July 8, 1941. G. W. REHFELD 2,248,721

JETTY

Filed Nov. 7, 1938

Fig. 1.

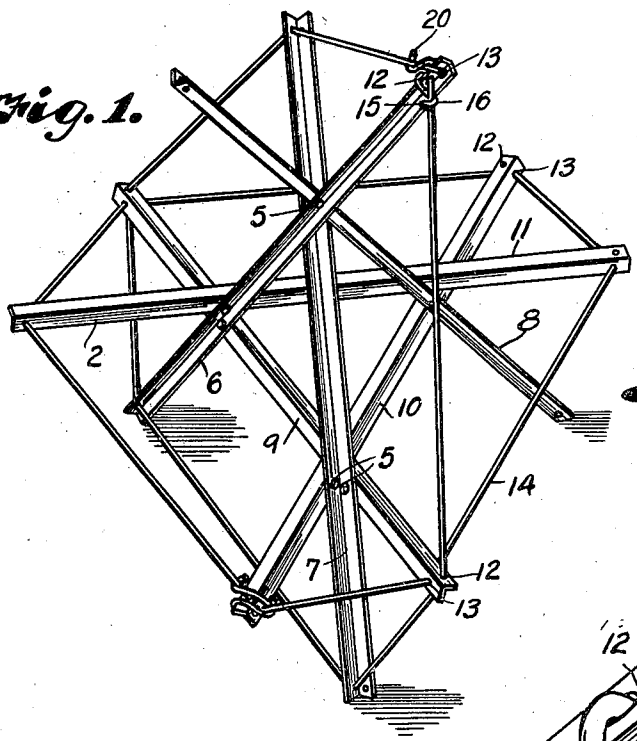


Fig. 3.

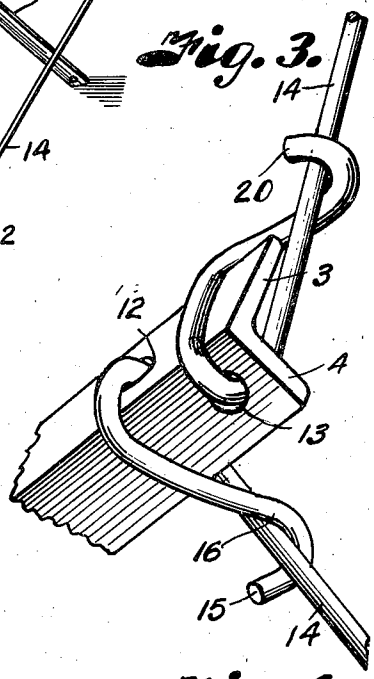


Fig. 2.

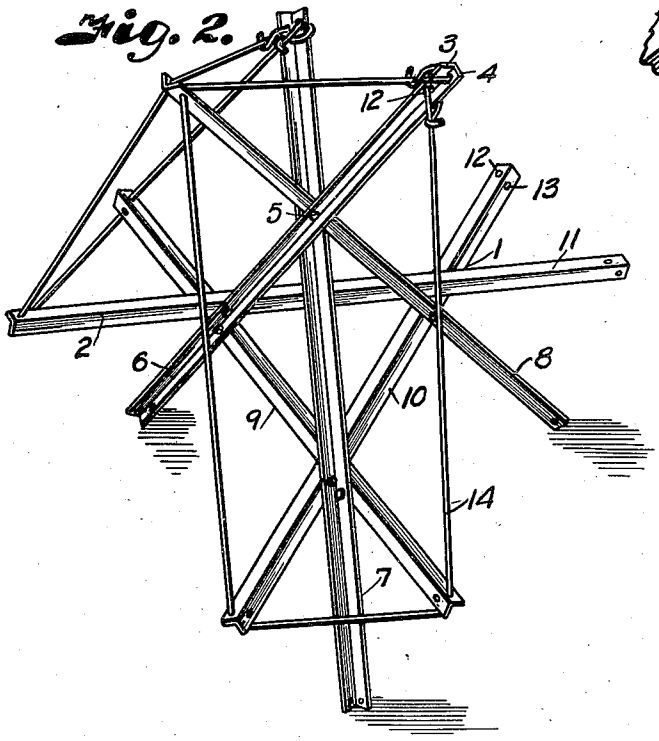
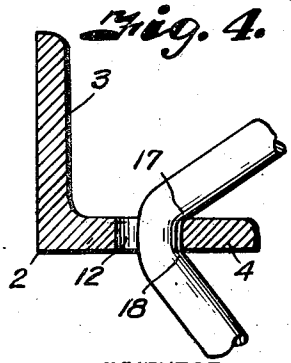


Fig. 4.



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2 Claims. (Cl. 61—3)

This invention relates to jetties of the type consisting of a plurality of interconnected structural members arranged to provide projecting arms for collecting debris and retarding the force of currents when used in river and like control work.

Jetties of this character have the terminals of the structural members interconnected by lacing to enhance the rigidity thereof and provide additional obstructions to the flow of current. This lacing has heretofore consisted of wire strands extending continuously through openings provided in the structural members and having their ends tied to other of said members. When debris collects upon the jetties, such as floating logs, silt, tree branches, and the like, the lacing is so weighted thereby that it breaks under the load. Since the lacing is formed of wire and therefore of flexible, spring-like character, it does not have sufficient rigidity to be self-supporting after breaking thereof, and sags under the weight so that the several strands are withdrawn from the openings at the sides of the break, completely loosening the strands and leaving the arms of the structural members unsupported. The jetties are therefore weakened and subject to rapid disruption. Attempts have been made to overcome this difficulty by cutting and tying the wire strands between each of the connected arms but this placement of the lacing is a long, tedious operation. Moreover, the wires are substantially brittle and subject to fracture at points where the ties are made, and particularly where the wires rub upon the edges of the angles and against the sharp edges of the openings. Wires are also subject to deterioration by the corrosive action of chemicals carried in a stream, and, being of relatively small size, are soon destroyed. Another disadvantage is that wire is extremely flexible and it is difficult to guide and thread long lengths of strands through the respective openings when lacing the jetties.

It is, therefore, the principal object of the present invention to overcome the above defects by providing a lacing which is rigid and self-supporting under weight of the debris, and wherein the kinks and bends imparted at the points of anchorage have a permanent set to retain the lacing in connection with the structural members, should one of the lacings happen to break.

It is a further object of the invention to provide a lacing having greater bearing surface with respect to the supporting openings in the structural members which they connect so that they are not as readily worn in two or fractured incidental to bending over the edges of the openings or flanges of the structural members.

It is a further object of the invention to provide a lacing which is of tough, resilient character and yet closely formable to the shapes of the structural members so that they may be bent beyond their elastic limit to take any desired angular direction with respect thereto.

A further object of the invention is to provide a lacing which not only acts as a rigid tie between the structural members but also serves as a brace to better stay the connected members.

In accomplishing these and other objects of the invention, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawing, wherein:

Fig. 1 is a perspective view of a jetty equipped with lacing in accordance with the present invention.

Fig. 2 is a perspective view of a jetty showing a modified arrangement of lacing.

Fig. 3 is an enlarged detail perspective view of an end of one of the structural members showing the method of anchoring an end of one of the lace rods.

Fig. 4 is an enlarged section through one of the intermediate arms of the jetty showing the lacing rod threaded therethrough.

Referring more in detail to the drawing:

1 designates a jetty formed of a plurality of structural members 2, such as angle-irons of suitable length, and having flanges 3 and 4. All of the members 2 may be of the same length and have selected flanges provided with openings at points spaced inwardly from the ends thereof to pass fastening devices 5 for interconnecting the respective members.

In the illustrated instance the members are arranged so that three of them, designated 6, 7 and 8, form a tripod with the fastening devices 5 extending through the adjacent openings in the crossing points of the respective members. The lower ends of the tripod members form legs to which are connected the remaining members, designated 9, 10 and 11, which are arranged in substantially an isosceles triangle, the legs of the tripod being connected adjacent the corners of the triangle by the fastening devices 5. When thus connected, the ends of the structural members project in various directions. The flanges at the ends of the members are provided with apertures 12 and 13 through which the lacing is extended to rigidly connect the members and

form additional obstructions. As above pointed out, these lacings have heretofore consisted of wire with the result that the wire is inadequate to support debris collecting thereon, causing the wire to break and effect unthreading thereof from the openings. As above pointed out, it is a purpose of the present invention to provide a lacing which adequately supports the load and retains the structural members in their proper relation throughout the entire life of the jetty.

In accomplishing the objects of the invention, I form the lacing of metal rods 14 which are sufficiently rigid to be substantially self-supporting but which are bendable to permit threading thereof through the respective openings 12 and 13. For example, in Fig. 1 a rod 14 has one end extended through one of the openings 12 in the upper end of the angle 6 and the end 15 thereof is extended around the other flange of the angle and hooked about the body portion of the rod, as shown at 16. The opposite end of the rod is then threaded through the opening 12 in the end of the member 9, then through the opening in the member 7, through the opening in the corresponding end of the member 6, through the member 9, through the member 7, to the place of beginning. After threading, the rod is bent substantially sharp at the point where it passes through the openings in the flanges, as shown at 17 and 18 in Fig. 4 and so that it extends in straight lines between the ends of the respective members, as clearly shown in Fig. 1. The terminal end of the rod is extended through the opening 13 at the end of the member 6, extended around the other flange thereof and wrapped about the body of the rod, as shown at 20, by the aid of a suitable tool (not shown). Similar rods are threaded in like manner through the openings of the other members, the rods being so threaded that they extend in the planes containing the structural members which they connect.

After the rods are shaped they closely conform to the bends imparted thereto, and the rigidity thereof maintains permanent retention of the bends so that it is impossible for the rods to slip through the openings.

The rods also have sufficient rigidity to be self-supporting under weight of the debris collecting thereon, and therefore retain their position even though a portion of the rod connecting a pair of adjacent structural members should happen to be broken. The rods, having large cross-section, are less subject to corrosion and attack of chemicals contained in the stream. The rods used are preferably hot rolled to the desired diameter so that they are tough and resilient and readily formable to the shapes to be imparted to them at the points where they extend through the openings in the respective flanges.

In Fig. 2 the rods are so threaded that they connect structural members lying in different planes. For example, the upper end of the member 6 is connected with the upper end of the member 8, the member 8 with the lower end of the member 10, the lower end of the member 10 with the lower end of the member 9, and the lower end of the member 9 with the upper end of the member 6, which in turn is connected with the member 8. The remaining ends of the members are connected in a similar manner to complete the lacing. In this form, the rods serve the same function and advantages as the rods described in the first form of the invention.

What I claim and desire to secure by Letters Patent is:

1. A jetty of the character described comprising a plurality of interconnected angle irons provided with flanges having openings in selected flanges, and a substantially rigid rod threaded through selected openings and having bent portions closely engaged with the edges of said openings to limit movement of the rod relative to said angle irons.

2. A jetty of the character described including a plurality of interconnected members having openings formed therein, and substantially rigid rods threaded through the openings of selected members adjacent the ends thereof for lacing said members relative to each other.

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