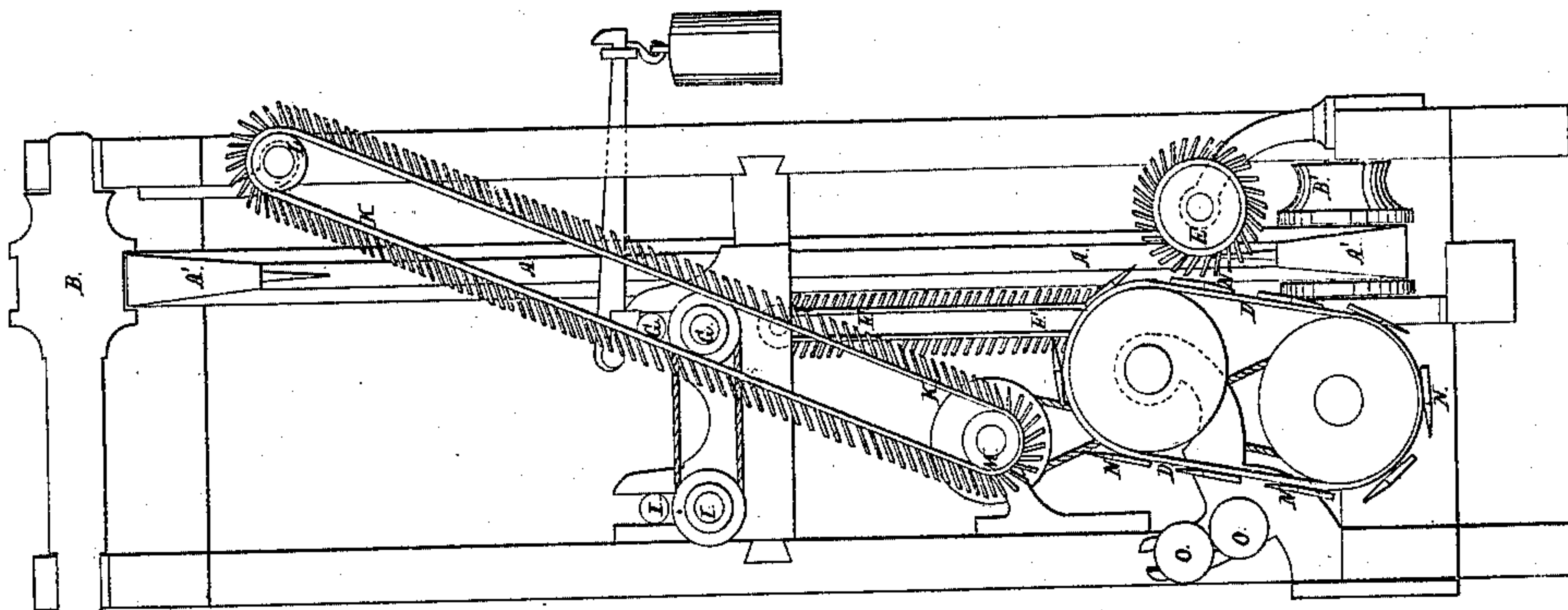


*F. A. Calvert.*  
*Wool Combing Mach.*

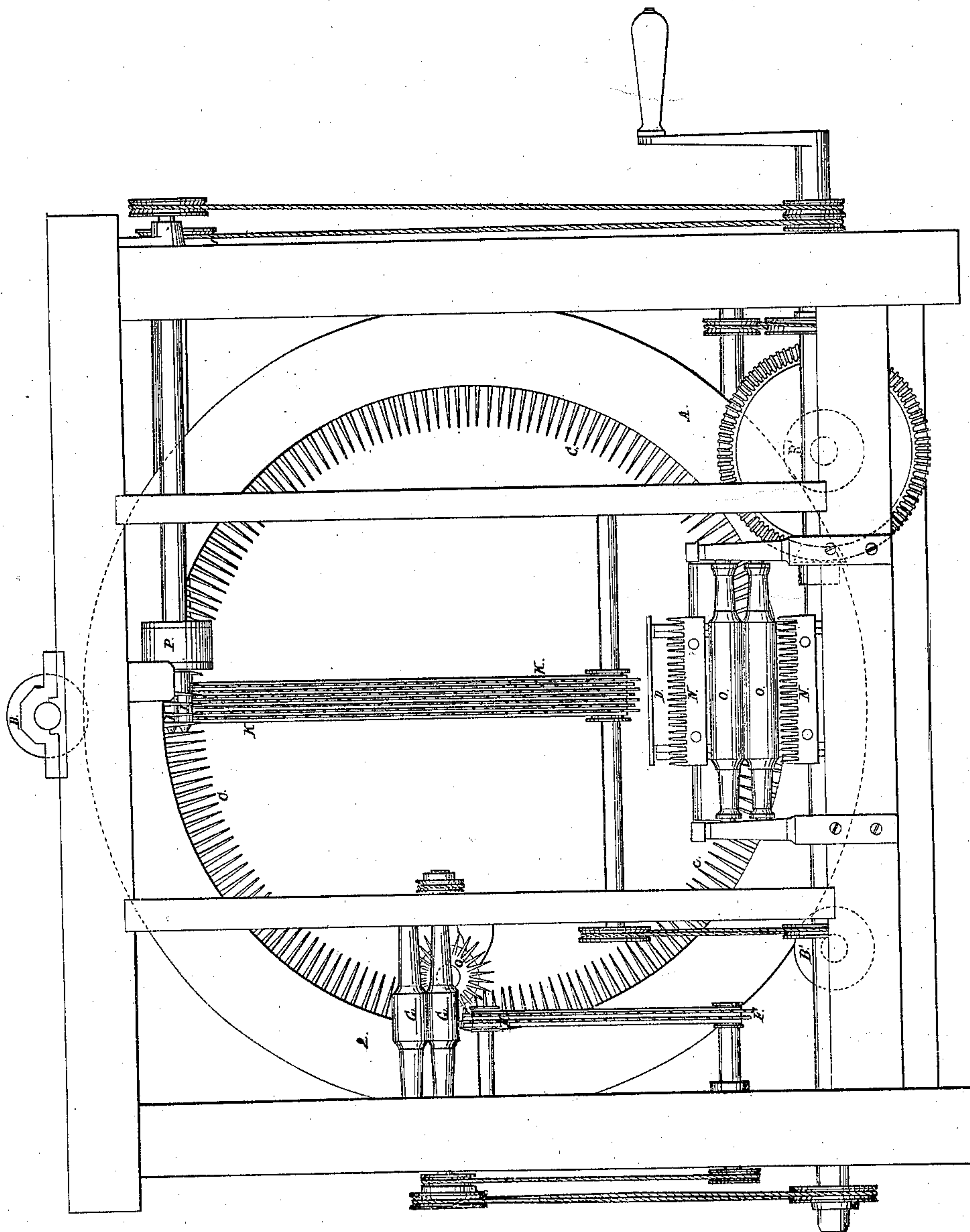
*N<sup>o</sup> 3,391.*

*Patented Dec. 27, 1843.*

*Fig. 2.*



*Fig. 1.*





# UNITED STATES PATENT OFFICE.

F. A. CALVERT, OF NEW YORK, N. Y.

## MACHINE FOR COMBING WOOL.

Specification of Letters Patent No. 3,391, dated December 27, 1843.

*To all whom it may concern:*

Be it known that I, FRANCIS A. CALVERT, of the city of New York, in the State of New York, have invented certain new and  
5 useful Improvements in the Manner of Constructing Machines for Combing Wool; and I do hereby declare that the following is a full and exact description thereof.

A principal improvement in this machine  
10 consists in the setting of the teeth upon which the wool is to be combed, on the inner rim of a vertical, flat ring, or hoop, which is without arms, so that said teeth may point toward the center of said hoop; I am aware  
15 that the mere causing of the teeth to point toward the center is not in itself new, but the setting them in that position on the inner rim, or edge, of a hoop without arms, is new; and by this arrangement I am enabled  
20 to bring up a flexible comb belt, which constitutes another of my improvements, and a clearer, or other analogous apparatus, on opposite sides of the vertical ring, so as to act upon the wool more advantageously than  
25 heretofore; a thing which in fact could not be done where arms were used.

Another improvement made by me consists in the manner in which I employ what I denominate backing rollers, by which roll-  
30 ers, or some analogous device, I cause the long wool that collects on the comb teeth, and that lies on the back of the comb, to be carried down from a point above the drawing rollers, so as to be worked over again;  
35 by which operation the great waste heretofore resulting from the absence of a device of this kind, is prevented.

Another improvement consists in the substituting for the comb cylinder, by which the  
40 wool is taken from the feeding rollers, and delivered on to the teeth of the vertical comb ring, a flexible belt of leather, or other material, which is furnished with teeth, and passes around two rollers, one above the  
45 other, as hereinafter explained and represented. I have likewise introduced what I denominate an intersecting, toothed wheel which is so situated as to revolve between the teeth on the vertical comb wheel and the  
50 drawing rollers. This wheel is furnished with pointed teeth, and revolves on a center pin, but is not driven by gearing of any kind, its motion being derived from that of the wool, as it passes up on the teeth of the  
55 vertical comb wheel. This intersecting toothed wheel serves, very effectually, to

prevent the nubs of wool from passing in between the drawing rollers, and causes them to ascend with the long fibers to the backing rollers, to be removed by the noiling  
60 roller.

In the accompanying drawing, Figure 1, is a front elevation, and Fig. 2, a vertical section through the middle, of the machine, from front to back.

A, A, is a vertical wheel, hoop, or ring, denominated the comb wheel, or ring, drawn to a scale of one eighth of the real size. This ring is sustained in its vertical position by means of grooved friction rollers, B, B',  
65 B'; to the two latter of which I apply the power by which it is made to revolve.

C, C, are the comb teeth that are set around the inner edge of the ring A; these teeth I make about two inches long.

D, D, is the flexible belt which I have substituted for the comb cylinder which has been hitherto used; and on to this the wool is to be fed by a feeding apron, in the ordinary way of feeding machines for a like  
80 purpose; this feeding is not to extend to the whole width of the belt, but only to such width as will leave about three inches toward each edge of the belt, free, or unfed.

The ring A, I make about six inches  
85 wider, and an inch and a half thick at its outer edge. On its inner edge, where it receives the teeth, it is beveled on the sides, so as to present a rim of about one fourth of an inch in width; this form is shown at A'  
90 in the section, Fig. 2. E, is the clearer, which is furnished with fancy card teeth, as usual.

F, F, is a toothed belt that takes the wool as it passes up on the comb teeth C, and  
95 delivers its ends on to the drawing rollers G, G, between which it passes, in straight lines, at right angles to the plane of the ring, A. A belt, or a tube, is used to twist the wool as it passes from the drawing, to the  
100 delivering, rollers, I, I; this is a well-known device, and is not therefore, shown in the drawing.

What I denominate the backing rollers are shown at J, J. These, as before observed,  
105 are intended to cause the long wool which collects on the comb teeth, and which lies on the back of the comb, to be carried down, and worked over again. By these backing rollers, which are made to revolve by suitable bands, or otherwise, the wool is passed  
110 from the teeth of the comb wheel, on to an



endless belt K, covered with card teeth, which belt passes around a pulley L, at the back of the ring A, and also around a pulley M, which is so situated as that the wool is  
 5 taken from the belt K, by the flexible toothed belt D, D, and is, as above stated, worked over again with the fresh fed wool, thereby effecting an important saving of material. The flexible belt D, D, is furnished with several rows of teeth formed on plates of metal,  
 10 and attached to the belt as represented at N, N, that take the wool from a feeding apron of the ordinary kind, the situation of the feeding rollers being shown at O, O; from these, it is delivered on to the teeth C, of the comb-wheel, or ring, A. By the substitution of the flexible belt D, D, for the comb cylinder heretofore employed for feeding the wool on to the teeth of the comb-  
 20 wheel, a very important end is attained. The belt D, while the feeding is effected by it, lies in the same plane with the teeth C, C, of the wheel A, and the feeding, therefore, is direct and uniform. The length of the comb cylinder formerly used, whether the part so called was made actually cylindrical, or whether it was curved from end to end on its face, had to be limited within bounds which it was desirable to exceed, but its extension was forbidden by the nature of the  
 30 case. Under my arrangement no limit exists to the width of the flexible belt, excepting what arises from the actual diameter of the ring A.

35 P, is a noiling roller which is covered with leather, and serves to remove the noils from the teeth of the wheel A, after they have passed the backing rollers J, J.

Q, represents what I have denominated  
 40 the independent, intersecting toothed wheel, revolving freely, as above remarked, upon a center pin; its pointed teeth passing through the space left between the teeth C, and the drawing rollers, such wheel being carried  
 45 around by the wool on said teeth; its use is to prevent the nubs of wool from passing in between the drawing rollers, and to force them to pass up with the short fibers, to be removed and thrown under the machine by the  
 50 noiling roller.

Having thus fully described the nature of

my improvements on the machine for combing wool, what I claim therein as new, and desire to secure by Letters Patent, is—

1. Combining with the vertical wheel A, 55 of a flexible comb-belt D, D, said belt passing around two drums, or rollers, and being thereby made capable of delivering the wool on to the teeth C, in a direction corresponding with the plane in which they revolve. 60

2. I likewise claim the use of such a flexible comb belt, that is to say, having teeth formed on plates of metal, and attached to the flexible belt as shown at N, N, whether combined with the wheel A, or employed for 65 a like purpose in any other combing machine.

3. I, also, claim the carrying down of the long, and other, wool, which has not been taken off by the drawing rollers, to be worked over again, this being effected by the 70 backing rollers J, J, and the toothed belt K, the latter reconveying it to the flexible belt D, to be worked over again. And I will here remark, that the manner of arranging this part of the apparatus as herein described, 75 and represented in the drawing, is adapted to the particular kind of machine in which it is employed; but the same principle may be applied, by equivalent means, to other combing machines; such, for example, as 80 that known as Simpson's belt machine, as well as to those of other constructions. All that is necessary being to vary the arrangement of the parts in a manner which can be readily done by any competent machinist to 85 whom the principle is known, without his having a right to claim any new invention. I intend, therefore, in claiming the use of the backing rollers and belt, for the purpose set forth, not to limit myself to the particular 90 arrangement herein made known, but to embrace in said claim all variations thereof that are substantially the same in the manner of operating, and in the end attained.

4. Lastly, I claim the manner of arranging and using what I have denominated the independent, intersecting toothed wheel, for the purpose herein fully set forth. 95

FRANCIS A. CALVERT.

Witnesses:

JOHN P. ROBINSON,  
 HORATIO G. F. CORLISS.