



# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN BROOM-CORN-SIZING MACHINES.

Specification forming part of Letters Patent No. **165,458**, dated July 13, 1875; application filed  
April 17, 1875.

*To all whom it may concern:*

Be it known that I, ALPHONSO WALRATH, of Fort Plain, in the county of Montgomery and State of New York, have invented a new and valuable Improvement in Broom-Corn-Sizing Machine; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a plan view of my machine, and Fig. 2 is a side view of the same. Fig. 3 is a sectional detail view.

This invention has relation to improvements in machines for sizing broom-corn. The object of the invention is to devise a means whereby broom-corn may be cheaply and expeditiously separated into lengths suited to the manufacture of the various sizes of brooms and whisks known to the trade. To this end the nature of the invention consists in the employment of a series of spurred carrying and distributing belts, of different lengths, except the outer ones, which are of the same length, supported by guide-strips, in combination with a bin divided into several compartments; and it further consists in the employment of spurred feeding-wheels, in combination with spring-fingers, a supporting-plate, and a cutter, as will be hereinafter more fully set forth.

In the annexed drawings, A designates a rectangular box, which is open at one side, and is divided, by means of partitions *a*, into a number of bins, *b*. This box supports a preferably-inclined frame, B, which affords bearings for a number of spaced rotating shafts, C C<sup>1</sup> C<sup>2</sup> C<sup>3</sup>, upon which are keyed pulley-wheels *c c<sup>1</sup> c<sup>2</sup> c<sup>3</sup>*, carrying endless belts D D<sup>1</sup> D<sup>2</sup> D<sup>3</sup>, having teeth *d*, as shown in Fig. 2, for a purpose hereinafter explained. These shafts are mounted in frame B, just over, and, preferably, slightly in front of, the partition-walls of each successive bin. Shaft C, as shown in Fig. 1, has two pulley-wheels, *c*, shaft C<sup>1</sup> a single one, as has also shaft C<sup>2</sup>, while the shaft C<sup>3</sup> at the feeding end of the

machine has four. The outer or lateral wheels *c c* and *c<sup>3</sup> c<sup>3</sup>* on the shaft C and C<sup>3</sup> sustain and carry endless belts D D<sup>3</sup>, while the intermediate pulleys *c<sup>3</sup>* on shaft C<sup>3</sup> and the pulleys *c<sup>1</sup> c<sup>2</sup>* on shafts C<sup>1</sup> C<sup>2</sup> sustain the intermediate belts D<sup>1</sup> D<sup>2</sup>, which latter are each shorter than belts D D<sup>3</sup>, and the belt D<sup>2</sup> shorter than the belt D<sup>1</sup>. *i i<sup>1</sup> i<sup>2</sup> i<sup>3</sup> i<sup>4</sup>* designate longitudinal strips arranged at a suitable distance apart under the belts to allow the teeth *d* of endless belts D D<sup>1</sup> D<sup>2</sup> D<sup>3</sup> to pass between them, and extending horizontally from the first to last, from the feeding end of the box to the fourth bin, the next *i<sup>1</sup>* to the third bin, the third *i<sup>2</sup>* to the second bin, and the third *i<sup>3</sup>* to the first bin, so that when the broom-corn is carried and supported upon the said strips, by causing the shaft C<sup>3</sup> to be operated the longest straws will be carried, by teeth *d* on belts D D<sup>3</sup>, along strips *i i<sup>4</sup>* to the last bin, into which they will fall, and the shorter lengths having been previously distributed by means of the strips above described, into their appropriate bins. Motion is given to the endless belts D D<sup>1</sup> D<sup>2</sup> D<sup>3</sup> through the medium of an endless belt, E, a pulley, F, on the end of the shaft C<sup>3</sup>, and a main actuating cone-pulley, F', and the latter pulley being of greater diameter than the former a very rapid motion of the carrier-belts will be obtained with a corresponding rapid distribution into their appropriate bins of the various sizes or lengths of broom-corn.

With a view of guiding the spears of corn so that they will fall into the appropriate bins, and not lodge upon the partition between the said bins, I make use of guide-strips *j j<sup>1</sup> j<sup>2</sup> j<sup>3</sup>*, arranged at the end, and in the continuation of strips *i, i<sup>1</sup>, i<sup>2</sup>, and i<sup>3</sup>*, a sufficient space being left between them to allow the spears of corn to fall through.

G represents an inclined platform rigidly secured at the feeding end of the machine, and provided with a metallic spring guiding-plate, G', of such length that when it is secured in position it shall extend from strip *i* on one side of the box to a point slightly beyond strip *i<sup>3</sup>*; and H H' represent two studded wheels secured upon a suitable shaft at one side of the box, and extending through plat-

form G upward on a level with the plate G'. Between these wheels, and rigidly secured to platform G, is arranged a spring-finger, *g*, which is curved concentrically to the peripheries of the said wheels, and extends downward below platform G nearly to belt D<sup>2</sup>. This finger is overhung by a second spring-finger, *g'*, sustained by means of a shank, *h*, on a post or upright at one side of the frame. Rotation is given to studded wheels H H' by means of a trundle or lantern wheel, I, keyed upon a shaft, *l*, through the medium of a pulley, *l'*, on the other end of the said shaft, an endless belt, *m*, and a step cone-pulley, F'. When the latter is actuated by any suitable motor the carrier-belts and studded wheels H H' will receive simultaneous movement, and they are used in the following manner, to wit: The operator, standing at the end of the box, places the broom-corn across and in contact with the wheels H H', between fingers *g g'*, when it is immediately seized by the studs or teeth of the said wheels, and is carried over them to a point within reach of the teeth *d* of the carrier-belts, the corn being accurately guided to said belts by the downward continuation of finger *g* and a number of preferably elastic strips of wood or metal, *o*, connecting platform G and strips *i i' i'' i'''*. While the corn is being carried over wheels H H' the upper spring-finger will hold it in contact with their teeth, and the lower finger will prevent the corn from being bent or broken by the action of the upper one. Guide-plates G' will hold the corn in a horizontal position, and will cause it to be delivered to the carrier-belts in a position transverse to

their length, so that the spears will be allowed to reach their appropriate bins in proper position for falling through the openings.

J represents a revolving knife secured in a suitable holder on one end of a shaft, *n*, which knife is so arranged, in relation to wheels H H', that when the corn is carried upward over them the butts thereof shall be brought between the knives and a curved cutter-guide, *p*, and will be smoothly cut off, and will, when distributed, as above described, be ready for use.

Shaft *n* is caused to rotate, imparting movement to the cutting-blade J, by means of a pulley, *r*, on its end, and an endless belt, *t*, passing around the cone-pulley F', which also actuates simultaneously feeding-wheels H H' and endless carrier-belts D D<sup>1</sup> D<sup>2</sup> D<sup>3</sup>.

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

1. The spurred and distributing belts D D<sup>1</sup> D<sup>2</sup> D<sup>3</sup>, of different lengths, except the outer belts D D<sup>3</sup>, which are of the same length, and the guide-strips *i i' i'' i'''*, in combination with the bin, divided into several compartments, substantially as described.

2. The spurred feeding-wheels H H', in combination with the spring-fingers *g g'*, supporting-plate G', and cutter J, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ALPHONSO WALRATH.

Witnesses:

JAMES GENTER,  
ERVIN PHILLIPS.