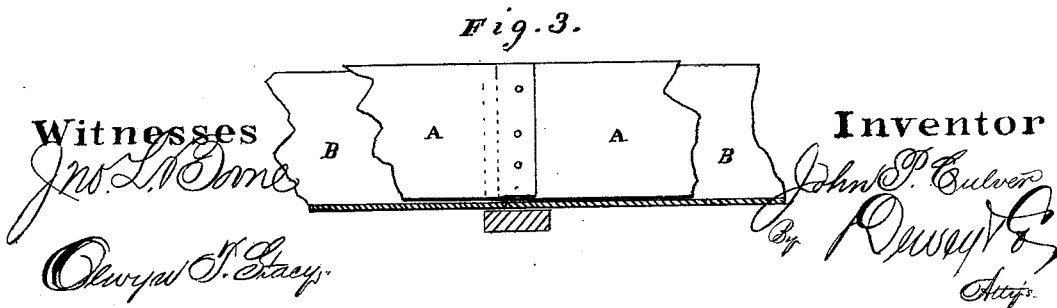
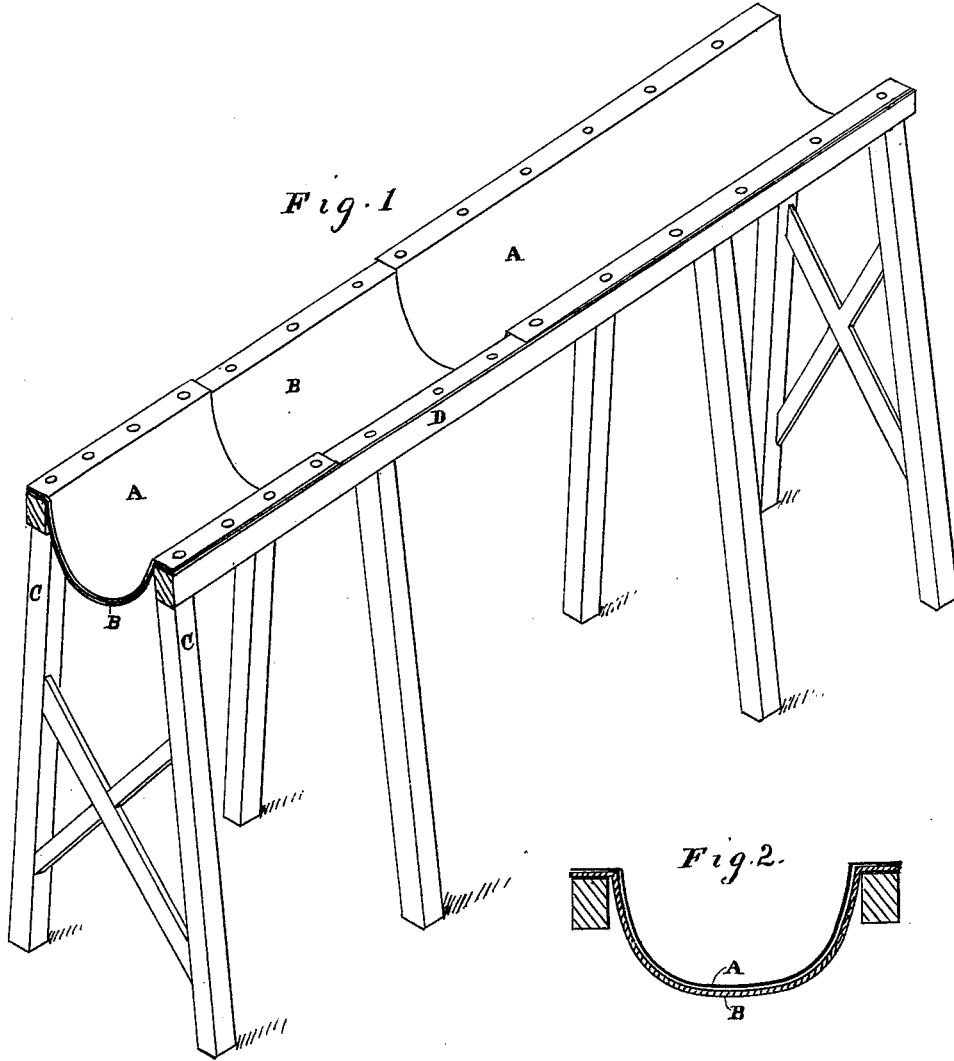


J. P. CULVER.

Forming and Lining Ditches, Flumes, &c.

No. 195,989.

Patented Oct. 9, 1877.



UNITED STATES PATENT OFFICE.

JOHN P. CULVER, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN FORMING AND LINING DITCHES, FLUMES, &c.

Specification forming part of Letters Patent No. **195,989**, dated October 9, 1877; application filed April 30, 1877.

To all whom it may concern:

Be it known that I, JOHN P. CULVER, of the city and county of San Francisco, and State of California, have invented Improvement in Forming and Lining Ditches, Flumes, &c.; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention relates to a novel method of constructing flumes to carry water for various purposes, and for lining irrigating or other ditches, so that they may be kept water-tight and preserved from the attack of burrowing or other animals.

It consists in the employment of burlaps or other fibrous material treated with asphaltum or other carbonaceous substance, either with or without a lining or backing of thin wood or veneer, as will be more fully described in the accompanying drawings, in which—

Figure 1 is a view of my flume or ditch. Fig. 2 is a cross-section. Fig. 3 is a view showing the method of joining the ends or meeting-sections.

The object of my invention is to prevent the loss of water by soaking into the banks or otherwise; to prevent the ravages of burrowing-animals, which might rupture or destroy the banks of ditches; and also to protect the earth of the banks from being washed by rapid currents, so as in effect to allow the passage of a greater quantity of water without injuring the earth-work. It will also prevent the earth from softening and washing into the bottom of the ditch.

For this purpose I prefer to employ burlaps, or similar fibrous material, which is manufactured in long sheets, and treating the material with some preparation of carbonaceous material, such as asphaltum.

This material may be used without further preparation, or it may be sanded or graveled, if desired. It is then so laid as to line the ditch, and the lengths are joined, so as to present a complete lining for the ditch or canal.

In some cases I have found that it is better to attach the cloth or burlaps to a thin veneer

of prepared wood, so as to form a double sheet, which will be more or less self-supporting, irrespective of any small inequalities of the ditch.

When it is desired to build a flume, the combined cloth and veneering can be formed into a ditch or channel, being supported upon the proper frame or trestle-work.

In the drawings, A is the burlap or other lining, which is fitted to the interior of the ditch or flume. B is the veneering or outer coat.

In practice, I place rails along each side of the ditch, and to them secure the burlap or lining, allowing it to lie snugly on the bottom and sides.

It is evident that with such a lining the water can be led over sandy or other porous soils without any loss by sinkage or absorption.

When used to form a flume, a trestle-work, C, may be built, and the sheets of burlap and veneer are shaped as desired, and secured to a continuous rail, D, which extends along the top of the trestles upon each side, and separated to the desired distance to form the ditch or flume.

The joints may be made by overlapping the sheets and nailing these lap-joints to a supporting-strip, which may be secured at this point, the whole forming a cheap and durable water-way.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The method herein described for forming or lining flumes or water-ways, consisting in protecting or lining them with burlaps or other fibrous material treated with asphaltum or carbonaceous material, either in single sheets or united, substantially as herein described.

In witness whereof I have hereunto set my hand and seal.

JOHN P. CULVER. [L. s.]

Witnesses:

GEO. H. STRONG,
OLWYN T. STACY.