

of the central web, substantially as set forth. 5th. The combination with the furnace formed with the end bearings, and having the central partition formed with the semicircular bearings, and the intermediate recesses of the grate-bars formed each with the end trunnions, the double central web forming the longitudinal vertical air space, having the series of alternating ribs on each side, connected at their ends by the longitudinal ribs, having the central trunnion forced at the bottom of its central web, and formed at each of its ends with the pair of perforated lips, the connecting bar, and means for rocking one of the said bars, substantially as set forth.

### No. 28,580. Stump-Puller. (*Arrache-souche.*)

William J. Hartrup, Walter Hartrup and George Hartrup, Tidionte, Penn., U.S., 1st March, 1883; 5 years.

*Claim.*—1st. In a stump-puller, the combination of a derrick having a doubled bar suspended from its top, having a hook at each end, a chain suspended by one end from one of said hooks, said chain consisting of a series of links, one of which is longer than the others, a lever pivotally suspended from the other of said hooks, one end of which passes through the long link of the chain, and two hooks pivotally secured at one end to the lever and adapted to engage the chain with their outer ends, as shown. 2nd. In a stump-puller, the combination of a derrick, a doubled bar suspended from its top, having a hook at each end, a chain suspended from one of said hooks, said chain consisting of a short link, a long link and a series of short links, said short link being suspended from one of the hooks in said doubled bar, a lever suspended from the other hook, one end of which passes through said longer link, two hooks suspended from said lever, the lower ends of which are adapted to engage with the series of short links in said chain, as described and shown. 3rd. In a stump-puller the combination of a derrick, a doubled bar suspended from its top having a hook at each end, one end of said bar being shorter than the other, a chain suspended from the hook upon the shorter end of said doubled bar, having one of its links longer than the other, a lever suspended from the longer end of said doubled bar, one end of which passes through said longer link and two hooks suspended from said lever, the lower ends of which are adapted to engage with said chain.

### No. 28,581. Method of, and Apparatus for Generating Vapour or Gas from Petroleum or other Oil, with Burner for Burning the Same in Lighthouse or other Lamps. (*Mode et appareil de production de la vapeur et du gaz de pétrole ou d'autres huiles, et bec de lampe à gaz pour lampes à phares et autres.*)

William Wakefield, Dublin, Ireland, 1st March, 1883; 5 years.

*Claim.*—1st In apparatus for generating vapour or gas from petroleum or other oils, the combination of a lamp or burner, a vapouriser or retort pipes for feeding the oil to the vapouriser from any suitable receptacle or reservoir, and conduit for conducting the vapour generated in the retort from same to the lamp or burner, said lamp or burner being arranged below the vapouriser so that the heat from it will generate the vapour, all substantially as shown and described. 2nd. In apparatus for generating vapour or gas from petroleum or other oils, the combination of a lamp or burner A, B, C, D, E, a vapouriser or retort G, pipes E, L, respectively, for feeding oil or gas to the vapouriser from any convenient source, and conduit I for conducting the vapour generated in the retort from same to the lamp or burner, all substantially as shown and described.

### No. 28,582. Door Weather Strip.

(*Bourrelet de porte.*)

John L. Breeze, Nanawee, Ont., 1st March, 1883; 5 years.

*Claim.*—The combination, with the door C, of the strip D, having an arm H projected against the door-jamb, and provided with a rubber strip or cushion E along its lower edge, and the upper edge attached to the door, the flat curved spring G secured at one end to the door, and the other or free end bearing against the lower face of strip D, whereby said arm, by contact with the door jamb when closing the door, forces the strip D against the resistance of the spring to a vertical position, and, when the door opens, the spring re-acts to lift the weather-strip to an inclined position, as set forth.

### No. 28,583. Electrical Apparatus for Dental purposes. (*Appareil électrique pour dentistes.*)

Elias Smith, Peoria, Ill., U.S., 1st March, 1883; 5 years.

*Claim.*—1st. In an electrical apparatus for dental purposes, a generator, an induction-coil having its armature mounted on a spring supported at both ends, and electrodes, substantially as described. 2nd. In an electrical dental apparatus, a generator, an induction-coil having its armature mounted on a spring fixed at one end, and provided at the other with a tension device, whereby the rapidity of the electrical impulses allowed to pass through the induction-coil is regulated, and the electrodes, substantially as described. 3rd. In an electrical apparatus for dental purposes, the generator, the induction-coil having its armature mounted on a spring fast at one end, and secured at the other to a lever and set-screw, whereby the rapidity of the electrical impulses allowed to pass through the induction-coil is regulated, and the electrodes, substantially as described. 4th. In an electrical apparatus for dental purposes, a generator, an induction-coil, the electrodes and the wire from one of the discharge-posts, connected with a pair of forceps, or the like, substantially as described. 5th. In an electrical apparatus for dental purposes, the elongated spring U forming a portion of the circuit, and the elongated lever W

mounted on the exterior of the case, and having a projection extending through the case and bearing against the spring, substantially as described. 6th. The combination, in an electrical apparatus for dental purposes, of one or more battery-cells, an induction-coil having its armature mounted on a spring supported at both ends, and provided with a tension device, the electrodes and the forceps, or other instrument, attached to one of the electrodes, substantially as described. 7th. The combination in an electrical apparatus, of one or more cells, an induction-coil having its armature mounted on a spring supported at both ends, and provided with a tension device, the elongated spring forming part of the circuit, the lever mounted on the case and bearing against the spring, the electrodes and the forceps, or the like, connected with one of the electrodes, substantially as described.

### No. 28,584. Grain Binder. (*Lièuse à grain.*)

William M. Steins, Pittsburgh, and John Bowman, Allegheny, Penn., U.S., 1st March, 1883; 5 years.

*Claim.*—1st. In a hand grain binder the combination of a frame consisting of two diverging arms united at the rear ends by a handle, and two semicircular bars secured parallel with each other at one end, between the converging ends of the arms, and with their diverging ends to the forward ends of the arms having teeth or prongs at the diverging ends, an operating lever pivoted at its lower end upon a bolt in the centre of the semicircular bars, a curved needle having a twine threaded in its eyed outer end, and having its inner end secured to arms pivoted with their inner ends upon the central bolt, a cord secured to the operating lever and passing over guide-shafts upon the semicircular bars, and at the forward end of the frame being secured to near the inner end of the needle, a spring for drawing the needle back, and a knotting mechanism for tying the twine secured above the pronged ends of the semicircular bars and operated by the operating lever, as and for the purpose shown and set forth. 2nd. In a hand grain binder, the combination of a frame consisting of two diverging arms united at the rear ends by a handle, and of two semicircular bars secured with their rear ends between the rear portions of the arms, and having their forward diverging ends secured to the diverging ends of the arms, and having curved prongs at their forward ends of a central prong extending upwards to a brace supporting a forwardly projecting handle, a twine box secured to the rear end of the arms, a tension device upon the rear end of one of the semicircular bars, a segmental needle having a twine-receiving groove in its back bridged by pins, and an eye at its outer end, and secured to the outer ends of arms pivoted upon a bolt central to the semicircular bars, passing through the diverging arms and braced by an inclined brace between the arms and the inner portion of the needle, a bifurcated arm pivoted near its curved end upon the side of one of the arms of the needle, and having a spring attached to its end and to the said arm, an operating lever pivoted at its inner end upon the central bolt and sliding between the semicircular bars having a handle at its outer end, a cord secured to the lever and passing over pulleys upon the semicircular bars and near the forward end of the frame, and between the forked end of the bifurcated arm being secured to the brace of the needle, a spring secured to the forward end of the frame and to one of the needle-arms, a twine-holder upon the forward portion of the frame, and a knotting mechanism below the holder for the tying of the twine, as and for the purpose shown and set forth. 3rd. In a grain binder, the combination of a bar provided at one end and having a spring forcing it to one side, and provided with blocks at its ends formed with longitudinal bearings, a knoter journaled with the end of its shaft in the outer bearing, and having a pinion within the bearing, and provided with a foot formed with a rounded heel, and with a straight prong, and with an inwardly hooked prong at its end, a bar sliding in the bearings and having suitable means for reciprocating it, and formed with a smooth forward portion, and with a rack-portion near the middle meshing with the pinion, and having longitudinal slots in it at the forward portion of the rack-portion and to the rear of the same, a sleeve journaled at the side of the sliding bar upon a bolt of the rocking bar, and having an arm at its upper end bearing against the side of the sliding bar engaging the slot of the same, and having an arm at its lower end at a right angle to the same, and bearing against an abutment plate at the side of the rocking bar near its free end, a spring secured at its rear end and having a curved loop at its forward end passed around the sleeve and over the upper arm of the same, and guides holding the twine at right angles to the shaft of the knoter and having a cutter at one side of the knoter, as and for the purpose shown and set forth. 4th. In a grain binder, the combination of a table having a partition wall, and having a plate upon the said partition near the outer end extended to form a curved guard, and having a guard lip upon the end of the partition projecting inward and towards the inner side of the curved guard, a cross-piece having diverging guard-fingers forming a notch registering with the space between the guard and the lip, a rectangular bent outer having its fulcrum at the bend and having its cutting edge registering with one finger, and having a spring secured to its long arm drawing it inward, a bar pivoted at its inner end upon the table and provided with blocks having longitudinal bearings at its ends, and with a spring drawing it towards the partition, a knoter journaled with its shaft in the forward block having a pinion within the bearing, and having a foot at its end formed with a rounded heel, and with a straight prong, and with an inwardly hooked prong, a bar having means for reciprocating it and having a smooth forward portion sliding in the forward bearings, and a rack-portion meshing with the pinion, and a smooth rear portion, and formed with a longitudinal slot in the forward portion of the rack-portion and to the rear of the same, a sleeve journaled at the end of the sliding bar upon a vertical bolt upon the rocking bar, and having an arm at its upper end bearing against the sliding bar engaging the slot, and an arm at the lower end at a right angle to the upper arm and bearing against the abutment-plate upon the partition, a spring secured at the rear end to the partition and having a loop at the forward end passed around the sleeve and secured over the upper arm, and a flat bar secured above the sliding bar upon it and parallel to it and engaging the long arm of the cutter when pushed forward, as and for the purpose shown and set forth.