4 Sheets--Sheet 1.

A. WALRATH & E. D. BRONSON

Broom-Winding Machine.

No. 168,814. Patented Oct. 11, 1875.

Fig. 1

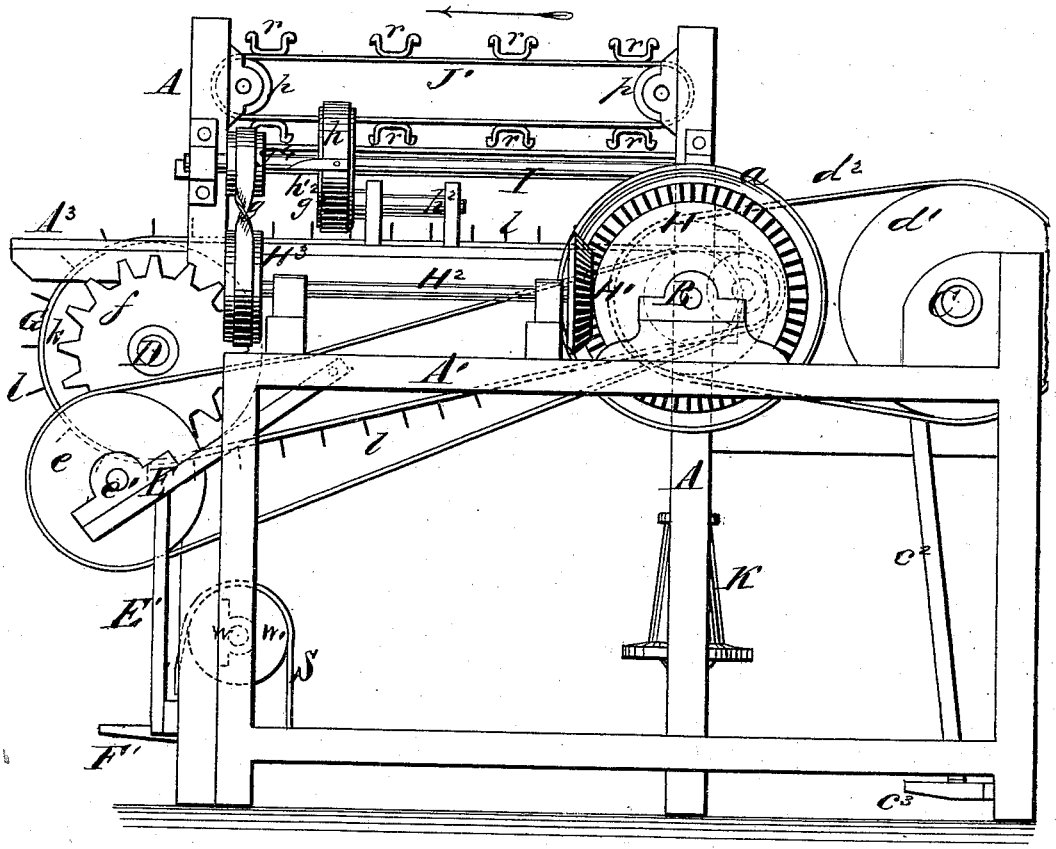

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Fig. 2

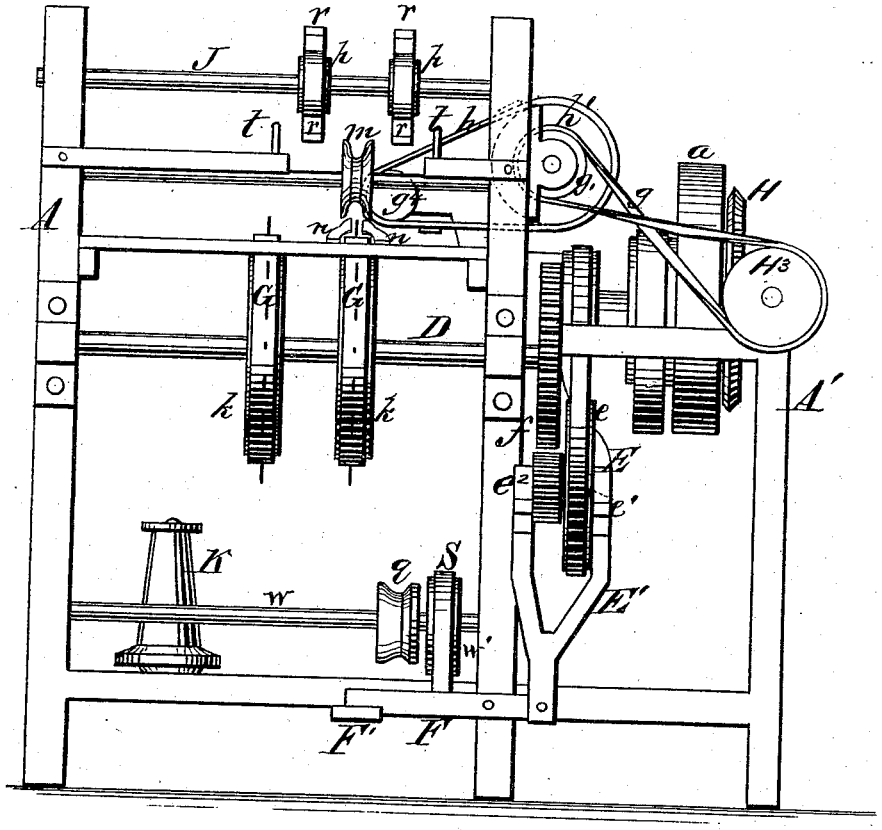

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Fig. 3

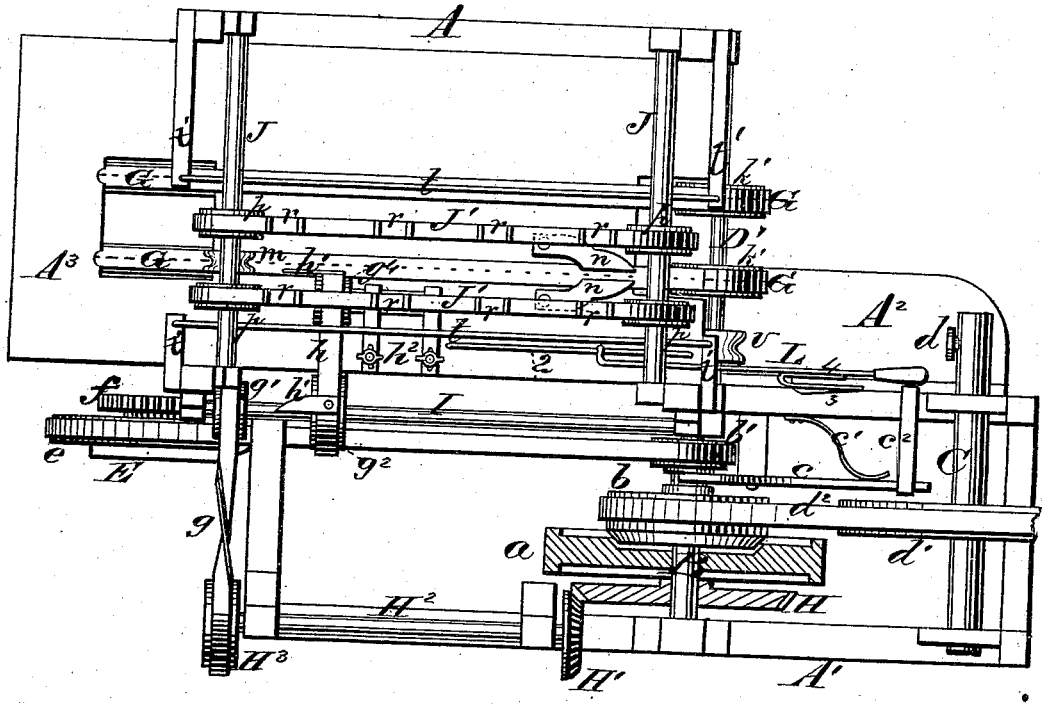

Fig. 4

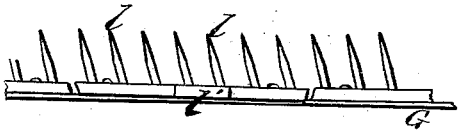

Fig. 5

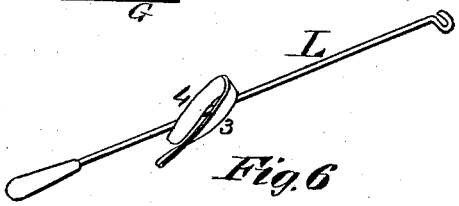

Fig. 6

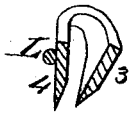

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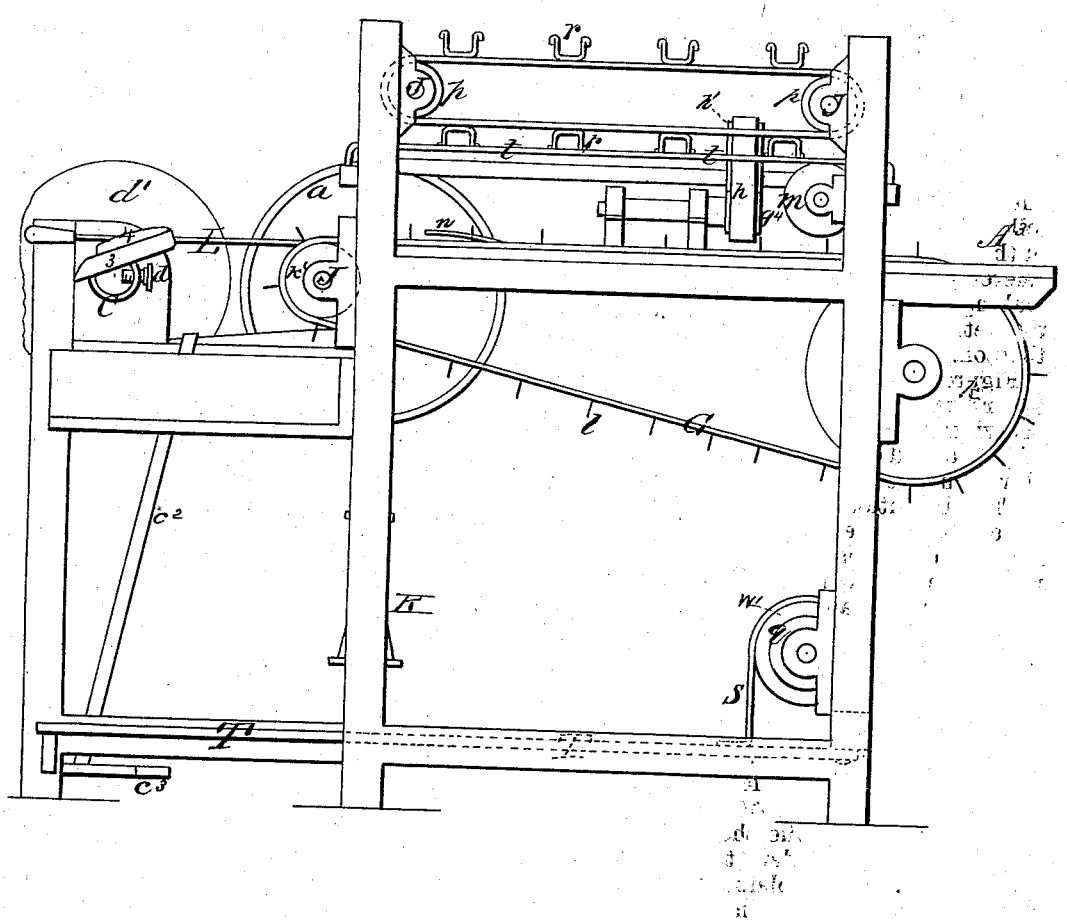
Fig. 7.



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UNITED STATES PATENT OFFICE.

ALPHONSO WALRATH AND EDWARD D. BRONSON, OF AMSTERDAM, N. Y.

IMPROVEMENT IN BROOM-WINDING MACHINES.

Specification forming part of Letters Patent No. **168,814**, dated October 11, 1875; application filed May 28, 1875.

To all whom it may concern:

Be it known that we, ALPHONSO WALRATH and EDWARD D. BRONSON, both of Amsterdam, in the county of Montgomery and State of New York, have invented a new and valuable Improvement in Broom-Winding Machines; and we 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 drawing is a representation of a rear view of our machine, and Fig. 2 is an end view of the same. Fig. 3 is a plan view; Figs. 4, 5, and 6 detail views, and Fig. 7 a front elevation of the same.

This invention has relation to machinery which is designed for facilitating the manufacture of brooms; and the nature of our invention consists mainly in certain devices, hereinafter explained, by which the several layers of corn required in the making up of a broom can be presented in regular order, and in proper quantities, to the person who binds the same upon the handle, as will be hereinafter explained.

The invention also consists in the combination, with a conveyer for the "covers," of means which will "spot" or trim the heads or spears thereof while the covers are being moved from the "feeder" to the "winder," as will be hereinafter explained.

It also consists in certain novel means which will enable the person feeding and the person winding to stop and start their respective parts of the machine at pleasure, as will be hereinafter explained.

Our invention, finally, consists in cutters which will bevel and trim the neck of a broom, and which are under the control of the person who performs the "making up" and "winding," as will be hereinafter explained.

In the annexed drawings, A designates the main frame of the machine, which affords support for the devices which move the corn up to the person who winds it upon the broom-handles, and A′ is another frame, joined to the first, and designed for supporting the spindle that carries the broom-handles, and also the mechanism that drives the spindle. B designates the main driving-shaft, on which is keyed a driving-belt pulley, *a*, and on which is loosely applied a friction-clutch-pulley, *b*. A small belt-pulley, b', is also keyed on shaft B. The clutch-pulley *b* has a beveled surface on one part of it, which, when it is forced in contact with a corresponding beveled surface on the pulley *a*, will cause the two pulleys *a b* to revolve together. The hub of the clutch-pulley *b* is grooved and embraced by the forked end of a lever, *c*, which lever is acted on by a spring, c^1, and connected by a strap, c^2, to a treadle, c^3, which is under the control of the person whose duty it is to wind the wire around the several layers of corn composing the broom. The clutch-pulley is forced away from the driving-pulley *a* by means of the spring c^1, and the winder engages the clutch-pulley with the driving-pulley by pressing with his foot upon the treadle c^3. C designates a tubular shaft, which has its bearings in the frame A^1, and which is located over the winder's table A^2, and provided with a set-screw, *d*, for confining a broom-handle in it. On the shaft or spindle C a belt-wheel, d^1, is secured, which receives motion from the clutch-pulley *b* by means of a belt, d^2.

The pulley b' communicates rotation to a pulley, *e*, on a shaft, e^1, on which shaft is a spurred pinion, e^2, which is designed to engage with a spur-wheel, *f*, on a shaft, D. The shaft e^1 has its bearings in the bifurcated ends of a vertically-vibrating arm, E, which is supported upon the upper ends of an arm, E′, secured to one end of a lever, F. The lever F is pivoted near the floor, and to this lever a treadle, F′, is attached, which is pressed upon by the foot of the feeder when he desires to set in motion the conveying-belts G G for the covers. When the feeder desires to stop the motion of the belts G G, he simply removes his foot from the treadle F′. H designates a large bevel spur-wheel, which is keyed on the main shaft B, and which engages with a pinion, H^1, on a shaft, H^2, carrying a belt-pulley, H^3. The pulley H^3 transmits rotary motion to a shaft, I, through the medium of a crossed belt, *g*, and a pulley, g^1. On the shaft I is a pulley, g^2, which, with a pulley, g^4, carries an endless belt, *h*, having knives h^1 se-

cured to it. The pulley g^4 is on a shaft which is supported by bearings h^2. The belt h runs at right angles to the belts G G, and the knives h^1 on these belts spot or trim the heads or spears of the covers on their way to the winder. On the shaft D two belt-wheels, k k, are keyed, and on a shaft, D′, two smaller belt-wheels, k' k', are keyed. The belts G G are applied around the wheels k k k' k', and to these belts spurs l are secured, which are preferably cast in short metal sections, as shown in Fig. 4, and fastened in any suitable manner to the belts. The feeder stands at one end of the table A^3, fixes the covers upon the spurs l, and, as the belts revolve and the covers are moved along toward the winder, a grooved pulley, m, presses the heads of the covers down upon the spurs l, after which the spotting-knives trim the heads of the covers, and, when the latter are within reach of the winder, spring-fingers n throw up the heads and free the covers from their spurs. J J designate two horizontal shafts, on which pulleys p are keyed, carrying endless belts J′ J′. To these belts are fixed, at suitable distances apart, U-shaped holders r, which are designed for holding the inside layers of corn, and also the shoulders, which are, in a complete broom, inclosed by the covers. These belts J′ J′ are moved along both by the feeder, who fills the holders r, and by the winder, who removes the corn from the holders.

The belts revolve in the direction indicated by the arrow in Fig. 1, and, in order to prevent the charges of corn from falling out of the holders, wires or rods t are used, which are fastened to arms t', and support the charges of corn on their way from the feeder to the winder. The spring-rods t are supported at their ends only, and situated laterally and below the endless belts, thus permitting the covers of unequal sizes to pass over and be carried forward.

If desired a carrying-drum, having holding-clasps for the charges of corn, may be used instead of the endless belts and holders r, above described.

K designates a bobbin, around which the wrapping-wire is wound, from which bobbin the wire is carried two or more times around a grooved pulley, q, thence around a grooved pulley, v, which latter is free to be moved endwise on its shaft for properly delivering the wire to the winder. The pulley q has a V-groove in its periphery, one side of which is more inclined than the other, for the purpose of preventing the wire from overriding itself and breaking. On the shaft w of the pulley q a drum, w', is keyed, over which a strap, S, is carried, one end of which is secured to the frame A, and the other end to a treadle, T, which extends forward, and terminates near the winder's station. By these means the winder can regulate the tension on the wrapping-wire, as circumstances may require.

L designates a rod, on which a handle is secured. One end of this rod has an eye formed on it, which is free to play on a long staple fixed to the table A^3. Near the handle of this rod L, and rigidly secured to the latter, are two knives, 3 4, which, for convenience, are formed of one plate bent in the form of the letter U. The knife 3 is designed for beveling or trimming down the necks of the brooms, and the knife 4 is designed for cutting directly down upon the handle, and cutting off the irregular ends of the corn which is bound into the neck.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a machine for manufacturing brooms, the combination of the endless belt J′, having the U-shaped holders r, and the holding spring-rods t, supported at their ends only, and situated below and laterally of the belt, substantially as described.

2. The carriers G l for the covers, in combination with the inclined endless belt h, armed with spotting-knives h', said belt operating at a right angle with the carriers, for the purpose of spotting or beveling the broom-corn stock while the covers are being carried to the operator.

3. The combination of a grooved presser-roller, m, with the spurs l and belt G which carry the covers, for the purpose of pressing the heads of the covers down upon the spurs, substantially as described.

4. In combination with spurred carriers for the covers of the brooms, and with spotting-knives h', stripping device n n, which will partially or completely free the trimmed or spotted heads from the spurs of said carriers, substantially as described.

5. In a machine for making brooms, a laterally-movable pulley-guide, v, for the wrapping-wire pulley w' g, and the friction-straps S, in combination with a treadle and a bobbin, substantially as described.

6. The rod L, having the vertically-cutting knife 4 and obliquely-cutting knife 3, in combination with a rotating broom-handle holder, substantially as and for the purpose set forth.

7. In combination with means for holding and carrying forward the covers, the treadle F′, lever r, arms E E, pinion e^2, wheel F, and the driving mechanism therefor, substantially as specified.

8. The revolving endless cover-carriers, automatically connected with the broom-holder, in combination with a suitable clutching device, substantially as described.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

ALPHONSO WALRATH.
EDWARD D. BRONSON.

Witnesses:
WILLIAM T. BRONSON,
CHARLES P. WINEGAR.