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STEAM JACKETS AND SEPARATORS.

BY J. MURPHY, MONTREAL.

(A Paper read at the Convention of Stationary Engineers, Toronto.)

It is not my intention to take up the time of this convention with a long paper, but simply to put before you some of the points which have come under my observation while practically in charge of condensing and compound condensing engines *versus* compound condensing jacketed engines, and some of the attachments which have been devised for safety and economy on the plant where I am at present employed, namely, the Montreal street railway power station.

I will not discuss the merits of the steam jacket, for I know well that I would be treading upon dangerous ground, as there is a great difference of opinion even among some of our ablest men, who are far more able to reason the fine points than I am, but will confine myself to my experience in practice while in charge of the different types.

I will commence my subject with the steam jacket and separator, as I have found them in my practical experience in the short space of time that I have been working with the jacketed engine and separator. I have seen wonders with regard to good running and efficiency, but it is not my intention to advertise those builders that have already adopted the jacket, it is simply to lay before you what I have found in practice. I will now describe as briefly as possible the way that the steam connections to this class of jacketed engines are designed. The high-pressure cylinder jacket is supplied from the high pressure steam chest of the engine, and the receiver jacket is supplied from the high-pressure cylinder jacket; the return pipes from the jackets are run to a pump that is situated below the level of the return pipes, and the water that is condensed in the jackets is pumped automatically back to the boilers. The low-pressure cylinder jacket is supplied from the initial pressure of the low-pressure cylinder, and the condensed water from the low-pressure jacket is also pumped back to the boilers automatically with a pump similar to the one for the high-pressure jackets. These pumps can be regulated and worked by hand in case of any disarrangement of the automatic regulating gear. There is also an independent way of draining these return pipes into a cesspool connected with the sewer that is used when making repairs to these pumps, so that you will see there is no further loss than that which is due to radiation. The steam separator is connected with the main steam pipe about ten feet below its level, and at the end of it, so that any water that may get into the main pipe through condensation or otherwise may find its way to the separator, and is pumped back to the boilers by the high-pressure jacket pump. The separator effects a considerable saving because there are no other drips necessary on the main steam pipe, while such are required on the ordinary steam pipe that is not connected with a separator.

In the Royal Electric Company's works, where I was employed as second engineer for a number of years, they had the Brown and Corliss engines, working both condensing and compound condensing. That these engines worked well goes without saying. The compound engines were the latest installed at their works, and when I say that these engines worked well I simply say the truth. They carried a big load and at times a great deal more than they were built for, and they did it well, at least as well as could be expected from them under the circumstances. I am now, however, thoroughly convinced that had those engines been jacketed they would have done a great deal better, as my experience teaches that engines jacketed of similar dimensions working on similar loads and conditions, work far better. In the Montreal Street Railway power station, where I have been employed for the past five months, they have cross compounding condensing engines of the Corliss type, jacketed as I have already described. These engines are rated at 600 i.h.p., on a coal consumption of $1\frac{3}{4}$ pounds of coal per one horse power per hour, but they have been carrying for the past three months, through the day and part of the night, an average of about 900 to 1,000 i.h.p., and sometimes a great deal more, and they do it as well as if they were only running at their rated capacity, and that they do it with fair economy will be seen from the following data, hastily got together for this occasion:

The dimensions of the cylinders are as follows.—The high-pressure cylinder 24 inches diameter, with 48 inches stroke, low-pressure cylinder 48 inches diameter by 48 inches stroke. The valves of the engine are arranged so that the engine may carry steam the whole of the stroke if necessary. They do carry steam the whole length of the stroke when the load comes on suddenly. Each engine carries 4,200 kilo-watt generators, with an average of about 300 amperes, at 550