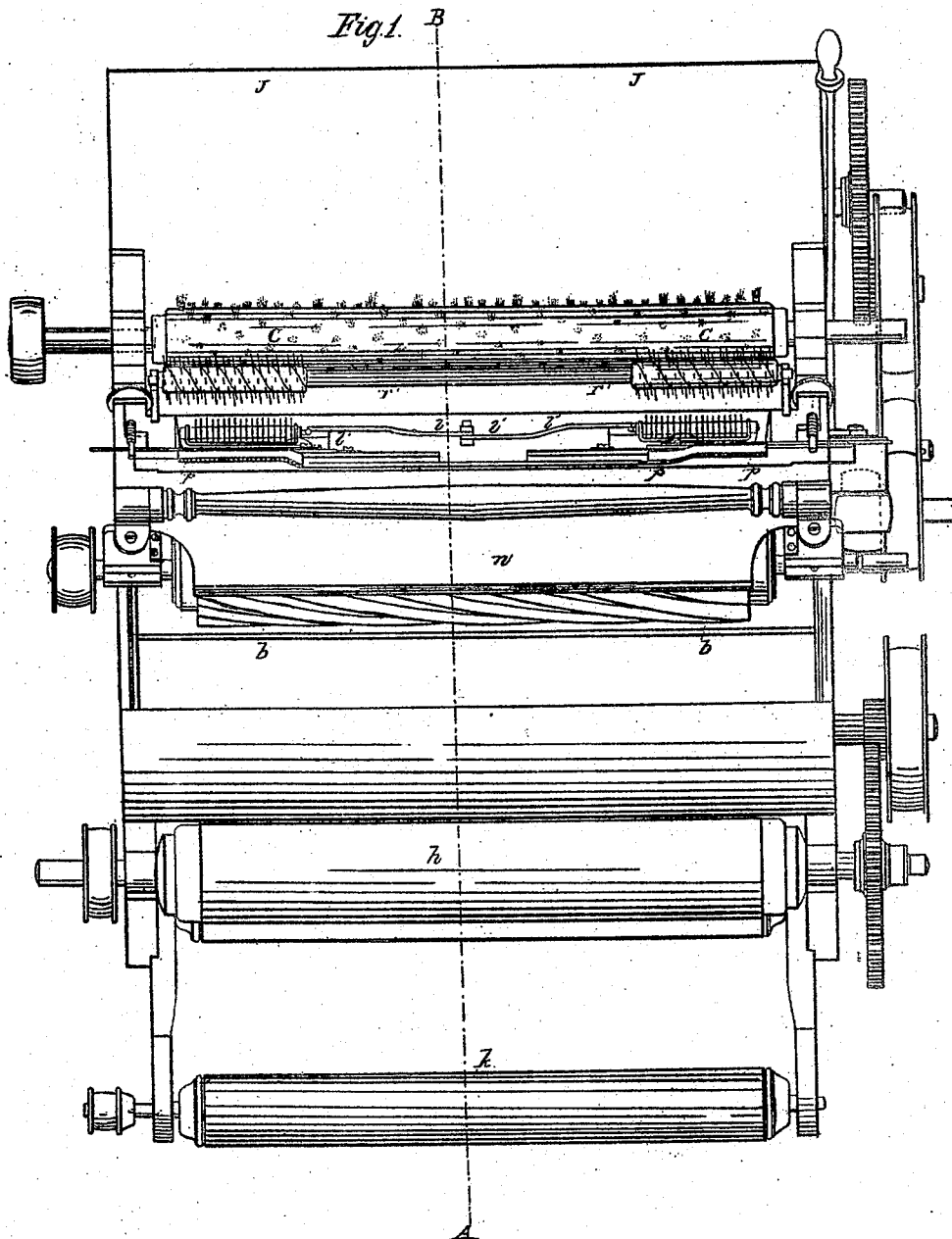


*A. Woolson*  
*Shearing Mach.*

*Nº 7407.*

*Patented May 28, 1850.*

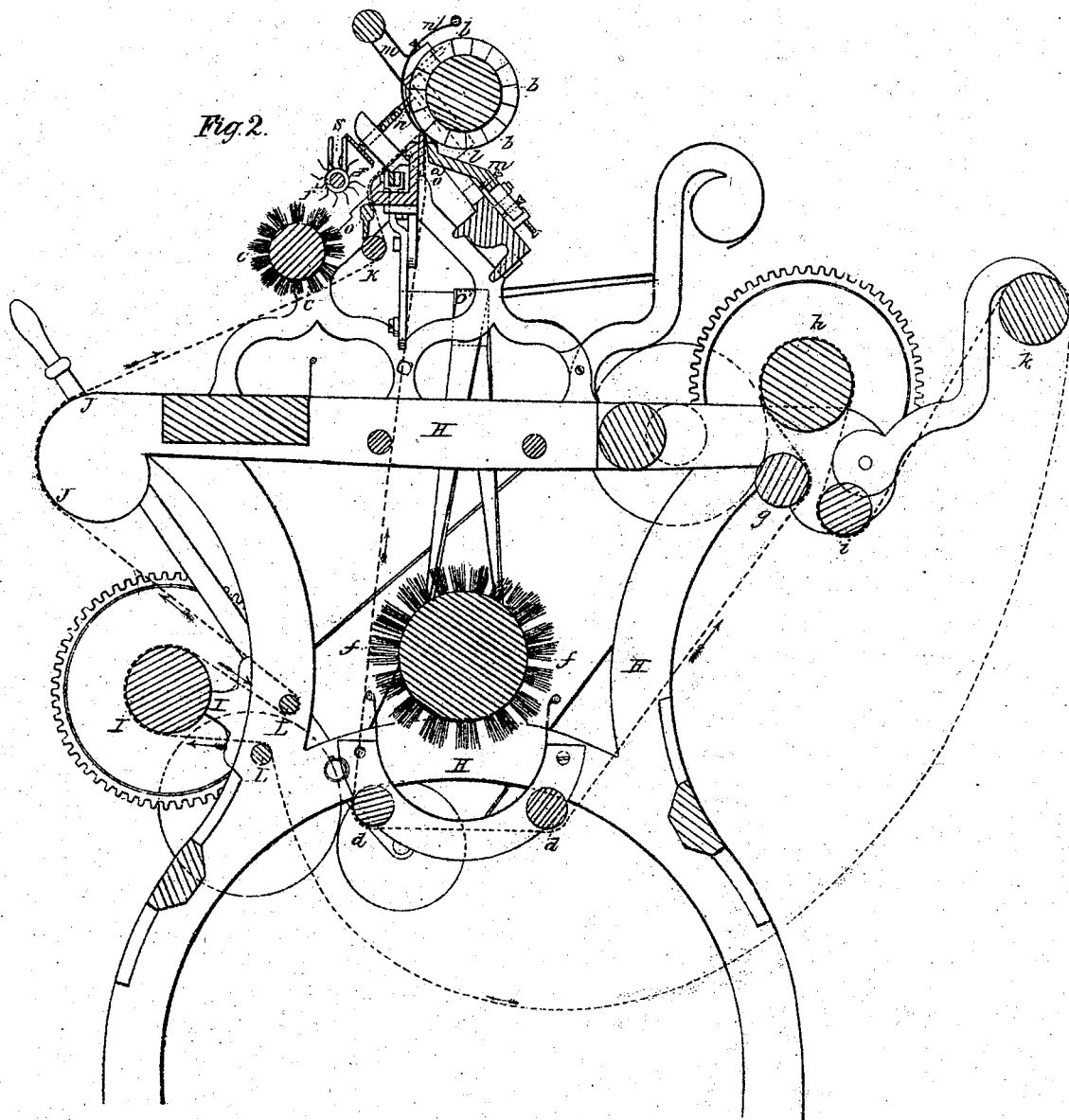


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N<sup>o</sup> 7,407.

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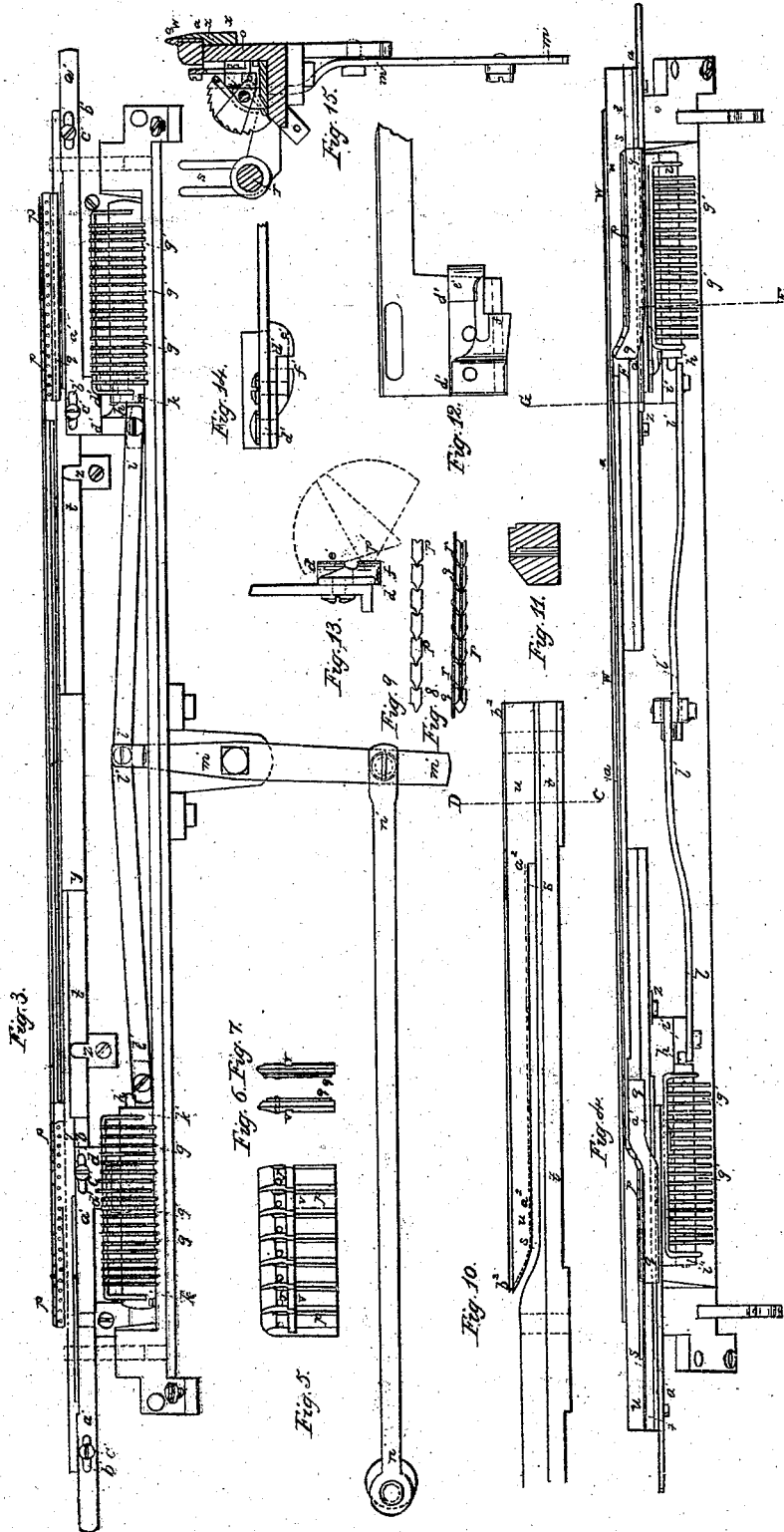


*Fig. 2.*

# A. Woolson. Shearing Mach.

No. 7,407.

Patented May 28, 1850.



# UNITED STATES PATENT OFFICE.

AMASA WOOLSON, OF SPRINGFIELD, VERMONT.

## MACHINE FOR SHEARING CLOTH.

Specification of Letters Patent No. 7,407, dated May 28, 1850.

*To all whom it may concern:*

Be it known that I, AMASA WOOLSON, of Springfield, in the county of Windsor and State of Vermont, have invented certain new and useful Improvements in Machinery for Shearing Cloth from End to End, and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same; wherein I have set forth the nature and principles of my said improvements by which my invention may be distinguished from others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The figures of the accompanying plates of drawings represent my improvements. In Plate 1, Figure 1 is a plan of my machine; Fig. 2 is a central vertical section taken in the plane of the line, A B, Fig. 1. In Pl. 2, Fig. 3 is a detail elevation of the stationary rest and "movable or chain rests", (so called), and the appendages of the latter which are necessary to effect its changes or self adjustments, as hereinafter explained. Fig. 4 is a plan of the same. Fig. 5 is a detailed side view of one of the movable or chain rests. Fig. 6 is an elevation of one end of the same, and Fig. 7 is an elevation of the opposite end. Fig. 8 is a detailed plan of the top of one of said rests, and Fig. 9 is a plan of the underside of the same. Fig. 10 is a plan of one of the grooves in which the chain rests are set; and Fig. 11 is a cross section of the same taken in the plane of the line, C D, Fig. 10. Fig. 12 is a detailed elevation of an adjustable gage bar, hereinafter described, with its two regulating notches or stops. Fig. 13 is an end view of the same, and Fig. 14 is a plan of the same. Fig. 15 is a detailed vertical section taken on the irregular line, E F G, Pl. 2, Fig. 4.

My improved machine belongs to that class or species of shearing machines, which shears the cloth from end to end; and if the two ends be joined, it may be passed through the machine any desired number of times without stopping.

The machine, as represented in the drawings above referred to, combines several minor improvements to which I shall not

now lay claim, wishing to present its peculiar and novel characteristics, which is in the "rest" against which the shearing knives cut, independently of claims to novelty in any other department of the machine.

The "rest" above referred to, has heretofore been made in one piece, and so as to be moved laterally by the hand of the operative who superintends the working of the machine, in order to provide for the swaying of the cloth from one to the other side of the machine.

In machines in which the rest is thus arranged, it becomes necessary to wind the cloth to be shaved, with great nicety on the cloth-beam, and have it closely watched as it unwinds, and the rest guided, or shifted with care, in order to save the requisite width of list on each side.

The object of my improvements is, to provide a movable or changeable rest on each side of the stationary rest over against which the knives bear, or draw, to remove, or shear the nap; so that if the cloth, in being fed along to the knives, should be swayed to one side or the other of the machine, the rest will be extended, or shortened accordingly, and the cloth will still be shorn close to the selvage, and yet leave the requisite width of selvage on each side. The "movable or changeable rests" are arranged one on each side of the stationary rest hereinafter referred to, and form with it, what may be termed a varying rest for accommodating, or operating upon different widths of cloth, and adapting itself to the swaying of the cloth hereinbefore referred to, as it passes to the cutters. These movable rests consist of a set or chain of vertical teeth or rests which are fitted to each other on each side by means of a swallow tail groove and tongue, and are arranged so nicely, as to present an almost perfectly smooth edge to cut against when in a straight line. These chain rests are set each in a groove formed in the vibrating bar, which groove has a diagonal bend in it that serves to bring the chain rests into the same line with the stationary rest, and to carry it out of said line according to circumstances. This sliding bar is connected to an adjustable gage bar which has two catches,

notches or stops set at a little distance apart; and the upper and outer catch or stop of this bar is adjusted at such a distance outside of the range or transverse plane passing through the inner end of the diagonal bend in the movable rest-groove before referred to, as to give, or leave the requisite width of list; said end of said bend being always set at the inner edge of the selvage, and leaving all outside of the range of said bend beyond the influence of the knives; because the movable chain rests beyond or outside of this end of said bend in said groove, is out or back of the range of the stationary rest. As the cloth sways from side to side, it passes over a series of toothed or burred feelers arranged loosely on a shaft vibrated laterally, each of which feelers has an upper and lower projection which when brought up, or left to drop down, bears accordingly against the upper or lower catch in the gage bar, and carries the bend in the groove before referred to, outward or inward, and always leaves the selvages of the same width.

In the several drawings, H H H. represents the frame-work of the machine which may be shaped as therein shown, or in any other suitable way.

I I, Fig. 2, pl. 1 is the cloth beam, so called, whose surface is covered with list or some other similar substance and on which the cloth is first wound. In front of this cloth beam are two small rollers, L L, arranged near each other, and around which the cloth is passed for the purpose of bringing it almost entirely about said cloth beam, and straining it around the same. The cloth then passes up over the curved metallic tablet, J J, and partly round roller of small diameter, K, which deflects it at right angles from its previous course, and brings it to bear closely and properly on the rest, *a a*, while the spiral knives, *b b*, *b b*, &c., operate with the fixed or ledger blade-like shears, to cut off the fibrous pile or nap which has been brushed up by the brush cylinder, *c c*, which is revolved in proper direction and at suitable speed for the purpose. The cloth then passes down in a vertical direction round the rollers, *d*, &c., having its nap brushed down again by the revolving cylinder brush, *f f*, and then partly about the roller, *g*, and almost entirely about the cylinder, *h*, by being brought back round the roller, *i*, which is in close proximity to the roller, *g*, and operates with said roller, to strain the cloth around said cylinder precisely as the two rollers, L L, above referred to, operate with the cloth, as it leaves the cloth beam. The cloth then passes around the outer roller, *k*, and, if desired, back again to the cloth-beam, from which it passes through the same routine a second time, as shown by the continuous yellow line

in Fig. 2, pl. 1; or, it may be taken as usually arranged, in folds, first upon the cloth-beam, and then after passing through the machine once, be redeposited in folds directly under the outer roller, *k*. The cylinder of spiral knives, *b b*, and the ledger blade, *l*, are set in a tilting frame, *m m*, which has proper journals provided with suitable bearings in the main frame-work, so that the said knives and blade may be moved up against the rest, *a a*, &c., at pleasure. The knife cylinder is provided with a suitable guard, *n n*, in front; and in rear, with a trough into which the severed portion of the nap or pile, drops in the usual way.

I shall now proceed to the description of the changeable rests and their appendages, and the mechanical means or combination of devices by which they are operated.

*o o o* is the rest frame, as I shall term it, which is firmly secured to the main frame-work, as shown in Figs. 1 and 2, Pl. 1, and on this rest frame, the stationary rest, *a a a*, is fastened in the usual position. The movable chain rests hereinabove referred to, are placed one at each end of the stationary rest, as shown at *p p*, *p p*, Fig. 1, Pl. 1 and Figs. 3 and 4, Pl. 2. The movable rests are formed of a series of separate rests, *p p p*, Figs. 5, 6, 7, 8 and 9, Pl. 2, which as hereinbefore suggested, and as shown in said Figs. 5, 8 and 9, fit into each other on each side with what may be termed a swallow-tail tongue and groove. They are connected together by means of a strip of leather, *q q*, *q q*, one on each side of each series, to which they are fastened, or strung by means of rivets, *r r r*, as shown in Figs. 5, 6, 7 and 8, Pl. 2. These chain rests thus constructed, are fitted into the grooves, *s s s*, formed between the two sliding bars *t t*, *u u*, one set of which is arranged on each side of the stationary rest, *a a*. The grooves, *s s s*, have a diagonal bend in them, as shown in Fig. 10, which, as the said bars move in one direction or the other, bring the movable chains into line with the stationary rest, or back of the range of said rest, as the case may be. The bar, *u u*, has a continuous lip along its upper and inner edge the width of which is shown by dotted lines in Fig. 10 Pl. 2 at *a<sup>2</sup> a<sup>2</sup>* which lip fits into a corresponding groove formed on the front side of each chain rest which groove is shown at *v v*, in Fig. 5, Pl. 2, and in section in Figs. 6 and 7, Pl. 2, and this arrangement serves to keep the movable rests in position, as will readily be understood. The outer edge of the bar, *u u*, is rebated along the greater portion of its length as shown at *b<sup>2</sup> b<sup>2</sup>* Fig. 10 Pl. 2, and a lip, *w w*, *w w*, (Figs. 4 and 15 Pl. 2) on the face-plate, *x x*, in front of the stationary rests, fits over this rebate, and keeps out the dirt, as the bars, *t t* and *u u*,

slide along on the ledge, *y y*, of the rest frame, on which they are kept by the guides, *z, z*, Figs. 3 and 4, Pl. 2. On the rear side of each of the sliding bars, *t t*, *t t*, is an adjustable gage bar, *a' a'*, *a' a'*, which has slots, *b', b'*, *b', b'*, &c., and confining screws, *c', c'*, by which it may be fastened in any desired position on said bars, *t t*, &c., as will be understood by inspection of Figs. 3 and 12, Pl. 2. On the inner ends of each of these gage bars is a plate *d' d'*, *d' d'*, made considerably wider than said bars, on each of which are formed the two catches or notches, *e' f'*, *e' f'*, shown in the detailed views, Figs. 12, 13 and 14, Pl. 2, and, as before suggested, the upper and outer catches, *e' e'*, should be set a distance outside of the inner end of the bend in the movable rest groove, equal to the width of the selvage desired to be left, said end of said bend being always in a range with the inner edge or line of the selvage up to which the knives will cut; because the movable chain rests, as far as said inner end of said bend, are in the same line with the stationary rest. The swaying of the cloth from side to side, is made to operate to change the position of said inner end of said bend in said grooves, and thereby lengthen the stationary rest on either side, by bringing more or less of the movable rest into line with it, by the following contrivance or combination of devices.

Working with the notches on each of the gage bars, *a' a'*, *a' a'*, is a series of toothed or burred feelers formed as I now use them very similar to segments of circular saw-plates, as shown at *g' g' g'*, &c. They are arranged at proper intervals apart on the short shafts, *h', h'*, on which they turn loosely. These shafts are connected to sliding frames, *i', i'*, which move along on the rest-frame, *o o o*, being properly guided thereon by the guiding pins, *k', k'*, &c., shown in Fig. 3, Pl. 2. A reciprocating rectilinear motion is imparted to these frames and feelers by the connecting arms *l' l'*, *l' l'*, which are screwed to, and worked by a vibrating lever, *m' m'*, which is vibrated by the eccentric rod, *n' n'*, connected to the pulley, *o'*, Fig. 2, Pl. 1, which pulley is revolved by a twisted band passing around it from some one of the pulleys on the revolving cylinders hereinabove referred to, in a manner which need not be more particularly explained.

The cloth as it passes up to the rest to be sheared, draws over a greater or less number of these feelers, and turns them on their shafts, so that the outer of those so turned will connect, or engage near its top with the upper and outer catches, *e', e'*, of the gage bars, *a' a'*, *a' a'*; and as the feeler frames, &c., move outward, said gage bars will be made to move with them carrying also the sliding bars, *t t*, *u u*, and changing

the position of the inner end of the diagonal bends of the movable rest grooves accordingly; that is, moving said bends toward the sides of the machine, and thereby lengthening, or extending the rest, as hereinbefore suggested. But when cloth of lesser width is used, or when it so sways in passing through the machine, as to permit, or leave the feeler free to drop down again, the lower angular projection, *p'*, (Fig. 15, Pl. 2) of said feelers, will connect with the lower and inner catches, *f' f'*, of said gage bar, and, as the feeler frames move inward, the inner end of the diagonal bend in the movable rest groove, will be changed accordingly, as will be understood without further explanation. The feelers are so arranged, as when not acted upon by the cloth, to drop down into the position shown in Fig. 15, Pl. 2; and when they are drawn up by the action of cloth, they are prevented from being carried so far on their shaft, as not to drop when left free so to do. A bent steel plate over which the cloth slides, fits over most of the apparatus on the rest frame leaving however the feelers uncovered; but it is left off in Figs. 3 and 4.

The cloth is kept against the feelers by means of the heavy metallic roller *r' r'*, Fig. 2, Pl. 1, which moves freely up and down in its bearings, *s'*, and has its ends covered with bent card teeth to the extent of the length of the feeler frames which by pressing the cloth against the teeth of the feelers, work them as afore described.

It is believed by me that shearing machines have never before been made with any portion of the rest made flexible, as I have above described, or that the rest against which the knives cut, has ever before been made susceptible of extension on each side, by combining with the usual stationary rest the flexible rests on each side of the same; and, furthermore, so far as I can discover, no extension rest has ever before been made self operating. I shall therefore confine myself to these general features in my claims, as I believe myself to be the original inventor thereof; and shall not in summing up embrace the details of machinery connected with these features.

Having thus described my improved shearing machine, I shall state my claims as follows.

What I claim as my invention, and desire to have secured to me by Letters Patent is,

1. A flexible rest constructed substantially as hereinabove described.

2. Making the rest susceptible of extension on each or either end, by combining with the ordinary stationary rest and on each side thereof a flexible and movable rest as hereinabove specified.

3. I claim making an extension or flexible

and movable rest, self operating or so as to be changed by the cloth itself in its passage through the machine, all as hereinabove set forth.

5 In testimony that the foregoing is a true description of my said invention and improvements I have hereto set my signature

this seventeenth day of January in the year 1850.

AMASA WOOLSON.

Witnesses:

HENRY CLOSSON,  
WARD R. DANN.