July 15, 1969 R. H. FROHOCK 3,455,229

APPARATUS FOR PRODUCING OFFSET PRINTING PLATES

Filed April 19, 1967 6 Sheets-Sheet 1

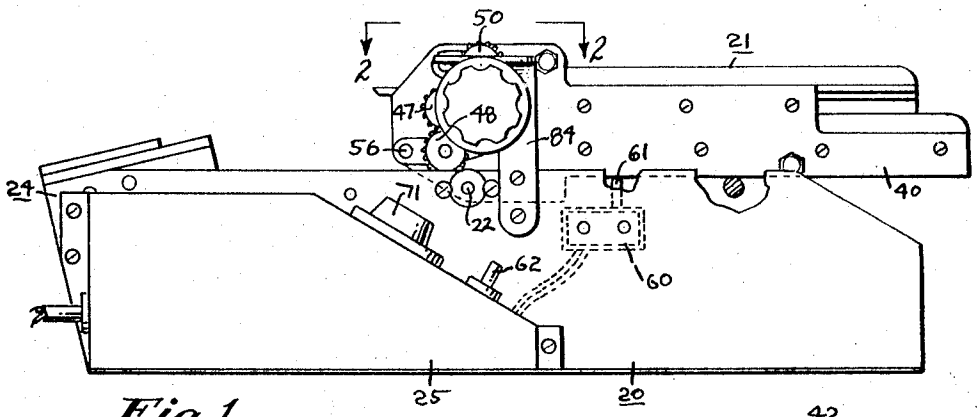


Fig. 1.

Fig. 3.

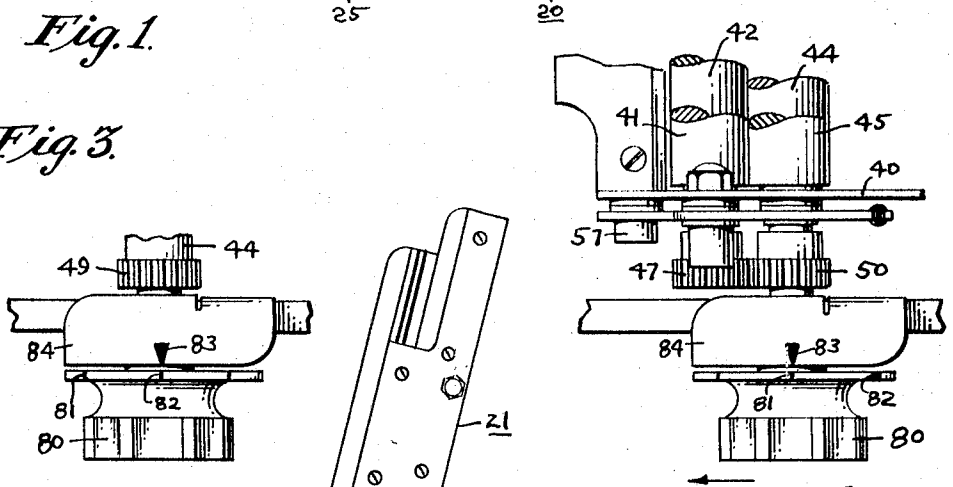


Fig. 2.

Fig. 4.

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APPARATUS FOR PRODUCING OFFSET PRINTING PLATES

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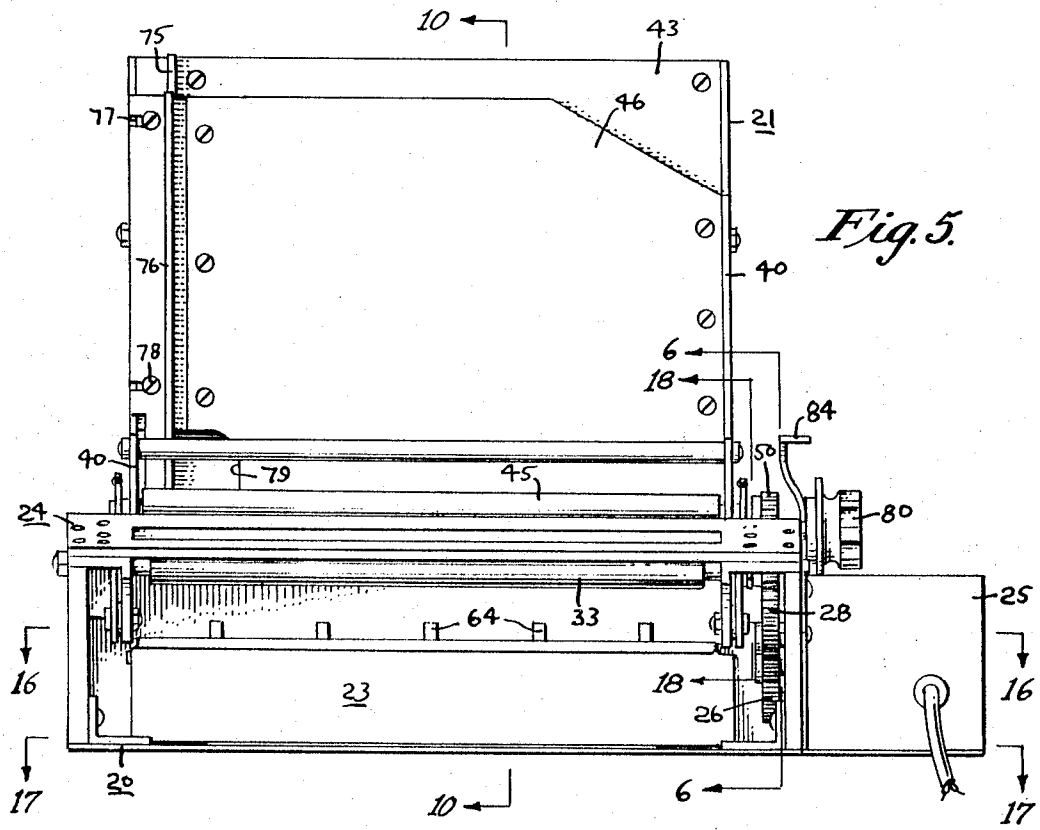


Fig. 5.

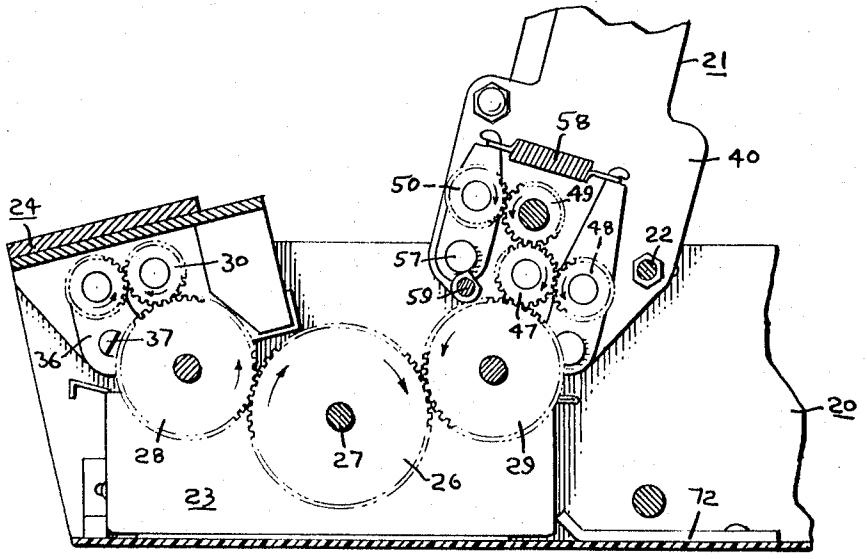


Fig. 6.

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APPARATUS FOR PRODUCING OFFSET PRINTING PLATES

Filed April 19, 1967 6 Sheets-Sheet 3

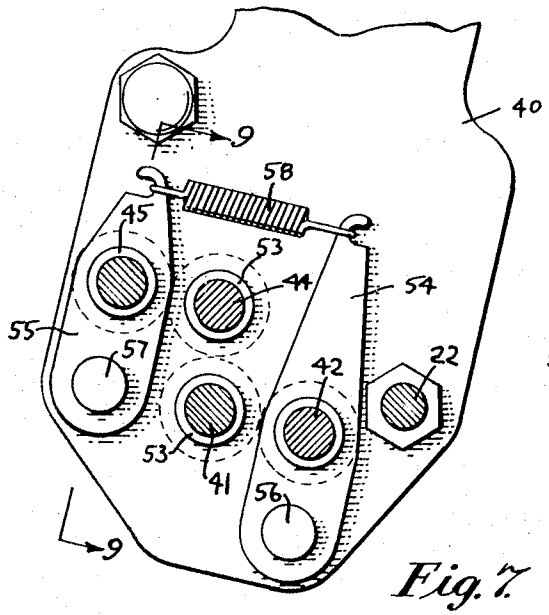


Fig. 7.

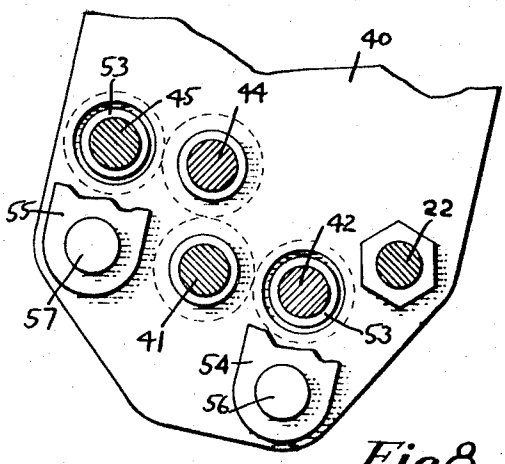


Fig. 8.

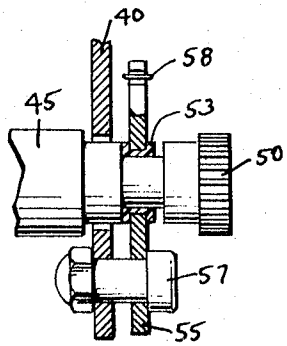


Fig. 9

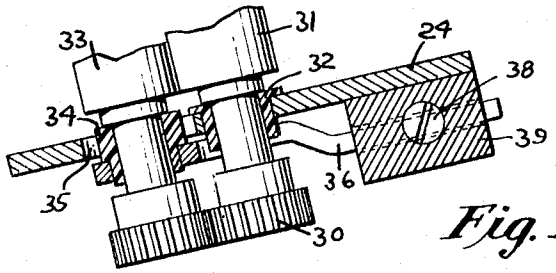


Fig. 19

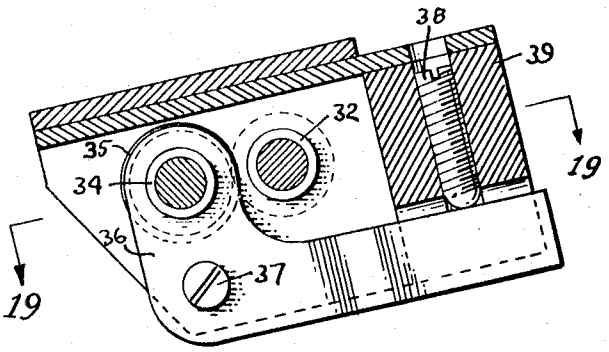


Fig. 18.

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APPARATUS FOR PRODUCING OFFSET PRINTING PLATES

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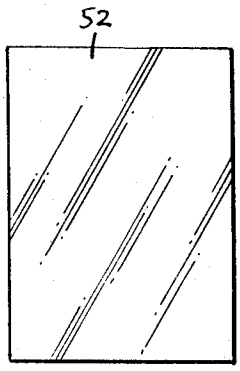


Fig. 11.

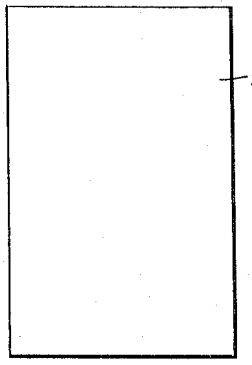


Fig. 12.

Fig. 10.

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APPARATUS FOR PRODUCING OFFSET PRINTING PLATES

Filed April 19, 1967 6 Sheets-Sheet 5

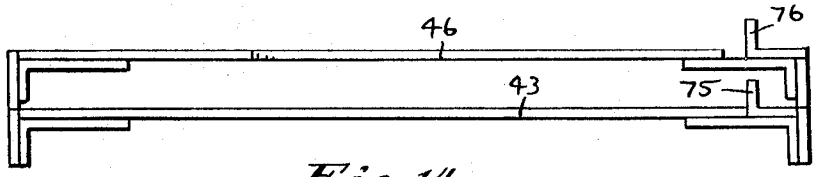


Fig. 14.

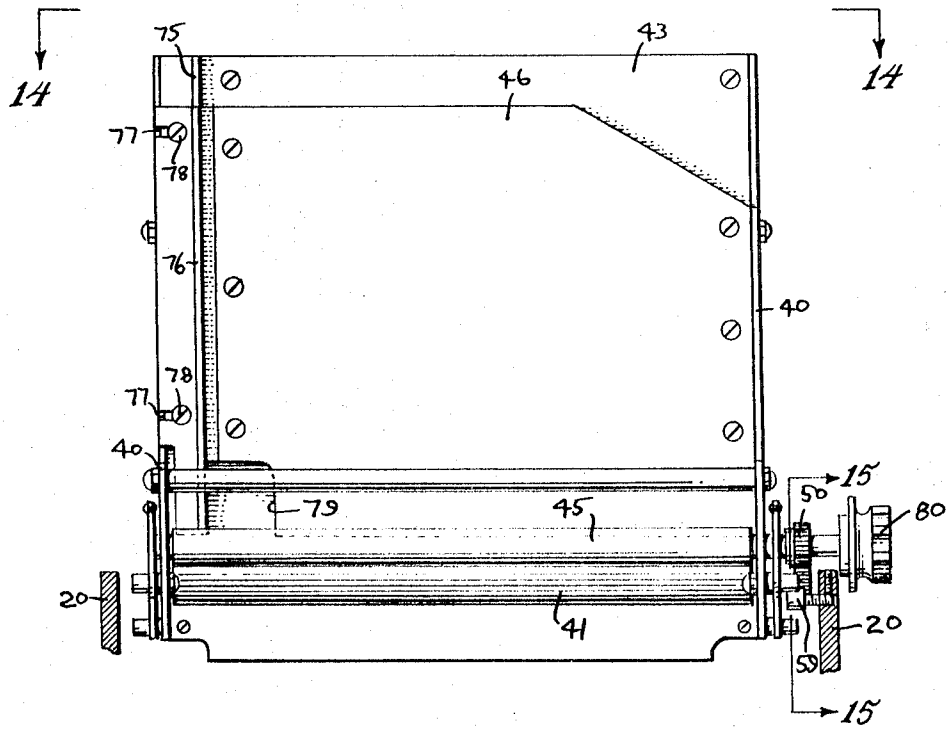


Fig. 13.

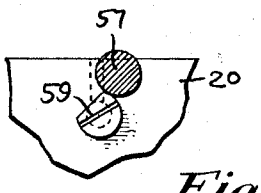


Fig. 15.

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APPARATUS FOR PRODUCING OFFSET PRINTING PLATES

Filed April 19, 1967 6 Sheets-Sheet 6

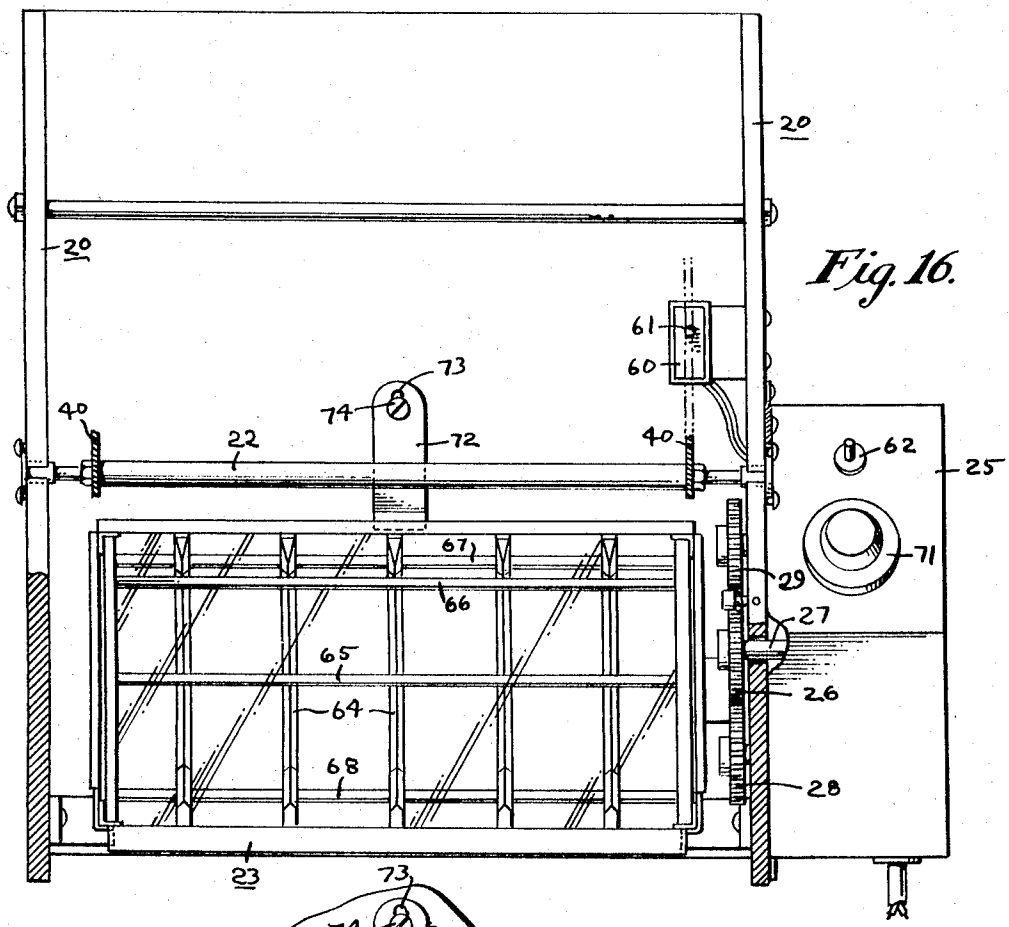


Fig. 16.

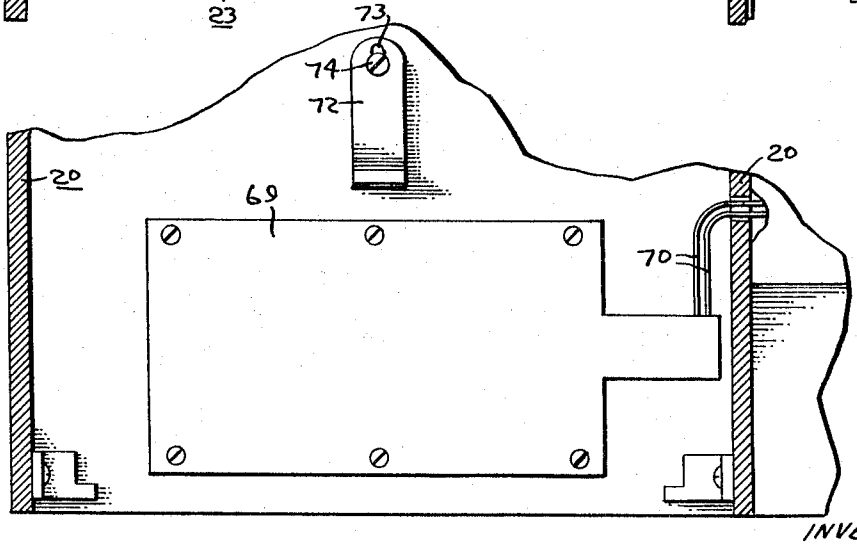


Fig. 17.

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United States Patent Office

3,455,229

Patented July 15, 1969

3,455,229

APPARATUS FOR PRODUCING OFFSET PRINTING PLATES

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Filed Apr. 19, 1967, Ser. No. 632,086
Int. Cl. G03d 3/12
U.S. Cl. 95—94 11 Claims

ABSTRACT OF THE DISCLOSURE

A photographic wet process contact transfer apparatus for transferring a latent image from a negative onto a metal offset printing plate utilizing a drive roller system carried on a tiltable table to feed dry negative and dry positive separately through a liquid developer bath and together into a press roller pair after emergence from the bath. The drive and press rollers are gear driven by an electric motor energized and de-energized respectively by the table when vertical and horizontal. The drive rollers and gears never contact the developer.

This invention relates generally to apparatus for producing offset printing plates. More patricularly, the invention relates to apparatus for producing positive offset printing plates from a copy negative and for insuring proper alignment and margin spacing between the copy negative and the offset printing plate, so that uniform margins and copy orientation may be produced on successively made printing plates.

One method of making offset printing plates employs photocopying commonly carried out by wet process contact printing apparatus used in most business offices for photocopying letters, invoices and other business papers. The contact photocopying apparatus generally includes a light source for exposing a sheet of sensitized negative paper with the copy material imprinted upon the paper which it is desired to reproduce, the exposure being made either by transmission through the material to be copied or by the reflex method. After the negative has been exposed, it is separated from the copy material and placed in flat surface contact with the sheet of positive transfer paper. The positive and negative paper are then inserted into a pair of parallel adjacent slots in the apparatus, passing downward into a developer liquid bath and into a pair of counter-rotating squeegee rollers which intimately press the wetted positive and negative sheets together and pass them out of the apparatus. The adhered positive and negative sheets are then separated and a positive print of the copy material previously exposed onto the negative paper is obtained on the positive paper.

Offset printing plates may be made in exactly the manner previously set forth, the only difference being that the positive print paper usually used to provide the finished print is replaced by a flexible metal offset printing plate which is commonly made of thin aluminum sheet. The offset printing plate must, of course, have the copy placed upon it in a precise orientation relative to the edges of the plate, and with prescribed top and side margins or the printed copies produced therefrom will be unacceptable. Unfortunately, the office types of contact photocopying machine provide no means of indexing the negatives to the offset plate prior to the transfer step which will insure the proper positioning of the negative relative to the plate, the proper positioning being a matter of estimation by the person operating the machine which essentially resolves itself to guess work. As a result of this deficiency in the photocopying apparatus, it frequently occurs that quite a few printing plates are ruined before obtaining an acceptable plate. This situation is aggravated

by the fact that the results of the negative to plate misalignment during the production of the first plate cannot be compensated for by making a second plate from the same negative because a given negative can usually be used only once, and new negatives must be made to produce successive printing plates.

The apparatus according to the present invention is an improvement over that shown and described in my U.S. Patent No. 3,277,808 and employs a novel drive system including a swingable indexing table carrying a system of rollers for providing a desired offset between the leading edges of the negative and printing plate so that the top marginal spacing may be precisely controlled. The entire drive system of the apparatus is maintained out of contact with the developer bath to eliminate gear clogging from dried developer solution. The feed rollers remain dry at all times, and only the press rollers contact developer solution from the wet negative and printing plate as the latter emerge from the developer bath. The swingable table and roller assembly is mounted upon any suitable support holding the developing bath well or tank above which the roller system may be swung and then motor driven for travel of the negative and printing plate conjointly into and through the developing solution and upward into a pair of press rollers. The apparatus permits positional adjustment of both the negative and the printing plate after insertion into the dry feed roller system.

One problem which occurred with the apparatus of my previously identified U.S. patent and which has been overcome by the present invention, was the entrapment of an air bubble which did not allow developing solution to penetrate across the edge of the negative immediately behind the nipped leading edge resulting in incomplete photographic development of the negative in this region with consequent incomplete etching of the offset printing plate. Additionally, since the initial gripping feed rollers were normally wet from being in the developer bath they caused initiation of negative development and plate etching immediately upon insertion of the negative and plate for initial gripping. This produced uneven etching and also did not allow for any realignment of negative and plate to insure accurate register because the negative being paper became soft and tearable when wet and could not therefore be shifted.

Accordingly, it is a primary object of this invention to provide a novel apparatus for transferring the latent image on an exposed negative to an offset printing plate so that the image will be transferred uniformly to the plate with a known desired orientation and top and side margins by allowing dry registration and adjustability of negative and printing plate with linear development.

Another object of this invention is to provide a novel apparatus for transferring the latent image on a negative to a printing plate which includes means for offsetting the top edges of the negative and the printing plate by a prescribed amount to thereby repeatedly obtain a desired top margin width.

Yet another object of this invention is to provide a novel apparatus of the aforedescribed type which is of mechanically simple and reliable construction, which may be relatively easily disassembled for cleaning, and which performs its desired function by indexing the negative and printing plate into a system of particularly related intercoupled motor driven rollers, which latter drive the negative and plate through a developing bath, thereafter pressing them firmly together and ejecting the adhered negative and plate from the apparatus.

A further object of this invention is to provide a novel apparatus as aforesaid wherein all of the operating parts which determine and control the relative positions of the copy negative and offset plate as they are moved through

the apparatus are fixedly indexed to one another in a unitary structure to thereby properly index the copy negative and offset plate to one another.

Still another object of the invention is to provide an apparatus for producing offset printing plates wherein the roller system is so swingably mounted relatively to the developing solution tank as to enable the roller system to be swung into a position well above the tank to facilitate insertion of the negative and printing plate into the roller in proper registration one with the other and at the same insure attainment of the desired lead of the metal printing plate relatively to the paper negative during passage of the paper and plate through the developing bath.

Still further, it is among the objects of the present invention to provide a roller assembly which is readily and conveniently swingable into and out of operative position relatively to the developing bath and which facilitates to maximum degree insertion of the paper negative and the metal printing plate into the roller system, while the same is swung free of and out of operative engagement with the driving mechanism for the roller system, thereby precluding all possibility of the rollers grabbing either the paper negative or the printing plate to cause either or both to travel through the roller system out of proper registration one with the other.

Yet another and important object of the invention is to provide a swingable table and roller system which allows initial insertion of the leading edges of the paper negative and metal printing plate into the roller system while the table is swung downwardly into its inoperative position and then, when the system is swung upwardly into the operative position and is motor driven, employs to advantage the inherent relative stiffness of the printing-plate to guide the paper negative in proper relation to the plate through those rollers of the system which operate to press the negative and plate together as they emerge from the developing bath.

The foregoing and other objects of my invention will become clear from a reading of the following specification in conjunction with an examination of the appended drawings, wherein:

FIGURE 1 is a side elevational view of the apparatus according to the invention with the swingable table in down or horizontal position and with a portion of the side wall partly broken away to show a stop bar supporting the table and a microswitch actuating button;

FIGURE 2 is an enlarged fragmentary detail view of a portion of the manually operated indexing drive system for the plate and negative, as would be seen when viewed along the lines **2—2** of FIGURE 1;

FIGURE 3 is a fragmentary view similar to part of that shown in FIGURE 2 which shows the indexing knob turned ot a different position;

FIGURE 4 is a side elevational view of the apparatus according to the invention which is similar to FIGURE 1 but shows the swingable table in its vertical position which it assumes during driving operation, and partly broken away to show a stop mechanism for supporting the table in a properly indexed position;

FIGURE 5 is a front elevational view of the apparatus according to the invention as would be seen when looking to the right from a left hand end of FIGURE 4;

FIGURE 6 is a vertical sectional view through the apparatus as would be seen when viewed along the lines **6—6** of FIGURE 5;

FIGURE 7 is an enlarged fragmentary side elevational view of the lower end of the swingable table similar to that as seen in the showing of FIGURE 6 but with the driving gear mechanisms removed to disclose the feed roller shaft locations and tensioning members;

FIGURE 8 is a fragmentary view similar to that of FIGURE 7 but with the spring loaded tension members broken away to show the clearance holes for the shafts of the movable feed rolls;

FIGURE 9 is a sectional view as would be seen when taken along the line **9—9** of FIGURE 7;

FIGURE 10 is a vertical sectional view taken through the appartus according to the invention, on an enlarged scale, as would be seen when viewed along the line **10—10** of FIGURE 5 and shown with a copy negative and positive plate in the apparatus in the process of being moved through the developing bath;

FIGURES 11 and 12 are respectively, on a reduced scale, plan views of the copy negative and positive plate members to show the relatively longer length of plate member;

FIGURE 13 is a view of the swingable table of the apparatus on a somewhat reduced scale as would be seen when viewed along the line **13—13** of FIGURE 10;

FIGURE 14 is a detail showing the side guides for feeding the negative and plate into the apparatus as would be seen when viewed along the line **14—14** of FIGURE 13, and on a somewhat enlarged scale;

FIGURE 15 is a fragmentary detail on an enlarged scale showing the stop mechanism for the swingable table in its vertical position;

FIGURE 16 is a horizontal jump view taken on line **16—16** of FIGURE 5 and showing some parts in elevation and some parts in section;

FIGURE 17 is a horizontal section through the apparatus as would be seen when taken along the line **17—17** of FIGURE 5 with the developer tank removed;

FIGURE 18 is a vertical sectional view as would be seen when viewed along the line **18—18** of FIGURE 5 and shows on an enlarged scale the pressure adjusting mechanism for the rubber press rollers; and

FIGURE 19 is a horizontal sectional view through the detail of FIGURE 18 as would be seen when viewed along the line **19—19** thereof.

In the several figures, like elements are denoted by like reference characters.

Turning now to the drawings, and considering first FIGURES 1, 4 to 6 and 10, it is observed that the apparatus includes a structural base or main frame **20** upon which is pivotally supported a swingable table **21** as by means of a pivot shaft **22**, a developer bath tank **23**, and a press roller assembly **24** fixedly secured to and carried by the base **20**. As best seen from FIGURES 1, 4 and 5, projecting laterally as part of the base **20** is a motor housing **25** within which is mounted an electric motor which when energized drives the main gear **26** by means of shaft **27** through a speed reducing mechanism not shown. The clockwise rotation of main gear **26** as viewed in FIGURE 6 drives secondary gears **28** and **29** counterclockwise at a slightly higher rotational rate due to the differences in gear diameter.

The secondary gear **28** drives the gear **30** on one end of the rubber covered press roller **31** of the press roller assembly **24**, this press roller being journaled in a fixed bearing **32** mounted in the near side wall of the press roller assembly frame **24** as best seen in the detail of FIGURE 19. The shaft of the other press roller **33** is mounted in a bearing **34** disposed loosely within a hole **35** let through the side wall of the press roller assembly **24**, the bearing **34** being physically carried by the end of the short leg of an L-shaped plate **36** which latter is pivotally secured to the side wall by machine screw **37**. The longer arm of the L-shaped plate **36** extends beneath roller **31** and inside of secondary gear **28** to a point of termination under a set screw **38** carried by a block **39** secured to the frame of the press roller assembly. The set screw **38**, as best seen in FIGURES 18 and 19, bears on the longer arm of L-shaped plate **36** so that advance of the screw **38** to increase the bearing pressure **38** causes press roller **33** to be pivoted more tightly against press roller **31**, while backing-off of the screw **38** reduces the pressure between the press rollers.

A similar adjustable bearing structure is located at the

opposite end of the press roller assembly so that uniform adjusted pressure may be obtained lengthwise of the press rollers by adjustment of the set screws **38** at opposite ends of the roller assembly. From the showing of FIGURE 6 it is observed that the rotation of secondary gear **28** is such that it rotates the press rollers **31** and **33** toward one another when viewed from below so as to draw upward therebetween any sheet material moved into the nip of the rollers from below, as by emergence from the developer bath tank of sheet material as seen in FIGURE 10.

The swingable table **21** includes a pair of opposite parallel extending side plates **40** between which extend from side to side of the table two sets of steel feed rollers, one set of feed rollers **41** and **42** being positioned to engage the metal offset printing plate positioned on the lower shelf **43** of the table **21**, while the other set of feed rollers **44** and **45** are positioned to engage the copy negative positioned on the upper shelf **46** of the swingable table. As best seen from FIGURES 2 and 6, the feed rollers **41, 42, 44** and **45** have fixedly secured on their respective shafts four meshed gears designated respectively as **47, 48, 49** and **50**. From FIGURE 6 it is observed that when the tiltable table **21** is tilted upward into operating position, gear **47** on feed roller **41** meshes with secondary gear **29** and is driven in a clockwise direction. By virtue of the meshed engagement of gears **48, 49** and **50**, feed roller set **41** and **42** and feed roller set **44** and **45** are observed to be rotatably driven to respectively advance metal printing plate **51** and copy negative **52** from their positions on the lower and upper shelves of the table **21** downward into the developer bath tank **23**.

As best seen from FIGURES 7, 8 and 9, each of the feed roller shafts is disposed within a bearing **53**, with the bearings of feed rollers **41** and **44** held in fixed position with respect to the side plates **40** of the table **21**, while the bearings **53** of feed rollers **42** and **45** are respectively mounted in arms **54** and **55** which latter are pivotally secured to the table side plates by studs **56** and **57**. As best seen in FIGURES 8 and 9, the shafts of feed rollers **42** and **45** pass freely through holes in the table side plates **40**. The free ends of the arms **54** and **55** terminate in hooks which serve as securements for the opposite ends of a tension spring **58**. The action of spring **58** causes feed rollers **42** and **45** to be respectively pressed against their associated fixed bearing rollers **41** and **44**. Since the gears **47** through **50** are identical, as are the rollers which they drive, the rate of feed of the metal printing plate **51** and copy negative **52** through the feed rollers is the same. As best seen in FIGURES 4, 6 and 15, the stud **57** engages an adjustable stop bolt **59** threaded into the main frame **20** when feed roller gear **47** is properly engaged with secondary gear **29**, the stop bolt taking the mechanical weight of the table **21** to prevent tooth bottoming between the gears **29** and **47** with the attendant mechanical instability and possibility of gear tooth breakage which would result.

As best seen from FIGURES 1, 4 and 16, it is observed that a micro-switch **60** having an actuating button **61** is secured to the structural base **20** in such position that the left side plate **40** of the tiltable table **21** depresses the actuating button **61** when the table **21** is down in its horizontal position, and disengages from the button **61** when the table is elevated into its operating position. The switch **60** is connected electrically in series with emergency switch **62** and with the motor which drives the main drive gear **26**. The switch **62** is a press-to-make/press-to-break switch which is normally in its closed position so that control of the driving motor is determined by the condition of switch **60**. Switch **60** is in closed position when actuating button **61** is in its up or released position, and is in its open position when the actuating button **61** is depressed. Consequently, when the table **21** is lowered as in the showing of FIGURE 1, the motor circuit is open and the apparatus is de-energized. It is in this position, as will be described, that the printing plate and copy negative are placed upon their respective shelves and indexed to one another.

When proper indexing has been accomplished, the table **21** is merely tilted upward to thereby close the switch **60** and start the motor drive to main gear **26**. Within the time that it takes to tilt the table **21** from horizontal position into its upwardly tilted operative position in which the gears **47** and **29** become engaged, the driving motor has come to full speed. When the copy negative **52** and printing plate **51** have been driven downward through the developer bath in the tank **23** and have moved upward into and through the press roller assembly **24**, the apparatus may be shut down merely by returning the table **21** to its horizontal position to open the switch **60** and de-energize the driving motor. Switch **62** is placed in the circuit in the event that the apparatus needs to be shut down immediately while it is in cycle. This is readily accomplished merely by depressing and releasing the actuating button of the switch. When the trouble has been cleared, the switch **62** may again be actuated to restore control of the apparatus to switch **60**.

The developer bath tank **23** includes a basin **63** within which is disposed an assembly of curved guide plates **64** which latter are held together in an assembled state by a plurality of transversely extending rods **65** through **68**. Rod **65** additionally functions as a hold down to prevent plate and negative from tending to float upward toward the surface of the liquid, while rod **66** functions as a separator to insure that the plate and negative remain separated for a sufficient time after entering the developer tank to guarantee that complete development occurs. The developer bath is held at a proper temperature for optimum development by means of a flat resistance type heater **69** secured to the structural base **20** immediately beneath the developer tank position. The heater **69** is electrically enrgized via the conductors **70** and is maintained at the desired temperature by a manually settable thermostat **71**. As best seen in FIGURES 6, 10, 16 and 17, the developer tank **23** is properly positioned with respect to the tiltable table **21** by means of a stop plate **72** having an elongated slot **73** cut therethrough and through which projects a locking screw **74** which locks the stop plate **72** to the structural base **20** at the desired position.

Referring now to FIGURES 2, 3, 5, 13 and 14, for details of the system for adjustably indexing the copy negative and printing plate to one another, it is observed that the lower and upper shelves of the table **21** are provided with edge guides **75** and **76** respectively, and that the lower shelf side edge guide **75** is fixed in a position which is perpendicular to the axis of the feed rollers while the upper shelf side edge guide **76** is shiftable inward and outward with respect to the guide **75** by means of the guide slots **77** and machine screws **78**. Additionally, the upper shelf **46** is cut away at the forward corner as shown at **79** so that the printing plate positioned on the lower shelf **43** is visible in this region and can therefore be observed for proper positioning.

Assuming that the side marginal relationship between the printing plate and copy negative has been established by proper positioning of the upper shelf side edge guide **76**, the leading edge offset which is desired is carried out by rotation of the indexing knob **80** affixed to the extended end of feed roller **49**. As best seen in the showings of FIGURES 2 and 3 the indexing knob **80** is provided with two indexing marks **81** and **82** spaced a predetermined distance around the periphery of the knob. These indexing marks are utilized in conjunction with a fixed indicator **83** marked on a guage plate **84** which latter is fixedly secured to a side member of the structural base **20**.

With the table **21** in horizontal position, the indexing knob **80** is first rotated as shown in FIGURE 2 so that indexing mark **81** is alined with the indicator **83** on the gauge **84**. The metal printing plate is next placed upon the lower shelf **43** and moved forward into the nip of the feed rollers **41** and **42** with its side edge properly placed

against the lower shelf side edge guide 75. The knob 80 is now turned counterclockwise until the indexing mark 82 alines with the indicator 83 on the gauge 84 as shown in FIGURE 3. The printing plate has of course now been fed forward for a predetermined distance through the feed rollers 41 and 42.

The copy negative is now placed on the upper shelf 46 and also fed forward by hand into the nip of feed rollers 44 and 45 with its edge properly positioned against side edge guides 76. The indexing knob 80 is now given an additional slight turn to feed the copy negative positively into the feed rollers 44 and 45, and of course to correspondingly advance the printing plate to maintain the leading edge offset desired. The copy negative and printing plate are now properly indexed one to the other and are still in a completely dry condition. If the indexing should not appear to be exactly that which is desired, the indexing knob 80 may be counter-rotated to shift the copy negative and printing plate backward out of the feed rollers so that a different desired indexing may be established. When the indexing appears to be satisfactory, the apparatus is actuated as previously described by merely tilting the table 21 upward into its vertical feed position. If both the copy negative and printing plate are initially positioned for simultaneous advancement through their respective feed roller pairs then the leading edge offset between the two will of course be equal to the fixed distance between the nips of the roller pairs.

Having now described my invention in connection with a particularly illustrated embodiment thereof, it will be be understood that modifications and variations of the same may now naturally occur from time to time to those persons normally skilled in the art without departing from the essential scope or spirit of my invention, and accordingly it is intended to claim the same broadly as well as specifically as indicated by the appended claims.

I claim:

1. Apparatus for producing offset printing plates comprising in combination, a feed roller assembly, a developer bath, a press roller assembly, and a power train for driving said feed and press roller assemblies, said feed roller assembly including a first pair of counter-rotating feed rollers for feeding therebetween a previously exposed copy negative and a second pair of counter-rotating feed rollers for feeding therebetween a printing plate to which the latent image on the copy negative is to be transferred, said first and second pairs of feed rollers being intercoupled for synchronous rotation about parallel axes to effect parallel feed of the copy negative and printing plate in the same direction, selectively operable indexing means coupled to said feed rollers effective when operated to advance one of a copy negative or printing plate through its associated pair of feed rollers to provide a desired leading edge offset from the other or to simultaneously synchronously advance a copy negative and printing plate through their respective feed rollers, said developer bath being positioned adjacent to said feed rollers assembly and including guide means effective to guide the copy negative and printing plate through the developer bath and into the press rollers assembly, said press roller assembly including a pair of counter-rotating press rollers drivingly engaged by said power train and operative to receive in the nip between said press rollers and press together the copy negative and printing plate after the latter both emerge from the developer bath, said feed roller assembly being movable between an inoperative rest position with the feed rollers disengaged from said drive train and an operative position with said feed rollers engaged with said drive train, said power train being actuated and rendered operative to drive said press rollers and feed rollers only when said feed roller assembly is moved from its said inoperative rest position, and said power train and feed and press roller assemblies being completely external to said developer bath.

2. Apparatus as defined in claim 1 wherein the nip of said second pair of feed rollers is spaced further in the direction of normal feed than is the nip of said first pair of feed rollers to provide a predetermined fixed initial offset between the leading edges of a copy negative and printing plate which are simultaneously started into the feed roller assembly.

3. Apparatus as defined in claim 1 wherein said indexing means comprises, a fixed position reference indicator, and a manually operable indexing knob fixed to an end of one of said intercoupled feed rollers and having indexing indicia thereon, said indexing knob being rotatable to thereby rotate the rollers of said feed roller assembly, said indexing knob being positionable with respect to said reference indicator so that the said indexing indicia on said knob are movable successively into apposition with and past said indicator as said knob is operated to rotate said feed rollers.

4. Apparatus as defined in claim 1 wherein said developer bath includes separator means effective to maintain the copy negative and printing plate separated from one another for a predetermined minimum distance of travel after entering the developer bath to insure complete photographic development of the transfer latent image.

5. Apparatus as defined in claim 1 wherein said developer bath includes hold-down means effective to prevent the copy negative and printing plate from moving upward to the surface of the bath before traversing a predetermined length of path through the developer bath.

6. Apparatus as defined in claim 1 wherein said feed roller assembly is carried by a movable table which latter includes two shelves, one of said two shelves having an upper planar surface the extension of which contains the line defining the nip of said first pair of feed rollers while the other of said two shelves has an upper planar surface the extension of which contains the line defining the nip of said second pair of feed rollers, whereby a copy negative and printing plate disposed flatwise respectively on different ones of said two shelves may be fed into said feed rollers after being indexed to one another on said shelves.

7. Apparatus as described in claim 1 wherein said power train and press roller assembly are carried by a common main frame in fixed relation to one another and wherein said feed roller assembly is carried by a swingable two shelf table pivotally connected to said main frame for swinging movement about a fixed axis between the said inoperative rest position of said feed roller assembly in which the shelves of said table occupy substantially horizontal positions on the one hand and the operative position of the feed roller assembly on the other hand in which the shelves of said table occupy positions inclined from the horizontal toward the vertical.

8. Apparatus as defined in claim 2 wherein said indexing means comprises, a fixed position reference indicator, and a manually operable indexing knob fixed to an end of one of said intercoupled feed rollers and having indexing indicia thereon, said indexing knob being rotatable to thereby rotate the rollers of said feed roller assembly, said indexing knob being positionable with respect to said reference indicator so that the said indexing indicia on said knob are movable successively into apposition with and past said indicator as said knob is operated to rotate said feed rollers.

9. Apparatus as defined in claim 4 wherein said developer bath includes hold-down means effective to prevent the copy negative and printing plate from moving upward to the surface of the bath before traversing a predetermined length of path through the developer bath.

10. Apparatus as defined in claim 7 wherein said power train is actuated by an electrically energizable motor and further including an electrical switch in series circuit with said motor and means for connection to a

source of electrical power, said switch being mechanically fixed to said main frame and engaged by said swingable table to open-circuit said switch and deactuate said power train when said table is moved to its horizontal position, and said switch being closed to actuate said power train when said table is moved from its horizontal position toward its feed rollers operative position.

11. Apparatus for producing offset printing plates comprising in combination, a feed roller assembly, a developer bath, a press roller assembly, and a power train for driving said feed and press roller assemblies, said feed roller assembly being carried by a table movable between an inoperative position with the feed rollers disengaged from said drive train and an operative position engaged with said drive train and including a first pair of counter-rotating feed rollers for feeding therebetween a previously exposed copy negative and a second pair of counter-rotating feed rollers for feeding therebetween a printing plate to which the latent image on the copy negative is to be transferred, said first and second pairs of feed rollers being intercoupled for synchronous rotation about parallel axes to effect feed in the same direction in parallel planes, selectively operable means coupled to said feed rollers effective when operated to advance a copy negative or printing plate as desired through their respectively associated pairs of feed rollers or to simultaneously synchronously advance a copy negative and printing plate through their respective feed rollers, the second pair of feed rollers being spaced further in the direction of normal feed than the nip of the first pair of feed rollers, said developer bath being positioned adjacent to and at least partly underlying said feed roller assembly and including separator means and guide means and hold-down means, said separator means being effective to maintain the copy

negative and printing plate separated from one another for a predetermined minimum distance of travel after they enter the developer bath to insure complete photographic development of the transfer latent image, said guide means being effective to guide the copy negative and printing plate through the developer bath and into the press roller assembly, said hold-down means being effective to prevent the copy negative and printing plate from moving upward to the surface of the bath before traversing a predetermined length of path through the developer bath, said press roller assembly including a pair of counter-rotating press rollers drivingly engaged by said power train and operative to receive in the nip between said press rollers and press together the copy negative and printing plate after the latter emerge from the developer bath, said power train being actuated and rendered operative to drive said press rollers and feed rollers only when said feed rollers assembly is moved from its said inoperative position, said power train and feed and press rollers assemblies being completely external to said developer bath.

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