

A. A. K. TALLENT & G. K. CARLSON.  
 MEANS FOR ATTACHING ENGRAVED SHEETS TO CYLINDERS FOR PRINTING PURPOSES.  
 APPLICATION FILED FEB. 7, 1916.

1,231,968.

Patented July 3, 1917.  
 2 SHEETS—SHEET 1.

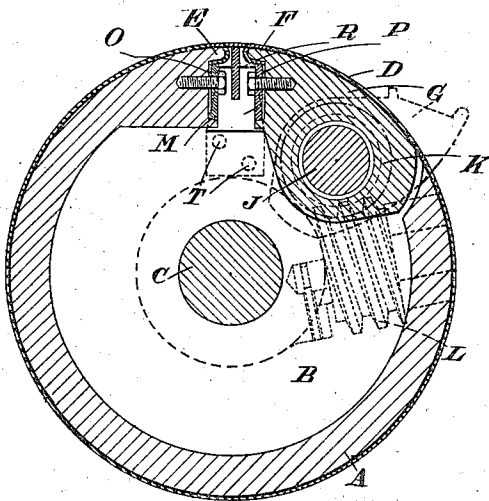


Fig. 1.

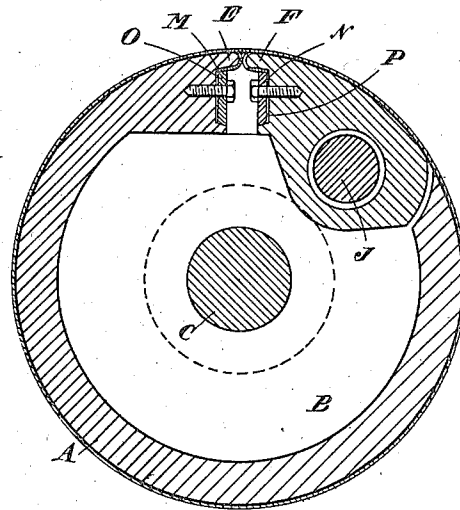


Fig. 3.

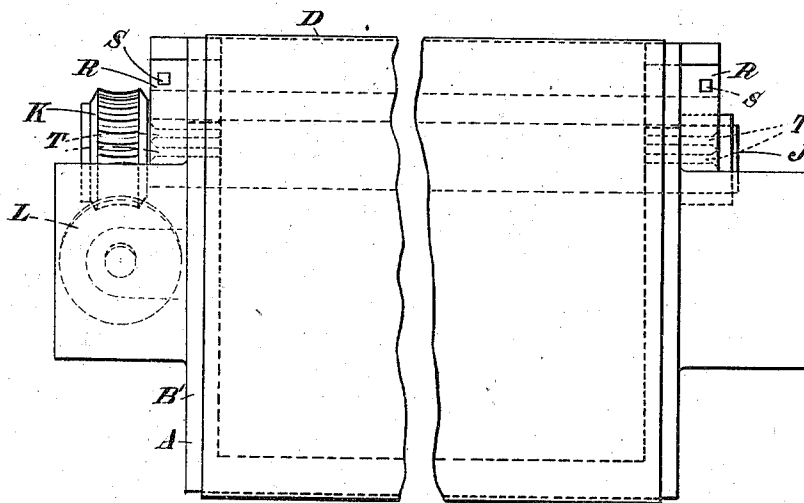


Fig. 2.

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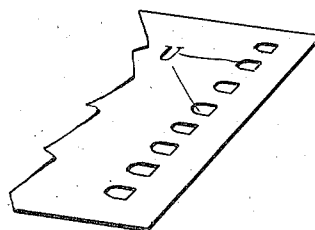
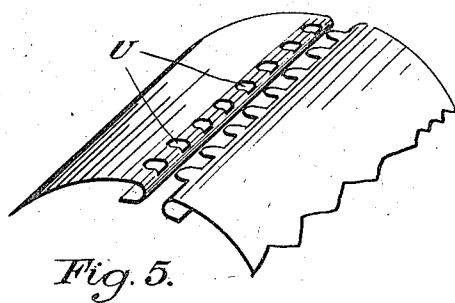
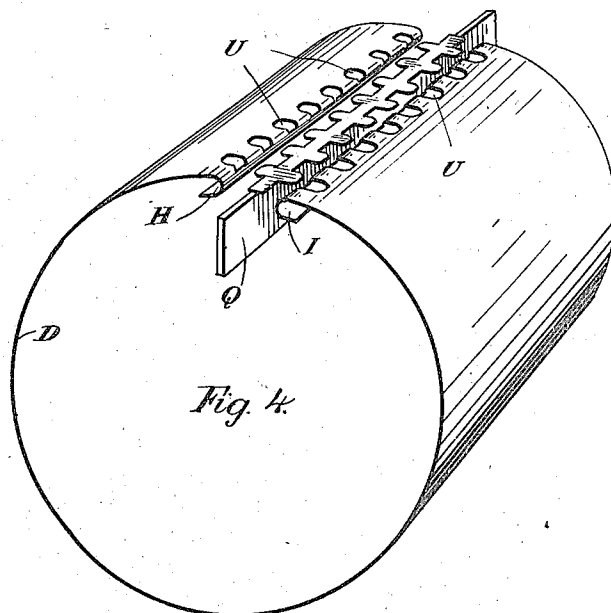


Fig. 6.

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# UNITED STATES PATENT OFFICE.

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MEANS FOR ATTACHING ENGRAVED SHEETS TO CYLINDERS FOR PRINTING PURPOSES.

1,231,968.

Specification of Letters Patent.

Patented July 3, 1917.

Application filed February 7, 1916. Serial No. 76,823.

*To all whom it may concern:*

Be it known that we, ALEXANDER ALLERTON KILLWORTH TALLENT and GEORGE KARL CARLSON, subjects of the King of Great Britain, and residents of London, England, have invented certain new and useful Improvements in Means for Attaching Engraved Sheets to Cylinders for Printing Purposes, of which the following is a specification.

This invention relates to means for attaching engraved sheets to cylinders for printing purposes, more especially for rotary intaglio printing.

One object of the invention is to secure a sheet tightly upon a cylinder in such a way as to preserve a continuous surface which will carry the "doctor" or ink cleaning knife used for intaglio printing satisfactorily; another object is to prevent ink entering the joint between the ends of the sheet holding device.

Other objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location, and arrangement, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

The accompanying drawings illustrate preferred forms of the invention.

Figure 1 is a sectional view of a printing cylinder employing a separate tongue piece;

Fig. 2 shows a side elevation of the cylinder;

Fig. 3 is a sectional view of a cylinder for use with a sheet having overlapping ends only;

Fig. 4 is a perspective view of a sheet for use with a separate tongue piece;

Fig. 5 shows the joint of a sheet for use with a cylinder as shown in Fig. 3; and

Fig. 6 shows the end of a sheet flattened out.

The same part is designated by the same reference sign wherever it occurs throughout the several views.

Metal plates or sheets have been secured to cylinders for lithographic printing by forming a longitudinal recess in the cylinder surface in which the plate fixing mechanism is placed, and in that class of work the presence of a gap in the cylinder is imma-

terial; in the case of intaglio work however there must be a continuous surface in order to support the "doctor" and for this reason complete tubes of copper have usually been employed hitherto for the rotary printing of intaglio.

Referring to the drawings A represents a hollow printing cylinder having end walls B and carried by a shaft C. A longitudinal cavity is made in the side wall of the cylinder which is eventually filled by a long cam-shaped surface G. D is a metal sheet which requires to be held so tightly on the cylinder A as to form a printing surface thereon, for use in intaglio printing employing a doctor. To this end, lips, E, F are formed on the stationary edge of the cylinder A, and upon the movable edge of a cam shaped surface G respectively, and the ends of the sheet D are formed as hooks H, I, which hook over the lips E and F respectively.

J is a spindle having bearings in the end plates B, B' and carrying a worm wheel such as K at one, or both ends with which is geared a worm L; attached to the spindle J is the cam surface G which is rotated by the action of the worm L turning the spindle J so as to occupy the position shown dotted in Fig. 1. Clamps M, N, operating by reason of the tapered edges acting in the tapered recesses O, P force one edge tightly against the hooked ends of the sheet D and secure them against the lips E and F. When the cam surface G is in the dotted position this is readily done with the end I while the end H covers the lip E. Upon returning the cam surface G—by means of the worm L—to its normal position as part of the periphery of the cylinder, the sheet D is tightly stretched around the cylinder A. The action of the worm L is self-locking, and as the leverage when nearing the final position of the cam surface is substantially in line with the pivot center J a very great tension can be applied.

It should be noted that when the cam surface is turned back the clamp N is readily fixed in place, and the opening leaves the way clear for a spanner or other tools to operate the screw of clamp M. Spaces are left in the end walls B, B' of the cylinder A for the passage of a planing tool during manufacture, and in the case where a loose

tongue piece Q is employed, brackets R are fixed to the end walls by screws T, and are provided with slots, in which rests the ends of the piece Q, set-screws S being provided for securing them in place.

If necessary, strips of felt, or other textile material, may be inserted between the lips E, F, when closing the joint to preclude the possibility of any ink getting into the joint.

It will be seen on reference to Fig. 4 (shown with the joint opened) that when the separate tongue piece Q is used, both ends of the sheet D are provided with holes U on the bend of the hook, the edge beyond the holes being retained in a continuous form as shown in Fig. 6, where the plate is shown flattened out. The tongues and recesses may be of any convenient shape.

In the modification shown in Fig. 5, holes U are made in one end of the sheet only, cuts being made in the other end so as to produce tongues which pass over the joint while the spaces from which they come pass around the surface of the lip F. Both ends will still be formed with a continuous edge as shown in Fig. 6; this is stronger than open ends, and permits of a tighter hold by the clamp plates. The clamp plates may conveniently be formed with the inside edge secured as a hinge, and preferably will have a spring to keep them open until the sheet is in place.

The rigid edge of the cylinder may be formed as a detachable portion of the cylinder surface, but preferably the lip will be integral with the surface, and a clamp will securely hold the sheet thereto.

The general direction of the joint may be parallel to the axis of the cylinder, though it may in certain cases be placed at an angle thereto.

It is obvious that many changes and variations in the details of construction and arrangement would readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of our invention. While therefore, we have shown and described various specific constructions and mode of arrangements as operative embodiments of the principles of our invention, we do not desire to be limited or restricted thereto; but

Having now set forth the object and nature of our invention and forms of apparatus embodying the same and having explained its construction, function, and mode of operation, what we claim as new and useful and of our own invention, and desire to secure by Letters Patent, is:—

1. A printing cylinder comprising a hollow drum provided with a longitudinally extending cavity in its side wall, a rigid edge on one side of the said cavity, a movable plate supporting member pivoted on the end walls so as to occupy the said cavity and

normally forming part of the cylindrical surface, and means for moving the said movable member radially outward out of conformity with the cylindrical drum surface while retaining its position longitudinally, a flexible printing plate encircling the cylinder, and inter-engaging means provided with tongues and recesses for removably securing the longitudinal ends of the said plate together so that a bearing surface continuously level is obtained when the sheet is strained by inward rotation of the pivoted cam surface into conformity with the cylindrical drum surface.

2. A printing cylinder comprising a hollow drum provided with a longitudinally extending cavity in its side wall, a rigid edge on one side of said cavity, a cam surface forming normally a part of the cylinder surface pivoted in the end walls of the cylinder so as to occupy the said cavity and forming a movable edge adjoining the rigid edge, a covering sheet encircling the said drum, means for attaching one end of the said sheet to the rigid edge of the cylinder cavity and the other end to the movable edge of the cam surface, and a series of tongues and recesses on the covering sheet inter-engaging across the adjoining ends thereof at the common surface level of same whereby a bearing surface of continuous level is obtained across the joint of the sheet when strained by rotation of the pivoted cam surface into its normal position.

3. A printing cylinder comprising a hollow drum provided with a longitudinally extending cavity in its side wall, a rigid lip on one side of said cavity, a cam surface forming normally a part of the cylinder surface pivoted in the end walls of the cylinder so as to occupy the said cavity and forming a movable lip adjoining the rigid lip, a covering sheet encircling said drum, a hooked end on the covering sheet engaging the rigid lip of the cylindrical cavity, a hooked end on the covering sheet engaging the movable lip of the cam surface, and a series of tongues and recesses on the covering sheet inter-engaging across the adjoining hooked ends thereof.

4. A printing cylinder comprising a hollow drum provided with a longitudinally extending cavity in its side wall, a rigid lip on one side of said cavity, a cam surface forming normally a part of the cylinder surface pivoted in the end walls of the cylinder so as to occupy the said cavity and forming a movable lip adjoining the rigid lip, a covering sheet encircling said drum, a hooked end in the covering sheet engaging the rigid lip of the cylindrical cavity, a hooked end on the covering sheet engaging the movable lip of the cam surface, means for securing the hooked ends to the rigid lip and the cam surface lip respectively, and

a series of tongues and recesses on the covering sheet inter-engaging across the adjoining hooked ends thereof.

5. In a printing cylinder for carrying flexible sheets for intaglio printing, a cylinder having a small longitudinal cavity, in combination with a flexible sheet, the ends of which project within the said cavity, and are provided exteriorly thereof with a series of spaces or recesses cut from the sheet, means for fixing the ends of the sheet in the cavity, a separate tongue piece supported in the cavity, and tongues projecting therefrom on both sides inter-engaging the sheet spaces with a common surface level, substantially as described.

6. In a device of the character described, a cylinder, a flexible sheet, a cam surface pivoted within the periphery of the cylinder and normally forming part of the cylinder surface, a worm wheel or wheels thereon engaging a worm or worms carried upon the cylinder ends, a lip formed upon a rigid part of the cylinder, a hooked end on the flexible sheet engaging the said lip, a second lip formed upon the pivoted cam surface, a hooked end on the flexible sheet engaging the second lip, means for securing the hooked ends to the rigid lip and the cam surface lip respectively, and surface level inter-engaging means connecting the adjoining ends of the said sheet when stretched by rotation of the pivoted cam surface lip to meet the rigid lip.

7. In a device of the character described, a cylinder, a flexible sheet, a cam surface pivoted within the periphery of the cylinder and normally forming part of the cylinder surface, a worm wheel or worm wheels thereon engaging a worm or worms carried upon the cylinder ends, a lip formed upon a rigid part of the cylinder, a hooked end

on the flexible sheet engaging the said lip and provided adjoining but exteriorly thereof with a series of spaces cut from the sheet, a second lip formed upon the pivoted cam surface, a hooked end formed on the flexible sheet engaging this second lip and provided adjoining but exteriorly thereof with a series of spaces cut from the sheet, means for securing the hooked ends to their respective lips, a separate tongue piece supported in the cavity, and tongues projecting therefrom on both sides inter-engaging the sheet spaces with a common surface level, substantially as described.

8. In a device of the character described, a cylinder, a flexible sheet, a cam surface pivoted within the periphery of the cylinder and normally forming part of the cylinder surface, a worm wheel or worm wheels thereon engaging a worm or worms carried upon the cylinder ends, a lip formed upon the rigid part of the cylinder, a hooked end on the flexible sheet engaging the said lip and provided adjoining but exteriorly thereof with a series of spaces cut from the sheet, a second lip formed upon the pivoted cam surface, a hooked end formed on the flexible sheet engaging this second lip and provided adjoining but exteriorly thereof with a series of spaces cut from the sheet, wedge strips and screws for securing the hooked ends to their respective lips, a separate tongue piece, tongues projecting therefrom so as to inter-engage the sheet spaces at a common surface level, and brackets for supporting the tongue piece attached to the cylinder ends having screws for securing the tongue piece therein.

Signed at London, England, this 15th day of January A. D. 1916.

ALEXANDER ALLERTON KILLWORTH TALLENT.  
GEORGE KARL CARLSON.