

IMPROVED CONCRETE MIXER.

We are indebted to *Iron* for the engravings and description of this mixer, the advantages of which are its portability, compact shape, and self-contained arrangements, which permit of its being easily moved from place to place, and used in different parts of a work, thus dispensing with a mixing platform and measures. Another point is that nothing is left to the judgment of the workman. The proportion of materials is predetermined, as well as the number of revolutions necessary; so that, with but little supervision, a concrete of uniform quality is produced.

The mixing chamber may be said to be of trapezoidal form, with its two longest planes at right angles to each other, rotating on a horizontal axis; this arrangement is adopted in order that the stuff falling from a contracted into an enlarged space or capacity may be thoroughly rolled over, and therefore intimately incorporated. When the chamber is half filled with the materials for making concrete, the whole contents are turned over sideways, as well as endways, four times in each revolution of the chamber, so that in from six to twelve revolutions—the number necessary being varied according to the weight and nature of the materials—a more perfect mixture is effected than can be produced by hand. Fig. 2 shows a vertical section through the mixing chamber, the dotted lines representing the altered view of the mixer after a quarter revolution. Fig. 1 shows the mixer mounted on a stout timber frame supported on four flanged wheels for running on rails, though plain wheels may be substituted for ordinary ground. In this arrangement it is driven by four men by means of gear, which can be adjusted to move the truck along, or can be thrown out when the truck is propelled by other means. The truck also carries, at one end, a tank holding the proper quantity of water for a charge of concrete, and at the other end a davit, from which is suspended a hopper for holding the materials, the cement being supplied in bags, ready for being run into the mixer. This arrangement is adopted for filling concrete into a trench or the heating of a pier, the mixer being supported over the opening on two balks of timber, and a wagon containing the materials following on the same line.

To receive a charge, the door of a mixer is brought uppermost, a catch in the cogs of one of the wheels holding it in that position. The door is allowed to rest on a stay provided for that purpose, as shown by dotted lines in Fig. 2. The hopper containing the materials in proper proportion is swung round on the davit to the position shown in dotted lines; and while the materials fall into the mixer, the water contained in the tank is allowed to run in by a flexible hose. The hopper is then swung clear of the mixer, the door closed, and the requisite number of turns given. To save the necessity of counting or guessing, a simple tell-tale is added for giving notice when a sufficient number of revolutions (as determined by the weight and nature of the materials) has been given. A screw thread is cut on the projecting end of the mixer shaft, and an iron plate with a hole in it is hung on the screw. The rotation of the shaft causes the plate to move towards the end until it drops off, and thus indicates that the determined number of revolutions has been accomplished. For a less number of revolutions, a nut or distance piece of the required thickness is put on the end of the shaft,

When the proper number of turns has been given, the mixer is stopped with the door downwards, the door fastening is released, and the charge of concrete falls in a mass into its place, the discharge being instantaneous. The mixer is then turned, so that the door comes upward again, and refilled as

before. While the mixer is being turned, two men fill the hopper from a wagon with raised sides.

Fig. 3 shows the arrangement of the machine for making concrete blocks for pier and harbor works. The mixer is mounted on a light traveling frame, capable of being moved from one mould to another; and the materials, filled into a large tray, holding from 10 to 15 tons, are lifted on to a raised portion of the traveling frame by the steam traveling crane, which removes the concrete blocks when formed.

It is stated that, with this mixer turned by hand, a gang of six men, with a boy for attending to the water cistern, can make from 30 to 40 cubic yards of concrete blocks, or a much larger quantity of concrete in bulk, in a day, of better quality and at a cheaper rate than can be done by shovel mixing; and that when the mixers are turned by steam, twice these quantities are produced.

Venus' Slippers.

Mr. F. Buckland, in *Land and Water*, says "Theseslippers are far more beautiful than anything ever yet turned out in the workshop of a London or Parisian ladies' bootmaker. They are found floating far out at sea in the Mediterranean, on the French coast. Each slipper is about an inch and a half in length, and half an inch in the widest part. They are of a lovely glass-like consistence, and in certain light resplendent like jelly fish. They are the shape of a handsome shoe: the edge of the shoe projects in a very ornamental dentated margin, and the toe part is highly ornamental, as if with embroidery insertion. Mr. M. Latham says: 'It is a kind of jelly fish; I have had considerable difficulty in finding out its real nature. At last I ascertained that it is one of the *pteropoda*, or wing-footed molluscs.' The Rev. J. Wood writes: 'These are so-called from the fin-like lobes that project from the sides, and are evidently analogous to the similar organs in some of the sea snails. These appendages are used almost like wings, the creature flapping its way vigorously through the water, just as a butterfly urges its devious course through the air. They are found in the hotter seas, swimming boldly in vast multitudes amid the wide waters, and one species (*Chio borealis*) has long been celebrated as furnishing the huge Greenland whale with the greater part of its subsistence. The scientific name of it is *cymbulia*, so called on account of its being so like a boat.' We read: 'Cuvier describes the *cymbulia* as having a cartilaginous or gelatinous envelope in the form of a boat or slipper, beset with points in longitudinal rows; and the animal as possessing two great wings, which are at once branchiæ and fins, and between them, on the open side, a third smaller lobe, which is three-pointed. The mouth, provided with two small tentacula, is placed between the wings towards the shut side of the cell, and above are two small eyes. The transparency of the texture permits the internal organs to be distinguished with great facility. The shell is cartilaginous, translucent, oblong in the form of a slipper, and entirely covered with a delicate and scarcely visible membrane.'

"These slippers of the Marine Venus are so beautiful in form and structure that I propose, if possible, to have a model of them cut in crystal. In the form of ear rings they would make very pretty ornaments, as showing the *chaussure* of Cinderella of the Ocean."

Fig. 1:

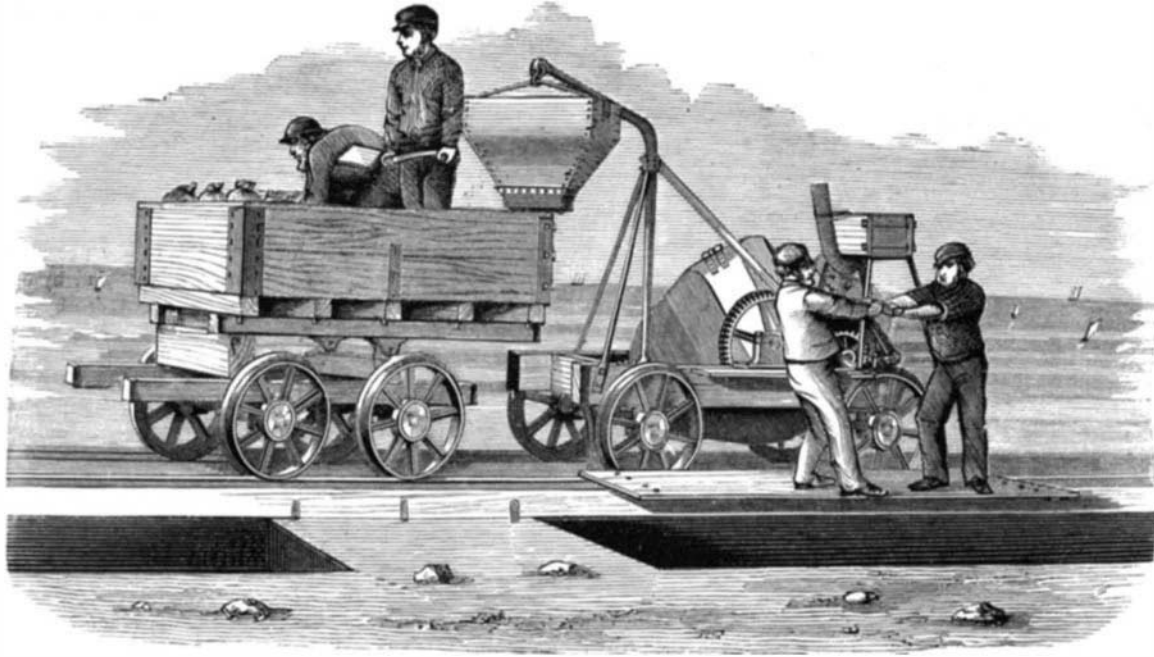


Fig. 2

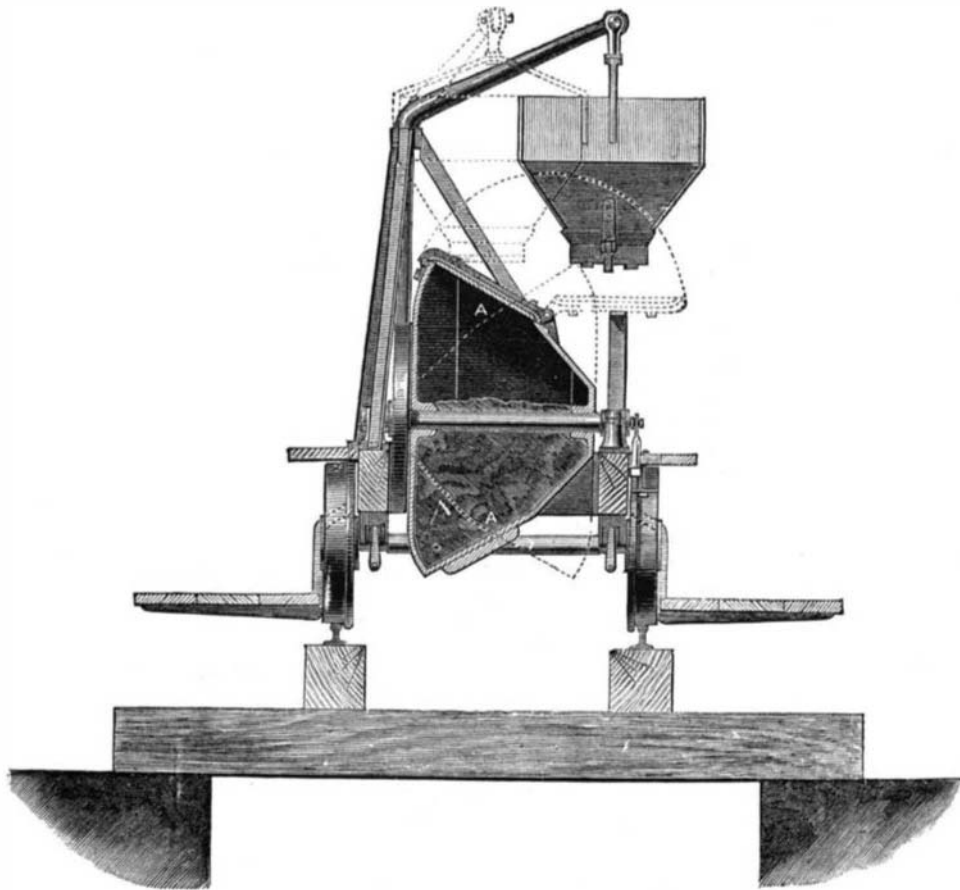
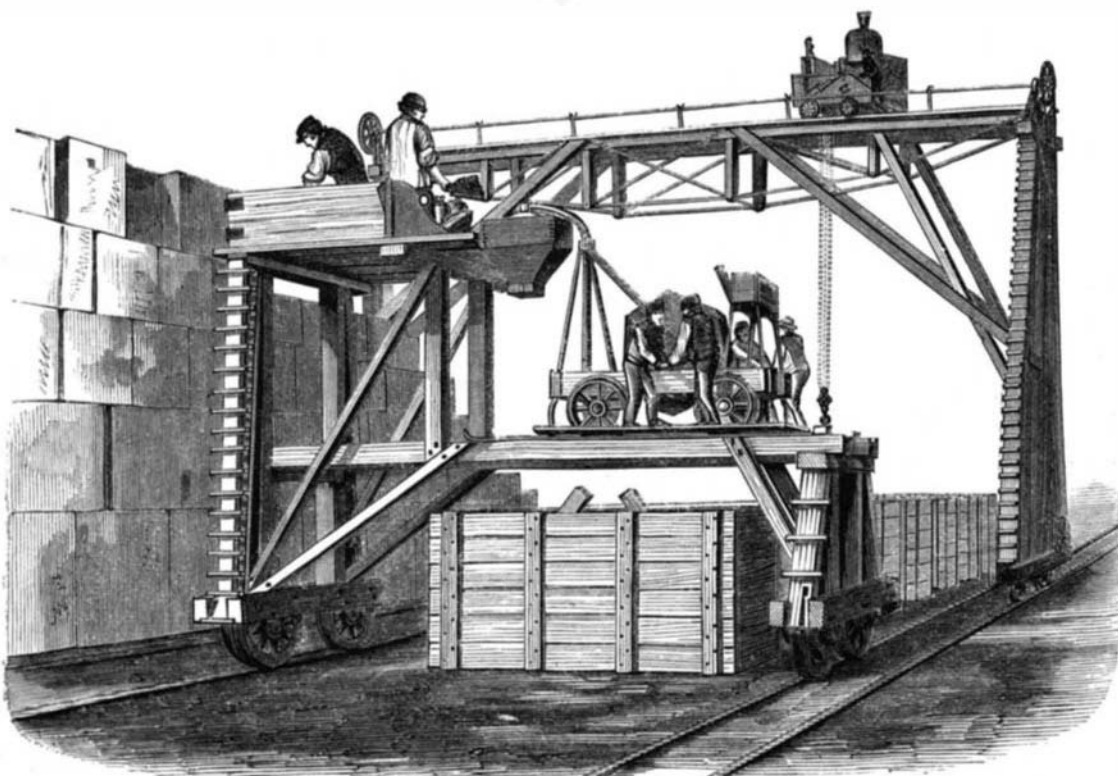


Fig. 3



MESSENT'S IMPROVED CONCRETE MIXER.