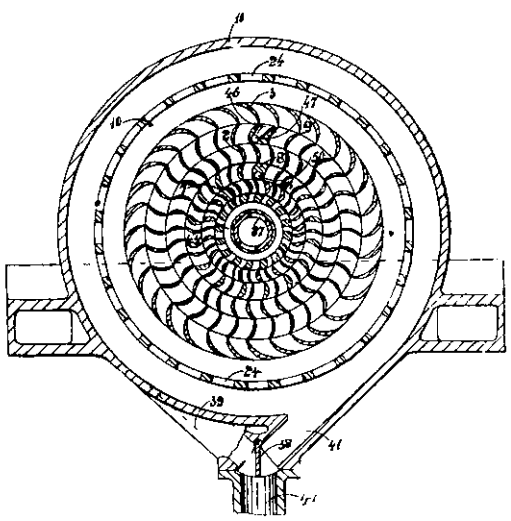
Inventions.

Falvey's Steam Turbine.

THE steam turbine, as a high-speed motor, has reached a very high degree of efficiency, but there are many engineers who consider that it is still capable of great improvement, and that in its present form it is only what may be reasonably considered the pioneer in the art of steam-motor construction. Our illustrations show longitudinal and transverse sections respectively of a new turbine invented by Mr. Thos. Falvey, engineer, of Wellington, of which a model has recently been exhibited. According to Mr. Falvey's invention a revolvable disc has, projecting from its face, a large number of inclined vanes arranged in concentric circles. These vanes enter annular spaces provided between concentric circles of fixed vanes, upon the casing of the turbine, and are inclined in a direction reverse to the movable vanes. Steam is admitted to the inner circles of fixed vanes and passing through the outer circles is expanded and finally exhausted into a condenser or to the atmosphere. Annular partitions, forming a disc, divide the vanes into two sets or series—the direction of the vanes of one set being the reverse of those of the other set. The invention will be understood by referring to the illustrations. It will be seen that the circles of vanes, 1, 2 and 3, are fixed to a main disc, 4, which is mounted upon a shaft, 5, revolving in bearings, 6. The circles of vanes, 7, 8 and 9 are fixed to the back of the casing, 10, in which the disc, 4, and its vanes are adapted to revolve, the circles of moving vanes on the disc alternating with the circles of vanes fixed to the casing, 10.



FALVEY'S STEAM TURBINE, FIG. 1.

The direction of the inclination of the moving vanes is the reverse of the direction of the fixed vanes.

The vanes of the disc, 4, are provided with annular partitions, 14, and 15, and the vanes of the casing, 10, are provided with similar partitions, 16 and 17, so that when the disc is in operative position the partitions, 14, 15, 16 and 17, form two continuous discs dividing the vanes lengthwise into sets or series.

Steam is admitted to the turbine through a passage, 25, and finds its way to the interior of the circular inlet valve, 26, which is provided with ports, 27, 28, 29 and 30.

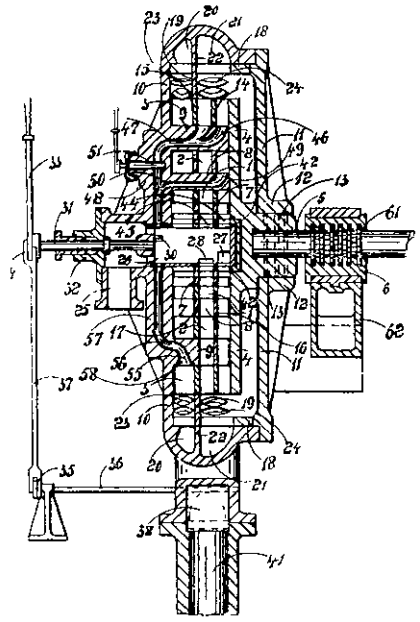
An exhaust valve, 38, is mounted upon the end of the shaft, 36, at the junction of two passages, 39 and 40, (Figure 1) through which exhaust steam passes to the exhaust pipe, 41.

The steam from the ports, 42, passes into an annular space, 44, surrounding the valve casing, and thence finds its way through the fixed circle of vanes, 7, and is thereby deflected on to the circle of movable vanes, 1, by which it is again deflected on to the vanes, 8, and so on until it finds its escape outside the vanes and through the holes, 24, into the recess, 21, and thence to the exhaust passage, 40, and the exhaust pipe, 41, the valve, 38, being open as shown in Figure 1

When more power is required the valve, 26, is turned by the lever, 33, until the ports 28 are brought into correspondence with ports, 45 in the casing, 43.

Steam continues to pass through the ports, 27 and 42, and also passes through the ports, 28 and 45, and between the partitions, 16 and 17, whereby increased area of the vanes is subjected to the action of the steam.

It is understood that Mr. Falvey will have a model of the invention working in the International Exhibition, and visitors who are interested in the subject will no doubt take an opportunity of seeing it at work.



FALVEY'S STEAM TURBINE, FIG 2

Vehicle Springs.

Herr Heinrich Bussing, of Brunswick, Germany, has devised a method of mounting the springs of vehicles, with the object of rendering them practically frictionless Each end of the spring is jointed to a slide capable of reciprocating in a guide secured to the under side of the frame of the vehicle. The bearing surface in the guide is formed by an inserted hardened plate, and the slide is provided with a series of rollers, bearing on the hardened plate and held in position by a projecting edge or shoulder.

An Aerial Bicycle.

Mr. Richard Allen, a retired constable of the Bradford Police Force, is constructing a flying machine to be worked by his bicycle, by means of which he hopes to be able to pedal through the air.

The framework of the machine is constructed of bamboo, and the working of the pedals of the bicycle causes the wings on either side to flap These are 33ft. from tip to tip, and automatically close when taking the upward stroke, and open out when coming down. An overhead apparatus provides for the steering.

Submarine Signalling.

The Admiralty have decided to make experiments with an American system of submarine signalling, and the cruiser Antrim is to be fitted with the apparatus at Chatham under the direction of Mr J. D Millet, an official of the Submarine Signalling Company, of Boston, America

By means of this system submerged bells can be heard by large vessels at a distance of from twelve to eighteen miles, and it is possible to communicate messages as well as to warn shipping of coast dangers in case of fog

New Motor Speed Sign.

A new speed indicator for motor omnibuses and cars has been put on the market The apparatus is arranged so that one dial faces the driver and another much larger one is displayed on the front of the vehicle On each the speed is indicated, while an auxiliary hand registers the maximum speed attained

It is claimed that the danger to the public will be greatly decreased if the police are able to see at a glance at what speed the vehicle is travelling

Road Motor Vehicles.

Mr. H. Livesey, of 14 South place, Finsbury-pavement, London, instead of arranging the engine cylinders in a motor car side by side in the usual manner, arranges each pair of cylinders in tandem. The pistons of each tandem pair are provided with projecting lugs or flanges to which external slide rods are connected that are fixed to the pistons and pass through slots in opposite portions of the walls of the cylinders. That piston of each tandem pair which is nearest to the crank shaft is connected to it by a connecting rod in the usual way. Thus, there are only two cranks to four cylinders, and the whole of the engine will be placed under the body of the car.

Marine Gas Engines.

Herr Emil Capitaine, of Reisholz, near Dusseldorf, explains in his specification, No. 22,594 (Eng.) of 1905, his method of utilising the waste heat of marine gas engines for the production of steam from sea water for feeding gas generators. The employment of gas engines and producers for sea vessels necessitates the production of a large quantity of steam for decomposition in the generator. The tubular boiler for the supply of steam is heated by the exhaust gases from the gas engine or by the hot gases from the producer. The boiler is constructed with a coil surrounding it, to which the sea water is first admitted, so that the heat of the discharging and only slightly concentrated sea water is, with the aid of a regenerator, given off to the cold incoming sea water.

Teaching Pronunciation by Machinery.

Two ingenious Frenchmen have recently perfected several mechanical devices which are used in teaching French pronunciation to foreigners. One of them is a small instrument called a "larynx-signal," which is held to the side of the throat when the diphthong "ou" is being pronounced. If the pupil is successful in getting the correct French pronunciation a small bell attached to the larynx-signal will notify him of his success by ringing. If the bell is silent, he may know that he has not given the word the correct pronunciation. Other machines are used for getting the correct pronunciation of various vowel sounds.

To Cool Refrigerator Cars with Liquid Air.

Armour & Company, of Chicago, have arranged with the inventors of a liquid-air producing process to erect a small experimental plant in Chicago for the purpose of testing the value of liquid air for the refrigerating of perishable goods in refrigerator cars. It is claimed by the inventors that liquid air can be made in quantities at a cost of about one cent per gallon, and that it can be kept in refrigerator cars for a period of approximately thirty days, with an evaporation of not over three per cent per day unless it is forced. The result of these experiments is looked forward to with great interest.

It is often difficult to ascertain who was the first inventor of a process in general use. It often happens that several minds have been at work on the same problem and have arrived independently at similar conclusions. Such, apparently, was the case in regard to reinforced concrete construction. Joseph Monier, who died recently, if not the sole inventor of reinforced concrete construction was, at any rate, one of its earliest exponents, his first patent having been brought out in 1867. An Englishman patented, two years earlier, a system of concrete building which seems to contain the germ of the many systems of ferro concrete or reinforced concrete construction which have since attained such extensive vogue Mr Joseph Tall was the inventor in question,

More than half the total miners of the world were in 1905 engaged in getting coal Great Britain employing over 833 000, the United States 594,000, Germany 543,000, France 171,000, Belgium 138,000, Austria 119,000, and India nearly 93 000. The total output of coal was 886 000,000 tons, of the estimated value of more than 295,000,000.