

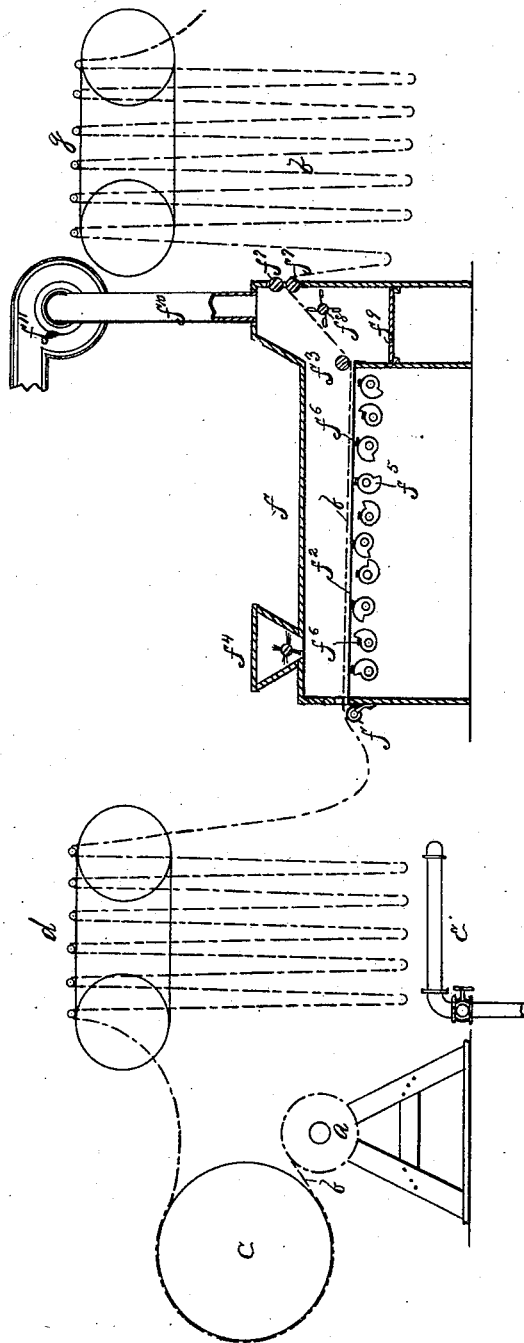
(No Model.)

G. K. BIRGE.

## MANUFACTURE OF WALL PAPER.

No. 304,492.

Patented Sept. 2, 1884.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

GEORGE K. BIRGE, OF BUFFALO, NEW YORK.

## MANUFACTURE OF WALL-PAPER.

SPECIFICATION forming part of Letters Patent No. 304,492, dated September 2, 1884.

Application filed June 2, 1884. (No model.)

### *To all whom it may concern:*

Be it known that I, GEORGE K. BIRGE, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Manufacture of Wall-Paper; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates particularly to that class of wall-paper which has portions of its surface decorated with finely-comminuted wool or jute, commonly known as "flock," which produces a velvety appearance upon the paper, the other portions of the paper being decorated with colors or bronze, or both.

The object of my invention is to produce such a class of paper in a rapid and economical manner without hand manipulation; and to that end it consists, substantially, in passing the paper through a printing-machine, in which are applied to the paper the permanent figures in one or more colors or bronze, or both, and the flocking size or varnish, then passing through suitable drying apparatus, which sets the permanent color or bronze, or both, but does not entirely dry the flocking varnish or size. Then passing the paper so prepared through a flocking-machine in which the flock is permanently applied to the varnished or sized figures.

My invention additionally consists in producing wall-paper of the class hereinbefore outlined with one or more tints or shades in the flocked figures by applying different shades or tints of size or varnish to the paper as it passes through the printing-machine, and then passing the paper so prepared through a flocking-machine in which a uniformly-colored flock is applied to the varnished or sized surfaces, the different shades or tints in the varnish or size producing a corresponding change in the appearance of the finished flocked surfaces.

The figure of the drawing represents in their proper order the various machines and appa-

ratus, all of well-known construction, for producing in a continuous process the particular style of wall-paper by my improved process.

Referring to the drawing, *a* is the roller upon which the paper *b* to be decorated is wound, the paper previous to its being placed upon this roller *a* having been either coated with the ground tint or color or not. From this roller *a* it passes to the printing-machine. (Represented at *c* in the drawing). During its passage through this printing-machine the permanent figures of the pattern, in one or more colors or bronze, or both, are applied, and at the same time the varnish or size is applied to those portions of the pattern which are to be subsequently coated with flock. The paper thus prepared next passes to the hanging-up machine *d*, underneath which is placed the steam-pipes *e*, which are so regulated as not to entirely dry the varnished or sized surfaces upon the paper during its passage through the hanging-up machine, but to leave these surfaces in a sufficiently-moist condition to effectually take up and retain the flock to be subsequently applied. At the same time the heat should be sufficient to thoroughly dry the permanent color or colors or bronze before the paper passes off the hanging-up machine and enters the flocking-machine. The paper next passes into the flocking-machine *f*, of ordinary construction, where the varnished or sized surfaces are to be coated with the flock. The paper passes in over the roller *f'* and along the loose canvas bottom *f''* to and under the roller *f'''*.

*f<sup>4</sup>* is a hopper, in which the loose flock is placed, and from which it is fed to the entering paper.

Below the canvas *f''* are series of cams *f<sup>5</sup>*, operating a number of beaters, *f<sup>6</sup>*, which continually strike the canvas and passing paper, thus agitating the loose flock, and causing it to thoroughly cover the varnished or sized surfaces. The flocked paper passes out between the rollers *f<sup>1</sup>* *f<sup>7</sup>*, after being beaten by the revolving beater *f<sup>8</sup>*, which throws off the surplus flock, that below the paper being collected in the box *f<sup>9</sup>*, and that above being drawn away to a proper receptacle by the conduit *f<sup>10</sup>* and suction-fan *f<sup>11</sup>*.

*g* is another hanging-up machine, which re-

ceives the finished paper and retains it until the varnish or size, with its coating of flock, is thoroughly set. If the varnish or size applied to the paper in the printing-machine is of a uniform color, the flocked surfaces in the finished paper will have a uniform shade; but by varying the shade or tint of the varnish or size before it is applied to the paper—for instance, by using a very light-colored and a very dark-colored varnish or size and a uniformly-colored flock—say red—the finished paper will have two shades of red in its flocked portions, thus producing in a rapid and accurate manner a very pleasing effect in the finished paper. By the employment of a very light-colored flock quite a number of shades or tints in the flocked portions could be produced by employing a series of varnishes graded in shade or tint.

Heretofore it has been customary to print papers of this class in two or more separate and distinct operations, and largely by hand manipulation; as, in making papers having velvet and gold, by either printing the gold in machine, and, after same is dried, printing, with a flat block in hand-press, with varnish, the parts to be flocked, and then flocking same in flocking-drum, or by flocking first and printing afterward. Where more than one shade of flock was desired, it has been customary to apply each shade of flock separately, it having been necessary not only to dry same between each and every operation, but to roll up the paper as well for each operation. By my improved process I produce all these results in one continuous operation, thereby greatly reducing the time and labor employed.

I claim—

1. The process of printing, coloring, bronzing, and flocking wall-paper, consisting, essentially, of passing the paper through a printing-machine in which are applied to the paper the permanent figures in one or more colors or bronze, or both, and the flocking size or varnish, then passing through suitable drying

apparatus, which sets the permanent colors or bronze, or both, but does not dry the flocking varnish or size, then passing the paper so prepared through a flocking-machine in which the flock is applied to the varnished or sized figures, substantially as shown and described.

2. The process of printing, coloring, bronzing, and flocking wall-paper, consisting, essentially, of passing the paper through a printing-machine in which are applied to the paper the permanent figures in one or more colors or bronze, or both, and the flocking size or varnish, then passing through suitable drying apparatus, which sets the permanent colors or bronze, or both, but does not dry the flocking varnish or size, then passing the paper so prepared through a flocking-machine in which the flock is applied to the varnished or sized figures, and the surplus flock is knocked off and collected, substantially as shown and described.

3. The process of preparing flocked wall-paper with two or more shades or tints in the flocked figures, consisting of applying different shades or tints of size or varnish to the paper as it passes through the printing-machine, and then passing the paper so prepared through a flocking-machine in which a uniformly-colored flock is applied to the varnished or sized surfaces, substantially as shown and described.

4. The process of preparing wall-paper by printing paper with one or more prints of patterns in bronze or colored bronzes, and with one or more prints of patterns in flocking varnish or size at the same time, then drying, flocking, and cleaning, substantially as shown and described.

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

GEORGE K. BIRGE.

Witnesses:

OTTO HODDICK,  
W. T. MILLER.