

junction of the cutter and inclined frame, and a driving chain extending from said crank-shaft to a driving wheel, substantially as described. 2nd. In a mower, a main frame, turning on the axle, a cutter-bar frame, intermediate inclined frame pivoted to the main and cutter frames, with a crank shaft connected with the cutter-bar and on a line with the pitman connection with the cutter bar, substantially as described. 3rd. The combination, with the axle, two supporting wheels, main frame swinging upon the axle, cutter-bar frame, and intermediate inclined frame, pivoted to the cutter-bar frame and to the main frame in front and at the rear of the axle, substantially as described. 4th. In a reaping machine, the combination, with its axle and a main frame pivotally mounted thereon, of a cutter-bar frame and an intermediate frame pivotally secured to both main and cutter frames, and consisting of laterally extending bars, one of which crosses the other, substantially as described. 5th. In a reaping machine, the combination, with its axle and a frame pivotally mounted thereon, of a second frame pivotally secured to said frame, and consisting of laterally extending bars, one of which is secured to the frame in rear of the axle, and the other in front thereof, one of said bars crossing the other, substantially as described. 6th. In a reaping machine, the combination of its axle and a frame pivotally mounted thereon, of a second frame on which is pivotally mounted the shoe at the end of the cutter-bar frame, said second frame being secured to the first named frame through laterally extending bars, one of which crosses the other and is secured to said frame in rear of the axle, and the other in front thereof, substantially as described. 7th. In a reaping machine, the combination, with the axle B carrying a driving bevelled wheel H, and upon which is supported the frame C and tongue D of the machine, of a frame G pivotally mounted upon said axle, between said driving wheel and the frame C, and connected with the cutter-bar, substantially as described. 8th. The combination, with the axle B carrying a driving bevelled wheel, and a frame G pivotally supported upon said axle, of a bracket K supporting the shoe and pitman crank-shaft, and means, substantially as described, for communicating the rotation of the driving wheel to said crank shaft, the said bracket being pivotally secured to the frame G, substantially as described. 9th. The combination, with the bracket K, provided with recessed bearings 33 and 34, of a shoe pivotally supported by said bracket and carrying a sleeve 19 adapted to the socket in one of the bearings, and which supports the crank-shaft for driving the pitman, substantially as described. 10th. The combination with the frame K provided with bearings for pivotally supporting the shoe, of the crank-shaft supported by one of said bearings, and having secured to its opposite ends a sprocket-wheel and a crank disk, whereby the shoe and frame are held together, substantially as described. 11th. The shoe M provided with a depression extending below the crank, substantially as and for the purpose described. 12th. The combination of the axle B, a frame G carried by said axle, and a lever for varying the inclination of said frame, and a shoe and bracket K pivotally supported from said frame, substantially as described. 13th. The combination, with a cutter-bar frame, main frame and connecting frame, of a shoe at the junction of the cutter-bar and connecting frame, and bearings for a crank-shaft on said shoe in line with the pitman connection with the cutter bar, substantially as described.

### No. 28,610. Freight Car Door.

(*Porte de char à marchandises.*)

Francis G. Susemihl, Detroit, Mich., U.S., 3rd March, 1888; 5 years.

*Claim.*—1st. In freight car doors, a guide rail provided with a bend or incline in the middle and having its straight portions arranged parallel or nearly so with the car, but on different planes with each other, substantially as described. 2nd. In freight car doors, the combination, with the guide rail having an incline or bend on the front end and one in the middle, and two straight portions arranged parallel or nearly so to the car, but in different planes to each other, of front and rear shoes or hangers having their guide grooves to correspond respectively to the straight portions of the guide rail, substantially as described. 3rd. In freight car doors, the combination, with the guide rail having a front and rear portion arranged in different planes parallel or nearly so with each other and to the side of the car, of front and rear shoes or hangers having their guide grooves arranged to correspond respectively with the front and rear portion of the guide rail, whereby the door runs parallel to the side of the car, substantially as described. 4th. In freight car doors, the combination, with the guide rail having a bend in the front and one in the middle, of front and rear shoes or hangers having their guide grooves enlarged to run over the bent portions of said rail, substantially as described.

### No. 28,611. Potato-Digger. (*Arrache-patates.*)

John Butman, Milan, Ohio, U.S., 3rd March, 1888; 5 years.

*Claim.*—1st. In a potato-digger, the double flanged sprocket-wheel I having teeth on one side in the radial lines of its centre, and on the other one an incline plane, in combination with the link belt J and enlarged sprocket-wheel M, Mr, and driving-wheels, substantially as described and for the purpose set forth. 2nd. In a potato-digger, the pitman U, V, provided with elongated slots at one end, for the reception of the crank pins, and jointed at the lower ends of the arms and operated by means of a link belt and sprocket-wheels, in combination with the vibrating sifter hinged to the rear of the scraper and operating conjointly therewith, constructed and arranged substantially as described and for the purpose specified. 3rd. In a potato-digger, the link belt K in connection with the sprocket-wheels on the shafts H, S and cranks, in combination with the pitman jointed to the sifter with a hinged attachment to the scraper having prongs projecting over the front-portion of the scraper, and means for operating the same, as and for the purpose set forth.

### No. 28,612. Friction-Clutch and Hoist.

(*Embrayage à friction et élévateur.*)

Otto Floht, Buffalo, N.Y., U.S., 3rd March, 1888; 5 years.

*Claim.*—1st. The combination of a driving and a driven part, one of

said parts formed with an overhanging flange, a divided friction ring within said flange and so connected to the other of said parts that both must rotate together, the axial shaft upon which said rotating parts are mounted, a longitudinally moving knee-piece on said shaft, and said sections and knee-piece formed with opposite sockets, inclined toggle-arms with their opposite ends entering said opposite sockets and abutting directly against the sections and knee-piece respectively, whereby, on advancing said knee-piece, the friction ring is expanded by the direct and unyielding thrust of said toggle-arms, and retracting springs arranged to contract said ring and thereby release the clutch. 2nd. The combination of a driving and a driven part, one of said parts formed with an overhanging flange, a divided friction-ring within said flange and so connected to the other of said parts that both must rotate together, the axial shaft upon which said rotating parts are mounted, a longitudinally moving knee-piece on said shaft, and said sections and knee-piece formed with opposite sockets extended laterally in planes perpendicular to the axis of rotation, inclined toggle-arms or plates broadened laterally to a width corresponding to the length of said sockets, and arranged with their opposite ends entering said opposite sockets and abutting directly against the sections and knee-piece respectively, whereby, on advancing said knee-piece, the friction ring is expanded by the direct and unyielding thrust of said toggle-arms, and retracting spring arranged to draw back the sections of said ring and release the clutch. 3rd. The combination of a driving and a driven part, one of said part formed with an overhanging flange, a friction ring within said flange so connected to the other of said parts that both must rotate together, and diametrically divided into two sections, the axial shaft upon which said parts are mounted, four inclined toggle-arms arranged radially with their outer ends bearing against the sections of said ring, two against one section and two against the other, and a knee piece movable longitudinally on said shaft and against which the inner ends of said toggle-arms bear. 4th. The combination of a driving and a driven part, one of said parts formed with an overhanging flange, a friction ring arranged within said flange and diametrically divided into two sections, each of which is formed at its middle with a socket, driving pins entering said socket and carried by the other of said parts, whereby the sections are forced to rotate with the latter part, the axial shaft upon which said parts are mounted, four inclined toggle-arms arranged radially with their outer ends bearing against the sections of said ring, two against each section and on opposite sides of said socket, thereon, and a knee-piece movable longitudinally on said shaft and against which the inner ends of said toggle-arms bear. 5th. The combination of a driving and a driven part, one of said parts formed with an overhanging flange, a friction ring arranged within said flange and so connected to the other of said parts that both must rotate together, and divided into sections, retracting springs applied to the sections of said ring and acting to draw them together, and thereby contract the ring, toggle-arms arranged at an inclination with their outer ends bearing against the sections of said ring, a knee-piece movable longitudinally and against which the inner ends of said toggle-arms bear, and mechanism for longitudinally moving said knee-piece. 6th. The combination of a driving and a driven part, one of which is formed with an overhanging flange, a divided friction ring within said flange and so connected to the other of said parts that they must both rotate together, guiding devices upon the respective sections of said ring adapted to guide them in their expanding and contracting movements, inclined toggle-arms with their outer ends bearing against the sections of said ring, a longitudinally movable knee-piece against which the inner ends of said toggle-arms bear, and retracting springs acting to contract said ring. 7th. The combination of driving and driven parts, one of which is formed with an overhanging flange, a divided friction-ring within said flange and so connected to the other of said parts that both must rotate together, a longitudinally movable knee-piece, inclined toggle-arms with their outer ends bearing against the sections of said ring, and their inner ends against said knee-piece, and removable blocks in which the ends of said toggle-arms are socketed. 8th. The combination of a driving and a driven part, one of which is formed with an overhanging flange, a divided friction-ring within said flange and so connected to the other of said parts that both must rotate together, a longitudinally movable knee-piece, inclined toggle-arms with their outer ends bearing against the sections of said ring and their inner ends against the said knee-piece, and adjustable socket-blocks, each interposed between one end of one of said toggle-arms and the part against which it bears, and angularly socketed in said latter part. 9th. The combination of driving and driven parts, one of which is formed with an overhanging flange, a divided friction ring within said flange and so connected to the other of said parts that both must rotate together, a longitudinally movable knee-piece, inclined toggle-arms with their outer ends bearing against the sections of said ring and their inner ends against said knee-piece, retracting springs acting to contract said ring and retract said knee-piece, and a stop for limiting the retractile movement of the knee-piece. 10th. The combination of driving and driven parts, one of which is formed with an overhanging flange, a divided friction ring within said flange, a knee-piece and inclined toggle-arms for expanding said ring, an annularly grooved sleeve connected to said knee-piece, a longitudinally moving slide engaging the groove in said sleeve, and an operating screw engaging said slide and adapted when rotated to impart longitudinal movement thereto, and thereby to engage or release the clutch. 11th. A clutch operating mechanism consisting of the combination of cap M formed with walls m, m, top plate N fixed thereon, yoke Q fixed thereto, slide P confine I between said walls and beneath said top plate, and operating screw R engaging said yoke and swivelled to said slide.

### No. 28,613. Thill Equalizer for Road Carts.

(*Boîte à égaliser pour voiture.*)

James Percy, Chicago, Ill., U.S., 3rd March, 1888; 5 years.

*Claim.*—In mechanism for equalizing the horse motion of two-wheeled vehicles, the two-part thills A, B, with overlapping joints J, and the part A formed of less depth than the part B, and provided with the stops d, m, in combination with the slotted plate D engaging the said stop, the draft-spring H E and the clip C G, as specified.