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NEW SERIES.

Engine With Walbridge's Cut-off.

The accompanying engraving represents a steam engine with an improved cut-off invented by A. S. Walbridge. The engine is of the ordinary construction embracing the latest improvements, and is a sample of those manufactured by C. C. Whittelsy of Malone, N. Y.

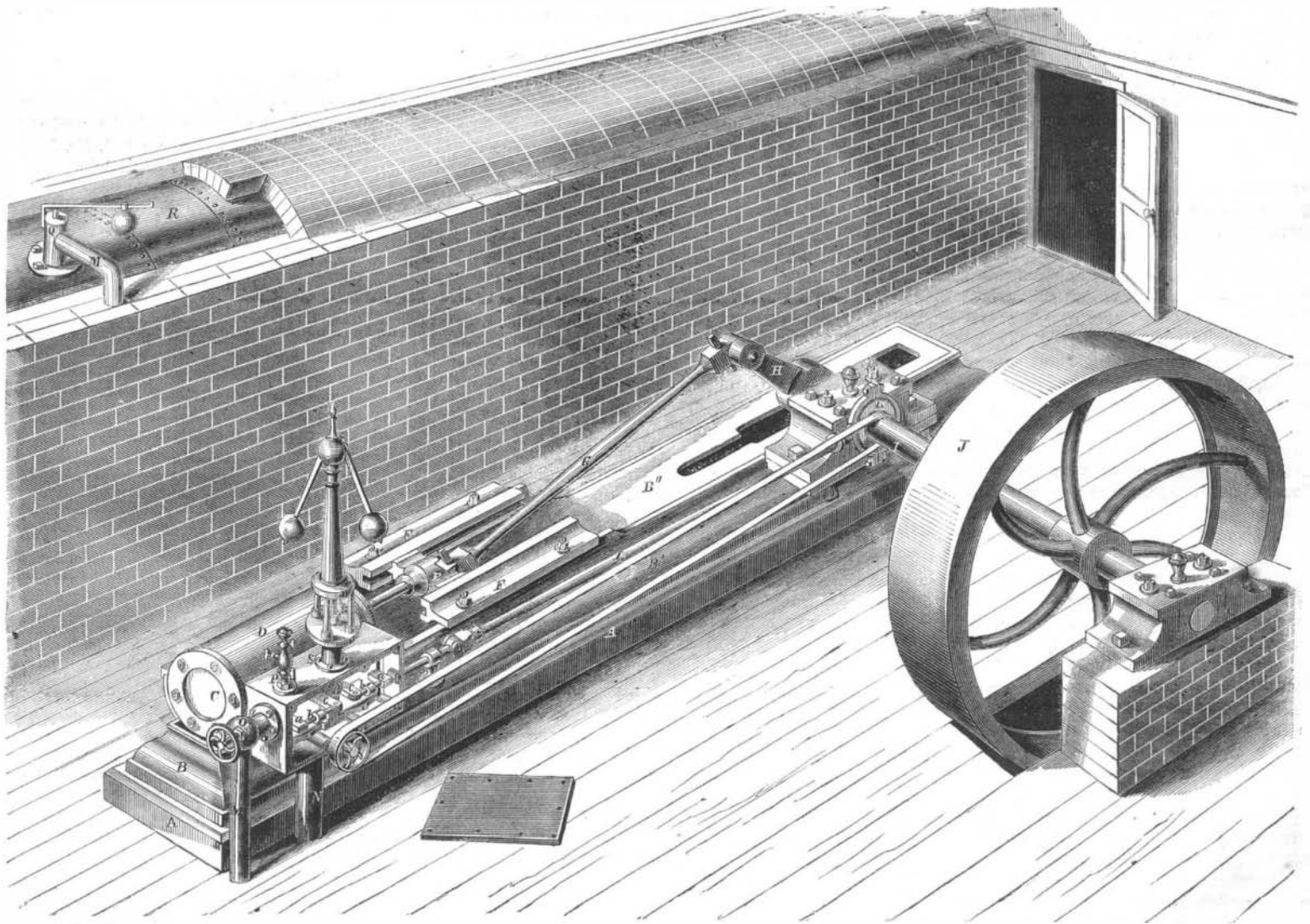
The several parts will be readily understood by an

inspection of the cut. Between the two levers, *cc*, is the wedge, *d*, which may be moved vertically by the governor, with which it is connected by a rod passing through a stuffing box. The edges of this wedge are the fulcra of the levers, *cc*. It will be seen that if the wedge, *D*, is lowered, the levers will strike it at an earlier part of the stroke, and will, consequently, close the cut-off valves earlier, while if the wedge is raised, the steam

ing a feeding full stroke; though the engine should be large enough to drive the work without this, as this prevents all expansion, and a loss of steam is the result. It is convenient, however, in case of necessity, where heavy work is required for a few minutes.

This invention has been secured by Letters Patent in Canada and the United States; the United States Patent having been granted, through the Scientific

WALBRIDGE'S VARIABLE CUT-OFF.



inspection of the cut. A is the foundation stone, B B' B'' is the cast bed on which the other parts are mounted, C is the cylinder head or end, D is the steam jacket surrounding the cylinder, E is the cross head, F F' are the guides, G is the connecting rod, H is the crank, I the shaft, J the fly wheel, K the eccentric, L the valve rod, M M' the steam pipe, N the exhaust pipe, O the throttle valve, P the oil cup for valves and cylinder, Q the safety valve, and R the boiler.

The cut-off belongs to that class in which there are two slide valves riding on the back of the main slide valve. The steam chest, S, is represented with the front plate removed to show the interior. Two horizontal posts, *aa*, are attached rigidly to the main slide valve, and are connected by rods, *bb*, with levers, *cc*, which are connected at their opposite ends by pin joints with the cut-off valves.

continues to enter the piston during a larger portion of the stroke.

The length of the rods, *bb*, is made variable, and may be altered by turning the cylinders, *ee*, to adjust the cut-off. The horizontal projections upon the lower end of the wedge, *d*, are provided for the purpose of stopping the engine, in case the governor or its driving belt should break; thus preventing the engine on being released from the control of the governor attaining a dangerous speed. As the governor's arms drop, the wedge is raised so as to bring these projections against the levers, and thus to cut off the steam as early as to stop the engine.

When the engine is heavily loaded so as not to cut off any part of the first half of the stroke, the valves give steam the same as with the link motion, that is by partly leaving the port open; the steam follow-

American Patent Agency, Sept. 10, 1861. Any further information in relation to the patented portion of the engine may be obtained by addressing the inventor, A. S. Walbridge. For information in relation to the purchase of engines with these improvements, address the manufacturer, C. C. Whittelsy, at Malone, N. Y.

TO RECOGNIZE GRAPE SUGAR BESIDE CANE SUGAR.—O. Schmidt employs triacetate of lead and ammonia, says the *Ann. der. Chem. und Pharm.*, which produce with both sugars, white precipitates, which, after a while, particularly when heated, assume a red color in the presence of grape sugar, but remains unaltered by cane sugar; a small quantity of the former mixed with a large proportion of the latter may thus be recognized by the red tint of the precipitate.