

ends with gears to engage the rack bars on the bearing surfaces, and a locking device to hold said rollers in proper working position, substantially as described. 3rd. In an anti-friction bearing or support, the combination, with two bearing surfaces provided with rack bars, of one or more intermediate anti-friction rollers provided at its opposite ends with gears to engage the rack bars on the bearing surfaces, a spacing frame movable with the rollers, and a locking device to engage said spacing frame, substantially as described. 4th. In an anti-friction bearing or support, the combination, with two flat bearing surfaces provided with rack bars, a flange A², secured to or forming part of one of said bearing surfaces, and a packing interposed between the said flange and one of the bearing surfaces, of an anti-friction roller or rollers interposed between said surfaces and provided with gears to engage said rack bars, substantially as described. 5th. In an anti-friction bearing or support, the combination, with two flat bearing surfaces, a flange A², secured to or forming part of one of said surfaces, and a packing interposed between said flange and bearing surface, of an anti-friction device or roller interposed between said bearing surface, substantially as described.

No. 42,456. Electric Railway. (*Chemin de fer électrique.*)

James Ferguson Munsie, Brooklyn, New York, U.S.A., 4th April, 1893; 6 years.

Claim.—1st. An electric railway consisting of a series of wells, or man holes spaced at intervals along the line, slotted guard casings extending from one well to the next in the series, feeding conductors exterior to said casings, and contacts connected to the feeding conductors and located at the ends of the casings, substantially as described. 2nd. An electric railway consisting of a series of wells or man holes spaced at intervals along the line, slotted guard casings extending from one well to the next in the series, an underground feeding conductor conduit extending along the line exterior to the casings and communicating with the wells, and contacts connected with the feeding conductors and located at the ends of the casings, substantially as described. 3rd. An electric railway consisting of a series of wells or man holes spaced at intervals along the line, slotted guard casings extending from one well to the next in the series, feeding conductors exterior to said casings, contacts connected to the feeding conductors and located at the ends of the casings, an insulating support for said contacts, and a base of conducting material upon which the insulating support is mounted, said base being grounded, substantially as described. 4th. An electric railway consisting of a series of wells or manholes spaced at intervals along the lines, slotted guard casings extending from one well to the next in the series, feeding conductors, contacts connected to the feeding conductors and located in front of the ends of the casings, and collecting pipes for carrying off dripping from said ends, substantially as described. 5th. In an electric railway of the kind described, the combination with the insulator, of a support therefor consisting of a metallic pillar and an insulating tube located within said pillar for the reception of the feed wire, substantially as described. 6th. In an electric railway, a car provided with a flat contact bar flexible edgewise, substantially as described. 7th. In an electric railway, a car provided with a longitudinally and laterally flexible contact bar, substantially as described. 8th. In an electric railway, a car provided with a contact bar consisting of a plurality of sections connected together by flexible joints, substantially as described. 9th. In an electric railway, a car provided with a contact bar and consisting of a plurality of sections jointed together at points intermediate of its supports, substantially as described. 10th. In an electric railway, a car provided with a contact bar, consisting of a plurality of sections and side pieces rigidly connected to the end of one of the sections, and flexibly connected to the proximate end of the adjacent section, substantially as described. 11th. In an electric railway, a car provided with a contact bar, consisting of a plurality of sections, side pieces connected to the end of one of the sections by a plurality of bolts, and to the proximate end of the adjacent section by a single bolt, substantially as described. 12th. An insulator provided with a cup shaped base, an inner projection for the attachment of a contact, an outlying partition between the said inner projection and the interior surface of the base, and an overhanging cap piece, the space on each side of the partition containing hygroscopic material, substantially as described. 13th. In an electrical railway system, a conductor to take up the electric currents, combined with a tube or shield therefor, an insulator on said shield to prevent short circuiting there-through, and a drying medium to counteract the effect of moisture the shield and conductor, substantially as described. 14th. In an electrical railway system, a conductor to take up the current, combined with a tube or shield therefor, an insulator and a hygroscopic material to dry said insulator, substantially as described. 15th. In an electrical railway system, a conductor to take up the current, combined with a tube or shield for the same, a cap piece on said shield, and a cup beneath said cap piece containing an absorbent or drier to absorb moisture within the cap piece, substantially as described. 16th. In an electrical railway system, a conductor to take up the electric current combined with a tube or shield for the same, a cap piece on the same having its opening facing downward, and a cup beneath the latter carried by said conductor and insulated from the cap piece, and an absorbent or drier in said cup, substantially as described. 17th. In an electrical railway system, a con-

ductor to take up the electric current, combined with a tube or shield on the same, and insulators on opposite ends of the shield, and a drying medium to prevent moisture collecting between the insulator and the conductor at the ends of the shield, substantially as described.

No. 42,457. Process of and Apparatus for Extracting Metals from Ores. (*Procédé et appareil pour extraire les métaux des minerais.*)

James John Shedlock and Thomas Donny, both of 105 Gresham House, London, England, 5th April, 1893; 6 years.

Claim.—1st. In the process herein described for extracting metal from ores subjecting the pulverized ore to violent agitation by jets of air and steam while it is heated by jets of gas. 2nd. In an apparatus for extracting metals from ores, the combination of the gas producer *a* and steam generator *g*, with the treating chamber *c* provided with the gas burners *G, G*, the steam and air jets *B* and *E, E*, whereby the pulverized ore blown into the chamber by the jet *B* is acted upon and agitated by the streams issuing from the jets *E, E*, whilst under the influence of the burning gas from the burners *G, G*. 3rd. Treating the pulverized deposit from the apparatus referred to in the preceding claims by subjecting it to abrading and crushing action in presence of fluid amalgamating or alloying metal. 4th. In an apparatus for extracting metals from ores, the amalgamating and alloying device consisting of the following elements in combination: the conoidal shell *Q* having a space or well at its lower end and pockets formed in its sides, the internal rotative shell *P* having a hollow shaft and pockets formed in its sides, and means for rotating the shell *P*, substantially as and for the purpose set forth. 5th. The herein described process for treating ores, first, by agitating the ores finely pulverized and heated by gas flames with air and steam thereby oxidizing some of their ingredients and driving off the gases and vapours evolved from them, and secondly, by subjecting the ores after such treatment to crushing and abrading action in presence of fluid amalgamating or alloying metal.

No. 42,458. Weighing Machine. (*Balance à bascule.*)

Charles Henry Phillips, Boston, Massachusetts, U.S.A., 5th April, 1893; 6 years.

Claim.—1st. In a weighing machine, the combination, substantially as and for the purpose set forth, of two buckets or receptacles arranged side by side and having a vertical movement, a scale beam or balance connected to each bucket or receptacle, and operating to hold the bucket in position, but permitting its descent when it has received a load equal in weight to the weight indicated upon the balance or scale beam, an oscillating chute discharging alternately into one bucket or the other, according to the position of the end of the chute, mechanism operated by the movement of a loaded bucket to oscillate the chute, whereby it will discharge into the empty bucket, a double faced chute pivoted under the discharging chute and oscillating in an opposite direction, and mechanism operated by the downward movement of each bucket to simultaneously oscillate these chutes in opposite directions. 2nd. In a weighing machine, the combination, substantially as and for the purpose set forth, of two buckets or receptacles arranged side by side, and each having an independent vertical movement, a scale beam or balance connected to each bucket or receptacle, and operating to hold the bucket in position, but permitting its descent when it has received a load equal in weight to the weight indicated upon the balance or scale beam, an oscillating chute discharging alternately into one bucket or other, according to the position of the end of the chute, a double faced chute pivoted under the discharging chute and oscillating in the opposite direction, mechanism operated by the downward movement of each bucket to simultaneously oscillate these chutes in opposite directions, a weight attached to each bucket for raising the bucket when relieved of the weight of its contents by the discharge of the same, a hinged gate in the bottom of each bucket opening downward, and mechanism operating to automatically open said gate when the bucket is filled and descends, and to close the gate when the bucket is filled. 3rd. The combination, substantially as and for the purpose set forth, of the rod *P*, attached to the bucket *E*, the adjustable swinging piece *S*, pivoted on said rod and embracing the same, the scale beam *R*, and the arm *g*, on the same, embracing the rod *P*, and curved surfaces on the ends of the swinging piece *S*, and arm *g*, bearing against each other. 4th. The combination, substantially as and for the purpose set forth, of the rod *P*, attached to the bucket *E*, the adjustable swinging piece *S*, pivoted on said rod and embracing the same, the rollers *l*, on said swinging piece *S*, the scale beam *R*, and the arm *g*, on the same, embracing the rod *P*, and carrying rollers *h*, which bear against the rollers *l*. 5th. The combination, substantially as and for the purpose set forth, of the oscillating discharging chute, the rods *P, P*, each attached, respectively, to a bucket or receptacle *E*, arms *T, T*, each extending toward the centre of the case and attached to a rock shaft *t*, pivoted on the case on opposite sides of each rod, a pin *r*, on each rod above the free end of each lever and engaging with the same only on the descent of the rod, the lever *u*, one on each rock shaft, and the arm *V*, pivoted on the arm *u*, and attached to the oscillating chute, whereby the engagement of the pin *r*, with each arm *T*, effects the movement of the oscillating chute. 6th. The combination, substantially as and for the purpose set forth, of