

S. CRUMP.
METHOD OF MAKING PRINTERS' ROLLERS.

APPLICATION FILED JUNE 27, 1903.

NO MODEL.

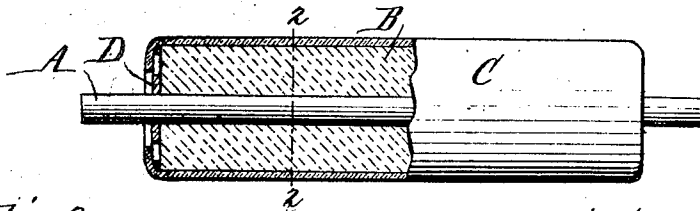


Fig. 1.

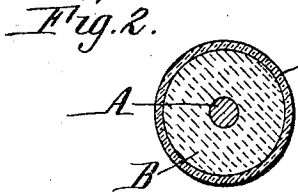


Fig. 2.

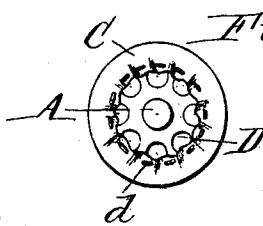


Fig. 3.

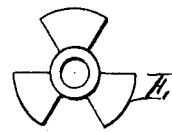


Fig. 4.

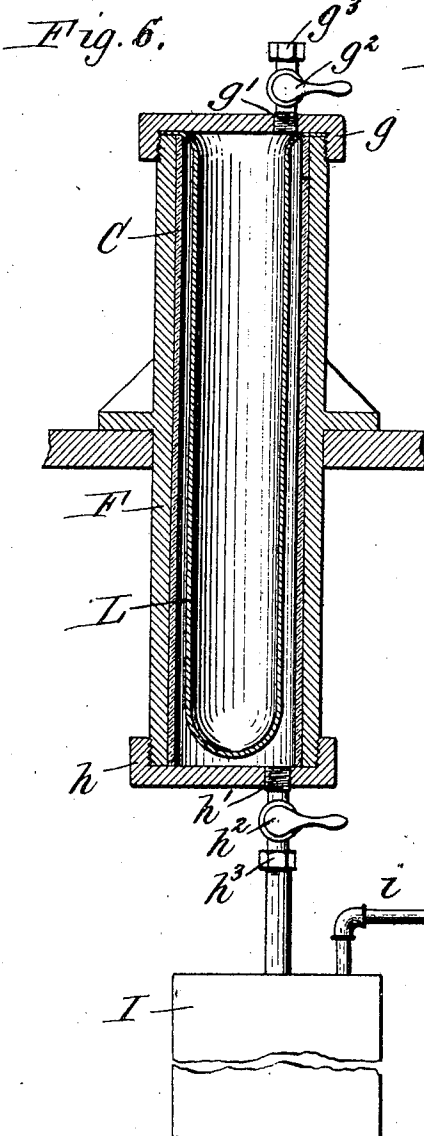


Fig. 6.

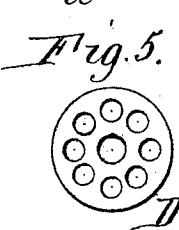


Fig. 5.

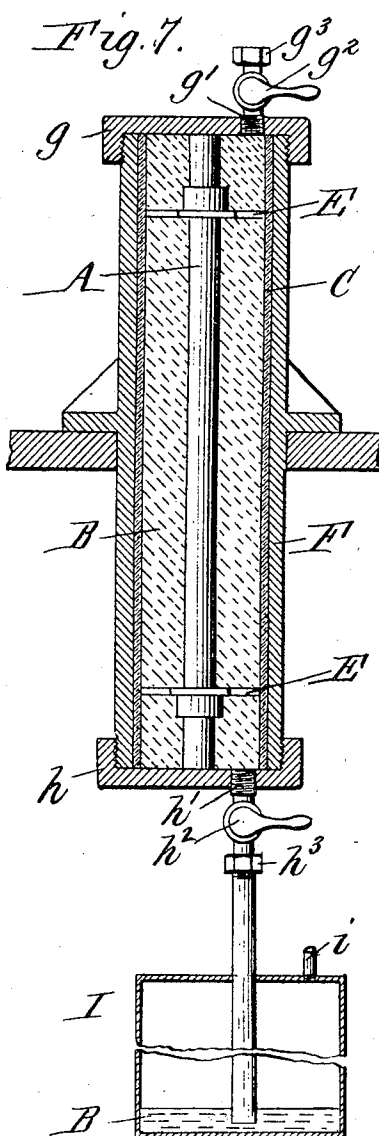


Fig. 7.

Witnesses:
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UNITED STATES PATENT OFFICE.

SAMUEL CRUMP, OF POUGHKEEPSIE, NEW YORK.

METHOD OF MAKING PRINTERS' ROLLERS.

SPECIFICATION forming part of Letters Patent No. 753,959, dated March 8, 1904.

Application filed June 27, 1903. Serial No. 163,373. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL CRUMP, a citizen of the United States, and a resident of Poughkeepsie, in the county of Dutchess and State of New York, have invented new and useful Improvements in Methods of Making Printers' Rollers, of which the following is a specification.

This invention relates to the leather-covered printers' rollers which are used largely in lithographic work. These rollers consist usually of a metallic core or shaft, a leather cover, and a flannel packing arranged between the core and cover. In rollers of this construction the leather cover is not reliably secured to the core and packing and is liable to work loose and become twisted both in use in the press and when being cleaned. The turpentine or other liquid solvent used in cleaning the rollers penetrates to the flannel packing and secretes color or dry patches and also causes the flannel packing to become stiff and lumpy. The consequence is that rollers of this construction rarely are truly cylindrical when new, as the sewed seam and other inequalities are forced to the outer surface and seldom preserve their original form for any length of time, so that most rollers of this class in actual use are more or less out of true and imperfect in shape, whereby the effective working surface of these rollers is greatly reduced, often to about one-half of the total surface.

The object of this invention is to produce a roller in which the leather cover is tightly secured to the core or shaft by a flexible packing or filling and in which the surface of the roller is of a practically true cylindrical form and not liable to change its form in use or by cleaning.

To that end the improved roller consists of a core or shaft, a leather cover, and an interposed packing or filling of a composition which firmly adheres to the cover and shaft, which is of the flexible or elastic nature required for printers' rollers and which is not affected by the solvents usually employed for cleaning the rollers.

In making this improved roller in the preferred manner the leather cover is placed in

a cylindrical mold of the proper size and shape to form the roller. The cover is then tightly fitted against the inner cylindrical surface of the mold by means of a rubber bag which is placed within the leather cover and distended and forced outwardly by internal pressure, such as hydraulic or air pressure, whereby the cover is pressed and fitted tightly against the inner face or wall of the mold. The pressure is then released, the rubber bag is removed, and the core or shaft is placed in the mold. The liquid composition is then admitted to the mold and is caused to completely fill the space between the core and cover, preferably by the application of pressure. The air may at the same time be exhausted from the mold, whereby the formation of air-bubbles or empty spaces on the inner side of the leather cover is still further prevented. The composition is composed of glue and molasses or glue and glycerin in the proportions usually employed for printers' rollers, and sawdust or dry wood-pulp is preferably added to give the composition more body and make it suitable for use in winter as well as in summer. The composition adheres firmly to the core and cover and connects the latter securely to the core, thereby preventing the cover from becoming loose and twisted. The composition filling is yielding or elastic. It is not affected by the liquids used for cleaning the rollers, and as the leather cover is closely shaped to the mold and the seam and other inequalities are forced to the inner side and the formation of air-spaces is avoided in forming the roller the latter is of true cylindrical form as it comes from the mold and retains this form in use. The inequalities on the inner side of the leather cover form anchorages which assist in preventing the cover from shifting its position.

In the accompanying drawings, Figure 1 is an elevation, partly in section, of my improved roller. Fig. 2 is a cross-section in line 2 2, Fig. 1. Fig. 3 is an end elevation of the roller. Fig. 4 is an elevation of one of the removable metallic heads which are used for centering the core in the mold. Fig. 5 is an elevation of one of the metallic heads which are substituted for the removable heads in finishing

the roller. Fig. 6 is a sectional elevation of the mold during the operation of fitting the cover in the same. Fig. 7 is a sectional elevation of the mold during the operation of supplying the liquid composition to the same.

Like letters of reference refer to like parts in the several figures.

A represents the metallic core or shaft of the roller; B, the composition filling; C, the leather cover, and D the metallic end heads. In the finished roller the cover is drawn with its end portions over the end heads and secured in any suitable manner, preferably by drawing a puckering wire or cord *d* through each edge portion of the cover. The end heads are fitted snugly upon the shaft, so as to retain themselves in position without any special fastening.

E represents the removable centering heads or spiders which are placed upon the core or shaft for centering the same in the mold while the mold is being filled.

F represents the body of the cylindrical mold, which is preferably used in an upright position.

g represents the upper head or cap of the mold, which is screwed upon the threaded upper end of the body and provided with an inlet-nipple *g'*, having a cock *g''* and a union *g'''*.

h represents the lower head or cap, which is provided with a nipple *h'*, having a cock *h''* and a union *h'''* for connection with the vessel I, which contains the composition. The latter is a tight vessel and provided at its top with a pipe *i*, by which the air-pressure can be applied to the surface of the liquid composition from a pump K.

The tubular leather cover C is placed against the inner surface of the cylindrical body F of the mold.

L, Fig. 6, represents a rubber bag, which is placed within the cover C and has its open inner end clamped between the upper cap *g* and the adjacent end of the body of the mold. Upon distending this bag by hydraulic or air pressure admitted through the nipple *g'* the cover is tightly pressed and fitted or shaped against the inner surface of the cylindrical body of the mold. The pressure is then removed, the cap *g* is detached from the body of the mold, and the rubber bag is withdrawn, leaving the leather cover C tightly fitted within the cylindrical body of the mold. The core A, to which the centering-heads E have been applied, is now placed in the body of the mold and held centrally therein by these heads or spiders, as shown in Fig. 7. When the mold has been closed, the composition is forced into the mold from the vessel I until the mold is completely filled. During the operation of filling the air may be exhausted from the vessel by connecting the nipple of the upper head *g* with an exhaust-pump, whereby any danger of air bubbles or spaces being formed in the composition filling is lessened. When the mold

has been filled with the composition, the cock of the upper nipple is closed, and air-pressure of about fifty pounds to the square inch is applied to the composition vessel and through the same to the liquid composition in the mold, whereby the composition is compacted and tightly pressed against the core and cover. When the composition has set, the heads of the mold are removed and the roller is forced out of the mold, which can be readily done, especially when the mold has been properly lubricated. The surplus composition outside of the centering-heads E and these heads are now removed and the permanent end heads D are applied to the core at the ends of the roller. These end heads are preferably applied by heating them, so that they shrink on the core and are held thereby securely in place, while the end portions of the composition filling are to some extent melted by the heat and united to the end heads. The latter are preferably plain annular disks with holes to reduce their weight, while the removable heads E are preferably three-armed spiders with ample spaces between the arms to permit of the free passage of the composition in filling the mold. The surplus leather at the ends of the cover is trimmed off, and the end portions of the cover are turned over the end heads D and secured by tying or wiring, thereby completing the roller.

The composition forms a yielding filling between the core and the cover, and this filling is tightly fitted against the core and cover, forming with these parts a roller which is perfectly cylindrical and which retains its shape in use and in cleaning.

While I have described the preferred mode of making my improved roller, it is obvious that this mode may be modified to some extent without departing from the invention.

I do not claim my improved roller in this application, because the same is claimed in my application filed September 8, 1903, Serial No. 172,316.

I claim as my invention—

1. The method of forming a printer's roller composed of a rigid core, a leather cover and a yielding composition filling, which consists in fitting the leather cover in a mold by internal pressure, placing the core in the mold, filling the space between the core and cover with the liquid composition, and allowing the composition to set, substantially as set forth.

2. The method of forming a printer's roller composed of a rigid core, a leather cover and a yielding composition filling, which consists in fitting the leather cover in a mold, placing the core in the mold, filling the space between the core and cover with the liquid composition, compacting the composition by pressure, and allowing the composition to set, substantially as set forth.

3. The method of forming a printer's roller composed of a rigid core, a leather cover and

a yielding composition filling, which consists in fitting the leather cover in a mold, placing the core in the mold, exhausting the air from the mold, filling the space between the core and cover with the liquid composition, compacting the composition by pressure, and allowing the composition to set, substantially as set forth. 15

4. The method of forming a printer's roller composed of a rigid core, a leather cover and a yielding composition filling, which consists in fitting the leather cover in a mold, placing the core in the mold, exhausting the air from the mold, filling the space between the core and cover with the liquid composition, compacting the composition by pressure, and allowing the composition to set, substantially as set forth.

Witness my hand this 15th day of June, 1903.
SAMUEL CRUMP.

Witnesses:

RICHARD H. CLIFFORD,
RUDOLPH A. HAGEDORN.