W. H. FAHRNEY.

METHOD OF LAYING PAVEMENTS UNDER WATER.

APPLICATION FILED OCT. 8, 1909.

961,222.

Patented June 14, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

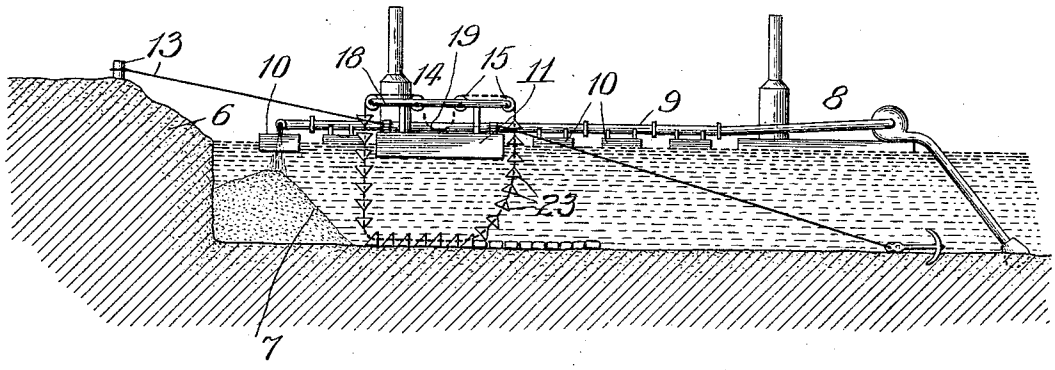

Fig. 2.

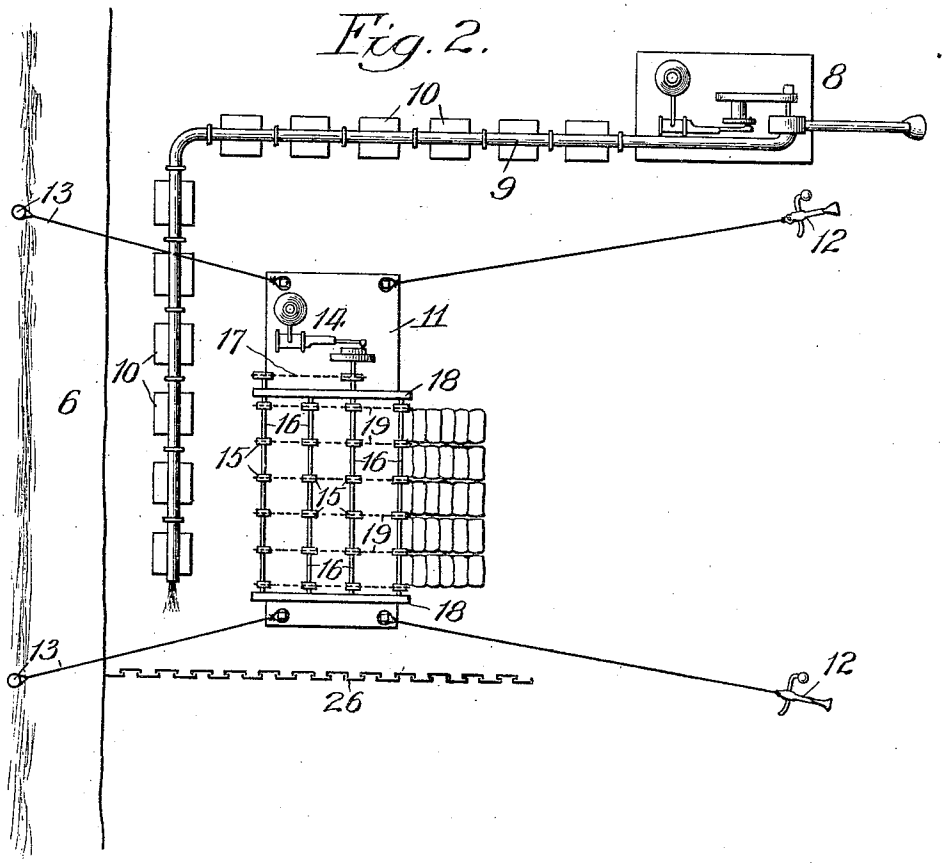

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Fig. 3.

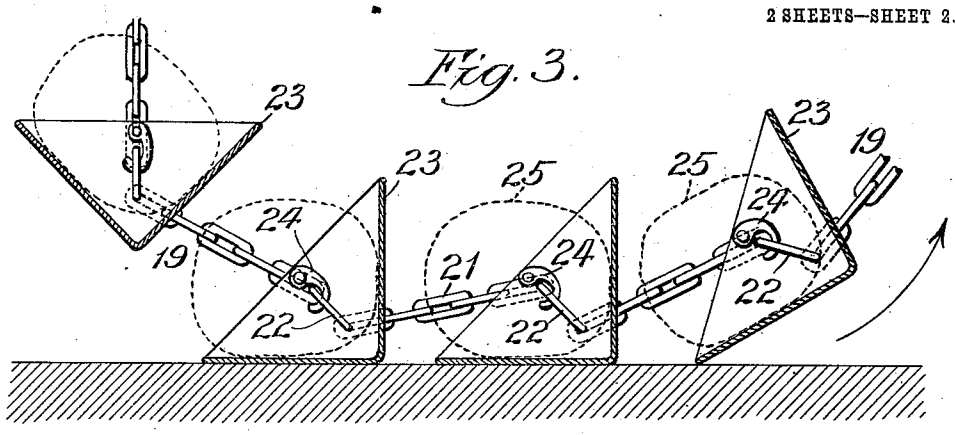


Fig. 4.

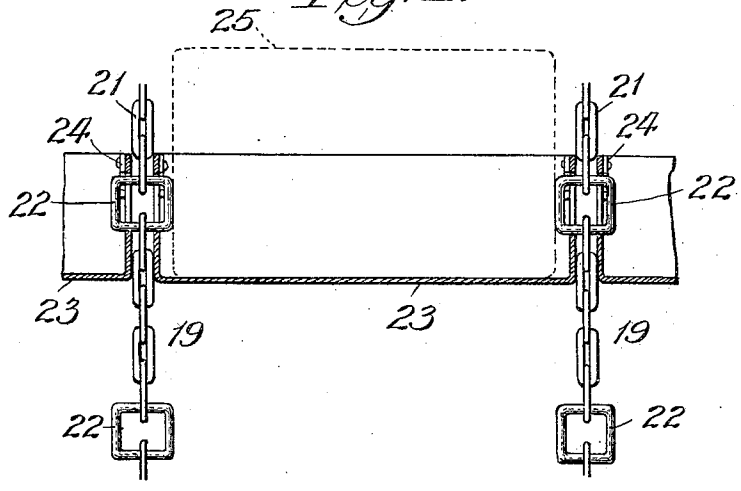
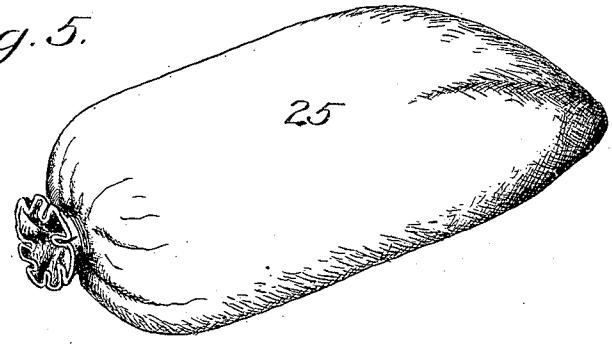


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM H. FAHRNEY, OF CHICAGO, ILLINOIS.

METHOD OF LAYING PAVEMENTS UNDER WATER.

961,222. Specification of Letters Patent. **Patented June 14, 1910.**

Application filed October 8, 1909. Serial No. 521,708.

To all whom it may concern:

Be it known that I, WILLIAM H. FAHRNEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Methods of Laying Pavement Under Water, of which the following is a specification.

My invention relates to an improvement upon methods hitherto practiced in paving under water, one such method, known to me, involving the laying upon the submerged surface to be paved of a thick matting, usually woven out of willow strips, and loading it down with rip-rap to form the pavement. This method, though considered the best in use with regard to all considerations, is objectionable because of the difficulty and expense of its employment, and also because the pavement laid by it is not desirably durable.

I have devised my improvement, more particularly, for use in paving the banks of rivers to prevent erosion thereof, though it is not limited to that particular use; but it may be best set forth in that connection so the following description is confined thereto.

In the accompanying drawings, Figure 1 is a view in sectional elevation, in the nature of a diagram, showing suitable means for the practice of my improved method of paving a river-bed; Fig. 2 shows the said means by a plan view; Fig. 3 is an enlarged longitudinal sectional view of a series of chain-connected buckets of preferred form for my purpose; Fig. 4 is a broken cross-section taken through a transverse row of the buckets which are connected from series to series by their chains, and Fig. 5 is a perspective view of a bag containing concrete, the same representing the preferred paving material in the most desirable form for handling it for my purpose.

To perform the work upon the bed adjacent to the bank of a river, represented at 6 in Fig. 1, the bank should be sloping, as represented at 7, and to that end the slope may have to be formed with material from the bed, which may be taken therefrom and properly distributed by a sand-sucker machine of any suitable construction, that indicated at 8 having its discharge-pipe 9 buoyed with floats 10. On the river is a floating support for the mechanism. This may be a scow or flat-boat, indicated at 11, suitably anchored, as represented at 12, and moored to the shore, as represented at 13. The boat carries an engine, indicated at 14, for driving several longitudinal series of pulleys 15 on shafts 16, journaled in a suitable frame 18, one of which shafts is shown in Fig. 2 to be directly driven by the engine and to have a sprocket-connection at 17 with one of the other shafts. An endless chain 19 passes about each series of pulleys extending transversely of the boat, a desirable construction of the chain being that illustrated in Figs. 3 and 4 to adapt it for the ready attachment to it and separation from it of buckets 23 for holding the paving material to be laid as hereinafter described. Each chain is formed of sets of similar ordinary links 21 connected by relatively wider links 22, to which the buckets are attached. The form of bucket illustrated is that of a shallow V-shaped trough having closed ends, on the inner sides of which are provided hooks 24 for releasably engaging the links 22 which pass through the bucket-ends. Each bucket is supported between two adjacent chains 19 by engaging its hooks with alining links 22, which are shown to be wide enough to overlap the adjacent buckets.

While any suitable paving material may be used, I prefer concrete contained in bags for convenience in handling and laying it.

To practice my improved method, with the chains 19 caused to travel at a suitably-slow rate of speed, operators string buckets 23 in proper succession on the chains, which lower them to the river-bed, the boat 11 occupying a position distant from the shore, when the work is started, to cause the first-lowered buckets to reach the bed at the distance from the shore to which the pavement is intended to reach. In thus lowering the chains the operators load the buckets with bags 25 of concrete, and as a transverse row of the buckets arrives on the river-bed, continued travel of the chains, in dragging them, tips them to unload or dump the bags on the bed in order, as indicated in Fig. 1. As the empty buckets are brought up to the boat by the travel of the chains, they are unhooked therefrom for attachment again to the descending chain-sections and re-loaded with bags 25. As the pavement thus laid approaches toward the shore, the boat is moved closer and closer thereto to enable the described orderly laying of the bags to be continued throughout the work, which consists in repetitions of the described oper-

ation until the slope 7 is paved to the desired height. In this manner any length of bed may be paved by employing a plurality of boats simultaneously, each equipped as described of the boat 11, or a single boat may be used for laying the pavement in successive sections upon mooring it in proper positions along the shore.

The concrete in the bags becomes set in time, and the material of the bags rots away leaving the pavement in stone-like condition, durable and permanent.

At 26 in Fig. 2 is indicated a row of sheet-piling to serve, when needed, as a barrier against washing away, by the river-currents, of sand from the slope 7 while the latter is being formed.

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

1. The method of paving the bed of a body of water, which consists in carrying loads of paving material in endless series down to said bed and automatically dumping the loads so lowered in succession and laying them in close but disconnected relation to each other along said bed by withdrawing from each load, in order, and thereby recovering its carrying medium.

2. The method of paving the bed of a body of water adjacent to the shore thereof, which consists in building a slope near the shore and lowering successive loads of paving material upon said bed and slope and depositing thereon said loads in successive order.

3. The method of paving the bed of a body of water, which consists in carrying perishable concrete-laden bags in endless series down to said bed and automatically dumping the bags so lowered in succession and laying them in close but disconnected relation to each other along said bed by withdrawing from each bag, in order, and thereby recovering its carrying medium.

WILLIAM H. FAHRNEY.

In presence of—

R. A. SCHAEFER,

J. G. ANDERSON.