

(No Model.)

D. McLACHLAN.
DETACHABLE RUDDER.

No. 550,522.

Patented Nov. 26, 1895.

Fig. 1.

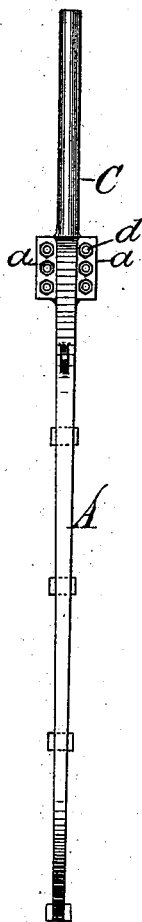
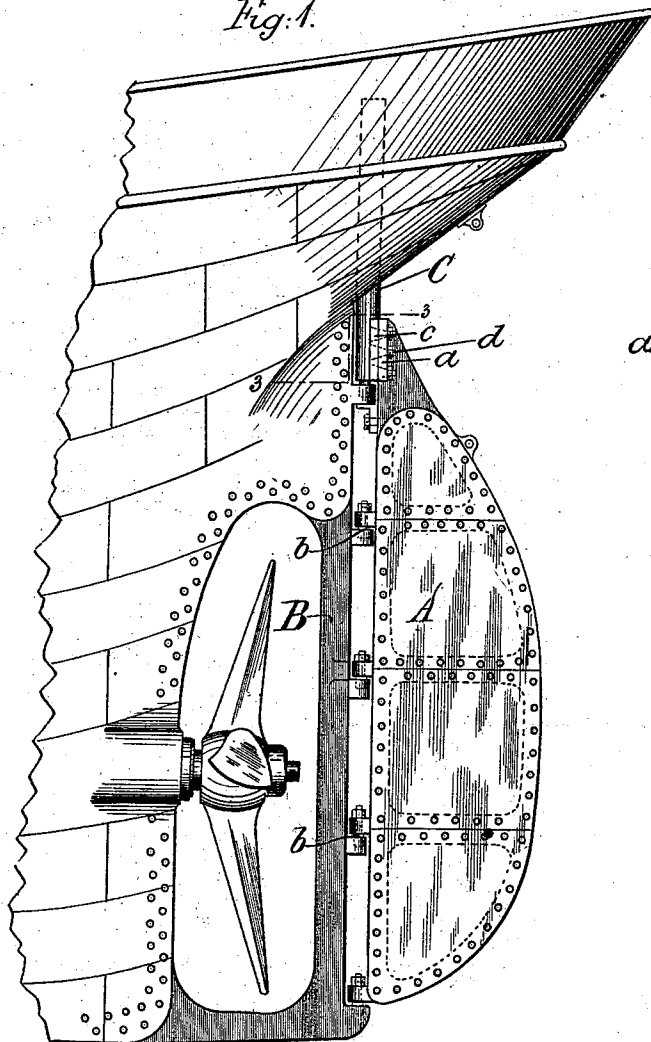


Fig. 2.

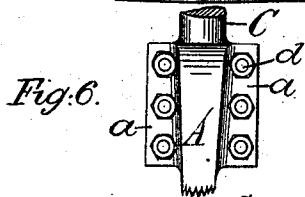


Fig. 6.

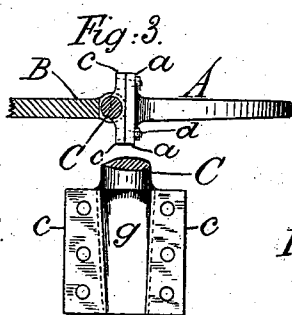


Fig. 3.

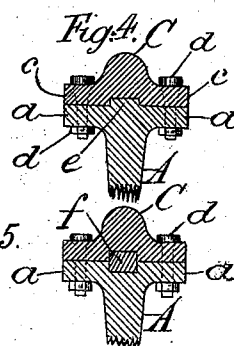


Fig. 4.

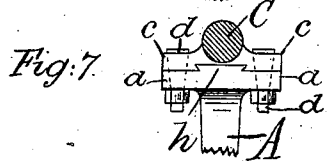


Fig. 7.

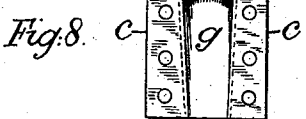


Fig. 8.

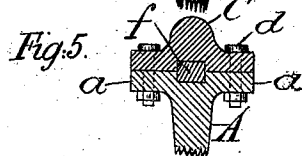


Fig. 5.

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DAVID McLACHLAN, OF CARDIFF, ENGLAND.

DETACHABLE RUDDER.

SPECIFICATION forming part of Letters Patent No. 550,522, dated November 26, 1895.

Application filed September 10, 1894. Serial No. 522,602. (No model.) Patented in England February 7, 1894, No. 2,705.

To all whom it may concern:

Be it known that I, DAVID McLACHLAN, a subject of the Queen of the United Kingdom of Great Britain and Ireland, residing at No. 8 Eleanor Place, Cardiff, in the county of Glamorgan, England, have invented certain new and useful Improvements in Detachable Rudders, (for which I have obtained the following patent: Great Britain and Ireland, No. 2,705, dated February 7, 1894;) and I do hereby declare that the following is a full, clear, and exact description of the invention, reference being made to the accompanying drawings, which are to be taken as part of this specification and read therewith, and one which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improved joint between a ship's rudder and its head; and it consists of the novel constructions hereinafter described and claimed.

The special object of the invention is to provide a more perfect, cheaper, and stronger joint than any hitherto in use between a rudder-head and its rudder detachable from it without interference therewith or with any of the inboard apparatus connected therewith.

In the accompanying drawings, Figure 1 is a side elevation of a ship's stern, its rudder, and the rudder-head. Fig. 2 is a rear elevation of the rudder and the rudder-head. Fig. 3 is a sectional plan taken on the line 3 3 of Fig. 1. Fig. 4 is a horizontal section through a rudder and its head, illustrating a device for supplementing the holding power of the bolts. Fig. 5 is a horizontal section through a rudder and its head, illustrating a modified supplementing device. Fig. 6 is a detail rear elevation of my improved joint. Fig. 7 is a plan partly in section illustrating a further modification of the supplementing device. Fig. 8 is a rear elevation of the supplementing lugs as they are illustrated in Fig. 7. Figs. 4 to 8 are on an enlarged scale.

A is the rudder. It is hung on the stern-frame B by gudgeons and pintles *b b*, as heretofore.

C is the rudder-head.

Both rudder and rudder-head are detachable from each other. The present invention does not relate to the detachability, but only

to the improved joint, by which they are made fast to each other.

a a are a pair of strong lugs forged onto or otherwise incorporated with the top of the rudder. The two lugs are of the same size, one standing on each side of the rudder. Their front faces stand in the same vertical plane, the said plane being at right angles with the vertical plane of the rudder.

c c are a corresponding pair of lugs forged on or otherwise incorporated with the bottom of the rudder-head C. The rear faces of these two lugs stand in one and the same plane, the lugs themselves being of the same respective position, size, and shape as the lugs *a a*, already described, so that when the rudder A is hung on its pintles *b* the front faces of its lugs *a a* are adapted to fit close up to the rear faces of the lugs *c c* on the rudder-head C.

The joint between the rudder A and the rudder-head C is made by bringing the said faces of the lugs opposite to each other and together and fixing them in that position by means of holding bolts and nuts *d*, as illustrated. The bolt-heads may project in front of the lugs *c c*, as illustrated in Figs. 4 and 5, in which case they will serve as stops by engaging the stern-frame B when the rudder A is over to either port or starboard, or they may be countersunk to stand flush with the front face of the lugs *c c*, as illustrated in Figs. 1, 3, and 7.

I wish it to be distinctly understood that I do not pretend to be the inventor of a rudder separable from its head, the two being adapted to be held together in working position by holding-bolts passed through a horizontal flange on the adjacent end of each. My invention in respect of flange or lug as such is confined to the vertical position of them and of the plane of junction between them, for it is evident that the verticalness of both pairs of flanges and of the plane of their junction is an important part of the invention, it being the condition precedent and essential to the realization of the special object of the invention.

The faces of the two pairs of lugs may be flat; but I prefer to introduce between them a special device adapted to supplement the holding power of the bolts *d*. One such de-

vice is illustrated in Fig. 4. It consists of a central vertical ridge or feather *e* on the rudder-lugs *a a*, adapted to engage in a central vertical groove in the lugs *c c* of the rudder-head. The respective positions of the ridge and groove may be reversed. Both ridge and groove are rectangular in cross-section.

A modified device is illustrated in Fig. 5. It consists of a key *f*, rectangular in cross-section, standing in two central vertical grooves, one in the lugs of the rudder and the other in the lugs of the rudder-head, half of the key in one groove and half of it in the other.

A further modification of the special device is illustrated in Figs. 7 and 8. *g* is a central vertical groove in the rudder-head lugs *c c*. It is undercut or dovetailed in cross-section, as indicated by the dotted lines in Fig. 8 and the full lines in Fig. 7, and is tapered, being narrower at the bottom than at the top. *h* is a central vertical ridge or feather on the rudder-lugs *a a* and corresponds in size and section with the groove *g*.

I am aware that it has been proposed to make a rudder detachable from its head by making them separate from each other and joining them together by bolts passed through two horizontal flanges, one on the bottom end of the rudder-head and one on the top of the rudder; but I lay no claim to such a device, because it is outside the present invention, inasmuch as it does not admit of the rudder being lifted up till its pintles are out of its gudgeons (after the above-mentioned bolts have been withdrawn from the horizontal flanges) without previously raising the rudder-head. Further, I am aware that it has been proposed to connect a detachable rudder to its head by entering the top of the former into a fork on the bottom of the latter, leaving a space between the said top and bottom equivalent to the length of a pintle and filling such space with a key, which must be removed before the rudder-pintles (fast to the rudder) can be lifted out of their respective gudgeons. This key is a clumsy device.

It involves extra expense—its own and that of the bolts by which it is held, as well as the cost of getting it out of the fork when it is required to unship the rudder. Further, the fork is weakened by the holes made through its members to receive the last-mentioned bolts, while the so-weakened members are subjected to a strain adapted to wrench them away from each other by every motion of the rudder to either port or starboard, as well as by every impact of the waves upon the said rudder. I make no claim to every type of joint which permits of the rudder-pintles being lifted out of their respective gudgeons, but only to one characterized by vertical lugs or flanges standing one on each side of the rudder-head and rudder, respectively.

I claim—

1. The combination of the bottom of a rudder head, two vertical lugs or flanges incorporated therewith and standing one on each side thereof, the top of the rudder, two vertical lugs or flanges incorporated therewith and standing one on each side thereof, and holding bolts adapted to hold the two lugs or flanges on the top of the rudder to the two lugs or flanges on the bottom of the rudder head.

2. The combination of the bottom of a rudder head, two vertical lugs or flanges incorporated therewith and standing one on each side thereof, the top of the rudder, two vertical lugs or flanges incorporated therewith and standing one on each side thereof, holding bolts adapted to hold the two lugs or flanges on the top of the rudder to the two lugs or flanges on the bottom of the rudder head and a central vertical device between the two pairs of lugs adapted to supplement the holding power of the said bolts.

In witness whereof I have hereunto affixed my signature, in presence of two witnesses, this 25th day of August, 1894.

DAVID McLACHLAN.

Witnesses:

SAMUEL WESLEY ALLEN,
FRANK. HOWELLS.