marine photographing apparatus, chains or cables for raising and lowering the said apparatus, electric conductors extending upward from said apparatus, and connected with the various mechanisms therein, and with the generator, and a switch board provided with a series of switches, each adapted to energize its particular mechanism. 15th. A submarine photographing apparatus, comprising a water-tight box or casing, a camera and electric lights, all arranged for operation substantially in the manner shown. 16th. In combination with the camera R, the disk *b*, provided with holes or openings *c*, and with stops *f*, an electric motor *d* for imparting motion to said disk or shutter, a pawl or detent *g* adapted to engage the disk an electro-magnet *k* for withdrawing said detent for engagement with the disk, and a spring adapted and arranged, substantially as shown, to hold the detent normally in engagement with the disk. 17th. In an apparatus for taking submarine photographs, the combination, with the camera and the lights, of the case or shell in which said devices are placed, said shell having its side walls bevelled and provided with light openings, substantially as shown and described. 18th. In combination with the shell of a submarine photographic apparatus, of a camera, light-giving bodies, and an opening in the top of the shell to serve as a guide for the operator.

No. 29,321. Stove Grate. (*Grille de poêle.*)

James Sangster, (assignee of Edward Walter), Buffalo, N. Y., U. S., 11th June, 1888; 5 years.

Claim.—A stove grate consisting of a series of bars projecting obliquely downward and inward from a frame or ring, in combination with a rocking or rotative portion consisting of a shaft set in bearings in the frame or ring, and having a series of bars projecting obliquely downward and outward from each side of said shaft, substantially as described.

No. 29,322. Blasting Car. (*Char de pétardement.*)

Andrew R. Shannon and Moffett, Hodgins and Clarke, Watertown, N.Y., 11th June, 1888, 5 years.

Claim.—1st. A blast car, carriage or similar device consisting of a fixed body, a lower pendent and vertically adjustable body, and means substantially as shown and described for manipulating the adjustable body, as and for the purpose specified. 2nd. A blast car, carriage or similar device consisting of a fixed body, a vertically adjustable fixed body pendent from the fixed body, a cushion intervening the two bodies, and means substantially as shown and described for raising and lowering the pendent body, as and for the purpose specified.

No. 29,323. Saw Swaging Machine. (*Machine à étamper les scies.*)

George M. Hinkley and Edward P. Allis and Company, Milwaukee, Wis., U.S., 11th June, 1888; 15 years.

Claim.—1st. A machine for swaging saws consisting essentially of the following elements in combination, a supporting frame work provided with standards and hangers for sustaining the moving parts of the machine, a rotary shaft mounted in said frame and provided with cams for giving motion to the various parts, feed-rollers adapted and arranged to bear against opposite faces of a saw-blade and to advance the same, movable jaws for clamping the blade preparatory to the swaging action, a swaging roller movable lengthwise and in front of the saw-teeth, a swaging-die movable to and from the rear face of the teeth, and connecting devices, substantially such as described and shown, for transmitting motion from the several cams to the feeding clamping and swaging devices. 2nd. In a saw-swaging machine, feeding mechanism consisting of a pair of rolls geared together, a beveled pinion secured upon the arbor of one of said rolls, a shaft provided with a bevel-gear to mesh with that of the roll and provided also with a ratchet-wheel, a pawl carrying arm or lever pivoted concentrically with said ratchet-wheel, a cam, a connecting rod extending from the pawl carrying lever to the cam and provided with a block or runner fitting upon the rim of said cam, and a link suspended from the frame of the machine, and serving to support the connecting-rod and the block or runner. 3rd. In combination with feed rollers H, H, connected by gearing shaft G, connected by gearing with the arbor of one of said rollers, ratchet-wheel L, levers M, M1, provided with dog *l*, sliding-block *m*, adjusting-screw *n*, pitman *o*, link or hanger P, block or runner N and cam or eccentric I for imparting motion to the rod O. 4th. In combination with rollers H, H, and the journal-blocks *f* at their upper ends, a yoke J pivoted to one of said blocks, and a screw K passing through said yoke and adapted to bear against the other of said blocks, substantially as and for the purpose set forth. 5th. In combination with rollers H, H and with mechanism, substantially such as shown, for imparting a step by stop rotation thereto, journal-blocks applied to the upper and lower ends of said rollers, adjusting screws bearing against the lower journal-blocks, a yoke pivoted to one of the upper journal-blocks, and an adjusting-screw passing through the yoke and bearing against the other of said journal-blocks. 6th. In a saw-swaging machine, the combination of a supporting frame, standards rising therefrom, clamping jaws mounted in said standards, and links or toggles bearing at one end against one of the jaws, and at the other end connected with a vertically-moving slide, whereby a vertical movement of the slide in one direction will cause the jaws to clasp the blade, and a movement in the reverse direction will cause the jaws to release the blade, substantially as set forth. 7th. The combination, in a saw swaging machine, of supporting standards jaws mounted and arranged to slide therein, set-screws applied to one of said jaws and serving to adjust and hold said jaw, a vertically moving slide in the rear of the other jaw, links extending from said slide to the jaw, a bearing block in rear of the slide, and adjusting-screws for moving and securing said bearing-block, whereby the distance to which the jaws shall be moved by the action of the slide may be varied, as desired. 8th. The combination, in saw swaging machine, of supporting standards, jaws mounted therein, a vertically moving slide in rear of one of said jaws, links connecting the slide and said jaw, a lever pivoted to the frame work of the machine, a link connecting the lever and the slide, a rotating cam or eccentric, and a block or runner carried by the lever and actuated by the cam or eccentric, whereby the jaws are caused to periodically clamp and release the saw blade passing between them. 9th. In a saw swaging machine, the combination, with a supporting frame and standards, of clamping jaws mounted in said standards, a slide moving in one of said standards at right angles to the movement of the jaws, and connected with one of said jaws by links, a lever pivoted at one end to the frame of the machine, and provided at its opposite end with a grooved block or runner, a cam having its rim extended into the groove of said block or runner and serving to give motion to the lever, and a link connecting said lever and the slide, whereby the rotation of the cam is caused to move the slide and actuate the clamping jaw, substantially as set forth. 10th. In a saw-swaging machine, the combination, with supporting standards of a vertically moving forked or slotted slide adapted to straddle the saw-blade, mechanism, substantially such as shown, for imparting a longitudinal movement to said slide and a die carried by the slide and adapted to strike the rear face of the saw-teeth, substantially as set forth. 11th. In a saw-swaging machine, the combination, with saw-holding devices and with a swaging-die, of uprights or supports provided with arms having arc-shaped grooves, grooved guides or standards having arms curved to fit and seated in the grooves of the uprights or supports, clamps for securing said arms at any desired adjustment, a slide movable in the grooved standards or guides, and a roller carried by said slide and adapted to act upon the front face of a saw-tooth, substantially as and for the purpose set forth. 12th. In a saw-swaging machine the combination of saw holding devices, a reciprocating slide, a swaging-roller carried by said slide and adapted to set upon the front faces of the saw-teeth successively, guides for said slide adjustable to different inclinations, and locking devices or clamps for holding the guides at any inclination, whereby the movement of the slide and its roller may be made to correspond with the line of the front faces of the saw-teeth. 13th. In combination with uprights or supports Q having arms *t* provided with curved grooves *s*, guides *z*, provided with arms *r*, fitting and seated in said grooves, clamping devices bearing upon said curved arms, slide Y movable longitudinally in said guides, and roller W carried by the said slide, substantially as set forth. 14th. In a saw-swaging machine, substantially as shown and described, the combination, with saw-supports, of a reciprocating slide Y, a swaging-roller carried thereby, a lever pivoted at one end and provided at its opposite end with a grooved block *x*, a cam 3 having its rim or flange extending into the groove of the block, and a rod or pitman A1 connecting the slide and the lever, whereby the rotation of the cam is caused to produce a reciprocating motion of the slide Y, and to carry the roller over the front faces of the teeth of the saw. 15th. In combination with guides Z, slide Y provided with roller W, lever C1 pivoted at one end, and provided at its opposite end with grooved block *x*, rotary cam 3 and pitman or rod A1 connecting the slide and the lever. 16th. In combination with slide Y, provided with roller W and with lever C1 and its operating devices, connecting-rod or pitman A1 having the open yoke or frame at one end, sliding block B1 mounted in said open yoke, stud or pin *w* extending from said block to the lever C1, and an adjusting screw D1 for raising and lowering said block and pin. 17th. In a saw-swaging machine, the adjustable ways Z, in combination with the slide Y and the swaging-roller W, as and for the purpose specified. 18th. In a saw-swaging machine, the combination of a die or anvil X to support the back of the saw tooth, a slide provided with a swaging roller to act upon the front of the tooth, adjustable guides for said slide, and clamps or locking devices for holding the guides at any desired inclination, whereby the roller is caused to move positively in contact with the front of the tooth from root to point.

No. 29,324. Ventilating and Draft Accelerating Cap for Chimneys, Ventilating Shafts, etc. (*Capuchon de ventilation et de tirage pour cheminées, bures de ventilation, etc.*)

Thomas W. Emery (co-inventor with William Spence), Minneapolis, Minn., U.S., 11th June, 1888, 5 years.

Claim.—1st. The main cap formed of a single piece of sheet metal, formed into shape and with inturned sections cut from the metal, substantially as herein specified. 2nd. A ventilating or draft producing cap constructed with an attaching band A, inturned sections C, C forming together an upwardly contracted case, and openings in the sides opposite to the same, and a close band at the top, substantially as and for the purpose herein specified. 3rd. A ventilating or draft producing cap constructed with upwardly contracted case, side openings opposite to the same, band above the openings supported by standards between the openings, and outwardly turned wings at the upper edge of the top band, substantially as and for the purpose herein specified. 4th. The combination of the main cap constructed with an upwardly contracted case with openings in the sides opposite to the same, and close band above, and a shield cap placed in the top of the cap over the draft opening of the contracted case, substantially as and for the purpose herein specified. 5th. The combination of the main cap constructed with upwardly contracted case, openings in the side opposite the same, and close band above the openings, a shield cap in the top of the main cap, and wire gauge screens covering the space between the shield cap and case below, substantially as herein specified. 6th. The combination of a chimney or ventilator having two or more flues, cap over the chimney formed with upwardly contracted case or frustrum, shield cap over the open mouth of the same, and partition or partitions within the frustrum between the flues, substantially as and for the purpose herein specified. 7th. The combination of a chimney, of ventilator having two or more flues, cap over the chimney or ventilator formed with an upwardly contracted case or frustrum, shield cap over the open mouth of the same, partition or partitions within the frustrum between the flues, and wing partitions outside of the frustrum and opposite to the interior partition or partitions, substantially as and for the purposes herein set forth.