Nov. 3, 1964 K. J. KALLENBERG 3,155,025

AUXILIARY CONTACT PRINTER UNIT FOR PHOTOGRAPHIC PRINTING MACHINE

Filed Oct. 9, 1961 6 Sheets-Sheet 1

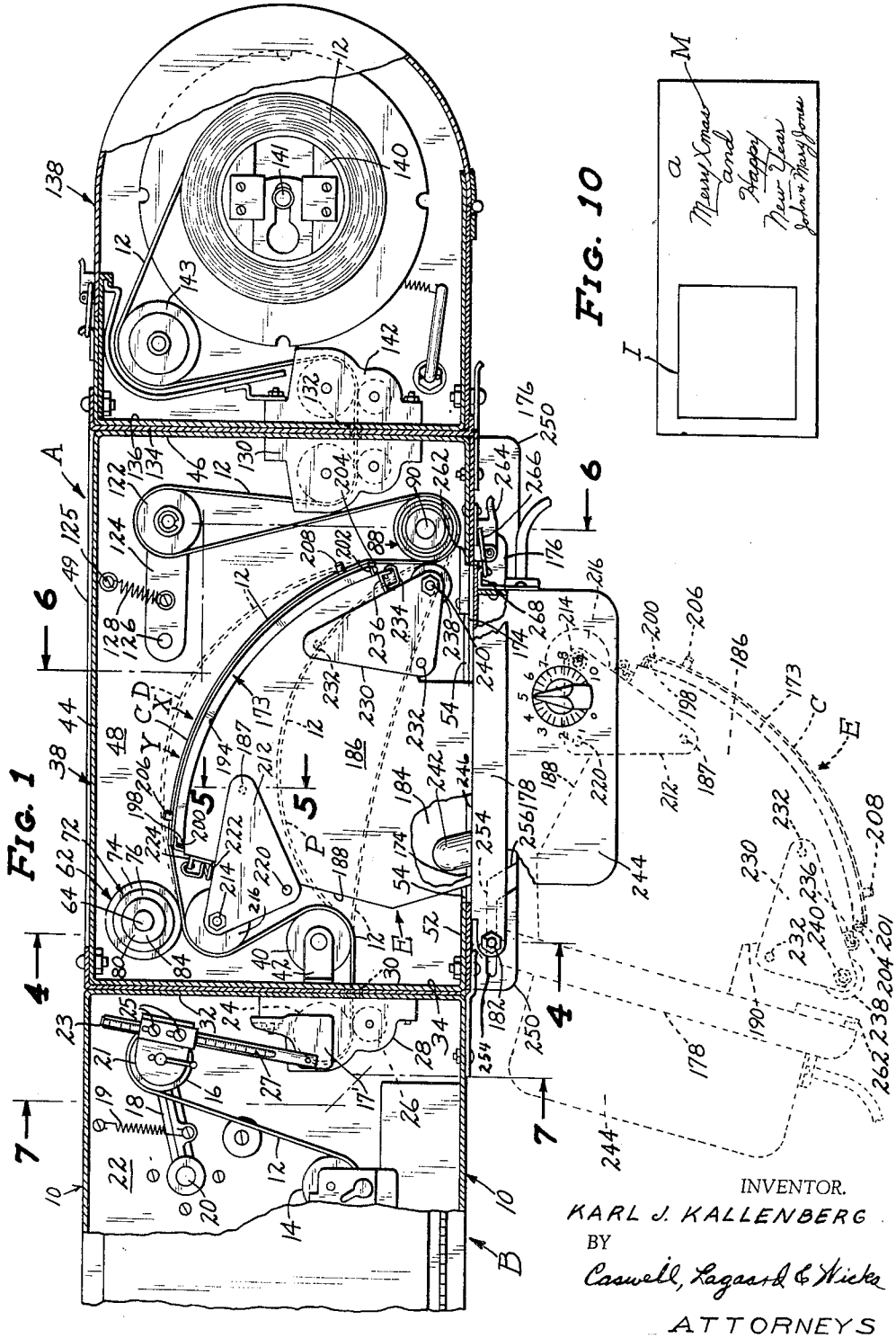

FIG. 1




FIG. 10

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AUXILIARY CONTACT PRINTER UNIT FOR PHOTOGRAPHIC PRINTING MACHINE

Filed Oct. 9, 1961 6 Sheets-Sheet 2

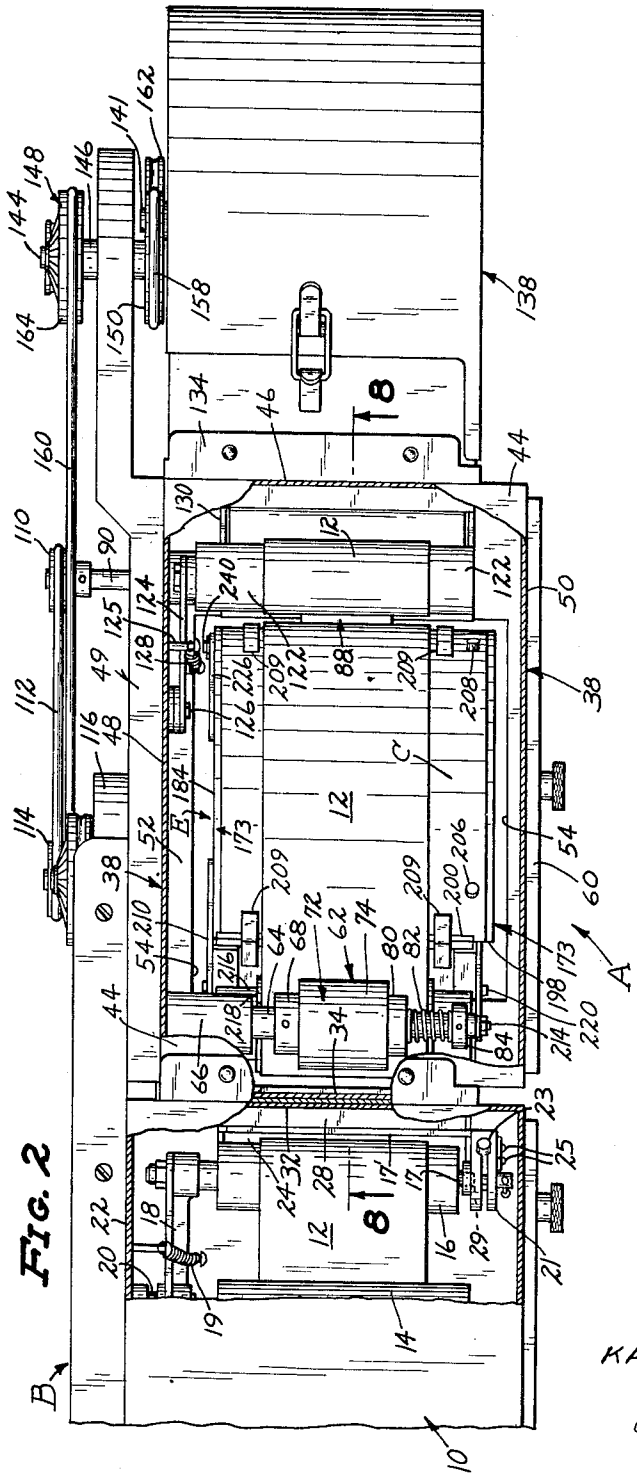

FIG. 2

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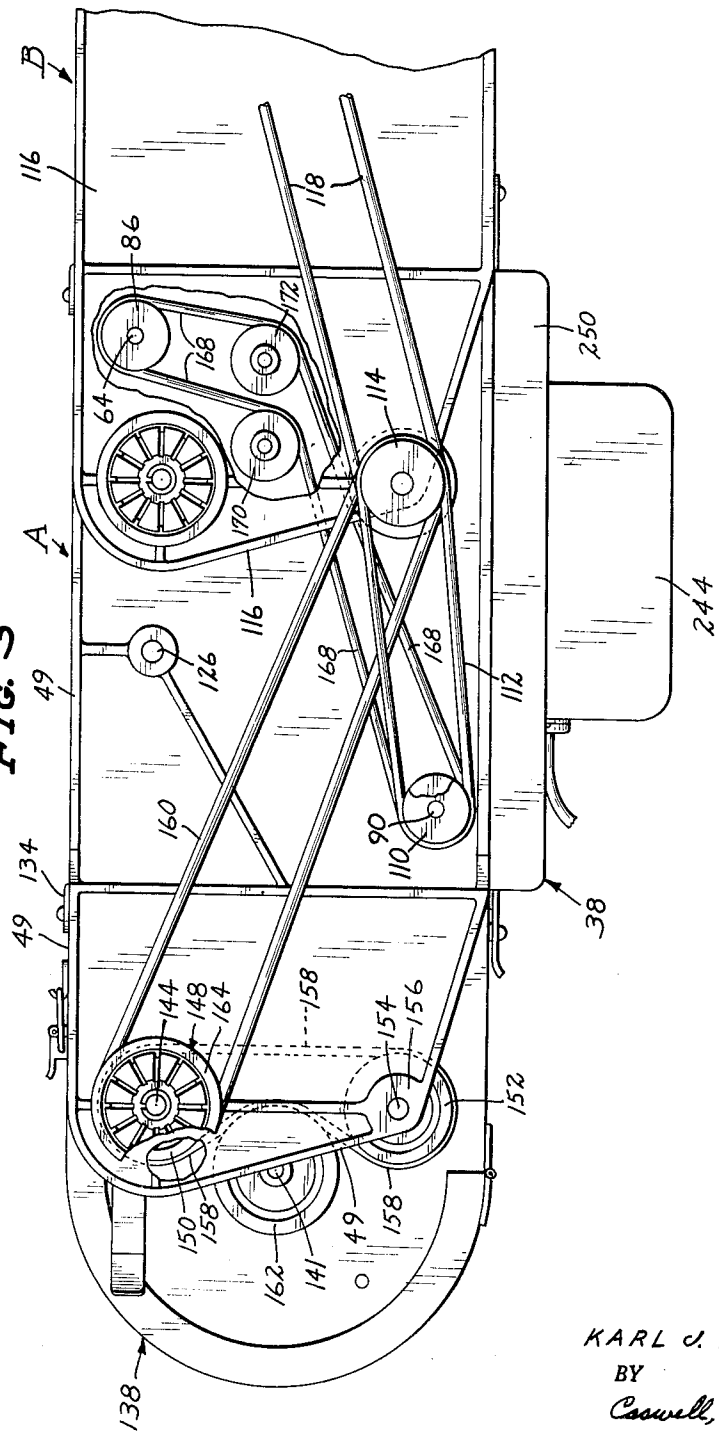
Filed Oct. 9, 1961 6 Sheets-Sheet 3

FIG. 3

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AUXILIARY CONTACT PRINTER UNIT FOR PHOTOGRAPHIC PRINTING MACHINE

Filed Oct. 9, 1961 6 Sheets-Sheet 4

FIG. 4

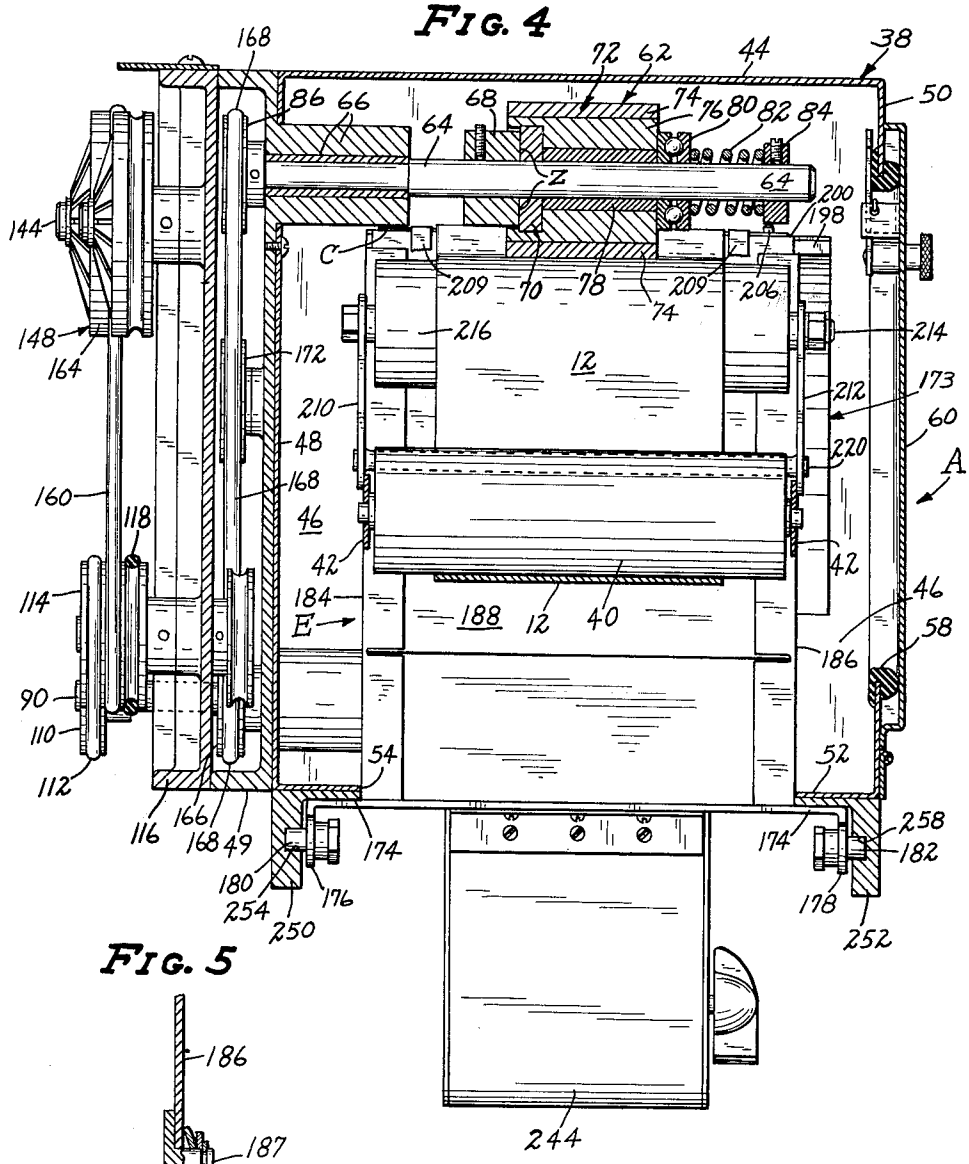
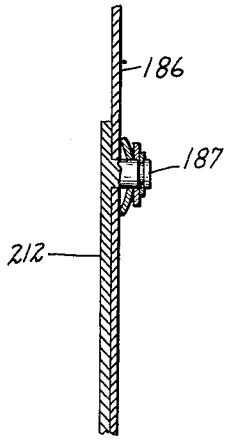



FIG. 5

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AUXILIARY CONTACT PRINTER UNIT FOR PHOTOGRAPHIC PRINTING MACHINE

Filed Oct. 9, 1961 6 Sheets-Sheet 5

FIG. 6

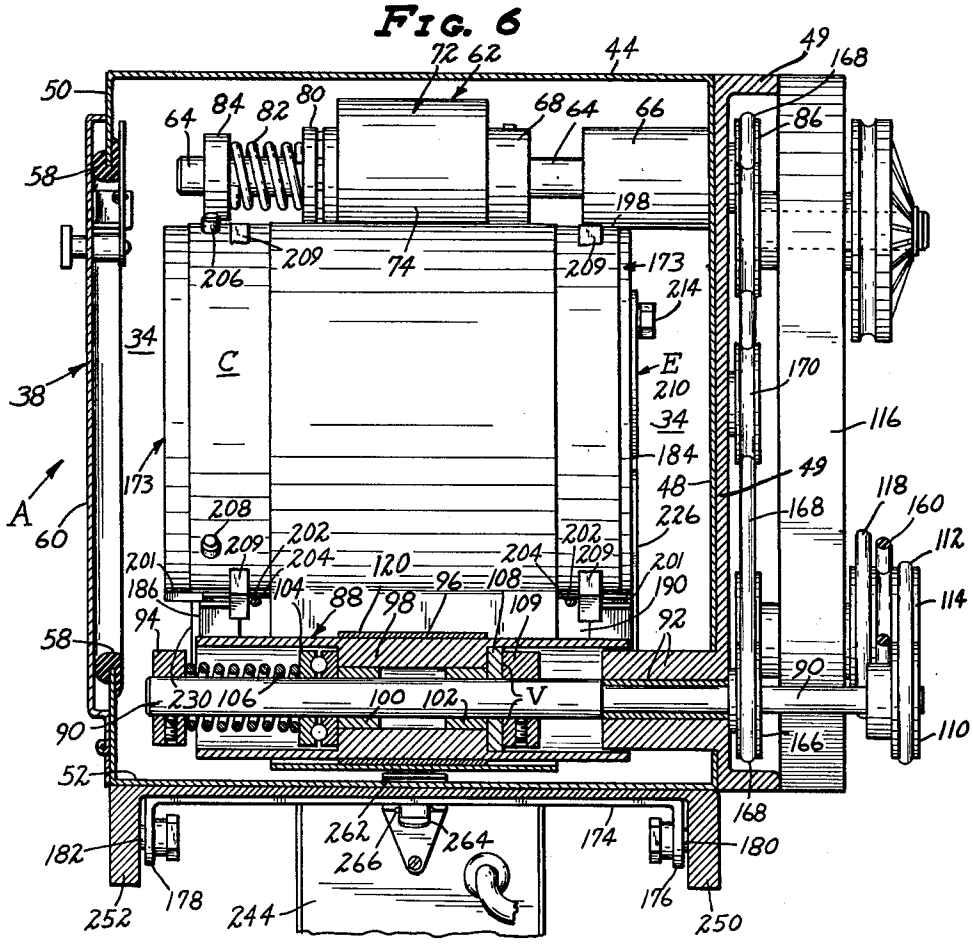
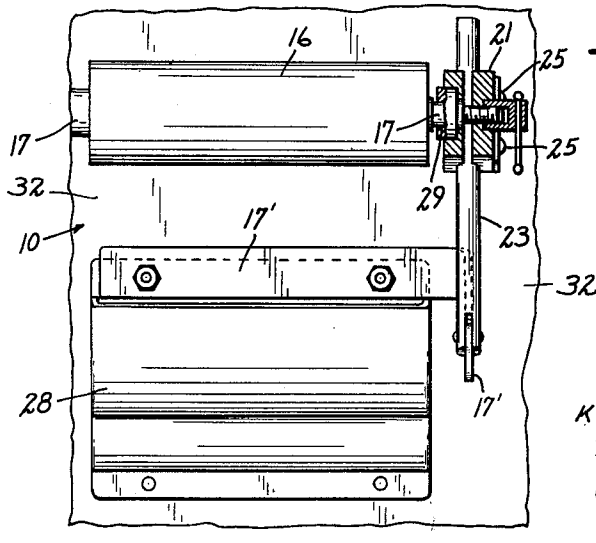



FIG. 7

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AUXILIARY CONTACT PRINTER UNIT FOR PHOTOGRAPHIC PRINTING MACHINE

Filed Oct. 9, 1961 6 Sheets-Sheet 6

FIG. 9

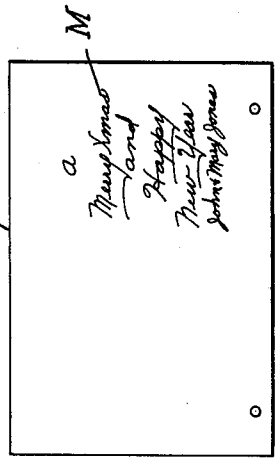
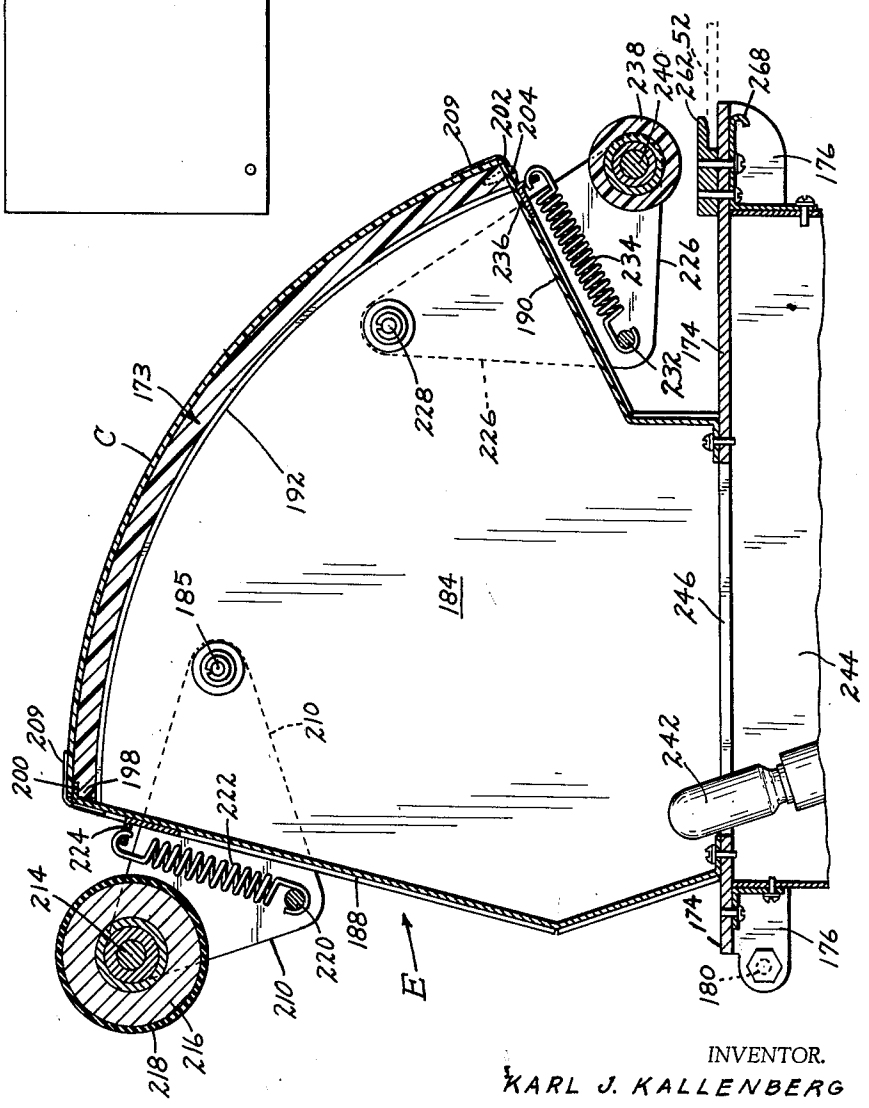



FIG. 8

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United States Patent Office 3,155,025 Patented Nov. 3, 1964



3,155,025

# AUXILIARY CONTACT PRINTER UNIT FOR PHOTOGRAPHIC PRINTING MACHINE

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Filed Oct. 9, 1961, Ser. No. 143,791
7 Claims. (Cl. 95—77.5)

The invention relates to an improvement in photographic printing equipment and more particularly to a unit which may be used in conjunction with a photographic printer to automatically and sequentially print indicia or the like adjacent an image on a print produced by the printer.

It is an object of the invention to provide a printer unit which will print indicia on a print adjacent an image already produced and advance the printing paper without moving the printing paper upon and in contact with the surface of the supported negative mask thereby reducing to a minimum any possible abrasion of the negative or print paper as the print paper moves to and from the negative support.

It is a further object to provide a printer unit in which the exposure lamp is substantially radially equidistant from the entire surface of the negative support thereby providing uniform light distribution over the entire surface of the negative support mounting the negative mask.

It is still a further object to provide a printer unit having a lamp housing mounting a negative support having an arcuate surface which is swingably mounted so that it can be moved into and out of printing position thereby allowing easy threading of the paper and for changing the negative mask. The arcuate negative support also allows proper contact between paper and support without the necessity of a pressure plate.

It is an additional object to provide a printer unit which, when swung into an upward locked position is ready to receive paper for printing.

It is a still further object to provide a printer unit having means for adjustably positioning the print paper on the supported negative mask.

It will not be here attempted to set forth and indicate all the various objects and advantages incident to the invention, but other objects and advantages will be referred to in or else will become apparent from that which follows.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings, showing by way of example a preferred embodiment of the invention idea wherein like numerals refer to like parts throughout.

In the drawings forming part of this application:

FIGURE 1 is a longitudinal and vertical sectional view of the unit with portions thereof broken away and the negative support shown in lowered position in phantom outline.

FIGURE 2 is a longitudinal horizontal sectional view with portions thereof being broken away.

FIGURE 3 is a rear elevational view of the unit showing in particular the drawing means therefor.

FIGURE 4 is a sectional view on the line 4—4 of FIGURE 1.

FIGURE 5 is a sectional view on the line 5—5 of FIGURE 1.

FIGURE 6 is a sectional view taken on the line 6—6 of FIGURE 1.

FIGURE 7 is a sectional view taken on the line 7—7 of FIGURE 1.

FIGURE 8 is a sectional view on the line 8—8 of FIGURE 2.

FIGURE 9 is a top plan view of a negative mask having indicia thereon to be printed adjacent a printed image.



FIGURE 10 is a top plan view of a finished print having the image and indicia thereon.

Referring to the drawings in detail, and FIGURE 1 in particular, the auxiliary printer unit A is mounted on a casing 10 which is part of a photographic printer, B, a portion of which is shown. Briefly, the casing 10 has an exposure aperture not shown, to which the printing paper 12 is transported for successive intermittent exposures. The paper 12 leaves the roller 14, FIGURE 1, and is positioned over the roller 16 mounted on the shaft 17 connected to the outer free end of the arm 18 pivotally mounted on the pin 20 secured to the rear wall 22 of the casing 10. The arm 18 is normally urged upwardly by the coil spring 19. Further provided is the U-shaped clamp member 21, FIGURES 1, 2 and 7, which is slidably and adjustably secured on the substantially vertical arm 23 by means of the screws 25. The arm 23 is provided with graduation marks 27 which aid in positioning of the clamp 21 thereon. The clamp 21 is formed with an indent or recess 29 into which the end of the shaft 17 extends. The position of the shaft 17 and the roller 16 is thus determined by the position of the clamp 21 on the arm 23. The lower end of the arm 23 is pivotally secured at its lower end to the bracket 17' secured to light lock housing 28. From the roller 16 the paper 12 is further positioned between the rollers 24 and 26 of the light lock housing 28 and outwardly therefrom through the aperture 30 formed in the end wall 32 of the casing 10 and the end wall 34 of the unit casing 38, thence to the idler roller 40 mounted on a pair of arms 42 secured to the inner surface of the wall 34.

The unit casing 38 further includes the top wall 44, the end wall 46, the rear wall 48 mounted on the casting 49, front wall 50 and the bottom wall 52 which is formed with the opening 54. The front wall 50 is formed with the access opening 58 formed in the front wall 50 and covered by the lock equipped access door 60.

Further provided is a first friction tendency drive 62 which is mounted on the shaft 64 extending within the casing 38 journaled in the bearing 66 integral with the casing 49. The shaft 64 has secured thereto the collar 68 positioned upon the shaft 64 and against the collar 68 is the oiled cork ring 70. Further positioned on the shaft 64 and as part of the drive 62 is the drive roller 72 including the outer rubber sleeve portion 74, and the body portion 76 mounted on the bearing 78. Positioned on the shaft 64 and against the drive roller 72 of the drive 62 is the thrust bearing 80 which is urged against the body portion 76 by means of the coil spring 82 positioned between the bearing 80 and the collar 84 fixed to the shaft 64. At the rear end of the shaft 64 is secured the pulley 86 which is driven in the manner hereinafter described. As the shaft 64 is rotated, the drive roller 72 is rotated due to the pressure contact of the cork ring 70 against the collar 68. When the movement of paper 12 is stopped, as hereinafter described, the drive roller 72, which is in contact with the paper, thereby stops and there is slippage at point Z between the face of the cork ring 70 and the face of the collar 68 with the shaft 64 continuing to rotate. As the paper is fed to the drive roller 62 the roller advances the paper which is described more in detail hereinafter.

The numeral 88, particularly FIGURES 1 and 6, designates a second friction tendency drive which includes the shaft 90 rotatably mounted in the bearing 92 connected to the casting 49. The drive also includes the collar 94 secured to the front or outer end of the shaft 90 and in addition the roller 96 formed with the centrally disposed internal hub portion 98 mounted on the bearings 100 and 102 on the shaft 90. Also positioned on the shaft 90 is

the thrust bearing 104 which is urged against the end of the hub portion 98 by the coil spring 106. Positioned on the shaft 90 is the oiled cork ring 108 which abuts the hub portion 98 and the same is positioned against the collar 109 fixed to the shaft 90. As the shaft 90 is rotated, the drive roller 96 is rotated due to the pressure contact of the cork ring 108 against the collar 109.

When the roller 96 takes up the loop formed in the paper as the result of the paper stopped at roller 72, hereinafter described, and the paper stops at roller 96, there is slippage at V between the cork ring 108 and the collar 109 with the shaft 90 continuing to rotate. Secured to the outer free end of the shaft 90 is the pulley 110 which is driven by the belt 112. The belt 112 is further positioned on a three-groove pulley 114, FIGURES 3, 4, and 6 which is mounted on the lower outer end of the casting 116 and which is part of the printer A. The pulley 114 is driven by the belt 118 which is driven by a pulley and power source of the printer B which is not shown.

The drive roller 96 of the second friction tendency drive 88 has positioned thereon the rubber driving sleeve 120 which engages the paper 12. The diameter of the sleeve 120 is smaller than the outside diameter of the rubber sleeve 74 of the drive 62 for the reason given hereinafter. Further provided is the take-up roller 122 mounted on the arm 124 pivotally connected to the shaft 126 which is mounted on the casting 49 and which extends into the upper part of the casing 38. The roller 122 is normally urged upwardly by means of the spring 128 secured to the arm 124 and the screw 125 connected to the casting 49. The paper is positioned under the drive roller 88 and upwardly over the take-up roller 122 and from the roller 122 downwardly to and through the light lock housing 130 and thence through the aperture 132 formed in the wall 46, the magazine mounting plate 134 and the end wall 136 of the magazine 138 in which is mounted the paper take-up spool 140. The spool 140 is mounted on the shaft 141. The paper 12 also passes through the light lock housing 142 mounted on the inside of the end wall 136 of the magazine 138 and from the housing upwardly over the idler roller 143 mounted in the magazine 138 and onto the spool 140.

The numeral 144 designates a shaft mounted on the boss 146 formed on the outer upper end of the casting 49, FIGURES 2, 3 and 4, and secured to the outer end of the shaft 144 is the friction clutch 148. Secured to the inner end of the shaft 144 is the pulley 150, FIGURES 2 and 3. A pulley 152 is mounted on the shaft 154 which is mounted in the boss 156 of the casting 49, FIGURE 3. A belt 158 is positioned on the pulleys 150 and 152. The friction clutch 148 is driven by the belt 160 which is positioned on the driven three groove pulley 114. Mounted on the spool shaft 141 is the pulley 162, FIGURE 3, which engages the belt 158 when the magazine 138 is locked in the position shown particularly in FIGURE 3, and as a result the spool 140 of the magazine is driven. The outer portion 164 of the clutch 148 is always rotating and when there is a slack in the paper fed by the rollers 62 and 88 the friction drive 148 becomes operable thereby rotating shaft 144, and as a result the pulley 162 through belt 158 is rotated, thereby rotating spool 140 and taking up the paper thereon.

The shaft 90 which drives the lower friction tendency drive 88 has mounted thereon the pulley 166 and positioned thereon is the belt 168 which passes over the pulley 86 to thereby drive the upper friction tendency drive 62. The belt 168 bears upon the idler pulleys 170 and 172 mounted on the casting 49.

*Negative Support*

The letter E designates a lamp housing which mounts the curved negative support 173 hereinafter described and includes the base plate 174 having formed on each of the longitudinal edges thereof the depending flanges 176 and 178 which mount the pair of trunnions 180 and 182, respectively. Further included in the lamp housing are the side walls 184 and 186 connected to the lead end wall 188 and the trailing end wall 190. The upper edges 192 and 194 of the side walls 184 and 186, respectively, are arcuate and support thereon the curved negative support 173 which is in the form of a section of a cylinder. The negative support 173 is transparent and may be made of a clear acrylic plastic. The negative support 173 is secured in position by inserting the lip portion 198 thereof under the transverse lip 200 of the leading wall 188 and the lower end of the same is positioned adjacent the flange 202 which is part of the trailing wall 190. The screws 204 are provided and extended through the flange 202 and are secured in the negative holder 173.

Mounted on one side of the outward surface of the negative holder 173 are the locating pins 206 and 208 which position the negative C upon the support 173. The negative C is secured in position by the tape strips 209 attached to the negative C and over the end of the support 173. Pivotally secured to the side wall 184 of the lamp housing E at 185 is the bracket 210 and pivotally secured to the side wall 186 at 187 is a similar companion bracket 212. Mounted on the brackets 210 and 212 is the shaft 214 which mounts the leading pressure roller 216 equipped with the rubber sleeve 218.

Connected to the lower ends of the brackets 210 and 212 is the transverse bar 220 to which is secured to the coil spring 222. The spring 222 is also secured to the bracket 224 secured to the leading end wall 188 thereby normally urging the pressure roller 216 upwardly against the drive roller 72. The numeral 226 designates a bracket pivotally connected at 228 to the wall 184. Further provided is a similar bracket 230 pivotally connected at 232 to the side wall 186. The brackets 226 and 230 are connected by the transverse bar 232 similar to bar 220, and the coil spring 234 connects the bar 232 and the bracket 236 secured to the trailing wall 190 thereby normally urging the pressure roller 238 upwardly, said roller being mounted on the shaft 240 connected at its ends to the brackets 226 and 230. The roller 238 is thus held in pressure engagement with the second friction tendency drive 88 when the lamp housing E is in the position shown in FIGURE 1.

Further provided is the exposure lamp 242, FIGURES 1 and 8, which is mounted in the timer housing 244 and which extends partially up into the lamp housing E through the opening 246 formed in the base plate 174. The filament of the bulb 242 is positioned substantially radially from the negative support 173 thereby providing uniform light distribution over the entire surface of the negative support 173 mounting the negative C.

Connected to the bottom 52 of the casing 38 are the spaced depending flanges 250 and 252, particularly FIGURES 1, 4 and 6. The flange 250 has formed at one end and on the inward surface thereof the slot 254 which is formed with the angularly disposed enlarged mouth entrance portion 256. The flange 252 has formed on the inner surface thereof the slot 258 identical to the slot 254 and also has an enlarged entrance portion (not shown) similar to the entrance portion 256. The slots 254 and 258 receive the trunnions 180 and 182, respectively of the flanges 176 and 187 of the lamp housing E to removably position the housing E within the casing 38 as hereinafter described. The base plate 174 of the lamp housing E has formed therein the lip 262, FIGURES 1 and 8, spaced from the plate 174 which engages upon the bottom 52 adjacent the edge of the aperture 54 when the housing E is in operative position within the casing portion 38 in the manner hereafter described. Further provided is the locking catch 264, the ring 266 of which engages the hook 268 secured to the underside of the base 174 of the housing E when the housing E is in operative position within the casing 38.

The lamp housing E is mounted within the casing 38 in the following manner: With the housing E removed from the casing 38 the paper 12 is drawn through and

from the aperture 30 of the printer B, FIGURE 1, placed under roller 40, under the second friction tendency drive 88, as shown in broken lines, indicated as P, FIGURE 1, upwardly over the take-up roller 122 and then downwardly through the light lock housing 130. The paper is further fed through the aperture 132, through the light lock housing 142 of the take-up magazine 138, upwardly over the idler roller 143 and thence onto the take-up spool 140.

The housing E is connected to the casing 38 in the position shown in broken lines in FIGURE 1 by slipping the trunnions 180 and 182 into the entrance openings 256 and 260, respectively, and then moved into the slots 254 and 258, respectively. With the trunnions 180 and 182 to the extreme left in the slots 254 and 258, the lamp housing E is then pivoted upon the trunnions upwardly through the opening 54 and into the casing 38. The housing is then moved to the right, FIGURE 1, whereby the lip 262 engages the edge of the bottom 52. The catch lock 264 is then engaged with the hook 268 thereby securing the housing E in the operative position shown in FIGURE 1. As the housing E is pivoted upwardly into position the negative support 173 is forced against the paper 12 drawing it upwardly from the position P and upon the holder 173. At the same time the pressure roller 216 of the housing E is moved into position against the first tendency drive roller 72 with the paper 12 therebetween and the pressure roller 238 is also moved into position against the second or lower tendency drive 88 with the paper 12 therebetween. In this position the paper 12 is upon and against the negative mask C on the negative support 173.

Thus it is seen that by a single upward pivoted movement of the lamp housing E the paper 12 is properly positioned for printing upon the negative mask C mounted on the negative holder 173. Also, by a single downwardly pivoted movement of the lamp housing E the internal portion of the casing 38 is open for feeding paper 12 into or out of operative position and in such position the mask C may be changed or the housing E removed.

The paper 12 is fed in successive intermittent lengths to the roller 14, FIGURE 1, in the printer B where it travels upwardly over the roller 16 and thence to friction tendency drive 62 as heretofore described and shown in FIGURE 1. As a length of print paper 12 is fed to roller 14 it is also transported by the friction tendency drive 62 to and upon the negative holder 173. When the transportation of paper 12 from the printer B to friction drive roller 62 is stopped, the friction drive 62 slips and the drive roller 72 does not transport any paper, and the slight slack or loop D in the paper 12 over the negative support 173 (shown in broken lines, FIGURE 1) is taken up by the second friction tendency drive 88 and the paper is then brought upon and in contact with the entire surface of the holder 173 at which time it is printed. After drive 88 takes up the loop it then slips. The slack or loop D is formed during the time the paper moves from drive 62 to drive 88 and the formation of the loop is due to the fact that the diameter of the drive 62 is greater than the diameter of the drive 88.

The slack or loop D is intentionally formed by the diameter of the upper drive 62 being larger than the diameter of the lower take-up drive 88. When the paper 12 is being moved by the drive 62, the rate of linear travel produced thereby is greater than the rate of linear take-up by the lower take-up drive 88. This difference in travel produces the unsupported loop D when the paper is moving. As a result of the above the paper 12 is not moved upon and in contact with the surface of the negative mask C upon holder 173, but the loop D is produced above the holder 173 and taken up to bring the paper down in intimate contact with the holder 173. In other words, the paper 12 moves in an unsupported loop over the surface of the negative C thereby preventing abrasion of the paper and the negative mask C by contact of one with the other. It is thus seen that the paper 12 is not drawn over the surface of the negative mask C thereby preventing abrasion of the same which is a distinct advantage. It will also be seen that with the above construction no pressure plate is needed to cause the print paper 12 to contact the negative.

When the loop D is taken up by the take-up drive 88, after the movement of paper from B to roller 62 is stopped, and the paper 12 is brought into contact with the holder 173, the drive 88 can then slip and any excess of paper is taken up by the take-up spool 140 from the light locks 130 and 132. With the paper 12 in intimate contact with the negative mask C, the lamp 242 and the timer 244 are actuated simultaneously by control mechanism (not shown) in printer B. The timer 244 controls the period of time the printing lamp 242 is energized. As the lamp 242 is energized, the message or indicia M of the negative mask C, FIGURE 9, is printed upon the sensitized paper 12 adjacent the latent image thereon previously printed by the printer B.

The roller 122 mounted on the spring-urged arm 124, FIGURE 1, creates a loop in the paper 12 whereby the take-up by spool 140 is from the loop formed and not directly from the friction tendency drive 88. This provides a cushion in the movement of the paper 12 and obviates any possible movement of the paper 12 on the mask C.

By means of the printer B the print paper 12 has a photo image printed thereon. When it is desired to print indicia M, for example, FIGURES 9 and 10, on the print created in the printer B adjacent the printed latent image I, the auxiliary unit A is used. In this connection, the latent image produced upon the paper 12 in printer B must be positioned on the negative mask C with regard to the message or indicia M on the mask C, FIGURES 9 and 10. The position of the indicia on the mask C varies from mask to mask, and as a result the positioning of a latent image on paper 12 on the negative mask holder will vary. To vary the positioning of the image which is on the paper 12 upon the negative mask C, the following procedure is followed:

Let it be supposed that it is desired to have the image which is on the paper 12 positioned on the negative mask C at point X instead of point Y, FIGURE 1. To do this the roller 16 is moved downwardly on the support arm 23 in the casing 10. Assuming the paper 12 in the printer B, to the left of roller 14, FIGURE 1, is stationary, the loop of excess paper 12 created thereby is removed by advancing the paper 12 in casing whereby the position of paper 12 formerly at point Y is now at point X. The amount of change of advance of the position of the image which is on paper 12 relative to mask C is controlled by the distance that roller 16 is moved downwardly on the arm 23. Briefly, in moving the roller 16 downwardly, the loop formed over roller 16 is less in length, and a given point thereon is therefore moved a greater distance (to X instead of Y) because there is less take-up paper in the loop over roller 16. Conversely, if it is desired to have the image which is on paper 12 positioned on the negative mask C at point Y instead of point X, the roller 16 is moved upwardly on the support arm 23. As a result a point on the paper formerly at X is moved to point Y. All subsequent positioning of the image which is on print paper 12 is at Y instead of X.

The invention is not to be understood as restricted to the details set forth since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a device for contact printing indicia on photographic strip print paper, a casing having an open bottom and an opening for receiving print paper, means for

intermittently supplying strip print paper to said casing via said opening, a lamp housing having an arcuate negative support, an exposure lamp mounted in said lamp housing substantially equidistant from the surface of the arcuate negative support, a first pressure roller mounted on the upper end of said lamp housing, a second pressure roller mounted on the lower end of said lamp housing, a first friction tendency drive roller carried by said casing and in engagement with said first pressure roller for moving print paper extending therebetween and from said casing opening, a second friction tendency drive roller carried by said casing and in engagement with said second pressure roller for moving print paper therebetween, which paper comes from said first friction tendency drive roller, means for rotating said first and second friction tendency drive rollers the diameter of said first drive roller being greater than the diameter of said second drive roller, to thereby produce an unsupported loop of print paper upon the negative support during the movement of paper from said first friction tendency drive roller to said second friction tendency drive roller, the loop of paper taken up by said second friction tendency drive roller when the paper is stopped at said first friction tendency drive roller, means for pivotally mounting said lamp housing on said casing to allow said lamp housing to be swung up into said casing through said open bottom to bring said pressure rollers into contact with said respective friction tendency drive rollers and position the print paper which has been positioned in said casing upon a negative mask mounted on said negative support whereby upon the operation of said lamp the print paper upon a negative on said negative support is exposed.

2. In a device for contact printing indicia on photographic strip print paper, a casing having an open bottom, a lamp housing having an arcuate negative supporting member, means for pivotally moving said lamp housing into and out of said casing, first and second friction tendency drive means for drawing print paper over and above said negative support, means for intermittently supplying print paper to said first drive means, means for forming a loop in the paper above said negative supporting member, said second friction tendency drive means causing the loop of print paper formed to be drawn tightly over the arcuate negative support when the print paper is stopped at said first friction tendency drive means.

3. In a device for contact printing indicia on photographic print paper, a casing, a lamp housing having an arcuate negative support member, means for pivotally mounting said lamp housing on said casing for movement into and out of said casing, first and second drive roller means mounted in said casing, means for intermittently supplying print paper to said first drive roller means, first and second pressure roller means mounted on said lamp housing for contact with said first and second drive roller means respectively, said first drive roller means having a diameter greater than that of said second drive roller means whereby a slight loop is formed in the print paper above said negative support between said first and second drive roller means when the paper is moved from said first drive roller means to said second drive roller means, the loop of print paper being taken up by said second drive roller means when the movement of the paper to said first drive roller means is stopped thereby causing the print paper to be brought into intimate contact with said negative support, and a lamp within said lamp housing substantially equidistant from the surface of said negative support for exposing the negative on said negative support to the print paper.

4. In a device for contact printing indicia on photographic print paper, a casing, a lamp housing having a negative support member, means for pivotally mounting said lamp housing on said casing for movement into and out of said casing, first and second drive roller means mounted in said casing, means for intermittently supplying print paper to said first drive roller means, first and second pressure roller means mounted on said lamp housing for contact with said first and second drive roller means respectively, said first drive roller means having a diameter greater than that of said second drive roller means whereby a slight loop is formed in the print paper upon said negative support between said first and second drive roller means when paper is moved from said first drive roller means to said second drive roller means, the loop of print paper being taken up by said second drive roller means when the movement of the paper to said first drive roller means is stopped thereby causing the paper to be brought into intimate contact with said negative support, a lamp within said lamp housing substantially equidistant from the surface of said negative support for exposing the negative on said negative support to the print paper.

5. In a negative support and print paper transport device, a lamp housing having an arcuate negative support member, a casing for said lamp housing, an exposure lamp mounted in said lamp housing, first and second drive roller means mounted in said casing, first and second pressure roller means mounted on said lamp housing adapted to contact said first and second drive roller means to move print paper from said first drive roller means to said second drive roller means and over said negative holder, means for intermittently supplying print paper to said first drive roller, means for intermittently stopping said drive rollers to position the print paper upon the negative support for exposure, the diameter of said first drive roller being greater than that of said second drive roller whereby a loop is formed in the print paper above the negative support during the movement of paper from said first drive roller means to said second drive roller means prior to the paper being positioned upon and in contact with the negative support by said second drive roller means when the paper is stopped at said first drive roller means.

6. The device of claim 5 further characterized by means for varying the position of the print paper upon the negative support.

7. In a device for contact printing indicia on photographic print paper, a casing, a lamp housing having an arcuate negative support, means for pivotally mounting said lamp housing on said casing for movement into and out of said casing, first and second friction tendency drive roller means mounted in said casing, means for intermittently supplying strip print paper to said first drive roller, means for rotating said drive roller means to transport print paper through said casing and upon said negative support, first and second spring-urged pressure roller means mounted on said lamp housing for contact with said first and second drive roller means respectively, said first drive roller means having a diameter greater than that of said second drive roller means whereby a slight loop is formed in the print paper above said negative support between said first and second drive roller means as the print paper moves between said first and second drive rollers, the loop of print paper being taken up by said second drive roller means when the print paper is stopped at said first drive roller means and brought into intimate contact with said negative support, a lamp within said lamp housing substantially equidistant from the surface of said negative support, and means for varying the position of the print paper upon the negative support.

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