No. 759,199. PATENTED MAY 3, 1904.

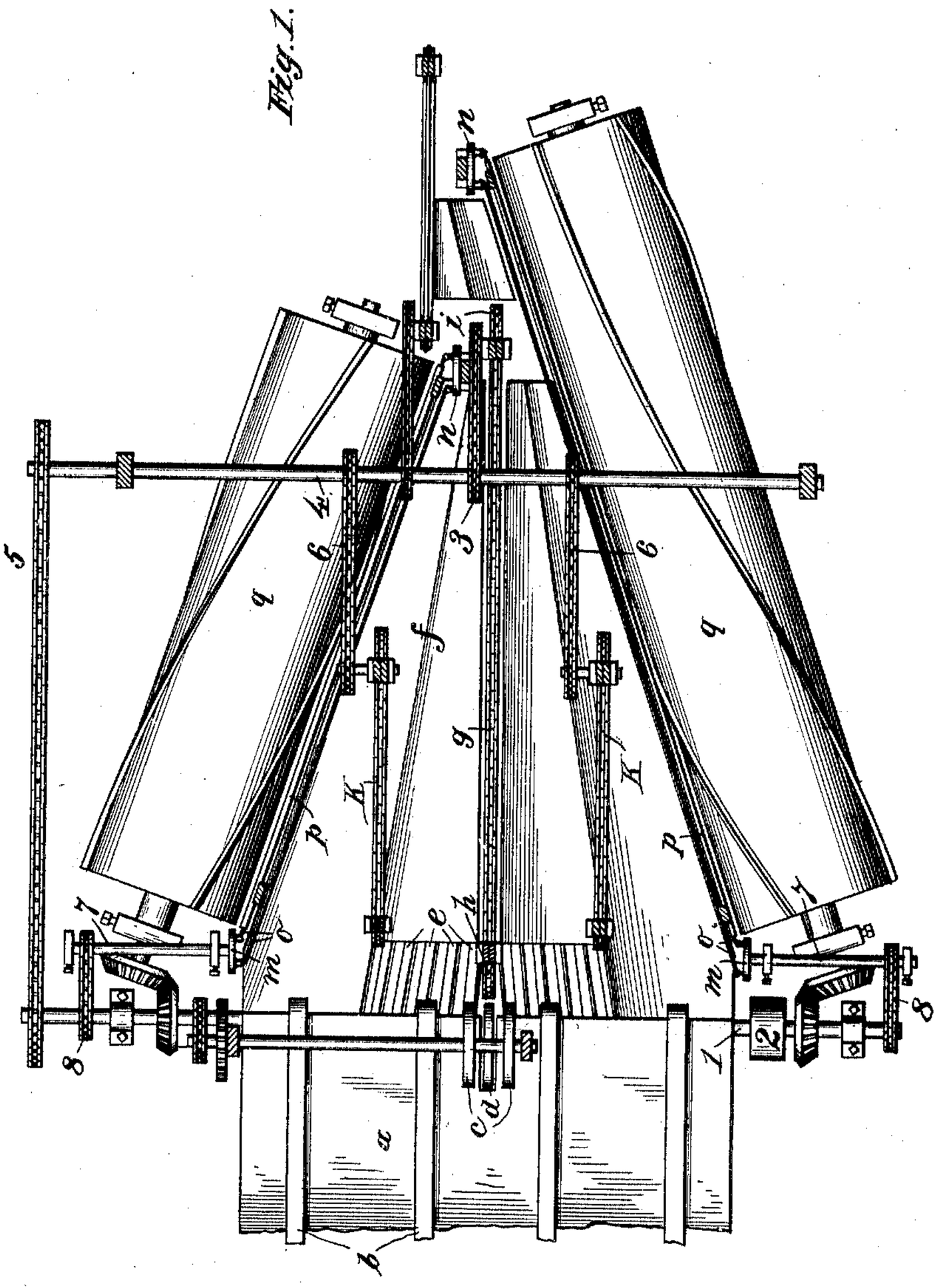
W. A. & A. M. SHELY.

FEEDING MECHANISM FOR MACHINES FOR TREATING FIBROUS MATERIAL.

APPLICATION FILED JAN. 26, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

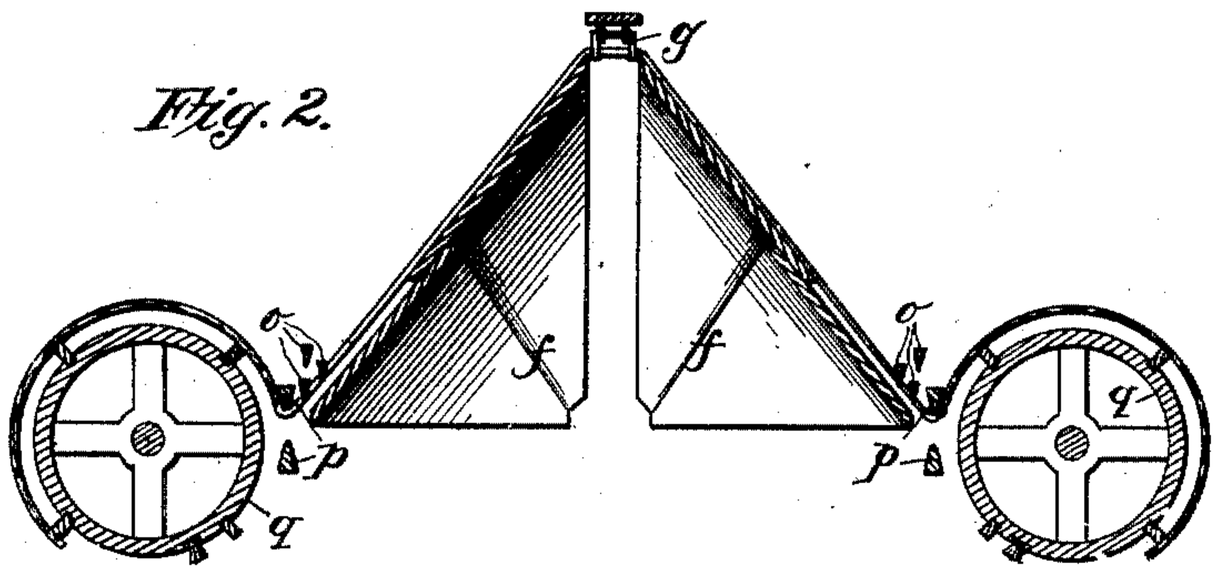
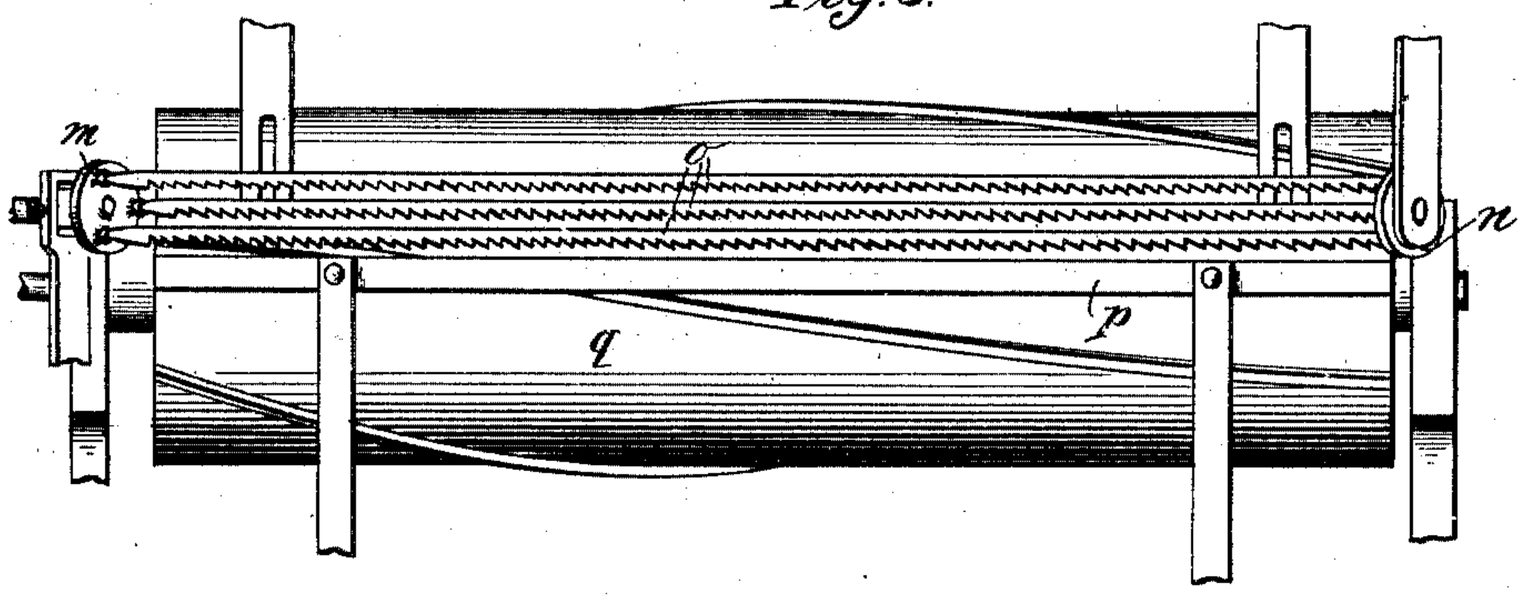


Fig. 3.



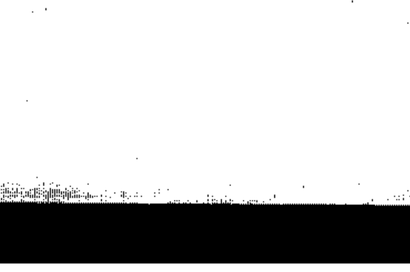


Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM ADONIRAM SHELY AND ALDA MERRILL SHELY, OF CHICAGO, ILLINOIS.

FEEDING MECHANISM FOR MACHINES FOR TREATING FIBROUS MATERIAL.

SPECIFICATION forming part of Letters Patent No. 759,199, dated May 3, 1904.

Original application filed March 3, 1903, Serial No. 184,993. Renewed December 12, 1903. Divided and this application filed January 26, 1904. Serial No. 190,692. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM ADONIRAM SHELY and ALDA MERRILL SHELY, both citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Feeding Mechanism for Machines for Treating Fibrous Material; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to stalk-feeding mechanism for machines for breaking, scutching or cleaning, or otherwise treating fibrous material—such as hemp, flax, jute, sisal, and other fiber-yielding growths.

The principal object is to provide simple and exceedingly efficient mechanism for moving or assisting the movement of transversely-arranged material laterally through such a machine or along or past the breaking, scutching, or fiber-working mechanism or instrumentalities thereof, keeping the stalks properly strung out lengthwise or in approximate parallelism, and holding them in position while undergoing operation by such mechanisms and preventing bunching or disarrangement of the stalks during their passage through the machine.

A practical embodiment and utilization of our improved feeding devices is illustrated and described, though not specifically claimed, in our prior application for patent, Serial No. 184,993, originally filed March 3, 1903, and renewed December 12, 1903, of which the present application is a division. In said prior application we have described and claimed an improved machine for breaking and scutching or cleaning fibrous material having opposite obliquely-related breaking and scutching mechanisms and an intermediate feed-platform across which the fibrous stalks to be treated are arranged transversely and over or along which they are moved laterally, so that as the stalks pass through the machine they are properly presented to the action of such breaking and scutching mechanisms and treated thereby progressively from their ends toward their medial portions. In said particular machine the stalks are moved along the platform principally by a suitable carrier or carriers, such as a toothed chain or chains, and in connection therewith feeding devices such as claimed herein are employed beside the breaking and scutching mechanisms to assist the lateral feed of the stalks, prevent displacement thereof, and keep their ends in position during the breaking and cleaning operation. For explanatory purposes we illustrate such a machine here with our invention embodied therein in a similar form and relation; but it will be understood that while admirably adapted to such or similar uses the invention is also susceptible of general application, may be used in different relations, and is capable of embodiment in different forms, according to the construction of the machine in which it may be incorporated and the particular purpose for which it may be designed.

The invention will first be described in the accompanying drawings, which are to be taken as a part of this specification, and will then be pointed out more particularly in the annexed claims.

In said drawings, Figure 1 is a top plan view of a breaking and scutching machine equipped with feeding mechanism embodying our invention. Fig. 2 is a diagrammatic representation of a vertical transverse section through the main portion of the machine, showing the fibrous material under treatment. Fig. 3 is a side elevation of one set of breaking and scutching mechanism and auxiliary stalk feeding and holding devices or gyratory feed-bars. Fig. 4 is an enlarged detail view of the driving-disk for said gyratory feed-bars.

The letter *a* designates a feed-table along which hemp, flax, or other fibrous stalks are fed laterally by carriers *b* to the feed-platform *f* and opposite breaking and scutching mechanisms. In this instance the feed-platform has opposite obliquely-related or rearwardly-converging edges along which the breaking and scutching mechanisms are arranged and

has oppositely-inclined sides forming a medial ridge, and hence in order to cause the stalks to conform to the shape of said platform and hang down upon its opposite inclined sides means are shown in connection therewith for primarily breaking or cracking the stalks at their centers, such means being located at the delivery end of table *a* and comprising a pair of disks *c*, coacting with an intermediate lower disk *d*, between which and the upper disks the stalks are passed. A space bridged by fingers *e* is shown between the rear end of table *a* and front end of platform *f;* but this feature is used principally because of provision for adjusting the pitch of the platform, as described in our aforesaid prior application, Serial No. 184,993, and has therefore no special bearing on the present matter. The stalks pass rearward from table *a* between the coacting disks *c* and *d* onto the feed-platform *f*, and having been thus centrally cracked the medial broken portions of the stalks fit over the ridge of the platform, while their opposite halves or end portions rest naturally upon its inclined sides, as represented in Fig. 2. The stalks thus lying athwart the platform are moved laterally along the same by suitable feeding mechanism, as hereinafter described, and their opposite end portions are thus presented to the action of the breaking and scutching mechanisms progressively toward the centers of the stalks.

The mechanisms illustrated in this particular instance for treating the fibrous material consist of break-bars *p* and coöperating breaking and scutching devices, the latter in the form of revolving blades or rotary ribbed cylinders *q*. The mode of operation is clearly represented in Fig. 2. A pair of break-bars are arranged one above another along each side or edge of the platform and substantially parallel therewith, so that the stalks lying athwart the platform project between said break-bars and pass along between them, said break-bars thus serving as stationary guides for the stalks, though only the upper or lower break-bars, according to the direction of rotation of the cylinders *q*, serve the function of actual breakers. This breaking and scutching mechanism is fully described and claimed in our aforesaid application, Serial No. 184,993, and is described here, of course, merely for explaining the operation of the particular machine represented and for illustrating a useful application of our present invention. The shafts or axles of the cylinders *q* are shown in Fig. 1 connected by bevel-gearing with a main driving-shaft 1, having a pulley 2 for application of power.

For feeding the stalks laterally along the platform *f* we have illustrated a central carrier *g*, traveling along the ridge of the platform, intermediate carriers *k*, arranged at opposite sides of the central carrier along the wider part of the platform, and in connection therewith stalk feeding and holding devices consisting of gyratory feed-bars *o*, arranged alongside the break-bars. As shown in Fig. 1, the central carrier *g*, which may be a toothed feed-chain, passes around drums or sprockets *h* and *i*, located, respectively, at the apex and rear end of the platform, so that its stalk-engaging run travels along the ridge. The rear carrier-sprocket *i* is shown connected by suitable chain-and-sprocket gearing 3 to an overhead shaft 4, driven from the main driving-shaft 1 by chain-and-sprocket gearing 5. The carriers or feed-chains *k* also pass around suitable drums or sprockets, the rear ones of which are represented connected by chain-and-sprocket gearing 6 with said overhead shaft. Any suitable feeding mechanism may, however, be employed in connection with the feed-bars *o*, so far as the purposes of our present invention are concerned.

Referring now to the gyratory feed-bars *o*, in this case a set of such bars is shown arranged beside each set of break-bars and cooperating mechanisms substantially parallel therewith and above the lower outer edge of the platform. This arrangement, while possessing certain special advantages, is not, however, essential, since the feed-bars may be used elsewhere and in different relations, serving either as principal or supplementary feeding instrumentalities. One or two bars may be employed for each set, though in the relation illustrated three are found most desirable and are therefore represented. The feed-bars of each set are shown pivotally connected at their front ends to the face of a rotary driving-disk *m*, represented mounted on a shaft 7, driven by chain-and-sprocket gearing 8 from the main driving-shaft 1. This disk is set at an angle to the feed-bars and related break-bars, so that in revolving with the disk the feed-bars are given a threefold movement with respect to the platform—a backward-and-forward, falling-and-rising, outward-and-inward movement. In other words, the feed-bars may be said to revolve in a reciprocatory manner. The rear ends of the feed-bars are shown secured to the back of a correspondingly-arranged disk *n*, though they may be otherwise suitably supported to permit this gyratory movement, and the paths of movement of their rear ends need not correspond exactly with the paths of movement of their front ends. We do not, of course, restrict ourselves to the specific means represented for operating the feed-bars. These feed-bars feed the stalks in a twofold direction—toward the breaking and cleaning mechanism and toward the rear or finishing end of the machine. They also prevent bunching or displacement of the stalks during their passage through the machine, and in the relation in which they are employed in the illustrated machine they hold the ends of the stalks or portions thereof undergoing treatment in position during the

breaking and cleaning operation. For these purposes the feed-bars are found exceedingly efficient and are deemed the best mechanism devised therefor. The lower edges of the feed-bars are preferably toothed or serrated, so as to bite or engage the stalks more firmly and positively.

Our invention is believed to be novel not only in the particular art to which it is herein shown applied, but also in the entire field of mechanics. As before stated, it is susceptible of wide application and use in different relations. It is adapted for feeding laterally as well as for pulling out lengthwise any kinds of fibrous stalks, stocks, leaves, grasses, or material of similar formation, and hence the expression "stalks" employed in the annexed claims is to include any material to which the invention is capable of application.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a longitudinally-disposed feed-bar having a reciprocatory movement across the stalks and adapted to engage them only when moving in one direction.

2. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a longitudinally-disposed feed-bar having a circuitous reciprocatory or backward-and-forward, falling-and-rising movement across the stalks, said feed-bar engaging the stalks when moving in one direction.

3. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, a feed-bar extending across the stalks, and means for imparting thereto a revolving and reciprocatory movement, said feed-bar engaging the stalks during one phase of such movement.

4. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a longitudinally-disposed feed-bar extending across the stalks and having a revolving movement, said feed-bar engaging the stalks during one phase of such movement.

5. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a feed-bar extending across the stalks and having a movement in a twofold direction with respect thereto, said feed-bar engaging the stalks during one phase of such movement.

6. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a feed-bar obliquely disposed to the stalks and having a movement in a twofold direction with respect thereto, said feed-bar engaging the stalks during one phase of such movement.

7. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a feed-bar obliquely disposed to the stalks and having a revolving and reciprocatory movement, said feed-bar engaging the stalks during one phase of such movement.

8. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a feed-bar extending across the stalks and revolving about an axis oblique to their line of movement, said feed-bar engaging the stalks during one phase of such movement.

9. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a feed-bar obliquely disposed to their line of movement and having a movement with respect thereto in a twofold direction, said feed-bar engaging the stalks during one phase of such movement.

10. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a feed-bar obliquely disposed to their line of movement and revolving about an axis also oblique to said line of movement, engaging the stalks during one phase of such revolution.

11. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and an obliquely-disposed feed-bar having a gyratory or revolving movement parallel with itself and engaging the stalks during one phase of such movement.

12. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a longitudinally-disposed toothed or serrated feed-bar having a reciprocatory movement across the stalks and adapted to engage them when moving in one direction.

13. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and an obliquely-disposed toothed or serrated feed-bar having a circuitous movement in a twofold direction with respect to the stalks and adapted to engage them during one phase of such movement.

14. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a plurality of longitudinally-disposed feed-bars each having a circuitous reciprocatory movement across the stalks and adapted to engage them when moving in one direction, said feed-bars following each other in such movements.

15. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a plurality of feed-bars extending across the stalks and gyrating or revolving in a reciprocatory manner, said feed-bars following each other,

and each engaging the stalks during one phase of its movement.

16. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and a plurality of obliquely-disposed gyratory feed-bars following one another in their movements and each adapted to engage the stalks during one phase of such movement.

17. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and an obliquely-disposed feed-bar having a gyratory movement in a circuit oblique to itself, said feed-bar engaging the stalks during one phase of such movement.

18. In a machine for treating fibrous material, stalk-supporting means, a gyratory feed-bar adapted to engage the stalks during one phase of its movement, and rotary driving element to which said feed-bar is connected mounted with its axis at an angle to said feed-bar.

19. In a machine for treating fibrous material, stalk-supporting means, a gyratory feed-bar adapted to engage the stalks during one phase of its movement, rotary disks to confronting faces of which the opposite ends of said feed-bar are pivotally attached, said disks being set with their axes at an angle to said feed-bar, and means for driving or rotating at least one of said disks.

20. In a machine for treating fibrous material, stalk-supporting means, a set of gyratory feed-bars, a rotary driving-disk mounted with its axis at an angle to said feed-bars, the ends of said bars being pivotally attached to said disk, and means for supporting the other ends of said feed-bars.

21. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and opposite obliquely-disposed feed-bars acting on opposite halves or portions of the stalks, said feed-bars having movements in a twofold direction with respect to the stalks so as to feed them in their general line of movement and also endwise.

22. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and opposite obliquely-disposed feed-bars having gyratory movements in circuits oblique to themselves, and each adapted to engage the stalks during one phase of its movement.

23. In a machine for treating fibrous material, means for supporting stalks transversely arranged to their line of movement, and opposite obliquely-disposed sets of feed-bars, the feed-bars of each set having gyratory movements about a circuit oblique to themselves, following each other in such movements, and each adapted to engage the stalks during one phase of its movement.

24. In a machine for treating fibrous material, the combination with an inclined platform across which stalks are arranged transversely and along which they are fed laterally, of a gyratory feed-bar arranged above said platform across the stalks and adapted to engage them during one phase of its movement.

25. In a machine for treating fibrous material, the combination with an inclined platform across which stalks are arranged transversely and along which they are fed laterally, of a set of gyratory feed-bars arranged above said platform across the stalks, following each other and each adapted to engage the stalks during one phase of its movement.

26. In a machine for treating fibrous material, the combination with a feed-platform having opposite inclined sides, along which stalks transversely arranged are adapted to pass laterally, of gyratory feed-bars at opposite sides thereof each adapted to engage the stalks during one phase of its movement.

27. In a machine for treating fibrous material, the combination of a plurality of bars arranged in substantially parallel relation to each other and each having a movement in a circuit oblique to itself.

28. In a machine for treating fibrous material, the combination of a set of bars arranged substantially parallel to each other, a rotary driving-disk mounted with its axis at an oblique angle to such bars, the ends of such bars being pivotally attached to such disk, and means for supporting the opposite ends of such bars.

29. In a machine for treating fibrous material, the combination of a set of bars arranged substantially parallel to each other, and rotary disks mounted at each end of such bars with their axis at an oblique angle to the bars, the ends of bars being pivotally attached to such disks.

30. In a machine for treating fibrous material, the combination of a plurality of sets of bars, each comprising a plurality of bars, and a pair of rotary disks for each set of bars each mounted with its axis at an oblique angle with relation to the bars, the ends of such bars being pivotally attached to such disks.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM ADONIRAM SHELY.
ALDA MERRILL SHELY,

Witnesses:
RAE HENION,
MARION JOHNSON.