

The vessel which it is proposed to transport will then be guided to and floated exactly over the cradle—the keel and bottom of the vessel corresponding with the line of blocks and cushions previously arranged to receive her. The arrangement of the blocks and cushions will vary according to the lines of the various crafts to be transported. Once in the proper position the gridiron will be raised to the level of the keel, and then the blocks will be hauled in while under water, close to the vessels bilges and sides. A rack with palls at the back of the blocks prevents any movement. The operation of raising the whole mass then begins by means of the hydraulic presses ranged on both sides of the gridiron.

The length of stroke is forty-two feet in each lift. The engines and presses are calculated to raise the average sized vessel, with cargo, to the level of the railway in the space of ten minutes. When the lifting process is finished the rails on the gridiron will correspond in level and coincide in line with the railway track on *terra firma*, the gridiron will then be locked securely to this level, so that by means of an accumulator and another hydraulic apparatus the cradle and ship together may then be hauled off the lift and thus transferred to the Railway, where they will be ready for transportation by means of locomotives.

The principle is simply a combination of the hydraulic ship lift with a marine slip or railway extended, either of which may be seen in this country in daily operation.

The operation of lifting vessels with cargo of much greater registered tonnage than contemplated here has been most successfully performed at the Malta Hydraulic Dock for many years without the slightest failure, although that dock was not specially designed for lifting loaded vessels as these will be on the Ship Railway.

The work of hauling will be done by locomotives especially constructed for the purpose instead of by stationary engines as on a marine slip, thus doing away with costly stationary engines, ropes and gearing, besides performing the service in a much quicker time.

Two locomotives will haul the largest vessel to be transported (not to exceed 2,000 tons weight) at the rate of ten miles an hour, or at greater speed, if necessary, for smaller class vessels.

The locomotives and cradles will be supplied with powerful brakes and appliances for both stopping and starting the load whenever required.

When the vessel and cradle have arrived at the other end of the Railway, the locomotive will be passed into a siding, and the vessel and cradle will be pulled on to the other hydraulic lift in the same manner and by the same appliance that they were first hauled on to the Railway. They will then be lowered and deposited into the water; and as the gridiron sinks into the bottom of the dock, the vessel floats herself off and may then be pulled into the dock, or if a steamer may steam away to her destination.

The empty cradle is then again raised to the level of the Railway, rolled on to a traverser platform where it will be shunted to one side, thus leaving the line clear for a succeeding vessel to undergo the same operation.

It will thus be seen that the whole operation is simple, rapid, and economical, scarcely any expense besides that of the lifting, hauling, and depositing being necessary.

The weight of the vessel and cargo as shewn by her displacement is not to exceed, according to the Government requirement, 2,000 tons dead weight, or a vessel of 1,000