No. 861,028. PATENTED JULY 23, 1907.

F. GROTE.

SYSTEM OF FILTRATION AND WATER SUPPLY.

APPLICATION FILED MAY 20, 1907.

2 SHEETS—SHEET 1.

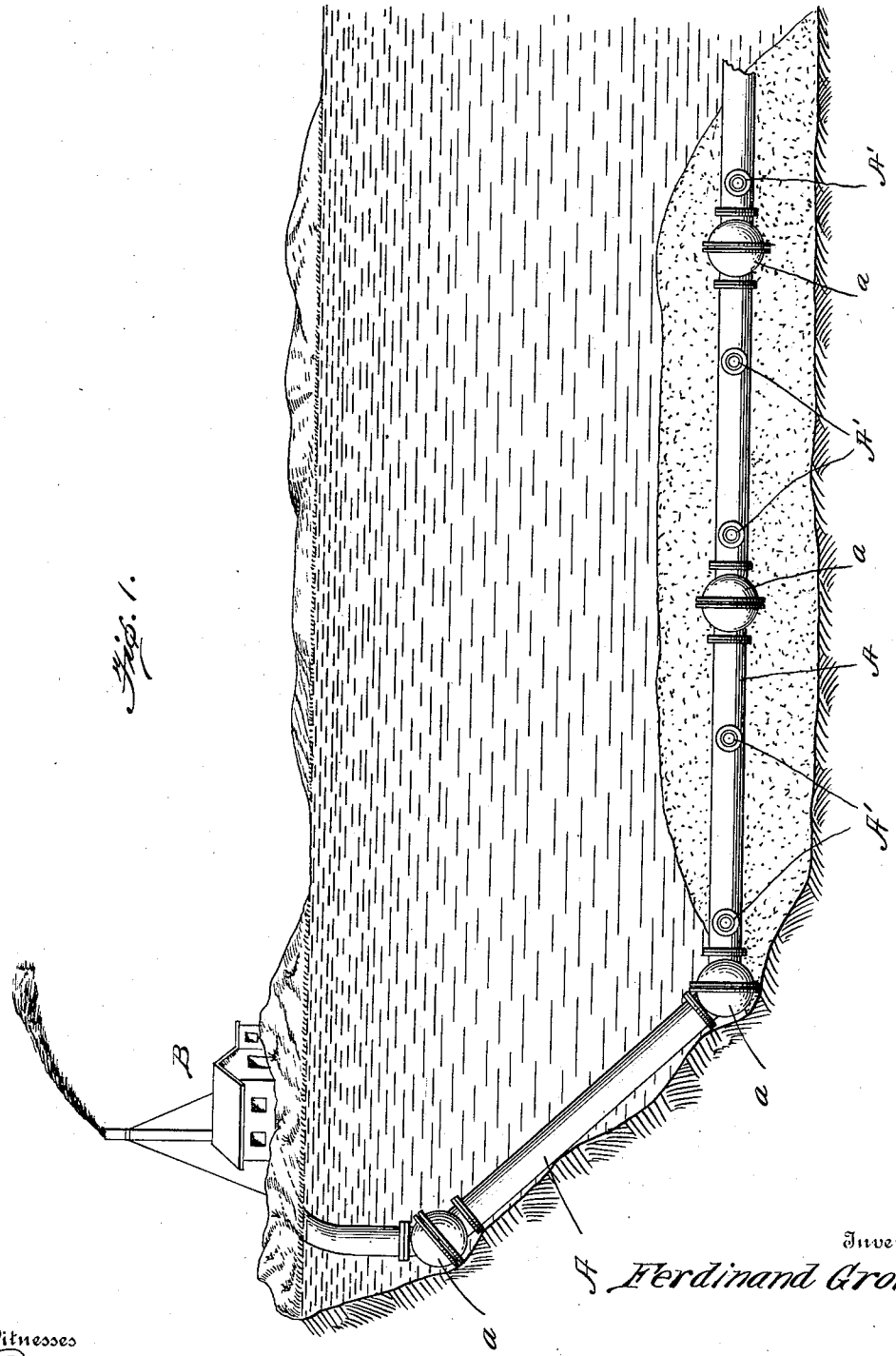

Fig. 1.

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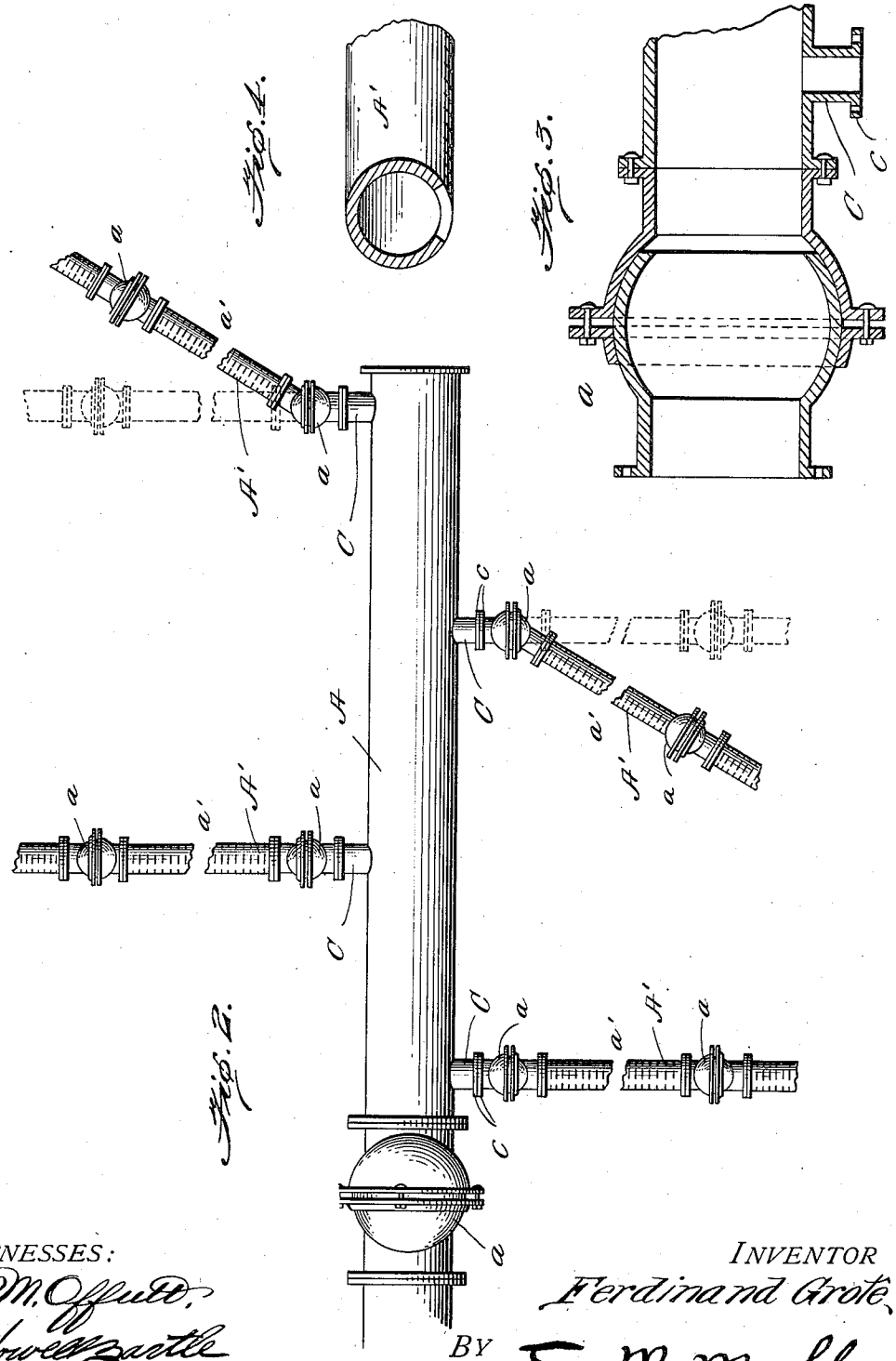

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SYSTEM OF FILTRATION AND WATER-SUPPLY.

No. 861,028. Specification of Letters Patent. Patented July 23, 1907.

Application filed May 20, 1907. Serial No. 374,652.

To all whom it may concern:

Be it known that I, FERDINAND GROTE, a citizen of the United States, residing at Evansville, in the county of Vanderburg and State of Indiana, have invented certain new and useful Improvements in a System of Filtration and Water-Supply, of which the following is a specification.

My invention relates to a system of water filtration and supply, and consists in the construction, arrangement, and operation of the several parts, which will be hereinafter more fully described, illustrated in the drawings, and particularly pointed out in the claims.

This invention is an improvement on the "water supply and filtering system" described and claimed in United States Letters Patent granted to Lloyd E. Smith, April 29th, 1902, Serial Number—699,032.

One object of this invention is to provide means by which the said invention may be better adapted to filtering water and supplying it as desired.

Another object of this invention is to provide the delivery pipe with universal joints, so that it may be so laid as to follow the bed of the stream in which it is used, to turn to the right or left to avoid obstacles, or to dip into or rise out of sloughs or holes in the bed of the stream as circumstances may require.

A further object of this invention is to provide the branch or intake strainer pipes, which are united to the main delivery pipe, with universal joints, so that they may be set at any angle to the said delivery pipe required by the stream or other circumstances.

A still further object of this invention is to provide said delivery pipe with branch or intake strainer pipes, of such number as may be desired, which are so constructed that they may be lengthened or shortened by sections or in any suitable manner to accommodate them to the sand bars as found in rivers or streams.

These objects I accomplish by the structures shown in the accompanying drawings forming a part of this application, and in which:

Figure 1 is a diagrammatic view showing the manner in which my system is arranged in the bed of a stream and carried up and into a pumping station. Fig. 2 is a top plan view of the delivery pipe with branch or intake strainer pipes secured therein, and a universal joint near one end thereof. Fig. 3 is a detail view of a section of the delivery pipe with the universal joint fully shown. Fig. 4 is a detail view of a section of a branch or intake strainer pipe with the strainer clearly shown.

In the drawings (Fig. 1), the delivery pipe A is shown leading from a pumping station or plant B located on the bank of a river or stream. This delivery pipe is provided with universal joints *a* to permit the same to be curved so as to descend in a proper way to the bed of the stream and to be sunk beneath the same where necessary. The branch strainer pipes A^1 are located at suitable distances along the delivery pipe, as shown. The delivery pipe and the branch strainer pipes are preferably sunk beneath the bed of the stream, as shown in Fig. 1.

In Fig. 2 a top plan view of the delivery pipe A is shown and a like view of the branch or intake strainer pipes A′. These strainer pipes are shown at *a*′, as arranged to be lengthened or shortened as the circumstances may require. They are also shown as provided with universal or flexible joints *a*.

It has been found necessary to provide the branch pipes of different lengths, or of more than one section, owing to different widths which may be found in the sand bars which may be found in rivers and streams. To meet this necessity provision is made, as shown, for longer or shorter strainer pipes. It has also been found necessary to arrange the strainer pipes at different angles to the delivery pipe because of the differing shapes of the sand bars. On this account it has been found necessary to provide the strainer pipes with universal or flexible joints so as to meet this requirement.

As shown in Fig. 2, the strainer pipes or some of them may be secured to the delivery pipe at different angles, but these strainer pipes must be arranged on a substantially horizontal plane with the other strainer pipes.

This system of filtration and supply of water is embedded in the sand at the bottom of rivers or streams to a suitable depth and the filtration is produced largely, if not entirely, by slow percolation through the strainers in the strainer pipes. The strainer pipes may be secured to the delivery pipes in any suitable manner but they are preferably secured in the manner shown in Fig. 2. The delivery pipe is cast in sections and each section has two or more hubs C provided with flanges *c*. Each strainer pipe is cast with corresponding flanges *c*. By bringing these flanges together and bolting them fast a strong joint is formed which cannot be readily disarranged. All of the joints in the delivery pipes are preferably made in the same way. Corresponding flanges of separate sections are brought together and bolted and thus the joints are made. The joints in the strainer pipes are preferably all made in like manner. In like manner the universal joints are secured to the delivery and branch strainer pipes.

In Fig. 3 a universal joint such as used in the delivery and strainer pipes is shown in section. These joints are well known and hence do not need specific description.

In Fig. 4 a section of a strainer such as I used in my strainer pipe is shown.

In this system the water may be drawn off by pumps through the delivery pipe, or if the delivery is, or may be directed to a lower elevation such as a receiving reservoir, then the delivery may depend entirely upon gravity.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is:

1. In a system of water filtration and supply, the combination with a delivery pipe provided with a universal joint and independent strainers therein substantially as described.

2. In a system of water filtration and supply, the combination with a delivery pipe having universal joints of a series of strainer pipes, each provided with a universal joint substantially as described.

3. A system of water filtration and supply, comprising a delivery pipe provided with universal joints, strainer pipes secured to the delivery pipes having universal joints, and means for drawing the water off through the delivery pipe, substantially as described.

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

FERDINAND GROTE.

Witnesses:
BLANCHE L. CHADWELL,
ALFRED M. HOUGHTON.