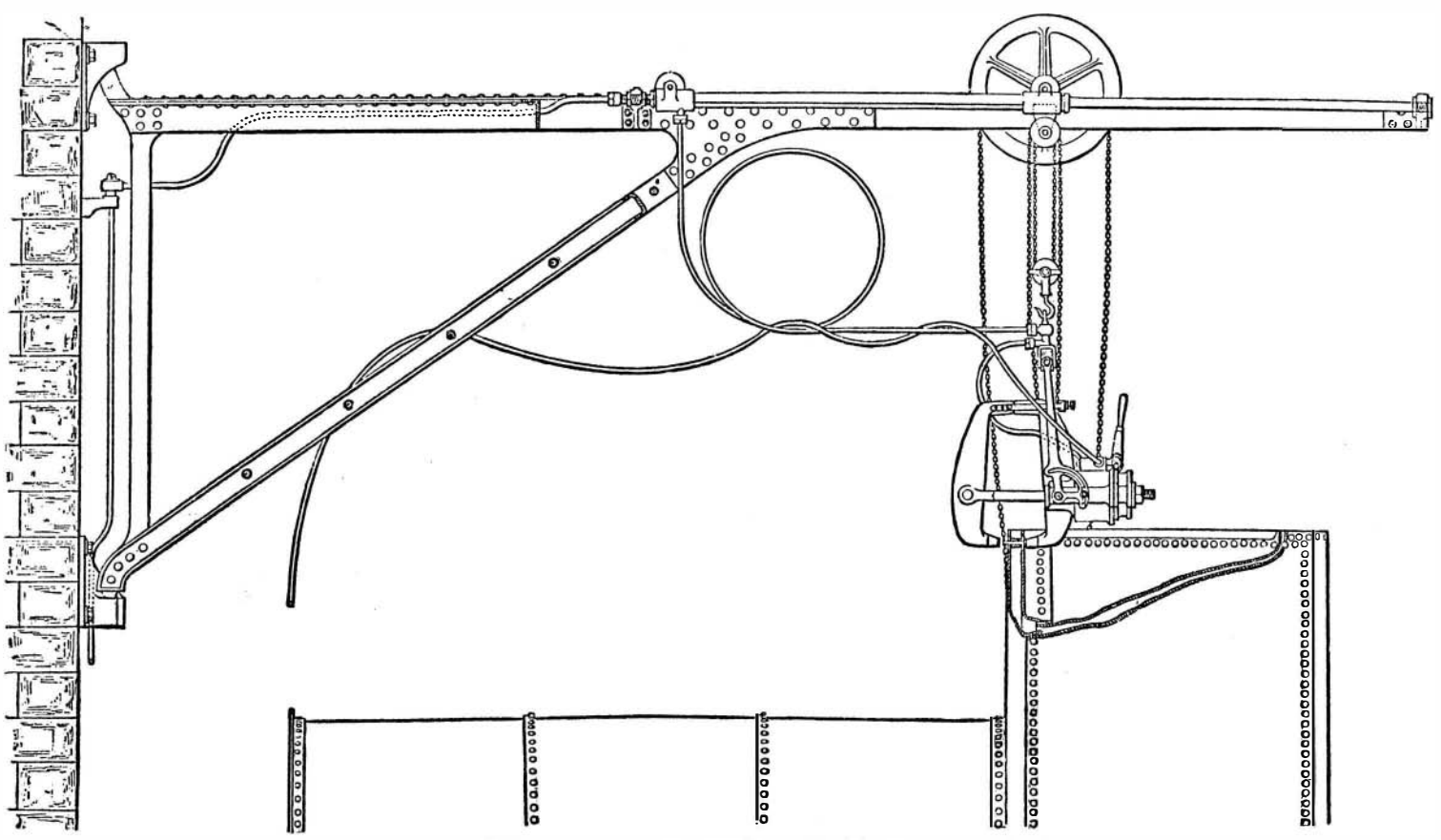
A PORTABLE HYDRAULIC RIVETING MACHINE.

Mr. Tweddell, a well known English mechanical engineer, has recently designed apparatus for riveting locomotive boilers without removing them from the engines. The machine has been erected and is now in use at the Crewe Locomotive Works of the London and Northwestern Railway, where it has been found very useful for doing such work as could not conveniently be brought to the fixed riveting machines.

The arrangement, says *Engineering*, is so simple that not much description is needed. An ordinary swing crane has attached to it an hydraulic sleeve or outer cylinder, which is moved along a fixed tube or pipe by means of a pinion worked by a sprocket wheel, this pinion gearing into a rack attached to the crane. The water, which is supplied under a pressure of 1,500 lbs. per square inch from one of Tweddell's differential accumulators, is taken from the main laid along the shop wall, and thence up the center on which the crane radiates. Thus any motion caused by swinging the crane is reduced to a minimum, and a swivel joint, almost frictionless, causes no twisting strain to be imparted to the pipe. After leaving this joint the pipe is led along the jib, as shown. There is communication between this fixed pipe and the larger one which slides on it, and this sleeve or sliding tube is balanced.

The riveter is hung from one end of the sliding sleeve, and the pipe conveying water to it from the other. The water is then, by means of a simple frictionless universal joint, led into the machine, which is free to turn completely round in a horizontal plane. The raising or lowering is done by blocks, and the angle of the machine jaws can be altered from vertical, as shown, to horizontal, by the quadrant in the suspending gear. It will be seen that there is no strain on any of the pipes, and the great difficulty in transmitting the pressure to a riveter or other machine in a portable form is overcome. We understand that the saving in cost of riveting by this method over the present mode is about four fifths, and the quality of the work is, like all that done by hydraulic pressure, excellent.



TWEDDELL'S HYDRAULIC RIVETER AND CRANE.

THE MANUFACTURE OF ANTHRACENE.

We illustrate herewith an improved method of obtaining anthracene, one of the most valuable products from coal tar, which has been invented by Messrs. Fenner and Versmann, of England, and patented in this country. The inventors claim that they have succeeded in obtaining anthracene from coal tar pitch, all previous attempts to do which have been failures. The anthracene is obtained in a comparatively pure state, with only a small proportion of other hydrocarbons, such as naphthaline or chrysene, mixed with it. Progressively increasing temperatures are employed in the distillation till finally a heat as high as 600° or 800° Fah. is reached. As the heat rises, the more solid constituents of the pitch become volatilized, till anthracene comes over; this occurs at a temperature of 600° or 800°.

Fig. 1 represents a plan view, and Fig. 2 a side view, partly in section, of the apparatus. *a* is a cast iron vessel, in which the coal tar pitch is placed for distillation by the furnace, *b*. *c c* are flue spaces by which the heat may be retained in contact with the surface of the vessel, *a*. *d* is a pipe with a stop cock, *d'*, by which pitch may be supplied to this vessel, *a*, and *e* is a pipe by which the anthracene and matters combined therewith, obtained in the distillation, are conducted in the form or vapor from the vessel, *a*, to a condensing chamber, *f*; but in the passage of the vapors along the pipe, *e*, they become cooled by the surrounding atmosphere, and the products of condensation flow by one or other of the branch pipes, e^1 e^2 e^3, to the receiving tank, *g*. The oil collected in the vessels or tanks, *f* and *g*, is drawn off therefrom through suitable taps. When the product distilled at about 400° begins to issue from *a*, it passes along *e* and at first reaches to and (part being principally non-condensed vapor or gas) enters *f*, as the temperature is raised, and anthracene begins to pass over. The richer oily product containing anthracene passes along e^1 into the chamber, *g*. The temperature being still further raised, or continued at a high standard, such as from 600° to 700°, the oily product distilled becomes more charged with anthracene. The tap in the branch pipe, e^2, is then opened, and if necessary, owing to the increasing density of the oil, the tap in the tube, e^3, is opened, so as to provide a short and ready passage for the distilled product into the receiving vessel, *g*.

Fig. 1

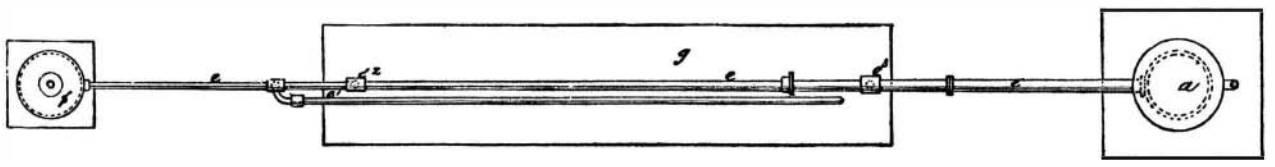
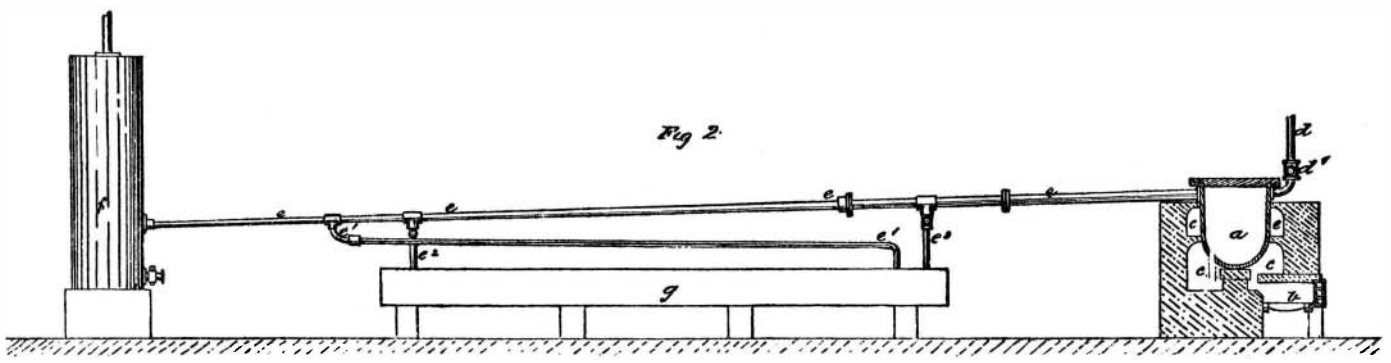
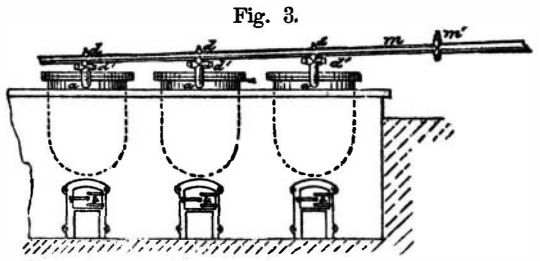


Fig. 2.



FENNER AND VERSMANN'S METHOD OF MAKING ANTHRACENE.

Fig. 3.



The production of anthracene can herein be combined with the distillation of heavy oils from coal tar (thus making one continuous process of the two operations) by distilling the heavy oils from coal tar in a wrought iron boiler, *n*, connected with a set of cast iron retorts, *a*, taking care, however, that they are capable of withstanding the high heat. As soon as the heavy oils have been worked off, a residuum of pitch is left; and without allowing to cool, it is at once run off into a set of vessels, *a*, which have been previously heated, and in which the distillation is proceeded with until the liquid or gaseous products have passed over to the condenser, aided in some cases by the use of a partial vacuum. Fig 3 represents a sectional view of the apparatus arranged to operate according to this method of working. *m* is a pipe by which liquid pitch may be conducted from the boiler, which is not shown in the engraving, to branches, *d*, with taps, *d'*, by which to supply vessels, *a*, such as already referred to. *m'* is a tap in the pipe, *m*, to regulate or to stop the supply, as required.

An Ostrich Egg Incubator.

We have pointed out in previous articles that the raising of ostriches in this country, for their feathers, might prove a profitable industry. It would further seem that the simplest way of obtaining the birds would be to procure the ostrich eggs, and pack them according to the well known recipes for preserving hens' eggs. On their arrival in this country, hatching might be accomplished by an incubator similar to that now in successful use in South Africa. The apparatus is a wooden box about three feet square, open from above and capable of containing twenty-five eggs. It rests upon a copper or zinc pan three inches deep and equal in size to the box. The warm temperature of the water is maintained by a paraffin lamp kept burning outside, underneath an extension of the pan which is carried through the wall of the box. The heat can be regulated as necessary, thermometers being constantly in use. The temperature of the box where the eggs are placed is 102° Fah. when they are first put in. After two weeks it is gradually reduced to 100°, and in two weeks more to 98°. The period of incubation is forty-two days. The eggs are turned and aired by opening the box and blanket covering once or twice a day. A fortnight before the time they are held up against the light to examine their condition, and a week after are slightly punctured near the top, to enable the chicks more readily to break the shell. When hatched they are turned, kept warm, and fed with cut lucerne, and allowed to run about their inclosures like ordinary fowls. It is stated that in natural hatching the average number of birds raised is sixteen out of twenty eggs; in artificial, when properly managed, not more than one out of twelve eggs fails.