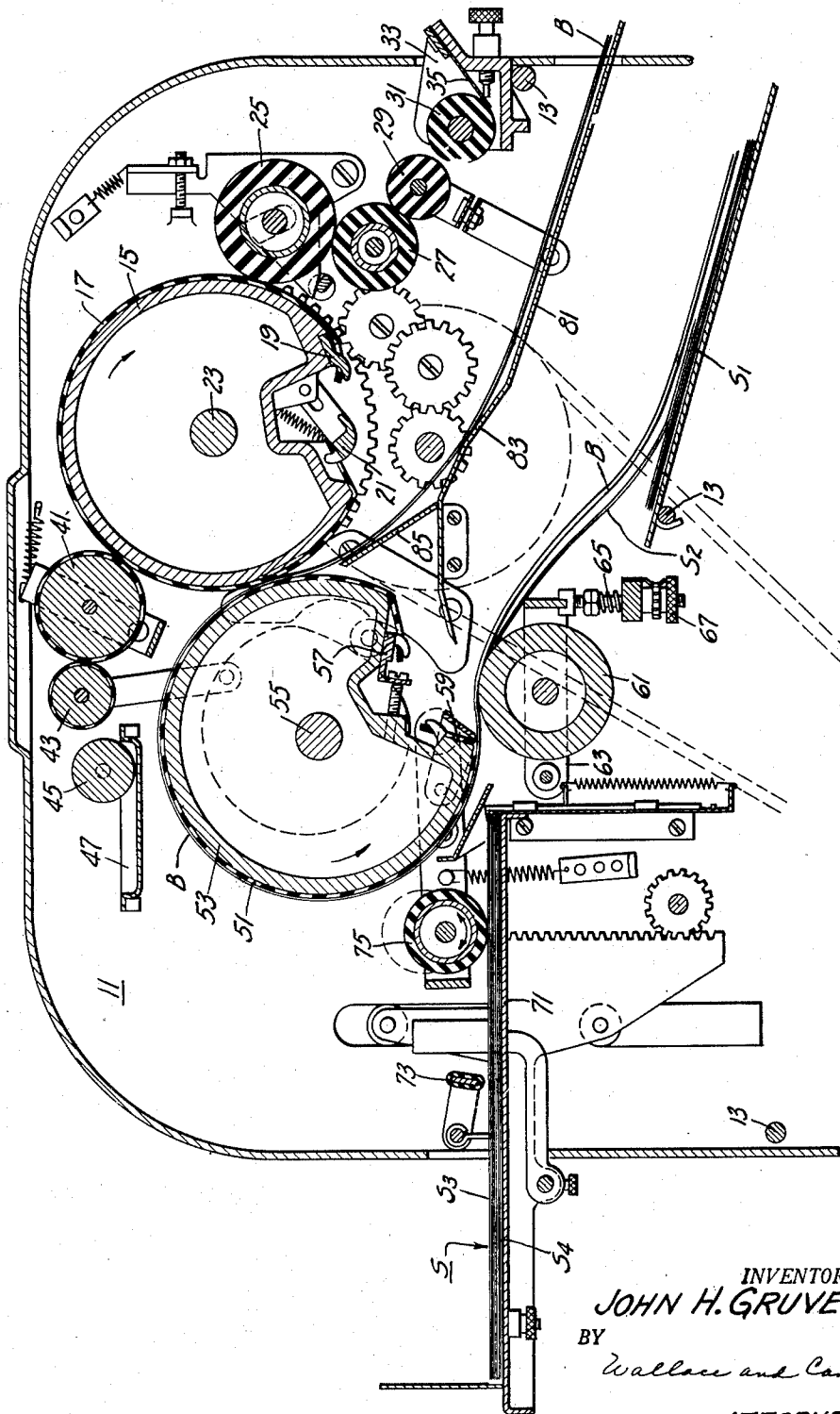


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EXPENDABLE OFFSET BLANKET FOR ROTARY
OFFSET PRINTING MACHINES
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EXPENDABLE OFFSET BLANKET FOR ROTARY OFFSET PRINTING MACHINES

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The present invention pertains to printing machines and especially to planographic printing machines of the offset type. It has to do more particularly with blankets or coverings for the offset printing members of such machines, and especially of rotary planographic offset machines.

A machine of the general character to which the present invention is particularly applicable is described in the patent to Curtis No. 2,165,231, although it will be understood that the invention is applicable to various types of machines of the general types mentioned in the preceding paragraph.

As known in the prior art of which the aforesaid patent to Curtis is exemplary, a planographic offset machine may be so constructed and arranged as to be suitable for use in business offices where there is a demand for printing of good quality at very low cost and with a minimum of equipment. Machines of this character have been widely accepted for such work and are commonly used for printing business papers such as letters, bills, orders, invoices and the like in small quantities, which would not be economically possible with heavier printing equipment of older types.

In many respects the practice of printing very small quantities or very short runs of material of the character just mentioned is entirely satisfactory but in the prior art such practice is open to the very serious objection that the offset member, which receives an inked image or imprint from a plate or "master," must be cleaned before printing can be done from a new plate or master. In machines of the character described in the aforesaid Curtis patent, the cleaning of the offset member, usually a rubber blanket mounted on a revolving cylinder or drum, is not particularly difficult, but it does consume some time which prevents rapid and economical production in very short runs. For example, as much time is required for cleaning the offset blanket after printing two or three or a dozen copies as is required after printing a thousand or five thousand. For very short runs the time consumed in cleaning may approach or even exceed all other costs of printing, even though very efficient cleaning materials are now available. It is frequently desirable to print as few as a dozen or even fewer copies, where, for example, a sufficient number cannot be produced on a typewriter, or where carbon copies are objectionable, paper stock too heavy, or a particular quality of work is required. Compo-

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sitions used for cleaning are commonly somewhat toxic in character and repeated and frequent use is likely to be injurious to those who operate the machine. For this additional reason it is desirable to reduce the cleaning requirements in machines of the aforesaid character.

Therefore it is an object of my invention to avoid the necessity of cleaning the offset blanket, after very short runs, by using an expendable offset blanket.

A further object of my invention is to employ as an expendable offset blanket a translucent sheet which may also serve as a copy or record of the matter printed.

A still further object is to insure accurate printing of detail by employing a continuous sheet as an offset blanket so that each printing is applied and transferred only once.

Another object is to utilize a continuous transparent or translucent non-absorbent sheet as a protective cover for the normal offset blanket, such sheet bearing an image or imprint which is legible through the sheet notwithstanding the fact that the image or imprint applied to the face thereof is in reverse.

Still a further object is to combine a novel offset blanket with elements of a planographic printing machine in a new and useful manner.

An additional object is to eliminate the danger of injury to operating personnel by reason of the toxic properties of cleaning compounds by making it unnecessary to clean the offset cylinder or blanket after short runs.

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

In the drawing the single figure shows a longitudinal vertical sectional view of a planographic offset printing machine embodying my invention.

The machine shown in the drawing corresponds in most respects with that shown and described in the aforesaid patent to Curtis No. 2,165,331 and reference may be had to such

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patent for construction details which are unnecessary herein to illustrate and describe the instant invention. Briefly the machine comprises a pair of frame members 11 separated and braced by transverse rods 13 and carried by suitable supporter, legs or frame elements not shown.

A plate cylinder 15 carries a planographic plate 17 which can be readily attached or detached by securing means 19 and 21. A shaft 23 supports the cylinder 15 in the side frames 11.

The plate 17 is inked by a form roller 25 which receives ink from a transfer roller 27. The roller 27 receives ink from a ductor roll 29 which is supported for periodic movement between roller 27 and a fountain roller 31 which is mounted in an ink fountain 33 and provided with a blade or wiper 35. The printing plate 17 is moistened, as well known in the art, by means comprising a form roller 41, ductor roller 43, and fountain roller 45 which is mounted in a fountain 47 containing a suitable moistening composition which is effective to render non-image bearing portions of plate 17 ink-repellant.

The planographic plate 17 normally is effective to transfer or imprint the inked image carried thereby to the surface of a rubber or like offset blanket 51 which in turn applies the image thus received to a sheet. The blanket 51 is mounted on an offset cylinder or drum 53 supported on a shaft 55 suitably journaled in side frames 11. Tensioning means 57 and 59 hold the blanket in place.

The blanket 51 is normally effective to receive a transferred imprint from plate 17, as indicated above, and to transfer it to sheets or the like S which are pressed against such blanket by a platen roller 61. This roller is carried by pivoted arms 63 which are urged upwardly by a spring 65, such movement being limited by an adjustable screw member 67.

Sheet feeding mechanism may be provided, including a magazine 71, a sheet buckling member 73 and an advancing roller 75, or, if desired, sheets may be fed manually, as is well known in the art.

In order to avoid the necessity of cleaning the offset cylinder 53 or the blanket 51 carried thereby, the present invention employs an expendable or temporary offset sheet or blanket B of paper which comprises a surface which is non-absorbent of ink. As shown in the drawing, the blanket may be continuous and of a length sufficient to print a number of sheets by continuous travel about the offset cylinder or roller 53. A guide plate or table structure may be provided as shown at 81, 83, 85 for leading the blanket B to the bight between rollers 15 and 53, and other guide elements, not shown, may be provided if required. The sheet B is passed around the offset cylinder 53 so that it covers the normal offset blanket 51 and is then led between the offset roller 53 and the platen roller 61 where it is pressed into contact with sheets S which are to be printed. In the drawing two such sheets S₁ and S₂ are shown already printed and other sheets S₃ and S₄ are in position to be fed sequentially to the printing mechanism.

Inasmuch as the expendable paper sheet B is to serve as an offset blanket for a limited number of printing operations and is intended to make it unnecessary to clean the normal blanket 51, the paper material must be properly selected. It must be receptive to ink imprinted thereon by

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the plate cylinder, must retain the image without loss of detail as it moves to position to print the sheets S, and then must release enough ink to form a good impression on the printed sheet.

A non-absorptive paper having a smooth surface, for example a vellum paper or an enamel surfaced paper has been found to be satisfactory. By using a transparent or translucent paper the expendable blanket B may be read from the reverse side and instead of being discarded after printing, it may be cut into sheets which will serve as additional or record copies of the printed matter. Hence the paper blanket B need not be discarded even though the image printed on its face is in reverse.

For some purposes the sheet B may be of a length merely sufficient to cover the normal blanket 51 and may be secured to the cylinder 53 by the attaching means 57, 59 or by other suitable attaching means, not shown. In this case the paper sheet B serves as a temporary blanket in the same manner as the regular blanket 51. It of course is not suitable for very long runs and cannot be cleaned, but if it is a non-absorbent material having a smooth surface of proper texture for picking up and transferring ink, printing may be accomplished substantially without loss of detail. The blanket B in this case is replaced each time the planographic plate is changed. The blanket removed may be discarded, or if it is of transparent or translucent material, it may be retained as an additional or record copy of the printing.

When the continuous blanket or sheet B is used, as shown in the drawing, it is preferably of a length equivalent to the peripheral measure of the roller 53 multiplied by the number of sheets S to be printed. The advance end of the sheet B is fed between the plate roller and the offset roller and returned above the sheet feeder and platen roller and above the printed sheets as S₁ and S₂.

While sheets S are being printed, the continuous sheet B is being advanced. The machine should be stopped just before this sheet is exhausted to prevent inking the rubber blanket 51. At the completion of a short run of this character, the printing plate 17 is changed, and a new blanket sheet B is fed in, or applied to the offset roller as described above, where further short runs are required. For long runs, the normal blanket 51 is inked since the time required for cleaning is not objectionable for such operation.

It will thus be understood that by the use of a paper or like blanket of inexpensive expendable material it is possible to secure rapid and economical production involving very short runs. Where the consumption of paper blanket material is objectionable, it may be preferred to fasten it to the offset cylinder, as described above, but normally the arrangement illustrated in the drawing is preferred for very short runs.

While I have referred to paper as being the preferred material, it will be understood that cellophane, glassine, and the like may be suitable for some types of operation and it is intended to cover the use of alternate materials so far as permitted by the prior art.

Hence, while I have illustrated and described the preferred embodiments of my invention, it is to be understood that these are capable of variation and modification and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and

alterations as fall within the purview of the following claims.

I claim:

1. In an offset printing machine, the combination of a cylindrical plate carrying member adapted to have a planographic printing plate mounted thereon, inking and moistening means for such a plate, a cylindrical offset member, a platen cooperating with said offset member, means for cyclically rotating said printing member and said offset member, and a strip of non-absorbent paper of substantially greater length than the circumference of said offset printing member and extended about a substantial portion of the offset member for movement therewith and adapted to be fed through and out of the machine as an incident to the movement thereof with said offset member whereby an unused portion thereof is presented to said printing member in each cycle of operation so that the printing image on said plate is transferred to said paper strip and from the strip to a sheet of paper passed between the offset member and the platen in each cycle of operation.

2. In an offset printing machine, the combination of a planographic printing cylinder, an offset cylinder, means for cyclically rotating such cylinders, and an offset blanket of translucent paper of substantially greater length than the circumference of the offset cylinder and extended about a substantial portion of the periphery of said offset cylinder and serving as a printed record of matter transferred from said printing cylinder thereonto in reverse, said elongated blanket being fed through the machine to thereby constantly present an unused portion thereof on the periphery of the offset cylinder, said translucent paper enabling the reverse printed record on one face thereof to be read directly from the other face thereof.

3. In a planographic printing machine, the combination of a planograph printing member, inking and moistening means for said member, an offset printing member comprising a normal blanket and an expendable blanket extended about a substantial portion of the periphery of said normal blanket for movement therewith and to receive and transfer ink for limited runs, said expendable blanket comprising a sheet of substantially non-absorbent paper.

4. In a planographic printing machine, the combination of a planographic printing cylinder,

inking and moistening means for said cylinder, an offset printing cylinder including a normal offset blanket, and a continuous expendable offset blanket of paper substantially non-absorbent to ink and extended about a substantial portion of the periphery of said offset printing cylinder to serve as a covering for said normal blanket and effective to serve as a printed record of matter transferred from said planographic cylinder.

5. In a planographic printing machine, the combination of an offset printing cylinder, a normal offset blanket secured to said cylinder and suitable for long runs, and an expendable paper blanket covering a substantial portion of the periphery of said normal blanket for short runs and effective to receive and transfer imprints from a printing member to a limited number of articles, thereby rendering unnecessary the cleaning of said normal blanket.

6. The combination which comprises an offset printing cylinder, a normal offset blanket secured to said cylinder and suitable for long runs, and a continuous expendable paper blanket extended about a substantial portion of the periphery of said normal blanket to cover said normal blanket for short runs and to receive and transfer imprints from a printing member to a number of articles proportional to the length of said continuous blanket, thereby rendering unnecessary the cleaning of said normal blanket.

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