

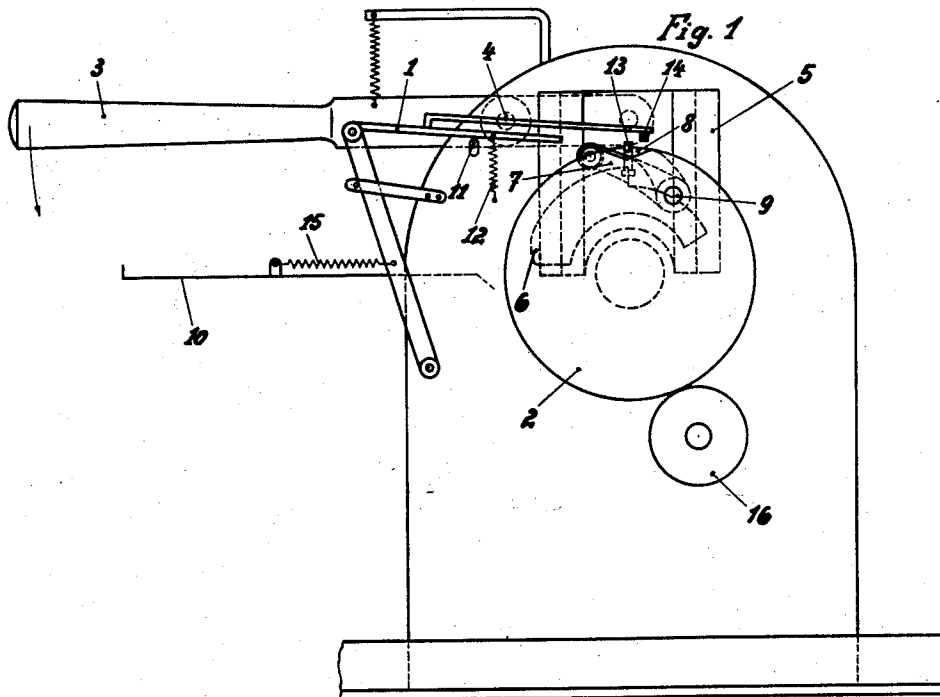
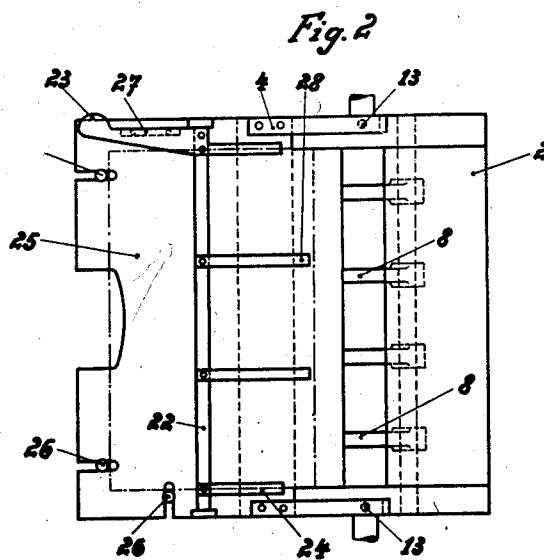
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2,175,665

METHOD AND MACHINE FOR CONTINUOUSLY REPRINTING

Original Filed July 10, 1931 2 Sheets-Sheet 1



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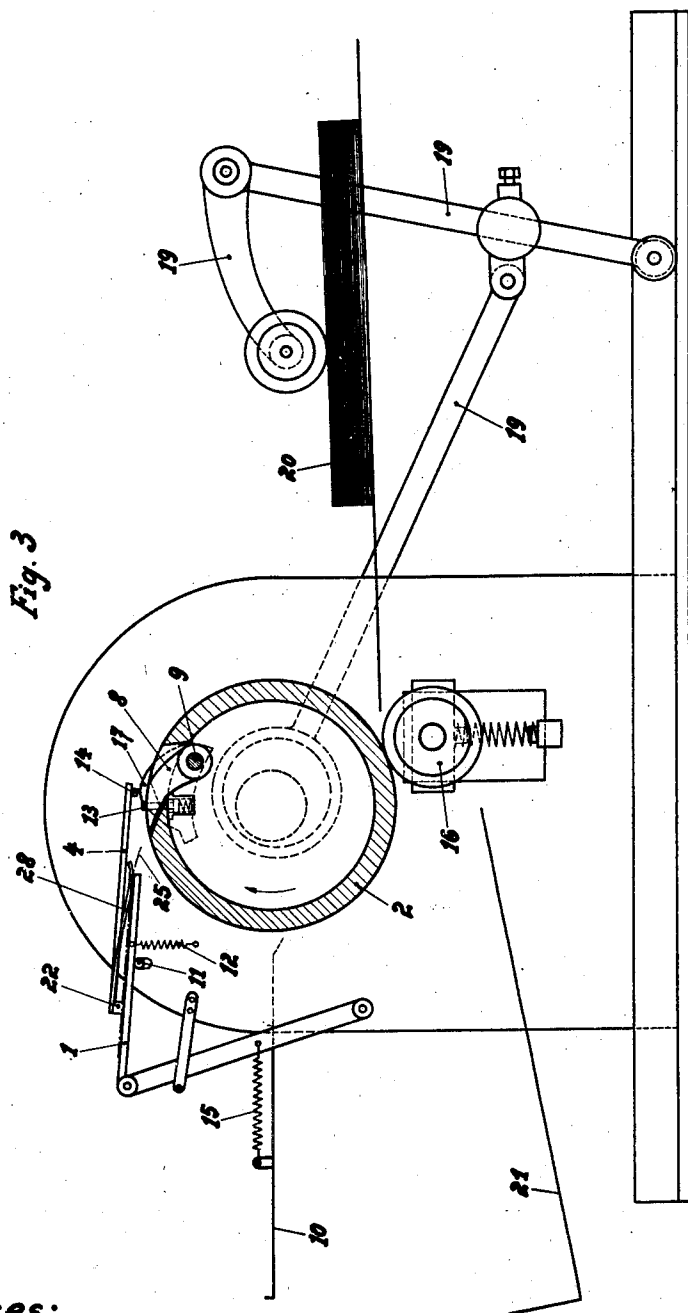
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METHOD AND MACHINE FOR CONTINUOUSLY REPRINTING

Original Filed July 10, 1931

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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METHOD AND MACHINE FOR CONTINUOUSLY REPRINTING

Leo Kluitmann, Dusseldorf, Germany

Application July 10, 1931, Serial No. 549,867. Renewed August 25, 1938. In Germany July 17, 1930

37 Claims. (Cl. 101—132)

Application for patent has been filed in Germany July 17, 1930.

This invention relates to a method and a machine for printing transferable originals or master sheets onto copy sheets from a cylinder or a drum continually driven by a motor or hand crank together with a counter printing cylinder. The aim of the invention and problem which it sets out to solve consists in avoiding the disadvantages of the known devices of this type which consist in the time required for the clamping of new originals and for the feeding of the individual sheets for the transferring, for which it was hitherto necessary to each time stop the drum, and at the same time to enable the machine to be used by any unskilled person.

This problem is solved according to the invention in that, by actuating a control element, the original is released and a new original automatically fed from a feed table and fixed to the drum without interrupting the printing and without stopping the drum. By actuating the control element the releasing and depositing of the finished original besides the automatic feeding and fixing of the new original is effected according to the invention without stopping the drum. A fixing device arranged on the drum is preferably controlled by a cam when the control element is actuated in such a manner that the finished original is released whereas by means of the same control element a feed table for the new original is caused to approach the drum and the new original gripped and clamped by the fixing arrangement on the drum.

According to the invention the feed table approaches the drum when introducing the new original, is further gripped by catch devices arranged on the drum, carried along for a certain portion of the revolution of the drum and then returned into its initial position by springs or the like after the fixing of the original and after the automatic disengagement of the catch devices. In order to facilitate the gripping of the original by the fixing arrangement on the drum, the edge of this original directed towards the drum is pressed down by a suitable device during the transport of the feed table. Further an accurate clamping of the original free from creases on the drum is effected according to the invention in that the original, gripped by the fixing device, is pressed downwards on to the feed table by springs or the like during the return movement of the feed table so that it leaves same under tension.

The invention relates further to different de-

vices, which serve for carrying out the fundamental idea of the automatic original changing and the automatic feeding of the sheets required for the reprinting.

These devices are illustrated by way of example in the accompanying drawings in which:

Fig. 1 shows the device for the automatic introduction of the original and the actuation of the grippers serving to hold same on the printing drum.

Fig. 2 shows in top plan view the feed table with its path intended particularly for enabling a reliable stretching of the new original on the drum, free from creases.

Fig. 3 shows the automatic feeding of the paper to be printed from the pile.

For introducing the original this is placed on the feed table 1 under light pressure springs. In order to fix the original on the drum 2, a lever 3 pivotally mounted at 4 on the frame of the machine is pressed downwards. Thus the slide 5 connected to the end of the lever 3 is raised together with the cam 6 so that the lever 7, rigidly keyed on a shaft 8 with the grippers 8, arranged one behind the other, is also raised and the grippers 8 opened. The original hitherto clamped is therefore released and falls on the receiving table 10. During the depression of the lever 3 the bolt 11 serving as support for the hinged table 1 descends as it is attached to the lever 3. The table is then moved toward the drum 2 by the spring 12. In the meantime the drum 2 has continued to rotate so that abutment pins 13 arranged on the drum grip the catch projections 14 of the table 1. The table 1 is thus carried along in the direction of rotation of the drum 2 until the grippers 8 now open, close by the lever 7 sliding off the cam 6 and thus the fed original is clamped or held tightly. The lever 3 passes back to its initial position and the printing can take place. The table 1 is returned into its initial position up to a stop by the spring 15.

Consequently according to the invention it is not necessary to first stop the machine in order to introduce a new original, but it can immediately after releasing and depositing the preceding original be clamped, whilst the machine is running, thus effecting a considerable saving in time.

By pressing the lever 23, keyed on the axle 22 which is pivoted on the table 1, the springs 24 rise to allow the passage of the original 25, the contour of which is indicated in dot dash lines in Fig. 2. When the original has come into proper abutment with the abutment pins 26, the lever 23 is released and the spring 27 presses same up-

wards so that the springs 24 mounted on the axle 22 are pressed downwards on the original. The springs 24 serve on the one hand to hold the original so that it cannot be shifted by the vibrations of the machine, when running and on the other hand to hold the original slightly stretched by the grippers of the printing drum 2 during the removal from the hinged table so that a smooth lying of the original on the printing drum is ensured. The registering springs 28 are bent so that they press the edge of the original projecting beyond the hinged table slightly downward, whereby an absolutely reliable gripping of this edge by the grippers is obtained.

By turning the drum 2 in the direction of the arrow, shown in Figure 3 the counter pressure cylinder or pressure roller 16, mounted in resilient slide bearings, is pressed away from the drum 2 by the cam 17, mounted on the drum 2 so that a gap is produced between the drum 2 and the cylinder 16. At the same time the eccentric 18, mounted on the axle journal of the drum 2 has moved the feed rod 19 in such a manner that a sheet from the pile 20 is pushed between the drum 2 and the cylinder 16, the abutment pins 13 preventing the sheet from being pushed too far. During the further rotation of the drum the counter cylinder 16 presses the fed sheet tightly against the original which is clamped on the drum 2 and the finished impression is deposited on the table 21 during the further rotation of the drum. The main feature in this instance is to provide means whereby any desired number of copies may be printed without stopping the drum.

What I claim, is:

1. A method for continuously reprinting transferable originals on to copy sheets, consisting in automatically feeding and fixing the original without interrupting the printing immediately after the preceding original is released and deposited after a desired number of prints.

2. A machine of the character described comprising a cylindrical printing drum, means for continuously rotating said drum, a gripper on said drum for securing one edge of a flexible original sheet to said drum, a control mechanism, means operable by said control mechanism when operated to actuate said gripper so that at a given angular position of said drum said gripper is moved to its sheet releasing condition during the continuous rotation of said drum whereby an imprisoned original sheet is released from said drum, and a feed device for original sheets under the partial control of said control mechanism whereby the protruding edge of a second original sheet may be moved toward said drum to place said edge of said second sheet in gripping relationship to said gripper, said gripper actuating means having means thereafter to automatically release said gripper thus to imprison said second sheet on said drum, whereby original sheets may be replaced during the continuous rotation of said drum.

3. A machine of the character described comprising a cylindrical printing drum, means for continuously rotating said drum, a gripper on said drum for securing one edge of an original sheet to said drum, a control mechanism, a cam operable by said control mechanism when operated to actuate said gripper so that at a given angular position of said drum said gripper is moved to its sheet releasing condition during the continuous rotation of said drum whereby an imprisoned original sheet is released from said drum, and a feed table for original sheets under the partial

control of said control mechanism whereby the protruding edge of a second original sheet may be moved toward said drum to place said edge of said second sheet in gripping relationship to said gripper, said gripper actuating cam having means to automatically release said gripper thus to imprison said second sheet on said drum, whereby original sheets may be replaced during the continuous rotation of said drum.

4. A machine of the character described comprising a cylindrical printing drum, means for continuously rotating said drum, a gripper on said drum for securing one edge of an original sheet to said drum, a control mechanism, means operable by said control mechanism when operated to actuate said gripper so that at a given angular position of said drum, said gripper is moved to its sheet releasing condition during the continuous rotation of said drum whereby an imprisoned original sheet is released from said drum, and a feed table for original sheets under the partial control of said control mechanism whereby the protruding edge of a second master sheet may be moved toward said drum to place said edge of said second sheet in gripping relationship to said gripper, said gripper actuating means having means to automatically release said gripper thus to imprison said second sheet on said drum, whereby original sheets may be replaced during the continuous rotation of said drum.

5. A machine of the character described comprising a cylindrical printing drum having means to grip and carry a flexible original sheet provided with transferable copy thereon, means for continuously rotating said drum, a pressure roller, means for directing the feeding of a copy sheet between said drum and roller whereby the copy of said original sheet is transferred to said copy sheet, and means selectively operable during the continuous rotation of said drum whereby said original sheet may be replaced by another during that portion of the cycle of rotation of said drum which will not interfere with printing on a new copy sheet during each complete cycle of rotation of said drum.

6. A machine of the character described comprising a cylindrical printing drum having means to grip and carry a flexible original sheet provided with transferable copy thereon, means for rotating said drum, a pressure roller, means for directing the feeding of a copy sheet between said drum and roller whereby the copy of said original sheet is transferred to said copy sheet, and means automatically operable at the will of the operator at a given angular position of said drum whereby said original sheet may be replaced by another without interfering with the printing on a new copy sheet during each complete cycle of rotation of said drum.

7. A machine of the character described comprising in combination a printing drum, a feed table, means for moving the feed table towards the drum, means on the drum adapted to carry said table along during a certain portion of the rotation of the drum, means for automatically disengaging said last named means from the feed table, gripping means on said drum adapted to seize and to secure an original sheet carried by said table while the drum is carrying the said table along, and means for returning said table to its initial position after it is disengaged from the drum.

8. A machine of the character described comprising a drum adapted to be continuously driven, grippers on said drum for holding an original

sheet thereon, a feed table for the original sheets, means for shifting the table with respect to the drum to engage a new original with said grippers, and means for pressing downwards the edge of the new original directed toward said drum while the feed table is being shifted toward the drum to facilitate the seizing of the original by said grippers.

9. A machine of the character described comprising a drum adapted to be continuously driven, gripping means on said drum adapted to secure an original sheet thereto, a table for feeding original sheets to the drum, means for moving the feed table toward the drum to engage the original with said gripping means, means for returning the table to its initial position, and yielding means adapted to press the original against the feed table during the return movement of said table so that the original, when fixed on the drum, is drawn from the table in a stretched condition.

10. A machine of the character described comprising a printing drum, clamping means for clamping an original sheet to the drum, a lever adapted to release said clamping means, a cam actuated by said lever, said clamping means comprising grippers arranged on said drum and actuated by said cam, a feed table for feeding a new original sheet to said drum and adapted to be moved to said drum by means controlled by said lever to bring the new original on said table within the range of said grippers after the used original is released.

11. A machine of the character described for printing copy sheets from originals or master sheets comprising in combination a printing drum, an actuating lever, a cam movable by said lever, grippers bearing on said drum, a shaft on said drum carrying said grippers, and a transmission element keyed on said shaft and actuated by said cam so as to lift said grippers from the drum.

12. A machine of the character described comprising a printing drum, grippers adapted to bear on said drum, a feed table adapted to carry a fresh original sheet, a lever adapted to move said table toward said drum, cooperating projections on said drum, and said table adapted to engage when the table is pressed toward said drum and to carry the table along with said drum during a portion of the revolution of said drum so that the fresh original sheet on the table is held within the range of said grippers to be gripped and clamped thereby.

13. A machine of the character described comprising a printing drum adapted to be continuously driven, means on said drum for clamping an original sheet thereon, a controlling lever, a feed table actuated by said lever and said drum and adapted to carry and to feed a fresh original to said drum, and resilient means for pressing towards the drum the edge of the fresh original which is directed toward the drum during the actuation of said table.

14. A machine of the character described comprising a drum adapted to be continuously driven, a feed table adapted to be shifted relative to said drum for the purpose of feeding a fresh original sheet thereto, abutment pins on said drum, projections on said table adapted to engage said pins and to shift the table, and means for returning said table into its original position after the disengagement of said pins from said projections.

15. A machine of the character described com-

prising in combination a printing drum adapted to be continuously driven, a control lever, a feed table shiftable under the control of said lever toward said drum for the purpose of advancing a fresh original sheet thereto, grippers on said drum for gripping the original sheet, resilient means on said table adapted to press the original sheet against said table and to hold the original stretched on said table after it has been gripped by said grippers and the table is on its rearward movement.

16. A machine of the character described for continuously printing copy sheets from original or master sheets comprising in combination with a drum, means for releasing used originals and for fixing new originals to the drum without interrupting the printing of a copy sheet for each rotation of the drum, a shaft carrying said drum, an eccentric on said shaft, and a paper feed device actuated by said eccentric to automatically feed copy sheets to said drum without interrupting the printing.

17. A machine of the character described comprising a cylindrical printing drum having means to grip and carry a flexible original sheet provided with transferable copy thereon, means for rotating said drum, a pressure roller, means for directing the feeding of a copy sheet between said drum and roller whereby the copy of said original sheet is transferred to said copy sheet, and means automatically operable at the will of the operator at a given angular position of said drum whereby said original sheet may be replaced by another without interfering with the printing on a new copy sheet during each complete cycle of rotation of said drum, said last named means comprising a shaft for said original sheet gripping means, a lever arm on said shaft, cam means adapted to engage said lever arm for operating said gripping means, and means to move said cam means into and out of functionally operative position with respect to said lever arm.

18. A machine of the character described comprising a cylindrical printing drum having means to grip and carry a flexible original sheet provided with transferable copy thereon, means for rotating said drum, a pressure roller, means for directing the feeding of a copy sheet between said drum and roller whereby the copy of said original sheet is transferred to said copy sheet, and means automatically operable at the will of the operator at a given angular position of said drum whereby said original sheet may be replaced by another without interfering with the printing on a new copy sheet during each complete cycle of rotation of said drum, said last named means comprising a lever, a member on said drum connected with said gripping means and movable with respect to the drum to open said gripping means, and mechanism movable by said lever between a functionally operative position, where it moves said member relatively to the drum as the drum approaches the aforesaid angular position to open said gripping means, and a functionally inoperative position.

19. A machine of the character described comprising a cylindrical printing drum having means to grip and carry a flexible original sheet provided with transferable copy thereon, means for rotating said drum, a pressure roller, means for directing the feeding of a copy sheet between said drum and roller whereby the copy of said original sheet is transferred to said copy sheet, and means automatically operable at the will of the operator at a given angular posi-

tion of said drum whereby said original sheet may be replaced by another without interfering with the printing on a new copy sheet during each complete cycle of rotation of said drum, said last named means comprising a lever, a member on said drum connected with said gripping means and movable with respect to the drum to open said gripping means, and mechanism movable by said lever between a functionally operative position, where it moves said member relatively to the drum as the drum approaches the aforesaid angular position to open said gripping means, and a functionally inoperative position, and an original sheet guiding means for guiding a fresh original sheet to said gripping means when said gripping means is opened by said member.

20. A machine of the character described comprising a cylindrical printing drum having means to grip and carry a flexible original sheet provided with transferable copy thereon, means for rotating said drum, a pressure roller, means for directing the feeding of a copy sheet between said drum and roller whereby the copy of said original sheet is transferred to said copy sheet, and means automatically operable at the will of the operator at a given angular position of said drum whereby said original sheet may be replaced by another without interfering with the printing on a new copy sheet during each complete cycle of rotation of said drum, said last named means comprising a lever, a member on said drum connected with said gripping means and movable with respect to the drum to open said gripping means, and mechanism movable by said lever between a functionally operative position, where it moves said member relatively to the drum as the drum approaches the aforesaid angular position to open said gripping means, and a functionally inoperative position, and an original sheet guiding means for guiding a fresh original sheet to said gripping means when said gripping means is opened by said member, said guiding means being movable partially under the control of said lever and partially under the control of said drum to bring an original sheet to said gripping means.

21. A machine of the character described comprising a cylindrical printing drum having means to grip and carry a flexible original sheet provided with transferable copy thereon, means for rotating said drum, a pressure roller, means for directing the feeding of a copy sheet between said drum and roller whereby the copy of said original sheet is transferred to said copy sheet, and means automatically operable at the will of the operator at a given angular position of said drum whereby said original sheet may be replaced by another without interfering with the printing on a new copy sheet during each complete cycle of rotation of said drum, said last named means comprising an actuating device adapted to cause said gripping means to release the held original sheet, and an original sheet table movable toward said drum to bring an original sheet thereon into position to be received by the gripping means after said gripping means has released the held original sheet.

22. A machine of the character described comprising a cylindrical printing drum having means to grip and carry a flexible original sheet provided with transferable copy thereon, means for rotating said drum, a pressure roller, means for directing the feeding of a copy sheet between said drum and roller whereby the copy

of said original sheet is transferred to said copy sheet, and means automatically operable at the will of the operator at a given angular position of said drum whereby said original sheet may be replaced by another without interfering with the printing on a new copy sheet during each complete cycle of rotation of said drum, said last named means comprising an actuating device adapted to cause said gripping means to release the held original sheet, and means to bring a fresh original sheet into registry with said gripping means whereby the fresh original sheet may be fixed to said drum.

23. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means on said drum for holding a master sheet releasably in operative position on the drum, control means adjustable manually into and out of operative position adapted automatically when in operative position to cause said gripper means to open at a predetermined point in each revolution of the drum and to close in each instance when the drum has moved through a fractional portion of a revolution beyond said opening point, a table movably mounted on said frame standing normally in spaced relation to the drum and movable toward the drum so as to direct a master sheet into position to be gripped by said gripper means, and means controlled by said control means adapted to cause said table to move toward the drum when said control means is adjusted for causing the grippers to open.

24. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means on said drum for holding a master sheet releasably in operative position on the drum, control means adjustable manually into and out of operative position adapted automatically when in operative position to cause said gripper means to open at a predetermined point in each revolution of the drum and to close in each instance when the drum has moved through a fractional portion of a revolution beyond said opening point, and means adapted normally to hold a master sheet in such relation to said drum as not to interfere with the printing operation of the machine and to hold said sheet alternatively in such changed position when said gripper means are opened as to enable the gripper means to close upon one edge of the master sheet and thus to draw the sheet into adjusted operative position on the drum as the drum rotates beyond the gripper closing position.

25. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means mounted on said drum for holding a master sheet releasably in operative position on the drum, an arm swingingly mounted on said drum in operative relation to said gripper means adapted by a swinging movement outwardly to open said gripper means, a cam adjustably mounted on said frame normally standing out of engagement with said arm and movable into position to engage said arm for causing said gripper means to open at a predetermined point in the revolution of the drum and of limited effective length circumferentially of the drum so as to permit the gripper means to remain closed during the major part of each revolution, manually operable means for moving said cam into and out of operative position with respect to said arm, and means adapted normally to hold a master sheet in such

relation to said drum as not to interfere with the printing operation of the machine and alternatively to hold the master sheet in such changed position when said gripper means are opened as to enable the gripper means to close upon one edge of the master sheet for holding the master sheet in adjusted operative position on the drum.

26. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means carried by the drum for securing a master sheet releasably in position thereon, a supporting member movably mounted on said frame for supporting a master sheet in spaced relation to the drum and its cooperating duplicating mechanism so as to permit said master sheet to be adjusted accurately with respect to the supporting member without interfering with the normal duplicating operation of the machine and adapted to be shifted evenly toward the drum so as to present an edge portion of the master sheet thereon into accurately adjusted position to be gripped by said gripper means, and means for opening and closing said gripper means in timed relation to the movements of said supporting member so as to cause said gripper means automatically to grip a master sheet presented thereto by an operative movement of said supporting member toward the drum.

27. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means carried by the drum for securing a master sheet releasably in position thereon, a supporting member pivotally mounted on an axis substantially parallel with the axis of the drum so as to stand normally in spaced relation to the drum and adapted to be tilted evenly toward the drum so as to present a master sheet thereon into position to be gripped by said gripper means, means for holding a master sheet removably in accurately adjusted position with respect to said supporting member, and means for opening and closing said gripper means in timed relation to the movements of said supporting member so as to cause said gripper means automatically to grip a master sheet presented thereto by an operative stroke of said supporting member toward the drum.

28. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means carried by the drum for securing a master sheet releasably in position thereon, a supporting member pivotally mounted on an axis substantially parallel with the axis of the drum so as to stand normally in spaced relation to the drum and adapted to be tilted evenly toward the drum so as to present a master sheet thereon into position to be gripped by said gripper means, means comprising a spring for holding a master sheet yieldingly in adjusted position with respect to said supporting member during the period when the gripper means is being applied to the master sheet, and means for opening and closing said gripper means in timed relation to the movements of said supporting member so as to cause said gripper means automatically to grip a master sheet presented thereto by an operative stroke of said supporting member toward the drum.

29. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means carried by the drum for securing a master sheet releasably in posi-

tion thereon, a table movably mounted on said frame for supporting a master sheet in spaced relation to the drum and movable evenly toward the drum so as to present an edge portion of the master sheet thereon into position to be gripped by said gripper means, a cam member movably mounted on said frame adapted in operative position to open said gripper means at a predetermined point in the rotation of the drum and to permit said gripper means to close after a fractional portion of a revolution of the drum, and means comprising a manually operable member adapted by an operative movement to cause said cam member to move into operative position for opening said gripper means and to cause said table to move toward the drum into position for presenting a master sheet thereon into position to be gripped.

30. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means carried by the drum for securing a master sheet releasably in position thereon, a table pivotally mounted on a horizontal axis on said frame for supporting a master sheet for delivery to the drum and positioned normally in spaced relation to the drum and its cooperating duplicating mechanism so as to permit continuous duplicating operation of the machine, means for holding a master sheet releasably in position on said table, means comprising a manually operable member for swinging said table toward the drum into position for directing the edge of the master sheet to said gripper means, and means for opening and closing said gripper means in timed relation to the movement of said table toward the drum so as to cause said gripper means automatically to grip a master sheet presented thereto by the movement of said supporting member toward the drum.

31. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means carried by the drum for securing a master sheet releasably in position thereon, a table mounted on said frame and movable toward and from said drum adapted when moved toward the drum to guide a master sheet into position to be gripped by said gripper means, a lever pivotally mounted on said frame adjacent to said drum, moving and supporting means for said table controlled by said lever adapted by a stroke of the lever at the will of the operator to move said table toward the drum and adapted alternatively to support the table in spaced relation to the drum, and means actuated by said lever in timed relation to the movement of said table for causing said gripper means to open at a predetermined point in the revolution of the drum following the movement of the table toward the drum.

32. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means carried by the drum for securing a master sheet releasably in position thereon, a table mounted on said frame and movable toward and from said drum adapted when moved toward the drum to guide a master sheet into position to be gripped by said gripper means, a lever pivotally mounted on said frame adjacent to said drum, moving and supporting means for said table controlled by said lever adapted by a stroke of the lever at the will of the operator to move said table toward the drum and adapted alternatively to support the table in spaced relation to the drum, and means comprising a cam member movably mounted on said frame and

actuated by said lever in timed relation to the movement of said table for causing said gripper means to open at a predetermined point in the revolution of the drum following the movement of the table toward the drum and of limited effective length circumferentially of the drum so as to permit said gripper means again to close when the drum has rotated through a fractional portion of a revolution beyond the point at which the gripper means is opened.

33. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means carried by the drum for securing a master sheet releasably in position thereon, a table pivotally mounted on an axis movable toward and from said drum adapted when swung toward the drum and moved forwardly edgewise therewith to guide a master sheet into position to be gripped by said gripper means, moving and supporting means for said table movably mounted on said frame and manually operable at the will of the operator for causing said table to move toward said drum, and means actuated by said moving and supporting means in timed relation to the movement of said table toward the drum for causing said gripper means to open at a predetermined point in the revolution of the drum following said movement of the table toward the drum.

34. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means carried by the drum for securing a master sheet releasably in position thereon, arms pivotally mounted at their lower ends on said frame so as to be swingable toward and from the drum, a table pivotally mounted on a horizontal axis on the upper end portions of said arms adapted when moved toward the drum to guide a master sheet into position to be gripped by said gripper means, means serving temporarily to connect said table with said drum when the table is swung downwardly for causing the table to move forwardly with the drum, and means actuated in timed relation to the movement of the table toward the drum for causing said gripper means to open at a predetermined point in the revolution of the drum for receiving said master sheet and thereafter to close upon said master sheet for carrying it around with the drum.

35. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means movably mounted on said drum adapted when closed upon one edge of a master sheet to hold the sheet releasably in operative position on the drum, means for feeding a copy sheet into impression relationship with a master sheet on the drum for taking a copy from

the master sheet as the drum is given a normal forward rotation, and means comprising a cam supported from the frame and a member movably mounted on the drum for cooperation with the cam for opening said gripper means, said cam and cooperating member being maintained out of operative relation to each other during the normal forward rotation of the drum but being movable with respect to each other into cooperative relationship with each other at the will of the operator for causing said gripper means automatically to open when the drum reaches a predetermined position in its rotary movement.

36. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means movably mounted on said drum adapted when closed upon one edge of a master sheet to hold the sheet releasably in operative position on the drum, means for feeding a copy sheet into impression relationship with a master sheet on the drum for taking a copy from the master sheet as the drum is given a normal forward rotation, a cam supported from the frame, and an arm swingingly mounted on the drum adapted by cooperation with said cam to open said gripper means, said cam and said cooperating arm being so positioned as to be maintained normally out of operative relationship to each other during the normal forward rotation of the drum but being so arranged as to be brought alternatively at the will of the operator into operative engagement with each other upon a rotary movement of the drum so as to cause said gripper means automatically to open when the drum reaches a predetermined position in said rotary movement by which said operative engagement is effected between said arm and said cam.

37. In a duplicating machine, the combination of a frame, a drum rotatably mounted on said frame, gripper means for securing a master sheet releasably in position on said drum, a member rotatably mounted on said drum and associated with said gripper means for controlling the positioning thereof whereby said gripper means may be moved into and out of operative closed position, and a cam supported from said frame opposite to said rotatably mounted member, said rotatably mounted member being adapted during the normal duplicating operation of the machine to move about said cam in inoperative relation to the cam and said cam and said rotatably mounted member being adapted alternatively to be brought into operative engagement with each other for causing said gripper means to open at a predetermined point in the rotary movement of the drum.

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