

Dec. 9, 1969

E. S. MARSHALL

3,482,393

BOOM CHAIN THREADING APPARATUS

Filed Feb. 19, 1968

FIG. 1.

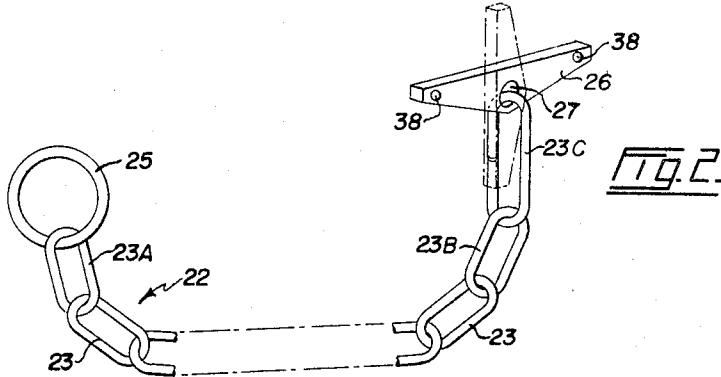
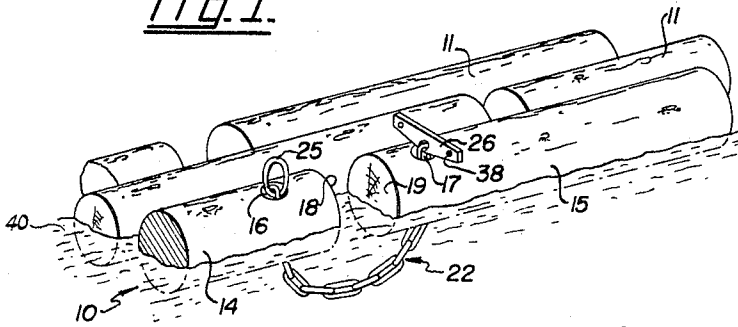


FIG. 4.

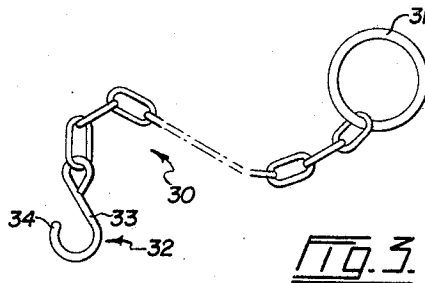
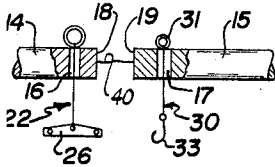


FIG. 3.

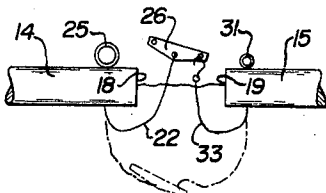


FIG. 5.

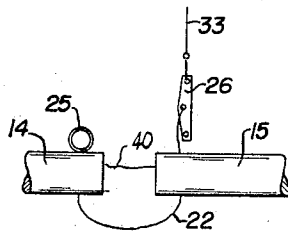


FIG. 6.

INVENTOR
ERNEST S. MARSHALL
BY

Peterson, Stenhaugh & Co.
ATTORNEYS

1

3,482,393

BOOM CHAIN THREADING APPARATUS

Ernest S. Marshall, Wellington, British Columbia, Canada, assignor to Elk Industries Ltd., Wellington, British Columbia, Canada

Filed Feb. 19, 1968, Ser. No. 706,500

Int. Cl. F16g 15/04, 13/18, 17/00

U.S. Cl. 59—35

5 Claims

ABSTRACT OF THE DISCLOSURE

Apparatus including a length of chain having a stop on one end and a fastening device on the opposite end to releasably grip a toggle on an end of another chain.

BACKGROUND OF THE INVENTION

This invention relates to apparatus designed to facilitate the task of connecting two logs together by means of a length of chain.

In the logging industry of the Pacific Northwest, it is common practice to ship logs from forest areas to the mill or dockside by building the logs into large rafts which are towed to their destination. These rectangular rafts have side, end, and other structural logs, locally known as sticks, which are chained together to enclose and contain the remainder of the logs making up the rafts. Holes are drilled transversely through the containing logs at suitable locations and heavy chains are threaded through these drilled openings to tie the lugs together as a unit. Of necessity, the boom chains are extremely strong and heavy and the task of fitting the chains in place is a particular difficult one even under favourable conditions. If the weather is cold or the water rough, it is a very arduous task and carries with it an element of danger.

The men constructing such a log boom are required to balance themselves on the floating logs while attempting to thread the chains through the openings. There are two methods commonly used to fit the chains to the logs. One method requires the vertically drilled log to be canted over with a peavy so that the chain can be threaded through the hole which is then substantially horizontally disposed. This requires two men who still find the task difficult since there is a strong tendency for the log to roll. A spinning log can crush a man's fingers between parts of the boom chain and it is not uncommon for a man's arm to be caught in the hole when the log rolls or heaves with the waves. Because of this, the men occasionally are thrown overboard and when they are caught by the fingers or the arm there is a danger of drowning quite apart from the possibility of serious injury. In addition, the boom chains and peavies are often dropped into the water and cannot be recovered.

Another method of linking these logs with a boom chain is for the boom man to lie on the log and thrust one arm into the water so that he can feed the chain through the opening in the log. The boom chains are heavy and therefore difficult to handle by a man lying prone on a log and, in any case, the boom man is still exposed to the hazards mentioned above.

SUMMARY OF THE INVENTION

The present invention overcomes the above-mentioned difficulties and in doing so, provides a simple and extremely effective solution to a long standing problem. The apparatus is carried easily by a man walking about on a log boom or balancing himself on individual logs. In addition to being light, the apparatus is rugged, weatherproof, and inexpensive. The method of using the

2

apparatus is readily explained to a boom man encountering the device for the first time so that he has no difficulty making effective use of the apparatus immediately.

BRIEF DESCRIPTION OF THE DRAWINGS

5 FIGURE 1 is a perspective view of a portion of a log boom showing a boom chain in position of use,
 FIGURE 2 is a detail perspective view of a boom chain, partly broken away,
 10 FIGURE 3 is a similar view of a fish chain, and
 FIGURES 4, 5 and 6 are diagrammatic views showing the method of using the apparatus.

DESCRIPTION OF THE PREFERRED EMBODIMENT

15 Referring to FIGURE 1, the numeral 10 indicates generally a raft or boom of the type constructed to transport logs by water. The boom 10 is made up of a large number of logs 11 which are placed together in side-by-side relation. The logs 11 of these huge rafts or booms are contained by interconnected logs such as 14 and 15 which are commonly referred to as boom sticks. Boom sticks 14 and 15 are drilled to provide vertical openings 16 and 17 which, in this instance, are located near the ends 18 and 19 of the aligned sticks. Ends 18 and 19 of the containing logs are connected together by means of a boom chain generally indicated at 22.

Referring now particularly to FIGURE 2, chain 22 will be seen to have a number of heavy, forged links 23 which are joined together to make up a chain of about 6 feet in length. One end link 23A is fitted with a large ring 25 and the other end link 23B is secured to an elongated connecting link 23C. A substantially triangular shaped toggle 26 is secured to the link 23C, the toggle having a central opening 27 through which the connecting link slidably and rotatably extends. Thus the toggle is supported so that it can be rotated between the sides of the connecting link 23C through 360°.

20 In FIGURE 3, the numeral 30 indicates generally a fish chain which also may be some 6 feet in length. The relatively lightweight chain 30 fitted at one end with a stop member 31, preferably a ring slightly larger in diameter than the diameter of the openings 16 and 17. Since these openings normally are 4 inches in diameter, the ring 31 desirably is approximately 6 inches in diameter. Fitted to the opposite end of the fish chain 30, is a suitable means 32 for releasably securing the fish chain to the toggle 26. As shown in the drawings, and particularly in FIGURE 3, the means 32 comprises a hook 33 having a free end or tip 34. Member 30 has been described as a length of chain but it will be appreciated that other flexible members will serve the required purpose, for example, a length of stout rope or the like. Chain is preferred for the member 30, however, since it is extremely strong and is capable of resisting the effects of frequent immersions.

25 The toggle 26 illustrated in the drawings is typical of a number of toggles used on boom chains, the toggles varying in shape to some extent but essentially being heavy, forged metal bars having a central hole 27 to receive a connecting link 23C. In order to practice the present invention, the toggle 26 is provided with at least one, but preferably two, apertures 38 as shown best in FIGURE 2. These apertures are drilled or punched through the ends of the toggle bars widely spaced from the center holes 27. As an alternative to the punched holes in the ends of the toggle bar, the apertures may be formed by rings, not shown, which are welded to the opposite ends of the toggle. In some instances, the apertures may be provided simply by slots (not shown) which extend into the edges of the toggle bar near the ends thereof.

The method of using the present apparatus is shown diagrammatically in FIGURES 4, 5 and 6 where it will be seen that the first step in tying two boom sticks together is to dispose the chains 22 and 30 as shown in FIGURE 4. Chain 22 is secured to the stick 14 for example, by dropping the toggle 26 through the opening 16 until the ring 25 engages the top of the log. Fish chain 30 similarly is fitted to the log 15 by dropping the hook 33 through the opening 17 until the ring 31 abuts the top of the log. The toggle and hook are now disposed a short distance below the surface 40 of the water with the log ends 18 and 19 are spaced a suitable distance apart.

With the logs and chains so positioned, the boom man uses a pike pole to hook first the lower end of one chain, then the lower end of the other chain to raise the toggle 26 and hook 33 out of the water as shown in FIGURE 5. He then puts the pike pole aside and feeds the tip 34 of the hook through an aperture 38 in the toggle whereupon the two connected ends of the chains are dropped back into the water to the dotted line position shown in FIGURE 5. When the connected ends are again immersed in the water, the tension applied to the chain by their own weight, swings the toggle substantially into alignment with the chains or into the dotted line position shown in FIGURE 2.

The boom man then seizes the stop ring 31 and hauls the fish chain 30 up through the opening 17 until both the hook and the toggle 26 are disposed above the top of the boom stick 15. Since the toggle is aligned with the fish chain, it is in the required position to pass freely through the opening 17 and does not become snagged on the underside of the log. Hook 33 is then disengaged from the toggle 26, which toggle is then rotated through 90° before it is lowered into contact with the top of the boom stick. Thus the two logs are securely connected together by the boom chain.

When the threading operation is performed with the present apparatus, the boom man is not required to dip an arm into the water or place his arm or fingers in a position where they might be crushed. The task can be carried out quickly and easily by one man who does not risk falling into the water at least to the same extent as before.

If the ends of the logs are to be connected widely spaced apart, such as would be necessary to form a gap through which logs could be pushed during the construction of a boom, a fish chain of identical construction but of a suitable length is used for this purpose. A long fish chain is connected to the boom chain in the same manner as before and the log ends 18 and 19 are spread apart to provide the necessary opening for the logs 11. To close the opening in the boom, the long fish chain is wound in to swing the log ends together and pull the toggle through the opening in the second log, thus effectively closing the opening and tying the two boom sticks together so that the logs 11 cannot escape.

I claim:

1. Apparatus for threading a boom chain, having a toggle at one end, through an opening in a log comprising a fish chain, a stop member on one end of the fish chain to prevent said fish chain from passing completely through the log opening in one direction, and connecting means on an opposite end of the fish chain for releasably securing said fish chain to the toggle whereby said toggle substantially is aligned with the boom and fish chains when said chains are under tension.

2. Apparatus as claimed in claim 1, in which said connecting means comprises a hook on the opposite end of the fish chain, and said toggle having an aperture near one end to receive the hook.

3. Apparatus as claimed in claim 2, in which said stop member on the fish chain is a ring larger in diameter than the diameter of the opening in the log.

4. Apparatus for threading a boom chain, including a toggle having an aperture near one end, through an opening in a log comprising a fish chain, a stop ring on one end of the fish chain preventing said fish chain from passing completely through the log opening in one direction, a hook on the opposite end of the fish chain, said hook being enterable into the aperture on the toggle whereby said toggle substantially is aligned with the fish chain when the toggle is hauled through the log opening by means of said fish chain.

5. A method of threading a boom chain, fitted with a toggle at one end, through openings in two adjacent boom sticks floating in water, which method comprises feeding the toggle end of the boom chain through an opening in one boom stick to depend therebelow, feeding an end of a fish chain through an opening in the other boom stick to depend therebelow, raising the toggle and said end of the fish chain above the surface of the water, connecting said end of the fish chain to the toggle whereby said toggle is swung substantially into alignment with the fish chain when the connected ends of the chains are again dropped into the water, and pulling the toggle through the opening in the other boom stick by means of the fish chain prior to disconnecting the fish chain from the toggle and releasing said toggle to engage the top of the other boom stick.

References Cited

UNITED STATES PATENTS

286,544	10/1883	Jonis	59-93
2,418,552	4/1947	Hasendahl	59-78
2,966,878	1/1961	Feiser	59-93

CHARLES W. LANHAM, Primary Examiner

G. P. CROSBY, Assistant Examiner

U.S. Cl. X.R.

59-78, 93; 254-134.3