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ROTARY PRINTING AND DISTRIBUTING MEANS

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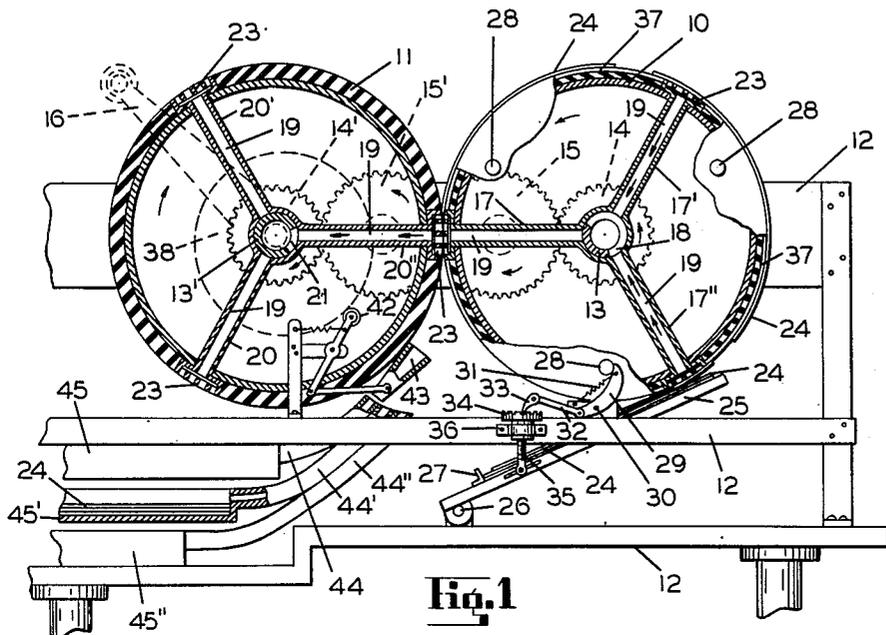


Fig. 1

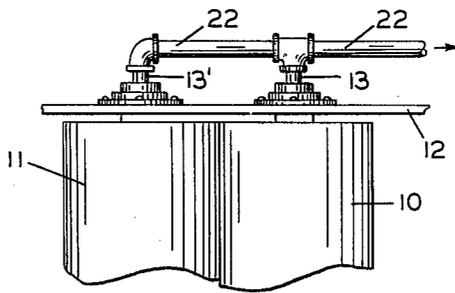


Fig. 2

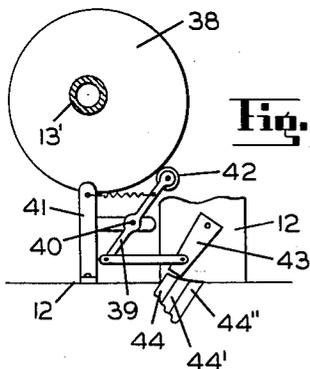


Fig. 3

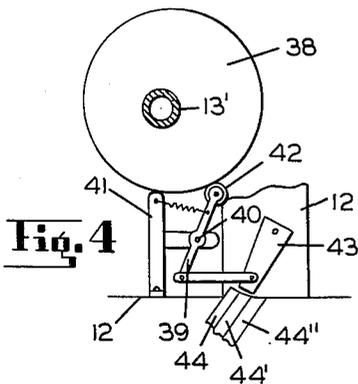


Fig. 4

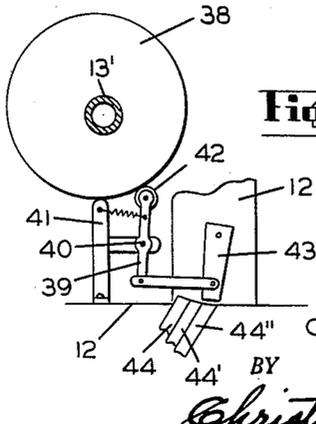


Fig. 5

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ROTARY PRINTING AND DISTRIBUTING MEANS

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2 Claims. (Cl. 101--2)

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My invention relates to printing devices and more particularly to a rotary type of cylindrical printing device.

The object of my invention is to provide a device that permits a plurality of sheets of varied types to be printed with a single revolution of the cylinder.

Another object of my invention is to provide a device that will automatically pick up, release and sort the sheets after they have the impression printed thereon.

A further object of my invention is to provide a device that may be manually or mechanically operated and used with either a stencil, a gelatin sheet or with set type.

A still further object of my invention is to provide a device that may be easily manipulated and economically manufactured, yet efficient for the purpose for which it is intended.

The device permits placing a plurality of sheets of gelatin onto the peripheral surface of a roller, thereby making it possible to print a plurality of impressions with a single revolution of the roller. The vacuum means employed permits contact of a sheet of paper on each gelatin sheet and makes it possible to release it in the correct sequence to permit sorting of each type or subject. Obviously, cut stencils may be employed, or a plurality of plates of set type may be used instead of gelatin sheets on the peripheral surface of the roller.

Other and further objects of my invention will become more apparent as the description proceeds and when taken in conjunction with the drawing in which

Figure 1 is a fragmentary cross-sectional view of the entire device showing the rotary cylinders and the means of feeding the sheets that are being printed, and distributing the printed sheets.

Figure 2 is a fragmentary plan view of a section of the assembly as shown in Figure 1.

Figure 3 is a schematic view of the distributor cam showing the hinged mounted dispenser in position to distribute the printed sheets into the upper tray.

Figure 4 is a similar view as shown in Figure 3 with the sheets being distributed to the center tray, and

Figure 5 is a similar view as shown in Figures 3 and 4, showing the sheets being deposited into the lower tray.

Similar characters of reference indicate corresponding parts throughout the several views, and referring now to the same, the device con-

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sists of two cylinders 10 and 11 mounted on a frame 12 which acts as a support for tubular shafts 13 and 13' onto which the cylinders 10 and 11 are rotatably mounted. The cylinders 10 and 11 respectively have gears 14 and 14' attached thereto, and a pair of gears 15 and 15' engaging the gears 14 and 14'. The cylinder 11 is also shown provided with a handle 16 shown in phantom, for rotating the cylinder 11, thereby actuating the entire mechanism.

Extending outward from the tubular shaft 13 are shown three tubular arms 17, 17' and 17''. These arms are an integral part of the cylinder 10 and rotate on the tubular shaft 13 as the cylinder 10 is rotated. The shaft 13 is provided with a longitudinal slot or opening 18 and these tubular members 17, 17' and 17'' have their central tubular area 19 opening onto the shaft 13.

Likewise the cylinder 11 is provided with the tubular arms 20, 20' and 20'' and the shaft 13' is provided with an aperture or opening 21 and the tubes 19 within the central portion of the arms 20, 20' and 20'' are open to contact this aperture 21.

The shafts 13 and 13' are shown connected by a tubular means shown as 22 in Figure 2 to a vacuum source not shown, and the peripheral surface of the cylinders 10 and 11 are provided with a plurality of apertures shown as 23 leading into the tubular portion 19 of the arms 17, 17' and 17'' and 20, 20' and 20'' of the cylinders 10 and 11 respectively.

In Figure 1 I show the arrangement as accommodating three gelatin sheets onto the outer peripheral surface of the cylinder 10. The sheets 24 of paper to be imprinted are shown mounted on a board 25 which is pivotally supported at 26 to the bottom of the frame structure 12. This board 25 is supported in angular fashion and the sheets 24 are supported by means of the small angular member 27 near the bottom of the board 25.

At the outer face of the cylinder 10 is shown a series of small contact members 28 which engage a pivotally mounted member 29 supported by the frame 12 at the pivoted mounting 30 and held in a vertical position by means of a resilient member shown as 31. This pivoted member 29 is provided with a link member 32 supporting a small ratchet dog 33, which dog engages a ratchet wheel 34 shown mounted on a threaded vertical shaft 35, supported within a bearing 36 mounted to the side of the frame structure 12. The bottom of the vertical shaft 35 is pivotally mounted to the board 25 and as the dog 33 is

caused to move along the face of the ratchet wheel 34 due to the pivoted action of the member 29 in its contact with the contact members 28 on the cylinder 10 it will cause the shaft 35 which is threaded to rise, thereby bringing the board 25 into closer engagement with, and forcing the paper sheet 24 into engagement with the apertures 23 on the peripheral surface of the cylinder 10, and the vacuum means, not shown, will provide a means of retaining the sheet 24 against the outer surface of the cylinder 10, and the apertures 23, and as the sheets 24 are brought around, they will cover the gelatin sheets 37 disposed onto the outer periphery of the cylinder 10 and will be carried around the cylinder. As the crank 16 is being rotated the cylinders 10 and 11 revolve and the sheet 24 will be caused to contact a similar group of apertures 23 on the cylinder 11 which are also actuated by the vacuum source and will cause the sheet 24 to be brought downward, and as the tubular portion 19 of the tubular members 17, 17' and 17'' engage the closed portion of the shaft 13' the vacuum source will be discontinued, thereby releasing the sheet 24 as it is brought downward.

In Figures 3, 4 and 5 I show a cam 38 mounted eccentrically to the shaft 13', thereby causing a lever 39 which is pivotally mounted at 40 to a fixture shown as 41, supported by the frame structure 12 to move, due to the contact of the roller 42 on the lever 39 with the peripheral surface of the cam member 38, and as the cam 38 revolves it will cause the lever 39 to move, thereby moving the hingedly mounted distributor tube 43 into position as shown in Figures 3, 4 and 5. The lower end of the distributor tube 43 contacts the plurality of flat tubes shown as 44, 44' and 44'' which enter into a plurality of trays shown as 45, 45' and 45'' supported by the frame structure 12, and in this manner the position of the distributor 43 will determine which tube the sheet 24 will enter as it is being brought around by the cylinder 11, due to the vacuum supply.

From the above description it is apparent that a plurality of gelatin sheets shown as 37, or stencils, or frames of type may be mounted to the outer periphery of the cylinder 10 and the vacuum source will cause one sheet 24 to be taken from the board 25 at a time and retained in position for engagement with the gelatin sheet 37 or the like, and as it is brought out and around so that the sheet 24 contacts the cylinder 11, the vacuum source will, due to the apertures 23 on the periphery of the cylinder 11, contact the sheet 24 taking it from the cylinder 11 and depositing it into the distributor 43, and by means of the cam 38 the distributor is moved into position so that its lower end or outlet is in direct alignment with one of the tubes 44, 44' and 44'', so that three different sheets of paper may be imprinted on the cylinder with but a single rotation of the cylinder, and all three sheets will be separated and sorted and deposited into one or other of the trays shown as 45, 45' and 45''.

This would permit three sheets to be printed with every revolution of the cylinder or every revolution of the crank 16, thereby expediting the printing operation and increasing production to the extent where one hundred and eighty sheets can be printed with every sixty revolutions of the cylinder, or if the cylinder is arranged for more or less sheets, the corresponding proportion will be maintained.

Obviously, the number of vacuum arms in the cylinder 10 must correspond with the number of

vacuum arms in the cylinder 11, and the diameter of the cylinders must be identical and the location of the apertures 23 must be synchronized so that direct contact is always made at a proper place.

In the chosen embodiments of my invention there are many features not heretofore disclosed in the prior art, and although I have shown a specific arrangement of the parts and have outlined the shape and contour of the parts in a specific manner, I am fully cognizant of the fact that many variations may be made in the form and configuration of the component parts constituting the device, and I reserve the right to make such changes in their form and configuration as I may deem convenient without departing from the spirit of my invention or the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent in the United States is:

1. A device of the character described to be used in conjunction with a vacuum source, said device comprising in combination a pair of cylinders, a frame structure, a pair of hollow shafts supporting said cylinders, said shafts mounted to said frame structure, said shafts closed at one end and having their open end connected to said vacuum source, said cylinders mounted on said shafts and arranged for synchronized rotation thereon, means for rotating said cylinders on said shafts, the peripheral surface of said cylinders being placed in engagement with one another, a plurality of tubular members mounted within said cylinders and extending from the hollow mounting on said shaft to the outer periphery of said cylinders, said tubular members open at both ends, apertures extending through the walls of said shafts at the point of contact of said shafts with said tubular members thereby permitting the vacuum to be brought through said shaft and tubular members, to the outer periphery of said cylinder, a plurality of imprinting members clamping, means for mounting said imprinting members to the peripheral surface of one of said cylinders between the outer open ends of said tubular members, a feed board, said feed board hingedly supported by said frame for supporting the sheets to be printed, means for keeping the top sheet on said board in close relation with the periphery of the cylinder supporting said imprinting members, means mounted on said frame structure for distributing the sheets that have been printed, as they are removed from one of said cylinders, by the other of said cylinders, and a plurality of trays supported by said frame for receiving the distributing sheets.

2. A device of the character described comprising in combination a frame, a pair of hollow shafts mounted to said frame, said shafts closed at one end, elongated apertures extending through the walls of said shaft between their point of support, a source of vacuum, said shafts connected at their open end to said source of vacuum, an imprinting cylinder, a distributing cylinder, said cylinders rotatably mounted to said shafts, a plurality of tubular members open at one end, extending from the hub of said cylinders to their outer periphery thereby leading said vacuum from the outer periphery of said cylinder to said shafts, said cylinders having their outer peripheries contacting one another, means for rotating said cylinders on said shafts in synchronized relation to one another, apertures extending through the peripheral surface of both of said cylinders, said apertures registering with the tu-

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bular members, means on the surface of said imprinting cylinder for attaching a plurality of imprinting sheets between the open outlet of said tubular member, said imprinting sheets corresponding in number to the tubular members on said cylinder, a sheet supporting feed board, said board adjustably mounted to said frame, means for retaining the top sheet on said board in close relation to said imprinting cylinder, the tubular members in said distributing cylinder arranged to register with the tubular members in said imprinting cylinder at their point of contact, a plurality of tubular members leading to a corresponding number of trays supported by said frame, and pivoted means mounted on said frame and actuated by said distributing cylinder for separating and sorting the sheets dispensed by the distributing cylinder, said sorting means ar-

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ranged to register with the tubular member leading to said tray.

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