

**IMPROVED PORTABLE ENGINE.**

The engraving represents a line of portable engines made by the Taylor Manufacturing Company, of Westminster, Md., from patterns formerly owned by the Utica or Wood & Mann Steam Engine Company, of Utica, N. Y. These engines have been in the market since 1857. The Taylor Manufacturing Company have purchased all of the patterns of the Utica Company, and have made many very decided improvements in details of construction while holding to the original well-tried principles of the engine.

This engine answers as a portable engine on the boiler, and it can be taken off and set upon a separate foundation and used as a stationary, and when so used it possesses advantages over the ordinary side crank stationary engine, as it has a compound or center crank supported by two ample bearings having gibs for adjustment. The journal boxes are of the kind known as the four-quarter box. They are bolted to the bed plate, which sustains the working strain of the engine and keeps all the parts in line. When the engine is used as a portable, the bed plate is secured to the boiler by means of stands or brackets, bolted to the boiler. The bolts that secure the frame to the brackets are made so as to allow for the expansion and contraction of the boiler without producing any strain on the engine bed. The guides are the usual locomotive pattern, and the crosshead has large and ample wearing surfaces. The connecting rod is made of the best hammered iron, straps being keyed and bolted and well fitted with gun metal boxes. The box in the crank end of the rod is made square to prevent rocking motion. The crank shaft, which is of good size, is forged of the best hammered steel. The fly wheels are heavy, and carefully balanced. Much care is taken in the casting of the cylinder so as to have good wearing metal. The piston is fitted with the usual packing, all joints of the rings being carefully ground and fitted so that the rings will adjust themselves to the surface of the cylinder. The slide valve is of the usual D-valve pattern, proportioned upon correct principles. The boiler is economical in the use of fuel, and the engine uses the steam to the best advantage. The Pickering governor used in connection with this engine is provided with a double valve that does not stick, and also with a stop motion that prevents the engine from running away in case the governor belt breaks. The speeder attachment is so arranged that

the speed of engine can be changed fifty revolutions or less without altering the size of the pulleys or stopping the engine. The stop-motion is a very valuable feature, and will prevent such accidents as occur from the running away of the engine. The engine is fitted with a pump or inspirator as may be desired, and is provided with a heater in the bed plate directly under the cylinder. The exhaust steam enters the heater, heating the feed water and escapes through a pipe into the smoke-stack. The heater being contained in one end of the frame overcomes the objectionable features of expansion and contraction of the frame or bed, a common fault with many engines that have the heater running the whole length of the frame.

An exhaust nozzle of peculiar construction is placed on the end of the exhaust pipe in the smoke-stack, by which the effect of the escaping steam on the draught can be regulated at will and made to produce a very strong draught if desired. The boiler is made of the best Pennsylvania charcoal iron, carefully fitted, and double riveted where the shell is connected to the fire box; all flat surfaces are closely stayed; the holes punched so as to avoid the use of the drift pin; the crown sheet is stayed with crown bars upon the same principles now used by the best locomotive builders, and is provided with a safety fuse plug that melts out in case of low water, and puts out the fire, thus preventing the burning and injuring of the crown sheet and providing against explosion occurring from that cause. The flues are three inches in diameter, of the best American lapwelded make. The boiler is provided with a large dome, securing large storing capacity for dry steam, and has a steam blower for blowing fire; it is securely mounted on strong stands and sills, and is provided with three gauge cocks, glass water

gauge, steam gauge, two top valves, a steam whistle, steam flue cleaner and fire irons, twenty feet of smoke-stack, and double sparkarresters. The engine is provided with automatic glass oilers and cylinder lubricator, a full set of wrenches, oil can, and, in fact, everything that should be found on a perfect engine. This engine represents only one style or class of portable engine, in addition to which this company manufacture the well-known dry-steam engine, the Utica adjustable cut-off valve stationary engine, sawmills, and the clipper vertical engines.

For further particulars in regard to this engine address the Taylor Manufacturing Company.

**Electric Lighting by Water Power.**

The town of Godalming, in Surrey, has just been successfully lighted by electricity produced by the aid of water power, a method of generating the current not hitherto publicly adopted in England. Sufficient allowance, however, not having been made for the flooded state, and consequently sluggish flow, of the river Wey, after the late heavy rains, a steam engine has had to be pressed into the service as an auxiliary power. The water power required for driving the machine is obtained by two Poncelet water wheels at the Westbrook Mills, belonging to Messrs. Pulman. The steam engine is a semi-portable, by Messrs. Wallis & Stevens, of Basingstoke. One of Messrs. Siemens Brothers' generators is used—an alternate current dynamo-machine with an exciter absorbing about ten horse power. This machine supplies seven differential arc lamps and forty Swan incandescent lamps. The arc lamps are used for the main thoroughfares, and the Swan lamps for lighting the smaller streets; they are fixed in the ordinary gas-lamp posts. The current

vide for removal of the calks from the shoe. The invention consists in a flanged calk and rubber block combined with a recessed shoe.

An improvement in dynamo-electric machines has been patented by Mr. James B. Livingston, of New York city. This invention relates to the armature of dynamo-electric and magneto-electric machines; and it consists, essentially, in an armature of spiral or volute form, wound with wires or other electrical conductors having their plane of convolution at right angles to the plane of rotation of the spiral. The object of the invention is to increase the length of the body of iron composing the core of the armature without increasing the diameter or axial length of the armature, so that a single core may be divided up into a number of poles and nodal points, to secure currents of different potential by connecting the bobbins with each other and with the commutator in different ways.

Mr. Thomas Burnett, of Eureka, Cal., has patented an improvement in that class of breech-loading firearms in which the breech-block swings backward and downward. The improvement cannot be clearly described without engravings.

Mr. August Krause, of Salina, Kan., has patented improvements in that class of oil stoves in which the chimney flues for the lamps are formed in a water reservoir arranged over the lamps; and it consists in providing the water reservoir with a series of flues, one for each wick tube, and arranged each immediately over a wick tube.

An improvement in trucks has been patented by Mr. Benjamin S. Harrison, of New Orleans, La. This improvement relates to trucks or wagons used for carrying heavy loads. As usually made, the hind wheels are of wider

gauge, so that such wagons will not take the street railroad tracks, except at one side, in a manner that strains the running gear. The object of this invention is to secure uniform gauge of the front and rear wheels without sacrifice of width and other useful features of the ordinary construction, so that such wagons may take the track, a matter of importance in cities where street railways are numerous.

An improved loose pulley has been patented by Mr. F. L. Waltner of Hamilton, Ohio. The object of this invention is to facilitate shifting a belt from a tight to a loose pulley, and vice versa, and at the same time to prevent waste of power and the rapid destruction of the loose pulley. The invention consists in a

fixed pulley within which slides a loose pulley which is adapted by its movement to carry the belt from the loose pulley on the fixed pulley.

**A Two Mile Walk under Lake Michigan.**

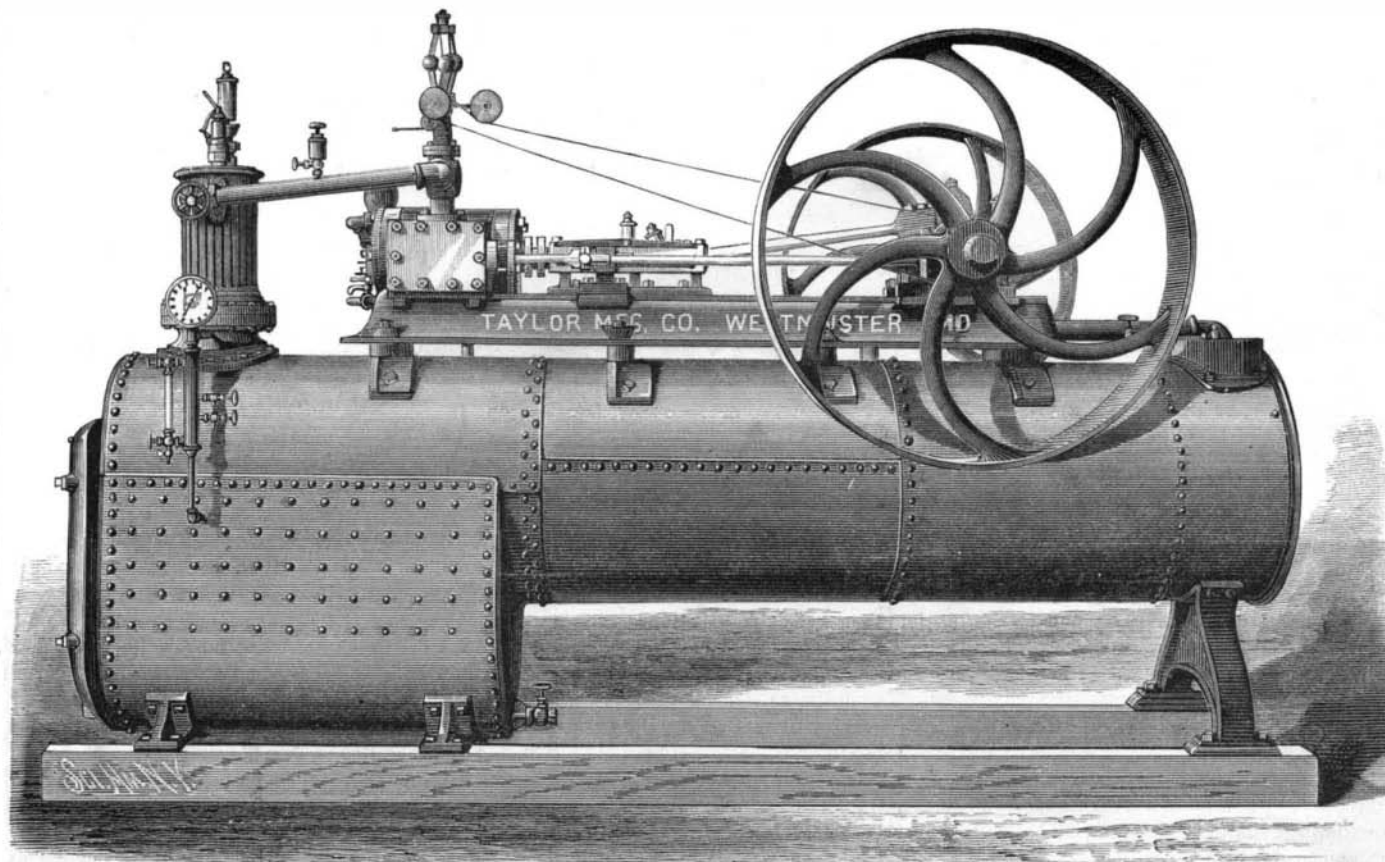
About the middle of January the old tunnel under Lake Michigan, for the water supply of Chicago, was pumped out for an examination of the masonry. On the 24th of January, Mayor Harrison, with the city engineer and several reporters, walked through the tunnel to the crib, a distance of two miles, on a tour of inspection. The bottom of the tunnel at the land end is sixty-eight feet below the surface of the earth, and the party were let down into the great hole at 2:15 P.M. With lighted miners' lamps they started on the journey, which was found to be laborious as well as uncomfortable, the water being ankle deep and the tunnel not quite high enough to permit a man to walk erect. The masonry was found to be perfect, and in commemoration of the trip, which took one hour and thirty-five minutes, the Mayor screwed a brass plate to the wall of the tunnel 3,000 feet from shore, bearing the inscription: "Water let in March 24, 1857. Pumped out January 18, 1882. Found in excellent condition." A climb of a series of ladders, seventy-two feet long, brought the party, well nigh exhausted, to daylight at the crib.

**The English Channel Tunnel.**

The construction of the proposed tunnel under the English Channel, between England and France, has been undertaken by the Southeastern Railway Company. It is promised that the undertaking will now be pushed to speedy completion.

**RECENT INVENTIONS.**

An improvement in horseshoes has been patented by Mr. James B. Finch, of Bozeman, Montana Ter. The object of this invention is to relieve the feet of horses from the jar or shock of traveling on hard or paved roads and also to pro-



PORTABLE ENGINE MADE BY THE TAYLOR MANUFACTURING COMPANY WESTMINSTER, MD.

is conducted by bare copper wire attached by insulators to poles, like overhead telegraph wires, and no direct return wire is employed.

Of the arc lamps one is similar to those in the lower system of street lamps used in that part of the city of London lighted by Messrs. Siemens. The other arc lamps, of which there are three in the town, are of different mechanism, having three pairs of carbons, which burn with instantaneous changes, instead of two long carbons burning continuously. These lights, inclosed in square lanterns of clear glass, provided with reflectors, are placed on iron posts 22 feet high, and are stated to have an illuminating power equal to 300 candles. The Swan lights are estimated to give a light of about 15-candle power. Three of the arc lamps and fifteen of the Swan lamps are used in the illumination of Messrs. Pulman's Mills. Altogether about five miles of wire are used for the two systems of lights. The circuit of the differential arc lamps is about two and a half miles, the nearest of the lamps in the town being about half a mile from the mills, and the furthest being about a mile and a quarter distant. The work has been carried out by Messrs. Calder & Barrett, electrical engineers, of 154 Westminster Bridge Road, London. This firm will exhibit at the Crystal Palace Electrical Exhibition a turbine, to be worked by water supplied from the towers, that is to drive a dynamo-machine, which will alternately supply current for lighting and for the transmission of power.