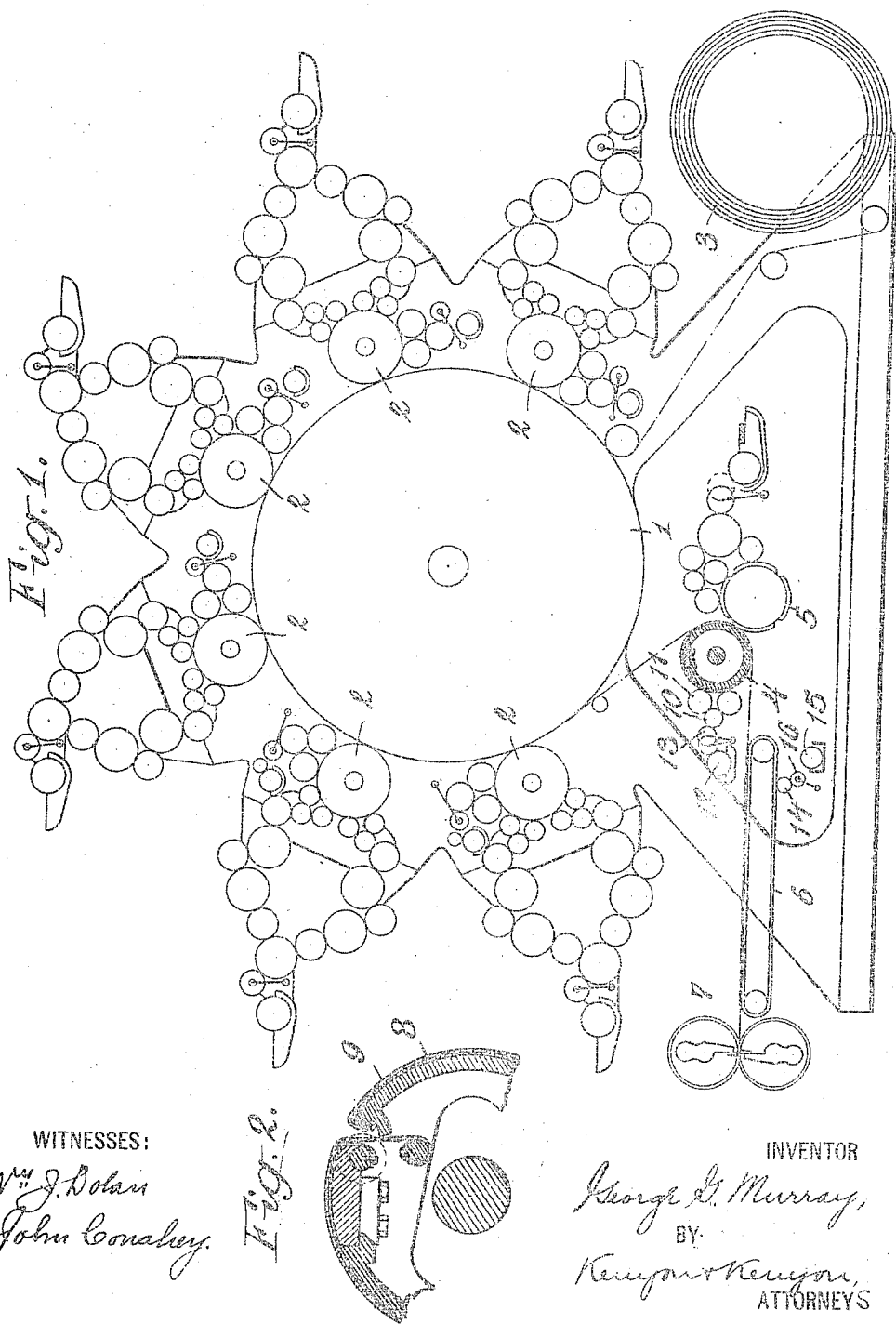


1,051,348.

Patented Jan. 21, 1913.



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UNITED STATES PATENT OFFICE.

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METHOD OF PREVENTING OFFSET.

1,051,348.

Specification of Letters Patent.

Patented Jan. 21, 1913

Original application filed January 27, 1906, Serial No. 298,190. Divided and this application filed April 11, 1908. Serial No. 426,490.

To all whom it may concern:

Be it known that I, GEORGE G. MURRAY, a citizen of the United States, and a resident of Larchmont, county of Westchester, and State of New York, have invented certain new and useful Improvements in Methods of Preventing Offset, of which the following is a specification.

My invention relates to a method for the prevention of offset in printing presses and other mechanisms for manipulating printed material, the same being particularly useful as carried out in connection with presses for printing on both sides of paper or similar material. In presses of this character and in various mechanisms for manipulating printed material and especially fresh printed paper, as, for example, delivery mechanisms of printing presses and folding mechanisms, if the ink bearing surface of the printed material comes in contact with any part of the mechanism some of the ink may be transferred to such part, especially where there is any pressure exerted between the contacting surfaces; and after a certain amount of ink has been thus transferred, it begins to set off or "offset," as it is termed, onto the passing material. Great difficulty has been experienced in preventing this offset, especially in the finer classes of printing, where not only is the offset more apt to occur by reason of the nature of the materials used but even a slight amount of defacement due to offset constitutes a most serious defect. Although much attention has been paid to this matter by those skilled in the art, no solution of the problem has been reached which is generally applicable, and particularly which will permit of the finer grades of printing being performed on perfecting presses, and particularly on rotary perfecting presses where the impressions on the opposite sides of the paper are effected in substantially instantaneous succession, and where the printed product cannot be manipulated, as in folding or delivering, without contact with the fresh printed surfaces.

My invention has for an object to provide a method whereby the defacement of printed matter by offset may be effectively prevented, and more particularly to provide a method whereby offsetting may be

effectively prevented without in any manner injuring the impressions on the paper or similar material, as by the removal of part of the ink therefrom.

It is also an object of the invention to provide a simple and effective method for preventing offset in printing presses and other mechanisms for manipulating printed material, whereby the complicated and expensive mechanisms now commonly used for this purpose may be dispensed with.

These and other objects of the invention will in part be obvious and in part be pointed out in the following description.

I have found that a transfer of ink from a printed surface to a surface with which it comes in contact will not take place, to a harmful extent at least, in the presence of a stable emulsion, even where the surfaces are brought into contact under heavy pressure, such, for example, as exists between an impression surface and the material being printed thereon. To obtain good results the surface of the member to which the emulsion is applied is preferably slightly roughened or grained or made to a certain extent porous so that it will more readily carry a suitable quantity or supply of the emulsion. In the case of an impression member of a printing press, moreover, the surface should be yielding or flexible or of such a nature that it will properly support the paper or other material to be printed in contact with the design member; and where the usual packing is employed on the impression member, the emulsion-carrying member should be impervious to the emulsion so as to prevent the destruction or impairment of the packing materials.

I have found an emulsion or a mixture of oil and water or similar substances in the nature of an emulsion, and particularly an emulsion or similar compound of boiled linseed oil, or linseed oil of like character, and water, to give good results when used in connection with the impression member of a printing press, the proportions employed being one part of oil to three parts of water with a little caustic soda to facilitate and render stable the emulsification of the oil in the water. Where boiled linseed oil is employed, it is preferably used in a substantially pure condition; the oxidizing agents

commonly found in the boiled linseed oil of commerce being omitted. The emulsion may, however, be greatly varied both as to the ingredients thereof and as to the treatment and combination of the ingredients. In carrying out the invention in connection with a printing press, the emulsion should be supplied in a very thin layer or film, and it is preferably supplied continuously and in uniform and regulatable quantities.

More fully to set forth the invention, I have illustrated in the drawing, which is referred to herein and forms a part hereof, a machine by which my method may be carried into effect and which machine will be herein described in connection with the method in order that the latter may be more fully and effectively set forth.

Of the drawing, Figure 1 is a view partly diagrammatic and partly sectional illustrating a printing press adapted for carrying out my invention, and Fig. 2 is a sectional view on an enlarged scale illustrating in more detail one of the impression members of the press.

Referring to the drawing in detail, the press there shown comprises an impression cylinder 1 around which are arranged a series of design cylinders 2 adapted to print a series of impressions on one side of the paper. As shown, this press is intended to print upon paper or similar material in web form, the web being continuously supplied from a roll 3. After passing around the cylinder 1 and receiving several impressions from the design cylinders, the web passes between the impression and design members 4 and 5, respectively, of a second printing mechanism whereby it receives impressions upon its opposite side. After leaving the second printing mechanism, the web passes to a suitable delivery mechanism, that shown including a set of conveying tapes 6 and a set of cutters 7. To prevent offset of ink from the first printed side of the web to the surface of the impression member 4, the surface of the latter is supplied with the emulsion. This may be accomplished in any suitable way. In the particular construction shown there is placed over the usual packing 8 of the cylinder a sheet or member 9 of material which is impervious to the emulsion and which is at the same time provided with a suitable porous or grained surface adapting it to carry a suitable quantity of supply of the emulsion without liability of transferring the same to a harmful extent to the surface of the paper or material being printed. Preferably this layer or member 9 should be flexible and yet not sufficiently soft or yielding to prevent the proper impression of the design upon the paper. I have found certain forms of artificial leather used for book binding and other purposes to give

satisfactory results. Where the impression cylinder is used in connection with a relief impression surface, I have employed an artificial leather known to the trade as "pantastote" to answer the purpose, the heavy cloth basic layer of this material being removed, if desired, to make the material less soft and yielding. This material affords a surface which is suitably porous or grained and at the same time the material is insoluble in and impervious to an emulsion of boiled linseed oil and water.

Any suitable means may be provided for maintaining a supply of emulsion on the impression surface. As shown, a simple liquid distributing mechanism is employed for the purpose, the same consisting of distributing and applying rollers 10 and 11, a fountain 12, and an intermittently operated conveying or doctor roller 13.

It will be understood that my invention may be carried out in connection with other surfaces which come in contact with or manipulate the printed material. As shown, for example, the delivery tapes 6 which serve to convey the printed material from the second printing couple to the cutter 7 may be supplied with an ink repellent emulsion. In accordance with the preferred construction, these tapes are formed of a material which is impervious to the emulsion and affords a suitably grained surface. For example, they may be made of or provided with a surface member of the artificial leather referred to, and suitable means, as the applying roller 14, fountain 15, and doctor 16, may be provided to maintain a supply of emulsion thereon. It is to be understood, however, that in this application I do not claim the means used in connection with the method herein claimed, the same forming the subject-matter of my application Serial No. 298,190, filed January 27, 1908, of which this application is a division.

It will be understood that my invention in its broader aspects is not limited to the precise mode of procedure nor to the precise compounds or devices herein specifically set forth, as many changes may be made respecting the materials and constructions employed in carrying out my invention without departing from the main principles thereof and without sacrificing its chief advantages.

I claim:

1. The method of preventing offset in machinery for manipulating printed material, which method consists in applying a stable emulsion to a surface with which an ink bearing surface comes in contact.

2. The method of preventing offset in machinery for manipulating printed material, which method consists in applying an emulsion of oil and water to a surface with which an ink bearing surface comes in contact.

3. The method of preventing offset in ma-

chinery for manipulating printed material, which method consists in applying an emulsion of boiled linseed oil and water to a surface with which an ink bearing surface comes in contact.

4. The method of preventing offset in printing presses, which method consists in applying a stable emulsion to a perfecting impression surface of the press.

5. The method of preventing offset in printing presses, which method consists in applying an emulsion of boiled linseed oil and water to a perfecting impression surface of the press.

6. The method of preventing offset of ink from printed paper to the impression surface of a printing press, which method consists in keeping said impression surface moistened with a stable emulsion sufficiently to repel the ink from said impression surface and thereby prevent the soiling of said surface.

7. The method of preventing offset in machinery for manipulating printed material, which method consists in mixing oil, water, and an alkaline substance to form a stable emulsion, and then applying said emulsion to a surface with which an ink-bearing surface comes in contact.

8. The method of printing, which method consists in mixing oil and water and an alkaline substance to form a stable emulsion, applying said emulsion to an impression surface, placing printed paper on said impression surface with a printed side in contact

therewith, and then printing on the opposite side of said paper.

9. The method of preventing offset in printing presses, which method consists in mixing boiled linseed oil, water, and caustic soda to form a stable emulsion, providing in the press an impression surface which is impervious to the said emulsion and keeping said impression surface moistened with said emulsion sufficiently to repel the ink therefrom, substantially as and for the purpose set forth.

10. The method of printing, which method consists in applying a stable emulsion to an impression surface, placing printed paper on said impression surface with a printed side in contact therewith, and then printing on the opposite side of said paper.

11. The method of printing, which method consists in providing an impression surface which is impervious to an emulsion of oil and water, moistening said impression surface with said emulsion sufficiently to repel ink therefrom, placing printed paper on said impression surface with a printed side in contact therewith, and printing on the opposite side of said paper.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

GEO. G. MURRAY.

Witnesses:

CHAS. M. HUDSON,
F. W. HERINGTON.