J. P. GAGE.

COATING PAPER.

No. 5,602. Patented May 30, 1848.

Fig. 2.

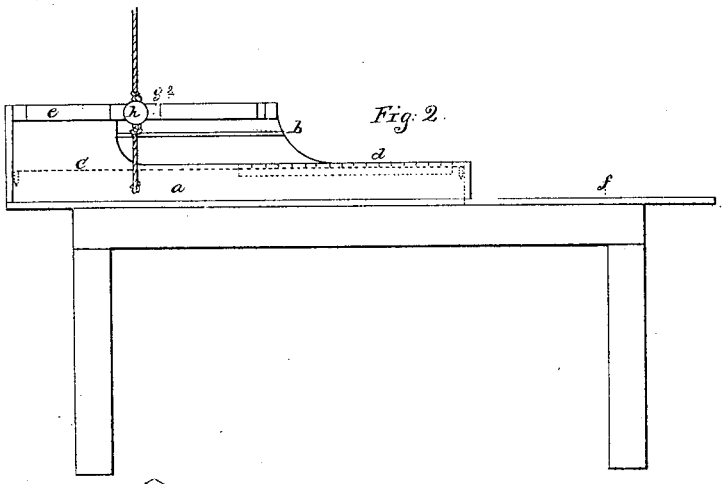
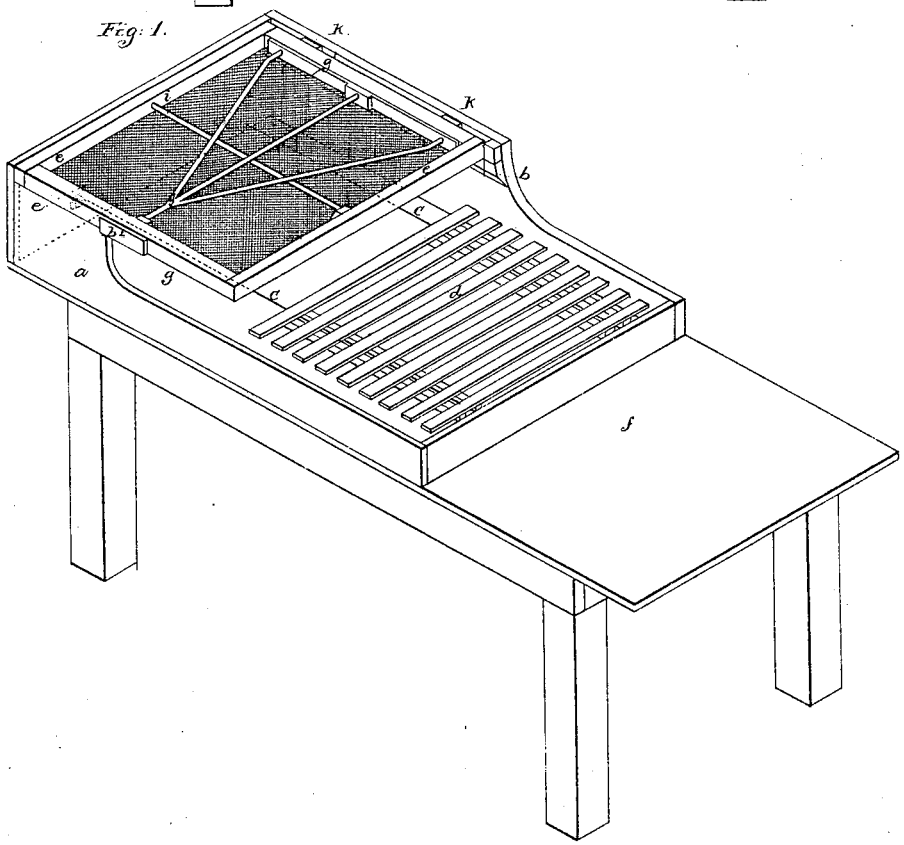


Fig. 1.



UNITED STATES PATENT OFFICE.

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

SIEVE FOR SANDING PAPER.

Specification of Letters Patent No. 5,602, dated May 30, 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 and useful Apparatus for the Manufacture of Sandpaper; 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. Fig. 2 is a side elevation, similar letters referring to similar parts throughout.

The nature of my invention consists in the construction of machinery, for applying or affixing to the surface of paper and like material, rough or angular grains of sand, ground glass, &c, and securing the same in a permanent manner, which when done constitutes the article known as "sand paper."

This invention consists in making sand paper in single sheets, and is performed on a peculiarly constructed table as represented. The top of this table consists of deal boards, and is oblong in shape; at one end there is a shallow box (*a*), the fore part of which, is scarfed down to about half its depth, as seen in the figures. Near the upper edge of the box, a cleat (*b*) is nailed the object of which is to support the sieve.

The letters (*c c*), represent two wires stretched parallel to each other, and fastened to the ends of the box, and support a frame called a paper "car," which frame is seen at (*d*), and consists of several light slats of wood, laid near to each other, and fastened to strips beneath placed each side of the wire, thus securing them, and at the same time forming a groove which prevents the car from slipping out of place. The frame or car can slide on the wires, and is used to convey the sheet of paper intended to be sanded under the sieve.

The sieve (*e e*) is an important part in the arrangement, and is of peculiar construction. The frame of the sieve consists of wood, is shallow and oblong in shape, on one side wire gauze of the proper fineness is fastened. The frame is then braced on the inside, by bars of iron crossing it. One of these bars (*i*), is a simple iron rod, having a screw on one end, with a nut to set it up with; the other brace is called a "shock conductor," and consists of three rods, branching from one stem at (*g*); the points spreading out, so as to extend across the back end of the frame, the points of these rods are kept in position, by passing through a plate of iron (g^1), having three holes punched through it to receive them; the opposite end, where these rods combine into one, rests against the center of the frame and has a screw tapped upon it, and a nut, by which the tension is regulated. By screwing this nut and the one on the single bar, the wire gauze of the sieve is made of the required stiffness.

At (g^2) there is a piece of thick leather, fastened outside of the frame immediately opposite to the center rod (*g*), to protect the frame of the sieve from being mashed by the blows from the shot. The vacant space (*f*) on the table, is where the paper is prepared for sanding. As the whole of the first process is performed here, when sandpaper is made in single sheets, it may be as well to state the preliminaries of manufacture. The paper must be prepared, by wetting the sides of a pile for an inch or two in depth, to prevent warping and curling; several hundred sheets at a time are thus made ready, and piled up for a few hours, until wanted.

The grit used is ground quartz, rock or like material, bolted to various degrees of fineness, and regulated by numbers for different qualities of papers, of which there are 10 sizes made, called 00 refined, 00, 0, 0½ 1, 1½, 2, 2½, 3 and 4. Instead of quartz, ground flint or pebbles from the sea shore, or glass will answer. The size or sticking matter may consist of well made glue, of the consistence now commonly used. A pile of paper as prepared by wetting down the edges is then placed upon the table (*f*). The sieve is next filled with grit of the requisite fineness, up to the top, and leveled off, as you do in measuring grain. An iron ball (*h*) is then suspended from the wall by a cord, so that it will hang opposite to the plate (g^2), and about six inches from it. There are two rings in the ball, one to suspend it from; and one to which a short cord is to be affixed on the underside, but this ball instead of being suspended, may be attached by a spring handle to the frame. At the back of the sieve, between the frame and the box, there are two pieces of India rubber (K K) to cause a recoil of the sieve after a blow from the shot. When all things are ready, a man and boy take their places before the table; the man at the glue, and

the boy at the sieve; a sheet of paper is then sized from the pile by the man, by spreading the glue over it with a brush; this done, it is laid upon the "car" (d), and passed under the sieve by the boy; who then gives the sieve a smart blow, with the suspended shot striking the leather plate (g^2). By means of the bracing (g) the shock is conducted equally over the sieve, so as to cause the grit to fall evenly from every part, upon the sized surface of the paper; and to this bracing (which prevents the concussion on the sides of the sieve, from bellying the wire net,) is owing in a great measure to the superior evenness of the sanded surface. The car is then withdrawn and the paper removed to a rack of laths to dry; another sheet is then sized, and treated as before, and so on throughout.

Various effects are provided by the blow of the shot upon the frame of the sieve; more or less grit being delivered by variations of the force of the stroke. This part therefore requires some practice, in order to cause just sufficient grit to fall to cover the paper entirely over, but so that no particles of the prepared material, shall lie upon one another. The paper also must be at different distances from the sieve, for different numbers of grit. This is regulated by several eyes in the box (d), to raise or lower the wires as need be. For fine numbers, the paper must be brought near the bottom of the sieve, so that the particles will not attract each other, and fall in clouds. For coarse numbers the wires must be lowered to the lower eyes; by this means the grit buries itself, by reason of the force of the fall well into the size, and gets a firmer hold. Six sieves are requisite for a full set, but if perfectly bolted, all the numbers may be made by three sieves, by regulating the blow of the ball. The paper is now to have a finishing coat of size applied over its sanded surface, in order to strengthen the adhesion of the particles. This is done by passing the sheets, one after another between rollers, constructed after the manner of rollers, set forth in Letters Patent granted to me, for making sand paper in lengthened rolls; or this last coat, may be given, by any analogous device.

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

The method of bracing the sieve internally by means of the brace (g) as described.

JAMES P. GAGE.

Witnesses:

JOSEPH P. PIRSSON,

J. L. KINGSLEY.