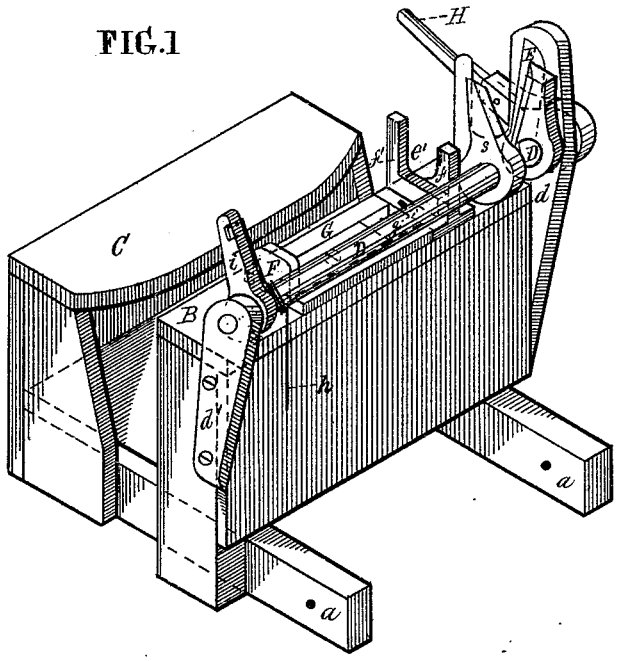
2 Sheets—Sheet 1.

W. CADY.

BROOM-MAKING MACHINE.

No. 186,077. Patented Jan. 9, 1877.

FIG. 1



Witnesses.

Thomas J. Bewley

Robert S. Williams

Inventor

William Cady

Stephen Ustick attorney.

2 Sheets—Sheet 2.

W. CADY.

BROOM-MAKING MACHINE.

No. 186,077. Patented Jan. 9, 1877.

FIG. 2

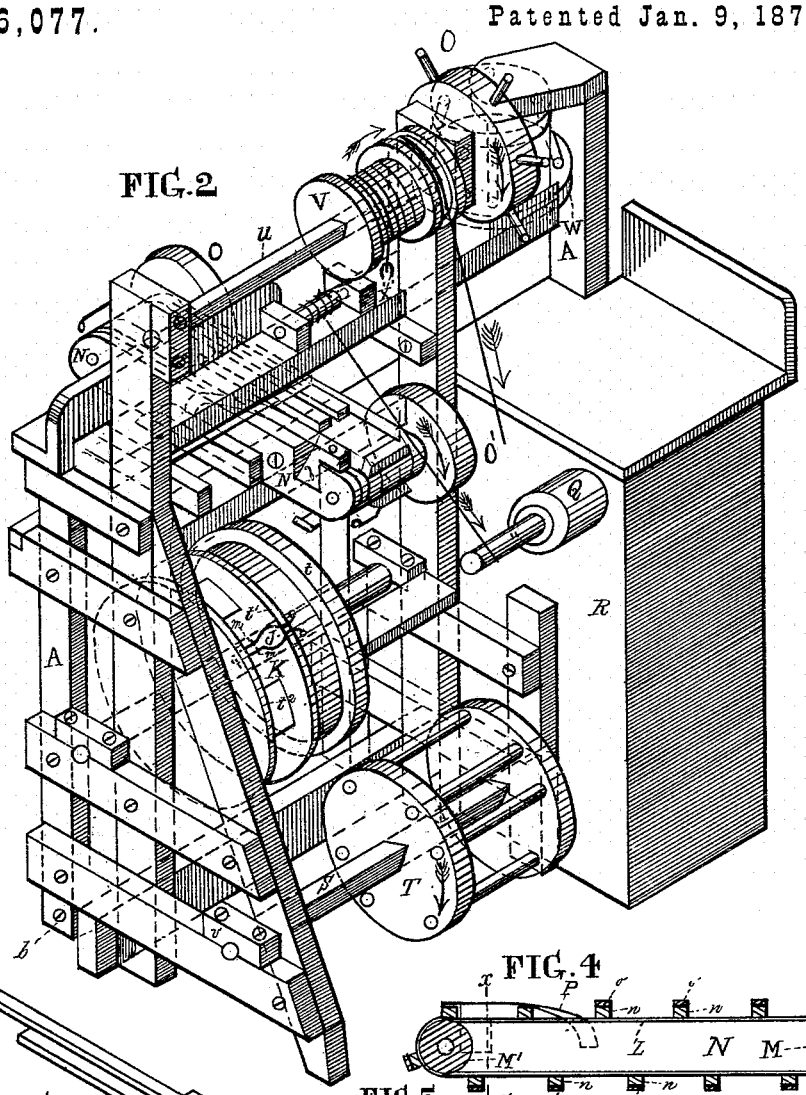


FIG. 3

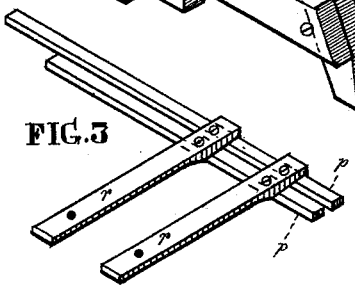


FIG. 4

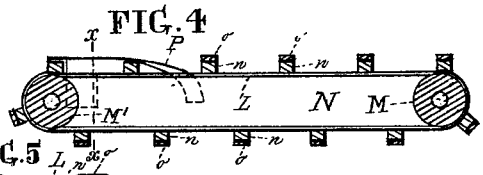


FIG. 5

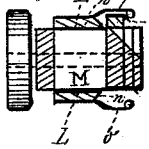


FIG. 6

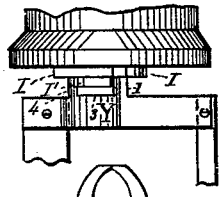


FIG. 8

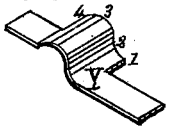
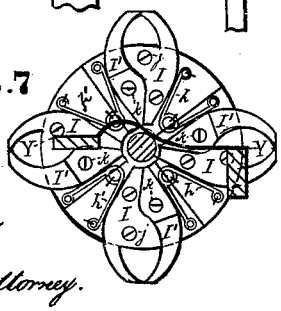


FIG. 7



Witnesses.

Thomas J. Bewley.

Robert S. Williams.

Inventor

William Cady

per Stephen Ustick attorney.

UNITED STATES PATENT OFFICE.

WILLIAM CADY, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BROOM-MAKING MACHINES.

Specification forming part of Letters Patent No. **186,077**, dated January 9, 1877; application filed June 28, 1876.

To all whom it may concern:

Be it known that I, WILLIAM CADY, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and use ful Improvement in Machines for Making Broom-Corn Brooms, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is an isometrical view of the table B, having sizing and cutting devices for the broom-corn, and a seat, C, connected therewith. Fig. 2, Sheet No. 2, is a like view of the front part of the machine for finishing the brooms. Fig. 3 is a like view of the strips *p p* and springs *r r*, connected thereto. Fig. 4 is a longitudinal vertical section of the frame N, apron L, and parts attached, taken through the middle of the frame. Fig. 5 is a cross-section taken through the line *x x* of Fig. 4. Fig. 6 is a top view of the carrying-wheel K and cam-plate Y on the supporting-arms *u u* of the frame A. Fig. 7 is a side elevation of said wheel and parts connected. Fig. 8 is an isometrical view of the cam-plate Y.

Like letters of reference in all the figures indicate the same parts.

The object of my invention is the accomplishment of the sizing, cutting, and tying of the broom-corn in manufacturing the brooms by a single machine, thereby saving much labor and expense in the manufacture.

The nature of the invention consists in the combination and arrangement of a table, having sizing and cutting devices for the broom-corn, with a stationary frame, having a revolving carrying-wheel for the conveyance of the cut corn for the inside portion of the brooms to the front of the machine, which is provided with a mandrel, in which the broom-handle is placed for the tying operation, and an endless apron for conveying the material for the covers or wrappers, there being a knife in connection with the frame which supports the apron-rollers, for spotting or flattening the stalks of the covers. The reel for holding the twine, and the spool which contains the twine or cord, are also supported by the frame A, as hereinafter described.

A represents a stationary frame, which supports that portion of the machine which is used in the construction of the brooms after the broom-corn is sized and cut to its proper length. B is a table, (shown in Fig. 1,) which is provided with the devices for sizing and cutting the broom-corn previous to its conveyance to the front of the machine for the construction of the brooms. C is a seat for the person who sizes the broom-corn into bunches of the proper size. The table B and seat C are connected together by means of timbers *a a*. These timbers are connected to the frame by means of bolts. The operation of the machine is not, however, dependent on the connection of the table and seat with the frame in a positive manner, as, for joint operation of the table devices, and those for which the devices with which the frame A is provided, it is only necessary that the table be arranged in the rear of the frame A in a convenient manner for the sizer and cutter to transfer the broom-corn from the table to the devices, hereinafter described, which convey it to the front of the machine. The table has at its ends upwardly-projecting plates *d* and *d'*, which have bearings for the journals of the shaft D.

On one end of the shaft is the knife or shear E, for cutting the broom-corn to its proper lengths. The plate *d* has an opening in its upper edge, in which the outer ends of the broom-corn are laid to be sheared, the knife cutting against the plate, which constitutes the permanent shear, as well as being a support for the broom-corn and a bearing for the knife end of the shaft D. There are upright plates *f f'*, which are recessed in one of their upper corners, so that when the two plates are brought together, as represented in the drawings, these recesses form the opening *e'*, in which the other end of the broom-corn is laid. The plate *f* is fastened to the table by means of screws, which pass through its flanges, and the plate *f'* is adjustable by means of its slotted flange and the screw *g*, for regulating the size of the recess *e'*.

The cutting of the broom-corn of any desired length is regulated by means of the gage F, which is movable between the ways G G, that are confined by means of screws to the top of the table B. The gage is fastened in its adjusted position by means of a screw, which passes through its longitudinal slot

into the table. The knife E is operated by means of the lever H on one end of the shaft D. As the knife descends and cuts the stalks to their length, the arm *s* of the shaft D is pressed upon them, and gives the requisite break to them. The knife is brought back to the position seen in the drawing by means of the spring *h*, which is connected at one end with the arm *i* of the shaft, and at its other end to the table B.

With this convenient mode of sizing and cutting the broom-corn, the work is easily performed by a boy. As each bunch is cut, the boy transfers it, if it is intended for the inside of the broom, to the carrying-wheel K, resting it on the peripheries of the flanges *t*, t^1, and t^2, and between a pair of clasps, I and I′, connected with the flange *t*, and a pair of clasps, J J, of the flange t^1.

The clasps I are permanently connected with the flange *t* by means of screws *j*, as seen in Fig. 7, and the clasps I′ are hung on pins *k* to the plate part of the clasps I. The clasps I are opened by means of the cam-plate Y, (shown in Figs. 6, 7, and 8,) as their inner ends pass over the edge of the cam at the point 1 as the wheel K revolves, thus affording the opportunity of the boy placing a bunch of broom-corn in position on the flanges of the wheel, the ends of the clasps J J being sprung open to receive the sweeping ends of the stalks by the pressure of the same between them.

The clasps J J are made of wire, a single piece forming a pair of clasps. They are fastened to the flange t^1 by means of staples *m*, as seen in Fig. 2. After the bunch is in position, the clasp I is closed as its inner end passes the depression of the cam-plate at the point 2 by the action of the spring *h*′, and remains closed until the bunch is near the front of the machine. It is then opened by the inner end bearing against the swell at the point 3 by the time the bunch has arrived at a convenient point for its removal to the broom-handle. Then the clasp is closed as its inner end passes the edge of the cam-plate at the point 4 by the action of the spring *h*′, so as to hold the bunch in position should the man in front of the machine fail to remove it from the wheel.

I have represented the clasps at four points of the wheel; but it will be seen that a fewer or greater number may be used. Instead of having only one of the clasps of each pair I and I′ to open, if desired, they may both be hung on pins *k*, and be opened in like manner.

The broom-corn for the covers or wrappers is conveyed to the front of the machine by means of the endless apron L on the rollers M M′, which have their bearings in the frame N, the bunches lying between the cleats *n*, which are attached to the apron. Confined to the cleats are steel straps *o*, which project forward beyond the front ends of the cleats, to assist in holding the bunches of the broom-corn in their position on the apron as it passes under the strips *p p*, which are supported by means of the springs *r r*, so as to automatically yield in accommodation to different sizes of bunches. O′ O are hand-wheels on one end of the shafts of the rollers M M, for giving movement to the apron L. Each roller is provided with a hand-wheel, as represented, so that the apron may be moved either by the boy in the rear of the machine or by the man in front of the same. P is a twisted knife connected with the frame N, for spotting or cutting the covers or wrappers during the passage of the bunches over it. As a bunch is passing the knife the attendant takes hold of its projecting end and pulls it forward, whereby the sheared parts of the stalks are split off and fall through the opening *z* in the front side of the frame N. The opening is inclined, as represented, to afford an easy passage of the splits through it. Q is a hollow mandrel for holding the broom-handle, in the usual manner. It is supported by suitable bearings in opposite sides of the case R. The treadle-shaft S is supported at its left-hand end by the bearing *v*, and at its other end by a bearing at the opposite side of case R. Inside of the case on said shaft there is a belt-wheel, over which a belt passes, to make a connection with the mandrel Q in the usual manner. T is a treadle-wheel on the shaft S for revolving the latter. U is a revolving shaft, which is provided with the spool, over which the cord is wound. It is arranged at the upper part of the frame A, as represented, so as to be out of the way, and also to admit of the cord and wire being brought in a convenient manner to the broom-handle, the spool having a groove at one end, over which the wire passes from the reel W. The wire, as it leaves the reel, runs through the staple X, and thence upward over the spool resting in said groove, and from thence to the mandrel Q or the broom-handle.

I claim as my invention—

1. In a machine for making broom-corn brooms, the table B, having stationary holders *d* and *f*, and an adjustable holder, *f*′, in combination with the knife E, operated by suitable mechanism, substantially as and for the purpose set forth.

2. In a machine for making broom-corn brooms, the combination of the knife E, operated by suitable mechanism, and the adjustable gage F, with the table B, having stationary holders *d* and *f*, and an adjustable holder, *f*′, substantially in the manner and for the purpose set forth.

3. In a machine for making broom-corn brooms, the shaft D, having a knife, E, lever H, and arm *i*, in combination with the spring *h* and table B, having holders *d*, *f*, and *f*′, the several parts being constructed and arranged for joint operation, substantially in the manner and for the purpose set forth.

4. The combination of the arm *s* with the knife-shaft D and holders *d*, *f*, and *f*′, for breaking the broom-corn during the down-

ward movement of the knife, substantially as set forth.

5. The carrying-wheel K, having pairs of clasps I and I′ and J J′, in combination with the stationary cam-plate Y, substantially as and for the purpose set forth.

6. The endless apron L, having cleats *n* and straps *o*, constructed and arranged substantially in the manner and for the purpose set forth.

7. The combination of the knife P with the frame N and endless apron L, for spotting or cutting the covers or wrappers, substantially as set forth.

8. The strips *p p* and springs *r r*, connected together as described, and arranged to operate in relation to the endless apron L, substantially as and for the purpose set forth.

WILLIAM CADY.

Witnesses:

THOMAS J. BEWLEY,

STEPHEN USTICK.