

No. 823,006.

PATENTED JUNE 12, 1906.

A. C. TOWNLEY.
STRIP CUTTING MACHINE.
APPLICATION FILED SEPT. 27, 1900.

FIG. 1.

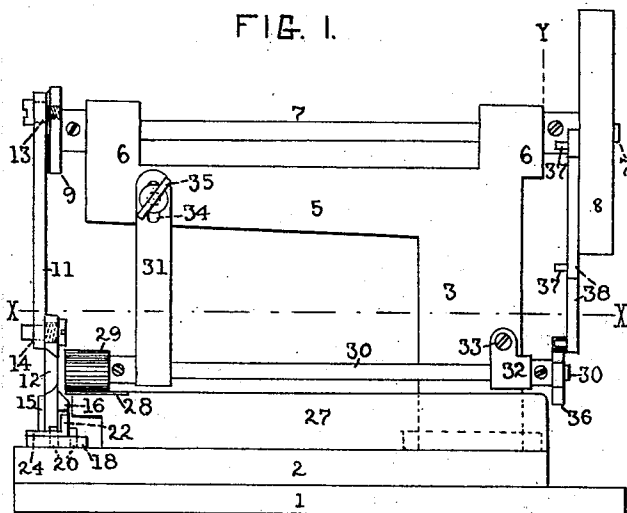


FIG. 2.

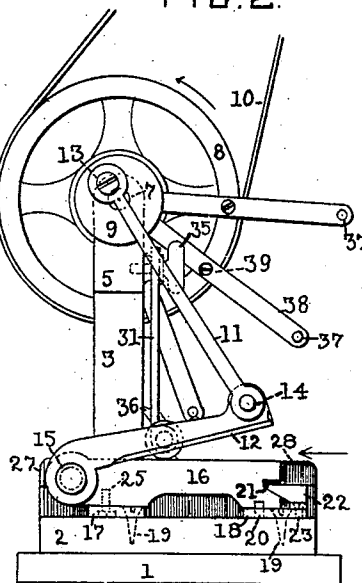


FIG. 3.

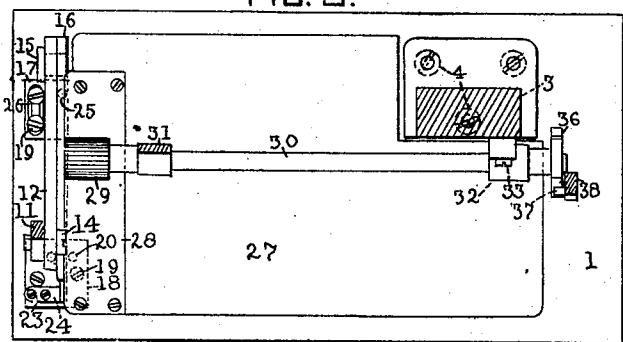


FIG. 4.

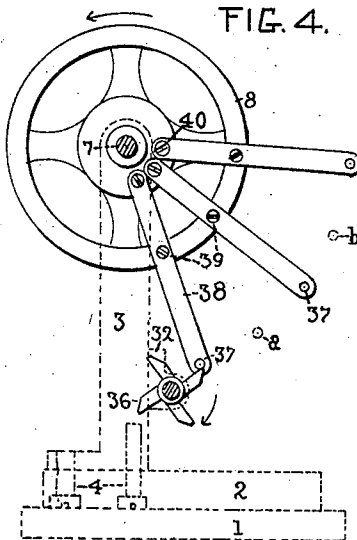


FIG. 5.



WITNESSES

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STRIP-CUTTING MACHINE.

No. 823,006.

Specification of Letters Patent.

Patented June 12, 1906.

Application filed September 27, 1900. Serial No. 31,287.

To all whom it may concern:

Be it known that I, ARTHUR C. TOWNLEY, a citizen of the United States, and a resident of Elizabeth, county of Union, and State of New Jersey, have invented a certain new and useful Strip-Cutting Machine, of which the following is a specification.

This application relates to a machine for cutting up cloth or cast-off clothing into narrow strips to be used in weaving rag carpets.

Heretofore the strips have been laboriously produced by means of ordinary scissors or hand-shears, the operation being excessively fatiguing, slow, and costly, and much valuable room being taken up by the large number of operators required for producing the strips. Moreover, the edges of ordinary hand-shears become quickly dulled, making it necessary to sharpen and reset them frequently.

The object of this invention is to facilitate the severing of cloth into strips, and, further, to enable the principal portion of the labor to be performed by the aid of steam or other power.

To these ends the invention consists generally in combining means for cutting the cloth with means for feeding the same in the direction of the cut, the cutting and feeding movements alternating.

The invention further consists in certain combinations of devices, features of construction, and arrangements of parts, all as will be more fully hereinafter set forth and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a front elevation of my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a plan taken on the line X X of Fig. 1. Fig. 4 is a sectional elevation taken on the line Y of Fig. 1 and showing part of the framework in dotted lines. Fig. 5 is an end view, upon a larger scale, of a toothed or knurled feeding wheel or drum.

Throughout the several views similar parts are designated by similar characters of reference.

The base of the machine comprises two blocks 1 2, the latter being fastened upon the former in any suitable way and the lower block being of a size convenient to rest upon a small stand, such as commonly used for sewing-machines. A cast-iron standard 3 is secured by screws 4 upon the block 2 at the right-hand part of the machine and carries at its upper end a horizontal overhanging arm 5,

the parts 3 and 5 being formed integrally and bearing a general resemblance in structure and manner of mounting to an ordinary sewing-machine "arm." In lugs 6, which project upwardly from the ends of arm 5, is journaled a main horizontal driving-shaft 7, said shaft extending through the lugs and carrying at its right-hand-extended end a fly-wheel 8 and at its left-hand-extended end a disk 9, said fly-wheel and disk being provided with hubs and set-screws by means of which they are rigidly secured upon the shaft. The hubs abut against the lugs 6, so as to prevent endwise movement of the shaft. A driving-belt 10, Fig. 2, may be passed around the fly-wheel or around a pulley suitably connected to the fly-wheel or formed integrally therewith in a well-known manner, so as to enable the machine to be driven by electric, steam, foot, or other power. If preferred, the belt may be omitted, and any suitable crank may be attached to the fly-wheel to enable it to be rotated by hand-power.

The disk 9 is connected by a downwardly-extending link or pitman 11 to the free forward end of a vibratory blade 12 of a pair of shears, the said pitman being pivoted at 13 to the disk and at 14 to the said vibratory blade, and the latter being pivoted at its rear end at 15 to the other blade of the shears, the last-mentioned blade being fixed and being designated as 16. The pivot 13 is at such a distance from the axis of the revolving shaft 7 that the blade 12 is given, through the pitman 11, the required up-and-down or opening-and-closing movement at each shaft revolution. In the illustrations said blade is shown at its uppermost position. The fixed shearing-blade 16 rests edgewise upon front and rear horizontal plates 17 and 18, which are secured by screws 19 upon the upper surface of the block 2. The forward part of the blade 16 fits between a pair of vertical studs 20, projecting upwardly from plate 17 and holding said blade against sidewise movement. A notch 21, provided in the forward or tip end of the blade, is engaged by a rearwardly-projecting hook 22, which is fixed upon the plate 17 by means of screws 23, which pass down through a horizontally-extending plate or member 24, formed upon said hook, and are tapped into said plate 18. The engaging faces or edges of the blade 16 and hook 22 are beveled in such a manner that an endwise movement or pressure imparted

to the blade toward the hook causes a wedging action, whereby the front end of the blade is seated firmly upon the plate 18.

By means of one or more screws 25, which
5 pass up through the rear plate 17 and are
tapped into the blade, said blade and plate
17 are secured together, the plate being also
provided with a longitudinal slot 26, so as to
10 permit the blade and attached plate to be
shoved and adjusted toward the front of the
machine until the forward end of the blade is
firmly seated by reason of the described
wedging action, whereupon the screws 19 are
15 turned down so as to hold the plate 17 firmly
upon the block 2, thereby securing the rear
end of the blade rigidly in working position
and also preventing the blade from working
rearwardly and becoming loose at its front
end.

20 Mounted upon the block 2 with its upper
surface substantially level or coincident with
the cutting edge of the blade 16 is a third
block 27, which forms a table for supporting
the cloth that is being passed through the
25 machine, the part of the table adjoining the
shears being protected from wear by a metallic
plate 28, whose left-hand edge preferably
overhangs to some extent the upper or beveled
edge of the fixed blade 16, so as to afford
30 a support for the cloth close to the line of cut.

For drawing the cloth along into the bite
of the shears a feeding drum or wheel 29 is arranged
close to the working edges of the shears and at
about the point where the cutting begins during
35 the descent of the upper blade, said feeding-wheel
being fixed upon the left-hand end of a horizontal
counter-shaft 30, the latter being mounted for
vertical adjustment at its left-hand end in a
40 hanger 31 and being mounted at its right-hand
end in a hanger or bracket 32, the latter being
secured by a screw 33 to the front face of the
standard 3. The hanger 31, whose lower end is
bored transversely to receive the shaft 30, is
45 provided at its upper end with a longitudinal slot
34, through which passes the shank of a thumb-screw
35, which is tapped into the left-hand portion of
the overhanging arm 5. By reason of this
50 construction the feeding-wheel 29 may be raised
or lowered to accommodate different thicknesses
of cloth, the adjustment preferably being such
that the wheel presses firmly upon the cloth, so
that the teeth formed upon the periphery of the
55 wheel may sink into or bite the fabric and insure
the true and rapid feed of the latter. By adjustment
of the hanger 31 the required degree of pressure
may be obtained upon goods of any thickness.
60

Intermittent rotative movement is communicated
to the counter-shaft 30 and the wheel 29 through
the medium of a star-wheel 36, arranged upon the
65 shaft, both the star-wheel and the feeding-

wheel being provided with hubs and set-screws,
whereby they are rigidly secured to the counter-shaft,
said hubs abutting against the outer sides or edges
of the hangers 31 and 32, so as to prevent endwise
70 shake of the shaft. The star-wheel is rotated by a
group or series of horizontal studs or pins 37, which
are carried by radial arms 38, the latter being
secured by screws 39 and 40 to the inner side of
the fly-wheel 8. The relation of the group
75 of pins 37 to the pivotal connection 13 of the
upper end of the shear-operating pitman 11 is
such that the pins rotate idly about the axis 7
during the descent of the pitman, and hence during
the cutting operation, and such that during the
80 upward stroke of the pitman or while the shearing-
blade 12 is nearly at rest at the upper end of its
stroke the pins engage the arms or teeth of the star-
wheel and rotate it, thus causing the feeding-wheel
85 29 to turn and the cloth to be thereby drawn
along into the opening or angle between the
shearing-blades. Thus during one part of the
revolution of the fly-wheel the shears cut the
cloth, which at the time is at rest, and during
90 another part of said revolution the cloth is fed
along, the vibratory shearing-blade being at the
moment in an inoperative position or making its
upstroke.

In operation the thumb-screw 35 is loosened
95 and the hanger 31 and wheel 29 are raised, and
the piece of cloth that is to be severed into
strips is placed upon the table 27 in such a
position that the shears may cut a narrow strip
from its left-hand edge. Then the hanger 31 is
100 lowered, and the wheel 29 is held down firmly
upon the cloth while the thumb-screw 35 is
tightened. Then the fly-wheel is set running in
the direction indicated by the arrow at Figs. 2
and 4, causing the upper 105 shearing-blade to
vibrate and the star-wheel 36 and feeding-wheel
29 to rotate intermittently in the direction of
the arrow at Fig. 4, the cutting and feeding
operations alternating in the manner herebefore
110 described, thus taking place prior to the severing
of a single strip from the body of the cloth. The
operator guides and manages the cloth as it passes
into and through the machine, and by the exercise
115 of a very little skill is able to produce with
great rapidity evenly-cut strips of substantially
uniform width without the necessity of employing
a side or edge guide for the cloth. An entire
120 piece of cloth or several pieces of like thickness
and texture may be passed repeatedly through the
machine without readjustment of the feeding-wheel
29.

The machine may be run very rapidly, making
125 several hundred cuts per minute, so that one
operator upon the machine can do the work of
many operators using hand-shears as heretofore,
thus materially reducing the labor cost of producing
strips, as well as greatly economizing room. It will
130 be un-

derstood that the shears are sufficiently powerful to cut through seams that constantly occur in the cloth and that the cutting may proceed either straight or bias—that is, it is not necessary that the threads of the cloth lie parallel with the sides of the strips cut therefrom—so that every piece of cloth may be cut up to the best advantage and with little or no waste.

When the shears need resharpening, the rear plate 17 is unscrewed from the block 2, and the shears and plate are moved rearwardly, so as to disengage the lower shear-blade 16 from the hook 22, whereupon the shears may be lifted bodily from the machine, the lower end of the pitman 11 being readily slipped off from the reduced and projecting end of the pivotal screw-stud 14, which is tapped into the shearing-blade 12, as will be understood from Fig. 1. After sharpening the shears are replaced by an operation the reverse of that just described. It will be understood, however, that the shears do not need frequent sharpening, as they are preferably made of tool-steel or of a special steel suitably hardened and tempered, so that a far better and harder cutting edge is produced than is present in ordinary hand-shears. At the same time the blades are made of sufficient thickness and width to avoid the liability of breakage, which is a characteristic of hardened tool-steel; but the increased weight of the shears is obviously no objection to their use in my machine, although hand-shears of such comparatively great weight would be too heavy for constant use in cutting strips. It will be understood that when hand-shears are used constantly in cutting cloth the necessity of keeping them in fit condition for work becomes a serious matter, and prior to my invention the sharpening and repairing of the usual hand-shears has made a large expense item. It will thus be seen that my invention not only enables a single operator to do the work heretofore performed by many workmen, but also that the great expense of keeping shears in repair has been almost wholly avoided. It will be further noted that the machine is simple in construction and operation, inexpensive to manufacture, compact, and requiring little power to operate, and not liable to get out of order.

Very many other changes may be made in the details of construction and arrangement of parts within the scope of the invention. For instance, the arms 38 and pins 37 may be arranged at shorter intervals, as illustrated at *a* and *b*, Fig. 4, or any other suitable mechanism may be introduced for securing the feed of the cloth between cuts. In carrying out my invention in some of its forms it is not essential that vibratory shears be employed, nor that a fly-wheel or other rotative device be used to effect the movement of the cloth-cutter and the cloth-feeder, nor that a rota-

tive feeding device be employed, nor that the described means be employed for pressing the feeding device into the cloth. However, I prefer the machine constructed and operating as hereinabove described. Parts of my invention may be used without others.

It will be seen that the machine is intended for reducing miscellaneous fragments and remnants of cloth or clothing to strips, such fragments being usually irregular in form and the feeding-wheel pinching only a small portion of the cloth, so that the latter may be swung from side to side by the operator, as required in order to change the direction of the cut from time to time, whereby a substantially parallel strip may be cut from an irregularly-formed edge; that the machine includes a table upon which the operator may lay the cloth to be cut and direct it as it is fed into the shears; that the shears are at one side of the table, and the latter is at the front of the machine and is substantially coincident with the cutting edges of the shears and extends close thereto, and that the shears open toward the front of the machine, the table being so arranged that the cloth may feed rearwardly during the operation of making the cut, and then the feed-wheel may be released and the cloth drawn forwardly for beginning a new cut, the wheel holding the cloth during the first snip of the shears and feeding the same until the strip is entirely cut off.

What I claim as new, and desire to secure by Letters Patent of the United States, is as follows:

1. In a machine for reducing cloth to strips, the combination of shear-blades 12 and 16, pitman 11, horizontal shaft 7 to which said pitman is connected, and fly-wheel 8; said shears opening toward the front of the machine, and said pitman moving said blade 12 in a vertical direction.

2. In a machine for reducing cloth to strips, the combination of cooperative shearing-blades; power-driven mechanism for operating at least one of said blades; a table along which the cloth may move in a direction longitudinally of said shears, said table extending in proximity to the opening between said shearing-blades; and a feeding device arranged just over the table, so that the cloth may be pinched between said feeding device and the table; said feeding device advancing the cloth in the direction of the cut.

3. In a machine for reducing cloth to strips, the combination of cooperative hinged shearing-blades; a power-driven shaft; a pitman connected at one end to one of said blades and at the other end to a wrist carried upon said shaft; and a feed-roller intermittently actuated by a device carried upon said shaft, said feed-roller being arranged alongside of said blades and close thereto.

4. In a machine for reducing cloth to strips, the combination of shear-blades 12 and 16; 130

pitman 11 connected to vertically movable blade 12; horizontal shaft 7 to which said pitman is connected; fly-wheel 8 attached to said shaft; horizontal overhanging arm 5 whereon said shaft is mounted; standard 3 carrying said arm; and a base or table below said overhanging arm.

5. A machine for reducing irregular fragments of cloth to strips, comprising power-driven means for cutting cloth, and means for advancing the cloth in the direction of the cut; said advancing means contacting with only a small portion of the cloth, so that the operator may turn the latter edgewise as it is fed along, so as to change the direction of the cut and thereby cut a substantially parallel-sided strip from an irregularly-shaped fragment.

6. A machine for reducing cloth to strips, consisting of scissoring mechanism and feeding mechanism; the feeding mechanism being operative alternatively with the scissoring mechanism, and advancing the cloth intermittently in the direction of the cut; said feeding mechanism contacting with only a small portion of the cloth, so that the latter may be swung edgewise to control the direction of the cut.

7. In a machine for cutting strips from cloth, the combination of a fly-wheel, a pivoted shearing blade operatively connected thereto, and a cloth-feeder intermittently rotated by said fly-wheel.

8. In a machine for cutting strips from cloth, the combination of a fly-wheel, a cutting device operatively connected thereto, and a feed-wheel also operatively connected to said fly-wheel and advancing the cloth intermittently in the direction of the cut.

9. In a machine for cutting strips from cloth, the combination of a table; a fly-wheel; a shearing-blade operatively connected to the fly-wheel; a feeding-wheel arranged just over said table, so that the cloth may be pinched between the wheel and the table; and intermittently operating mechanism connecting said feeding-wheel to said fly-wheel.

10. In a machine for cutting strips from cloth, the combination of a scissoring-blade, a cloth-feeding wheel which contacts directly with the cloth and advances the same in the direction of the cut, and power-driven mechanism for reciprocating said blade and effecting intermittent rotative movements of said feeding-wheel.

11. In a machine for cutting strips from cloth, the combination of a power-driven scissoring-blade; a coöperative blade; a table arranged close thereto; and a power-driven feeding-wheel arranged close to said blade and constructed to press the cloth against the table and advance the same into the bite of the scissoring-blades; the direction of the feed being longitudinal of said blades.

12. In a machine for cutting strips from

cloth, the combination of a main shaft; a counter-shaft; connections between said shafts for operating the counter-shaft intermittently; a feeding-wheel operated by the counter-shaft; and a shearing-blade operated by the main shaft; said feeding-wheel advancing the cloth in the direction of the cut.

13. In a machine for cutting strips from cloth, the combination of a work-table; a feed-wheel arranged thereover; a pair of scissors arranged close to said work-table and close to said feeding-wheel; and mechanism for operating said feeding-wheel and scissors so as to alternately cut and draw the cloth along in the direction of the cut.

14. In a machine for cutting strips from cloth, the combination of shearing-blades 12 and 16; shaft 7 operatively connected to one of said blades; counter-shaft 30 placed cross-wise of the direction of the cut; intermittently-operating connections between said shafts; and feeding-wheel 29 upon said counter-shaft for drawing the cloth into the bite of said shearing-blades.

15. In a machine for cutting strips from cloth, the combination of fixed shearing-blade 16; vibratory shearing-blade 12 hinged thereto; shaft 7; pitman 11 connecting said shaft to said vibratory blade; fly-wheel 8 for said shaft; counter-shaft 30; connections extending from shaft 7 to said counter-shaft for operating the latter intermittently; feeding-wheel 29 actuated by said counter-shaft; and work-table 27 beneath said counter-shaft; said wheel 29 feeding the cloth in the direction of the cut.

16. In a machine for cutting strips from cloth, the combination of a main shaft; a cutting device operated thereby; a counter-shaft carrying a star-wheel; devices carried by said main shaft for engaging said star-wheel so as to rotate the latter intermittently; and a feeding-wheel intermittently actuated by said star-wheel and advancing the cloth in the direction of the cut to be made.

17. In a machine for cutting strips from cloth, the combination of a main shaft; a cutting device operated thereby; a counter-shaft carrying a star-wheel; arms carried upon the main shaft; pins fixed upon said arms in position for engaging said star-wheel so as to revolve the latter intermittently; and a feeding-wheel intermittently actuated by said star-wheel and advancing the cloth in the direction of the cut.

18. In a machine for cutting strips for rag carpets, the combination of a main shaft; a fly-wheel; a shearing-blade connected to said main shaft and fly-wheel; a counter-shaft carrying a star-wheel; and a group of pins arranged upon one side of said main shaft in position to engage said star-wheel during one portion only of the revolution of said main shaft; and a feeding-wheel upon said coun-

ter-shaft, for advancing the cloth in the direction of the cut; said feeding-wheel being stationary during the cutting operation.

19. In a machine for reducing cloth to strips, the combination of a base or table; standard 3 thereon; an overhanging arm 5 mounted upon said standard; a horizontal shaft 7 mounted in said overhanging arm; a fly-wheel 8 upon said shaft; a shear-blade 12 connected to said shaft; a shear-blade 16 rigid with said base or table; feeding-wheel 29; counter-shaft 30 whereon said feeding-wheel is mounted; star-wheel 36 upon said counter-shaft; pins 37 for engaging said star-wheel; and arms 38 carrying said pins and attached to said fly-wheel.

20. In a machine for cutting strips from cloth, the combination with a power-driven scissoring device of a work-table; a power-driven feeding-wheel which is intermittently actuated and advances the cloth in the direction of the cut; and means for adjusting said feeding-wheel to accommodate different thicknesses of cloth.

21. In a machine for cutting strips from cloth, the combination with a power-driven shearing-blade of a power-driven feeding-wheel which advances the cloth intermittently in the direction of the cut, and an ad-

justable support whereon said feeding-wheel is mounted. 30

22. In a machine for cutting strips from cloth, the combination with a power-driven shearing-blade, and a cooperating stationary blade, of a work-table, a shaft arranged thereover, a feeding-wheel upon said shaft, an adjustable hanger 31 carrying one end of said shaft, means for supporting the other end of said shaft, and means for rotating said shaft intermittently; said feeding-wheel advancing the cloth in the direction of the cut. 40

23. In a machine for cutting strips from cloth, the combination of a base or table; plate 18 rigid therewith; studs 20 in said plate; hook 22 upon said plate; shearing-blade 16 having notch 21 adapted to said hook; slotted plate 17 attached to said shearing-blade; and screws 19 for plate 17. 45

24. The combination with means for cutting the cloth, of a feeding-wheel above the cloth, and means for turning said wheel. 50

Signed at Elizabeth, in the county of Union and State of New Jersey, the 25th day of September, A. D. 1900.

ARTHUR C. TOWNLEY.

Witnesses:

BENJ. MAYER,
AUG. W. ROSINGER.