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"SNYDER'S LITTLE GIANT" ENGINE.

We illustrate on this page a complete and compact small power steam engine and boiler, familiarly known as "Snyder's Little Giant."

The great variety of small industries to which motive power can be advantageously applied has produced a demand for small, convenient, and safe motors. To meet this demand with a reliable steam engine which would be complete in every detail and yet simple and safe in the hands of the inexperienced, Mr. Snyder has brought out the "Little Giant." It is a generally acknowledged fact that it is impossible to construct boilers with shells of large diameter which will be equally as safe as those of smaller diameter. For example, by doubling the diameter of a boiler, other things remaining the same, the area of its shell is doubled, and its power of resisting pressure is diminished one half. The shells used in the "Snyder" boiler are not only of small diameter, but they are made of the finest quality of wrought iron and lap welded. The almost universal practice of joining plates of boiler iron with rivets reduces the strength of the shell, so that in boilers whose sheets are joined by a single row of rivets only 56 per cent of the strength of the iron is realized, and where the sheets are double riveted only 70 per cent of the strength of the iron is realized.

In the "Little Giant" boiler, the full strength of the iron is utilized, as no rivets are required, all of the joints being screwed together, and the joint in the shell being lap welded. The boiler is suspended over the fire, and the heat freely and uniformly circulates on all sides of it. There being no water legs or water spaces below the bottom head or cap, if through carelessness the water should be allowed to get entirely out of the boiler, the only result would be a possible damage to the lower head or cap. We are informed by Mr. Snyder that all the materials used in the construction of these boilers are tested by hydraulic pressure before it is put together, thus insuring its fitness for use before labor is expended on it.

These boilers are provided with fusible or safety plugs, which are arranged so that no sediment or scale can form on the alloy to prevent the fusion of the plug when the water becomes low.

The alloy or soft metal is contained in the pipe about half way up from the bottom of the boiler, and above it a continuation of the same pipe extends upward beyond the water level with a siphon shaped top, so that the water never comes in contact with the metal and there is no chance of scale forming over it. This boiler has a double or air jacketed casing, through which the air passes to the ash pit. This arrangement supplies the fire with hot air and adds greatly to the economy of fuel, while the loss of heat by radiation is prevented. The air supply is controlled by a damper band, shown in the engraving at top of boiler. The boiler has a novel sectional grate, safety valve, blow-off cock, and check valve. The steam gauge, and glass water gauge, and three brass gauge cocks are secured to a water column which is attached to boiler with two unions and may be easily removed for shipping.

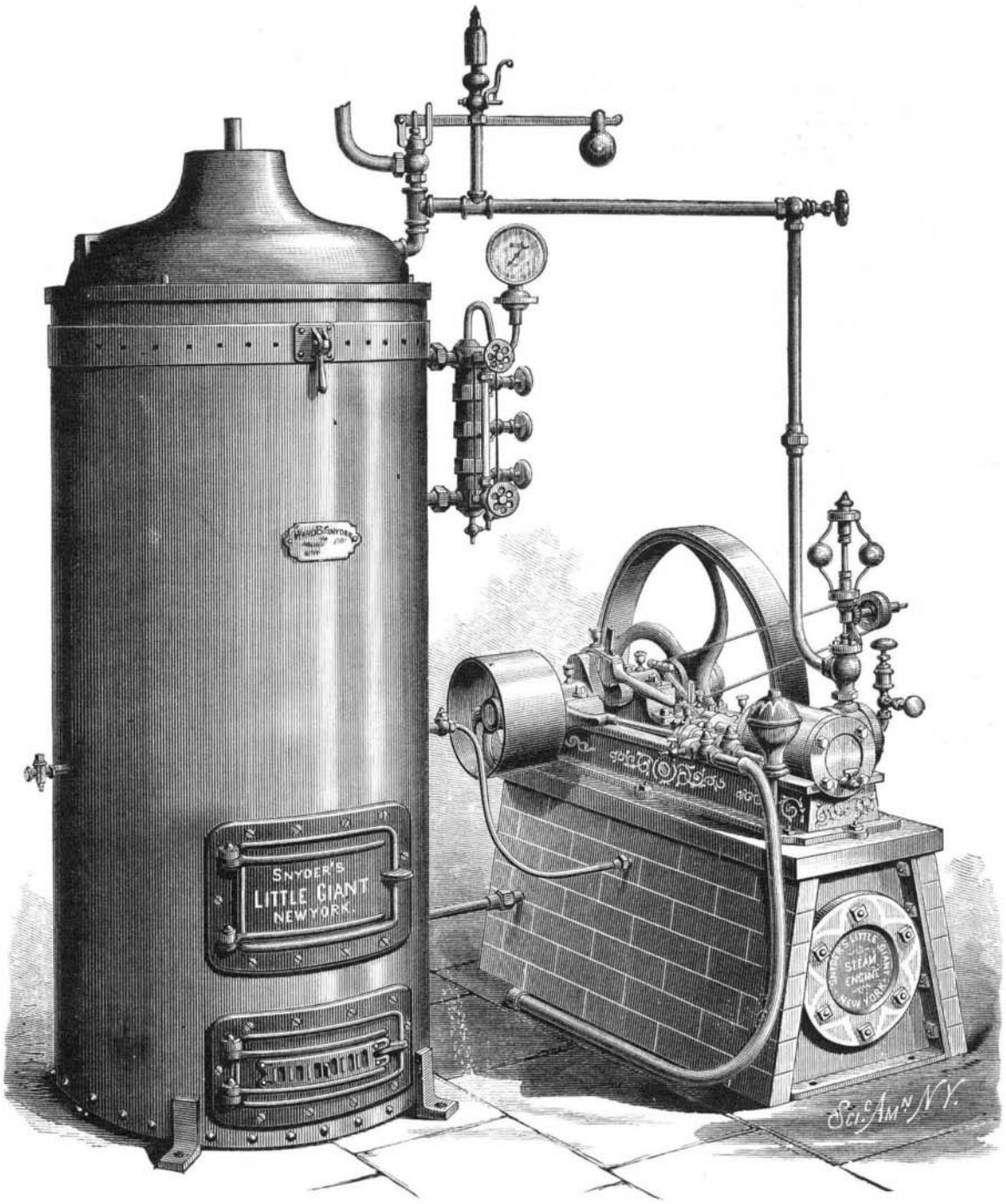
The engine is of the horizontal type. As a large majority of those who purchase small engines are not experienced or professional engineers, and the extent of their business is not sufficient to warrant the employment of one who is, it has been the aim of the builder of the "Little Giant" to avoid all superfluous parts and fittings to adapt it to the use of those not especially skilled in machinery. These engines have an improved circular flat slide valve which is held in a ring or buckle in which it is perfectly free to revolve during its travel, thus guaranteeing uniform lubrication and wearing a perfect mat.

The pistons have double metallic packing rings and are self adjusting. The pump is of the locomotive pattern and is driven by an eccentric direct from the main shaft; the plunger is made of brass and works in a brass gland, thus preventing corrosion. The slides are V-shaped and fit into correspondingly shaped recesses in the cross head, which admits of taking up all wear. Both the cross head and crank ends of the connecting rod are provided with gibs and keys for taking up wear. An oil well is cast in the crank strap, which carries a fullhalf day's supply of oil and only feeds it to the crank pin when the engine is in motion. Brass oil cups are furnished on all other bearings, and a nicely designed lubricating cup is placed on the steam chest.

The pillow blocks are lined with anti-friction metal. Steel is used in all parts where it will increase the durability and efficiency of the engine. All working parts and the cylinder heads are polished. The cylinder is incased in black walnut and ash. The bolts and screw heads are highly polished and are of a standard size, so that should one be lost or broken it can be easily replaced.

The sides and top of base to which the engine is secured are made of plank which are bolted to flanged iron ends. This foundation is painted to closely resemble brickwork. The feed water heater passes through and is supported by the foundation, and the exhaust steam from the cylinder is conveyed through the heater. The feed water before entering the boiler is forced by the engine pump through from 30 to 40 feet (according to size of engine) of steam pipe, which is contained in the heater chamber and is surrounded by the hot steam, thereby heating it to nearly the boiling point before it enters the boilers. It is stated that from 10 to 15 per cent of fuel is saved by the use of this heater.

The celebrated "Pickering Governors" are exclusively used on these engines, and are run by a ¾" flat belt. Mr. Snyder, we are informed, has invariably made it a rule to put every engine up at his works and test them under steam with a friction brake and indicator. All parts of the engine are made interchangeable, so that they may at any time be replaced. These engines and boilers are now made from one to six horse power, at very reasonable prices. For further particulars address Mr. Ward B. Snyder, the patentee of this boiler and the proprietor of the "Little Giant" engine works, at 94 Fulton street, New York city.



SNYDER'S LITTLE GIANT ENGINE.

New Mechanical Inventions.

An improved Actuating Mechanism for Calendar Clocks has been patented by William S. Shirk, of Anderson, Indiana, which consists in a novel arrangement, in the time movement of a calendarclock, of a system of levers, springs, pawls, and ratchets, whereby the accurate movements of the indicating hands are effectually secured; and in certain details of construction which render the calendar more reliable in its operation.

Homer C. Emery, of Union, Oregon, has patented an improved Turning Chisel, which has an arm extending from the front point of turning chisel over the timber being turned. It forms a rest for the chisel while being used, and, being bluntly rounded at the point, forms a guard against the chisel entering or gouging in the timber being turned.

Ephraim M. Kimball, of Toledo, Ohio, has patented an Appliance for Flat Filing, by which plain surfaces on small work may be quickly and economically produced. It consists in a plain flat plate, which is secured to the stationary jaw of a vise, and in an adjustable head or guide, which is secured to the end of the file.

James Brett and Bethune Perry, of Albion, Cal., have patented an improved Saw Mill Head Block, which consists in a combination of set wheels, provided with notches for receiving a detent, and with ratchet wheels and levers for disengaging the detents and moving the set wheels. It also consists in an arrangement of gearing by means of which the screw of the head block may be moved independently of the set wheels.

John W. Cleland, of Nevada, Missouri, is the inventor of an improved Wind Engine, which consists in a vertical wheel having curved vanes or blades that are connected with a governor carried by the wheel shaft. The supply of wind to the wheel is controlled by hinged deflectors, and the wind on entering the wheel acts on the outer surface of the vanes on one side of the wheel and upon the inner surface of the vanes on the other side of the wheel. The force of the wind is thus twice utilized.