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BRAKE FOR STEAM VESSELS.  
APPLICATION FILED JUNE 16, 1909.

Patented Mar. 29, 1910.

2 SHEETS—SHEET 1.

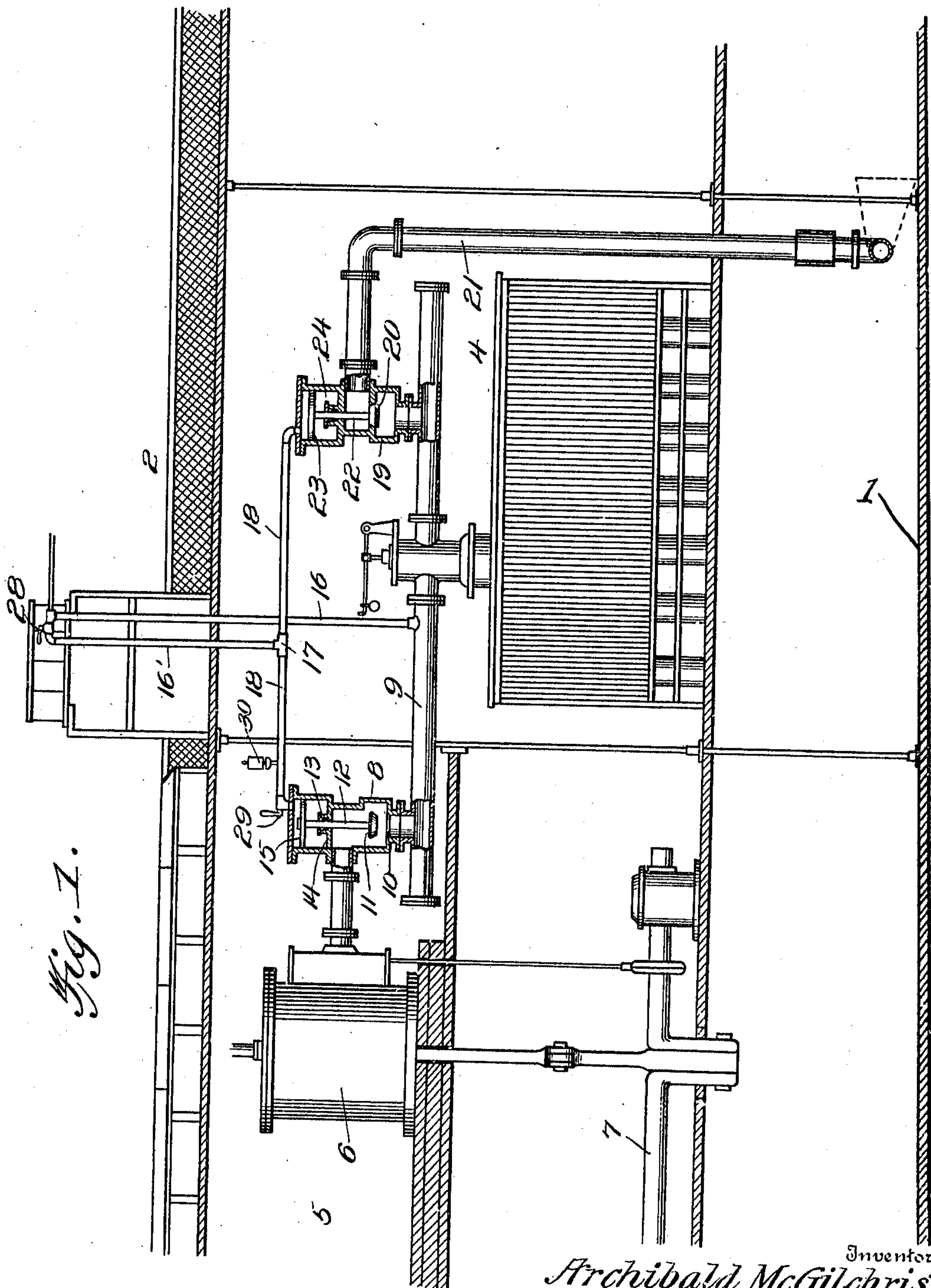


Fig. 1.

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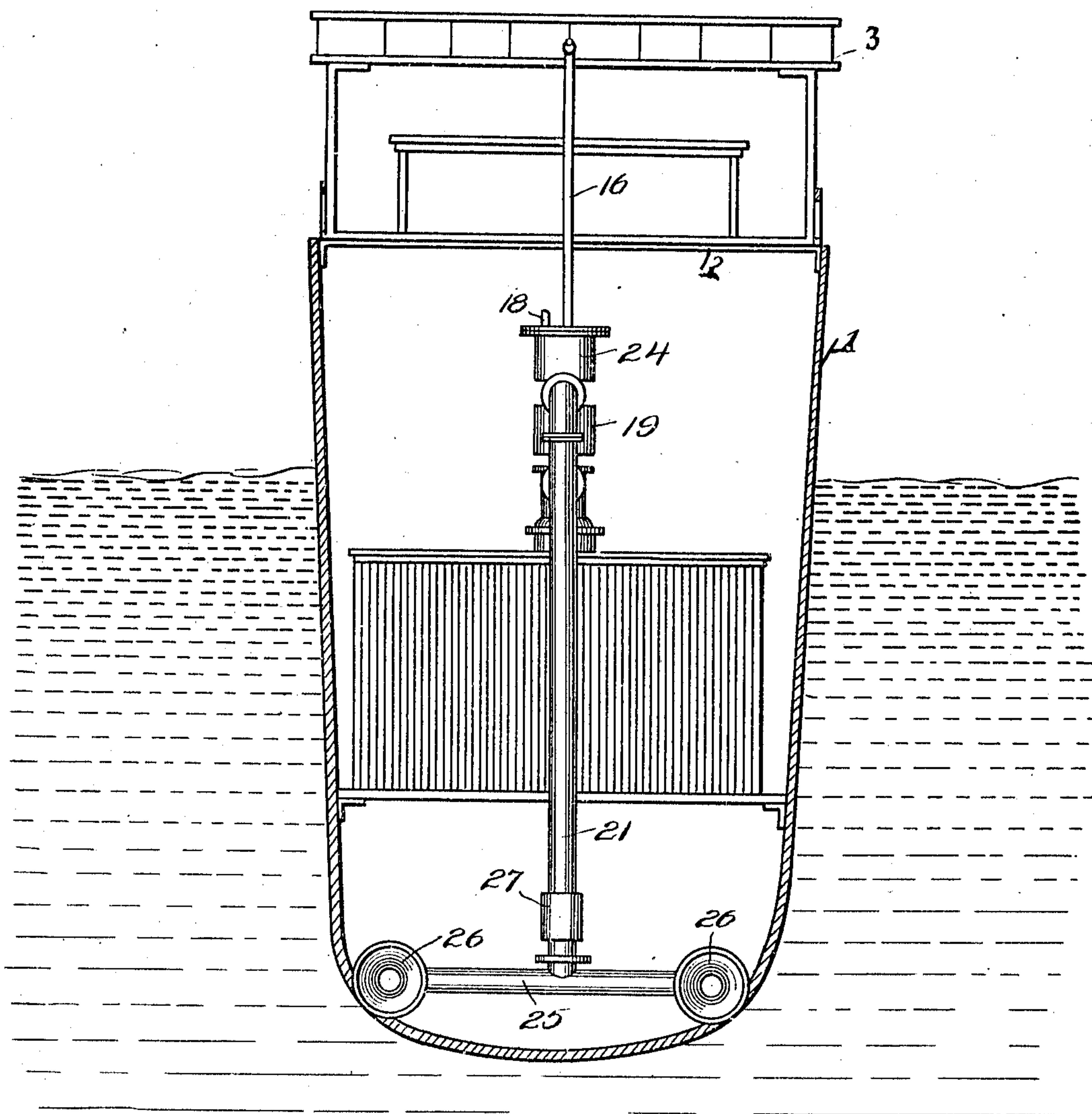
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2 SHEETS—SHEET 2.

*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

ARCHIBALD MCGILCHRIST, OF GRAPHITEVILLE, NORTH CAROLINA.

## BRAKE FOR STEAM VESSELS.

953,152.

Specification of Letters Patent.

Patented Mar. 29, 1910.

Application filed June 16, 1909. Serial No. 502,557.

*To all whom it may concern:*

Be it known that I, ARCHIBALD MCGILCHRIST, a citizen of Great Britain, residing at Graphiteville, in the county of McDowell and State of North Carolina, have invented new and useful Improvements in Brakes for Steam Vessels, of which the following is a specification.

This invention relates to brakes for steam vessels, the object in view being to provide simple and effective means for arresting and stopping the forward motion of a vessel when in danger of collision or in other emergencies, the same being under the immediate and instant control of the helmsman or other officer of the vessel, whereby steam may be instantly cut off from the engine and directed into the water at the bow of the vessel and in the direction of movement of the vessel, at the same time avoiding complication of machinery and obtaining a device which is always ready for instant use and which may be installed economically.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts as herein fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a vertical longitudinal section through a sufficient portion of a vessel to illustrate the application of the present invention thereto. Fig. 2 is a vertical transverse section through the same.

Referring to the drawings, 1 designates the hull of the vessel, 2 the deck thereof, 3 the bridge, 4 the boiler room, 5 the engine room, 6 the engine and 7 the engine shaft.

In carrying out the present invention, an engine cut off valve casing 8 is interposed in the main steam pipe 9 leading from the boiler 4 to the engine 6. This valve casing embodies a valve seat 10 in conjunction with which, a cut off valve 11 coöperates. The valve 11 is normally open as shown in Fig. 1, being held open by the steam pressure in the pipe 9 and said valve is provided with a stem 12 passing through a stuffing box 13 in a partition wall 14 in the valve casing and having secured to the other end thereof a piston 15. A steam pipe 16 leads from the main steam pipe 9 upward to the bridge 3 and the return portion 16' of said pipe communicates by means of a tee with a double branch pipe 18, 18', one branch of which

leads into the head of the valve casing 8 so as to allow the steam to act upon the piston 15 which is of materially larger area than the valve 11 so that when steam is admitted to act against the piston 15, the effect is to close the valve 11 and cut off the supply of steam to the engine 6 thereby stopping the propeller of the vessel. The other branch 18' of the steam pipe leads into the head of another valve casing 19 in which is arranged a brake valve 20 controlling communication between the main steam pipe 9 and a large exhaust pipe 21 as clearly shown in Fig. 1. The valve 20 is provided with a stem 22 to which is secured a piston 23 operating in a cylinder 24 forming an extension of the valve casing 19. The piston 23 is of considerable larger area than the valve 20 so that when steam is admitted to act against the piston 23 the effect will be to open the valve 20 and allow the steam to pass from the main pipe 9 into the exhaust pipe 21.

The exhaust pipe 21 is connected by a tee-coupling to a horizontal pipe 25 near the bow of the vessel, the opposite ends of the pipe 25 being provided with forwardly facing flaring nozzles 26 which are arranged outside of the hull so as to direct the exhaust steam forward or in the direction of movement of the vessel for the purpose of arresting the forward movement of the vessel. The pipe 21 is provided with a valve casing 27 in which is arranged a check valve which is normally closed by the water pressure passing inward through the nozzles 26 and which opens under the action of the exhaust steam to allow the steam to escape through the nozzles 26. The pipe 16 is provided with a stop cock 28 adapted to be operated by the helmsman standing on the bridge 3 while a similar stop cock 29 controls the branch 18 of said steam pipe and is arranged in the engine room so as to be in ready reach of the engineer.

The operation of the mechanism hereinabove described is as follows:—In case of collision or other emergency when it is desirable to stop the vessel, the helmsman standing on the bridge opens the stop valve 28 whereupon the steam pressure passing through the pipes 16 and 16' and through the branches 18 and 18' acts on the pistons 20 and 23 to close the valve 11 and open the valve 20. This cuts off steam from the engine and transfers said steam into the ex-



haust pipe 21 and thence outward through the flaring nozzles 26. In view of the fact that the propeller is thus stopped and the exhaust steam thrown ahead in dense water, the forward progress of the vessel is quickly arrested when the steam is thus diverted. A steam whistle 30 connected with the branch 18 and located in the engine room 5 is sounded, thus notifying the engineer who manipulates the reverse gear of the engine and then opens the stop cock 29 which again admits the steam from the pipe 9 to the engine 6, thus causing the propeller to rotate in a reverse direction which materially assists in stopping the forward progress of the vessel. The whistle 30 also acts as a vent for the steam in the pipes fed by the main steam pipe 9 and by relieving the pressure on the pistons 50 and 23, the valves are allowed to be returned by the steam pressure in the pipe 9 and their normal positions shown in Fig. 1.

I claim:—

1. In a device of the class described, the combination with the steam pipe which supplies the engine, of an exhaust pipe arranged to discharge the steam from the bow of a vessel in a forward direction under water, and means for shutting off steam from the engine and admitting it to said exhaust pipe comprising valves in the steam pipe, and steam actuated pistons on the stems of said valves.

2. In a device of the class described, the

combination with the steam pipe which supplies the engine, of an exhaust pipe arranged to discharge the steam from the bow of a vessel in a forward direction under water, and means for shutting off the steam from the engine and admitting it to said exhaust pipe comprising a valve between the boiler and engine, another valve between the boiler and exhaust pipe, and steam operable pistons on the stems of said valves.

3. In a device of the class described, the combination with the boiler and engine and the main steam pipe leading from the boiler to the engine, of an exhaust pipe arranged to discharge steam from the bow of the vessel in a forward direction under water, a valve controlling communication between the main steam pipe and exhaust pipe, another valve arranged in the steam pipe between the boiler and engine, pistons for actuating said valves, a valve operating steam pipe leading from the main steam pipe to the chambers in which said pistons are mounted, a stop cock controlling said valve steam pipe and arranged adjacent to the bridge of the vessel, and another stop cock controlling said pipe and arranged in the engine room.

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

ARCHIBALD MCGILCHRIST.

Witnesses:

FRED MOORE BRADLEY,  
JOE P. HEMPHILL.