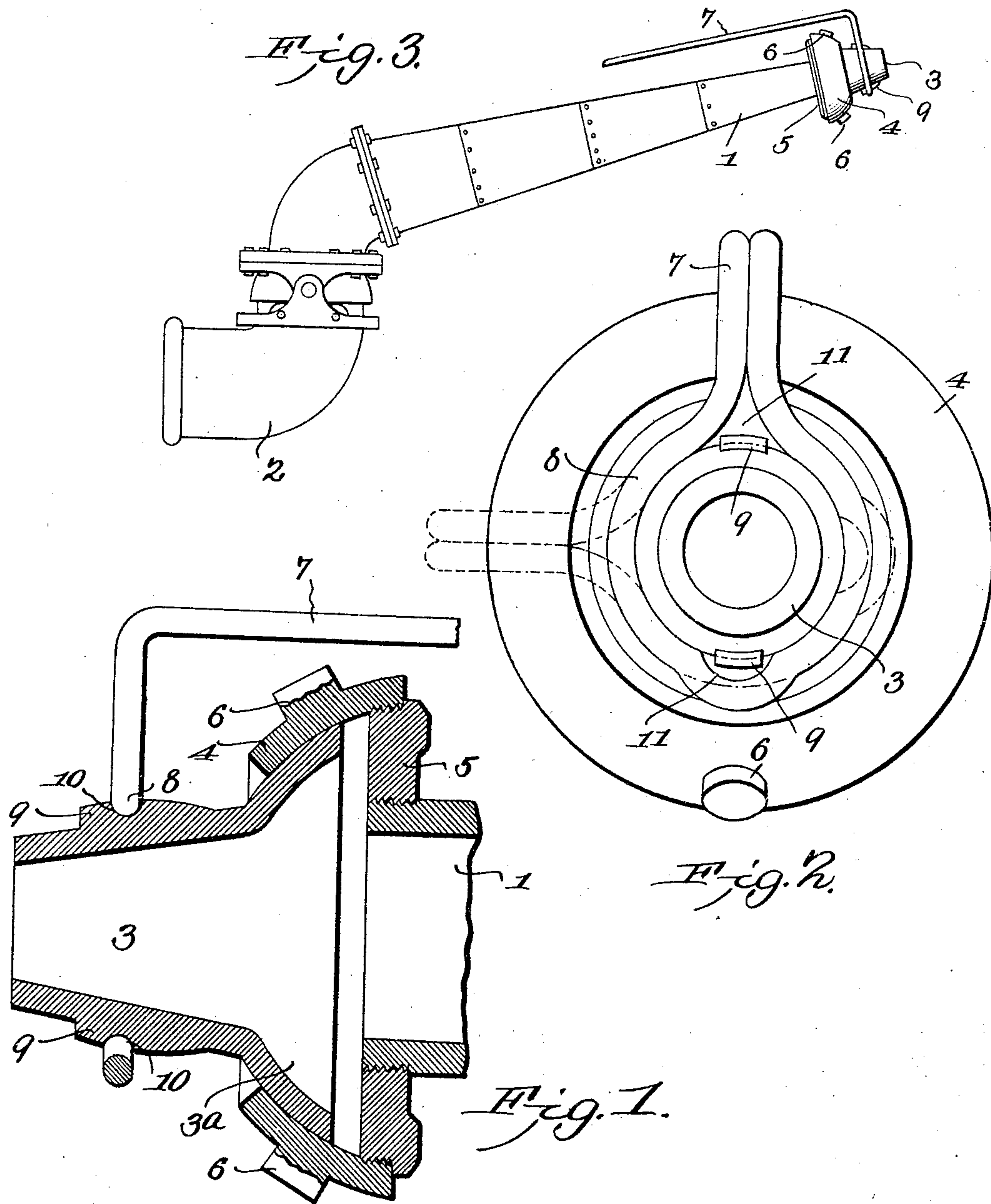


No. 832,066.

PATENTED OCT. 2, 1906.

J. LARSEN.
HYDRAULIC MINING APPARATUS.
APPLICATION FILED SEPT. 6, 1905.



WITNESSES:
E. J. Stewart
H. T. Shepard

John Larsen,
INVENTOR.
By *C. A. Snow & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN LARSEN, OF BURNTRANCH, CALIFORNIA.

HYDRAULIC MINING APPARATUS.

No. 832,066.

Specification of Letters Patent.

Patented Oct. 2, 1906.

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To all whom it may concern:

Be it known that I, JOHN LARSEN, a citizen of the United States, residing at Burntranch, in the county of Trinity and State of California, have invented a new and useful Hydraulic Mining Apparatus, of which the following is a specification.

This invention relates to hydraulic mining apparatus, and has for its object to provide improved means for shifting the nozzle in a simple and efficient manner. In this connection it is proposed to provide a novel form of deflector which is controllable by hand and is arranged to make use of the force of the stream passing through the nozzle to shift the latter in any direction, and thereby avoid manual shifting of the nozzle.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a longitudinal sectional view of a nozzle for hydraulic mining involving the principles of the present invention. Fig. 2 is a front view thereof. Fig. 3 is a side elevation, on a small scale, of a hydraulic giant equipped with the deflector of the present invention.

Like characters of reference designate corresponding parts in all figures of the drawings.

In explanation of the present invention there has been shown in the accompanying drawings the nozzle 1 of the discharge-pipe of a hydraulic mining apparatus which is swiveled to swing in any direction upon the supply-pipe 2 in any suitable or approved manner, as shown in Fig. 3 of the drawings. A tubular deflector 3 is associated with the nozzle and is provided at its rear end with a substantially semispherical flange 3^a, which has a working fit within a substantially semispherical member 4, the latter being connected to the nozzle 1—as, for instance, by being threaded to an annular flange or collar 5, provided upon the extremity of the nozzle 1. If desired, the flange or enlargement 5 may be formed as an integral part of the nozzle, or it may be in the nature of a ring or collar threaded thereon, as indicated in the drawings. When the coupling member 4 is threaded upon the part 5, it is preferably provided with a pair of ears or projections 6 for engagement by a spanner to enable the convenient application of the

member 4 with respect to the flange 5. The engaging faces of the parts 3 and 4 are ground, so as to have a snug working fit, and thereby produce a water-tight joint between the members without requiring the employment of packing.

For the manual control of the deflector there is provided a handle or controlling element 7, which is provided at its outer end with a loop or ring 8, disposed at substantially right angles to the handle-bar 7 and arranged to embrace the deflector, whereby the latter may be tilted in any direction upon the member 4 by manipulation of the handle 7. For convenience in assembling and removing the handle it is proposed to provide the deflector with diametrically opposite external lugs or ears 9, which are provided in their outer ends with transverse seats or grooves 10 for the reception of the ring 8, the latter being provided with diametrically opposite outwardly-extending seats or recesses 11, designed to receive the projections 9, as shown in Fig. 2 of the drawings, when applying and removing the handle, the ring of course being turned so as to disalign its seats and the projections 9, whereupon the ring will be fitted in the grooves or seats 10, and thereby held against lateral displacement along the deflector.

In practice when it is desired to change the direction of the stream issuing from the nozzle the handle 7 is manipulated to tilt the deflector in the desired direction upon its universal connection with the nozzle 1, whereupon the force of the stream against that side of the deflector which is inclined across the end of the nozzle tends to swing the nozzle slowly to the right or the left upon its swiveled connection with the supply-pipe 2 until it has assumed the desired position, and then the handle is released, and the force of the water will return the deflector into longitudinal alinement with the nozzle. The advantage of this feature is that it employs the force of the water, rather than manual force, to shift the nozzle from the right to the left, and as this shifting is comparatively slow it prevents the sudden changing of the direction of the stream. The direction of the nozzle may be changed vertically by vertically tilting the deflector and the direction of the stream may be changed horizontally by horizontally tilting the deflector.

Attention is directed to the fact that the member 4 is removable from the nozzle 1,

and the member 3 is removable rearwardly through the member 4, whereby these members may be removed and another member 3 of a different diameter assembled with the member 4 and then connected, through the medium of the latter, to the nozzle 1. By this arrangement of parts the diameter of the stream issuing from the nozzle may be changed to suit various conditions without replacing the entire nozzle.

The particular advantage of the ball-and-socket connection between the nozzle 1 and the deflector 3 resides in the fact that a water-tight joint is provided, and there are no sockets or recesses wherein dirt and the like may accumulate and interfere with the adjustment of the deflector.

Having thus described the invention, what is claimed is—

1. The combination with the nozzle of a hydraulic mining apparatus, of a tubular deflector having a swinging connection with the nozzle and provided with external projections, and a controlling-handle having a loop

embracing the deflector back of the projections, the loop being provided with internal seats capable of alinement with the projections to permit application and removal of the loop.

2. The combination with the nozzle of a hydraulic mining apparatus, of a tubular deflector having a swinging connection with the nozzle and provided with external projections, said projections having transverse recesses in their outer ends, and a controlling-handle having a loop embracing the deflector and received within the recesses of the projections, the loop being provided with internal seats to pass over the projections when applying and removing the loop.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN LARSEN.

Witnesses:

J. L. AMMON,

THOS. H. BRETT.