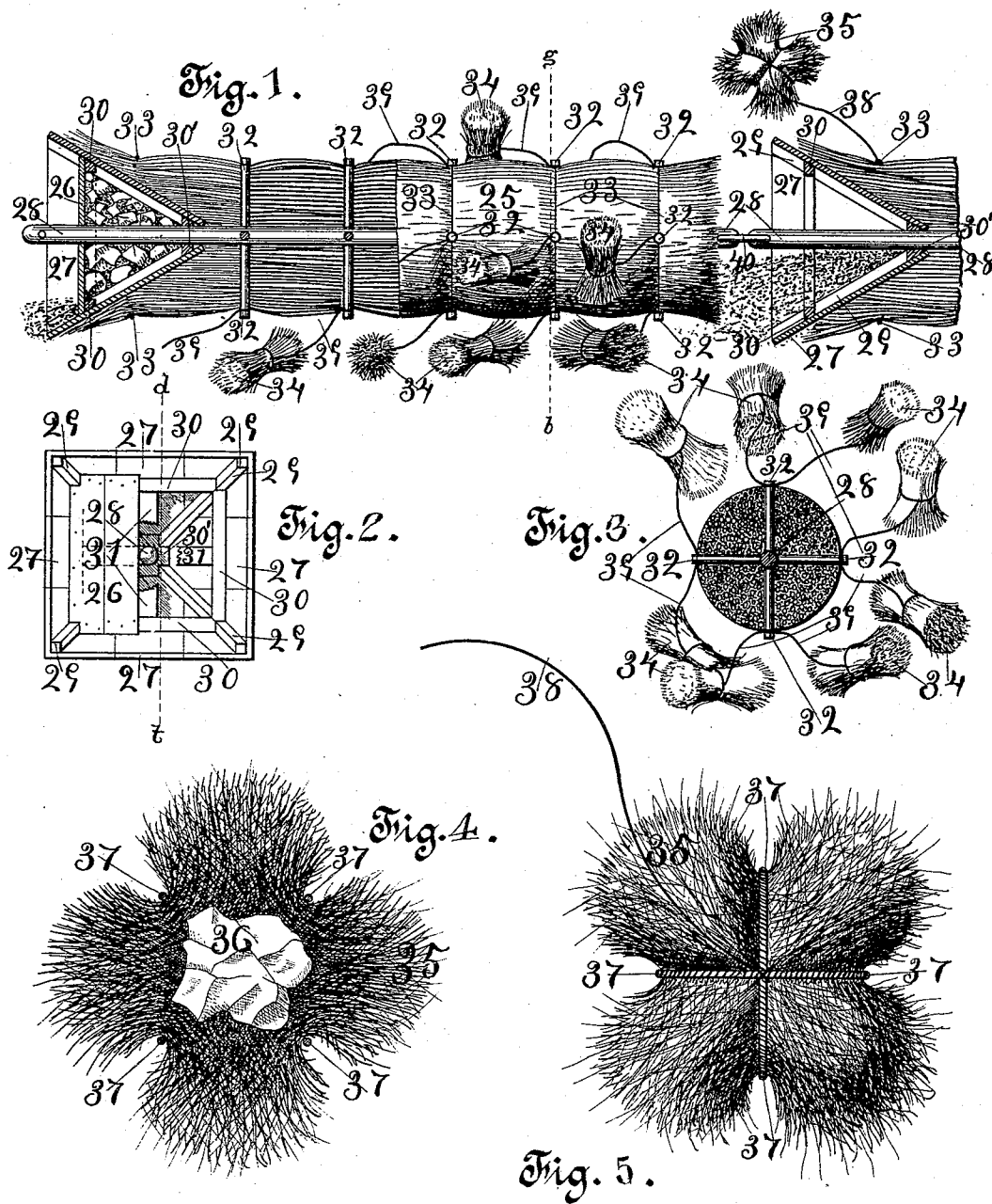


(No Model.)

D. NEALE.
ANCHOR RIPRAP.

No. 486,887.

Patented Nov. 29, 1892.



Witnesses:
Carrie Lawson
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UNITED STATES PATENT OFFICE.

DAVID NEALE, OF FORT CALHOUN, NEBRASKA.

ANCHOR-RIPRAP.

SPECIFICATION forming part of Letters Patent No. 486,887, dated November 29, 1892.

Application filed April 4, 1892. Serial No. 427,700. (No model.)

To all whom it may concern:

Be it known that I, DAVID NEALE, a citizen of the United States, residing at Fort Calhoun, in the county of Washington and State of Nebraska, have invented a new and useful Improvement in Anchor-Ripraps, of which the following is a specification.

My invention relates to improvements in riprapping by the use of anchored fascines of different sizes and construction, modified to suit the particular requirements of each case; and the objects of my improvement are, first, to provide a fascine that is nearly self-anchoring, thus lessening the liability of breaking cables and the giving away of anchor-piles or rocks when the fascines are first deposited and before they have accumulated sufficient silt or sand to weigh them down, and, second, to facilitate the more rapid accumulation of alluvial deposits or accretion by the combined use of fascines constructed and used in the manner hereinafter more fully shown and set forth. I attain these objects through the medium of constructions illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation of a self-anchoring fascine as used continuously, a portion of the downstream end, as well as the part of a fascine to which it is attached, being shown in longitudinal section on the broken line *t d* of Fig. 2. Fig. 2 is an elevation of the lower or downstream end of Fig. 1 with a part of the inclosing end 26 removed to show the inner construction. Fig. 3 is a vertical cross-section on the broken line *g b* of Fig. 1, this view, as well as Fig. 1, showing the manner of attaching small bundles of hay, straw, or bagasse. Fig. 4 is an enlarged view of a double or transversely-bound bundle, generally made of long marsh-hay or other coarse grasses, or may be made of ordinary hay, straw, or bagasse. Fig. 5 is a sectional view of Fig. 4, showing the manner of weighting the same by inclosing a sack of sand or a rock, as shown.

Similar numerals refer to similar parts throughout the several views.

In Fig. 1 is illustrated the manner of making fascines self-anchoring. A central log or core 28 has radial arms 32 32, &c., projecting through the envelope of brush, the ends receiving the binding-wires 33 33, &c. The downstream ends of these fascines are provided

with a hopper-shaped pocket, the open or flaring end downstream, and are constructed of four angle-timbers 29 29 29 29, attached near the downstream end of the core 28 to a square furring 30'. They then radiate diagonally downward and outward, forming the oblique angles of a right-square pyramid of which the core-log is the axis. The lower ends are supported by the bars 30, which are supported at their centers by the arms 31 31, &c. The diagonal sides 27 27, &c., are then planked, the lower ends projecting beyond the bars 30 30, &c., as also do the lower ends of the angle-timbers 29. These also project away from the core beyond the diameter of the round portion of the fascine. It is sometimes desirable to load or weight this end of the fascine when it will be planked upon the bars 30 with planks 26, a part of which is shown removed in Fig. 2. This pocket is then filled with rocks, sand, or earth. When these fascines are deposited and anchored so as to retain them with the flaring pocket downstream the edges of the planking 27 cut into the bed of the stream and prevent them from moving with the current, a small anchor-stone being all that is necessary to keep the fascine or line of fascines parallel with the current. Further, when this fascine is placed in the stream, at the pocket there is an eddy formed and an accretion immediately takes place, as at 40 in Fig. 1, which soon fills the whole pocket. The pocket at this point is shown without the perpendicular planking 26. The central log or core 28 is of sufficient length and so constructed that a number of these fascines may be connected end to end or used singly, according to the magnitude or character of the work. To make them more effectual and where rapid work is required, I attach a large number of smaller bundles of fascines 34 by short cables 39, attached to the binding-wires and ends of the radial arms. These I generally make of fine material, such as hay, straw, or bagasse, varying them in size and number to fit the work. With this fascine (shown in Fig. 1) used singly a jetty can be easily and quickly built. Laying a tier from the bank out with the small anchor-rocks, they soon bury up with the accretion that begins at the pocket, when another tier is deposited above them, and so on; also, to mend breaks in a levee with

the smaller attached bundles, using both single and continuous, the break can soon be effectually stopped. As a finisher and for general use with all the others, as cases may require, the transversely-bound or double bundle or mattress 35 (shown in Fig. 4, also shown attached by the cable 38 in Fig. 1) is made of as long material as possible and serves a purpose in many places in the riprap not reached by the others. In finishing a jetty, a shore protection, or a dam, as the last work above the mattresses and fascines they are anchored in large numbers. Where it is not easy to attach to the other work, they are weighted by inserting before binding a sack of sand or a rock as shown in Fig. 5. They are bound with a double band 37, as shown, and when anchored by the cable 38 it is attached where the binders cross.

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

1. A fascine having a pocket opening directly out at its downstream end, substantially as shown and described.

2. A fascine having a pocket opening directly out at its downstream end, and planks inclosing a portion of the pocket, the inclosed por-

tion filled with weighting material, substantially as shown and described.

3. A fascine consisting of the core-log 28 with the radial arms 32, one end provided with a pyramidal pocket consisting of the angle-timbers 29, the furring 30', the cross-bars 30, the radial arms 31, and the planking 27, the whole having an annular envelope of brush or finer material bound on with the encircling wires 33, substantially as shown and described.

4. A fascine for ripraps, having attached to it by cables a number of smaller fascines or bundles of hay, straw, or bagasse, substantially as shown and described.

5. In a riprap, the transversely-bound double bundle 35, consisting of long hay, straw, or bagasse, having two encompassing binders 37 crossing each other at about right angles and having within a sack of sand or rock 36, substantially as shown and described.

Signed at Blair, in the county of Washington and State of Nebraska, this 31st day of March, 1892.

DAVID NEALE.

Witnesses:

ADAH CRAWFORD,
W. E. DAVID.