IMPROVED OSCILLATING ENGINE.

The Pittsburg people seem to be devoting more attention to the oscillating engine than it receives anywhere else. We have already illustrated several improvements in it made there, and we now present two more. These relate to that class of oscillating engines in which the steam is introduced through a side pipe, and they are intended to overcome two difficulties which have been encountered in that class of engines.

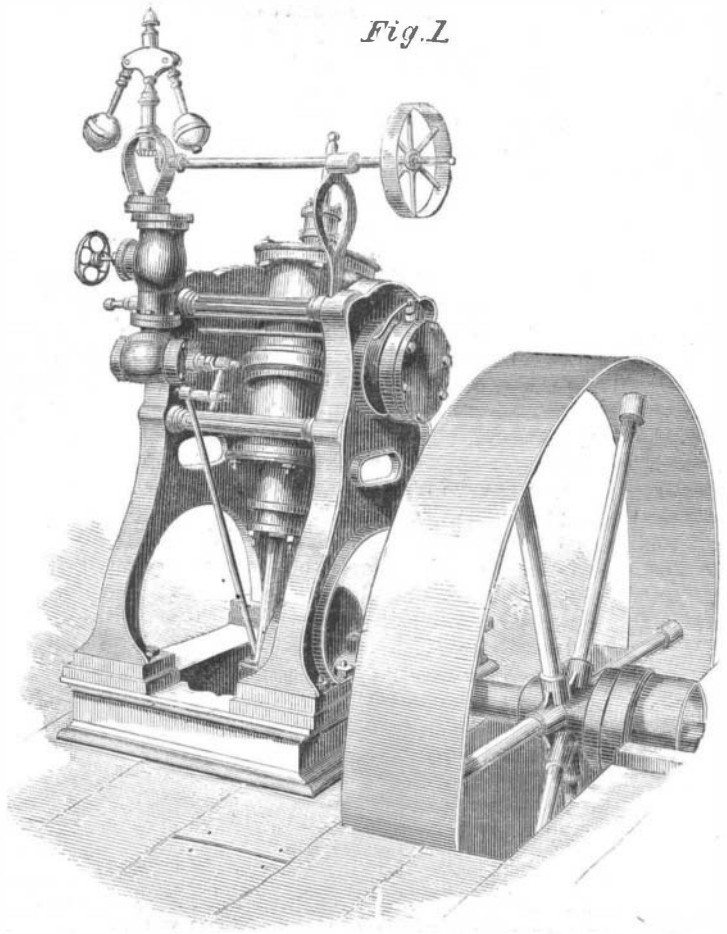
First, The pressure of the steam forcing the face of the pipe away from its contact with the face on the cylinder to which it is fitted varies with the varying pressure of the steam, so that the means resorted to, heretofore, to counteract this pressure exerting a constant force, have either pressed the cylinder against the face of the pipe with unnecessary power or have allowed an escape of the steam. In this contrivance the tendency of the steam to force the cylinder away from the face of the induction pipe is balanced by the pressure of the steam itself upon the opposite side of the cylinder, so that it varies in force exactly in accordance with the pressure which it is designed to counteract. A pipe, *g*, Fig. 5, communicating with the induction pipe, brings the steam into a cylindrical chamber opposite the trunnion, *a*, and behind a piston, F, which is fitted to work in this chamber with suitable packing to prevent the escape of the steam. The piston presses against a steel pin which bears against the end of a similar pin in the end of the trunnion, so that the pressure of the steam acts on the cylinder with but little friction. It will be seen that this arrangement causes the pressure of the steam to vary alike on both sides of the cylinder.

A modification of this arrangement is shown in Figs. 2 and 3. The piston, F, is fitted into a cylindrical opening in the outer side of the induction pipe, and a rod, *l*, connected with it is carried through a stuffing-box in the inner side of the pipe, which rod acts through the levers, *m* and *h*, upon the pin, *r*, pressing it against the pin, *s*, in the end of the trunnion.

The second difficulty sought to be overcome by this invention is the unequal expansion of the side pipe in its different parts, resulting from the steam which comes in from the cylinder being warmer than that which passes out through the eduction ports. To remedy this, two pipes, *t t'*, Fig. 4, are carried from the induction chamber, *g*, to cavities in the inner wall of the eduction chamber, *h*, near the eduction ports, *j* and *j'*, and return pipes, *v v'*, are constructed, by which means a current of hot steam is made to flow through the parts of the side pipe near the eduction ports, and thus keep the face of the pipe at the same temperature in its several parts.

Several large fortunes have been made during the present generation by improvements in the steam engine; two, at least, by modifications in the valves, and as this miracle-working machine is constantly extending its beneficent power, improvements in its details are constantly becoming of more and more value.

Fig. 1



MACKINTOSH'S IMPROVED OSCILLATING ENGINE.

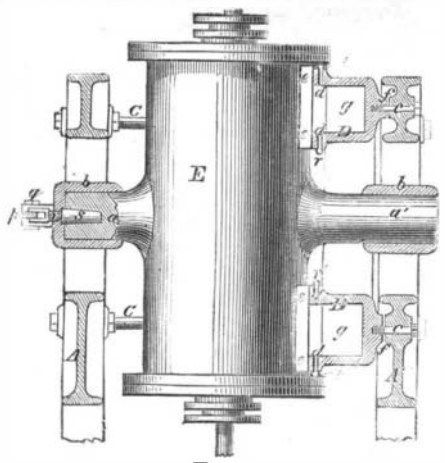


Fig. 2

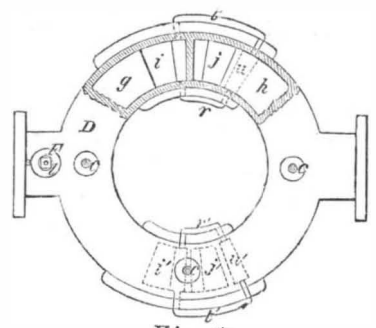


Fig. 4

Fig. 3

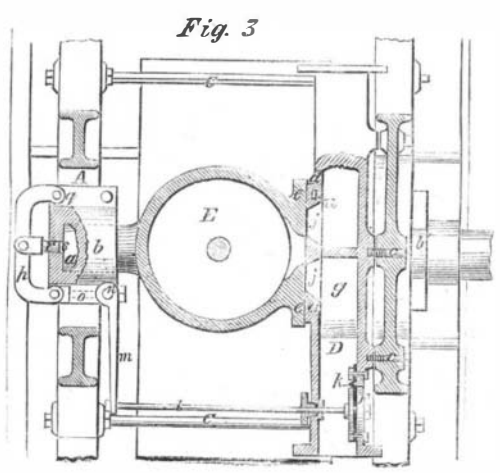
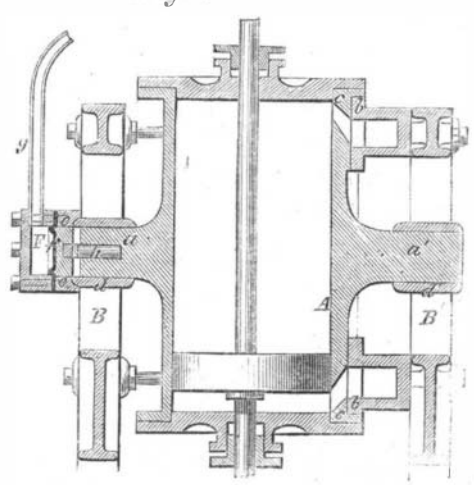


Fig. 5



The inventions above described are secured by two patents, both procured through the Scientific American Patent Agency—one issued to W. S. Mackintosh and James Hemphill, and the other to W. S. Mackintosh alone, both dated Jan. 17, 1860. Further information in relation to the matter may be obtained by addressing Mackintosh, Hemphill & Co., steam engine manufacturers, at Pittsburg, Pa.

THE TYRIAN PURPLE.—It is certainly wonderful that two of the finest colors known—namely, the purple of the ancients and the celebrated Chinese green, or *lokao—i. e.*, the finest color furnished by the animal kingdom, and the finest color furnished by the vegetable kingdom—are produced by the direct ageney of light. At the last meeting of the Academy of Sciences, M. Lacaze-Duthiers read a paper upon the production of the Tyrian purple, and has again called attention to the wonderful part light plays in the formation of this color—a fact that has long been well known. The only thing really novel in this long dissertation is the description by its author of the organs which, in certain marine mollusca, secrete the colorless liquid that finally turns to purple when exposed to the air and to daylight. This organ is nothing more than a small cluster of cells, situated at the surface of the animal's body, and quite distinct from the *corpus bojani*, or kidney of gasteropodous mollusca. The product secreted by this organ in the genera, *purpura* and *murex*, is a colorless, whitish, or slightly yellow liquid, which is extremely photogenic. "The action of light upon this liquid," says our author, "has for effect the development of the three simple colors, yellow, blue, and red; between which are observed, as effects of mixture, green and violet. When the experiment is made in diffused daylight—that is to say, slowly—the order in which the colors appear is observed in a very perfect manner. But whilst the yellow disappears as the action of the light continues, the blue remains constantly in a certain quantity, so that the red is never to be obtained alone, and the purple produced by these natural means is always more or less violet." M. Lacaze-Duthiers, has, moreover, experimented photographically with this Tyrian purple; he has obtained proofs upon silk, batiste, &c., which, although they do not offer the perfections of ordinary photographs, present, nevertheless, in the numerous details, a great strength of tone. In an image thus obtained, we again meet with the colors above named: a greenish yellow corresponds to the white parts, and a more or less dark violet to the dark portions, of ordinary photographic proofs.—*London Photographic News.*

ON the night of the 27th ult., the steamboat *A. T. Lacey* took fire on the Mississippi, at Booth's Point, 125 miles below Cairo, and was completely consumed. A great number of passengers threw themselves overboard and were drowned.