of the link K connecting the said bell-crank levers J with each other, the clamps B, each having a projection I, the rods F, each provided with a pin F^1 and the spring G acting on the said pins F^1, substantially as shown and described. 7th. In a metallic printing block, the bell crank lever J, the link V and the bell crank lever U, in combination with the rod O, provided with the pin O^1, the spring T acting on the pin of the said rod O, and the clamp E held on the said rod O, substantially as shown and described. 8th. In a metallic printing block, the movable clamps C and E, the rods F and O carrying the said clamps C and E respectively, and the springs G and T operating on the said rods F and O, in combination with the bell crank levers J and U, the link K connecting the said levers J with each other, the post N, having the arm M, the link L connecting one of the levers J with the said arm M and the link V connecting the other lever J with the said bell crank lever U, substantially as shown and described. 9th. In a metallic printing block, the combination, with the post N having the arm M, of the link L connecting the said arm M with the first lever J, the levers J pivoted on the block A, the connecting link K connecting the said levers J with each other, the clamps C, each having a projection I and operated by the said levers J, the rods F carrying the said clamps C, the spring G operating on the said rods F, substantially as shown and described. 10th. In a metallic printing block, the combination, with the block A and the stationary clamps B, formed on the face of the said block A, of the movable clamps C and E sliding in grooves *m*, the said block A, the rods F and O carrying the said clamps C and E, the springs G and T operating on the said rods F and O, the bell crank lever U operating on the said rod O, the said bell crank levers J operating on the said clamps C, the link K connecting the said bell crank levers J with each other, the link V connecting one of the bell crank levers J with the said bell crank lever U, the link L pivotally connected to one of the bell crank levers J, the arm M pivotally connected with the said link L, and the post N, carrying the said arm M and mounted on the said block A, substantially as shown and described.

No. 25,988. Hair Pin. (*Epingle à Cheveux.*)

John H. Russell, Boston, Mass., U.S., 12th February, 1887; 5 years.

Claim.—1st. As an improved article of manufacture, a hair pin composed of a single piece of wire bent at or near its middle to form two prongs, that extend thence in curved planes and intersect at or near their middles, substantially as described. 2nd. A hair pin, composed of a single piece of wire bent at its middle to form two prongs which cross each other, and each of which extends in two nearly similar curves from its middle towards its point and towards its junction with the remaining prong, substantially as described. 3rd. A hair pin, composed of a single piece of wire bent to form prongs, each of which is bent at a point near its middle, and extends thence towards its end, and junction with the remaining prong respectively in continuous similar curved planes, whereby when said prongs are crossed, the opposite ends thereof shall be curved toward and from each other respectively, as and for the purpose specified.

No. 25,989. Automatic Cut-off Valve for Steam Engines. (*Soupape de Détente Automatique pour Machines à Vapeur.*)

Charles E. Kimball, Anamosa, Iowa, U. S., 12th February, 1887; 5 years.

Claim.—1st. The spring E and the balance wheel A, as shown, and means for operating the same, in combination with a stem or rod to operate the cut-of valves of a steam engine, connected with and operating the said balance wheel A, whereby the action and motion of the cut-off valves is governed and regulated, substantially as shown and described. 2nd. In a steam engine, the combination of the eccentric rod F, stud G, arm C, spring E, balance wheel A and stem B, substantially as and for the purpose described. 3rd. In a steam engine, the combination of the eccentric rod F, stud G, arm C, sleeve D, spring E, adjusting screw H, plate L, balance wheel A and stem B, substantially as and for the purpose specified and described. 4th. In a steam engine, the combination of the eccentric rod F, stud G, arm C, sleeve D, spring E, adjusting screw H, plate L, weighted arms X, Y, Z, or any of said arms radiating from the axis and stem B to operate the cut-off valves, substantially as and for the purpose described.

No. 25,990. Pipe Vise. (*Mordache à Tuyau.*)

Andrew L. Rose, West Troy, N.Y., U.S., 14th February, 1887; 5 years.

Claim.—1st. In a pipe vise, the combination, with the base A and flanges C carrying the lower jaws E, and the hinged upper part H of the stock carrying the stem J and jaw K, and having projection S of the pivoted bars P, and the cam lever R pivoted in the upper ends of the said bars, substantially as herein shown and described, whereby the jaws are made to grasp the pipe firmly and the screw relieved of strain, as set forth. 2nd. In a pipe vise, the combination, with the upper part H, of the stock having a right screw thread in the inner surface of its upper end, and the stem J carrying the upper jaw and having an interior left screw thread, of the hand screw M having a right screw thread on its larger upper part, and a left screw-thread on its smaller lower part, substantially as herein shown and described, whereby the said upper jaw can be quickly adjusted, as set forth.

No. 25,991. Pivotal Coupling for front Axles of Waggons. (*Avant Train de Wagon.*)

Francis J. Fortier, Iroquois, Ont., 14th February, 1887; 5 years.

Claim.—1st. In a waggon pivot coupling, the combination of the sand-board plate D, having the circular wall b^1, provided with the flanges c^1, with the bolster plate E, provided with the segmental walls F, on which are formed the flanges g^1 to hold under the flanges c^1, substantially as shown and described. 2nd. The combination of the pivot e^1 attached to the bolster plate E, and provided with the flanges f^1, with the circular wall b^1 attached to the sand board plate D, and provided with the flanges d^1, as specified. 3rd. The combination of lugs G and H, coupling pin f^1, and reach I, with the sand board plate D and bolster plate E, all constructed substantially as shown and described.. 4th. The combination of the sand-board plate D, having the circular wall b^1, having the flanges c^1 and d^1 and bearing walls i^1 with the bolster plate E having the pivot e^1, with its flanges f^1, the segmental walls F, with their flanges g^1 and the bearing walls h^1, substantially as herein shown and described and for the purpose set forth.

No. 25,992. Motor. (*Moteur.*)

Bartholomew McCabe, Buffalo, N. Y., U. S.. 14th February, 1887; 5 years.

Claim.—1st. The combination, with the shaft B and ratchet wheel C, of the pulleys D, D^1 placed loosely on the shaft pawls G, G^1 pivoted in the pulleys D and adapted to engage the teeth of the ratchet wheel, and cords E, E^1 and F, and sheave H, substantially as herein and described. 2nd. The combination, with the shaft B and ratchet wheel C carried thereby, of the pulleys D, D^1 placed loosely on the shaft pawls G, G^1 pivoted in the pulleys, adapted to engage the ratchet wheel C, and provided with ears *b*, the cords E, E^1 connected with the ears *b*, the sheave H journalled at right angles to the shaft B, and the cord F extending around the pulleys D, D^1 and over the sheave H, substantially as herein shown and described. 3rd. The combination, with the cords E, E^1, of the treadle J provided with oppositely-arranged sectors I, I^1, substantially as herein shown and described. 4th. The combination of the shaft B, provided with the ratchet wheel C, pulleys D, D^1, pawls G, G^1 carried thereby and provided with ears *b*, the cords E, E^1 connected with ears *b*, the sheave H journalled at right angles to the shaft B, the cord F connected with the pulleys D, D^1 and extending over the sheave H, and the treadle J provided with the sectors I, I^1, and connected with the cords E, E^1, substantially as herein shown and described. 5th. The combination, with the treadle J, sectors I, I^1, the ropes E, E^1, F and pawl and ratchet mechanism, of the steam cylinder M, piston rod L and connecting rod K, substantially as described.

No. 25,993. Carriage Gear. (*Train de Voiture.*)

John B. Armstrong, Guelph, Ont., 14th February, 1887; 5 years.

Claim.—1st. A carriage gear, with two semi-elliptic cross-springs F and G, and having spring-tempered bi-furcated perch plates C and D connecting front and rear axles, substantially as described and specified and for the purposes set forth. 2nd. In a cross spring gear, the combined spring shackles and tie bars E, free swinging hangers H, anti-rattlers *e*, draw-jacks I, ferrules *d*, and their attachment to naked front axle and each other, substantially as described and for the purposes set forth. 3rd. In a carriage gear, with two semi-elliptic cross springs, the cross springs F and G, graduated and formed to operate substantially as described and for the purposes set forth. 4th. In a carriage gear with two semi-elliptic cross-springs, the spring G connected at the ends to the plate perches C and D, by tie bars, bolts, shackles *u* and free swinging hangers H, the perch ends being attached to the naked rear axle B by tits *v* and clips *w*, substantially as described and for the purposes set forth. 5th. A carriage gear having a single semi-elliptic front cross spring graduated, formed, and operating substantially as and for the purposes described and set forth. 6th. A carriage gear having a single semi-elliptic rear cross spring, graduated, formed and operating, substantially as and for the purposes described and set forth. 7th. In a carriage gear, a front semi-elliptic cross spring with metal turning wear plates J and K attached to the same, and supporting a spring bar *p*, substantially as shown and for the purpose described and set forth. 8th. The compensating buffers *a*, *a* and *b* placed on the rear axle and perches, and operating substantially as and for the purpose described and set forth.

No. 25,994. Grain Binder. (*Lieuse à Grain.*)

Amédée Tétrault, Miamisburg, Ohio, U. S,, 14th February, 1887; 5 years.

Claim.—1st. A grain binder, provided with a knotter arm carrying the device for knotting, severing and clamping the cord, substantially as described. 2nd. A binder, provided with a knotter arm carrying appliances constructed to form a knotter when caused to engage with the doubled cord, a knife for severing the cord, and a clamp whereby the cord is held in connection with the arm after the tying portion is cut off, substantially as described. 3rd. The combination, in a grain binder, of a pivoted knotter arm carrying appliances for knotting, cutting and holding the cord, and a cord carrier whereby the cord from the spool is conducted to the knotting devices, substantially as set forth. 4th. The combination, with the swinging knotter arm carrying cord knotting, severing and retaining devices, of appliances whereby said devices are operated from power applied near the heel of the knotter arm, substantially as set forth. 5th. The combination, in a grain binder, of a knotter arm carrying the cord knotting, severing and retaining devices, and a compressor arm arranged to form with the knotter arm jaws between which the bale is compressed, substantially as described. 6th. The combination, in a binder, of a compressor and a knotter arm carrying a clamp, whereby the portion of cord passing from the spool is secured, and a knotting device also carried by the arm and constructed to form a knot in the doubled part of the cord between the clamp and the bale, and a cutter arranged to sever the cord between the knotter and clamp, substantially as described. 7th. The combination, in a binder, of a knotter arm and means for always retaining the end of the cord in connection therewith, and cord knotting and severing devices also carried by the arm, substantially as described. 8th. The combination, in a binder, of a knotter arm, and appliances for always retaining a part of the cord in connection therewith, cord knotting and severing devices carried by the arm and a cord carrier, whereby the cord after passing round the bale is brought into engagement with the knotter devices, substantially as set forth. 9th. The combination, in a grain binder, of a platform, a knotter arm carrying cord knotting, butting and severing devices and pivoted below but vibra-