

M. E. LAYNE.
SCREEN DEVICE.
APPLICATION FILED JAN. 8, 1903.

Fig. 1

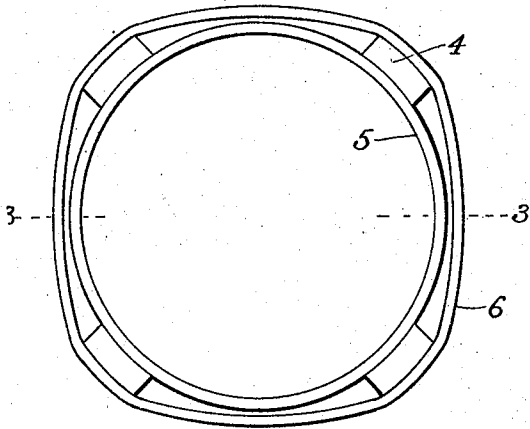


Fig. 2

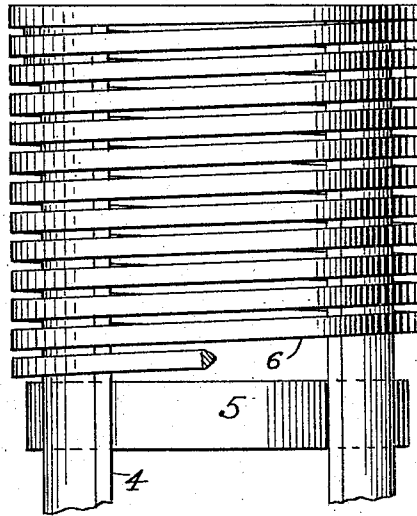


Fig. 4.

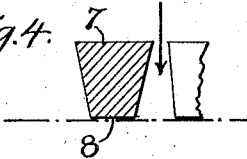
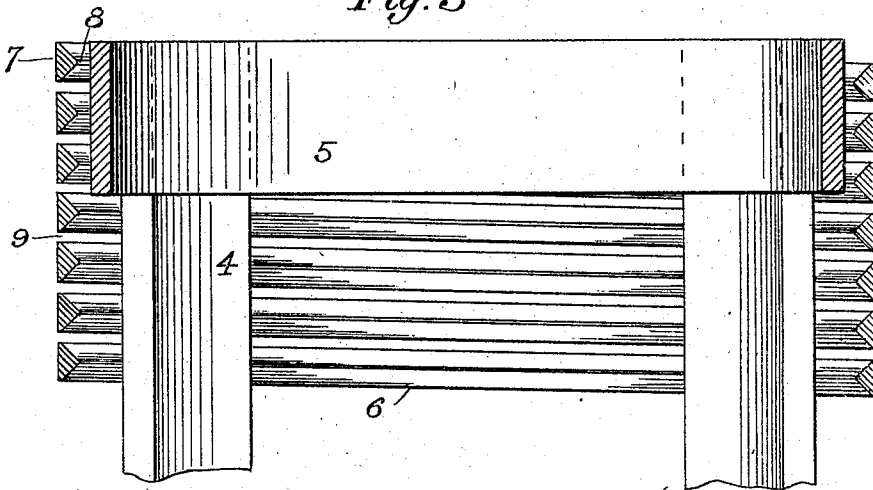


Fig. 3



WITNESSES:

H. Wells
J. L. Smith

INVENTOR,

Mahlon E. Layne
by Paul Synnistrudt
Att'y.

UNITED STATES PATENT OFFICE.

MAHLON E. LAYNE, OF ROCK RAPIDS, IOWA.

SCREEN DEVICE.

No. 806,416.

Specification of Letters Patent.

Patented Dec. 5, 1905.

Application filed January 8, 1903. Serial No. 138,217.

To all whom it may concern:

Be it known that I, MAHLON E. LAYNE, a citizen of the United States of America, residing at Rock Rapids, Lyon county, Iowa, have invented certain new and useful Improvements in Screen Devices, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention has reference to mechanism such as is employed in wells, to permit the water to flow into the well at the bottom of the pipe, and at the same time protect the interior of the pipe from the entrance of sand or dirt from the outside, and the principal object of this invention is the provision of a device of the character specified, which will permit ready access of the water to the interior of the screen, while at the same time keeping out the foreign substances, and not be liable to be choked up by the same wedging into the opening.

A further object of this invention is the provision of an apparatus of the kind specified, which is so constructed that it can be made at a very low cost, and will not be liable to get out of order.

Still another object of this invention is the provision of a screen device of the kind specified above, in combination with an apertured supporting frame, a plurality of strips secured across the aperture of the said frame, and spaced apart from each other so as to permit the water to pass between them, said strips having the face next the frame narrower than their outer face, whereby the openings formed between adjacent strips are narrowest on the outside and gradually increase in width toward the inside, thus being much less liable to be choked up by the foreign substances which pass through the slits between the strips, than they would be if the sides of the adjacent strips were parallel. Heretofore where it has been proposed to use screen devices in which the openings were smaller upon the outside than upon the interior of the screen it has been a matter of considerable difficulty, and expense, to construct such devices, since the counterboring of such openings from the interior of the screen involves the expenditure of considerable time and labor. It is one of the objects of my present invention to construct a screen device having all of the advantages enumerated, which can yet be manufactured very readily, and at a very low cost.

The above, as well as such other objects as

may hereinafter appear, I attain by means of a construction which I have illustrated in preferred form in the accompanying drawing, in which

Figure 1 is an end view of a screen device embodying my invention,

Figure 2 is a side elevation thereof, and

Figure 3 is a sectional view taken on the line 3 3 of Figure 1.

Figure 4 is an enlarged section of the wire.

In carrying out my invention I provide first a supporting frame, which frame in the preferred construction I have shown as constructed of longitudinal bars or strips 4, fastened about rings 5 in some convenient way so as to make a kind of skeleton tube of cylindrical shape, and about such frame I wind a wire 6, which is formed with the outer face of the same, as indicated at 7, wider than the inner face indicated at 8, which is in effect narrowed so as to give the wire a kind of truncated pyramid cross-section. In winding the wire around the frame each succeeding coil is spaced apart from the preceding one as indicated at 9, to make a narrow slit or opening for the entrance of the water, the converging sides of the wire thus, disposed as they are, producing a gradual enlargement of the opening toward the interior or toward the frame, so that if any small grains of sand or foreign substance get through the narrow slits they will wash along with the water and not tend to choke up the openings. The inner side of the wire being flat, notches in the frame are not required to firmly seat the wire thereon.

In the devices which I have constructed in accordance with my invention I have secured the wire to the frame by means of solder, but they might, if preferred, be retained in position in any other manner which might be preferred.

While in the preferred form of the improvement I have thought it best to use a continuous wire wound helically about the frame, as shown, it is obvious that a frame made with a number of apertures, or even a frame made with but one aperture, and having said aperture covered by a plurality of strips secured across the aperture and spaced apart, the strips having the face next the frame narrower than their outer face, would meet the requirements of the situation, and come within the contemplation of my invention as claimed in the broader claims.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In a well screen the combination of an open frame formed of rings and longitudinal bars and having flat external surfaces, a helical wire wound thereon resting upon said surfaces and having the turns spaced apart, said wire being in cross section of the form of a truncated pyramid, whereby the narrow flat surface rests upon said frame and the wide surface of the wire is extended outward so that the openings between the wires are continuous and are of decreasing width toward the outside.
2. In a well screen the combination with a supporting frame, of a screen wire wound thereon and having the turns spaced apart, said wire being in uniform section of a general quadrilateral form having a flat surface to rest upon said frame and the outer side of the wire as wound being wider than the inner side, substantially as described.

3. The combination with an open supporting frame having a series of longitudinal flat faced bars, of a screen wound thereon composed of a wire having continuously a cross section of the form of a truncated pyramid and having the turns spaced apart, said wire resting on its narrow face on the frame and having the wide face outward and the slit between successive layers of wire being continuous and unobstructed, substantially as described.

4. A well screen comprising a supporting frame having a plain surface and a wire wrapped thereon with openings between the turns of wire, said wire being of greater width on the outer side than on the inner side.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

MAHLON E. LAYNE.

Witnesses:

PAUL CARPENTER,
EDWARD C. BURNS.