NOTES FROM GERMANY, FRANCE, BELGIUM, &c.

(From our own Correspondent.)

Rheinland-Westphalia.

LITTLE is being done on home account in the pig iron industry. Deliveries of foundry pig have been well up to the average, and the Martin Works are reported to have sold their make till the beginning of July, but forge pig is in weak request. The tendency in the manufactured iron market has been a trifle less slow, and the mills have been asking better prices for forward sales. Basic bars realise M.2 to M.3 p.t. more than previously in the Rhenish-Westphalian district and the current quotation is M.94 to M.95 p.t., compared with M.92 p.t. a few weeks ago. Some works are reported to have asked M.96 p.t., but this is an exception. Dealers, on the whole, show very little inclination to pay more than is absolutely necessary, being well supplied till far into next quarter, and so the number of orders that can be taken in at advanced rates is very limited for the present. The export market remains without improvement. Offers from Belgian firms increase and export quotations have consequently been exceedingly low and unremunerative, more than M.80 p.t. f.o.b. Antwerp being obtainable with difficulty for basic bars. Accounts from the Luxemburg iron producing district have been a little less discouraging, and less than M. 81 p.t. free Antwerp is rarely accepted. The demand for bars is very quiet at present. In pig iron a moderate activity is reported, deliveries in foundry pig to Belgium having decreased. More life was felt in sectional iron owing to an improvement in the building department. A weak tone continues to characterise the Luxemburg iron ore market. Rates are lower than every before, and a rise cannot be looked for until the new contracts for 1915 have been booked, and even then only a slight advance will probably take place.

The German Coal Market.

On the Upper Silesian coal market a reduction in output is being contemplated, because the general position seems to be going from bad to worse. Home demand has strongly decreased and this has led to a rapid rise in stocks. Since January this year deliveries per working day have shown a falling off, the railway requirements being smaller than previously, while the demend from the iron and zinc industry is moderate. A poor export only is being done to Austria-Hungary, owing to a rising output of some pits in Hungary, which are selling coal at very cheap rates. The sugar mills of Russian Poland have remained steady customers, but much less is exported to South and Central Russia than formerly. On the Rhenish-Westphalian coal market demand and consumption are stated to be limited and to show a falling off as compared with last quarter. Stocks of coke are heavy and increasing, and some coke ovens have been put out of service.

Austria-Hungary.

The raw and finished iron industries are very poorly occupied and the general condition of the market is extremely quiet. Pit coal and brown coal have remained in tolerably brisk demand.

Returning Strength in Belgium.

Since last week's report a change for the better has set in and the iron and steel market shows more life. Exports in bars have been so animated that the mills could realise higher prices. A few weeks ago buyers hesitated to pay £4 p.t., while now £4 5s. p.t. has been realised for basic bars. Several orders of weight were booked in at the above quotation, but makers do not care to dispose of their output for any length of time, because prices are now expected to move steadily upwards. Iron bars have not been touched by the rising tendency; they are firm at £4 8s. p.t. Rods stand at £4 13s. to £4 14s. p.t. Plates have also slightly improved; heavy steel plates for export stand at £4 14s. to £4 15s. p.t., while hoops are stiff at £5 15s. to £5 16s. p.t. On home account a quiet business is being done at 112.56f. to 115f. p.t. for basic bars, and 120f. p.t. for iron bars, while heavy steel plates stand at 125f. p.t. A moderate trade is being carried on in pig iron; forge pig is sold at 61f. p.t., basic stands at 65f. p.t., and foundry pig realises 66f. p.t. The weakness in semi-finished steel is more pronounced than ever; 70s. p.t. is the current quotation for rolled billets. The Belgian coal market keeps quietly steady.

LAUNCHES AND TRIAL TRIPS.

DEMETERTON, steel screw steamer; built by Ropner and Sons, Limited, Stockton-on-Tees; to the order of Messrs. R. Chapman and Son, Newcastle-on-Tyne; dimensions, 429ft. long; to carry 10,000 tons; engines, constructed by Blair and Co., Limited; trial trip, May 26th.

ONA, twin-screw ocean-going tug; built by J. I. Thornycroft and Co., Limited; to the order of the Argentine Naval Commission for towing purposes; dimensions, 130ft. by 28ft. by 13ft. 11in.; engines, triple-expansion, 13½in., 22in., and 35in. by 27in. stroke, pressure 180 lb. per square inch; launch, May 28th.

MELANIA, steel screw steamer; built by Craig, Taylor and Co., Limited, Stockton; to the order of the Anglo-Saxon Petroleum Company, Limited, London; dimensions, 427ft. by 53ft. 4in. by 31ft.; to carry oil in bulk; engines, triple-expansion, 27in., 45in. and 74in. by 48in. stroke, pressure 180 lb. per square inch; constructed by the North-Eastern Marine Engineering Company, Limited, Sunderland; a speed of 11½ knots was attained, fully loaded, on trial trip, May 28th.

VARELA, twin-screw steamer; built by Swan, Hunter and Wigham Richardson, Limited; to the order of the British India Steam Navigation Company, Limited, of London; dimensions, 390ft. by 53ft. by 26½ft.; to carry passengers; engines, triple-expansion, twin-screw; constructed by the builders; a speed of 16 knots was attained on trial trip, May 28th.

PANAMA TRANSPORT, steel screw steamer; built by Irvine's Shipbuilding and Dry Docks Company, Limited; to the order of Furness, Withy and Co., Limited, for the Empire Transport Company, Limited; dimensions, 400ft. by 52ft. by 29ft. 6in.; to carry 8000 tons on a moderate draught; engines, triple-expansion, 25in., 40in. and 68in. by 48in. stroke, pressure 180 lb. per square inch; constructed by Richardsons, Westgarth and Co., Limited; a speed of 12 knots was attained on trial trip, June 4th.

HAIMARA, twin-screw passenger steamer; built by Philip and Sons, Limited; to the order of Crown Agents for the Colonies; dimensions, 100ft. by 23ft. by 9ft.; to carry passengers; engines, two sets compound surface-condensing engines, pressure 140 lb. per square inch; launch, June 4th.

ABELIA, twin-screw motor vessel; built by Sir W. G. Armstrong, Whitworth and Co., Limited; to the order of the Flower Motor Ship Company, Limited, London; dimensions, 350ft. by 46ft. 9in. by 27ft.; to carry 5600 tons; engines, two-cycle motor engines developing 1200 brake horse-power at 135 revolutions per minute; constructed by the Wallsend Slipway and Engineering Company, Limited; launch, June 5th.

VARSOVA, twin-screw steamer; built by Swan, Hunter and Wigham Richardson, Limited; to the order of British India Steam Navigation Company, Limited, of London; dimensions, 390ft. by 53ft. by 26½ft.; to carry passengers and cargo; engines, twin-screw triple-expansion; constructed by Swan, Hunter and Wigham Richardson, Limited; launch June 9th.

BRITISH PATENT SPECIFICATIONS.

When an invention is communicated from abroad the name and address of the Communicator are printed in italics.

When an abridgment is not illustrated the Specification is without drawings.

Copies of Specifications may be obtained at the Patent-office Sale Branch, 25, Southampton-buildings, Chancery-lane, W.C., at 8d. each.

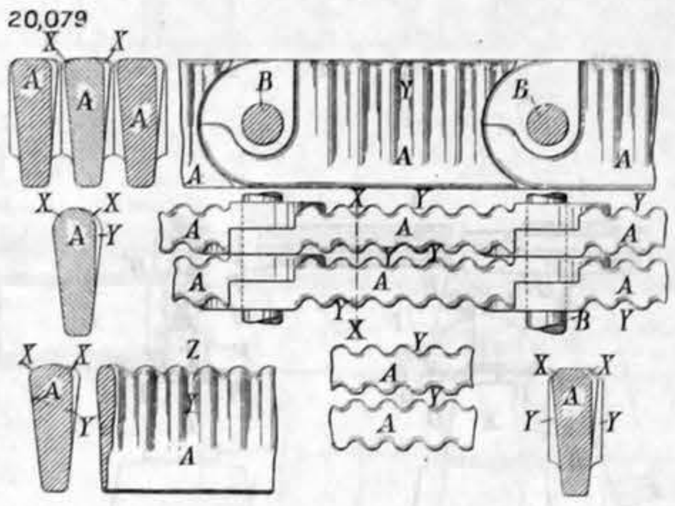
The date first given is the date of application; the second date at the end of the abridgment is the date of the advertisement of the acceptance of the complete Specification.

Any person may, on any of the grounds mentioned in the Act, within two months of the date given at the end of the abridgment, give notice at the Patent-office of opposition to the grant of any Patent.

STEAM GENERATORS.

20,079. September 5th, 1913.—IMPROVEMENTS IN CHAIN GRATE FURNACES, Edward Bennis, of Beech Hill, Astley Bridge, Bolton, Lancashire.

This invention consists in making the top surface of each longitudinal link rounded, curved or bevelled whether flat or corrugated at the sides to provide an air space beneath the layer of fuel and secure a better circulation or diffusion of the air through the fuel. The grate is built up of a number of longitudinal links A mounted on transverse rods B in the usual way. The top of each link A is made round or curved or flat on top with curved or bevelled edges X. The links A are, in addition to the curved, rounded or bevelled top, also preferably

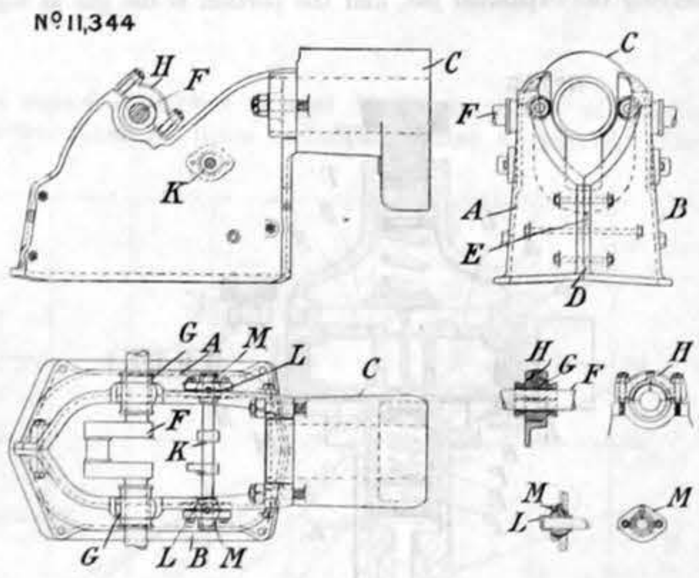


corrugated or fluted at Y at both sides, and in the direction of their length the links may be straight on top or corrugated as at Z. The side corrugations may be arranged relatively to one another, as shown. By thus constructing the longitudinal links A so that the edge Y where the air passes up to the fire is of rounded or curved shape or bevelled, it will not burn away so quickly as in the usual form of link. Moreover, the coal will be supported on a less area of the link and will offer less obstruction to the passage of the air to the fire and as a depression is formed between two links through which the air can pass, it will consequently reach a larger area of fuel. The corrugations serve a similar purpose.—*May 21st*, 1914.

INTERNAL COMBUSTION ENGINES.

11,344. May 15th, 1913.—IMPROVEMENTS IN AND CONNECTED WITH THE BED-PLATES OR FRAMES OF INTERNAL COMBUSTION ENGINES, Edmund Ernest Bentall, engineer, and George Cowley Bingham, works manager, both of Heybridge, Maldon, Essex.

This invention has for its object improvements in the construction of internal combustion engines, designed to simplify the erection and adjustment and cheapen the manufacture thereof. The hollow open bed-plate or frame of the engine is formed in two parts A B, so shaped that they may be bolted together at both ends to form a rigid independent structure, and to this is bolted one end of the engine cylinder C. To render the joints between the two parts of such bed-plate or frame more secure and rigid, the abutting faces of these parts are provided with



V-shaped joints; those D at one end being situated at right angles to those E at the opposite end, as shown in full and dotted lines respectively. Transversely to the joint between the two parts of such bed-plate or frame is journalled the crank shaft F and this is provided with spherical bearings G, which rest on semi-cylindrical surfaces in the sides of the bed-plate or frame, and are secured in position by caps H, which are shaped to fit them and have bolt holes of sufficient size as to permit of adjustment. The half-speed shaft K is similarly journalled in spherical bearings L, which are arranged outside the bed-plate or frame and fit on to the ends of the spindle, and are held in position by caps M, which fit on to the bearings and are bolted to the sides of the bed-plate or frame, so that they are also capable of adjustment.—*May 21st*, 1914.

965. January 13th, 1914.—IMPROVEMENTS IN OR RELATING TO THE COOLING OF CYLINDER COVERS OF INTERNAL COMBUSTION ENGINES, Maschinenfabrik Augsburg-Nurnberg, A.G., of 7, Stadtbach-strasse, Augsburg, Germany.

The cooling chamber of this cylinder cover, through which the piston-rod passes at A and the valves at B, is divided into two unequal parts by the partition O, and of these parts the upper part adjacent to the cylinder is considerably shallower than the other part. The cooling water, which enters at D and issues at E, and which comes direct from the pump or from the water supply conduit, will therefore flow through this chamber at a relatively high velocity. The lower cooling chamber is either fed from a separate supply pipe at F, or the cooling water that has traversed the upper cooling chamber can be caused to flow through the lower chamber by admitting it from the upper to the lower cooling chamber at I—see the lower illustration. The effect can be still further increased if a portion of the stream of water, after passing through the partition O, be circulated in such a manner that it flows as uniformly a

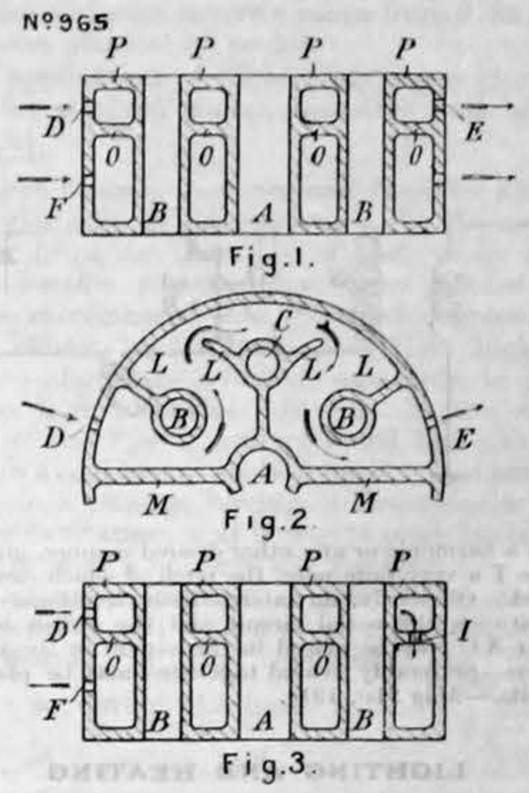


Fig. 1.

Fig. 2.

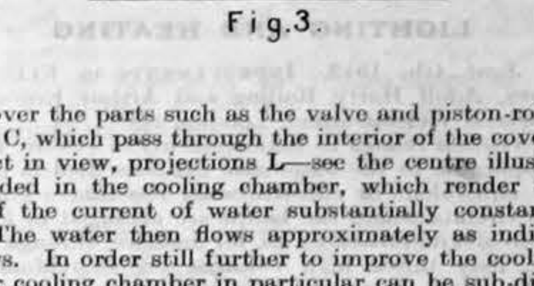
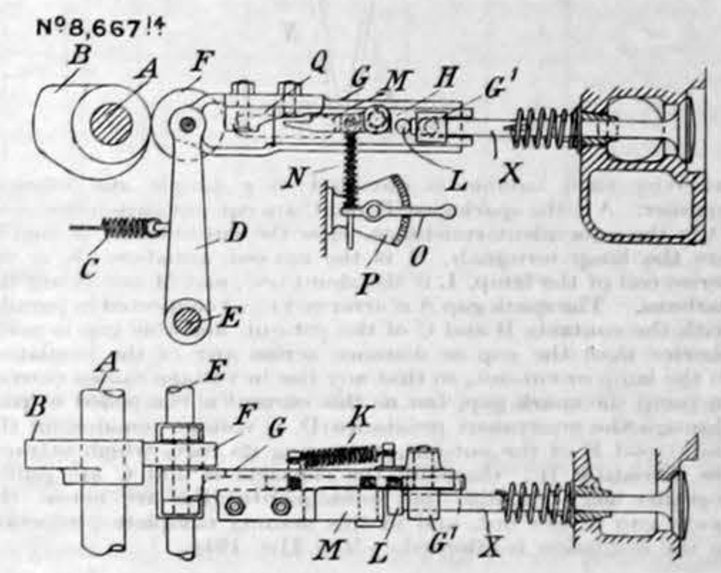


Fig. 3.

possible over the parts such as the valve and piston-rod sockets A, B and C, which pass through the interior of the cover. With this object in view, projections L—see the centre illustration—are provided in the cooling chamber, which render the cross section of the current of water substantially constant everywhere. The water then flows approximately as indicated by the arrows. In order still further to improve the cooling effect the upper cooling chamber in particular can be sub-divided by one or more partitions M. There are two other illustrations.—*May 21st*, 1914.

8667. May 15th, 1914.—IMPROVEMENTS IN VALVE GEAR FOR INTERNAL COMBUSTION ENGINES, Edmund Ernest Bentall, engineer, and George Cowley Bingham, works manager, both of Heybridge, Maldon, Essex.

The half-speed shaft A carries a cam B, which operates against the action of a spring C, the free end of a rocking arm D, which is mounted to rock upon a transverse spindle E and carries an anti-friction roller F, against which the cam B works. This rocking arm has hinged to it one end of a push frame G, which is supported at its opposite end by the engine inlet valve stem X by means of an eyed lug G¹ secured to the frame, and through which the valve stem works. The push frame G has arranged to slide in it a slide H, which is held in its normal position by a spring K, and is fitted with an extension or lug L, which engages and operates the inlet valve stem when the slide is caused to travel with the frame. This slide has hinged or pivoted to it a finger piece M, which swings in a vertical plane, and is normally held by a spring N against a cam surface on the frame. The lower end of this spring N rests on one end of a lever O, which is pivoted to a fixed plate P,



and has its opposite end arranged to move over and engage a serrated segmental projecting rib on the plate P, so that the lever may be adjusted to any position desired to vary the tension of the spring. The cam surface on the frame G comprises a combined curved surface and stop Q, and against this the finger piece M works in such manner that it will slide over the curved surface and engage the stop when the engine is running at normal speed, but when it exceeds this speed the finger piece will be thrown by the curved surface downwards to such an extent as to allow it to pass the stop, so that the slide will not be forced to travel with the frame, and consequently the inlet valve stem will not be operated as it normally is when the slide travels with the frame. The force with which the finger piece is thrown downwards and consequently the extent of its downward movement depends upon the speed of the engine and the tension of the spring N, so that by varying the latter the former may be varied as desired. The proper relative position of the slide H to the frame G at the commencement of each forward stroke of the latter is maintained by the spring K which connects together projecting lugs on said frame and slide.—*May 21st*, 1914.

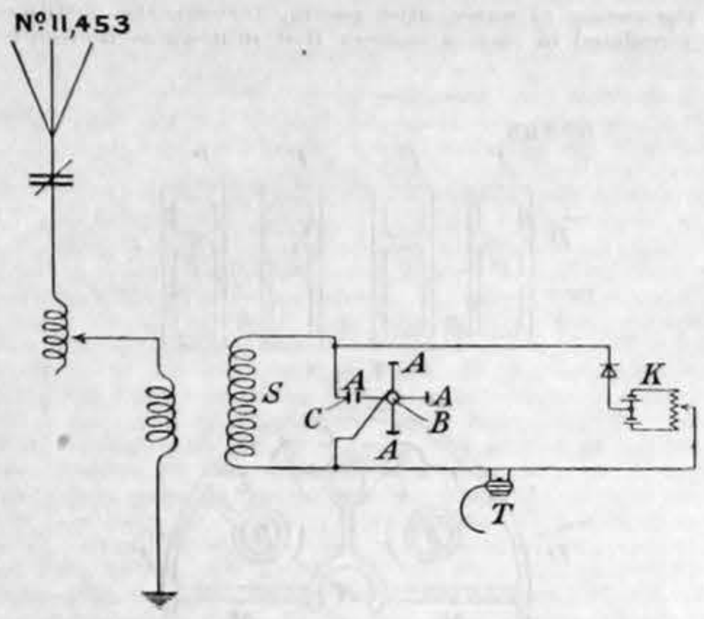
WIRELESS TELEGRAPHY.

11,453. May 16th, 1913.—IMPROVED MEANS FOR DETECTING CONTINUOUS ELECTRICAL OSCILLATIONS, Marconi's Wireless Telegraph Company, Limited, and Charles Samuel Franklin, electrical engineers, both of Marconi House, Strand, London, W.C.

A A are conducting sectors which can be caused to rotate about an axis B so that they approach and recede from a conductor sector C in series with an inductance S. The capacity between A and C thus varies between two limits, and therefore the tune of the circuit comprising the inductance S and condenser A C also varies between two limits, which can be made

as wide apart as desired by suitably proportioning A and C. This circuit is adjusted so that at one of the limits or at the intermediate position it is in tune with the aerial which is tuned to the wave it is desired to receive. The result is that the rectified current through a rectifier K during the reception of continuous waves is varied between maximum and minimum

Nº 11,453



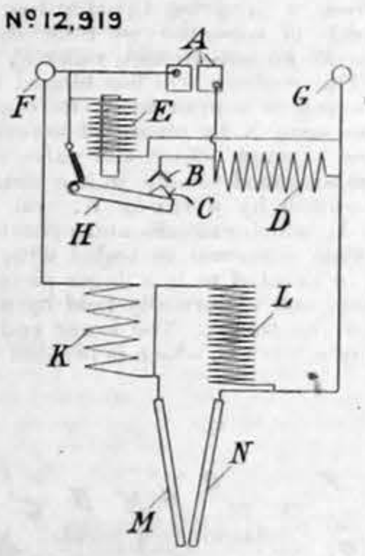
values in a harmonic or any other desired manner, giving in the telephone T a very pure note, the pitch of which can be varied as desired. Obviously, an intermediate circuit may be introduced between the aerial circuit and the circuit S, and the condenser A C may be placed in this circuit or similar varying condensers—preferably geared together—may be placed in all the circuits.—*May 21st*, 1914.

LIGHTING AND HEATING.

12,919. June 4th, 1913.—IMPROVEMENTS IN ELECTRIC ARC LAMPS, Adolf Harry Railing and Arthur Ernest Angold, 67, Queen Victoria-street, London, E.C.

This invention relates to improvements in electric arc lamps, and is applicable to the automatic cut-outs used in connection with the equivalent or substitutional resistances employed in arc lamp circuits where the lamps are arranged in long series. In such circuits disturbances, as, for instance, through the lamps pumping, may throw high voltages on individual cut-outs during the short time taken for the moving member of the cut-out switch to move from its "off" position to its "on" position. Should such voltage be high enough to cause an arc across the insulation of the cut-out and the lamp at a point where the arc would not be extinguished on account of its preventing the closing of the cut-outs, considerable damage will occur. The object of this invention is to provide means

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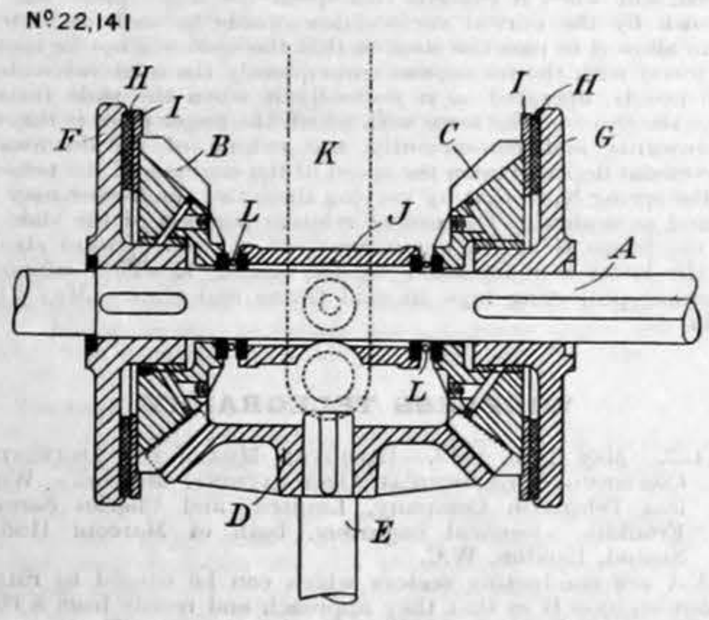
whereby such trouble is obviated in a simple and efficient manner. A is the spark gap, B and C are cut-out switch contacts, D is the equivalent resistance, E is the cut-out coil, F and G are the lamp terminals, H is the cut-out armature, K is the series coil of the lamp, L is the shunt coil, and M and N are the carbons. The spark gap A is arranged to be connected in parallel with the contacts B and C of the cut-out, and this gap is made shorter than the gap or distance across any of the insulation in the lamp or cut-out, so that any rise in voltage causes current to jump the spark gap, but as this current is compelled to pass through the equivalent resistance D, a voltage remains on the shunt coil E of the cut-out, energising its core, which attracts the armature H; therefore the contacts B and C are pulled together very rapidly, and consequently the arc across the spark gap A dies out, and in this manner complete protection to the insulation is afforded.—*May 21st*, 1914.

CRANES AND CONVEYORS.

22,141. October 1st, 1913.—IMPROVEMENTS IN REVERSING GEARING FOR CRANES, Babcock and Wilcox, Limited, of Oriel House, 30, Farringdon-street, London, and Frederick William Hollick.

Running loose on the driving shaft A are two toothed bevel

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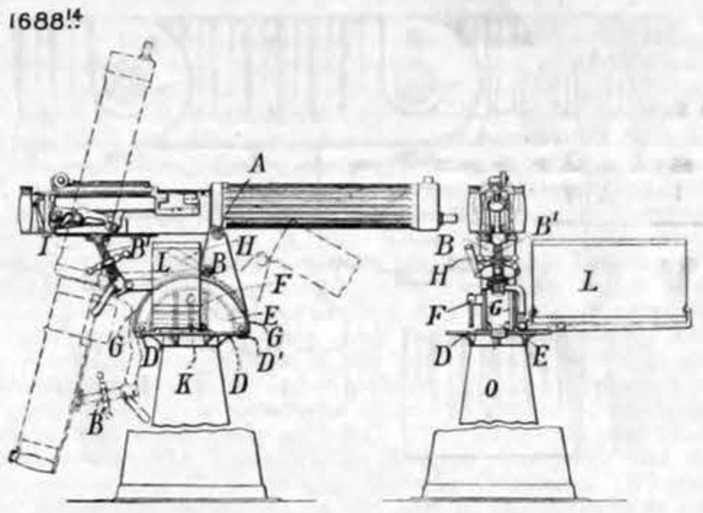
wheels B C adapted to mesh as usual with one bevel wheel D secured on the driven shaft E. The two bevel wheels B C are also loosely mounted on the hubs of two friction discs F G keyed to the driving shaft, one adjacent to the bevel gear B, and one adjacent to the bevel gear C. The inner face of each disc F G has a plane annular facing H of "Ferodo" or similar substance, while the bevel wheels B C are provided with co-operating plane annular metal facings I nearly contacting with the facings H on the discs. A sliding sleeve J operated by the usual clutch lever K is fitted on the shaft A between the bevel gears, and is adapted to act thereon through the intermediary of thrust bearings L, so as to press one or the other of the bevel gears B or C into frictional contact with its friction disc F or G, so that the reversing shaft may be driven in one direction or the other. Lubrication of the frictional bearing faces of the clutch above described is not required, and risk of involuntary slipping is avoided, while liability to seize or to render the action too sudden when the gear is used to check slewing action is overcome. Hence, the operations of slewing, luffing or travelling in cranes can be carried out with perfect safety. The gear may also be safely used in braking.—*May 21st*, 1914.

ORDNANCE AND ARMOUR.

1688. February 11th, 1913.—IMPROVEMENTS IN OR RELATING TO AUTOMATIC GUN MOUNTINGS.—Sir Arthur Trevor Dawson and George Thomas Buckham, both of Vickers Limited, Vickers House, Broadway, Westminster.

This invention relates to automatic gun mountings of the pedestal type, and has for its chief object so to construct a mounting of this type that the gun can at will be converted from one for firing at the usual small maximum angle of elevation to one capable of being elevated to a high maximum angle for firing at aeroplanes or other aerial vessels. The pedestal is provided with a fixed training plate D, which is circular in plan, and is adapted to be engaged by detachable clips D^1 carried by a bracket E, which is formed with a socket to receive the

1688.



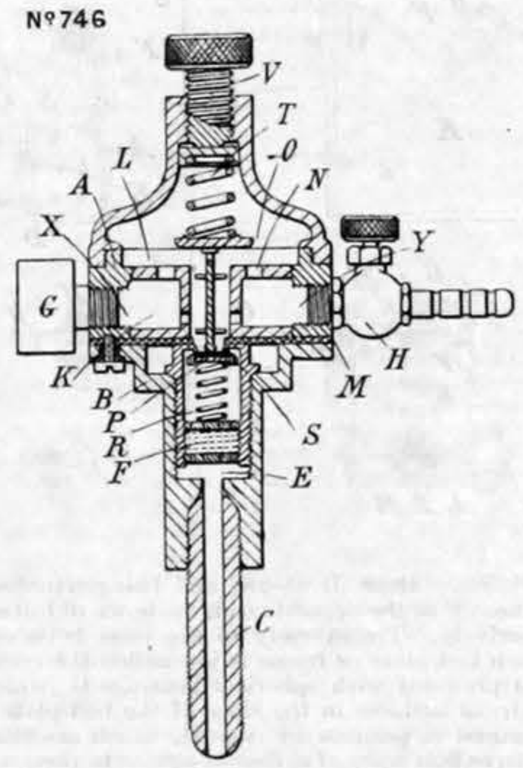
training pivot F carried by the training plate D. This bracket is provided with vertically arranged semi-circular guides G, upon which the top carriage B is mounted. This top carriage is forked to receive the trunnion pin A. The top carriage carries the usual elevating screw B^1 and a clamp H for retaining the top carriage in the required position. This clamp is normally in the engaging position, and the gun is then capable of being elevated by the screw. When it is desired to elevate the gun to a high angle, the clamp is released and the top carriage moved around the guides G on the bracket E. A suitable clamp K may be provided for co-operating with the training socket and the pivot E to retain the gun in any desired position of training. L is a cartridge belt box.—*May 21st*, 1914.

MISCELLANEOUS

746. January 10th, 1914.—IMPROVED MEANS FOR PREVENTING THE FREEZING OF VAPOUR DURING THE DISCHARGE OF COMPRESSED GASES FROM STORAGE VESSELS, L'Air Liquide Société Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude, of 48, Rue St. Lazare, Paris.

The present invention consists essentially in thermally insulating the portion of the expander containing the gas at high pressure from the portion containing the low-pressure gas. The cold produced by the expansion of the gas is then unable to communicate itself to the portion containing the gas at high pressure, and as the latter thereby preserves its temperature, all condensation and freezing are consequently avoided. The apparatus consists of two main portions A and B, the portion A receiving the expanded gas, and the portion B the gas at high

Nº 746



pressure. The gas enters through the threaded portion C, serving to connect with the oxygen cylinder and enters the recess E in which is housed the expansion member adapted to receive filtering gauzes F and valve P, the latter being normally held to the seat S by a spring R. A plate M consisting of heat non-conducting material thermally insulates the part B from the part A in the most complete manner attainable, these two latter parts being connected by means of screws also surrounded by insulating material. A pusher receiving the movement of the membrane or diaphragm O serves to open the expansion orifice, and the regulation of the expansion pressure is effected by means of the spring T controlled by the screw V. The expanded gases enter the chamber K, and then pass through the passages N into the chamber L, thence the gases pass through the openings X and Y to the safety valve G, and the discharge cock H. During the operation of the apparatus the expanded gas, which is very cold, becomes distributed throughout the part A without having time to cool the part B; thus the high-pressure gas reaches the expansion orifice without any material fall of temperature, and, even if it is saturated with water vapour, no condensation can take place, the result being that the flow of the gas through the expansion orifice takes place with perfect regularity.—*May 21st*, 1914.

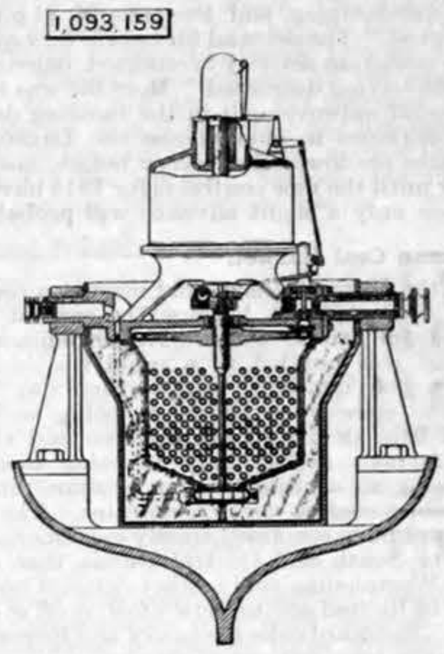
SELECTED AMERICAN PATENTS.

(*From the United States Patent-office Official Gazette.*)

1,093,159.—TURBO SHIP-STEADYING DEVICE, *E. Thomson, Swampscott, Mass., assignor to General Electric Company, a Corporation of New York.—Filed September 19th*, 1913.

The anti-rolling device comprises a vertical shaft turbo-generator having a condenser base and tubular trunnions, the axis of which is athwartship for supporting it on an axis athwart the

1,093,159

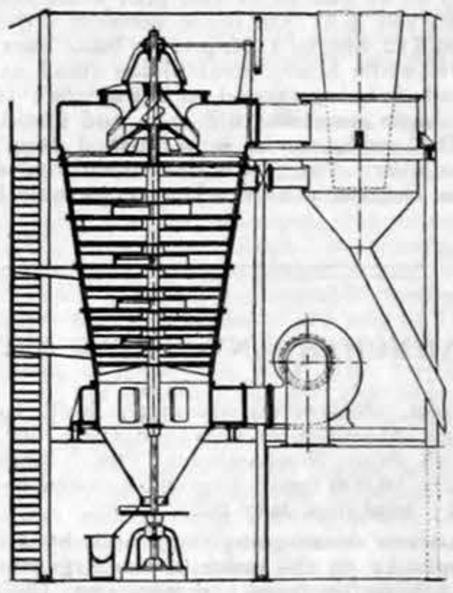


ship. There are means for supplying steam to the turbine through one of the trunnions, and means for leading off the products of condensation through the other. The current produced by the generator may be used for propelling the ship. There are five claims.

1,093,206.—CONTINUOUS DRYING KILN WITH VERTICAL AXIS, *J. Réol, Alais, France, assignor to Société de Constructions Mécaniques d'Alais, Alais, France, a Corporation.—Filed December 24th*, 1912.

The kiln is vertical and has a central vertical spindle with a series of superposed, spaced platforms alternately arranged around the spindle. Vertical scrapers are provided upon each of the platforms and horizontal sections are secured to the scrapers,

1,093,206

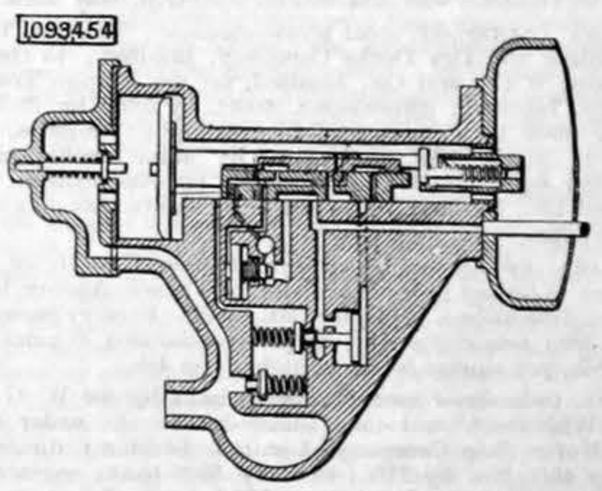


while vertical ribs are secured to the underside of the platforms, forming at given moments an obturator with the sections for forcing the hot gases to pass through the falling material removed from the platforms by the scrapers in an automatic and continuous operation. There is only one claim.

1,093,454.—AIR BRAKE APPARATUS, *B. J. Minnier, Watertown, N.Y., assignor to New York Air Brake Company, a Corporation of New Jersey.—Filed November 1st*, 1909.

The apparatus embodies the combination of the triple valve cylinder and piston and main and supplementary valves operated thereby. A yielding stop overcomes a predetermined preponderance of train pipe pressure on the triple-valve piston, but is overcome by a larger preponderance. A restricting device co-operates

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with the brake cylinder exhaust passage, and an operating piston therefor. Fluid pressure is provided to actuate the piston to bring the restricting device into operation, being admitted by the supplementary valve when train pipe pressure is sufficient to overcome the stop. An exhaust passage is provided which permits the restricting device to be inactive when the triple-valve piston is arrested by the stop. There are three claims.