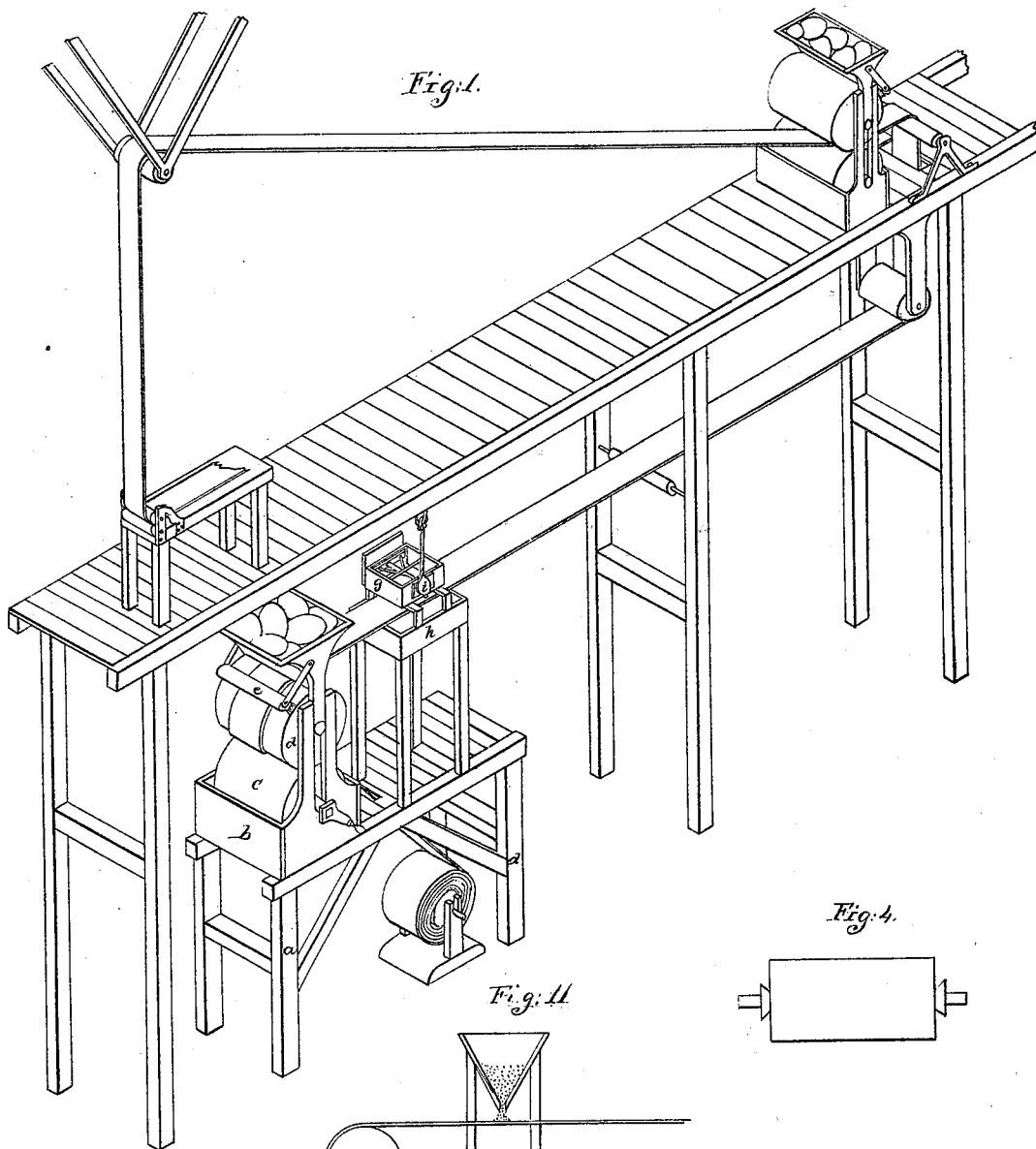
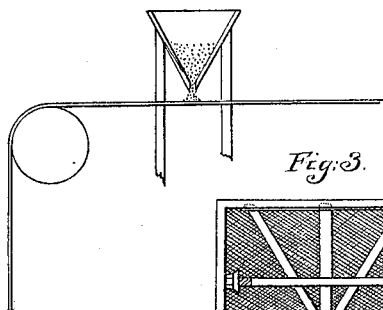


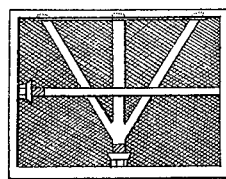
*J. P. Gage.*  
*Coating Paper.*  
*N<sup>o</sup> 5,443. Patented Feb. 15, 1848.*



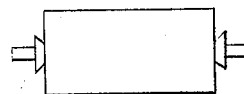
*Fig. 11*



*Fig. 3.*



*Fig. 4.*



# UNITED STATES PATENT OFFICE.

JAMES P. GAGE, OF NEW YORK, N. Y.

## IMPROVEMENT IN MACHINERY FOR SANDING PAPER.

Specification forming part of Letters Patent No. 5,443, dated February 15, 1848.

*To all whom it may concern:*

Be it known that I, JAMES P. GAGE, of New York, in the county of New York and State of New York, have invented a new Machine for the Manufacture of Sand-Paper; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view, and Figs. 2, 3, and 4 are sections and details.

The nature of my invention consists in machinery for applying and affixing to the surface of paper rough or angular pieces of glass, sand, crushed rock, or other like materials, and securing the same in a permanent manner to the said paper, which, when done, constitutes the article known as "sand-paper."

Upon a suitable frame *a a*, I place my glue-vat, rollers, and glassing-table. The glue-vat *b* consists of an oblong box having an upright secured at each end. These uprights have slits cut through them from the top down to a point on a line with the rim of the glue-vat, or thereabout. A roller *c* is next placed within the vat so that its axis will be within the slits in the uprights and have their bearings upon the bottom of said slits, so that the lower side of the roller will be constantly immersed in the glue contained in the vat. This I call the "sizing-roller," and it consists of a cylinder, of wood or other suitable material, covered on the outside with felted cloth. It has likewise two peculiar centers, as seen in Fig. 4. The pins of which they are constructed have conical rings turned upon them or washers of that shape. The use of these washers is to prevent the glue which wastes over the ends of the roller from spreading out upon the journals.

The roller *d* is the pressure-roller, and revolves upon the top of the sizing-roller *c*, and is kept in its place by the slits in the uprights.

In order to regulate the pressure of the roller *d*, a trough is placed above it having two legs, which pass down through the slits before named and rest upon the top of its journals. Sufficient weight is next put into the trough to get the required pressure.

Regulating-springs may be substituted in the place of the trough.

The letter *e* represents a brush extending

the length of the roller *d*, the use of which is to level the glue upon the paper and sweep off any excess that may be upon it. A vibrating motion is to be given to it by cams placed upon the sides of the rollers with suitable connections.

Immediately beyond the rollers is the sanding-box *h* and sieve *g*. The sieve consists of a shallow frame of wood, well braced on the interior by iron rods or like material, having wire net-work or gauze attached to the bottom. It lies upon a cross-framing elevated above the sand-box *h*, so that the paper may pass between the two.

At the back of the sieve a board is raised to form a fender to resist the shocks got from the suspended shot. Between this fender and the frame of the sieve I place small lumps of india-rubber to give a return-spring to the frame. One of the brace-rods branches into three forks at the back of the frame.

Opposite to the front point of the brace, outside the frame, there is a piece of thick leather or other like material to protect the frame from being battered by the blows of the shot.

The letter *h* represents a box placed beneath the sieve to catch the particles of sand as they waste over the edges of the paper.

On a floor immediately above the first set of rollers is placed a second set in every respect similar to the first, and is for the purpose of giving the finishing sizing after the paper has received its sand. The paper, however, before it receives the action of these second rollers passes through a drying-room and is there dried. The putting of glue upon the paper a second time by means of the uppermost set of rollers is for the purpose of giving additional adhesion to the particles of sand. After passing through these last rollers the paper is again subjected to the drying process, and carried to the cutting-table to be divided into sheets or rolled up.

In the place of the sieve a hopper is sometimes put, which delivers the sand in a continuous stream upon the paper. This hopper consists of a long open trough with the sides converging at the bottom, so as to form a narrow slit, through which the sand falls in a slender stream upon the paper as it passes along. A section of the trough is seen in Fig. 2.

The operation is as follows: The vats under the rollers having been filled with glue of a proper consistence, the paper is taken from the roll beneath and passed between the felted and pressure roller, rotary motion being given by the crank. As the paper leaves the felted roller, and before it passes over the pressure-roller, it receives the action of the brush *e*, which serves to level the glue and keep back any excess, (a matter of great importance.) The paper having been thus sized is ready for sanding, and accordingly passes under the sieve for the purpose. This delicate and important part is performed by the attendant, who, standing on the form beside the sieve and watching the progress of the paper as it passes under it, strikes the side of the sieve with the suspended shot from time to time, which shock is conducted throughout the frame by the conductor, before described. The sand by this means falls in an equal shower over the glued surface, and that so nicely that no two particles rest upon the other, while they at the same time present all possible angles to the surface. The sieve must be elevated above the paper at different heights for different

numbers of sand. Thus, for large sizes the sand is to fall a considerable distance upon the glue, for by this means it is forced through the surface and more securely fixed upon the paper. The paper after it is sanded passes into a drying-room of sufficient extent to dry the glue before it arrives at the second set of rollers. It is finished by receiving another coating of size from the upper set of rollers upon the sanded surface, which effectually secures all the particles. After leaving these rollers the paper is again subjected to the drying process, when it is carried to the cutting-table and prepared for the market, or, if not cut, rolled into large rolls.

What I claim as my invention and improvement, and desire to secure by Letters Patent, is—

The second set of rollers for giving the finishing sizing, combined with the sanding table or hopper and the first set of rollers, as described and set forth herein.

JAMES P. GAGE.

Witnesses:

J. P. PIRSSON,

J. L. KINGSLEY.