John Brown & Co 492 approved 5/3/20

Lloyds

The Propelling Machinery consists of Brown-Curtis Turbines driving the propeller shaft through a double reduction mechanical gear with helical teeth.

The H.P. and I.P. Turbines work in tandem and drive one first reduction pinion; the L.P. Turbine drives the other first reduction pinion.

Under its absolute maximum load condition, the H.P. Turbine will develop 1450 S.H.P. at 2810 revolutions and the spindle transmitting this power has a minimum diameter of $3\frac{1}{2}$". Under maximum load conditions for H.P. and I.P. turbines in tandem, 3,150 S.H.P. will be transmitted at 2810 revolutions through spindle having a minimum diameter of $4\frac{3}{4}$". A first reduction pinion spindle, 6" diameter with $2\frac{1}{4}$" diameter hole, is connected to the above parts by a flexible coupling and transmits this combined power to its first reduction wheel, which is mounted on a common spindle with the second reduction pinions having one of these second reduction pinions on either side of the first reduction wheel. The diameter of that part of this spindle through which the first reduction wheel transmits the power to the second reduction pinions is $29\frac{1}{4}$" diameter with 8" hole. Each second reduction pinion running at 380 revolutions transmits therefore one half of the above mentioned power, reduced by about 2% through friction loss in gearing, this nett power of about 1550 S.H.P. passing to its corresponding rim of the second reduction gear wheel.

Under its absolute maximum load condition the L.P. Turbine transmits 3800 S.H.P. when running at 1810 revolutions through a spindle having a minimum diameter of $8\frac{1}{4}$", and, through Flexible Coupling, this power is transmitted to L.P. Pinion Spindle having minimum diameter of $8\frac{1}{4}$" diameter with 4" diameter hole and so to L.P. First Reduction Wheel. This First Reduction Wheel mounted on common spindle with L.P. Second Reduction Pinions transmits one half of the above power, reduced by about 2% through friction loss in gearing, through each of the second reduction pinions to the Main Gear Wheel. This second reduction pinion, running at 380 revolutions, has a diameter of $29\frac{1}{4}$" with 8" diameter hole at that part through which the power is transmitted.

The above mentioned loss of about 2% through gearing friction has resulted in the transmission of the power through the two sets of first reduction gear and a further loss of about 2% is met with in transmitting these powers through the wheel and pinions of the Second Reduction Gear, thus the Main Gear Wheel is called upon to transmit a total power of 6,750 S.H.P. through its spindle when running at 92 revolutions per minute, the minimum size of this spindle being $19\frac{1}{4}$".

For Astern working, it is estimated that about 5,000 S.H.P. will be developed by the high pressure and low pressure turbines working in series/

eries, this power being equally divided over the high pressure
urbine which is incorporated in the same casing with the I.P. Turbine
or Ahead working and the L.P. Astern Turbine which is incorporated
n the same casing with the L.P. Turbine for Ahead working. Accord-
ngly, each set of First Reduction Gearing will transmit about 2500.
.H.P. to the Main Gear Wheel which in turn will transmit the above
entioned 5000 S.H.P. when running at about 78 revolutions of the
ain Shaft.

CUNARD STEAMER. OUR ENGINE NO. 557.

scription of Engines.	Twin Screw Geared Turbines.
. of Turbines.	(2 H.P.Ahead, 2 I.P.Ahead and (Astern. (2 L.P. Ahead & Astern.
ia. of Rotor Shaft Journals.	H.P. $3\frac{1}{2}$", I.P.$4\frac{1}{2}$", L.P.$8\frac{1}{2}$".
ia. of Pinion Shafts.	H.P. & I.P. 6" with $2\frac{3}{4}$" hole. L.P. $8\frac{1}{2}$" with 4" hole.
ia. of Pinion Journals.	H.P. & I.P. 6", L.P. $8\frac{1}{2}$".
istance between centres of Pinion Bearings.	H.P. & I.P. 3'$7\frac{1}{4}$", L.P. 3'$7\frac{1}{4}$".
itch circle Dia. of Pinions.	H.P. & I.P. 10.4979, L.P. 16.2825 2nd Reduction 29.994".
istance between centres of 2nd Reduction Pinion Bearings.	9' - $3\frac{1}{4}$".
ia. of 2nd Reduction Journals.	16".
Distance Between Centres of Gear Wheel Bearings.	10' - $1\frac{1}{4}$".
Dia. of Main Gear Wheel Journals.	20".
Dia. of Pitch Circle of 1st Reduction Wheel.	H.P. & L.P. 77.7702".
Dia. of Pitch Circle of Main Gear Wheel.	123.618".
Width of Faces.	H.P. & I.P. 26", L.P. 26" Main Wheel 60".
Dia. of Thrust Shaft.	$19\frac{1}{2}$". 19"
Dia. of Tunnel Shaft.	18".
No. of Screw Shafts.	2.
Dia. of Screw Shafts.	$19\frac{1}{2}$".