A. GIGER.

HYDRAULIC SCREW.

APPLICATION FILED MAR. 4, 1914.

1,114,603.

Patented Oct. 20, 1914.

Fig. 1.

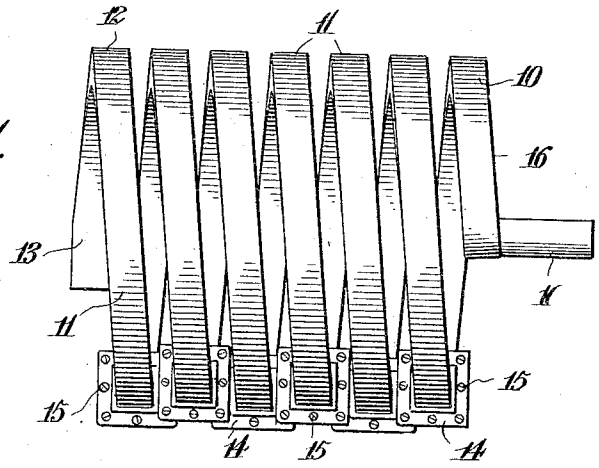


Fig. 2.

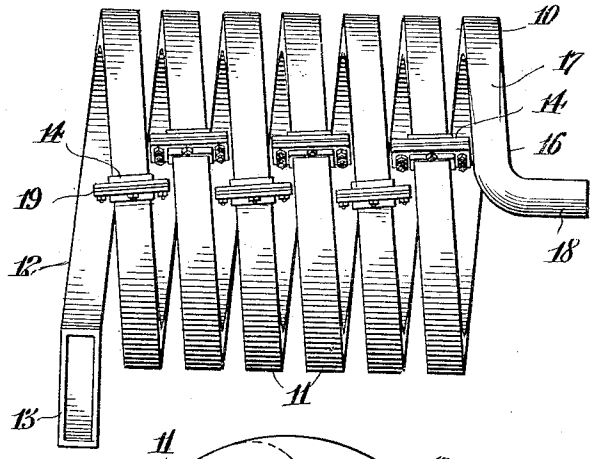


Fig. 4.

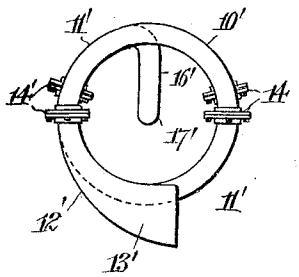
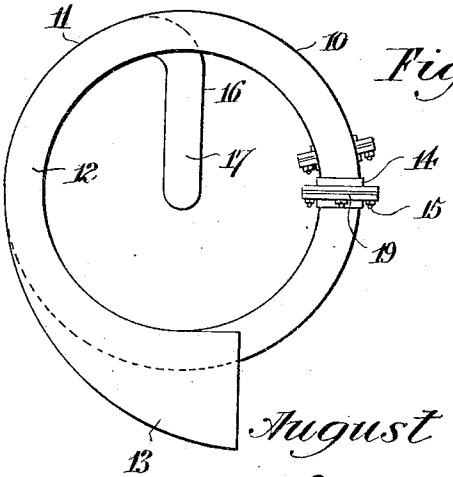


Fig. 3.



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HYDRAULIC SCREW.

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To all whom it may concern:

Be it known that I, AUGUST GIGER, a citizen of the United States, residing at Portland, in the county of Multomah and State of Oregon, have invented new and useful Improvements in Hydraulic Screws, of which the following is a specification.

An object of the invention is to provide a screw for raising fluids.

The invention embodies, among other features, the use of a screw operable in the manner of the well known Archimedean screw, for raising fluid such as water, from a certain level to a higher elevation.

A further embodiment of the invention resides in the provision of a screw that is simple, durable and efficient in construction to present an article of commercial value, capable of accomplishing the desired result.

The well known Archimedean screw has been and is at the present day, used extensively in educational institutions and laboratories for the purpose of conducting experiments, the screw being usually constructed of glass and on a small scale, applicable only for experimental purposes and not as a commercial article. It has been found impossible to construct the Archimedean screw on a large scale of metallic tubing, it being impossible to bend large tubing to form the screw and, therefore, the Archimedean screw, although highly efficient when constructed on a small scale for experimental purposes as mentioned, has not been adapted to commercial usage, as, for instance, in irrigating lands and elevating the waters of a stream.

In the use of my invention I aim to provide a device operable on the principle of the Archimedean screw, but arranged and formed of tubing sufficiently large to adapt the device for commercial usage, the manner of forming, arranging and assembling the device, as will be hereinafter more fully described, being simple, expeditious and capable of accomplishing, on a large scale and in a commercial manner, what the Archimedean screw has been unable to accomplish in view of the fact that the Archimedean screw can only be made sufficiently large for experimental purposes.

In the further disclosure of the invention reference is to be had to the accompanying drawings, constituting a part of this specification, in which similar characters of reference denote corresponding parts in all the views, and in which:

Figure 1 is a plan view of the screw; Fig. 2 is a side elevation; and Fig. 3 is an end view. Fig. 4 is an end view of a modified form of my device.

Referring more particularly to the views, I provide a screw 10 comprising a series of tubular sections 11 which are adapted to be so connected and relatively arranged as to form the screw 10 shown in the views. An inlet section 12 forms a part of the screw and is formed with a flared mouth 13 at one end of the section 12, the other end of the section being adapted for connection with the end of one of the sections 11. Each of the sections 11 terminates at each end in a flange 14 which is soldered or in any other convenient manner secured to the end of the section and which is adapted to abut against a similar flange on the end of the next adjacent section, said flanges being connected by suitable screws 15. An outlet section 16 is provided to form a part of the screw 10 and has a portion 17 thereof bent to extend diametrically with respect to the connected sections 11 and terminate in an end 18 projecting longitudinally with respect to the screw 10 and lying in the plane of the center of the connected sections 11. A suitable gasket 19 is preferably interposed between connected flanges 14 to prevent any leakage and it will be apparent that with a device of the character described, and wherein there is employed a series of connected sections, the end sections of which terminate in outlet and inlet sections, the structure set forth can be readily manufactured on a large scale and without any danger of weakening the completed structure on account of any necessary bending of the sections forming the screw.

The Archimedean screw is used in experimental laboratories and the like, and is formed of a single piece of glass, and it will be readily appreciated that a screw of this kind cannot be made on a large scale and adapted for commercial usage inasmuch as it could hardly be formed of glass and must be formed of a stronger material such as galvanized iron, steel or cast iron.

As mentioned heretofore, the device described is used in the same manner as the Archimedean screw in that the structure shown clearly in Figs. 1 and 2 is mounted on

a central bearing or shaft (not shown) and is adapted to be rotated thereby, with the said structure shown in Figs. 1 and 2 inclined and having the inlet or mouth 13 adapted to be immersed in the water periodically during the rotation of the screw so that the water passing into the connected sections will be elevated and advanced therein to be discharged at the outlet 18.

The practical construction of the device described will now be apparent and it will be seen that it differs decidedly from the construction of the Archimedean screw in that the screw described consists of a series of connected parts, capable of being readily assembled, whereas the Archimedean screw is of a spiral nature and made entirely of one piece of material.

As mentioned heretofore, my device is preferably adapted for use in irrigation and although I have described the invention as specifically set forth in the views, it will be understood that I do not limit myself to the specific construction embodied in the drawings and that the scope of the invention is defined by the appended claim.

In Fig. 4 I show a modified form of my device and in which instance the screw is indicated by the numeral 10′ and the tubular sections by the numeral 11′, the said tubular sections in this instance being slightly shorter than the tubular sections shown in the preferred form of the device with the inlets 12′ and mouth 13′ being of substantially the same shape as shown in the preferred form of the device. As mentioned however the sections are shorter and are coupled together by circular flanges 14′, the only difference over the preferred form being that on account of the shorter sections a larger number of flanges or coupling members are employed thus simplifying the manufacture and formation of the sections. The outlet section is indicated by the numerals 16′ and has a portion 17′ thereof bent to extend diametrically with respect to the connected sections 11′ substantially the same as shown in the preferred form of the device.

Having thus described my invention, I claim:

In a hydraulic screw, the combination with a series of similar tubular members, of flanges on the tubular members for relatively connecting adjacent the tubular members end to end, an inlet tubular section having connection with one of the tubular members and an outlet tubular section having connection with another of the tubular members, said outlet section terminating in a diametrically extending portion having its end bent to lie in the plane of the circumferential center of the said tubular members.

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

AUGUST GIGER.

Witnesses:
GUSTAV SCHMIDT,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."