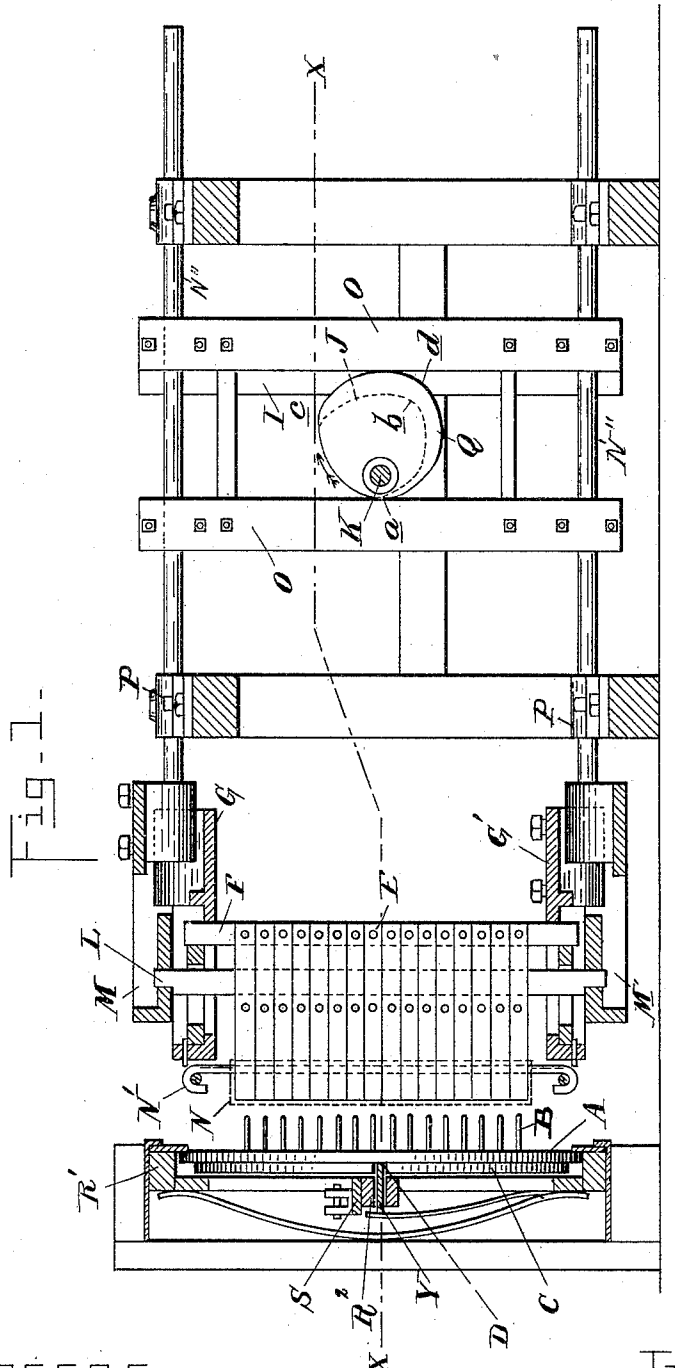
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J. KREHBIEL.

MOLD PIN GREASING MACHINE.

No. 430,861. Patented June 24, 1890.

Fig. 1.



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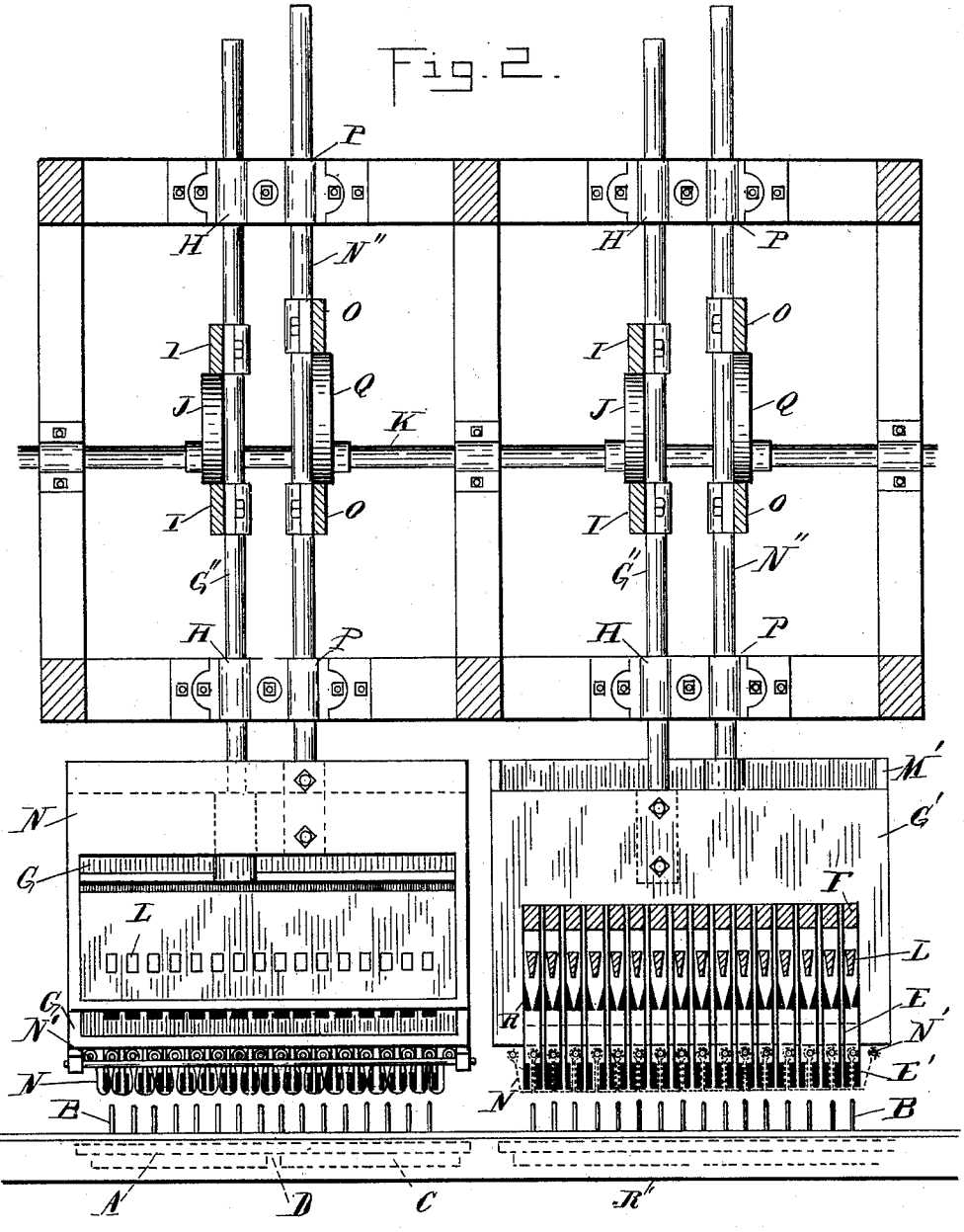
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MOLD PIN GREASING MACHINE.

No. 430,861. Patented June 24, 1890.

Fig. 2.



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MOLD PIN GREASING MACHINE.

No. 430,861. Patented June 24, 1890.

Fig. 3.

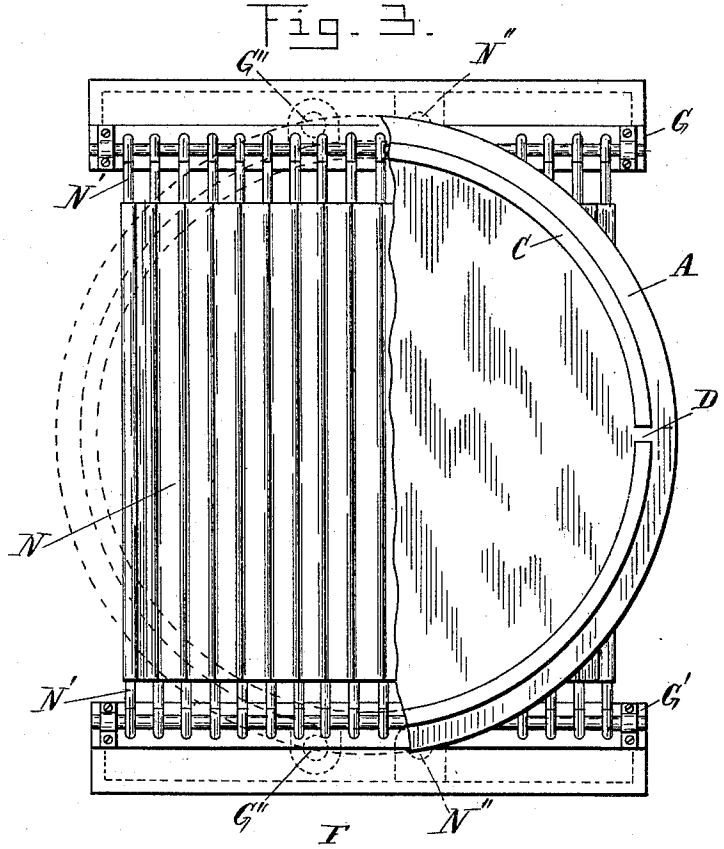


Fig. 6.

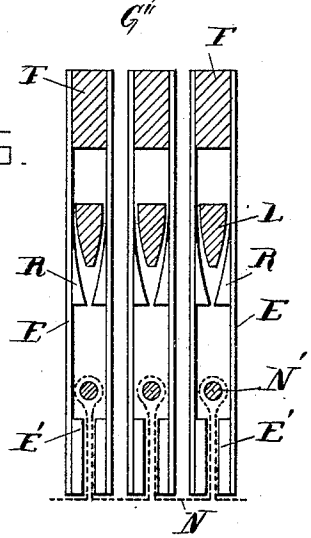
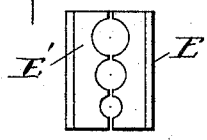


Fig. 7.



Witnesses

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(No Model.) 4 Sheets—Sheet 4.

J. KREHBIEL.

MOLD PIN GREASING MACHINE.

No. 430,861. Patented June 24, 1890.

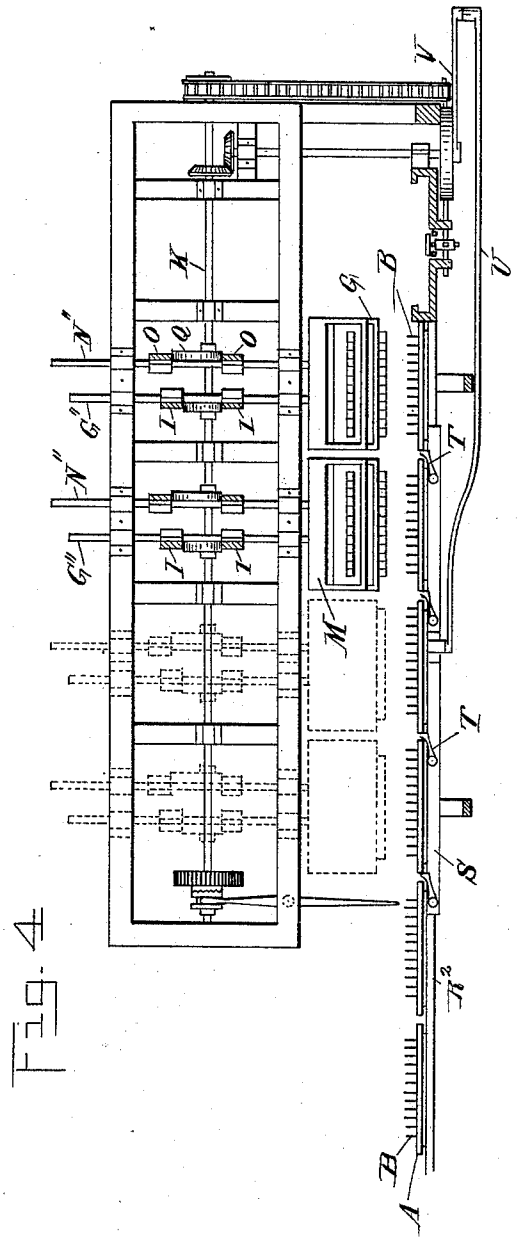


Fig. 4.

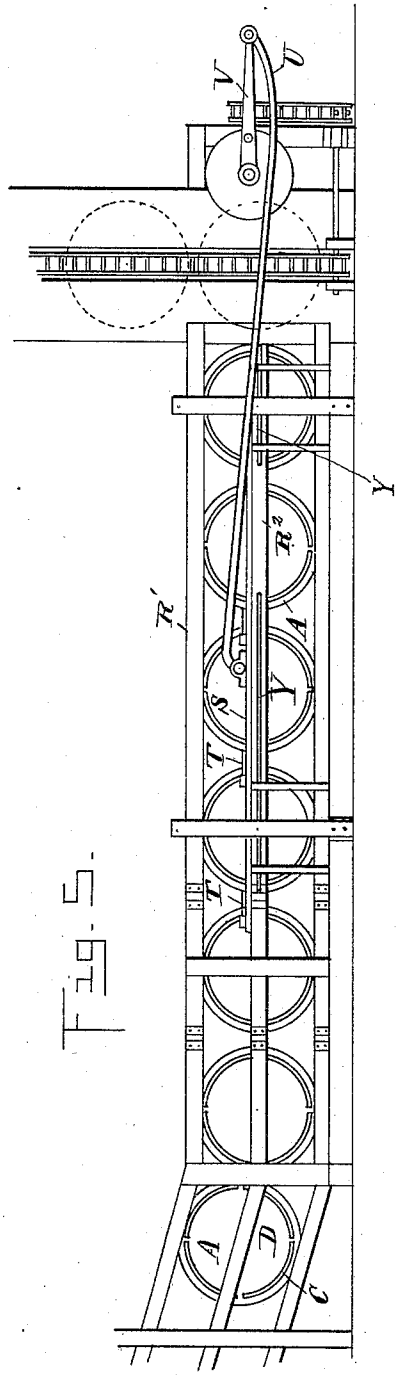


Fig. 5.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN KREHBIEL, OF KALAMAZOO, MICHIGAN, ASSIGNOR TO THE KREHBIEL CAPSULE COMPANY, OF SAME PLACE.

MOLD-PIN-GREASING MACHINE.

SPECIFICATION forming part of Letters Patent No. 430,861, dated June 24, 1890.

Application filed December 4, 1889. Serial No. 332,499. (No model.)

To all whom it may concern:

Be it known that I, JOHN KREHBIEL, a citizen of the United States, residing at Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Machines for Greasing Gelatine Capsule Mold-Pins, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in machines for greasing the mold-pins of mold-plates on which gelatine capsules are formed; and the invention consists in the devices for greasing the pins, in combination with the peculiar construction, arrangement, and combination of different parts whereby the machine is adapted to work automatically, and with the feeding devices by means of which the mold-plates are presented to the machine and removed after they have been operated upon, which automatic working and feeding mechanisms are made the subject-matter of a separate application, filed October 21, 1889, Serial No. 327,701.

In the manufacture of gelatine capsules in the usual manner by means of mold-plates provided with mold-pins, which latter are dipped into the gelatine to form capsules thereon, which are then cut off, dried, and removed, it is customary to slightly oil or grease the mold-pins before dipping them again into the gelatine, the object being to make the capsules more easily removable.

The object of my invention is to perform this operation entirely by mechanical means, thereby dispensing with hand-labor or the handling of the mold-plates.

In the drawings which accompany this specification, Figure 1 is a vertical longitudinal section of my greasing-machine. Fig. 2 is a plan view of two like greasing-machines which co-operate together to effect the greasing of the mold-pins, one machine being shown in horizontal section on a line corresponding to line $x\,x$ in Fig. 1 and the other being a top view. Fig. 3 is a front elevation of one of the greasing-machines. Fig. 4 is a diagram plan of the two greasing-machines in connection with the feeding devices, and in dotted outlines are shown the capsule-pulling machines, which are of similar construction and operation, and have been described in a separate application filed concurrently herewith. Fig. 5 is a front elevation of Fig. 4. Fig. 6 is an enlarged horizontal section through several pairs of greasing-jaws, showing the construction of the jaws and also the manner of arranging the same. Fig. 7 is an elevation of one pair of greasing-jaws.

A is a circular mold-plate provided upon its face with the usual mold-pins B, arranged in rows at right angles. On the back of each mold-plate is a circular annular flange C, provided at diametrically-opposite points with notches D, there being preferably four of such notches, corresponding with two diameters at right angles to each other and respectively parallel to the rows of pins.

E are spring-bars secured in pairs to the vertical bars F, which bars are engaged at their upper and lower ends into horizontal sliding plates G and G′. These two plates form part of a sliding frame, which, in addition, comprises the horizontal sliding bars G″, to the free end of which the sliding plates are respectively secured, and which are in turn yoked together by the vertical bars I I. The whole sliding frame is supported by a suitable frame provided with bearings H, in which the sliding bars G″ slidingly engage. A transverse shaft K carries a cam J, which engages between the yokes or connecting-bars I I, and by its revolution actuates the sliding frame.

The spring-bars E form greasing-jaws by having secured upon their free ends the cheek-pieces E′, which are grooved horizontally upon their inner faces to fit the mold-pins, there being preferably two or more sets of grooves, which correspond to the different sizes of mold-pins.

The greasing device consists of the cloth N, which is folded in between the spring-bars, as shown, and held in position therein by vertical rods N′, which are detachably secured in any suitable manner to the front edges of the sliding-plates G and G′, respectively. Each pair of spring-bars is provided upon its inner face, in the rear of the greasing-jaw, with the inclined spreader-blocks R, which operate, in connection with vertical

spreader-bars L, to open or close the jaws of the spring-bars. To this end the vertical bars L are engaged at their upper and lower ends, respectively, into sliding-plates M and M′, which form a part of another sliding frame, similarly constructed and actuated as the sliding frame which carries the bars F, there being two horizontal sliding bars N″ sliding in bearings P, parallel to the sliding bars G″, to carry the plates M and M′, and these sliding bars are connected by yokes or connecting-bars O with the cam Q upon the shaft K, adapted to operate between the yokes O in the same manner as the cam J operates between the connecting-bars I. It will be seen that the cam Q has a larger throw than the cam J, and this imparts to the sliding frame carrying the spreader-bars L a relatively larger sliding movement than to the sliding frame carrying the greasing-jaws, the result being that at a certain point of the revolution of the shaft K the spreader-bars will be projected between the spreader-blocks to effect the spreading of the jaws. Thus in practice it will be seen that the mold-plates being held in a fixed position in relation to the machine, as shown in Fig. 1, and with the rows of mold-pins registering with the rows of greasing-jaws, the eccentricity of the cam Q from *a* to *d* will project the spreader-bars, and the eccentricity of the cam J from *a* to *b* will project the greasing-jaws. The movement of the frame carrying the spreader-bars being larger will spread the jaws, and thus enable the mold-pins to pass into them. The cam J from *b* to *c* is concentric, and thus the greasing-jaws will remain in stationary positions during that portion of the travel of the cam, while the cam Q, traveling from *d* to *c*, withdraws the spreader-bars sufficiently to allow the greasing-jaws to close upon the pins by their own tension. During the subsequent movement, the two cams being coincident and traveling from *c* to *a*, the two cams impart the same degree of movement to both frames, and the greasing-jaws will thus be withdrawn from the mold-pins, drawing during that time the greasing-cloth with a sliding motion over the mold-pins and imparting to them the necessary amount of lubrication. It will be seen that by this operation the mold-pins are not liable to be lubricated all around as the greasing-jaws only clamp the sides of the pins. Therefore I prefer to combine two greasing-machines and present the mold-pins to the second greasing-machine at a relatively different position—that is, after turning the mold-plate a quarter of a turn. This I effect automatically in the following manner: The mold-plate is held in a way R′, in which it is free to roll or slide, as will be shown hereinafter, and this way is provided with a horizontal reciprocating feed-bar S, which carries a number of dogs T, adapted to engage with the jaws on the back of the mold-plate, and thereby feed them intermittently to the greasing-machine. The feed-bar S is supported in suitable bearings, preferably upon the central-bar R^2 of the way, and is reciprocatingly actuated by means of a crank V and connecting-bar U, all so arranged that at each revolution of the crank the feed-bar will engage two mold-plates and slide them in front of the greasing-machine, while the two mold-plates, having been actuated upon, are drawn out of position into a continuation of the roll-way, or, preferably, an elevator, which carries them on their further journey.

In order to register the mold-plates with the greasing-jaws, I preferably provide the central bar R^2 with a locking rib or bar Y, which is adapted to engage in the notches formed in the flange on the back of the mold-plates, and thereby prevents the mold-plate from rolling when drawn by the feed-bar after it has been engaged by the locking-rib. The initial portion of this locking rib or bar is made yielding to allow the mold-plate to roll until it is in proper position to allow the locking-bar to engage, and between the two greasing-machines a portion of said locking-bar is cut away to allow each plate to make a one-quarter revolution while being fed from the first machine to the second.

The greasing-machine herein described is in most particulars almost identical with the machine for stripping off the capsules described in said concurrent application, Serial No. 327,701, the difference being merely that, instead of constructing the jaws in such manner as to enable them to pull the capsules from the mold-pins, I construct them to effect, in connection with the greasing-cloth, the lubrication of the mold-pins, and as the operations of stripping and greasing the mold-pins are thus made so nearly identical and being operations consecutively required, I combine the two kinds of machines together, as shown in Fig. 4, wherein the dotted lines represent two stripping-machines. One feeding device may then be used for both by providing the feed-bar S with a sufficient number of dogs T to engage with four plates at a time.

To prevent any accident to the machine in case the mold-plates should not properly register with the greasing-machines, I make the way in which the mold-plates are held to yield under abnormal pressure.

What I claim as my invention is—

1. In a capsule-mold-pin-greasing machine, the combination of two sliding frames and means for operating the same, one carrying a series of spring-jaws consisting of spring-bars arranged in pairs with grooved cheek-pieces secured between the free ends of the bars to form greasing-jaws and the other frame carrying a series of spreader-bars adapted to engage between the spring-bars of the greasing-jaws and distend the same, and of a greasing-cloth folded in and out between the cheek-pieces of the greasing-jaws, substantially as described.

2. In a capsule-mold-pin-greasing machine, the combination, with the circular mold-plates, of a way in which said mold-plates are adapted to roll or slide, of two greasing-machines adapted to act on the mold-pins of the mold-plates, substantially as described, a feed-bar provided with feed-dogs to feed the mold-plates on such way, and a locking bar or rib on such way to prevent the mold-plates from revolving by engaging into notches on the back of the mold-plates, such bar being also cut away between the two greasing-machines to permit of a one-quarter revolution of the mold-plates between the greasing-machines, substantially as described.

3. In a greasing-machine, the combination, with a series of spring-jaws arranged in pairs and having grooved cheek-pieces adapted to register with and engage upon the mold-pins of capsule-mold plates, mechanism for operating the same, of a greasing-cloth detachably secured in front of the spring-jaws and having folds extending between the cheek-pieces of the spring-jaws, substantially as described.

4. In a greasing-machine, the combination of the spring-jaws E, arranged in pairs in vertical rows and provided with grooved cheek-pieces E′, adapted to engage with the mold-pins of the capsule-mold plates, the vertical bars F, to which the spring-jaws are secured, the sliding frame G G′, which carries these bars, the greasing-cloth N, and the vertical rods N′ in the folds of the greasing-cloth and detachably secured upon their ends to the frame G G′, substantially as described.

5. In a greasing-machine, the combination of the spring-jaws E, arranged in pairs, the cheek-pieces E′, secured to the free ends of said jaws and provided with parallel grooves adapted to fit different sizes of mold-pins, and the greasing-cloth having folds extending between the cheek-pieces of the spring-jaws, substantially as described.

6. In a capsule-mold-pin-greasing machine, the combination, with the mold-pins, of yielding greasing-jaws having grooved faces adapted to engage the pins, and mechanism for separating the jaws from the pins, substantially as described.

7. The combination, with the mold-plates carrying the mold-pins, of a way in which said mold-plates are held and caused to travel intermittently, a greasing-machine arranged in proximity to said way and provided with greasing-jaws, and means for operating said jaws, whereby they are adapted to be projected and retracted to engage and grease the mold-pins, substantially as described, a device for registering the mold-pins with the greasing-jaws, and yielding bearings in which the way is supported to prevent breakage in case of failure of the registering device, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 11th day of April, 1889.

JOHN KREHBIEL.

Witnesses:
GEO. A. GREGG,
P. M. HULBERT.