

UNITED STATES PATENT OFFICE.

NATHAN P. STEVENS, OF CONCORD, NEW HAMPSHIRE, ASSIGNOR, BY MESNE ASSIGNMENTS, TO HIMSELF AND LORENZO D. BROWN, OF SAME PLACE.

MACHINE FOR DRESSING HOOPS.

SPECIFICATION forming part of Letters Patent No. 281,737, dated July 24, 1883.

Application filed April 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, NATHAN PAGE STEVENS, of Concord, in the county of Merrimack, of the State of New Hampshire, have invented a new and useful Improvement in Machinery for Dressing Hoops; and I do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, of which—

10 Figure 1 is a top view; Fig. 2, a side elevation; Fig. 3, a longitudinal section; and Fig. 4, a transverse section of a machine embodying my invention, the nature of it being defined in the claims hereinafter presented. The said transverse section is taken through the axis of the cutter-cylinder, the longitudinal section being taken in a plane going through the middle of one set of the yielding and adjustable hoop eveners or rollers. The machine as represented has two sets of such eveners, each set of them being composed of three rollers, two of which are parallel to each other and at a distance apart and above the third one, each being not directly over but aside of or at a distance horizontally from such third one, as represented. Fig. 5 is a vertical section of the frame G, and two eveners and their carriers applied thereto, as hereinafter explained. Fig. 6 is a rear end elevation; and Fig. 7, another or side elevation of the machine.

The important novel feature of the machine, by which it differs from other machines for dressing hoops by means of feed-rollers, a cutter-cylinder, and drawing-rolls, is in what I term the "eveners," each set of which, as represented, consists of three rollers, each of which is not only provided with a spring or like means to enable it to yield or move up and down vertically, but has mechanism to admit of its adjustment nearer to or farther from the cutter-cylinder, as occasion or the thickness of the hoop to be dressed may require. These eveners are arranged between the feed-rollers and the cutter-cylinders, as represented in the drawings, in which A is the said cutter-cylinder; B, its throat-plate; C and D, the pair of feed-rollers; and E and F and E' and F', two sets of drawing-rollers.

50 This machine is a duplex one, inasmuch as

it is capable of dressing two hoops at one and the same time. It has two sets of eveners, a single cutter-cylinder, one lower feed-roller, two upper feed-rollers, and one lower drawing-roller to each set of drawing-rollers, and besides it has a single throat-piece to the cutter-cylinder. Each upper feed-roller, as well as each upper drawing-roller, is a yielding one—that is its carrier is supported by a spring or springs to enable the roller to move upward and downward relatively to the fellow roller underneath it, whose only movement is that of revolution on its own axis. All the uppermost of the rollers are connected with a frame, G, which at one end is hinged to the frame R for supporting the cutter-cylinder and the lower feed and drawing rollers.

In Fig. 3 the three eveners of one set are shown at H, I, and K in their relative positions. Each upper evener has its journals supported in a furcated carrier, *a*, whose shank *b* is provided with a shoulder, *c*, and extends upward through a supporter, L, and is screw-threaded at its upper end, as shown at *d* to receive a nut, *e*, which screws on the screw *d*, and against the upper end of a sleeve or tubular screw, *f*, which is arranged concentrically on the shank *b*, and is screwed down into the supporter L and against the upper end of a spiral spring, *g*, encompassing the shank *d* and resting on the shoulder *c*. The supporter L rests at its middle on the median bar, *h*, of the frame G, and is connected thereto by one or more clamp-screws, *i*, each of which goes down through a slot, *k*, made transversely in the supporter, and screws into the said bar, the same being so as to admit of the supporter being moved in order to adjust the evener nearer to or farther from the cutter-cylinder, as occasion may require. The machine shown, being a duplex one, as described, has two eveners to each of the supporters L, though in a single machine adapted to dress but one hoop at one time there would be but one evener to each of the supporters, which would be adjustable, as described, on the frame. Each lower evener, K, has its journals supported in a furcated carrier, *a'*, whose shank *b'* is provided with a shoulder, *c'*, and extends down through an adjustable supporter, L', sustained 100

by the frame R, and held thereto by one or more clamp-screws *v'*, each of which goes down through a slot, *k'*, made in the supporter L, so as to admit of the said supporter and
 5 evener K being adjusted nearer to or farther from the cutter-cylinder.

From the above it will be seen that by means of its spiral spring each evener becomes yielding, and that the pressure of such spring
 10 can be increased by screwing downward the screw-threaded sleeve *f*, and furthermore that by means of the nut *e* and its screw *d* the altitude of the evener can be varied, as the thickness of the hoop-pole to be dressed may re-
 15 quire.

Each upper feed-roller, as well as each upper drawing-roller, is supported by means, such as described, for sustaining an upper evener and allowing it to yield vertically, such
 20 upper feed or drawing roller being what is usually termed a "pressure-roller," it operating to keep the hoop down upon the fellow roller beneath such feed or drawing roller. The two drawing-rollers have gears *ln* on their
 25 shafts, which engage with an intermediate gear, *m*, and there is a pulley, *o*, fixed on the shaft of the roller F'. An endless belt, *p*, goes around the pulley *o*, and a pulley, *p'*, at one end of a shaft, *q*, arranged as shown. At
 30 the other end of the said shaft is another and larger pulley, *r*, about which and a pulley, *s*, on the shaft of the cutter-cylinder an endless belt, *t*, passes, such shaft having a driving-pulley, *u*, at one and each end of it. About
 35 another pulley, *v*, on the cutter-cylinder shaft, and a larger pulley, *w*, on another shaft, *x*, an endless belt, *y*, travels. Another endless belt, *z*, goes around a pulley, *a*², on the shaft *x*, and also around a pulley, *b*², on the shaft of the
 40 lower feed-roller, D.

On the cutter-cylinder being put in revolution the lower feed and drawing rollers will also be revolved; and on a hoop being introduced between the feed-rollers C D it, by the
 45 lower of them, will be impelled forward upon the evener K and between it and the eveners H and I, and thence will be caused to pass to and over the cutter-cylinder A and its throat-piece B, and thence between the rollers of
 50 each set of the drawing-rollers E F and E' F', it being in the meantime planed or dressed on its lower or flat or sawed surface by the cutter-cylinder. The evener K and both of the eveners H I, or the evener I only, arranged
 55 as shown, with the evener K, support and guide the hoop to much better advantage than would two rollers only arranged one directly over the other, the upper of them only or each of them being a yielding roller, because with
 60 the three eveners, or with the eveners I and K arranged as represented, when a knob or projection of the hoop may be passing an upper of the eveners the hoop-pole can spring down independently of the roller K, which serves
 65 then to hold it up to the upper evener or eveners, and with such directs the hoop properly

to the cutter-cylinder. The having each upper evener disposed above and not directly over the evener K, but at a sufficient distance horizontally therefrom, substantially as rep-
 70 resented, renders the machine productive of better results in evenly dressing the hoop than would be the case were it to have a set of eveners wherein one would be directly over the other.

In some cases the evener H may be dispensed with, the evener I, arranged above the evener K and between it and the cutter-cylinder, being used.

It is customary sometimes to saw a hoop-
 80 pole twice diametrically, so as to separate it into four strips, each of which is quadrantal in transverse section. Each strip has subsegmentally to be reduced, so as to make it segmental in cross-section. To properly guide
 85 such strips to the feed-rollers of the machine I use rollers M, freely revoluble on a sustaining-shaft N, each roller having in and around it at its circumference a groove triangular in cross-section, the said supporting-shaft being
 90 vertically adjustable in the machine.

I claim—

1. The combination of the feed-rollers C and D and the cutter-cylinder A with the evener K, and also with the evener I, arranged above
 95 the said evener K and cutter-cylinder and between them, such eveners being between the feed-rollers and the cutter-cylinders and to operate substantially as set forth.
2. The combination of the feed-rollers C and
 100 D, the cutter-cylinder A, and the three eveners H I K, the eveners H I being in a plane above the evener K, and all three between the feed-rollers and cutter-cylinder, and arranged and to operate substantially as represented. 105
3. The combination of the feed-rollers C and D, the cutter-cylinder A, throat-piece B, and the evener K, and also with the evener I, arranged above the said evener K and between
 110 it and the cutter-cylinder, such eveners being between the feed-roller and the cutter-cylinder, substantially as represented.
4. The combination of the feed-rollers C and D, the cutter-cylinder A, throat-piece B, and the three eveners H I K, the eveners H I being
 115 in a plane above the evener K, and all three between the feed-rollers and cutter-cylinder, and arranged and to operate substantially as set forth.
5. The combination of one or more sets of
 120 drawing-rollers, E F, the feed-rollers C and D, and cutter-cylinder A, with the evener K, and also with the evener I, arranged above the said evener K and cutter-cylinder and between them, such eveners being between the
 125 feed-rollers and the cutter-cylinder, and to operate substantially as set forth.
6. The combination of one or more sets of drawing-rollers, E F, the feed-rollers C and D,
 130 cutter-cylinder A, and the three eveners H I K, the eveners H I being in a plane above the evener K, and all three between the feed-rol-

ers and cutter-cylinder, and arranged and to operate substantially as set forth.

7. The combination of one or more sets of drawing-rollers, EF, the feed-rollers C and D, cutter-cylinder A, throat-piece B, and the three eveners H, I, and K, the eveners H I being in a plane above the evener K, and all three between the feed-rollers and cutter-cylinder, and arranged, adapted, and to operate substantially as set forth.

8. The combination of the cutter-cylinder A and its throat-piece B, the single lower feed-roller, D, and two yielding feed-rollers C C thereto, two sets of eveners I K, such eveners being between the feed-roller and the cutter-cylinder, and the evener I being above the evener K and between it and the cutter-cylinder, a driving-roller, F, and two yielding drawing-rollers E, adapted to such roller F, all being arranged in manner and to operate substantially as set forth.

9. The combination, with the feed-rollers and the cutter-cylinder, of the eveners I and K, such eveners being between the feed-roller and the cutter-cylinder, and the evener I being

above the evener K and between it and the cutter-cylinder, arranged substantially as described, and provided with means of adjusting them nearer to or farther from the cutter-cylinder, as specified.

10. The combination, substantially as described, for sustaining each evener and pressure-roller, such consisting of the furcated carrier *a*, provided with the shoulder *c*, screw *d*, and nut *e*, as described, and of the supporter L, the spiral spring *g*, and the screw-threaded sleeve *f*, arranged and adapted essentially as set forth.

11. The combination of the grooved guide-roller M, the feed-rollers C and D, cutter-cylinder A, and the eveners I and K, such eveners being between the feed-roller and the cutter-cylinder, and the evener I being above the evener K and between it and the cutter-cylinder, all being arranged and applied substantially as set forth.

NATHAN PAGE STEVENS.

Witnesses:

R. H. EDDY,
E. B. PRATT.