

(No Model.)

4 Sheets—Sheet 1.

R. S. MUNGER.
APPARATUS FOR HANDLING SEED COTTON.

No. 308,788.

Patented Dec. 2, 1884.

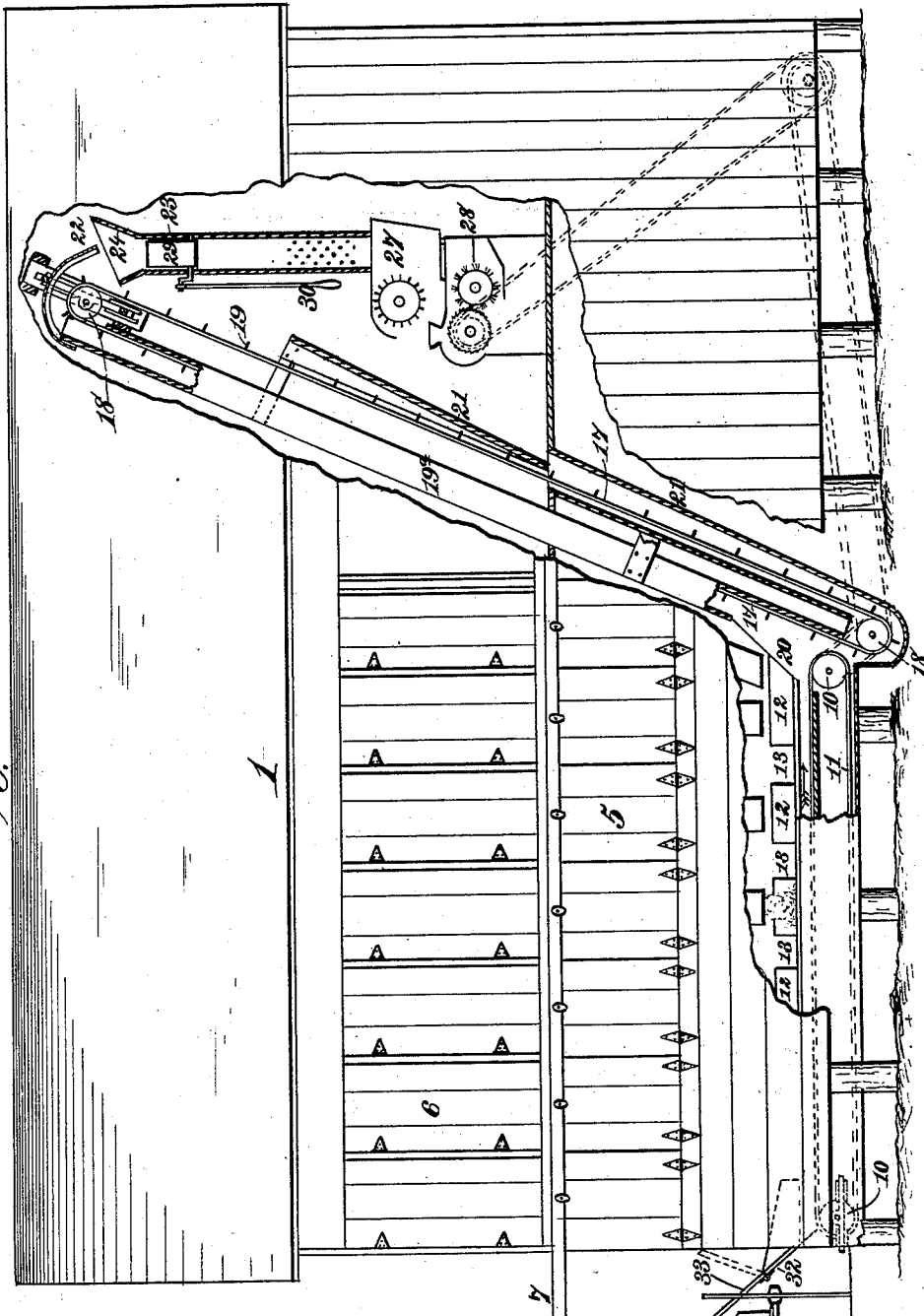


Fig. 1.

Witnesses,
Robert Everett,
John L. Coombs

Inventor,
Robert S. Munger,
 By *James L. Norris,*
Att'y.

(No Model.)

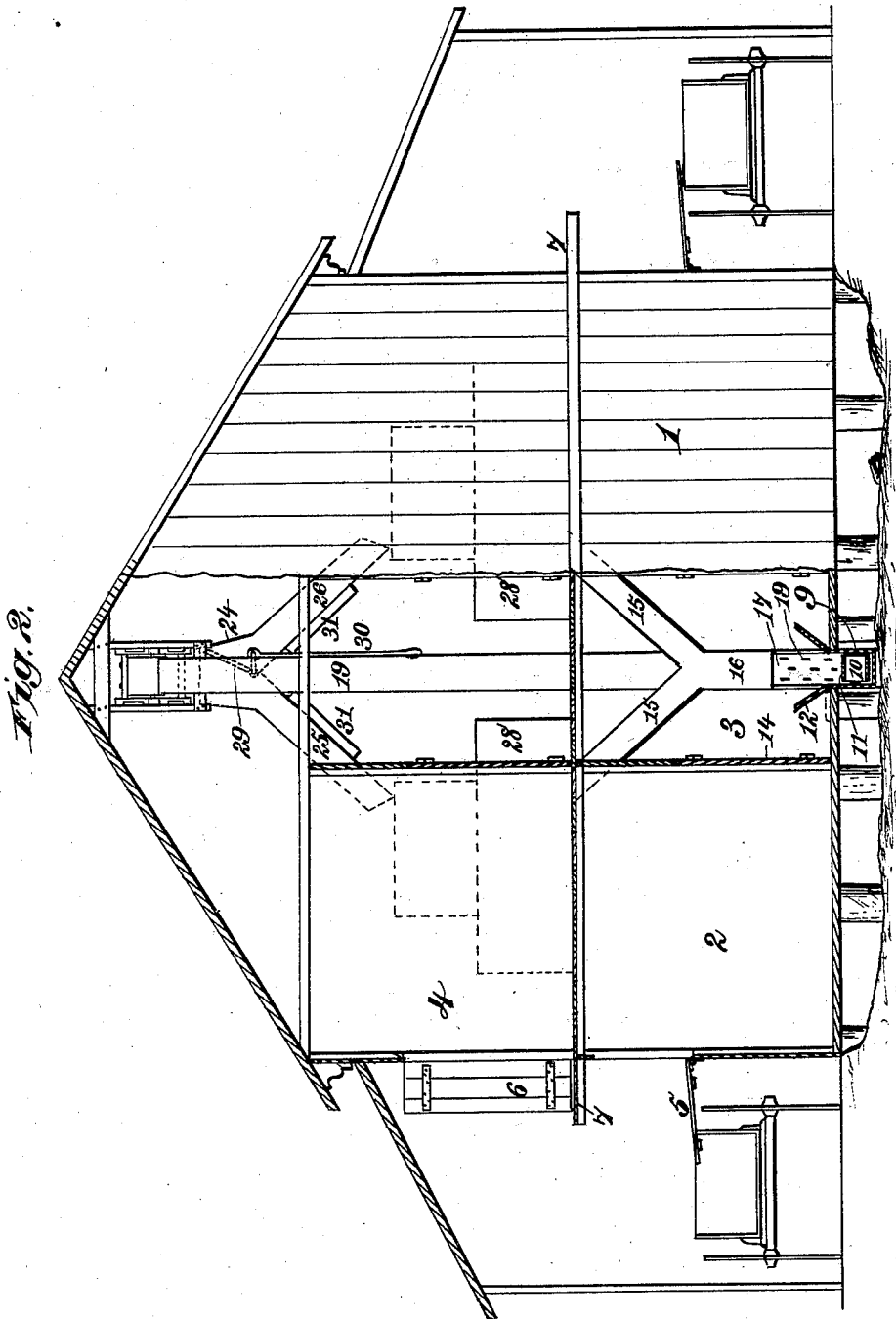
4 Sheets—Sheet 2.

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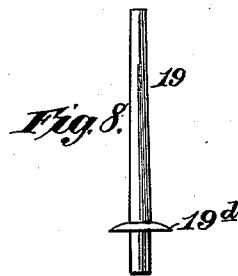
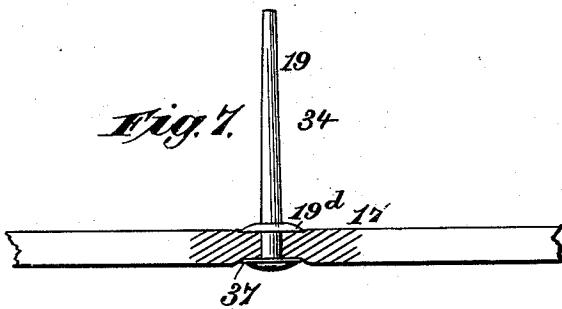
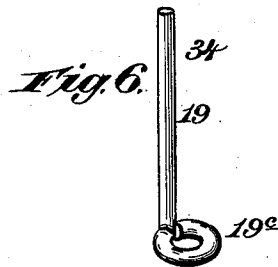
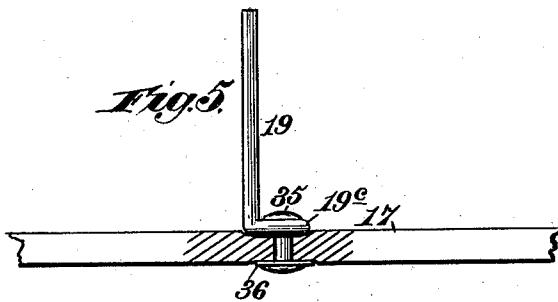
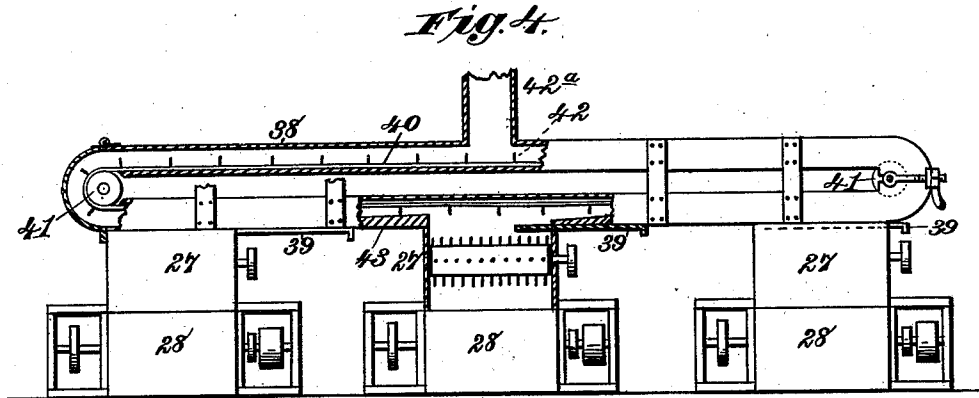
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UNITED STATES PATENT OFFICE.

ROBERT S. MUNGER, OF MEXIA, TEXAS.

APPARATUS FOR HANDLING SEED-COTTON.

SPECIFICATION forming part of Letters Patent No. 308,788, dated December 2, 1884.

Application filed May 31, 1884. (No model.)

To all whom it may concern:

Be it known that I, ROBERT S. MUNGER, a citizen of the United States, residing at Mexia, Texas, have invented new and useful Improvements in Method of and Apparatus for Handling Seed-Cotton, of which the following is a specification.

My invention relates to mechanism for handling seed-cotton, and has for its purpose to effect a substantial economy in the time and labor involved in the mode of operation heretofore employed; to secure a more perfect cleansing of the cotton from dust and similar impurities before it reaches the gin; to avoid the repeated handling of the cotton between its unloading from the field-wagon and its delivery to the gin; to provide automatic mechanism for handling the seed-cotton after it is received in the cotton-house and conveying it from any or all parts of the latter to the ginning-house or to the gins, and to secure certain improvements in the construction of said mechanism, whereby its efficiency and durability are materially enhanced.

To such ends the invention consists in the mechanism hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a view, partly in side elevation and partly in section, of a cotton-house constructed according to my invention. Fig. 2 is a view, partly in end elevation and partly in transverse section, of the same. Fig. 3 is a horizontal section of the same. Fig. 4 is a view, partly in vertical section and partly in side elevation, of a modification. Fig. 5 is a detail section of the belt, showing one manner of constructing and attaching the spikes or teeth. Fig. 6 is a detail perspective of the tooth shown in Fig. 5. Fig. 7 is a detail section showing a modified construction and attachment of the spikes. Fig. 8 is a detail of the spike shown in Fig. 7.

In said drawings, the reference-number 1 indicates the cotton-house constructed according to my invention. Within this house may be provided with one or more series of bins, 2, arranged upon either or both sides of a passage-way or space, 3, and with either construction an upper series of bins, 4, may, if desired, be superposed upon the lower. Each lower bin is provided with a door, 5, opening outward and

hinged horizontally at such a distance from the ground that when thrown down it will rest upon the side of a wagon-bed, as shown in Fig. 1, the unloading of the cotton from the wagon to the bin being thereby greatly facilitated and considerable waste avoided. When the house is constructed with two tiers or stories of bins, the upper tier may be provided with vertically-hinged doors 6, opening outward, a permanent sill-board, 7, projecting over the space between the side of the wagon and the wall of the house.

Adjacent to the inner ends of the bins 2, which are arranged along one or both of the longer sides of the cotton-house, is a space or passage, 3, having a central box or open trough, 9, at or near each end of which is placed a roll or pulley, 10, carrying an endless carrier-belt, 11. By the construction of the parts the upper web of this belt may be dropped below the flooring of the space 3, and said belt is of such width as to practically fill the trough 9 from side to side. If desired, however, the belt may run upon the floor-level and be inclosed upon each side by a guard-board.

Upon each side of the open box or trough 9, and opposite the end of each bin, is placed an inclined board, 12, which is so arranged as to form a hopper leading to the carrier-belt 11. This hopper is, however, only used in connection with the chutes leading from the upper tier or story of bins, and between the several hopper-boards 12 is left a space, 13, as shown in Figs. 1 and 3, through which the contents of the lower bins may be raked and delivered upon the belt, being taken through the doors 14, opening from the inner ends of each bin upon the lower story or tier. The upper bins communicate with the carrier-belt 11 by means of chutes 15, which lead from the opposite bins and unite in a single vertical chute, 16, through which the cotton from the upper bins, lying upon each side of the space or passage-way 3, is delivered to the belt 11. After being received upon the belt, the cotton is carried forward in the direction of the arrow in Fig. 1. As the carrier-belt 11 passes over the pulley 10 the cotton lying upon it is thrown or dropped upon an elevating-belt, 17, carried by pulleys 18. This belt is provided with suitable teeth or spikes, 19, their construction and attachment to the belt being hereinafter

described. The elevator-belt 17, which is arranged at any suitable angle with the horizontal carrier-belt 11, is inclosed over its upper or carrying surface by a casing or box, 19^a, the lower end of which is provided with a hopper-shaped enlargement, 20, to prevent the cotton which comes from the carrier-belt and is caught by the elevating-belt from being crowded or choked at the point where the two belts join. The under side of the elevating-belt is protected upon each story by a boxing, 21, which protects the operatives from contact with the spikes of the belt. This boxing is inclined at an angle converging downwardly toward said belt, whereby all danger of the spikes striking upon the end of the boxing is avoided. At the upper end the elevating-belt is provided with an apron, 22, by which the cotton is prevented from being thrown off the belt as the latter runs over the pulley carrying it. From the upper end of the elevating-belt the cotton is delivered directly to a chute, 23, having a hopper-shaped end, 24, said chute being suspended or supported in any suitable manner. Below the hopper 24 the chute is forked or divided into two diverging branches, 25 and 26, each having such an inclination that the cotton received will spout readily through the same. Each branch or fork of the chute leads to and discharges the cotton into a feeder, 27, of a ginning-machine, 28. It is evident, also, that, if desired, a third branch might be used, arranged intermediate of the two branches shown in Fig. 2, and in such case a third gin might be employed, which would be located between the ginning-machines 28.

In order to regulate the volume of cotton passing through the forks of the chute 23, a valve, 29, is hinged in the angle formed by the union of the two branches, and so arranged that it may wholly close either of said branches or may be placed vertically between them, whereby both branches are open to the passage of cotton from the chute 23 to the gins. It is evident that by slightly moving said valve by means of a lever, 30, (see Fig. 3,) connected with the bent end of its axis, the volume of cotton passing through the branches may be brought easily and completely under control. Upon the under side of each branch of the forked chute is placed a dust-box, 31, and the wall of the chute lying above said box is either perforated, slatted, or netted, to permit the dust to pass through and drop into said boxes.

In Fig. 2 I have shown the cotton as being unloaded from a suitable wagon or wagons driven up by the side or sides of the house and discharging directly into the bins. Instead of this, however, the wagon may be unloaded from the end of the house, as shown in Fig. 1, the contents being guided by a chute or trough, 32, directly to the carrier-belt 11. This method of procedure is shown also in Fig. 3. The chute 32, which projects from the end of the house, is made in two parts or

sections, one of which—viz., the outer end, 33—is hinged upon the other, so that it can be thrown out and rest against the side of the wagon, or turned up and be supported by the house-wall. The carrier and elevator belts are driven by any suitable mechanism—such, for example, as that shown in Fig. 1, wherein a belt is taken from a pulley upon the shaft which drives the gins to the lower pulley of the elevator-belt, the latter being geared by a second belt to the pulley of the carrier-belt. The elevator-belt 17 is provided at suitable intervals with teeth or spikes 34, the form and attachment thereof being shown in Figs. 5 to 8, inclusive. These spikes may be of two forms. One, (shown in Fig. 6,) consists of a straight body, 19, terminating below in a ring or eye, 19^c, lying in a plane at right angles to the body. It is attached to the belt by placing the ring upon the surface of the latter, passing a headed rivet, 35, downward through said ring and through the belt, slipping a washer, 36, over the end of the rivet, and then upsetting the latter. The other form of spike is shown in Fig. 8, and consists of a straight body provided near its lower end with a collar, 19^a. This spike is made of malleable iron, and is attached to the belt by passing that end lying below the collar 19^a through the belt, slipping thereon a washer, 37, and upsetting the end of the spike. While I prefer the latter form of spike and attachment, because of its relative cheapness, either of the forms shown and described provides a strong, durable, and efficient device, which will carry the cotton, but will not raise heavy foreign bodies, such as nails, stones, &c.

When it is desired to use a group of three, four, or more gins, I may dispense with the forked chute 25 and 26, and instead thereof employ a single spout, whereby the cotton is carried directly to a distributor, (shown in Fig. 4,) from which it is automatically distributed to the gin-feeders. This apparatus consists of a continuous casing, 38, extending over the whole series of gins, and communicating with each gin-feeder 27 by means of an opening, which may be closed either wholly or in part by a valve, 39. This casing contains an endless belt, 40, carried by pulleys 41 at each end, said belt being provided with spikes 42, formed and attached in the manner already described. The cotton, as it is received from the elevating-belt 17, passes through a single vertical spout, a portion of which is shown at 42^a, Fig. 4, and falls upon the distributing-belt 40, by which it is carried to the gin-feeders. Upon the farther side of each valve-opening the lower wall, 43, of the belt-casing is inclined upward in the direction of the movement of the belt, the upper end being carried high enough to support the belt by the contact of the ends of the spikes, while the opposite end is dropped low enough so that the sag of the belt will not cause the ends of the spikes to catch upon it. If desired, a small suction-fan may be placed in the spout to draw out the

fine dust and trash, which is not heavy enough to fall through the openings in the bottom of the spout.

It will be seen from the foregoing description that the cotton may be carried either from the bins or from the wagon directly to the gins. In both cases it is by the action of the mechanism knocked about and loosened up, separating the locks, and presenting it to the gins in a favorable condition for ginning. Moreover, if the cotton is damp, it becomes dried, in a great measure, if not entirely, during its passage to the gins. The use of this apparatus effects a large economy in handling seed-cotton, since not only can the same person feed the carrier belt and attend to the gins, but the mechanism is capable of operating with such speed as to supply the largest number of gins used in any one establishment.

By attaching the spikes directly to the belt I obtain many advantages not found in other forms of construction. The form of construction shown is simple and cheap and capable of being easily repaired, if injured. Again, if any large or heavy substance is deposited upon the belt when in motion, the flexibility of the latter will allow the spike to move sideways or backward and drop such substance down into the space below; or, in case it should be carried up with the belt, it will cause no injury to it or to the spikes. Owing to its lightness and flexibility, the belt can be run at a high rate of speed, thereby loosening the cotton to better advantage and enabling the belt to handle a much greater quantity of cotton relatively to the size of the belt. For the same reason, also, I am able to drive said belt with smaller pulleys and with a lower power.

The spikes of the belt may be made of wire bent into shape, or they may be cast and rendered malleable. I prefer the latter mode of construction, because of its cheapness.

What I claim is—

1. In apparatus for handling seed-cotton, a spike for an elevating or distributing belt, consisting of a single straight bar having a collar near its lower end, said collar being adapted to rest upon the surface of the belt, the lower end of the spike being upset upon a washer resting against its lower surface, substantially as described.

2. In an apparatus for handling seed-cotton, the combination of a cotton-house, a longitudinal box or trough therein, a horizontal conveyer in the box or trough, cotton-bins along the side of the box or trough, an elevator receiving the cotton from the conveyer, a cotton-ginning machine, a gin-feeder, and a spout connecting the upper end of the elevator with the gin-feeder, substantially as described.

3. In an apparatus for handling seed-cotton, the combination of a cotton-house, a longitudinal box or trough therein, an endless horizontal carrier-belt traveling in the box or

trough, cotton-bins along the side of the box or trough, a spiked elevating-belt receiving the cotton from the horizontal carrier, a cotton-ginning machine, and a spout connecting the upper end of the elevator-belt with the gin-feeder, substantially as described.

4. In an apparatus for handling seed-cotton, the combination, with one or more series of storage-bins, of a carrier-belt adapted to receive the cotton therefrom, a spiked elevating-belt, a forked chute receiving the cotton and provided with slatted or perforated portions, and a valve hinged in the angle between the forks of the chute and adapted to close either branch, substantially as described.

5. In an apparatus for handling seed-cotton, the combination, with a group of two, three, or more gins, of a distributor receiving the cotton and conveying it to the several gin-feeders, substantially as described.

6. In an apparatus for handling seed-cotton, the combination, with a group of two, three, or more gins, of a belt-casing opening into each gin-feeder; a spiked belt traveling within said casing, valves for closing the openings between the latter and the gin-feeders, and a spout for delivering the cotton upon the belt traveling in said casing, substantially as described.

7. In an apparatus for handling seed-cotton, the combination, with a group of two, three, or more gins, of a casing communicating with each and containing a spiked endless belt, said casing having its lower wall or floor inclined upward between the gins and in the direction of the movement of the belt, substantially as described.

8. In an apparatus for automatically handling seed-cotton, the combination, with a hinged chute communicating with the wagon, of a carrier-belt, an elevating spiked belt, a chute or spout receiving the cotton therefrom, and one, two, or more gins supplied from said chute, substantially as described.

9. In an apparatus for handling seed-cotton, the combination of a cotton-house having outwardly-opening doors, cotton-bins in the house for receiving the cotton through said doors, inwardly-opening doors at the inner sides of the bins, a traveling conveyer along the bins, an elevator receiving cotton from the conveyer, a cotton-ginning machine, and a spout connecting the elevator with the gin-feeder, substantially as described.

10. In apparatus for handling seed-cotton, the combination, with a carrier-belt and an elevating-belt by which the cotton is conveyed to the gins, of a chute leading to the carrier-belt, and having a hinged section which, when turned down, rests against the side of the wagon from which the cotton is unloaded, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

Witnesses: ROBERT S. MUNGER,
JAS. L. NORRIS,
JOS. L. COOMBS.