

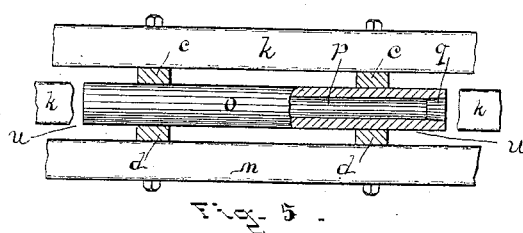
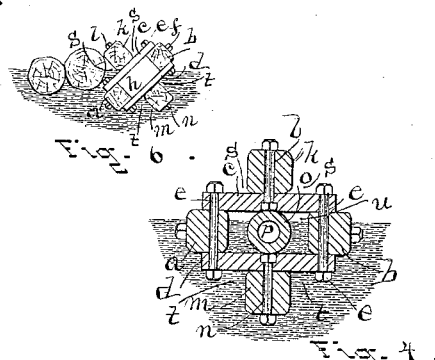
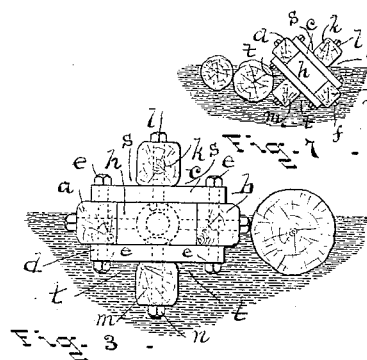
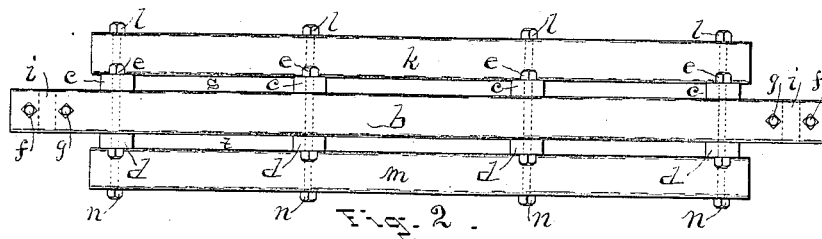
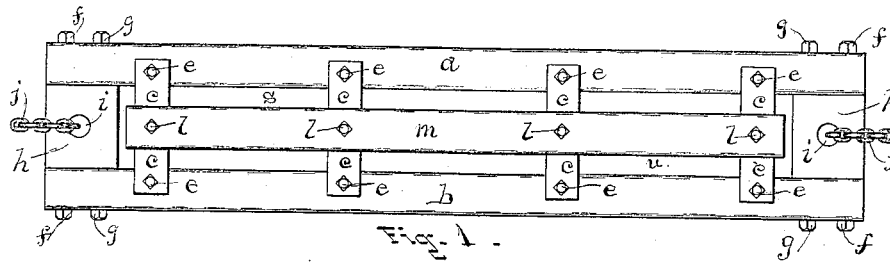
(No Model.)

F. H. DURELL & W. GOLDIE.

BOOM STICK.

No. 381,494.

Patented Apr. 17, 1888.



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By
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UNITED STATES PATENT OFFICE.

FRANK H. DURELL, OF BAY CITY, AND WILLIAM GOLDIE, OF WEST BAY CITY, ASSIGNORS TO JAMES REID & CO., OF ST. IGNACE, MICHIGAN.

BOOM-STICK.

SPECIFICATION forming part of Letters Patent No. 381,494, dated April 17, 1888.

Application filed February 8, 1888. Serial No. 263,394. (No model.)

To all whom it may concern:

Be it known that we, FRANK H. DURELL and WILLIAM GOLDIE, citizens of the United States, residing, respectively, at Bay City and West Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Boom-Sticks; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked hereon, which form a part of this specification.

This invention relates to improvements in boom-sticks of the class used for confining a large number of saw-logs together or in a collection in order to facilitate their transportation by water from one place to another, and the invention is designed especially as an improvement upon the devices described and illustrated in Letters Patent granted to us on May 1, 1883, and numbered 276,789.

The invention consists in a boom-stick formed of two pieces of timber of a light and buoyant wood, usually pine or cedar, and of a proper length, and secured a short distance from and parallel with each other by saddle-pieces of suitable size, which, reaching across the space between the sticks, are secured by their ends above and below the said timbers by suitable bolts, and an upper and also a lower timber secured above and below the central portions of the saddles and parallel with the said side timbers, the ends of the side timbers being provided with means of coupling two or more of the boom-sticks together.

The object of our invention is to provide a floating boom-stick which will rise above the water to a sufficient height to prevent logs confined thereby from being washed or thrown over the stick by the waves of a rough sea, and that will sink in the water to a sufficient depth to prevent the logs from passing beneath the stick when in a trough of the sea, and to construct the stick so that the floating portion thereof shall have sufficient width or beam to prevent any liability of the sticks being overturned by the waves or of being crowded over by the logs within the boom; and a fur-

ther object of this invention is to provide a boom-stick which will, on being partially overturned in either direction, present an inclined surface reaching over the outer logs in the boom, whereby the said logs are held within the boom by their own buoyancy and the weight of the portion of the boom-stick resting thereon; and a third object is to construct and arrange a boom-stick which will allow a free passage of water through its central portion when being towed through the water, which forms a suction current and retains the logs within the boom more compactly together during a blow or heavy sea; and a fourth object of our invention is to construct a boom-stick which will have a comparatively still portion of water within its central portion and have openings for a free lateral passage of the water through the boom-stick, whereby the pounding force of a heavy sea is partially overcome and the disastrous effect thereof greatly reduced. We attain these objects by means of the devices illustrated in the accompanying drawings, in which—

Figure 1 is a top or plan view of our improved boom-stick. Fig. 2 is a side view of the same. Fig. 3 is an end view of the same. Fig. 4 is a transverse vertical section of Fig. 1. Fig. 5 is a side view, partly sectional, of a portion of the boom-stick and of the air-float secured thereto. Fig. 6 is an end view of the boom-stick tilted toward the log and the log in position. Fig. 7 is an end view of the boom-stick, showing its position and the position of the log when tilted.

a and *b* represent two pieces of timber of a proper length to suit the different circumstances in which they are to be used. These pieces *a* and *b* are placed parallel with and at some distance from each other, and may have their sides flattened or square, as desired, or they may be left partially round; and *c* represents a series of saddle-pieces placed across the space between the timbers, and with their ends upon and firmly bolted to the upper side of the timbers.

d represents cross pieces or saddles placed beneath the saddle-pieces *c*, and with their ends resting upon the underside of the timbers *a* and *b*, and are secured thereto by suitable bolts, *e*, the bolts preferably passing entirely through

the ends of both of the cross-saddles and the timbers. At the ends of and between the timbers *a* and *b* is secured, by the cross-bolts *f* and *g*, the block *h*, having a vertical opening, *i*, through which to pass a chain, *j*, or other convenient device for securing the ends of two boom-sticks together and for towing the same through the water. Upon the upper side of the saddles *c*, and midway over the space between and parallel with the timbers *a* and *b*, is placed the timber *k*, and secured rigidly in position by the bolts *l*, which pass through the timber and through the saddles. Below the cross-pieces *d* and parallel with the timbers *a* and *b* is placed the timber *m*, in a position to be beneath the central portion of the space between the timbers *a* and *b*, and is secured in position by bolts *n* passed through the stick and through the cross-pieces *d*. These upper and lower timbers, *k* and *m*, may extend to the entire length of the timbers *a* and *b*, or may be somewhat shorter to allow a free and easy passage of the coupling-chains *j* into the openings *i*, and also to allow the sticks, when coupled together, to rise and fall with the undulations of the seas in rough weather.

The timber *m* is preferably of a heavier and more dense wood than the timbers *a* and *b*, which acts upon the boom-stick as a ballast, and places the center of gravity thereof in such a position that should the sticks become partially turned or inverted in the water the heavier timber *m* will operate to right the stick and retain it in a proper position.

A number of these boom-sticks coupled securely to each other by their ends are formed into a crib, and into this crib are placed the logs which are to be removed until the space inclosed by the boom-sticks is entirely filled, the logs lying upon the surface of the water and against each other, and a tug is then, with line, attached to the end of the crib and the crib towed to its destination, often through storms and rough seas, which, with the common means used for confining the logs (which is the trunks of large trees coupled together) throw or wash the logs over the boom-sticks allowing the logs to pass in a trough of the sea beneath the boom-stick, as the end of the boom-stick resting upon the crest of two waves holds the central portion of the stick above the bottom of the trough between the waves and allows the logs within to pass beneath the boom-stick, which two great difficulties are overcome by the use of our improved boom-stick, as the side timbers, *a* and *b*, being located at some distance from each other, operate to retain the stick always in a nearly vertical position, and the timber *k* extends above the water to a sufficient height to prevent the logs from being washed over the stick, and the timber *m*, being of a heavier wood, operates to ballast the stick, and also extends into the water to a sufficient depth to prohibit the logs from passing beneath the stick in a trough of the sea, as before described.

Another very great advantage, and one of the most important features of our invention, is the form of our improved stick, as the timbers *a* and *b* extend to some distance laterally beyond the sides of the timbers *k* and *m*, which obtains for the boom-stick the form of a cross in cross-section, and presents to the logs within the crib an upper angular trough, *s*, above the surface of the water and an angular trough, *t*, below the water; and the effect upon the logs of that form of construction is that when one or more logs are by any means thrown or crowded upon the timbers *a* or *b* and into the trough *s* the boom-stick is tilted toward the logs by the weight of the logs lying on the stick, as illustrated in Fig. 6, so that the log is at once rolled by its gravity out of the trough *s* into the boom, and should the logs from any cause become crowded beneath the inner side timber and into the trough *t*, the buoyancy of the logs at once lifts upon the timber until the log can roll from beneath, or will be held by its buoyancy in the angle of the trough *t*, as shown in Fig. 7, until the stick can right itself and allow the log to go free within the crib; and also a further and great advantage of a boom-stick constructed in this form is that the several timbers are held in position a short distance from each other, which allows a central space, *u*, between the timbers to be partly filled with still water, and the waves, dashing against the outside of the boom-stick, are partially broken up and the force thereof expended upon the boom-stick and the water within the inclosed space, so that the logs within the crib are not greatly affected thereby.

As the timbers, after lying in the water for a long period, become water-soaked and lose their buoyancy, we place one or more floats, *o*, within the space *u* between the timbers. This float *o* consists of a log of wood parallel with the timbers, provided with an opening, *p*, through its middle, which is formed into an air-chamber by the plugs *q*, which are driven firmly into each end of the opening, first, however, being coated with a water-proof covering of paint or other suitable material, and the outside of the log or float *o* is also provided with a water-proof covering, and may also be bound around with thin iron bands, if desired, and is secured to the boom-stick in any convenient manner, and two or more can be placed side by side within the space, if necessary, and as the chamber *p* is filled with air the buoyancy of the boom-stick is greatly increased, and the liability of the boom sinking too low in the water is avoided.

It is not essential in constructing our improved boom-stick to leave the open space *u* in the central portion of the stick, as the space between the timbers *a* and *b* may be filled with other timbers solidly bolted together, and the effect of this construction would be substantially the same to a less degree, and we do not limit our invention entirely to the precise construction shown and described in detail, but

claim, broadly, the form of our improved boom-stick as the most essential and important feature of our invention.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a boom-stick, with the timbers *a* and *b*, placed parallel with and at a short distance from each other, of the saddle-pieces *c* and *d*, placed across and with their ends secured, respectively, to the upper and lower sides of the said timbers, and the timber *k*, located centrally upon and secured to the said saddles *c*, and the timber *m*, located centrally below and secured to the under side of the said pieces *d*, substantially as and for the purpose set forth.

2. The combination, in a boom-stick, of the timbers *a* and *b*, secured in position a short distance from and parallel with each other by the saddle-pieces *c* and *d*, bolted to the timbers, a timber, *k*, centrally located upon and secured to the saddle-piece *c*, the timber *m* below and secured to the saddle-pieces *d*, with the blocks *h* between the ends of the timbers *a* and *b*, and provided with an opening, *i*, and the bolts *f* and *g*, passed through the side timbers and the blocks, substantially as and for the purpose set forth.

3. In a boom-stick, the combination, with the side timbers, *a* and *b*, secured in position a short distance from and parallel with each other by the cross saddles *c* and *d*, bolted thereto, the upper timber, *k*, upon and secured to the saddles *c*, and the timber *m* below and secured to the saddles *d*, of the floats *o*, provided with an air-chamber, *p*, and secured in position between the said saddles *c* and *d*, substantially as and for the purpose set forth.

4. The herein-described boom-stick, consisting, substantially, of the side timbers placed near to and parallel with each other and provided with blocks *h*, secured between their ends, and having a series of cross-saddle pieces bolted to their upper sides, and a second series of cross-saddle pieces bolted to their under sides, a light timber centrally located upon and secured to the said upper saddle-pieces, and a

heavy timber centrally located and secured to the under sides of the said lower saddle-pieces, substantially as and for the purpose set forth.

5. A boom-stick consisting, substantially, of the side timbers and the upper and under timbers secured in position in the form of a cross in transverse section and provided with the angular troughs *s* on the lateral sides of the said upper timber and with the angular troughs *t* on the lateral sides of the said lower timber, substantially as set forth.

6. A boom-stick consisting of the side timbers and the upper and lower timbers placed parallel with each other and secured in position in the form of a cross in transverse section, substantially as set forth.

7. A boom-stick consisting of the side timbers and the upper and lower timbers secured in position substantially in the form of a cross in transverse section and having a longitudinal central opening between the said timbers, substantially as set forth.

8. The herein-described boom-stick, consisting of the side timbers and the upper and under timbers secured in position in the form of a cross in transverse section and provided with a longitudinal central opening and with lateral side openings, substantially as described.

9. A boom-stick consisting, substantially, of the lateral timbers secured in a position parallel with each other by a series of upper and under cross-saddles, an upper timber parallel with the said lateral timbers and secured to the central portion of the upper cross-saddles, and a lower timber parallel with the said lateral timbers and secured to the said lower saddles and having a longitudinal central opening between the said timbers, and having lateral openings between the said upper and under timbers and the lateral timbers, substantially as described and shown.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANK H. DURELL.
WILLIAM GOLDIE.

Witnesses:

JAS. E. THOMAS,
G. P. THOMAS.

It is hereby certified that Letters Patent No. 381,494, granted April 17, 1888, upon the application of Frank H. Durell, of Bay City, and William Goldie, of West Bay City, Michigan, for an improvement in "Boom-Sticks," was erroneously issued to "James Reid & Co., of St. Ignace, Michigan," as sole owners of the patent; whereas the said Letters Patent should have been issued to said *Frank H. Durell and William Goldie and James Reid & Co. jointly*, said James Reid & Co. being assignees by direct and mesne assignments of one-half interest only in said invention as shown by assignments of record in the United States Patent Office; and that the proper correction has been made in the files and records of the case in the Patent Office, and should be read in the Letters Patent that the same may conform thereto.

Signed, countersigned, and sealed this 8th day of May, A. D. 1888.

[SEAL.]

D. L. HAWKINS,
Assistant Secretary of the Interior.

Countersigned:

BENTON J. HALL,
Commissioner of Patents.