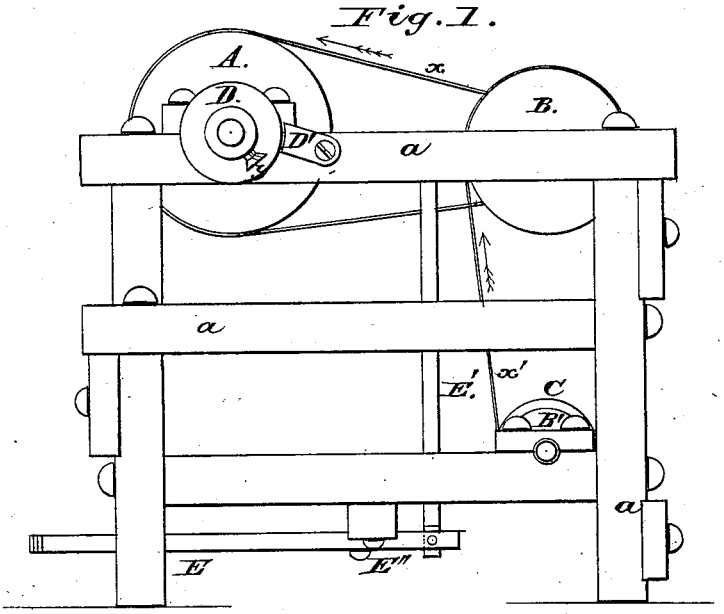
2 Sheets—Sheet 1.

# J. GRAY.

## BROOM WINDING MACHINE.

No. 191,048. Patented May 22, 1877.

*Fig. 1.*



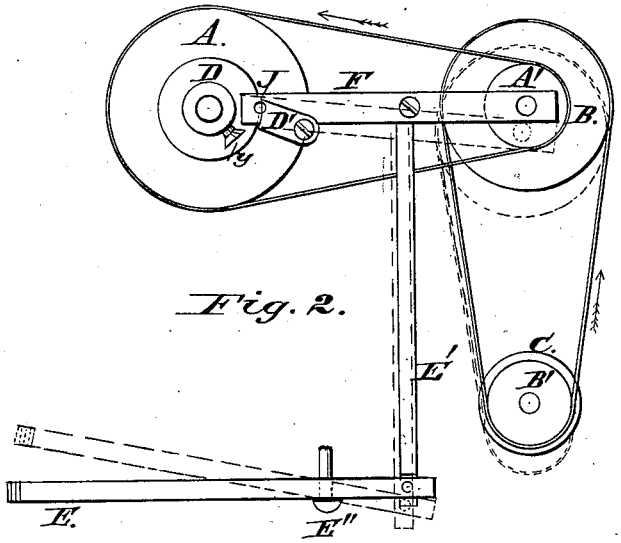




*Fig. 2.*

Attest:
W. W. Dawling
H. H. Dawling

Inventor.
Jacob Gray
Per W. Davidson Jones
Atty

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# J. GRAY.

## BROOM WINDING MACHINE.

No. 191,048. Patented May 22, 1877.

Fig. 3.

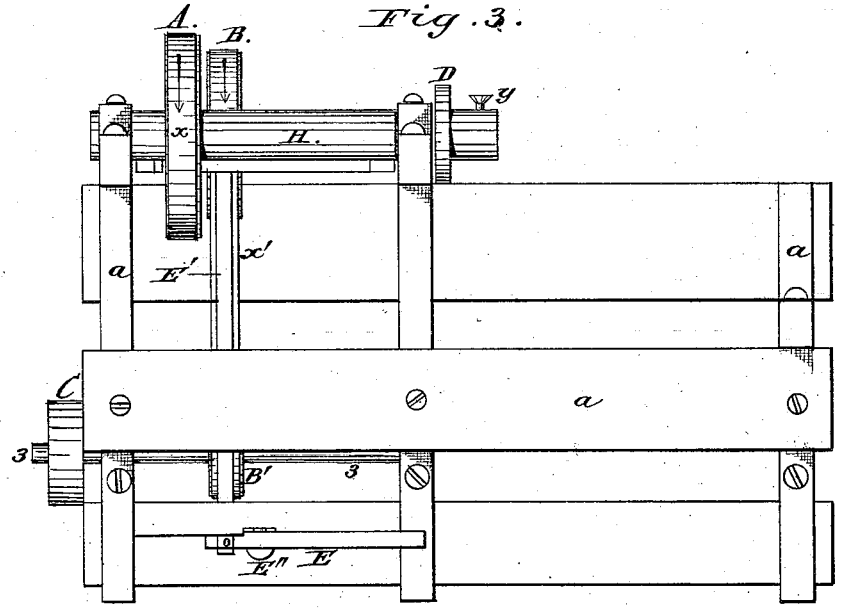
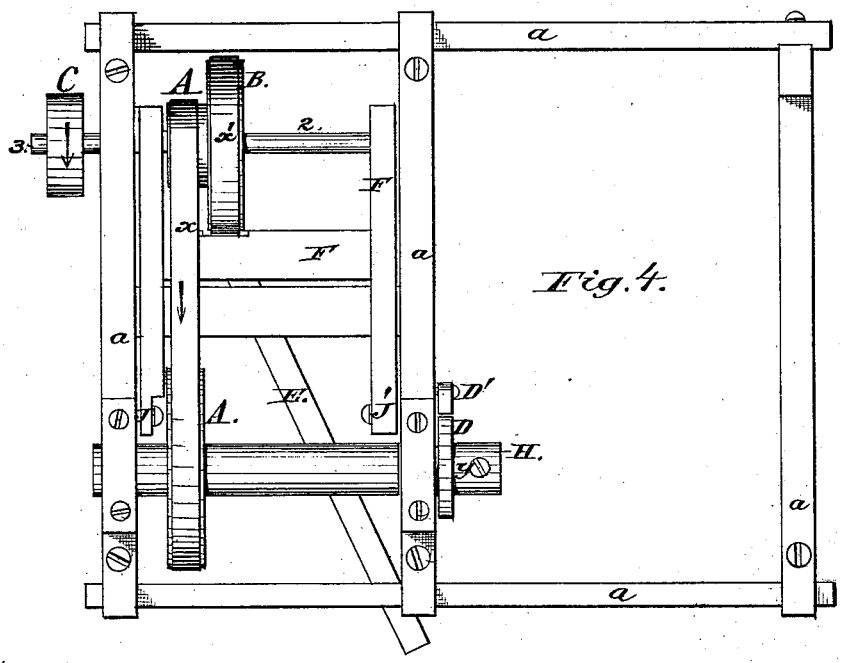



Fig. 4.




Attest:

Wm. M. Rawlins
H. H. Rawlins

Inventor.

Jacob Gray
Per W. Davidson Jones.
Atty

# UNITED STATES PATENT OFFICE.

JACOB GRAY, OF SCHENECTADY, ASSIGNOR OF ONE-HALF HIS RIGHT TO CHARLES H. TOLL, OF SCOTIA, NEW YORK.

## IMPROVEMENT IN BROOM-WINDING MACHINES.

Specification forming part of Letters Patent No. **191,048**, dated May 22, 1877; application filed October 27, 1876.

*To all whom it may concern:*

Be it known that I, JACOB GRAY, of Schenectady, in the county of Schenectady and State of New York, have invented a new and useful Improvement in Broom-Winding or Broom-Making Machines, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is an end elevation. Fig. 2 is a sectional elevation of Fig. 1, showing the working parts and their different positions. Fig. 3 is a front elevation, and Fig. 4 is a plan.

Like letters and figures of reference indicate like parts in each drawing or figure, and the arrows the direction of motion.

My invention relates to that class of broom-winding machines in which the power to operate the machine may be transmitted and broken at the will of the operator by a foot-treadle and its connections, from any known prime motor, such as steam, water, or horse-power, thereby giving the operator the free use of his hands to manipulate the brush and wire or cord in winding or making a broom.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

*a a a a* is a suitable and proper frame, constructed substantially as shown in the several drawings. H is a hollow barrel, wherein the broom-handle is secured, and is provided with pulley A and friction-wheel D, and is mounted in boxes on the forward part of the frame *a*, substantially as shown in Figs. 1, 3, and 4. F is a horizontal frame, pivoted at J and J′, (see Figs. 2 and 4,) and having in its outer end boxes to receive and carry shaft 2, said shaft having thereon band-wheels A′ and B, and susceptible of an oscillating movement on the pivots J J′. 3 3 (see Figs. 1 and 3) is a horizontal shaft, provided with pulley B and driving-pulley C, and placed in the lower back portion of the frame *a*, as shown, said shaft 3 having a steady motion through the medium of a belt (which is not shown) from the prime motor to the driven pulley C. E (see Figs. 1, 2, 3, and 4) is a foot-treadle, supported upon the fulcrum E″, and the vertical stem E′ forms the connection with the outer end of the treadle and the oscillating frame F, whereby the frame is moved up and down.

X is a belt, which connects the pulleys A and A′ together, thereby transmitting motion from shaft 2 to the barrel H. X′ is a belt, whereby motion is communicated from pulley B′ on shaft 3 to pulley B on shaft 2. D′ is a friction-pawl, engaging friction-wheel D on the barrel or hollow mandrel H.

The operation of my invention is as follows: Positive motion is communicated through a belt (not shown) to the pulley C on shaft 3, thereby giving to said shaft and pulley B′ a steady motion.

The normal position of the frame F, belts X and X′, pulleys A′ and B, treadle E, and stem E′, is as shown in Fig. 2 by the broken lines, belt X′ not engaging pulley B′. The barrel H and all the moving parts of the machine, excepting shaft 3, are at rest.

The operator places a handle in proper position in the barrel H, and secures it therein with the screw *y*. The wire or cord used to wind the broom with is fastened to the end of the handle, as is usually done, (while the balance of the wire or cord is retained on a spool or drum, and the tension obtained by friction, which arrangements are so well understood by those skilled in the art of broom-making that it is unnecessary to exhibit or describe the same.) The operator takes a suitable quantity of corn-brush and holds it in a proper position so that the wire or cord can engage it against and around the handle. He then presses down with his foot the treadle E, which elevates the stem E′ and frame F, thereby tightening the belt X′ on pulley B′, which movement gives motion to the barrel H, carrying with it the handle and spinning on the wire or cord around the brush and handle. When sufficiently wound he releases his foot from the treadle, which allows the frame F, by its specific gravity, to fall to its normal position, thereby releasing the tension of the belt X′, and stopping instantly the barrel H. The friction-pawl D′ engages friction-wheel D on barrel or mandrel H, thereby not allowing it to revolve backward by the tension of the wire or cord. He then takes a sufficient

quantity of brush to form one of the "shoulders" of the broom, and holds it under the wire or cord and against the brush just wound on the handle, in a proper position, which is well known to the art, depresses the treadle with his foot for a brief period of time, giving the barrel a partial revolution, thereby winding on the shoulder just placed. He then takes an equal quantity of brush for the opposite shoulder, places it on the opposite side of the handle, and under the wire or cords, as above stated, depresses the treadle, and winds on sufficient wire or cord to hold the shoulders.

The shoulders are then cut in proper form by the operator. He depresses the treadle, and guides with his hand the wire or cord from off the shoulders onto that portion of the handle where he spins on the hurl or final covering of the broom, which operation is performed substantially as above described—that is, when the operator wishes to revolve the barrel he depresses the treadle, thereby obtaining motion through the parts already described; and when he wishes to stop the barrel he releases his foot from the treadle, thereby accomplishing the desired results.

This machine is almost noiseless, and cheap, simple, and durable in its construction and operation, secures to the operator the full use of his hands to manipulate the corn-brush, wire, or cord, and relieves him of that labor which is necessary to work a broom-machine by hand, while brooms can be wound with great rapidity and ease.

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

The combination of the barrel H, having thereon pulley A, with pulley A′ and belt X, pulleys B and B′, and belt X′, oscillating frame F, treadle E, and stem E′, substantially as and for the purposes shown and set forth.

JACOB GRAY.

Witnesses:

J. E. REES,

GEO. W. FEATHERSTONHAUGH.