

C. Holliday.

Mach. for Printing on Fabrics.

N^o 78288.

Patented May 26. 1868

Fig. 1.

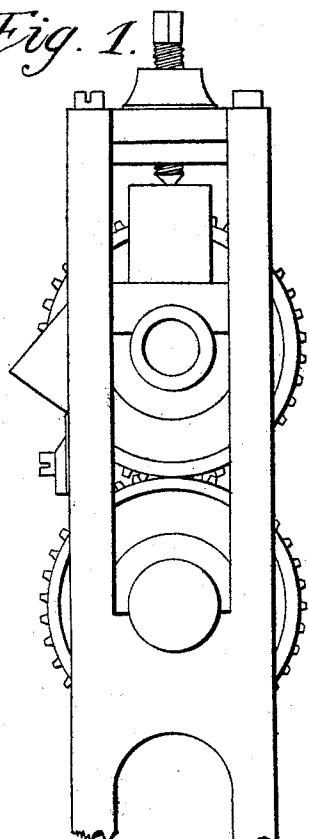


Fig. 2.

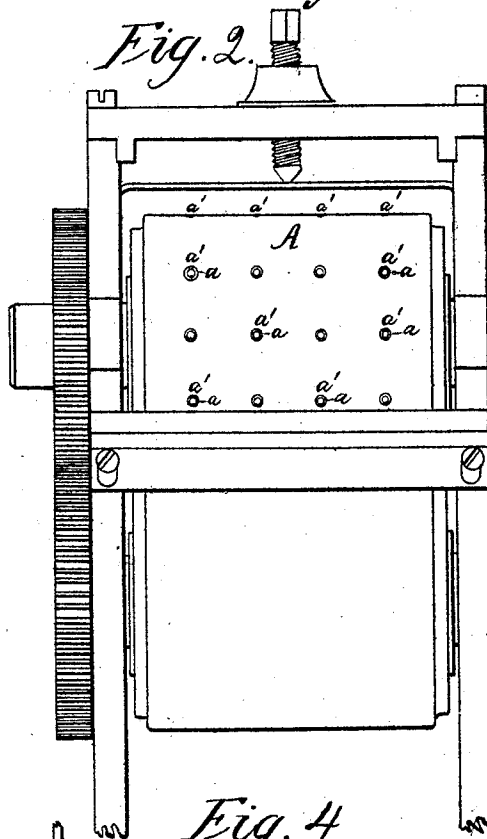


Fig. 3.

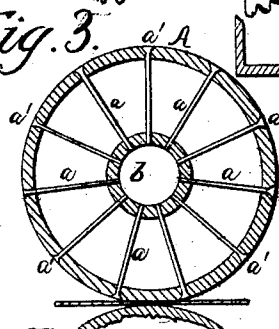


Fig. 4.

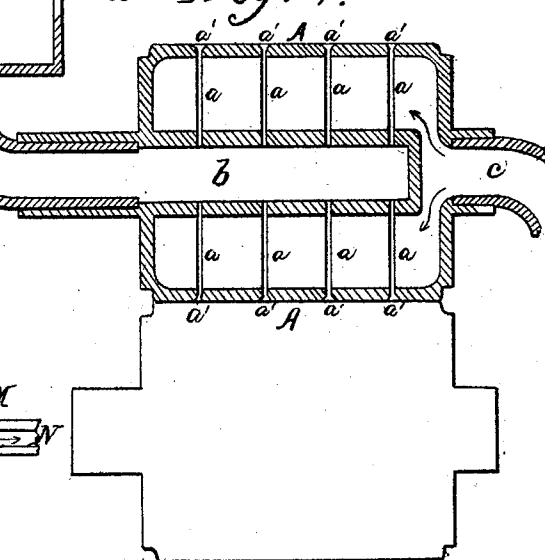


Fig. 5.

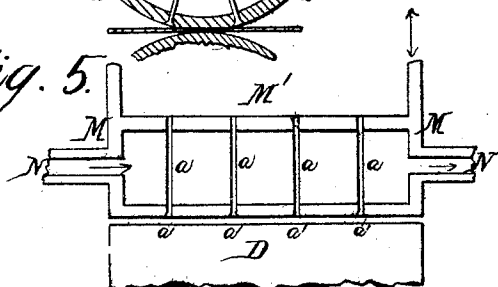
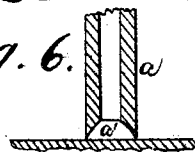


Fig. 6.



Witnesses:

W. C. O'Connell
D. Neilson Melvin.

Inventor:

Charles Holliday
By his attorney
J. L. Peterson

United States Patent Office.

CHARLES HOLLIDAY, OF HUDDERSFIELD, ENGLAND.

Letters Patent No. 78,288, dated May 26, 1868.

IMPROVEMENT IN MACHINERY FOR PRINTING ON FABRICS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, CHARLES HOLLIDAY, of Huddersfield, in the county of York, England, chemist, have invented certain new and useful Improvements in Means or Apparatus for Printing or Depositing on Woven or other Fabric or Material; and I do hereby declare that the following is a full and exact description thereof.

My improvement is intended more particularly for printing with paint, japan-varnishes, gums, or the like material, which is thicker or more glutinous than is ordinarily employed; and where a large amount is required to be impressed, I prefer to apply the printing-matter through holes, tubes, passages, or perforations, from a reservoir of the material, such holes or passages being, at their outlet, of the form desired to be impressed, and at the other part of a size adapted to the quantity desired to be contained, and to flow through the passages. I have been very successful in ornamenting goods by this method, by simply impressing round dots. I increase the fluidity of the glutinous material by heat, adapting blocks or rollers, by which the printing is effected, to receive hot water or steam; or, in case this is not practicable, I apply heat by radiation or otherwise, in order that the surfaces may be heated when the printing is effected. After the glutinous material is laid on the goods to be printed, it thickens in the act of cooling; and by cooling, or drying, or setting, or by a combination of these operations, each spot becomes hard and permanent.

The printing-surfaces may be of a cylindrical character, with a heating-chamber or chambers inside.

When the printing-mixture is not required to be heated, simple perforations, tubes, or passages, with their outlets of the form desired, may be formed upon the cylindrical or other printing-surfaces, for the passage of such printing-mixture; and the printing-material may, by its consistency, or by thickening applied to it, be such as just to admit the quantity desired through the openings or passages.

By placing partitions in the reservoir of the block or roller, I can print as many colors as there are divisions introduced, the different coloring-matters in the different cells or chambers flowing through the several pipes or openings, as will be readily understood.

When printing, I fill the reservoir or the block two or three inches deep, and then apply steam, by preference, to the inside of the block. This heats the perforations and also the varnish or printing-material. The tubes or passages should be contracted a little back of the printing-surface. In other words, they should be countersunk on the end like an inverted cup, of the size and shape of the pattern required. The varnish passes down the tubes, and fills this countersink, and on pressing the block on the material to be printed, and again raising it, the varnish or other printing-material is left on the goods in a quantity and figure depending on the area and depth of the countersunk cavity. The cups or countersunk cavities fill again by the gradual flow of the semi-fluid matter, and the process is repeated, as in common block-printing.

I can apply the heat very conveniently to some form of printing-blocks, by having a jacket of steam acting on the rear or edge surfaces, or both. In printing with rollers, I have an inside compartment for steam, and another for color; and, by operating slowly, the deposits are left on or in the goods very perfectly.

In order to better conduct the semi-fluid matter, and to better insure its reception and retention on the goods, I can introduce slender pointed wires or needles in the blank surfaces, or the backing against which the goods are pressed in the act of printing, which wires or needles shall puncture the goods at each point where a dot is to be deposited, and shall extend into the several tubes or passages. The presence of these needles insures more perfect delivery of the coloring-matter, and more perfect adhesion to the cloth.

In printing from blocks, the process can be applied with the block upside down. In such case, the coloring-matter of an adjacent reservoir is to be kept on a level with the ends of the tube. The goods to be printed are pressed down upon the ends of the tubes, and take up the coloring-matter in the cups or countersinks, after which it is raised, and the process repeated continuously, the cups refilling after each operation by a moderate movement of the mass of coloring-matter in a passage leading to the reservoir.

The accompanying drawings form a part of this specification.

Figure 1 is an end view, and

Figure 2 is a face view of the means for carrying out my invention by means of rollers.

Figure 3 is a cross-section of the novel parts.

Figure 4 is a longitudinal section thereof.

Figure 5 is a cross-section of the parts in a different form. Here they are not rollers, but plane surfaces

Figure 6 is a section of a tube on a large scale. It is represented as standing alone. It may thus stand alone, or may be sunk flush with the adjacent surface, as may be preferred.

Similar letters of reference indicate corresponding parts in all the figures.

The drawings show the novel parts, with so much of the other parts as is necessary to show the relation thereto.

Referring to figs. 1 to 4, A is the printing-roller, and *a* the tubes. The enlargement at the ends is indicated by *a'*. The thick material is led through a passage, *b*, from a reservoir, B. Steam is admitted through a pipe, *c*, from a boiler, not represented.

The gear-wheels for impelling the rolls, and the stuffing-boxes for making proper connections between the hollow revolving shaft, and the passages leading the ink and the steam, are not shown in detail, but will be readily supplied. They may be of the ordinary construction.

Referring to fig. 5, D is a fixed bed, and M is a rectangular case of iron, having connections for moving it up and down, not represented. The thick ink or other matter to be applied, is placed in the open top of M' of the case M, and flows slowly down through the tubes *a a'*, while steam is allowed to circulate through the space between the tubes *a*, entering through one or both the flexible pipes N N. It may, by preference, enter through one and escape through the other. Warm air, water, or other fluid, may be used instead of steam, when steam would impart too high a temperature.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. I claim the within-described process of ornamenting goods, by applying coloring or ornamenting-material through tubes impressed against the material, with or without the aid of needles or leading wires, substantially as herein specified.

2. I claim the application of heat, in connection with the tubes in the above process, substantially as and for the purpose specified.

3. I claim, in connection with printing through tubes, the enlargement of the tubes at and near the printing-surfaces, so as to form cups, which tend to determine the depth in the tube from which coloring or other viscid matter is drawn at each impression, substantially as and for the purpose herein specified.

In testimony whereof, I have hereunto set my name in presence of two subscribing witnesses.

CHARLES HOLLIDAY.

Witnesses:

READ HOLLIDAY,

JOHN HOLLIDAY.