

a1 a2 arranged in the outside plate, on the outside of the air space *c*, and a series of finely perforated plates *a4* on the plate *a3*, on the opposite side of the air space. 2nd. A stove oven having a double series of holes *a1 a2 a3 b* and an air space *c*, in combination with a series of openings *c2* in the back of the oven, and an adjusting damper. 3rd. An oven door provided with a transparent plate *f* secured thereto by buttons *f*.

No. 16,782. Device to Assist to Put On and Take Off Coats, &c. (*Appareil pour aider à mettre et ôter les habits, &c.*)

Silvanus Morton, Milton, N.S., 4th May 1883; for 5 years.

Claim.—In combination with a clothes rack attached to a wall or any convenient hook or fixture to support cord C, coat hook A having hook B at one end and an eye D at the other, to receive a cord chain or wire to attach it to the clothes-rack or convenient hook or fixture.

No. 16,783. Improvements on Shirts.

(*Perfectionnements aux chemises.*)

Isaac B. Keller and Cyrus G. Ranch, Lebanon, Penn., U.S., 4th May 1882; for 5 years.

Claim.—A shirt having the back yoke extension *d* beyond the back slit *b*, provided with a second button-hole *a* behind the neck button-hole, and a shield-shaped re-enforcement K having a broad lower end *m* secured to the back below the back slit, an upper end secured to the back yoke extension, a lateral edge *n* joining the back at one side of the back slit, and a portion *z* lapping over the back at the other side of the slit.

No. 16,784. Improvements in Vehicles.

(*Perfectionnements dans les voitures.*)

The Guelph Carriage Goods Company, (Assigness of John B. Armstrong,) Guelph, Ont., 4th May, 1883 (Re-issue of Patent No. 13,420)

Claim.—1st. A naked front axle centrally pivoted to a head plate, which is connected to the rear axle by perches or supporting springs. 2nd. A naked front axle having a bearing formed on its centre, upon which the head plate may be directly pivoted. 3rd. A head plate having the pivot bolt hole reinforced by a boss or thimble, punches from the stock of the plate, and forming a wearing point to protect the pivot bolt. 4th. A pivoted head plate having upwardly curved ends to receive the perches or side springs. 5th. A metal head plate, in combination with spring perches or supporting springs, arranged to connect the ends of the head plate with the rear axle. 6th. A metal head plate having spring ends, in combination with spring perches or supporting springs arranged to connect the spring ends of the head plate with the rear axle. 7th. A naked rear axle connected to the head plate by spring steel perches or supporting springs. 8th. A flat steel perch curved upwardly or downwardly between the points of connection. 9th. In a buggy or carriage gear, a metal saddle-plate having semi-circular recesses formed on its top surface to hold in position the saddle-plate clips and form a finish on either side thereof. 10th. In a buggy or carriage gear in which the perches and C-springs are fastened to the axle by clips, a teat or projection formed on the bottom side of the C-springs and fitting into a recess formed on the top of the perch by the punching of its stock, to form a similar teat on its bottom, which latter teat fits a recess made to receive it in the axle or head plate. 11th. In a buggy or carriage gear, tapered single plate C-springs rigidly attached at one end to the axle or head plate at right angles thereto, and having their free ends pointing towards each other. 12th. A tapered single plate side spring having a free shackle at either end, to connect it to tapered single plate, C-spring arranged to support it. 13th. A metal-spring plate fastened to the top side of the side springs and arranged to support the body of the vehicle. 14th. A single plate side spring having cyma reversa ends connected to tapered single plate C-springs by free shackles. 15th. A brace rigidly fastened to the axle and extending obliquely to the perch, where it is secured by a bolt passing through holes in the brace and perch, the said hole in the perch being reinforced by a boss formed by the stock punches out of the hole and fitting into a hole in the brace, for the purpose of strengthening the connection and protecting the connecting bolt from wear.

No. 16,785. Improvements on Hoop Machines. (*Perfectionnements aux machines à cercles.*)

John Connel, (Assignee of John B. Dougherty,) Rochester N.Y., U.S., 4th May, 1883; for 5 years.

Claim.—1st. The combination of the reciprocating dividing knife C, the movable lapping or tapering knives *f f1* arranged to act alternately on the plank, and the pointing knives *g g1*. 2nd. The combination, with the reciprocating dividing knife C, of the knife stock I and bar *m* pivoted to the knife stock and carrying at either end the lapping or tapering knives *f f1*. 3rd. The combination, with the reciprocating dividing knife C, of the lapping or tapering knives *f f1* and the pointing knives *g g1*, and mechanism for moving the lapping knives and for alternately operating the pointing knives. 4th. The combination of the reciprocating dividing knife C, knife-stock I, the movable lapping knives *f f1* and means for adjusting the position of the lapping knives relatively to the dividing knife at each reciprocation of the latter. 5th. The combination of the reciprocating dividing knife C, knife-stock I, pivoted bar M and lapping knives *f f1* arranged to be adjusted lengthwise of said bar to lap hoops of different length. 6th. The combination of the knife C, reciprocating knife frame H provided with studs *V1 V11*, pointing knives *g g1* and clamping dogs Y Y1 having bent arms *n m*. 7th. The combination of the reciprocating dividing knife C, swinging bar *m*, lapping and tapering knives *f f1* and rock shaft *n*. 8th. The combination of the slotted frame A, bed plate G, cranks F F1, pitmans *a a1*, dividing knife C, swinging bar *m*, lapping and bevelling knives *f f1*, rock shaft *n*, gearing O P and cam *q*.

No. 16,786. Improvements on Coffor-Dams for Ships. (*Perfectionnements aux caissons des navires.*)

Charles J. Fox, Liverpool, Eng., 4th May, 1883; for 5 years.

Claim.—1st. The combination, with a coffer-dam A adapted to receive the stem or stern of a ship, of an upright series of separately adjustable arms or bars B arranged at each side of the coffer-dam, and adapted to have their bars brought against the sides of the ship. 2nd. The combination, with the coffer-dam A, of two series of the independently adjustable hinged arms or bars B. 3rd. The combination, with a coffer-dam A adapted to receive the stem or stern of a ship, of an upright series of separately adjustable arms or bars B arranged at each side of the coffer-dam A and adapted to have their ends brought against the sides of a ship, and a covering of canvas, rubber, or other material *b* applied to the outer sides of said arms or bars, and a packing of fibrous material *d* applied between the ends of said arms or bars and the sides of the ship. 4th. The combination, with a coffer-dam A comprising watertight compartments and provided at each side with an upright series of separately adjustable arms or bars B, of valves for allowing water to flow from the inside of the coffer-dam into said compartments. 5th. The construction and arrangement of coffer-dam A, as described and shown at figures 1 2 3. 6th. The construction and arrangement of coffer-dam A, as described and shown at figures 4 5 6. 7th. The construction and arrangement of coffer-dam A as shown at figures 7 8. 8th. The construction and arrangement of coffer-dam A as shown at figures 9 10. 9th. The construction and arrangement of coffer-dam A as shown at figure 11.

No. 16,787. Improvements on Wheel Hubs.

(*Perfectionnements aux moyeux des roues.*)

Thomas B. Dowsley, Owen Sound, Ont., 4th May, 1883; for 5 years.

Claim.—A wheel hub constructed of a wood centre A mortised to receive the ends of the spokes B, and a metallic band *c* sleeved thereon, having independent or separated mortises, and spokes B bevelled to fit into the mortises and retain the band.

No. 16,788. Apparatus for Treating Milk for the Manufacture of Butter and Cheese, and for Other Purposes. (*Appareil de traitement du lait pour la fabrication du beurre et du fromage, et pour d'autres fins.*)

The Powell Manufacturing Company, (assignee of Edwin R. Powell,) Burlington, Vt., U. S., 4th May, 1883; for 5 years.

Claim.—1st. The described process of treating milk for the manufacture of butter and cheese or for other purposes, which consists in first heating or raising the temperature of the milk and then cooling same *in vacuo*. 2nd. In the treatment of milk for the manufacture of butter and cheese or for other purposes, the method of developing the saccharine properties of the milk, which consists in exhausting the air from the milk containing vessel while the milk therein is in heated condition. 3rd. The combination of a suitable tank for receiving the cream, a suitable revolving dasher and pipes connected thereto at both of its ends, sliding couplings which are connected with the pipes that are attached to the revolving dasher and suitable flexible connections J for uniting the couplings with the pipes K L. 4th. The combination of a suitable tank in which the milk is placed, a hollow revolving dasher which is journaled therein and connected with flexible pipes to pipes K L, whereby the tank is adapted to be raised or tilted at one end so as to cause the butter to be gathered at the opposite end. 5th. The combination of a tank to receive the milk provided with a suitable opening, to allow the milk to be poured in and the butter to be removed, with a hollow revolving dasher through which steam, hot or cold water can be forced, and suitable couplings to connect the dasher with the supply and exit pipes, the tank being connected to an exhausting medium so as to form a vacuum over the top of the milk while the cream is being raised.

No. 16,789. Improvements on Bustles.

(*Perfectionnements aux tournures.*)

Charles W. Higly, Jackson, Mich., U. S., 4th May, 1882; for 5 years.

Claim.—1st. The foundation springs A and curved springs B combined with the apron D having an opening E formed in it and rendered adjustable by elastics. 2nd. A bustle composed of the springs A B C c, the apron D having an opening E provided with the elastics *b*, the skirt C, spring F and cord *d*.

No. 16,790. Improvements on Windows.

(*Perfectionnements aux fenêtres.*)

Samuel C. Taylor, Morton near Bingley, Eng., 4th May, 1883; for 5 years.

Claim.—1st. In a device for raising and lowering and controlling the sash of a window, the pulley D having the chamber K provided with the teeth *m*, the gear L provided with the studs X and teeth *a*, the sleeve P provided with the eccentric *n* and pulley G, the clutch M, shaft E, chain R, cord O and cord H. 2nd. The pivoted bars I to enable the sash C to be tilted or removed. 3rd. The auxiliary sill T provided with the sockets *j*, in combination with the sash C having the hinges *r*. 4th. The sash C provided with studs *y q*, in combination with the band Y provided with the bar I and space *z*. 5th. The door F in combination with the sash B. 6th. The sill U provided with the sockets *e*, in combination with the sash C having the hinges *r*. 7th. The sill U provided with the sockets 22, in combination with sash B having the flange 20. 8th. The sash C, auxiliary sill T, sash B and door F, in combination with means for raising and lowering the sash.