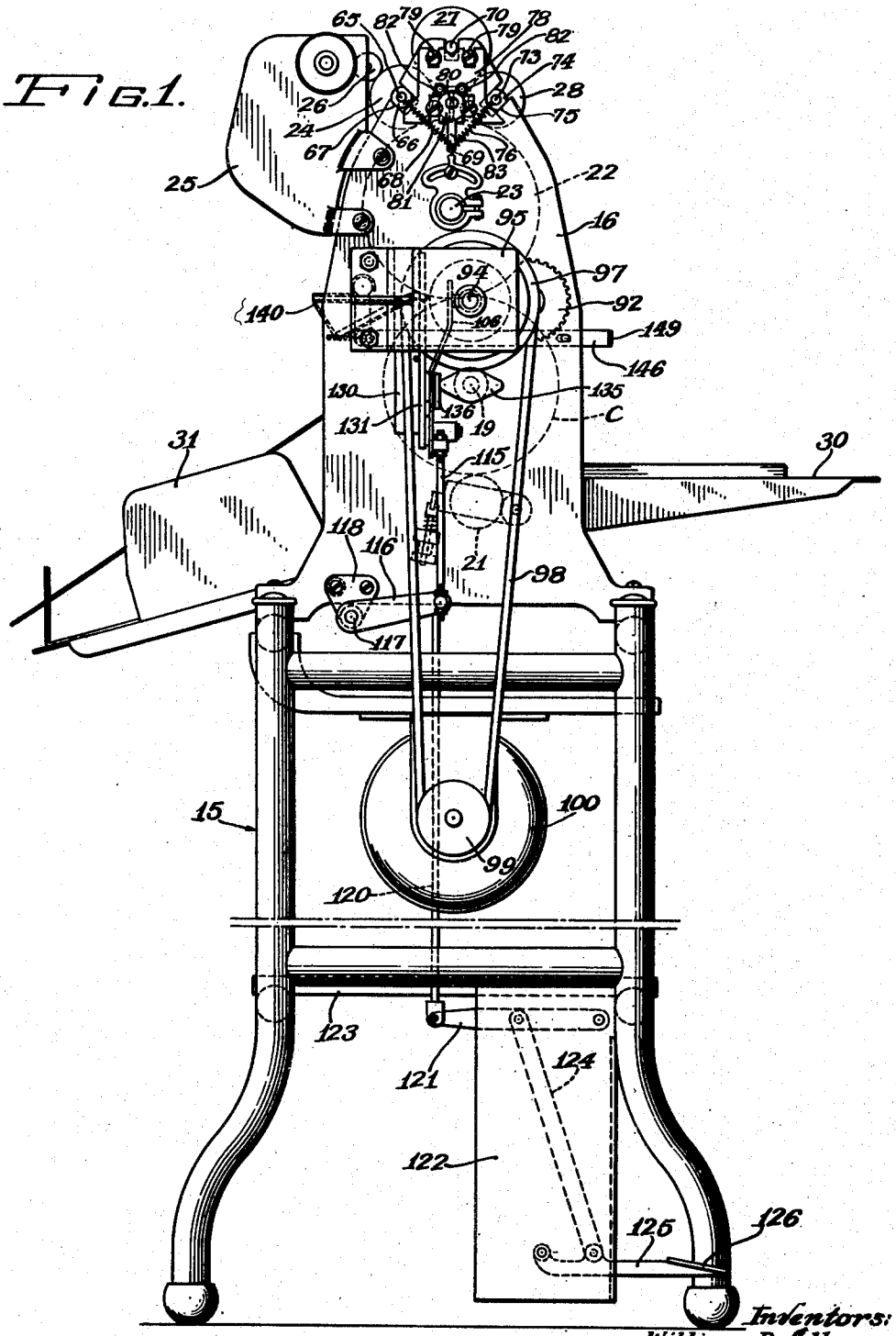
June 10, 1947. W. R. ALLEN ET AL 2,421,823

DRUM STOP MEANS FOR PRINTING MACHINES

Filed June 29, 1942 8 Sheets-Sheet 1

Fig. 1.



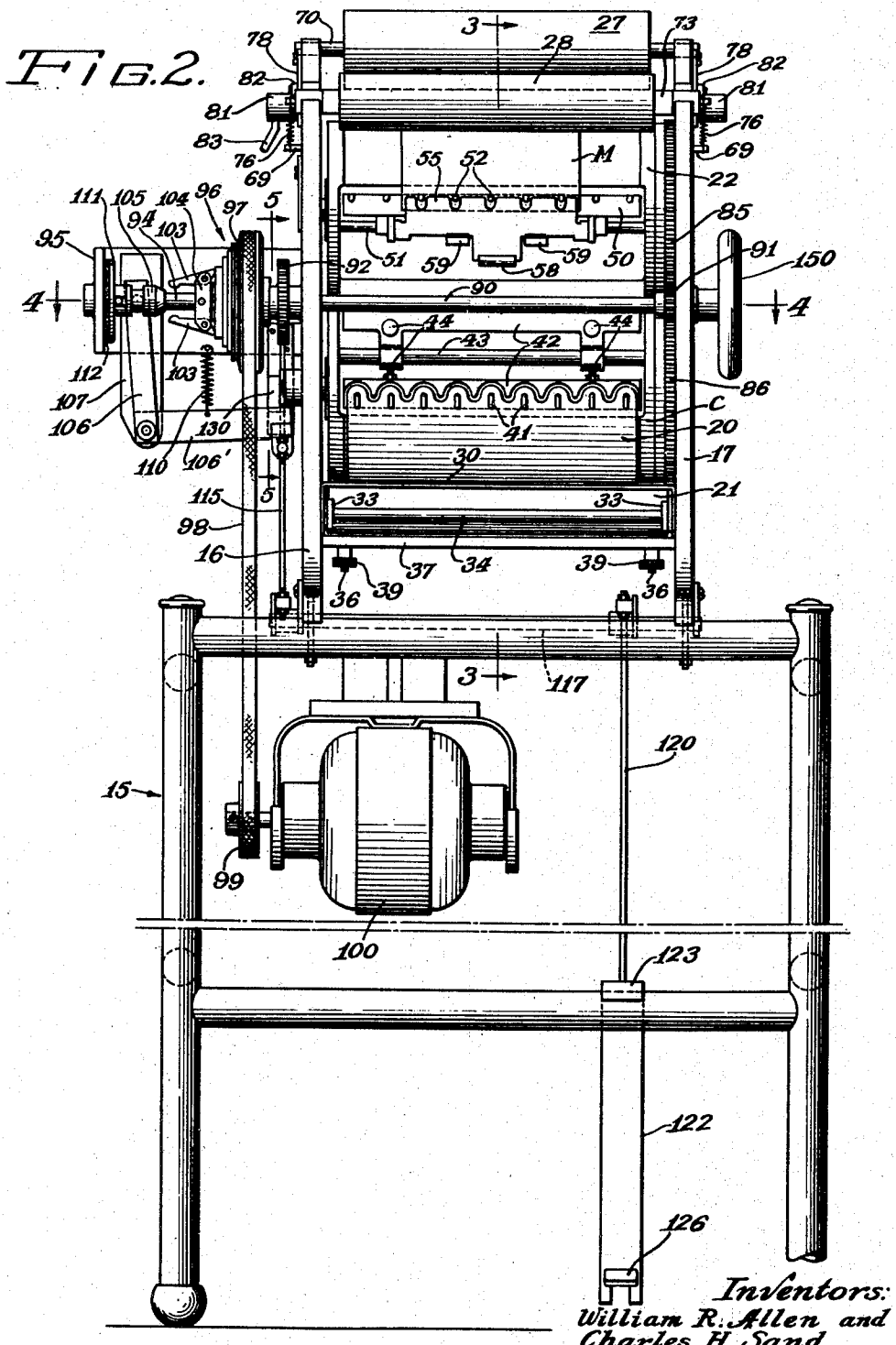

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DRUM STOP MEANS FOR PRINTING MACHINES

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FIG. 2.



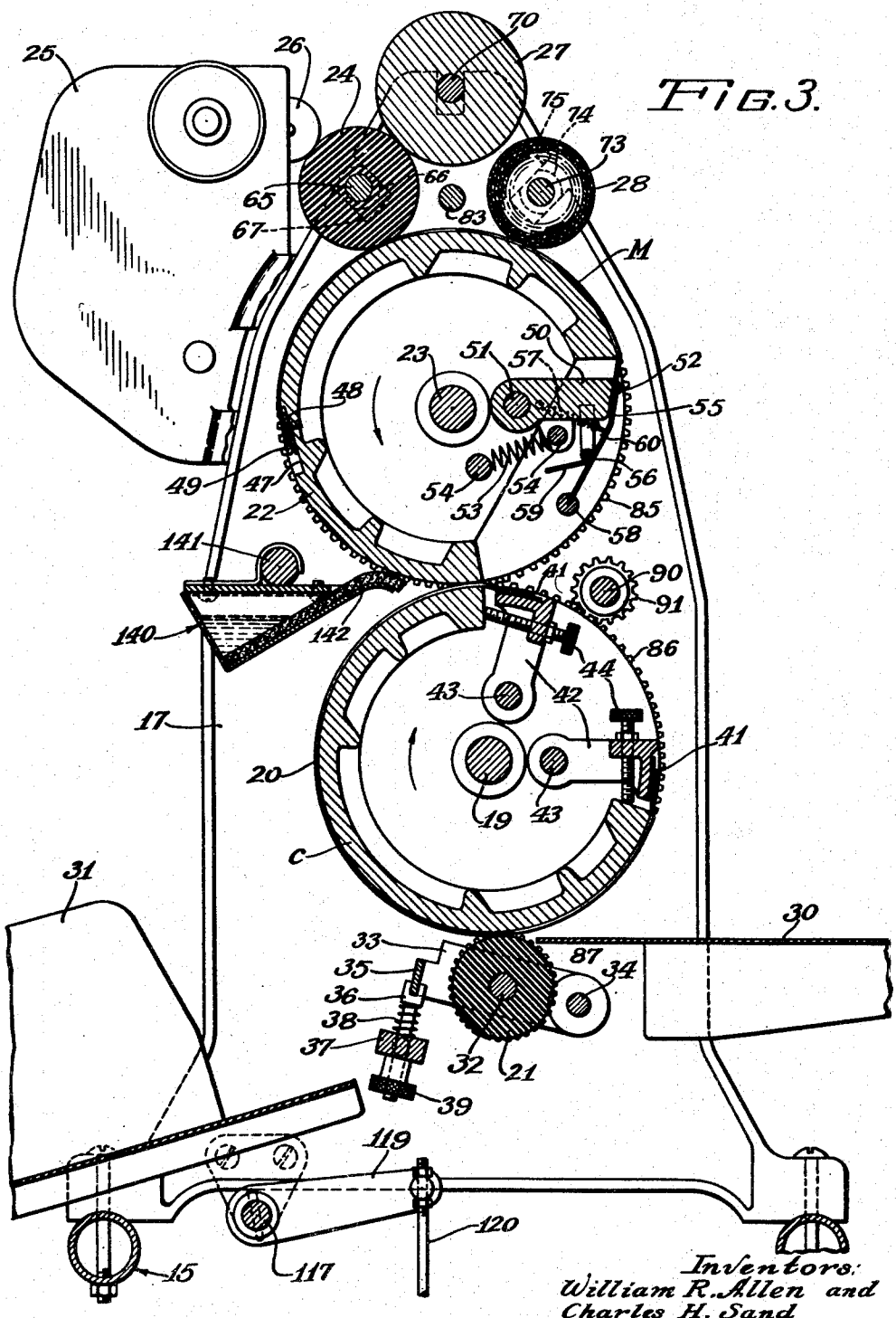

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DRUM STOP MEANS FOR PRINTING MACHINES

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FIG. 3.




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DRUM STOP MEANS FOR PRINTING MACHINES

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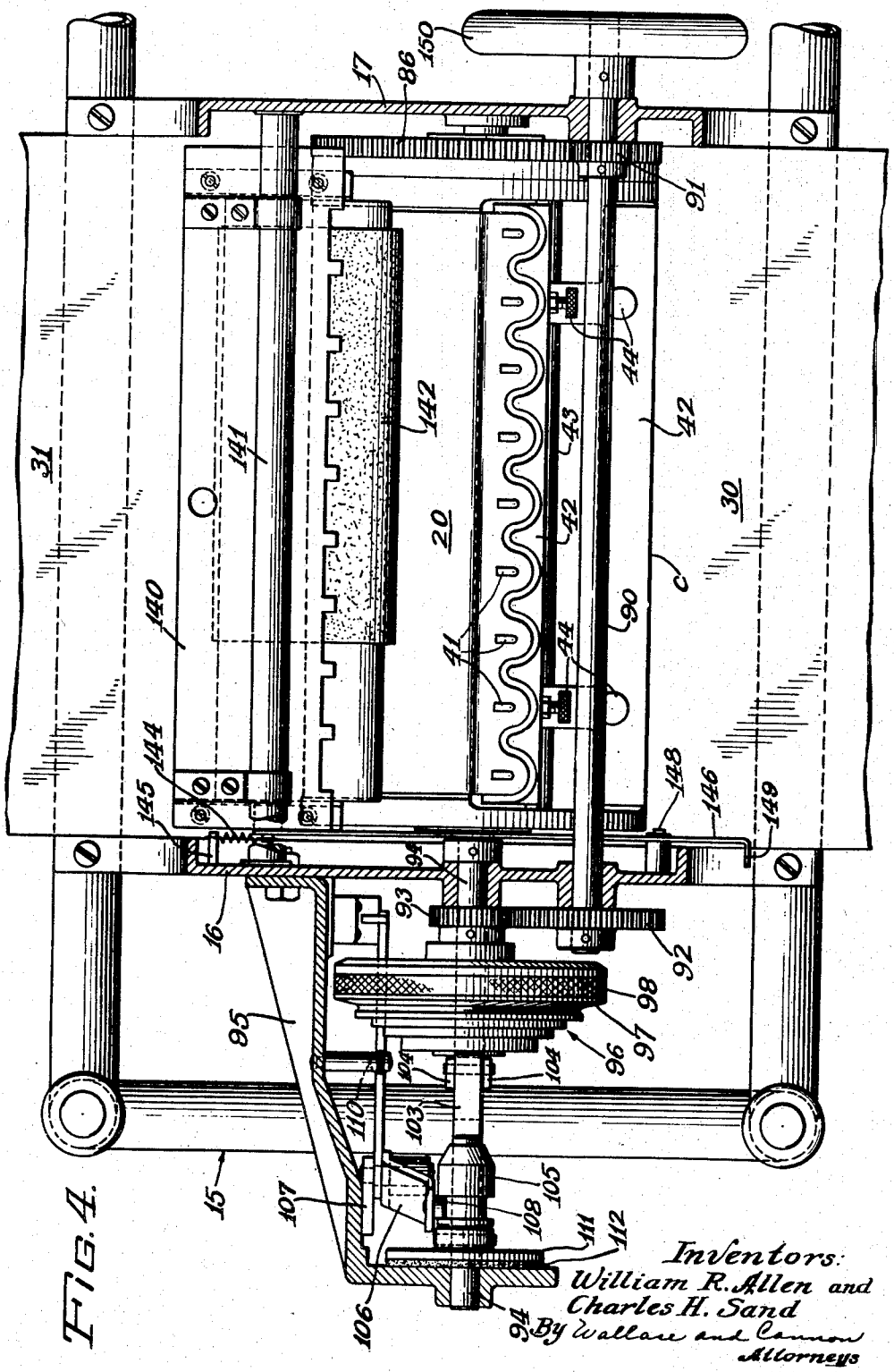



FIG. 4.

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DRUM STOP MEANS FOR PRINTING MACHINES

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FIG. 5.

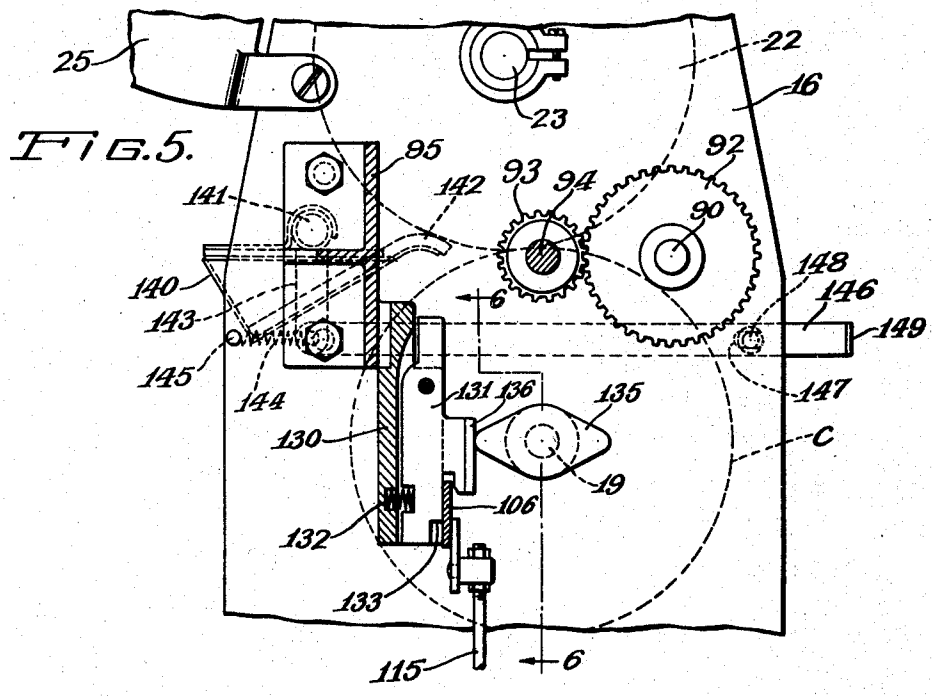



FIG. 6.

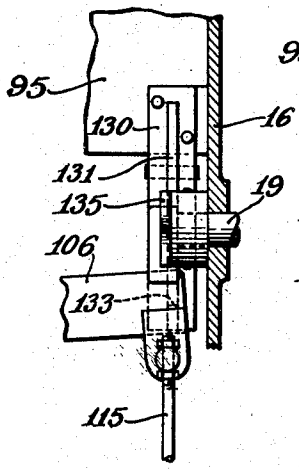



FIG. 7.

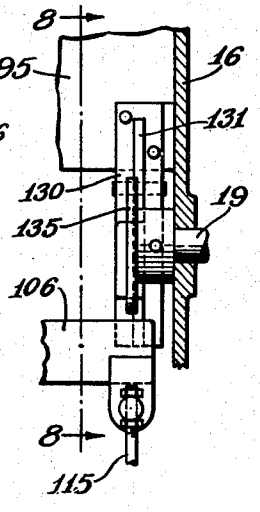
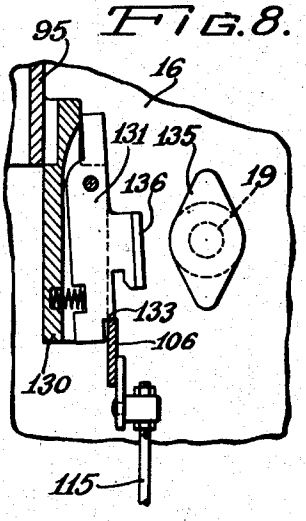



FIG. 8.




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DRUM STOP MEANS FOR PRINTING MACHINES

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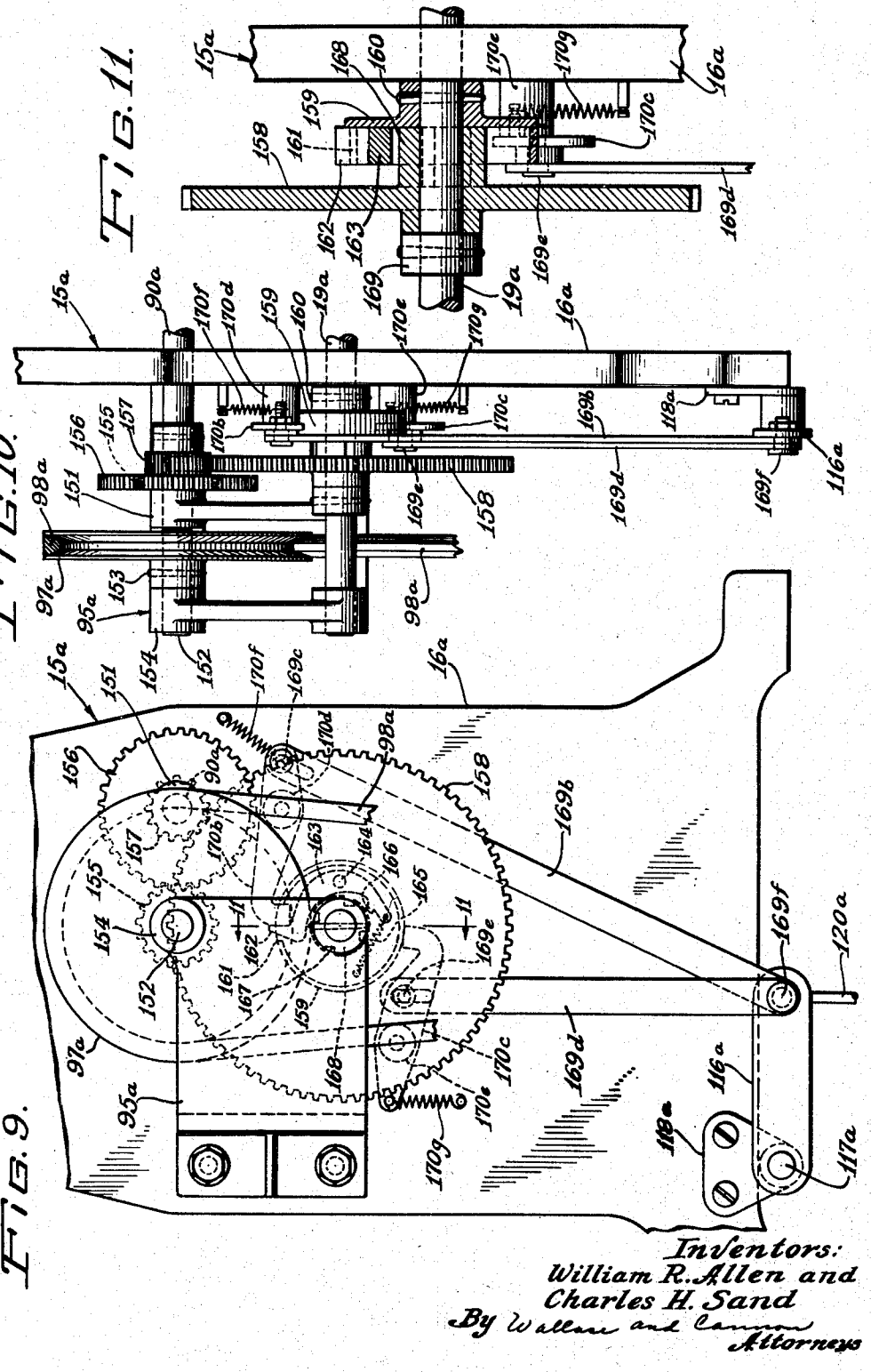


FIG. 11.

FIG. 10.

FIG. 9.

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DRUM STOP MEANS FOR PRINTING MACHINES

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FIG. 12

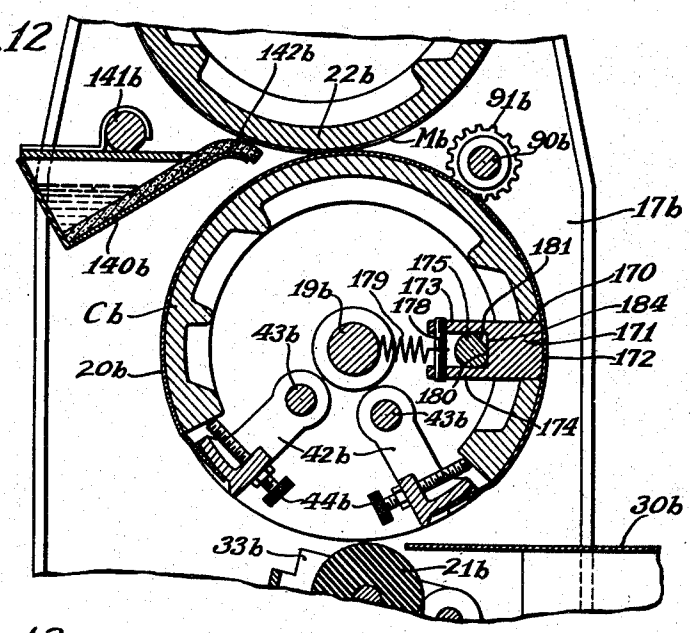



FIG. 13.

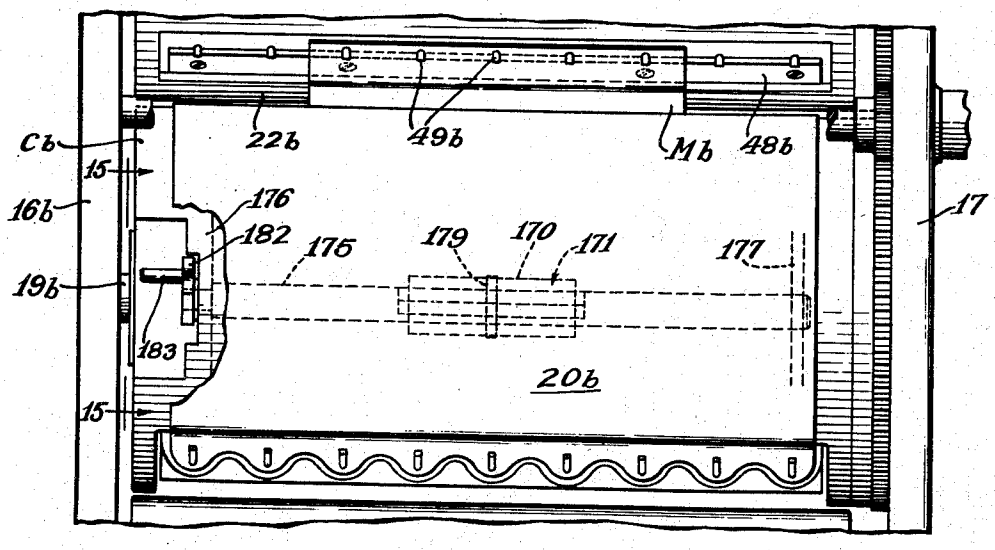
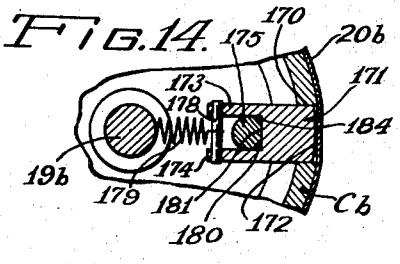



FIG. 14.




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DRUM STOP MEANS FOR PRINTING MACHINES

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FIG. 15.

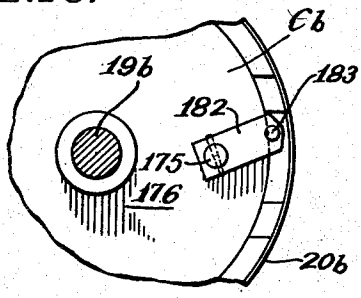



FIG. 16.

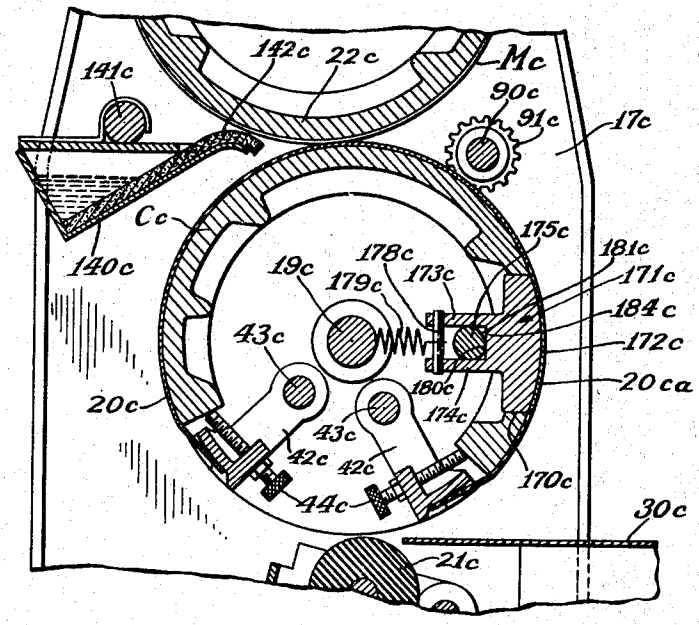



FIG. 17.

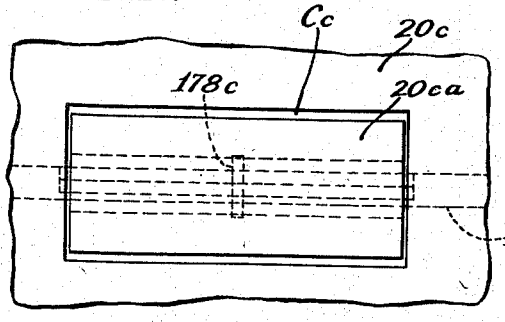
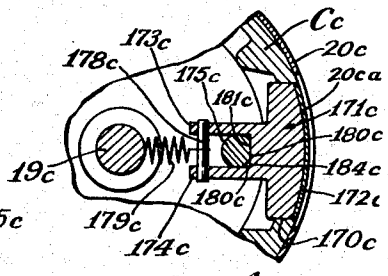



FIG. 18.




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Patented June 10, 1947

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# UNITED STATES PATENT OFFICE

2,421,823

## DRUM STOP MEANS FOR PRINTING MACHINES

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Application June 29, 1942, Serial No. 448,912

4 Claims. (Cl. 101—142)

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This invention relates to printing machines and particularly to those which embody a rotary printing couple and especially to those in which an image carried by a lithographic master is transferred to a blanket and is thereafter transferred onto sheets or the like.

The master that is included in printing machines of the aforesaid character is customarily removably retained in operative position in the machine so that it may be replaced from time to time. In many uses to which printing machines of this character are put the master is retained in the machine for relatively protracted periods inasmuch as in such circumstances a large number of sheets or the like receive impressions from the same master. However, there are many instances where but a relatively small number of sheets are to receive impressions from a particular master, as in the instance of the preparation of an insurance policy where certain data are printed on the policy and also on file cards and other records that are retained by the company issuing the policy, and in such circumstances ofttimes no more than ten, or even fewer impressions are made from each master installed in the machine.

Particularly in circumstances where but a relatively few sheets are to receive impressions from a particular master that is removably mounted in a printing machine it is advantageous to enable the master to be expeditiously installed, and one of the important objects of this invention is to enable this to be effected in a novel manner.

Inasmuch as it is an inherent characteristic of printing machines of the character to which this invention pertains to have the printing couple so arranged that the elements thereof may be freely rotated, it has been customary heretofore, when one master was to be replaced by another, to bring the machine to rest and to thereafter manually manipulate the drum or cylinder on which the master was to be retained so as to bring the drum into such position that the operator of the machine could have access to the means which are effective to secure the master on the drum or cylinder and, while this is not particularly objectionable in those instances where the master need be changed but infrequently, as where a large number of sheets receive impressions from the same master, in those instances where the master is to be replaced relatively frequently, it has been observed that the requirement that the drum be manually manipulated, as aforesaid, has interfered with efficient use of the machines, particularly in view

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of the time lost in manually manipulating the drum so as to enable the substitution of one master for another. Hence, yet another object of this invention is to enable the drum or cylinder on which a master is to be mounted in a printing machine to be brought to rest in such position as will expedite substitution of one master for another or other installation of a master in the machine.

In many printing machines of the aforesaid character, it is necessary that the master be maintained taut on the drum or cylinder on which it is mounted and in order that this may be effected it is customary in many instances to fixedly retain one end of the master and to so arrange the other end of the master that resilient means will be effective thereon to thereby retain the master in taut condition on the periphery of the drum or cylinder. In arrangements of this character there are usually two places whereat the ends of the master may be connected to the drum or cylinder and, with respect to such arrangements, it is yet another object of this invention to enable a drum or cylinder of the aforesaid character to be brought to rest in such position as will facilitate the attachment of each end of a master thereto, and a related object is to enable a drum of the aforesaid character to be brought to rest in such position as will expedite the attachment of one end of a master thereto and to thereafter enable the drum to be so manipulated that it will be brought into such position that the other end of the master may be expeditiously attached thereto.

In printing machines of the aforesaid character the rotary parts of the printing arrangement are usually so arranged that they may be expeditiously connected to or disconnected from the customary power-operated driving means therefor and to this end it is customary to interpose a clutch arrangement intermediate such driving means and the rotary elements of the printing couple, and such a clutch is usually arranged so as to enable manual control thereof. Therefore, still further objects of this invention are to so control the operation of a clutch arrangement of the aforesaid character that the rotary elements of the printing couple, and particularly the element or cylinder on which a master sheet is to be attached, that particularly such element may be brought to rest in selected positions under control of the clutch; to so arrange the control of the clutch of the aforesaid character that the printing elements of the printing machine may be optionally kept in continuous operation or be

caused to operate in a step-by-step manner so as to thereby bring those portions of the drum or cylinder, to which the ends of a master are to be attached, into positions which will facilitate attachment to, or detachment therefrom, of a master; and to so control a clutch arrangement of the aforesaid character that a drum to which a master is to be attached may be first brought to rest in one selected position and thereafter be brought to rest in another selected position so as to enable the respective ends of a master to be connected to or detached from the means which are to be respectively effective to connect such ends of the master to the drum or cylinder.

Other and yet more specific objects of the invention are to utilize a friction clutch which will be effective to control operation of particularly the drum or cylinder on which a master sheet is to be attached in the manner described hereinabove; to enable separable elements in a friction clutch arrangement of the aforesaid character to be automatically disengaged at selected times and thereby so regulate the positions at which such drum or cylinder comes to rest as to enable a master to be attached thereto or detached therefrom in the manner described hereinabove; to brake the released portions upon disengagement of the clutch in the manner just described and thereby insure prompt arresting of the movement of such released parts; and yet other and related objects are to employ a clutch arrangement which will positively stop a drum of the aforesaid character in selected positions; and to so arrange either of such clutch arrangements that means which are operative to effect disengagement thereof may be rendered ineffective so as to thereby enable the drum and other printing elements of the printing machine to be operated continuously when and as desired.

In many instances in the use of printing machines of the character to which this invention pertains it is necessary to moisten or otherwise treat the master sheet. For example, in those instances where a lithographic master is utilized it is necessary that the non-image bearing areas thereof be resistant to ink so that only the image will be picked up by the blanket or transfer medium when ink is applied to the master and the image thereon is thereafter brought into operative relation with the blanket. While in many instances the master may be so treated prior to the time it is installed in the machine and while in other instances a treatment of the aforesaid character is continuously applied to the master in the course of use thereof, there are instances where it is advantageous to treat the master in the aforesaid manner after it is installed in the machine and then but once or at least only intermittently. One particular instance where it is advantageous to so treat a master is where but a relatively few sheets are to receive an impression from each master installed in the machine. In such instances it is not necessary that the master be treated continuously during course of use thereof for usually one treatment will suffice as, for example, in those instances where ten or even fewer impressions are to be made from each master. In such circumstances it may be disadvantageous to treat the master before it is installed in the machine for in the subsequent handling of the master, as during installation thereof in the machine, the hands of the operator may become soiled and time will be lost while the operator's hands are being cleaned or, in the alternative, if the operator feeds sheets to the machine, soiling of the sheets and the like may result.



Thus yet another important object of this invention is to enable a master to be treated in any manner which may be required by the nature thereof after it has been installed in the machine so as to thereby enable the master to perform its intended function in the machine; to utilize an arrangement which may be selectively rendered effective or ineffective for applying a required treatment to a master; to so arrange the apparatus that is effective to apply a treatment to a master that it may be rendered effective either when the master is initially installed in the machine or from time to time in the course of use of the master should this be found to be necessary; to so arrange an apparatus of this character that a quantity of the material required in the treatment of the master may be stored therein; to utilize the wick arrangement for withdrawing the material required in the treatment from the quantity thereof stored in the apparatus and for applying the material to the master; and to facilitate installation and operation of an apparatus of the aforesaid character.

In those offset printing machines which embody a cylinder adapted to have a lithographic or like master mounted on the periphery thereof and wherein another cylinder is provided which is adapted to have a blanket or other transfer medium mounted on the periphery thereof, the arrangement is such that the image borne by the master mounted on the periphery of the first drum is transferred to the blanket which is therefore effective to transfer the image so picked up to sheets or the like. In such an arrangement it may sometimes be desirable to enable less than all of the image borne by the master to be transferred by the blanket or the transfer medium to the sheets and while, particularly in instances where a large number of sheets are to receive impressions, this may be effected by masking the portion of the image which is not to be produced, as by adhesively applying a thin sheet over the portion of the image borne by the master which is not to be produced, this entails interrupting the operation of the machine and is otherwise not entirely satisfactory.

Furthermore, in other instances, the portion of the image which it is not desired to reproduce may be so related to the portions which it is desired to reproduce that such portions will be arranged in spaced apart relation axially along the extent of which the cylinder on the master is mounted. In such instances a gauge or the like may be provided to so determine the point whereat the sheets are to pass into the bite between the blanket cylinder and the platen roller, which cooperates therewith, so that only those portions of the image which it is desired to reproduce will be transferred onto the sheets. With this arrangement the portion of the image which it is not desired to reproduce will not be transferred onto the sheets since these will not be fed into position to receive the same, and moreover in such circumstances an offset will not be made onto the platen roller since the periphery of the platen roller is normally spaced from the surface of the blanket or transfer medium.

Now while in many instances resort may be had to arrangements of the aforesaid character, it is ofttimes desirable to reproduce less than all of the image borne by a particular master in such circumstances that the portion of the image that is not to be transferred is surrounded by portions

of the image which it is desired to transfer and, particularly in instances where but a relatively small number of sheets are to receive impressions in such circumstances, it is advantageous to so arrange the machine that selected portions of an image borne by a master will not be transferred to the sheets or will be cut off as it is known in the art, and to enable this to be effected in a novel and efficient manner is yet another object of our invention.

Other and further objects related to this last set forth object are to enable such relative movement to be effected between a master and the cylinder on which it is mounted in the arrangement of the aforesaid character or between the blanket or transfer medium and the other cylinder on which it is mounted in such an arrangement as to prevent selected portions of the image borne by the master from being transferred to the blanket or other transfer medium; to enable retraction of selected portions of either the cylinder on which the master is mounted or the cylinder on which the transfer medium is mounted, or both of these cylinders, so as to thereby enable a cutoff of the aforesaid character to be effected; to enable the foregoing to be accomplished in certain instances, without interrupting the master, the blanket or either of these elements and in other instances to afford an arrangement such that a portion of the master or the blanket or portions of both may be connected to a retractable part so as to thereby enable one or more cutoffs to be effected.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show preferred embodiments and the principle thereof and what we now consider to be the best mode in which we have contemplated applying that principle. Other embodiments of the invention embodying the same or equivalent principle may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings,

Fig. 1 is a side elevational view of a printing machine embodying our invention;

Fig. 2 is a front elevational view of the machine shown in Fig. 1;

Figs. 3, 4 and 5 are sectional views taken substantially and respectively on the lines 3—3, 4—4 and 5—5 on Fig. 2;

Fig. 6 is a sectional detail view taken substantially on the line 6—6 on Fig. 5;

Fig. 7 is a view similar to Fig. 6 but showing certain of the parts in another of the operative positions thereof;

Fig. 8 is a sectional detail view taken substantially on the line 8—8 on Fig. 7;

Fig. 9 is a fragmentary side elevational view somewhat similar to Fig. 1 but showing another form of our invention;

Fig. 10 is a fragmentary front elevational view of the apparatus illustrated in Fig. 9;

Fig. 11 is a vertical sectional detail view taken substantially on the line 11—11 on Fig. 9;

Fig. 12 is a fragmentary vertical sectional view illustrating a further aspect of our invention;

Fig. 13 is a front elevational view of the apparatus as illustrated in Fig. 12;

Fig. 14 is a fragmentary vertical sectional detail view showing certain of the operative parts



illustrated in Fig. 12 in another of the operative positions thereof;

Fig. 15 is a vertical sectional detail view taken substantially on the line 15—15 on Fig. 13;

Fig. 16 is a fragmentary vertical sectional view similar to Fig. 12 but showing another form of our invention;

Fig. 17 is a fragmentary front elevational view of a portion of the blanket drum illustrated in Fig. 16; and

Fig. 18 is a fragmentary detail view showing certain of the parts illustrated in Fig. 17 in another of the operative positions thereof.

The form of our invention illustrated in Figs. 1 to 8, inclusive, is included in a printing machine which, in the present instance, is of the offset lithographic type and which embodies a frame or stand 15 that includes two vertically disposed side plates 16 and 17 between which various operative parts of the machine are disposed. Thus, a cylinder C is mounted on a shaft 19 journaled in the side plates 16 and 17. A blanket 20 is removably mounted on the periphery of the cylinder C and cooperates with a platen roller 21, Fig. 3, to produce offset impressions on sheets or the like which are passed into the bite of the cylinder C and platen roller 21. The image which is to be thus printed upon the sheets is transferred thereto by the blanket 20 from a lithographic master sheet M removably mounted on the periphery of a cylinder or drum 22 carried by a shaft 23 journaled in the side plates 16 and 17. An inking roller 24 cooperates with the master sheet M to ink the image areas of the master sheet in the manner well understood in the art. Ink is supplied to the roller 24 by a conventional inking unit 25 which includes a ductor roller 26 that periodically conveys ink from a fountain in the unit 25 to the inking roller 24. A distributing roller 27 cooperates with the inking roller 24 to evenly distribute the ink over the surface of the roller 24. A wiping roller 28 is also disposed to cooperate with the master sheet M on the drum 22 for a purpose to be explained presently, this roller 28 being out of contact with the inking rollers 24 and 27.

The sheets which are to be printed are fed one at a time across a table 30, Figs. 1, 2 and 3, into the bite of the printing couple comprising the platen roller 21 and blanket cylinder C. As each sheet passes through the printing couple it receives an impression of the image from the blanket 20 and is then discharged to a receiving rack or collector 31. The platen roller 21 is mounted on a shaft 32 journaled in a rocker including arms 33 which are pivotally mounted on a rod 34 extending between the side plates 16 and 17. The arms 33 are interconnected by a cross bar 35 which is received in the slotted heads of screws 36 that extend downwardly through openings in a stationary cross bar 37 secured to the side plates 16 and 17. Coil springs 38 encircling the screws 36 intermediate the slotted heads of these screws and the cross bar 37 tend to urge the rocker carrying the platen roller 21 upwardly, but such action of the springs 38 is limited by nuts 39 which bear against the underside of the cross bar 37. The nuts 39 are adjusted to afford a predetermined clearance between the blanket 20 and the periphery of the platen roller 21 and the arrangement is such that the platen roller will not pick up ink from the blanket in an instance where a sheet is not disposed between the roller 21 and the blanket on the periphery of the cylinder 16.

The periphery of the blanket cylinder 18 is interrupted, as shown in Fig. 3, and the blanket 20 is stretched over the periphery of the cylinder between the edges along the recess affording the interruption. The ends of the blanket 20 are scalloped, as shown in Figs. 2 and 4, and slots are formed in these scalloped end portions to enable the blanket to be anchored to hooked projections 41 on rockers 42, Figs. 2 to 4, which are disposed in the recess in the cylinder 18. The rockers 42 are pivotally mounted on rods 43 extending axially of the cylinder 18 and fastened to the solid end portions of this cylinder. Screws 44 are threaded into the rockers 42 and bear against the edges of the recess in the cylinder and by adjusting these screws, the blanket 20 may be drawn taut over the impression surface of the cylinder 18.

The drum 22 on which the master sheet M is removably retained is of the same diameter as the blanket cylinder 18 and likewise has an interrupted cylindrical impression surface. A recess 47 is formed in the cylinder 20 to receive a bar 48 having hooked projections 49 for anchoring one end of the master sheet M to the drum 22, the bar 48 being secured to the drum 22 in any suitable manner. The other end of the master sheet M extends slightly beyond an end of the cylindrical shell of the drum 22 and is anchored to a rocker 50 disposed in the recess in the drum 22. The rocker 50 is pivotally mounted on a rod 51 extending axially between the end portions of the drum 22 and is provided with hooked projections 52 which are received in holes in the end of the master sheet M. The portion of the surface of the drum 22 on which the projections 52 are mounted is slightly relieved so that it cannot contact the blanket 20. Springs 53 are extended between a rod 54 on the rocker 50 and a rod 55 secured in the drum 22, these springs serving to place the master sheet M under tension to maintain it taut and smooth on the drum 22.

A clamping plate 55, Figs. 2 and 3, is pivotally mounted as at 56 on the rocker 50 and is urged by a spring 57 against the outer end of the rocker 50 to firmly clamp the end of the master sheet M thereon. The free end of the clamping plate 55 is provided with a knob 58 to facilitate manipulation of the clamping plate when it is desired to insert or remove a master sheet. Tongues 59 struck out from the clamping plate 55 are disposed to engage the spring anchor rod 54 on the rocker 50 when the clamping plate 55 is pivoted against the action of the springs 57. This is done when it is desired to release the end of the master sheet M or insert a new master sheet, the tongues 59 bearing against the rod 54 and swinging the rocker 50 against the action of the springs 53 as the knob 58 is pushed inwardly. Stop pins 60 secured to the ends of the drum 22 limit the movement of the rocker 50 under the influence of the springs 53 when no master sheet is on the drum 22. Hereinafter the end of the master sheet M anchored to the fixed bar 48 will be referred to as the leading end thereof, and the end which is anchored to the spring-urged rocker 50 will be designated the trailing end of the sheet.

The inking roller 24 is mounted on a shaft 65 journaled in bearing blocks 66, Figs. 1 and 3, which are arranged to slide in slots 67 in the side plates 16 and 17. Springs 68 are extended between the ends of the shaft 65 and pegs 69, Figs. 1 and 2, fastened to the outer faces of the side plates 16 and 17. The wiping roller 28 is mounted on a shaft 73 journaled in bearing blocks 74 slidably arranged in slots 75 and the side plates 16 and 17. Springs 76 are extended between the ends of the shaft 73 and the pegs 69 on the side plates 16 and 17. The springs 68 and 76 tend to urge the inking roller 24 and wiping roller 28 radially toward the drum 22 and the master sheet M carried thereby. The bearing blocks 66 and 74 in which the shafts 65 and 73 of the rollers 24 and 28 are journaled are adapted to cooperate with sloping shoulders on cam plates 78, Figs. 1 and 2, which are slidably mounted on the outer faces of the side plates 16 and 17. The ink distributing roller 27 is mounted on a shaft 70, Figs. 1, 2 and 3, journaled in the cam plates 78. Screws 79 passed through vertical slots in the cam plates 78 are threaded into the side plates 16 and 17 to guide the cam plates 78 for vertical movement. A shaft 80, Figs. 1 and 3, passing through the side plates 16 and 17 and openings in the cam plates 78, carries eccentrics 81 which cooperate with rollers 82 mounted on the cam plates 78.



The shaft 80 is provided with a handle 83, Figs. 1 and 2, by means of which the shaft 80 may be turned to bring the high portions of the eccentrics 80 into cooperation with the rollers 82, thereby elevating the cam plates 78. As the cam plates 78 are thus raised, the sloping shoulders thereon cam the bearing blocks 66 and 74 radially outwardly in the slots 67 and 75 to thereby lift the inking roller 24 and the wiping roller 28 out of contact with the master sheet M on the drum 22. The ink spreading roller 27 is likewise elevated by the cam plates 78. This is effected whenever it is desired to insert or remove a master sheet, as will be explained in greater detail presently. In order to return the inking roller 24, spreading roller 27 and wiping roller 28 into cooperative relation with the master sheet M on the drum 22, the handle 83 is turned until the low portions of the eccentrics 81 cooperate with the rollers 82 on the cam plates 78, whereby the cam plates 78 are lowered to enable the springs 68 and 76 to restore the rollers 24, 27 and 28 into the positions shown in Fig. 3. The shoulders of the cam plates are supported by adjustable stop screws in the bearing blocks 66 and 74 to prevent the inking roller 24 and wiping roller 28 from dropping onto the relieved portion of the drum 22 or into the recess of this drum but the arrangement is such as to enable the rollers 24 and 28 to contact the master sheet M.

In placing a new master sheet on the drum 22, the leading edge of the sheet M is first attached to the anchor bar 48 on the drum 42, Fig. 3, and the trailing end of the master sheet is thereafter attached to the spring-urged rocker 50. This requires that the drum 22 shall first be disposed in a position in which the operator may conveniently have access to the bar 48 (the drum 22 being shown approximately one hundred eighty degrees away from this position in Fig. 3) and then the drum is so disposed that the trailing end of the master sheet may be fastened to the rocker 50 (in which position the drum is shown in Fig. 3). For the purpose of conveniently locating the drum 22 in these two desired positions we have provided a clutch mechanism, presently to be described, which enables this to be expeditiously effected.

As shown in Figs. 2 and 3, a gear 85 is mounted coaxially of and secured to the drum 22, and this gear meshes with a gear 86 similarly connected to the blanket cylinder 18. A gear 87 connected to the platen roller 21 meshes with the gear 86 and the arrangement is such that the platen roller 21 may be adjusted relative to the cylinder 18, in the manner explained hereinabove, without

demeshing these gears. A shaft 90, Figs. 3 and 4, extending between and journaled in the side plates 16 and 17 carries a pinion 91 which meshes with the gear 86 on the blanket cylinder 18. A gear 92 fixed to the shaft 90 outwardly of the side plate 16 meshes with a pinion 93 on a shaft 94, hereinafter referred to as the drive shaft, which is journaled in a bracket 95 secured to the outer face of the side plate 16. A disc clutch generally designated 96 is mounted on the drive shaft 94 adjacent the pinion 93, and the driving member of this clutch includes a pulley 97 which is connected by a belt 98, Figs. 1 and 2, to a pulley 99 on the shaft of a motor 100 supported by a stand 15, this motor furnishing the power for operating the machine.

In order to couple the driving pulley 97 to the drive shaft 94 it is necessary to apply axial pressure against the discs of the clutch 96. To this end, two lever arms 103 are pivotally mounted on small plates 104 pinned to the shaft 94 on opposite sides thereof. The levers 103 extend axially of the shaft 94 and the corresponding ends thereof are arranged to bear against the outer disc of the clutch 96. A clutch operating member in the form of a collar 105 has a conical face that is adapted for cooperation with rounded portions at the free ends of the levers 103, the collar 105 being splined to the drive shaft 94. When the collar 105 is advanced toward the clutch 96 it engages and spreads the arms 103, causing them to exert pressure on the discs of the clutch 96 and operatively engage the same to thereby couple the pulley 97 to the drive shaft 94.

A shifting lever 106 is effective to move the collar 105 into and out of the position in which it is effective to engage the clutch, this lever being pivotally mounted on a bar 107 secured to the bracket 95. A roller 108, Fig. 4, mounted on one arm of the lever 106 is disposed in a circumferential groove in the collar 105 and a spring 110, anchored to the bracket 95, acts on the other arm of the lever 106 and tends to urge this lever in such a direction as to cause the collar 105 to be disengaged from the lever arms 103. When the lever 106 is released to the action of the spring 110 the collar 105 is brought to bear against the hub of a brake disc 111 which is slidably but non-rotatably mounted on the drive shaft 34. A friction element 112 secured to the face of the disc 111 cooperates with a flat surface on the outer end of the bracket 95 surrounding the shaft 94, and when the collar 105 is urged by the spring 110 against the hub of the disc 111, the friction element 112 is effective to exert a braking force to arrest and hold the drive shaft 94 so long as it is uncoupled from the driving pulley 97.

The arm 106' of the shifting lever 106 to which the spring 110 is fastened is connected by a vertical link 115 to an arm 116 on a rock shaft 117, Figs. 1, 2 and 3, journaled in brackets 118 secured to and depending from the lower ends of the side plates 16 and 17. Another arm 119 on the rock shaft 117 is connected by a vertical link 120 to a lever 121 which extends into, and which is pivotally mounted in, a housing 122, Figs. 1 and 2, depending from a cross bar 123 on the stand 15. The lever 121 is connected by a link 124 to a lever 125 pivotally mounted in the housing 122 and having a foot pedal 126 thereon which protrudes from the housing 122 near the base of the stand 15 below the feed table 30.

When the machine is to be kept in continuous operation, the operator applies pressure to the pedal 126 and thereupon the lever 121 is pivoted downwardly and this in turn is effective through the vertical link 115 to move the arm 106' of the lever 106 downwardly whereupon the tapered portion of the collar 105 moves into engagement with the levers 103 to thereby engage the clutch 96, whereupon the cylinders and platen roller are set in rotation, and rotation thereof continues so long as pressure is applied to the pedal 126.

In some instances, however, the drum 22 on which the master sheet is mounted, is advantageously operated in a step-by-step manner so as to thereby bring the portions thereof to which the ends of the master sheet are to be connected into position to be disclosed toward the side of the machine from which the feed table 30 projects, at which side of the table the operator normally stands so as to have access to the pedal 126. Hence the bracket 95, Figs. 2 and 4, which supports the driving mechanism includes a depending portion 130, Figs. 5 to 8, on which a latch member 131 is pivotally mounted adjacent to the lever 106. A spring 132 tends to urge the latch member 131 against the lever 106 and, when the arm 106' on the lever 106 is pulled downwardly to effect engagement of the clutch 96 as aforesaid, a shoulder 133, Figs. 5 and 8, on the latch 131 moves into position above the lever 106 and retains it in its lower position and under such circumstances, if pressure is relieved from the foot pedal 126, the clutch 96 will nevertheless be maintained engaged, and such engagement will continue so long as the latch 131 is maintained above the arm 106'.

However, as has been explained hereinabove, it is often desirable to bring the drum as 22 to rest in selected positions to enable the ends of the master sheet to be connected thereto and to this end a two-lobed cam 135, Figs. 2, 5 and 6, is provided in the present instance, and this cam is mounted on the shaft 19 on which the drum or cylinder C is mounted to be rotatable therewith and, since the drums C and 22 rotate synchronously, this cam rotates in timed and fixed angular relation with the drum 22. An ear 136 is formed on the latch 131 and is disposed to lie in the path of movement of the lobes on the cam 135. Each of these lobes is located in such position that upon engagement of either such lobe with the ear 136 the latch 131 is moved against the effect of the spring 132 and out of latching relation with the arm 106'. When this occurs the lever 106 is freed to the effect of the spring 110 and thereupon the collar 105 is retracted from cooperating relation with the levers 103 to thereby effect disengagement of the clutch 96, and at this same time the friction element 112 on the disc 111 engages the flat surface on the bracket 95 and brakes rotation of the drive shaft 94 with the result that the drum 22 is promptly brought to rest. Of course, so long as pressure is applied to the pedal 126, the lobes of the cam 135 are ineffective to effect such disengagement of the clutch 96.

Hence, when the parts are in the position shown in Fig. 3, the operator may momentarily apply pressure to the foot pedal 126 to bring about engagement of the clutch and thereupon the drum 22 is set in operation. However, if the operator does not continue to apply pressure on the foot pedal 126, prior to the time the anchor bar 48 on the drum 22 moves into position to be disclosed at the side of the machine from which the feed table 30 projects, one of the lobes on the cam 135 engages the ear 136 with the effects hereinabove described so that the drum 22 comes to rest in

such position that the anchor bar 48 is accessible to the operator and then the leading end of a master sheet M may be attached to, or detached from, the anchor bar.

At a time when the machine is to be operated in this manner the handle 83 is desirably manipulated to lift the inking roller 24, the distributing or spreading roller 27 and the wiping roller 28 away from the periphery of the drum 22 inasmuch as such parts of the apparatus are to be rendered ineffective when a master sheet is to be initially attached to the drum 22.

However, once the drum 22 has been brought to rest in the manner above described and the operator has attached the leading end of a master sheet M to the hooks 49, the foot pedal 126 is again manipulated to again engage the clutch 96 and thereupon the drum 22 is set in rotation, and this continues until shortly before the drum 22 attains the position thereof shown in Fig. 3. If, at this time, pressure is not maintained on the pedal 126, the other lobe on the cam 135 acts on the ear 136 to again cause disengagement of the clutch 96 and braking of the shaft 94. The operator then manipulates the knob 83 and the clamp plate 55, Figs. 2 and 3, to swing the clamping plate 55 upwardly and thereby dispose the hooks 52 back of the openings to receive the same at the trailing end of the master sheet. Then when the rocker 50 is released, the hooks 52 enter these openings as the clamping plate 55 moves inwardly and thereupon the trailing end of the master sheet is clamped in position, the springs 53 acting on the rocker 50 to apply tension to the master sheet and thereby maintain it taut on the periphery of the drum 22. The master sheet is then retained on the drum and in position to have impressions made therefrom.

In instances, however, where the master sheet M is lithographic in character, it is first treated to render the non-image bearing portions thereof ink-repellent, but once this has been done the handle 83 is again manipulated so as to render the inking roller 24, the distributing or spreading roller 27 and the wiping roller 28 effective. Subsequently and so long as pressure is applied to the foot pedal 126 and sheets are fed into the bite between the blanket 20 and the platen roller 21, impressions may be made onto sheets fed into this bite from the feed table 30.

It has been explained hereinabove that it is frequently desirable to treat a master sheet as M prior to the time impressions are to be made therefrom and in instances where the master sheet M is lithographic in character and the non-image bearing portions thereof are to be rendered repellent to ink, it is customary to moisten the master with a suitable conditioning fluid such as that, for example, to which Wescott Patent No. 2,003,268, patented May 28, 1935, pertains.

In order that a master sheet as M may be so moistened or otherwise treated after it has been installed on the drum 22, we have provided a moistening device 140, Figs. 3 and 4, for applying a conditioning fluid to the master sheet as M when it is mounted on the drum 22 and this drum is set in rotation. The moistening device 140 is located to the left, as viewed in Fig. 3, of the bite between the drums or cylinders 22 and C and desirably somewhat in the horizontal plane of this bite.

In the present instance, the moistening device includes a trough-like member which is suspended from a rod 141 extending between the side plates 16 and 17 and this member affords a well in which the conditioning fluid may be stored. A wick 142 extends from the well in the trough-like member toward the periphery of the drum 22 to be engageable therewith. However, since the wick 142 is to be intermittently engaged with the master sheet, an arm 143 is secured to and depends from the moistening device 140 and this arm is connected by a spring 144 to a pin 145 fastened to the side plate 16, this spring tending to retract the moistening device 140 so that the wick 142 normally does not engage the drum 22 or the master sheet M thereon. Retraction of the moistening device 140 by the spring 144 is limited by the engagement of the pin 148 with one end of the slot 147 in the link 146. The link 146, Figs. 4 and 5, is pivotally connected at one end to the arm 143 and has a slot 147 therein through which a pin 148 attached to the side plate 16 projects and a finger piece 149 is formed on the free end of this link to be disposed at the side of the machine from which the table 30 projects so that the operator may conveniently grasp the link and thereby rock the trough-like member about the rod 141 to bring the wick 142 into engagement with the master sheet M on the drum 22 whenever this is desired.

When the master sheet M has been attached to the drum 22 in the manner above described, the operator may maintain the pedal 126 depressed to maintain the clutch 96 engaged and in such circumstances the control cam 135, Fig. 5, is ineffective to release the clutch. Then the moistening device may be swung into its ineffective position by pulling on the link 146, and as the master sheet M passes the wick 142 the conditioning fluid is applied thereto for the purpose explained. Once the master sheet M has been properly conditioned in this manner, the link 146 is released and the spring 144 then disengages the wick from the master sheet and thereafter the inking roller 24, the spreading roller 27 and the wiping roller 28 may be lowered into their effective positions, shown in Fig. 3, by turning the handle 83, Figs. 1 and 2, and the machine may be continued in operation. The wiping roller 28 serves to absorb any excessive conditioning fluid from the surface of the master sheet M prior to movement of the master sheet into cooperation with the inking roller 24. Then, as the master sheet M moves past the inking roller 24 it picks up ink on image areas thereof and then moves into cooperation with the blanket 20 on the cylinder 18, leaving an inked impression of the image on this blanket. The platen roller 21 is spaced from the blanket 20 sufficiently so that no offset impressions will be made on a platen roller in the absence of a sheet intermediate the cylinder 18 and roller 21. The sheets to be printed are fed by hand over the feed table 30 into the bite between the blanket cylinder 18 and the platen cylinder 21, although, of course, it will be understood that an automatic feeding means may be employed.

In the type of work for which the present invention is adapted to be used, only a limited number of sheets are printed from each master sheet M and usually it is necessary to make only one application of the moistening fluid to each master sheet. In the event, however, a relatively large number of sheets or the like are each to receive an impression from a particular master, it may be necessary to apply the conditioning fluid to the master sheet from time to time in the course of such printing operations. This

may be conveniently done by actuating the moistening device 140, in the manner above explained, when and as required. It will be appreciated that the inclusion of a moistening device as 140 in a machine of the character to which this invention pertains is, therefore, quite advantageous inasmuch as it materially expedites applying treatment to master sheets that are mounted on the drum adapted to receive the same either when a master sheet is initially installed or from time to time in the course of use thereof.

The wiping roller 28 is absorbent in character and the master sheet is passed into engagement therewith prior to the time it passes to the ink applying means and thus the wiping roller 28 may be and is effective to remove any excess conditioning fluid that may be applied to the master upon manipulation of the moistening device 140 in the manner hereinabove explained. If in the course of use of the machine the wiping roller 28 should become saturated, it may be readily removed from the machine and run over a sheet of absorbent material such as blotting paper or the like whereupon the moisture content therein will be reduced so as to thereby insure that the wiping roller 28 will be properly conditioned to perform its intended function.

As is usual in machines of the character to which this invention pertains, a hand wheel 150, Figs. 2 and 4, is mounted on the shaft 90 outwardly of the side plate 17 and this enables the drum 22 and the parts movable therewith to be manually manipulated when and as required, as for example in instances where the drum 22 does not stop in the precise position desired to facilitate attachment of an end of a master sheet thereto.

In the form of the invention thus far described a friction clutch is employed to drive the rotating parts of the printing mechanisms and a friction brake is relied upon to bring the drum as 22 to rest in selected positions as in those instances where the ends of a master sheet is to be attached thereto. In certain circumstances, however, it may be advantageous to bring the drum 22 to rest in positively determined positions, and an arrangement which will enable this to be accomplished is illustrated in Figs. 9 to 11, inclusive.

Inasmuch as many of the parts illustrated in Figs. 9 to 11 correspond to those described hereinabove, except in so far as the particular clutch mechanism is concerned, those parts shown in Figs. 9, 10 and 11 which correspond to the parts shown in Figs. 1 to 8, inclusive, are designated by the same reference character but the suffix *a* is added to these reference characters in Figs. 9, 10 and 11. Moreover, while the shaft 90*a* shown in Figs. 9 and 10 is to have a hand wheel as 150, Fig. 2, secured thereto, the shaft 90*a* does not carry a pinion corresponding to the pinion 91, Fig. 2, for in this instance the shaft 19*a*, which otherwise corresponds to the shaft 19, is arranged to be driven and a gear corresponding to the gear 86 is fast to the shaft 19*a* and meshes with a gear 85 associated with a cylinder or drum as 22 so that when rotative movement is imparted to the shaft 19*a*, the drums C and 22 rotate in synchronism, as explained hereinabove.

In the form of the invention shown in Figs. 9, 10 and 11 a bracket 95*a* is fast to the outer face of the side plate 16*a* and includes a bearing 151 in which an end of the shaft 90*a* is mounted. A pulley 97*a* has the hub thereof pinned to a jack shaft 152, as indicated at 153, this jack shaft being journaled in a bearing 154 in the bracket 95 and a suitable bearing provided in the side plate 16*a*. Power is transmitted through a belt 98*a* from a motor as 100 to the pulley 97*a* and thence to the jack shaft 152 and hence so long as the motor is in operation the jack shaft 152 is rotated.

A pinion 155 on the jack shaft 152 meshes with a gear 156 fast on the shaft 90*a* and movement imparted to the jack shaft 152 is transmitted through the pinion 155 and the gear 156 to a pinion 157 also fast on the shaft 90*a*. A gear 158 rotatably mounted on the shaft 19*a* meshes with the pinion 157 and therefore the gear 158 is driven so long as power is transmitted to the jack shaft 152. Inasmuch as the gear 158 is rotatably mounted on the shaft 19*a* a clutch is provided for connecting the shaft 19*a* to the gear 158 and when this clutch is engaged, the shaft 19*a* and therefore the cylinders C and 22 are driven, with the jack shaft 152.

The clutch to which reference has just been made includes a housing 159 that embodies a hub that is pinned or otherwise suitably secured to the shaft 19*a*, as indicated at 160 and, as best shown in Fig. 9, an opening 161 is formed in the flanged periphery of the housing 159. The nose 162 of a clutch dog 163, which is pivotally mounted as indicated at 164 on the housing 159, is urged through the opening 161 by a spring 165 having one end thereof fast to the dog and the other end thereof fast to the housing 159. The spring 165 is also effective to urge a lug 166 on the dog 164 toward notches as 167 formed in the periphery of the hub 168 on the gear 158, which hub, as best shown in Fig. 11, projects into the housing 159, a collar 169 engaging another hub on the gear 158 to thereby hold the free end of the hub 168 in engagement with the housing 159 so as to thereby prevent axial movement of the gear 158 on the shaft 19*a*.

As explained hereinabove, the clutch including the housing 159 is to be effective to stop the cylinder 22 at selected positions in order, for example, to facilitate the attachment or detachment of the ends of a master sheet to the drum 22, for example, in the manner explained hereinabove. Hence two stop pawls 170*b* and 170*c* are respectively pivotally mounted on studs 170*d* and 170*e* carried by the side plate 16*a*, and springs 170*f* and 170*g* are respectively effective on the pawls 170*b* and 170*c* to urge the nose portions thereof into the path of the part of the nose 162 on the clutch dog 163 that is projected through the opening 161 in the housing 159, and normally the springs 170*f* and 170*g* are effective to dispose the nose portions of the stop pawls 170*b* and 170*c* in position to engage the nose 162. However, one end of a link 169*b* is connected through the intermediary of a pin and slot connection 169*c* to the pawl 170*b*, while another link 169*d* is connected through the intermediary of a pin and slot connection 169*e* to the pawl 170*c*, and the opposite ends of the links 169*b* and 169*d* are pivotally connected, as indicated at 169*f*, to the free end of the arm 116*a* that extends from the shaft 117*a*. The links 169*b* and 169*d* are so connected to the pawls 170*b* and 170*c* through the intermediary of the pin and slot connections 169*c* and 169*e* that, when the rod 120*a* is moved downwardly when the foot pedal 126, Fig. 1, is depressed, the noses of the pawls 170*b* and 170*c* are respectively retracted out of the path of travel of the nose 162. Therefore, when

the foot pedal 126 is depressed and the pawls 170b and 170c are retracted, whichever one of these pawls has been engaging the nose 162 is withdrawn from engagement with this nose and thereupon the spring 165 is effective to so rock the dog 163 that the lug 166 thereon seats in one of the notches 167 in the hub 168. Preferably, a plurality of notches 167 are provided in the hub 168 so that when a stop pawl is retracted, as aforesaid, from engagement with the nose 162, the dog 163 will be quickly connected through the intermediary of the lug 166 with the hub 168 and therefore with the gear 158.

It will therefore be seen that when the foot pedal as 126 is depressed so as to free the nose 162 from engagement with a stop pawl as 170b or 170c to thereby enable the lug as 166 to seat in a notch as 167, the shaft 19a is connected with the gear 158 to rotate therewith. In this respect it is to be understood that the stop pawls 170b and 170c are mounted on the side frame member 15a in such related positions that when the nose 162 comes into engagement with one of these stop pawls the drum 22 will be quickly brought to rest in such position that access may be conveniently had to one or the other of the positions thereon whereat the end of a master sheet M is to be connected thereto. Thus once the foot pedal 126 has been depressed and the shaft 19a has been connected to the gear 158 and drums or cylinders as C and 22 are set in operation and the foot pedal is released, the springs 170f and 170g are effective to bring the stop pawls 170b and 170c into position to cooperate with the nose 162 and as soon as the nose 162, for example, engages the stop pawl 170b, the dog 163 is so pivoted about the pivotal mounting 164 thereof against the effect of the spring 165 that the lug 166 is withdrawn from whatever notch 167 in which it has been seated and thereupon the drums C and 22 are at once brought to rest. Thus if the position of the pawl 170b has been related to the cylinder 22 so that the rocker 50 will be disposed in the position shown in Fig. 3 at the time the nose 162 engages the pawl 170b, then the drum 22 will be brought to rest in such position that the end of a master sheet may expeditiously be connected to the rocker 50 in the manner described hereinabove. On the other hand, if the nose 162 engages the pawl 170c, then by reason of the relationship between the stop pawl 170c and the drum 22, the drum 22 will be brought to rest in such position as to dispose the bar 48 in position to have the end of a master sheet connected thereto. In any event, however, once the foot pedal 126 is released, the rotation of the drums C and 22 will be so arrested that the drum 22 will be brought to rest in such position as to enable one or the other of the ends of a master sheet to be connected thereto depending, of course, upon whether the stop pawl 170b or 170c has been engaged by the nose 162. Of course, if the drum 22 is brought to rest in the position shown in Fig. 3, for example, at a time when access is desired to the bar 48, then the foot pedal 26 is depressed only sufficiently to retract the stop pawls 170b and 170c and thereupon it is released so that when the nose 162 engages the stop pawl other than that with which it has been engaged the drum 22 will be brought to rest in the desired position.

In instances where resort is had to an arrangement such as that shown in Figs. 9, 10 and 11, and the shaft as 90a does not have a pinion as 91 thereon and it is desired to rotate the cylinders as C and 22 by grasping and rotating the hand wheel as 150, it will be necessary to effect engagement of the clutch in order that the cylinders may be rotated for in such instances movement will be transmitted from the shaft 90a through the pinion 157 to the gear 158 and thence through the clutch including the housing 159 to the shaft 19a.

In many of the uses to which a printing machine embodying the present invention may be put it will be advantageous to in some instances print less than all of the image borne by the master sheet as M and while in certain instances this may be effected by masking the portion of the image that is not to be reproduced by applying a thin covering sheet over such portion of the image and, for example, adhesively securing this sheet to the master sheet, there will be instances where it will not be convenient to so mask the master sheet. Furthermore, in some instances that portion of the image that is to be eliminated in the course of making reproductions from the master sheet may be so arranged axially along the master sheet when it is mounted on a drum as 22 that the sheets to receive the impressions may be so passed into the bite between the blanket and the platen roller that only the desired portion of the image along the axial extent thereof will be reproduced. This may be conveniently done by arranging a gauge to determine the position of the sheets relative to the blanket and therefore the master sheet so that only a portion of the image borne by the master sheet will be reproduced. In such instances an offset will not be produced on the platen roller by reason of the spacing of the platen roller from the blanket in the manner explained hereinabove.

However, in other instances the portion of the image that it is desired to eliminate in at least selected of the impressions made onto sheet fed between the blanket and the platen roller may be surrounded by portions of the image which it is desired to reproduce, and when this occurs resort may be had, for example, either to an arrangement such as that shown in Figs. 12 to 15, inclusive, or that shown in Figs. 16 to 18, inclusive.

Referring first to Figs. 12 to 15, inclusive, the portions of the apparatus there illustrated which correspond to those described hereinabove are designated by corresponding reference characters except that in Figs. 12 to 15, inclusive, the suffix b is added to such reference characters. Moreover, the location of the portion of the image which it is desired to eliminate will be accurately ascertained particularly with respect to the position at which such portion of the image will appear when transferred to the blanket 20b, and in this respect, since the blanket and the master bearing the image are arranged for synchronic cooperation, it will be understood that an identical portion of the image is picked up by the blanket each time the blanket and master move into cooperating relation one with the other. Furthermore, since the portion of an image, which it will be desired to cut off when resort is had to the arrangements shown in Figs. 12 to 15, inclusive, will usually be a portion that is surrounded by other portions of the image, we have, for the purpose of illustrating this aspect of our invention, shown an arrangement which will cause a portion of the image disposed substantially midway between the side edges of the master sheet and therefore the blanket as being the portion that is to be eliminated, and we have also

shown this portion as being located in such position that it will appear on the face of the blanket near one of the ends thereof and it will be understood that such an arrangement is merely illustrative of arrangements to which resort could be had within the purview of our invention.

In any event, however, once the portion of the image that is to be eliminated has been ascertained with reference to the position at which this will appear on the blanket as 20*b*, an opening or recess 170 is formed on the periphery of the cylinder as C*b* in alignment with such portion of the blanket, and a block 171 is mounted to be radially slidable in the opening 170, the block 171 being arranged so that it includes a face 172 that is formed to afford a continuation of the surface of the cylinder C*b*.

As best shown in Figs. 12 and 14, the inner end of the block 171 is bifurcated to provide two branches 173 and 174 between which a shaft 175 is passed, the shaft 175 being journaled in the end walls 176 and 177 of the cylinder C*b*. A pin 178 extends between the branches 173 and 174 rearwardly of the shaft 175, and a spring 179 has one end thereof fastened to the pin 178 and the other end thereof is disposed about the shaft 19*b*. Thus the spring 179 is effective on the block 171 to tend to urge the surface 172 thereon away from cooperating relation with the surface of the drum C*b* and into engagement with the periphery of the shaft 175.

As best shown in Figs. 12 and 14, the shaft 175 in the portion thereof disposed between the branches 173 and 174 has two flattened portions 180 and 181 thereon. The flattened portions 180 and 181 formed on the shaft 175 are spaced from the center thereof in different amounts. Moreover, a plate 182, Figs. 13 and 15, is fast to the shaft 175 outwardly of the end wall 176 of the cylinder C*b*, and a pin 183 projects from this plate and is disposed in position so that it may be conveniently grasped by the operator to thereby enable the shaft 175 to be rotated. Therefore, when the pin or handle 183 is grasped and the shaft 175 is rotated into a position which will dispose the surface 180 thereon in engagement with the bottom wall 184 of the bifurcation formed in the block 171, the effect of the spring 179 is so overcome that the surface 172 on the block 171 is disposed to afford a continuation of the surface of the cylinder C*b* and, when the blanket 20*b* is drawn taut over the surface of the cylinder C*b* and the surface 172, the portion of the blanket aligned with the surface 172 is disposed in such position as to enable it to pick up a portion of the image carried by the master sheet M*b*.

When, however, the pin 183 is grasped and the shaft 175 is rotated to present the surface 181 to the wall 184, then under the influence of the spring 179 the surface 172 is retracted from cooperating relation with the periphery of the cylinder C*b*, the surface 172 being shown in this position in Fig. 14. Thereupon, by reason of the fact that the blanket 20*b* is drawn taut on the periphery of the cylinder C*b* and since the support afforded therefor by the surface 172 is withdrawn from cooperating relation therewith, the portion of the blanket 20*b* aligned with the surface 172, or, stated otherwise, aligned with the opening 170, assumes a tangential position relative to the periphery of the drum C*b* to thereby be so retracted from the normal position thereof that this position of the blanket 20*b* is prevented from engaging the master sheet as M*b* and therefore



the portion of the image that is aligned with this tangentially extending portion of the blanket is not picked up by this portion of the blanket, wherefore, as it is called in the art, such portion of the image is cut off and will not therefore be transferred by the blanket 20*b* from the master sheet M*b* to a sheet fed into the bite between the cylinder C*b* and the platen roller 21*b*.

It will be appreciated that a block as 171 and the cooperating parts may be located at any desired or required position relative to the periphery of the cylinder C*b* so as to thereby enable a cutoff to be effected upon retraction of the peripheral surface as 172 on a block as 171 in a desired or required position. However, in those instances where a rather substantial cutoff is to be effected, it has been found that if a portion of the blanket is drawn into such tangential relation, the edges defined at the ends of such tangentially extending portion sometimes cause a pickup of ink to be effected with the result of what is known as toning appears on the sheet receiving impressions from the blanket. Hence, in those instances where the extent of the cutoff, peripherally of the blanket as 20*b* or a cylinder as C*b*, is of substantial length, we have found it advantageous to resort to the arrangement shown in Figs. 16, 17 and 18.

The form of the invention shown in Figs. 16, 17 and 18 embodies many parts which have been referred to hereinabove and where such parts appear in Figs. 16, 17 and 18 they are designated by a reference character such as that previously used to identify such a part, but in Figs. 16, 17 and 18 the suffix *c* is added to each such reference character.

In the form of the invention shown in Figs. 16, 17 and 18 the extent of the block 171*c* is such that it is advantageous to form this block so that it will be substantially T-shaped in cross section, the block being bifurcated at the free end of the stem of such T-shaped configuration to therefore afford limbs as 173*c* and 174*c*.

A pin 178*c* extends between the limbs 173*c* and 174*c* and a spring 179*c* extends between this pin and the shaft 19*c* in the manner explained hereinabove with reference to the spring 179. The spring 179*c* is effective on the block 171*c* to tend to retract the surface 172*c* thereon from cooperating relation with the periphery of the drum C*c*, and flattened portions 180*c* and 181*c* on a shaft 175*c* are effective in the manner explained hereinabove with reference to the portions 180 and 181 to dispose the surface 172*c* either in or out of cooperating relation with the periphery of the cylinder C*c*.

In this instance, however, instead of causing the blanket 20*c* to assume a tangential position in the portion thereof aligned with the opening 170*c* upon retraction of the surface 172*c* from cooperating relation with the periphery of the drum or cylinder C*c*, the portion 20*ca* of the blanket 20*c* aligned with the surface 172*c* is cut away from the remainder of the blanket 20*c* and is adhesively or otherwise suitably secured to the face 172*c*. As best shown in Fig. 17, the opening that is thus formed in the blanket 20*c* is preferably enlarged so as to afford clearance about the portion of the blanket 20*ca* that is secured to the surface 172*c* so that the portion 20*ca* will not interfere with tightening of the blanket 20*c* on the periphery of the cylinder C*c*.

It will therefore be seen that when the surface 180*c* is engaged with the wall 184*c*, the portion 20*ca* of the blanket is aligned with the

remainder thereof that moves into cooperating relation therewith so as to transfer this portion of the image to sheets that pass through the bite between the cylinder Cc and the platen roller 21c. When, however, the surface 181c is brought into cooperating relation with the wall 184c, the portion 20ca is retracted from cooperating relation with the master sheet whereby a cutoff will be effected as described hereinabove.

It will be understood that, as in the case of the block 171, the block 171c will be located at any desired or required position in the extent of the blanket as 20c so that a cutoff may be effected at any desired position.

The arrangements shown in Figs. 12 to 18, inclusive, are such as to enable a retraction of a portion of the blanket or transfer medium but it will be understood that particularly in those instances where a relatively flexible master such as that to which Wescott Patent No. 2,134,165, patented October 25, 1938, pertains is utilized either the arrangement shown in Figs. 12 to 15 or that shown in Figs. 16 to 18 could be utilized.

Thus if the arrangements shown in Figs. 12 to 15 were incorporated in the cylinder as 22b, a master of the aforesaid character could be caused to assume the aforesaid tangential or chordal relation with respect to the periphery of the cylinder 22b and just as in the case when the blanket 20b assumes a tangential or chordal relation with respect to the periphery of the cylinder C, a cutoff would be effected.

Likewise, if the arrangement shown in Figs. 16 to 18, inclusive, were incorporated, for example, in the cylinder 22c, then a portion of a master either of the aforesaid character or even a metallic or other master could be cut therefrom and attached to the surfaces 172c of a block as 171c and that thereupon a cutoff such as that described hereinabove could be effected.

It will thus be seen that the arrangement shown in Figs. 12 to 18, inclusive, and equivalents thereof may be utilized to either effect retraction of a portion of a master or a portion of a transfer medium so as to thereby enable a cutoff to be effected. Moreover, in some instances it may be desirable to effect more than one cutoff and the portions which are thus desired to be cut off may be so related one to the other that there would be mechanical transfer in the event it was desired to incorporate the arrangements which would enable such cutoffs to be effected in a single cylinder, and hence in such circumstances, or elsewhere as desired, an arrangement for enabling retraction of both a portion of a master and a portion of the transfer medium may be incorporated in the respective cylinders on which such members are mounted. This would of course enable two portions of a master arranged in axial alignment along the periphery of the drum 22c, for example, to be cut off either singly or together and, of course, any other relation between the two portions to be cut off could be provided for by resorting to the inclusion of the means for effecting the cutoff in one or both of the two cylinders.

It will be appreciated from the foregoing description that we have provided a printing machine in which portions of a drum or cylinder to which ends of a master sheet are to be connected may be expeditiously brought to rest in positions as will facilitate connection of the end of a master sheet thereto. As explained hereinabove, this desirable result may be accomplished either through the utilization of a friction clutch and brake or resort may be had to a clutch arrangement which will positively arrest movement of a drum or cylinder in selected of such positions. It will be appreciated that an arrangement of this character materially expedites the use of printing machines of the kind to which this invention pertains, particularly in those instances where but a relatively few impressions are to be made from each master sheet that is arranged in the machine.

Moreover, we have provided an arrangement which may be utilized to apply a treatment to a master sheet such, for example, as in the case of a lithographic master sheet as will render the non-image portions of the master sheet ink-repellent. The arrangement which we have provided is manually controlled and may therefore be rendered operative when and as required and furthermore, as explained hereinabove, the arrangement is such that the means for applying such a treatment to the master sheet may be rendered effective either when the master sheet is initially installed in the machine or from time to time as impressions are being made from such a master sheet.

Furthermore, we have included in the printing machine an arrangement which will effectively wipe off any excess from the master sheet of any fluid or the like that may be applied thereto by the manually-controlled means to which reference has just been made. Inasmuch as the means which effects this wiping operation is so arranged in the machine that it may be expeditiously removed from or installed in the machine, such wiping means may at all times be kept in condition to perform its intended function.

Additionally, as explained hereinabove, the present invention also includes an arrangement which will enable a cutoff of selected portions of an image borne by a master sheet to be expeditiously effected without resorting to masking the master sheet. Furthermore, this arrangement is such that portions of an image surrounded by the image may be expeditiously cut off which, it will be appreciated is ofttimes advantageous. Inasmuch as we have shown the means that enable such a cutoff as being effected to be manually controlled, it will be understood that this means may be rendered ineffective or effective as may be desired or required in the course of operation of the machine.

Thus while we have shown and described preferred embodiments of our invention, it is to be understood that these are capable of variation and modification and we therefore do not wish to be limited to the precise details set forth but desire to avail ourselves of such changes and alterations as fall within the purview of the following claims.

We claim:

1. In a printing machine, a rotary drum embodying spaced apart means for attaching to the drum the respective ends of a master disposed on the periphery of the drum, driving means for said drum, clutch means interposed between said driving means and said drum, means for effecting engagement of said clutch means to set said drum in rotation, and means for effecting disengagement of the clutch means and operative to bring about disengagement of said clutch means in such angular relation with the positions of the spaced apart means on said drum as to cause said drum to come to rest in selected positions at which access may be readily had to the spaced

apart means for attaching a master to the drum to thereby facilitate attachment to the ends of a master to the drum.

2. In a printing machine, a rotary drum embodying spaced apart means for attaching to the drum the respective ends of a master disposed on the periphery of the drum, driving means for said drum, clutch means interposed between said driving means and said drum, means for effecting engagement of said clutch means to set said drum in rotation, and means for effecting disengagement of the clutch means and operative to bring about disengagement of said clutch means in such angular relation with the respective positions of the spaced apart means on said drum as to cause said drum to come to rest in one or the other of two selected positions at one of which access may be readily had to one of said spaced apart means and at the other of which access may be readily had to the other of said spaced apart means to thereby facilitate attachment of the ends of a master to the drum.

3. In a printing machine, a rotary drum embodying spaced apart means for attaching to the drum the respective ends of a master disposed on the periphery of the drum, driving means for said drum, clutch means interposed between said driving means and said drum, means for effecting engagement of said clutch means to set said drum in rotation, and means in said clutch means effective to bring about disengagement thereof and to arrest movement of the drum in such angular relation with the respective positions of the spaced apart means on said drum as to cause said drum to come to rest in one or the other of two selected positions at one of which access may be readily had to one of said spaced apart means and at the other of which access may be readily had to the other of said spaced apart means to thereby facilitate attachment of the ends of a master to the drum.

4. In a printing machine, a rotary drum embodying spaced apart means for attaching to the drum the respective ends of a master disposed on the periphery of the drum, driving means for said drum, clutch means including a clutch member operative to set said drum in rotation, and means respectively disposed in predetermined angular relation with the spaced apart means on said drum and engageable with said clutch member to interrupt rotation of said drum and effective to arrest movement thereof in such angular relation with the respective positions of the spaced apart means on said drum as to cause said drum to come to rest in one or the other of two selected positions at one of which access may be readily had to one of said spaced apart means and at the other of which access may be readily had to the other of said spaced apart means to thereby facilitate attachment of the ends of a master to the drum.



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