tion of the main frame, the sliding frame, the handles and a windlass journalled between said handles and connected with the sliding frame, substantially as described. 9th. In a truck, the combination of the main frame, the sliding frame and the extension handles pivoted to the main frame, for the purpose described.

No. 30,089. Harness Saddle. (*Sellette.*)

J. Frank Bond, Portland, and William H Scott, Deering, (assignees of Andrew H. Larkin, Portland), Me., U. S., 2nd November, 1888; 5 years.

Claim.—1st. In a harness saddle, the combination of the skirt and pad, with the metal loop plate *a*, made as described and secured to the point or lower end thereof, substantially as and for the purposes set forth. 2nd. The plate, having a transverse slot and shoulder and rivets, substantially as described.

No. 30,090. Soil, Gas, Water, Sewer Pipes and Fittings. (*Tuyaux et garniture pour le fumier, le gaz, l'eau et les égouts*)

Philip Gleich, Horatio S. Krause and Richard J. Cheney, St. Paul, Minn., U.S., 2nd November, 1888; 5 years.

Claim.—1st A pipe, formed with alternate peripheral grooves and ridges around its outer surface throughout its length, for the purpose herein set forth. 2nd. In combination with the pipe described, formed with alternate peripheral grooves and ridges around its outer surface, a pipe coupling socket adapted to receive the end of the said pipe and having alternate grooves and ridges around its inner surface, and a soft metal packing between the pipe and socket, as herein set forth. 3rd. In combination with a pipe formed with alternate peripheral grooves and ridges around its outer surface, a pipe coupling socket adapted to receive the end of the pipe therein, and having alternate grooves and ridges around both its inner and outer surfaces, as herein set forth.

No. 30,091. Knitting Machine. (*Machine à tricoter.*)

David C. Bellis, Philadelphia, Penn., U. S., 2nd November, 1888: 5 years.

Claim.—1st. The combination of the needle cylinder and needles of a knitting machine, with a bed plate, a cam cylinder and driving mechanism therefor, a needle rest and side cams on the cam cylinder, sliding gates and a friction ring, carrying the sliding gates, all substantially as set forth. 2nd The combination of the needle cylinder and needles of a knitting machine with a cam cylinder, having a needle rest, and a top cam provided with yielding end pieces free to move both upward and laterally with reference to the said top cam, substantially as set forth. 3rd. The combination of the needle cylinder and needles of a knitting machine with a cam cylinder, having a needle rest, and a top cam provided with yielding end pieces, adapted to inclined grooves in the cylinder, and free to move both upward and laterally therein, substantially as and for the purpose described. 4th. The combination of the needle cylinder and needles of a knitting machine, a cam cylinder and driving mechanism therefor, with a needle rest top bottom and side cams and sliding gates provided with noses, the width of the needle rest to serve at the same time as the bottom side cams, substantially as specified. 5th. The combination of the needle cylinder, cam cylinder, and needles of a knitting machine, with a driving shaft gearing, by which the shaft drives the cam cylinder, a crank handle on the shaft, and a sliding spring locking bolt on the handle, to engage with the shaft, substantially as set forth. 6th. The combination of the bed plate of a knitting machine, the cam cylinder and a needle cylinder with a supporting cylinder for the latter, flanged at its lower end and secured to the bed plate, and a cam ring on the flange of the supporting cylinder to raise and lower the needle cylinder, all substantially as specified. 7th. The combination of the needle cylinder of a knitting machine, having needles, some with long projecting bits, and others with short projecting bits, with a cam cylinder having a needle-rest, a cam adapted to slide laterally into and from said needle-rest, devices for pushing the said cam inward and drawing it outward, and means for restricting the inward movement before the cam reaches a position to act upon the short bits of the needles, all substantially as specified. 8th. The combination of the needles and needle cylinder of a knitting machine, with a cam cylinder having a needle rest, a cam adapted to slide laterally in said cylinder, a cam lever to push the said cam inward and springs to draw it outward, and a tripping pin acting on said cam lever as the latter rotates with the cam cylinder, all substantially as specified 9th. The combination of the cam cylinder of the machine and its fixed cam with the cam nose, a spring acting thereupon to hold it in operative position, and a pivot pin for said cam nose, inclined in respect to the vertical, whereby said cam-nose has an upward and backward yielding movement, all substantially as specified.

No. 30,092. Beer Engine. (*Pompe à bière.*)

John H. Nathan, Sydney, N.S.W, (assignee of James A. Bigelow, Melbourne, Victoria), 2nd November, 1888; 5 years.

Claim.—1st In a beer engine, the combination of the following elements; a base plate adapted to be fixed to a bar or counter, a pump barrel on said plate, a valved plunger and its rod adapted to work upwardly in the pump barrel, a cylinder surrounding the pump barrel and forming a chamber there between, a circular spray pipe in said chamber, an inlet pipe communicating with the spray pipe, an outlet pipe leading from the base of the chamber, a cap plate centrally apertured over the pump barrel and fitted thereat with an outlet valve, and having openings over said chamber, provided with detachable covers, means, substantially as described and shown, for connecting the base and top plates an outlet pipe leading from the valved aperture in the cap plate and provided with a delivery tap, valved pipes connecting the pump barrel with a source of liquor supply, and a foot lever fulcrumed below the bar or counter, and connected to or with the plunger rod, all constructed, arranged and adapted to operate, substantially as herein shown and described. 2nd. In a beer engine, the combination, with the pump barrel B having base and cap plates, the plunger *p*, *l*, and its rod *p*, the connecting rods *c*, *r*, treadle *t*, and band or spring *s*, *a*, of the suction pipes *s*, leading from a source of liquor supply to the pump-barrel, and provided with regulating taps T and check valves V, whereby on opening said taps and operating the treadle, different kinds of liquors may be simultaneously delivered to and mixed in the pump barrel, as herein set forth. 3rd. In a beer engine, the combination water inlet and outlet pipes I, *o*, the pump barrel B, having base and cap plates, and the chamber C around the pump-barrel, of the spray pipe *s*, *p*, in said chamber and communicating with the pipe I, whereby hot or cold water may be sprayed into said chamber for heating or cooling the contents of the pump barrel and find exit from the chamber through the pipe *o*, as herein set forth. 4th. In a beer engine, the combination, with the pump barrel B, having a base plate, the chamber C surrounding the pump barrel and the outlet pipe *o*, of the cap plate P1, having hand holes H, H, over said chamber, provided with detachable covers, whereby hot or cold mediums may be placed in said chamber for heating or cooling the contents of the pump barrel, and find exit from the chamber through the pipe *o*, as herein set forth.

No. 30,093. Tobacco Cutting Machine. (*Hache-tabac.*)

The LeClair Manufacturing Company (assignee of George LeClair), Oswego, N.Y., U.S., 2nd November, 1888; 5 years.

Claim—1st. In combination with the feed-hopper and conveyor, the feed-roller *a*, provided with circumferential grooves *a1*, *a1*, the rotary circular knives *b*, *b*, over the feed roller and entering the grooves thereof, the plate *c* and the roller *d* over the said plate and provided with grooves coinciding with the aforesaid knives, as set forth and shown. 2nd. In combination with the feed-hopper and conveyer, the feed roller *a* provided with the grooves *a1*, *a1*, the rotary circular knives *b*, *b*, over the feed-roller and entering the grooves thereof, the plate *c* having fingers *c1* projecting into the grooves of said feed-roller, the roller *d* over the said plate and the rotary cutter C arranged to move across the discharge edge of the plate *c*, substantially as described and shown. 3rd. The cutter-head C1, formed with the longitudinal plates C11, C11, inclined toward the axis of the cutter head from the centre toward opposite ends thereof, in combination with the cutters C, C secured to the inclined sides of said plates, and having their cutting edges diverging from the centre toward opposite ends of the cutter-head, substantially as described and shown. 4th. The combination of the plate *c*, having a straight discharging edge, and the cutter-head C1 arranged axially parallel with said edge, and having the cutters C, C, with cutting edges, extending in the direction of the length of the axis of the cutter-head, and inclining toward said axis from the centre toward opposite ends of the cutter head, and diverging in said direction, substantially as described and shown 5th. A tobacco-cutting machine, comprising an endless feed belt, a feed roller arranged along the discharge portion of said belt, rotary circular knives over said feed roller and in planes parallel with the line of feed, a water-trough under the feed-roller, a stationary plate along the discharge side of the feed roller, and having a straight discharge edge, a roller over said plate, and a cutter-head arranged axially parallel with the discharge edge of the aforesaid plate, and having cutters with the cutting-edges extending in the direction of the length of the axis of the cutter-head, and inclining toward said axis from the centre toward opposite ends of the cutter-head and diverging in said direction, substantially as described and shown. 6th. In combination with the cutter and feed-conveyer, the longitudinally-oscillatory sieves F, H, the crank-shaft *i*, having the cranks projecting in opposite directions, and pitmen *l*, *l*, connecting said cranks with the sieves, substantially as described and shown.

No. 30,094. Button Attaching Machine and Method or Process of Securing Buttons to Materials. (*Machine à poser les boutons et manière de les assujétir.*)

William B. H. Dowse, (Trustee), Newton, (assignee of Edward P. Merwin and Walter E. Bennett, Boston), Mass., U.S., 2nd November, 1888; 5 years.

Claim.—1st. In a button attaching machine, an oscillating lever provided on its free end with a pawl, or dog, adapted to engage a wire to feed it through the eye of a button, a guide and support for the wire, a second oscillating lever bifurcated at one of its ends to engage the wire on both sides of the eye of the button, and arranged to move in close proximity to the wire guide, or support, to shear, or cut, the wire at this point, and a support for the eye of the button, on both sides of which the bifurcated end of the latter lever is adapted to move, to bend the wire into staple-like form in the eye of the button, all constructed, combined and arranged substantially as and for the purposes hereinbefore set forth. 2nd. As a means for severing the portion of a wire extended through the eye of a button, and bending the same into the form of a staple, or loop, therein, a guide, or support, for the wire, an oscillating lever *x* bifurcated at one of its ends, as at *l1*, and adapted to engage the wire on both sides of the eye of the button, and arranged to move in close proximity to said wire guide, or support, to shear, or cut, the wire at this point, and a support for the eye of the button, on both sides of which the bifurcated end of said lever is adapted to move, to bend the wire into staple-like form in the eye of the button, constructed combined and operating substantially as hereinbefore set forth. 3rd. In a button setting machine, a button raceway stop-gate *n1*, oscillating lever *x*, provided with the bifurcation *l1* and pin or projection *m1*, wire guide or rest *p1* and saddle-strip *o1*, combined and operating substantially as and for the purposes hereinbefore set forth. 4th. As a means for feeding a wire through the eye of a button, an oscillating lever *x* provided with a dog or pawl *e1* adapted to engage the wire and feed it forward, a guide for the wire, a second dog or pawl *f1*, adapted to engage the wire and prevent it from being drawn back as the oscilla-