h_3. 19th. In a machine to produce hollow articles from pulp, the combination, with the pervious former and its hollow stem, of a pipe connecting the interior of the former with an exhausting pump or vacuum-chamber, to remove the fluid from the inside of the former and box thereon. 20th. In a machine to produce hollow articles from pulp, a pervious former, a series of radially movable pressing dies, a die box to contain them, a plunger and sleeve in which it moves, and means to exhaust the water from the interior of the former as it is expressed from the fibre on the former. 21st. The pervious former and hood to cover it, combined with a pipe to lead water under pressure to and discharge it within, and cleanse the former. 22nd. The former, the receiving bed and the two concaved jaws of the taking-off cap, combined with means to move the jaws into position above the former and then above the bed, and means to lower and raise the said jaws in each of their two positions and open and close them at the stated times to transfer the box from the former to the receiving-bed. 23rd. The two concaved pivoted jaws of the taking-off cap and their oscillating carrying-shaft, the slide, and means to lower the jaws in position, to surround but not to touch the box on the former, combined with the slide and its forked part, to close the said jaws together while they surround the former and box. 24th. The two pivoted concaved jaws of the taking-off cap, the oscillating shaft 43 to move the said jaws from a position above the former to a position above the receiving-bed and vice versa, and the bevel gear carried by the said shaft, combined with the shaft 46, its bevel gear 55, and cover 44. 25th. The oscillating shaft, the yoke 42 provided with finger 6 and the two pivoted concave jaws, actuated by the said shaft, *combined with mechanism to oscillate the said shaft, and the* slide and its projections 56 57 to check the oscillation of the said shaft and place the jaws in proper horizontal position, preparatory to the descent of the slide. 26th. In a machine for the manufacture of hollow articles from pulp, the former upon which the box is pressed into shape, its hollow stem, the taking-off cap composed of the two concaved jaws, which, when closed together do not come into contact with the box, and the cover 41 combined with a valve and pipe to introduce compressed air into the former to expand the box, detach its inner face from the perforations of the former, and place the outside of the box in contact with the concave jaws. 27th. A taking-off cap to remove the box from the former, a receiving-bed for the hollow articles, and means to move the said bed forward intermittingly. 28th. An intermittingly rotating table and a series of sleeves thereon, and a series of formers having stems fitted to the said sleeves, combined with the plunger bed and a series of hollow plungers, and means to reciprocate the plungers at the proper time, as stated, to lift the formers into operative position. 29th. The combination of the following instrumentalities, *viz*: a pulp receiver, the forming cylinder, a valve located between them, a rotary table and a series of formers carried by it, means to place the formers successively within the said cylinder, a series of hollow reciprocating plungers and means to automatically place the plungors in connection with the stems of the formers, to exhaust the water from the formers, a set of dies to compress the fibre upon the formers, and a taking-off cap and means to operate it at the proper times, the combination being and operating to automatically form and deliver the said hollow articles. 30th. That improvement in the art or process of manufacturing articles from paper pulp wherein the water of the pulp is pressed through the pervious former by compressed air, which consists in heating the pulp before it is delivered into the forming cylinder, about the pervious former, whereby the water of the said pulp, as the compressed air is permitted to expand, is kept at the proper temperature to flow freely through the fibre of the pulp and the perforations of the former. 31st. The pervious former upon which the box is formed and pressed, combined with the separate taking-off cap to remove the hollow articles to be dried. 32nd. The perforated metallic seamless former shell. 33rd. A stationary forming cylinder, a pervious former adapted to be placed below the same to receive a coating of pulp, a rotating table and means to remove the former from the forming cylinder into position between the pressing dies and means to move them to compress the hollow article on the said former. 34th. The series of formers and their rotating carry-table notched at its edges, its supporting shaft, ratchet and pawl, combined with the reciprocating rack to move the table intermittingly, and a stop to hold the table at rest at the proper time. 35th. The pulp vat, receiving cylinder and forming cylinder combined with a vat-valve located between the pulp-vat and receiving cylinder, and with a pulp controlling valve between the receiving and forming cylinders. 36th. The pervious former provided with a hollow stem, for the passage of air and water. 37th. A taking-off cap composed of two jaws and a cover 41. 38th. In combination, the hood 72 and means to hold it, the former p, the force pump 74 and a suitable pipe or passage for water from the said pump into the former in the said hood. 39th. A paper box making machine provided with a suction pump, for withdrawing water from the pulp on the former p, and with a force pump 74 for clearing the interior of the former. 40th. The combination of the sliding bolt 95 provided with a finger 98 and the teeth 94, upon the circular table t that carries the pervious formers p, and with the projection 99 on the rock-bar, that rotates the said circular table. 41st. The improvement in the art or method of manufacturing hollow articles from pulp which consists in forcing the water from the pulp through a pervious former surrounded by it, by means of compressed air and subsequently pressing the fibrous portion of the pulp so left on the pervious former between the said former and pressing dies.

No. 16,642. Improvements in Aerial Vessels.

(*Perfectionnements aux vaisseaux aériens.*)

Eugene F. Falconnet, Nashville, Tenn., U. S., 11th April, 1883; for 5 years.

Claim.—1st. A vessel for aerial navigation, terminating fore and aft in long cylindrical cones, the larger ends abutting against and secured to each other and propelled, steered and handled by internally arranged machinery through externally arranged screws. 2nd. A vessel for aerial navigation consisting of a central cylinder body terminating in long cylindrical cones, the whole secured together and within one cover, and steered, propelled and handled by internally arranged machinery through externally arranged screws. 3rd. A vessel for aerial navigation terminating fore and aft in long cylindrical cones, the larger ends of which abut against each other, and the whole coustructed on one general frame of metal thoroughly braced and secured at its several intersections, within one envelope of thin metal or other suitable material made impervious to air and gas, the gas field in which is divided into gas tight sections by vertical and horizontal partitions, as well as by transversely arranged bulkhead of metal or other material also impervious to gas. 4th. A vessel for aerial navigation terminating fore and aft in long conic cylindrical ends made sharp at the extremities, the whole constructed on one thoroughly and substantially braced and stayed general frame of metal within one envelope of thin metal or other suitable material made impervious to gas and air, the gas field divided into gas tight sections by vertical and horizontal partitions as well as by transversely arranged bulkheads of metal or other material also made impervious to gas and air. 5th. A vessel in a cylinder form having a body a terminating at the ends in two long cylindrical cones a^1 a^2 respectively, the whole constructed on one general frame of metal thoroughly braced and trussed, and secured at its several intersections within one envelope of thin metal, or other suitable material, made impervious to gas and air, the gas field divided into gas tight sections by transversely arranged bulkheads c_3 of metal or other material impervious to air and gas and provided with a bracing cord d_4, extending the lower line of the end cone and forming the bottom support of a cabin. 6th. Vessels for aerial navigation resembling two long cylindrical cones, the larger ends thereof abutting against, and the smaller ends antipode to each other, the whole constructed on one general frame of metal thoroughly braced and trussed and secured at its several intersections within one envelope of thin metal or other suitable material made impervious to gas and having tensil strength sufficient to retain the gas, the lower part of the hull thereof divided into floors and subdivided into engine, freight store and machinery rooms by fire and waterproof partitions, besides a chimney or outlet through the gas field for the smoke stack and steam pipes, the latter having a fire and waterproof and heat repellant wall. 7th. Vessels for aerial navigation in cylindrical form terminating fore and aft in long cylindrical cones a^1 a^2, sharp at the antipode ends, the whole constructed on one general frame of metal and provided with internally arranged machinery for actuating reversible side and fore and aft propelling screws, journalled and operated in revolving cylinders for raising, lowering, propelling and steering such vessel. 8th. Vessels for aerial navigation terminating fore and aft in long cylindrical cones, the whole constructed on one general frame of metal and provided with a cabin m partly within and partly extending below the general hull of the vessel and secured by cords d_4, stanchions e and otherwise properly braced and stayed to make it safe and secure. 9th. Vessels for aerial navigation constructed on one general frame of metal thoroughly braced and secured at its several intersections within one envelope of thin metal or other suitable material made impervious to gas, air and water, a cabin m made sharp fore and aft and arranged partly within and protruding partly below the vessel hull where it is secured by cords, posts and braces to the underside of the huli. 10th. Vessels for aerial navigation constructed on one general metal frame thoroughly braced and secured at its several intersections, the whole within one envelope of thin metal or other suitable material, side raising, lowering and propelling screws adjusted on revolving cylinders and an after steering and propelling screw also adjusted on a revolving cylinder, for raising, lowering, steering and propelling such vessel. 11th. Vessels for aerial navigation, constructed on one general frame and within one envelope or skin, the hull divided into engine room, store and freight compartments, machinery room and cabin, the latter extending part of its depth below the keelson revolving cylinders n n^1 n_3 for securing the side and after, or stern propelling screws extending from within but through the shell, to without the vessel for receiving, holding and operating side and after screws for raising, lowering, steering and propelling such vessels. 12th. In combination, cabin m divided into compartments and provided with doors and outlooks, windows, an elevator well r_4 adjusted in, and protruding below the keelson cord, cord d, truss d_4, stanchions e, in aerial vessels in the form of two cylindrical cones a^1 a^2 supported by one general frame of metal thoroughly braced and secured at its several intersections, within one envelope of metal or other suitable material, made impervious to gas, air, fire and water, in which the gas field is divided into sections by gas tight bulkheads and the hull into engine, store, freight and machinery rooms by fireproof partitions, also the fireproof chimney S_3, internally arranged propulsive machinery, revolving shafts n n^1 n_3, propelling screws n_2 n_4, the whole constructed and arranged in the manner shown. 13th. Vessels for aerial navigation in cylinder form terminating fore and aft in cylindrical cones propelled, steered and handled by internally arranged machinery through side raising, lowering and propelling screws and an after propelling and steering screw, carrying a cabin sharp at the ends and protruding part of its depth below the hull of the vessel. 14th. Vessels for aerial navigation constructed in the form of a cylinder terminating fore and aft in elongated cylindrical cones, propelled, steered and handled by internally arranged machinery through side raising, lowering and propelling screws, and an after propelling screw and forward steering screw and carrying a cabin sharp fore and aft, provided with windows, doors, ventilators, outlooks and a well for an elevator protruding below the vessel hull. 15th. Vessels for aerial navigation in cylindrical form terminating fore and aft in long cylindrical cones made sharp at the extreme ends, the whole within one envelope or cover of metal, or other suitable material made impervious to air and gas, as well as water and fire proof, one general frame of metal thoroughly trussed, braced and stayed throughout, the whole secured at its several intersections and divided into a hull and gas field, the hull being divided into engine, freight and business rooms, and a cabin which latter extends part of its depth below the keelson proper, and a gas field divided by transverse bulkheads of metal, or other suitable material made impervious to gas, into small gas sections or cells. 16th. Vessels for aerial navigation in cylindrical form terminating fore and aft in long cylindrical cones made sharp at the extreme ends, the whole within one envelope of metal or other suitable material made impervious to air and gas, as well as water and fire proof, divided into engine, machinery, freight and business rooms and a cabin, the latter extending from within the hull part of its depth below the keelson proper, in combination with a gas field divided into sections or gas cells, by bulkheads of metal made