horizontally-projecting supporting-lugs a^7 upon the end plates, upwardly-projecting hooks a^{7t} upon the supporting-lug, and a grate-section D_1, which is provided upon its lower rear portion with a downwardly projecting lug d_9, which terminates in a hook which engages behind the upwardly-projecting hook a^{7t} of the supporting lug a^7, as described. 70th. The combination of a vertical end plate, which has a shelving projection, a supporting-lug below the shelving projection, and a reciprocating grate which is provided with a rear bottom hook, which engages with the supporting-lug, the upper surface of the grate when it is in its operative position being nearly in contact with the lower surface of the shelving projection. 71st. The combination of vertical end plates A^2 A^3, having shelving projections a^3, a^3, a supporting lug a^7 below the shelving projections, and a grate which is provided with rear bottom hooks d_9, d_9, which engage with the supporting-lugs, the upper surface of the grate when it is in its operative position, being nearly in contact with the lower surface of the shelving projection. 72nd. The combination, with the vertical grate front E, of the supporting-rail A_3 secured to the face-plates A, A, and to the grate-front, and provided with openings for an operating lever. 73rd. The combination, with the grate front of an open fire grate, of a supporting-rail secured to the grate-front, and to the face plates at the sides of the grate-front inclined downwardly from front to rear and provided with self-closing valves. 74th. In a fire-grate, a grate section, which at each end at its rear extremity is provided upon its bottom surface with a downwardly-projecting engaging-hook. 75th. In a fire grate, a grate-section D^1 or D_2, which at each end at its rear extremity is provided upon its bottom surface with a downwardly-projecting engaging-hook. 75th. In a fire grate, a grate-section D^1 or D^2, which at each end at its rear extremity is provided upon its bottom surface with a downwardly-projecting engaging-hook d_9 or d^9.

No. 24,888. Grinding Mill. (*Moulin à Blé.*)

Mil J Althouse, Waupun, Wis., U.S., 6th September, 1886; 5 years.

Claim.—1st. In combination with the horizontal shaft and its grinding disk, a co-operating disk, and a weighted lever acting to urge said shaft endwise and maintain the separation of the disks. 2nd. In combination with the grinder shaft and the weighted lever, the intervening leather, substantially as and for the purpose described. 3rd. In combination, with the tempering screw and the bearing plate J, the supporting hub and the lining therein, constructed as described, to serve as a shaft bearing and also to retain the plate in place. 4th. In combination with the feed throat and the feed-screw therein, the flange to prevent material from being expelled in an upward direction. 5th. In combination, with the eccentric, the lever R embracing the wooden lining arranged with its grain endwise to the eccentric. 6th. In combination with the feed shoe, the actuating lever and the elastic bushing T, substantially as shown and described. 7th. In combination, with the hopper and the sliding gate therein, the pivoted button arranged to bear forcibly on the gate, whereby the gate is held frictionally in position. 8th. In combination, with the tempering screw, its support, the jam nut, and the nut operating handle removable therefrom, and arranged to hang upon the screw, substantially as and for the purpose described. 9th. In combination with the casing or body E, the hopper and the hopper sustaining arms L, constructed and arranged as described, their upper ends flanged and secured to the hopper, and their lower ends seated upon and bolted to the casing. 10th. The grinding disk, consisting of the hard metal disk or grinder proper, and the soft metal disk secured to its rear face. 11th. As a new product, a grinder composed of a front grinding disk of hard metal, with a suitable dress, and a back plate of softer metal secured permanently and rigidly thereto, said back plate having its rear face dressed in a plane parallel with that of the grinding face. 12th. In a grinding mill, the combination of a shaft B, a disk I secured rigidly therein and having a circular concentric recess with its face in a plane at right angles to its axis, and a grinding disk consisting of the hard and soft metal parts, constructed and united, as described, the soft metal part seated in disk I, as shown, whereby the grinding surface is maintained in the proper relation to the shaft. 13th. The herein described method of securing parallelism of the grinding surfaces of a disk mill, consisting in the following steps, first forming the two disks, each with a rear surface parallel with the grinding surface, second, revolving the disk receiving surfaces of the mill about an axis coincident with that of the operative disk subject to the action of a cutting tool, and forming therein concentric surfaces at right angles to said axis, and, third, seating and rigidly securing the backs of the disks against said surfaces. 14th. A grinding disk, provided with the feeding furrows, the diamond dress encircling the same, and the peripheral teeth having the abrupt forward faces and cutting edges, as described and shown.

No. 24,889. Service Pipe for Hydrants or Buildings, etc. (*Tuyau de Distribution pour Bornes-Fontaines ou Bâtiments, etc*)

George B. Bassett, Watertown, N. Y., U. S., 6th September, 1886; 5 years.

Claim.—1st. The combination, with a water main of two lateral pipes connected at their outer ends and connected with the main in close proximity, as and for the purpose shown and set forth. 2nd. The combination, with a water main, of the lateral pipes communicating with their outer ends, and connected with the main in close proximity to each other, the diameter of the main between the two pipes being enlarged, as and for the purpose shown and set forth. 3rd. The combination, with a water main, of a casting or joint forming a part of the main, and having two openings or necks at one side near to each other, as and for the purpose shown and set forth. 4th. The combination, with a water main of a casting or joint forming a part of the main, and having a bulge or enlargement to one side formed with the apertures or necks near to each other, as and for the purpose shown and set forth. 5th. The combination, with a water main, of a casting or joint having two necks or apertures at one side in close proximity to each other, and two lateral pipes secured in the necks or apertures and having their outer ends communicating to form one continuous passage, as and for the purpose shown and set forth. 6th. The combination, with a water main, of a casting or joint forming a part of the main, and having a bulge to one side formed with two apertures or necks close to each other, and two lateral pipes secured in the apertures or necks, and having their outer ends communicating to form a continuous passage, as and for the purpose shown and set forth. 7th. The combination, with a hydrant, of two lateral pipes opening with their ends in the lower end of the hydrant, and having their other ends secured to an opening into a main in close proximity to each other, as and for the purpose shown and set forth. 8th. The combination, with a hydrant, of two lateral pipes opening with their ends in the lower end of the hydrant, and a joint in a main having a bulge at one side, having the ends of the pipes secured to and opening into in close proximity to each other, as and for the purpose shown and set forth. 9th. The combination of a main, having a casting or joint formed with a bulge at one side, having two apertures or necks in close proximity to each other, a hydrant having two necks or apertures in the lower end outside of the valve, and two lateral pipes secured in the necks or apertures of the hydrant, and the casting or joint, as and for the purpose shown and set forth. 10th. The combination of a water main, a casting or joint having a bulge at one side, formed with two necks or apertures in close proximity to each other, a hydrant, a Y-shaped joint secured in the lower end of the hydrant, and two lateral pipes secured in the necks of the bulged casting or joint, and of the Y-shaped joint, as and for the purpose shown and set forth. 11th. The Y-shaped joint having a lip or web projecting from the crotch into the shank or main branch, as and for the purpose shown and set forth. 12th. In combination with a hydrant and a water main having two parallel lateral pipes extending from one side in close proximity to each other, a Y-shaped joint secured with its shank or main branch in the lower end of the hydrant, and with its branches in the ends of the pipes, and having a lip or web projecting from the crotch into the shank or main branch of the joint, as and for the purpose shown and set forth.

No. 24,890. Harvesting and Binding Machine. (*Moissonneuse-Lieuse.*)

Samuel Johnston, Brockport, N. Y., U. S., 6th September, 1886; 5 years.

Claim.—1st. In a harvesting machine, the combination of the platform and the binding devices with a pivoted vibrating collecting arm adapted to sweep across the platform from the grain side when collecting the cut grain, a reciprocating arm carrying a packer and adapted to receive the grain from the advancing collecting-arm and deliver it to the binder, the said packer being adapted to approach toward and recede from the collecting arm, reel arms or beaters to deposit each gavel upon the platform when the said packer and collecting arm are farthest from each other, and operating mechanism to actuate said parts whereby their movements shall be properly timed, substantially as and for the purpose specified. 2nd. In a harvesting machine, the combination of the platform and the binding devices, with a pivoted collecting-arm adapted to sweep across the platform from the grain side when collecting the cut grain, a reciprocating arm carrying a packer adapted to approach the collecting arm and receive the grain therefrom, and to retreat and deliver it to the binder, and a vibrating butting-board arranged to act upon the butts of the grain during its transit to the binder, substantially as and for the purpose specified. 3rd. In a harvesting machine, the combination of the platform and the binding devices, with a pivoted collecting-arm adapted to sweep across the platform from the grain side while collecting the cut grain, a reciprocating arm carrying a packer adapted to approach the collecting arm from the other side of the platform and receive the grain therefrom, as said collecting arm advances, and then to retreat and deliver it to the binder, and a vibrating butting-board arranged to act upon the butts of the grain during transit to the binder, reel arms or beaters to deposit each gavel upon the platform when the said packer and collecting arm are farthest from each other, and operating mechanism to actuate said parts whereby their movements shall be properly timed, substantially as and for the purpose specified. 4th. In a harvesting and binding machine, the platform and cutters, in combination with the usual gathering reel or rakes to deliver the cut grain back upon the platform, collecting devices adapted to sweep across the platform and collect each gavel before the next succeeding one falls and deliver it to the binder, an adjustable butting-board hinged or pivoted to the machine by parallel bars, and operated by means of crank and pitman connected to the board between the points of connection of the bars with the board, substantially as described, to straighten the butts of the gavel during their passage to the binder and control the location of the band around the bundle, substantially as and for the purpose specified. 5th. In a harvesting machine, the platform, the binder and suitable rake or reel arms, to deliver the cut grain onto the platform, in combination with a collecting device to pass across the platform and deliver the grain to one side, leaving the platform clear for the next gavel, and a packer adapted to reciprocate between the binder and collecting device, said packer being provided with two sets of prongs or fingers, arranged one in advance of the other, each set acting on different gavels, whereby when one set is receiving the gavel from the collecting device, the other set is receiving the gavel previously acted on by the first set, and whereby both gavels are simultaneously advanced toward the binder, substantially as and for the purpose specified. 6th. A device for collecting cut grain and moving it over a platform of a harvesting machine, consisting of a vibrating arm to which one or more wheels, armed with fingers or teeth, are journalled, in combination with means to reciprocate said arm, and means to prevent the toothed wheels rotating in one direction, but allowing of their rotating in the other direction when passing the pivoted collecting arm, whereby the roll over the collected grain without disturbing it, and in moving in the opposite direction they are locked against rotation and move the cut grain with them, substantially as and for the purpose specified. 7th. In a device for collecting cut grain and moving it over a platform, the combination, with a reciprocating collecting-arm, of a vibrating arm to which one or more wheels armed with fingers or teeth are journalled, in combination with means to reciprocate said arm, and means to prevent the toothed wheels rotating when the arm is moving toward the binder, springs or friction devices whereby