

volving the cylinder on its axis. 42nd. The revolving cylinder shaft  $n^1$  provided with bevel gear band on the inner end, terminating in circular jaws at the outer end, in which the revolving carriage which carries the forward steering screw is journaled and secured, and with internally arranged journal bearings for securing the main revolving shaft  $p$  in place, and with shaft  $p^1$  carrying pinions at each end, for revolving on its axis the carriage  $q^1$  for changing the position of the forward steering screw. 43rd. In combination, revolving cylinder shafts  $n^*$   $n^1$  and circular beds  $q^3$ , the latter having a journal bearing in one side for the axle of the screw, and in the opposite side a slot for the passage of the propelling shaft, and provided with a cogged rack on the upper edge. 44th. In combination, revolving cylinder shafts, having corrugated bands at one end, rotating bands  $r$  sprung on the periphery and cogged on the inner edge, an endless chain belt, a cogged pinion  $p^2$  passing through a slot  $n^3$ , revolving shaft  $p^1$ , circular bed or carriage  $p^1$ , main revolving shaft  $p$ , universal joint  $r^1$  and shifting, raising, lowering, propelling and steering after-screw, for vessels for aerial navigation. 45th. The revolving driving shaft  $p$  broken near the outer ends by universal joints  $r^1$  increased part of its length in a segregated sleeve  $p^*$ , on which is adjusted driving-belt pulleys  $p^3$ , double belt pulleys  $p^4$  governed and secured in place by grip clutches  $p^6$ , through hand levers  $p^8$  and friction shoulders  $p^9$ , in combination with a motive power for handling and propelling vessels for aerial navigation, through externally arranged screws on the sides and stem thereof. 46th. The revolving driving shaft  $p$  broken near the outer ends by universal joint  $r^1$  increased part of its length in a movable segregated sleeve  $p^*$ , in combination with grip clutch  $p^5$ , friction shoulder  $p^9$ , driving belt pulleys  $p^3$  for conveying power thereto, fixed shoulders  $p^9$ , grip clutches  $p^6$  for securing in place the double pulley wheels  $p^4$ , endless belts  $p^{10}$  through which power is communicated to the raising, lowering and propelling side screws. 47th. The revolving driving shaft  $p$ , in combination with revolving cylinders  $n^*$   $n^1$ , universal joint  $r^1$ , shifting bed or carriage  $q^3$  and shifting, raising, lowering, steering and propelling fore and aft, screws  $q$  in vessels for aerial navigation. 48th. The revolving driving shaft  $p$  broken near the outer ends by universal joints  $r^1$ , increased part of its length in a movable segregated sleeve  $p^*$ , in combination with grip clutches  $p^5$ , driving belt pulleys  $p^3$ , double pulley wheels  $p^4$ , friction shoulders  $p^9$ , grip clutches  $p^6$ , hand levers  $p^8$ , revolving cylinders  $n^*$   $n^1$ , shifting bed or revolving carriage  $q^3$ , raising, lowering, propelling and steering screws  $q$ , also with the cogged band  $r$  on the carriage  $q^3$ , pinion  $p^2$ , revolving shaft  $p^1$ , rotating band  $r$  cogged on its inner edge and sprung on its periphery, the endless chain belt  $r$  for handling, propelling and changing the course of vessels for aerial navigation. 49th. The revolving driving shaft  $p$ , broken near the outer ends by universal joints  $r^1$  journaled in the revolving cylinders  $n^*$   $n^1$ , and at other points longitudinally within the vessel, increased part of its length in movable segregated sleeve  $p^*$ , in combination with grip clutches  $p^5$ , driving belt pulleys  $p^3$ , fixed friction shoulders, grip clutches  $p^6$ , double belt pulleys  $p^4$ , friction shoulders  $p^9$ , endless belts  $p^{10}$ , vaults  $m^2$ , journal axle  $m^1$ , raising, lowering and propelling side-screws  $m$ , revolving cylinders  $n$  provided with internally arranged idlers, all arranged and designed for handling and propelling vessels for aerial navigation. 50th. The revolving shaft  $p$  provided with driving pulley wheels, double pulley wheels, grip clutches, friction shoulders and hand levers, in combination with endless belts  $p^{10}$ , vaults  $m^2$ , side raising, lowering and propelling screws  $m$ , revolving cylinder  $n$ , collars  $n^3$ , having a projecting lever arm  $n^3$ , lever arms  $n^8$ , pendulum lever  $n^9$  carrying a weighted ball, a rocker shaft  $n^6$  and with bevelled gear band  $n^2$  on the inner end of cylinder  $n$ , for revolving the same and changing the position of the screws  $m$ , for handling and propelling vessels for aerial navigation. 51st. In combination, bevel gear bands  $n^2$  secured on the inner ends of revolving cylinders  $n$ , gear wheels  $n^2$   $n^1$ , revolving shafts  $n$  for simultaneously revolving on their respective axes, revolving cylinders  $n$  and changing the position of the side screws  $m$ , for raising, lowering and propelling vessels for aerial navigation. 52nd. The revolving cylinder shaft  $n^*$  having a bevel gear band  $n^2$  fixed on the inner end, and terminating at the outer end in a looped yoke  $q^*$  having ways in its periphery, for sliding yoke strap  $t^*$  and carrying a ring, disk or revolving carriage  $q^3$  imbedded therein, in combination with a sliding looped band  $t^*$  secured to a sliding collar  $t$  adjusted thereon, and handled and controlled by a lever  $\beta^3$  through a lever arm  $t^4$ , for changing the direction of flight of the after-screw. 53rd. The revolving cylinder shaft  $n^*$  terminating at the outer end in a looped yoke  $q^*$  having ways in its periphery and a slot on one side, and having a recess, wherein a circular carriage, provided with a sleeve journal bearing  $r$  for securing and carrying the axle of the after-screw, as well as with raked teeth on its periphery, to mesh with similar teeth on loop yoke strap  $t^*$ , formed by the arms extending from a sliding collar  $t$  adjusted on the revolving cylinder and operated by a shaft  $t^4$  governed and actuated by a hand lever  $\beta^3$ , for changing the position of the after-screw from right angles to a position perpendicular to the line of the cylinder. 54th. In combination, the after-screw  $q$ , journal sleeve  $r$ , circular carriage  $q^3$ , provided with raked teeth on the periphery, on one side, carried in a recess, in the looped yoke  $q^*$  terminating the outer end of revolving cylinder  $n^*$ , the sliding yoke  $t^*$  provided with raked teeth on the inner edge of one of the arms thereof, and secured to, and projecting from a sliding collar  $t$  adjusted on the revolving cylinder  $n^*$  and operated by a hand lever  $\beta^3$  through a shaft  $t^4$ , the whole for handling and changing the direction of the raising, lowering, propelling and steering screw aft. 55th. In combination, the after-screw  $q$ , journal axle  $r$ , universal joint  $r^1$ , actuating shaft  $p$ , revolving cylinder  $n^*$  terminating in a loop yoke  $q^*$  having ways in the periphery, and a recess in the interior thereof, the circular carriage  $q^3$  having raked teeth on a segment of its periphery, and a sleeve journal bearing  $r$ , the sliding yoke  $t^*$  carrying raked teeth on the inner edge of one of its arms, secured to a sliding collar  $t$  adjusted on revolving cylinder  $n^*$  and actuated by lever  $\beta^3$  through an arm  $t^4$ , for carrying, rotating and changing the position of the after-screw of vessels for aerial navigation. 56th. In combination, the main actuating shaft  $p$  provided with double crank  $p^2$  secured in journal bearings and extending longitudinally through the vessel, from forward of the cabin to the stern, segregated at intervals, but unifiable by grip clutches  $p^5$ , the shaft  $p$  carrying grip clutches  $p^5$ , bevel gear wheels  $p^1$   $p^2$ , universal joint  $r^1$ , axle  $r$ , after-screw  $q$ . 57th. In combination, main driving shaft  $p$  having a double crank  $p^2$  secured in suitable bearings longitudinally through the vessel, the bevel gear wheels  $p^1$   $p^2$  secured thereon, the

bevel gear wheels  $o_2$   $o_1$  and revolving shaft  $o$ , bevel gear wheel  $m_3$ , axle shaft  $m_1$  journaled in revolving cylinder  $n$  and carrying the side screws, for raising, lowering and propelling vessels for aerial navigation. 58th. In combination, main driving shaft  $p$  having a double crank  $p^2$  therein, secured in bearings longitudinally through the vessel but unifiable by grip clutches  $p^5$  and carrying grip clutches  $p^5$  arranged for throwing into and out of gear the bevel gear wheels  $p^1$   $p^2$ , bevel gear wheel  $o_2$ , revolving shaft  $o$  journaled in boxings as well at the inner end as within the cylinder  $n$ , through which shaft  $o$  passes from within to the outside of the vessel, bevel gear wheel  $o_1$ , gear wheel  $m_3$ , right angle axle shaft  $m_1$  carrying the side screw  $m$ , journaled in the cross head  $n$  on the outer end and forming part of revolving cylinder  $n$ , for raising, lowering and propelling vessels for aerial navigation. 59th. In combination, the main driving shaft  $p$ , double crank  $p^2$ , bevel gear wheels  $p^1$   $p^2$ , clutches  $p^5$   $p^6$ , levers  $p^8$ , cylinder  $n^*$ , universal joint  $r^1$ , revolving carriage  $q^3$ , journal sleeve  $r$ , after-screw  $q$ , sliding loop straps  $t^*$ , sliding collar  $t$ , shaft  $t^4$ , lever  $\beta^3$ , bevel gear wheel  $o_2$ , shaft  $o$ , bevel gear wheel  $o_1$ , bevel gear wheel  $m_3$ , axle shaft  $m_1$ , side screws  $m$ , cross head  $n$ , revolving cylinder shaft  $n$ , collar  $n_3$ , lever arm  $n_3$ , longitudinal lever arms  $n^8$ , pendulum  $n^9$ , weighted ball rocker shaft  $n^6$ , in machinery for propelling and handling vessels for aerial navigation. 60th. In combination, hand wheel  $v_1$ , shaft  $v$ , bevel gear wheel  $v^2$ , bevel gear wheels  $n_2$ , shafts  $u$ , gear wheels  $u^1$   $u^2$  on shaft  $u$ , bevel gear wheels  $n_2$  secured on the inner ends of revolving shafts  $u$ , revolving shafts  $u$  and raising, lowering and propelling side screws  $m$ , the whole arranged for simultaneously changing the line of flight of the side screws of vessels for aerial navigation. 61st. In combination, hand wheel  $v_1$ , shaft  $v$ , bevel gear wheel  $v^2$ , bevel gear wheel  $v_4$  on and shaft  $v_5$ , bevel gear wheel  $v_6$ , bevel gear wheel  $n_7$ , transverse shaft carrying bevel gear wheel  $n_6$ , bevel gear band  $n_2$  secured on the inner end of cylinder  $n^*$ , revolving cylinder shaft  $n^*$  extending out through the stem of the vessel and terminating in a loop yoke  $q^*$  recessed for carrying a revolving carriage  $q^3$ , journal bearings  $q^2$  or circular jaws  $q^2$ , circular bed  $q^3$ , after-screw  $q$ , axle  $r$ , universal joint  $r^1$ , main shaft  $p$  and journal bearings for the same, in machinery for handling, steering and propelling vessels for aerial navigation. 62nd. In combination, hand  $v_1$ , shaft  $v$ , bevel gear wheel  $v^2$  thereon, bevel gear wheels  $u^2$  on shaft  $u$  and gearing with gear wheels  $v^2$ , shaft  $u$  secured in suitable bearings longitudinally arranged on the opposite sides of the main shaft  $p$ , bevel gear wheels  $u^1$  on shafts  $u$ , to gear with bevel gear bands  $n_2$  on cylinder  $n$ , raising, lowering and propelling side screws  $m$ , also with grip clutches  $n^*$ , bevel gear wheel  $n_3$  on shaft  $n$ , bevel gear wheel  $n_4$  on shaft  $n^5$  secured in suitable journal bearings, bevel gear wheel  $v_5$ , bevel gear wheels  $n_7$ , transverse shaft secured in suitable bearings, bevel gear wheel  $n_6$  gearing with bevel gear band  $n_2$  on revolving cylinder shaft  $n^*$ , sliding collar  $t$ , loop strap  $t^*$ , revolving carriage  $q^3$ , adjustable after-screw  $q$ , longitudinal shaft  $t^4$ , hand lever  $\beta^3$ , in machinery internally arranged as well as externally adjusted, for simultaneously changing the several screws, both on the sides and the stern, for raising, lowering, propelling and steering vessels for aerial navigation. 63rd. A pendulum attachment consisting of a weighted ball, lever  $n^9$  secured on a rocker shaft  $n^6$  and carrying two lateral levers  $n^8$  secured one above and one below the rocker shaft  $n^6$ , the other ends of which are secured to lever arms  $n_3$   $n_3$  projecting from and forming a part of the collar or muff  $n^3$   $n^3$  adjusted on the revolving shafts  $n$ , for carrying the side screws in vessels for aerial navigation, the whole adjusted near the centre on the sides within the vessel. 64th. A pendulum attachment consisting of a pendulum lever  $n^9$ , secured on a rocker shaft  $n^6$  and carrying suspended therefrom a weighted ball, two arms  $n^8$   $n^8$  secured by one end, each to the pendulum lever  $n^9$ , one above and one below the rocker shaft  $n^6$ , and by the other ends to projecting lever arms  $n_3$   $n_3$  forming part of collars  $n^3$   $n^3$  secured on, and in combination with revolving cylinders  $n$ ; the whole arranged and designed for automatically regulating the plane of flight of vessels for aerial navigation. 65th. A pendulum attachment consisting of a lever  $n^9$  suspended from a rocker shaft  $n^6$ , within and near the sides of the vessels carrying a weighted ball depended therefrom, having two branching levers  $n^8$   $n^8$  secured thereon, one above and one below the rocker shaft  $n^6$ , in combination with lever arms  $n_3$   $n_3$ , collars  $n^3$   $n^3$  adjusted on revolving cylinder shafts  $n$ , which carries and changes the position of the side raising, lowering and propelling side screws  $m$ , in vessels for aerial navigation. 66th. In vessels for aerial navigation, gas generators, gas condensers, gas reservoirs for supplying gas to the gas-field, or receiving, securing or condensing any surplus occasioned by going into high altitude. 67th. The adjusting of the after-screw of vessels for aerial navigation, under the stern, below what may be called the stern frame, and sustaining the same in externally arranged bracket bearings.

### No 15,048. Improvements on File Cutting Machines. (*Perfectionnements aux machines à tailler les limes.*)

Frederick Outram, Montreal, Que., 5th July, 1882; for 5 years.

*Claim.*—1st. In a file cutting machine, the combination, with a horizontal bed, of a ram and chisel carried obliquely in a permanently fixed guide standard. 2nd. The combination, with the cam shaft F and standard A, of the collar F firmly mounted on said cam shaft, and carrying the cam K on its outer face. 3rd. The cam K, formed by driving two round pins together, and afterwards cutting parts of same away to attain the desired contour. 4th. The ram G and chisel holder, constructed in one piece, and having formed thereon, groove or socket I. 5th. The sliding carrier B formed semi-circular and provided with one or more feathers  $b$ , in combination with a similarly grooved bed block. 6th. The combination, with the sliding carrier B and bed block A, of air passages  $b^1$   $b^2$  arranged at the junction of said parts.

### No. 15,049. Improvements on Wagon Wheels. (*Perfectionnements aux roues des wagons.*)

William Downham, St. Johns, Mich., U.S., 5th July, 1882; for 5 years.

*Claim.*—1st. The combination of the felly piece D having slots  $h$  i