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SKELETON ROLL PRINTING PRESS

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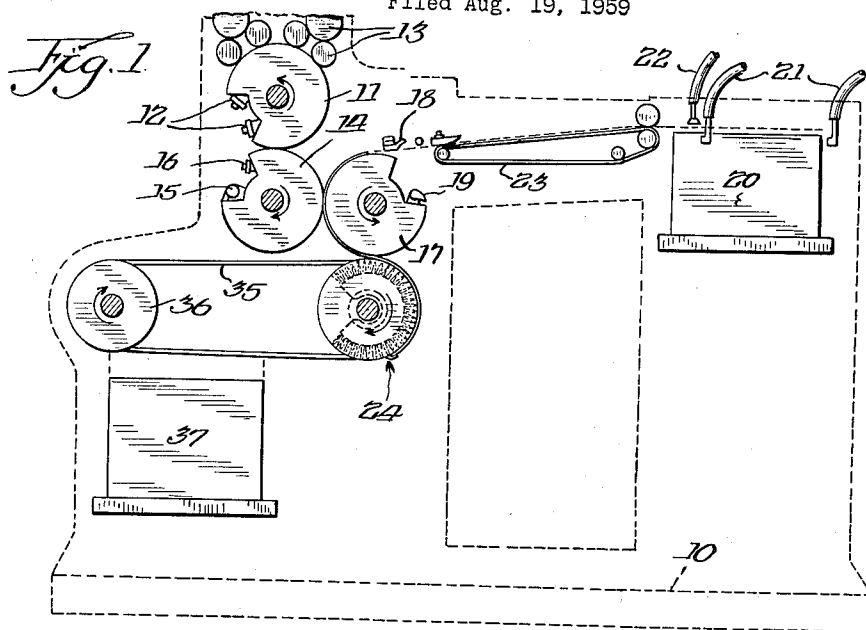
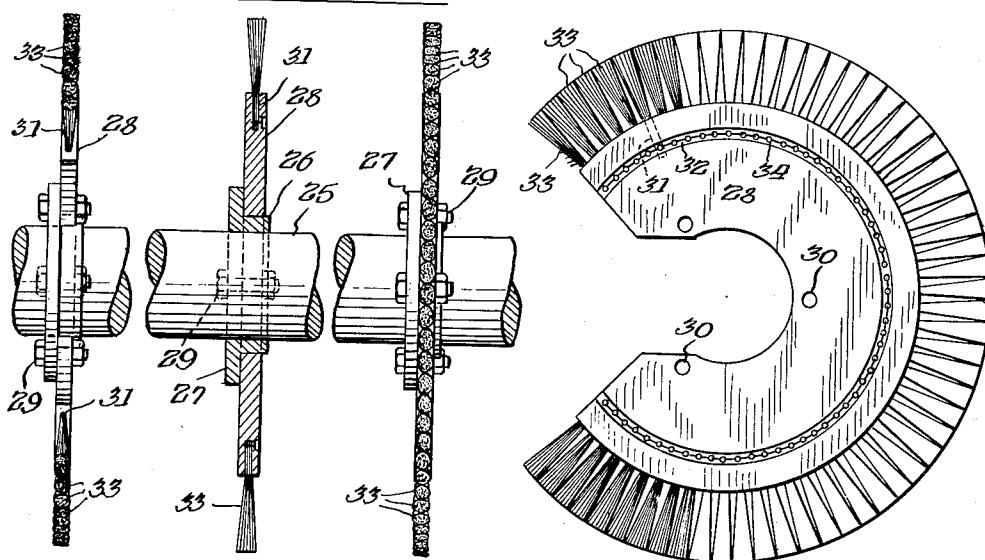


Fig. 2.

Fig. 3.



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SKELETON ROLL PRINTING PRESS

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4 Claims. (Cl. 101-420)

My invention relates to skeleton cylinder rolls for use with printing presses and has particular reference to a skeleton cylinder roll which is particularly adapted to use in offset printing where it becomes necessary to transport the freshly printed sheets from the impression cylinder of the press into stacks or piles for the rerunning of the sheets where a multiplicity of colors are involved in the printing, and where it is necessary to use a cylinder roller or some transfer mechanism which comes into contact with the inked impression on the paper while the ink is not completely dry without smearing the ink or marking the impression thereof in a manner which destroys or mars the impression upon the sheet.

Another and further object of my invention is the provision of a skeleton cylinder which is composed of a plurality of movably mounted disks, each disk having a row of bristles or small fibers mounted around its outer periphery and extending radially therefrom which in the transfer operation receives the impression face of the sheet upon the ends of the bristles and assists in transporting it to the desired location with the points of the bristles acting as supports for the printed sheet, which bristles do not smear or mark the surface of the impression or printing in any manner so that the impression on the sheet is preserved in perfect condition and form for use later as may be desired either for final cutting and embodying the sheets in a publication or for rerunning the sheets through the press for the application of other colors.

Another and further object of my invention is the provision of a skeleton cylinder roll which can be embodied in the transfer system of handling printed or lithographed sheets for various purposes when it is necessary to bring the impressions upon a freshly printed sheet into contact with the surface of the moving cylinder for the support of the sheet while being transferred to various locations for different purposes.

I am aware that skeleton cylinder rolls are old and generally have been used for the purpose of handling printed sheets, but such cylinders have been made of various kinds of material including wood, metal, plastic and the like with fairly narrow serrated hard edge surfaces, but such surfaces pick up the ink from an impression surface, whether printing or illustration, and may transfer it to some other part of the printed surface or impression, or if there is the slightest relative movement between the printed sheet and the disk forming a part of the skeleton roller the impression surface of the sheet is marred and the sheet must be destroyed resulting in a loss of time, as well as, the loss of the paper and material comprising the printed sheet and generally this type of skeleton cylinder roll has not been successful in service. The operator will often try to so align these disks so their engagement with the sheet will be on an imprinted area or on a line to one side of the impression thereon if the impression on the paper is illustrative, so that the edge of the disk will not contact any portion of the ink bearing surface of the sheet. This setting takes additional time and often cannot be accomplished at all. Through the use of my improved disks in the making of the roll in which the printed surface of the paper is supported upon the ends of small flexible bristles, the bristle marks even if made in the ink are so small they cannot be detected and because of the multiplicity of the points of the bristles supporting the paper and the flexibility of the bristles

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themselves, relative movement between the printed sheet and the bristles is not apt to occur.

Another and further object of my invention is the provision of a skeleton cylinder roll which is composed of a plurality of disks having bristles extending radially therefrom, preferably in the form of tufts, which bristles are small and exceedingly flexible so that in case the printed sheet is moved the bristles will flex and not drag across the printed surface so as to leave a mark or an imperfection in the printed surface.

These and other objects of my invention will be better and more fully understood by reference to the accompanying sheets of drawings in which—

FIGURE 1 is a diagrammatic view of an offset press and the operating parts therefore including the skeleton roller;

FIGURE 2 is a composite view showing sections of the roller with the central figure being a sectional view through the center of one of the disks composing the roller, while the views on the outer side of the figure are elevational views of the disks taken from opposite edges of the disk.

FIGURE 3 is an elevational view of one of the disks of which the skeleton cylinder roll is composed.

Referring now particularly to the drawings and in which like reference characters refer to like parts throughout, a frame 10 for an offset printing press is shown, upon which a plate cylinder 11 is mounted having plate clamps 12 thereon, and with the usual ink distributing rollers 13, 13 used for supplying ink to the plate cylinder 11 with a blanket cylinder 14 being shown having a blanket reel 15 at one side thereof, and a blanket clamp 16 at the opposite side and the usual impression cylinder 17, with the usual side guides 18 thereon, and a side guide gripper 19 for gripping the paper as it passes over the impression cylinder 17.

The paper in sheet form is fed onto the impression cylinder 17 from a stack 20 supported by the usual feed-board with a blowing device 21 being provided and a suction member 22 also being used which transfers a sheet of paper from the stack 20 onto an endless tape 23 which in turn delivers the sheet to the impression cylinder 17 over which the sheet passes and receives the ink impression from the blanket on the blanket cylinder 14. A skeleton roll, designated as a whole as 24, is provided which consists of an axle 25 and a plurality of movable spaced collars 26, 26 thereon, each of said collars 26, 26 having a lateral circular extension 27 thereon and integrally formed with the collars 26, 26, which collars 26, 26 are held in position on the axle 25 by means of a set screw (not shown) or any other approved fastening means.

A plurality of spaced segmental disks 28, 28 are provided which are spaced in the axle 25, one of which is shown in FIGURE 3. The disks are segmental in character and extend approximately in a 270° arc with an opening at one side of the disks 28, 28 which allows them to be fitted over the collars 26, 26 and against the lateral extension 27 on each collar 26 where the disk 28 is secured to the lateral extension by means of bolts 29, 29 which pass through openings 30, 30 in the disks 28, 28 and are firmly secured to the collars 26, 26 in this manner. The individual disks 28, 28 may be formed of any approved material, such as plywood, or may be molded from resinous material, rubber, or the like, and are provided with a plurality of openings 31, 31 in the outer periphery of each of the disks 28, 28 and extend radially outward therefrom with a kerf being provided at one side of each of the disks 28, 28 which is deep enough to intersect the inward extending openings 31, 31 at their bases.

A plurality of tufts of bristles 33, 33 are mounted at

their bases in the openings 31, 31 and are tied together by wires 34 which are wound around the bases of the tufts and extend around the kerf 32 so that the tufts of bristles 33, 33 are firmly anchored to the disks 28, 28 and extend around its entire circular outer periphery, these bristles being extremely fine and flexible and of a length preferably of one and a half to two inches, determined somewhat by the size of the disks 28, 28 with the diameter of the skeleton cylinder 24 being substantially the same as the impression cylinder 17 so there is no slipping between the two cylinders which may cause a smearing of the paper after its passing over the impression cylinder as these cylinders are rotated in synchronism with each other in the operation of the press.

An endless chain delivery guide 35, which passes over a roller 36 and over the end of the skeleton roll 24 with the usual grippers located thereon, is provided and which engages the side of the sheet of paper just prior to its leaving the impression cylinder 17 and delivers the sheet to a point over a paper pile 37 where it is released and drops onto the paper pile 37 which movement of paper and the travel thereof is common in all offset printing presses of the usual type.

In the operation of the device, it is believed to be readily understood, when a sheet of paper is delivered from the stack 20, it passes over the tape where it is delivered to the upper side of the impression cylinder 17 and as the paper passes around the impression cylinder it receives a deposit of ink thereon from the blanket cylinder 14 at its outer side and which as the sheet continues to travel, is carried around to the under side of the impression cylinder where the inked or impressed side of the sheet is delivered over the skeleton cylinder roll 24 composed of several disks 28, 28, with the impression side of the paper resting upon the tips of the bristles 33 at which points the grippers on the delivery chain 35 catch the gripper edge of the sheet of paper and carry it around the skeleton cylinder roll 24 and towards the delivery pile 37 whereupon the delivery pile 37 being reached, the grippers automatically release the sheet of paper and it drops onto the delivery pile 37 from which point the stacked sheets can be replaced in mass and can be transferred back to the stack 20 of the press for a rerunning of the sheet through the press for the application of another color, if color printing of different colors is being run, which is common in this particular type of work, or to some other press or to a folder if desired. As the inked paper is delivered upon the points of the bristles, the contact with the inked impression is so light and so minute that the ink pattern is not displaced or smeared to a point where it is noticeable, or where the printing surface is injured or damaged in any manner.

In the skeleton rolls heretofore used, which are made of molded material, vulcanized rubber or the like, the edge of the roll, even though exceedingly narrow, is sufficiently firm so that it may pick up small particles of ink and smear the inked surface to such a degree that the inked surface is marred to a degree where the illustration would be damaged to such an extent that it is not saleable or usable. Through the use of my improved skeleton cylinder this skeleton having the bristles secured thereto avoids this difficulty and all possible smearing, blotting and the like of the ink is removed and therefore the loss in spoiled prints from this source is prevented and loss reduced.

It will be understood that the skeleton roll can be made up of as many of the disks 28, 28 as may be needed to support the paper being printed, and which of course, may vary in size depending upon the character of the work and the size of the pages into which the printed sheets are ultimately converted, so that if necessary the disks 28, 28 can be placed rather close together or distributed far apart as may be desired. In placing a disk in place it is first placed on the axle 25 and then moved

sideways over the collar 26 as it will be noted that the throat of the opening is narrower than the circular portion of the opening into which the collar 26 is fitted but is of sufficient width to be fitted over the axle 25.

Also in the use of the disks, heretofore an attempt was made to space the disks forming the skeleton roll in such manner that when the sheet is deposited on the skeleton roll the disks are in such position that they pass across the sheet on an imprinted or unimprinted portion thereof which has not been inked. This entails a great deal of time and effort and in many instances it is not possible to accomplish this result and if not very accurately done a smearing of the printed surface results all of which difficulty is avoided through the use of this improved skeleton roller.

I have shown somewhat diagrammatically one preferred form of my invention, but it is to be understood that it may be varied to meet differing conditions and requirements and I therefore contemplate such modifications as come within the spirit and scope of the appended claims.

What is claimed is:

1. In combination with a printing press having a sheet delivery mechanism connected therewith consisting of a pair of spaced rollers and an endless delivery chain having sheet grippers thereon connecting the said rollers, one of said rollers being a printed sheet receiving roller consisting of an axle and a plurality of disks of ununiform diameter in spaced relation with each other mounted on the said axle, each of said disks on the axle having tufts of flexible bristles on its outer periphery extending radially outward from the said disks the said tufts being composed of bristles at least one and one half inches in length whereby relative movement between the roller and the sheets is absorbed by the flexing of the bristles.

2. In combination with a printing press having a sheet delivery mechanism connected therewith consisting of a pair of spaced rollers and an endless delivery chain connecting the said rollers having sheet grippers thereon, one of said rollers comprising an axle, spaced movable collars on the said axle and segmental disks spaced a substantial distance from each other secured to the said collars, the segmental disks having tufts of flexible bristles on their outer peripheries extending radially outward therefrom and forming a support for a printed sheet as it is discharged from the said press.

3. In combination with a printing press having a sheet handling mechanism connected therewith consisting of a pair of spaced rollers and an endless delivery chain connecting the said rollers having sheet grippers thereon, one of said rollers being a skeleton printed sheet receiving roller comprising a plurality of segmental disks in spaced relation with each other and also in offset radial relation with each other, the said disks having flexible fibers mounted on their outer edge portions and extending outwardly therefrom whereby printed sheets discharged from the press are supported upon the ends of the said flexible fibres while being discharged from the said press, the said flexible fibres absorbing the difference in movement of a sheet and the sheet receiving roller.

4. In combination with a printing press having a sheet delivery mechanism consisting of a pair of spaced rollers and an endless delivery chain connecting the said rollers having sheet grippers thereon, one of said rollers comprising an axle, a plurality of segmental disks spaced apart from each other adjustably mounted in the said axle, each of said disks having fibers from one and a half to two inches in length mounted on their outer edges and extending outwardly therefrom to receive and support printed sheets of material as they are discharged from the press, the said bristles being in contact with the printed face of the sheet while being discharged from the said press, the said fibres being flexible whereby relative movement of the sheet and the receiving rollers is absorbed by the said fibres.

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