No. 657,603.

Patented Sept. 11, 1900.

W. KRAEMER.

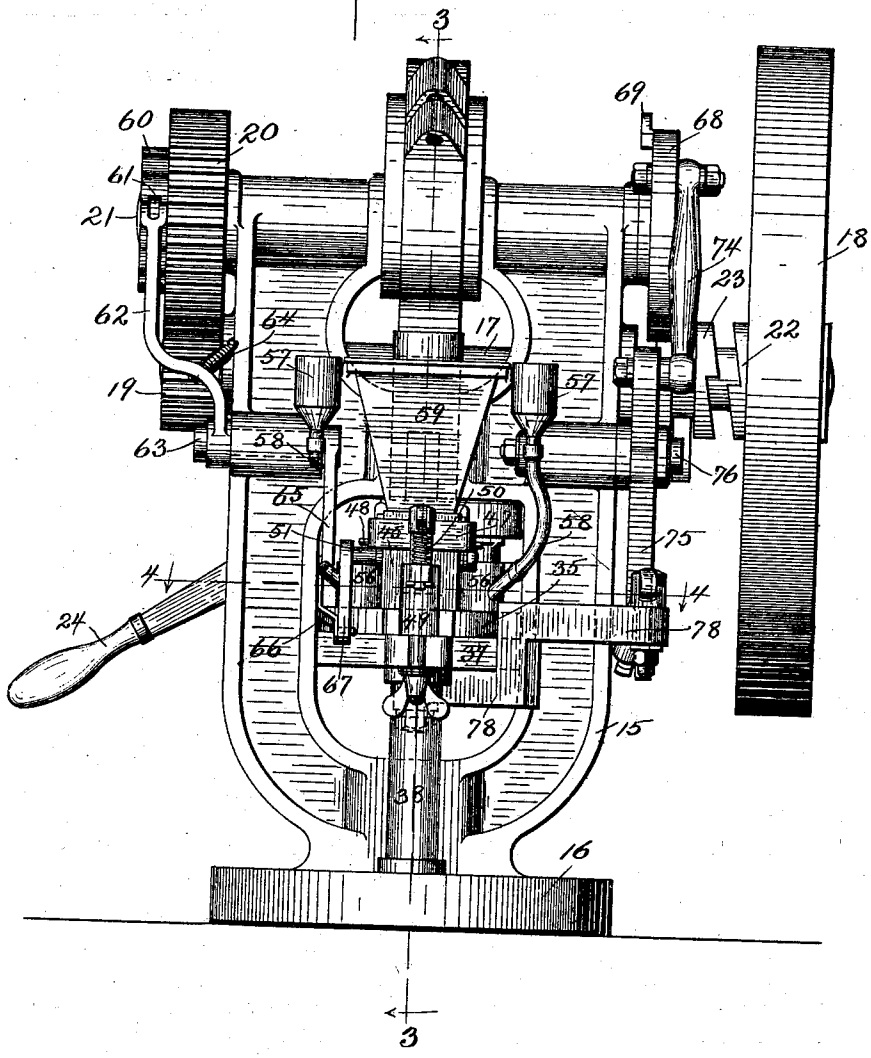
STAMPING MACHINE.

(Application filed June 22, 1900.)

(No Model.)

5 Sheets—Sheet 1.

Fig. 1.



Witnesses

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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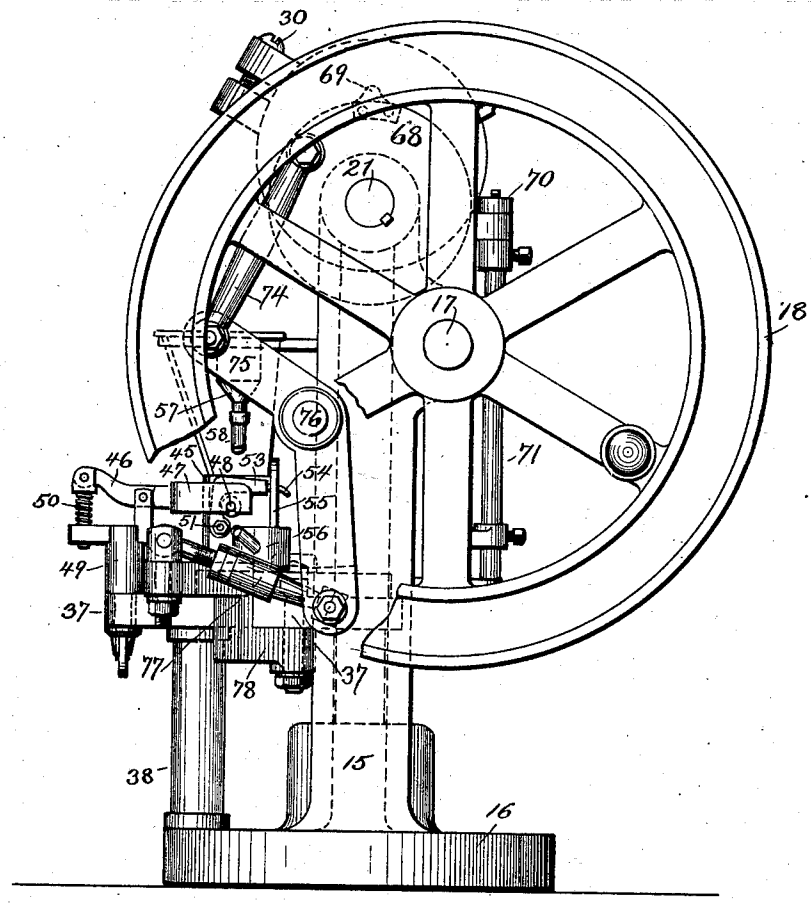
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(No Model.)

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Fig. 2.



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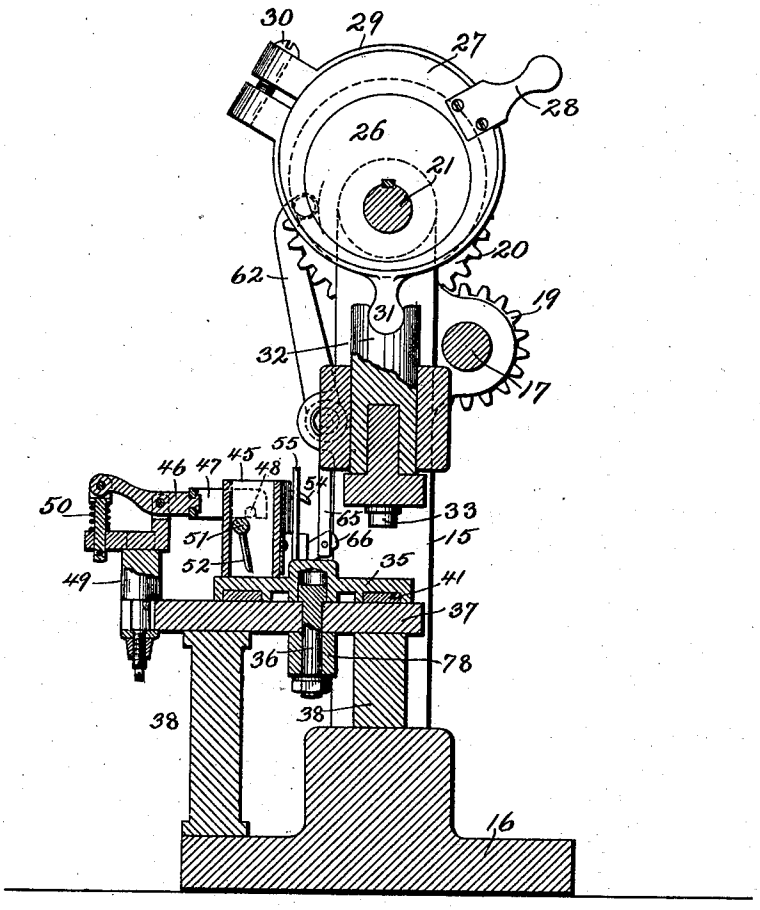
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(No Model.) 5 Sheets—Sheet 3.

Fig. 3.



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Fig. 4.

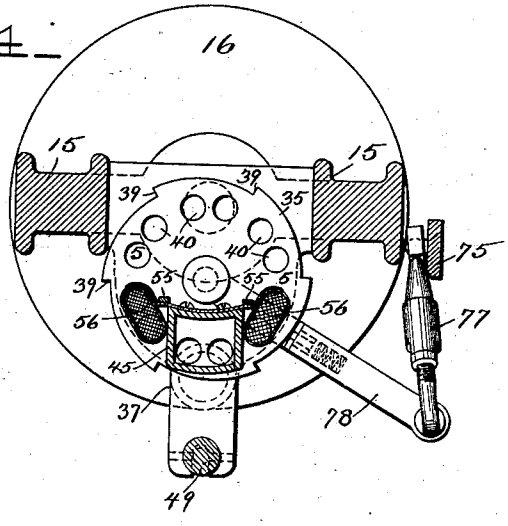


Fig. 5.

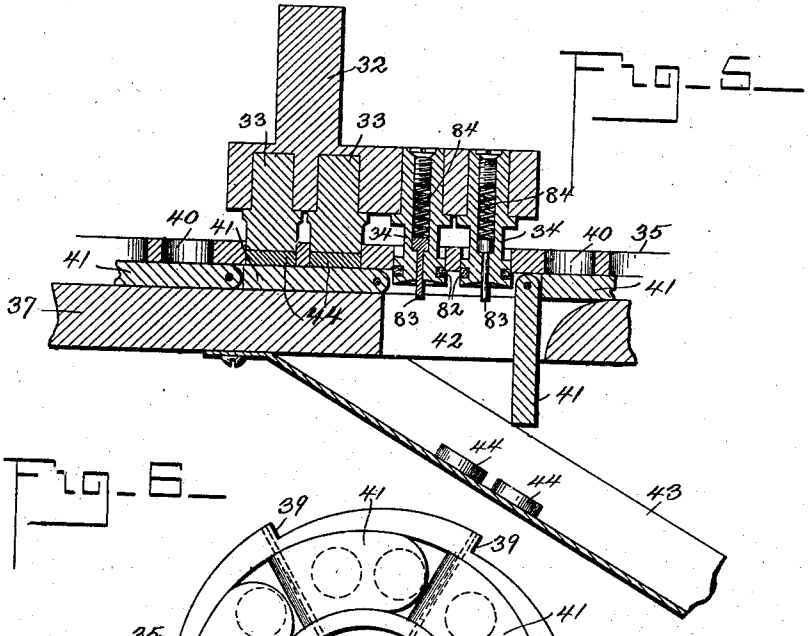
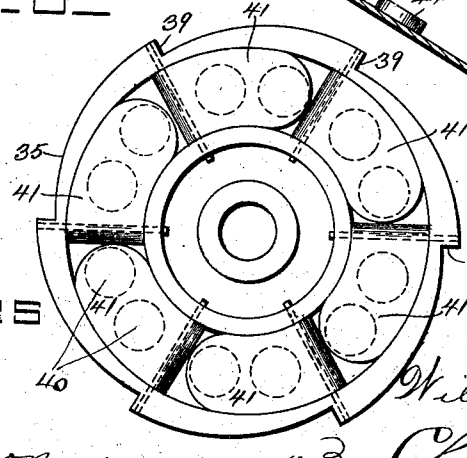


Fig. 6.



Witnesses

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STAMPING MACHINE.

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(No Model.) 5 Sheets—Sheet 5.

Fig. 10.

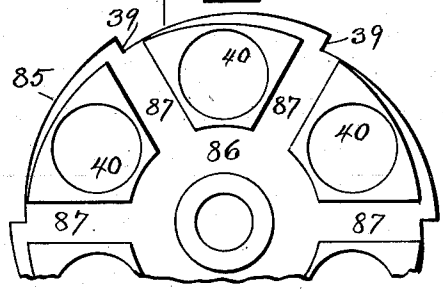


Fig. 7.

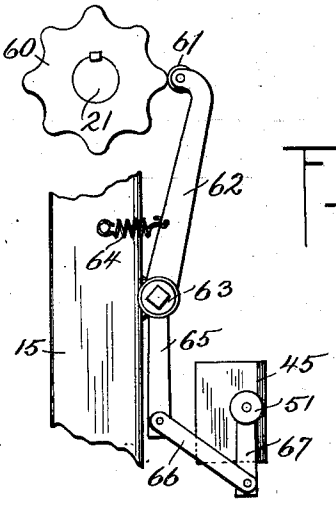


Fig. 8.

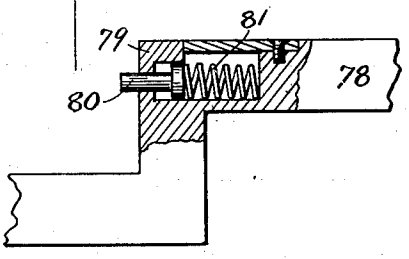


Fig. 9.

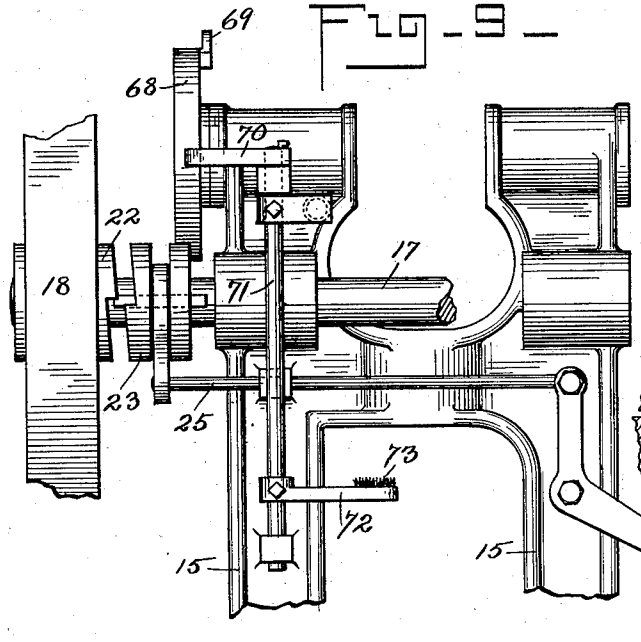
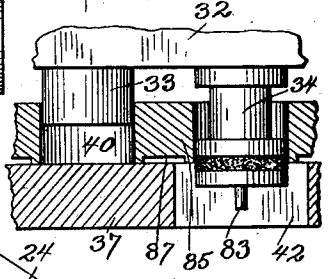


Fig. 11.



Witnesses

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM KRAEMER, OF CHICAGO, ILLINOIS.

STAMPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 657,603, dated September 11, 1900.

Application filed June 22, 1900. Serial No. 21,167. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM KRAEMER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stamping-Machines, of which the following is a specification.

This invention relates to improvements in a machine to be used for stamping or pressing comminuted particles or material in a plastic state into various forms to produce tablets, disks, small cakes, spheres, buttons, and analogous articles; and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a view in front elevation of the machine, showing the parts in position ready for use. Fig. 2 is a view in side elevation, showing the power-wheel broken away. Fig. 3 is a vertical central sectional view taken on line 3 3 of Fig. 1 looking in the direction indicated by the arrows. Fig. 4 is a plan sectional view taken on line 4 4 of Fig. 1. Fig. 5 is a circumferential sectional view taken on line 5 5 of Fig. 4. Fig. 6 is a bottom plan view of the matrix disk or plate. Fig. 7 is a detail view in elevation of a part of the upper portion of the supporting-frame, showing a mechanism for agitating the material in the feed-box. Fig. 8 is a view, partly in section and partly in elevation, of a portion of a lever employed for rotating the matrix plate or disk. Fig. 9 is a rear view in elevation of the upper portion of the machine. Fig. 10 is a bottom plan view of a modified form of the matrix plate or disk; and Fig. 11 is a view, partly in section and partly in elevation, of a portion of said disk, a part of the supporting-table, and a portion of the die-head.

The reference-numeral 15 represents the main or supporting frame, which may be made of any suitable size, form, and material, but is preferably of metal and of substantially the shape shown in the drawings, and has a base 16, which may rest on or be secured to the floor or other suitable support. Horizontally journaled on the rear portion of the frame 15, a little above its middle, is a main shaft 17, on one end of which is mounted a wheel 18, to which power may be applied for operating the machine. On the opposite end of the shaft 17 is mounted a cogged gear 19, which meshes with a gear 20, mounted on a shaft 21, journaled on the upper part of the supporting-frame. The wheel 18 carries on its surface, adjacent to the frame of the machine, a clutch-face 22, which engages a clutch 23, which is movable longitudinally on the shaft 17 and is operated so as to throw the wheel 18 in or out of gear by means of a lever 24, fulcrumed on the main frame, and a rod or link 25, connecting one end of said lever and the clutch.

Keyed to the middle of the shaft 21 is an eccentric 26, surrounding which and movable therewith is another eccentric 27, which is provided with an extension or projection 28 to be used for shifting the position of the last-named eccentric when it is desired to regulate the stroke of the die-carrying plunger.

On the periphery of the eccentric 27 is located a clamping-band 29, in the ends of which is located a screw 30, employed for securing said band by clamping the same on the outer eccentric. The band 29 is provided with a projection 31, rounded in its free portion, which projection oscillates in a suitable opening in the upper part of the plunger 32, which carries the dies 33 and ejector-heads 34, which dies and heads are arranged on an arc to correspond with that of the matrices in the matrix plate or disk 35, which is rotatably mounted on a vertical shaft 36, extending through the platform 37, which is suitably mounted on the pieces 38 on the lower front portion of the supporting-frame. The matrix plate or disk 35 is circular, as shown in Fig. 6 of the drawings, and has on its periphery a series of ratchet-teeth or notches 39, the purpose of which will be presently explained. This plate or disk is provided with a number of openings or matrices 40, which may be of any desired shape, but in the present instance are shown as cylindrical and are arranged in a concentric circle to the shaft 36, on which the said disk or plate is mounted.

Hinged to the lower surface of the disk 35

are a number of doors 41, which drop through a suitable opening 42 in the platform 37, under which opening is located in an inclined position a chute 43 to receive and carry off the stamped or pressed articles 44, which may be of any suitable shape and desired material.

Resting on the upper surface of the matrix plate or disk 35 is a feed-box 45, the upper and lower ends of which are open to allow the material which is to be stamped or pressed into form to pass therethrough. This box is held in position on the said disk by means of a spring-pressed lever 46, which is provided with a yoke 47 to engage pins or projections 48 on the sides of the box. The lever 46 is fulcrumed on a suitable support 49 on the front part of the platform 37 and is actuated by an expanding-spring 50, located under its outer end. Passing through the box 45 is a rock-shaft 51, which carries fingers 52 within the box, used to agitate the material and to prevent its clogging. Fixed on the rock-shaft 51 on each side of the feed-box 45 is an angle-lever 53, whose free end is provided with a finger 54, which passes through a suitable opening in a frame 55, secured to the rear surface of the feed-box, so as to move vertically thereon. To each side of the frame 55 is secured a powder-box 56, which boxes have their bottoms perforated, as shown in Fig. 4 of the drawings. These boxes are connected to the lower ends of funnel-shaped receptacles 57 by means of flexible tubes 58, which convey the powder from the receptacles 57 to the powder-boxes. Located on the top of the feed-box 45 and communicating therewith is a hopper 59, used for supplying the material to the matrices. On one end of the shaft 21 is mounted a cam 60, with which impinges a friction-roller 61, carried by a lever 62, fulcrumed on the shaft 63, which is journaled on the front portion of the main frame. The roller 61 is held in contact with the cam 60 by means of a spring 64, secured at one of its ends to the main frame and at its other end to said lever. On the shaft 63 is an arm 65, which is connected at its lower end by means of a link 66 to an arm 67 on the rock-shaft 51, which connections and lever operate said shaft and the powder-boxes 56, so as to agitate the material therein and to shake the powder from said powder-boxes into the matrices. On the opposite end of the shaft 21 from that on which the cam 60 is mounted is a wheel 68, which carries a cam projection 69 to contact with an arm 70 on the rock-shaft 71, which is vertically supported on the rear surface of the main frame. On the lower portion of the rock-shaft 71 is secured an arm 72, which carries a brush 73, used for cleaning the dies 33. Pivotally secured to the wheel 68 is a link 74, which is also pivotally connected to one arm of a bell-crank lever 75, which lever is fulcrumed on a shaft 76 on the front part of the main frame. To the lower arm of the bell-crank lever 75 is connected by a universal joint a link 77, which is similarly connected at its other end to one end of a bar 78, whose other end is pivotally connected to the shaft 36, on which the matrix disk or plate is pivoted. By reference to Figs. 1 and 8 of the drawings it will be seen that the bar 78 is formed with an elbow 79, through which extends a pin 80, which is normally projected by means of a spring 81, located in a suitable recess in said bar. The pin 80 is employed to engage the teeth or notches 39 on the matrix-disk, and in conjunction with the bar 78 and its connections with the wheel 68 to turn said disk.

The plunger 32 carries the die-heads 33, as well as the ejector-heads 34, which are provided with packing-rings 82, of felt or other material, to wipe or clean the matrices through which said heads pass. Each of the ejector-heads 34 is provided with a pin or projection 83, which pins are normally projected by means of springs 84, located in suitable openings in said heads.

In Figs. 10 and 11 of the drawings I have shown a modification in the construction of the matrix-disk which consists of a disk 85, having notches or ratchet-teeth 39 on its periphery, as before, but provided on its lower surface with a circular channel 86 and radial channels 87, extending to the periphery of the disk. In this modification the matrices are arranged singly instead of in pairs, as in the first-described construction, and, besides, the drop-doors are omitted. By this construction the powder and material falling on the platform 37 will be removed therefrom through the channels 87, and thus automatically cleaning said platform.

From the foregoing and by reference to the drawings it will be seen and readily understood that by throwing the clutch 23 so as to engage the clutch-face 22 on the wheel 18 and applying power to said wheel the machine will be put in operation. The shaft 21 will be driven by its gearing with the shaft 17 and through the medium of its connections with the feed-box and powder-boxes will agitate or shake the material therein, so as to prevent the former clogging, and will cause the powder to be sifted from the powder-boxes into the matrices before and after they have been filled from the feed-box 45, thus preventing the material sticking to the matrices or dies. A further purpose of the powder-boxes 56 is to give the piece or cake a coating of different colors. As the material passes from the hopper and feed-box into the matrices of the matrix plate or disk said disk will be turned on its pivot by means of the pin 80 on the bar 78 and its connections with the wheel 68, so as to place other empty matrices under the feed-box and at the same time place the filled ones in position to receive the die-heads 33, which will compress the material to the desired form. As the disk turns the matrices containing the stamped material will be brought over the opening 42 in the platform and the door 41 under said matrices will drop

(see Fig. 5) and allow the ejector-heads to push the pieces from the molds, the spring-actuated pins 83 being used to remove the pieces from said heads should they stick thereto. The die-heads 33 and ejector-heads 34 are moved at the same time by the eccentrics 26 and 27 and their connections with the plunger 32, which operates in a vertical opening in the main frame. When it is desired to limit the stroke of the plunger, so as to make the cake or piece thick or thinner, the eccentric 27 may be turned on the eccentric 26 by means of the arm 28 in the proper direction.

The brush 73 will be caused to wipe or clean the die-heads 33 by reason of the projection 69 contacting with the arm 70 on the rock-shaft 71 in the operation of the machine.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a stamping-machine, the combination of a main or supporting frame, with a matrix plate or disk rotatably mounted thereon, a feed-box communicating with the matrices thereof, a powder-box located near the feed-box, and vertically movable thereon, and means to intermittently rotate the matrix-disk and to agitate the material in the feed-box and to shake the powder-box, substantially as described.

2. In a stamping-machine, the combination of a main or supporting frame, with a platform horizontally located thereon and having an opening, a matrix-disk rotatably mounted on said platform and having hinged doors below the matrices, a feed-box communicating with the matrices, a powder-box located near the feed-box and vertically movable thereon, and means to intermittently rotate the matrix-disk and to agitate the material in the feed-box and to shake the powder-box, substantially as described.

3. In a stamping-machine, the combination with a main or supporting frame, of a matrix-disk rotatably mounted thereon, a feed-box communicating with the matrices thereof, a powder-box located near the feed-box, a plunger carrying a die-head and an ejector-head, means to intermittently rotate the matrix-disk and to agitate the material in the feed-box and to shake the powder-box, and means to raise and lower the said plunger, substantially as described.

4. In a stamping-machine, the combination with a main or supporting frame, of a matrix-disk rotatably mounted thereon, a feed-box communicating with the matrices thereof, a powder-box located on each side of the feed-box and each having a foraminous bottom, said powder-boxes being vertically movable, a rock-shaft transversely journaled in the feed-box and having fingers within the said box, levers rigid on the rock-shaft and connected to the powder-boxes, and means to intermittently rotate the matrix-disk and to operate the rock-shaft, substantially as described.

5. In a stamping-machine, the combination with a main or supporting frame, of two powder-receptacles thereon, two powder-boxes having foraminous bottoms and connected to said receptacles by means of flexible tubes, a rock-shaft journaled near the powder-boxes, levers or arms rigid on the rock-shaft and connected to the powder-boxes, and means to operate the rock-shaft, substantially as described.

6. In a stamping-machine, the combination with the main frame, of a die-carrying plunger vertically movable thereon, a shaft horizontally journaled on the upper portion of the main frame, eccentric connections uniting said shaft and plunger, to raise and lower the same, a rock-shaft vertically journaled on the main frame and having at its upper end an arm, an arm secured to the lower portion of the rock-shaft and having a wiper for the dies, and a wheel mounted on the horizontal shaft, and provided with a projection to strike the upper arm on the rock-shaft, substantially as described.

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