

ABSTRACTS OF PATENT SPECIFICATIONS

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

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Aeroplanes—Construction

399,190. *Improvements in and Relating to Brake Mechanism.* Avery, W. L., Blue House, Thorley, Bishop's Stortford, Hertfordshire. Date Jan. 27th, 1932. No. 2,470.

This specification relates to fluid-operated aircraft brake mechanisms of the type where differential braking for steering purposes is effected by a connection between the brake mechanism and the rudder bar of the aircraft, while normal braking is effected by a separate lever operated by the pilot.

The apparatus described consists of a mechanism containing pistons adopted to produce pressure in the brake mechanism. There is a rocking member attached to a lever, which rocking member may be actuated by a rudder bar connection to produce differential braking, while if the lever is actuated normal braking occurs. Arrangements are described for controlling the admission of fluid to the mechanism from the reservoir and for controlling the pressure developed.

399,332. *Safety Devices for Aeroplanes.* Voiciechauskis, B., Apskrities Mokesciu Inspekeija Siauliai, Lithuania. Nov. 9th, 1932, No. 31,700, and Nov. 29th, 1932, No. 33,809.

This specification refers to an arrangement by which the passenger in an aircraft is enclosed in a box which may be given the form of a cask-like cylinder. This box is so arranged that it may be thrown out of the aircraft from a moderate height and it is hoped that the passenger will not suffer from a severe shock at the fall of the box upon the ground. Various automatic devices are described for assisting the functioning of the arrangement and modifications are described for use in water craft.

399,453. *Improvements in or Relating to Aircraft Wings.* Dornier Metallbauten, G.M.B.H., and Dr. Eng. C. Dornier, Friedrichshafen, Lake Constance, Germany. Convention date (Germany), Sept. 9th, 1932. Dated (U.K.) June 21st, 1933. No. 17,719.

The device described here is intended to prevent what is described as the diversion or avulsion of the air flow when the aircraft is stalled, that is to say, when the auxiliary rear flaps are lowered to a considerable extent.

The arrangement proposed consists of an aerofoil fitted with a rear flap of the usual type. Fitted above and slightly in front of the hinge of the rear flap is an aerofoil-shaped member of narrow chord which extends along the wing in front of the rear flap. This member is arranged to pivot about its approximate centre of pressure. The rear flaps are to be movable in the same direction while the aerofoil-shaped members are to be movable in opposite directions in the manner of ailerons.

399,555. *Improvements in the Construction of Wings for Aircraft.* Vickers (Aviation), Ltd., and Wallis, B. N., both of Weybridge Works, Byfleet Road, Weybridge, Surrey. April 8th, 1932. No. 10,111.

This specification describes a wing construction in which the upper and lower booms of the ribs are constructed of members of uniform cross-section as, for instance, tubes. These tubes carry stringers which protrude beyond the ribs and which, in their turn, carry the fabric. Methods are given for constructing and attaching these stringers, which latter are shown as of a channel section provided with holes by means of which they can be threaded on to the rib booms. This method of construction is stated to be suitable also for the rudders, elevators, fuselages, etc., of aircraft.

399,622. *Brakes and Their Controls.* Dunlop Rubber Co., Ltd., 32, Osna burg Street, London, N.W.1, Goodyear, E. F., and Wright, J., of the Company's Works, Foleshill, Coventry, Warwickshire. July 2nd, 1932. No. 18,769.

The object of this invention is to diminish the loss of air in pneumatically-operated brake systems for aircraft by diminishing to the smallest possible extent the air space and piping by which the air escapes to atmosphere when the brakes are released. It is proposed to accomplish this by filling the piping and the distensible members within the brake drums with liquid acted on by the air pressure. Springs are attached to the brake shoes by which the liquid is forced out of the distensible member when the brake is released.

399,887. *Means for Mounting Members on Each Other about Intersecting Axes so as to Permit of their Independent Angular Adjustment.* Vickers (Aviation), Ltd., and Wallis, B. N., both of Weybridge Works, Byfleet Road, Weybridge, Surrey. April 19th, 1932. No. 11,189.

This specification refers to a device which enables an elevator extending laterally of the tail end of a fuselage and carrying on the ends of such elevator the bearings for the posts of rudders.

The drawing shows a wire-braced tail with two elevator planes arranged as in a biplane. At each extremity of these planes a rudder is arranged. At the points where the spars of the elevators and the posts of the rudders come together there is fitted a special swivel pivot bearing allowing angular movement to either the rudders or elevators.

400,070. *Improvements in Aeroplane Undercarriages*. Dunlop, S., of H. D. Fitzpatrick and Co., 49 Chancery Lane, London, W.C.2. (Communicated by Fiat Società Anonima, 250 Via Nizza, Turin, Italy.) March 3rd, 1933. No. 6,518.

It is stated that an object of the invention is to provide an undercarriage consisting of elements which can be easily disassembled and which, in the case of braked wheels, allow of an equal distribution of the braking action on the frame members symmetrically arranged relatively to the middle plane of the wheel.

The undercarriage described has a forked vertical member and a forked member inclined backwards which is stabilised laterally by a lateral strut rigidly secured to the backwardly inclined member. When the wheel has a brake the disc carrying the brake shoes is so fitted that the braking action is equally distributed on the fork branches. The wheel is preferably fitted on the spindle by means of a sleeve engaging at its ends the branches of one of the forks.

400,338. *Improvements in the Framing of Boat, Pontoon, Aircraft and other Streamline Bodies*. Edward G. Budd Manufacturing Co., 2500, Hunting Park Avenue, Philadelphia, Pennsylvania, U.S.A. Convention date (U.S.A.) June 23rd, 1931.

This specification refers to the framing of streamline bodies and relates particularly to the relation of framework and sheathing of such bodies. A main object is to provide a construction which permits the standardisation of the transverse framing and the joining of the framework to the sheathing by, preferably, spot welding. A uniform section of transverse frame members is utilised, these members are framed with convex surfaces through which they may be readily joined to the sheathing, or to a frame member itself connected to the sheathing.

The drawings show frames constructed of members apparently semi-circular in section with a flat plate top, these members being connected either directly to the sheathing or to longitudinal members connected to the sheathing. These long structural members are channel in section and have saddles attached to them with semi-circular seats adopted to the frame members.

Airships

399,756. *Improvements in or Relating to Towing Arrangements for Aircraft*. Blochmann, E., 38, Ebert Allee, Dessau, Germany, and Pohlmann, 23a, Ringstrasse, Dessau, Germany. Convention date (Germany), May 24th, 1932.

It is proposed to combine the advantages of the aeroplane and airship by an arrangement by which one or more motorless airships carrying loads and passengers are towed by one or more aeroplanes. The airship may be provided with an auxiliary moving apparatus and a steering gear and the towing wire may be provided with a telephone cable.

Autogiros

399,446. *Improvements in and Relating to Rotary Blades or Wings for Aircraft*. G. and J. Weir, Ltd., and Bennett, J. A. J., both of Holm Foundry, Cathcart, Glasgow. May 24th, 1933. No. 14,966.

This invention refers to the method of construction of the rotary blades of autogiros and it is proposed to construct these blades by the use of a steel tube which is of the shape of the nose section of the aerofoil so that fairing is only necessary at the trailing edge of the blade to obtain the section desired. Pre-

viously these blades have been constructed with a circular steel tube carrying ribs of the aerofoil section desired. Advantages of cheapness, lightness and greater rigidity are claimed for the new construction. A claim is also made for a method of attaching the new type of blade to the root fitting.

399,693. *Improvements in Aircraft having Rotative Sustaining Means.* Cierva Autogiro Co., Ltd., Bush House, Aldwych, London, W.C.2. Convention date (U.S.A.), Feb. 12th, 1932.

The object of this invention is to improve the trim, stability and controllability of the autogiro aircraft and also the balance of the autogiro rotor. It is also claimed to reduce stresses and vibration. The rotor blades are arranged so that the axis of their articulations intersect the general rotational axis of the rotor and the independent swinging movements of the blades take place co-axially with the rotational axis.

The blades are attached each to a member which is independently mounted on the hub member permitting at least limited rotation. These intermediate blade-carrying members are axially spaced and the blades are attached thereto by forked blade root attachments. Some or all of these may be bent or joggled to make the rotor symmetrical. Auxiliary fixed wings are also referred to which are mounted so that they generate a rolling moment which opposes the variable rolling moment generated by the rotor.

Engines

399,238. *Improvements in or Relating to Prime Movers for Aircraft.* Aktiebolaget Milo, Kungsgatan 32, Stockholm, Sweden. Convention date (Germany), Nov. 23rd, 1931.

This is a gas turbine scheme in which the turbine itself may be of the multi-stage type, but the double rotating radial flow turbine is considered more suitable. The two sides of the turbine are arranged to drive compressors which collect air from an air intake extending centrally with regard to the axis of the plant, and arranged so that air is blown into it by the propeller. The whole plant is contained in a streamline casing and a reduction gear is provided for the propeller. Multiple turbines may be used if desired.

Helicopters

399,886. *Improvements in or Relating to Flying Machines of the Helicopter Type.* Porter, J. R., 6, Hurst Road, Twyford, Berkshire, England, and Fullalove, A. L., Market Place, Wantage, Berkshire, England. April 19th, 1932. No. 11,179.

The inventors propose to improve the lift of a lifting screw by surrounding it with a hollow ring whose inner diameter is the same as that of the screw. This hollow ring is attached to the engine mounting, which latter is attached to the fuselage by a pivotal bearing so that the screw and ring revolve in opposite directions when the engine is running, the engine driving the screw direct.

Variations of pressure are stated to be obtained on the ring when the plant is working which have the effect of causing an enhanced lift, and the device is also stated to act as a parachute. Several other advantages are claimed for the device.

Parachutes

400,385. *Improvements in Pack Parachutes*. Popelák, J., 68, Kralovská, Prague X, Czecho-Slovakia. Convention date (Czecho-Slovakia) August 17th, 1931.

In cases where the flaps of the parachute are connected in the closed position so that they engage studs fixed to one of the flaps, it is stated that the studs can assume such a position that they render difficult the release of the flaps. It is proposed to avoid this by the provision of studs having spherical bearings and by the provision of a pilot parachute frame made in the form of a book.