

(No Model.)

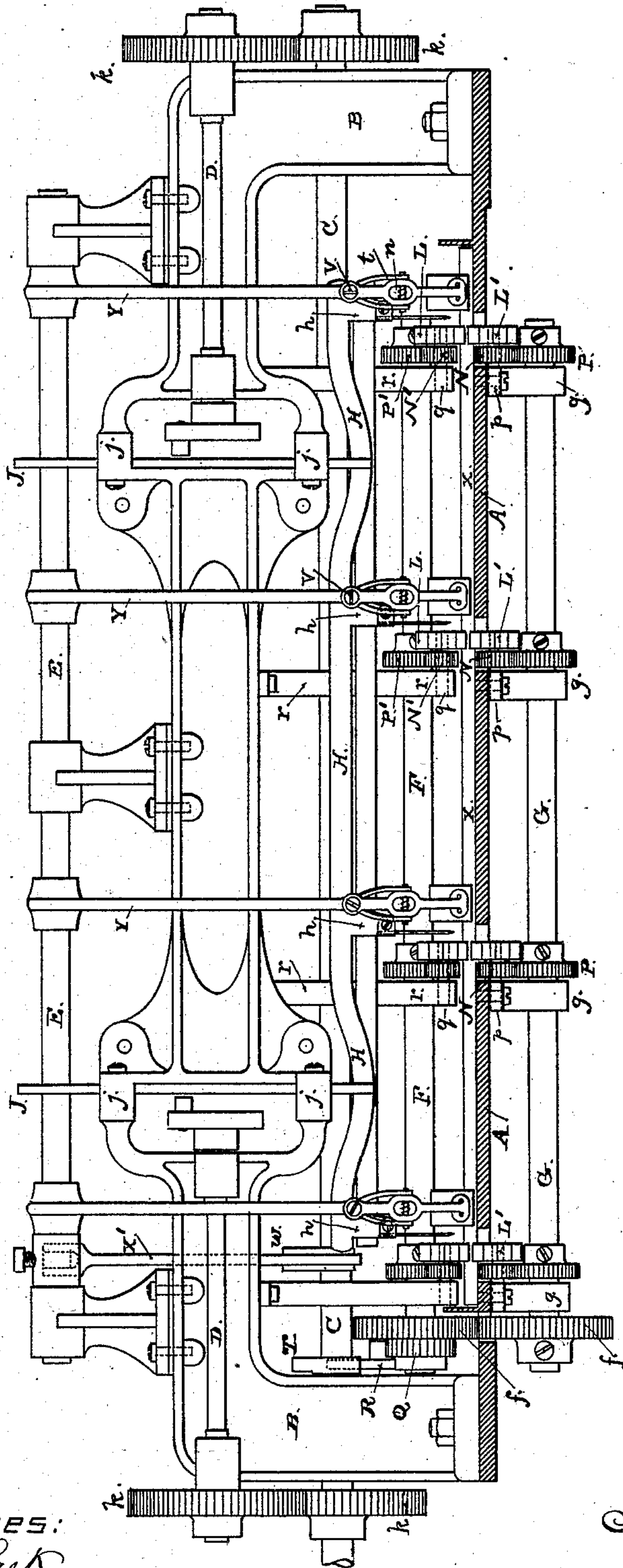
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G. GRISEL.
SEWING MACHINE.

No. 257,940.

Patented May 16, 1882.

Fig. 1.



WITNESSES:
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Wm. Voit

INVENTOR:
George Grisell

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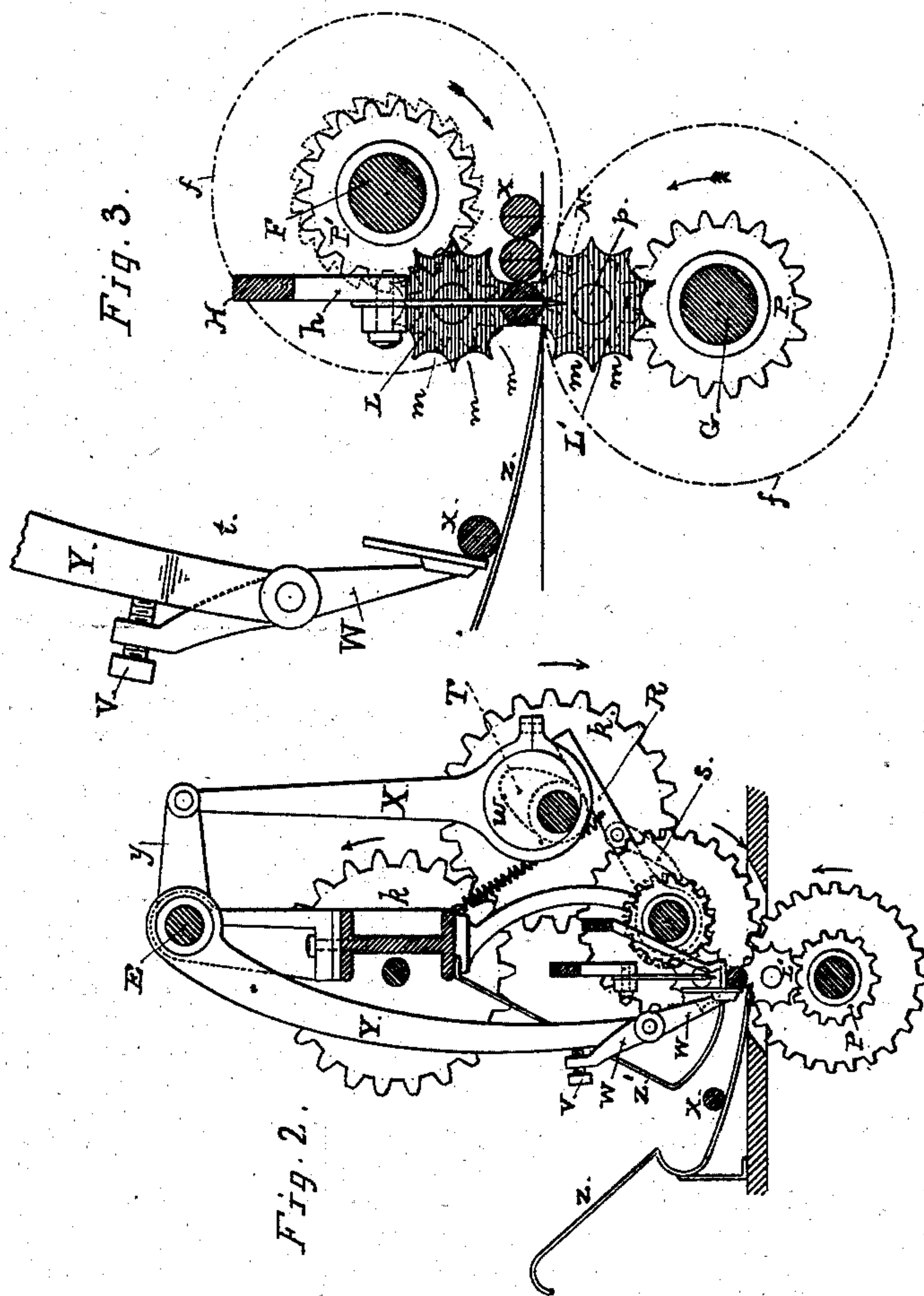
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UNITED STATES PATENT OFFICE.

GEORGE GRISEL, OF SAN FRANCISCO, CALIFORNIA.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 257,940, dated May 16, 1882.

Application filed September 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEORGE GRISEL, of the city and county of San Francisco, in the State of California, have made and invented certain new and useful Improvements in Sewing-Machines for Sewing together Stalks of Tule-Grass and other like Plants; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the accompanying drawings.

My invention relates to a sewing-machine for uniting together in parallel row by lines of stitches a number of stalks of tule or other similar plants in the manufacture of matting, carpet-lining, and like productions.

The object of my invention is to dispense with hand-feeding in such machine, by which I both greatly increase the working capacity of the machine and improve the quality of its work.

My improvements, as hereinafter more particularly described, consist, first, in the combination, with a pair of grooved or fluted feed-rollers rotating uniformly together and toward each other with an intermittent movement, of a feeding device consisting of a vibrating or oscillating finger having a movement alternately toward and away from the feed-rollers at one side thereof, by which the stalks are moved or carried forward and presented one at a time in a position to be caught by the rollers and by them carried beneath the needle and held to receive the action of the sewing mechanism.

It consists, also, in a sewing-machine having a gang of needles, each provided with a stitch-forming and thread-controlling mechanism, and operating to sew parallel rows of stitching at required distances apart, and a pair of feeding-rollers and an automatic feeding-finger applied and arranged at each needle for moving or feeding forward a length of stalk in a regular manner to be caught and penetrated simultaneously by all the needles of the gang.

Referring to the accompanying drawings, Figure 1 is a front elevation of my improved machine, showing the connection and combination of the needle-operating mechanism and the automatic feed device. Fig. 2 is a side elevation, in detail, of the feed device and the

mechanism by which I produce the movement of the feed-rollers and the vibrating finger. Fig. 3 is a side view, in detail, of the feed-rollers and the vibrating feed-finger.

Upon opposite sides of a work-supporting table or surface, A, I fix two goose-necks or standards, B B, to support and afford bearings for the upper works above the table, which consist of the principal driving-shaft C, the needle-operating shafts D D, the rock-shaft E, that actuates the feeding-fingers, and the shaft F, that gives motion to the feed-rollers.

Below the table is a secondary shaft, G, that carries and operates the lower one of each set of feed-rollers. This shaft is held in brackets g g and driven from the shaft F by means of the gears f f.

Beneath the table also will be situated the mechanism that controls the under threads and operates, in conjunction with the needles, to form stitches; but as this part of the sewing mechanism forms of itself no part of my present invention and can be readily supplied and connected with the other parts and operative mechanism by any person skilled in the construction of sewing machinery, I shall not describe it more particularly.

The needle-arm in this machine consists of a horizontal bar, H, having needle-clamps h h, at distances apart according to the number of needles required for the work, to carry and work the needles i i. To give this needle-carrying bar the required reciprocations I secure it to the ends of the vertical slides J J, that are held in bearings j j, and have a reciprocating motion derived from the shafts D at each side of the machine. These two shafts are driven with a uniform motion from the principal shaft by means of the gears k k, and to obtain the proper movement of the slides I make use of the ordinary heart-cam and roller, or any othersuitable mechanism. The gang of needles is thus operated to pierce the stalk at several points in its length at or near each end and midway at one, two, or more points, as required by the length of the stalk or the character of the work being turned out, and to carry through the upper threads for simultaneous formation of stitches at each needle.

The stalks x, to be united by lines of stitches,

are presented one at a time to the needles by the action of the feeding and clamping rollers L L', which are placed at each needle in pairs, one below the table A, but projecting and working through a slot at one side of the needle-aperture, and the other one of the pair situated above and in position perpendicularly over and in the same plane with the first one. The rollers of each pair are geared together to run with an uniform movement toward each other, and their faces have an equal number of concave grooves, *m m*, extending around the whole circumference and forming a series of longitudinal channels semicircular, or nearly so, in cross-section. As these rollers have the same number of grooves and are moved uniformly together, they act to seize the stalk as it is presented and embrace it above and below, as they rotate a sufficient distance to bring the contiguous grooves of the roller in line perpendicularly. The axes of these rollers are placed substantially in a plane with the line of movement of the needle, so that when any two grooves *m* of the pair come opposite each other the path of the needle shall run diametrically through the circle inclosed between the concaves or grooves in the faces of the rollers, and when a stalk is held in this space and embraced by the grooves, as shown in Fig. 3 of the drawings, the needle shall pass substantially through the thickest part of the stalk. At each descent of the needles these rollers have no movement of rotation, but are held stationary until the needles have descended and passed upward again out of the stalk, and at such time they act as clamps to hold and present the stalk for the operation of the sewing mechanism. The required rotation and these intervals of rest are produced by the mechanism shown in Figs. 2 and 3, and seen also in the general view, Fig. 1 of the drawings. The roller L' below the table turns on a stud, *p*, held in the bracket *g*, and it has a pinion, N, which meshes with a gear, P, fixed on the lower shaft. The upper roller, L, is carried in the same manner by a stud, *q*, in a bracket, *r*, and is driven by means of the pinion N' and the gear P' on the upper shaft. These two shafts are geared together to move the pairs of rollers and the entire series uniformly together.

To give the intermittent rotation I employ the ratchet-wheel Q on the end of the upper shaft, F, and a rocking lever, R, that carries a pawl, *s*, and is worked by means of the revolving cam T, carried by the principal shaft, the movements of the lever being caused to turn the ratchet-wheel a certain distance forward at each revolution of the shaft, as will be readily understood from the drawings. These parts are so timed with respect to the revolutions of the needle-operating shafts and the reciprocations of the needle-bar that the ratchet-wheel is caused to turn the feed-rollers forward the distance of one groove at each movement upward of the needle, by which one stalk is

thus presented and held in position for the stitching mechanism of each reciprocation of the needle.

To feed the stalks automatically into the feed-rollers, I provide a device which operates to seize or engage with the stalks one at a time and move them forward into position to be caught by the grooved rollers. This device consists of a feeding-finger, W, on the end of a vibrating or oscillating arm, Y, and having a movement alternately toward and away from the front of the rollers. This movement is effected by means of the eccentric *w* upon the principal shaft, the rod *x'*, the rock-shaft, and the projecting arm *y*, to which the end of the rod *x'* is connected, the vibrating arms Y being fixed to this rock-shaft, so that the whole set of fingers are moved simultaneously by the one eccentric.

As before stated, I employ in my machine a set of feed-rollers at each needle of the gang. I therefore operate one of these feeding-fingers in front of each needle for the purpose of carrying the length of stalk regularly forward and bringing it into position to be properly grasped by each set of rollers. This insures penetration of all the needles of the gang into the center or thickest part of the stalk.

Just at one side of the path of the finger W I place in front of the rollers L L' a curved guide-wire, *z*. These wires are fixed above the table A, with a sufficient inclination toward the rollers to give the stalks, when laid on the upper end, a start or impetus downward toward the rollers L L'. The lower portion of these guide-wires is carried forward in a curve approaching or coinciding with the path described by the end of the feed-finger, and the stalk is held by them directly in the path of the feeding-finger. Their position is such that in its backward movement each feed-finger slips over and past the stalk, and is brought on the return movement behind the stalk and in a position to carry it into the space between the two rollers. Over this wire *z*, I place an upper guide-wire, *z'*, and between these two wires the stalk is perfectly guided and directed into place and into line with the concave grooves in the feed-rollers.

The yielding movement of the finger to allow it to pass by the stalk and get into position behind it is provided for and effected by the construction shown in Figs. 1 and 3, where the feed-finger W is pivoted in the forked extremity of the arm Y, and a light spring, *n*, having one end fixed to the pivot *w* and the other end to the bar W, serves to hold the finger-bar in line with the arm Y, and yet allows it to turn and yield in passing over the stalk on the backward movement. By means of the set-screw V, working in the upper end of the finger-bar and bearing against the top of the arm Y above the pivot, I can set the lower end of the finger W more or less forward and adjust it with respect to the movement of its operating-arm Y so that it will be brought up

against the front of the feed-rollers sooner or later in its forward movement, to compensate for lost motion or wear of parts or the size of the stalks. This will be readily understood by referring to Fig. 3 of the drawings.

The operation together of these parts and mechanisms will be as follows: The stalks to be sewed or united laterally together are introduced one at a time by an attendant, who places a stalk upon the upper end of the inclined guides, where it slides down upon the curved portion of the wires in front of the feed-rollers. As the feeding-fingers move backward their ends then slip over and get into position behind the stalk, and upon the return movement the fingers carry the stalk forward and into the feed-rollers. As this movement of the feeding-fingers is completed the feed-rollers rotate and the opposing concave grooves in the faces of every two rollers close together around the stalk, and by their revolution together carry it forward under the needles. Upon reaching this position the rollers stop and hold the stalk at rest while the needles perform their office of penetrating and carrying their threads through the stalk for engaging with the stitch-forming mechanism beneath; but as the needles descend the fingers move back to take another stalk, and during the upward movement of the needles the fingers begin to feed forward, so that by the time the points of the needles are clear of the stalk being sewed the succeeding stalk will be in position to be caught between the feed-rollers. Each rotating movement of the feed-rollers therefore takes a stalk in at one side as the preceding sewed stalk is discharged at the other side upon the table behind the rollers. The feeding thus takes place automatically, and the stalks are introduced and held to the needles uniformly and in regular rows. There are no special care and attention required on the part of the attendant in placing the stalks, as the fingers perform all the work of bringing each stalk into parallel position to be caught simultaneously by all the feed-rollers.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for sewing together stalks of tule-grass and other like plants, the combination, with a reciprocating needle, of a pair of grooved feeding and clamping rollers, arranged relatively to the needle substantially as described, and having an intermittent rotation, for the purpose set forth.

2. In a machine for sewing together stalks of tule-grass and other like plants, the combination, with the reciprocating needle-bar carrying a gang of needles, of the sets of grooved

feeding-rollers L L', having an intermittent rotation and a simultaneous movement together, by which a length of stalk is brought regularly forward in line with and beneath the needles of the gang for simultaneous penetration, substantially as hereinbefore described.

3. In a machine for sewing together stalks of tule and other like plants, the combination, with a set of grooved feeding-rollers, L L', having an intermittent rotation, of a vibrating or oscillating feeding-finger applied to operate substantially as described, for the purpose set forth.

4. In combination with the vibrating or oscillating arm Y, the yielding finger W, having a turning movement in the backward motion of its arm, but a rigid position at the forward motion, substantially as described, for the purpose set forth.

5. The feeding-finger W, pivoted on the end of its operating-arm Y, and having a spring to hold and to return it to its working position with respect to the arm, and an adjustable stop, substantially as described, for the purpose set forth.

6. The combination, with the intermittently-rotating feeding-rollers and the vibrating feeding-fingers, of the inclined guides z, substantially as described, for the purpose set forth.

7. In a machine for sewing together stalks of tule and other like plants, the combination, with the work-supporting table or surface, of the grooved feed-rollers L L upon the shaft F, held in bearings above the said table, the similarly-grooved rollers L' L' upon the shaft G, beneath the table, the gears connecting the said shafts together, and the mechanism for giving said shafts intermittent rotation simultaneously toward each other, consisting of the ratchet-wheel, the pawl, and its operating-lever, and the cam on the shaft, substantially as described, for the purposes set forth.

8. The herein-described machine for sewing together in parallel rows stalks of tule-grass, consisting of the work-supporting table or surface, the standards at each end, the motor-shaft, the shafts operated with an intermittent rotation for actuating the sets of feed-rollers, the grooved feed-rollers arranged in pairs upon said shafts, the rock-shaft carrying and operating the vibrating feeding-fingers, and the needle-operating shafts and the horizontal needle-carrying bar, combined to operate in the manner and for the purpose set forth.

Witness my hand and seal.

GEORGE GRISEL. [L. S.]

Witnesses:

EDWARD OSBORN,
W. F. CLARK.