Dec. 14, 1948. H. M. MORRILL 2,456,440

PROPELLING DEVICE

Filed July 10, 1946 2 Sheets-Sheet 1

FIG. 1

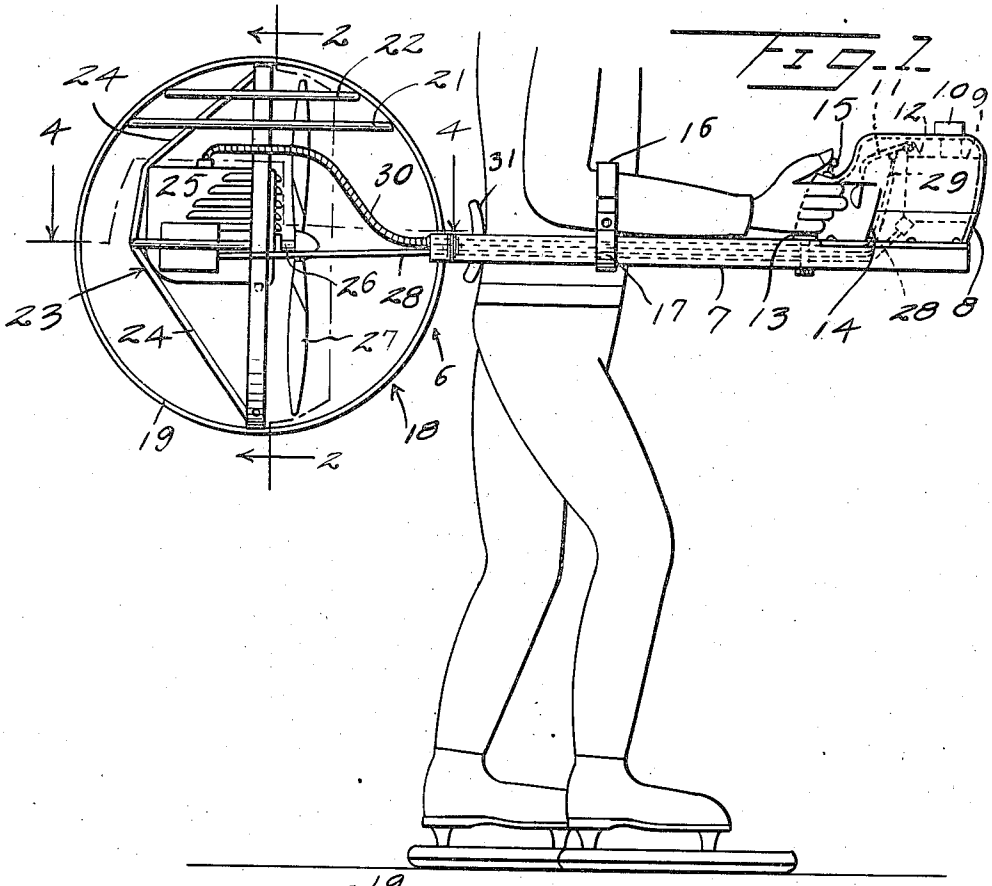
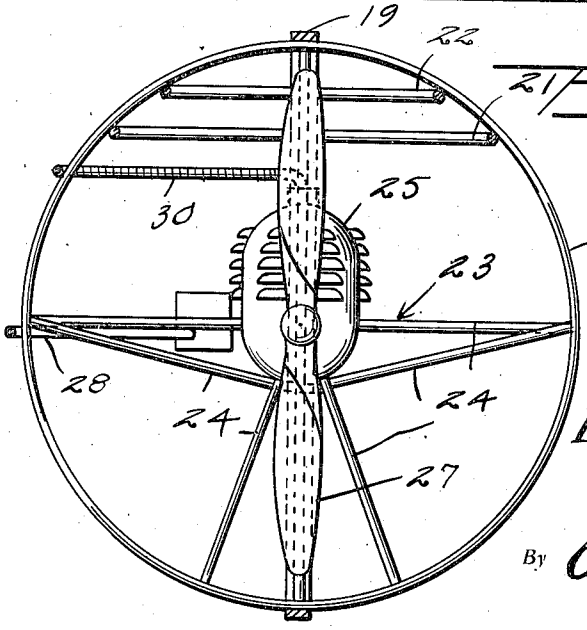


FIG. 2



Inventor

Horace M. Morrill

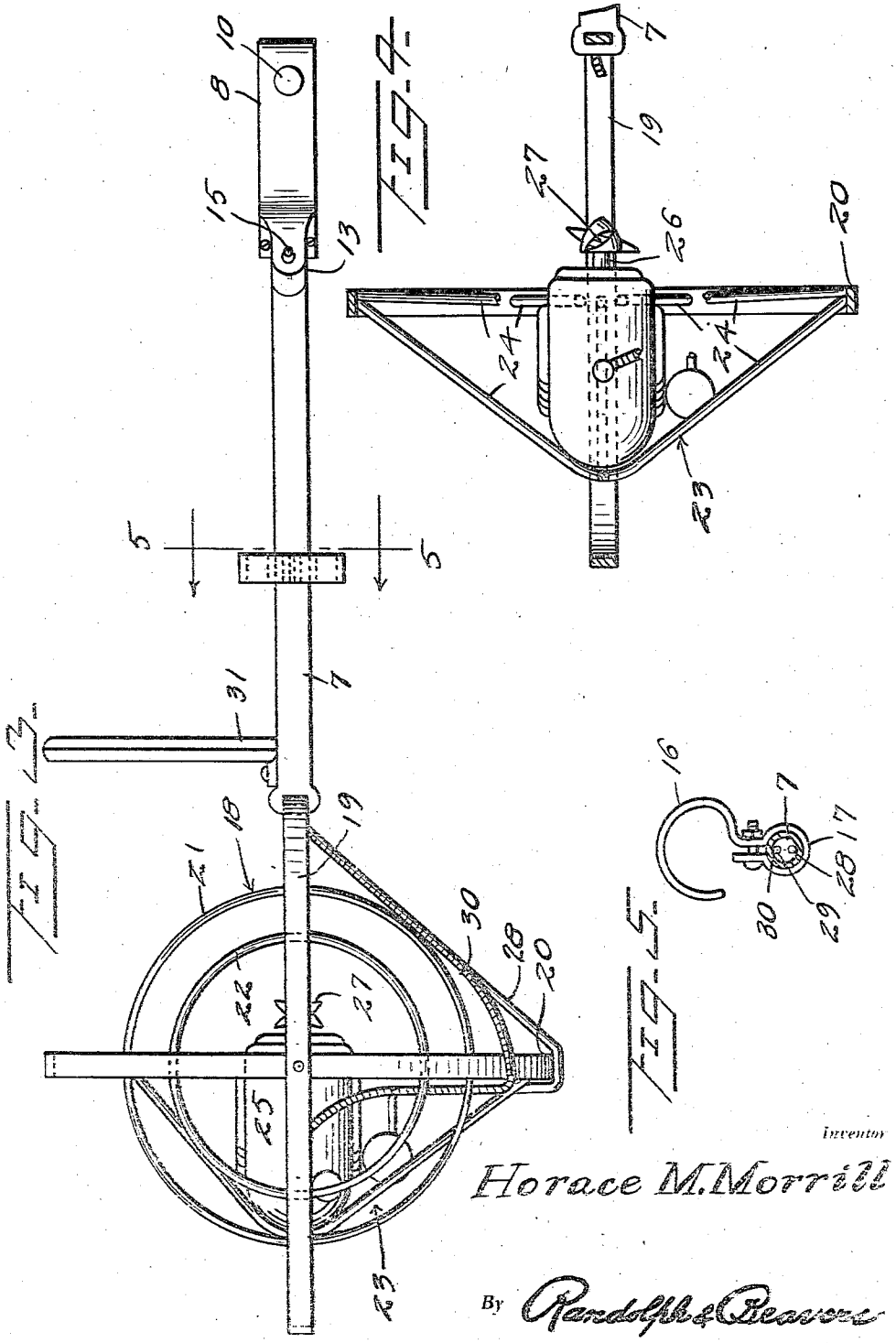
By Randolph & Beavers

Attorneys

Dec. 14, 1948. H. M. MORRILL 2,456,440

PROPELLING DEVICE

Filed July 10, 1946 2 Sheets-Sheet 2



Inventor

Horace M. Morrill

By Randolph & Beavers

Attorneys

Patented Dec. 14, 1948

2,456,440

UNITED STATES PATENT OFFICE

2,456,440

PROPELLING DEVICE

Horace M. Morrill, Pontiac, Mich.

Application July 10, 1946, Serial No. 682,481

4 Claims. (Cl. 180—1)

1

This invention relates to motor driven propelling device of the type employing a propeller for propelling a person on a vehicle which is normally manually propelled, such as skates.

More particularly, it is an aim of the invention to provide a portable manually supported propelling unit including a propeller and a motor for driving the propeller which is controlled by the rider, for propelling the rider on any type of small vehicle which is normally manually propelled, through the thrust of the propeller which is exerted directly on a part of the body of the user.

Still a further object of the invention is to provide a propelling device of the afore described character wherein the user will experience the thrill and pleasure of feeling the thrust developed by the engine and propeller directly against the part of his body as he is conveyed by the propelling device on a pair of skates or other small vehicle at a relatively high speed over a surface.

Still a further object of the invention is to provide a device of the above described character capable of being economically manufactured and sold, which will be efficient in operation, durable and extremely light in weight so as not to produce an undue burden on the part of the user.

Numerous other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, which illustrate preferred embodiments thereof, and wherein:

Figure 1 is a side elevational view showing the propelling device in an applied position;

Figure 2 is an enlarged cross sectional view taken substantially along a plane as indicated by the line 2—2 of Figure 1;

Figure 3 is an enlarged top plan view of the propelling device;

Figure 4 is an enlarged horizontal sectional view taken substantially along a plane as indicated by the line 4—4 of Figure 1; and

Figure 5 is a cross sectional view taken substantially along a plane as indicated by the line 5—5 of Figure 3.

Referring more specifically to the drawings, the propelling device in its entirety, designated generally 6, is illustrated in Figure 1 in an applied position on the body of an ice skater, this being a preferred use for the propelling device 6 in propelling ice skaters. However, it is to be understood that the propelling device 6 may be utilized for propelling a person on any small normally manually propelled vehicle including roller skates, bicycles, and small boats such as punts and canoes, and skis.

The propelling device 6 includes an elongated rigid supporting bar 7, preferably in the form of a hollow tube having a housing 8, preferably of aluminum, detachably mounted on the forward

2

end thereof. The housing 8 preferably contains a fuel tank 9 having a filling neck extending through the top of the housing 8 and provided with a removable cover 10. A pivotally mounted hand throttle 11 is disposed within the housing 8 and is pivoted at one end thereof on a bracket 12 which projects from the top of the tank 9. A hand grip 13 is secured to and projects upwardly from the bar or tube 7 at the inner, rear end of the housing 8 and is adapted to be grasped by the right hand of the user, as illustrated in Figure 1. The upper part of the rear end of the housing 8 is secured to the upper part of the hand grip 13 and the sides of the housing 8, directly in front of the hand grip 13, are cut away to provide openings 14 for accommodating the fingers of the hand, grasping the grip 13. The free end of the hand throttle 11 extends into the space between the openings 14 and is located to be engaged by the index finger of the hand, engaging the grip 13. A swingably mounted electric switch 15 projects upwardly from the hand grip 13 to be engaged and actuated by the thumb of the hand engaging the grip 13.

A supporting hook 16, as best seen in Figure 5, is provided with a clamp 17 forming the lower part thereof, which is adjustably and detachably secured to the bar 7 for positioning the hook 16 thereabove and with the bill of the hook preferably disposed on the outer side of the bar 7. The arm of the hand grasping the grip 13 extends through the hook 16, which is preferably located adjacent the elbow, and said arm and hand thus combine to support the propelling device 6 in the position as seen in Figure 1.

A substantially spherical cage, designated generally 18, is connected to the rear end of the bar 7 and extends rearwardly therefrom and is disposed with the horizontal axis thereof in substantially the same plane as the longitudinal axis of the bar 7. The cage 18 includes perpendicularly disposed ring members 19 and 20 which are positioned at right angles to one another and horizontal ring members 21 and 22 which are disposed within and connected to upper portions of the rings 19 and 20. A motor support, designated generally 23 and including a plurality of bars or braces 24, which are secured at their outer ends to the ring members 19 and 20, is disposed within the spherical cage 18 and in the rear half thereof. The support 23 is constructed and arranged to fixedly support a small internal combustion engine 25 within the cage 18 and preponderantly in the rear part thereof and with the driven shaft 26 of the engine 25 disposed substantially axially of the cage 18 and supporting bar 7. The engine 25 is preferably a small gasoline engine of the type conventionally employed as a power unit for model airplanes. A propeller 27 is keyed to the forward end of the

driven shaft 26 and is disposed slightly forward of the transverse center of the cage 18.

A fuel line 28 extends from the bottom of the tank 9 through the hollow bar or tube 7, around the forward part of the cage 18 and inwardly of the rear part thereof to the engine 25. A flexible shaft 29, disposed within a flexible conduit 30, is connected at one end to the hand throttle 11 and extends therefrom through the tube 7, around the forward part of the cage 18 and inwardly through the rear part thereof to the engine 25 where it is connected to suitable means, not shown, for controlling the fuel mixture to the carburetor, not shown, of the engine 25. The switch 15 is connected by electrical conductors, not shown, to the ignition system, not shown, of the engine 25.

A back rest or brace 31 may be attached to the supporting bar or tube 7, adjacent the rear end thereof, and disposed to project laterally therefrom to rest against the back of the user for absorbing the thrust produced on the propelling device 6 by the propeller 27, when in operation. If desired, and for the purpose of increasing the thrill to be derived from being propelled by the device 6, the back rest 31 may be dispensed with and is accordingly detachably mounted on the bar 7.

Assuming that the device 6 is supported in the manner shown in Figure 1 and that the ignition switch 15 is in a circuit closing position and that the engine 25 is in operation for revolving the propeller 27, it will be readily apparent that the device 6 will be supported primarily by the hook 16 engaging the right arm of the user and secondarily by the right hand of the user engaging the grip 13. The user by engaging his right index finger with the free end of the throttle 11 can pull said end rearwardly for rocking the throttle 11 upwardly to accelerate the engine 25 to thereby increase the R. P. M. of the propeller 27 so that the thrust therefrom will be exerted through the cage 18 and the supporting bar 7 on the right arm and hand of the skater for propelling him on the blades of his skates at a relatively high rate of speed over an ice surface. The rate of speed can be regulated by control of the throttle 11 and in case the user should fall, the engine 25 may be readily shut off by snapping the ignition switch 15 with the right thumb. When the back rest 31 is employed, substantially all of the thrust will be exerted against the back of the user thus taking the forward thrust off of the right arm and hand.

A relatively small model airplane type gasoline engine driving a fourteen inch high pitch propeller between eighteen and twenty thousand R. P. M., will develop approximately a six pound forward thrust which is sufficient to propel an ice skater at a relatively high rate of speed, with a little aid on the part of the skater in gaining initial momentum.

The propelling device 6 may be formed of steel,

magnesium and aluminum so as to be extremely light in weight and easily carried by the user.

Various modifications and changes are contemplated and may obviously be resorted to, without departing from the spirit and scope of the invention as hereinafter defined by the appended claims.

I claim:

1. In a propelling device for occupant supporting vehicles such as skates, a substantially spherical cage, a prime mover mounted therein, a propeller driven by said prime mover and rotatable within said cage for exerting a forward thrust thereon, a supporting bar connected to the forward end of said cage and extending forwardly therefrom and adapted to be disposed along one side of the body of the user, a hanger adapted to detachably engage a horizontally disposed forearm of the user and connected to said supporting bar for supporting the latter therebeneath, and a handle extending upwardly from said supporting bar, forwardy of the hanger, to be engaged by the hand of the arm engaged by said hanger for receiving the forward thrust of the propeller through said cage and supporting bar.

2. A propelling device as in claim 1, and a back engaging bar projecting laterally from the supporting bar, adjacent said cage for transmitting the thrust from the propeller to the back of the body of the user.

3. In a manually supported propelling device, a cage, a prime mover supported by the cage, a propeller driven by the prime mover and disposed for rotation in said cage, a bar extending forwardly from and secured to the cage and provided with an upstanding fore-arm engaging hanger disposed intermediate the ends thereof, and a hand grip projecting upwardly from the forward end of the supporting bar.

4. A propelling device as in claim 3, and a laterally projecting back engaging thrust bar secured to the supporting bar adjacent said cage.

HORACE M. MORRILL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
965,912	Krohn	Aug. 2, 1910
1,345,727	Wilson	July 6, 1920
1,999,296	Juergens	Apr. 30, 1935
2,239,122	Stokes	Apr. 22, 1941

FOREIGN PATENTS

Number	Country	Date
155,043	Austria	Nov. 25, 1938
238,239	Great Britain	Feb. 25, 1926
365,134	Germany	Dec. 8, 1922
456,429	France	June 18, 1913