

combination, with the knottor, of a reciprocating finger 130 and operating devices, substantially as and for the purpose set forth. 36th. The combination, in a grain binder, of a table or platform, a knotting device supported above the table, a wheel, and gears whereby the reciprocation of the wheel operates the knottor, and a lever connected at the upper end to the wheel, and at the lower end to driving mechanism below the platform, substantially as described. 37th. The combination of the knottor, shaft carrying the knottor, a wheel gearing with said shaft and a vibrating lever connected to reciprocate the wheel, all arranged and supported above the table, substantially as set forth. 38th. The combination of the shaft and wheel geared together, a knottor carried by the said shaft, and a cutter carried by the wheel, substantially as described. 39th. The combination of a knottor, shaft, wheel, gears, and a guard carried by the wheel, substantially as set forth. 40th. The combination, with the knottor, shaft carrying the same, and wheel and gears, of a guard carried by, or forming part of, the said wheel in proximity to the knottor, substantially as set forth. 41st. The combination, with the knottor and shaft carrying the same, provided with a pinion, of a wheel carrying a rack gearing with said pinion, and provided with a finger for tightening the knot, with a projection for throwing the loop out of the loop, and with a cutter, substantially as set forth. 42nd. The combination of the knottor, notched disk Q, wheel geared with the knottor shaft, cam upon the wheel and connections, substantially as described, between the cam and disk to rotate the latter step by step, as the wheel is rocked, substantially as set forth. 43rd. The disk Q, provided with a ratchet r, in combination with an arm R extending beyond the disk and carrying a spring pawl engaging with said ratchet, substantially as set forth. 44th. The combination of the disk Q, ratchet lever and pawl and a shaft w, operating cam and arm carried by the shaft, and rod connecting the said arm to the pawl lever, substantially as set forth. 45th. The combination, with the knottor and shaft carrying the same, and with the notched disk, of a wheel geared with the said shaft and provided with a cam, and connections between the cam and the disk, whereby the knottor and disk are both operated by the reciprocation of the wheel, substantially as described. 46th. The notched disk, bevelled at both sides at the edge, in combination with a plate R having a recess or channel receiving the edge of the disk, substantially as and for the purpose set forth. 47th. The combination of the platform, overhanging arm, knottor carried by said arm, lever pivoted to the arm and connected to devices for operating the knottor, and shaft below the table provided with a crank and rod, connecting the crank to the lower end of the said lever, substantially as set forth. 48th. The combination, with the needle shaft and needle, of a compressor hung to and swinging upon the needle shaft, substantially as set forth. 49th. The combination of the table, cord-tying and severing devices above the table, needle carried by a shaft below the table, and discharge arm also carried by a shaft below the table, substantially as set forth. 50th. The combination of the binder frame, wheels A, A, supporting the said frame, a platform supported by the frame and extending over one of the wheels, and a binder supported by the frame and provided with discharge arms arranged to discharge the bound bundles from the platform and over the wheel, substantially as set forth. 51st. The combination of the wheels A, A, binding table arranged above and projecting over one of the wheels, a frame supported by the wheels below the platform, and supporting the driving shafts and their connections, an arm projecting above the platform and supporting the cord knotting and cutting devices, substantially as set forth. 52nd. The combination of the supporting wheels A, A, frame supported by the said wheels, driver's seat arranged at the rear of said wheels, and a binder arranged directly in front of the driver's seat and in line with the driver and the horses, substantially as set forth. 53rd. The combination of the supporting wheels, frame, pole extending forward from the frame, driver's seat at the rear of the frame, and binder provided with an overhanging arm, and knottor devices carried by the said arm upon the end opposite the driver and in line with the driver and the team, substantially as set forth.

No. 28,618. Machine for Upsetting Tires.

(Machine à refouler les bandages.)

Isaac N. Wright, Greensburg, and James S. Harper, Sardima, Ind., U.S., 3rd March, 1888; 5 years.

Claim.—1st. In a tire-upsetting machine, the combination, with a rigid plate A, movable plate D, arms C and E, and a lever F, of brackets G formed with serrated upper faces, serrated eccentric disks L and means, substantially as described, for operating said disks, as specified. 2nd. In a tire-upsetting machine, the combination, with a rigid plate A, movable plate D, arms C and E, and lever F, of brackets G, each formed with a transverse cylindrical groove in its upper face, serrated blocks, each provided with a transverse cylindrical rib upon its back adapted to fit into said grooves, serrated eccentric disks L and means, substantially as described, for operating said disk, as shown and described. 3rd. In a tire-upsetting machine, the combination, with a rigid plate A, movable plate D, arms C and E, lever F and bracket G, of serrated eccentric disks L, arms C connected to said disks, bar P to which said arms are pivoted, and lever R, substantially as and for the purpose set forth. 4th. In a tire-upsetting machine, the combination, with the rigid plate A, movable plate D, arms C and E, and lever F, of bracket-plates secured to the rigid and movable plates, brackets G, eccentric disks L secured to said bracket-plates, the foot T provided with a slotted arm adapted to slide upon the lip W, and means, substantially as described, for operating said foot and disks, for the purpose set forth. 5th. In the within described tire-upsetting machine, the combination, with the bracket G, disks L, arm C, bar P, foot T and lever R, of the pawl X, arm B, slotted bar C, and the screw-bolt Q, substantially as and for the purpose set forth.

No. 28,619. Harvester. (Moissonneuse.)

The Massey Manufacturing Company, Toronto, Ont., (assignee of William N. Whiteley, Springfield, Ohio, U.S.), 3rd March, 1888, 5 years.

Claim.—The combination, in a harvester, of a main axle and a main wheel mounted loose thereon, the segments G on the frame, the

pinions E, E₂, or their equivalents, on said axle, the worm-wheel F secured to said axle, the worm H mounted on the telescopic shaft J, K, whereof the part K slides but does not turn within the part J, substantially as and for the purpose hereinbefore set forth.

No. 28,620. Harrow. (Herse.)

The Stoddard Manufacturing Company, (assignee of Henry C. Lowe, Administrator of the estate of E. Fowler Stoddard, Dayton, Ohio, U.S.), 3rd March, 1887; 5 years.

Claim.—1st. In a wheel or disk harrow, the combination, with the main frame, of the disk gangs hinged or pivoted thereto on each side of its centre, and connecting mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and *vice versa*, substantially as described. 2nd. In a wheel or disk harrow, the combination, with the main frame, of two or more sets of disk gangs hinged or pivoted thereto on each side of its centre, and connecting mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and *vice versa*, and whereby the shifting of one gang causes the simultaneous shifting of its adjacent connected gang, substantially as described. 3rd. In a wheel or disk harrow, the combination, with the main frame, of two or more sets of disk gangs hinged or pivoted thereto on each side of its centre, and connecting mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and *vice versa*, and whereby the shifting of an inner gang causes the simultaneous shifting of its adjacent outer gang, substantially as described. 4th. In a wheel or disk harrow, the combination, with the main frame and the disk gangs hinged or pivoted thereto on each side of its centre, of an independently backwardly and forwardly movable doubletree and connecting mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and *vice versa*, substantially as described. 5th. In a wheel or disk harrow, the combination, with the main frame and two or more sets of disk gangs hinged or pivoted thereto on each side of its centre, of an independently, backwardly and forwardly movable doubletree, and connecting mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and *vice versa*, and whereby the shifting of one gang causes the simultaneous shifting of its adjacent connected gang, substantially as described. 6th. In a wheel or disk harrow, the combination, with the main frame and two or more sets of disk gangs hinged or pivoted thereto on each side of its centre, of an independently, backwardly and forwardly movable doubletree, and connecting mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and *vice versa*, and whereby the shifting of the inner gangs causes the simultaneous shifting of the outer gangs, substantially as described. 7th. In a wheel or disk harrow, the combination, with the main frame and the disk gangs hinged or pivoted thereto on each side of its centre with connecting mechanism, of an independently, backwardly and forwardly movable doubletree, and adjusting and locking mechanism, whereby the power of the team effects the simultaneous shifting of said disk gangs from a straight line to an angling position, and *vice versa*, and whereby said disk gangs can be locked in any of their adjusted positions, substantially as described. 8th. In a wheel or disk harrow having two or more sets of disk gangs on each side of its centre, chains connecting the beams of said gangs on each side and passed around sheaves journaled to the main frame, substantially as described, whereby the shifting of the inner gangs causes the simultaneous shifting of the outer gangs. 9th. In a wheel or disk harrow, the combination, with the main frame and a convertible pole and thills secured thereto, of backwardly and forwardly movable hitching mechanism, substantially as described, whereby a perfect centre draft is obtained whether two or three horses are used. 10th. In a wheel or disk harrow, the combination, with the main frame and adjustable disk gangs hinged thereto, of convertible pole and thills secured to the main frame, and hitching mechanism, whereby a perfect centre draft is obtained whether an odd or an even number of horses abreast are hitched thereto.

No. 28,621. Manufacture of Cylindrical Brushes and Apparatus therefor. (Fabrication des pinceaux et appareil pour cet objet.)

Frederick J. Page and Charles F. Page, Norwich, Eng., (assignees of Jean V. Gane, Paris, France), 3rd March, 1888; 5 years.

Claim.—1st. In an apparatus such as described, and as a means of suspending the stock in varying positions equidistant from each other, the combination, with the extensible rod J and its operating worm E and worm wheel F, of the pitch chain mechanism consisting of the pitch wheels C and D, pitch chain C, sleeve C, spring catch Q, rowed rod P and stop nut P, or their respective mechanical equivalents, the whole constructed and operating substantially as and for the purpose specified. 2nd. In an apparatus such as described, the means for raising and lowering the stock consisting of an extensible rod such as H I J, pulley F and connecting wire, substantially as specified. 3rd. In an apparatus such as described, an extensible rod consisting of a solid internal rod, surrounding tubes telescopically arranged and supported in a gimbal frame, and a swivelling wire for connecting with the controlling pulley, substantially as specified. 4th. In an apparatus such as described, the combination, with two extensible rod and pitch chain mechanism, of the sliding bracket B and slide K, substantially as and for the purpose specified. 5th. In an apparatus such as described, the combination, with the slide K, of the adjustable rest N, substantially as and for the purpose specified.

No. 28,622. Lathe. (Tour.)

The Dodge Manufacturing Company, (assignee of Wallace H. Dodge and George Philion), Mishawaka, Ind., U.S., 3rd March, 1888, 5 years.

Claim.—1st. In a machine for turning the rims and boring the hubs