To all whom it may concern:

Be it known that I, CAMERON B. WATERMAN, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Boat-Propelling Devices, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to new and useful improvements in boat propelling devices and particularly in the construction and combination of parts, whereby an internal combusion motor may be mounted outboard, as will be more fully hereinafter described and set forth in the claims.

One object of my invention is to provide means whereby the motor may be easily and quickly shipped or unshipped and detached from one boat and attached to another if desired.

Another object is to provide means for raising the motor to lift the propeller and shaft from the water and means for securing the parts in their raised position, so that they will not drag when it is desired to propel the boat by other means, as by sail or oars.

A third object of my invention is to obviate the overheating liable to be caused in an air-cooled motor when the speed of propulsion will not produce an air current sufficient to lower the temperature of the motor to the required point.

In the drawings, Figure 1 shows a side elevation of my motor applied to the stern of a boat; Figs. 2 and 3 are rear and front elevations respectively; Figs. 4 and 5 are vertical longitudinal sections of the upper end lower supporting bearings shown in large scale.

A is a boat having a transom A', a keel A, and a stern thwart a. B is a supporting post preferably of tubing and is secured to the boat by means of upper and lower clamps. The upper clamp comprises a vertical member having downwardly-extending furcations C for engaging the transom and secured thereto by a clamping screw c having a screw threaded engagement with one of said furcations C, and a normally horizontal member having one end bifurcated to engage the projection C between the furcations C and the other end e sleeved on the post B. The furcations C are adjustably secured to C by means of a bolt c passing through C C. A series of apertures being provided in C, the upper end of the post may be set at different distances from the transom to vary the pitch of the propeller shaft, as desired. The lower clamp consists of a cup-shaped stop bearing 60 or socket D in which is stopped the lower end of the post B and is bifurcated at d and provided with a wing screw d' passing through one of the furcations whereby it is secured to the keel or stern post of the boat.

E is a motor having a cylinder E' and a crank case E preferably formed in two sections e e' in the ordinary manner, the sections being held together by bolts e passing through both sections. The motor is supported on the post B by means of brackets or arms F extending from collars F' sleeved on the post and fixed thereto by pins or by brazing. It is obvious that each arm may be separately attached to the post if desired but I prefer to form them in pairs integral with the collars F'. The ends of the arms are bent and slotted to engage the bolts e' so that the position of the motor relative to the arms may be adjusted.

The motor shaft G projects from both sides of the crank case and on the end between the post and the motor is keyed or otherwise suitably secured a sprocket H. On the opposite end of the shaft G are ratchet teeth G' for engagement with the teeth J' of a starting crank J which is preferably loosely sleeved on the reduced end g of the shaft G.

At a suitable distance below the motor are propeller shaft bearings K preferably formed in the apexes of V-shaped supports K', the ends of the supports being secured to the motor by engagement with the ends of the two lower bolts e. The ends of the supports are slotted at k so that the bolts may be moved therein to adjust the propeller shaft in relation to the motor. Mounted in these bearings is a propeller shaft L having one end rounded to fit loosely in a recess L' in the lower end of post B just above the socket D of the lower clamp, the recess thus forming a thrust bearing for the shaft, an l on the other end of the shaft is secured a propeller wheel L'. A sprocket H' is keyed on the propeller
shaft in alignment with the sprocket H and
and an endless chain H’ carried by these sprock-
ets transmits power from the motor-shaft to
the propeller. It is obvious that a vertical
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shaft with bevel gears may be used in place
of the chain and sprockets if desired, without
departing from the scope of my invention.
I prefer to employ an air-cooled motor on
account of its weight but the transom of the
boat is liable to shut off most of what little
air current is caused by the motion of the
boat and when run at a high speed there is
great danger of over-heating. This diffi-
culty I have obviated by setting the cooling
flanges M with a slight downward pitch from
the front to the back of the motor, as clearly
shown in Fig. 1, and by securing a deflector
or shield M’ to the upper pair of arms F, so
that the water thrown upwards by the chain
H when running above normal speed will be
deflected and thrown upon the flanges M.
The pitch of these flanges will carry a portion
of the water around to the back of the motor
and the consequent rapid evaporation will
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supplement the air cooling. If desired, I
may form grooves in the flanges to further
assist in distributing the water.
On the upper end of the post B I secure a
tiller N sleeved on the post and pinned as at
n. A gasoline tank O is secured on the tiller
by means of metal straps O’ or by any other
suitable means and between this tank and the
motor is the carburetter P connected to the
motor intake by a gas conduit P’ and to
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the tank by a gasoline conduit P”. On the
tiller is a sector Q to which is pivoted a hand
lever Q’ connected to the commutator S by
means of rod R, bell crank lever R’ pivoted
on the tiller, rod R”, bell crank lever R” piv-
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oted on the motor, and rod R”. The commu-
tator may thus be adjusted by means of the
lever Q’ and if desired I may arrange a
lever adjacent thereto with connections for
adjusting the throttle or the mixture.
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The batteries T and coil T’ are placed in
any suitable place in the boat, preferably un-
der the stern thwart a, and are electrically
connected (connections not shown) to the
commutator S and spark plug S’ in any ordi-
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nary manner, as the wiring may be connect-
ed in different ways well known to those
skilled in the art and depends largely upon
the style of coil and commutator employed,
I shall not further describe it.
When it is desired to raise the propeller
and shaft from the water, the post B is raised
from the step bearing D and slides through
the sleeved portion c of the upper clamp,
carrying the motor, propeller, tiller, and all
rigid parts. When raised the required dis-
tance, a wing screw c’ passing through a
screw-threaded aperture in c’, is tightened to
engage the post B and the parts are thus held
in their raised position. The tiller is then
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pressed downwards, tilting the motor and
other parts, as shown in dotted lines in Fig.
1, so that the sprocket H’ and propeller are
entirely clear of the water. The device is
held in this position by a hook-ended rod U
engaging a suitable ring or staple U’ in the
thwart a and the tiller or a suitable ring U”
atached to the tiller.
While I have shown and described specific
forms of clamps, I do not wish to limit my-
self to these, as any form of clamp may be
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used without departing from the scope of
my invention. I prefer, however, to use a
form of clamp which may be attached to any
boat without the use of tools and which will
permit of the raising alone or the tilting alone
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or the raising and tilting combined to ele-
vate the propeller above the water.
When the larger sizes of motors are em-
ployed, as for instance, for use on sail boats,
I may, if desired, provide clamps which will
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engage the post B slidably but not rotatably,
allowing the boat to be steered by her own
rudder. This of course can only be done
where the motor is attached to the over-hang
of the stern aft of the rudder.
With the motor as shown, the pivotal ar-
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rangement of the motor and propeller per-
mits steering the boat thereby and the whole
device may be started and operated from
the stern thwart and if it is desired to install
the device on a canoe, the tiller and controlling
means may be extended farther forward for
operation.
The exhaust conduit X is connected to the
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motor in the ordinary way and is preferably
extended downwards and turned astern, as
at X’, opening below the surface of the water
aft of the propeller wheel. The water thus
serves as a muffler for the motor.
What I claim as my invention is:
1. In a boat propelling device, the combi-
nation with a frame arranged to be secured
on the outside of a boat, of an explosive
motor, means for securing the crankcase of said
motor to said frame, a shaft on said motor, a
propeller shaft supported below and parallel
with said motor shaft, and a drive connection
therebetween.
2. In a boat propelling device, the combi-
nation with a motor, of a motor-supporting
frame thereon arranged to be attached to
the outside of a boat, a propeller shaft, a sup-
port having bearings thereon carried by and
dependent from said motor, and a drive con-
nection from the motor to said shaft.
3. In a boat propelling device, the combi-
nation with a frame adapted to be secured
on the outside of a boat, a motor mounted
thereon, a propeller shaft driven and sup-
ported by said motor, and a thrust bearing
for said shaft on said frame.
4. In a boat propelling device, the combi-
nation with clamps adapted to be attached
to a boat, of a frame pivoted in said clamps,
a motor supported on said frame, a shaft in

said motor, and a propeller shaft supported by said motor and having a drive connection with said motor shaft.

5. In a boat propelling device, the combination of an internal combustion engine, means for securing it outside of a boat, a shaft support depending from the engine, a propeller shaft journaled therein parallel with the engine shaft, and a drive connection between said shafts.

6. In a boat propelling device, the combination of a frame adapted to be secured on the outside of a boat, a motor therein, a shaft support depending from the motor, a propeller shaft therein, a thrust bearing for the shaft in the frame, and a drive gear from the motor to said shaft.

7. The combination with an air cooled internal combustion motor adapted to be secured on the outside of a boat, a propeller shaft driven by the motor shaft, and means associated with said propeller shaft for raising water and directing it upon the cylinder to supplement the air cooling.

8. The combination with a boat, of an externally supported air cooled internal combustion engine therefor a propeller shaft below the same, a drive connection from the engine to the shaft, adapted to raise water in the operation of the engine, and means for directing said water upon the engine cylinder.

9. The combination with a boat, of an externally supported air cooled internal combustion engine, a propeller driven thereby, and means operable when the propeller is in motion for delivering water upon the engine cylinder to supplement the air cooling.

10. The combination with a normally air cooled internal combustion marine motor and a shaft therefor, of a propeller shaft journaled below said motor, sprockets on said shafts, a chain engaging said sprockets to drive said propeller shaft and to raise water and a deflector for directing said water upon said motor, for the purpose described.

11. The combination with a small boat, such as a row boat, of a substantially vertical post swivelled to the stern thereof, a motor mounted on the post, a shaft bearing supported by and below the motor, a propeller shaft journaled therein and having a drive connection with said motor, and a thrust bearing for the shaft in the post.

12. The combination with a swivelled post, of brackets projecting outward therefrom, a motor supported on the brackets, a depending shaft support carried by the motor, a propeller shaft therein operatively connected to the motor, and a thrust bearing for the shaft in the post.

13. The combination with a swivelled post, brackets projecting outward therefrom, a motor supported on the brackets, a depending shaft support carried by the motor, a propeller shaft therein, a thrust bearing for the shaft in the post and a drive connection on the shaft between said thrust bearing and said shaft support.

14. The combination with a boat, a post hinged to the stern thereof for adjustment about horizontal and vertical axes, a step bearing for the lower end of the post and a motor, propeller shaft, and drive connection supported on the post.

15. In a boat propelling device, the combination with a frame, an explosive motor supported thereon, and a propeller wheel having a drive connection with said motor, of means adapted to be clamped to a boat, and means connecting said clamping means to said frame and permitting said frame to be raised vertically and tilted in a vertical plane in relation to said clamping means.

16. In a boat propelling device, the combination with a frame, an explosive motor supported thereon, and a propeller wheel having a drive connection with said motor, of means adapted to be clamped to the outside of the boat, and a link having a horizontal pivotal connection with said means and sleeved on said frame for the purpose described.

17. In a boat propelling device, the combination with a frame, an explosive motor supported thereon, and a propeller wheel having a drive connection with said motor, of means adapted to be clamped to a boat, a link slidably attached to said frame, and a horizontal pivot adjustably connecting said link to said clamping means, for the purpose described.

18. In a boat propelling device, the combination with a frame arranged for horizontal and vertical pivotal attachment to a boat of an explosive motor mounted on said frame, a propeller mounted below said motor and having a drive connection therewith, a tiller attached to said frame, and motor-controlling means carried by said tiller.

19. In a boat-propelling device, the combination with a boat, of a frame adapted to be removably pivoted thereon, a motor, propeller, and drive connections carried by said frame, a tiller rigidly secured to said frame, and motor-controlling means and fuel-supply receptacle carried by said tiller.

20. In a boat propelling device, the combination with a clamping member arranged to detachably engage the stern of a boat, a post, brackets projecting laterally from said post, a motor supported by said brackets, a propeller shaft projecting laterally from said post below said motor, a driving connection between said motor and shaft, and adjustable connecting means between said post and said clamping member for regulating the pitch of said propeller shaft.

21. In a boat propelling device, the combination with a post and a motor carried thereby, of a member sleeved on said post.
and longitudinally adjustable in relation thereto, means for limiting said longitudinal adjustment, and a clamp arranged to be attached to the stern of a boat and adjustably connected to said member for varying the angle of said post to the stern of the boat, for the purpose described.

22. In a boat propelling device, the combination with a post arranged to be secured to the outside of a boat, of a motor and propeller carried thereby, a drive connection between said motor and propeller and means for adjusting said motor in relation to said post to adjust said drive connection.

23. The combination with a lower supporting stepped bracket and an upper bracket having a tubular bearing, said brackets being adapted to be detachably clamped to the stern of a boat, of a vertical motor-supporting frame engaging said stepped bracket and having a sliding pivotal engagement with the bearing in said upper bracket, and means for rigidly securing said tubular bearing to said frame, for the purpose described.

24. In a boat propelling device, the combination with an internal combustion engine and means for pivotally supporting said engine on the outside of a boat, of a horizontal shaft in said engine, a shaft support depending from and swinging with the engine, a propeller shaft journaled in said support, and a drive connection from the engine shaft to the propeller shaft.

In testimony whereof I affix my signature in presence of two witnesses.

CAMERON B. WATERMAN.

Witnesses:

JAMES P. BARRY,

AMELIA WILLIAMS.