No. 660,712.

Patented Oct. 30, 1900.

O. ROESEN.

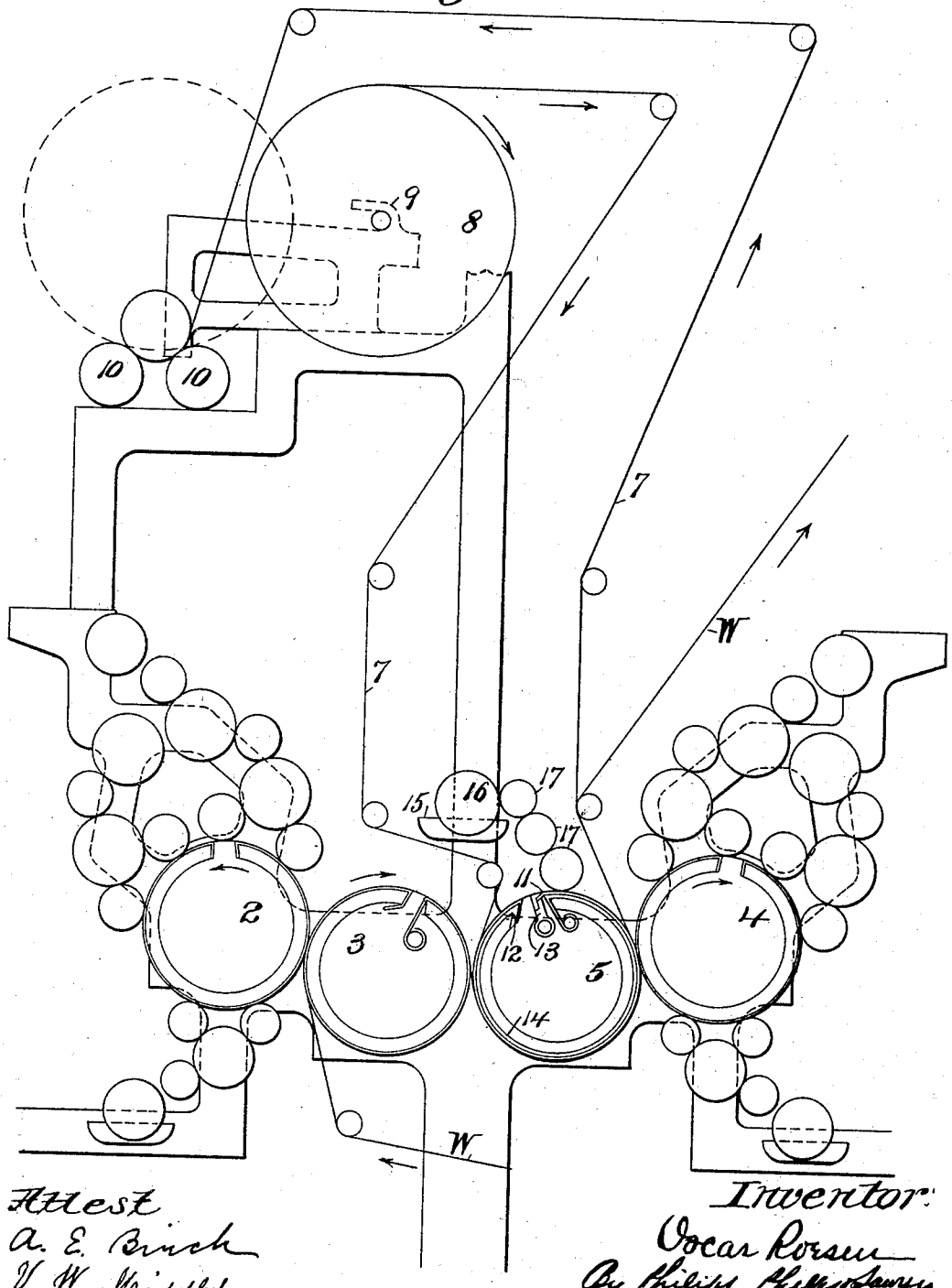
OFFSET DEVICE.

(Application filed Dec. 8, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



Attest
A. E. Birch
V. W. Middleton.

Inventor:
Oscar Roesen
By Philipp Philipp & Sawyer
Attys

No. 660,712.

Patented Oct. 30, 1900.

O. ROESEN.

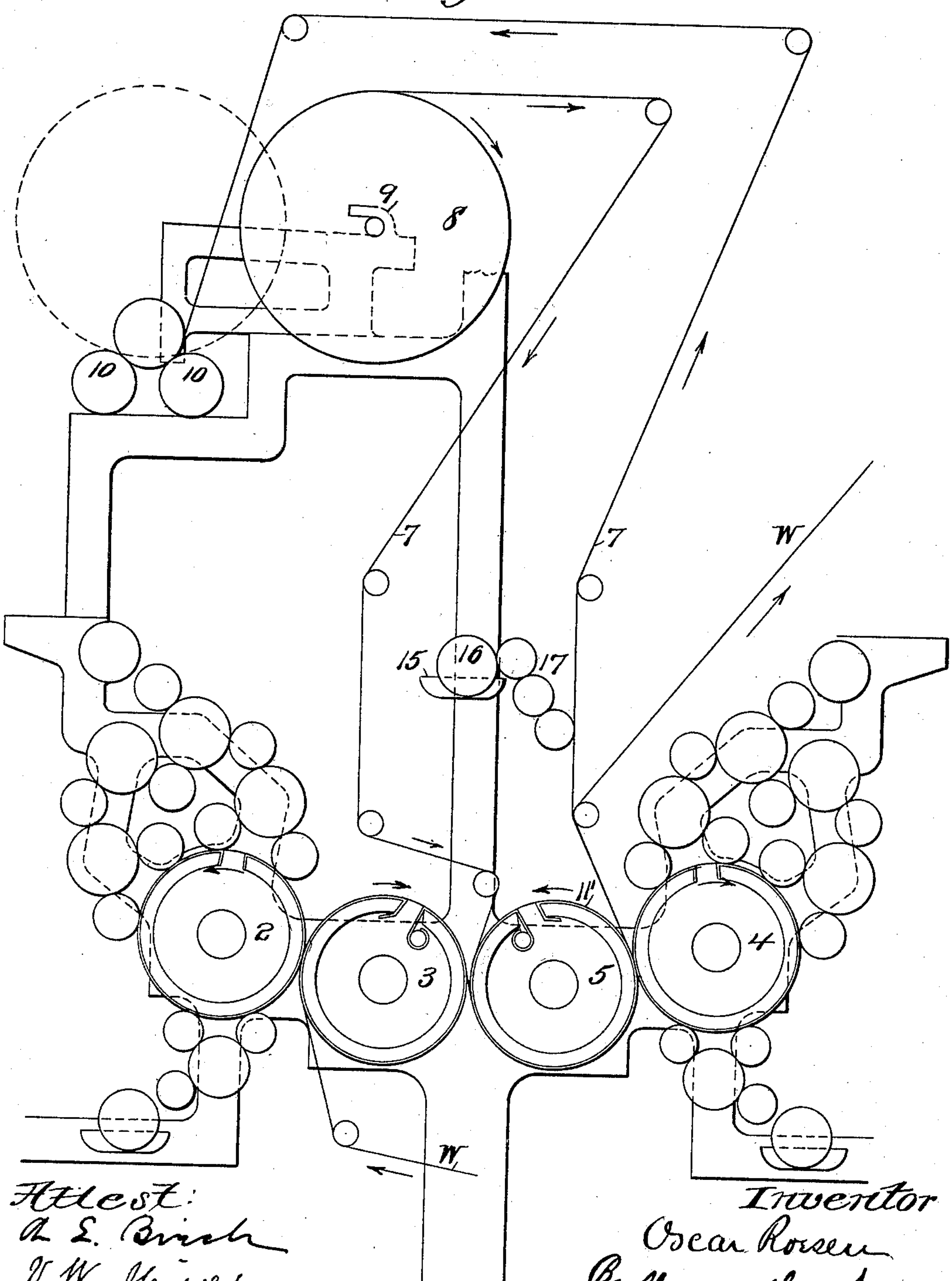
OFFSET DEVICE.

(Application filed Dec. 8, 1899.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.



Attest:
A. E. Birch
V. W. Middleton

Inventor
Oscar Roesen
By Philipp Phelps & Sawyer
Attys

UNITED STATES PATENT OFFICE.

OSCAR ROESEN, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ROBERT HOE AND CHARLES W. CARPENTER, OF SAME PLACE.

OFFSET DEVICE.

SPECIFICATION forming part of Letters Patent No. 660,712, dated October 30, 1900.

Application filed December 8, 1899. Serial No. 739,588. (No model.)

To all whom it may concern:

Be it known that I, OSCAR ROESEN, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Offset Devices, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in devices for preventing offset.

In perfecting printing-machines if the freshly-printed web or sheet comes in contact with the impression-surface of the couple by which the perfecting impression is made the ink from the freshly-printed paper will come off onto the tympan of the said surface and after a certain amount has been deposited thereon it begins to set back on or, as it is termed in the art, "offset" onto the printed sheet. This smuts the sheet and seriously interferes with good printing, especially in fine bookwork and in heavy cutwork, where large amounts of ink are necessarily used. Many devices have been used to prevent this offset. A very efficient device for this purpose consists in running a web of offset material around the impression-cylinder and between it and the freshly-printed sheet or web. This web is wound off from a roll suitably located in the printing-machine and wound up onto another roll. When the supply-roll is exhausted, the position of the rolls is changed and the web is again run through the machine; but the surface which was next the printed sheet or web the first time it was run through is now caused to run in contact with the impression-cylinder. It happens, however, especially after the offset-web has become somewhat heavily charged with ink, that the ink therefrom sets off onto the surface of the impression-cylinder and accumulates or cakes on certain parts of it. This raises the impression-surface somewhat at the points where this accumulation or caking of ink takes place and results in what is known as a "false impression" on the printed web.

It is the object of this invention to prevent caking or accumulation of ink on an impression-cylinder with which an offset-web is used.

With this and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter described, and fully pointed out in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification, and in which like characters of reference indicate like parts, Figure 1 illustrates in diagrammatic elevation so much of a printing-machine as is necessary to an understanding of the invention. Fig. 2 illustrates certain modified features of the invention.

Referring to the drawings, 1 indicates the frame, supporting a pair of perfecting printing-couples between which the web W is led to be printed and perfected. The printing or form cylinder of the first couple is marked 2 and its coöperating impression-cylinder is marked 3. The printing or form cylinder of the second couple is marked 4 and its coöperating impression-cylinder is marked 5. These printing-couples may be of any suitable form and carry printing-surfaces of any desired description. The printing or form cylinders are inked by any suitable form of inking mechanism.

An offset-web 7 is shown as passing around the second impression-cylinder 5, this web being led from a roll 8, which is mounted in suitable bearings 9 in the frame, and after passing around the cylinder 5 is rewound. This rewinding may be accomplished in any suitable manner. In the machine shown the partially-rewound roll is shown as resting on rollers 10, these rollers being driven from any suitable moving part of the machine by suitable gearing. As this is an ordinary form of winding mechanism, the means for operating the rollers 10 are not shown.

In order to prevent the ink on the offset-web from accumulating or caking on the surface of the cylinder 5, the cylinder is provided with any suitable porous surface which when moistened becomes ink-repelling. This surface is marked 11 and preferably consists of a sheet of aluminium, although other porous metals—such, for instance, as zinc—may be used. The sheet of aluminium, when aluminium is used, may be secured to the

cylinder in any suitable way. In the machine shown one end of the aluminium sheet is secured by pins 12 at one side of the ordinary cylinder-gap and the other is held in a straining-clamp 15 of any suitable description. While the surface of the cylinder, as has been said, will preferably consist of a sheet of aluminium; it may consist, where aluminium is used, of any suitable material covered with a thin sheet of aluminium foil, the purpose being merely, as will be understood, to provide the cylinder with a porous surface, which when moistened becomes ink-repelling.

Where aluminium or other metal which when moistened becomes ink-repelling is used, it may be applied, if desired, directly to the surface of the cylinder—as shown, for instance, in Fig. 2, but preferably, in order to improve the impression qualities, a sheet of rubber 14 or other suitable material will be used between it and the cylinder, as shown in Fig. 1. Where aluminium is used, its surface will preferably be prepared by applying thereto an etching solution of any suitable acid in order to thoroughly clean it. A weak solution of phosphoric acid is suitable for this purpose, inasmuch as it entirely removes the grease from the plate, which is the purpose of the etching solution, and at the same time does not bite the plate to such a degree as does the solution of nitric acid, which is the acid ordinarily used for etching purposes. The aluminium surface may also be roughened by sand-blasting or in any other suitable manner, as desired.

Suitable damping devices are provided by which the porous surface of the cylinder is kept in a moistened condition. These devices may be arranged, if desired, so as to apply the moisture directly to the ink-repelling surface on the cylinder, or they may be arranged to apply it to the offset-web, in which case the tympan-web will give up sufficient moisture to the cylinder to keep its surface sufficiently damp to prevent the ink from adhering thereto. Both constructions are shown. In Fig. 1 a suitably-located fountain 15 is shown, this fountain being provided with water-rolls 16 and suitable damping-rolls 17, the said rolls being arranged to apply moisture to the porous surface of the cylinder. In Fig. 2 the fountain 16 is shown as so located that its water-roll 16 and damping-roll 17 will apply moisture to the web after it leaves the impression-cylinder, and consequently the web is rerolled in a dampened condition. It will, however, retain sufficient moisture so as to sufficiently dampen the ink-repelling surface of the cylinder when it is again brought against it. It will be understood, of course, that the fountain may, if desired, be arranged to apply the moisture to the web as it passes to the cylinder instead of from it, as shown.

It is obvious that with the construction before described; as the offset-web comes in contact with the moistened porous surface of the cylinder the said surface will not take ink from the web and the objectionable accumulation of ink or caking heretofore adverted to cannot take place,

The invention is not to be limited to the use for the surface of the impression-cylinder of any particular porous material which when moistened becomes ink-repelling nor to any particular means for applying the material to the cylinder.

What I claim is—

1. In an offset mechanism for printing-machines, the combination with a cylinder having a porous surface which when moistened becomes ink-repelling, of means for running an offset-web around the cylinder, and means for moistening the surface of the cylinder, substantially as described.

2. In an offset mechanism for printing-machines, the combination with a cylinder having a porous metallic surface which when moistened becomes ink-repelling, of means for running an offset-web around the cylinder, and means for moistening the surface of the cylinder, substantially as described.

3. In an offset mechanism for printing-machines, the combination with a cylinder having an aluminium surface, of means for running an offset-web around the cylinder, and means for applying moisture to said surface, substantially as described.

4. In an offset mechanism for printing-machines, the combination with a cylinder having a porous surface which when moistened becomes ink-repelling, of means for running an offset-web around the cylinder, and damping devices arranged to apply moisture directly to the cylinder, substantially as described.

5. In an offset mechanism for printing-machines, the combination with a cylinder having a porous metallic surface which when moistened becomes ink-repelling, of means for running an offset-web around the cylinder, and damping devices arranged to apply moisture directly to the cylinder, substantially as described.

6. In an offset mechanism for printing-machines, the combination with a cylinder having an aluminium surface, of means for running an offset-web around the cylinder, and damping devices arranged to apply moisture directly to the cylinder, substantially as described.

7. In an offset mechanism for printing-machines, the combination with a cylinder having a porous metallic surface which when moistened becomes ink-repelling, of a suitable elastic surface between the cylinder and the metallic surface, means for running an offset-web around the cylinder, and means for applying moisture to the cylinder, substantially as described.

8. In an offset mechanism for printing-machines, the combination with a cylinder having a surface of aluminium, of a suitable elas-

tic surface between the cylinder and the aluminium surface, means for running an offset-web around the cylinder, and means for applying moisture to the aluminium surface, substantially as described.

9. In an offset mechanism for printing-machines, the combination with a cylinder having a porous metallic surface which when moistened becomes ink-repelling, of means for running an offset-web around the cylinder, and means whereby moisture is applied to the cylinder, substantially as described.

10. In an offset mechanism for printing-machines, the combination with a cylinder having a surface of etched aluminium, of means for running an offset-web around the cylinder, and means whereby moisture is applied to the cylinder, substantially as described.

11. In an offset mechanism for printing-machines, the combination with a cylinder having a surface of etched and roughened aluminium, of means for running an offset-web around the cylinder, and means whereby moisture is applied to the cylinder, substantially as described.

12. In an offset mechanism for printing-machines, the combination with a cylinder having a suitable elastic covering, of a surface of roughened and etched aluminium stretched over the elastic surface, means for running an offset-web around the surface, and means whereby moisture is applied to the cylinder, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

OSCAR ROESEN.

Witnesses:
OTTO L. RAABE,
HENRY S. MOUNT.