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Wolff

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[54] **OFFSET PRINTING PRESS**

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[51] **Int. Cl.** **B41f 13/04,** B41f 5/16

[58] **Field of Search** 101/138, 140, 141, 142, 101/143, 176, 177, 178, 217, 227, 228; 226/157

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[57] **ABSTRACT**

The heavy forces required for transferring the impressions from the blanket to a web at the printing station are provided by intermittently coacting blanket and impression segments which rotate constantly at a uniform speed. The impressions are printed on a translatory moving central portion of an oscillatory loop formed out of the web while such portion is advancing at a speed equal to the peripheral speed of the blanket and impression segments in the direction of feed of the web. The central portion of the web loop is returned with a translatory movement during the intervals that the blanket and impression are not in coactive printing relation. During such intervals also measured lengths of web are advanced through the loop.

12 Claims, 3 Drawing Figures

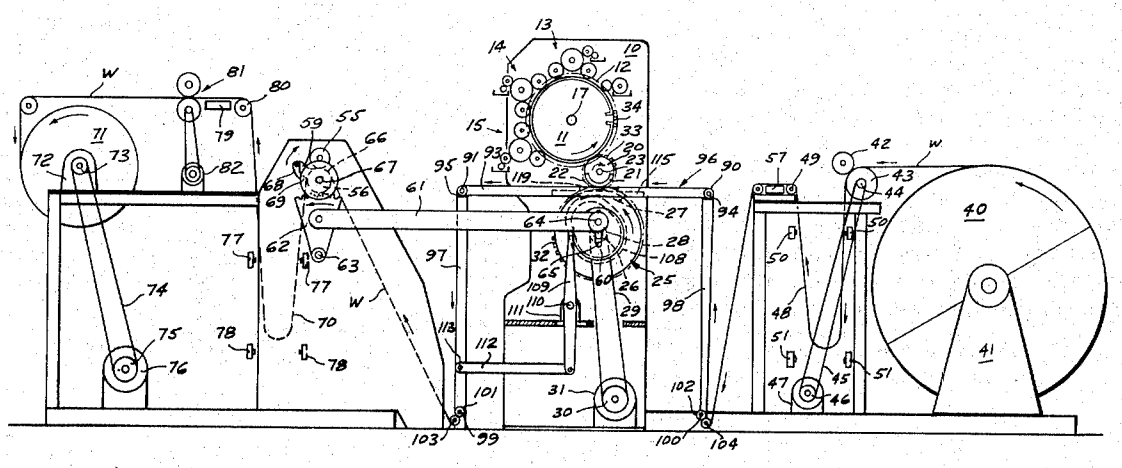


FIG. 2

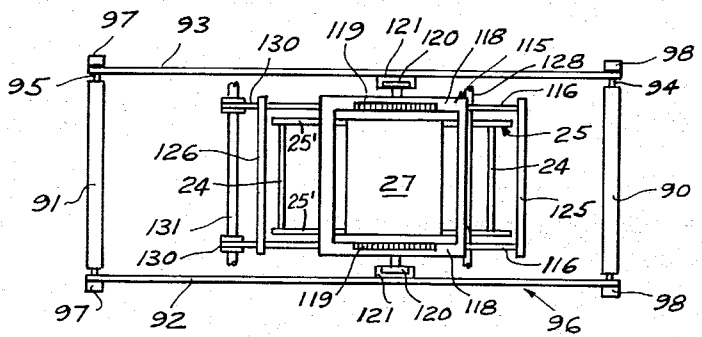


FIG. 3

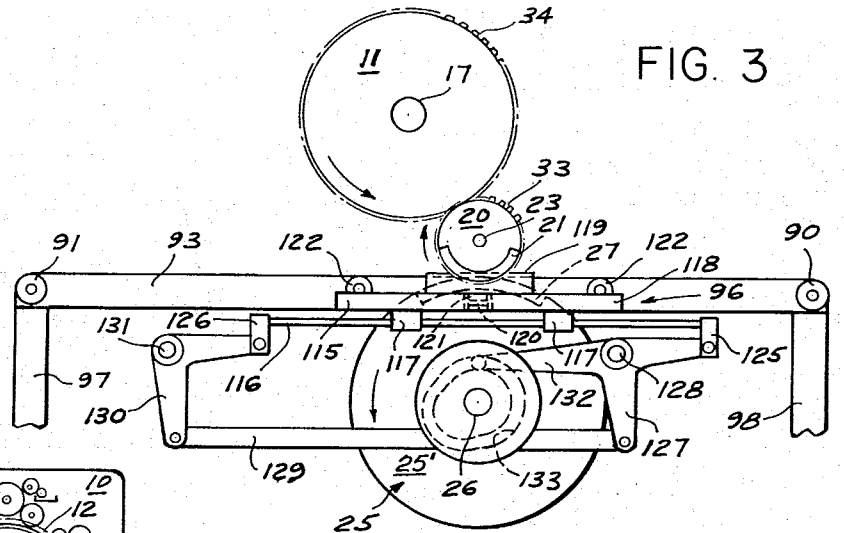
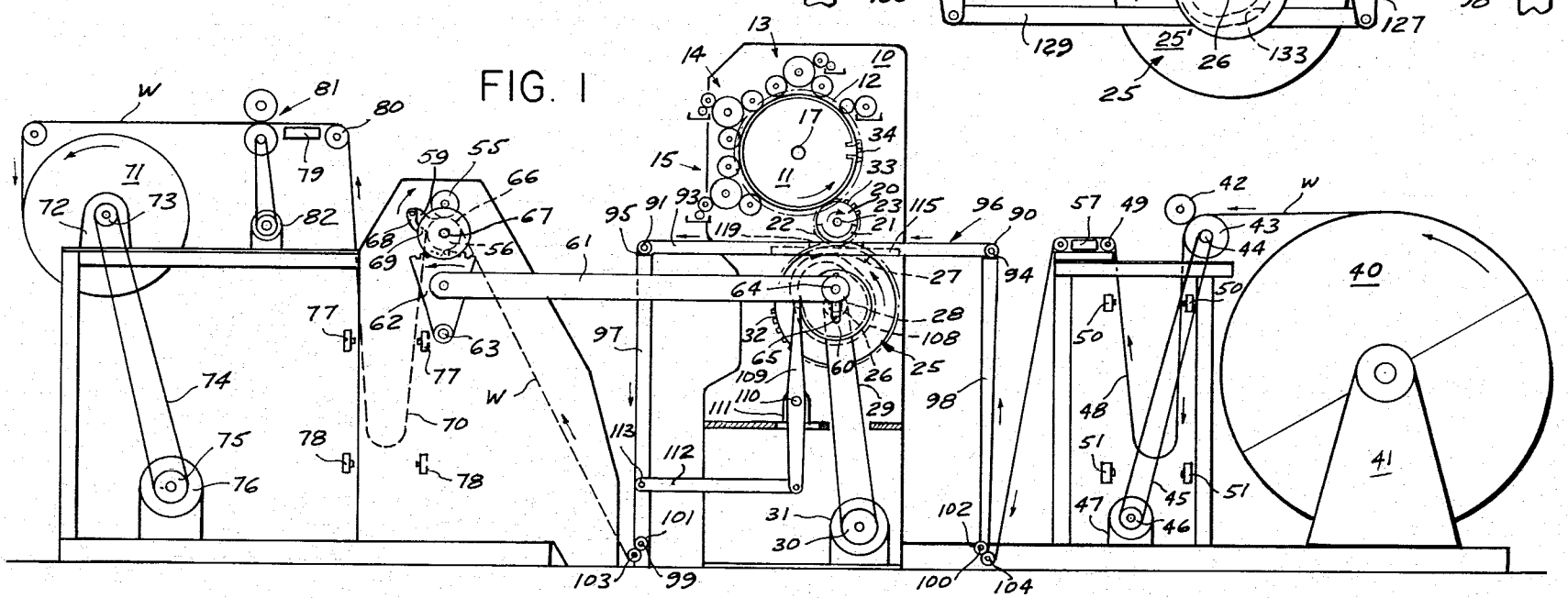


FIG. 1



OFFSET PRINTING PRESS

THE INVENTION

This invention relates to the printing of labels, forms, and the like, on a continuous web, by the offset printing method.

Offset printing provides a number of well recognized advantages over other types of printing. The presses presently used in the practice of such printing method however, are massive, costly machines. This is especially true of offset presses provided with reciprocating impressing plates, because it has been found necessary as a practical matter to provide such machines with a substantial massive construction in order to avoid vibration and inaccuracy of repeat. Until now this has been an inherent characteristic of this type of printing press and is accepted as such by the art.

The principal object of the present invention is to provide an accurate, high speed reciprocating type of offset printing press that will now have the heavy, costly type of construction that is usually associated with this type of press.

A particular object of the invention is to provide a reciprocating offset press provided with a novel web translation mechanism constituted of light, but rigidly mounted parts.

Another object of the invention is to provide a reciprocating offset press in which the parts are so constructed that the offset blanket, the coactable impression means, and the web section being printed are in locked relation during the printing operation.

Other objects of the invention, as well as the advantages and features of novelty thereof, will appear from the following description, when read in connection with the accompanying drawings, in which

FIG. 1 is a side elevation, partly in vertical section, of a reciprocating type offset printing machine embodying the invention;

FIG. 2 is a plan view of the web section translation mechanism associated with the blanket cylinder and impression means; and

FIG. 3 is a partial side elevational view of the translation mechanism shown in FIG. 2.

The offset printing press illustrated in FIG. 1 of the drawings has its forward side frame removed, having its other side frame **10** shown, in order that a clearer view may be obtained of certain of the parts mounted between such side frames. The press comprises a plate cylinder **11** of customary construction having associated therewith the rolls for applying ink to the plate **12** mounted thereon. The plate **12** may be of any suitable construction and may be constituted of one or a plurality of sections of the same or different materials, and constructed for dry or wet offset printing or both. The ink is shown applied in three different colors by three separate inking mechanisms **13, 14** and **15** of customary construction. The application of the inks to the three separate plate image areas required for the printing of three color impressions on the web W is controlled in the customary manner by cams associated with the periphery of the plate cylinder **11.**

In tangential arrangement with the plate cylinder **11,** is a blanket cylinder **20** having a circumferential dimension one-third the circumferential dimension of the cylinder **11.** The blanket cylinder **20** comprises a blanket supporting segment **21** having a circumferential dimension equal to the circumferential length of one of the three equally dimensioned image areas provided on the plate **12.** With such construction the blanket cylinder **20** will revolve three times for every revolution of the plate cylinder **11.** With each revolution of the cylinder **20** there will be applied to the blanket **22** mounted on the sector **21** the inked images from one of the image areas on the plate **12.** Thus, at the end of the three revolutions of the cylinder **20,** there will have been applied to the blanket **22,** all of the images from the three image areas of the plate **12** to provide a complete inked replica of the printing impression which is to be transferred to the continuous web W. It will be understood that if such transfer is made continuously to a web which is not adjusted, as is customary, there would be provided on the web between the repeats of such printed impression spaces equal to the circumferential distance between the ends of the working area of the blanket **22** on the segment **21.** The machine of this invention however, is provided with means that make it possible to apply the repeated impressions to the web at controlled distances apart regardless of the circumferential dimension between the ends of the working area of the blanket **22.** Thus, the successive impressions provided on the web W may be made to touch at their ends, or to be spaced a given distance apart, as will hereinafter become more clear.

The blanket cylinder **20** is tangentially arranged with an impression cylinder **25** mounted on a rotatably supported shaft **26** and provided at its periphery with an impression segment **27.** As is shown more clearly in FIGS. **2** and **3** of the drawings, the impression cylinder **25** is composed of two end walls **25', 25'** connected together in spaced relation by spacer rods **24** and the arcuately-shaped impression segment **27,** the latter of which is located to form a transverse peripheral portion of the cylinder **25.** The impression segment is cooperable with and has a circumferential dimension greater than the circumferential dimension of the blanket segment **21.** Secured to shaft **26** is a pulleywheel **28** which is connected by a belt **29** to a pulleywheel **30** mounted on the shaft of a continuously driven motor **31.** Also mounted on shaft **26** is a gear **32** whose teeth are in mesh with the teeth of a gear **33** secured to the shaft **23** of the blanket cylinder **20.** The blanket cylinder gear **33** is in turn meshed with a gear **34** mounted on the shaft **17** supporting the plate cylinder **11.** Thus, the cylinders **11, 20** and **25** are continuously driven by the motor **31** through the gears **34, 33** and **32,** shaft **26,** pulley **28,** belt **29** and pulley **30.**

It will be understood from the foregoing, that in the operation of the press, the three cylinders **11, 20** and **25** are each revolving in the directions indicated by the arrows at a constant velocity and are locked in such revolving relationship by the gears **24, 33** and **32,** respectively. The plate and impression cylinders **11** and **25,** respectively, have a similar circumferential dimension, while the circumferential dimension of the blanket cylinder **20** is one-third that of each of such cylinders **11** and **25.** Thus, the blanket cylinder will revolve three times for every revolution of each of the plate and impression cylinders. As previously indicated, by the end of the third revolution of the blanket cylinder **20,** a composite of all of the inked images on the plate **12** will have been formed on its blanket **22.** As the blanket cylinder **20** completes its third revolution and is starting on the first revolution of its next cycle of operation, its

segment 21 and the impression segment 27 are so located on the blanket and impression cylinders 20, 25, respectively, that the advancing end of the blanket segment 21 will come into biting relation with the advancing end of the impressing segment 27 and cause the transfer of the composite of the images on blanket 22 to the paper web W. FIG. 1 shows the relation of the blanket and impression segments during such transfer. It will be noted that the heavy squeezing forces which are necessary to transfer the composite print from the blanket to the web are wholly substained by the blanket segment and the impression segment which are constantly turning at a uniform speed to accomplish such result with a pure rolling operation and do not effect the reciprocating movements of the web section to which the printing impression is being applied. It is possible therefore to impart a reciprocating movement to the web by much lighter forces that are wholly divorced from such heavy forces. The means for effecting such reciprocating movement of the web will now be explained.

The paper strip of web W is fed from a supply roll 40 mounted on a shaft rotatably supported at its ends by a standard 41 mounted on a base portion of the machine. The paper web W is drawn from the supply roll by feed rolls 42, 43, the latter of which is drivenly connected by a pulley 44, belt 45 and pulley 46 to an photo-electric cell regulated variable speed electric motor 47. The rolls 42, 43 feed the web into a free loop 48 located between such feed rolls and a guide roll 49 mounted in spaced relation to the latter on a portion of the machine frame. The loop 48 controls the operation of the motor 47 through photoelectric cells 50, 51 which are arranged with relation to such loop in a known manner so that the motor is actuated to cause the feed rolls 42, 43 to feed the web into the loop when the bottom of the latter rises above the photoelectric cell 50, and so that the operation of the motor is stopped when the loop interrupts the beam of the photoelectric cell 51. The paper web W is drawn from the loop 48 intermittently, in given lengths, by feed rolls 55, 56 located downstream of the press during the intervals when the blanket and impression segments 21, 27 respectively, are not in coactive printing relation. As the web is drawn from the free loop 48 and over the guide roll 49, it passes over a web tensioning device in the form of a vacuum table 57 that places the web under tension from that point to the web advance or feed rolls 55 and 56 and during its travel through the mechanisms between such table 57 and such feed rolls 55, 56.

The advance of the portions of the web by the feed rolls 55, 56 and the length of such portions is controlled by mechanism which comprises an eccentric disc 60 mounted on the shaft 26 of the impression cylinder and having connected thereto in offset relation to the axis of rotation of shaft 26, one end of a crank arm 61. The other end of the crank arm 61 is connected to a gear segment 62 mounted for oscillating movement about a fixed axis 63. The connection of crank arm 61 with the segment 62 is offset from fixed axis 63 a given distance such as to enable such segment during its oscillating movements to produce a range of movements at the pitch line of the gear teeth on such segment such as to enable the feed by the rolls 55, 56 of web portions within a given range of lengths, for example, from zero to nine inch lengths. The precise range of movement at such pitch line is attained by radial adjustment of said one end of the crank arm with relation to the eccentric disc 60. As illustrated this may be accomplished by adjustment of the position of the connecting pin 64 in a diametral slot 65 provided in the disc 60. This adjustment is so precise that the feed of the paper web W may be varied by increments of from 1/32 to 1/16 inches to enable the exact length of label web portion to be advanced to take care of the given length of printed impression applied to such portion in end-to-end engagement with a previously applied impression, or in any given spaced relation with such previously applied impression, regardless of the circumferential length of the blanket cylinder 20 between the ends of the segment 21 thereof. It will be understood that once such adjustment is made, all of the printed impressions will be equally spaced throughout the length of the web until such adjustment is again varied.

The teeth of the gear segment 62 are in mesh with a gear 66 which is rotatably mounted on the shaft 67 supporting feed roll 56 and which is provided with an arm 59 carrying a pawl 68 that engages the toothed edge of a ratchet wheel 69 secured to such shaft 67. The arrangement of the parts are such that during the coaction of the blanket and impression segments 21 and 27, respectively, to transfer the composite of the images from the blanket 22 to the paper web W, the segment 62 will be oscillated by the eccentric disc 60 and the crank arm 61 in one direction to cause the gear 66 to move the pawl 68 in the direction indicated by the arrow in FIG. 1 so that it merely rides on the ratchet wheel 69 without imparting any movement thereto or to the feed roll 56 and consequently with no advance of the web W. When the blanket and impression segments 21 and 27, respectively, have completed their coactive relation and the impression cylinder is moving through that portion of its cycle in which no printing operation takes place, the segment 62 will be oscillated by the disc 60 and crank arm 61 in the other direction and cause the gear 66 to move the pawl 68 in a direction opposite to that indicated by the arrow in FIG. 1 to drive the ratchet wheel 69, shaft 67 and feed roll 56 to advance the web W the exact given length determined by the adjustment of the crank arm 61 with disc 60. The portion of the web moving through the feed rolls 55, 56 passes into a free loop 70 from which it is withdrawn by a take-up roll 71 rotatably mounted on standards 72 suitably supported on the frame of the machine. Mounted on the supporting shaft of the take-up roll is a pulleywheel 73 which is connected by a friction belt 74 and a pulleywheel 75 to the shaft of an electric variable speed motor 76. The operation of the motor 76 is controlled by photoelectric cells arranged with relation to the free loop 70 in a known manner so that the motor is actuated to cause the take-up roll 71 to withdraw the web from such loop when the lower end of the latter interrupts the beam of the photoelectric cell 78, and so that the motor is stopped when the loop 70 rises above the cell 77. Located between the loop 70 and the take-up roll 71 is a container 79 which like the container 57 is connected to a suitable source of suction so that it forms a suction plate or table. The suction in the container 79 is sufficient to place tension on the web as it is winding up on the take-up roll 71. In its travel from the loop 70 to the take-up roll 71, the web passes over a roll 80 which guides it onto the suction plate 79 and then through slitters 81 driven by a

constant speed motor **82** suitably mounted on the machine frame.

It will be understood that the parts so far described are primarily concerned with the feed of the web W from the supply roll **40** and through the printing press to the take-up roll **71**, with the printing of the composite impressions on such web as it advances through the printing press, and with the means for controlling the amount of advance of the web in each step of its intermittent feed to provide successive web portions of sufficient length to receive the impressions and to have such successive impressions arranged on the web in a given abutting or spaced relation unrelated to the length of the circumferential distance between the leading and trailing ends of the working area of the blanket **22** on the cylinder **20.** As described, this step-by-step advancing movement of such web portion takes place in the intermittent periods of time during which the blanket segment **21** and the impression segment **27** are not coactable to transfer the composite impressions from the blanket to the web. This step-by-step advancing movement of such web portions also takes place while elongated sections of the web between the loops **48** and **70** and of a length that is a multiple of the length of said web portion, are being simultaneously translated without interference with such feed of the web portions substantially horizontally in a direction opposite to the feed of the web portions to a retracted position preparatory to the printing of successive web portions. The mechanism for accomplishing such translatory movements of the web sections comprises a pair of elongated, horizontal flying guide rolls **90,91** disposed in spaced relation, transversely of the path of feed of the web, and locked in such spaced relation for reciprocatory movements along the path of feed of the web. The rolls **90,91** are held in such locked relation by a pair of substantially horizontally disposed spaced parallel bars **92** and **93** on the ends of which the shafts **94,95** of the rolls **90,91,** respectively, are rotatably mounted so that the rolls and bars form a substantially rectangular frame generally designated **96.** The length of the rolls **90,91** are greater than the width of the impression cylinder **25** and the length of the bars **92,93** are greater than the diameter of such cylinder so that the frame **96** formed thereby defines an area substantially greater than the cross sectional area taken through the diameter of the cylinder as can be observed by a comparison of the drawings. It will also be observed that the cylinder **25** is located substantially centrally in such area when the central portions of the blanket segment **21** and the impression segment **27** are engaged in a printing stroke. The frame **96** is supported by a pair **97** and a pair **98** of substantially vertical links which are pivotally connected at their upper ends to the ends of the frame so that the axes of their pivotal connections are substantially coincident with the axes of the rolls **90** and **91.** The lower ends of the links **97** and **98** are mounted for pivotal movement about fixed axes **99** and **100,** respectively. It will be noted that the length of the links **97** and **98** and the length of the arc of movement thereof at their upper ends are such that when such links are oscillating, the paths of reciprocating movement of the rolls **90,91** are substantially straight horizontal paths. Mounted for rotative movement about axes coincident with the fixed axes **99** and **100** are elongated web guide rolls **101** and **102,** respectively. Located adjacently to the guide rolls **101, 102,** are elongated guide rolls **103** and **104,** respectively. The arrangement of roll **103** with roll **101** and of roll **104** with roll **102** is such that the web W is provided with a stabilized guiding action along the pivot areas thereof during the oscillating movements of the links **97,98.** It will be understood that during such oscillating movements of the links **97,98** and the resulting reciprocating movements of the rolls **91, 90,** respectively, there is no change in the length of the loop of web extending throughout the lengths of the links **97,** the bars **93,94** and the links **98.** Thus, during the reciprocating movements of the flying rolls **90** and **91,** the upstanding legs of such web loop are oscillating about fixed horizontal pivots, while under the rolling contact of such flying rolls **90** and **91,** the central portion of such loop which is of variable web portion constitution, but of a given length, is being translated substantially horizontally in a reciprocating fashion between the blanket cylinder **20** and the impression cylinder **25.** The location of the rolls **90** and **91** with relation to such cylinders is preferably such that during the forward strokes of their reciprocating movement i.e., in the direction of feed of the web, the web moves through the tangent line of contact of the blanket segment **21** and the impression segment **27** during their coaction to transfer composite impressions to the web. The return strokes of the rolls **90** and **91** occur during the intervals that the blanket segment **21** and the impression segment **27** are not in such coactive printing relation. It will be noted that during the printing operation the heavy forces required for transferring the composite impression from the blanket **22** to the web W is effected by the blanket and impression segments which are constantly turning at a uniform speed, while the web itself functions as the carriage for the areas wherein to be printed, thereby avoiding the need for a reciprocating web support bed for such areas of the web being printed and the attendant heavy construction usually necessitated by such method of operation.

The flying rolls **90** and **91** are caused to effect such web translating movements by a pair of cams **108** which are mounted in spaced relation on the impression cylinder shaft **26,** but only one of which is shown in FIG. **1** of the drawings. The cams **108** control the movements of two cam follower levers **109** mounted for pivotal movement about the fixed axes of shafts **110** mounted in bearings **111** suitably supported on the frame of the machine. The levers **109** are pivotally connected to one end of links **112** which are pivotally connected by pins **113** to the links **97.** The movements imparted to the links **97** by the cams **108,** levers **109** and links **112,** are transmitted to the links **98** through the frame **96.** The cams **108** are designed to advance the flying rolls **90** and **91** in such manner through their forward movements at an accelerated pace until at the time the blanket segment **21** and the impression segment **27** commence their printing coaction, the web is being translated at a velocity equal to the circumferential velocity of the blanket surface which equals the pitch velocity of the gears **32** and **33** mounted on the impression and blanket cylinders, respectively, and accordingly the circumferential velocity of the blanket and impression segments.

During the printing operation, the rolls **90** and **91** and their associated linkage **92, 93, 97** and **98** are locked at such velocity so that there can be no deviation from such velocity for any rason, such as backlash, and there

results a firm, positive operation in which there is ensured a pure rolling contact of the blanket segment, the web and the impression segment. The means for accomplishing this locking action comprises a substantially square frame **115** located centrally within the rectangular frame **96** and underlying the web W. The frame **115** is of such dimensions as to permit the impression segment **27** to extend therethrough into contact with the web W without interference during the reciprocating movements of such frame **115.** The frame **115** is slidably mounted on slide rods **116,** each of which extends through a pair of spaced guide members **117** depending from a side **118** of the frame. Mounted centrally on each of the frame sides **118** is a gear rack **119** hich engaged with one of two similar gears **33** provided on the ends of the blanket cylinder **20** when the frame **115** is in a raised position. The blanket gears **33** are wide enough to enable both a gear rack **119** and the impression cylinder gear **32** to engage simultaneously one of such blanket gears. Web guide rolls **122,122** may be mounted on the frame sides **118** beyond the ends of the gear racks **119** as is indicated in FIG. **3** of the drawings. Projecting outwardly from the center of the outer faces of the frame sides **118** are stub shafts carrying follower rolls **120** movable in a short vertical track provided in the blocks **121** mounted centrally on the inner faces of the bars **92,93.** It will thus be understood that as the frame **96** is being reciprocated lengthwise by the links **97,98** from the cam **108,** the frame **115** will be similarly reciprocated on the slide rods **116** through the follower rolls **120** and the blocks **121.**

The slide rods **116** are connected at their ends to two transverse bars **125, 126.** Pivotally connected to the ends of bars **125** are one of the arms of a pair of cranks **127** mounted for rotational movement on a shaft **128** fixedly mounted on the frame of the machine. The other arms of the cranks **127** are connected by links **129** to one of the arms of a pair of bell cranks **130** which are mounted by pivotal movement on a fixed pivot shaft **131** and the other arms of which are pivotally connected to the ends of transverse bar **126.** The cranks **127** are provided with a cam follower arm **132** which are connected to frame lift cams **133** mounted on the impression cylinder shaft **26.** The cams **133** are designed to rotate the cranks **127** and **130** in a counterclockwise direction to lift the transverse bars **125, 126** and consequently the slide rods **116** and frame **115** and thereby cause the gear racks **119** to move lengthwise into engagement with the blanket gears **33** when the web translation frame **96** on its forward stroke has accelerated to the tangential velocity of the blanket surface. As previously indicated, when such engagement is made, the blanket **22,** web W and pressure segments **21** and **27** are all locked together, and while so locked the printing operation takes place. When the printing operation has been completed with the disengagement of the blanket and impression segments and while the frame **96** continues the translation of the web, the racks **119** will pass beyond the blanket gears **33** and become disengaged from such blanket gears **33.** Just after this occurs, the translation velocity of the frames **96** and **115** and the web W will drop to zero, and the cam **133** will move the cranks **127, 130** in a clockwise direction to drop the frame **115** sufficiently to move the racks **119** out of the plane of their engagement with the blanket gears **33.** The web feed mechanism then feeds the desired amount of web fowardly, while the web translation mechanism returns for the printing stroke.

What is claimed is:

1. In a printing machine, printing means including at the printing station thereof rotatable curved blanket supporting and impression surfaces intermittently coactable during portions only of the rotatable movements thereof and operable while in coactable tangential relation to transfer image inkings from a blanket on said blanket supporting surface to a continuous web, means for rotating said blanket supporting and impression surfaces constantly at a uniform peripheral velocity, means for supporting a given length of the continuous web at spaced places on opposite sides of said station, means connected to said web supporting means and operable to translatorily reciprocate said web supporting means to translatorily reciprocate the given length of web through said printing station, means for actuating said reciprocating means to advance said web supporting means and the given length of web supported thereby through said station at a velocity equal to the peripheral velocity of said surfaces during the coaction of the latter and to retract such given length of web in the intervals between such coactable relation of said surfaces, means intermittently operable to positively lock said blanket supporting and impression surfaces and said web supporting means temporarily during the printing operation while the given length of web is advancing at said velocity, and means operative during the printing operation to prevent movement of the web generally relative to said web supporting means and during said intervals to feed given length portions of the continuous web.

2. In a printing machine as defined in claim **1,** in which said web supporting means comprises two spaced flying rolls for supporting the ends of said given length of web, and said reciprocating means comprising pivotal means movably supporting said rolls for pivotal reciprocating movement in unison, said actuating means being connected to and reciprocating said pivotal supporting means.

3. In a printing machine as defined in claim **2,** in which said web supporting means comprises a plurality of first substantially horizontally disposed members located between and connected to the ends of said flying rolls to hold the latter in given spaced relation, and said pivotal supporting means comprises a plurality of second substantially vertically disposed pivotal members pivotally connected to the assembly formed by said flying rolls and first members.

4. In a printing machine as defined in claim **3,** in which said first members comprise a pair of spaced parallel members, and in which said second members are elongated members mounted at their lower ends for pivotal movement about fixed axes and connected at their upper ends to said assembly so the axes of their pivotal connections with the latter are coincidental with the flying roll axes.

5. In a printing machine as defined in claim **1,** including a first cylinder having a printing impression of given length on its peripheral surface, a blanket cylinder having a blanket supporting segment providing said blanket supporting surface and having a working circumferential dimension equal to the circumferential length of the printing impression provided on said first cylinder, an impression cylinder having an impression segment providing said impression surface, said impression cyl-

inder having a circumferential dimension such that when the circumferential dimension of said blanket segment is divided thereunto there will result a certain whole quotient greater than one, said rotating means locking said first, blanket and impression cylinders in revolving relationship during the printing operation, and in which said operable means includes first means movable to connect said rotating means to said web supporting means and lock the latter during its advancing movement to said first, blanket and impression cylinders, and second means operable to so move said first means during the advancing movement of said web supporting means at said velocity.

6. In a printing machine as defined in claim **1,** in which said operable means comprises a member movably connected to said web supporting means and reciprocated with the latter and said given length of web, means mounted on said reciprocating member for connecting the latter with said rotating means, and means operable to move said reciprocating member relative to said web supporting means to effect such connection when said member is moving at said velocity equal to the peripheral velocity of said blanket supporting and impression surfaces.

7. In a printing machine as defined in claim **1,** in which said operable means includes a member movably connected to said web supporting means and reciprocated therewith, said member having engaging means to connect the same to said rotating means, first means supporting said member for slidable reciprocating movement, second means supporting said first supporting means for movement transverse to such slidable movement, and means operable to move said second supporting means and said member in a direction to cause said engaging means to connect said member with said rotating means when said member is moving at the said velocity and in the middle portion of its sliding stroke, and to move said second supporting means and said member in a direction to disconnect said member and rotating means before said member reaches the ends of its stroke.

8. In a printing machine as defined in claim **6,** including first means for supporting said web supporting means at spaced places for lengthwise translatory reciprocating movement, said actuating means being connected to and reciprocating said first supporting means, second means located between said spaced places for supporting said member for lengthwise translatory reciprocating movement, and means connecting said web supporting means and said member to enable relative movement of the same during the reciprocating movements thereof.

9. In a printing machine as defined in claim **5,** in which said operative means includes means downstream of said station in the direction of feed of the web for intermittently drawing the web portions in the intervals when said blanket and impression segments are not in coactable relation, and web retaining means upstream of said station in the direction of feed of the web and coacting with said drawing means during the printing operations to place the length of web therebetween under tension and to prevent movement of the web generally relative to said web supporting means.

10. In a printing machine as defined in claim **1,** in which said rotating means comprises a shaft for supporting said impression surface for rotatable movement about the longitudinal axis thereof, and in which said operative means comprises a first member secured to said shaft, a second member mounted for pivotal movement about a fixed axis spaced from said shaft axis, a link extending from said first member to said second member, means connecting one end of said link to said first member in offset relation to said shaft and the other end of said link to said second member in offset relation to said fixed axis so that said link is operable by the first member to pivotally reciprocate said second member about said fixed axis, said connecting means connecting one end of said link to one of said members for adjustment of such connection relative to the axis of movement of such one member, a pair of feed rolls for the web, and means for connecting said second member to said feed rolls to enable such second member to drive said feed rolls in one direction of its pivotal movement to advance the web a given length portion.

11. In a printing machine, printing means including at the printing station thereof rotatable curved blanket supporting and impression surfaces intermittently coactable during portions only of the rotatable movements thereof and operable while in coactable tangential relation to transfer image inkings from a blanket on said blanket supporting surface to a continuous web, means for rotating said blanket supporting and impression surfaces at a uniform peripheral velocity, web supporting means for forming in the continuous web an open loop of given size having its central part extending through said printing station, means hingedly supporting said web supporting means to enable it to reciprocate and impart to such web loop an oscillatory movement such that the central part of such loop is advanced and retracted in a translatory fashion through the printing station, actuating means for reciprocating said web supporting means to cause the translatory advance of the central loop part through the printing station at a velocity equal to the peripheral velocity of said surfaces during the intervals in which the latter are in coactable relation and and to retract such central loop part in the intervals between such coactable relation of said surfaces, means intermittently operable to positively lock the central part of such loop temporarily to said blanket and said impression surfaces during the printing operation while said central loop part is advancing at said velocity, and means operative during the intervals between the transfer of image inkings by said blanket and impression surfaces for feeding into and removing from such loop given length portions of the continuous web.

12. In a printing machine as defined in claim **11,** in which said loop supporting means comprises a first pair of spaced web guide rolls supporting the ends of said central loop part, means linking said spaced rolls to move in unison, a pair of means mounted for pivotal movement about two fixed axes adjacent to the ends of the sides of the open web loop and supporting said rolls in an elevated position with relation to such fixed axes, the connection between said rolls and said pair of means enabling movement of the latter relative to said linking means, said actuating means being connected to said pair of means and reciprocating said pivotally mounted pair of means about said fixed axes.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,797,389 Dated March 19, 1974

Inventor(s) Edwin K. Wolff

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 1, line 13, -"impressing" should be --impression--;

Col. 1, line 21, -"now" should be --not--.

Col. 3, line 5, -"impressing" should be --impression--.

Col. 6, line 67, -"rason" should be --reason--.

Col. 7, line 15, -"hich" should be --which--;

same line, - "engaged" should be --engages--;

line 40, -"by" should be --for--.

Signed and sealed this 2nd day of July 1974.

(SEAL)
Attest:

EDWARD M. FLETCHER,JR.
Attesting Officer

C.MARSHALL DANN
Commissioner of Patents