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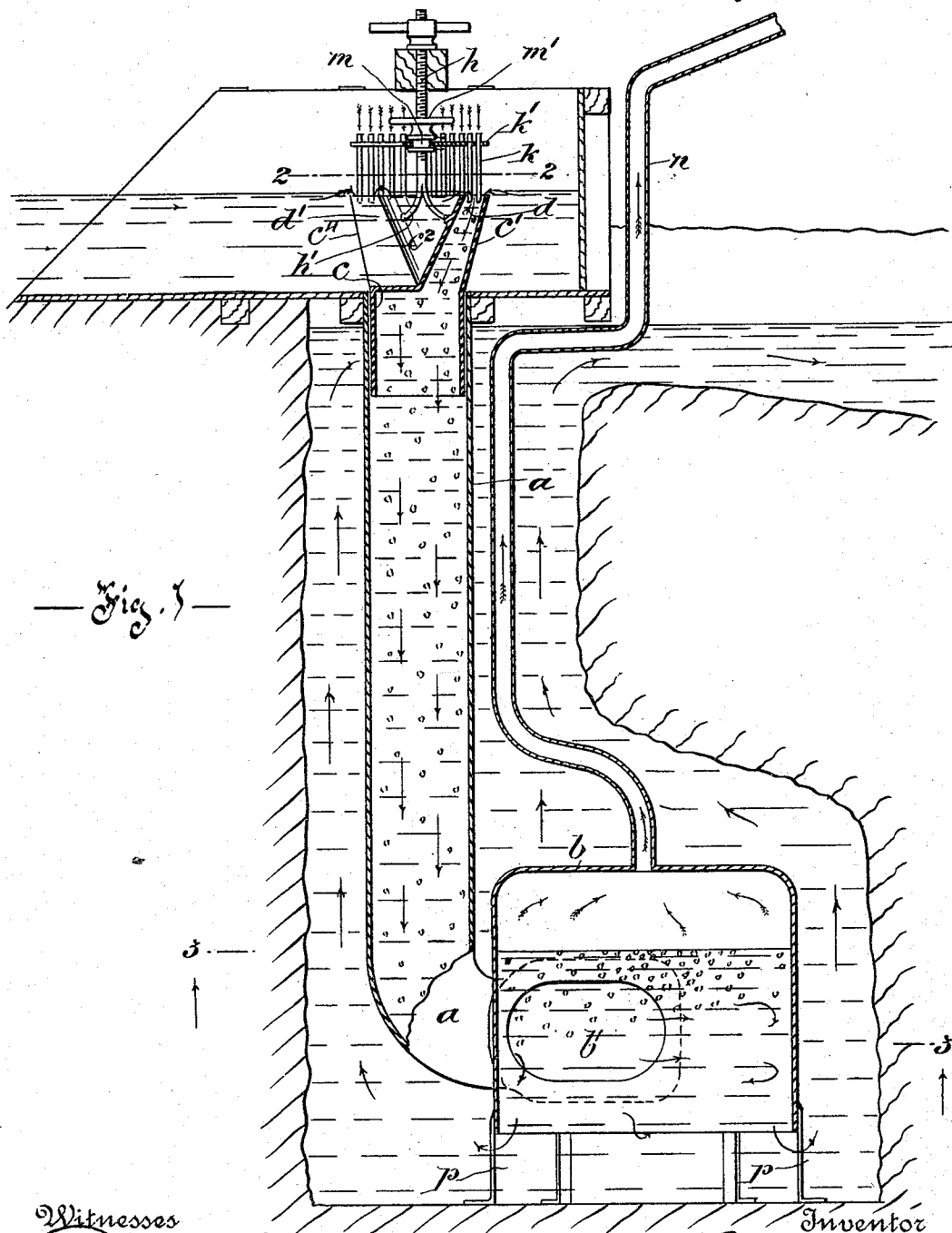
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C. H. TAYLOR.

HYDRAULIC AIR COMPRESSING APPARATUS.

No. 543,412.

Patented July 23, 1895.



Witnesses


 R. P. Kimber

Inventor

Chas A. Taylor

By *his* Attorney

Adm N. Nam

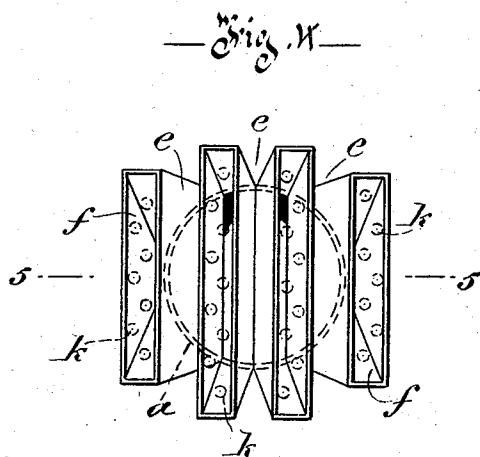
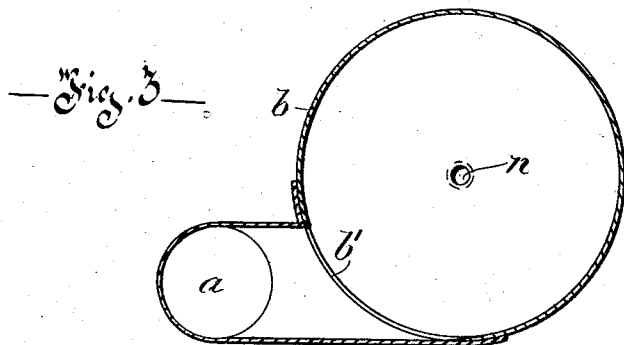
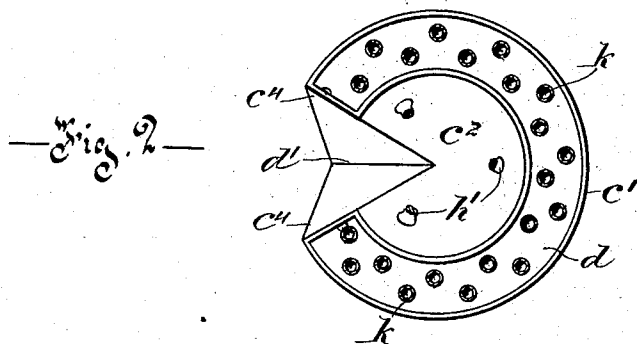
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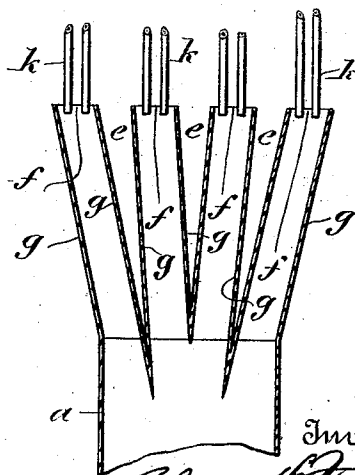
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—Fig. 5—



Witnesses
John H. East
Rup. H. Kimber

Inventor
Chas. H. Taylor
By *his* Attorney
Wm. N. Shaw

UNITED STATES PATENT OFFICE.

CHARLES H. TAYLOR, OF MONTREAL, CANADA, ASSIGNOR TO JOSEPH ROWAT FAIR AND HENRY MILLEN, TRUSTEES, OF SAME PLACE.

HYDRAULIC AIR-COMPRESSING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 543,412, dated July 23, 1895.

Application filed February 13, 1895. Serial No. 538,302. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HAVELOCK TAYLOR, of the city of Montreal, in the district of Montreal and Province of Quebec, Canada, have invented certain new and useful Improvements in Hydraulic Air-Compressing Systems and Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to the hydraulic air-compressing method and apparatus shown and described in my allowed application for United States Patent, filed April 19, 1894, under Serial No. 508,197, and has for its object to furnish improved means for insuring the introduction of large quantities of air at the receiving end of the vertical stand-pipe and the certain drawing of the same to the lower end thereof, where it is separated from the body of water carrying it.

The invention embodies as novel features, first, an improved open receiving end specially constructed, as hereinafter described, for dividing and introducing the water into the stand-pipe in a number of separate streams instead of in a single body, as heretofore, and, secondly, in means for creating a whirlpool at the lower end of the stand-pipe in order to establish a better separation of the air from the water.

For full comprehension, however, of the invention, reference must be had to the annexed drawings, forming a part of this specification, in which like symbols indicate corresponding parts, and wherein—

Figure 1 is a vertical sectional view of my improved apparatus; Fig. 2, an enlarged horizontal section of same on line 2 2, Fig. 1; Fig. 3, a horizontal section on line 3 3, Fig. 1, looking in the direction indicated; Fig. 4, a detail plan view of a modified form of my device; Fig. 5, a transverse vertical section of same taken on line 5 5, Fig. 4.

α is the stand-pipe or conductor sunk in a well, as formerly, and extending from the timbers of the usual dam formed about the opening of the well downward to a point midway of the height of an expansion chamber or dome b , which is located at the bottom of the well and has an opening b' in its side with which the lower end of the stand-pipe communicates,

such lower end being cut away obliquely and flattened to allow of riveting to such dome. The lower end of the pipe is connected with the side of the dome in such a way as to deliver the water tangentially into the dome, and by so doing cause it to circle round the same and so create a whirlpool, which has the effect of thoroughly separating the air from the water.

To control the flow of water into the stand-pipe α , I use a movable or adjustable receiving end of a construction that will have the effect of dividing the body of water into a number of streams, preferably converging toward a central point, with the result that a greater quantity of air is drawn in and a solid body or column without any central vertical cavity is formed in the stand-pipe, which is not the case where the inflowing body of water simply falls inwardly over the upper edge of the stand-pipe.

The preferred form of receiver is constructed, as shown in Figs. 1 and 2, of a short length of cylinder c with outer-flared mouthpiece c' , which latter has a portion cut out of its side and an inner mouthpiece located centrally of the outer mouthpiece, and preferably constructed of a hollow cone c^2 also having a corresponding portion cut out of its side and connected to the outer mouthpiece by strips c^4 , so that in addition to the annular opening or inlet d , between the outer and inner mouthpieces on the top of the receiver, there is also a side inlet d' , leading to the inside mouthpiece or cone c^2 . This inner mouthpiece acting with the outer one naturally has the effect of causing the body of water to enter the stand-pipe in two separate streams, and at the same time the inner mouthpiece tends to guide or direct one body thereof toward the center of the stand-pipe, since water passing through the side inlet d' must overflow the edge of the inner mouthpiece and will then follow the outer surface thereof, which, converging as it does to a central point, will guide it to the center.

If preferred, the receiver might be made, as shown in Figs. 3 and 5, with a series of side inlets e and top inlets f , the sides g of each converging centrally, so as to concentrate the body of water in the stand-pipe.

The movable receiver is supported and rendered adjustable by means of a screw *h*, passing through an upper cross-timber of the dam, the lower end of the screw being divided into arms *h'*, connected to the inner mouthpiece *c*².

The air-ducts are in the form of an annular series of vertical tubes *k*, the lower ends of which are located opposite the upper inlet of the receiver, being carried by a disk *k'*, which is provided at its center with a screw-threaded collar *m*, adapted to work on the screw *h* in order to adjust the ends of the tubes nearer to or farther from the water-inlet, thus having the effect of diminishing or increasing the quantity of air drawn in, a suitable handle *m'* being provided on the collar, whereby it can be rotated.

The air when separated passes up the conductor *n* to the usual tank in the customary manner, and the water is preferably allowed to travel through ports *p* at the base of the dome *b* and pass from the well at the top, as formerly.

What I claim is as follows:

25 1. Hydraulic air compressing apparatus having a conductor through which a falling body of water is passed the receiving end of the conductor having side and top inlets for dividing the body of water into a number of separate streams upon entering the conductor for the purpose set forth.

30 2. Hydraulic air compressing apparatus having a conductor through which a falling body of water is passed, the receiving end of the conductor having a number of independent inlets and inclined faces for dividing the body of water into a number of separate streams upon entering the conductor and bringing them together within such conductor, for the purpose set forth.

3. Hydraulic air compressing apparatus having a conductor through which a falling body of water is passed and such conductor curved to create a whirlpool at the lower end thereof for the purpose set forth.

45 4. Hydraulic air compressing apparatus, having a stand pipe or conductor, with its upper receiving end adjustable and divided into a number of independent inlets, and an air conductor leading from its lower or delivery end to a tank or receiver, for the purpose set forth.

50 5. Hydraulic air compressing apparatus having a stand pipe or conductor with its receiving end formed to present inner and outer edges, for the water to fall over into the conductor, and means for conducting water to the inner edges, for the purpose set forth.

60 6. Hydraulic air compressing apparatus having a stand pipe or conductor, the receiving end of which is composed of two inverted cones, one within the other, and the outer one truncated, so as to form an inlet to the stand pipe, each cone having a portion cut away and the edges, thus formed, of one, connected to the edges, thus formed, of the other, so as to form a lateral passage to the inner cone, for the purpose set forth.

70 7. Hydraulic air compressing apparatus, having a stand pipe or conductor an expansion chamber to which said stand pipe is connected tangentially, and an air conductor leading from such expansion chamber to a receiver, for the purpose set forth.

Montreal, 31st day of January, 1895.

CHARLES H. TAYLOR.

In presence of—

FRED. J. SEARS,

RUPT. C. KIMBER.