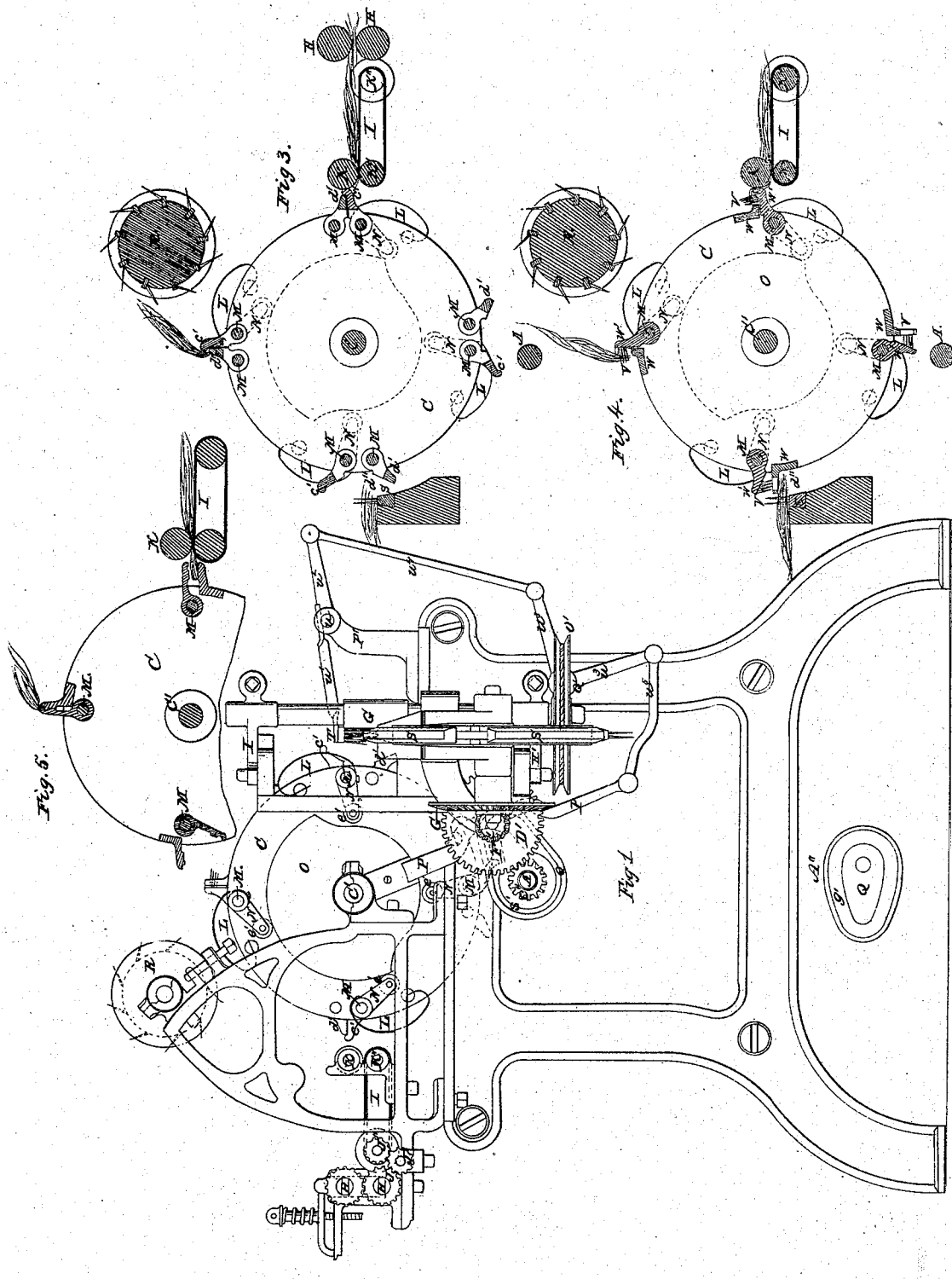
C. G. Sargent.
Combing Mach.

No. 11,534. Patented Aug. 15, 1854.



Sheet 2. 4 Sheets.

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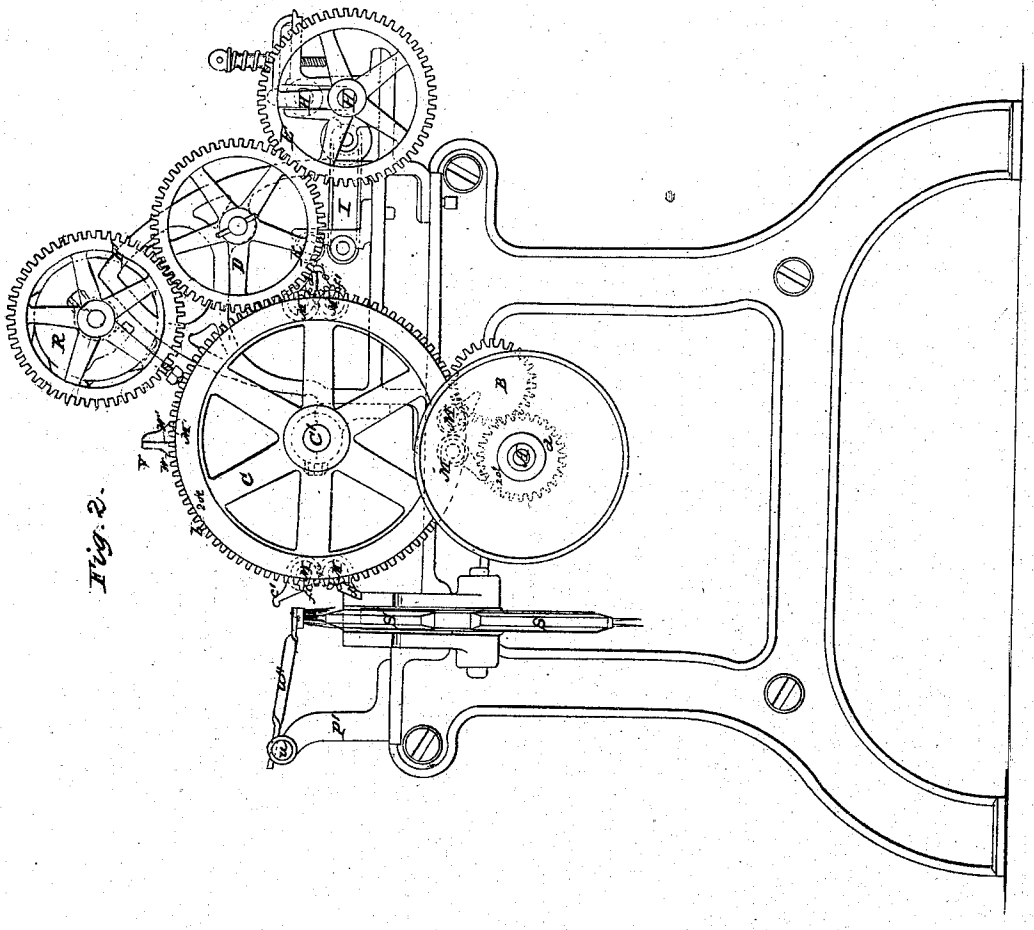


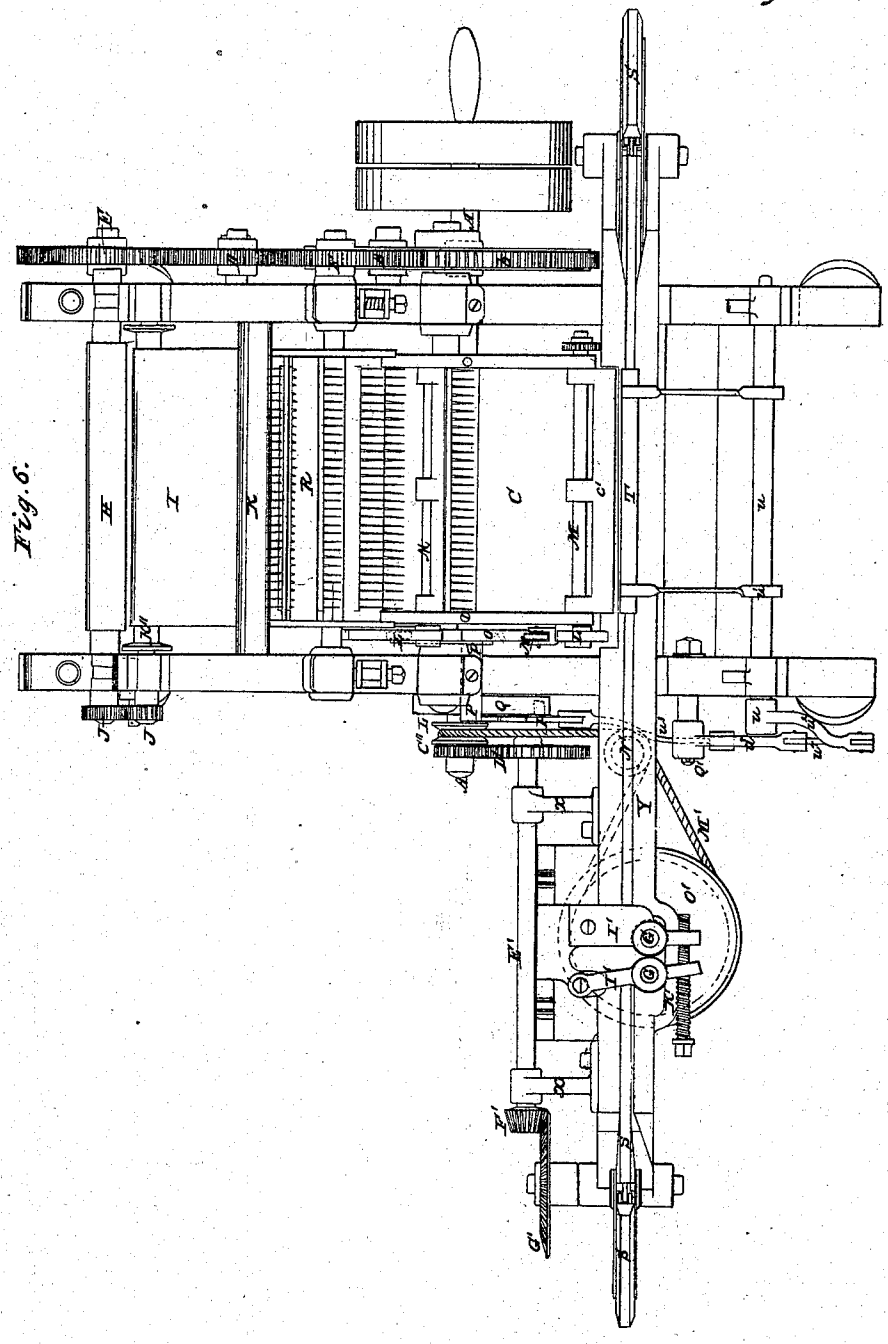
Fig. 2.

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Fig. 3.



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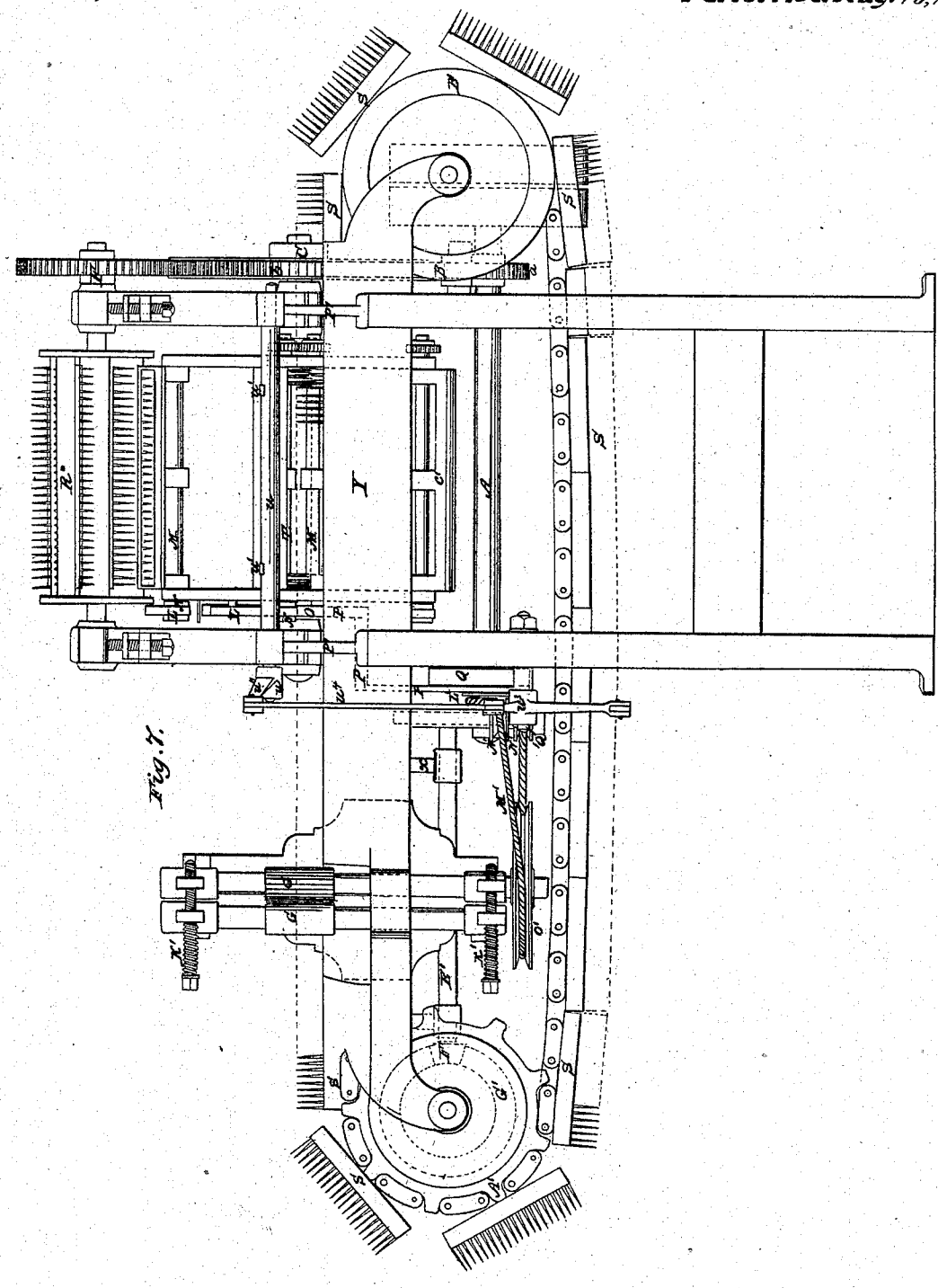


Fig. 1.

UNITED STATES PATENT OFFICE.

CHARLES G. SARGENT, OF LOWELL, MASSACHUSETTS.

MACHINERY FOR COMBING WOOL.

Specification of Letters Patent No. 11,534, dated August 15, 1854.

To all whom it may concern:

Be it known that I, CHARLES G. SARGENT, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Combing and Stapling Wool, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a view of the machine taken from the end upon which the drawing off rollers are placed. Fig. 2 is a view of the opposite end. Fig. 3, is a section of the revolving nipper apparatus, with the feed rolls, combing cylinder and chain comb. Fig. 4 is a section similar to the above, the nippers being replaced by teeth for the purpose of holding the wool. Fig. 5, is a section showing an arrangement of the nippers where they have indentation, intended more securely to hold the wool. Fig. 6 is a plan; Fig. 7 a back view of the machine.

In the machines heretofore contrived for the purpose of combing wool, the fibers are either wholly or partially combed before they leave the main body of the material which is being fed into the machine. In my machine the wool is pulled out from the main lot and stapled in small successive portions before the operation of combing commences, by which means the fibers are drawn out and laid lengthwise, which much facilitates the subsequent operation of combing.

My invention also consists in causing the pincers or nippers which draw out and staple the wool to revolve continuously, any suitable number of them being brought up in succession to the feed rolls, by which means the various operations of the combing process are caused to proceed simultaneously upon different portions of material, without the necessity which has heretofore existed, of performing them one at a time, all the others being for the time interrupted. It is evident that the withdrawing of the separate portions from the feeding rollers must be an intermittent operation, and it has been my aim to make this intermittent movement approach as nearly as possible to a continuous one, as the material is to be delivered from the machine continuously in an unbroken sliver.

To enable others skilled in the art to make and use my invention I will proceed to describe the manner in which I have carried it out,—like parts being designated by the same letters in the several drawings. I will first describe the manner in which the principal parts of the machine are set in motion,—then the improvements which form the subject of my present invention, and lastly the general operation of the machine.

A, is the main driving shaft. *a* is a pinion upon this shaft, which gears with the pinion B, which drives the cog-wheel *b*, upon the shaft C′ of the nipper cylinder C. The wheel *b*, engages with the cog-wheel D, which drives the cog-wheel E, upon the shaft of one of the feed rolls H, H, and also the cog-wheel F—upon the shaft of the combing cylinder R.

I, is an endless feeding apron which is actuated as follows *j*, is a cog-wheel upon the lower roll H, which gears with the intermediate cog-wheel *j*′, which drives the cog-wheel *j*² upon one of the carrying rollers of the apron I.

K, is a roller at the delivery end of the apron, upon which it bears with its own weight only, being at liberty to rise and fall freely as the wool is drawn out from beneath it.

S, is a chain comb which is operated in the following manner; this chain is carried by the sprocket wheel A′, and the plain grooved wheel B′. C″ is a pinion upon the main shaft A, which drives the cog-wheel D′ upon the shaft E′, which is carried by arms X, which project from that portion of the frame of the machine Y, which carries the chain comb. This shaft carries a beveled pinion F′, which drives the bevel wheel G′ upon the shaft of the sprocket wheel A′.

G, are the drawings off rollers which run in suitable bearings H′, I′, projecting from the frame work Y, which carries the endless chain comb S. These rolls are pressed up together by the springs K′, and are actuated in the following manner:

L′ is a pulley upon the main driving shaft which carries a band M′, which passes over guide pulleys N′, and around the pulley O′ upon the shaft of one of the drawing off rollers G.

I will now describe the peculiar construction of the nippers which I have adopted for the purpose of stapling the wool previous to its being combed, and of holding it while undergoing the latter operation, also the manner in which they are operated. *c*′, *d*″,

are the jaws of the nippers attached to rods M, which run the whole length of the nipper cylinder. These rods are connected together by cog wheels f' at one end as seen in Fig. 2, by which means the rods are caused to vibrate together in opposite directions. N, are arms attached to the rods M, and bearing rollers e' which rest upon the periphery of a cam O, Fig. 1. The springs L, serve the purpose of keeping the rollers e', down upon the cam and the nippers open, except when they are closed by the cam. The cam O, is loose upon the shaft of the nipper cylinder, and has attached to it an arm P, which carries a pin which plays in a groove g of the cam Q seen detached at A'' Fig. 1. This cam is attached to the main driving shaft A, and revolves with it. As the nippers approach the delivering end of the feeding apron they are open, and on arriving at this point by the sudden motion of the cam O, which is revolved as before described by the cam Q, they are closed upon the projecting ends of the wool as seen in Fig. 3. As the nipper cylinder continues to revolve all those fibers which are held by the nippers are drawn out lengthwise and stapled, the roller K, rising sufficiently to permit their escape, and the rollers H being at a distance from the roller K a little greater than the length of staple of the material, that those fibers not gripped by the nippers may be retained by the rollers H, H, and none of them may be broken. The wool thus stapled is carried up to the revolving combing cylinder R by which it is combed, and over to the opposite side of the cylinder, the wool being deposited upon the endless chain comb S, and the next instant the nippers are thrown open by the revolution of the cam O which releases the arms N, and permits the nippers to be operated upon by the springs L. In some cases it may be necessary to corrugate the gripping surfaces of the nippers as seen in Fig. 5, to enable them to take a better hold upon the material.

In Fig. 4 is represented a form of carrier which I propose to make use of when operating upon some kinds of long stapled material, for which I consider it to be more suitable than the nippers. w, is a stationary bar having a slot running through its whole length, w', is a movable bar which carries several rows of teeth V placed closely together, and which, when the two bars are brought together, pass through the slot in the stationary bar w, and into and through the projecting ends of the wool, as they pass the delivery end of the feed rollers, drawing out the fibers and carrying them up to the combing cylinder. On arrival at the opposite side of the cylinder the wool is deposited as before upon the endless comb S, and the next instant by the motion of the cam O, the spring L, is allowed to act upon the bar w', and its teeth being suddenly withdrawn through the slot in the other one, are freed from the material which they carry, and the latter is carried off, by the chain comb as before. T is a brush which descends upon the wool, as it is placed upon the chain comb by the revolving nippers, and which is actuated as follows. u, is a shaft which revolves in the standards P', and to which is attached the arms u', which carry the brush. u^2 is an arm projecting from the shaft u, which is connected to the bent lever u^3, by the arm u^4. The lever u^3, is pivoted at the point Q', and is connected by the arm u^5, to the lower end of the lever P, which actuates the cam O, by which connection it will be perceived, that as the cam is moved for the purpose of opening the nippers, the brush T is caused to descend and force the wool down upon the teeth of the chain comb and prevent it from being carried away by the end of the nippers, the opening of the nippers and the descent of the brush to crowd the wool upon the teeth of the chain comb taking place simultaneously, being both operated by the same device viz, the lever P, set in motion by the cam Q.

Operation: The wool having been prepared by carding or otherwise is passed in between the forward pair of feeding rollers H, which deliver the wool to the feeding apron I carried by the rollers K''. On the arrival of the nippers at the delivering end of the feed apron they are closed upon the projecting tuft of wool as seen in Fig. 3. The nippers are represented in Fig. 5 in the act of being closed. As the nipper cylinder continues to revolve each nipper draws out and staples a portion of the wool from off the feed apron, the roller K, pressing but lightly upon the material offers no resistance to this operation, the distance between the feed rollers H, and the roller K, being as before stated a little greater than the length of staple of the wool in order that all the fibers seized by the nippers may be drawn out without being broken while those which have not yet escaped from the rolls H, shall be retained, the fibers are thus straightened out by this stapling operation previous to the commencement of the combing. The nippers then pass up and the wool so stapled is brought into contact with the teeth of the combing cylinder R, by which it is combed, and the short loose fibers separated from it. As the cylinder C, continues to revolve the staple of wool is deposited upon the endless chain comb S, and the next instant the nippers are opened and the brush T is depressed by the motion of the cam O, and the staple having the ends which project from the nippers combed is carried forward to the drawing off rolls G which take it from the chain comb and deliver it in a

sliver ready for use. That portion of the tuft of wool *d''* Figs. 3 and 4 which remained in the nippers while the balance was being combed by the teeth of the comb cylinder R, is combed by the teeth of the chain comb as it is drawn off by the rolls G. The noil left upon the chain comb is removed in the customary manner.

It will be perceived that by the preliminary stapling operation above described the fibers of the wool are all drawn out and laid lengthwise before the combing commences which greatly facilitates the latter operation while by the continuous motion of the nipper cylinder the various operations are proceeding simultaneously without interruption, the feeding of the material to the machine, the stapling or drawing out, the combing, the delivering to the endless chain comb, and the drawing off of the perfect sliver therefrom, all proceeding at one and the same time upon different portions of wool; no operation being interrupted to allow the performance of another and no time being lost in retrograde movements. These peculiarities while they enable my machine to perform many times more work than those heretofore in use for the purpose render it far less complicated than they are and less liable to get out of order.

I have described the nipper cylinder as containing but four nippers—it is evident however that a greater number may be employed, the size of the nipper cylinder being increased in accordance.

It is evident that the shaft which carries the cam Q by which the cam O, is operated for the purpose of opening and closing the nippers must make as many revolutions to one of the nipper cylinder as there are nippers upon this cylinder, or the form of the cam Q may be modified so as to give more than one motion out and in for each revolution of its shaft.

The auxiliary cam Q is employed to give motion to the cam O, at the instant the nippers are to be closed, in order that the latter operation may be performed suddenly, notwithstanding the slow motion of the cylinder which carries the nippers.

What I claim as my invention and desire to secure by Letters Patent is—

1. Drawing out and stapling the material as set forth previous to commencing the combing operation.

2. I claim the continuous motion of the nippers or other parts which operate upon the wool, whereby I am enabled to keep a number of them in operation at the same time, the different steps in the process proceeding simultaneously upon different portions of the material, without the necessity of interrupting any one of them for the performance of another, and without retrograde motion of any of the parts of the machine.

3. I claim the method herein described of opening and closing the nippers by means of the cam O in combination with the cam Q or its equivalent, whereby the nippers are closed suddenly upon the wool, whatever may be the rate of motion of the nipper cylinder.

CHAS. G. SARGENT.

Witnesses:
ISAAC S. MORSE,
ALBE C. CLARK.