ABSTRACTS OF PATENT SPECIFICATIONS

(Specially abstracted for the Journal by W. O. Manning, F.R.Ae.S.)

Regular abstracts of Patent Specifications received by the Society are published in the Journal. It should be noted that these abstracts are specially compiled by Mr. W. O. Manning, F.R.Ae.S., for the Journal and are only of those actually received and subsequently bound in volume form for reference in the library. These volumes extend from the earliest aeronautical patents to date, and form a unique collection of the efforts which have been made to conquer the air.

The Council accept no responsibility whatever for the accuracy of the abstracts and in any case of doubt the full patent can be consulted when necessary in the library of the Society.

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Aerodrome Equipment

402,632. *Improvements in or Relating to Landing Grounds for Aircraft.* Chevalier, J. P. L., 9, Rue Felicien David, Saint-Germain-la-Laye (Seine et Oise), France. Convention date (France), March 2nd, 1932.

The specification describes an arrangement of lighting for facilitating the landing of aircraft at night, or a similar arrangement may be used, substituting electric waves for the light, to facilitate landing in fog. The lighting arrangement consists of a number of light projectors in pairs, arranged on the line of approach of the aircraft, the beams from each pair of projectors being arranged to intersect. These intersections are arranged to occur at varying heights from the ground so that a pilot flying through the intersections is led on to the landing ground, which is illuminated normally. The light beams may be coloured, and a movable beam normally directed vertically is used to attract the attention of the aircraft pilot.

Aerofoils

402,514. *Improved High Lift Wing Section for Aeroplanes and the Like.* Read, R. G., 25, Croydon Road, Reigate, Surrey. Dated July 1st, 1932. No. 18,594.

The claim here is for a wing section on which the underside of the nose is formed with a hollow curve, this curve being faired into the remainder of the wing section, which is of normal shape.

Aeroplanes—Construction

402,236. *Improvements in Structural Members for Aircraft.* A.T.S. Company, Ltd., 5 and 6, Clement's Inn, Strand, London, W.C.2; and Dobson, R. H., "Ash Grove," Hollinwood, Lancs.; and Wylie, H. N., 5 and 6, Clement's Inn, Strand, London, W.C.2. Dated October 28th, 1932. No. 30,298.

This specification is concerned with a method of constructing sheet metal spars, struts, etc., for aircraft, the separate lengths of sheet metal with which

these structural members are built up being connected by electrical resistance welding. In order that this may be done, the parts are formed with outwardly projecting flanges which are used for the welding operation, some or all of the joints thus formed being afterwards pressed inward so that they are accommodated within the contour of the member. The parts may be subsequently heat-treated.

402,675. *Improvements in and Relating to Retractable Landing Gears for Aeroplanes and to Brakes for Use in Conjunction Therewith.* Minshall, R. J., and Boeing Airplane Co., both of 200, West Michigan Street, Seattle, County of King, State of Washington, U.S.A. Dated May 18th, 1933. No. 14,415.

This specification describes a retractable aeroplane chassis which is arranged so that landings can be made in emergency even if there is not time to move the landing wheels into the fully projected position, and in which the brake gear is arranged so that it may operate normally whatever the position of the chassis. The chassis described is of the type using three struts to each wheel, the vertical strut containing the shock-absorbing apparatus. The strut projecting rearwards is connected to a frame, one member of which is comprised by a threaded bar acting in a nut. On rotating this bar the chassis is caused to fold backwards into the wing, while the method of operation is irreversible so that landings can be made even if the chassis is partially folded. The brake device is operated mechanically, and linkage is arranged so that the operation of the brakes remains normal whatever the position of the chassis. It is stated that in certain emergencies, such as a forced landing on snow, it is safer to land with the chassis retracted so as to prevent the machine nosing over.

402,124. *Improvements in and Relating to Flotation or Buoyancy Boxes for Aircraft.* The British Thomson-Houston Co., Ltd., Crown House, Aldwych, London, W.C.2; Warren, H. W. H., "Lynn," St. Andrew's Road, Earlsdon, Coventry; Martin, R. I., 82, Eastland's Road, Rugby; Bray, G. R. R., 86, Dunchurch Road, Rugby. Dated May 25th, 1932. No. 14,888.

It is proposed to provide buoyancy for aircraft, which may land on the sea, by providing a flotation box composed of a number of water-tight boxes so shaped that when placed together they conform substantially to the curvature of the aeroplane wings. The boxes are constructed of varnished cloth or by sheets having surfaces of resin-bonded cloth, etc.

402,833. *Improvements in or Relating to Braking Systems for Aircraft.*. Vickers (Aviation), Ltd., and Duncan, T. S., Weybridge Works, Byfleet Road, Weybridge, Surrey. Dated June 11th, 1933. No. 16,543.

This specification describes a method of arranging hydraulic brakes for aircraft, by which, without the use of a separate reservoir, it is possible to increase the brake pressure on the wheel or wheels on the inside of a turn, while at the same time reducing the brake pressure on the wheel on the outside of the turn. This augmentation of the pressure on the inside wheel is produced by pistons and cylinders operated by a cam attached to the rudder bar, there being one piston and cylinder for each side of the machine. Valve arrangements are described which make the operation of the device automatic, and the scheme is such that when the rudder bar is returned to neutral the augmented pressure is reduced to normal.

Aeroplanes—General

403,253. *Improvements in the Construction of Feathering Paddle Wheels, in particular for Aerodynamic Purposes.* Strandgren, C. B., 14, Rue Gallieni, Versailles (Seine et Oise), France. Convention dates (France), March 11th, 1932; January 25th, 1933.

This specification describes a method of constructing paddle wheels, or rotary lifters, for aircraft by means of which the various loads—aerodynamical, centrifugal, etc.—that act on the structure are opposed as far as possible by members in tension. Each paddle, for instance, is connected to the hub by flexible connecting members so that to each paddle corresponds another substantially aligned with it, each being attached to the hub at nearly the same place, hence relieving the hub of nearly all stress. Various arrangements for attaining this result are described.

403,157. *Improvements in Flying Machines.* McLaughlin, R. J., 73, West End Avenue, Manhattan Beach, Brooklyn, New York, U.S.A. Convention date (U.S.A.), August 17th, 1931.

This specification relates to the operation of wind wheels resembling buzz-saws. These wheels have hollow teeth which are intended to draw in air, which proceeds to the centre of the wheel, where it is compressed and driven downwards through vents. The reaction to this downward motion is stated to produce the lift. There is also a claim for a propeller with curved vanes extending from the axis to the circumference. The air is driven into a central compression space, where it reacts against the vanes and is driven backwards. Gear wheels fitted with spiral springs are also claimed. These allow the motors to start at full speed while the wind wheels slowly gather speed.

402,429. *Improvements in or Relating to Means for Propelling a Moving Body Through a Fluid Medium.* Mainguet, H., 10, Rue Garanciere, Paris, France. Convention date (France), June 1st, 1931.

This is a scheme for a type of rocket propulsion in which the high-speed gases are allowed to escape through an annular orifice formed by a gap between a streamline body and a streamline cap fitted on the nose on the body. The gases may be generated by the combustion of fuels or by the exhaust of an internal combustion engine. It is claimed that by this arrangement a vacuum is produced at the front of the body and a pressure at the rear, thereby augmenting the propulsion efficiency.

402,939. *Devices for Testing Aeroplanes and the Like.* Kosaburo Asano, 4 Itchome, Miyamoto-cho, Naka-Ku, Yokohama-shi Kanagawar-Ken, Japan. Dated December 12th, 1932. No. 35,243.

The device described is practically a whirling arm constructed on a large enough scale to enable it to deal with full-sized aircraft. The arm, or arms, carrying the aeroplane to be tested are fitted to a sort of cap on a tower, the cap being rotated electrically. Means are also provided so that the weight of the aeroplane can be balanced to any desired extent by pistons operated by compressed air within the tower, the arms being pivoted so that they can swing vertically, the inner ends of the arms being connected to the pistons.

402,992. *Aeroplane with Rotatable Wings.* De Chappedelaine, I. L. M. O., 51, Rue Chardon Lagache, Paris, France. Convention date (France), January 28th, 1933.

This specification refers to aeroplanes having rotatable wings, the section being of small curvature S form adapted to enter into autorotation under the action of air resistance. Arrangements are described whereby such aircraft may be

provided with locking devices enabling the wings to be fixed on the most favourable position for flight with fixed wings, or released for flight with rotating wings. The rotating wings may be driven by the engine. Means are provided whereby the pilot can give a differing inclination to the rotating wings.

Control of Aircraft

402,645. *Improvements in Aeroplane Rudders or the Like.* Avions, C. T. Weymann, 28, Rue Valentin, Levallois-Perret, Seine, France. Convention date, March 24th, 1932.

This specification refers to a type of air-brake for aeroplanes which consists of constructing the rudder in two halves, which normally remain in contact with each other but which can be opened up into the form of a V when an air-braking effect is required, and describes a method by which such a rudder may be operated. The rudder has normal control levers which are operated through a vertical shaft fitted in the fuselage also fitted with control levers. This latter shaft can be moved forward by the operation of another control so as to open the rudder to the form of a V.

402,941. *Improvements in or Relating to Means for Actuating Servo-Operating Controlling Surfaces for Aircraft and the Like.* The Fairey Aviation Co., Ltd., Cranford Lane, Hayes, Middlesex, and Williams, D. L. H., Hillside, Swakeley's Road, Ickenham, Middlesex, and Ordidge, F. H., Croft Gardens, Ruislip, Middlesex. Dated December 22nd, 1932. No. 36,329.

This specification refers to the method of servo-operation of controls which consists in providing a flap aft of the hinge axis of a control surface, the variable inclination of the flap being used to provide power for the operation of the control surfaces. The object of the device described being to obviate any risk of flutter by preventing transmission of energy to the control flap as a result of involuntary displacement of the main control surface. It is proposed, therefore, to use an arrangement by which there is no mechanical connection, over a limited range between the servo-flaps and the control surface. The arrangements shown are such as to maintain direct connection between the pilot's control and the flap, while providing for a limited degree of lost motion between this connection and the main control surface. Several mechanical devices are described by means of which this can be effected.

402,225. *Apparatus for the Automatic Operation of the Vertical and Traverse Stabilising of Aircraft.* Messgerate Boykiev, G.M.B.H., Goetz Allee, Zehlendorf, Berlin, Germany.

This specification refers to a method of automatic control of aircraft by which the ascertaining of the inclination of the aircraft about its axis is effected by means of nozzles or pitot heads, the differing pressures on these heads operating the controls. Sets of two nozzles are used, set at angles of 90°. Or the pressure differences shown by these nozzles may be made to operate an indicating device. The indicating device may carry a picture of a landscape, etc. Means are described by which the pressure differences in the nozzles may operate an electrical device which, in its turn, operates the controls.

401,266. *Aeroplane.* Mosimann, P., Utzenstorf, Bern, Switzerland. Dated March 7th, 1932. No. 6,814.

This specification relates to an aeroplane tail which is arranged to be rotatable round the fuselage on its longitudinal axis. The drawing shows an aeroplane, the rear part of the fuselage of which is rotatable on a steel tube fixed to the fuselage. This rear part carries an elevator. Both the rotatable portion and the elevator are under the control of the pilot.

401,580. *Improvements in Mechanism for Driving a Fan Propeller.* Wigger Meindersma, 167, Buurtweg, Wassemaar, The Hague, Holland. Dated April 7th, 1933. No. 10,485.

A fin propeller is a propeller consisting of a single blade which is caused to oscillate in such a manner as to propel. This specification describes a method of operating such propellers. The fin propeller being movable about a centre of oscillation and of the kind in which the axis of the propeller describes a conical path during half a revolution, the mechanism for driving consists of a coupling, one member being rotatable about an axis which is unsymmetrical with regard to the oscillating centre of the propeller, the other member of the coupling being slidable on the propeller arm. The two members of the coupling are also slidable with respect to each other and movable with respect to each other in the manner of a hinge.

Pilots and Piloting

402,345. *Improvements in or Relating to Automatic Steering Apparatus for Air and other Craft.* Dehn, F. B., Kingsway House, 103, Kingsway, London, W.C.2. Dated May 19th, 1933. No. 14,579.

This specification describes an automatic pilot for aircraft, in which the steering is effected by the provision of a gyroscope having two degrees of freedom and adapted normally to precess about an axis at right angles, or having a component at right angles to that about which the steering is to be effected, the force exerted in the bearings of the precession axis acting directly or through relays on the control mechanism. These bearings may be resiliently mounted. The forces which control the steering may act on a pivoted jet tube discharging a fluid which oscillates under their action so that the fluid stream acts differentially on the two chambers of a fluid-pressure motor, which operates the rudder.

CORRESPONDENCE

To the Editor of the JOURNAL OF THE ROYAL AERONAUTICAL SOCIETY.

Dear Sir,—Regarding the editorial notice on page 69 of the January issue of the "Journal of the Royal Aeronautical Society," I may give you the following notes concerning the first metal aeroplanes. Being unable to make use of verified references, I am compelled to refer here from memory and without giving exact dates, etc.

The first English metal aeroplane, and the first metal aeroplane in the world at all, was no doubt the aeroplane constructed by Sir Hiram Maxim (about 1896). Mr. Harry Harper shows clearly in his excellent book "The Steel Construction of Aeroplanes" (London, 1928) that Maxim had already used a steel tube framework. In the same book is also described how the steel construction has been developed in England by Mr. Mayo and others.

By no means can the Maxim aeroplane be called an *all-metal* aeroplane, but, taken from an engineering standpoint, a metal covering of wings or fuselages may certainly not be significant for metal construction (viz., the view of Dr. Dornier and his constructions).

The second English metal aeroplane was a curious biplane, designed about 1910 by an English officer, and built by Messrs. Accles and Pollock from drawn and properly bent steel tubes.