Nov. 4, 1930. S. TSUJI 1,780,322

APPARATUS FOR ENABLING HATCH LOADING IN THE RAIN FOR SHIPS OR THE LIKE

Filed July 9, 1928

Fig. 1

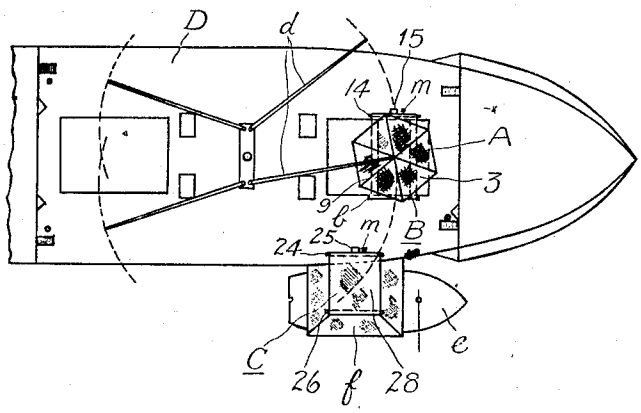


Fig. 2

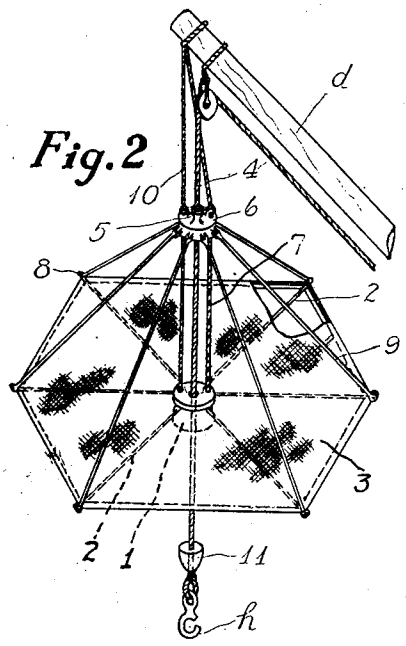
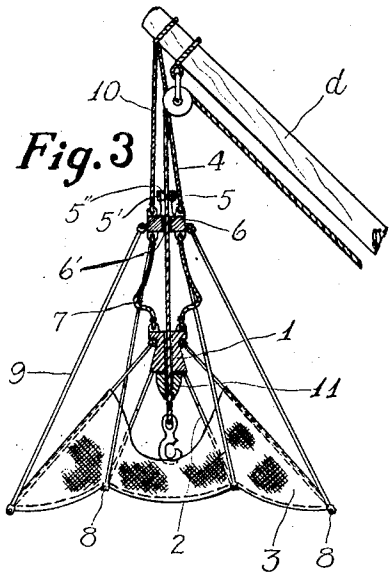


Fig. 3



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Patented Nov. 4, 1930 1,780,322

UNITED STATES PATENT OFFICE

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APPARATUS FOR ENABLING HATCH LOADING IN THE RAIN FOR SHIPS OR THE LIKE

Application filed July 9, 1928, Serial No. 291,405, and in Japan August 4, 1927.

My invention relates to improvements in loading devices for ships or the like, and particularly to apparatus for enabling hatch-loading in the rain.

One object of my invention is to provide means for automatically covering and uncovering a load on a loading rope with a water-proof member, in accordance with the operation of loading.

Another object of my invention is to provide means for covering and uncovering the hatchway of a ship with a water-proof member, in accordance with the loading operation.

Another object of my invention is to obtain means for spreading and unspreading water-proof fabrics over a lighter staying outside a ship for loading, in accordance with the loading operation.

A further object of my invention is to provide apparatus for enabling hatch-loading in the rain, which is simple in construction and reliable in operation.

A still further object of my invention is to obtain devices for enabling hatch-loading in the rain, which devices can be detachably mounted at proper positions on board a ship.

There are other objects and particularities of my present invention which will be fully understood, together with the essential features in constructions and operations of my invention, by the following descriptions, with reference to the accompanying drawings, wherein:

Fig. 1 is a diagrammatic plan view of a portion of a ship showing a general arrangement of my apparatus.

Fig. 2 is a perspective view of the device A shown in Fig. 1.

Fig. 3 shows a side elevation of the same device in another position, partly in section.

Referring to the drawings, my invention comprises an umbrella-like device A suspended from the end of the arm of a derrick *d*, which may be replaced by a crane or other like machine and equipped on a ship D. A device B is arranged for a hatch of the ship, and a similar device C for a lighter *e* staying beside the ship.

In Figs. 2 and 3, the umbrella-like device A comprises a cone 1 having a central bore through which a loading rope freely passes. The cone 1 may have a predetermined height and angle for facilitating the operation of the device. On the top portion of the cone are mounted, by pivots or hinges, a plurality of strips 2 of steel or other suitable material, which extend radially from the cone. A water-proof fabric 3 of polygonal outline is stretched over and fixed to the radiating strips.

Above the cone 1, an annular member 6 is provided having a central bore 6′ for allowing the loading rope 4 passing freely therethrough. The member 6 has a cylindrical member 5 carried thereon, for removing water drops adhering to the rope 4 therefrom, and consisting of a shell 5′ and a contacting part 5″. The member 6 is connected with the cone 1 through definite length of flexible strings 7, and also connected with the outer ends 8 of the radiating strips 2 by means of a plurality of strips of steel or other tension members 9 having their ends pivoted or hinged to the member 6 and the ends 8, respectively.

The member 6 and consequently the whole device A are suspended from the end of the derrick arm *d* through definite length of strings 10.

The loading rope 4 has at its end a hook *h* secured thereto, and a cylindrical or inverted conic member 11 attached thereto for raising the cone 1. When the derrick arm *d* is lifted, the rope 4 being left free, the strips 2 and the cone 1 drop by gravity and automatically assume the open position as shown in Fig. 2, at a predetermined height fixed by the resultant length of strings 7 and 10.

When it does not rain, the devices A, B, C

and *f* may be detached from the proper positions and stored in any suitable place in the ship.

In operation, when the loading rope 4 is wound up, hanging a load by its end hook *h*, the member 11 will first engage the cone 1 of the device A and lift the same with itself. The umbrella is then closed as shown in Fig. 3, as the member 11 is lifted further by the rope 4, and encloses the load for protecting it from the rain. The load is then lifted and swung horizontally as usual and lowered into the hatch. The devices B and C are so controlled manually or mechanically as to unspread the waterproof fabrics and open the passway for the derrick rope 4, when it is on the respective devices, and spread the fabrics and cover the hatch and lighter by the fabrics when the rope 4 and the device A are in a position out of the hatch and lighter, respectively. Thus the loading can be effected even in the rain without any fear of damaging cargo by the rain.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:

1. In a loading apparatus, the combination with a derrick having a swinging arm and a loading rope cooperating therewith, of an umbrella-like water-preventing means comprising a central annular member suspended from the top of said swinging arm, a group of radiating strips pivotally mounted on said annular member, a central cone having a central bore and suspended from said annular member, a second group of radiating strips pivotally mounted on said central cone and having their outer ends pivotally connected with the outer ends of the respective strips of said first group, a waterproof fabric stretched over and secured to said second group of radiating strips, said annular member and central cone having said loading rope freely passing through their central bores, means for holding a load at the end of said rope, and means carried on said end of the rope below said central cone for engaging and forcing said cone upwards when travelling upwards with said rope.

2. In loading apparatus of the class described, in combination with a crane having a hoisting tackle comprising a pulley and a cord, an umbrella-like protecting means comprising a fabric, a lower runner member through which the hoisting cord freely passes, rods arranged radially with respect to said lower runner member and on which said fabric bears, said rods being pivotally connected to said lower runner member, an upper runner member through which also the hoisting cord freely passes, cords connecting the upper and lower runner members, cords pivotally connected at their upper ends to the upper runner member and connected at their lower ends to the peripheral portion of said fabric, cords suspending said upper runner member from the crane and a stop element on the hoisting cord below the lower runner member and arranged when the hoisting cord moves upwardly, to engage and thereby cause the lower runner member to move upwardly, so that the fabric becomes folded.

In witness whereof I affix my signature.

SHINGO TSUJI.