

(No Model.)

3 Sheets—Sheet 1.

M. SCHMALTZ.
STEERING GEAR FOR VESSELS.

No. 533,143.

Patented Jan. 29, 1895.

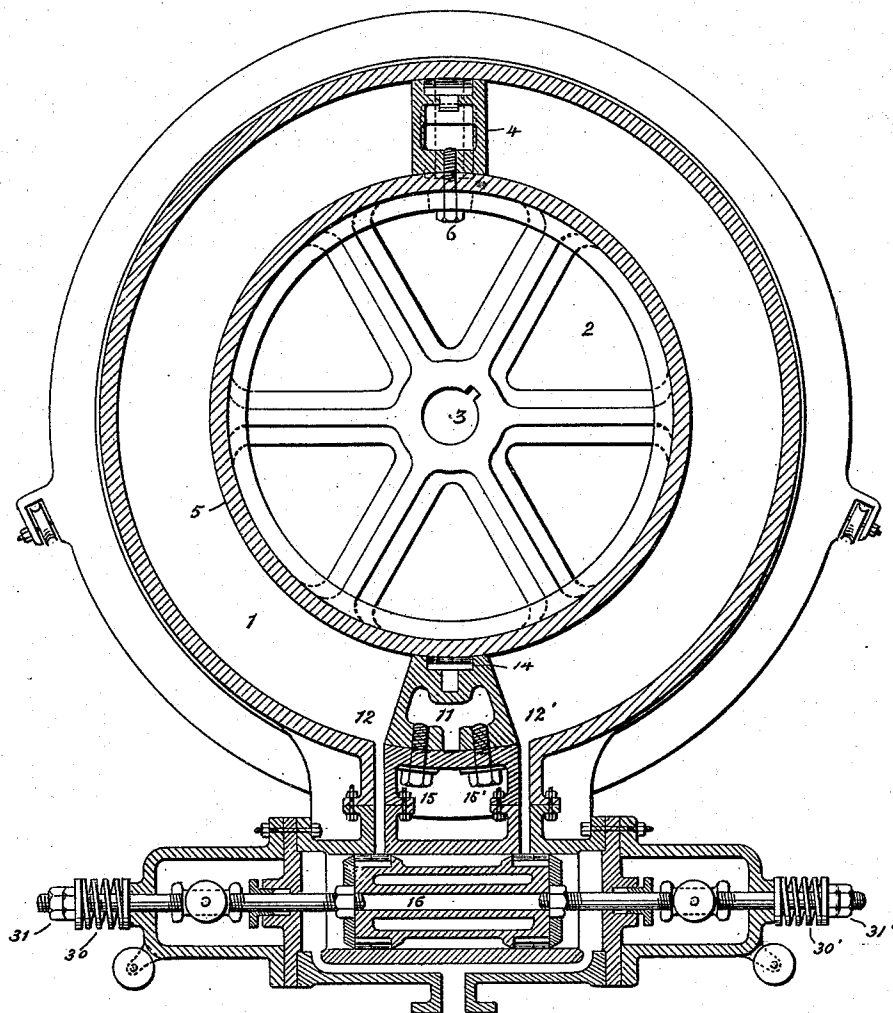


FIG. 1.

Witnesses
Wm Brown
John A Gregg

Inventor
M. Schmalz

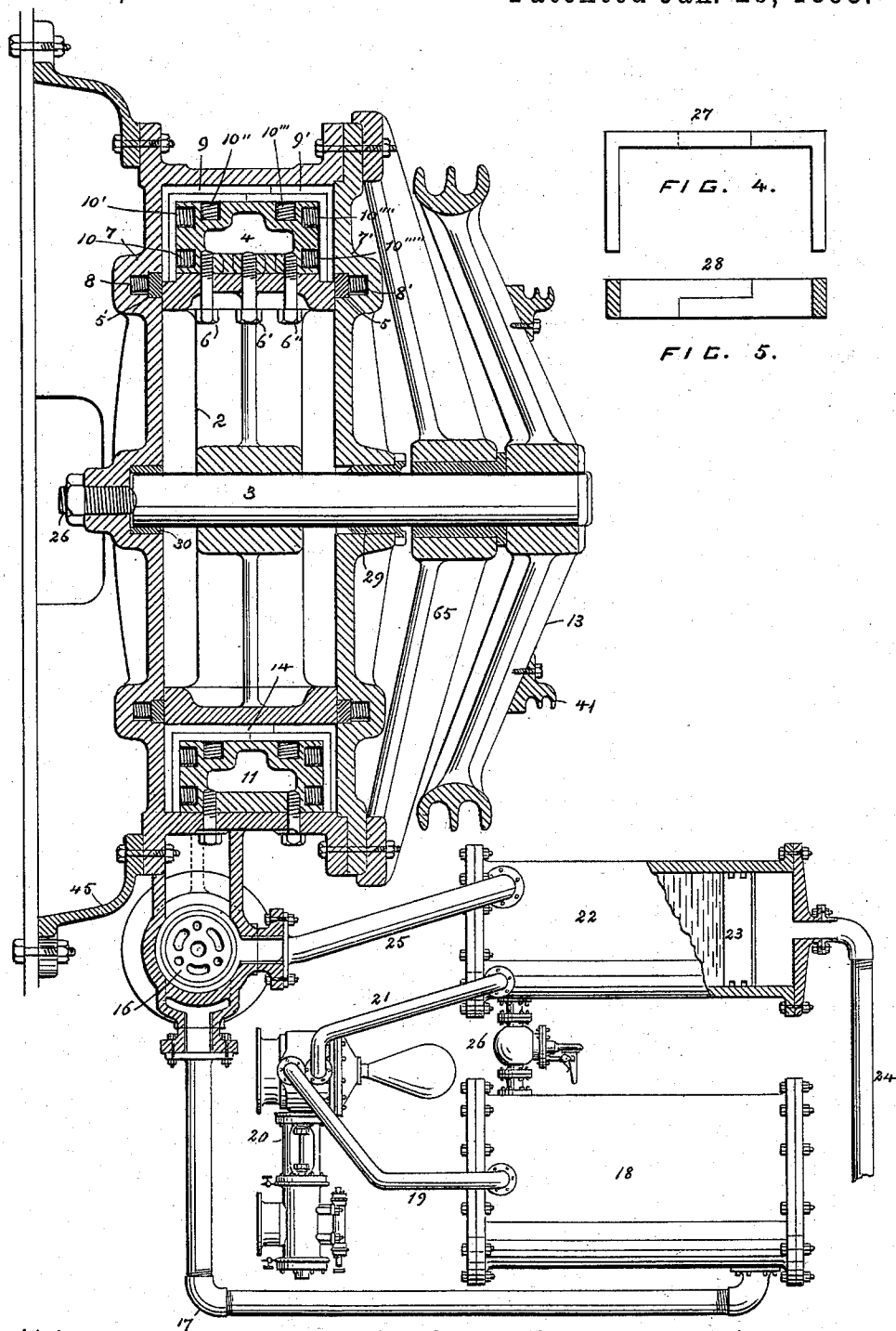
(No Model.)

3 Sheets—Sheet 2.

M. SCHMALTZ.
STEERING GEAR FOR VESSELS.

No. 533,143.

Patented Jan. 29, 1895.



Witnesses

Ward Brown
John A. Gregg

Inventor

Adventist
Abile. Schmalz

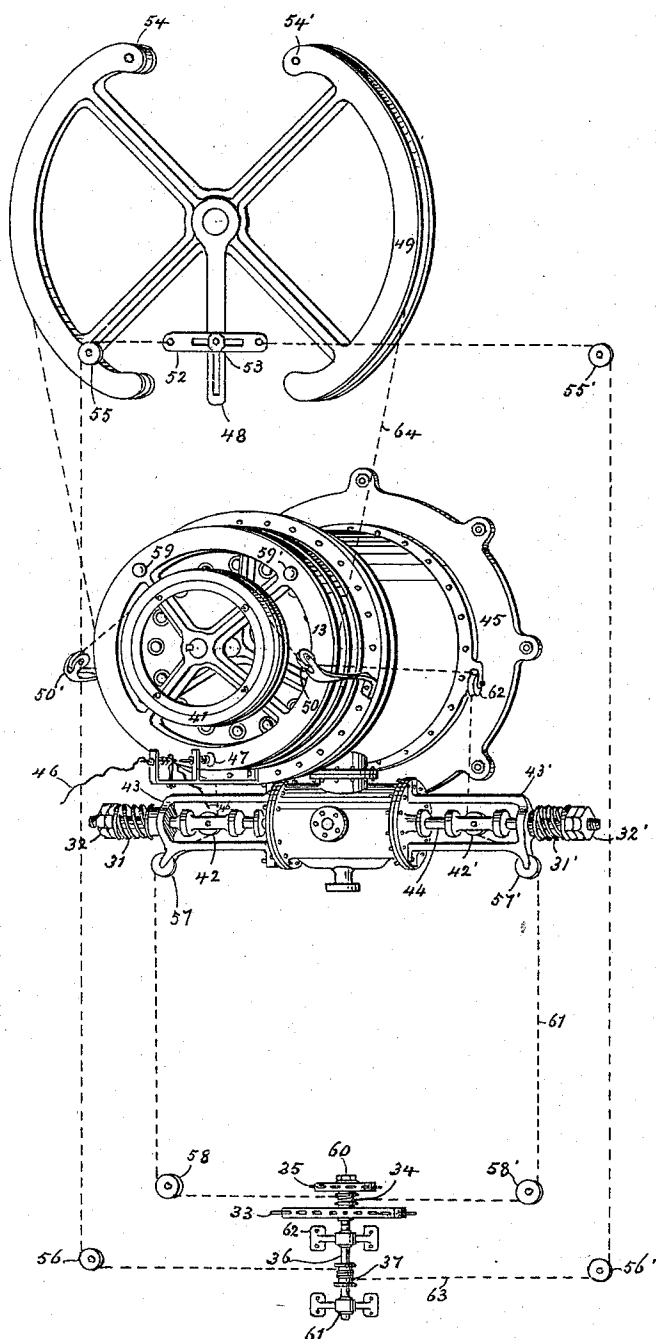
(No Model.)

3 Sheets—Sheet 3.

M. SCHMALTZ.
STEERING GEAR FOR VESSELS.

No. 533,143.

Patented Jan. 29, 1895.



Witnesses
Wm Brown
John A. Gregg

FIG. 3.

Inventor
M. Schmalz

UNITED STATES PATENT OFFICE.

MIKLE SCHMALTZ, OF BAY CITY, MICHIGAN.

STEERING-GEAR FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 533,143, dated January 29, 1895.

Application filed February 5, 1894. Serial No. 499,150. (No model.)

To all whom it may concern:

Be it known that I, MIKLE SCHMALTZ, a citizen of the United States, residing at Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Steering-Gear for Floating Vessels, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in steering gears in connection with the devices, and contrivances for propelling, operating and connecting the same.

The object of my invention is to arrange, and construct a device for steering vessels, that will hold the tiller stable, that will be easily operated, and quick in its actions, whereby, the motion of the tiller will be accelerated, bringing the vessel under quick control.

Another object of my invention is to construct and arrange a device, that may be operated with oil or other suitable substance, whereby, the working surface is kept smooth and lubricated; and condensation from steam in the gear is avoided, by means of a force pump, an expansion tank, an annular cylinder, and an exhaust tank.

Another object of my invention is to construct a rotating, steering gear with square cornered, metallic, piston head packing, that will form a joint sufficient to hold pressure in a square or rectangle cavity of an annular cylinder.

Another object of my invention is to construct a steering gear, with a slide valve that will automatically close itself, by means of coil springs placed on the end of valve stems, and actuated by the travel of the gear.

A further object of my invention is to construct a steering gear that the pilot may operate the tiller by power or by hand without making any alterations whatsoever, and furthermore to devise a steering gear with an electric signal attached for the purpose of warning the pilot when the tiller is hard over, and at the same time to produce a reliable gear at a moderate price.

I attain these objects by the devices illus-

trated in the accompanying drawings, in which similar figures of reference will be found indicating the same parts throughout the several illustrations, in which—

Figure 1, is a sectional plan view of my invention. Fig. 2, is a transverse section, showing in connection with the expansion tank, a pump and exhaust tank. Fig. 3, represents a perspective view of my invention, diminished in size showing the slide-valve, pilot wheel, and tiller connections. Fig. 4, represents a side view of my metallic square cornered packing, exaggerated. Fig. 5, is a section of the same with square corner gained joints, as shown at 27 and 28.

1 represents an annular cylinder, and 2 an annular rotating piston secured to a vertical shaft 3, resting on stud-bolt 26, and journaled in the casing of the cylinder at 29, and in the frame 65, and pivoted at step 30.

4 is a piston head secured to the piston by stud bolts 6, 6', 6''.

5, 5' are annular metallic packing rings placed in grooves formed in the cylinder casing at 7, 7', with a cavity formed over the grooves, and coil springs 8, 8' set therein, for the purpose of packing the flange, or outer edge of the rotating piston rim.

9, 9', represent square cornered metallic packing pressed outward and held in position by coil springs 10, 10', 10'', 10''', 10''''', whereby tight joints are procured, and the piston head securely packed.

11 represents a partition for the purpose of dividing ports 12, 12' secured to the cylinder by stud bolts 15, 15', with metallic packing at 14, for the purpose of packing and forming a joint on the outer surface of rotating piston 2, whereby opening slide valve 16 to the desired side of the cylinder, admits pressure and at the same time exhausts from the opposite side, whereby the pressure coming in contact with the surface of the piston head, drives the head around, whereby the piston is rotated, rotating shaft 3 and transmitting power from grooved wheel 13 to the tiller, by cable 64 or other suitable appliances.

30, 30', represent the coil springs placed on the outer ends of the slide valve stem, held

in tension by taps 31, 31', whereby the slide valve is automatically centered, closed, and held in position.

47 represents a push button of an electric alarm.

46, 46', represent conductors broken off.

59, 59', represent oval knobs for the purpose of touching the push button, pressing it upward, and forming a circuit, whereby the alarm is given to the pilot when the rudder is hard over.

The oil or substance is exhausted by way of an exhaust pipe 17, into an exhaust tank 18, and then being pumped out by way of a suction pipe 19, by the force pump 20, forced through induction pipe 21, into the expansion tank 22. The compression head 23 is fitted and made steam tight in the expansion tank, and an induction pipe 24 secured to the top cover of the expansion tank, to connect on the boiler for the purpose of having boiler pressure on the upper surface of the compression head, whereby forcing the fluid in the lower part of the expansion tank, drives the compression head upward, and against boiler pressure, for the purpose of storing energy, whereby in case the pump is stopped for repairs, or other causes there is sufficient energy stored to operate the gear, for a reasonable length of time.

25 is a supply pipe from the expansion tank to the steering gear.

26 is a safety or relief valve for the purpose of setting for any desired pressure, at, or above boiler pressure, and to form circulation between the expansion tank, and exhaust tank, whereby the pump may be kept constantly in motion when the steering gear is not being used.

36 represents the shaft of the pilot's steering apparatus, journaled at 61, and 62, with a hand wheel 33, secured thereto, a spool secured at 37, wound by cable 63, extending around sheaves 56, 56', thence to, and around sheaves 55, 55', and secured to a sliding bar 52, secured by bolt 53, to tiller 48, whereby, rotating the hand wheel 33 operates the tiller by hand.

35 represents the pilot wheel for operating the gear with a side hub, or spool 34, secured to the side of the wheel, and placed loose on

the projected end of shaft 36, with cable 61, wound around spool 34, and extending to sheaves 58, 58', thence to the sheaves 57, 57', thence around sheaves 42, 42', forming an angle and carried under sheave 62, thence, upward and over sheave 50, 50', and placed around annular rim 41, secured to the arms of wheel 13, whereby turning the pilot wheel 35, to the direction desired draws cable 61, in line at sheave 42, whereby the valve stem is pulled outward opening the valves and at the same time slacking the cable on the opposite side. Now therefore, when the gear moves around it takes up the slack of the cable on the loose side and deposits it on the tight side, whereby the coil springs shown at 31, 31', automatically centers the valve, cuts off the oil, and stops the gear.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a steering gear the combination with the slide valve stems made in two sections, and connected by a sheave with bearings secured to the heads of the valve casings, and projecting outward and between the sheave and the outer end of the valve stem, with coil springs placed on the outer end of the valve stems and secured by taps substantially as and for the purpose set forth.

2. In a steering gear the combination with a small side hub wheel pivoted loose, on a projected end of a pilot's wheel shaft, with cable wound around hub carried around sheaves and extending to the valve stem frame, thence, around the sheaves and forming an angle around the valve stem sheaves, thence, under and around sheaves secured to the lower part of the cylinder casing, thence, up and over sheaves secured to the top of the cylinder casing and placed around an annular grooved rim secured to the transmission wheel of the gear substantially as and for the purpose set forth.

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

MIKLE SCHMALTZ.

Witnesses:

N. N. BROWN,
JOHN A. GREGG.