Claim.—The revolving metal chamber consisting of a metallic shell lined with fire clay or other refractory material and provided with spiral ribs, and one or more working holes for the introduction of the glass blower tools. 2nd. The combination, with a furnace, a stack and a revolving melting chamber, of intermediate detachable collars D D1 suspended between the ends of the chamber. 3rd. The collar D and means for elevating or depressing the same, whereby it is made to serve the purpose of a damper.

No. 16,122. Improvements on Refrigerating and Freezing, and on Apparatus therefor. (*Perfectionnements dans la méthode de réfrigération et congélation et aux appareils pour cet objet.*)

John Chambers, Te Mata, N. Z., (now in Manchester, Eng.) 15th January, 1883: for 5 years.

Claim—1st. The novel system or method of removing from the air the moisture contained therein by first, cooling the air down to a temperature more or less above the freezing point of water, so as to condense and extract the greater part of the said moisture from the air in the form of water and, afterwards, when required further reducing the temperature of the said air below the freezing point and effecting the deposit of the remaining comparatively small quantity of moisture in the form of snow or ice in the refrigerating apparatus. 2nd. The combination of a group or groups of refrigerating pipes or tubes with depositing chambers for the reception of the moisture condensed in or on such pipes or tubes, such depositing chambers being adapted with slides valves or their equivalents, whereby the current of air may be directed through one or more of the groups of refrigerating pipes or tubes and in either direction at pleasure. 3rd. The employment, in air refrigerating apparatus, of one or more groups of U-shaped refrigerating pipes or tubes enclosed in suitable casings, the two ends of each of the said pipes or tubes forming one group being secured in one tube plate in such a manner as to open into the moisture depositing chamber at opposite sides of the division plate in such chamber. 4th. The combination, with air refrigerating and freezing apparatus, of a blowing or exhaust fan or other air compressing or exhausting apparatus.

No. 16,123. Improvements in Waggon Brake Blocks. (*Perfectionnements aux sabots des freins de wagons.*)

Benjamin F. Haldeman, Allegheny, W. R. Stoughton and James H. Mills, Pittsburg, Penn., U.S., 15th January, 1883: for 15 years.

Claim.—The combination of the cap A having the tongue *b* with the block B, notch *c* and bolt or set screw *i*.

No. 16,124. Improvements on Wrecking and Construction Cars for Railways. (*Perfectionnements aux chars de secours et de construction des chemins de fer.*)

Luther K. Jewett, Fitchburg, Mass., U.S., 15th January, 1883; for 5 years.

Claim.—1st. The combination, with the car of a pivoted counterbalanced mast *h h2* provided with a pivotted boom *h*, the mast being adapted to be turned down nearly horizontally when the car is to be run on the track. 2nd. The car and the weighted or counterbalanced mast and its turn-table, combined with the pivotted ring *a*. 3rd. The car and the pivotted ring *a* to support the mast, combined with the ring timbers to lock the ring *a*, when the mast is to be retained in upright position. 4th. The car and counterbalanced mast, pivotted ring to support the mast and the step sill, combined with a locking device to engage the lower end of the mast with the step sill. 5th. The car and its attached rack *a b* and the pivotted ring *a*, combined with the ring timbers, their worm gears, and the cords or chains connected with the shaft of the worm gears to operate them, and the ring timbers. 6th. The combination, with the car, of the jack screws *g* pivotted to the corners of the car. 7th. The combination, with the car, of the jack screws *g h* pivotted thereto. 8th. The combination, with the car and its pivotted jack screws, of the levelling blocks *g'* adapted to be sustained by the ties. 9th. The car and turn-table and tipping mast, combined with the step sill stop thereon, and means to adjust the step on the step-sill. 10th. The car turn table and tipping mast, combined with the step, step sill and jack screws connected with the car and with the step sill. 11th. In the car, its tipping mast and boom, combined with the track timbers *m*, post *m2* and jack screw *n*. 12th. In the car, its tipping mast boom and turn table, combined with the track timbers *m2*, braces *l2* and suitable screws to hold the said braces and car in proper position. 13th. The car body and turn table, and mast and boom, combined with the drum shaft, its gears 17 18, shaft 7, its gears 6 and 16, the sprocket or chain wheels 10 8 and chains 9, and shafts *h3 h4* provided with gears to operate the shafts 12 and 7. 14th. The two shafts *h3 h4* and their double set of gears *h, h*- 14 15 of different sizes, combined with the shafts 12 and 7 and their connecting gearing 17 18 6 and 16, and sprocket or chain wheels and chains, whereby either the gears *h h2* or 14 15 may be made operative to turn the drum shaft 12 at a slower or faster speed. 15th. The car body, the turnable mast and boom combined with the drum *s*, rope or chain *n*, and means to turn the said drum. 16th. The longitudinally movable shaft *h3* and its collar 22, and gears of different diameter combined with the two locking devices 23 24. 17th. The car body combined with the shaft *a* and drums 28. 18th. The longitudinally movable shaft *a* and the car body to which it is applied, combined with the drums 28 and cranks 29.

No. 16,125. Improvements on Grain Binding Machines. (*Perfectionnements aux moissonneuses-lieuses.*)

William P. Hale, Brockport, N. Y., U.S., 15th January, 1883: for 5 years.

Claim.—1st. A combined harvester and grain binder, the series of rakes connected to flexible carriers and means by which the rakes are moved forward of the cutter bar and then downward in a vertical position into the standing grain. 2nd. The combination, with the harvester platform of harvester rakes, of means by which they are moved in front of the cutter bar, then downward and rearward, and means for retaining the rakes in a vertical position during their descent. 3rd. The combination, with the harvester platform, of endless chains having rakes connected therewith, sprocket wheels arranged to conduct the rakes rearward in a line parallel to the harvester platform and forward in an upward inclined direction, then downward into the standing grain, and means for retaining the rakes in a vertical position during the descent. 4th. The combination, with a harvester platform, of a series of harvester rakes and means by which the rakes are moved forward of the cutter bar, and then downward in a vertical position, and means for tripping the rakes as they are moved rearward over the platform. 5th. The combination, with a harvester platform and binder platform, of a series of independent rakes journalled in bearing links attached to endless chains, and devices for automatically tripping the rakes and throwing them out of operative position, and for causing any particular rake of the series to carry the grain rearward to the binding platform. 6th. The combination, with endless chains and rakes journalled at opposite ends in bearing links attached to said chains, of a reel located over the rear end of the harvester platform, the ends of said reel being recessed for the reception of the bearing links in the endless chains. 7th. The combination, with endless chains and rakes journalled at opposite ends in bearing links attached to said chains, of a reel located over the rear end of the harvester platform, said reel having recesses in its ends for the admission of the bearing links of the endless chains, and having the bar adjacent to said recesses located nearer the centre of the reel than the remaining bars. 8th. The combination, with endless chains and rakes, journalled at their opposite ends in bearing links attached to said chains, said rakes being provided with crank arms, of a guideway extending in front of the cutter bar and adapted to retain the crank arms of the rakes therein during their descent, and retain the rakes in a vertical position. 9th. The combination, with endless chains and rakes journelled at their opposite ends in bearing links attached to said chains, of crank arms connected with the rakes, guideways and switch mechanism constructed and arranged to cause the rakes to assume a vertical position in their descent, and, for a short distance, rearward over the forward portion of the harvester platform, and then to turn on their journals and pass over the accumulated cut grain of the harvester platform. 10th. The combination, with the rakes for transferring the grain from the harvester platform to the binder platform, of a switch, a toothed wheel for regulating the position of the switch, and a toothed wheel arranged to be operated by the rakes and close the switch at certain intervals of time. 11th. The combination, with a series of harvester rakes connected to a flexible carrier, of a switch devices for actuating the switch by the rakes, and mechanism for setting the parts so that the switch will shift any one of the rakes. 12th. The combination, with endless chains and harvester rakes, journalled in bearing links attached to the chains, of a switch lever, a toothed wheel with which the switch lever engages and serves as a pawl, to prevent its backward rotation, a toothed wheel constructed to be operated by the harvester rakes and a device for setting the parts to cause the switch to close at any point in the travel of the rakes. 13th. The combination, with the switch and spring for holding it open, of a shaft provided at one end with a toothed wheel to be actuated by the rakes and another wheel to be engaged by the switch, a spring actuated drum connected with the opposite end of the shaft, a gear wheel mounted on a stationary bearing encircling the shaft, said gear wheel being provided with a stop with which engages a stop on the drum, and a rack bar for adjusting the positions of the gear wheel. 14th. The combination, with the switch, ratchet wheels and drum, of the gear wheel, rack bar, hand wheel and spring lever or catch. 15th. The combination, with a switch and a spring bar holding it open, of a sliding bar and connection for operating the same by the foot of the driver, and relieve the switch from the action of the springs. 16th. The combination, with the rakes and endless chains, of link bearings having rounded bearings on their upper and lower sides and formed with tapered ends. 17th. In a combined harvester and grain binder, the combination, with the harvester rakes and stationary guide rail, of the adjustable guide rail action for regulating the travel of the rakes. 18th. The combination, with the harvester rakes and stationary guide rails, of the adjustable guide rail section, a rock shaft connected therewith, an operating lever and a holding place. 19th. The combination, with the harvester platform and rakes, of a binder platform located in rear of the harvester platform, guide rails supported on the binder platform, endless chains encircling sprocket wheels mounted on said guide rails, rakes journalled in bearing links attached to said chains and arranged to travel transversely to the travel of the harvester rakes, and devices for retaining the binder rakes in a vertical position as they descend and engage the grain, and as they rise and are disengaged from the grain. 20th. The combination, with the driving shaft, of the binding mechanism and a clutch supported on said shaft, of a series of harvester rakes attached to endless carriers, and tripping devices whereby the binding mechanism is automatically put in operation at certain intervals of time by the harvester rakes. 21st. The combination, with the binding arm, of a jointed compressor arm pivotted to the frame, a link pivotted at one end to the compressor arm, and at its other end to the binding arm, and a yielding rod secured at one end to the compressor arm, and at its other end to the frame. 22nd. The combination, with the driving shaft and two-armed crank M provided with the anti-friction rollers *m m'*, of a cam yoke M1 provided with the irregular interior trackway, the slide M2, link M3 and binder shaft. 23rd. The combination, with the binding arm and shaft, of a cam yoke, a two-armed crank engaging therewith, and a crank connected with the yoke and attached to the binding arm shaft. 24th. The combination, with the two armed crank cam yoke and slide, of the binding arm shaft provided with a groove and the crank connected therewith provided with a spline to allow of a longitudinal movement of the binding arm shaft. 25th. The combination, with a rotary knot tyer, of a friction holder consisting of two reciprocating jaws, one of said jaws being bent outward in the form of a loop. 26th. The combination, with a rotary knot tyer, of a friction holder, one portion of which is formed with a