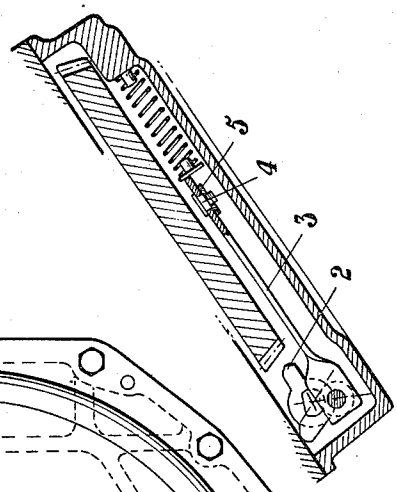
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MANUALLY OPERATED CAPSTANS PARTICULARLY FOR THE RUNNING RIGGING OF SAILBOATS

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Fig. 3



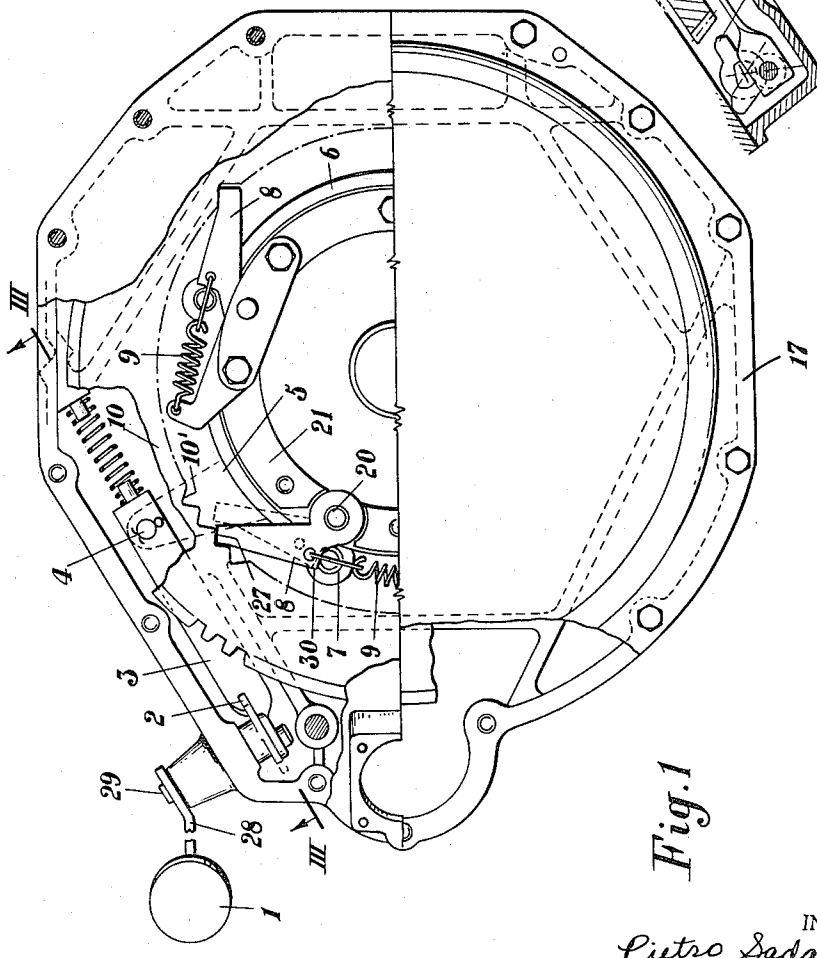


Fig. 1

INVENTORS,
Pietro Sada
Luigi Taragna

BY Wenderoth, Lind and Ponack
ATTORNEYS

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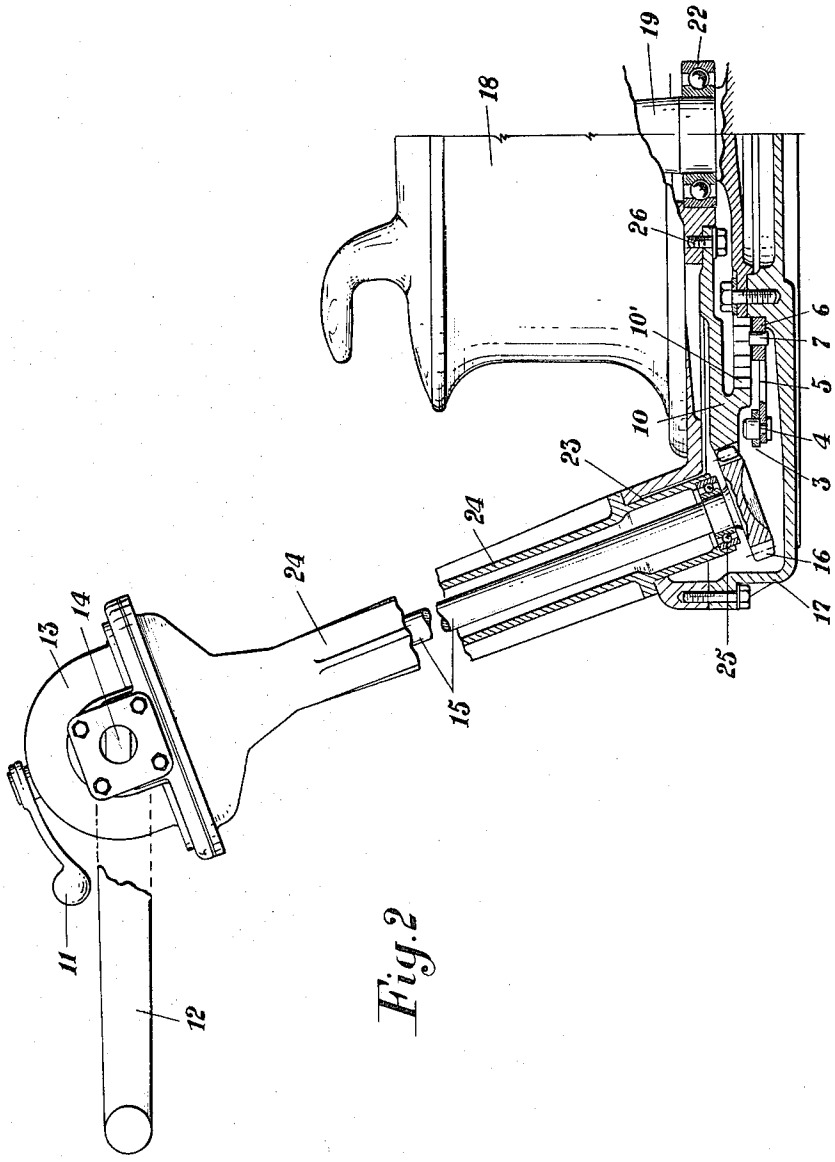


Fig. 2

INVENTORS
Pietro Sada
Luigi Taragna

BY Wenderoth, Lind, and Ponack
ATTORNEYS

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MANUALLY OPERATED CAPSTANS PARTICULARLY FOR THE RUNNING RIGGING OF SAILBOATS

Pietro Sada and Luigi Taragna, both of Aprilia, Latina, Italy

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1 Claim. (Cl. 254—150)

The present invention relates to an improvement in the manually operated capstans; particularly said capstans can be used for the running rigging of sailboats, but it is to be noted at once that this embodiment of the invention has been disclosed only by way of an exemplary embodiment and with no limitative statement about the possibilities of use of this invention.

More specifically, this invention relates to a pedal operated control device destined to clutch or to unclutch the capstan barrel with respect to the operating handles so as to block or render idle at will said barrel if the winding or the unwinding of the rope, the loops of which are wound on the barrel is to be obtained.

Generally, the capstan according to this invention comprises a base suitable to be fixed to its support surface, consisting in the exemplary case of the deck of the boat, said base serving also as case containing the various gearings.

The operation of the capstan is obtained, as aforesaid, by means of manually operated handles which cause a pinion to be rotated, said pinion operating an internal and external ring gear while the barrel of the capstan is rigidly fixed to said ring gear.

A set of pawls provides to annul the reaction of the rope wound about the barrel, so as to render possible the operation in either direction of the barrel when submitted to stress. A pedal unit is suitable in turn to disengage simultaneously all the pawls from the inner teeth of the gear ring connected to the capstan barrel so that by acting on said pedal said barrel will be disengaged allowing thus the rope wound about the barrel to be paid out with no action on the handles.

This invention will be better described, in one preferred embodiment thereof, with reference to the drawings contained in the attached sheets. In said drawings:

FIG. 1 is a top plane view, wherein the upper portion shows the unit of the mechanisms assuming removed the cover of the lower case, the capstan barrel and the operating stand, while the lower portion shows the sole base of the unit;

FIG. 2 is a view of one half of the unit, and a partially sectional detail;

FIG. 3 is a detail cross sectional view taken along the line III—III of FIG. 1.

With reference to the drawings, the unit comprises a capstan the barrel 18 of which is supported by the shaft 19 about which said barrel can freely rotate through the ball bearing 22.

The shaft 19 is rigidly connected to the base 17 forming the case of the mechanisms, as it will be described later on; said case is closed at its top by a cover 23 wherefrom projects the outer casing 24 of the operating stand.

Said operating stand is provided at its top, with the box 13 wherein a gearbox (not shown in the figure) is contained, said gear box being operated through the outer lever 11; the motive power to the gear box is imparted by the pair of manually operated handles 12.

The gearbox acts on the shaft 14 which, by means of gearing not shown in the figure, rotates the shaft 15 extending in the stand 24 and the lower end of which is

supported by the ball bearing 25 carried by the stand itself.

At the lower end of the shaft 15 is mounted the gear wheel 16 engaging the internal and external ring gear 10 which is rendered rigid to the barrel 18 by the screws 26. Therefore, when the gear wheel 16 is rotated by means of the handles 12, said wheel engaging by its teeth the external ring gear 10 causes the barrel 18 to be rotated through the bearing 22 about its support shaft 19.

The unit is completed by a set of pawls 8 pivoted at 20 (FIG. 1) on a stationary ring 21 being part of the base, said pawls engaging by their ends 27 the internal gear 10′ (FIGS. 1 and 2) of the gear 10.

The set of pawls is provided with as many springs 9 as many are the pawls, said springs pulling each pawl 8, being anchored one end of each spring to one pawl, while the other end of each spring is anchored to a stationary element of the base 17; the springs 9 tend therefore to keep the ends 27 of the pawls 8 engaged with the teeth 10′ so as to hold the gear 10 and consequently also the barrel 18.

The ends 27 of the pawls have a substantially right angles contour, and also the inner teeth 10′ of the gear 10 have a right angle contour so that the unit forms an irreversible engagement so that the gear 10 when operated, can slide on the pawls which, on the contrary prevent the gear from rotating due to a passive action.

The capstan is completed by a pedal 1 which through its arm 28 and the shaft 29 acts onto the rocker 2 causing the latter to rotate. When the pedal 1 is operated, the rocker 2 causes the lever 3 to be moved forward through the pin 4 and said lever is rigidly connected by the arm 5 to a ring 6 capable of rotating about the aforesaid ring 21 carrying the pivots 20 of the pawls 8. The rotation of the ring 6 which is concentrical to the ring 21, carries the pin 7 to act against the shoulder 30 of each pawl 8, being provided as many pins 7 as many are the pawls. The pushing action of the pin 7 onto the shoulder 30 causes each pawl 8 to rotate clockwise as seen in FIG. 1, disengaging thus the end 27 of each pawl from the inner teeth 10′ of the gear 10, releasing thus the barrel 18 from the holding action, so that the barrel can be rotated, for instance, by the tractive action of a running rigging wound about the barrel, allowing the rope to be paid out without having to remove same from the barrel. Of course, when the action onto the pedal will be released, the springs 9 will move back the pawls from the disengaged position (shown in dot and dash for one pawl in FIG. 1) to their engaged position (shown in solid line in said figure) so as to embody again the holding action on the capstan.

Under these conditions, the barrel of the capstan will be again held against the passive action applied onto said barrel, which is submitted on the contrary to the active operation action applied through the handles 12.

It is to be noted that in the unit according to this invention all the operative mechanisms are enclosed within the case 17 forming the base, so that said mechanisms are protected against any external action. In the meantime, the base 17 forms the base suitable to be applied to the support surface, and in the specific case, to the deck of a boat.

The present invention has been illustrated and described in one preferred embodiment, being however understood that constructive changes might be practically adopted without departing from the scope of the present industrial privilege.

We claim:

A manually controlled capstan, particularly for running rigging of sailboats comprising a casing rigidly secured to a sailboat, a stationary shaft rigidly secured within said

casing projecting upwardly therefrom, a barrel rotatably arranged on said shaft above said casing, a first gear wheel having external and internal teeth rigidly secured to said barrel to rotate around said stationary shaft, a stand protruding upwardly askew of said casing, a driving shaft rotatably arranged in said stand, a second gear wheel rigidly secured to one end of said driving shaft to engage said outer teeth of said first gear wheel, a gearbox secured to said stand operatively coupled with the other end of said driving shaft, two manually operated handles for operating said gear box, an outer lever for reversing the rotation direction of said driving shaft, a ring connected to said casing around said stationary shaft, a plurality of pawls secured to said ring, a plurality of springs anchored each at one end to one of said pawls and at the other end to said casing to bias said pawls into engagement with said internal teeth, a rotary ring rotatably arranged around said ring, a plurality of pins rigidly secured to said rotary ring and each contacting one of said pawls, an arm protruding laterally from said rotary ring, a lever arranged

within said casing and pivoted to the end of said arm, a rotary shaft protruding through a lateral projection of said casing, a pedal connected to the outer end of said rotary shaft, a rocker connected to the inner end of said rotary shaft and operatively coupled to one end of said lever, a return spring arranged at the other end of said lever and resting on an inner projection of said casing, whereby by pushing said pedal said rocker displaces said lever to rotate said rotary ring by said arm for disengaging said pawls from said inner teeth to allow a free rotation of said barrel, said return spring causing said lever to return to its original position when the pushing action on said pedal is released.

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SAMUEL F. COLEMAN, *Primary Examiner.*