(No Model.) 2 Sheets—Sheet 1.

J. T. SMITH.

PORTABLE FLAX OR HEMP BRAKE.

No. 494,176. Patented Mar. 28, 1893.

Fig. 1.

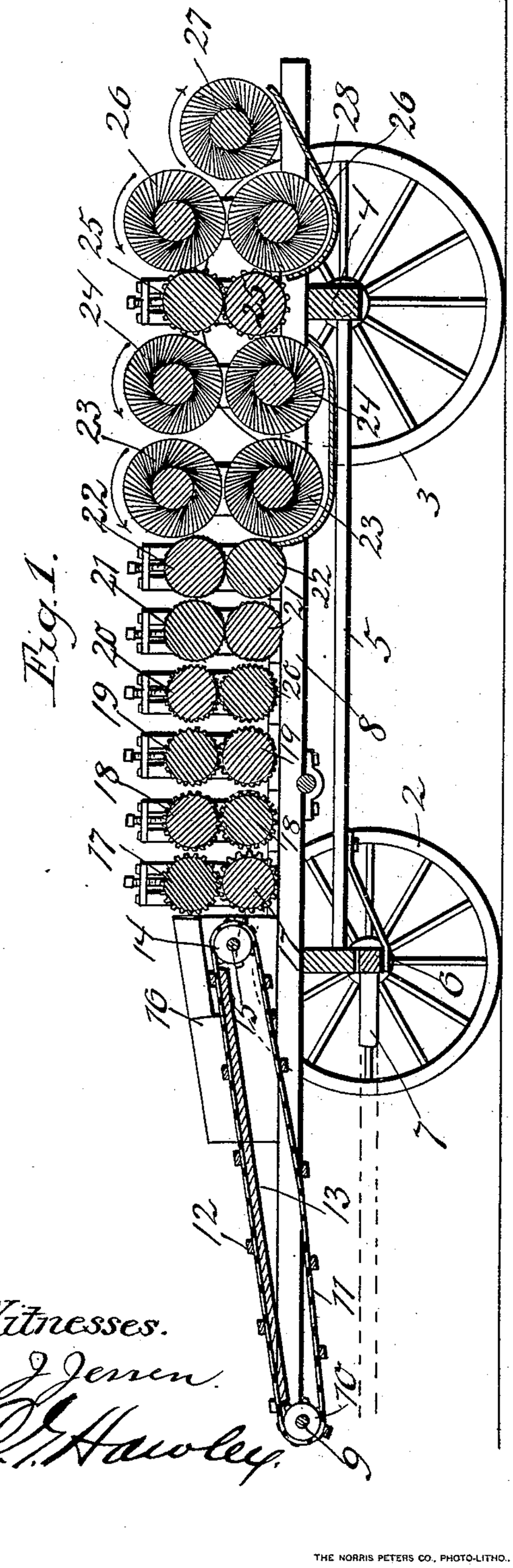
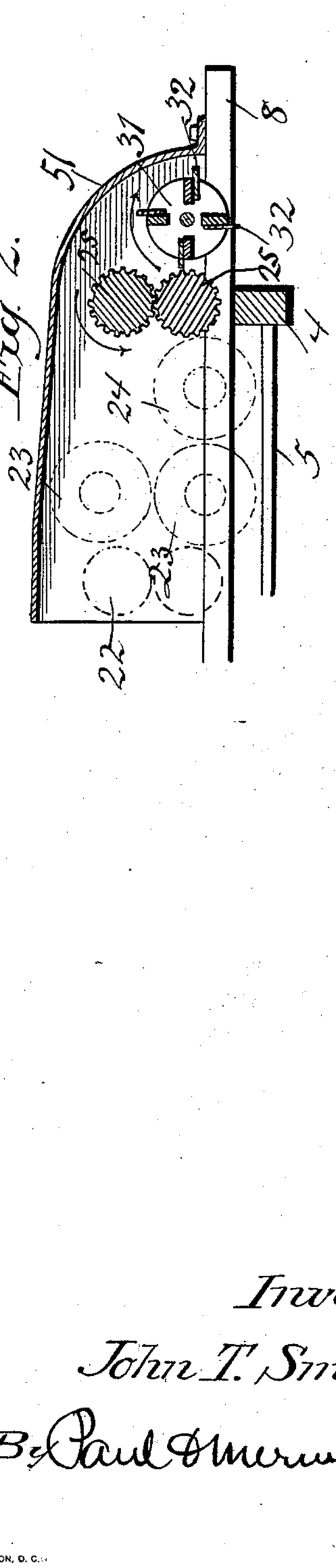


Fig. 2.



Witnesses.
J. Jerven.
C. F. Hawley.

Inventor:
John T. Smith.
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(No Model.) 2 Sheets—Sheet 2.

J. T. SMITH.

PORTABLE FLAX OR HEMP BRAKE.

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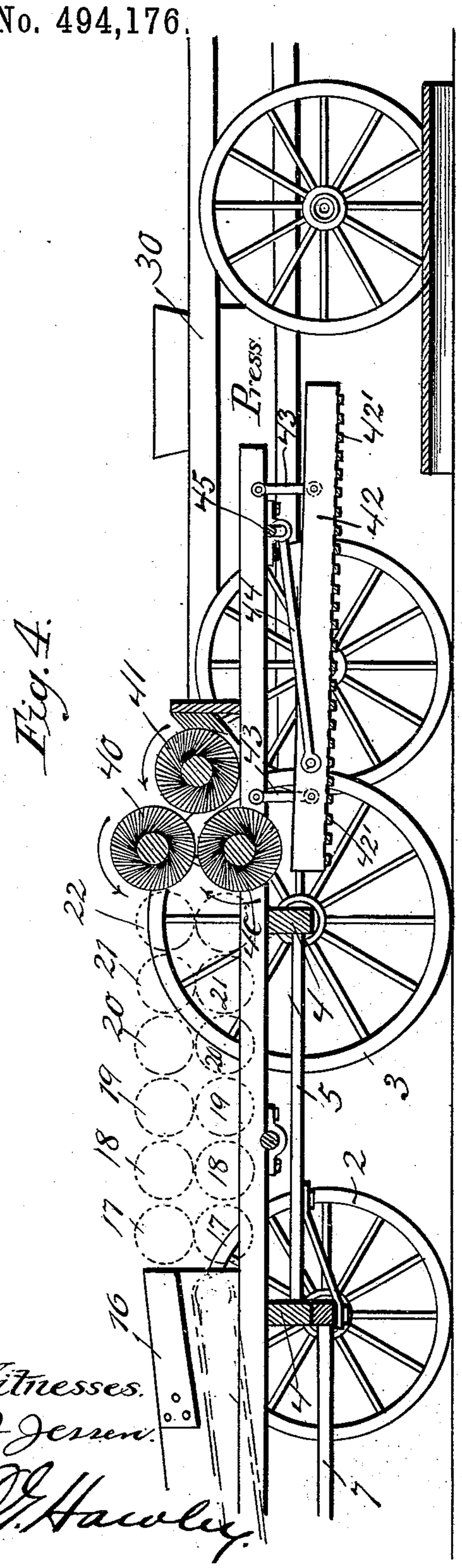


Fig. 4.

Fig. 5.

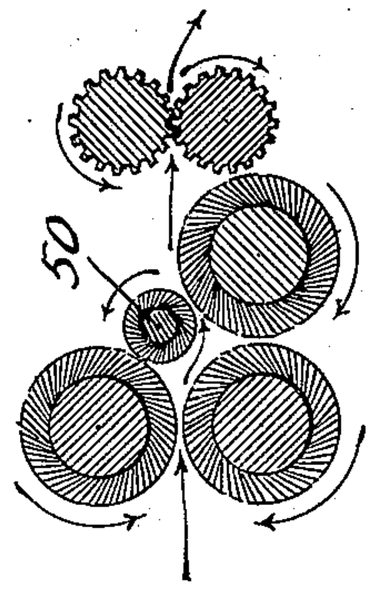
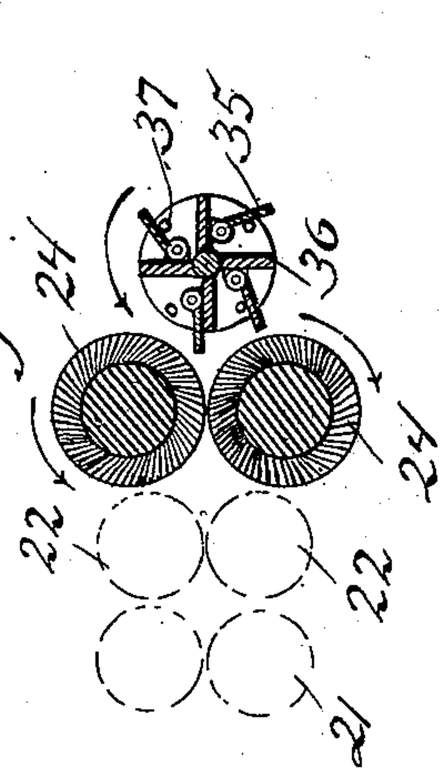


Fig. 3.



Witnesses.
J. Jerren.
O. J. Hawley.

Inventor:
John T. Smith.
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UNITED STATES PATENT OFFICE.

JOHN T. SMITH, OF HERON LAKE, MINNESOTA.

PORTABLE FLAX AND HEMP BRAKE.

SPECIFICATION forming part of Letters Patent No. 494,176, dated March 28, 1893.

Application filed April 23, 1892. Serial No. 430,415. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. SMITH, of Heron Lake, in the county of Jackson and State of Minnesota, have invented a certain Improved Portable Flax and Hemp Brake, (Case No. 4,) of which the following is a specification.

My invention relates to a portable device for treating the crude flax or hemp in the field where it is grown thereby dispensing with the expense of haulage and materially decreasing the cost of marketing flax, both for the farmer and for the manufacturer.

To this end my invention consists in a flax brake and fiber cleaner of a novel construction and mounted upon wheels in such a manner as to render the transportation of the machine easy.

The invention will be more readily understood by reference to the accompanying drawings, in which:—

Figure 1 is a longitudinal and vertical section showing a portable machine embodying my invention. Fig. 2 is a detail showing a modified construction of one portion of my machine. Fig. 3 is a still further modification thereof. Fig. 4 shows still another construction, in which a shaker is included. Fig. 5 is a modification of Fig. 2.

As shown in the drawings, 2 and 3 represent the forward and rear wheels of the machine and 4 the axle bolsters. The reach 5 extends between these bolsters and the usual king-bolt or fifth wheel 6 is provided upon the axle of the front wheels from which the tongue 7 extends. Upon the bolsters I arrange the long heavy sills 8.

At the forward end of the machine I provide the shaft 9 having bearings on the ends of the sills and carrying the sprocket wheels 10 over which the endless sprocket chain conveyer 11 runs. This conveyer has the cross slats 12 and passes up over the inclined table 13, the upper end of the conveyer working around the sprocket wheel 14 on the shaft 15.

16 represents one of the side boards, which I arrange on each side of the conveyer belt, the boards being made to converge at their rear ends so as to feed the flax straw or the hemp into the brake rolls in a compact form. The brake rolls, six pairs of which are preferably employed, are corrugated as shown and mesh with one another in pairs. Each roll is independently driven by suitable end gears on the roller shafts so that there is no side contact between the long teeth or ribs thereof, the teeth of any two rolls merely intermeshing sufficiently to crimp the long straw or hemp stocks as they pass through. Beginning with the first pair of rolls 17, 17, which have comparatively coarse corrugations, the succeeding rolls, 18, 18, 19, 19, 20, 20, 21, 21, and 22, 22, are corrugated each more finely than the preceding rolls so that as the stock passes through the woody portions and pith are broken gradually until in the last pair of rolls only short lengths of the waste part remain. Indeed this breaking is so thorough that I preferably make the lower roll of the pair 22 smooth so as to feed the stock therefrom in a thin smooth sheet into and between the pair of fine toothed carding rolls 23, 23. These rolls revolve at a speed somewhat greater than that of the brake rolls all of which move at the same speed and hence the carding rolls forcibly draw the stock from the last pair of rolls and pull out the straight fibers and at the same time strip the shives or waste portions from the fibers. From the carding rolls 23 the stock is caught by the still more rapidly moving rolls 24, 24 of the same construction as those numbered 23 and again drawn and the fiber stripped and separated. After passing through these carding rolls the thick loose sheet or layer of stock is taken up by the corrugated rolls 25, 25, which break up all of the remaining shives and compress the sheet so as to present it again to the final pair of carding rolls 26, 26 in a flat and firm form. These rolls 26 operating at a greater speed than any of the preceding parts of the machine draw out the fiber again and practically clean away all of the waste material, after which the stock passes up between the upper roll 26 and the single card or doffer 27 arranged directly in advance of the two rolls 26 and operating to carry the stock out over its upper side throwing the same from thence to the ground. Beneath the lower roll 26 and the roll 27 I arrange the curved guard plate 28 which prevents any of the fiber which may cling to the card roll 26 from falling to the ground before being subjected to the action of the doffer. In this manner the rough stock first placed upon the conveyer table, which table is long enough to permit the material to be thrown

thereon from any part of a wagon, is finally converted into a marketable quality of tow, which as indicated in Fig. 4 after falling upon the ground platform is put directly into a baling press 30 and compressed prior to being shipped to market.

In place of using the three carding rolls 26, 26 and 27 I sometimes substitute a beater 31, the same being arranged directly back of the lower brake roll 25 and having the long straight iron pieces 32, which as the beater revolves very rapidly strip the fibers and also loosen them up to allow the shives to fall out. In such a case I sometimes omit the upper carding roll 24 and merely use the lower one to draw out the stock from the rolls 23 and carry it over into the brake rolls 25 as indicated in dotted lines in Fig. 2. In such cases a small carding roll 50 as shown in Fig. 5 is used to clean the tow from the upper roll 25. A modification of this construction is shown in Fig. 3, where in place of using the fixed bars or knives 32 I provide the hinge or pivoted parts 35 upon the cross walls 36 of the beater and arrange stops 37 to limit their movement. These hinged bars will yield when striking a large mass of material thus avoiding any tearing of the stock and shortening of the fibers. A beater of this kind I usually arrange directly back of the first pair of carding rolls 23.

In Fig. 4 I show a still different construction in which I do away with the second set of brake rolls 25 and arrange the carding rolls 40 to take the stock from the last pair of the first set of brake rolls and then provide back of this pair of carding rolls the doffer 41 which draws off the top of the layer of stock and throws it down in a light, loose heap upon the inclined shaker 42 having a bottom made up of the transverse slats 42′. The shaker is hung from the sills 8 by pivotal links 43 and is operated by a connecting rod or rods 44 extending from a crank shaft 45 which is driven from a power connection from the other parts of the machine.

The machine is operated by the ordinary thrashing machine field engine, or horse power. In such construction I preferably arrange a closed cover 51 over the carding rolls as shown in Fig. 2, the object being to prevent the blowing away of the tow by wind or the damaging of the machine by rain or sun.

By the use of my machine farmers are enabled to have flax or hemp converted into a marketable form upon their own property and in the same fields where the material has been grown and afterward retted, thus reducing the bulk of material to be transported. This is especially the case where a baling press is used in connection with my machine.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a series of brake rolls, of an inclined feed table, a conveyer arranged to operate over said table and to carry the stock into said rolls, carding rolls into which the stock is delivered from the last of the brake rolls, a final stripping mechanism, and a reciprocating shaker having a perforated bottom composed of transverse slats and whereon the stock is thrown from said stripping mechanism, substantially as described.

2. The combination with a feed table and a cross slat conveyer to operate over the same, a series of diminishingly corrugated brake rolls, carding rolls revolving at a greater speed than said brake rolls and into which the material is delivered therefrom, a second pair of brake rolls, and a final stripping and shaking mechanism, substantially as described.

3. The combination with the wheels and the bolsters, of the sills 8, the pairs of diminishingly corrugated rolls mounted thereon, the feed table mounted on said wheels, the conveyer to operate over said table, carding rolls, an intermediate roll or rolls, brake rolls 25 and a beater, substantially as described.

4. The combination with the wheels, of the sills 8 mounted thereon, the series of brake rolls supported upon said wheels, the feed table, carding rolls into which the stock is delivered from the series of brake rolls, a pair of brake rolls 25, a final stripping mechanism, a shaker 42 having cross slats 43 and means for operating all of said parts, substantially as described.

5. The combination with the frame, of the wheeled support for the same, the brake and stripping rolls and the curved guard plates arranged beneath said stripping rolls, substantially as described.

6. The combination with the frame, of the brake rolls mounted thereon, the carding rolls 23, the lower card or comber rolls 24, the brake rolls 25, and the small card roll 50 arranged as described and for the purpose specified.

7. The combination with a suitable carriage, of a series of brake rolls mounted thereon, an inclined feed table also mounted upon said carriage, a conveyer arranged to operate over said table and carry the stock into said rolls, the carding rolls into which said stock is delivered from the last of the said brake rolls, a final stripping mechanism and a reciprocating shaker onto which the stock is thrown from said stripping mechanism, substantially as described.

In testimony whereof I have hereunto set my hand this 11th day of April, 1892.

JOHN T. SMITH.

In presence of—
M. S. HANSON,
T. A. DIESON.