

June 9, 1953

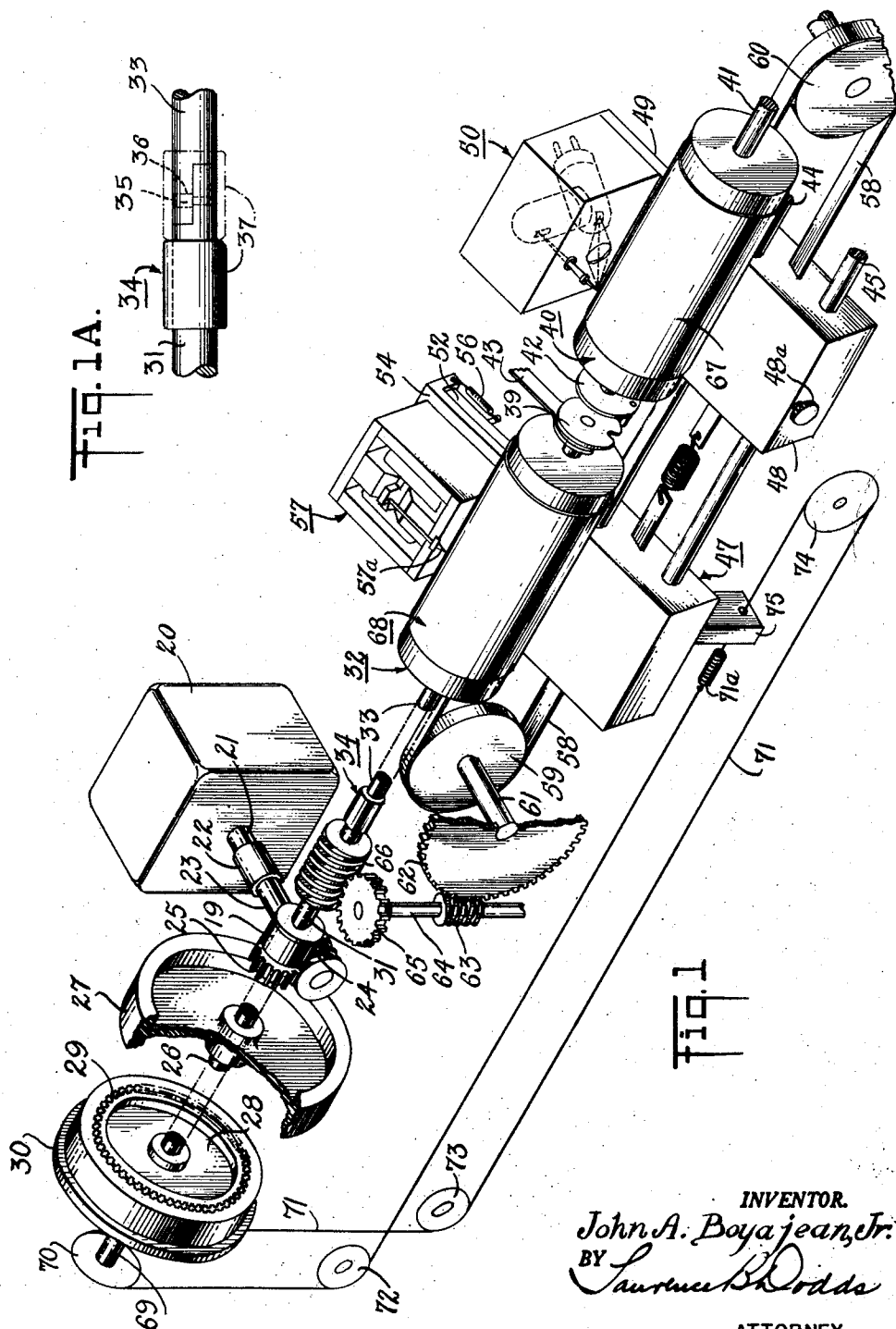
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2,641,183

IMAGE-REPRODUCING PLATE AND CYLINDER ASSEMBLY

Filed July 24, 1948

3 Sheets-Sheet 1



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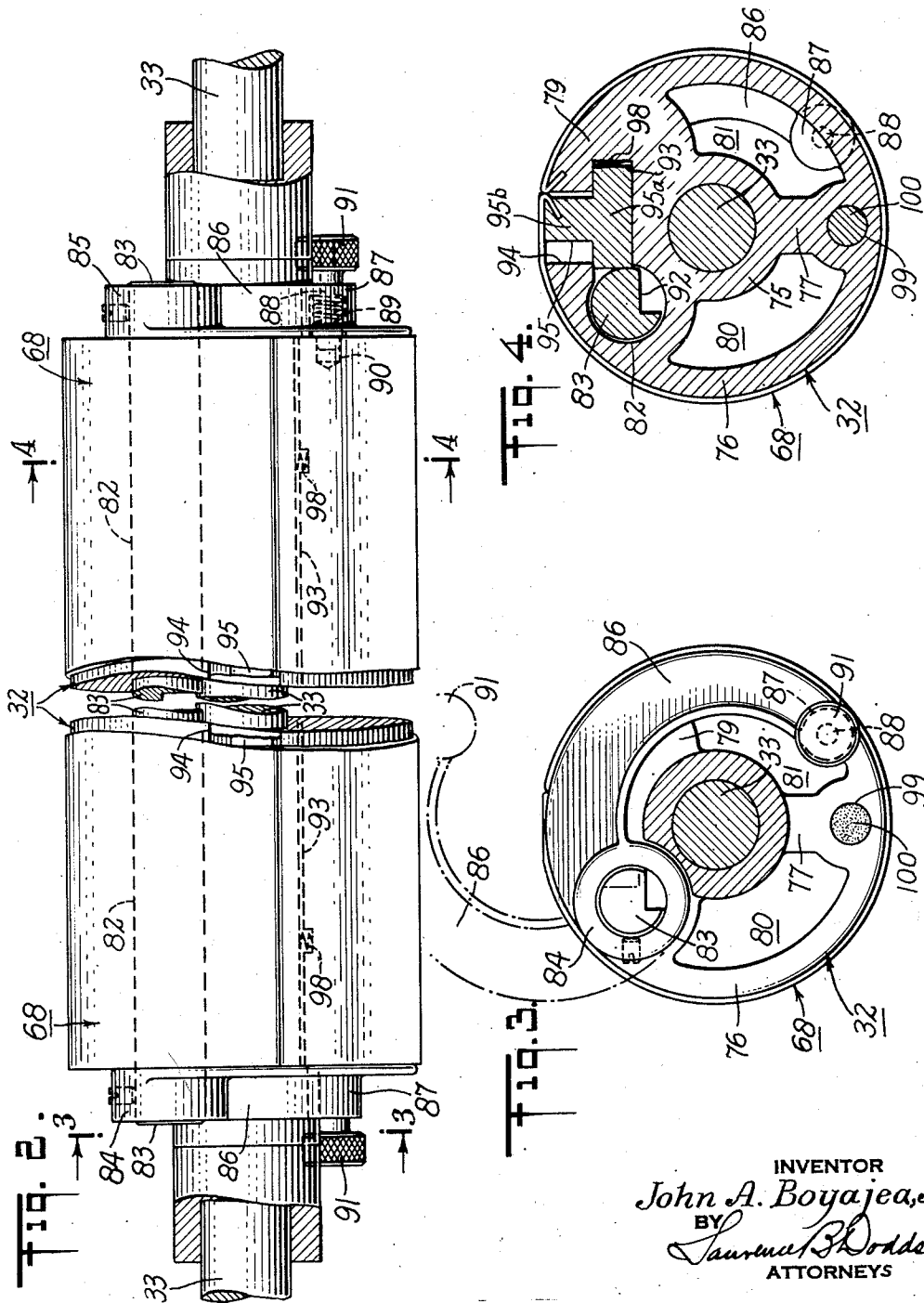
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IMAGE-REPRODUCING PLATE AND CYLINDER ASSEMBLY

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3 Sheets-Sheet 2



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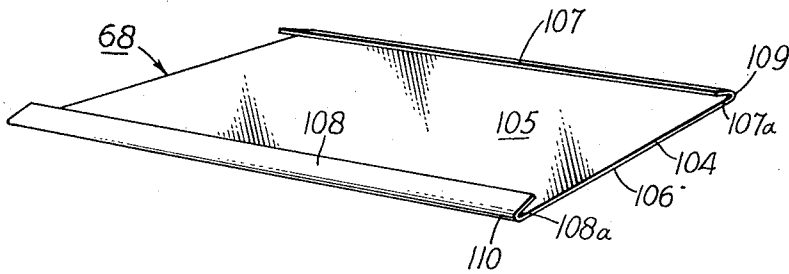
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IMAGE-REPRODUCING PLATE AND CYLINDER ASSEMBLY

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3 Sheets-Sheet 3

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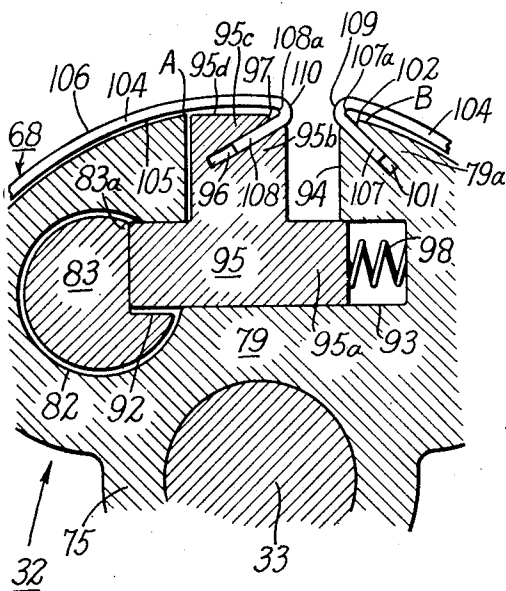
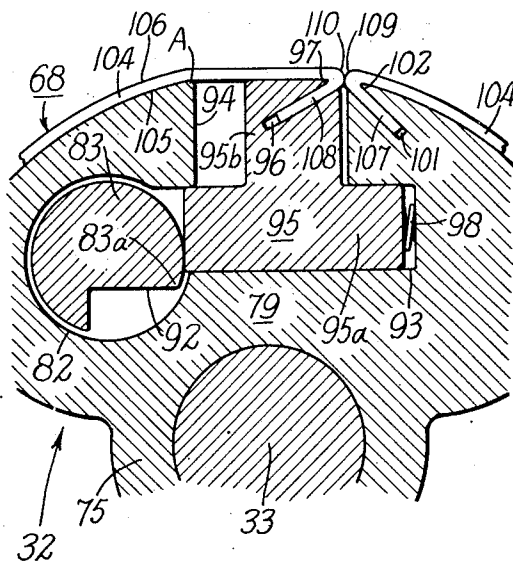


Fig. 7.



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2,641,183

IMAGE-REPRODUCING PLATE AND CYLINDER ASSEMBLY

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Application July 24, 1948, Serial No. 40,595

2 Claims. (Cl. 101—415.1)

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This invention relates to image-reproducing plate and cylinder assemblies and, while it is of general application, it is particularly useful as a component or sub-assembly of a machine for producing screened relief pattern plates of the type described in applicant's copending application, Serial No. 40,594, filed concurrently herewith, now Patent 2,575,546.

In aforesaid copending application there is described a machine designed and intended to be used in the place of well-known photo-chemical processes for making plates from photographic prints, negatives, or other images for reproduction by printing or like processes. In general, that machine comprises a pair of synchronously rotatable cylinders for individually supporting a plate and an image sheet and a pair of reciprocable carriages individually including a pick-up system and a plate-deforming tool for respectively scanning the image sheet cylinder and the plate cylinder. The machine also includes means responsive to the output of the pick-up system for actuating the tool, means for reciprocating the carriages synchronously; and an electrical screen generator driven synchronously with the cylinders and connected to modulate the output of the pick-up system.

It is an object of the present invention, therefore, to provide a new and improved image-reproducing plate and cylinder assembly which, while of general application, is particularly useful as a sub-assembly in a machine of the type described.

It is another object of the invention to provide a new and improved image-reproducing plate and cylinder assembly of maximum simplicity in construction, of maximum facility in assembly and dis-assembly, and capable of use by an unskilled operator.

It is another object of the invention to provide a new and improved image-reproducing plate and cylinder assembly in which the plate to be formed is securely fixed to its supporting cylinder and tensioned to provide a smooth surface upon which the image to be reproduced is formed.

In accordance with the invention, there is provided for use in a machine of the type described an image-reproducing plate and cylinder assembly comprising an image-reproducing plate of flexible deformable material having parallel pre-formed tensioning flanges at either end thereof and a supporting cylinder mechanism having provisions supporting it for rotation. The cylinder mechanism has a longitudinal slot extend-

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ing to its periphery and a cylindrical recess extending longitudinally through said cylinder mechanism and in longitudinal communication with said slot. At least one tensioning member is disposed in the slot and is movable transversely thereof. The cylinder mechanism also includes a pair of oppositely inclined slots, at least one of which is in the tensioning member disposed to receive the flanges of the plate and cylindrical camming means rotatably disposed in said recess and engaging said tensioning member substantially along its entire length for moving the tensioning member transversely of the slot to tension the plate about the cylinder and for locking said tensioning member in its tensioning position.

By the term "deformable material," as used herein and in the appended claims, is meant a material that may be cut, gouged, decomposed, or otherwise deformed by an engraving tool or stylus to form an image-reproducing plate.

For a better understanding of the present invention, together with other and further objects thereof, reference is had to the following description taken in connection with the accompanying drawings, and its scope will be pointed out in the appended claims.

Referring now to the drawings, Fig. 1 is a schematic perspective view of a machine of the type described including a plate and cylinder assembly embodying the present invention; Fig. 1A is a fragmentary view of the cylinder supporting shaft of the machine of Fig. 1; Fig. 2 is an enlarged fragmentary elevation, partly in section, of the plate and cylinder assembly of the invention; Fig. 3 is a cross-sectional view taken along line 3—3 of Fig. 2; Fig. 4 is a cross-sectional view taken along line 4—4 of Fig. 2; Fig. 5 is a perspective view of a blank printing plate embodying a feature of the invention; Figs. 6 and 7 are enlarged fragmentary cross-sectional views of the plate and cylinder assembly of Fig. 2 illustrating the plate-tensioning member in open and closed positions, respectively.

Similar reference characters refer to similar parts throughout the views of the drawings.

Referring now more particularly to Fig. 1, there is illustrated schematically a machine for producing on a plate from an image sheet a screened relief pattern suitable for image reproduction by printing processes. This machine includes an electric driving motor 20 which directly motivates all moving parts of the machine except the reciprocable heated stylus. The motor includes a shaft 21 connected as by a flexible cou-

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pling 22 to a shaft 23 on the end of which is mounted a worm 24. Worm 24 meshes with a worm wheel 25 fastened to a shaft 26, on which is mounted a fly wheel 27. The flexible coupling 22 mechanically filters or smooths out any pulsation which the rotation of the motor may possess, while the fly wheel ensures pulsationless rotation of the shaft 26, regardless of irregularities that might otherwise be produced through imperfections in the worm and worm wheel.

Shaft 26 has mounted on its left-hand end a metallic disc 28 having a number of equally spaced teeth 29 formed on its periphery. This disc operates in conjunction with an insulated metallic ring 30 having equally spaced teeth (not shown) formed on its inner periphery, the ring and disc constituting an electrostatic type of alternating-voltage generator. The disc and ring comprise a half-tone screen generating device which provides an alternating voltage which is used to provide a "screen" for the subject copy.

On the right-hand end of shaft 26 is an over-running (one-way drive) clutch 19, the driving element of which is secured to shaft 26, and the driven element of which is secured to a shaft 31. This clutch allows fly wheel 27 to decelerate when motor 20 is de-energized, without imposing an undue back load on the speed-reducing worm and worm wheel, and also allows the operator manually to rotate shaft 31, if desired.

Shaft 31 comprises the drive shaft for the image-reproducing plate and supporting cylinder assembly of the invention including a supporting cylinder mechanism 32, this cylinder having provisions for supporting it for rotation, for example, a shaft 33. The left-hand end of shaft 33 is detachably secured to drive shaft 31 by a separable connection 34, which is shown in greater detail in Fig. 1A. Thus, the right-hand end of shaft 31 and the left-hand end of shaft 33 are milled to half rounds, the end of shaft 31 carrying an attaching pin 35. This pin is adapted to extend into a hole 36 formed in the half-round end of shaft 33, thus to connect the two shaft ends. A slidable collar 37 is movable from its full to its dotted-line position over the half-round ends of the shafts detachably to secure these ends together, any suitable means being provided to hold the collar in its locking position. The right-hand end of shaft 33 (Fig. 1) is detachably secured as by another coupling 34 to the left-hand end of a shaft 38, the right-hand end of which carries a clutch disc 39. A second cylinder, generally indicated at 40, is provided to support the subject copy and this cylinder is mounted on a shaft 41. On the left-hand end of shaft 41 is a clutch disc 42 which is a complement of disc 39, either of these discs, for example, disc 39, being movable relative to the other as by a lever system 43 to engage the discs and thus form a driving connection between shafts 38 and 41. It may now be seen that when motor 20 is energized, shafts 31, 33, 38, and 41 are all driven at the same rate of speed so as to effect rotation of plate-supporting cylinder 32, and the copy-supporting cylinder 40.

Underlying cylinders 32 and 40 are a pair of guide rods or ways 44 and 45, which are parallel to the common axis of the two cylinders. These guide rods slidably support a scanning carriage generally indicated at 46, and a deforming tool or stylus carriage generally indicated at 47, these carriages being respectively juxtaposed to copy-supporting cylinder 40, and plate-supporting cylinder 32.

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Scanning carriage 46 includes a bracket 48, or the like, which is supported by guide rods 44 and 45 and has a rearwardly extending platform 49 which supports a scanning head generally indicated at 50. Carriage 47, in turn, includes a bracket 51 having a rearwardly extending platform 52, on which is mounted the stylus head, generally indicated at 53. Head 53 includes a base 54 which is pivotally attached in any suitable manner to platform 52; a holding magnet 55 which when energized swings the cutter-head into proper operating position relative to cylinder 32 against the action of a retracting spring 56, and a stylus and driving motor therefor, generally indicated at 57.

The scanning and stylus carriage brackets 48 and 51 are driven by a belt 58 which is trained about drive and guide pulleys 59 and 60, respectively, the bracket 51 being fixedly attached to the belt 58 and the bracket 48 being releasably attached thereto by an internal clutch (not shown) actuated by an adjustable knob 48a. Drive pulley 59 is fastened to one end of a shaft 61, whose other end carries a worm wheel 62, meshing with a worm 63. This worm is mounted on the lower end of a shaft 64, whose upper end carries a worm wheel 65 which meshes with a worm 66 mounted on shaft 31. It may now be seen that, as shaft 31 is driven by motor 20, drive pulley 59 is rotated at a low R. P. M. through the reduction afforded by worm 66, worm wheel 65, worm 63, and worm wheel 62, accordingly to drive belt 58 at a very low rate of speed, thus to move the scanning and stylus heads 50 and 53 along paths parallel to the common axis of cylinders 40 and 32.

As scanning head 50 scans the subject copy, for example, a photographic print 67 on cylinder 40, it transmits a succession of signals whose amplitudes vary proportionally to the shade or tonal values of the print. At the same time, the generator 29 produces an alternating voltage of "screen" frequency, for example, 350 cycle/second. This screen voltage is amplified and varied in amplitude or modulated by the signals developed by the scanning head 50 and fed to the stylus motor 57 which oscillates its stylus 57a at the frequency of the screen voltage and with an amplitude varying with the image signals from the scanning head 50. Stylus 57a, which is heated (by means not shown) to a temperature in excess of 1000° F., has a tapered point and burns a pit in an image-reproducing plate 68 mounted in cylinder 32 at each stroke, the depth and surface area of successive pits accordingly being a function of the amplitude of successive signals transmitted by the scanning head. Accordingly, there are formed in plate 68 a large number of regularly spaced pits of areas varying with the shade values of the subject copy or print 67, leaving islands therebetween forming the printing surface and also of areas varying with the shade values of the print 67.

It is desirable that the pits formed in adjacent lines of plate 68 be in staggered relationship to provide the half-tone screen effect which characterizes the conventional photo-engraving process. To this end, the ring 30 of alternating-voltage generator 29 is mounted on one end of a shaft 69, the other end of which carries a pulley 70. Trained about this pulley is a drive cable 71 which is supported by guide pulleys 72 and 73, and is trained about a third guide pulley 74. One run of cable 71 is attached to a post 75 fastened to stylus bracket 51, while the other end is

returned to post 75 through the intermediary of a stiff spring 71c. Thus, as the stylus is driven to the left, it in turn drives cable 71, causing pulley 70 and accordingly shaft 69 and ring 30 to rotate very slowly. This rotation of the ring 30 relative to the stylus carriage 41 shifts the phase of alternating voltage developed by generator 29 by one-half cycle for each complete revolution of the cylinder 32, thereby to produce the staggered pit relationship referred to.

The above description of the machine shown in Fig. 1 is included herein to clarify what follows. For a detailed description of the features of construction and operation of this machine, reference is made to the aforementioned copending application.

As pointed out above, the image-reproducing plate 68 is formed of a material that will decompose or disintegrate upon the application of sufficient heat with little or no ash residue. It is, of course, vital that such thermal decomposition be limited to minute localized areas, that is, to only that portion of the plate engaged by the hot stylus 57a, at each stroke thereof. In other words, the portion of the plate surrounding the pit formed by the stylus must be left intact, as it is the plate surfaces between the dots or pits formed by the stylus that carry the ink where the plate is used as a half-tone or rotogravure plate. These same plate surfaces must also be preserved with the greatest definition possible where the plate is used as a rotogravure printing plate. It accordingly follows that the plate must not only have certain characteristics, but also must be properly supported during the "engraving" operation if the picture to be printed by the completed plate is to have the sharp definition and tone gradation required. Thus, where the blank plate is made of a highly combustible material, such as, for example, nitro-cellulose, it is necessary that the thermal decomposition of the material caused by the engagement thereof by the hot stylus be narrowly controlled, not only to attain the aforementioned definition, but also to avoid any danger of a serious fire. To this end, the machine described includes as a sub-assembly or component part thereof the plate and cylinder assembly now to be described in greater detail.

This assembly, comprising cylinder mechanism 32 and plate 68, is shown in enlarged detail in Figs. 2, 3, and 4. Referring to Fig. 4, cylinder mechanism 32, which is formed of a metal having good heat conducting properties, such as steel or aluminum, comprises a hub 75 which is preferably longitudinally coextensive with the cylinder, this hub mounting the cylinder on shaft 33. The cylinder also includes a rim 76, the outer surface of which forms the supporting surface for the underside of blank plate 68. Rim 76 is connected to hub 75 by a web 77 and a body portion 79 which, with the web, form longitudinally extending openings 80 and 81. These openings extend longitudinally throughout the cylinder.

As is more clearly shown in Fig. 6, body portion 79 is longitudinally drilled to provide a recess 82 in one side of cylinder body portion 79, specifically a longitudinal slot of circular cross section. Disposed in the recess or slot 82 is a camming means in the form of an elongated cylindrical cam 83 rotatably mounted therein. As shown in Fig. 7, cam 83 has a longitudinal angularly shaped cam groove 92 cut therein. The opposite ends of the cam 83 have secured thereto operating members or levers 84 and 85, respectively (see Fig. 2), for operating the cam. Each of these levers, for

example, lever 85, includes a shank 86 on the end of which is formed a boss 87. This boss is drilled slidably to receive a pin 88, which is spring-biased as by a spring 89 to force the end of the pin into a hole 90 formed in the cylinder rim, thus to hold the lever in a closed position. Pin 88 includes a knurled head 91 which may be grasped to withdraw the pin from hole 90 against the pressure of spring 89, when it is desired to swing the lever. Lever 84 is similar in all respects to lever 85. Hence, it follows that the levers may be swung in unison to rotate shaft 83, for a purpose to be described.

Also formed in body portion 79 of cylinder 32 is a longitudinal slot of T-shaped cross section and including a channel 93 communicating with slot 82 and a channel 94 (forming the stem of the T) extending to the periphery of the cylinder. Disposed in the slot comprising channels 93 and 94 is an elongated tensioning member 95, also of T-shaped cross section, and slidable transversely of the slot comprising channels 93 and 94. The opposite sides of the slot 94 limit the movement of the tensioning member 95.

A plurality of springs 98 are disposed within channel 93 between one side of head 95a of tensioning member 95 and the adjacent side of the channel, and these springs bias member 95 to the left, as viewed in Fig. 6, that is, toward its open position. It may now be seen that when cam 83 is rotated clockwise, edge 83a thereof engages the left-hand side of head 95a and moves the member 95 transversely of the slot 93, 94 against the pressure of springs 98, from its open position (Fig. 6) to its closed position (Fig. 7). This movement of the member 95 is accomplished upon rotation of cam 83 through 90°, whereby edge 83a of the shaft disengages the member 95 and locks the member 95 against inadvertent return to its open position. Movement of the member 95 to its open position is effected by springs 98 upon counter-rotation of cam 83 to the Fig. 6 position.

By reason of the weight of cylinder body 79 and the weight of cam 83 and member 95, cylinder 32 is out of balance. To correct this, the cylinder is preferably drilled at 99, and the hole provided thereby is loaded with a sufficient amount of lead 100 to restore the balance of the cylinder, thus to avoid undesirable pulsations during the rotation of the cylinder.

The cylinder 32 and tensioning member 95 are individually provided with oppositely inclined slots disposed to receive tensioning flanges of plate 68 described in detail hereinafter. Specifically, shank 95b of the tensioning member has a slot 96 cut therein, the general plane of this slot forming with a tangent to the cylinder at point A an acute angle of the order of 30°. At the entrant end of slot 96, portion 95c of shank 95b is provided with a radius 97, the plane of the surface 95d of the stem of the member 95 being approximately tangent to the cylinder surface at point A.

A slot 101 is also cut in portion 79a of the cylinder body and the general plane of this slot forms an acute angle of the order of 30° with a tangent to the surface of cylinder 32 at point B, a radius 102 on the cylinder portion adjacent the entrant end of the slot being provided. Inasmuch as the tangents at points A and B of the cylinder surface make similar angles with the surface 95d, the two slots 96 and 101 bear similar but oppositely directed angularity to such sur-

face. Slot 96 is deeper than slot 101 for a purpose described below.

In Fig. 5 there is shown a blank image-reproducing plate 68 which, as indicated hereinbefore, is formed of a flexible deformable material, specifically, one which, upon ignition, will continue to burn without externally supplied oxygen, provided the material is maintained above the ignition temperature. An example of such a material is one consisting in substantial part of a nitro-cellulose such as cellulose nitrate, although other materials having the aforementioned property may be used. Plate 68 comprises a body portion 104, the under surface 105 of which is finished to a true and flat surface. The upper or outer surface 106 (Fig. 7) of the plate may or may not be polished, as desired, but it is finished to a surface which is sufficiently flat and true for printing purposes. At either end, the plate 68 is provided with parallel preformed reversely bent flanges 107 and 108 (Fig. 5), each of these flanges forming with plate body 104 an acute angle which preferably corresponds approximately to the angle of 30° of slots 96 and 101 (Fig. 6). These flanges 107 and 108 are of a substantial rigidity and constitute provisions for tensioning the plate 68 about the cylinder 32, as described hereinafter. The flanges are so formed as to leave radii 107a and 108a of substantially the same value as radii 102 (Fig. 6) on the cylinder and radius 97 on T-bar 95. Furthermore, the distance between planes which are normal to plate 68 (Fig. 5) and which are respectively tangent to radii 107a and 108a is maintained as nearly uniform as practicably possible, so that the edges 109 and 110 of the plate are parallel.

When plate 68 is mounted on cylinder 32, plate flange 107 is inserted in slot 101. The body 104 of the plate is then wrapped around the cylinder 32 with its finished under surface 105 adjacent the cylinder surface. Plate flange 108 is then inserted in slot 96, whereupon the plate is ready to be tensioned or drawn into proper operative relation against the surface of the cylinder. It should be noted that the depth of slot 101 closely approximates the width of flange 107, while the depth of slot 96 exceeds the width of flange 108, for a purpose that will appear later.

With the plate 68 loosely mounted on the cylinder, and with its flanges 107 and 108 in the positions relative to slots 101 and 96 shown (Fig. 6), cam 33 is rotated clockwise by levers 84 and 85 to move tensioning member 95 to the right to tension the plate 68 about the cylinder 32 and this tensioning is effected without the use of any accessory tools. As the member 95 so moves, force is exerted on the plate 68 adjacent its end 110, with the result that flange 108 is forced into slot 96 until radius 97 of member 95 engages plate radius 108a. Continued movement of the member 95 places plate body 104 under tension, causing the plate body to move circumferentially relative to the cylinder surface until plate radius 107a abuts cylinder radius 102 and the under surface 105 of the plate is drawn into intimate engagement with the cylinder surface. Continuing movement of member 95 to the limit of its closing movement stretches the plate body so that the plate body is actually elongated. The effect of this is to perfect the engagement of all portions of the under surface 105 of the plate body with the surface of the cylinder, thereby establishing therebetween as good a heat transfer relationship as possible. While the plate is tensioned well below its elastic limit, the tension-

ing has the further effect of smoothing out any ripples or waves in the plate so that the portion of the outer surface of the plate that is to be operated on by the hot stylus is as nearly exactly cylindrical as practicably possible. This condition of the outer surface of the plate assures uniformity of the depth of pits formed by the hot stylus over areas of the same tone value, so that uniform tone is produced by the plate during the printing operation.

As pointed out hereinbefore, slot 96 is preferably somewhat deeper than slot 107. The reason for this is that, while it is not particularly difficult to hold the width of sheet flange 107 within fairly close tolerances, it is more difficult so to dimension flange 108. This condition results from the efforts made to maintain the length of plate body 104 between edges 109 and 110 uniform and close to the required dimension. Hence, in view of the fact that plate flange 108 may occasionally be wider than flange 107, slot 96 is given sufficient depth to accommodate such excess width.

It should also be noted that through the provision of radii 97 and 102 on member 95 and cylinder portion 79a, respectively, and by pre-forming plate flanges 108 and 107 in such a way as to provide radii 108a and 107a, the complementary plate and cylinder radii advantageously mate so that undue stress is not localized at the plate edges when the plate is tensioned. Furthermore, by providing the plate radii referred to, it is not necessary to crease sharply the plate at edges 109 and 110 thereof, which might weaken the plate.

The perfection of the heat transfer relation between the under surface of the plate and the supporting surface of the cylinder is attained both by reason of the intimate engagement therebetween due to the finished under surface of the plate. This relationship between the plate and cylinder is important because of the nature of the plate material. In other words, the intense heat created in the plate by the engagement thereof with the hot stylus must be conducted away from the plate as rapidly as possible or else the plate would continue to burn. It is equally important rapidly to conduct the heat from the plate in order that the individual pits formed by the hot stylus do not enlarge by continued combustion of the material forming the pit walls, after the withdrawal of the hot stylus. This is particularly true where a screen size of 120 or greater is being cut.

As noted hereinbefore, the plane of surface 95d of the member 95 is as nearly tangential as possible to the cylinder at point A. Hence, when the member 95 is actuated to tension the plate as described, the pull on the plate is approximately tangential at point A, which results in as low a frictional resistance between the under surface of the plate and the surface of the cylinder at point A as it is possible to attain while maintaining the plate's entire under surface in engagement with the cylinder surface at this point.

It has been found that by exerting approximately tangential tension on the plate at point A, substantially all portions of the plate body between radii 107a and 108a are stretched, thus attaining the desired tensioning throughout all portions of plate 68 which assures the intimate engagement between the under surface of the plate and the surface of the cylinder. It might be noted that the under surface of the plate, in addition to perfecting the heat transfer relation

referred to, also facilitates relative movement between the finished plate surface and the cylinder surface which, of course, occurs as the plate is stretched.

The importance of this close, tight engagement between the under surface of the blank plate and the supporting surface of the cylinder and the resultant heat transfer relationship effected thereby is further emphasized when it is pointed out that the thickness of the body of the plate may be of the order of 0.030 inch. With a plate as thin as this, it becomes clear that there is insufficient material mass adjacent the pits formed by the hot stylus to conduct the heat away from the sides of the pits with sufficient rapidity to preclude continuing combustion at the pit walls, as would enlarge the size of the pits, and perhaps cause destruction of the plate. This is particularly true where the stylus penetration is maximum, as it would be where high-light tone values are being reproduced. Thus, the specific characteristics and properties of the blank plate combine in an advantageous manner with the structural and functional characteristics or features of the cylinder to constitute a highly efficient and effective component of the machine.

As noted hereinbefore, shaft 33 (Fig. 1) of cylinder 32 is detachably secured to shafts 31 and 38 by the separable connections 34. By so mounting the cylinder in the machine, and by providing the user of the machine with two cylinders, it is possible for the operator to set up a cylinder and plate unit at a station remote from the machine while the machine is operating on another cylinder and plate unit mounted in the machine. Inasmuch as the cylinder and plate unit in the machine can be detached therefrom and the second cylinder and plate unit thereafter fastened to shafts 33 and 38 in a very considerably less amount of time than it takes to mount a blank plate on the cylinder, it may be seen that valuable time is saved through the provision of the detachable mounting for the cylinder, and through the provision of a plurality of cylinder and plate units. Further, and perhaps even more important, is the fact that where an extra cylinder is available, the operator does not have to handle the blank plate close to the hot stylus and in the relatively confined space adjacent the cutterhead. This, of course, precludes the danger of the operator being burned by the stylus, or the plate coming in contact therewith and being damaged or spoiled. Of course, it is much easier to mount the plate on the cylinder when the cylinder is out of the machine.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention, and it is, therefore, aimed in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. In a machine for producing on a plate from an image sheet a screened relief pattern suitable for image reproduction by printing processes, an image-reproducing plate and cylinder assembly comprising: an image-reproducing plate of flexi-

ble deformable material having parallel preformed tensioning flanges at either end thereof; a supporting cylinder mechanism having provisions supporting it for rotation and a longitudinal slot extending to the periphery thereof and a cylindrical recess extending longitudinally through said cylinder mechanism and in longitudinal communication with said slot; at least one tensioning member disposed in said slot and movable transversely thereof; said cylinder mechanism including a pair of oppositely inclined slots, at least one in said tensioning member, disposed to receive said flanges of said plate; and cylindrical camming means rotatably disposed in said recess and engaging said tensioning member substantially along its entire length for moving said tensioning member transversely of said slot to tension said plate about said cylinder, said camming means having a circular cylindrical surface portion engageable with said tensioning member for locking the same in its tensioning position.

2. In a machine for producing on a plate from an image sheet a screened relief pattern suitable for image reproduction by printing processes, an image-reproducing plate and cylinder assembly comprising: an image-reproducing plate of flexible deformable material having parallel preformed tensioning flanges at either end thereof; a supporting cylinder mechanism having provisions supporting it for rotation and a longitudinal slot of T-shaped cross section with the stem of the T extending to the periphery of the cylinder and a second longitudinal slot of circular cross section extending longitudinally through said cylinder mechanism and in longitudinal communication with said T-shaped slot; at least one tensioning member of T-shaped cross section disposed in said slot and movable transversely thereof; said cylinder mechanism including a pair of oppositely inclined slots, at least one in said tensioning member, disposed to receive said flanges of said plate; an elongated cylindrical cam rotatably disposed in said second slot and engaging said tensioning member substantially along its entire length for moving said tensioning member transversely of said slot to tension said plate about said cylinder, said camming means having a circular cylindrical surface portion engageable with said tensioning member for locking the same in its tensioning position; and an operating member at at least one end of said cylinder mechanism for actuating said cam.

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