

CANADIAN ELECTRICAL NEWS

AND

STEAM ENGINEERING JOURNAL.

VOL. I.

TORONTO AND MONTREAL, CANADA, AUGUST, 1891.

No. 8.

NORDBERG POPPET VALVE ENGINE.

THE Patent Poppet Valve Engine, illustrated herewith, is the product of the long experience and careful study of Mr. Bruno Nordberg, who for a number of years was the chief designer with the Edward P. Allis Co., Milwaukee, Wis.

The designer claims that it is constructed to meet the increasing demand for greater rigidity, strength, and durability of wearing parts. On account of the small tips of inlet valve, the latter will drop very quickly, enabling the engine to be run at a speed up to 150 revolutions per minute.

The shape and location of the wrist lever permits of a very

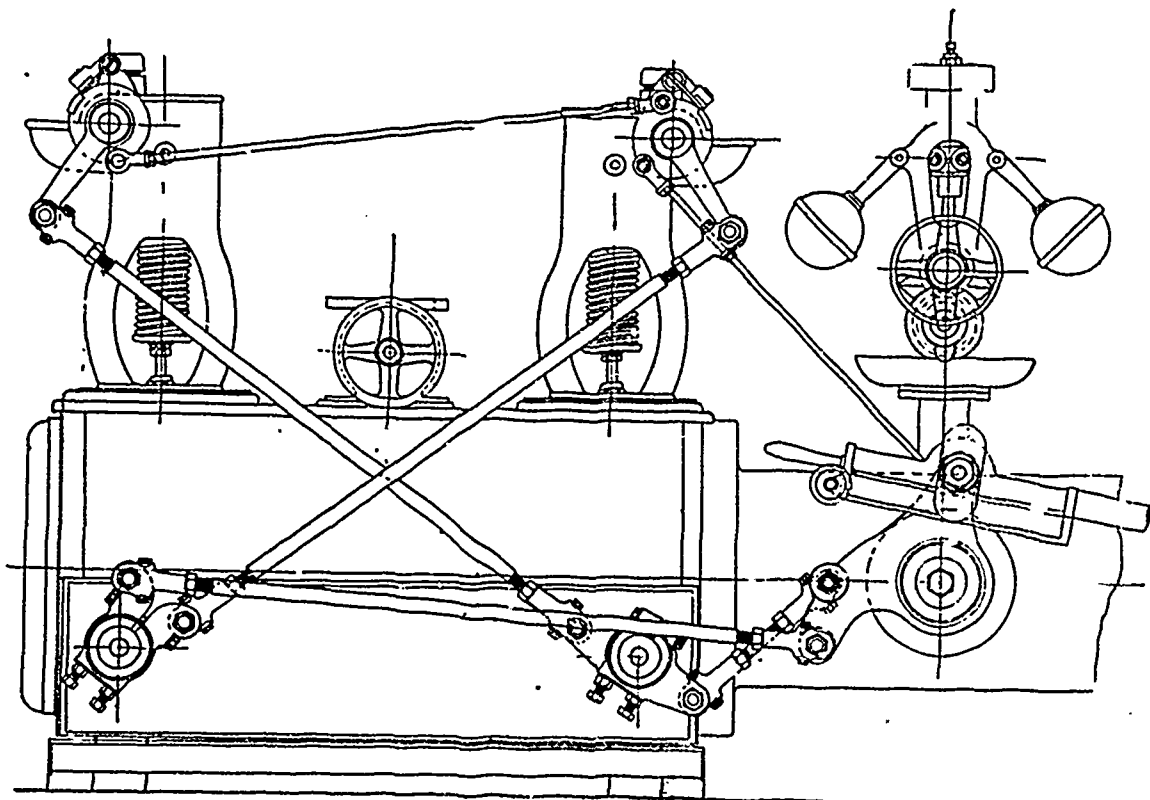
Darling Bros., Montreal, who are manufacturing the Nordberg automatic governor, are the sole makers of this engine in Canada.

STEAM ADMISSION.

III.

THE valve being arranged to admit the steam in sufficient quantity and at the right time, the next point to consider is how long should the steam continue to flow in, or should it be cut off?

There are many different ideas held on this subject, and when high pressure steam came first into use many thought that the



short distance between centre of shaft and foundation, being on a 20 inch engine, only 22 inches, while that on some other engines of same diameter of cylinder is 30 inches. This, it is claimed, lessens the strain on the foundation, by reducing the tendency to rock it endwise, communicated by the momentum of the reciprocating parts.

The frame is of the girder pattern, cast in one piece with the main bearing and slide.

The post under the main bearing is considerably wider than the length of the bearing, and in it is provision for four bolts.

In designing the cylinder, the object kept in view was to increase the inlet valve area, and at the same time reduce the clearance. The clearance in the valve cavities is a great deal less than those commonly made. That of the exhaust valve is reduced nearly one-half, this result being obtained by its location and peculiar construction.

The external valve gear presents a great many radical improvements, as can be seen by cut. One feature of this valve gear is that the setting of the exhaust valves can be adjusted without changing the length of the valve rods, i. e., without disturbing the motion, by changing the angles through which the valves are intended to move.

sooner it could be cut off, the better the result. Some engineers still hold this idea, and it would be a correct one were steam cylinders made of a material that was perfectly impervious to heat and quite unaffected by any change of temperature. Were it possible to make the cylinder of a material which once heated to the same temperature as the newly admitted steam would remain so, and not cool down, then a quick, sharp, early cut-off would be economical. But as cylinders are made, they absorb heat from the fresh steam, and thus a portion of steam is condensed. Then as the cut-off takes place, and the steam is expanded, the heat is returned by the cylinder and some of the water is again made into steam when it is too late to do any work, and so the heat taken out of the fresh, live steam, is thrown away. The greater the difference between the temperature or pressure of steam admitted to the cylinder and the temperature or pressure of the same steam when let out of the cylinder, the greater the loss from this cause. It may not all be carried off by the work of re-evaporating water, but some of it is wasted in going that, and some of it in simply raising the temperature of the exhaust steam and water. Many experiments have been made to determine the best point of cut-off, and it may be taken as a result of these, that there is no economy in cutting off so