This invention relates to an improved implement which may be described briefly as deep sea tongs, and it has more particular reference to a structure of this general class which is expressly designed for scooping and elevating oysters, sponge, coral, and analogous water inhabitants.

Present day devices used for these purposes are generally cumbersome, exceptionally difficult to manipulate and handle, unduly heavy, and not altogether satisfactory for expeditious work.

Briefly stated, the improved tongs are characterized by a plurality of parts among which are upper and lower duplex toggles arranged for independent operation, and having individual suspension ropes or cables, the arrangement being such as to facilitate grappling and lifting of oysters, and subsequent releasing thereof.

A further feature of the invention is predicated upon novel tooth equipped jaw structures designed to withstand burdensome usage, and to provide effective means for grabbing and lifting oysters and the like.

In the drawings:

Figure 1 is an elevational view of a pair of tongs constructed in accordance with the present invention showing gripping jaws closed.

Figure 2 is a side or edge elevational view thereof.

Figure 3 is a view of the upper portion of the structure showing the expanding and contracting toggles.

Figure 4 is a horizontal section on the line 4—4 of Figure 3.

Figure 5 is a vertical section on the line 5—5 of Figure 2.

Figure 6 is a fragmentary plan view of the gripping jaws.

The entire assembly may be seen in Figure 1 which, when compared with the other figures, will give a clear idea of the construction and arrangement of parts. The tongs proper are denoted by the numeral 7, and these include a pair of bars arranged in intersecting relation and pivotally connected together as at 8 to define reach arms 9, and actuating handle 10. The handles 10 are disposed in the customary outwardly diverging relationship.

It will be observed that the lower end portions of the arms 9 are twisted as indicated at 11 and the twisted extremities 12 are secured appropriately to the especially designed jaws 13. Each jaw is the same in construction and a description of one will suffice for both. In side elevation the jaw is somewhat rectangular in configuration as indicated in Figure 2.

It comprises a rectangular frame 14 and spaced parallel vertically disposed wires or rods 15 which function with the frame to provide object confining grids. Attached to the lower frame bar as shown in Figure 5 is a horizontal angle iron 16, and secured to the upper flange of this is an upstanding L-shaped attaching arm 17.

The numeral 18 designates a spaced perpendicular attaching member of general T-shaped form having its lower end portion 19 fastened to the vertical flange of the angle iron 16. It is between these two members 17 and 18 that the arm extension 13 is fastened. Attached to and extending at right angles from the angle bars 18 are interfitting teeth 20 and 21. Next call attention to the numeral 22 which designates an upper jaw contracting toggle. This is made up of two pairs of links, the links being distinguished by the numerals 23 and 24, being pivoted together at their upper ends and pivoted to the actuating arms 10 at their lower end. At the upper or apex portion is a clevis 25 to which a hoisting and lowering chain, rope, or the like 26 is connected.

The numeral 27 designates the lower jaw-expanding toggle composed of companion links 28 and 29 pivoted to one another at their lower ends in Figure 1 and pivoted at their upper ends in this figure to the corresponding ends of the arms 10. The numeral 30 designates a clevis for attaching the operating cord or cable 31 to this particular toggle. The numerals 32 designated U-shaped straps which co-operate with the links 23 and 24 as shown in Figure 3 to limit the straightening of the links 28 and 29 in the position shown in Figure 3.
It is to be observed that the intersecting arms 9 and 10 are so arranged as to form a sturdy tong structure and that upper and lower toggles 22 and 27 are operatively connected therewith for independent and successive operation. The upper toggle 22 obviously constitutes the means for closing the jaws 13 against the oyster. Incidentally these jaws co-operate with one another to provide a convenient and dependable grapple and receptacle for not only gripping the loads but for elevating it successfully.

The lower toggle 27 and its associated cable 31 constitutes the means for opening the jaws for releasing the load when it is brought to the surface. The lower toggle 27 has a limited degree of expansion as shown in Figure 2 so as to prevent the links 28 and 29 from passing beyond dead center.

This improved structure is sturdy and dependable, efficient in operation, easy to manipulate in descending as well as in ascending. All of the parts are especially selected and mechanically co-related to fulfill their respective functions. Consequently, the complete organization serves to provide a successfully operable grapple or tong structure.

It is thought that the description taken in connection with the drawings will enable a clear understanding of the invention to be had. Therefore, a more lengthy description is thought unnecessary. While the preferred embodiment of the invention has been shown and described, it is to be understood that minor changes coming within the field of invention claimed may be resorted to if desired.

I claim:

1. A deep sea grapple comprising a pair of pivotally connected intersecting levers, gripping jaws carried by the lower ends thereof, upper and lower independently operable toggles connected with the upper ends of said levers, the links of the lower toggle being provided near their upper ends with pivotally mounted stops for limiting the degree of expansion of said lower toggle.

2. A deep sea grapple of the type described comprising a pair of levers equipped at their lower ends with toothed jaws, the levers being crossed and pivoted together at the point of intersection and the portion of each lever above the point of intersection being angularly and outwardly directed, a jaw closing toggle having its ends pivotally connected to the extremities of the angularly directed portions of the lever, a jaw opening toggle likewise connected at its ends below the extremities of said angularly directed portions, a pivoted yoke embracing the upper end of each link of the jaw opening toggle adapted to engage the lower end portions of each link of the jaw closing toggle so as to prevent the links of the jaw opening toggle from moving into longitudinal alignment with each other, and lifting cables connected to the jaw closing and jaw opening toggles at the mutual pivotal connection of their links.

3. A deep sea grapple of the type described comprising a pair of levers equipped at their lower ends with toothed jaws, the levers being crossed and pivoted together at the point of intersection and the portion of each lever above the point of intersection being angularly and outwardly directed, a jaw closing toggle having its ends pivotally connected to the extremities of the angularly directed portions of the lever, a jaw opening toggle likewise connected at its ends below the extremities of said angularly directed portions, a pivoted yoke embracing the upper end of each link of the jaw opening toggle adapted to engage the lower end portions of each link of the jaw closing toggle so as to prevent the links of the jaw opening toggle from moving into longitudinal alignment with each other, and lifting cables connected to the jaw closing and jaw opening toggles at the mutual pivotal connection of their links.

In testimony whereof I affix my signature.

WILLIAM M. JOHNSON.