L. D. GROSVENOR.

Broom Machine.

No. 7,872. Patented Jan'y 1, 1851.

Fig. 1

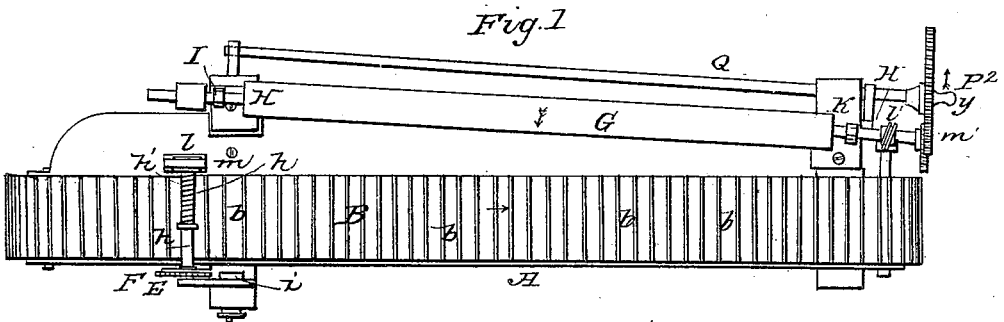


Fig. 2

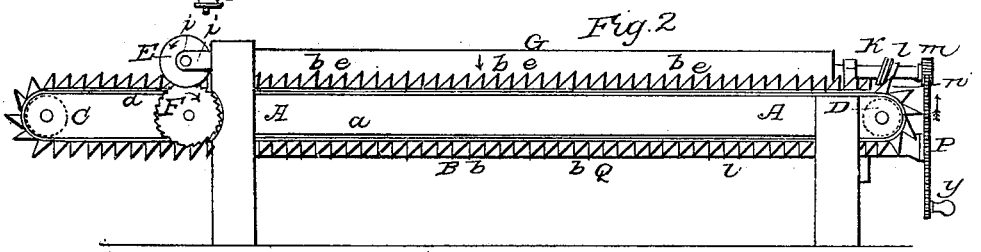


Fig. 5

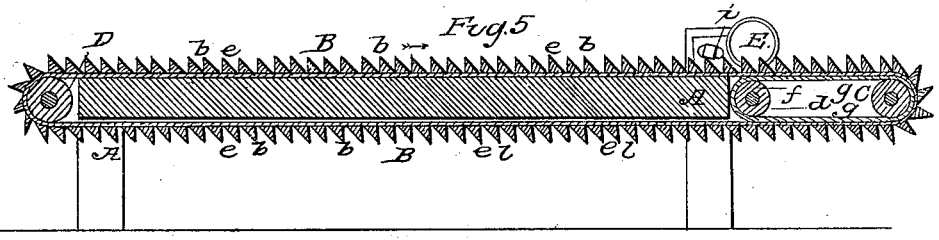


Fig. 4

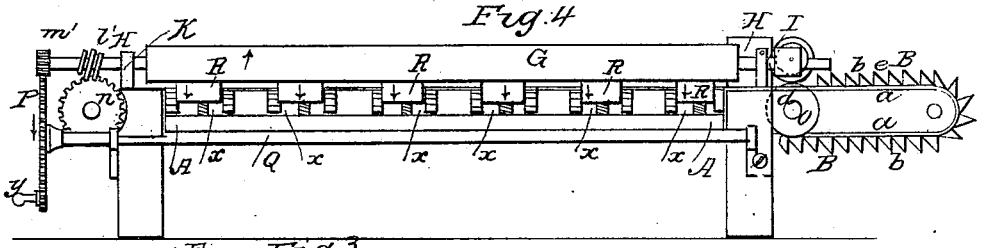


Fig. 3

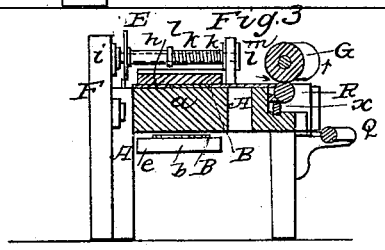
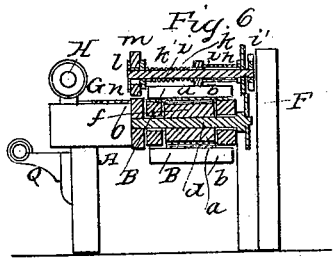


Fig. 6



UNITED STATES PATENT OFFICE.

LORENZO D. GROSVENOR, OF HARVARD, MASSACHUSETTS.

MACHINE FOR ASSORTING BROOM-CORN.

Specification of Letters Patent No. 7,872, dated January 1, 1851.

To all whom it may concern:

Be it known that I, LORENZO D. GROSVENOR, of the Shaker village of Harvard, near South Groton, county of Worcester, and State of Massachusetts, have invented a new and useful machine for sorting broom-corn, bristles, or various other matters, whether for the manufacture of brooms, brushes, or other articles; and I do hereby declare that the same is described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings Figure 1 denotes a top view of my said machine. Fig. 2, is a front elevation of it. Fig. 3 is a vertical and transverse section of it. Fig. 4, a rear elevation of it. Fig. 5 represents a longitudinal and vertical section taken through the endless belt or platform.

In the said drawings A represents a strong frame made of suitable dimensions and in a proper manner for supporting the operative parts or members of the machine. B, is an endless platform whose upper half rests on the table or top surface of the frame A. The said belt or platform is extended from end to end of the said frame, and passed around two drums or rollers C, D, (denoted by dotted lines in Fig. 2) arranged at the ends of the frame as seen in the drawings. The lower half of the endless platform extends underneath the table. The said endless platform is composed of an endless belt or band *a*, and a series of lags or strips of wood *b*, *b*, *b*, &c., the said strips of wood being fixed to the belt or band and formed and arranged with respect to one another as seen in the drawing. The forms of each of the said strips of wood should be such as to have a cavity or space *e* between it, and the strip next to it, and on either side of it.

Rotary shears or cutters E F are disposed with respect to the endless belt, as seen in Figs. 1 and 2. The lower cutter F is placed upon an axle *d*, on which is a drum *f*, see Figs. 5 and 6, the latter figure being a transverse section of the machine taken through the cutters and their axle. Around the drum *f*, as well as one of the drums of the endless platform, an endless belt *g* is carried, the same being for imparting motion to the lower cutter. The upper cutter is fixed upon a tubular axle *h* which revolves upon a horizontal cylindric axle *i* extended over the endless platform and from an arm *i'* projected from the frame of the machine. The upper cutter is pressed against the lower one by means of a helical spring *k* which incloses the stationary axle, and is placed between the tubular shaft of the cutter and a shoulder or circular plate *k'*, fixed upon the stationary axle as seen in Figs. 1 and 6. There is also another circular plate or shoulder, fixed upon the stationary axle as seen in Figs. 1 and 6, between which shoulder *l* and the shoulder *k'* before named, a cylindric roller *m*, is arranged and placed upon the stationary axle. The eye or central hole *n*, of the said roller is made much larger than or about double the diameter of, the axle on which it turns, the object of such formation of the eye being to allow the roller to freely rise and fall a short distance as circumstances may require. Directly underneath the roller is another roller *o* which is fixed upon the axle of the cutter of the lower cutter and has the upper surface of its periphery arranged on a level or a little above the level of the top surface of the endless belt of the endless platform. On one side of the endless platform is a long drum or roller G which has its lower surface arranged on a level or a little above the level of the top surface of the endless belt of the endless platform. The said roller G is not to be arranged parallel with the endless platform or to the direction in which the endless platform is to be moved, but it is disposed so as to be nearer to the endless platform at one end than it is at its other end as seen in Fig. 1. The axle or shaft H H, of the long roller G is supported by and travels in boxes I K, and has a worm or endless screw *l'*, and a pinion gear *m'*, fixed upon it as seen in Figs. 1 and 2. The endless screw plays into a worm gear *n'*, fixed upon the axle or shaft of one of the drums which carries the endless platform. The pinion *m'* engages with a spur gear P, fixed upon one end of the driving shaft Q. Directly underneath the large roller G, is a series of smaller pressure rollers R, R, R, each of which is borne or pressed up against or toward the roller G by a spring *x* or any other suitable contrivance; the said rollers being arranged with their axes parallel to the axis of the roller G, and in other respects as seen in the drawings. On a person applying his hand to a crank *y*, extended from the side of the spur gear before mentioned,

and turning said gear in the direction denoted by the arm *z* in Fig. 1, motion will be imparted to the endless platform, the rotary cutting shears, the driving roller G and the pressure rollers R, R, R, underneath the same, in the direction denoted by the arrows on such parts in the drawings. Consequently if we lay between those lags of the endless platform which may be on top of the frame, and in the act of approaching toward the rotary cutters, a quantity of sprigs of broom corn, and cause them to project beyond the sides of the endless platform, the said sprigs will be carried, during the movement of the platform, between the circular shears or cutters, which will cut off a portion of each of said sprigs, the sprigs being held firmly during such operation by the weight of the roller *m'*, which rests upon them.

Now these sprigs being of various lengths would be carried onward by the endless platform and toward the pressure rollers R, R, R, &c. The pressure rollers R, R, R, and the stationary roller G, being supposed to be in motion will seize hold of the sprigs and draw them out of the cavities of the endless belt, the longest sprigs being seized by the pressure roller which is at the greatest distance from the endless belt, while the shortest sprigs are seized by the pressure roller which is nearest to the endless belt. The sprigs of intermediate lengths will severally be seized and drawn out of the cavities of the endless platform by the other pressure rollers, each of which will draw away those sprigs which are of a certain length.

A suitable box or receptacle for the sprigs may be placed under each pressure roller, and in such position as to receive the sprigs acted upon by it. After they are discharged from between the pressure roller, and the roller G over it, thus all the sprigs of one length will be deposited in some one of the boxes or receptacles, while all those of any other length will be deposited in some one of the other boxes, and thus the sprigs which previous to their introduction into the machine were of various lengths, will not only have their refuse, or portion not wanted, cut off, but they will be assorted or separated from one another, so that all those of the same length will be drawn away from the rest.

It is well known that sprigs of broom corn are used in the manufacture of house brooms. After having their refuse parts cut off, the sprigs are usually assorted by hand so that all those of any particular length shall be in a pile by themselves; as brooms are of various lengths, and as sprigs of one length are desirable for each broom, it becomes necessary to assort the sprigs as has been stated. The assorting of them however is a somewhat troublesome and tedious process, when conducted by a person in the old way, but when my machine is employed, it becomes a very expeditious and easy one and is attended by a great saving of labor. I would remark that I do not intend to confine my machine to the work of sorting sprigs of broom corn for the manufacture of house brooms, as it may probably be adapted to the assorting of various other matters, such as bristles for brushes, feathers for dusters, et cetera; and I would further remark, I do not intend to confine my invention to the precise form or construction of its parts or to the contrivances for operating them, as represented in the drawings, but mean to make such charges as circumstances may require, while I do not alter the principle or novel features claimed by me.

What I claim as my invention is—

The combination of the endless belt, the roller G, and the series of pressure rollers or any mechanical equivalents therefor, as arranged and made to operate together substantially in the manner and for the purpose as herein before described, and in combination therewith, I claim the rotary shears and the weighted roller M', or their mechanical equivalents, the whole being applied and made to operate together essentially as herein before specified.

In testimony whereof I have hereto set my signature this twenty-eighth day of August A D 1850.

LORENZO D. GROSVENOR.

Witnesses:

R. H. EDDY,

FRANCIS GOULD.