THE M. T. DAVIDSON STEAM PUMP.

The Davidson Steam Pump is a direct double-acting pump, with single steam end, simple or compound. It is built with a view to simplicity and durability. Its action is regular, and having no dead point, it is absolutely positive, starting from any point, and running full stroke under all conditions. It will pump any fluid, giving a steady and uniform delivery at very slow or high piston speeds. The makers claim that it is the most efficient and economical steam pump made.

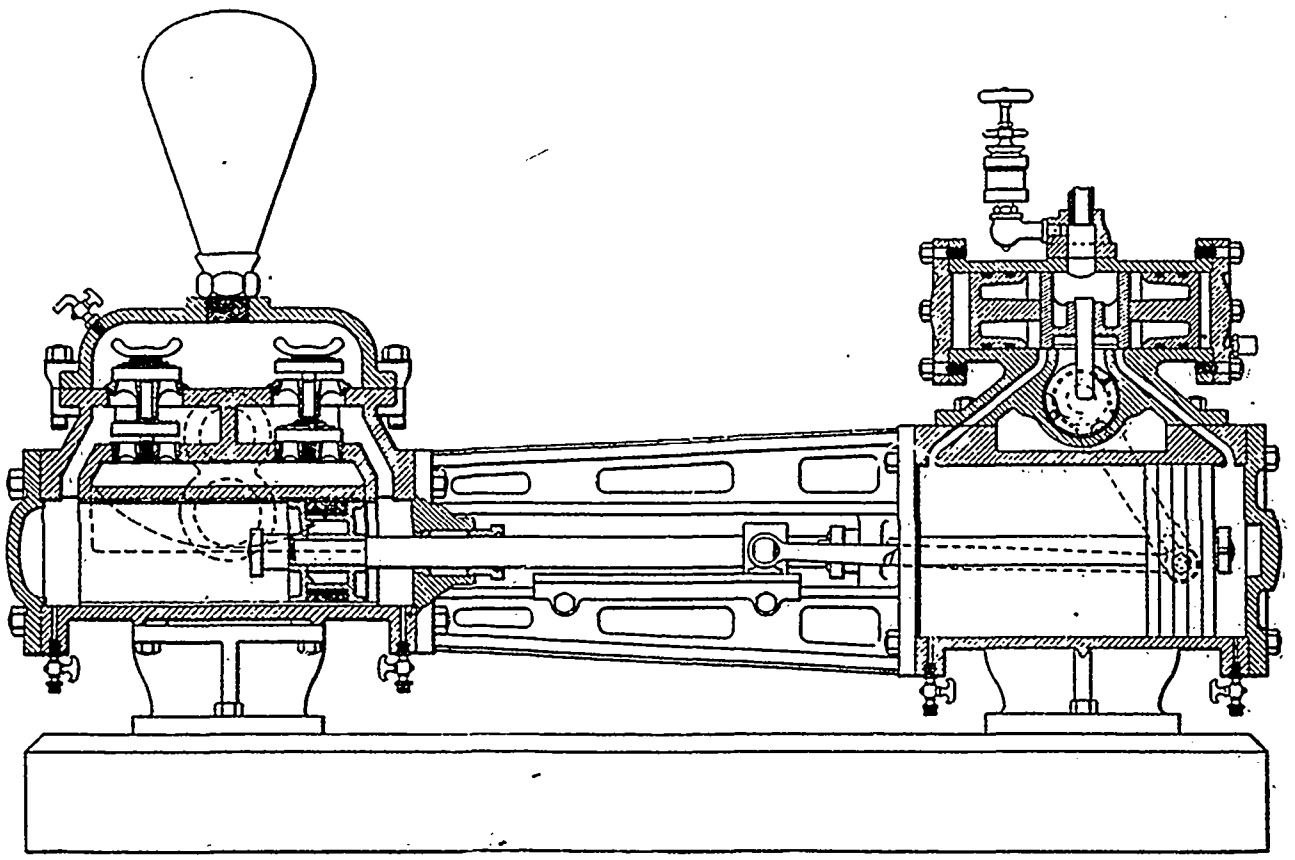
The distinctive feature of the steam end of this pump is, that unlike other direct-acting steam pumps, the valve gear consists of only one valve, which is actuated by a positive mechanical connection with the main piston rod of the pump, being assisted in its movements by steam. The accompanying cut represents the valve gear in detail. It consists of the cylindrical steam chest *M*, which is bored out to make a face for the valve *A*, and the piston *B* and *B'*, that assists in operating the valve. The pistons are connected, sufficient space being allowed between them for the valve and steam ports. They are also attached to the slide-valve, all working in the same plane and being of the same diameter, insuring evenness of wear and readiness of access for adjustment, repairs, etc. An examination of the valve will at once suggest the impossibility of its getting out of order, becoming deranged, or wearing out within the life of any other portion of the pump. The valve is controlled and operated by cam *C* acting on steel-pin *D*, passing through the valve into exhaust port, in which the cam is located. In addition to this mechanical operation, steam is alternately admitted and exhausted to and from the steam chest by ports *e* and *e'*, assisting the movements of the valve by steam actuating the valve pistons *B* and *B'*. When pump is at rest, with valve completely covering main steam ports *f* and *f'*, the cam holds the valve so that steam will be admitted to one end of chest and exhausted from opposite end, by ports *e* and *e'*, throwing the valve and opening main ports *f* and *f'*, admitting steam to and exhausting from steam cylinder. If valve occupies any other position, one of the main steam ports will be open to steam, and the other to the exhaust, insuring the direct supply of steam to one end of cylinder and the rapid release of exhaust steam from other end. It is consequently very evident that the pump must start from any position.

When one of the main steam ports, as *f*, is completely open, admitting steam to cylinder driving main piston, cam and valve in directions shown by arrows, the first movement of the cam will be to oscillate the valve preparatory to bringing it in proper position for the opening of the auxiliary steam port *e*, to live steam, and *e'* to exhaust, and secondly, to bring the valve to its closure (mechanically) slightly before the end of the stroke of main piston, thereby causing slight cut-off and compression, next fully opening auxiliary port *e* to steam, and *e'* to exhaust. The admission of steam to one end of valve piston, and the other being open to exhaust, throws the valve in direction shown by arrow, admitting and exhausting steam to and from cylinder for the return stroke.

The main valve being as much under control of the piston rod as is the valve of an ordinary steam engine worked by an eccentric, instead of being independently controlled by an auxiliary valve, secures a positive acting pump, capable of starting from any position, and maintaining a uniform and full stroke.

The pistons are absolutely prevented from striking the cylinder heads by virtue of the mechanical valve closure. This is one of the most important features of the pump.

The water cylinder is of new design. It is beyond question the simplest made; it has but one joint to blow out, and that is in plain sight The pump is readily inspected, as the water valves and whole inside can be examined by the removal of one plate or bonnet, without breaking any connections of suction and discharge pipes. Each suction and delivery valve is held in place by one valve stem. The pump can be taken apart and put together again in a few minutes. The steam and water cylinders are rigidly connected by a substantial frame, designated the intermediate. The intermediate carries a slide for cross-head, preventing vibrations and keeping pump in line. The stuffing boxes of the steam and water cylinders are secured to the heads of the intermediate. They are in plain sight and accessible for adjustment.



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The Davidson Steam Pump runs full stroke against the maximum working pressure, and being provided with tightly packed pistons, avoids loss by piston-leakage, and insures a discharge equal to the piston displacement, at its highest speed and greatest pressure. The valve and port areas being very large, allow of the high speeds obtainable by the steam end, securing the greatest pumping capacity with the best economy. The following guarantee is given to purchasers:

"In all cases where I am correctly advised (before shipment) as to the requirements—and possible contingencies—of pumps, I will guarantee satisfaction, or refund the amount of purchase money.

"M. T. DAVIDSON."

The St. Lawrence Machinery Supply Co., Naud, Valiquet & Hunt, of Montreal, have been appointed sales agents for the Davidson pumps in Canada. Their address is 361 a, St. James street, Montreal.