

July 24, 1934.

B. ROTTENBERG

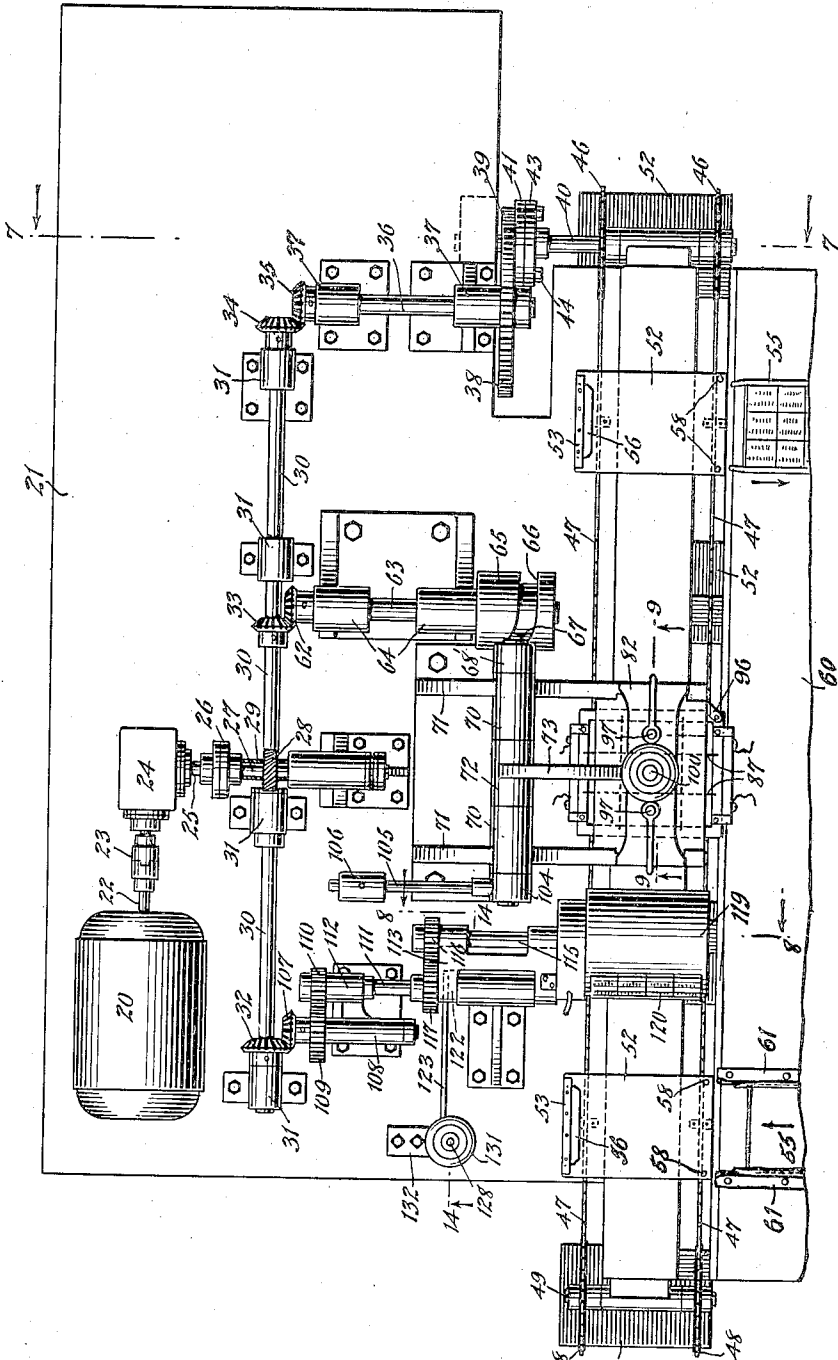
1,967,972

BUTTER PRINTING AND CUTTING MACHINE

Filed June 4, 1932

6 Sheets-Sheet 1

Fig. 1.



WITNESSES

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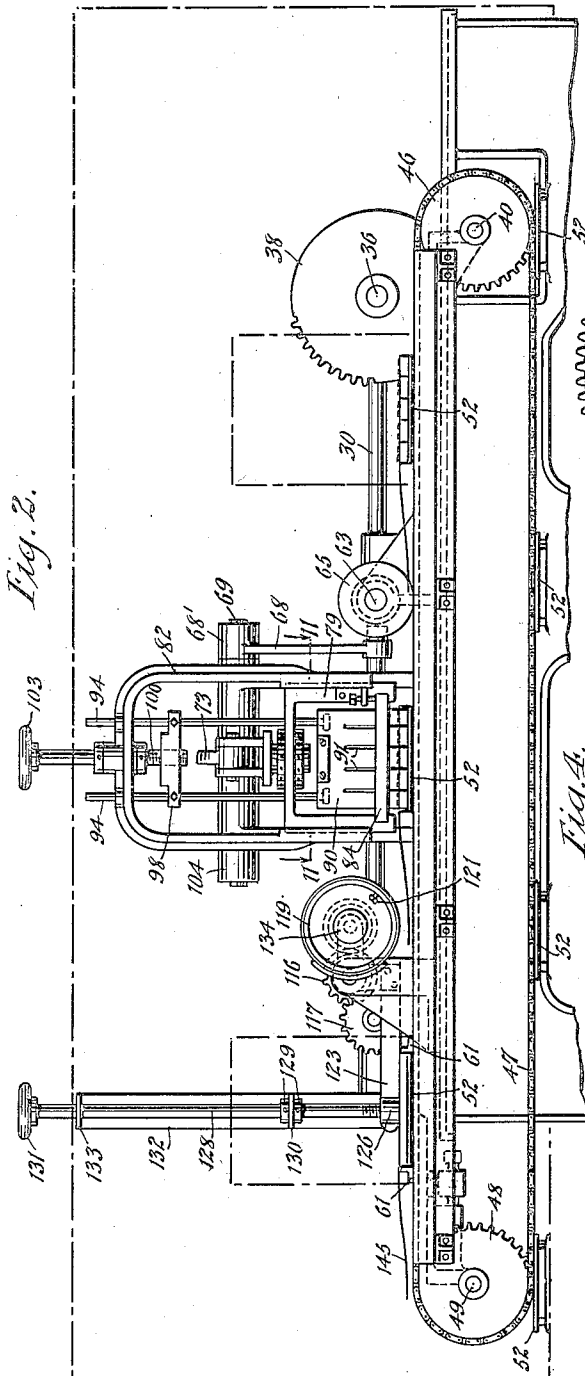
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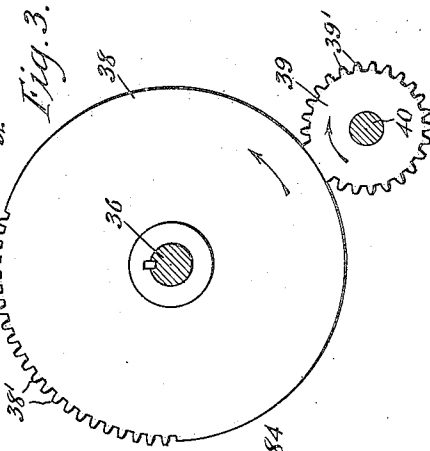
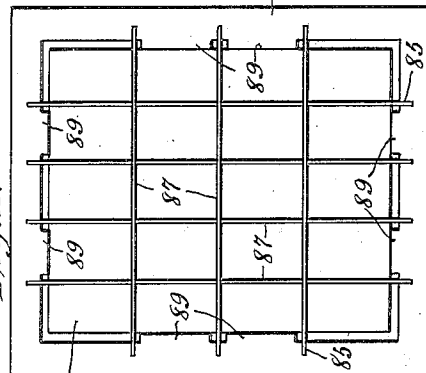
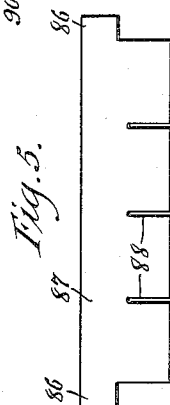
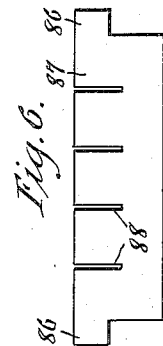
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WITNESSES

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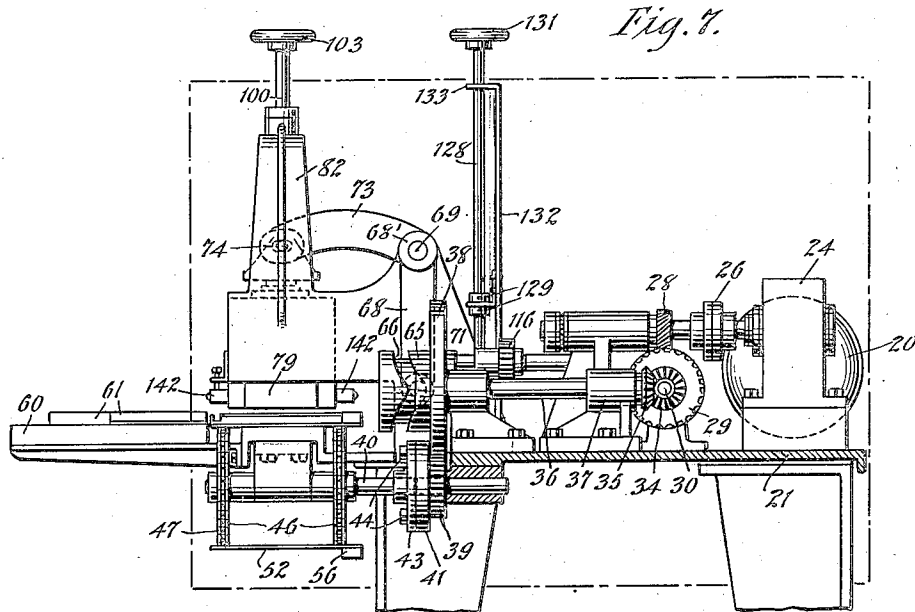
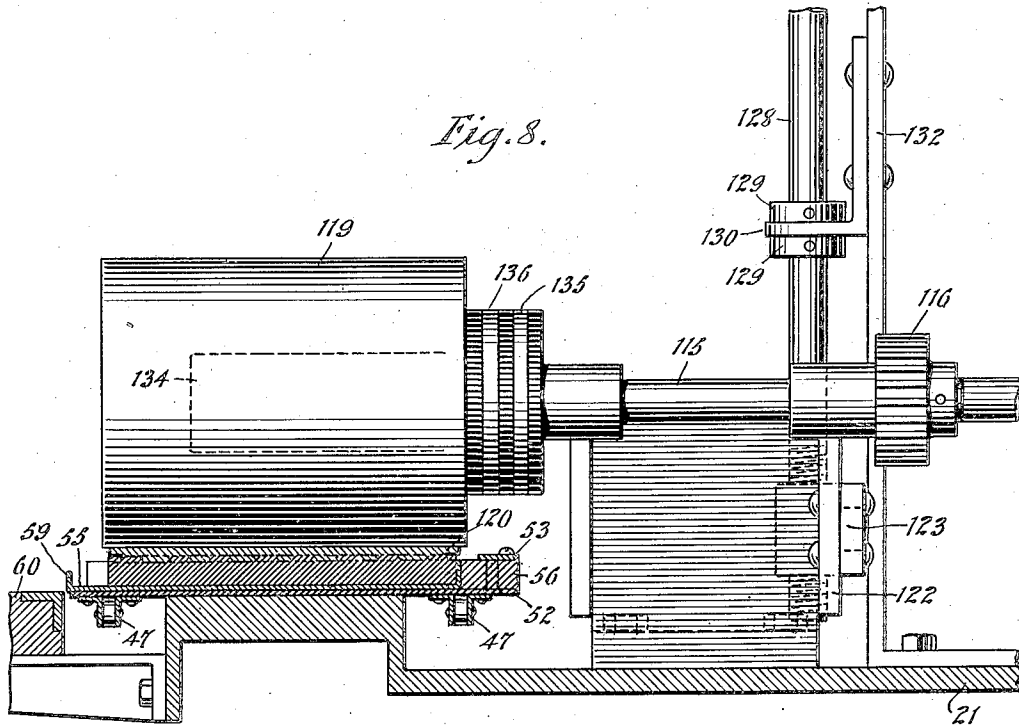
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BUTTER PRINTING AND CUTTING MACHINE

Filed June 4, 1932

6 Sheets-Sheet 3



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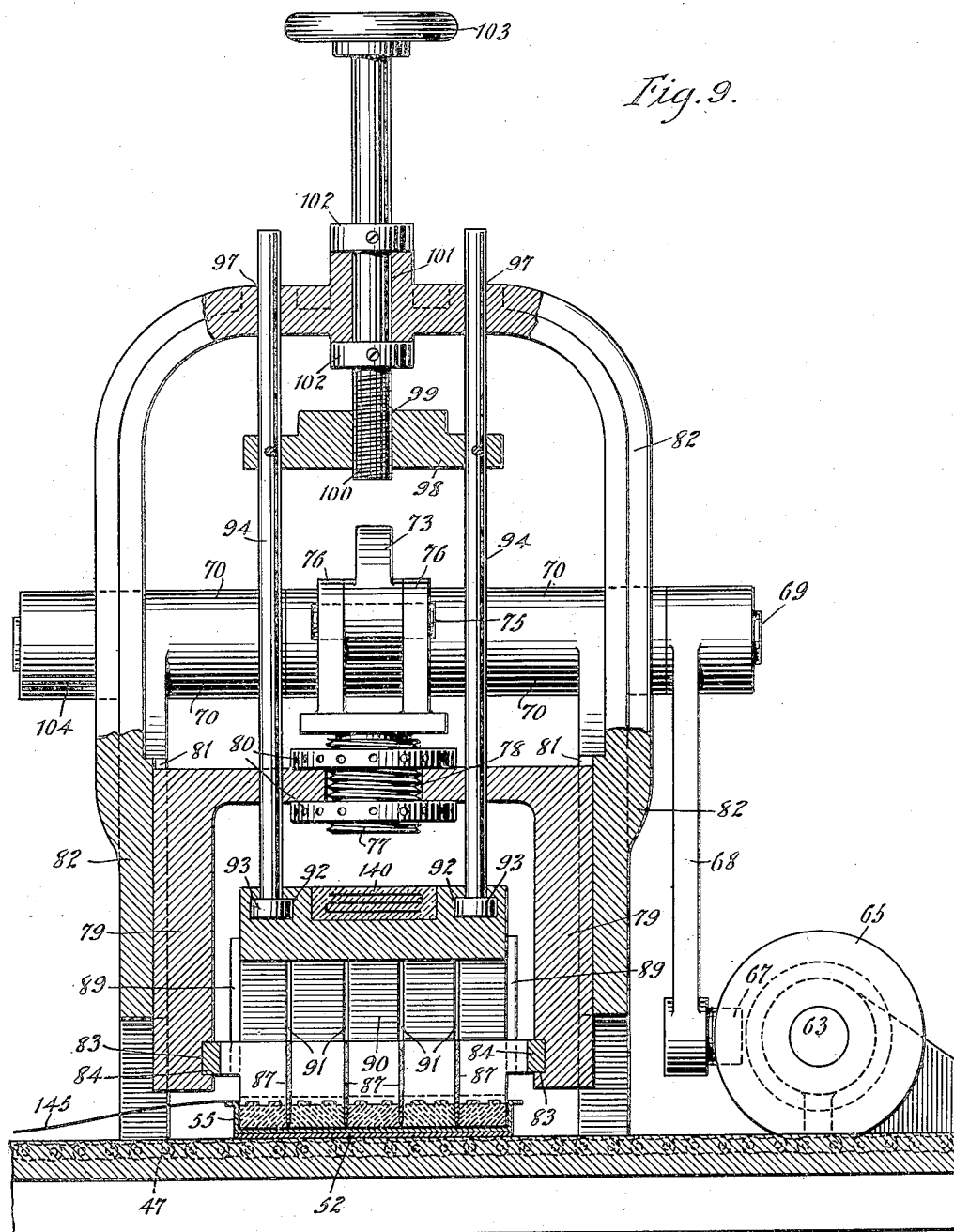
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BUTTER PRINTING AND CUTTING MACHINE

Filed June 4, 1932

6 Sheets-Sheet 4



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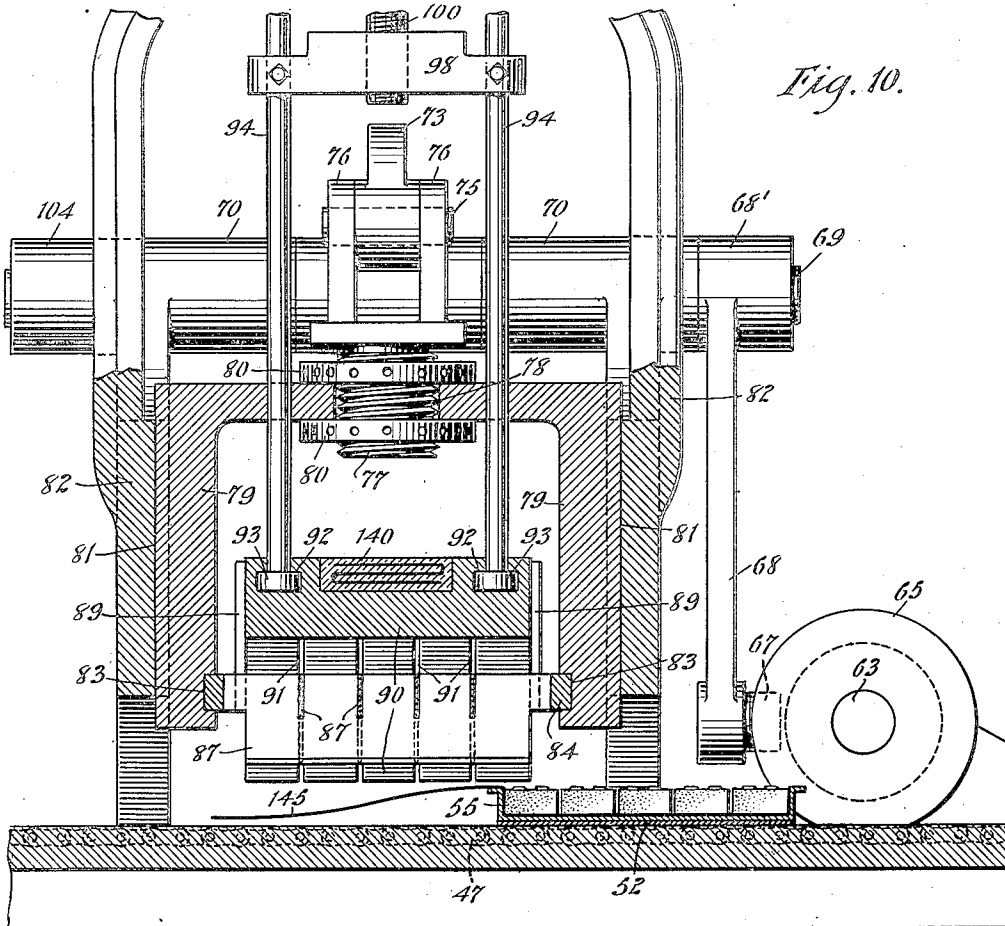
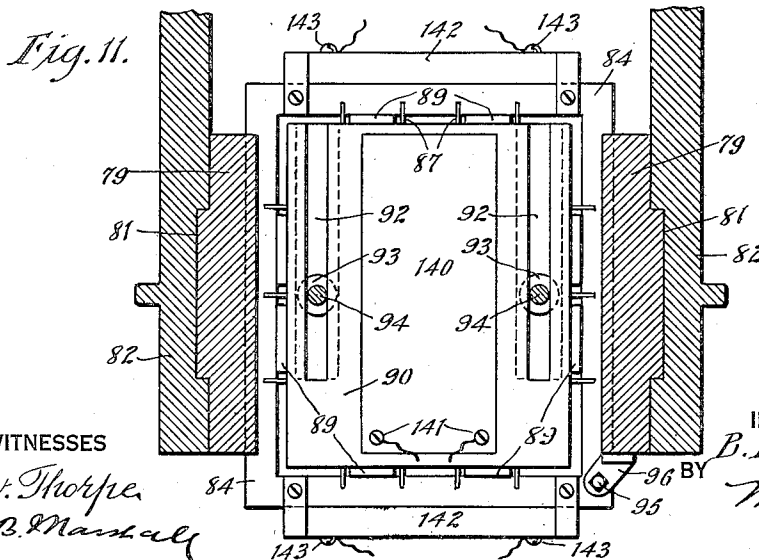
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BUTTER PRINTING AND CUTTING MACHINE

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6 Sheets-Sheet 5



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BUTTER PRINTING AND CUTTING MACHINE

Filed June 4, 1932

6 Sheets-Sheet 6

Fig. 12.

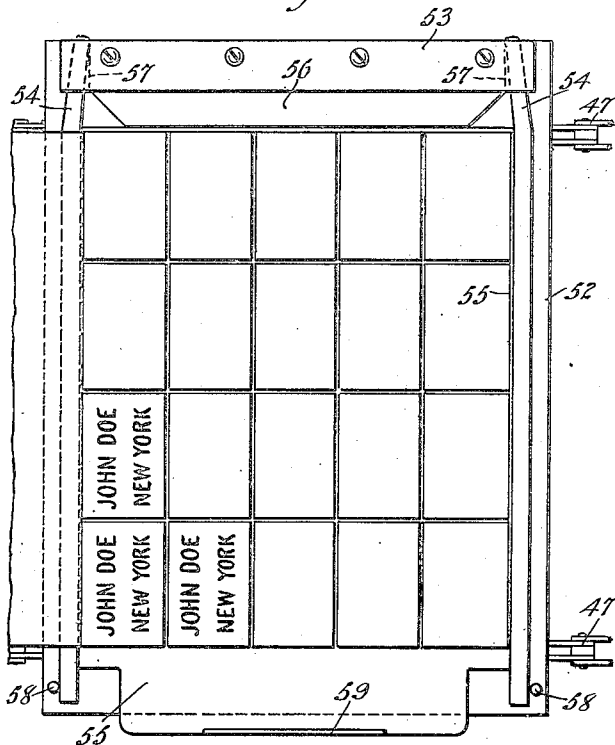


Fig. 13.

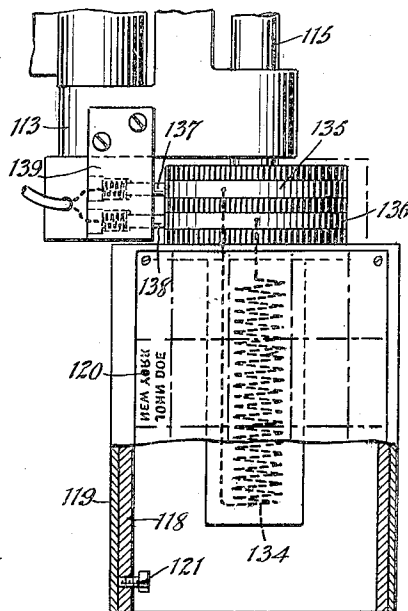


Fig. 16.

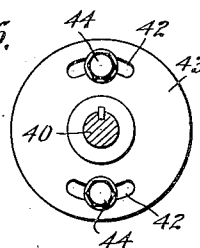
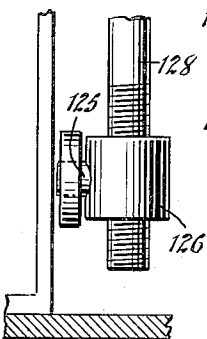


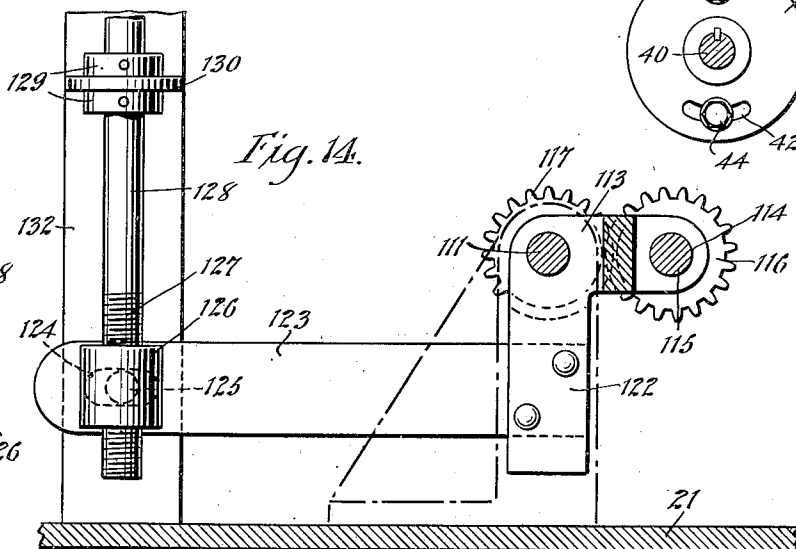
Fig. 15.



WITNESSES

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Fig. 14.



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UNITED STATES PATENT OFFICE

1,967,972

BUTTER PRINTING AND CUTTING
MACHINEBenjamin Rottenberg, New York, N. Y., assignor
to Dexter Bishop Co. Inc., New York, N. Y., a
corporation of New York

Application June 4, 1932, Serial No. 615,399

6 Claims. (Cl. 31-20)

An object of the invention is to provide a butter printing and cutting machine which will cut the butter into pats and print a name or symbol on each pat of butter.

5 Another object of the invention is to provide such a machine which may be conveniently arranged to cut the butter into pats of different widths, lengths and thicknesses and to print the pats of butter with different names or symbols. Means are provided to heat the cutting knives, which are used to cut the butter into pats, and a printing roll, which is used to print the names or symbols on the pats of butter.

10 Still another object of the invention is to provide an automatic means to drive a belt step by step on which the butter is conveyed to the cutting and printing means, which permits operators to dispose trays of butter on the belt and to remove the trays of butter after the butter has been cut into pats and printed, the belt being at rest when the trays of butter are placed on the belt, when the butter is cut into pats and when the trays of butter are removed from the belt. Means are provided to adjust the belt relatively to the driving means to properly dispose the belt with the trays at the cutting means.

15 An additional object of the invention is to provide convenient means for disposing the trays of butter on the belt and for holding the trays of butter on the belt, which means permits of the convenient removal of the trays of butter from the belt when the butter on the trays has been cut into pats and has been printed.

20 Additional objects of the invention will appear in the following specification in which the preferred form of the invention is described.

In the drawings similar reference characters refer to similar parts in all the views, of which
25 Figure 1 is a plan view illustrating the machine,

Figure 2 is a view illustrating the front elevation of the machine,

30 Figure 3 is an enlarged view illustrating the cog wheels which connect the driving means with one of the shafts for rotating the belt.

Figure 4 is an enlarged inverted plan view of the cutter frame with its knives and showing the block with the channels through which the knives pass,

50 Figures 5 and 6 are views illustrating the knives which are arranged and are secured to the cutter frame,

Figure 7 is a sectional view on the line 7-7 of Figure 1,

Figure 8 is an enlarged sectional view on the line 8-8 of Figure 1,

Figure 9 is an enlarged sectional view on the line 9-9 of Figure 1,

Figure 10 is a fragmentary sectional view similar to the view illustrated in Figure 9, but with the cutter frame with its knives in raised position,

Figure 11 is an enlarged sectional view on the line 11-11 of Figure 2,

Figure 12 is an enlarged plan view showing one of the carriers secured to the belt, with a tray disposed thereon,

Figure 13 is an enlarged fragmentary sectional view illustrating the cylinder with a printing roll secured thereon, together with the heating means,

Figure 14 is an enlarged sectional view on the line 14-14 of Figure 1,

Figure 15 is a fragmentary end sectional view of Figure 14, and

Figure 16 is a view illustrating one of the couplings for securing intermittent driving means with one of the shafts carrying one set of the sprocket wheels.

By referring to the drawings, it will be seen that a motor 20 is provided which is mounted on a base 21, the motor 20 having a shaft 22 connected by a clutch 23 with a shaft leading to the gear box 24, a gear in the gear box 24 having a shaft 25 which is connected by a coupling 26 with a shaft 27, the shaft 27 having a worm 28 which meshes with a worm wheel 29 secured to a shaft 30. This shaft 30 is the main driving shaft and is journaled in bearings 31 on the base 21.

The shaft 30 has a gear 32 for driving the printing means, a gear 33 for operating the butter cutter and a gear 34 for operating the intermittent drive for the belts or sprocket chains.

The gear 34 meshes with a gear 35 on a shaft 36 journaled in bearings 37, the shaft 36 having a gear 38 which meshes with a gear 39 mounted on a shaft 40. Secured to the gear 39 there is a coupling 41 which has extending bolts disposed in the arcuate slots 42 in the companion coupling 43. As will be seen by referring to Figure 16, the arcuate slots are concentric with the shaft 40 and nuts 44 engage the bolts extending from the coupling 41 for securing the couplings 41 and 43 together in adjusted position. The shaft 40 serves to drive sprocket chains or belts 47 and it will, therefore, be seen that it is possible to adjust the sprocket chains or belts

47 relatively to the shaft 36 to properly dispose the belts relatively to the means for cutting the butter into pats, as will shortly be described.

Secured to the shaft 40 there are sprocket wheels 46 around which the sprocket chains 47 are disposed, the sprocket chains 47 extending over the base 21 and being disposed around sprocket wheels 48 which are spaced from the sprocket wheels 46, the sprocket wheels 48 being mounted on a shaft 49 which is mounted in suitable bearings on the base.

It will be seen by referring to Figures 1 and 2 of the drawings that the printing roll 119 and the cutting knives 87 are disposed between the sprocket wheels 48 and the sprocket wheels 46, so that the butter, which is conveyed by the sprocket chains 47, will pass beneath the printing roll 119 and beneath the knives 87.

Spaced apart and secured to the sprocket chains 47 there are carriers 52 on which the butter trays may be disposed. Each of these carriers 52 has a flange 53 disposed at one side and spaced from the body of the carrier, so that projections 54 on the tray 55 may be disposed between the flange 53 and the body of the carrier 52 and at the outer sides of a spacing member 56 which separates the flange 53 from the body of the carrier 52. This spacing member 56 has sides 57 against which the projections 54 are disposed, so that the tray 55 at the said projections 54 will not only be held by frictional engagement of the projections 54 with the flange 53 and the body of the carrier 52, but the said projections 54 will serve to properly position the tray 55 on the carrier 52. The carrier 52 at its other side has pins 58 which engage the sides of the tray 55 so that the tray 55 at the pins 58 will be properly disposed on the carrier 52. Each tray 55 has a flange 59, by means of which the trays 55 may be readily pushed on a carrier 52 and be removed therefrom.

As will best be seen by referring to Figure 1, there is a table 60 at the front of the machine, on which the trays may be disposed and may be moved on and off the carriers 52. While the trays 55 may be readily removed from the carriers 52, it is important that the trays be positioned relatively to the carriers 52 to move a tray on a carrier readily and conveniently during a period in the interruption of the operation of the belts or sprocket chains 47. This is accomplished by supplying the table 60 with guideways 61 between which the tray 55 may be moved to dispose the tray on the carriers 52, this being clearly illustrated in Figure 1 of the drawings.

As will best be seen by referring to Figure 3, the gear 38 has teeth 38' which extend around approximately one-third of its periphery and the gear 39 has teeth 39' which extend around approximately four-fifths of its periphery. It will, therefore, be seen that, with this movement, an intermittent drive will be furnished to the belts or sprocket chains 47 and during the rest period one of the carriers 52 will be positioned to receive a tray 55 from the guides 61 which have been described.

Meshing with the gear 33 on the shaft 30 there is a gear 62 secured to a shaft 63 journaled in bearings 64, there being a cam 65 secured to the said shaft 63, the cam 65 having a cam groove 66 in which is disposed a stud 67 on an arm 68. The arm 68 has a collar 68' secured to a shaft 69 which is journaled in bearings 70 mounted on brackets 71 secured to the base 21. Also secured on the shaft 69 there is a collar

72 which is disposed between the bearings 70, the collar 72 having an arm 73 which has a slot 74 in which a pin 75 is disposed, the pin 75 extending through apertures in a bracket 76, the bracket 76 having a depending screw 77 which is disposed in an aperture 78 in a reciprocating frame 79, there being nuts 80 which mesh with the screw 77 and engage the opposite sides of the reciprocating frame 79 for holding the reciprocating frame 79 in adjusted position relatively to the bracket 76.

The reciprocating frame 79 is disposed in vertically extending guideways 81 in a frame 82, there being horizontally extending guideways 83 in the inner sides of the reciprocating frame 79 for receiving the sides of a cutter frame 84, which is shown in Figure 4. This cutter frame 84 is provided with slots 85 in which the ends 86 of the knives 87 are disposed, the knives 87 having slots 88 which permit the knives 87 to be crossed, as illustrated in Figure 4, for cutting the butter into pats of a desired size. Disposed within the cutter frame 84 and engaged by the projections 89 extending inwardly from the cutter frame 84, there is a block 90, the block 90 having channels 91 in which the knives 87 reciprocate. This block 90 serves to engage the butter as the knives 87 are withdrawn therefrom to prevent the upward movement of the butter with the knives.

The block 90 has guideways 92 extending in the same direction as the guideways 83 and in these guideways 92 there are disposed heads 93 on rods 94 which serve as supports for the block 90, while permitting the block 90, together with the cutter frame 84, to be withdrawn, permitting the substitution of another cutter frame and block which may be provided with knives spaced apart in a different relationship, as well as channels spaced apart in the block in a different relationship, to permit of the cutting of the butter into pats of a different size.

When the cutter frame 84 and the block 90 are disposed in operative position, they are so held by means of a bolt 95 which connects a side of the cutter frame 84 with a bracket 96 extending from the reciprocating frame 79.

By the means which have been described, it is possible to cut the butter at a desired length and width providing a block and a cutter frame with knives properly arranged to accomplish the desired result.

Means are also provided for arranging the block 90 as desired for cutting the pats of butter into a desired thickness, inasmuch as the block 90 may be adjusted vertically, as illustrated in Figure 9. As has been stated, the block 90 is supported on the rods 94, these rods 94 passing through apertures 97 in the frame 82. Secured to the rods 94 there is a nut 98 having a threaded aperture 99 through which a screw 100 is disposed, the screw 100 being journaled in a bearing 101 in the frame 82 and being held relatively to the said bearing 101 by means of collars 102 which are secured to the shank of the screw 100 and which engage the frame 82 at the top and at the bottom of the said bearing 101. Therefore, by means of a handwheel 103, the block 90 may be raised or lowered to permit of the passage of the butter on the trays 55 under the block 90 but in close proximity thereto. As will be seen by referring to Figure 1, there is another collar 104 secured to the shaft 69 and from this collar 104 projects an arm 105 on which a counter-weight 106 is disposed.

A gear 107 meshes with the gear 32, the said gear 107 being secured to a shaft journaled in a bearing 108 and the said shaft carrying a gear 109 which meshes with a gear 110 secured to a shaft 111 journaled in a bearing 112. As best illustrated in Figure 14 of the drawings, a bracket 113 is mounted to rock on the shaft 111, the bracket 113 having a bearing 114 in which a shaft 115 is journaled, there being a gear 116 secured to the shaft 115, the gear 116 meshing with a gear 117 secured to the shaft 111, so that the shaft 115 will be rotated by the shaft 111 irrespective of the position of the bracket 113 relatively to the axis of the shaft 111. Mounted on the said shaft 115 there is a cylinder 118 for rotation thereby, a printing roll 119 being removably mounted on the cylinder 118, it being understood that a roll 119 with any desired names or symbols 120 may be removably secured to the cylinder 118 by means of the set screw 121. It will be understood that the printing roll 119 may have the desired names or symbols spaced apart to correspond with the pats of butter which will be cut by the knives 87, and that the printing roll 119 may be removed and replaced with another printing roll with other names or symbols which may be spaced apart and arranged as may be desired.

In order that the printing roll 119 carried by the cylinder 118 may be spaced as may be desired from the carriers 52, and with reference to the thickness of the butter contained in a tray 55, there is secured to a depending portion 122 of the bracket 113 an arm 123, the arm 123 having a slot 124 in which is disposed a stud 125 which projects from a nut 126 meshing with a thread 127 on a rod 128, the rod 128 having collars 129 disposed against opposite sides of a flange 130 provided with an aperture through which the rod 128 extends. By turning the rod 128 at its handpiece 131, the cylinder 118 carrying the printing roll 119 may be adjusted relatively to the belts or sprocket chains 47 and the carriers 52 secured thereto. With this means the printing roll may be regulated with reference to the thickness of the butter contained in the trays 55.

The flange 130 extends from an upright 132 which has another flange 133 provided with an aperture through which the rod 128 extends, the flange 133 with its aperture serving as a bearing for the rod 128 adjacent the handpiece 131.

The butter which is to be printed and cut is taken from the refrigerators, where the temperature is low, and, therefore, it will be understood that the butter will chill the printing roll 119 and the knives 87 unless precautions are taken to maintain the temperature of the said printing roll and the knives. Should the printing roll 119 and the knives 87 become chilled by the butter, the butter will stick to the printing roll and the knives, which will interfere with the operation of the machine. Therefore, means are provided to heat the printing roll 119 and the knives 87 to maintain the printing roll and the knives at a desired temperature. The cylinder 118 is provided with an electrical heater 134 which is disposed within the cylinder 118 and which serves to heat the cylinder 118 and the printing roll 119 mounted thereon. The wires to and from the electrical heater 134 extend to the annular contact members 135 and 136 which are insulated from each other and from the shaft 115, and which are mounted on

the said shaft 115. These annular contact members 135 and 136 are engaged by brushes 137 and 138 which are insulated from and are secured to a member 139 which is secured to the bracket 113. Therefore, it will be seen that the electrical heater 134 may be operated during the rotation of the cylinder 118 and irrespective of the position of the cylinder 118 relatively to the axis of the shaft 111. The block 90 is also provided with a heater 140 which has binding posts 141 and the cutter frame 84 is provided with heaters 142 which have binding posts 143. Therefore, it will be seen that the printing roll 119 and the knives 87 may be maintained at a desired temperature irrespective of the temperature of the butter which is being operated on. By heating the block 90, provision is made to keep the cut butter from adhering to the block in consequence of the upward movement of the knives. Furthermore, the trailing side of each tray 55 will assure removal of the cut butter should it possibly adhere to the block 90, upon the movement of the belts.

When the machine is operated, it will be understood that the belts or sprocket chains 47 will have an intermittent movement and that during a rest period a tray 55 may be moved from between the guideways 61 to one of the carriers 52 and be positioned thereon in the manner described and that, with the next movement of the belts or sprocket chains 47, the tray 55 will be carried under the printing roll 119 to print the butter in the tray 55 at positions spaced apart, the tray 55 passing during this movement to a position under the block 90, where the reciprocation of the knives 87 will cut the butter into pats, separating the printings or markings effected by the printing roll, and that during the period of operation of the knives 87, the belts or sprocket chains 47 will again be at rest, and during the next movement of the belts or sprocket chains 47, the tray 55 will be carried to the position indicated at the right in Figure 1 of the drawings, where the tray 55 may be removed from the carrier 52.

As will best be seen by referring to Figures 9 and 10 of the drawings, the butter in the trays 55 is customarily covered by a paper or other member 145 and that this paper or other member 145 is raised or turned to one side when the trays 55 containing the butter are disposed on the carriers 52, the paper or other member 145 being disposed over the butter in the trays 55 as the trays are removed from the carriers 52.

What is claimed is:

1. In a machine of the class described, a block having channels extending through its sides and bottom, a cutter frame disposed around the block and having knives disposed in the channels, and means to reciprocate the cutter frame relatively to the block for moving the knives to cut butter disposed at the bottom of the block.

2. In a machine of the class described, a stationary frame having guideways, a reciprocating frame disposed in the guideways, the reciprocating frame having guideways, a block having guideways extending in the same direction as the second mentioned guideways, members carried by the first mentioned frame and disposed in the guideways in the block to support the latter in fixed relation thereto, a cutter frame disposed in the guideways in the reciprocating frame and extending around the block, the block having channels extending through its sides and bottom, knives on the cutter frame disposed in

the channels, and means to reciprocate the reciprocating frame in the first mentioned frame.

3. In a machine of the class described, a stationary frame having guideways, a reciprocating frame disposed in the guideways, the reciprocating frame having guideways, a block having guideways extending in the same direction as the second mentioned guideways, members carried by the first mentioned frame and disposed in the guideways in the block to support the latter in fixed relation thereto, a cutter frame disposed in the guideways in the reciprocating frame and extending around the block, the block having channels extending through its sides and bottom, knives on the cutter frame disposed in the channels, a rocking member having an arm articulated to the reciprocating frame, a shaft with a cam, and another arm on the rocking member having a stud engaged by the cam.

4. In a machine of the class described, the combination of a frame mounted for reciprocatory movement, cutting means carried by said frame to cut material upon the reciprocation

of said frame, mechanism to reciprocate said frame, said mechanism including means connected with said frame which is adjustable to vary the depth of cut of said cutting means; a block arranged to strip the material being cut from the cutting means, and means to adjust said block with respect to the cutting means.

5. In a machine of the class described, the combination of a cutter mounted for up and down movement, a block arranged to strip material being cut by said cutter from the cutter in the up movement of the latter, and means to heat said block to prevent said material from adhering thereto.

6. In a machine of the class described, the combination of a cutter mounted for up and down movement for cutting refrigerated material into sections, means arranged to strip the material being cut by said cutter from the cutter upon the up movement of the cutter, and means to heat said last means to prevent said material from adhering thereto.

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