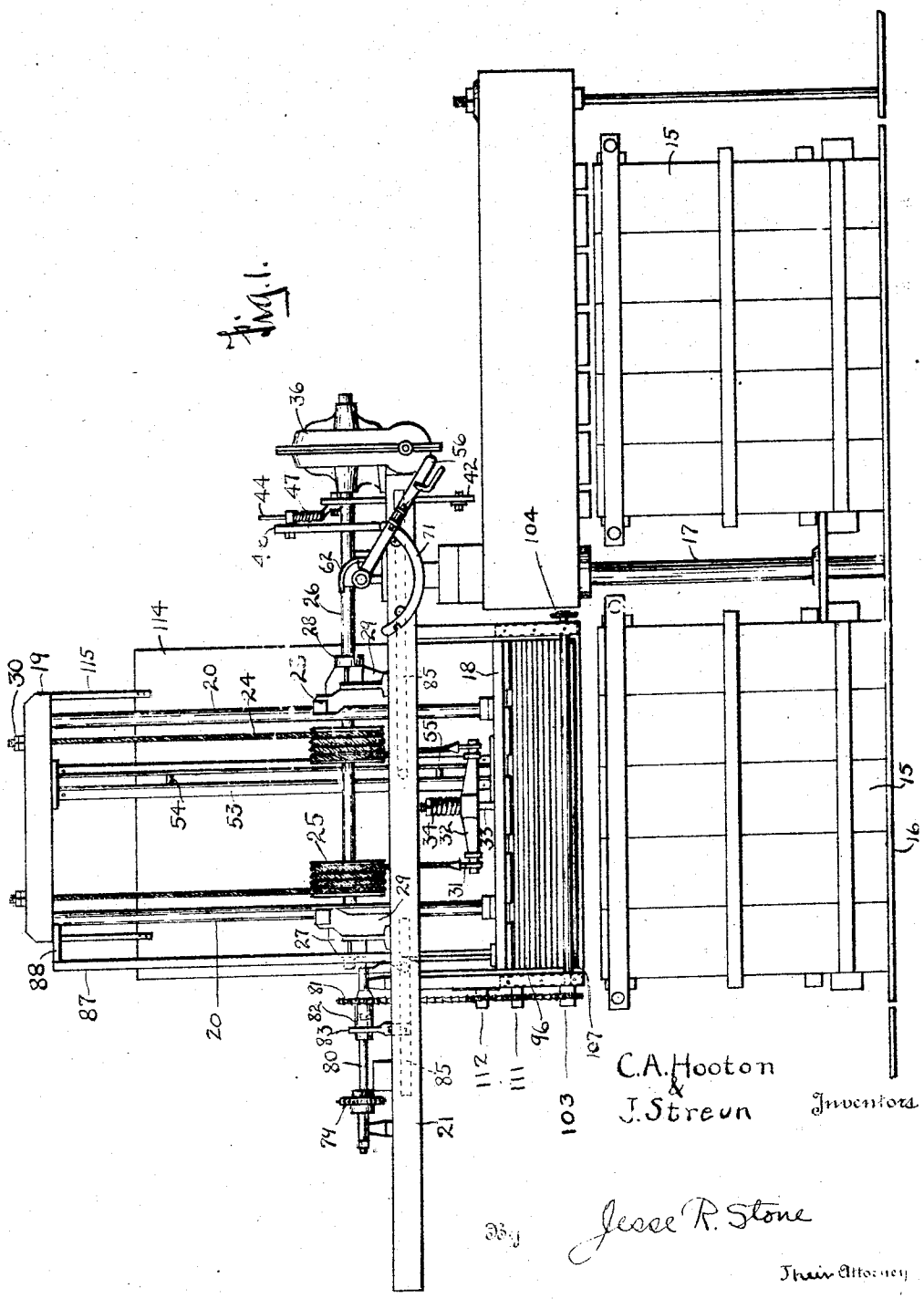
July 14, 1925. 1,545,984

C. A. HOOTON ET AL.

COTTON TRAMPER

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C. A. HOOTON ET AL

COTTON TRAMPER

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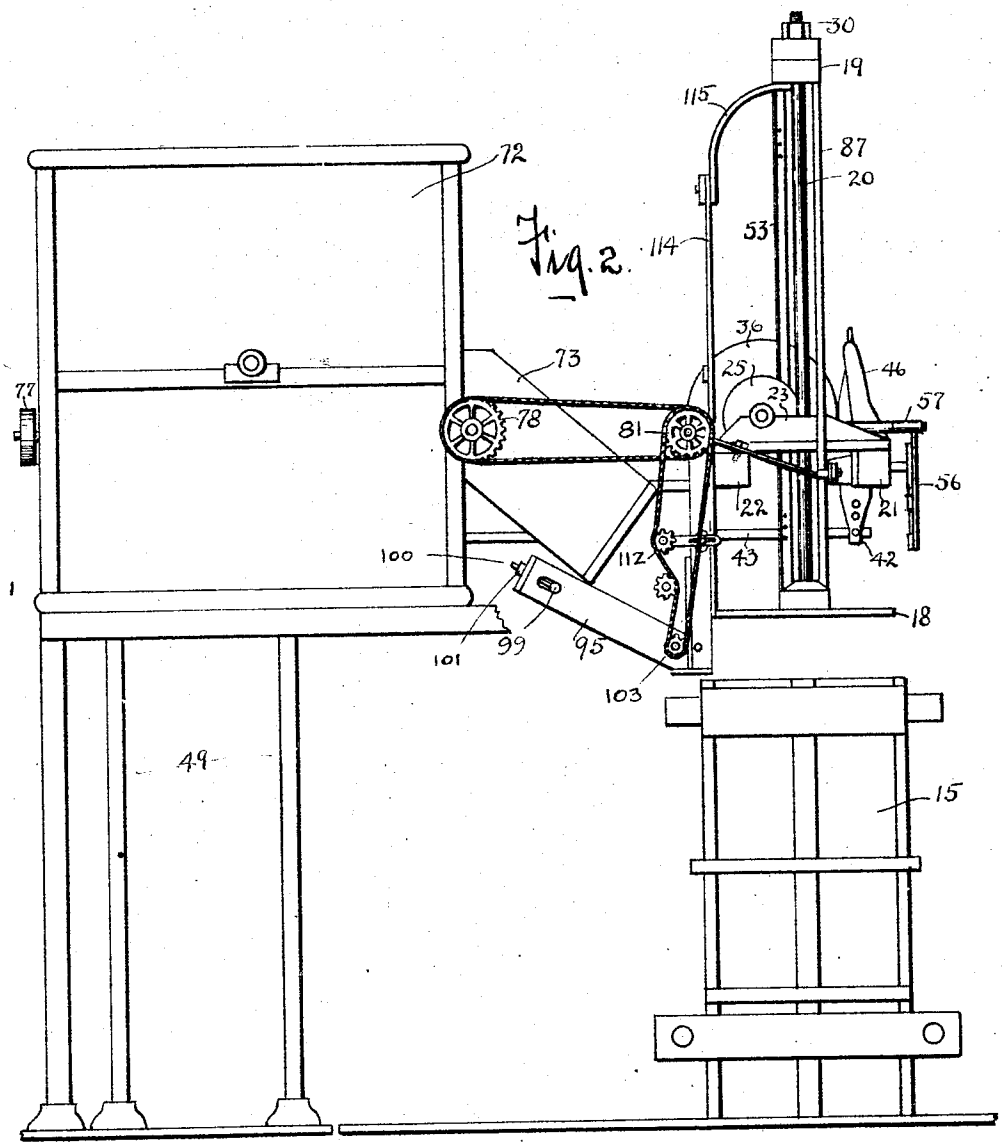


Fig. 2.

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C. A. HOOTON ET AL

COTTON TRAMPER

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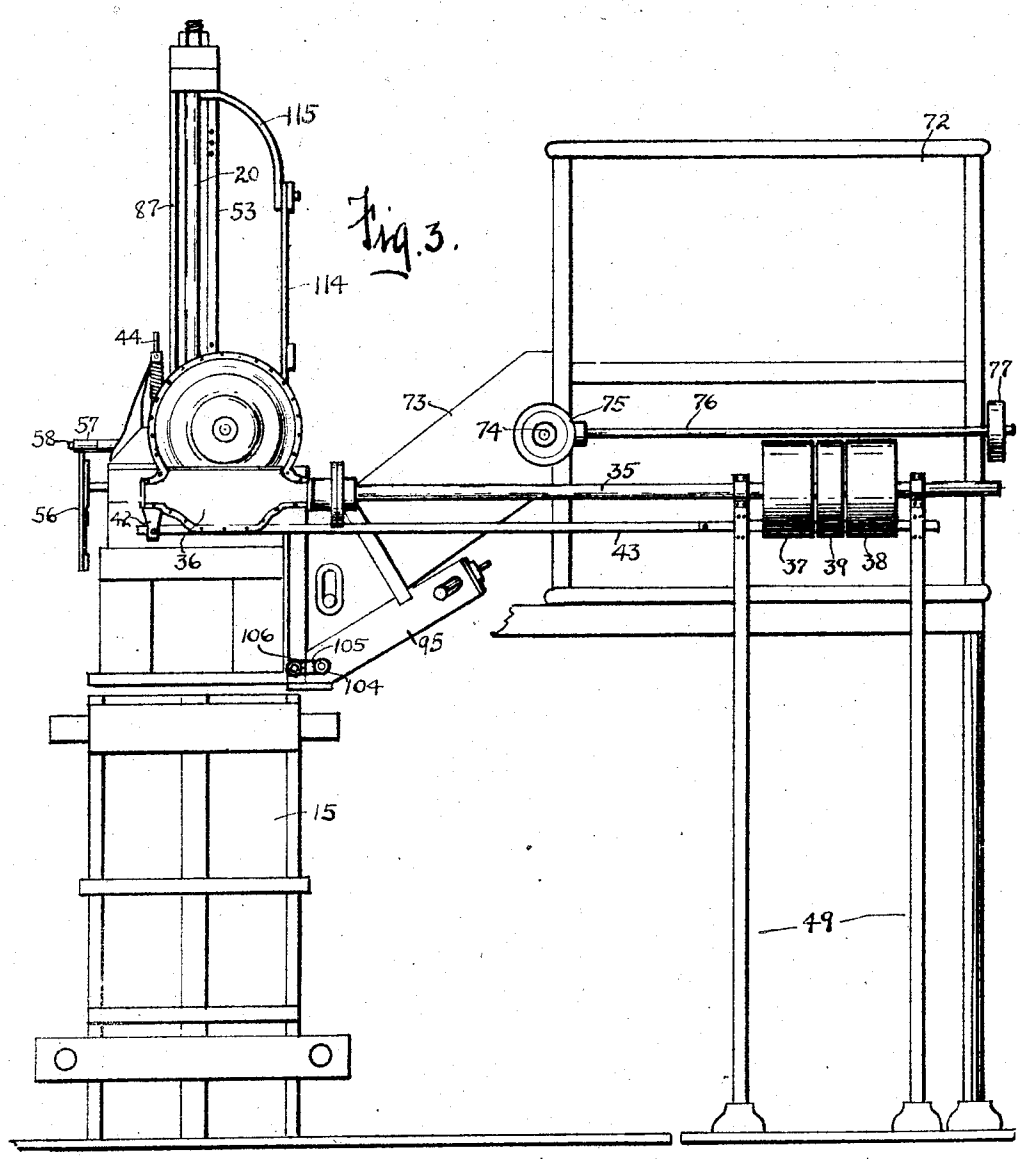


Fig. 3.

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COTTON TRAMPER

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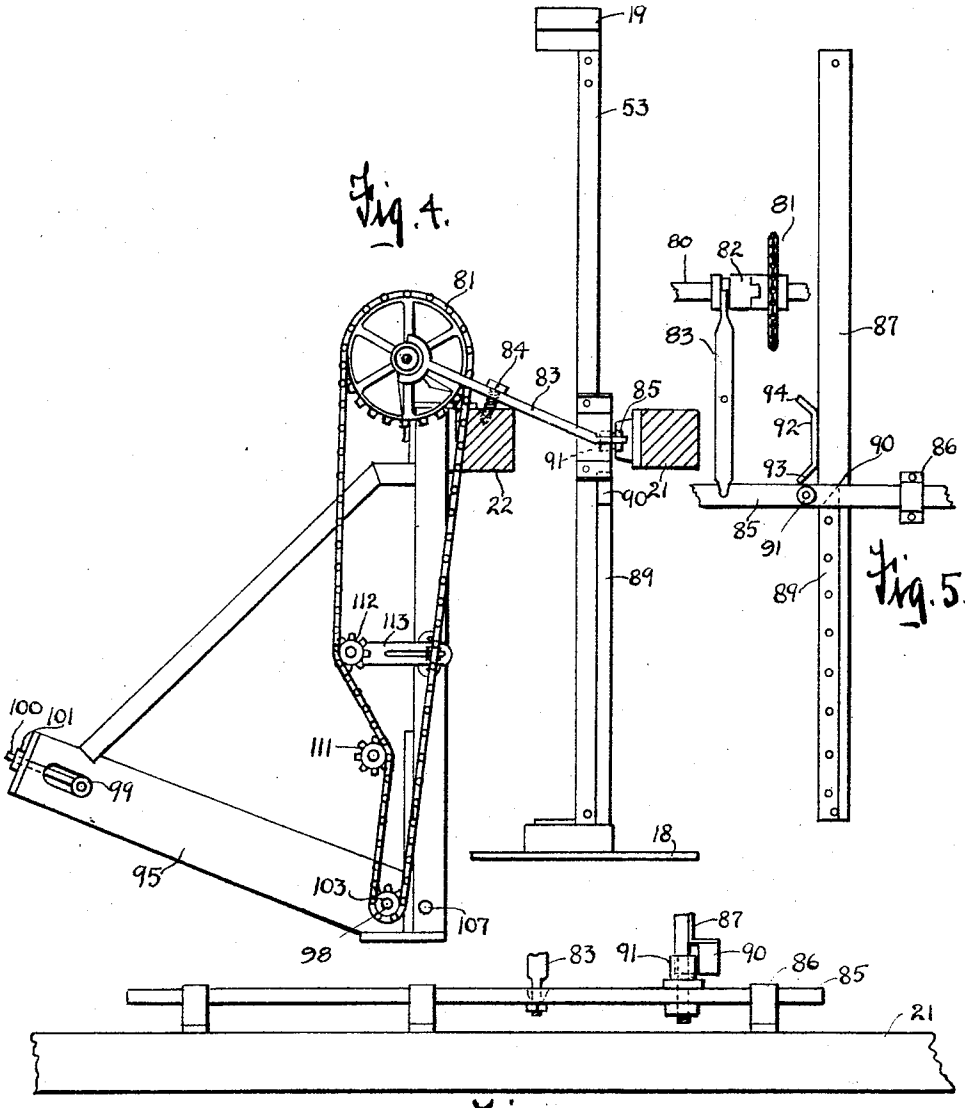


Fig. 4.

Fig. 5.

Fig. 6.

C. A. Hooton
and
J. Streun INVENTORS

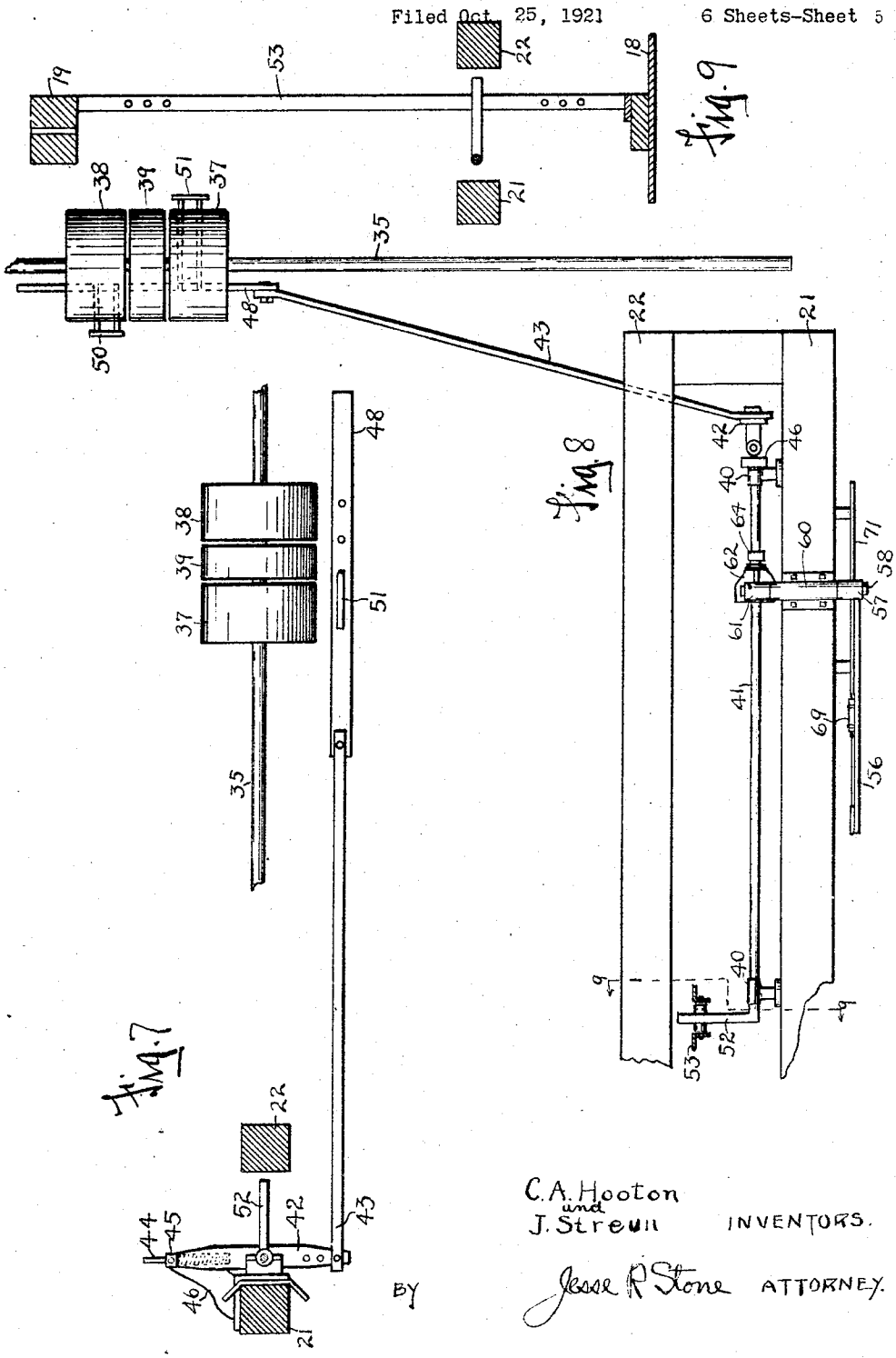
Jesse R. Stone
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July 14, 1925. 1,545,984

C. A. HOOTON ET AL

COTTON TRAMPER

Filed Oct. 25, 1921 6 Sheets-Sheet 5



C. A. Hooton
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J. Streun INVENTORS.

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July 14, 1925. 1,545,984

C. A. HOOTON ET AL

COTTON TRAMPER

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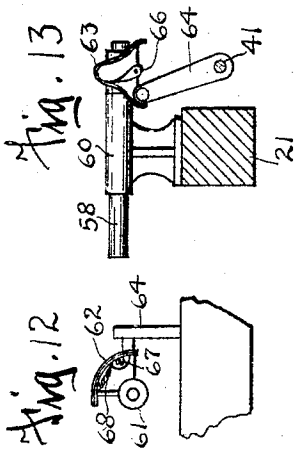


Fig. 13.

Fig. 12.

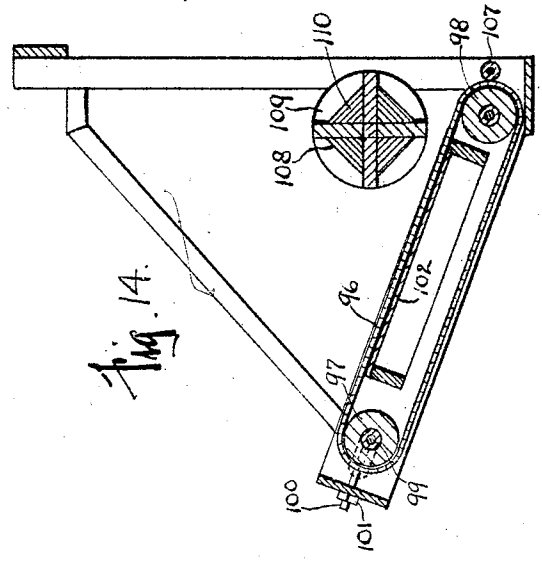


Fig. 14.

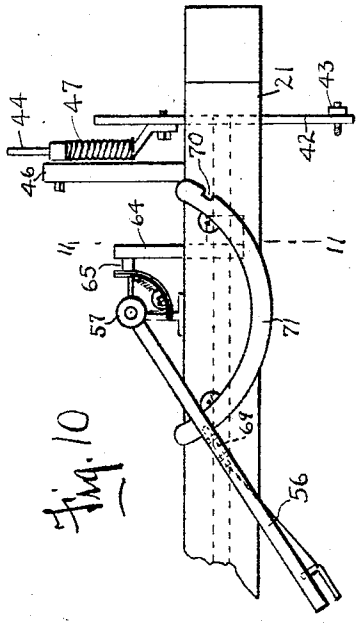


Fig. 10.

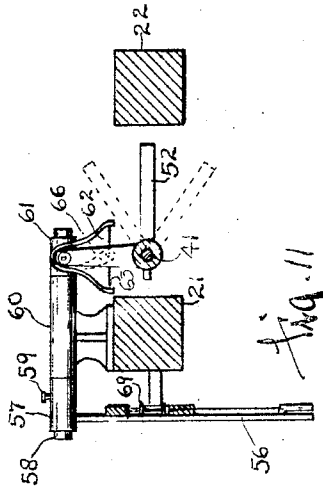


Fig. 11.

C. A. Hooton and J. Streun, Inventors

By Jesse R. Stone atty.

Patented July 14, 1925. 1,545,984

UNITED STATES PATENT OFFICE.

CLAUDE A. HOOTON, OF HOUSTON, AND JOHN STREUN, OF SHERMAN, TEXAS, ASSIGNORS TO HARDWIKE-ETTER COMPANY, OF SHERMAN, TEXAS.

COTTON TRAMPER.

Application filed October 25, 1921. Serial No. 510,407.

To all whom it may concern:

Be it known that we, CLAUDE A. HOOTON and JOHN STREUN, citizens of the United States, residing at Houston, Harris County, Texas, and Sherman, Grayson County, Texas, respectively, have invented a certain new and useful Improvement in Cotton Trampers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to an improvement in cotton trampers and has especial application to the means by which the tramping device may be made automatic, or nearly so, in its action.

The object of our invention is to construct a tramping device which will act positively and in which the ordinary operation thereof will be controlled automatically.

Another object is to provide a plunger-operating mechanism which will be simple and strong in construction and easy to adjust or repair.

Another object is to provide an improved and efficient feeding device for the tramper.

Another object is to provide a controlling means in connection with the device which will operate simply and efficiently with a minimum of operating parts.

These and other objects and advantages will more clearly appear in the specification which follows and the points of novelty will be brought out with greater particularity in the claims appended hereto.

Referring to the drawings wherein a preferred embodiment of our invention is shown, Fig. 1 is a front elevation of the tramping device. Fig. 2 is a side elevation as seen from the left in Fig. 1. Fig. 3 is another side elevation as seen from the right in Fig. 1. Figs. 4, 5 and 6 are broken details of the gear shifting mechanism controlling the feeder. Figs. 7 and 8 are broken side and plan views, respectively, showing the shifting device whereby the operation of the plunger or tramper may be controlled. Fig. 9 is a transverse section on the plane 9—9 of Fig. 8. Figs. 10 and 11 are front and side elevations, respectively, of the controlling lever for the operating means. Figs. 12 and 13 are details of the cam plate by means of which the shifting rod is operated, and Fig. 14 is a section through the feeder by means of which the lint is fed to the tramper.

The cotton tramper shown in the drawings illustrates the application of our invention to a construction, some parts of which are old in the art. There is a set of two cotton boxes 15 mounted upon a rotating platform 16 adapted for rotation about an upright post 17. This allows one box to be filled and packed with cotton while the other box is being emptied of the bale previously packed therein.

The tramper block or plunger which serves to force the cotton lint tightly into the box 15, is designated by the numeral 18. This plunger is connected to an upper yoke or head block 19 by means of two posts 20, 20, which thus form a rigid frame by means of which the plunger may be operated. The two posts 20 are adapted for vertical movement between two parallel supporting beams 21 and 22. Guides for these posts are formed by the cross plates 23 supported on said beams. The plates 23 have semi-cylindrical grooves in the sides thereof to receive and guide said posts 20.

The plunger is actuated by means of cables 24, 24 wound on pulleys 25, 25 fixed on a shaft 26. Said shaft extends transversely across the machine parallel with the beams 21 and 22 and is supported in bearings 27 and 28 on plates 29, 29 resting on the beams 21 and 22. The cables are secured by adapters and nuts, indicated at 30, to the yoke 19 and extend downwardly to said pulleys 25; one cable being wound in a right hand direction and the other in a left hand direction around said pulleys. The lower ends of said cables are attached to stumps 31, 31 secured to the opposite ends of an equalizing bar 32. This bar is slidable vertically on a small post or bolt 33 secured to the plunger 18 centrally thereof.

Above the bar is a spiral spring 34 which bears at its upper end against the head of the bolt and serves to cushion the jar of the abrupt upward movements of the plunger.

The shaft 26 is operated from a shaft 35 at right angles thereto, through a worm gear on the shaft 35 which meshes with a worm gear wheel fixed to the shaft 26. This

gear mechanism is housed at 36 and being a well known mechanism is not shown in detail. The shaft 35 is provided, at a point spaced to the rear of the tramper, with a set of two loose pulleys 37 and 38 mounted idly thereon. Between said loose pulleys is a narrower tight pulley 39 fixed to the shaft. The loose pulleys each has a belt, not shown, connecting it with a power shaft. One of these belts is crossed, the other is straight. Thus, when it is desired to rotate the shaft in one direction, one of the belts is shifted from the loose pulley to the fixed pulley, but when it is desired to rotate the shaft in the opposite direction, the other belt is shifted from its loose pulley to the fixed pulley. When the belts are on their respective loose pulleys the machine is in neutral and is not running.

The belt shifting means by which the shaft is rotated in either direction is partly automatic. On the rear side of the beam 21 we mount for rotation in bearings 40, a shift rod 41, shown best in Fig. 8. It has, on the end toward the shaft 35, a lever 42 secured thereto. This lever extends below the rod 41, and is perforated at spaced intervals to provide adjustable attachment for a sliding bar 43 (Fig. 7). The lever also extends above the shift rod and has secured thereto a lateral bracket 44 having an upwardly extending rod adapted to be slidably received in an eye 45 supported on a short post or bracket 46 which is mounted on the beam 21. Between the eye 45 and the lower end of the bracket and rod 44 is a spiral spring 47. This spring is under compression and hence tends to force the lever arm toward the shift rod 41. Thus when the rod is rotated slightly so as to throw the lever 42 out of vertical position the spring will tend to throw it strongly in the direction in which it is moving and thereby assist in the movement of the lever 42 and bar 43 so as to shift the belt quickly and positively.

To shift the belts on the pulleys 37, 38, the sliding bar 43 is secured to a second bar 48 parallel with the shaft 35 and slidable on supports 49 which supports also hold the shaft 35. On the bar 48 are belt guides 50 and 51 of ordinary construction and through which the belts are adapted to run.

At the other end of the shifting rod 41, the rod is bent at right angles to form a crank arm 52. This arm extends rearwardly so as to pass between two upright bars 53 secured at their upper and lower ends respectively to the yoke and plunger 18. These bars 53 are made of angle iron and support a roller 54 toward the upper ends and a roller 55 toward their lower ends. These rollers are so spaced and positioned that when the plunger goes down so far that roller 54 strikes the crank arm 52 and moves it downwardly, the belt will be shifted and the movement of the plunger reversed. The movement of the shift rod 41 acts to turn the lever 42 out of the vertical and the spring 47 snaps the same over and slides the bar 43 so as to shift the belts, throwing one off the pulley 39 and to throw the other on said pulley thus reversing the direction of rotation of the shaft 35 and reversing the tramper. This reversing of movement occurs just at the end of the downward stroke of the tramper. As the motion of the plunger is reversed the frame, including the upright bars 53, moves upwardly until the lower roller 55 comes in contact with the crank arm 52 and throws this arm upwardly, thus giving it a movement the reverse of that given to it by the downward movement of the roller 54. This acts to throw the lever 42 in the opposite direction, the spring 47 assisting in throwing the lever forcibly in the opposite direction so as to slide the bar 43 and the belt shifting mechanism 48, 50 and 51 so as to move the opposite belt upon the pulley 39 and thus reverse the direction of rotation. This movement takes place when the plunger has reached the upward end of its stroke and acts to immediately start the plunger downwardly again.

The belt shifting mechanism thus described is operated automatically. When it becomes desirable to stop the machine or to reverse its direction of movement before the plunger has reached the end of its stroke we provide a hand lever 56, having means connected therewith to control the position of the shifting rod 41. This mechanism is shown most clearly in Figs. 10 to 13, inclusive. The lever 56 is connected at its upper end to a sleeve 57 which may be secured non-rotatably to a shaft 58 by means of a set screw 59, or other similar means. The shaft 58 rotates in a bearing 60 mounted upon a support resting upon the beam 21. The opposite end of the shaft 58 has a sleeve 61 fixed thereon, this sleeve having projecting therefrom a sector shaped cam 62. This cam is a flat plate bent in the quadrant of a circle and having an upstanding flange 63 around the outer edge thereof. As seen particularly in Figs. 11 and 13, this cam plate is wider at the lower end than it is at the upper end.

Mounted on the shift rod 41 at a point adjacent the plate 62 is an upstanding lever 64 having on the upper end and on the side toward the plate 62 a roller 65. This roller is limited in its movement laterally by the flange 63 on the sides of the plate 62. When the lever is in the position shown in Figs. 10 and 11 the roller 65 is in the smaller upper end of the plate 62 and is held in that position by the marginal flange 63 on said plate. In this position of the lever 64 the shift rod 41 is in neutral position, that is, the crank

arm 52 is in a horizontal position and when in that position the belt shifting bar 48 is in the position shown in Fig. 8, and the two belts controlled by the said belt shifting device are running upon the two loose pulleys 37 and 38, and motion is therefore not communicated to the fixed pulley 39.

On the face of the plate 62, toward the lever 64, there is provided a small switch or pointer 66 shown in dotted lines in Fig. 11 and also shown in Fig. 13. This switch is mounted upon a pin extending directly through the plate 62 and is held in position thereon so that it may rotate by means of a nut 67 on the inner end of the pin. It is desired to hold this switch resiliently against the flange on the left hand side of the plate, as shown in Fig. 13. This is done by forming a small arm or lever on the nut 67 and securing a spring 68 thereto in such position as to force the switch into the position desired. The opposite end of the spring 68 is secured to a portion of the plate and is under tension so as to perform this service. When the lever 56 is moved to the right, as shown in Fig. 10, so that the latch 69 thereon may be received within the notch 70 in the sector shaped plate 71 the cam plate 62 is moved into the position shown in Figs. 12 and 13. This causes the roller 65 on the lever 64 to pass downwardly between the flange on the said plate and the switch 66, thus throwing it to the right, as seen in Fig. 13. This movement of the lever to the right causes the belt to be shifted, as previously described, bringing the proper belt upon the pulley 39 to cause the plunger to move upwardly. It will thus be possible, by shifting the lever to neutral and back, to cause the plunger to move upwardly at any time. When the lever 56 is in its position to the right, as shown in Fig. 10, thus bringing the cam plate 62 into the position shown in Fig. 13, the roller 65 on the lever 64 may assume the position shown in Fig. 13. If the lever is then shifted back to neutral the roller will travel upwardly along the flange 63 to the upper end of said plate. In doing so it will shove the switch 66 to one side against the action of the spring 68 and after the roller has passed the switch said switch will snap back to the position shown in Fig. 13, thus making it necessary, when the lever is again thrown into operative position, for the roller to move to the right in the manner previously described.

The cotton lint is fed to this tramper from a battery condenser 72 by means of a lint slide 73, the construction of which is not a part of our invention. The movement of the lint from the condenser to the lint slide is accomplished through a feeding device operated through a shaft 74, which shaft is operated by means of a bevel gear 75 thereon, said gear being in turn operated by a similar gear on the shaft 76. This shaft is actuated through the means of a belt from the power shaft running over the pulley 77 on said shaft 76. On the opposite end of the shaft 74 is a ratchet wheel 78 which may be connected by means of a sprocket chain to a sprocket wheel 79 on a counter shaft 80 mounted upon the supporting beam 22. Mounted on this same shaft is a second sprocket wheel 81 which is ordinarily idle thereon. A clutch 82, adjacent thereto, is keyed slidably to the shaft 80 and may be thrown in mesh with the teeth on the adjacent wheel 81 by means of a lever 83. This lever 83 is pivoted intermediate its ends at 84 to the beam 22 and its outer end is pivotally connected to a sliding bar 85. This bar is supported on the rearward face of the beam 21 by means of hangers 86. The movement of the bar 85 toward the right, as shown in Fig. 5, will manifestly throw the clutch 82 out of operative connection with the sprocket wheel 81 while the movement in the opposite direction will throw the said sprocket wheel in gear with the shaft. The bar 85 is automatically operated so as to throw the feeding mechanism out of gear and into gear at the proper time. To perform this movement of the bar 85 we have secured between the upper yoke 19 and the plunger 18 an upright angle iron 87. This iron is secured at its upper end to a plate 88, which is in turn secured to the yoke 19. The lower end of the bar 87 is mounted upon the plunger. Toward the lower end of the bar 87 is secured an upright bar or plate 89. This plate is beveled at 90 at the upper end. The sliding bar 85 has on the rearward side thereof, facing the beveled upper end of the plate 89, a roller 91, this roller being adapted to contact with the beveled surface and thus be forced to the left, as shown in Fig. 5. Mounted on the side of the upright member 87, slightly above the upper end of the plate 89, is secured a second plate 92. This plate, as seen from the side, is somewhat U-shaped in that the lower end is flared outwardly at 93 and the upper end is also bent similarly at 94. This plate projects into the path of the roller 91, so that as the bar 87 moves downwardly the lower end 93 thereof will contact with said roller and move it toward the right of the position shown in Fig. 5. It will thus be seen that the movement downwardly of the plunger will carry with it the upright bar 87 and when the plunger reaches the proper point the lower end 93 of the plate 92 will contact with the roller, throwing the same to one side so as to move the sprocket wheel 81 out of gear with the shaft 80, thus stopping the said wheel. When the plunger moves upwardly until the upper end 90 of the plate 92 comes in contact with said roller it will serve to force the roller and the bar

85 in the opposite direction, thus throwing the wheel again into gear, causing its rotation.

The sprocket wheel 81 is operatively connected with a mechanism which is formed upon the feeder 95 to assist in the feeding of the lint to the tramper. The construction of the feeder itself is shown best in Fig. 14. It comprises an apron 96 composed of transverse slats secured to belts running over upper and lower rollers 97 and 98, respectively. The upper roller 97 is mounted on a shaft adjustable within a bearing slot 99 by means of a rod 100 which may be moved longitudinally of said slot by means of an adjusting nut 101. The central portion of the apron 96 is supported for movement upon a small platform 102. The lower end of the apron passes over the roller 98, said roller having on one end thereof a sprocket wheel 103 by means of which the roller may be rotated. The other end of the roller shaft has thereon a small sprocket wheel 104 by means of which it may be operatively connected by a small sprocket chain 105 to a similar sprocket wheel 106 upon a small roller 107 immediately in front thereof. Above the feeder apron 96 is mounted a roller 108. This roller is composed of flat boards set at right angles to each other to form a body cross-shaped in transverse section between the end plates 109. In the angles of these two boards are placed reinforcing strips 110 which are triangular in cross section, as shown in Fig. 14.

The roller thus provided acts to assist the apron 96 in moving the cotton uniformly into the cotton box below the plunger. Each of the ends of the cross boards constituting the roller acts as an arm in moving the cotton forward. As the roller 108 is of greater diameter than the roller 98, its peripheral speed is greater than that of the apron thus acting to push the cotton from the apron into the tramper. This roller has on the end thereof toward the sprocket wheel 81 a small sprocket wheel 111 by means of which this roller is operated. A chain from the sprocket wheel 81 passes downwardly around an idle wheel 112 mounted adjustably upon a support 113 and around the sprocket wheels 111 and 103, back to the sprocket wheel 81. The idle wheel 112 may be adjusted to tighten or loosen the chain as desired. The small roller 107, shown best in Fig. 14, rotates in the same direction as does the roller 98 and thus serves to throw the cotton away from the apron into the cotton box and prevents the adhering of the lint to the apron.

It will thus be noted that the feeding mechanism, by means of which the cotton is fed to the tramper, is adapted to be operated only when the plunger is in a position above the said feeder. When it has moved down to a position nearly closing the opening of the feeder the mechanism previously described acts to throw the operating lever 81 so as to throw the feeding mechanism out of gear, thus preventing any further movement of cotton from the feeder while the plunger is below the level thereof. The movement upwardly of the plunger, however, will act at the proper point to again throw the feeding mechanism into gear so that the cotton will again be fed into the cotton box below the plunger.

On the rearward side of the plunger and the frame work connected therewith is formed a shield 114. This shield is of the same width as the plunger and extends upwardly nearly to the top of the frame of the plunger and is connected to the yoke 19 by means of curved braces 115. This shield acts to prevent cotton lint from falling in on top of the plunger when the said plunger is below the level of the feeding device.

The operation of our improved cotton tramper has been already set forth and it is thought that its operation will be clear without further description. The principal advantages of the construction lie in the automatic arrangement by means of which the plunger is driven downwardly by the cable connections in the manner described, and the simple means provided for the shifting of the belts upon the pulleys so as to reverse the movement of the said plunger. During the normal operation of the device this shifting of the belts upon the pulleys will be automatic in its operation, the contact of the rollers 54 and 55 with the shifting rod 41 acting uniformly to change the direction of rotation at the proper point. It is, however, possible to stop the operation of the device by throwing the belts upon the pulleys into neutral position by means of the lever 56, and to reverse the direction of the plunger when it is moving downwardly by shifting the belts first into neutral and then back into operative position, it being arranged, as previously described, to cause the plunger to move upwardly when it is thrown from neutral position into operative position. The shifting of the belts is performed quickly and positively through the assistance of the spring 47, as previously described.

The feeding of lint to the tramper is also regulated automatically by means of the clutch operating device, shown and described in connection with Figs. 4, 5 and 6. It will be seen that lint will only be fed to the tramper while the plunger is above the level of the feeding mechanism, and that it will immediately be thrown into operative position by the movement of the plunger above the level of the feeding apron.

By this arrangement very little attendance will be necessary in the operation of

this tramper. The workmen who are required to run the baling mechanism may also oversee the operation of the tramper and very little, if any, care will be required in running the machine. The further objects and advantages of our invention will be obvious to one skilled in the art without further description.

Having thus described our device, what we claim as new and desire to protect by Letters Patent is:

1. In a device of the character described, a plunger, a rotatable shaft operatively connected to said plunger, means to drive said shaft in either direction, means to control said driving means comprising a shift rod, a crank arm on one end thereof, a lever on the opposite end, a sliding bar connecting said lever and said driving means, means connected with said plunger to engage said crank arm and rotate said shift rod and a spring on said lever to assist in said rotation when the crank arm is thus moved.

2. In a cotton tramper, a cotton box, a plunger, a rotating feeder apron adapted to feed cotton into said box when said plunger is raised and an auxiliary roller above said box, closely adjacent said apron and adapted to rotate in the same direction as said apron, for the purpose described.

3. In a device of the character described, the combination of a set of rollers, a cotton feeding apron thereon, a friction roller closely adjacent the feeding end of said apron and means to rotate said rollers in the same direction for the purpose described.

4. In a cotton tramper, a cotton box, a plunger, a roller, a rotating feeding apron on said roller adapted to feed cotton into said box, a sprocket wheel on said roller, a rotating shaft, an idle sprocket wheel thereon, a clutch to secure said idle sprocket wheel on said shaft, a lever on said clutch, a bar slidable by means of said plunger to move said lever and clutch and thereby actuate said feeding apron.

5. In a device of the character described, a plunger, a rotatable shaft, operative connections between said plunger and said shaft, means to drive said shaft including two oppositely driven belts, means operated by said plunger to shift either of said belts into operative connection with said shaft, and a lever connected with said shaft adapted when shifted in one direction to place said belts in neutral position and when shifted back to its original position will leave the belts in position to move said plunger upwardly.

6. In a cotton tramper, combination of a cotton box, a feeding apron positioned to discharge to said box, means between said apron and said box to remove cotton lint from said apron, and a roller above said apron having short radial blades thereon to assist said apron in discharging cotton to said box.

In testimony whereof, we have hereunto affixed our signatures, this the 14th day of October A. D. 1921.

JOHN STRUEN
C. A. HOOTON.