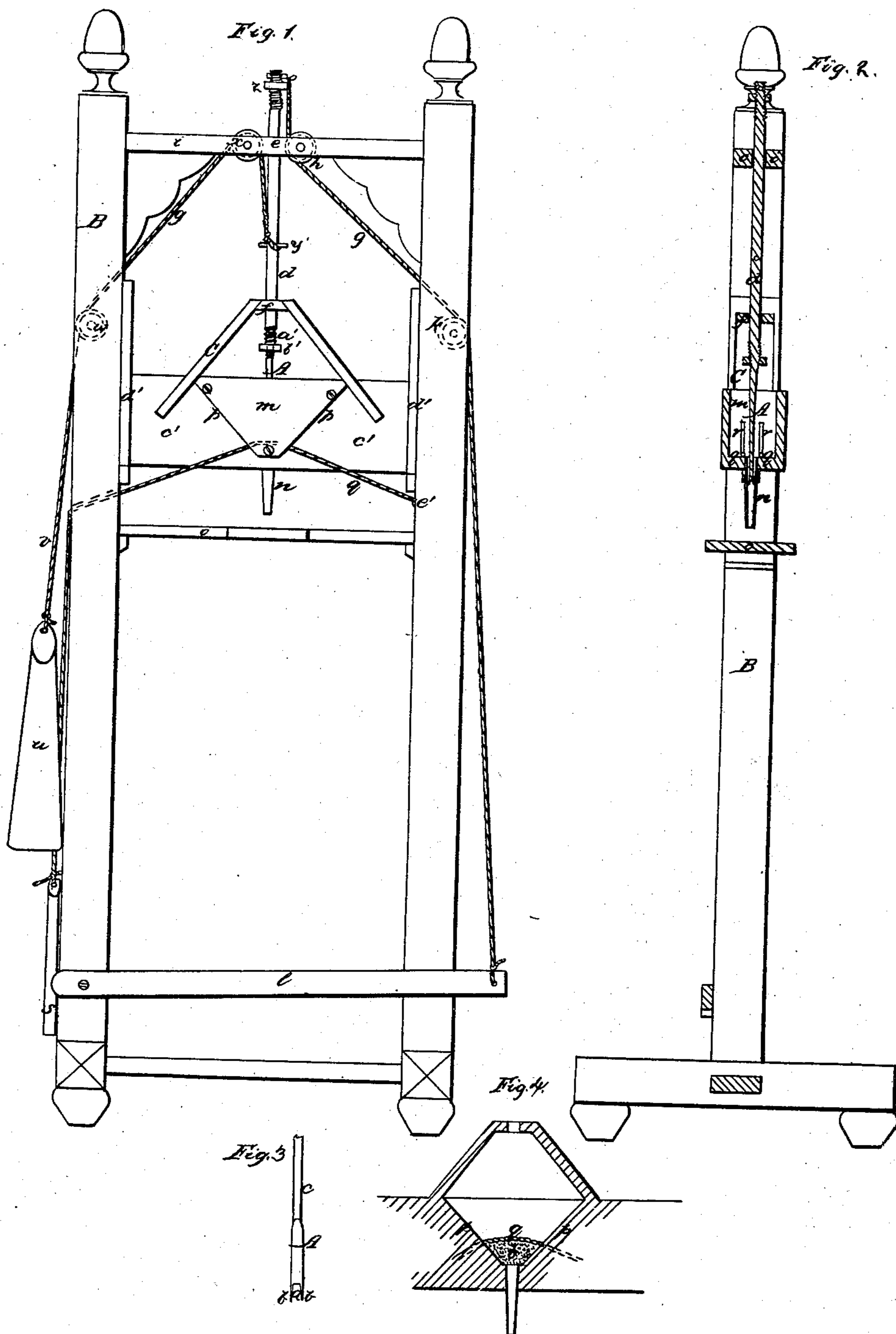


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PATENTED MAY 1, 1845.

S. TAYLOR & A. R. DAVIS.
MACHINE FOR FILLING BRUSH BLOCKS.



UNITED STATES PATENT OFFICE.

SAMUEL TAYLOR, OF CAMBRIDGE, AND ABBOT R. DAVIS, OF BOSTON, MASSACHUSETTS.

MACHINE FOR FILLING BRUSH-BLOCKS WITH BRISTLES.

Specification of Letters Patent No. 4,027, dated May 1, 1845.

To all whom it may concern:

Be it known that we, SAMUEL TAYLOR, of Cambridge, in the county of Middlesex, and ABBOT R. DAVIS, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful machine for filling brush-blocks with bristles; and we do hereby declare that the nature of our invention and the manner in which the same is to be performed are particularly described and ascertained in and by the following statement thereof, reference being had to the drawings, accompanying and making part of the same, and to the figures and letters marked thereon.

Figure 1, of the aforesaid drawings, represents a front elevation, and Fig. 2, a central, vertical and transverse section of our machine.

A (Figs. 1, 2), is what we term the gage punch or filling tool. The lower end of it is forked, as seen on an enlarged scale in Fig. 3, which represents a side view of the lower end of it; the space (*a*) within the tines *b, b*, being of sufficient size to receive within it, when pressed down upon a bunch or quantity of bristles, such a number of the same as it may be desirable to insert in a hole of the block of the brush, to which (hole) the gage punch is adapted. The forked gage thus made upon the end of a long rod *c*, is supported in a vertical position by a vertical shaft (*d*), which plays up and down, in bearings (at *e, f*), applied to a frame B, and to a movable frame C; the upper end of the gage rod *c*, being inserted and fixed in the lower end of the shaft *d*.

A band *g*, is attached to the shaft *d*, at or near its upper end, and extends downward and under a grooved pulley (*h*), fixed in the cross bar *i* of the frame B; thence it passes laterally over a grooved pulley *h*, and is carried downward and attached to a treadle, (*l*). On applying the foot to the treadle, and pressing it downward, the gage punch is caused to descend. The said punch passes through a hopper (*m*), and a tube (*n*), extending downward from the bottom of the hopper, and directly over a shelf (*o*).

The hopper is formed with its sides (*p p*) inclined downward toward each other, as seen in Fig. 4, which represents a longitudinal section of it, and the bristles are laid transversely in it, and are pressed down toward the bottom of it, by one or more strings (*q q*), each of which extends over and upon them, and through a vertical pas-

sage (*r*), cut by a saw, upward through the bottom and sides of the hopper, for about two thirds of the height thereof. The ends of each string are respectively passed through the sides of the hopper; one end of each string being secured to the post of the frame B, at a point *e'*, and the other having a weight (*s*), hung to it, as seen in the drawings; the central part of each string, or that part of it within the hopper, stretching over and acting on the bristles, (in the hopper), which are all supposed to be laid parallel to each other, and transversely of the machine, as seen at (*l*), in Fig. 4. By such an arrangement of strings to act upon the bristles, they (the bristles), are crowded down to such a degree, as, when any are removed from the hopper by the descent of the gage punch through the mass, the space occupied therein, by such as are so removed, will be filled up by others, as soon as the gage punch rises out of the mass.

The gage punch is drawn upward by a counterbalance weight (*u*) hung upon a cord (*v*), which passes over two grooved pulleys (*w x*), placed as seen in Fig. 1; the end of the cord being attached to the spindle or shaft (*d*), at a point (*y'*), situated at about one third of the length of the shaft, above its lower end.

A small shoulder nut or step (*z*), is screwed or affixed to the upper end of the shaft, in order to regulate its descent, or permit the fork of the gage to pass far enough through the guides tube, extending from the bottom of the hopper, in order to deposit the bristles in the hole of the block, as will be hereinafter more particularly described. When this takes place, the shoulder or step *z*, rests upon the top of the bearing, immediately beneath it. The lower end of the shaft or spindle, has a screw *a'* cut upon it, and a nut *b'*, applied and operating upon the screw, so as to regulate the height to which the gage punch may rise above the bottom of the hopper. When the gage is elevated to the height required, the upper side of the nut will be brought against the lower side of the bearing, directly above it, and the force exerted by the counterbalance weight (*u*), will elevate the hopper and gage, some distance above the brush block laid upon the shelf under the hopper. The hopper is to be thus elevated for the purpose of clearing its tubes of the bristles as fast as they are inserted in the block.

The hopper is sustained in position by projections or arms ($c' c'$), which extend from it longitudinally, as seen in Fig. 1, and are adapted at their ends to and received within vertical grooves (formed in the inner sides of pieces $d' d'$, secured to the inner sides of the posts of the frame B, in the positions as seen in Fig. 1), so as readily to move up and down therein, and thereby permit the hopper to be moved from or toward the shelf beneath it. This vertical movement of the hopper, tends also to compress and roll the bristles together, or force them down toward the lower part of the hopper.

In operating our machine, a brush block previously prepared for the reception of bristles, is placed on the shelf underneath the hopper, and the hole thereof to be filled with bristles, brought directly under the lower end of the guide tube of the hopper, and so that when the gage punch is caused to descend, it will enter within the hole. This being accomplished, the punch is next to be depressed, or forced through the mass, or a portion of the mass of bristles within the hopper, and so that the fork of the gage shall carry down the guide tube, the quantity of bristles required for the hole in the block; and in its passage into the guide tube double or bend the said bristles, the one half of each, around upon or toward the other half, and finally insert the part so bent within the hole of the block. This being accomplished, the gage is raised out of the hole, and leaves the bristles behind, and the brush is moved along, so as to fill each of its holes in succession, in a similar manner.

The employment of a gage punch, either

with or without a hopper, and moved into, and forced out of the block by mechanism or manual power, is, in itself, a very great improvement over the mode heretofore practiced, for regulating the quantity of bristles for each hole of the brush, the same having been accomplished by the hand and judgment of the brush maker.

Having thus described our invention, we shall claim—

1. The combination of the gage punch with a hopper, arranged beneath it, and having a guide tube or other suitable contrivance of like character, adapted to it, the whole being arranged and operated substantially as above described.

2. Also, the manner in which the bristles are fed beneath the gage punch, as fast as is necessary, when others are removed by the same from the hopper, viz: by means of the weighted strings adapted to the hopper and frame of the machine, as above specified.

3. We also claim, in combination with the weighted strings, elevating the hopper when the gage punch rises upward; the same being for the purpose of drawing the strings over the bristles, and thereby insuring their movement beneath, and into the fork of the gage punch.

In testimony whereof, we have hereto set our signatures, this fifteenth day of February, A. D. 1845.

SAMUEL TAYLOR.
ABBOT R. DAVIS.

Witnesses:

R. H. EDDY,
GEO. H. BAILEY.