K. S. CHUNG.

SCRAPER.

APPLICATION FILED AUG. 25, 1919.

1,327,522.

Patented Jan. 6, 1920.

3 SHEETS—SHEET 1.

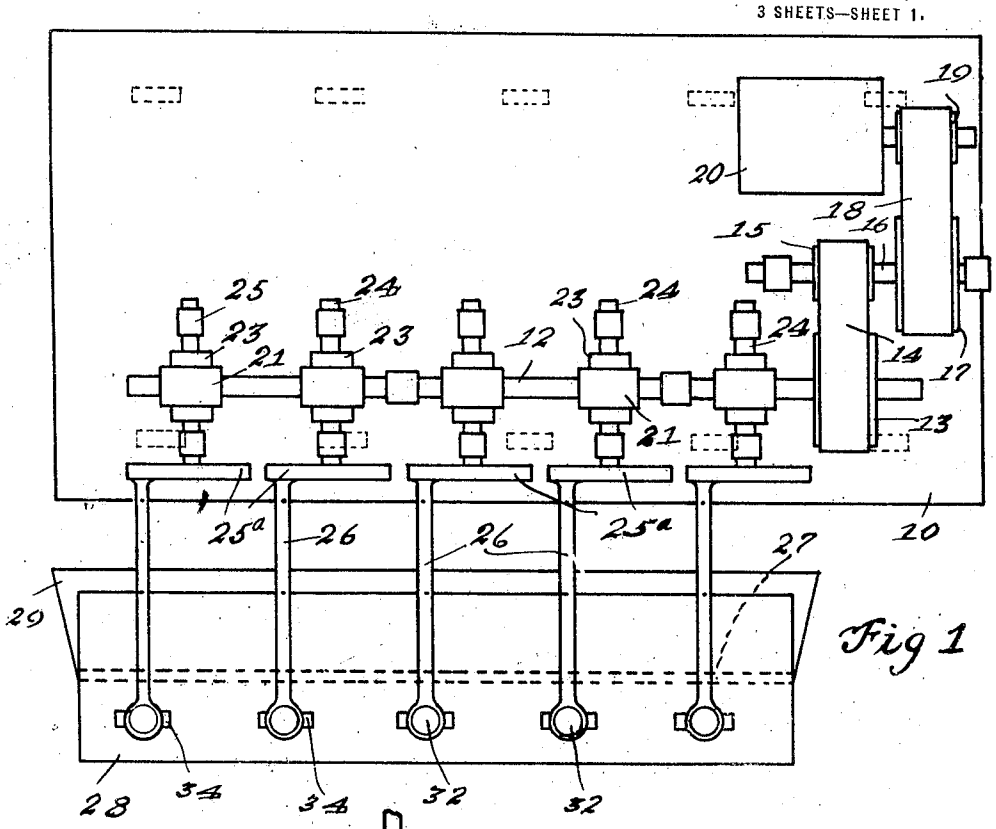


Fig 1

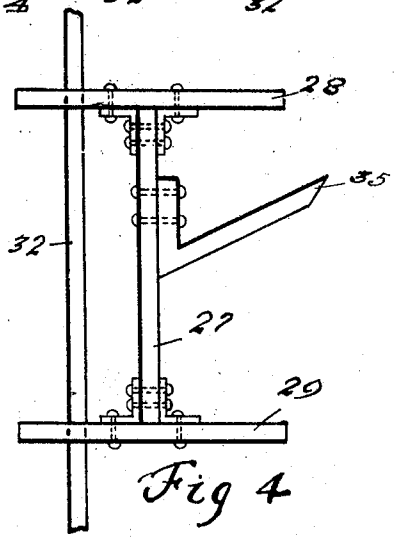


Fig 4

INVENTOR.

BY Kun Sung Chung

Victor J. Evans

ATTORNEY

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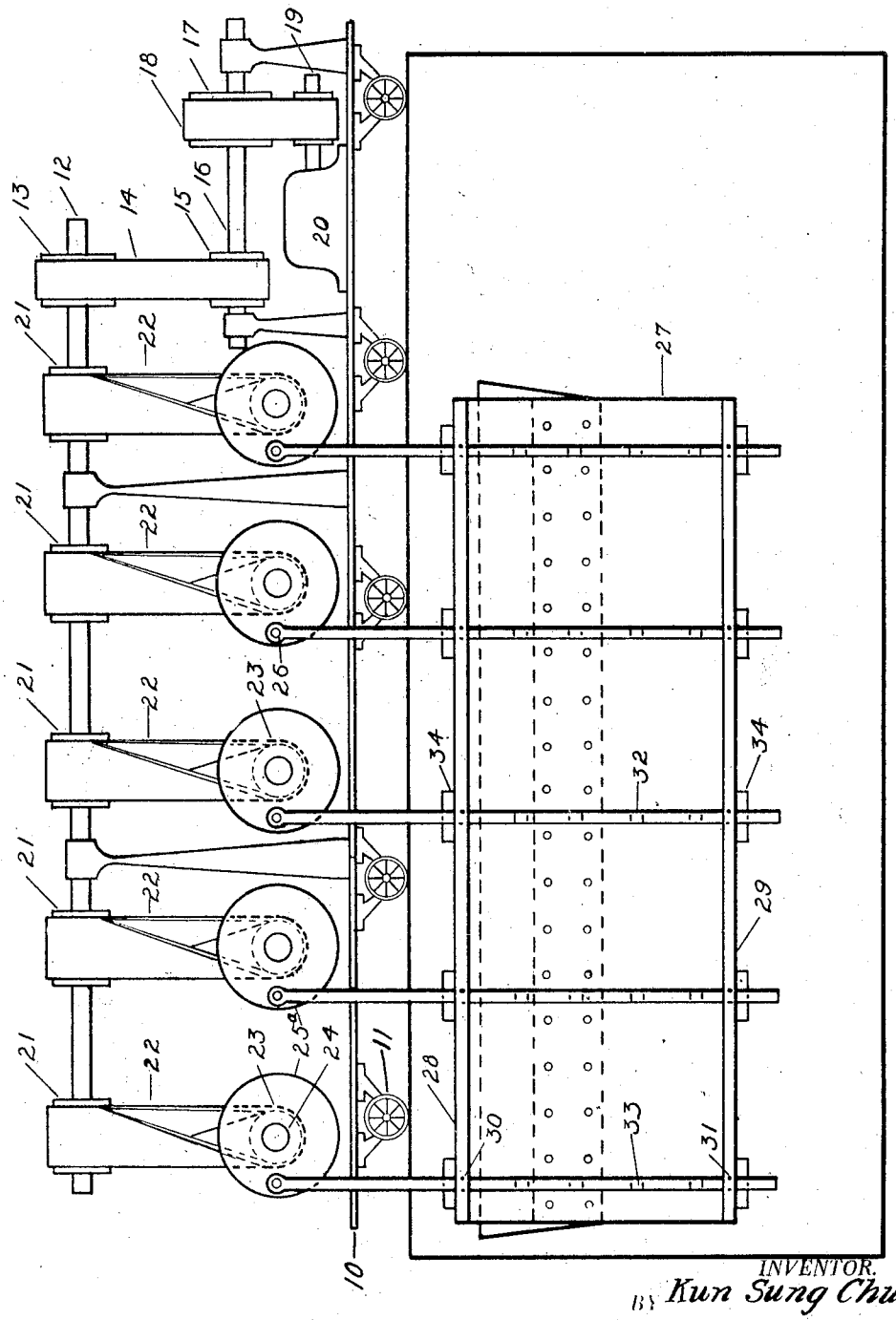


Fig 2

INVENTOR.

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3 SHEETS—SHEET 3.

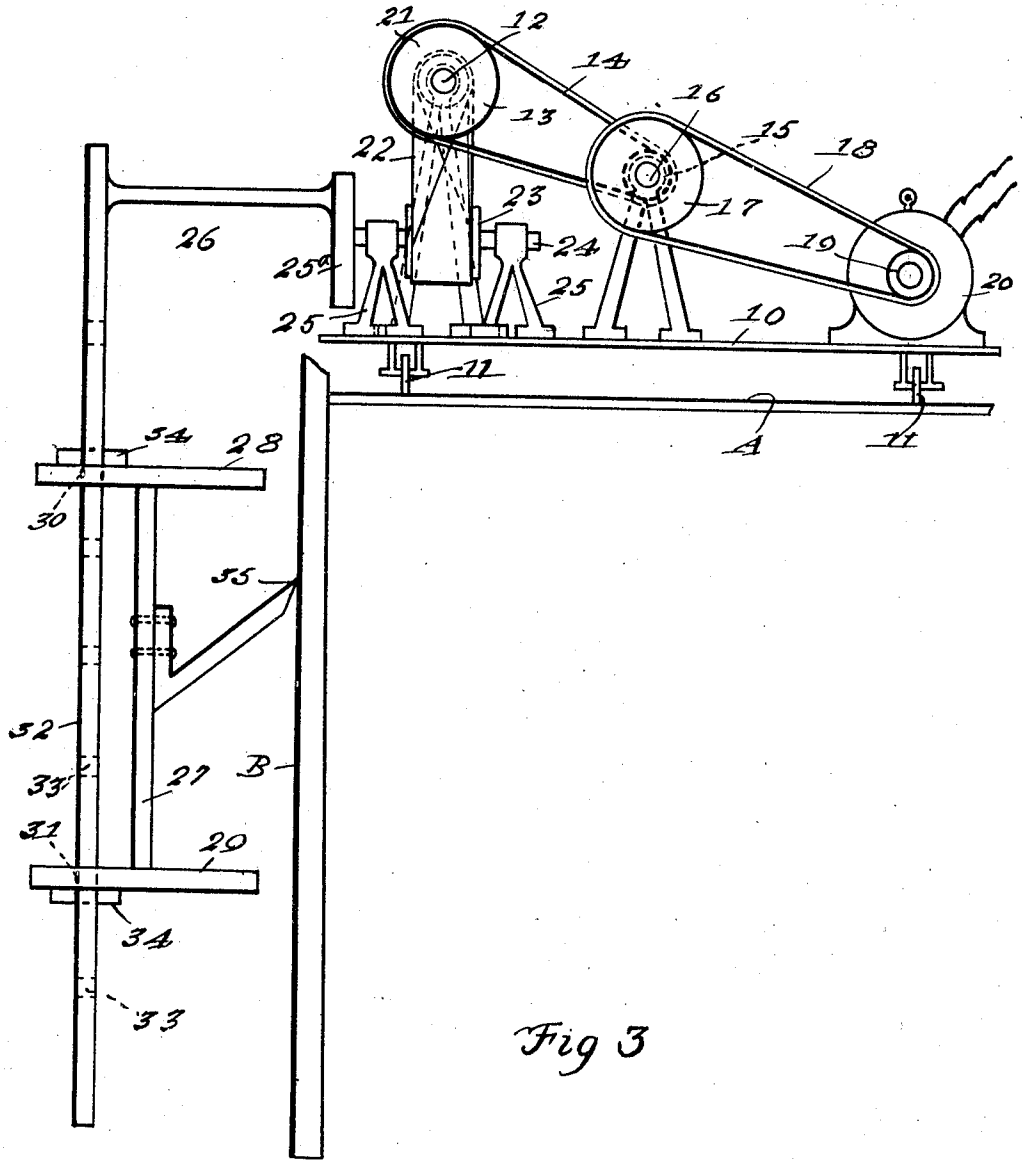


Fig 3

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UNITED STATES PATENT OFFICE.

KUN SUNG CHUNG, OF HONOLULU, TERRITORY OF HAWAII.

SCRAPER.

1,327,522. Specification of Letters Patent. Patented Jan. 6, 1920.

Application filed August 25, 1919. Serial No. 319,814.

To all whom it may concern:

Be it known that I, KUN SUNG CHUNG, a citizen of the United States of America, residing at Honolulu, Territory of Hawaii, have invented new and useful Improvements in Scrapers, of which the following is a specification.

This invention relates to devices adapted for use upon shipboard and has for its object the provision of motor driven means for scraping from the hull of the ship, any accumulation of barnacles or other marine life which might adhere thereto.

An important object is the provision of a device of this character which is adapted to be positioned and moved along the deck of a ship and carrying a scraper member bearing against the hull of the ship, means being provided for giving the scraper member vertical and lateral movement in circular form to produce a sort of rotary scrubbing action which will effectually result in removal of accumulation of undesirable matter.

Another object is the provision of a device of this character provided with means whereby the vertical position of the scraper member upon the hull may be varied whereby the entire hull may be scraped from the top to the bottom thereof in a thorough and efficient manner.

An additional object is the provision of a device of this character which will be comparatively simple and inexpensive in manufacture, installation, and operation, highly efficient in use, durable in service, and a general improvement in the art.

With the above and other objects and advantages in view, the invention consists in the details of construction to be hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which

Figure 1 is a plan view of the deck of a ship, showing my device thereon,

Fig. 2 is a side elevation of the ship, showing my device in operation,

Fig. 3 is a cross sectional view through the hull and showing the device in operation, and

Fig. 4 is a fragmentary view of the scraper element.

Referring more particularly to the drawings, the letter A designates the deck of a ship and B designates the hull. It is well known that after a ship has been in service for variable lengths of time barnacles and other undesired forms of matter accumulate on the hull and this incrustation eventually becomes of such thickness as to appreciably retard the speed of the ship. It is therefore highly desirable that some simple and efficient means be provided for removing this accumulation.

In carrying out my invention I provide a carriage including a supporting frame-work 10, mounted upon wheels 11 and adapted to be moved upon the deck of the ship from place to place. This frame-work carries a horizontal shaft 12 which is provided at one end with a pulley 13 about which is trained a belt 14 which is in turn trained about another pulley 15 carried on a shaft 16 supported by the frame-work. This shaft 16 carries a second pulley 17 about which is trained a belt 18 driven preferably by a pulley 19 operated by an electric motor 20 which is driven from any suitable source of current. The shaft 12 is provided at intervals with a plurality of pulleys 21 and about these last named pulleys are trained belts 22 which are in turn trained about pulleys 23 mounted on shafts 24 extending laterally from supporting bearing members 25 carried by and forming a part of the frame-work 10. These shafts 24 carry fly-wheels 25^a and are provided at their ends with rigidly secured arms 26.

The scraper member is formed as a sheet 27 of suitable material such as steel, provided at its upper and lower ends with flanges 28 and 29, respectively, which extend toward the hull of the ship and which are provided with vertically alined holes 30 and 31, respectively. Vertically disposed rods 32 extend through these alined holes and are pivotally connected at their upper ends with the free extremities of the arms 26. At its lower end, each rod 32 is provided with a series of spaced holes 33 within selected ones of which are disposable transverse pins 34 secured in place by any desired means whereby this scraper member may be supported in vertically adjustable positions with respect to the rods 32, whereby the

device may be adjusted for operating upon the upper and lower portions of the hull of a ship. Secured substantially centrally upon the sheet of material 27 is an upwardly inclined scraper blade 35 adapted to contact with the hull B.

In the operation of the device it will be seen that when the carriage formed by the wheel supported frame-work 10 is disposed at any desired location upon the deck of the ship and the motor 20 set in operation, the shaft 12 will be rotated, causing rotation of the fly-wheels 25ª and rotary movement of the arms 26. This movement of the arms 26 will cause movement in a combined vertical and lateral direction of the vertical rods 32 which will result in imparting to the scraper member 27 a rotary scrubbing action. As the scraper blade 35 projects from this member and engages against the hull B, it will be obvious that any incrustations upon the hull will be effectually scraped away and removed. When the upper portion of the hull has been scraped, it is merely necessary that the pins 34 be removed from the uppermost holes 33 and be lowered into the next succeeding holes therebelow so that the action of the scraper blade 35 will remove accumulation at a lower level. This adjustment of the pins 34 is made from time to time until the scraper blade 35 has acted upon the entire hull from the upper to the extreme lower portion thereof. By moving the carriage formed by the frame-work 10 and wheels 11 lengthwise of the deck, it will be obvious that the entire length of the hull may be scraped as well as the entire height.

From the foregoing description and a study of the drawings, it will be apparent that I have thus provided comparatively simple and inexpensive means which may be readily operated and adjusted for removing from the hull of a ship throughout the length and height thereof, all accumulations or incrustations of barnacles or other undesirable matter adhering thereto.

While I have shown and described the preferred embodiment of my invention, it is of course to be understood that I reserve the right to make such changes in the form, construction, and arrangement of parts as will not depart from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:—

1. A device of the character described comprising a carriage adapted for movement to a selected location upon the deck of a ship, a shaft carried by said carriage, means for rotating said shaft, a plurality of wheels driven by said shaft, a plurality of vertically disposed rods operatively connected with said wheels and movable in a vertical and lateral direction thereby, a member carried by said rods, and a scraper blade carried by said member and engaging against the hull of the ship.

2. A device of the character described comprising a carriage, a horizontal driven shaft carried by the carriage, a plurality of wheels driven by said shaft and rotating in a vertical plane, a plurality of vertically disposed rods operatively connected with said wheels for vertical and lateral movement, a member carried by the lower ends of said rods, a scraping blade carried by said member and engageable against the hull of a ship, and means for adjusting the position of said member upon said rods.

3. A device of the character described comprising a carriage, a horizontally disposed shaft thereon, means for driving said shaft, a plurality of wheels driven by said shaft, a plurality of vertically disposed rods operatively connected with said wheels and movable in a vertical and lateral direction thereby, a member formed as a sheet metal shield channel shaped in cross section, and a scraper blade carried by said shield and engageable with the hull of a ship.

4. A device of the character described comprising a horizontally disposed shaft, means for driving said shaft, a plurality of pulleys mounted on said shaft, a plurality of wheels corresponding in number to the number of said pulleys and journaled for rotation in the same vertical plane, means engaging said pulleys for driving said wheels, arms connected with and rotating with said wheels, a plurality of vertically disposed rods corresponding in number to the number of said wheels and pivotally connected with the extremities of said arms, a member formed as a sheet metal shield channel shape in cross section and having its upper and lower walls provided with alined holes, a scraper blade carried by said shield and engageable with the hull of a ship, and means for adjusting the position of said shield with respect to said vertical rods.

5. A device of the character described comprising a horizontally disposed shaft, means for driving said shaft, a plurality of pulleys mounted on said shaft, a plurality of wheels corresponding in number to the number of said pulleys and journaled for rotation in the same vertical plane, belts engaging said pulleys for driving said wheels, arms connected with and rotating with said wheels, a plurality of vertically disposed rods corresponding in number to the number of said wheels and pivotally connected with the extremities of said arms, a member formed as a sheet metal shield channel shaped in cross section and having its upper and lower walls provided with alined holes, a scraper blade carried by said shield and engageable with the hull of a ship, and means for adjusting the position of said

shield with respect to said vertical rods, said means comprising a pin associated with each rod and engageable within selected ones of a series of holes formed in each rod.

6. A device of the character described comprising a carriage adapted for movement to a selected location upon the deck of a ship, a plurality of wheels rotating in the same vertical plane, a plurality of vertically disposed rods operatively connected with said wheels and movable in a vertical and lateral direction thereby, and a scraper member carried by said rods and engaging against the hull of a ship.

In testimony whereof I affix my signature.

KUN SUNG CHUNG.