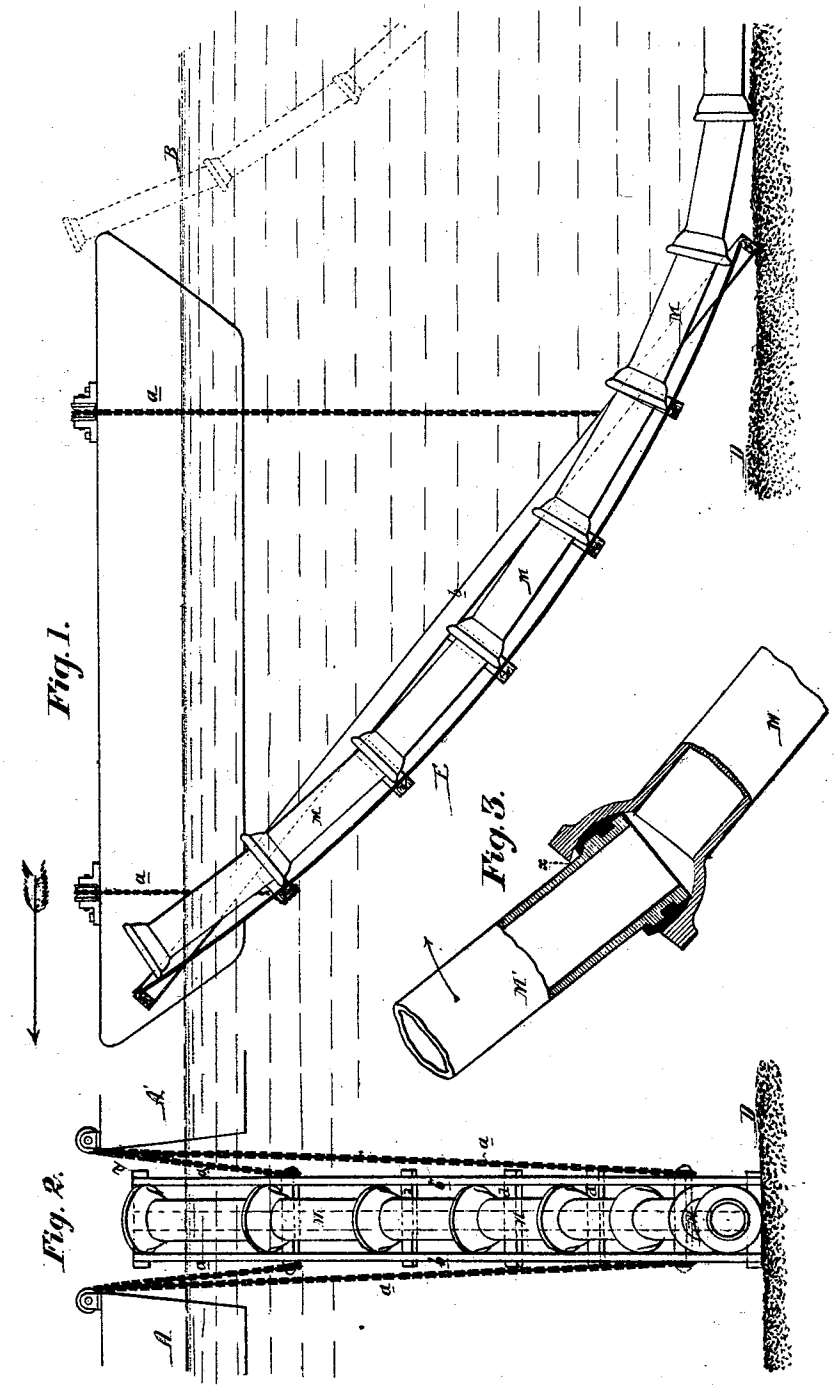
J. F. Ward,

Laying Pipes.

No. 111,498. Patented Jan. 31. 1871.



Witnesses
Wm. A. Abel
Jos. B. Harding.

John F. Ward - by his Attys Howson and Son

United States Patent Office.

JOHN FROTHINGHAM WARD, OF JERSEY CITY, NEW JERSEY.

Letters Patent No. 111,498, dated January 31, 1871.

IMPROVEMENT IN THE MODES OF LAYING PIPES ACROSS RIVERS.

The Schedule referred to in these Letters Patent and making part of the same.

I, JOHN FROTHINGHAM WARD, of Jersey City, county of Hudson, State of New Jersey, have invented a Mode of Laying Pipes Across Rivers, Creeks, &c., of which the following is a specification.

Nature and Object of the Invention.

My invention consists of a mode or process, too fully explained hereafter to need preliminary explanation, of laying pipes across rivers, creeks, &c., with facility and at comparatively little expense.

Description of the Accompanying Drawing.

Figure 1 is a vertical section of the cradle and a side view of one of the barges by which my invention is carried into effect;

Figure 2, an end view of fig. 1; and

Figure 3, a sectional view of the pipe-joint, illustrating a modified plan of laying light pipes of small diameter.

General Description.

In figs. 1 and 2, A and A′ represent two barges floating in a river or creek, of which the line B represents the surface of the water and D the bed.

The pipes to be laid on the bed of the river or creek have ball-and-socket or other flexible joints. They may be made, for instance, in accordance with the patent granted to me on August 25, 1863, antedated July 15, 1863, in which the joints are of the ball-and-socket character, with a leaden packing, and admit of considerable deflection from a right line in laying the pipes on an irregular surface.

Between the two barges A and A′ is suspended, by chains *a a*, a cradle, E, of wood or iron, the lower end extending to the bed of the river and the upper end projecting above the surface of the water.

In fig. 1 a number of lengths of pipe, M M, connected together with ball-and-socket joints, is shown as resting partly on the bed of the river and partly on the cradle E, the end of the highest pipe projecting above the surface of the water, and the barges being properly anchored so as to resist the tendency of the pipes on the cradle to force the said barges and cradle in the direction of the arrow.

By suitable shears on the barges another length of pipe is hoisted and the end adjusted to the socket of the highest pipe on the cradle, and the joint is completed, after which the barges are loosened from their anchorage and permitted to float in the direction of the arrow until another length is deposited on the bed of the river, and the greater portion of the last length added is submerged, its socket only remaining above water, when the barges are again anchored prior to the addition of another length. Thus length after length is added, the barges and the cradle receding from the shore where the first length was laid until they arrive at the opposite shore, leaving behind them a continuous pipe consisting of lengths coupled together so that the pipe can accommodate itself to the irregular surface of the bed of the river or creek.

It may be remarked here that I have laid a line of thirty-six-inch pipe across the Hackensack river, according to the above plan, at a much less expense than pipes could be laid by the plans heretofore adopted, and that I am now engaged in laying across the river Schuylkill, at Philadelphia, a pipe thirty-six inches in diameter by the same plan.

The cradle E may be made in different ways. In the drawing it is illustrated as consisting of two main beams, *b b′*, connected together by transverse bars *d d*, to which is secured a central board, (shown by dotted lines in fig. 2,) on which the pipes bear, while they are steadied laterally by the two main beams.

I have found that in laying pipes of small diameter, say up to six or seven inches, the supporting cradle may be dispensed with if the joints are properly made.

Fig. 3 shows a section of the joint of a six-inch pipe, the end of the pipe M having a spherical socket, in the interior of which is cast lead surrounding the end of the adjoining pipe M′, on which are rings for retaining the lead and rendering it an inseparable part of the said pipe, while it is capable of moving in the said spherical socket, which is so formed as to arrest the pipe when it has been deflected to a given distance from a right line.

Thus it will be seen, on referring to fig. 3, that the pipe M′ cannot be deflected in the direction of the arrow beyond the point shown, owing to its coming in contact with the edge *x* of the socket of the length M.

In laying pipes of small bore I simply lower them over the stern of a barge, as shown by dotted lines in fig. 1, adding length after length, and causing the barge to recede after each joint is completed.

The lengths extending from the bed of the river to the barge will sustain themselves at a curvature determined by the contact of one length with the socket of the adjacent length without the aid of a cradle to support them and without danger of fracture, owing to the comparative lightness of the pipes. When the latter exceed eight inches in diameter, however, it is advisable to use a cradle in the manner described.

Claims.

1. The within-described mode of laying light cast-iron pipes, having ball-and-socket or other flexible joints, across rivers, creeks, &c.; that is to say, by

connecting together length after length on a barge or other floating object, lowering the lengths therefrom, permitting one length to come in contact with the socket of the adjoining length, and causing the barge to recede as the lengths are added, all as set forth.

2. A barge or barges or other floating structure, provided with a cradle, and otherwise constructed, for laying pipes, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN F. WARD.

Witnesses:
LUTHER S. ELMER,
FRANK DAVIS.