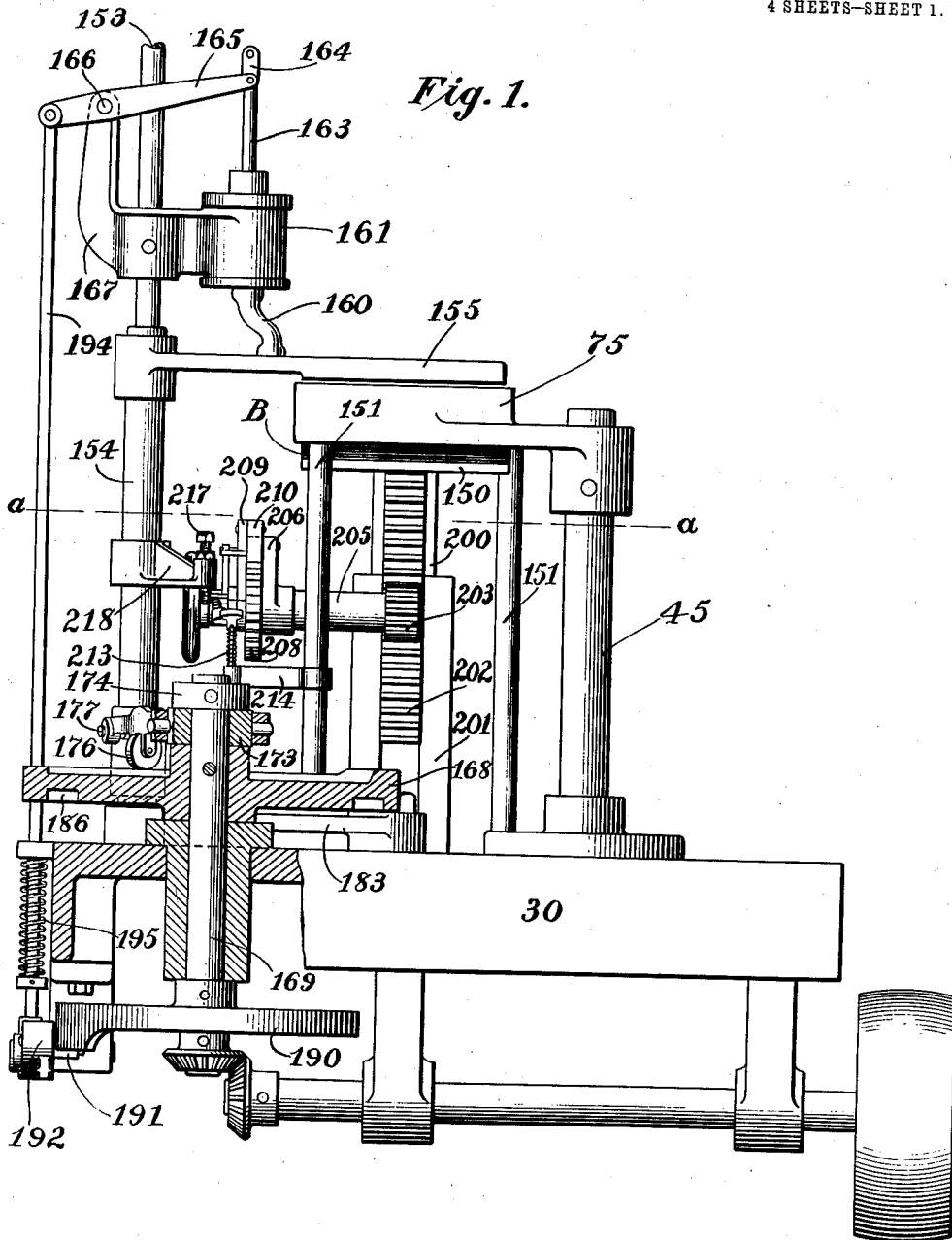


E. E. CLAUSSEN & E. A. CLAUS.
PAPER BLANK FEEDING MACHINE.
APPLICATION FILED FEB. 11, 1911.

1,047,172.

Patented Dec. 17, 1912.

4 SHEETS—SHEET 1.



Witnesses:
Chas. W. La Rue
Louis B. Fischer

Inventors:
Edward E. Claussen
and Emil A. Claus
by Albert H. Walker
Attorney

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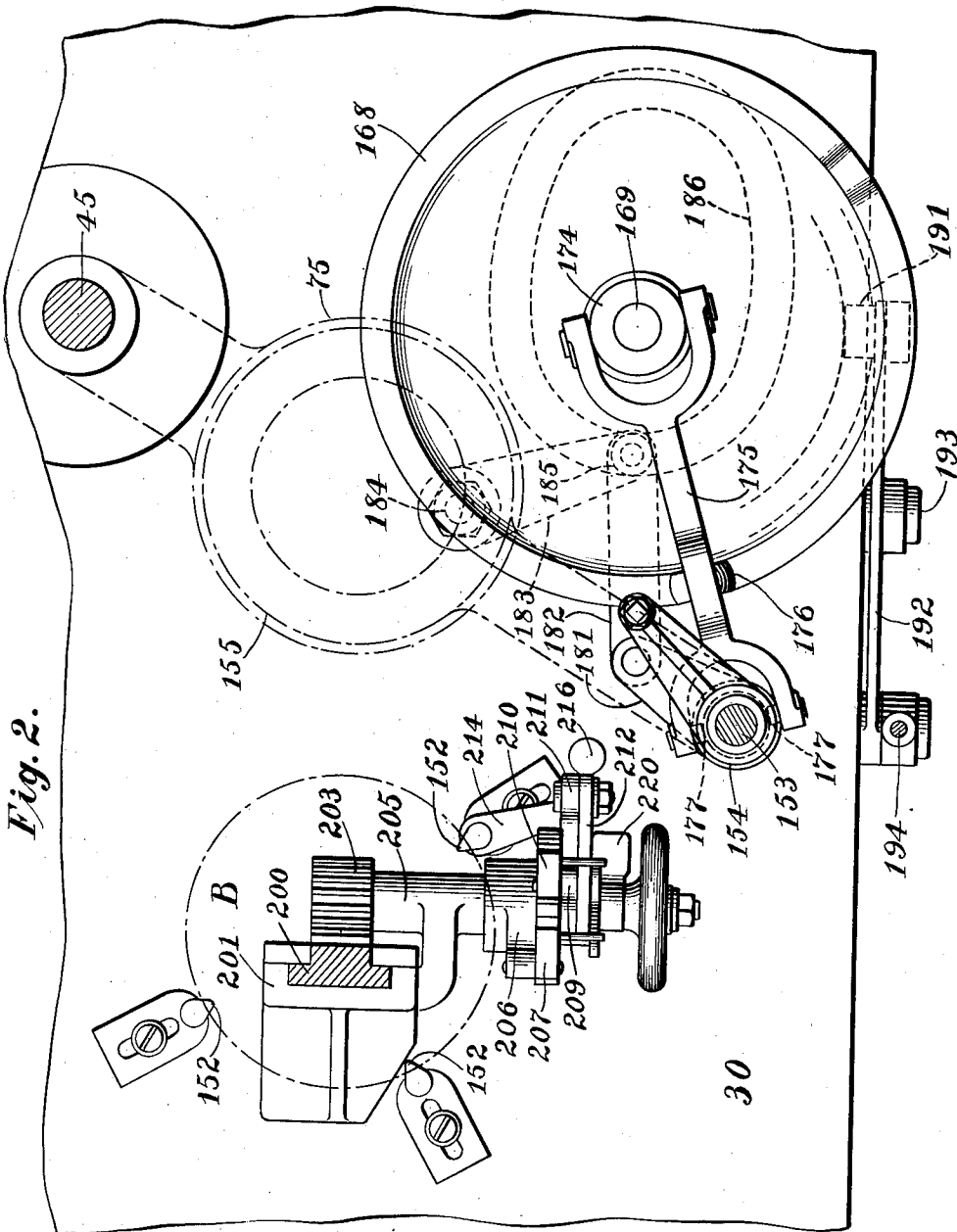


Fig. 2.

Witnesses:

Chas W. La Rue
 Louis B. Tischler

Inventors:
 Edward E. Claussen
 and Emil A. Claus

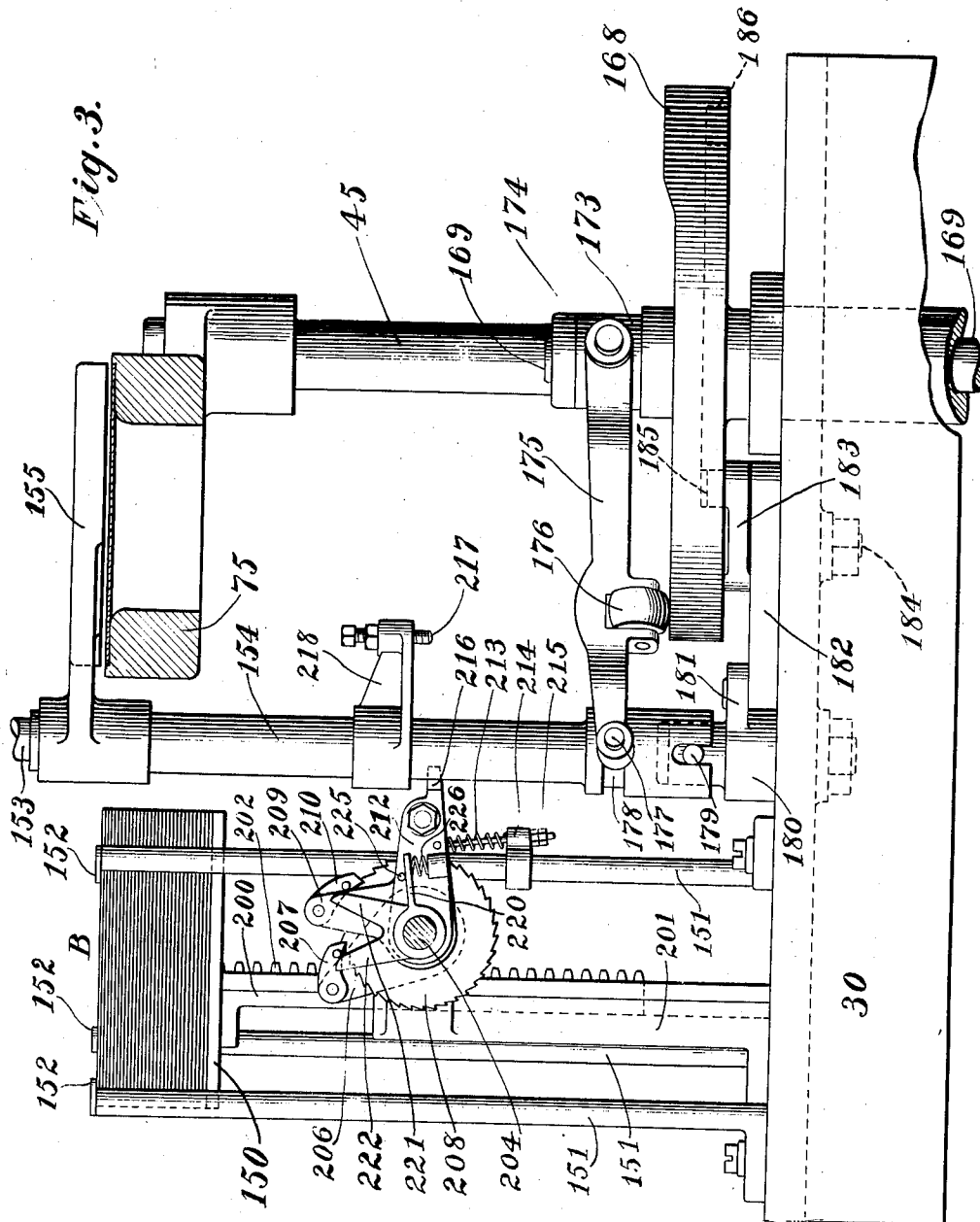
by Albert H. Walker
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4 SHEETS-SHEET 3.



Witnesses:

Chas. W. La Rue

Louis B. Fischer

Inventors:

Edward E. Claussen
and Emil A. Claus

by Albert de Kalken
Attorney

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4 SHEETS—SHEET 4.

Fig. 4.

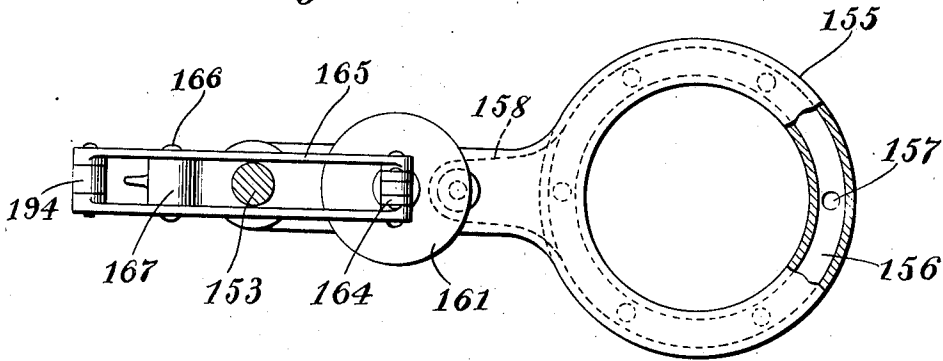
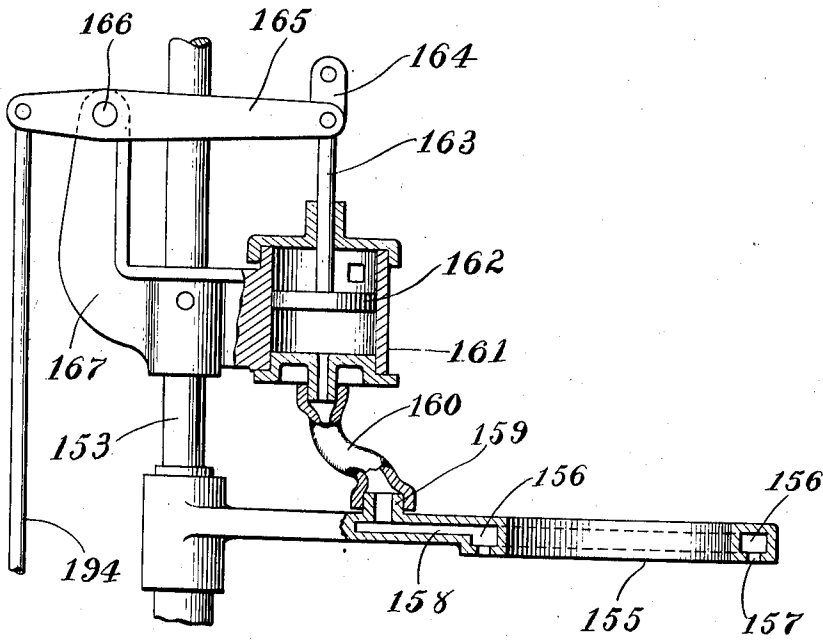


Fig. 5.



Witnesses:
Chas. W. La Rue
Louis B. Fischler

Inventors:
Edward E. Claussen
and Emil A. Claus
by Albert de Walker
Attorney

UNITED STATES PATENT OFFICE.

EDWARD E. CLAUSSEN AND EMIL A. CLAUS, OF HARTFORD, CONNECTICUT, ASSIGNORS
TO PUBLIC SERVICE CUP COMPANY, A CORPORATION OF NEW YORK.

PAPER-BLANK-FEEDING MACHINE.

1,047,172.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed February 11, 1911. Serial No. 608,142.

To all whom it may concern:

Be it known that we, EDWARD E. CLAUSSEN and EMIL A. CLAUS, citizens of the United States, and residents of Hartford, Connecticut, have invented a certain new and useful Paper-Blank-Feeding Machine, of which the following description and claims constitute the specification, and which is illustrated by the accompanying four sheets of drawings.

This is an automatic machine which is adapted to receive a pile of round, flat paper disks, and to successively feed those disks into another machine, by successively removing them from the pile and successively depositing them within the control of such other machine.

Figure 1 of the drawings is an elevation of the machine, which however, shows a few parts in vertical section. Fig. 2 is a plan view of those parts of the machine which are below the level of the line *a, a* of Fig. 1. Fig. 3 is an elevation of some parts of the machine as viewed ninety degrees to the left from the face of Fig. 1. Fig. 4 is a plan view of the upper part of what is shown in elevation in Fig. 1. Fig. 5 is an elevation, partly in vertical section, of the mechanism shown in Fig. 4.

The scale of Figs. 2, 3, 4 and 5 is uniform, but the dimensions of those figures are fifty per cent. larger than the dimensions of the same parts in Fig. 1.

The capital letter B in Figs. 1, 2, and 3, indicates a pile of round, flat paper disks or blanks, laid upon the vertically movable table, 150, and held together by three vertical rods 151. Each of those rods has at its upper end, a short horizontal inwardly extending finger 152, which three fingers hold back from withdrawal from the pile all the disks upon the table, except the upper one. The table 150 is supported by the vertical slide 200, which reciprocates in a T-shaped vertical groove of the standard 201, the foot of which standard is permanently attached to the bed 30 of the machine. The slide 200 is provided with rack-teeth 202, for engagement with the pinion 203, which pinion is keyed to the shaft 204, which shaft is journaled in a horizontal bearing in the bracket 205, and which bracket is supported by the standard 201. The stationary arm 206 extends diagonally upward from the bracket 205; and at the upper end of that arm, the

pawl 207 is pivoted for engagement with the ratchet 208, which is keyed to the shaft 204. The arm 209 is loosely pivoted upon the shaft 204, and its upper end carries a pawl 210 for other engagement with the ratchet 208. The arm 209 has a branch 211 whereby it may be clamped to a lever 212, which is normally held in position by spring 213, placed between it and the bracket 214, which is secured to one of the rods 151. The elevation of the free end of the lever 212 is adjustable by a pair of check-nuts 215, to bring its nose 216 into proper elevation for engagement with the lower end of the screw 217, which is adjustably mounted in an arm 218, and which arm extends horizontally from the sleeve 154. The arms 220, 221 and 222 extend radially from a mutual hub, which is pivoted upon the shaft 204. This device is held in an inoperative position against the stop-pin 225, which projects horizontally from the lever 212, and is thus held by a spring 226, placed between the lower side of the arm 220, and another horizontal projection from the lever 212.

The stationary vertical rod 153 has its lower end rigidly secured to the bed 30, as shown in Fig. 3; while its upper end is rigidly held by direct or indirect attachment to any convenient stationary structure. The sleeve 154 is mounted for vertical and also for oscillating movement upon the rod 153; and to the upper end of that sleeve the horizontal suction-ring 155 is fixed. That ring has an interior annular air chamber 156, which communicates with the external atmosphere through the perforations 157, and also communicates with an air duct 158, the location of which is shown in Figs. 4 and 5, and which ends in the tubular nipple 159. To that nipple one end of the flexible tube 160 is attached, and the other end thereof is attached to a tubular nipple extending downward from the center of the lower end of the air cylinder 161. The piston 162 is reciprocated in that cylinder by the piston rod 163, and that rod is connected through the link 164, to the lever 165 which turns on the pivot 166 at the top of the bracket 167, and that bracket is immovably fixed to the rod 153. The lever 165 is worked by attachment to its short end of the vertical rod 194, which rod is reciprocated by the cam border on the lower side of the disk 190 through the lever 192; which lever is shown in Fig. 110

2 as being pivoted at 193 to the bed 30 of the machine, and as being provided with the roller 191 for anti-frictional contact with the cam border of the disk 190. The roller 191 is held in constant contact with that cam border by the spiral spring 195, pushing downward upon the rod 194, or by any other proper means.

The vertical movement of the sleeve 154 is caused by the cam border on the upper side of the disk 168, operating through the roller 176 upon the lever 175. That lever is bifurcated at each end, as shown in Fig. 2, the fork which terminates its longer end being pivoted on opposite sides of the collar 173, which is held in position on shaft 169 by the collar 174; while the fork at its shorter end carries opposite inwardly extending prongs 177 for engagement with the annular groove 178 on the sleeve 154. The oscillating movement of the sleeve 154 is caused by the cam groove 186 in the lower side of the disk 168. The devices by which that oscillation is accomplished, without interfering with the vertical movement of the sleeve 154, include the sleeve 180, with its pin 179 and its arm 181, and include also the link 182 and the arm 183, one end of which is pivoted to the bed of the machine upon the stud 184, and the other end of which is pivoted to the link 182, and is provided with a roller 185 for engagement with the cam groove 186.

The mode of operation of this machine is as follows: The shaft 169 is continuously rotated through the bevel pinion fixed to its lower end, by the belt pulley which is shown at the lower right hand corner of Fig. 1, acting through the horizontal shaft to which it is fixed and through the bevel pinion at the opposite end of that shaft; or the shaft 169 may be continuously rotated by any other proper means. The revolutions of the shaft 169, operate through the disk 168, to cause one cycle of operation of the suction-ring 155 in the same space of time that the revolution of the shaft 169 operates through the disk 190, to cause one cycle of operation of the air pump which is composed of the cylinder 161 and the piston 162. These two cycles of operation work harmoniously together in such timing, as that when the suction-ring 155 is oscillated by the sleeve 154 to a position directly over the pile of paper disks B, the piston 162 rises in the cylinder 161, enough to suck the upper paper disk against the lower side of the suction-ring. Thereupon the suction ring oscillates with the sleeve 154, through about sixty degrees of a revolution from the position indicated by the left hand circle in Fig. 2, to the position indicated by the central circle in that figure, where that oscillation stops. At that instant, the piston 162 descends in the cylinder 161 enough

to blow the paper disk gently down from the lower side of the suction-ring 155, into any recess prepared for its reception. Such a recess is shown in Fig. 3 of the drawings in the upper side or border of a ring 75; which ring is shown as being carried at the end of an arm which extends horizontally and radially from the vertical shaft 45. That ring having received a paper disk in the recess in its upper border, may be moved away from the location where it received that disk to some other location, by means of a revolving or an oscillating motion of the shaft 45. No means for thus working that shaft and that ring are shown in the drawings; because they are not included in the present invention. The ring 75, with the recess in its upper border, is shown only as one sort of receptacle in which the paper feeding machine being described at present, may successively deposit the paper blanks which it successively takes away from the pile B. Continued repetitions of the foregoing operation reduce the elevation of the pile of paper disks, and thereby cause the vertical movement of the suction-ring 155 with the sleeve 154 (which at first was sufficient to enable the suction-ring 155 to press firmly down upon the pile of paper disks, without reaching the lower limit of that vertical movement) to extend downward until the screw 217 presses downward upon the nose 216 of the lever 212 against the resistance of the spring 213. That downward pressure operates through the arm 209 and the pawl 210, to move the ratchet-wheel 208 in a clock-wise direction, and thereby to cause that ratchet to rotate the shaft 204 and the pinion 203, and thereby to raise the slide 200 and the table 150 far enough to carry the upper side of the pile of paper disks upward to a level where the upper paper disk can be reached by the lower side of the suction-ring 155, without that suction-ring falling to its lowest level. When the paper disks on the table have all been taken away by the suction ring, the entire machine is stopped and the operative who runs it, presses down the arm 220 against the resistance of the spring 226, and thus causes the arms 221 and 222 to force the pawls 207 and 210 out of contact with the ratchet wheel 208. Thereupon he lowers the table 150, as far as it can go and deposits upon it another load of paper disks, and having adjusted the ratchet mechanism again to its proper working position, he starts the entire machine, and keeps it running till the supply of paper disks upon the table 150 is again exhausted.

We claim as our invention:

1. Blank feeding mechanism including in combination, a vertically movable table for supporting a pile of blanks, stop fingers for engaging the uppermost blank of said pile,

rack and gear means for moving said table upwardly, means for rotating said gear to elevate said table, comprising a ratchet fixed to said gear for rotation therewith, an oscillatable arm mounted coaxially with said ratchet and gear, a pawl pivotally mounted on said arm for engagement with said ratchet, means for successively removing the top blank from said pile and means carried by said blank removing means for oscillating said pawl arm.

2. Blank feeding mechanism including in combination, a vertically movable table for supporting a pile of blanks, stop fingers for engaging the uppermost blank of said pile, means for moving said table upwardly including a ratchet, an oscillatable arm mounted coaxially with said ratchet, a pawl pivotally mounted on said arm for engagement with said ratchet, blank lifting and transfer mechanism comprising a sleeve mounted for vertical and oscillatory movement about its fixed axis, a picker arm fixed to said sleeve, a picker carried by said arm, an arm fixed to said sleeve for engagement with said pawl arm when said picker descends toward said vertically movable table, means for vertically reciprocating said sleeve and means for oscillating said sleeve.

3. Blank feeding mechanism including in combination, a vertically movable table for supporting a pile of blanks, stop fingers for engaging the uppermost blank of said pile, means for moving said table upwardly including a ratchet, an oscillatable arm mounted coaxially with said ratchet, a pawl pivotally mounted on said arm for engagement with said ratchet, means for successively removing the top blank from said pile, means carried by said blank removing means for oscillating said pawl arm, a retaining pawl pivotally mounted on a fixed axis for engagement with said ratchet and means mounted coaxially with the ratchet for disengaging said pawls to permit the lowering of said table.

4. Blank feeding mechanism including in combination, a vertically movable table for supporting a pile of blanks, stop fingers for engaging the uppermost blank of said pile, rack and gear means for moving said table upwardly, means for rotating said gear to elevate said table, comprising a ratchet fixed to said gear for rotation therewith, an oscillatable arm mounted coaxially with said ratchet and gear, a pawl pivotally mounted

on said arm for engagement with said ratchet, blank lifting and transfer mechanism comprising a sleeve mounted for vertical and oscillatory movement about its fixed axis, a picker arm fixed to said sleeve, a picker carried by said arm, an arm fixed to said sleeve for engagement with said pawl arm when said picker descends toward said vertically movable table, means for vertically reciprocating said sleeve and means for timing the several instrumentalities with each other.

5. Blank feeding mechanism including in combination, a vertically movable table for supporting a pile of blanks, stop fingers for engaging the uppermost blank of said pile, rack and gear means for moving said table upwardly, means for rotating said gear to elevate said table, comprising a ratchet fixed to said gear for rotation therewith, an oscillatable arm mounted coaxially with said ratchet and gear, a pawl pivotally mounted on said arm for engagement with said ratchet, blank lifting and transfer mechanism comprising a sleeve mounted for vertical and oscillatory movement about its fixed axis, a picker arm fixed to said sleeve, a picker carried by said arm, an arm fixed to said sleeve for engagement with said pawl arm when said picker descends toward said vertically movable table, means for vertically reciprocating said sleeve, means for oscillating said sleeve and means for timing the several instrumentalities with each other.

6. Blank feeding mechanism including in combination, a vertically movable table for supporting a pile of blanks, stop fingers for engaging the uppermost blank of said pile, means for moving said table upwardly including a ratchet, an oscillatable arm, a pawl pivotally mounted on said arm for engagement with said ratchet, blank lifting and transfer mechanism comprising a sleeve mounted for vertical and oscillatory movement about its fixed axis, a picker arm fixed to said sleeve, a picker carried by said arm, means governed by the amount of downward movement of said picker for oscillating the oscillatable arm, means for vertically reciprocating said sleeve and means for oscillating said sleeve.

EDWARD E. CLAUSSEN.
EMIL A. CLAUS.

Witnesses:

HENRY F. SMITH,
FRANK E. EHRET.