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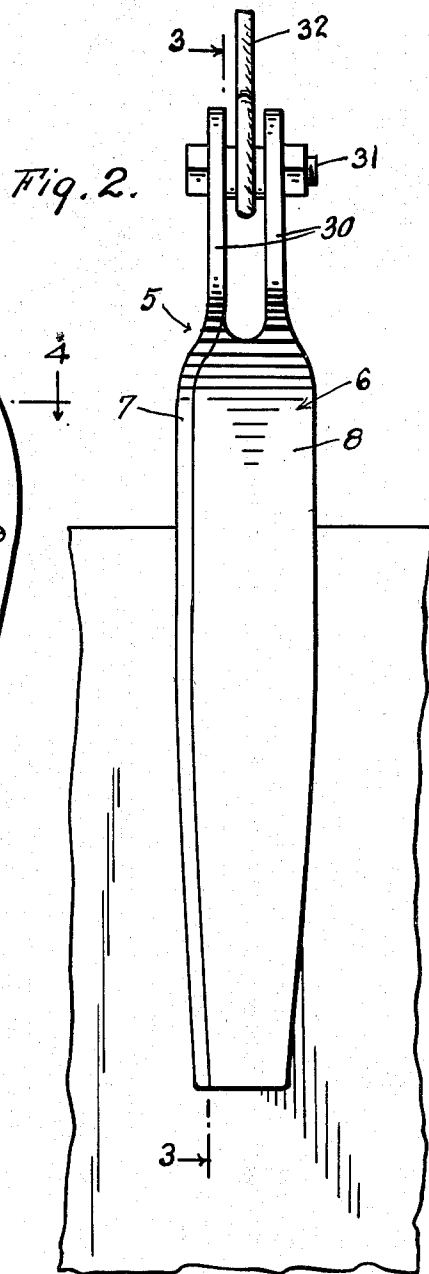
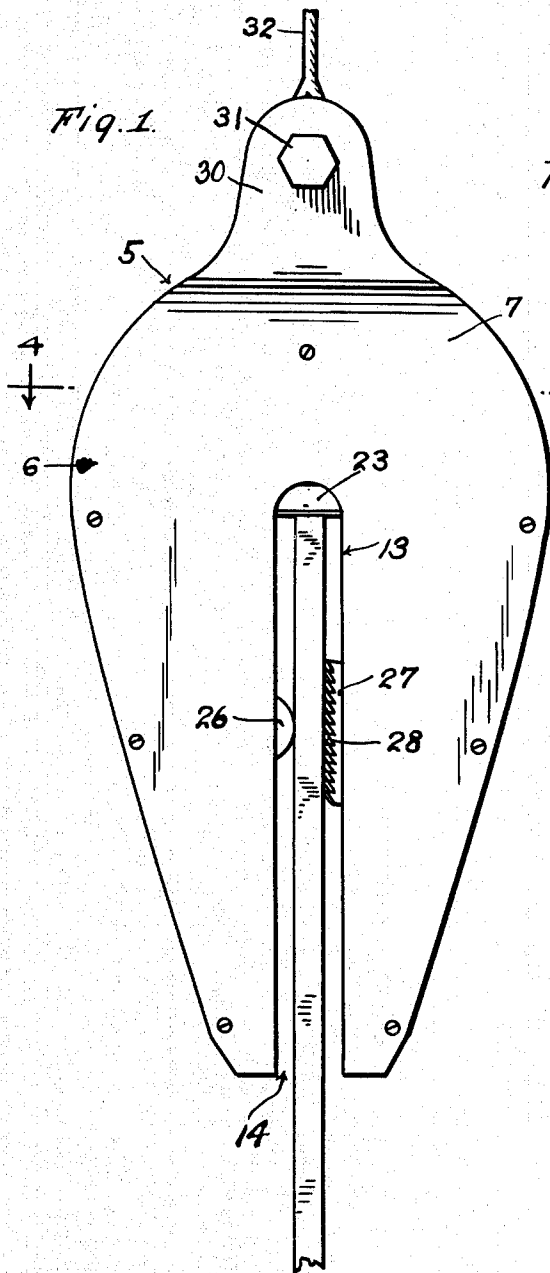
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2,387,408

GRAPPLE

Filed Feb. 1, 1945

2 Sheets-Sheet 1



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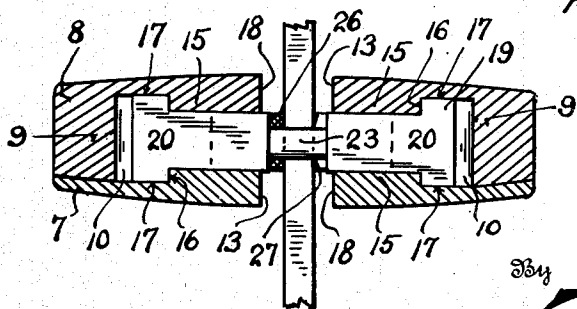
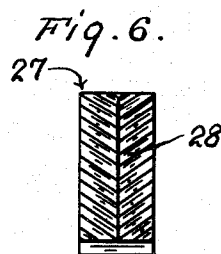
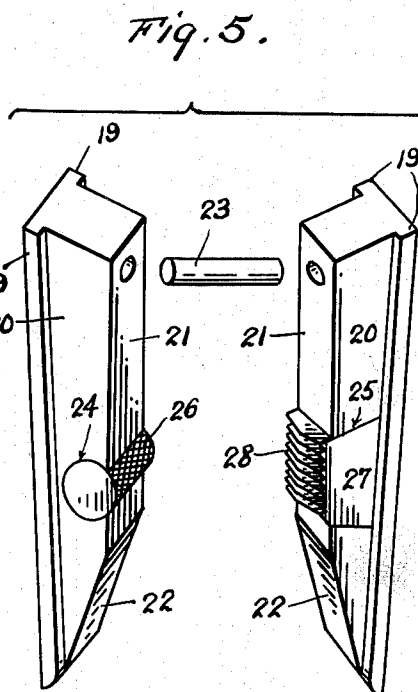
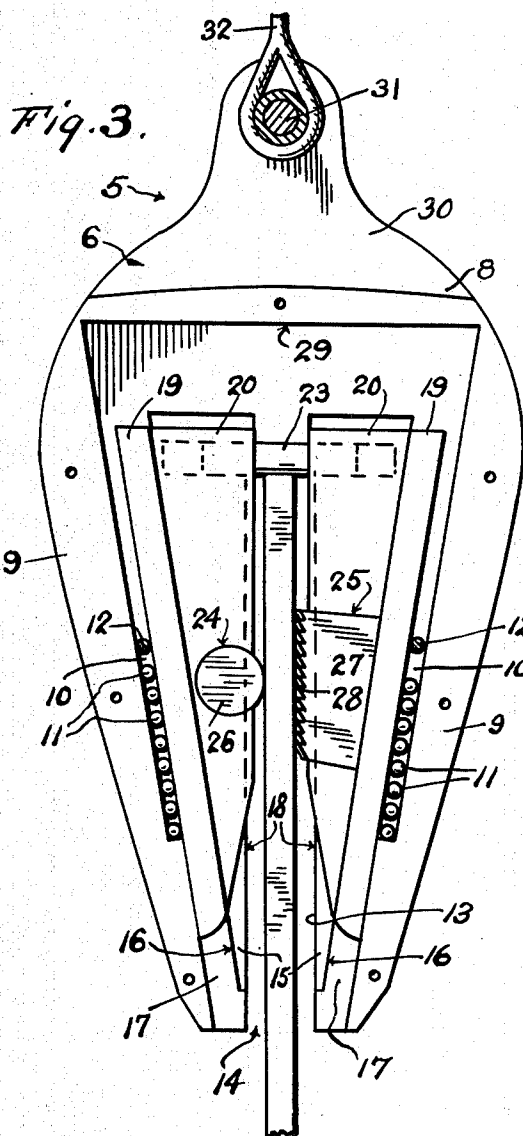
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,387,408

GRAPPLE

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Application February 1, 1945, Serial No. 575,608

1 Claim. (Cl. 294—86)

This invention relates to the official class of pushing and pulling and more particularly grapples.

The primary object of this invention resides in the provision of a grapple adapted to engage sheet metal plates and the like for lifting the same.

Another object of this invention resides in the provision of a grapple adapted to engage sheet metal plates so they can be lifted as practiced in building ships, and subsequently released upon slacking the hoisting cable thereof.

A further object of this invention resides in the provision of a sheet metal plate grapple adapted to tighten its grip on the plate as the same is hoisted.

A still further object of this invention resides in the particular construction of the housing.

Aside from the aforesaid objects is the particular construction of the wedge blocks.

In addition to the objects heretofore set forth, this invention resides in the particular construction and association of the gripping jaws.

One of the salient features of this invention resides in the particular manner of mounting the wedge blocks in the housing.

With these and other objects in view this invention resides in certain novel features of construction and arrangement of elements to be hereinafter more particularly set forth in the specification, illustrated in the accompanying drawings and pointed out in the appended claim and, while this disclosure depicts my present conception of the invention, the right is reserved to resort to such changes in construction and arrangement of elements as come within the spirit of the invention.

In the accompanying drawings forming a part of this application:

Fig. 1 is a front view of the grapple.

Fig. 2 is a side view thereof.

Fig. 3 is a sectional view taken approximately on line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken approximately on line 4—4 of Fig. 1.

Fig. 5 is a detail perspective view of the wedge blocks in juxtaposition.

Fig. 6 is an elevational view of the rectangular gripping jaw.

In the present illustration of this invention the numeral 5 designates, in general, a grapple consisting of a housing 6, preferable but not necessarily of substantially elliptical configuration, formed of front and rear plates 7 and 8 spaced apart by downwardly diverging side walls

9 which are provided with roller races 10 in their inner sides to accommodate a plurality of rollers 11 of slightly greater diameter than stop pins 12 disposed in the race 10.

Extending upwardly from the lower ends of the plates 7 and 8 are elongated slots 13 forming a mouth 14 for receiving a portion of a metal plate to be lifted by the grapple.

Formed on the inner surfaces of the plates 7 and 8 are inwardly extending ribs 15 having their inner surfaces 16 disposed in spaced parallel relation to the inner surfaces of the walls 9 to form upwardly diverging grooves 17 and their outer surfaces 18 coinciding with the opposed wall of the slots 13 to form a wide area of contact with the sheet metal plates to be lifted.

Slidably disposed between the plates 7 and 8 and guided along the grooves 17 by elongated ribs 19 formed thereon, are wedge blocks 20 having the major or upper portions of their opposed surfaces 21 disposed to travel in parallelism during upward and downwardly movement thereof so as to be always parallel to the sides of the plates to be lifted and, in order to readily permit entrance of the edge portion of the sheet metal plate between the wedge blocks when lowered thereon, the lower inner surfaces of the wedge blocks are levelled as indicated by the numeral 22.

In order to retain the wedge blocks in opposed slidable relation as they increase or diminish the distance therebetween during their gripping and releasing action, they are connected adjacent their upper ends by a pin 23 which permits movement thereof toward and from one another.

Removably disposed in sockets 24 and 25 formed in the wedge blocks adjacent their inner opposed surfaces are gripping jaws 26 and 27, the forms of which is of cylindrical configuration with its surface knurled while the latter is of substantially rectangular configuration with its outer surface provided with gripping teeth 28, which together with the knurled surface of the jaw 26 engages opposite sides of the sheet metal plate to be hoisted. Upward movement of the wedge blocks is limited by a stop plate 29 formed between the plates 7 and 8. However, said stop plates may form a closure for the top of the grapple.

Formed on the upper ends of plates 7 and 8, are apertured lugs 30 adapted to receive a bolt 31 or the like for suspending the grapple from a hoisting cable 32 or any well known hoisting means.

Through the instrumentality of the aforesaid

assemblage of elements, the wedge blocks normally remain in their lowermost position between the plates 7 and 8 and, upon entering the edge portion of a sheet metal plate within the mouth of the grapple, the wedge blocks will be forced upwardly until the sheet metal plate has been sufficiently engaged on opposite sides by the jaws, whereupon, upward pull on the hoisting cable will jam the jaws against opposite sides of the sheet metal plate and thereby increase its grip in accordance to the weight of the plate.

The grapple is readily and easily released from the sheet metal plate by slacking on the hoisting cable.

With this invention fully set forth, it is manifest that a sheet metal plate lifting grapple is provided which is positive in operation and,

through the instrumentality of the mechanism set forth, work in shipyards and other places wherein the same can be used will be speeded up.

Having thus described my invention what I claim and desire to protect by Letters Patent is:

A sheet plate grapple comprising, a housing having a plate receiving mouth therein, wedge blocks in the housing and operable relative to the mouth therein, gripping jaws on the opposed faces of the wedge blocks, means spanning the space between the upper portion of the wedge blocks and slidably connecting them together, anti-friction elements between the wedge blocks and housing, and a hoisting cable connected to the housing.

HECTOR V. PERTUIT.