as described.

5. A fore-bay construction comprising a foundation and side, front and back walls, all made of an integral mass of concrete tied
35 together with reinforcing rods, the rear walls being in the form of horizontal arches with arch-shaped reinforcing rods tying said arches to the side walls, with tie beams connecting
40 the side walls, and inlet and outlet openings for the water, substantially as described.

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

JOSEPH E. SIRRINE.

Witnesses:

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