

March 12, 1963

E. G. POLLAK

3,080,845

BOAT HAVING MOVABLE KEEL DEVICE

Filed Nov. 6, 1961

2 Sheets-Sheet 1

Fig. 1.

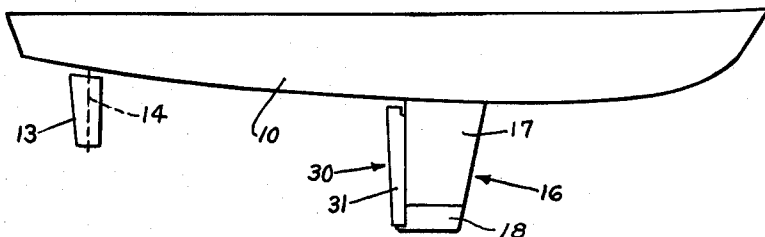


Fig. 2.

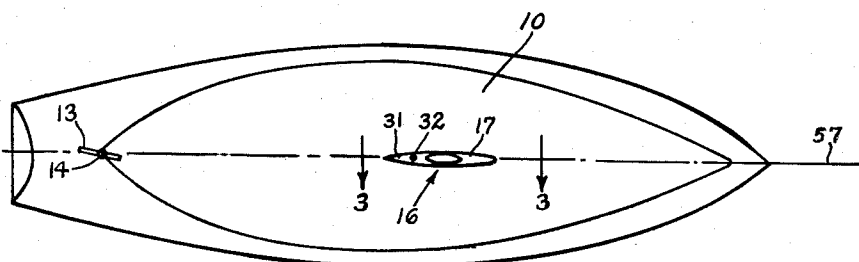
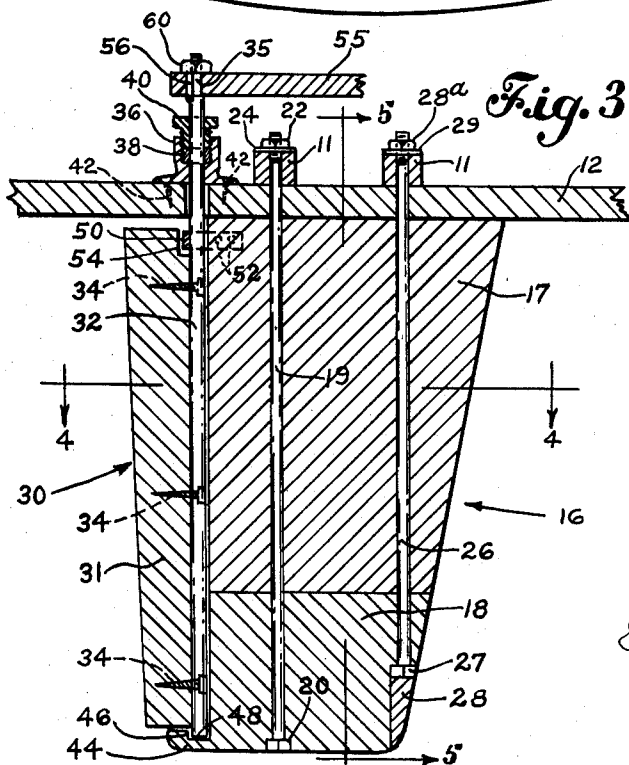


Fig. 3.



INVENTOR.

Edward George Pollak
BY Harold E. Cole
Attorney

March 12, 1963

E. G. POLLAK

3,080,845

BOAT HAVING MOVABLE KEEL DEVICE

Filed Nov. 6, 1961

2 Sheets-Sheet 2

Fig. 4.

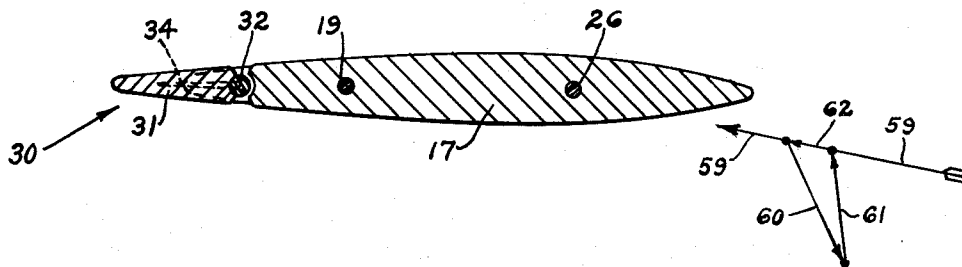
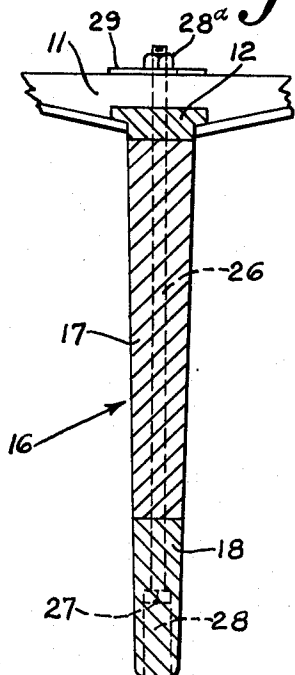


Fig. 5.



INVENTOR
Edward George Pollak
BY Harold E. Cole
Attorney

1

3,080,845

BOAT HAVING MOVABLE KEEL DEVICE
Edward George Pollak, Pepperell Road, Kittery, Maine
Filed Nov. 6, 1961, Ser. No. 150,473
3 Claims. (Cl. 114—140)

This invention relates to a boat having a novel keel device.

One object of my invention is to provide a boat having, in addition to the usual keel, a keel device having a flap that is movable to any position that is desirable.

Another object is to provide means whereby said keel device can be operated by a person seated in a boat, to thereby move a keel flap so as to acquire finer control over the movements of the boat when conditions make that desirable.

The foregoing and other objects which will appear as the nature of the invention is better understood, may be accomplished by a construction, combination and arrangement of parts such as is disclosed by the drawings. The nature of the invention is such as to render it susceptible to various changes and modifications, and therefore, I am not to be limited to the construction disclosed by the drawings nor to the particular parts described in the specification; but am entitled to all such changes therefrom as fall within the scope of my claims.

In the drawings:

FIG. 1 is a diagrammatic, side elevational view of my boat.

FIG. 2 is a bottom plan view of said boat.

FIG. 3 is an enlarged, sectional view taken on the line 3—3 of FIG. 2.

FIG. 4 is a sectional view taken on the line 4—4 of FIG. 3.

FIG. 5 is a sectional view taken on the line 5—5 of FIG. 3.

As illustrated, I show a boat having a main body or hull 10 having floor timbers 11 and a keel timber 12 attached to said floor timbers. A rudder 13 is movably fastened to said hull by a well known shaft 14.

A well known keel 16 of the fin-type has a main body 17 that includes a lower portion 18 of metal such as iron, bronze or lead. Said keel 16 is attached to said hull 10 by a bolt 19 that extends through a said floor timber 11, keel timber 12 and said keel 16. This bolt 19 has a head 20 countersunk in the lower end of said keel and at the upper end it has a nut 22 and a bearing plate 24 outside a said floor timber 11 that holds it in place. Another bolt 26 extends through another of said floor timbers, said keel timber and into said keel 16. This bolt 26 has a head 27 extending into said keel metal portion 18 as shown, being retained as by a plug or plastic filler 28, and held in place by a nut 28a and a bearing plate 29.

In addition to said fixed keel 16 I provide a movable keel device 30 having a flap or keel after-portion 31 that is attached to a rotatable stock or shaft 32 by screws 34 or other pin members extending through the latter. Said shaft has a reduced upper portion 35, and it extends through an opening in a said keel timber 12, and to the latter is attached hollow retaining means having a stuffing box 36, containing waterproof packing 38 compressed by a gland nut 40. Screws 42 hold said stuffing box 36 to said keel timber 12. Said shaft 32 movably extends through said stuffing box and gland nut.

Said keel lower portion 18 has a lower, lateral extension 44 having a recess 46 that enables it to serve as a bearing member 48 for said shaft 32. A metal strap or bearing

2

member 50 is fastened by screws 52 to said keel main body 17 and it extends around said shaft 32 and enters a recess 54 in said keel flap 31, whereby said strap provides a bearing member for said shaft.

Rotation of said keel device 30 may be controlled manually by a handle or tiller 55 shown broken away in said FIG. 4. This handle 55 is mounted on said shaft reduced portion 35, being attached thereto by a well known shaft key 56 and retained thereon by a nut 60 screw-threadedly connected to said shaft 32.

My invention is especially adapted for a sailboat. In sailing, the wind, by means of the sail or sails, exerts a large, lateral force upon the hull and keel, as well as a forward force, hence the boat does not move through the water in the direction of the center-line, which is indicated by the numeral 57 in said FIG. 2; but moves at an angle thereto. The angle between the direction of said motion and the direction of the center-line of the vessel is termed "angle of leeway" and is dependent upon the size and shape of the underwater surface of the hull, keel and rudder. Said angle of leeway likewise is the "angle of attack" of the water upon said keel.

Positioning of said keel flap 31 at an angle to said center-line 57 alters the hydrodynamic characteristics of said keel and permits it to counteract the lateral force of the wind at a smaller angle of attack or leeway, and increases speed through the water. Reduction of leeway is highly desirable in sailing into the direction of the wind by the process of tacking inasmuch as the total distance that must be sailed is proportionate to the secant of the course angle made good relative to the objective point, times the direct distance to the objective point. A reduction in course angle by reduction of leeway, or an increase in speed, are the two factors which can reduce the time required by a vessel to reach a destination lying upwind.

In said FIG. 4 the arrow 59 indicates the direction of water flow relative to the vessel, the angle between said arrow 59, and the center-line 57, is the angle of attack or angle of leeway. The arrow 60 indicates the general direction and relative magnitude of the force exerted by the wind; and the arrow 61 indicates the general direction and relative magnitude of the force exerted by the keel; and the arrow 62 indicates the direction and relative magnitude of the forces recognized as hydrodynamic resistance of the hull, keel, rudder and other underwater portions of the vessel.

What I claim is:

1. A boat comprising a hull, a rudder connected to said hull, a keel connected to said hull, a keel device rearwardly of said keel and spaced forwardly from said rudder, said keel device having a rotatable shaft extending downwardly and adjacent said keel, only one flap attached to and movable with said shaft relative to said keel, and means rotatably connecting said shaft to said hull.

2. A boat comprising a hull, a rudder connected to said hull, a keel connected to said hull, a keel device rearwardly of said keel and spaced forwardly from said rudder, said keel device having a rotatable shaft extending downwardly and adjacent said keel, only one flap rearwardly of said keel and attached to, extending parallel with, and movable with said shaft relative to said keel, and means rotatably connecting said shaft to said hull, the longitudinal axis of said flap extending parallel with the longitudinal axis of said shaft.

3. A boat comprising a hull, a rudder connected to said hull, a keel connected to said hull, and fixedly positioned longitudinally therewith, a keel device rearwardly of said

keel and spaced forwardly from said rudder, said keel device having a rotatable shaft extending downwardly and adjacent said keel, only one flap attached to, and movable with said shaft laterally relative to said keel, and means rotatably connecting said shaft to said hull, said rudder being positioned at a rear half portion of said hull, said keel and keel device being positioned adjacent the mid-length of said hull, said flap extending downwardly parallel with said keel.

References Cited in the file of this patent

UNITED STATES PATENTS

768,085	Stromborg	Aug. 23, 1904
1,885,198	Hale	Nov. 1, 1932
2,167,552	Paine	July 25, 1939
2,851,001	Scott	Sept. 9, 1958