

combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed, as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed, as set forth, and operating respectively in connection with corresponding rolls of corresponding mandrels, gearing for positively driving said compressing rolls, a prime mover for actuating said gearing, and adjusting gearing for simultaneously setting up toward a common centre all of the compressing rolls of all of the sets, substantially as set forth. 12th. In a rolling mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed, as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed, as set forth, and operating respectively in connection with corresponding rolls of corresponding mandrels, and idler carrying rolls for carrying and supporting the ingots, substantially as set forth. 13th. In a rolling mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed, as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed, as set forth, and operating in connection with corresponding rolls of corresponding mandrels adjusting gearing for simultaneously setting up toward a common centre all of the external compressing rolls, idler carrying rolls for carrying and supporting the ingot, and adjusting gearing for adjusting the vertical set of said carrying rolls, substantially as set forth. 14th. In a rolling mill, the combination of a series of roller mandrels, each containing two or more rolls, the rolls of said respective mandrels being alternated or interdisposed, as set forth, gearing common to the rolls of all of the mandrels for positively driving said rolls, a prime mover for actuating said gearing, a series of sets of external compressing rolls corresponding with the number of mandrels, the rolls of said respective sets being alternated or interdisposed, as set forth, and operating in connection with corresponding rolls of corresponding mandrels, gearing for positively driving the set of external compressing rolls, a prime mover for actuating said gearing, adjusting gearing for simultaneously setting up toward a common centre all of the external compressing rolls, idler carrying rolls for carrying and supporting the ingot, and adjusting gearing for adjusting the vertical set of said carrying rolls, substantially as set forth.

No. 31,868. Beam End Protector.

(*Sabot de poutre.*)

Henry A. Goetz, New Albany, Ind., U.S., 1st August, 1889; 5 years.
Claim.—A beam end protector having bottom A, with lug a, dove-tailed sides, as B, B, and back wall C, substantially as and for the purpose hereinbefore set forth.

No. 31,869. Carriage Bow.

(*Branche de capote de voiture.*)

James C. Cose, William G. Avery, and Joseph A. Osborne, Cleveland, Ohio, U.S., 1st August, 1889; 5 years.

Claim.—1st. The within-described bow-socket consisting of the tube A, the tube B fitted therein, and the slat-iron C, substantially as shown. 2nd. The within-described bow-socket consisting of two tubes, one tube being fitted within the other, and the slat-iron, substantially as shown. 3rd. In a bow-socket, the double tube, one tube being fitted within the other, substantially as shown. 4th. In a bow-socket, the tube B having the slit b, in combination with the tube A, substantially as shown. 5th. The combination, in a carriage bow, of the tube A, the tube B fitted within the tube A, and the short bow D, substantially as shown. 6th. The combination, in a carriage-bow, of the tube A, the tube B fitted within the tube A, the slat-iron C and the short bow D, substantially as shown.

No. 31,870. Metallic Railway Tie.

(*Traverse métallique de chemin de fer.*)

Walter H. Donaldson and Robert B. Reid, San Francisco, Cal., U.S., 1st August, 1889; 5 years.

Claim.—1st. In combination with a railway-tie and the rail thereon, clamps or dogs pivoted in the top of the tie, and having their upper ends hooked and engaging the base-flanges of the rails, and their lower ends passing beneath the top of the tie, and wedges driven transversely through the tie and bearing on the lower ends of the dogs, whereby they are deflected and their upper ends made to clamp the rails, substantially as described. 2nd. In combination with a railway-tie and the rails thereon, clamps or dogs pivoted in slots in the tie and having their upper ends hooked and engaging the base-flanges of the rails on their inner and outer sides, and their lower ends passing in opposite directions and crossing under the top of the tie, and transverse wedges through the tie and acting on the lower ends of the dogs to cause their upper ends to clamp the rails, substantially as described. 3rd. A metallic railway-tie or sleeper having a top plate with longitudinal slots, and down-turned side flanges with transverse slots, in combination with clamps or dogs pivoted in the slots of the top plate, and having their upper ends hooked and engaging the flanges of the rails, and their lower ends crossing under the top plate, and wedges driven through the slots of the side flanges and bearing on the lower ends of the dogs, whereby their upper ends are clamped on the flanges of the rails, substantially as herein described. 4th. A metallic railway-tie or sleeper having a top plate with longitudinal slots, down-turned side flanges with transverse slots, and a central longitudinal web with transverse slots, in

combination with clamps or dogs pivoted in the slots of the top plate, and having their upper ends hooked and engaging the flanges of the rails, and their lower ends crossing under the top plate, and wedges driven through the slots of the side flanges and central web, and bearing on the lower ends of the dogs, whereby their upper ends are clamped on the flanges of the rails, substantially as described.

No. 31,871. Rail Cutting Machine

(*Machine à couper les rails.*)

Thomas G. Perkins, Chicago, and E. C. Read, Blue Island, Ill., U.S., 1st August, 1889; 5 years.

Claim.—1st. The combination, in a rail-cutting machine, of a rotary cutter, a horizontally reciprocating table carrying at one end the rotary cutter, and a stationary turntable at one end of the machine provided with means for supporting a rail thereon, and serving to permit setting of the supported rail to any angle in the horizontal plane with reference to the vertical plane of the rotary cutter, substantially as described. 2nd. The combination, in a rail-cutting machine, of a rotary cutter, a horizontally reciprocating table carrying at one end the rotary cutter, a stationary turntable at one end of the machine, and provided with means for supporting a rail thereon, and serving to permit setting of the supported rail to any angle in the horizontal plane with reference to the vertical plane of the rotary cutter, and an angle-indicating attachment geared to the turntable, and operated by the rotation thereof, substantially as described. 3rd. In a rail-cutting machine, in combination with the bed A, a reciprocating table B carrying a saw D, a rack B₁ on the table B, a shaft *q* provided with a cog-wheel *q*₁ in mesh with the rack, and with a worm-wheel *q*₂, a worm shaft *p* having its worm in mesh with the wheel *q*₂, and a driving-shaft *p*₁ geared to the shaft *p*, substantially as described. 4th. In a rail-cutting machine, in combination with the bed A, a reciprocating table B carrying a saw D vertically adjustable on its support, substantially as described. 5th. In a rail-cutting machine, in combination with the bed A, a reciprocating table B carrying a saw D on a rotary shaft *o*, rotary shafts *o*₁ and *o*₂ supported on the bed, a rotary shaft *o*₃ supported on the table B, and an endless belt *m* connecting the shaft *o* and saw-shaft, and passing over the intermediate shafts *o*₁ and *o*₂ to form a compensator, substantially as described. 6th. In a rail-cutting machine, in combination with the bed, a reciprocating table N carrying a saw D, a turntable E adjacent to the saw, and a guard E₁ upon the turntable provided with a clamp for holding a rail to be cut, substantially as described. 7th. In a rail-cutting machine, in combination with the bed, a saw D, a turntable E having teeth on its periphery, a worm-shaft *i* in mesh with the teeth of the turntable, and carrying a cog-wheel *i*₁, a rotary shaft *i*₂ carrying a cog-wheel *i*₂ in mesh with the wheel *i*₁, a miter-gear *g*₁, a cog-wheel *g*₂, and a dial-finger *h*₃ connected by suitable gearing with the shaft *i*₂, whereby rotation of the said shaft turns the table E, and the dial-finger to indicate upon the protractor the angle to which the table E is turned, substantially as described. 8th. In a rail-cutting machine, in combination with the bed, a saw D, a turntable E having teeth on its periphery, a worm-shaft *i* in mesh with the teeth of the turntable and carrying a cog-wheel *i*₁, a rotary shaft *i*₂ carrying a cog-wheel *i*₂ in mesh with the wheel *i*₁, a miter-gear *g*₁, a cog-wheel *g*₂, and a dial-finger *h*₃, a stationary minute dial H surrounding the shaft *i*₂, and having a seconds dial H₁ marked upon it, a shaft *e*₁ carrying a pinion *e*₂ in mesh with the wheel *g*₂, and a cog-wheel *e*₃, an arbor *f* carrying a dial-finger *g*₄ for the dial H₁, and a pinion *f*₁ in mesh with the cog-wheel *e*₃, a worm-shaft *h* carrying a miter-gear *g* in mesh with the miter-gear *g*₃, a rotary worm-wheel *h*₁ in mesh with the worm on the shaft *h*, and on an arbor *h*₂ carrying a dial-finger *h*₃, and protractor G supported adjacent to the dial-finger *h*₃, substantially as and for the purpose set forth.

No. 31,872. Flue Cleaner.

(*Nettoyeur de carneaux.*)

John T. Mead, John Thomson and James P. Swain, Cleveland, Ohio, U.S., 1st August, 1889; 5 years.

Claim.—1st. In a flue-cleaner, the combination, with a central rod and arms, substantially as indicated, pivoted at their rear ends to the said rod, and supported upon yielding bearings near the front ends of ribs extending spirally in opposite directions from each arm, each rib having a scraping-edge adapted to fit a flue of given size, substantially as set forth. 2nd. In flue-cleaners, the combination, with a central rod having a series of projections on its front end, of arms pivoted at their rear ends to said rod, and provided with scraping ribs extending spirally in opposite directions from each arm, and springs interposed between the projections on the rod, and the arms for yieldingly supporting the free ends of the latter, substantially as set forth.

No. 31,873. Cash Delivering Device.

(*Appareil à livrer la monnaie.*)

Sidell E. Fish, Greenport, and Eugene Pearl, New York, N.Y., U.S., 1st August, 1889; 5 years.

Claim.—1st. The change delivering device constructed, substantially as described, of an extended inclined chute having a cash receiving opening at its upper end, in combination with a spring actuated door closing its lower end, substantially in the manner and for the purpose herein set forth. 2nd. In a change delivering device, the combination, substantially as set forth, of the inclined chute having a cash receiving opening at its upper end, the spring actuated door closing its lower end, and the actuating cord extending from the door to a point at or near the receiving end of the chute. 3rd. The combination in a portable change delivery device, substantially as set forth, of the hopper A, the inclined chute B projecting beyond its supports at its lower end D, the door E closing an opening in said lower end, the spring F actuating the door to close it automatically, the hand piece H projecting from the door, and the tray G beneath the door.