Engineering Notes.

A subway scheme is proposed for Chicago, every other street in the business section being involved in the project.

It is said that the Krupps are negotiating with Spanish capitalists for the organization of a company in Spain to build ironclads and manufacture ordnance.

The increasing importation of American steel into Great Britain is interfering with the trade of Swansea, as the revenue obtained from the importation of raw material used in making bars, and the industry itself, was threatened with extinction.

The à la carte system of dining cars of the Pennsylvania Line west of Pittsburg has been abandoned in favor of the table d'hote plan, ballots having been given to passengers for several months in order that they might vote as to their preference.

The Lake Shore and Michigan Southern Railway has instituted a house to house canvass in Chicago with a view to causing the people to test the facilities of their suburban service, and free tickets are left at the houses which entitle the holder to one free ride in either direction.

Probably the most valuable stock in the world is that of the London New River Company, of London. There are only 72 original shares, of which 36 are "adventurers' shares" and 36 "king's shares," the former commanding higher prices than the latter. A share sold recently for $625,000.

Preparations are being made to move the Columbus monument at the circle at Fifty-ninth Street and Eighth Avenue, New York, on account of the underground railroad. The foundations were so deep that it was considered cheaper and safer to move it temporarily, and then return it to its present location.

Experiments are being carried out in Germany as to the perforating capacity of the latest Mauser model, and the latest field guns, and as targets several hundreds of pauper corpses are being used. The bullets, when fired at a comparatively short distance, tear asunder the soft inner organs and finally mangle the bodies.

A new light system has been introduced into the village of Simnozheim in Würtemberg. From a large central petroleum reservoir, the oil from which the light is produced is distributed to the different lamps through copper tubes; the petroleum is then vaporized by special apparatus and burner. A large lighting plant of this system is to be put in the railroad shops at Stuttgart.

The American red gum wood is now being largely employed in London for street paving purposes. Regent Street, Piccadilly, and the Haymarket have recently been paved with this wood, and it is to be employed extensively in other parts of the metropolis. Although the wood is not so hard as the red woods of Australia, it is more durable than deal or any other timber, while it affords the best foothold for horses. A prominent feature of the wood is that it neither shrinks nor expands under the influence of dry or wet weather, which are great recommendations for its utilization for paving purposes.

An American hydraulic engineer, Linden W. Bates, has been asked to undertake the widening of the Suez Canal. The corporation is desirous of rendering the canal available for the passage of ships of greater draught than can now be accommodated. It is to be carried on by a colossal dredging process. Mr. Bates has just completed three very large dredging ships for the Queensland government. The largest of them is about to leave the Armstrong-Whitworth yards at Newcastle-on-Tyne, and the Australian colony has consented to have the machinery stopped en route and test its efficacy for the purpose. Mr. Bates has had great experience in matters of this kind, as he helped to lay out the Chicago Drainage Canal and designed the big Mississippi works at Memphis for the War Department.

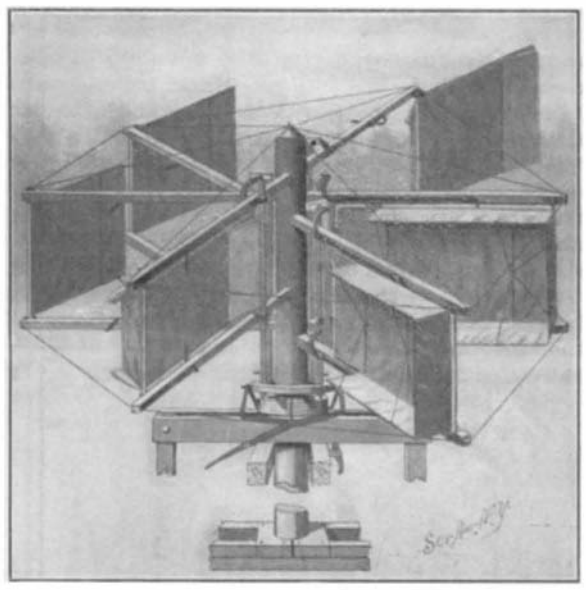
The Midland Railway Company, of England, have recently purchased four Pullman sleeping cars for use on their system. Each car measures 59 feet 10¾ inches over the buffer beams, and 13 feet 1 inch in height from the rail level to the top of the roof. The bogies upon which the car is built were constructed by the Midland Railway Company at their own shops, so that they differ somewhat from the prevalent American pattern. The fittings for the vacuum brake were also supplied by the railway company. The car was dispatched to England in sections, and the parts reassembled at the railway works. The car is divided, one portion of it being provided with five staterooms, each of which is supplied with bed, folding washstand and usual appurtenances. The remaining portion of the car is a general saloon, and is only converted into a sleeping apartment at night by making up the berth between the two seats. All the berths are on the same level, the company having abandoned the idea of placing one berth over the other. A smoking saloon and buffet are attached A charge of $1.25 is made for the use of this saloon in addition to the railway saloon.

A NOVEL WIND OR WATER MOTOR.

We present herewith an illustration of a novel motor, patented by Marcin Puszkar, 18 Greenwich Street, New York city.

From a central driving shaft, a number of arms radiate, which serve to carry vanes. Of these vanes, each has one end pivotally attached to the outer end of one of the arms, so that it can swing freely. Stops are movably secured to the arms and arranged to project into the path of the vanes to bring them into driving connection with the arms. Bars are slidable transversely on the arms and are operatively connected with the stops. A collar or ring normally engages the ends of the bars, the ring being provided with alternating elevations and depressions. The collar is locked by means of a lever. A stop-lever is arranged to engage the projecting portion of the lock-lever to unlock the collar whenever desired. By means of this lever mechanism, the collar can be made to rotate with the arms, or it can be thrown out of gear, so that the bars will sink into the depressions, thereby stopping the motor.

The vanes, as our illustration shows, are of peculiar construction. Each vane consists of a rectangular frame to which a cover is secured. To this rectangular frame canvas-covered side frames are pivoted so that they can fold inwardly. At the pivotal or outer end of the vanes a folding canvas-covered end frame is attached, and is opposed by a balancing-frame likewise covered with canvas. The vanes are pressed by the current against the stops. When the vanes approach a position directly in line with the wind, they are swung around on their pivots, partially by the action of the wind on the end frames. This action is counterbalanced by the balancing frame, thereby preventing the vanes from swinging around too soon. The vanes range in the direction of the wind, the several frames folding against the main frame. Against the current



THE PUSZKAR CURRENT MOTOR.

the vanes present a narrow edge, and therefore offer little resistance, automatically preserving a direction parallel with the current until they strike the stops again.

Strike Insurance in Austria.

A number of Austrian manufacturers have recently formed an association for insurance against strikes, says a United States consul. It is the object of the association to indemnify its several members for all losses sustained by them from unjust strikes which may break out in their respective establishments, whether voluntary, sympathetic, or forced. Each member is to pay a weekly premium equal to from 3 to 4 per cent of the amount of his pay-roll. The indemnity to be paid to him in case of a strike is to be, tentatively, 50 per cent of the wages paid to his employes for the week next preceding the suspension of work. It is provided, however, that no indemnity shall be paid if a committee of confidential agents appointed by the association shall, after a full investigation of all the circumstances, find the strike a justifiable one.

It is worthy of note that a report upon and discussion of the subject "Insurance against strikes" formed a prominent feature of the programme of the national convention of Austrian manufacturers.

It appears that this movement of industrial employers is not confined to Austria. It is reported that a similar insurance association, though on a smaller scale, has been organized in Leipzig. Both the Austrian and German associations, it appears, recognize in principle the justness of strikes; which is, at least in this country, an important concession to labor. Whether this recognition will have any practical result, remains for the present a matter of conjecture.

THE French roller boat built by M. Bazin has been broken up at Preston, England, after being exhibited for some time as a curiosity. Her construction was most intricate, and the amount of metal used enormous.

Electrical Notes.

Telephonic communication has been established between St. Michael and Nome by means of a temporary submarine cable. The toll is $2 for ten words.

A Russian medical man has decided that the electric light is least injurious to the eyes. He says that the oftener the lids are closed the greater the fatigue, and consequent injury. By experiments he finds that the lids would close with different illuminations per minute: Candle light, 6·8; gas, 2·8; sun, 2·2; electric light, 1·8.

The single-phase system is rapidly being supplanted in England. The Sheffeld corporation have arranged with the Electrical Construction Company, Limited, of Wolverhampton, for the conversion of their existing plant into the two-phase system. They have also ordered two new two-phase alternators and engines to work in connection with the same at a cost of $69,200.

The new electric railway at Paris has proved a great success, despite the mishaps that have occurred thereon from time to time. From the date of its opening on July 19 until October 31, 13,000,000, passengers were carried. Occasionally the daily number of passengers carried amounted to 170,000. It was originally intended to run only 270 trains per day, but this number has been considerably increased, and further trains are to be added.

An accident occurred on October 19, on the Paris Underground Railway, in which twenty-nine persons were injured, and two were fatally hurt. The accident occurred near the Exposition grounds. A train entered the station at the Place de la Concorde, and then backed out again. The train which followed it misunderstood its signal, and the result was a collision. As both trains were moving slowly, the damage to the train was not very great. Traffic, however, was delayed for several hours.

The French government have decided to establish their own service of submarine cable communications. This decision has been arrived at as a result of the Transvaal and Chinese campaigns, when the majority of the messages from France had to be dispatched over lines under British control. Even the communications that pass between the home government and the various ministers abroad have to pass through English hands. It is proposed to establish four cable lines interconnecting the colonies and the home country.

In the fire which destroyed the telegraph department of the Manchester post office a short time ago, the whole of the 250 instruments, which comprised one of the finest and most modern installations in the English postal service, were lost, the damage representing some thousands of dollars. For the past twelve months the work of substituting the accumulator system in place of the old battery system has been in progress, and now the obsolete system will have to be used for another year until the accumulators can be restored.

The Russian authorities are displaying remarkable energy in connection with the utilization of Popoff's wireless telegraphic system. All the lighthouses in the Black Sea are to be provided with this apparatus, and several stations are to be erected on the shore, so that communication may be maintained between the shore, lighthouses, and the warships within the radius of the electric waves. Two hundred complete installations of the apparatus were recently dispatched to Vladivostock and Port Arthur, and the work of fitting out the Russian warships in the Pacific is to be carried on with all possible celerity. The two ports are also to be connected by the establishment of intermediate stations along the Korean coast.

Mr. K. W. Hedges, of London, has recently patented some improvements in connection with lightning conductors. By his process, all the joints in the conductors are effected by a fusible or plastic metal, poured into a mould which has been placed around the parts to be joined. To insure perfect contact between the joints, he recommends that the mould should constitute a kind of clamp, thus forcing the plastic metal upon the parts of the conductor joints. He also fixes a lead protecting sheath round the conductor at the approximate point at which it enters the earth. Earthing is attained by a plate, or in the event of the ground being dry, by a tube driven deeply into it, and closely packed with carbonaceous material.

A new electricity meter has been patented in London in which the conventional balance spring is substituted by an electro-magnetic device to bring the escapement wheel to the central position. This wheel has a number of wires diametrically attached to it, and is surrounded by a coil through which passes the current to be measured. The rapidity of the oscillation of the balance wheel to a certain extent is proportional to the current. Should an extra powerful current happen to traverse the coil, or should the current be suddenly increased in voltage, auxiliary devices are provided to prevent the balance wheel when near the central position remaining stationary at that point. These secondary appurtenances also serve to set the balance wheel in motion with a small current. In other respects the appliance resembles the ordinary type of meter.