

March 30, 1943.

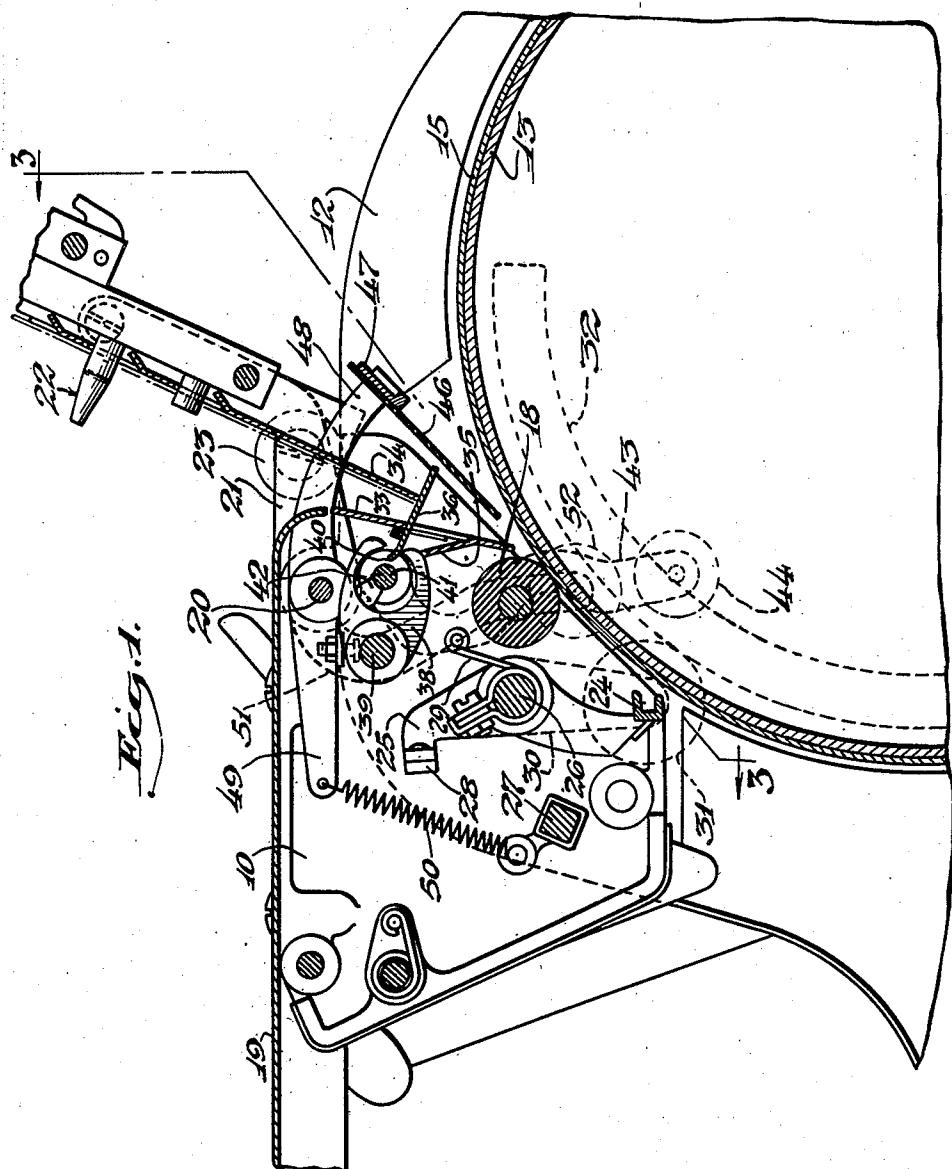
R. A. WILLIAMS

2,315,175

DUPLICATING APPARATUS

Filed Aug. 9, 1941

4 Sheets-Sheet 1



Invention:
Robert Alonzo Williams.
By Fabel, Carlson, Britzbaugh & Wells
Attorneys.

March 30, 1943.

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DUPLICATING APPARATUS

Filed Aug. 9, 1941

4 Sheets-Sheet 2

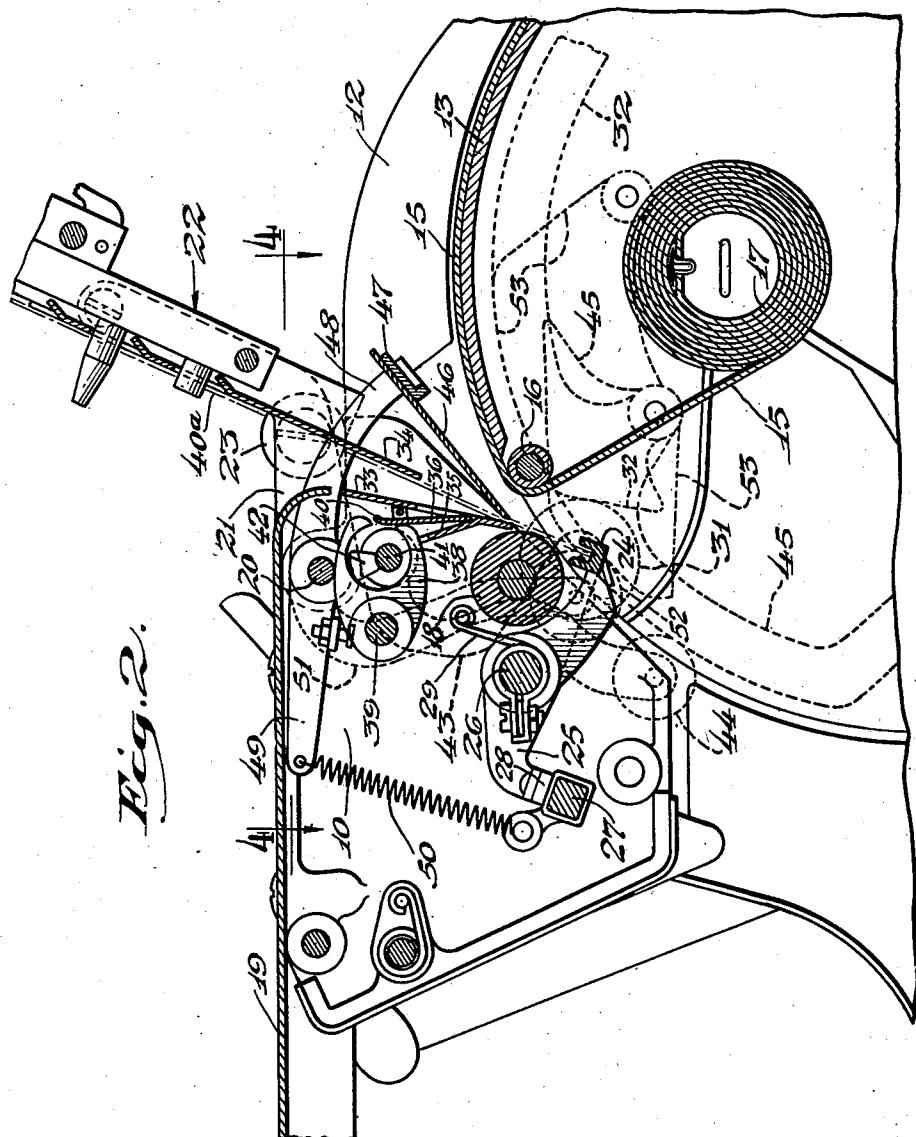


Fig. 2.

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March 30, 1943.

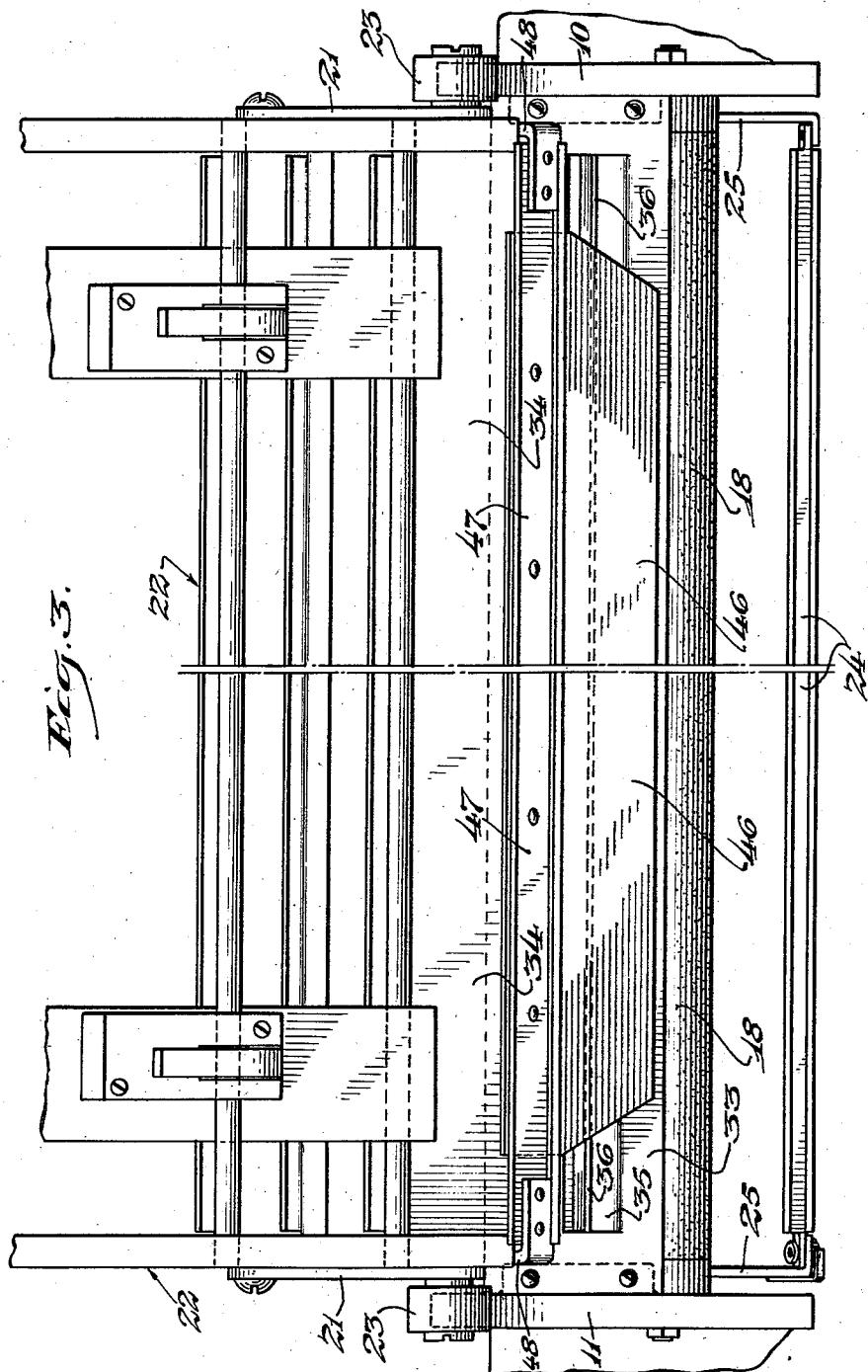
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DUPLICATING APPARATUS

Filed Aug. 9, 1941

4 Sheets-Sheet 3



Invention.
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DUPLICATING APPARATUS

Filed Aug. 9, 1941

4 Sheets-Sheet 4

Fig. 4.

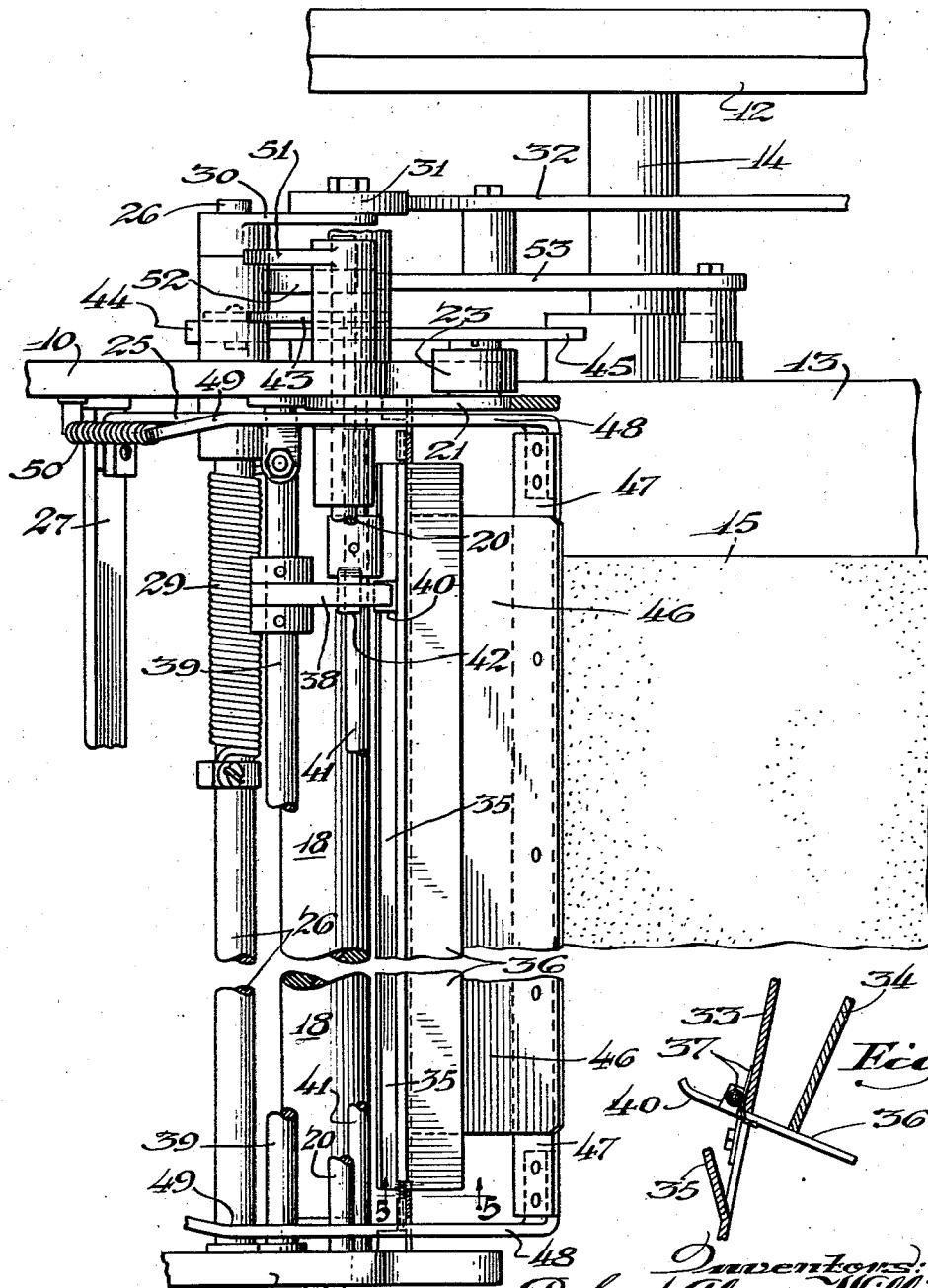


Fig. 5.

Inventors:
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UNITED STATES PATENT OFFICE

2,315,175

DUPLICATING APPARATUS

Robert Alonzo Williams, Chicago, Ill., assignor to
 Ditto, Incorporated, Chicago, Ill., a corpora-
 tion of West Virginia

Application August 9, 1941, Serial No. 406,211

10 Claims. (Cl. 161—132)

This invention relates to means for feeding copy sheets or copy sheet assemblies to a duplicating machine and particularly for feeding copy sheets to the drum of such a machine into engagement with a gelatin duplicating pad or band on the drum and provided with a copy ink design on its face formed in reverse so as to transfer a copy in positive form to the copy sheet pressed against the pad as the drum rotates. It is the principal object of the invention to provide a new and improved form and arrangement of parts by which a copy sheet assembly of varied thickness at different points may be fed evenly and smoothly in the desired adjusted position to the drum in pressure relationship with the duplicating pad.

In machines of this type employed for system work, copy sheet assemblies are employed each comprising a considerable number of sheets in overlapping arrangement with respect to each other so as to give the assembly a substantially greater thickness at its intermediate portion than at its side portions. In connection with such copy sheet assemblies of considerable weight and varied thickness, it is particularly important that the mechanism for handling the assemblies and for controlling their position for a duplicating operation shall be very effective so as to reduce to a minimum the likelihood that the assemblies shall slip or otherwise fail to respond to the forces normally moving the assemblies forwardly in controlled position. The machine is preferably of the same general type as that disclosed by prior Marchev Patent No. 2,150,744, of March 14, 1939, and employs certain of the improved structure as disclosed by my earlier application Serial No. 391,353, filed May 1, 1941.

In the arrangement by which the desired results have been attained, a stop plate is pivotally mounted in transverse position below an obliquely disposed paper guide so as to be held normally by a light spring pressure in operative position for receiving and supporting a copy sheet assembly thereon, the plate being movable out of operative supporting position by a swinging movement downwardly and forwardly so as to permit the supported copy sheet or assembly to move downwardly on the paper guide in rear of the stop plate. Improved means is provided for giving the stop plate the desired swinging movement out of operative position in the desired timed relation to the rotation of the drum, comprising a swingingly mounted arm or block which is moved in the required timed relation by the camming action of a lug engaging an eccentric face portion

of the arm so that the stop plate is given a movement out of operative position at a predetermined point in each revolution of the drum against the action of the spring pressing on the plate and is, after a comparatively short interval, returned by the spring to its operative sheet stopping position.

The arrangement comprises further a plate movably mounted in position to act as a guide for directing the copy sheet or assembly into position between the drum and the platen roller, together with means for pressing the sheet into frictional holding engagement with an adjacent part. The plate employed is thin and resilient and is easily flexed so as to have effective engagement with the sheet or assembly throughout the full width of the machine even though the assembly is of varied thickness at different points transversely of the machine. The assembly may accordingly be pressed lightly and yieldingly against an adjacent stationary part so as to be held securely in adjusted position and still be adapted to move readily edgewise when the assembly is drawn forwardly by the drum and the platen roller. The arrangement is such that when the stop plate is moved out of operative supporting position for a copy sheet assembly resting thereon the assembly moves downwardly on the paper guide into engagement with a margin bar by which the assembly is stopped in the desired adjusted and aligned position, after which the movable resilient plate is brought into pressure relationship with the assembly so as to hold the assembly in position when the margin bar is moved out of the path of the assembly. The construction is such that the point at which the resilient pressure plate engages the copy sheet assembly is closely adjacent to the platen roller so as to reduce to a minimum the chance that the leading edge portion of the assembly shall be wrinkled at the portion thereof between the point of pressure thereon and the point at which the assembly is gripped between the drum and the platen roller.

It is another object of this invention to improve machines of this type in sundry details hereinafter pointed out. The preferred means by which the several objects have been attained are illustrated in the accompanying drawings, in which

Fig. 1 is a central vertical sectional view through a portion of a duplicating machine of the rotary gelatin band type, showing the means for controlling the feeding of a copy sheet or assembly into operative position in the machine;

Fig. 2 is a view similar to Fig. 1 but with the parts in changed position;

Fig. 3 is a vertical sectional view taken substantially at the line 3—3 of Fig. 1;

Fig. 4 is a horizontal sectional view taken substantially at the line 4—4 of Fig. 2; and

Fig. 5 is a fragmentary vertical sectional view taken substantially at the line 5—5 of Fig. 4.

Referring now to the several figures of the drawings, in which corresponding parts are indicated by the same reference characters, 10 and 11 indicate side frame members at opposite sides of the machine, suitably supported from the main framework 12 of the machine which is of any approved type. A drum 13 is rotatably supported on the framework by a transversely extending shaft 14, such drum being of segmental form with an opening at one side face portion, the drum being provided with means for holding a gelatin band 15 wrapped thereabout, comprising one or more supporting rollers 16 and reels 17.

Between the frame members 10 and 11, a platen roller 18 is rotatably mounted in position by any suitable means—such as the means shown by said prior Marchev Patent No. 2,150,744, by which means the roller is pressed yieldingly toward the drum so as to have operative pressure relationship with the gelatin band on the drum. A table or tray 19 is mounted in front of the drum at a slightly higher level so as to support a pile of copy sheets or copy sheet assemblies in convenient position for being fed by hand to the sheet guiding and supporting means of the machine for being carried one at a time into impression relationship to the gelatin band.

Adjacent to the rear edge portion of the table 19, a shaft 20 is rotatably mounted between the frame members 10 and 11, upon which shaft two bellcrank levers or brackets 21 are loosely mounted for supporting a paper guide 22 in oblique position, each of the brackets being provided with a roller 23 rotatably mounted thereon in position to engage horizontally extending portions of the framework as shown in Figs. 1 and 2 for limiting the clockwise movement of the brackets in said figures. The paper guide 22 is preferably of the type disclosed by my earlier application Serial No. 391,353, filed May 1, 1941, and the structure accordingly will not be described in detail. The arrangement is such that copy sheets can readily and easily be placed in position by hand one at a time so as to be supported evenly and smoothly thereon ready for a sliding movement downwardly on the guide when the support for the lower edge of the sheet is removed as hereinafter described.

As is clearly shown in Figs. 1 and 2, the paper guide 22 normally stands in such position obliquely as to direct a copy sheet assembly downwardly thereon directly past the rear face of the platen roller 18 into engagement with a margin bar 24 of channel form supported by arms 25 fixedly mounted on a shaft 26 journaled between the frame members 10 and 11. The arms 25 extend forwardly beyond the shaft 26 into position to engage a transversely extending bar 27 fixedly mounted in position between the frame members 10 and 11, said arms being provided with cushions 28 in the form of rubber blocks. A coiled spring 29 on the shaft 26 normally holds the shaft 26 turned to the limit of its motion in counter-clockwise direction in Figs. 1 and 2 for holding the margin bar 24 yieldingly in raised position directly below the platen roller 18, as shown in Fig. 2. On its outer end, the shaft 26 is pro-

vided with an arm 30 having a roller 31 rotatably mounted thereon in position to engage a cam 32 carried around with the drum. When the cam 32 engages the roller 31 as shown in Fig. 2, the continued rotation of the drum and cam causes the shaft 26 to rotate in clockwise direction in said figure so as quickly to move the margin bar 24 downwardly and forwardly from the position of the bar in said Fig. 2 to the position as shown in Fig. 1, the margin bar being held in this way out of contact with the gelatin band 15 on the drum.

For directing a copy sheet assembly into engagement with the margin bar 24 as shown in Fig. 2, a guide plate 33 is provided, mounted rigidly in position in front of the lowermost plate portion 34 of the paper guide structure 22 in downwardly convergent position with respect thereto so as to direct the assembly into close proximity to the rear face portion of the platen roller 18. At its intermediate portion, the plate 33 is cut out and bent forwardly to provide a flange 35 and so as to provide an opening in which a stop plate 36 is adapted to operate, such plate 36 being pivotally mounted on the front face of the plate 33, as is best shown in Fig. 4. A light spring 37 is provided, as shown in Figs. 4 and 5, adapted normally to hold the plate 36 in raised position in engagement with the lower edge of the plate 34 of the paper guide so as to support on edge a copy sheet assembly resting on said plate 36 and said paper guide. The arrangement is such with respect to the adjacent parts that an operator can quickly and easily place a copy sheet assembly in position on the plate 36 so as to be supported evenly and smoothly thereby ready for a downward movement along the paper guide promptly when the plate 33 is swung downwardly out of supporting position.

Means is provided for moving the stop plate 36 downwardly at a predetermined point in each revolution of the drum 13 for permitting the copy sheet assembly to move downwardly toward the platen roller. This means comprises an arm or block 38 swingingly mounted on a transversely positioned shaft 39 in position to engage a lug 40 carried by the plate 36. With the arm 38 in the position as shown in Fig. 1, the plate 36 stands in its operative sheet-stopping position, but when the arm 38 is swung upwardly through a very small arc into the position as shown in Fig. 2 its engagement with the lug 40 forces the plate 36 downwardly against the action of the light spring 37 so as to permit a copy sheet assembly supported by the plate 36 to slide downwardly along the paper guide into engagement with the margin bar 24, as shown in Fig. 2, where the assembly is indicated by the reference character 40a.

Means is provided for giving the arm or block 38 an upward swinging movement in timed relation to the revolution of the drum, such means comprising a shaft 41 provided with a lug 42 thereon adapted by a camming engagement with an eccentrically arranged face portion of said arm or block 38 to give the block or arm a short swinging movement upwardly when the shaft 41 is rocked slightly in clockwise direction from the position as shown in Fig. 1 to the position as shown in Fig. 2, such upward movement of the arm or block 38 serving to move the plate 36 downwardly out of operative position into the displaced position as shown in said Fig. 2. For effecting the rocking movement of the shaft 41, the shaft is provided with an arm 43 pro-

vided with a roller 44 in position for engagement with a cam 45 carried around by the drum 13.

Additional means is provided for assisting in the control of the movement of a copy sheet assembly to the drum, comprising a pressure plate 46 carried by a stiff and rigid angle bar 47 mounted on arms 48 which in turn are rigidly mounted on the shaft 20 about which the brackets 21 are journaled as hereinabove set forth. An arm 49 extending forwardly from the shaft 20 is drawn downwardly by a coiled spring 50 so as normally to hold the plate 46 in the position as shown in Fig. 1 in downwardly convergent position with respect to the plate 33 so as to guide a copy sheet assembly along the rear face of the platen roller. The construction is such that when the shaft 20 is rocked in clockwise direction in Fig. 1 the plate 46 is moved edgewise toward the platen roller 18 and the lower edge portion of the plate 33 so as to press the intervening copy sheet assembly lightly against said plate 33 for holding the assembly in adjusted position. For effecting such movement of the shaft 20 and the plate 46, the shaft is provided with an arm 51 at one end, having a roller 52 rotatably mounted thereon in position to engage a cam 53 carried around by the drum 13. At a predetermined point in each revolution of the drum, the cam 53 engages the roller 52 so as to move the pressure plate 46 downwardly and forwardly into the position as shown in Fig. 2 for pressing a copy sheet against the lower edge of the guide plate 33.

For enabling the pressure plate 46 to cooperate effectively with the stationary plate 33 for holding a copy sheet or copy sheet assembly in adjusted position, the plate is made very thin and of resilient material so as to cause it to yield readily for applying a substantial degree of pressure on the assembly at all points thereof regardless of the varied thickness of the assembly at different points transversely of the machine. The parts are arranged so that the plate 46 applies pressure against the edge of the plate 33 regardless of whether or not a copy sheet is interposed between the plates, the plate 46 having such resiliency and flexibility as to enable it to yield without undue stress thereon even when a considerable number of thicknesses of copy sheet material are interposed between the plates, this result being due in part to the fact that the plate 46 is of substantial width between its lower edge and the point at which the plate is secured rigidly to the stiff reinforcing bar 47.

With the drum 13 rotating in counterclockwise direction in Figs. 1 and 2 in the normal operation of the machine, the margin bar 24 is brought to its operative position as shown in Fig. 2 promptly when the open face portion of the segmental drum comes opposite to the margin bar, the cam 32 being shaped for attaining this result as is usual in this type of machine. As soon as the stop plate 36 returns to operative sheet-supporting position as shown in Fig. 5 for receiving the next following copy sheet assembly thereon, which occurs promptly as soon as the preceding assembly has cleared the plate, the operator takes a copy sheet assembly from the pile on the table 19 and places it in position on the paper guide 22 so as to rest evenly and smoothly on said plate 36. In the continued rotation of the drum in counterclockwise direction in Figs. 1 and 2, when the cam 45 engages the roller 44 the plate 36 is swung down-

wardly into the position as shown in Fig. 2 so as to permit the copy sheet assembly 40a to slide downwardly on the paper guide 22 into engagement with the margin bar 24 upon which the copy sheet assembly settles evenly in the desired adjusted position as shown in Fig. 2. Shortly after such downward movement of the copy sheet assembly into position on the margin bar, the cam 53 is brought into engagement with the roller 52 so as to move the pressure plate 46 downwardly and forwardly into operative position as shown in Fig. 2 for pressing the assembly lightly against the lower edge of the stationary plate 33, the grip of the two plates on the assembly being effected without any appreciable tendency for displacement of the assembly from its normal adjusted alignment. Almost immediately after the establishment of the grip of the plates 33 and 46 on the copy sheet assembly, the cam 32 is brought into engagement with the roller 34 for moving the margin bar 24 outwardly out of the path of the drum. Shortly after this, the leading edge portion of the copy sheet assembly is caught between the platen roller 18 and the leading edge portion of the segmental drum, after which such copy sheet assembly is carried around by the drum, with the assembly held releasably in position on the gelatin pad.

At substantially the same time when the margin bar is being moved out of operative position, the cam 45 is carried out of engagement with the roller 44 so as to permit the stop plate 36 to move upwardly under the influence of the spring 37 into engagement with a copy sheet assembly. This light pressure of the plate 36 on the face of the assembly has no objectionable effect on the assembly in any way, since the assembly is at that time firmly secured on the drum. As soon as the assembly clears the plate 36, such plate returns to operative position as shown in Figs. 1 and 5.

By the use of the improved arrangement of stop plate means, and by reason of the cooperation of the thin and resilient readily-flexed plate 46 for pressing the copy sheet assembly yieldingly against an adjacent stationary part, the control of the copy sheet assembly is substantially improved. With the plates 33 and 46 engaging the assembly at a point in close proximity to the platen roller 18, the likelihood of the assembly's becoming wrinkled between the platen roller and the point where the assembly is gripped is kept to a minimum. It has been found in practice that the arrangement as shown and described is highly effective for the delivery of either a single sheet or an assembly comprising a plurality of sheets in overlapped arrangement.

For certain purposes it is now desirable to pass through the duplicating machine an assembly of copy sheets consisting of as many as ten to twenty individual sheets arranged in overlapped relation so that a portion of each sheet will engage the master copy on the drum. These assemblies are available generally in such form that after passing through the duplicating machine the sheets are readily separable from each other so that the individual copy sheets may be passed through the machine to receive individual legends from a master. It has been found that the individual copy sheets or the copy sheet assemblies are held at all times in accurately adjusted and aligned position free of wrinkles so as to be applied successively in the desired position on the gelatin band. In the claims I have used the term

"copy sheets" to define both an individual sheet and the assembly.

While the form and arrangement of parts as above described are preferred, the invention is not to be limited thereto except so far as the claims may be so limited, it being understood that changes might well be made in the form and arrangement of the parts without departing from the invention.

I claim:

1. In a duplicating machine, the combination of a drum rotatably mounted on a horizontal axis and having a recess in its peripheral surface, a platen roller rotatably mounted in position to press on said drum, an obliquely disposed paper guide along which copy sheets are adapted to move downwardly toward said platen roller, margin bar means movably mounted in position for engagement with a copy sheet on said paper guide for supporting its lower end portion opposite to said platen roller, means effective at a predetermined point in each revolution of the drum to move said margin bar means automatically out of the path of a copy sheet on said paper guide, and means comprising a thin resilient plate movably mounted in position for pressing said copy sheet lightly against an adjacent stationary part and adapted to be flexed readily for applying pressure effectively against portions of different thicknesses so as to hold the copy sheet yieldingly against movement downwardly on the guide after said margin bar means has been withdrawn from engagement with the copy sheet.

2. In a duplicating machine, the combination of a drum rotatably mounted on a horizontal axis and having a recess in its peripheral surface, a platen roller rotatably mounted in position to press on said drum, an obliquely disposed paper guide along which copy sheets are adapted to move downwardly toward said platen roller, a plate in front of said paper guide in spaced relation thereto and at a comparatively small angle with respect thereto adapted to direct a copy sheet from said paper guide along the rear face of the platen roller, margin bar means movably mounted in position for engagement with a copy sheet on said paper guide for supporting its lower end portion opposite to said platen roller, means effective at a predetermined point in each revolution of the drum to move said margin bar means automatically out of the path of a copy sheet on said paper guide, and means comprising a thin resilient plate movably mounted between said first-named plate and said drum in comparatively sharp angular relation to said first-named plate and movable edgewise into position for pressing said copy sheet lightly against said first-named plate and adapted to be flexed readily for applying pressure effectively against portions of different thicknesses so as to hold the copy sheet yieldingly against movement downwardly on the paper guide after said margin bar means has been withdrawn from engagement with the sheet.

3. In a duplicating machine, the combination of a drum rotatably mounted on a horizontal axis and having a recess in its peripheral surface, a platen roller rotatably mounted in position to press on said drum, an obliquely disposed paper guide along which copy sheets are adapted to move downwardly toward said platen roller, margin bar means movably mounted in position for engagement with a copy sheet on said paper guide for supporting its lower end portion opposite to said platen roller, means effective at a

predetermined point in each revolution of the drum to move said margin bar means automatically out of the path of a copy sheet on said paper guide, and means comprising a thin resilient plate movably mounted in position for pressing said copy sheet lightly against an adjacent stationary part in close proximity to said platen roller in rear thereof, said plate being adapted to be flexed readily for applying pressure effectively against portions of different thicknesses so as to hold the copy sheet yieldingly against movement downwardly on the paper guide after said margin bar means has been withdrawn from engagement with the sheet.

4. In a duplicating machine, the combination of a drum rotatably mounted on a horizontal axis and having a recess in its peripheral surface, a platen roller rotatably mounted in position to press on said drum, an obliquely disposed paper guide along which copy sheets are adapted to move downwardly toward said platen roller, margin bar means movably mounted in position for engagement with a copy sheet on said paper guide for supporting its lower end portion opposite to said platen roller, means effective at a predetermined point in each revolution of the drum to move said margin bar means automatically out of the path of a copy sheet on said paper guide, two arms pivotally mounted on a transverse axis above said drum, a stiff rigid bar connecting the ends of said arms, a thin resilient plate supported from said bar and normally extending downwardly between the platen roller and the drum adapted upon a downward swinging movement of said arms to press said copy sheet lightly against an adjacent stationary part in close proximity to said platen roller in rear thereof and adapted to be flexed readily for applying pressure effectively against portions of different thicknesses so as to hold the copy sheet yieldingly against movement downwardly on the paper guide, and means for moving said arms and said flexible plate downwardly into operative sheet holding position on each revolution of the drum ahead of the movement of the margin bar means out of sheet supporting position.

5. In a duplicating machine, the combination of a drum rotatably mounted on a horizontal axis and having a recess in its peripheral surface, a platen roller rotatably mounted in position to press on said drum, an obliquely disposed paper guide along which copy sheets are adapted to move downwardly toward said platen roller, margin bar means movably mounted in position for engagement with a copy sheet on said paper guide for supporting its lower end portion opposite to said platen roller, means movably mounted below the paper guide adjacent to said platen roller adapted by engagement with the bottom edge of a copy sheet to support the assembly on the guide and movable out of operative position for permitting the copy sheet to move downwardly into engagement with said margin bar means with its lower edge portion positioned along the inner face of the platen roller and extending below said roller, means effective at a predetermined point in each revolution of the drum to move said margin bar means automatically out of the path of a copy sheet on said paper guide, and means comprising a thin resilient plate movably mounted in position for pressing said copy sheet lightly against an adjacent stationary part and adapted to be flexed readily for applying pressure effectively against portions of different thicknesses so as to hold the copy sheet yieldingly against move-

ment downwardly on the paper guide after said margin bar means has been withdrawn from engagement with the copy sheet.

6. In a duplicating machine, the combination of a drum rotatably mounted on a horizontal axis and having a recess in its peripheral surface, a platen roller rotatably mounted in position to press on said drum, an obliquely disposed paper guide along which copy sheets are adapted to move downwardly toward said platen roller, margin bar means movably mounted in position for engagement with a copy sheet on said paper guide for supporting its lower end portion opposite to said platen roller, a plate extending across the machine below said paper guide and pivotally mounted on a transverse axis so as to be movable upwardly and backwardly into position to support a copy sheet on said paper guide, yielding means adapted normally to hold said plate in operative sheet supporting position, means adapted at a predetermined point in each revolution of the drum to move said plate downwardly against the action of said yielding means for permitting the copy sheet to move downwardly into engagement with said margin bar means with its lower edge portion positioned along the inner face of the platen roller and extending below said roller, means effective at a predetermined point in each revolution of the drum to move said margin bar means automatically out of the path of a copy sheet on said paper guide, and means comprising a thin resilient plate movably mounted in position for pressing said copy sheet lightly against an adjacent stationary part and adapted to be flexed readily for applying pressure effectively against portions of different thicknesses so as to hold the copy sheet yieldingly against movement downwardly on the paper guide after said margin bar means has been withdrawn from engagement with the copy sheet.

7. In a duplicating machine, the combination of a drum rotatably mounted on a horizontal axis and having a recess in its peripheral surface, a platen roller rotatably mounted in position to press on said drum, an obliquely disposed paper guide along which copy sheets are adapted to move downwardly toward said platen roller, margin bar means movably mounted in position for engagement with a copy sheet on said paper guide for supporting its lower end portion opposite to said platen roller, a plate extending across the machine below said paper guide and pivotally mounted on a transverse axis so as to be movable upwardly and backwardly into position to support a copy sheet on said paper guide, yielding means adapted normally to hold said plate in operative sheet supporting position, means comprising an arm pivotally mounted in front of said plate adapted by a swinging movement of the arm in one direction in engagement with the plate to give the plate a movement downwardly against the action of said yielding means for permitting the copy sheet to move downwardly into engagement with said margin bar means with its lower edge portion positioned along the inner face of the platen roller and extending below said roller, means adapted at a predetermined point in each revolution of the drum to give said arm a swinging movement in the direction for displacing said plate from operative position, means effective at a predetermined point in each revolution of the drum to move said margin bar means automatically out of the path of a copy sheet on said paper guide, and means comprising a thin resilient plate movably mounted in position for pressing said

copy sheet lightly against an adjacent stationary part and adapted to be flexed readily for applying pressure effectively against portions of different thicknesses so as to hold the copy sheet yieldingly against movement downwardly on the paper guide after said margin bar means has been withdrawn from engagement with the copy sheet.

8. In a duplicating machine, the combination of a drum rotatably mounted on a horizontal axis and having a recess in its peripheral surface, a platen roller rotatably mounted in position to press on said drum, an obliquely disposed paper guide along which copy sheets are adapted to move downwardly toward said platen roller, margin bar means movably mounted in position for engagement with a copy sheet on said paper guide for supporting its lower end portion opposite to said platen roller, a plate extending across the machine below said paper guide and pivotally mounted on a transverse axis so as to be movable upwardly and backwardly into position to support a copy sheet on said paper guide, yielding means adapted normally to hold said plate in operative sheet supporting position, means comprising an arm pivotally mounted in front of said plate adapted by a swinging movement of the arm in one direction in engagement with the plate to give the plate a movement downwardly against the action of said yielding means for permitting the copy sheet to move downwardly into engagement with said margin bar means with its lower edge portion positioned along the inner face of the platen roller and extending below said roller, a shaft rotatably mounted in rear of the axis on which said arm is pivotally mounted, a lug on said shaft adapted to have a camming engagement with an eccentrically positioned face portion of said arm as said shaft rotates and adapted thereby to give said arm a swinging movement in the direction for displacing said plate from operative position, means adapted at a predetermined point in each revolution of the drum to give said shaft a rotary movement for actuating said arm and thus moving said plate out of operative sheet supporting position, means effective at a predetermined point in each revolution of the drum to move said margin bar means automatically out of the path of a copy sheet on said paper guide, and means comprising a thin resilient plate movably mounted in position for pressing said copy sheet lightly against an adjacent stationary part and adapted to be flexed readily for applying pressure effectively against portions of different thicknesses so as to hold the copy sheet yieldingly against movement downwardly on the paper guide after said margin bar means has been withdrawn from engagement with the copy sheet.

9. In a duplicating machine, the combination of a drum rotatably mounted on a horizontal axis and having a recess in its peripheral surface, a platen roller rotatably mounted in position to press on said drum, an obliquely disposed paper guide along which copy sheets are adapted to move downwardly toward said platen roller, margin bar means movably mounted in position for engagement with a copy sheet on said paper guide for supporting its lower end portion opposite to said platen roller, a plate in front of said paper guide in spaced relation thereto and at a comparatively small angle with respect thereto adapted to direct a copy sheet from said paper guide along the rear face of the platen roller, a second plate extending across the machine below

said paper guide and pivotally mounted on a transverse axis so as to be movable upwardly and backwardly into position to support a copy sheet on said paper guide, yielding means adapted normally to hold said second plate in operative sheet supporting position, means adapted at a predetermined point in each revolution of the drum to move said second plate downwardly against the action of said yielding means for permitting the copy sheet to move downwardly into engagement with said margin bar means with its lower edge portion positioned along the inner face of the platen roller and extending below said roller, means effective at a predetermined point in each revolution of the drum to move said margin bar means automatically out of the path of a copy sheet on said paper guide, and means comprising a thin resilient plate movably mounted in position for pressing said copy sheet lightly against said first-named plate and adapted to be flexed readily for applying pressure effectively against portions of different thicknesses so as to hold the copy sheet yieldingly against movement downwardly on the paper guide after said margin bar means has been withdrawn from engagement with the copy sheet.

10. In a duplicating machine, the combination of a drum rotatably mounted on a horizontal axis and having a recess in its peripheral surface, a platen roller rotatably mounted in position to press on said drum, an obliquely disposed paper guide along which copy sheets are adapted to move downwardly toward said platen roller, margin bar means movably mounted in position for engagement with a copy sheet on said paper guide for supporting its lower end portion opposite to said platen roller, a plate in front of said paper guide in spaced relation thereto and at a comparatively small angle with respect

thereto adapted to direct a copy sheet from said paper guide along the rear face of the platen roller, a second plate extending across the machine below said paper guide and pivotally mounted on a transverse axis so as to be movable upwardly and backwardly into position to support a copy sheet on said paper guide, yielding means adapted normally to hold said second plate in operative sheet supporting position, 5 means adapted at a predetermined point in each revolution of the drum to move said second plate downwardly against the action of said yielding means for permitting the copy sheet to move downwardly into engagement with said margin bar means with its lower edge portion positioned along the inner face of the platen roller and extending below said roller, means effective at a predetermined point in each revolution of the drum to move said margin bar means automatically out of the path of a copy sheet on said paper guide, two arms pivotally mounted on a transverse axis above said drum, a bar connecting the free ends of said arms, a thin resilient plate supported from said bar and normally extending downwardly between the plate roller and the drum adapted upon a downward swinging movement of said arms to press said copy sheet lightly against said first-named plate in close proximity to said platen roller in rear thereof and adapted to be flexed readily for applying pressure effectively against portions of different thicknesses so as to hold the copy sheet yieldingly against movement downwardly on the paper guide, and means for moving said arms 20 25 30 35 and said flexible plate downwardly into operative sheet holding position on each revolution of the drum ahead of the movement of the margin bar means out of sheet supporting position.

ROBERT ALONZO WILLIAMS.