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PATENTED OCT. 31, 1905.

C. F. HELD.

DISCHARGING DEVICE FOR CRAYON MOLDING MACHINES.

APPLICATION FILED AUG. 14, 1905.

2 SHEETS—SHEET 1.

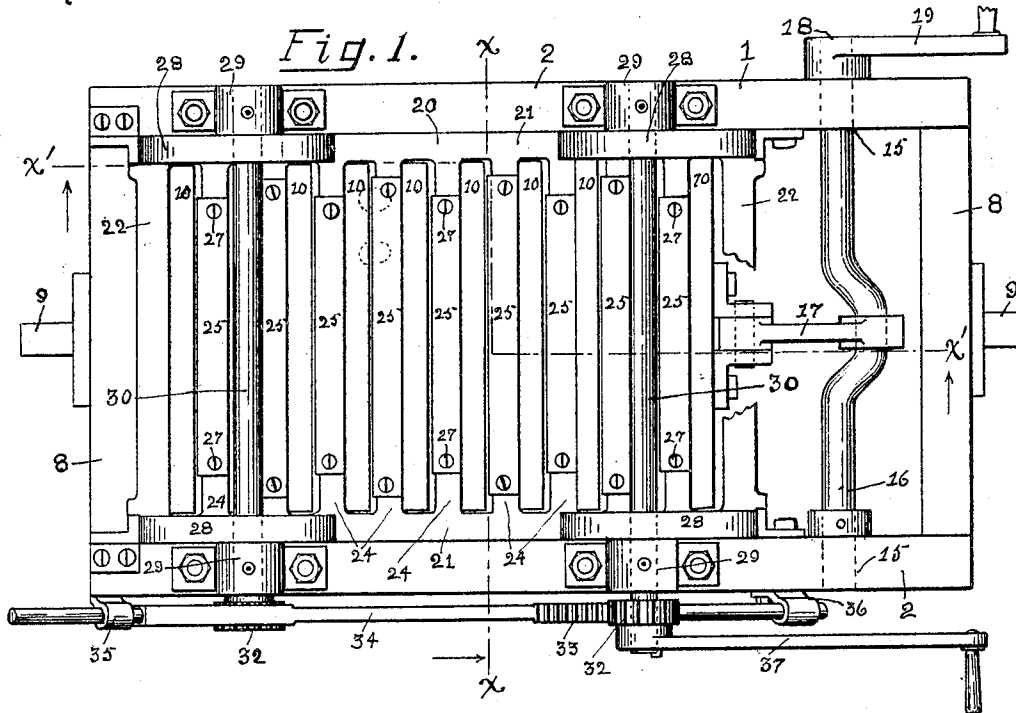
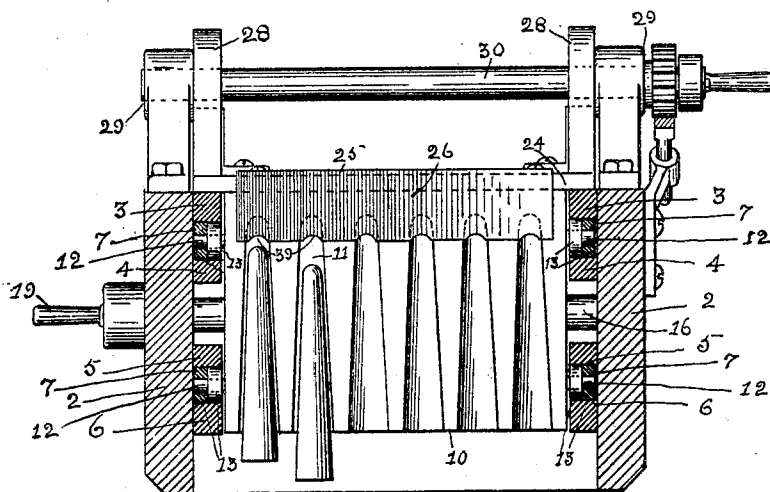


Fig. 2.



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Fig. 3.

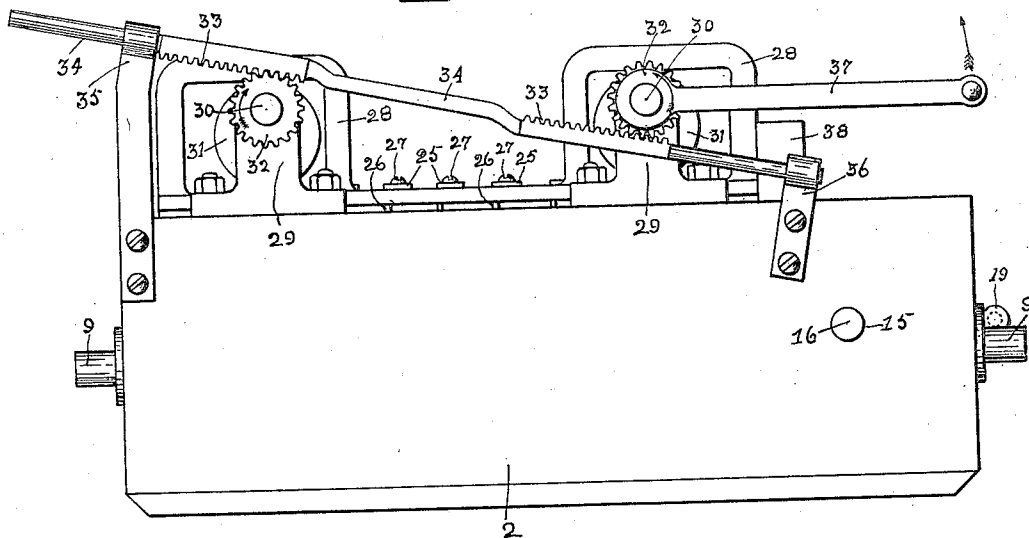
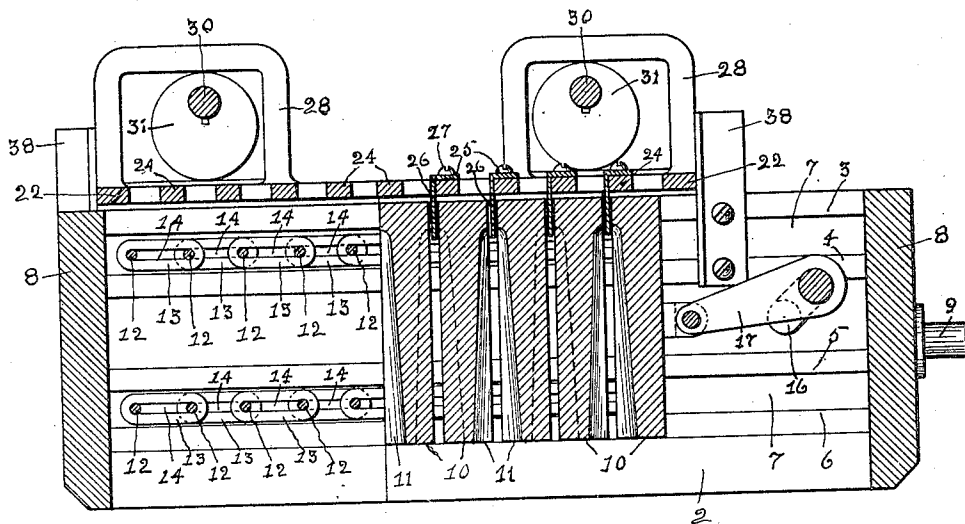


Fig. 4.



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UNITED STATES PATENT OFFICE.

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DISCHARGING DEVICE FOR CRAYON-MOLDING MACHINES.

No. 803,057.

Specification of Letters Patent.

Patented Oct. 31, 1905.

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To all whom it may concern:

Be it known that I, CHARLES F. HELD, a citizen of the United States, and a resident of Sandusky, in the county of Erie and State of Ohio, have invented a new and useful Improvement in Discharging Devices for Crayon-Molding Machines, of which the following is a specification.

My invention relates to a discharging device for crayon-molding machines, and has for its object to provide a machine of the kind with means for readily discharging the crayons from the molds.

With this object in view my invention, which is adapted to be used with a crayon-molding machine of the kind having a reversible mold-plate frame provided with a plurality of rectangular mold-plates fitted in the frame and movable laterally therein to and from compact side engagement for molding from and to open position for discharging, wherein the plates are separated at regular and equal intervals, the mold-plates being each provided with fractional molds which are adapted to register with fractional molds of companion plates and together form a series of complete molds transverse the joined plates, said molds being each tapered from end to end, open at the larger and closed at the smaller end, said frame being also provided with means to separate and close the plates together, and the plates with means to limit the lateral separation of the plates to separation at equal intervals, consists in providing a machine of the kind described with a discharging mechanism comprising a discharging-frame mounted on the mold-plate frame and movable upward and downward thereon, discharging-plates transversely secured edgewise to the discharging-frame opposite and in line with the intervals of the mold-plates when separated, and means to lower the discharging-frame and force the discharging-plates into the interval between the mold-plates and into engagement with the smaller end of the crayons in the fractional mold-cavities and thereby discharge the crayons, and to raise the discharging-frame and thereby withdraw the discharging-plates from the intervals between the mold-plates.

The construction, application, and operation of my invention in connection with a crayon-molding machine is hereinafter more particularly described, and illustrated in the drawings, in which—

Figure 1 is a top plan view of my inven-

tion mounted on the mold-plate frame of a crayon-molding machine. Fig. 2 is a cross-section on line *xx* of Fig. 1. Fig. 3 is a view in side elevation of my invention mounted on the mold-plate frame of a crayon-molding machine, the discharging-frame being shown in lowered position. Fig. 4 is a longitudinal vertical section on line *x'x'*, Fig. 1, with part of the mold-plates and discharging-plates removed.

In the drawings, 1 represents the rectangular mold-plate frame of a crayon-molding machine, comprising the sides 2, each provided with the upper inner ledges 3 and 4 and with the lower inner ledges 5 and 6, forming the lengthwise grooves 7, and the ends 8 provided with the trunnions 9, by which the frame is revolvably mounted on a suitable support. (Not shown.)

Within the frame 1 are movably mounted on the ledges 3 and 4 and 5 and 6 and transverse the frame a plurality of rectangular mold-plates 10, each having a plurality of fractional mold-cavities 11, adapted to register with the fractional cavities of the abutting faces of its companion mold-plates and form therewith a series of complete molds between each two abutting plates. Each end of each mold-plate is provided with a pair of pins 12, which extend into the adjacent grooves 7 and support the plates in the frame, and the pins of each plate are connected by links 13 to the pins of the next adjoining plates. The links are of equal length and have slots 14 of equal length to receive the pins, the slots being of a length greater than the distance between the pins of adjoining plates when the plates are abutting. The links are movably fitted in the grooves 7 to slide therein on the ledges, and each pin extends through the overlapping end portions of two links extending oppositely therefrom. The first mold-plate of the series is permanently secured to the adjacent end 8 of the mold-plate frame, and the other plates of the series are movable laterally. Between the last mold-plate of the series and the adjacent end 8 the sides 2 of the mold-frame are provided with shaft-bearings 15, in which is mounted transverse the frame the rock-shaft 16, having eccentrically linked thereto by a link-rod 17 the last of the series of mold-plates, and upon an end extension 18 of the rock-shaft is mounted a lever 19, whereby a movement of the lever in one direction moves the mold-plates successively one against another until the whole body of the movable

plates are compactly pressed against the first plate of the series and when moved in the opposite direction successively moves the plates from such compact position until all the links
5 are drawn taut and the plates are separated at equal intervals.

For a mold-plate frame of the above or equivalent construction and equipment for the simultaneous discharge of all the crayons
10 molded therein that are not discharged by the lateral separation of the mold-plates, as described, I have provided a discharging-frame 20, having sides 21, adapted to rest on the inner portions of the faces of the sides 2 of the
15 mold-plate frame 1, (that are uppermost when the frame is in position for discharging the crayons from the mold-cavities,) and ends 22 cross-connecting the sides 21, the frame thus formed being of a length to extend the ends
20 22 beyond the end mold-plates of the series when fully separated at equal intervals, as described, and between the ends 22 there are provided at regular intervals parallel with the ends 22 the cross-bars 24, so located that
25 each bar is over one of the mold-plates with one edge of each bar (on the same side) in the same plane with one face of the mold-plate, and to each cross-bar is secured lengthwise thereof the discharging-plates 25, which are
30 preferably angle-plates, arranged with the inner face of one wing 26 abutting the side of the cross-bar that is alined with the face of the mold-plate and with the other wing abutting the outer face of the cross-bar and secured thereto by the screws 27. The wings 26 of the
35 plates are of a thickness to enter the intervals between the mold-plates when fully separated, of a length to extend over all the mold-cavities of the mold-plate, and of a width to extend, when the discharging-frame is resting
40 on the mold-plate frame, a suitable distance below the inner ends of the mold-cavities of the plate. Opposite, near each end of the discharging-frame, the sides of the frame are provided with cam-houses 28, and adjacent to
45 each cam-house there are secured to the mold-plate frame a shaft-bearing 29, and in each pair of opposite bearings is mounted transverse the frames and extending through the
50 cam-houses the shafts 30, upon which are mounted within each cam-house an eccentric 31. The eccentrics 31 are of equal diameter and circumferentially engage both the top and bottom of their respective cam-houses, and
55 they are all mounted in the same relation to the shaft. Each shaft 30 has a portion extending outside its bearing on the same side of the mold-plate frame, upon which is mounted a pinion 32, and the two pinions respectively intermesh with racks 33, secured to
60 opposite end portions and on opposite sides of a connecting-bar 34, mounted and movable in guide-standards 35 and 36, secured to the mold-plate frame, one rack being adapted to engage one pinion at the bottom and the other

rack being adapted to engage the top of the other pinion, whereby when one shaft is turned in one direction the other shaft is turned an equal distance in the opposite direction.

On the outer end of one shaft 30, adjacent to the pinion 32, is provided a lever 37, which is adapted to be moved through a half-circle, and the lever is so attached to the shaft relative to the eccentrics that it projects horizontally outward past the end of the mold-plate frame when the point of greatest eccentricity of the eccentrics is vertically below the shafts 30, as shown in Fig. 3, in which position the discharging-frame is resting on the mold-plate frame, and when the lever 37 is moved through a half-circle in the direction of the arrow shown in said figure the points of greatest eccentricity will be upward against the tops of the cam-houses and the discharging-frame will be thereby elevated until all the discharging-plates are withdrawn from the intervals between the mold-plates.

At the ends of the discharging-frame the mold-plate frame 1 is provided with guide-posts 38, which prevent endwise movement of the discharging-frame.

Thus constructed the operation of my discharging device is as follows: Before the operation of filling the molds and while the discharging-frame is uppermost the operating-lever 37 of the discharging-frame is thrown inward into its normal position, thereby elevating the discharging-plates above the mold-frame, which is then reversed on its trunnions to bring the open ends of the mold-cavities uppermost. The lever 19 is then thrown inward to compress the mold-plates together in position to be filled. When the cavities have been filled with the liquid material of which the crayons are formed and after the material has set sufficiently for their discharge, the mold-plate frame is again reversed, and the lever 19 is then thrown outward to separate the mold-plates. The lever 37 is then thrown outward from its normal position, whereby the discharging-frame is forced downward by the eccentrics, and the discharging-plates entering the intervals between the mold-plates engage the small ends of the crayons and push them downward in the mold-cavities until they are sufficiently loosened to drop by their own gravity into the tray placed underneath the mold-plates to receive them. The tray is then withdrawn, the discharging-lever is reversed to its normal position, and the operation of filling first described is repeated. In order that there may be no injury to the small ends of the crayons by the discharging-plates, they are preferably provided at the points of their engagement therewith with indents 39, incurved for engagement with the rounded ends of the crayons, whereby the pressure of the discharging-plates instead of being confined to the tip ends

of the crayons is extended to the larger part of the areas of their rounded ends.

From the foregoing it is apparent that I have provided a discharging device for crayon-molding machines that is readily and conveniently attached to the mold-plate frame and when so attached is adapted to produce a quick and simultaneous discharge of all the crayons and that by its use the laborious mechanical shuffling of the mold-plates or jarring them with mallets, commonly employed as means for discharging the crayons, is wholly avoided.

What I claim to be new is—

1. In a crayon-molding machine the combination with a reversible mold-plate frame, mold-plates mounted in the frame and adapted to be moved laterally therein, said mold-plates being provided with fractional mold-cavities, adapted when the plates are joined face to face to form complete molds open at one end and closed at the other, means to move the mold-plates laterally to and from compact face-to-face engagement from and to lateral separation, and means to limit the separation to equal intervals between the plates, of a discharging-frame mounted on the mold-plate frame and movable upwardly and downwardly thereon, discharging-plates transverse the discharging-frame opposite the intervals between the mold-plates and adapted to enter the intervals, and

means to move the discharging-frame downwardly and upwardly, substantially as set forth.

2. In a crayon-molding machine, the combination with a reversible mold-plate frame, mold-plates mounted in the frame and movable laterally therein, means to laterally separate the mold-plates, and means to limit and equalize the separation of the plates, of a discharging-frame mounted on the mold-plate frame and movable upwardly and downwardly thereon, discharging-plates transverse the discharging-frame, opposite the intervals of the mold-plates when separated, shafts mounted on the mold-plate frame transverse the discharging-frame, cam-houses mounted on the discharging-frame around the shafts, eccentrics fixedly mounted on the shafts within the cam-houses, and adapted to raise or lower the discharging-frame according as the shafts are turned, and means to simultaneously operate the shafts, substantially as set forth.

In witness whereof I have hereunto signed my name, in the presence of two subscribing witnesses, this 24th day of July, 1905, at Sandusky, Erie county, Ohio.

CHARLES F. HELD.

In presence of—

WM. BUDDENHAGEN,
JAMES M. FRENCH.