Sept. 22, 1959 G. J. ZAHRADNIK 2,905,467

RECEIVING TRAY FOR DUPLICATORS

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Fig. 2.

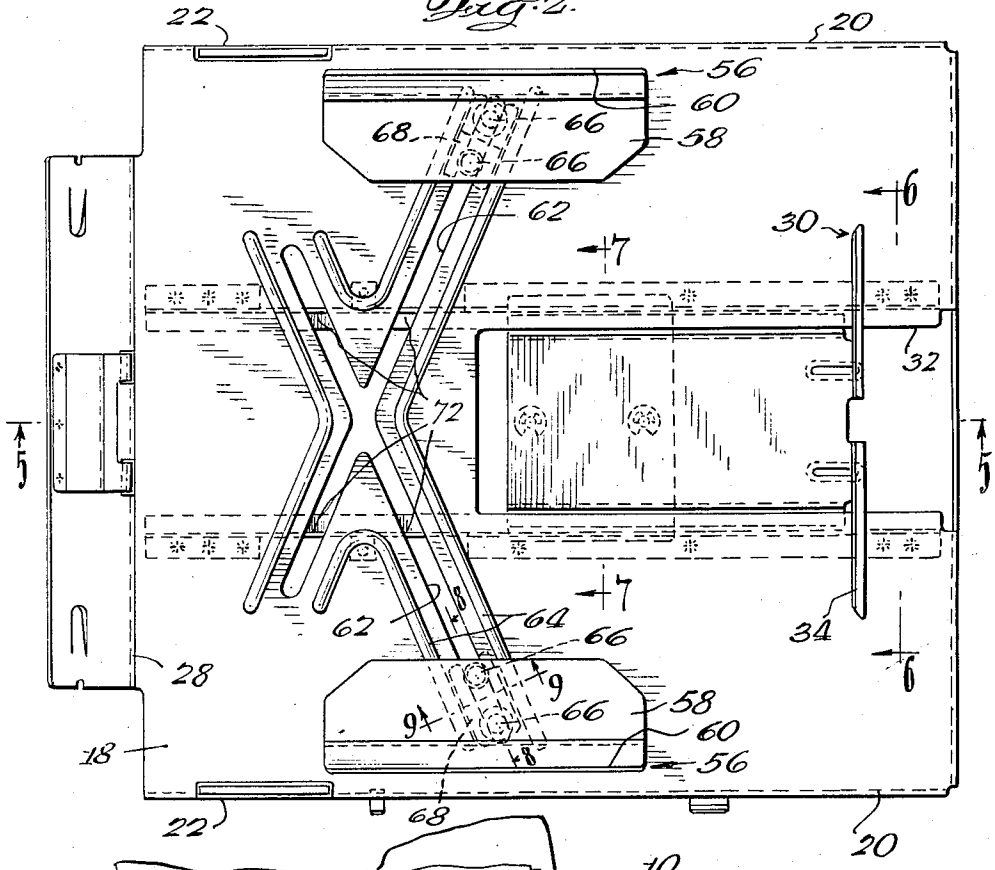
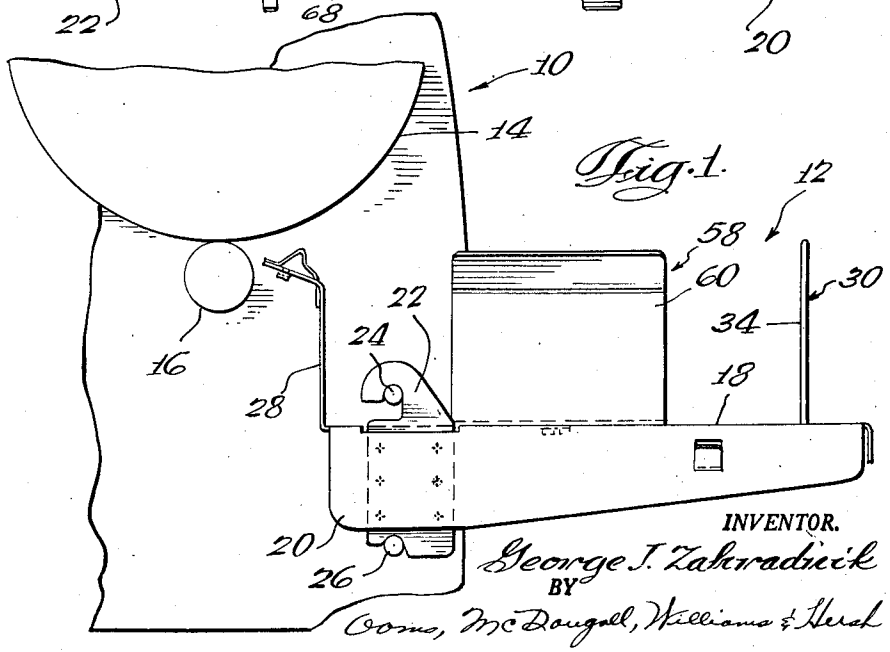


Fig. 1.



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RECEIVING TRAY FOR DUPLICATORS

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Fig. 3.

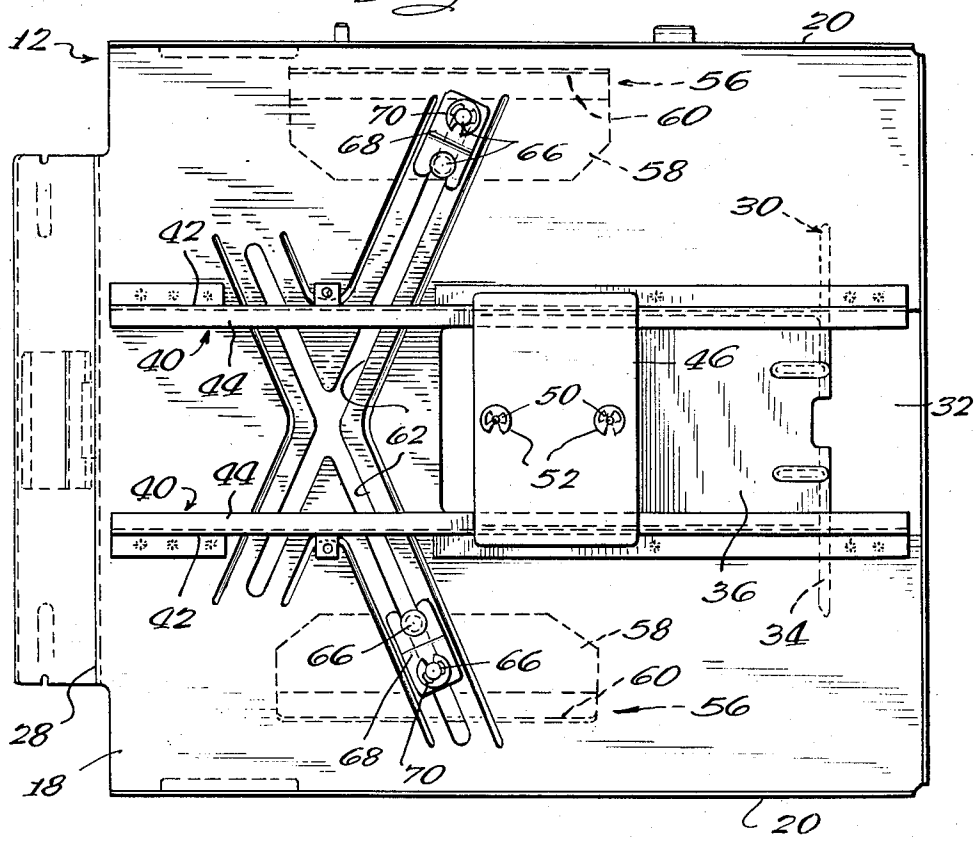
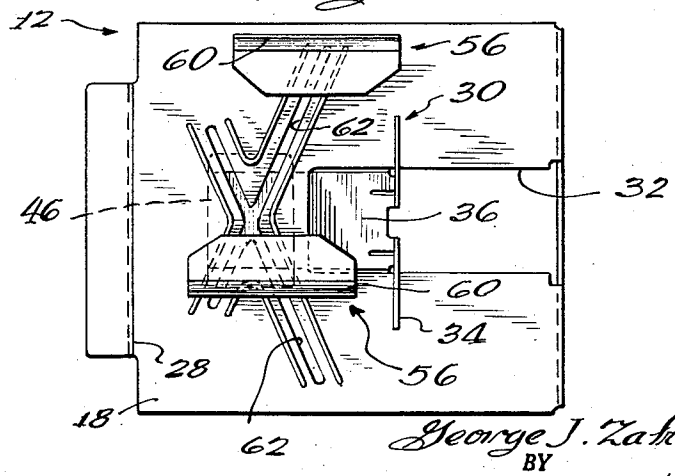


Fig. 4.

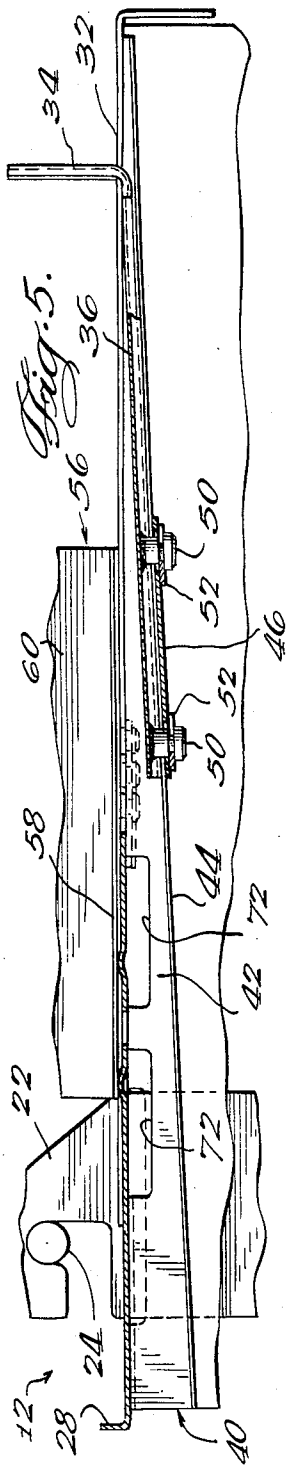


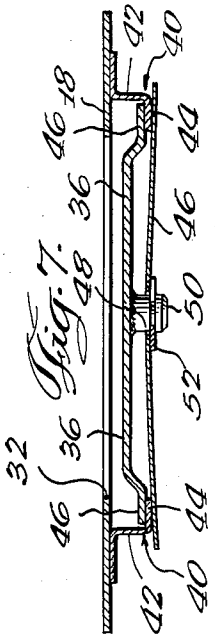
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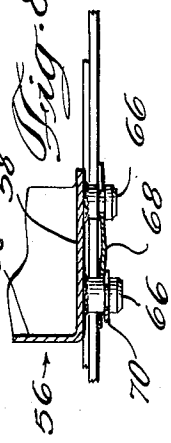
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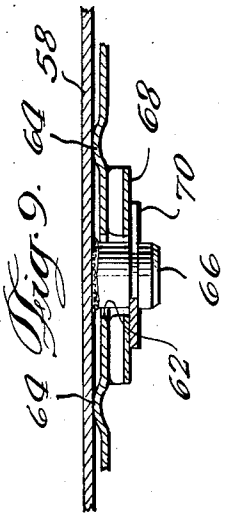
RECEIVING TRAY FOR DUPLICATORS

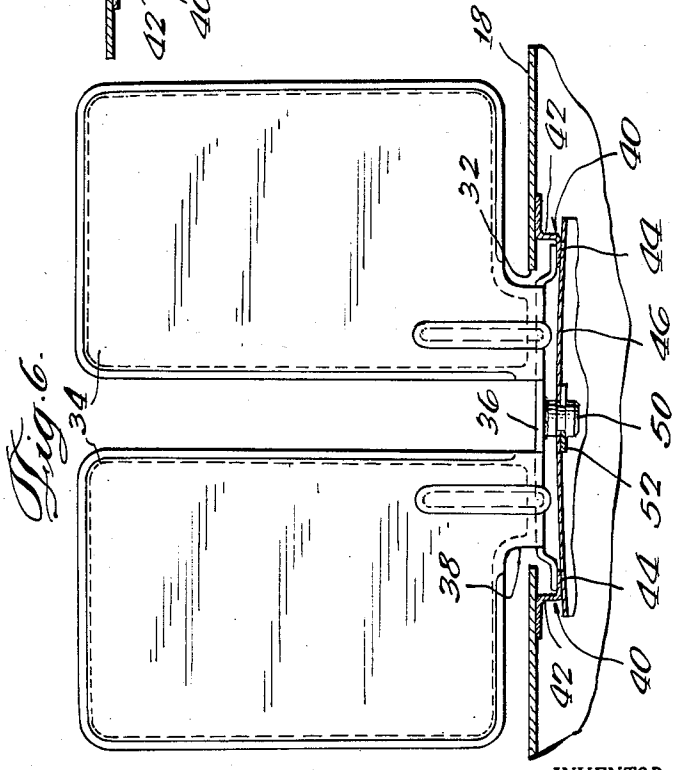
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RECEIVING TRAY FOR DUPLICATORS

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Application September 16, 1957, Serial No. 684,332

9 Claims. (Cl. 271—86)

This invention relates to duplicators or other printing machines and pertains particularly to receiving trays or the like adapted to receive printed sheets from a duplicator.

One object of the present invention is to provide a new and improved receiving tray which is equipped with side and end stops or guides having a wide range of adjustability so that sheets of various sizes may be accommodated at various positions along the width of the receiving tray.

A further object is to provide a new and improved receiving tray in which the side guides or stops are movable diagonally so that they are displaced toward the receiving end of the tray as they are moved inwardly toward the center of the tray.

Another object is to provide a new and improved receiving tray which has an outer end stop or guide which is mounted on inclined rails or the like so that the stop rises as it is moved outwardly.

A further object is to provide a new and improved receiving tray which is easy to adjust and extremely adaptable yet is low in cost and easy to manufacture.

Further objects and advantages of the present invention will appear from the following description taken with the accompanying drawings in which:

Fig. 1 is a somewhat diagrammatic elevational view showing a duplicating machine equipped with a receiving tray to be described in an illustrative embodiment of the present invention.

Fig. 2 is a plan view of the receiving tray.

Fig. 3 is a bottom view of the receiving tray.

Fig. 4 is a plan view somewhat similar to Fig. 2 but on a smaller scale and showing some of the side and end guides or stops in changed positions.

Fig. 5 is a fragmentary longitudinal sectional view taken generally along a line 5—5 in Fig. 2.

Fig. 6 is a transverse sectional view, taken along a line 6—6 in Fig. 2.

Fig. 7 is a fragmentary transverse sectional view taken along a line 7—7 in Fig. 2.

Figs. 8 and 9 are fragmentary sectional views taken along lines 8—8 and 9—9 in Fig. 2.

It will be seen that Fig. 1 illustrates a portion of a duplicator 10 equipped with a receiving tray 12, which is adapted to receive printed sheets from the duplicator. Thus, the duplicator 10 is provided with a printing cylinder 14 and an impression roller 16 between which the sheets to be printed are fed. The receiving tray 12 is mounted on the duplicator 10 in a position to receive the printed sheets from the cylinder 14 and roller 16.

The illustrated receiving tray 12 comprises a table or platform 18 which is substantially horizontal and is generally rectangular in shape. Various means may be provided for disengageably mounting the receiving tray 12 on the duplicator 10. In this case, the platform 18 is formed with a pair of downwardly extending side flanges 20. Brackets 22 are mounted on the side flanges 20 and are adapted to be hooked over upper and lower studs or rods 24 and 26.

At its inner, sheet receiving end, the receiving tray 12 is formed with a fixed end stop or flange 28, which projects upwardly from the platform 18. It will be seen that the flange 28 extends across a portion of the width of the receiving tray 12 so as to prevent the printed sheets from sliding off the inner end of the platform 18.

At its outer end, the receiving tray 12 has an adjustable transverse fence or stop 30 adapted to arrest the outward motion of the printed sheets and prevent them from sliding off the outer edge of the platform 18. The outer stop 30 is movable longitudinally along an elongated longitudinal slot 32 formed in the platform 18. It will be seen that the slot 32 extends part way from the outer end toward the inner end of the platform 18.

The illustrated adjustable stop 30 takes the form of a vertical flange 34 extending upwardly from the outer edge of a generally horizontal supporting plate 36. From Fig. 5 it will be apparent that the supporting plate 36 is movable below the platform 18, while the flange 34 extends upwardly through the slot 32 and above the platform. In this regard, it will be noted from Fig. 6 that the vertical flange 34 has a lower portion 38 of reduced width to pass through the slot 32.

The carrying plate 36 of the stop 30 is supported on a pair of rails 40 mounted below the platform 18. In this case, each rail has a generally vertical flange 42 which extends downwardly from the platform 18. Horizontal flanges 44 project inwardly toward each other from the opposite vertical flanges 42. The supporting plate 36 has downwardly offset edge portions or flanges 46 which are adapted to slide along the upper sides of the flanges 44. It will be seen from Figs. 6 and 7 that the spacing between the vertical flanges 42 is slightly greater than the width of the supporting plate 36, so that the supporting plate will slide freely between the rails 40 yet will be guided in such a manner that the transverse position of the flange 34 will be maintained.

In the illustrated construction, the supporting plate 36 is held on the rails 40 by a spring plate 46, which is secured to the under side of the supporting plate and is adapted to engage the under sides of the horizonal flanges 44 on the rails 40. Thus, the illustrated spring plate 46 is formed with apertures 48 adapted to be received over mounting pins 50 extending downwardly from the supporting plate 36. Clips 52 or the like may be employed to retain the spring plate 46 on the pins 50. It will be seen from Figs. 6 and 7 that the spring plate is flexed upwardly at its center portion so that it will apply light frictional pressure against the under sides of the rail flanges 44. Thus, the spring 46 will retain the adjustable stop 30 in any position to which it is adjusted.

From Fig. 5, it will be apparent that the rail flanges 44 are inclined upwardly at a small angle between the inner and outer ends of the receiving tray 12. Thus, the adjustable outer stop 30 rises as it is moved toward the outer end of the receiving tray. With this arrangement, the adjustable outer stop 30 has its maximum height when adjusted to accommodate the longer sizes of printed sheets, with the result that the sheets are effectively retained on the receiving tray.

Adjustable left and right hand side guides or fences 56 are also provided on the receiving tray 12, to guide the edges of the printing sheets. Each of the illustrated side guides 56 has a substantially horizontal flange 58 which is adapted to slide along the top of the platform 18. Vertical flanges 60 project upwardly from horizontal flanges 58. It will be seen from Fig. 2 that the vertical flanges 60 extend longitudinally of the platform 18 and are parallel to each other.

Means are provided to guide the side stops or fences

56 for angular movement, so that each side stop will be displaced toward the inner end of the receiving tray as it is moved toward the opposite side stop. In this case, the platform 18 is formed with a pair of generally diagonal slots or tracks 62 which cross adjacent to the longitudinal center line of the receiving tray. Each slot 62 extends from one side of the platform 18 past the center line and part way toward the opposite side. Each slot 62 angles toward the inner end of the platform 18. Ridges 64 are formed on the top of the platform 18 on the opposite sides of the diagonal slots 62 to engage and support the horizontal flanges 68 of the side guides 56 as shown to best advantage in Figs. 2 and 9.

In order that the side stops 56 may be guided by the diagonal slots 62, the stops 56 are provided with guide elements in the form of pins 66 which are mounted on the lower sides of the horizontal flanges 58. The pins 66 extend downwardly through the slots 62. Two of the pins 66 are mounted at spaced points on each of the horizontal flanges 58 so that the longitudinal position of the corresponding vertical flange 60 will be maintained as the side stop is moved along the corresponding diagonal slot 62.

To retain the side stops 56 on the platform 18, arched spring plates 68 may be mounted on the pins 66 below the platform. Clips 70 may be employed to hold the spring plates 68 on the pins. The springs 68 provide light frictional resistance to the movement of the side stops 56, so that the side stops will be held in any position to which they may be adjusted. The vertical flanges 42 of the guide rails 40 are formed with openings 72 aligned with the diagonal slots 62 so as to afford passage to the guide pins 66.

At the points where the guide pins 66 pass through the openings 72, the generally horizontal rail flanges 44 are below the level of the guide pins 66 so that clearance is afforded for the lower ends of the pins.

It will be apparent from Fig. 2 that the adjustable end stop 30 may be moved more than halfway from the outer end of the platform 18 toward the inner end thereof. Thus, the effective length of the receiving tray may be reduced to less than half of its normal length. The end stop 30 may also be moved into an outboard position with the vertical flange 34 beyond the outer end of the platform 18, to extend the normal length of the platform 18. The generally horizontal supporting plate 36 of the outer stop 30 is effective to support the paper sheets when the stop is in its outboard position.

Each of the adjustable side stops 56 may be moved from its normal or extended position, adjacent one side of the platform 18, to a position past the longitudinal center line of the platform and spaced only a short distance from the opposite side of the platform. Thus, the space between the side stops 56 may be made narrow to guide narrow sheets. Moreover, the side stops may be adjusted to receive such narrow sheets at any position along the width of the receiving tray, from one side to the other.

As the side guides 56 are moved inwardly to guide narrow sheets, they are automatically displaced toward the inner end of the receiving tray by the action of the diagonal guide slots 42. In this way the side guides are positioned more favorably to guide small sheets. Moreover, the side guides are moved out of the way of the adjustable end stop 30 so that the end stop may be moved without obstruction toward the inner end of the receiving tray.

It will be apparent that the receiving tray is universally adjustable to accommodate various sizes of sheets at various positions along the width of the tray. The end and side guides are easy to adjust and are frictionally retained in any position to which they may be adjusted. With all these advantages, the receiving tray is easy to manufacture and low in cost. Various modifications, alternative constructions and equivalents may be employed without departing from the true spirit and scope of the invention, as exemplified in the foregoing description and defined in the following claims.

I claim:

1. A receiving tray for duplicators, comprising, in combination, a generally horizontal sheet metal platform having means for mounting said platform on a duplicator in a position to receive printed sheets therefrom, said platform having a sheet receiving end with an upstanding transversely extending flange fixed thereon, said platform having an elongated longitudinal slot formed therein in a generally central position with respect to the sides thereof extending away from said receiving end of said platform toward the opposite end thereof from a point disposed part way between said receiving end and said opposite end, an adjustable end stop movable along said slot, said stop having a generally horizontal bar portion disposed under said platform and upstanding flange means extending upwardly from said bar portion and above said platform, a pair of rails mounted below said platform on opposite sides of said slot for guiding said bar portion for movement therealong, said rails being inclined upwardly in a direction extending from said receiving end to said opposite end of said platform so that said end stop will rise in position as it is moved toward said opposite end, left and right hand diagonal slots formed in said platform and extending generally in a transverse direction with respect thereto, said diagonal slots crossing at a point disposed between said receiving end of said platform and the adjacent end of said longitudinal slot, said diagonal slots being oppositely angled, and being arranged to angle from the opposite sides of said platform toward said receiving end thereof, left and right hand side stops having generally horizontal members movable along said platform and upstanding longitudinal flange members extending upwardly therefrom for guiding the edges of the printed sheets received by said platform, each of said side stops having a pair of spaced guide pins extending downwardly therefrom through the corresponding diagonal slot, each of said side stops thereby being movable along the corresponding diagonal slot from one side of said platform toward the opposite side thereof and simultaneously being displaced by said diagonal slot toward the receiving end of said platform.

2. A receiving tray for a duplicator, comprising, in combination, a generally rectangular platform adapted to receive printed sheets from the duplicator, said platform having left and right hand sides, a sheet receiving end and an opposite end, a pair of end stops on said platform adjacent said receiving end and said opposite end for engaging the ends of the printed sheets to retain the sheets on said platform, said end stops adjacent said opposite end being mounted on said platform for longitudinal adjusting movement, left and right hand side stops extending upwardly from said platform for guiding the left and right hand edges of the printed sheets, means on said platform forming first and second tracks for guiding said left and right hand side stops, said tracks extending generally in a transverse direction across said platform but being angled diagonally and being arranged to cross adjacent to center line of said platform, each of said tracks angling from one side of said platform toward the receiving end thereof, each of said side stops thereby being movable from one side of said platform past the center line thereof and to a position adjacent the opposite side thereof, and being simultaneously displaced by the corresponding track toward the receiving end of said platform.

3. In a receiving tray for a duplicator, the combination comprising a platform adapted to receive printing sheets from the duplicator, said platform being generally rectangular and having an inner sheet receiving end and an outer end, inner and outer upstanding end stops on said platform adjacent the inner and outer ends thereof for engaging the ends of the printed sheets to retain the sheets on the platform, means mounting said outer end stops on said platform for longitudinal adjusting move-

ment therealong to accommodate sheets of different lengths, left and right hand side stops on said platform for guiding the edges of the printed sheets, each of said side stops having a generally horizontal flange movable along said platform and a generally vertical flange extending upward therefrom, said vertical flanges of said side stops being parallel to each other and being arranged to extend longitudinally of said platform, said platform having first and second generally diagonal slots formed therein for guiding said left and right hand side stops, said slots crossing adjacent to the longitudinal center line of said platform, each of said slots extending from one side of said platform past the longitudinal center line thereof and angling toward the inner end of said platform, said platform having ridges thereon extending therealong on opposite sides of said diagonal slots for engaging and supporting the horizontal flanges of said side stops, each of said side stops having a pair of guide pins mounted on the corresponding horizontal flange and extending downwardly through the corresponding diagonal slot, and spring clip means mounted on said guide pins below said platform to retain said side stops thereon while affording light frictional resistance to movement of said side stops along said diagonal slots.

4. In a receiving tray for a duplicator, the combination comprising a platform adapted to receive printed sheets, said platform having an inner sheet receiving end and an outer end, a fixed end stop on said platform adjacent said inner end, said platform having a longitudinal slot therein extending from said outer end part way toward said inner end, an outer end stop movable longitudinally of said platform along said slot, said outer end stop having a generally horizontal carrier plate disposed below said platform and a stop flange extending upwardly from said carrier plate through said slot and above said platform, a pair of guide rails mounted below said platform along the opposite edges of said slot, said rails having generally vertical flanges extending downwardly from said platform and generally horizontal flanges projecting inwardly toward each other for supporting said carrier plate, said carrier plate having downwardly offset generally horizontal edge flanges adapted to ride along said horizontal flanges of said rails, a spring plate secured to the under side of said carrier plate and having edge portions engaging the under sides of said rails, said spring plate being flexed upwardly at its center portion to apply light frictional pressure against the under sides of said rails, said rails being inclined upwardly at a small angle between said inner and outer ends of said platform so that said outer end stop will rise as it is moved toward said outer end, left and right hand side stops mounted on said platform for guiding the edges of the printed sheets, first and second generally diagonal slots formed in said platform for guiding said side stops, said diagonal slots crossing adjacent the longitudinal center line of said platform, each of said diagonal slots extending from one side of said platform past said longitudinal center line and angling toward the inner end of said platform, and guide elements on said side stops extending downwardly therefrom through said diagonal slots, said vertical flanges of said rails having openings therein aligned with said diagonal slots for passing said guide elements, said horizontal flanges of said rails being disposed below the level of said guide elements.

5. A receiving tray for a duplicator, comprising, in combination, a platform adapted to receive printed sheets from the duplicator, inner and outer end stops on said platform adjacent the inner and outer ends thereof for engaging the ends of the printed sheets to retain the sheets on said platform, left and right hand side stops extending upwardly from said platform for guiding the left and right hand edges of the printed sheets, means on said platform forming first and second tracks for guiding said left and right hand side stops, said tracks extending generally in a transverse direction across said platform but being angled diagonally, said tracks having oppositely angled longitudinal axes directed to cross adjacent the center line of said platform each of said tracks angling from one side of said platform toward the inner end thereof, each of said slide stops thereby being movable from one side of said platform toward the opposite side thereof and being simultaneously displaced by the corresponding track toward the inner end of said platform.

6. In a receiving tray for a duplicator, the combination comprising a platform adapted to receive printed sheets from the duplicator, left and right hand side stops extending upwardly from said platform for guiding the left and right hand edges of the printed sheets, means on said platform forming first and second tracks for guiding said left and right hand side stops, said tracks extending generally in a transverse direction across said platform but being angled diagonally the angling of said tracks being opposite from left to right, said tracks crossing each other adjacent the center line of said platform, each of said tracks angling from one side of said platform toward the inner end thereof, each of said side stops thereby being movable from one side of said platform past the center line thereof and to a position adjacent the opposite side thereof and being simultaneously displaced by the corresponding track toward the inner end of said platform.

7. In a receiving tray for a duplicator, the combination comprising a platform adapted to receive printed sheets from the duplicator, said platform being generally rectangular and having an inner sheet receiving end and an outer end, left and right hand side stops on said platform for guiding the edges of the printed sheets, each of said side stops having a generally horizontal flange movable along said platform and a generally vertical flange extending upward therefrom, said vertical flanges of said side stops being parallel to each other and being arranged to extend longitudinally of said platform, said platform having first and second generally diagonal slots formed therein for guiding said left and right hand side stops, said slots crossing adjacent to the longitudinal center line of said platform, each of said slots extending from one side of said platform past the longitudinal center line thereof and angling toward the inner end of said platform, each of said side stops having guide means mounted on the corresponding horizontal flange and extending downwardly through the corresponding diagonal slot, and spring means retaining said side stops on said platform while affording light frictional resistance to movement of said side stops along said diagonal slots.

8. In a receiving tray for a duplicator, the combination comprising a platform adapted to receive printed sheets, said platform having an inner sheet receiving end and an outer end, a fixed end stop on said platform adjacent said inner end, said platform having a longitudinal slot therein extending from said outer end part way toward said inner end, an outer end stop movable longitudinally of said platform along said slot, said outer end stop having a generally horizontal carrier plate disposed below said platform and a stop flange extending upwardly from said carrier plate through said slot and above said platform, a pair of guide rails mounted below said platform along the opposite edges of said slot, said rails having generally vertical flanges extending downwardly from said platform and generally horizontal flanges projecting inwardly toward each other for supporting said carrier plate, said carrier plate having downwardly offset generally horizontal edge flanges adapted to ride along said horizontal flanges of said rails, and a spring plate secured to the under side of said carrier plate and having edge portions engaging the under sides of said rails, said spring plate being flexed upwardly at its center portion to apply light frictional pressure against the under sides of said rails, said rails being inclined upwardly at a small angle between said inner and outer ends of said platform so

that said outer end stop will rise as it is moved toward said outer end.

9. In a receiving tray for a duplicator, the combination comprising a platform adapted to receive printed sheets, said platform having an inner sheet receiving end and an outer end, a fixed end stop on said platform adjacent said inner end, said platform having a longitudinal slot therein extending from said outer end part way toward said inner end, an outer end stop movable longitudinally of said platform along siad slot, said outer end stop having a generally horizontal carrier plate movable below said platform and a stop flange extending upwardly from said carrier plate through said slot and above said platform, a pair of guide rails mounted below said platform along the opposite edges of said slot and slidably supporting said carrier plate, said rails being inclined upwardly at a small angle between said inner and outer ends of said platform so that said outer end stop will rise as

it is moved toward said outer end, left and right hand side stops mounted on said platform for guiding the edges of the printed sheets, first and second generally diagonal slots formed in said platform for guiding said side stops, said diagonal slots crossing adjacent the longitudinal center line of said platform, each of said diagonal slots extending from one side of said platform past said longitudinal center line and angling toward the inner end of said platform, and guide elements on said side stops extending downwardly therefrom through said diagonal slots, said rails having openings therein aligned with said diagonal slots for passing said guide elements.

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