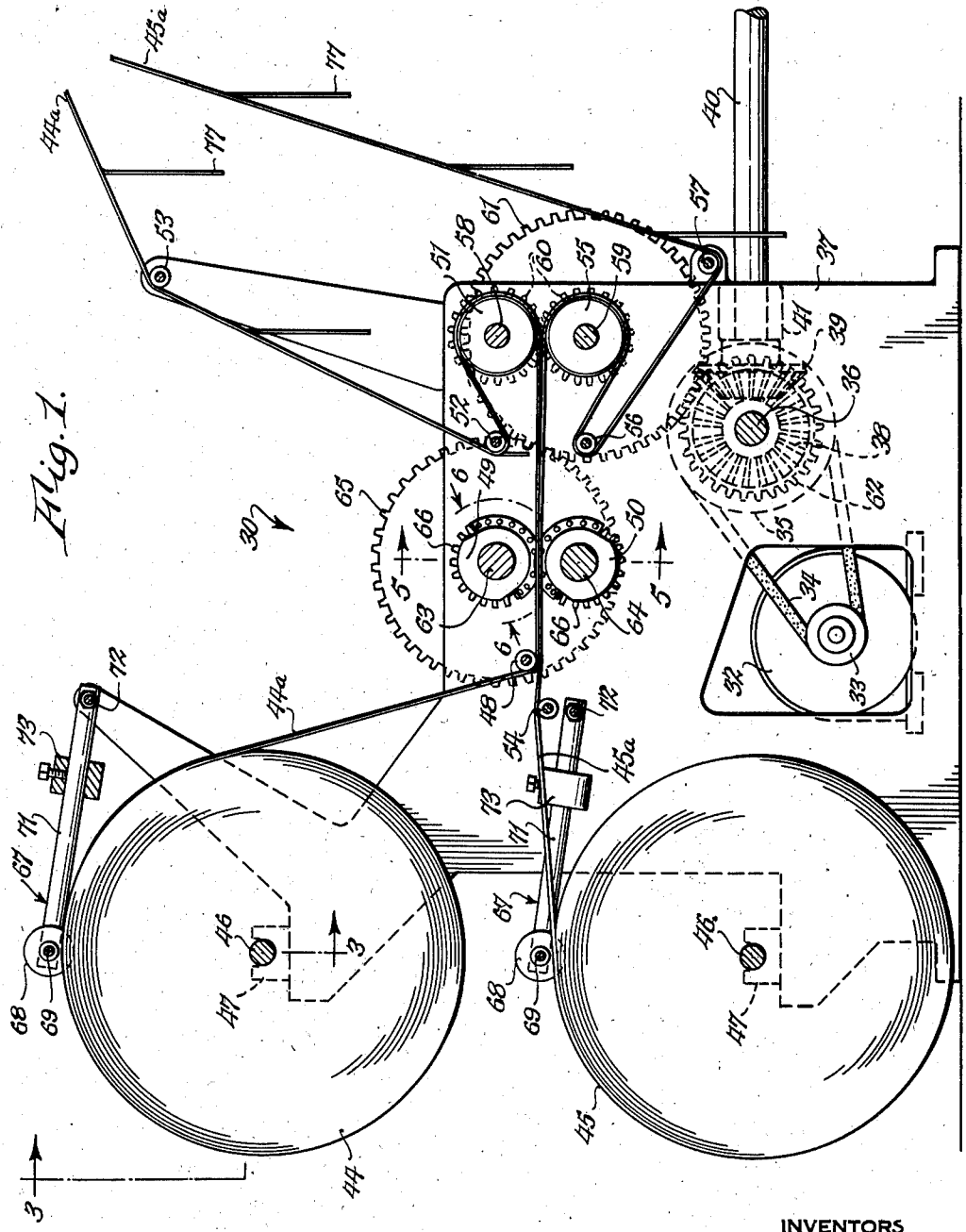
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MACHINE FOR AND METHOD OF FORMING FOLDED TOILET SEAT COVERS

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Fig. 1.



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Fig. 3.

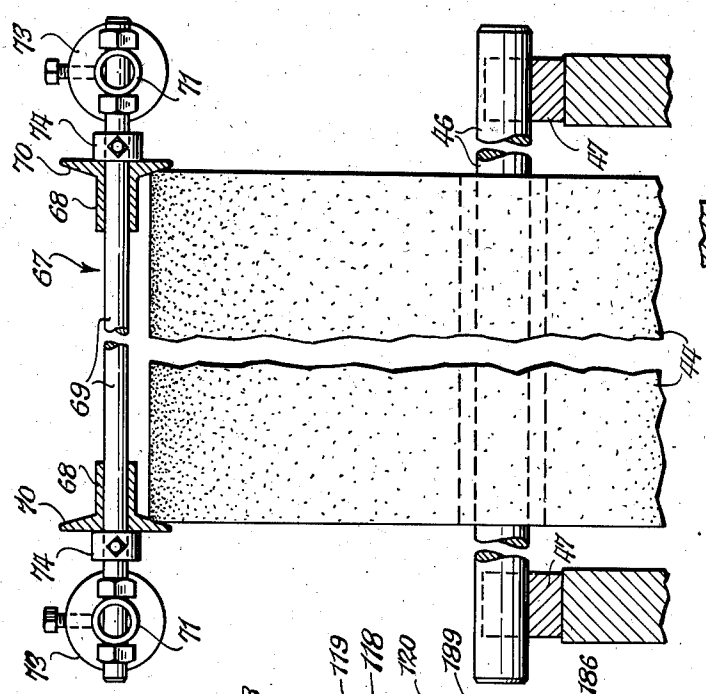


Fig. 4.

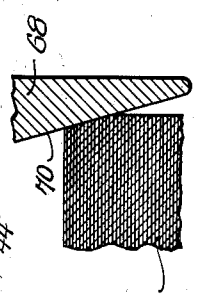
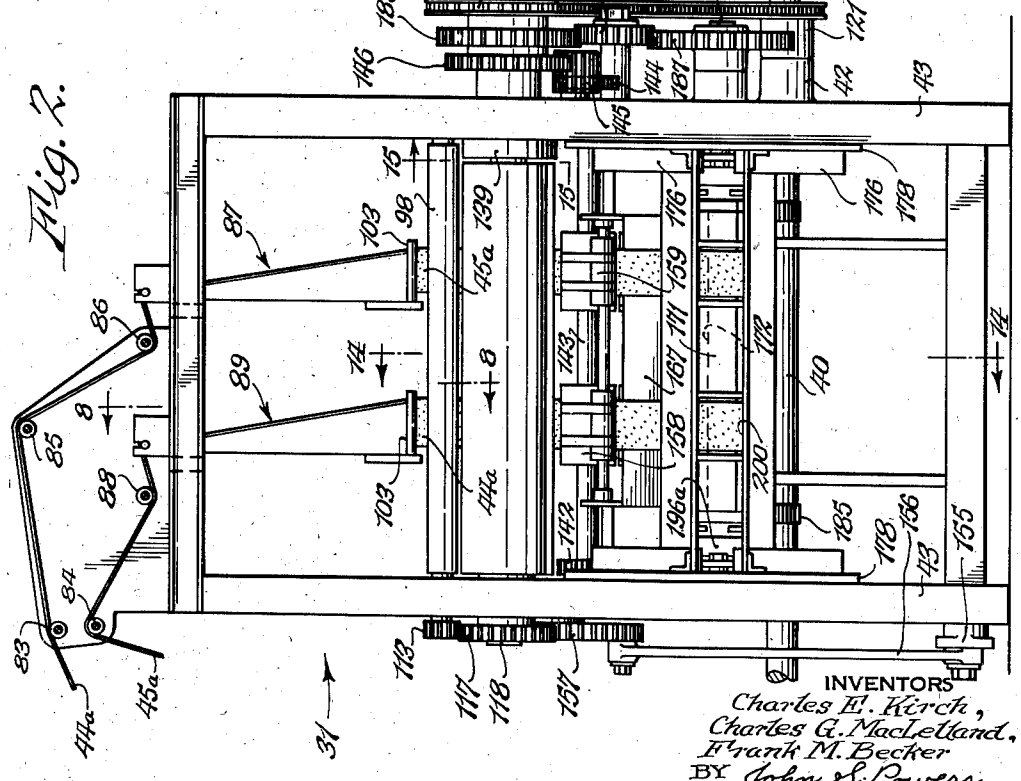


Fig. 2.



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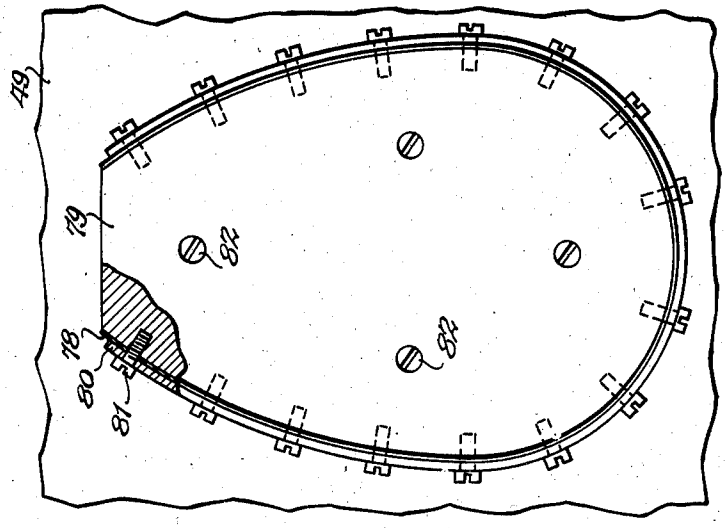


Fig. 6.

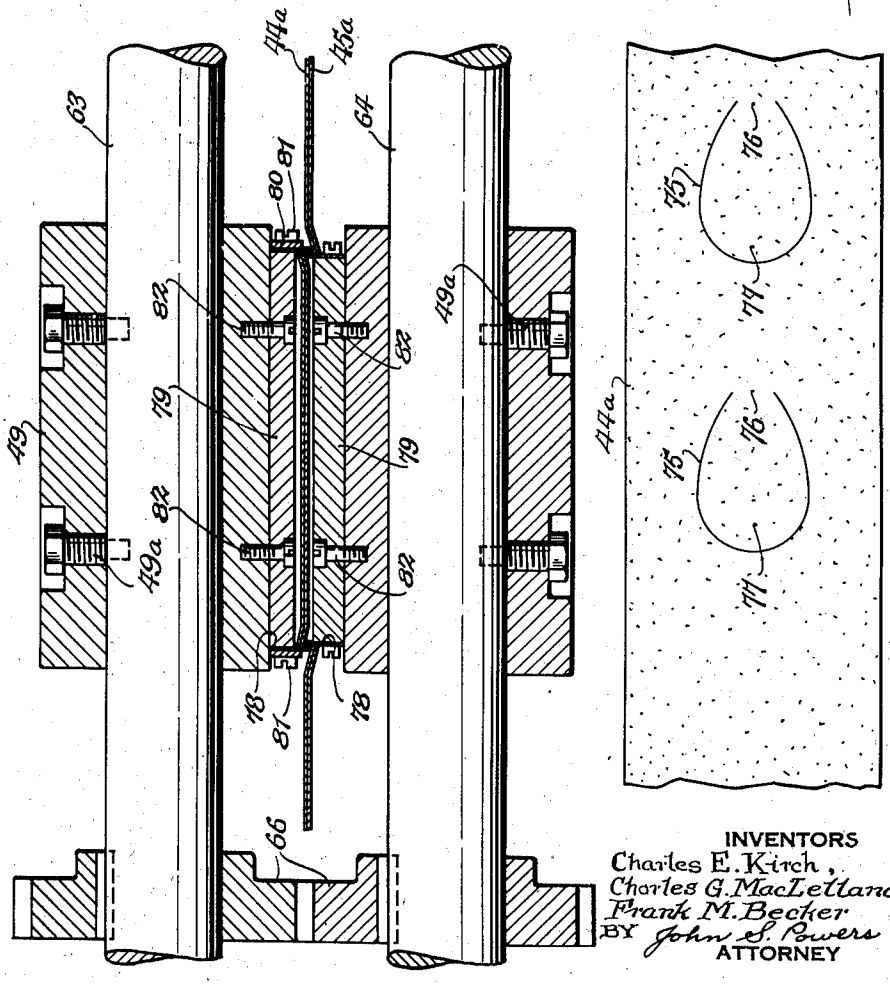


Fig. 7.

Fig. 5.

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Fig. 9.

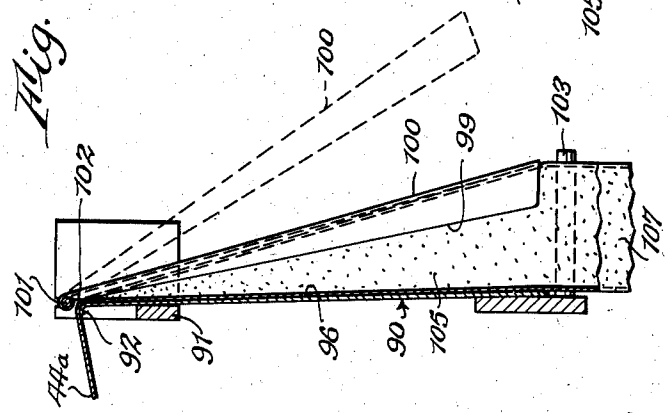


Fig. 13.

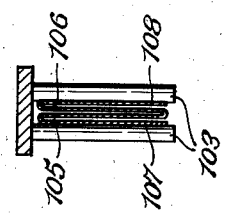


Fig. 11.

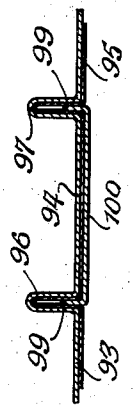


Fig. 12.

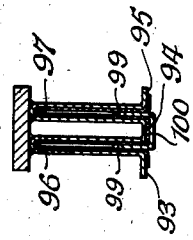


Fig. 10.

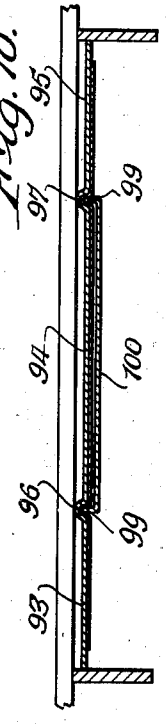


Fig. 8.

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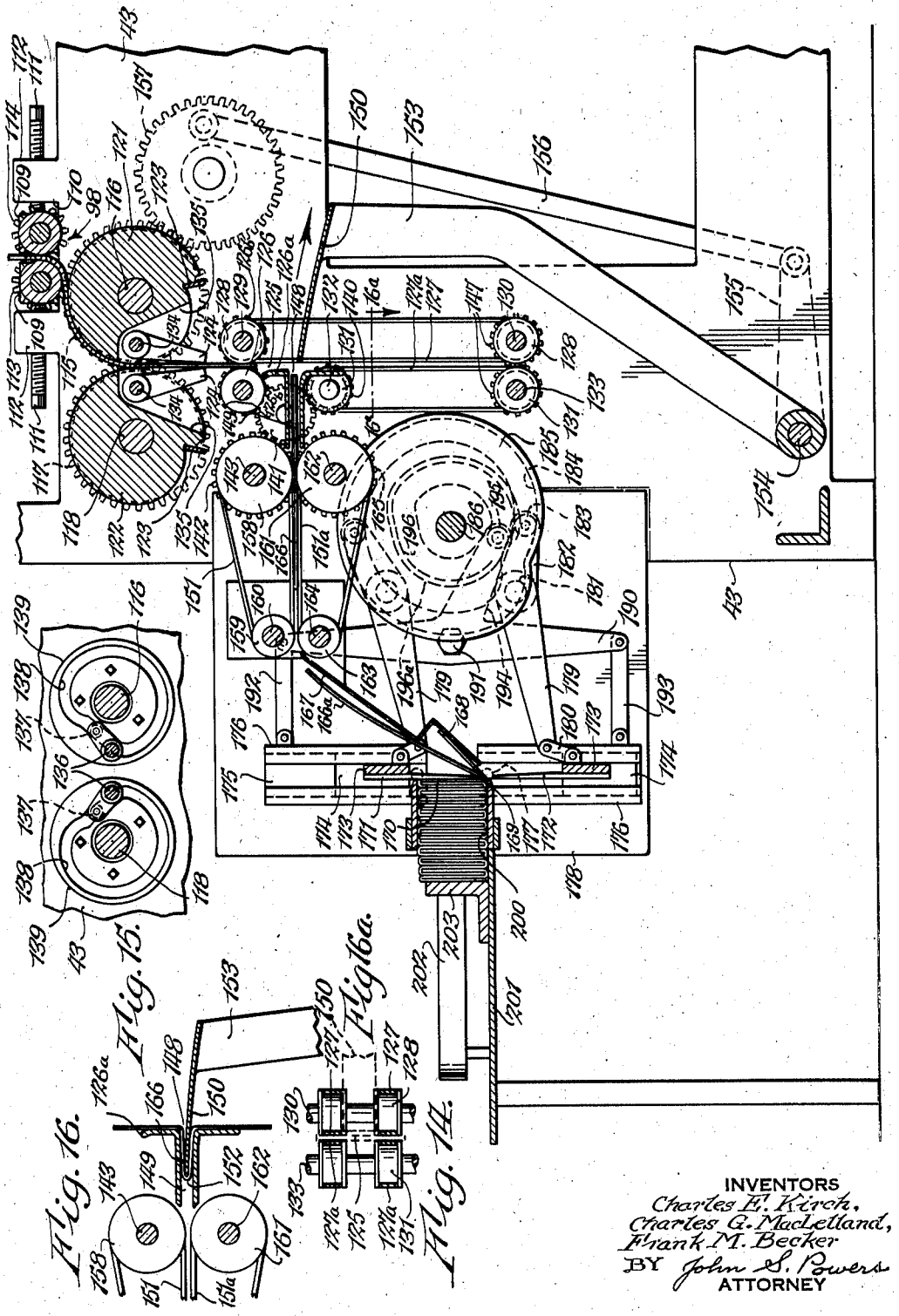


Fig. 15.

Fig. 16.

Fig. 16a.

Fig. 17.

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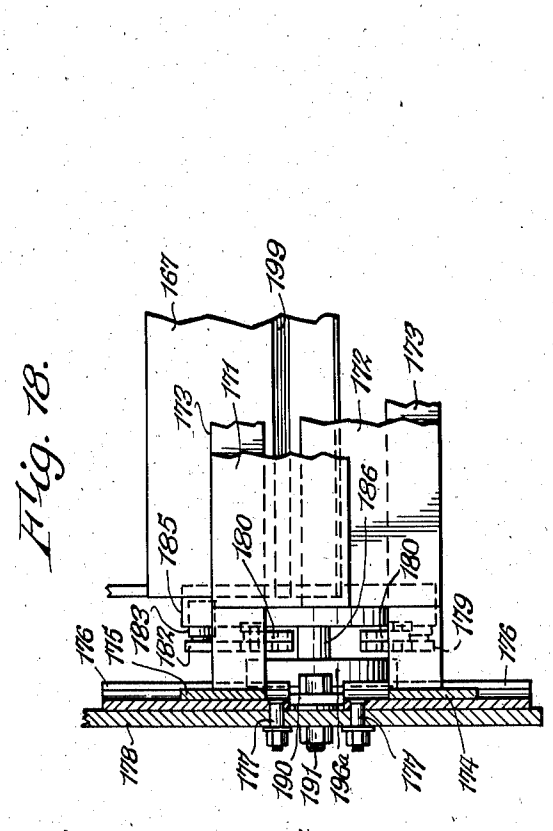


Fig. 18.

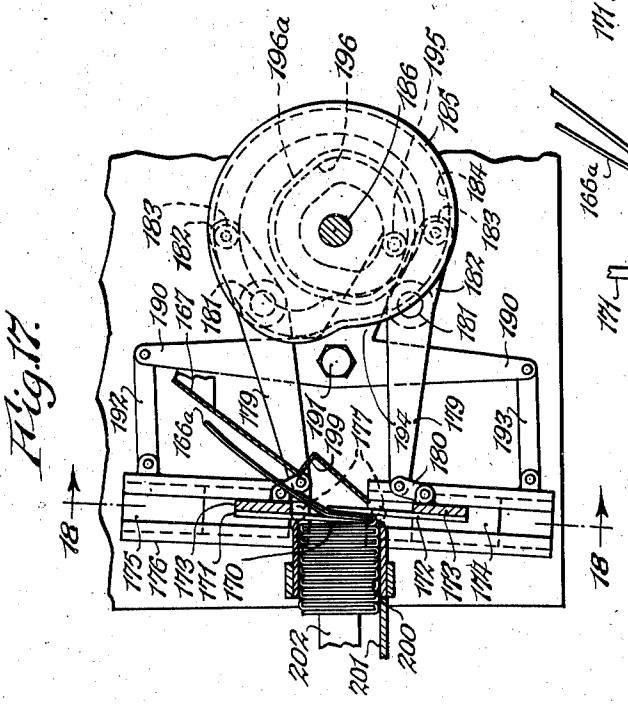


Fig. 17.

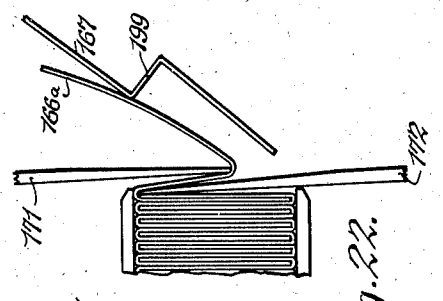


Fig. 22.

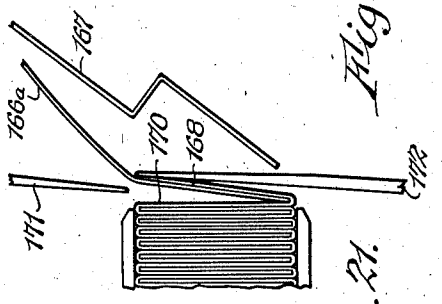


Fig. 21.

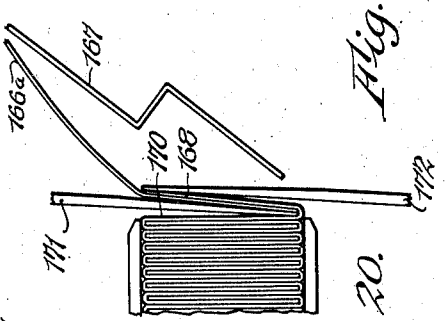


Fig. 20.

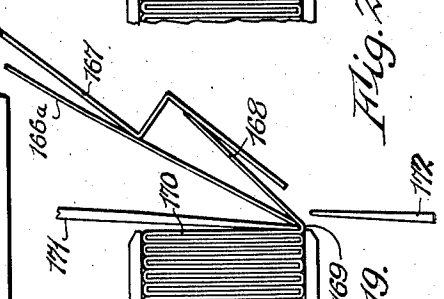


Fig. 19.

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MACHINE FOR AND METHOD OF FORMING FOLDED TOILET SEAT COVERS

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Fig. 24.

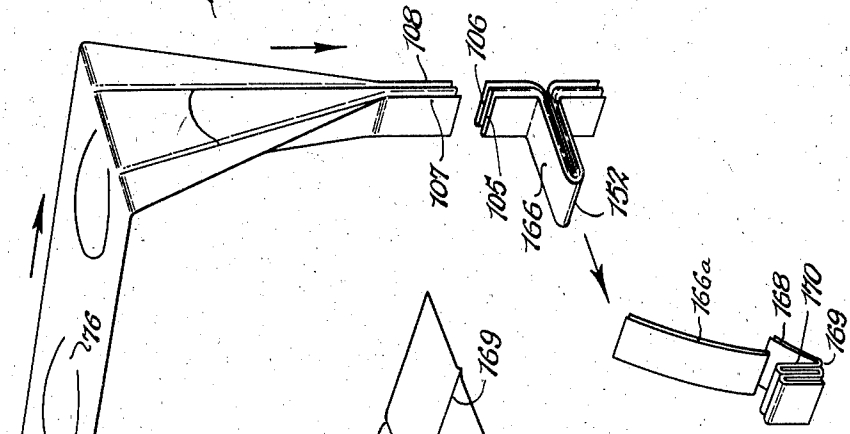
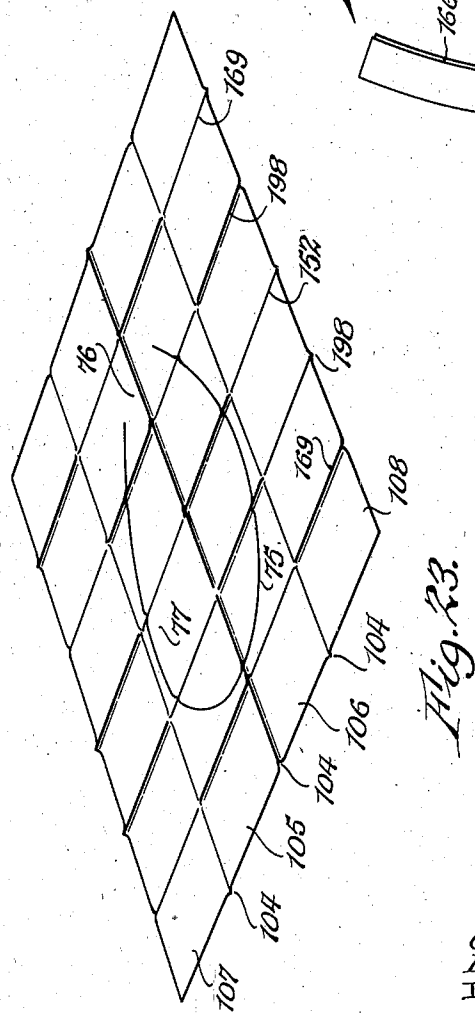


Fig. 23.



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Patented Apr. 21, 1942

2,280,092

UNITED STATES PATENT OFFICE

2,280,092

MACHINE FOR AND METHOD OF FORMING FOLDED TOILET SEAT COVERS

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Application September 15, 1939, Serial No. 295,070

17 Claims. (Cl. 93—1)

This invention relates to a machine for and a method of forming and folding disposable toilet seat covers.

One object of the invention is to provide a machine which is adapted to fold the seat covers in such a manner that they may be accommodated in dispensers of convenient size and may be withdrawn therefrom with facility.

A further object is to provide a machine which is so designed that thin and inexpensive grades of stock may be employed.

A still further object is a machine wherein provision is made for preventing displacement or disarrangement, during the subsequent folding operations, of the flaps which are provided as an incident to the opening forming operations.

A still further object is a novel construction and arrangement of the parts of the machine, whereby to minimize wearing of the parts and enable a high rate of production.

Figures 1 and 2 are companion views of the rear and front halves, respectively, of a machine embodying the features of the invention, the rear half being shown in section and the front half in elevation.

Figure 3 is an enlarged section taken along line 3—3 of Figure 1.

Figure 4 is an enlarged fragmentary section taken along the same line as Figure 3, the roll of stock in this instance being shown in section.

Figures 5 and 6 are enlarged sections taken along lines 5—5 and 6—6, respectively, of Figure 1.

Figure 7 is a view in plan of a strip of stock after passage through the opening forming rolls.

Figure 8 is an enlarged detail section taken along line 8—8 of Figure 2.

Figure 9 is a section taken along line 9—9 of Figure 8.

Figures 10, 11, 12 and 13 are transverse sections through the co-operating shoe and slipper of the pleating device and are taken along lines 10—10, 11—11, 12—12 and 13—13, respectively, of Figure 8.

Figure 14 is an enlarged vertical section taken along line 14—14 of Figure 2.

Figure 15 is a detail section taken along line 15—15 of Figure 2.

Figure 16 is a detail section illustrating the action of the mechanism which doubles the pleated strip sections.

Figure 16*a* is a horizontal section taken along line 16*a*—16*a* of Figure 14.

Figure 17 is a section through the interfolding mechanism.

Figure 18 is a section taken along the line 18—18 of Figure 17.

Figures 19, 20, 21 and 22 illustrate progressively the action of the interfolding mechanism.

Figure 23 is a perspective view, unfolded, of a seat cover produced by the machine.

Figure 24 is a perspective view illustrating diagrammatically the various stages of the process.

The machine, as illustrated, includes a forming section 30 (Figure 1) and a folding section 31 (Figure 2), the two sections being adapted to be mounted in tandem upon a suitable base or foundation and being powered by a motor 32 suitably mounted in the forming section. The drive pulley 33 of the motor is connected by a belt 34 to a pulley 35 which is fixed to a drive shaft 36. The said shaft extends crosswise of the forming section, is mounted in suitable bearings formed or provided upon the side frame members 37 thereof and carries a driving gear 38 which meshes with a driven gear 39. The latter is fixed to a countershaft 40, one end of which is journaled in a bearing 41 carried by one of the frame members 37 and the other end of which is journaled in a bearing 42 (Figure 2) carried by one of the side frame members 43 of the folding section, it being noted that the side frame members of the folding section are arranged at right angles with respect to the corresponding members of the forming section.

Rolls of stock 44 and 45, preferably paper, are carried by spindles 46. The journals of the rolls rest in bearing blocks 47 which are carried by the side frame members of the forming section, the said rolls being mounted one above the other, as best shown in Figure 1. The strip of material 44*a* unrolled from the roll 44 passes downwardly around a guide roll 48, between upper and lower cutting rolls 49 and 50, respectively, around a feed roll 51, under a guide roll 52 and over a guide roll 53 to the folding section of the machine. The strip of material 45*a* unrolled from the roll 45 passes over a guide roll 54, between the cutting rolls 49 and 50, around a feed roll 55, over a guide roll 56 and under a guide roll 57 to the forming section. The feed rolls 51 and 55 are preferably of steel and are mounted upon shafts 58 and 59, respectively, in such a manner that their peripheries, which are knurled or otherwise roughened, are spaced from one another, the said shafts carrying companion gears 60 and being driven by a gear 61 which is carried by the shaft 59 and which meshes with a gear 62 carried by the drive shaft 36. The cut-

ting rolls **49** and **50** (Figure 5) are secured upon shafts **63** and **64**, respectively, by set screws **49***a* and are driven by a gear **65** (Figure 1) which is fixed to the shaft **63** and which meshes with the gear **61**, the shafts **63** and **64** carrying companion gears **66**.

It will be noted that the guide rolls **48** and **54** and the feed rolls **51** and **55** guide the strips **44***a* and **45***a* in superposed relation between the cutting rolls **49** and **50**. In order to maintain the strips under the proper tension gravity brakes **67** (Figures 1, 3 and 4) are associated with the rolls **44** and **45**. Each brake includes a pair of elements **68** which are freely mounted upon a cross-shaft **69**, the said elements being headed and having beveled inner faces **70** which engage the opposite edges of the associated roll. The cross-shafts **69** are carried by arms **71** which are pivotally mounted at their inner ends upon rods **72**, the latter being supported between the side frame members **37**. The elements **68** rest upon the rolls and, owing to their weight and the weight of the associated parts, exercise a wedging action against, and hence deform slightly, the opposite edges of the rolls, as best shown in Figure 4. Referring to this figure, it will be noted that the edges of the outer, faster moving, layers of the rolls contact the inner, slower moving, zones of the beveled faces of the elements **68** while the inner, slower moving, layers of the rolls contact the outer, faster moving, zones of the beveled faces of the elements. Free rotation of the rolls is, therefore, resisted, the degree of resistance depending upon the areas of the engaged edge portions of the rolls and being variable, at will, by adjusting weights **73**, which are provided for this purpose, along the arms **71**. The elements **68** are thus operative to exercise a substantially uniform braking action upon the rolls which is uninfluenced to any substantial degree by the diameters of the rolls or irregularities in their shape. They also serve to maintain the rolls in proper alignment with the cutting rolls, collars **74** which are carried by the cross-shafts **69** being adjustable to vary their setting.

As the strips **44***a* and **45***a* pass between the rolls **49** and **50**, opening **75** (Figure 7) are formed at regular spaced intervals. In this operation the slitting is so controlled, however, that unsevered joints **76** are permitted to remain at the leading ends of the openings, the said joints connecting the flaps **77** which are delimited by the slits to the strips and being located substantially midway between the marginal edges of the strips along longitudinally extending median lines. The openings **75** are formed by co-operating knives **78** (Figures 5 and 6), one of which is carried by each of the cutting rolls. The said knives are thin and of spring steel; and each is bent around and secured to the marginal edge of a matrix plate **79** by a backing strip **80** and screws **81**. The matrix plates are arcuate and have marginal edges of the requisite contour; they are secured to the cutting rolls by screws **82**; and they support the blades in such a manner that their cutting edges co-operate in scissor-like fashion. Preferably the knives are mounted so that there is a slight clearance between their cutting edges. This has the advantage that it prevents wearing or dulling of these edges. It does not, however, impair the shearing action of the knives as the strips of stock are under tension during their passage between the cutting rolls. In this connection it will be noted that the knives are so mounted and that the rolls **49** and **50** are so rotated that the spaced ends of the knives make the initial contact with the strips of stock, whereby to effect formation of the joints **76** in the desired relation with respect to the flaps **77**.

As the opening forming operations are completed, the strips of stock advance to the folding section (Figure 2) of the machine, the said section having an upper guide roll **83** to which the strip **44***a* passes from the guide roll **53** and a lower guide roll **84** to which the strip **45***a* passes from the guide roll **57**. From the guide roll **83** the strip **44***a* passes over a guide roll **85** and under a guide roll **86** to a pleating device **87** while the strip **45***a* passes from the guide roll **84** under a guide roll **88** to a pleating device **89**. The two pleating devices are similar. Each includes a vertically arranged shoe **90** (Figures 8 and 9) which is supported from a horizontal frame member **91** so that its back faces the direction from which the strips of stock advance, the upper edge of the shoe having a rolled edge **92** (Figure 9). The face of each shoe is divided into three triangularly shaped sections **93**, **94** and **95** by converging grooves **96** and **97** (Figures 8, 10, 11 and 12), the portions of the rolled edge **92** of the two outer sections sloping downwardly away from the horizontal central portion. The grooves **96** and **97** begin from a minimum depth at the rolled edge **92** and increase to a maximum depth at their lower ends, the depth of the grooves increasing as the width of the face sections decreases.

The strips **44***a* and **45***a* are pulled downwardly across the shoes **90** by feed rolls **98**. As they pass over the rounded edges **92** of the shoes the strips are engaged by flanged edges **99** of slippers **100** and are caused to enter the grooves **96** and **97**, the slippers being pivotally mounted upon cross rods **101** and being so formed that the flanged edges extend into the grooves. The upper ends of the flanged edges are preferably rounded, as indicated at **102** (Figure 9), so that as the strips move around the rounded edges **92** of the shoes the engaged portions are directed into the grooves. The location of the feed rolls and the angularity of the outer face sections of the rolled edges **92** of the shoes cause the strips to follow the bottoms of the grooves, the depth of the grooves being predetermined so that at the lower ends of the shoes they accommodate the strips in their entirety. Hence as the latter emerge from the shoes and pass between guide rods **103** they have been folded lengthwise to one-fourth of their original width, inner folds **105** and **106** and outer folds **107** and **108** (Figure 13) being produced during the passage of the strips through the shoes. In this connection it will be noted that the flanged edges **99** of the shoes do not follow the bottoms of the grooves **96** and **97**. This is unnecessary unless the grooves are of exceptional depth, it being only necessary, in most instances, to initiate movement of the strips into the grooves.

It will be apparent that during passage of the strips **44***a* and **45***a* from the cutting rolls to the pleating devices there is a tendency for the flaps **77** to move out of the openings **75** and assume perpendicular positions. However, as the strips pass over the rounded edges **92** of the shoes and move under the slippers **100** the leading unsevered joints **76** insure return of the flaps to their respective openings, whereby they are caused to enter the grooves **96** and **97** in substantially the

same manner as though the strips were uncut. Referring to Figure 23, it will be noted that the openings 75 are formed in the central folds 105 and 106 of the strips and that the flaps 77 are folded lengthwise and are located wholly between the two marginal sections 107 and 108, the said folds being creased, as indicated at 104 (Figure 23), as the strips pass between the feed rolls 98.

The journals of the feed rolls 98 are carried in bearing blocks 109 (Figure 14) which are mounted in windows 110 formed in the frame members 43. The feed rolls may be adjusted to engage the strips 44a and 45a with the proper pressure by adjusting threaded elements 111 which are carried by projections 112 formed or provided upon the said frame members. The feed rolls carry companion gears 113 and 114. The former meshes with a gear 115 which is fixed to a shaft 116, the gear 115 also meshing with a gear 117 which is fixed to a shaft 118. The latter carries a sprocket 119 (Figure 2) which is connected by a chain 120 with a sprocket 121 carried by the countershaft 40. The driving mechanism described is so designed that the peripheral speed of the feed rolls 98 is slightly slower than that of the feed rolls 51 and 55. Hence the latter advance the strips 44a and 45a only when they are under the desired tension. In the event, therefore, that any slack should tend to develop between the cutting rolls and the pleating devices the rolls 51 and 55, although continuing to rotate, merely slip until the engaged portions of the strips are again under the proper tension. The employment of feed rolls in the manner described insures passage of the strips of stock through the machine without the development of slack between the opening forming and pleating devices and has the advantage that the total pulling force exercised upon the strips is divided and applied to different areas and is not concentrated at a single area. Thinner and less expensive grades of stock than would otherwise be permissible may, therefore, be employed without the possibility of tearing of the strips during carrying out of the above operations.

From the feed rolls 98 the strips 44a and 45a pass between shearing rolls 121 and 122 (Figure 14) which are carried by the shafts 116 and 118, respectively. The said rolls carry axially arranged knives 123 which co-operate to cut the pleated strips in sections, each of which includes one of the openings 75. Prior to the operation of the knives 123, the sections to be severed are engaged by fingers 124 and directed into vertical passages 125, each of which is provided by a roll 126, a guide plate 126a and the opposing runs of two pairs of vertically arranged belts 127 and 127a (Figure 16a), the longer belts 127 (Figure 14) being carried by pulleys 128 which are mounted upon upper and lower shafts 129 and 130, respectively, and the shorter belts 127a being carried by pulleys 131 which are mounted upon upper and lower shafts 132 and 133, respectively. The fingers 124 are fixed to actuating shafts 134 which are carried by the shearing rolls and they normally occupy recesses 135 formed in the rolls. The actuating shafts 134, however, carry cranks 136 (Figure 15) which in turn carry rollers 137, the latter operating in cam grooves 138 formed in disc-like members 139 which are carried by one of the side frame members 43. The cam grooves 138 are so formed that after the knives 123 have severed the leading sections from the strips 44a and 45a and the succeeding sections start to emerge from between the shearing rolls, the fingers 124 move outwardly to engage the ends of the latter and direct them into the passages 125 in the manner described. The shaft 132 carries a gear 140 which is driven through an idler gear 141 by a gear 142 which is carried by a shaft 143, the latter also carrying a gear 144 (Figure 2) which is driven through an idler gear 145 by a gear 146 carried by the shaft 118. The pulley shafts 130 and 133 (Figure 14) carry companion gears 147 while the shaft of the roll 126 and the shaft 129 carry companion gears 126b. The roll 126 and the belts 127 and 127a, therefore, feed the strips 44a and 45a downwardly.

As the strips enter the passages 125, they are engaged first by the roll 126 and the belts 127 and thereafter by the latter and the belts 127a and are moved downwardly in front of entrances 148 of horizontal passages 149. As the central portions of the strip sections move opposite the entrances 148, and after the said sections have been severed from their respective strips by the knives 123, they are engaged by blades 150 and pushed through the entrances 148 and passages 149 into engagement with the opposing runs of upper and lower pairs of belts 151 and 151a, respectively, and are folded crosswise as their trailing ends are withdrawn from the passages 125, the crease thus formed in each section being indicated at 152 in Figure 23. The blades 150 which initiate this folding operation are carried by arms 153 which are mounted upon a shaft 154, the actuating mechanism for the said shaft including a crank 155, a link 156 and a gear 157 which meshes with and which is driven by the gear 115. The upper belts 151 are carried by pulleys 158 which are mounted upon the shaft 143 and pulleys 159 which are mounted upon a shaft 160 while the lower belts 151a are carried by pulleys 161 which are mounted upon a shaft 162 and pulleys 163 which are mounted upon a shaft 164, the shaft 162 carrying a gear 165 which meshes with the gear 142 to drive the pulleys, and hence the belts.

A pleated strip section which has been doubled in the manner described is indicated at 166 (Figure 14). As it is fed forwardly and emerges from between the belts 151 and 151a it slides downwardly by gravity across a transversely arranged guide plate 167 to a position (indicated at 166a) in which its leading end overlies the trailing end 168 of the preceding strip section and occupies a joint 169 which connects the said trailing end and the adjacent fold 170. A blade 171 of mechanism for folding the doubled sections crosswise is also located in the joint 169, a co-operating blade 172 being located below and exteriorly of the joint. The blades 171 and 172 are carried by upper and lower cross bars 173. The ends of the latter carry blocks 174 which are slidably mounted for vertical movement in guideways 175 formed in track-pieces 176 which are arranged in pairs, one above the other, and which are pivotally mounted as at 177 upon extensions 178 of the side frame members 43. Vertical movements of the blades 171 and 172 are effected by two pairs of levers 179. One pair of levers is carried by each of the frame extensions 178. The levers of each pair are pivotally mounted as at 181, are connected to the cross bars 173 by links 180 and are formed or provided with tail-pieces 182 which carry rollers 183. The rollers of each pair of levers operate in a groove 184 formed in a cam 185 which is mounted upon a transverse shaft 186, the latter carrying a gear 187 (Figure 2) and being driven from a gear 188 carried by

the shaft 118 through an idler gear 189. Pivotal movements of the blades 171 and 172 are effected by levers 190 (Figure 14) one of which is mounted as at 191 upon each of the frame extensions 178. The upper end of each lever 190 is connected by a link 192 to the free end of the associated upper track-piece 176 while the lower end is connected by a link 193 to the free end of the companion track-piece. A lateral extension 194 of each lever 190 carries a roller 195 which operates in a groove 196 formed in a cam 196a, the latter and the companion cam being carried by the shaft 186.

The cams 185 and 196a are so designed that after the strip section 166a moves to the position indicated the blade 171 is pivoted forwardly and the blade 172 is pivoted rearwardly to the positions shown in Figure 19. Thereafter, while the blade 171 remains stationary, the lower blade 172 is moved upwardly, as shown in Figure 20, to fold the trailing end 168 of the preceding strip section around the upper blade and upon the leading end of the section 166a. The blade 171 is then moved upwardly and is withdrawn from between the folds 168 and 170, as shown in Figure 21, while the blade 172 remains stationary. The blade 172 is then pivoted forwardly and the blade 171 is pivoted rearwardly, after which the upper blade is moved downwardly, as shown in Figure 22, to fold the strip section around the lower blade and crease the strip section as indicated at 198 (Figure 23), during the final part of which movement the trailing end of the said section passes beyond a shoulder 199 which is formed on the guide plate 167 and, owing to its inherent resiliency, assumes a position behind the shoulder, whereby to later insure passage over it of the leading end of the succeeding strip section. The blade 172 is then moved downwardly to withdraw it from between the folds of the strip section 166a and the sequence of operations described begins anew, the leading end of the succeeding strip section having, in the meantime, moved over the trailing end of the section 166a in the same manner that the leading end of the latter moved over the trailing end of the preceding strip section. Hence as the blade 172 is again moved upwardly the trailing end of the strip section 166a is folded around the upper blade to complete the folding of the said section, the latter being creased as indicated at 169 in this final operation.

The vertical movements of the blades 171 and 172 occur one after the other whereas their pivotal movements are simultaneous, are in opposite directions and occur after successive vertical movements of the two blades in the same direction. During the forward pivotal movements of the blades the engaged folds of the strip sections are caused to enter a receiver 200 (Figure 14), which conforms generally to the shape of the folds, the complete interfolded seat covers being pushed from the receiver onto a table 201 from which they may be removed and packed in suitable cartons or containers. Guide rails 202 and a weight 203 maintain the pack formation of the seat covers, the latter pushing the weight along the table as they accumulate.

From the foregoing it will be apparent that as a strip of stock passes through the machine the openings 75 are cut at regularly spaced intervals, the said openings being so formed that the unsevered joints 76, which provide the connections between the flaps 77 and the strip proper, are located at the leading ends of the openings substantially midway between the margins of the strip. The unsevered joints, therefore, lead the flaps over the rounded upper edge 92 of the shoe of the pleating device and insure the return to the openings of the flaps which may have previously moved out of them. During the pleating operation the slipper holds the flaps in their openings and prevents them from interfering with the entry of the strip into the grooves 96 and 97 of the shoe. The pleated strip is then cut into sections which are folded crosswise in successive operations. In the first of these the sections are doubled. In the final operation the doubled sections are folded twice, the leading end of each section being interfolded between the trailing end and the adjacent fold of the preceding section during this operation. The folded seat covers are one-fourth their original width and one-sixth their original length. They may, therefore, be accommodated in dispensing cabinets of relative small size. When arranged in such a cabinet with the leading end of the foremost seat cover extending through the outlet opening so that it may be grasped, each seat cover is adapted when withdrawn to move the succeeding seat cover to the position originally occupied by it. Withdrawal of the seat covers from the cabinet is thus facilitated.

It is to be noted that the openings 75 are formed in the zones of the strip which ultimately become the inner folds 105 and 106. The openings 75 and flaps 77 are, therefore, wholly covered by the outer folds 107 and 108 during the crosswise folding operations and hence do not interfere in any way with the mechanisms which perform these operations.

We claim as our invention:

1. A machine for forming interfolded toilet seat covers from a strip of stock including means for moving said strip lengthwise, means for forming openings in said strip at spaced intervals, means for pleating said strip to form lengthwise extending folds, means for cutting the pleated strip crosswise between said openings to divide it into sections, means for folding said sections crosswise to double them, means for folding the doubled sections crosswise and means for feeding said doubled sections to said last named means in such a manner that the leading end of each is folded between the trailing end and the adjacent fold of the preceding section.

2. A machine for forming interfolded toilet seat covers from a strip of stock including means for moving said strip lengthwise, means for forming openings in said strip at spaced intervals, said last named means providing flaps which are located within the openings and which are connected to the strip by unsevered joints, means for pleating said strip to form lengthwise extending folds, means for cutting the pleated strip crosswise between said openings to divide it into sections, means for folding said sections crosswise to double them, means for folding the doubled sections crosswise and means for feeding said doubled sections to said last named means in such a manner that the leading end of each is folded between the trailing end and the adjacent fold of the preceding section.

3. A machine for forming folded toilet seat covers from a strip of stock comprising means for moving said strip lengthwise, said means including a roll which engages one part of said strip, a pair of rolls which engage a different part thereof, means for driving said first named roll at a slightly faster peripheral speed than said

last named rolls, whereby to prevent the accumulation of slack between the engaged parts of the strip, means for forming openings in said strip at spaced intervals, means for pleating said strip to form lengthwise extending folds, means for cutting the pleated strip crosswise between said openings to divide it into sections and means for folding said sections crosswise.

4. A machine for forming folded toilet seat covers from a strip of stock comprising means for moving said strip lengthwise, said means inculding a roll which engages one part of said strip, a pair of rolls which engage a different part thereof, means for driving said first named roll at a slightly faster peripheral speed than said last named rolls, whereby to prevent the accumulation of slack between the engaged parts of the strip, rotary knife means for forming openings in said strip at spaced intervals, said last named means providing flaps which are located within the openings and which are connected to the strip by unsevered joints, means for pleating said strip to form lengthwise extending folds, means for cutting the pleated strip crosswise between said openings to divide it into sections and means for folding said sections crosswise.

5. A machine for forming interfolded toilet seat covers from a strip of stock comprising means for moving said strip lengthwise, said means including a roll having a roughened metal surface which engages one part of said strip and a pair of rolls which engage a different part thereof, means for driving said first named roll at a slightly faster peripheral speed than said last named rolls, whereby to prevent the accumulation of slack between the engaged parts of the strip, rotary knife means for forming openings in said strip at spaced intervals, means for pleating said strip to form lengthwise extending folds, means for cutting the pleated strip crosswise between said openings to divide it into sections, means for folding said sections crosswise to double them, means for folding the doubled sections crosswise and means for feeding said doubled sections to said last named means in such a manner that the leading end of each is folded between the trailing end and the adjacent fold of the preceding section.

6. A machine for forming folded toilet seat covers including means for rotatably mounting a roll of stock, means for unrolling said stock and for moving lengthwise the strip thus provided, rotatably mounted elements having angularly inclined faces which engage and slightly deform the opposite edges of said roll to provide friction between said faces and edges and thereby maintain said strip under a predetermined tension, means for supporting said elements so that they are free to follow said edges as the roll diminishes in diameter, means for forming openings in said strip at spaced intervals, means for pleating said strip to form lengthwise extending folds, means for cutting the pleated strip crosswise between said openings to divide it into sections and means for folding said sections crosswise.

7. A machine for forming interfolded toilet seat covers including means for rotatably mounting a roll of stock, means for unrolling said stock and moving lengthwise the strip thus provided, means for frictionally engaging said roll to maintain said strip under a predetermined tension, rotary knives between which said strip passes and which co-operate in scissor-like fashion to form openings at spaced intervals, means for pleating said strip to form lengthwise extending folds, means for cutting the pleated strip crosswise between said openings to divide it into sections, means for folding said sections crosswise to double them, means for folding the doubled sections crosswise and means for feeding said doubled sections to said last named means in such a manner that the leading end of each is folded between the trailing end and the adjacent fold of the preceding section.

8. A machine for forming folded toilet seat covers from a strip of stock including means for moving said strip lengthwise, means for forming openings in said strip at spaced intervals, said last named means providing flaps which are located within the openings and which are connected to the strip by unsevered joints, a shoe providing converging passes which form the strip into lengthwise extending folds, a slipper arranged in front of said shoe for preventing displacement of said flaps from said openings, means for cutting the pleated strip crosswise between said openings to divide it into sections and means for folding said sections crosswise.

9. A machine for forming folded toilet seat covers from a strip of stock including means for moving said strip lengthwise, means for forming openings in said strip at spaced intervals, said last named means providing flaps which are located within the openings and which are connected to the strip by unsevered joints, a shoe providing converging passes for forming the strip into lengthwise extending folds, a slipper which co-operates with said shoe to prevent displacement of said flaps from said openings, said slipper having flanges which extend in said passes, means for cutting the pleated strip crosswise between said openings to divide it into sections and means for folding said sections crosswise.

10. A machine for forming interfolded toilet seat covers including means for rotatably mounting a roll of stock, means for unrolling said stock and moving lengthwise the strip thus provided, means for forming openings in said strip at spaced intervals, said last named means providing flaps which are located within the openings and which are connected to the strip by unsevered joints, means for pleating said strip to form lengthwise extending folds, means co-operating with said pleating means for preventing displacement of said flaps, means for cutting the pleated strip crosswise between said openings to divide it into sections, means for folding said sections crosswise and means for feeding said sections to said last named means in such a manner that the leading end of each is folded between the trailing end and the adjacent fold of the preceding section.

11. A machine for forming interfolded toilet seat covers from a strip of stock including means for moving said strip lengthwise, means for forming openings into said strip at spaced intervals, said last named means providing flaps which are located within the openings and which are connected to the strip by unsevered joints, a shoe providing converging passes which form said strip into lengthwise extending folds, a slipper which co-operates with said shoe to prevent displacement of said flaps from said openings, means for cutting the pleated strip crosswise between said openings to divide it into sections, means for folding said sections crosswise and means for feeding said sections to said last named means in such a manner that the leading

end of each is folded between the trailing end and the adjacent fold of the preceding section.

12. A method of forming folded toilet seat covers comprising moving a strip of stock lengthwise and during such movement forming openings in the strip at spaced intervals, pleating the strip by displacing parallel lengthwise extending zones, cutting the pleated strip between said openings to divide it into sections, moving said sections lengthwise in single file, and folding each of said sections crosswise while interfolding the leading end of the succeeding section between its trailing end and the adjacent fold.

13. A method of forming interfolded toilet seat covers comprising moving a strip of stock lengthwise and during such movement forming openings in the strip at spaced intervals, pleating the strip by displacing parallel lengthwise extending zones, cutting the pleated strip between said openings to divide it into sections, folding said sections crosswise to double them, moving the doubled sections lengthwise in single file and folding each of the doubled sections crosswise while interfolding the leading end of the succeeding section between its trailing end and the adjacent fold.

14. A machine for forming folded toilet seat covers from a strip of stock including means for moving said strip lengthwise, means for forming openings in said strip which are located at spaced intervals along a longitudinal median line and which are bounded on each side by a longitudinally extending, marginal, uncut zone, said last named means providing flaps which are located within said openings and which are connected to the strip by unsevered joints, means for pleating said strip to form a plurality of lengthwise extending folds, the inner of said folds including said flaps and the outer of said folds including said uncut zones, means for cutting the pleated strip crosswise between said openings to divide it into sections and means for folding said sections crosswise.

15. A machine for forming interfolded toilet seat covers from a strip of stock including means for moving said strip lengthwise, means for forming openings in said strip which are located at spaced intervals along a longitudinal median line and which are bounded on each side by a longitudinally extending, marginal, uncut zone, said last named means providing flaps which are located within the openings and which are connected to the strip by unsevered joints, means for pleating said strip to form a plurality of lengthwise extending folds, the inner of said folds including said flaps and the outer of said folds including said uncut zones, means for cutting the pleated strip crosswise between said openings to divide it into sections, means for feeding said sections lengthwise, means for receiving said sections one after the other and for folding them crosswise and means for controlling the operation of said feeding means so that as a preceding section is being folded by said receiving and folding means said feeding means will advance the leading end of the succeeding section to a position overlying the trailing end of said preceding section, whereby the leading end of each section is folded between the trailing end and an adjacent fold of a preceding section.

16. A machine for forming interfolded toilet seat covers from a strip of stock including means for moving said strip lengthwise, means for forming openings in said strip at spaced intervals, means for pleating said strip to form lengthwise extending folds, means for cutting the pleated strip crosswise between said openings to divide it into sections, means for feeding said sections lengthwise, means for receiving said sections one after the other and for folding them crosswise and means for controlling the operation of said feeding means so that as a preceding section is being folded by said receiving and folding means said feeding means will advance the leading end of the succeeding section to a position overlying the trailing end of said preceding section, whereby the leading end of each section is folded between the trailing end and the adjacent fold of a preceding section.

17. A machine for forming interfolded toilet seat covers from a strip of stock including means for moving said strip lengthwise, means for forming openings in said strip at spaced intervals, said last named means providing flaps which are located within the openings and which are connected to the strip by unsevered joints, means for pleating said strip to form lengthwise extending folds, means for cutting the pleated strip crosswise between said openings to divide it into sections, means for feeding said sections lengthwise, means for receiving said sections one after the other and for folding them crosswise and means for controlling the operation of said feeding means so that as a preceding section is being folded by said receiving and folding means said feeding means will advance the leading end of the succeeding section to a position overlying the trailing end of said preceding section, whereby the leading end of each section is folded between the trailing end and the adjacent fold of a preceding section.

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