being adapted to permit either liquid or solid matter to be introduced within said stem; 7th. The combination, with a fixed plate formed with two vertical or vertically inclined guides and located within a hollow stand suitably filled with liquid, of floats having free longitudinal movement respectively within said guides, and whose upper extremities are secured to the electric candles, together with guides formed in the top of the stand, and made vertical or vertically inclined, correspondingly with the plate guides and top guides, being adapted to permit the burning extremities of the electric candles to have unrestrained endwise movement therein; 8th. The combination, with a horizontal plate fixed transversely in a hollow stand and immersed within the liquid with which the latter is suitably filled, said plate being formed with vertical or vertically inclined guides within which the candle floats have free endwise movement, of the guides formed in the top of the stand and made corresponding vertical or vertically inclined, whereby the burning extremities of the electric candles, whose opposite ends are secured respectively to said floats, may have unrestrained longitudinal movement within the same; 9th. The combination, with a chamber, suitably filled with liquid, in which the electrodes are supported either by floats or pistons, of an electro-magnet actuated by the electric current of the lamp, the same being adapted to vary the level of said liquid, whereby the electrodes are adjusted relative to each other, corresponding with the intensity of the electric current and the reverse; 10th. The combination with a float regulator adapted to maintain the electrodes in burning position within certain limits, of a magnet regulator adapted to control said limits by varying the level of the liquid coincident with the variance in strength of the electric current of the lamp; 11th. The combination, with the electrodes, of a chamber, or chambers, suitably filled with liquid, in which the same are supported by floats or pistons, said chamber being capable, in connection with devices adapted for the purpose, to vary the volume of liquid contained therein, according as the electric current of the lamp varies in strength; 12th. The combination, with a chamber, or chambers, suitably filled with liquid, and in which the electrodes are supported in burning position, of a supplementary chamber communicating therewith and adapted in connection with an electro-magnet actuated by the electric current of the lamp, to draw a portion of the liquid from out of said electrode chamber, or chambers, and to recharge the latter with the same, corresponding to the strength of said electric current; 13th. The combination, with a chamber, or chambers, suitably filled with liquid and in which the electrodes are supported in burning position, of a communicating chamber, made wholly or partially elastic and adapted in connection with an electro-magnet through which the electric current of the lamp passes, to vary in capacity as the strength of said current varies; 14th. The combination, with a chamber, or chambers, suitably filled with liquid and in which the electrodes are supported, of an elastic chamber communicating therewith, and located with its top below the lowest level of liquid in said electrode chamber, or chambers, a part of said elastic chamber being formed of a magnetic substance, and adapted in connection with an electro-magnet through which the lamp current passes to expand and contract correspending to the variance in the strength of said electric current; 15th. The combination, with the elastic chamber, of a spring device adapted to vary the tension with which the same resists expansion, when subjected to the attraction of the electro-magnet; 16th. The combination, with the elastic chamber, of an electro-magnet and adjusting device adapted to move the latter to and from said chamber; 17th. The combination, with a float regulator which maintains the electrodes in burning position, of a magnet regulator which automatically lights the lamp in the first instance, and relights it when afterwards it may be put out, the same being adapted to vary the level of the liquid in said float regulator coincident with the variance in strength of the electric current, whereby the electrodes are relatively adjusted, corresponding with the intensity of the electric current, and also whereby the intensity of said current is varied corresponding with the relative adjustment of the electrodes; 18th. The combination, with a chamber, or chambers, suitably filled with liquid and in which the electrodes are held in burning position by floats or pistons, of an expansible chamber communicating therewith, and provided with an elastic tension device, together with an electro-magnet through which the lamp current passes, that portion of the expansible chamber nearest said magnet being formed of soft iron or other magnetic substance, the whole being adapted to cause the electrodes to separate as the electric current increases, and to approach each other as said current decreases in strength; 19th. The combination, with a float regulator which adjusts the electrodes M6 M_7 in burning position, of an optical regulator L6 adapted to move the electric lamp in compensation for any change in position of its electric arc; 20th. The combination, with a float regulator capable, by means of a single float C6, to adjust the electrodes in burning position, of an optical regulator adapted to move bodily the electric lamp, so as to compensate for any change in location of the centre of its electric arc; 21st. The combination, with two electrodes M6 M7, located one above the other, of a single float C6, buoyed in liquid and adapted to maintain said electrodes in burning position; 22nd. The combination, with mechanism capable of adjusting the lamp by means of the expansion of suitable substances when subjected to heat, of a lens L6, or its equivalent, which concentrates light upon said mechanism, as the centre of the electric arc may vary in its position, the same being adapted to maintain said arc centre at a practically constant point; 23rd. The combination, with a lever D6 adapted to adjust the lamp, and lens actuating mechanism which operates by means of the expansion of suitable substance when subjected to heat, of a lens L6, or its equivalent, which converges light upon said mechanism as the centre of the electric arc may change its position, thereby causing the lamp to move in compensation for any such arc movement; 24th. The combination, with a lever D6 which supports an electric lamp on one arm, and mechanism adapted, by means of the expansion of suitable substance when subjected to heat, to actuate the other arm of the lever, of a lens L6, or its equivalent, which directs the light of the varying arc centre upon said lever actuating mechanism, and thereby adjusts the lamp in compensation for the change in position of its electric arc; 25th. The combination, with a lever D6 which supports an electric lamp on one arm, and adjusting devices which, by means of the expansion of suitable substances when subjected to heat, actuate the other arm of the lever respectively in opposite directions, of a lens L6, or its equivalent, which directs the light of the varying centre of the electric arc respectively upon said adjusting devices, the same being adapted to move the lamp in direction opposite, but in degree equal to the movement of said electric arc; 26th. The combination, with a horizontally pivoted lever D6 which supports an electric lamp on one arm, while the other arm is suitably counterbalanced, together with upper and lower pistons and piston rods which move the latter arm in opposite directions, of independent tubes F6 F7 filled with liquid which expand, when subjected to heat, and in the lower extremities of which said pistons and piston rods have actuating movement, the same being in connection with a stationary lens L6, or its equivalent, adapted to focus light from the centre of the electric arc, as the latter may vary in position, respectively on the upper or opposite extremities of said tubes.

No. 10,308. Improvements on the Dexter Spring. (*Perfectionnements aux ressorts dits "de Dexter."*)

Dudley Ackland, Almonte, Ont., 29th July, 1879, for 5 years.

Claim.—1st. The converging of the lower springs E E from the bottom of the hind axle, at outside springs, to the centre of the front axle; 2nd. The mode of attaching springs E E to hangers F F; 3rd. The hangers F F joining together and taking the king bolt tie at the bottom of the front axle B.

No. 10,309. Improvements on Pumps. (*Perfectionnements aux pompes.*)

Olivier D. Barberie and George F. Barberie (Administrators of the effects of Edwin A. Barberie), Portland, N.B., 29th July, 1879, for 5 years.

Claim.—1st. The wood chamber A A used as a submerge force pump; 2nd. The iron box B and the packing ledge x x; 3rd. The escape holes K C, to allow the water to escape from the pipe; 4th. The mode of seating the valve box E E in the bore (cylinder) of wood chamber; 5th. The mode of arranging the packing leather in four or more pieces, or less, and cutting them on a curve; 6th. The bracket C and its uses, 7th. The mode of attaching the lever K to iron plate J J J and pump; 8th. The mode of constructing the tin air chamber and attaching it to the pump.

No. 10,310. Improvements in Steam Boilers. (*Perfectionnements aux chaudières à vapeur.*)

James Livingston and Joseph Wright, Toronto, Ont., 29th July, 1879, for 5 years.

Claim.—1st. The ash pit section A_1, provided with the flue E and the water sections A_2 A_3 A_4 A_5 placed one above the other and provided with a fire chamber D, coal reservoir H and return flues G G_1; 2nd. The combination of two or more water sections provided with return flues for the heat and products of combustion, and communicating water ports; 3rd. The combination, with the lower water sections provided with flues G G_1, of the top water section A_5 said section being recessed on its under side to form the chamber I and provided with tubes G_3; 4th. The combination, with the steam and water boiler A built up on sections having communicating water ports, of the inlet pipe K and the outlet pipes N; 5th. The combination, with the upper sections A_5 provided with the tubes G_3 corresponding to the tubes in the lower sections, of the sectional plate L.

No. 10,311. Improvements in Paper Bag Machines. (*Perfectionnements aux machines à sac de papier.*)

William C. Cross, Boston, Mass., U. S., 1st August, 1879, for 5 years.

Claim.—1st. The combination of the severing knife or cutter and the independent mechanisms, for imparting to it rising and falling and backward and forward motion, with the reciprocating plate knife folder; 2nd. The combination with the guide finger of a reciprocating follower provided, at its front end, with jaws arranged and operating to direct the paper tube to pass around the guide finger; 3rd. The combination, with the rising and falling severing knife or cutter, of the reciprocatory follower provided with yielding jaws and arranged to move backward and forward in the interval between the knife and its head, or stationary blade, in conjunction with which it acts; 4th. The combination, with the guide finger, of a vibratory folder arranged and operating to break down the upper ply of the tube as it is fed forward under the guide finger; 5th. The combination with the guide finger and the plate knife folder operating together to make the first or diamond fold of the vibratory folder; 6th. The vibratory folder carried by the guide finger and arranged and operated to enter the tube with the guide finger and to turn back and thus break down the upper ply of said tube; 7th. The delivery-rolls arranged and operating to open or separate, to permit the end of the diamond fold to pass between them; 8th. The combination, with the mechanism for forming the final fold, of the guide arranged and operating to keep down the second fold and to present it in proper position to pass into the final rolls; 9th. The combination of the vertically reciprocating folding knife and the second fold guide carried by, and moving with, said knife and united therewith; 10th. The combination, with the paste trough or reservoir and the vertically reciprocating paster, of the box, in which said paster moves, arranged to communicate with the reservoir and the sliding box bottom or gate intermittently withdrawn to permit the paster to descend; 11th. The paster stem formed in two parts connected to permit the upper part to partly descend without actuating the paster; 12th. The paster and its two stems, in combination with the coupling sleeve; 13th. The combination of the paster, the wiper rod, the sliding bottom, its hinged actuating rod, operated by the wiper rod and the spring for returning the sliding bottom to its position; 14th. In combination with the folding knife, the guard for keeping the paste-covered part of the fold from contact with the knife; 15th. The combination of the trunk or former, the reciprocating follower and the intermittently moving feed rolls placed in advance of the former or trunk, under the arrangement and for operation as set forth.

No. 10,312. Protector for the Fetlock Sinews of Horses. (*Protecteur pour les nerfs du fanon des chevaux.*)

Huns Lehmann and Aurel Borendt, Hanover, Germany, 1st August, 1879, for 5 years.

Claim.—An elastic ring, or equivalent appliance made of India rubber or other elastic material, which at one end or side is connected to an ankle boot or similar appliance around the leg of the horse, and at the other end or side is connected to a strap or similar appliance around the fetlock.