F. W. OSTROM AND I. F. WEBB.

FILLED SACK SEWING APPARATUS.

APPLICATION FILED JAN. 21, 1919.

1,377,624.

Patented May 10, 1921.

3 SHEETS—SHEET 1.

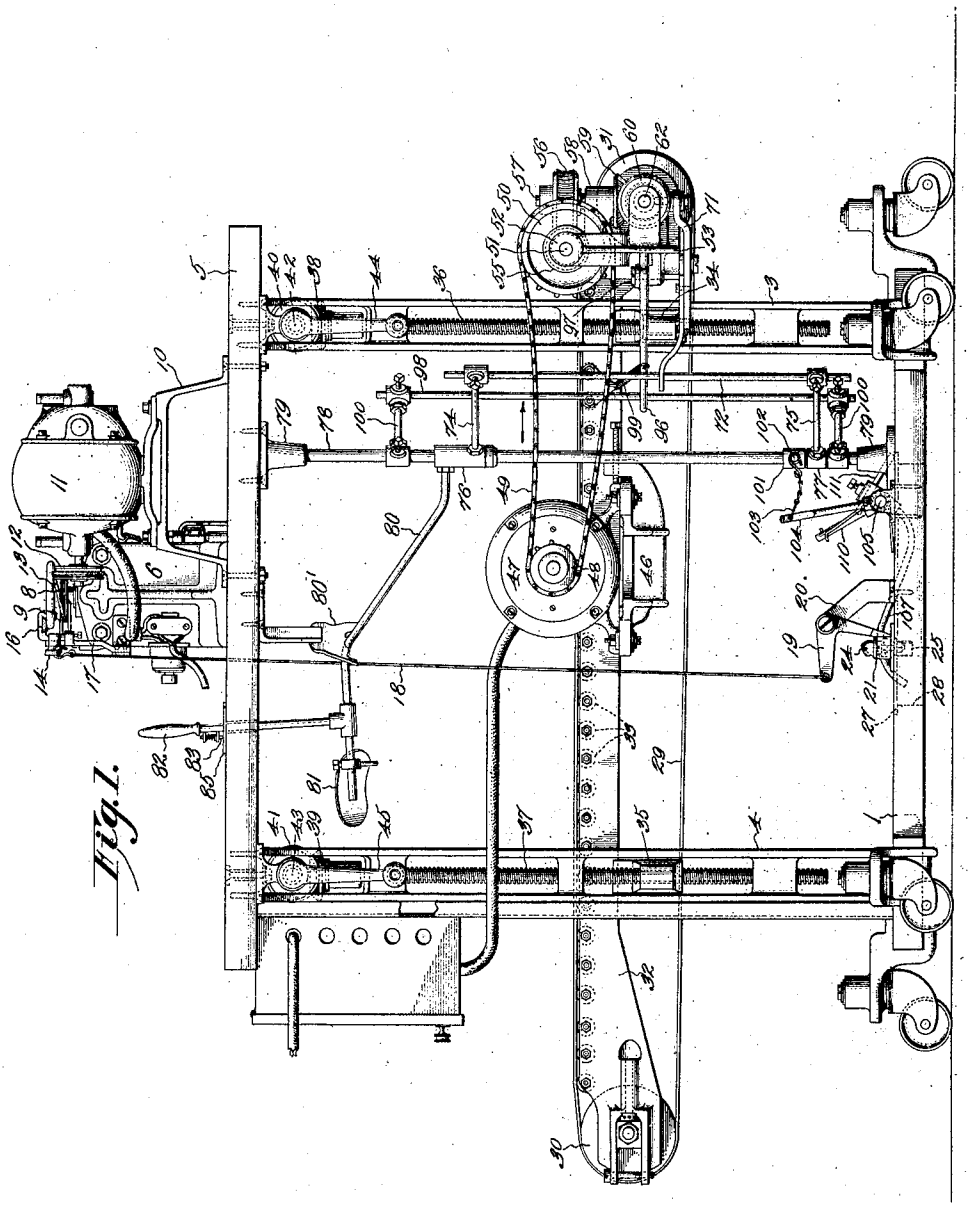


Fig. 1.

WITNESS

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3 SHEETS—SHEET 2.

Fig. 2.

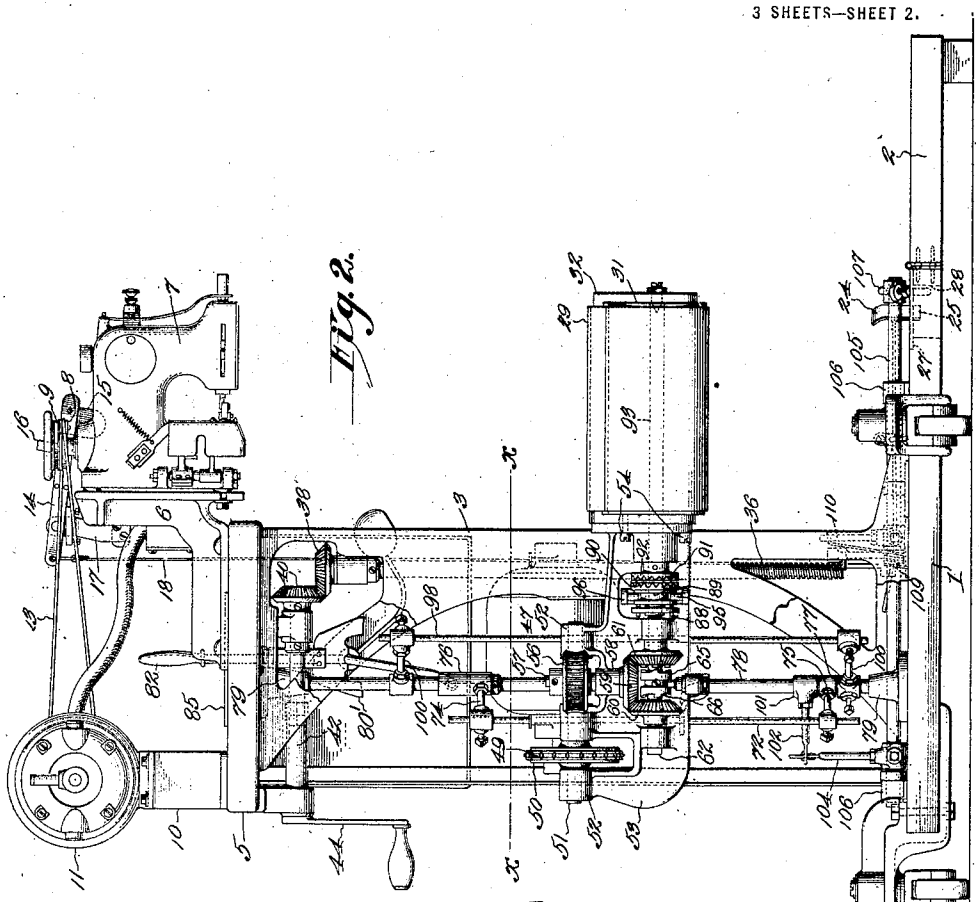
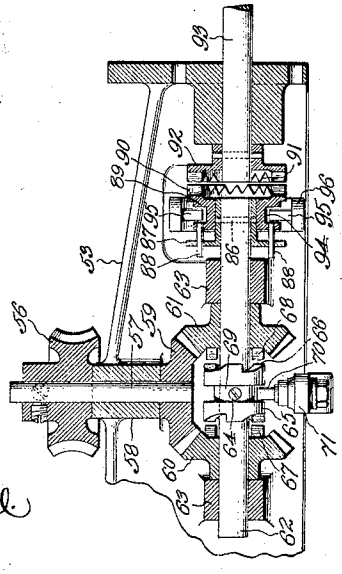


Fig. 4.



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3 SHEETS—SHEET 3.

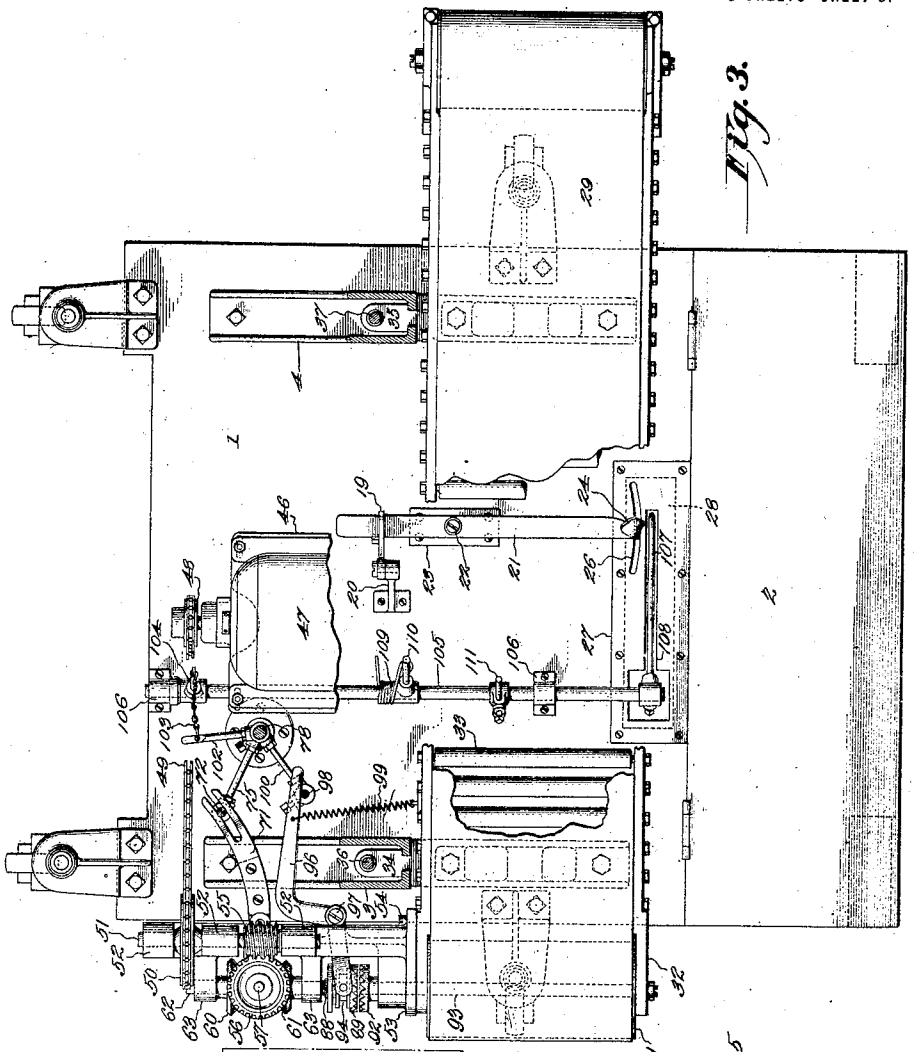


Fig. 3.

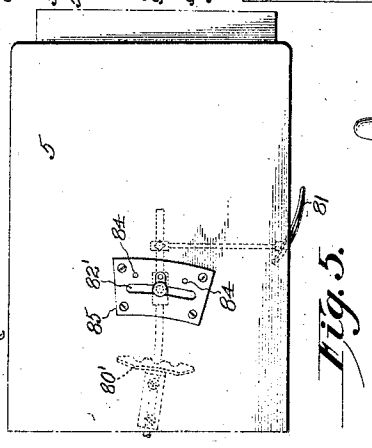


Fig. 5.

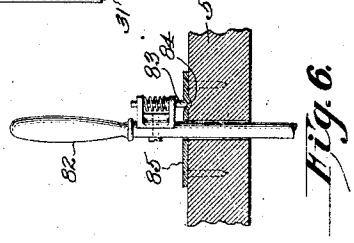


Fig. 6.

WITNESS

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UNITED STATES PATENT OFFICE.

FREELAND W. OSTROM, OF NEWARK, AND IRVING F. WEBB, OF ELIZABETH, NEW JERSEY, ASSIGNORS TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

FILLED-SACK-SEWING APPARATUS.

1,377,624. Specification of Letters Patent. Patented May 10, 1921.

Application filed January 21, 1919. Serial No. 272,254.

To all whom it may concern:

Be it known that we, FREELAND W. OSTROM and IRVING F. WEBB, citizens of the United States, residing, respectively, at Newark, in the county of Essex and State of New Jersey, and Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Filled-Sack-Sewing Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in filled sack sewing apparatus and has for its primary object to provide a construction reducing the manual handling of the filled sacks to a minimum.

In the sewing of filled sacks, it frequently happens, through inadvertence on the part of the operator in not holding the mouth of the sack in the proper position, that the stitching runs off the upper edge of the sack thereby leaving a portion of its mouth unstitched. Further, filled sacks of the larger sizes are usually double, including an inner or lining sack of closely woven material and an outer sack of more coarsely woven material such as burlap. In the sewing of the mouths of these double sacks it frequently happens, again through inadvertence on the part of the operator, that the inner sack mouth is not caught by the line of stitching. In both of these cases, and in others such as the breaking of thread, &c., it has heretofore been necessary in high speed machines which employ an endless sack carrier to manually carry the sacks back to the starting point in order to repeat the sewing operation.

In the present machine a simple mechanism is provided to mechanically return sacks to the starting point by the employment of means for reversing the direction of movement of the carrier.

This invention has a further object to provide means for automatically controlling the reverse movement of the carrier to determine the starting position of the sack relative to the sewing mechanism for restitching of the mouth of said sack and to additionally provide manually operable means whereby the direction of travel of the sack carrier is at all times under the control of the operator.

The invention has for a still further object to improve the treadle mechanisms employed for controlling the driving connections of the sack sewing and conveying devices by the provision of treadles whereby the operator is enabled to stand firmly with both feet on a platform during the operation of the machine and in a position wherein the manually operable lever for controlling the direction of travel of the carrier is within convenient reach.

Other objects of the invention will be apparent from the following description and claims.

In the accompanying drawings, Figure 1 is a rear side elevation of a filled sack sewing apparatus embodying the present improvements. Fig. 2 is an end elevation of the apparatus as viewed from the right in Fig. 1. Fig. 3 is a sectional view substantially on the line x—x, of Fig. 2, with a portion of the sack carrier and its driving motor partly cut away to better illustrate the drive controlling connections. Fig. 4 is a detail sectional view of the driving clutch and the reversing gearing. Fig. 5 is a detail illustration of the lever automatically controlling the reverse movement of the carrier. Fig. 6 is a detail illustration of the lever whereby the movement of the carrier may at all times be manually controlled.

Referring to the drawings, there is herein illustrated a form of filled sack sewing apparatus comprising a base 1 upon which is suitably hinged a platform 2. Projecting upwardly from the base 1 are standards 3 and 4 adapted to support a table 5. Suitably secured upon the table 5 is an L-shaped bracket 6 sustaining the overhanging sewing head 7, employing any suitable form of stitch-forming mechanism and including a loose pulley 8 and a fast pulley 9.

A motor supporting bracket 10 is also suitably secured upon the table 5 and sustains a motor 11 provided with a driving pulley 12. A belt 13 is employed to transmit power from the pulley 12 to the fast pulley 9, treadle connections being provided to shift the belt from the fast to the loose pulley when it is desired to stop the stitching operation. In its preferred form these connections comprise a belt-shifting lever 14, carrying at one end a weight 15 to normally hold the belt on the loose pulley 8 and a brake element 16 adapted to act upon the

fast pulley 9 when the belt is shifted to the loose pulley. The belt-shifting lever 14 is pivotally supported intermediate its ends upon an arm 17 suitably secured to the bracket 6 and is connected preferably by means of a flexible element 18 with one end of a bell-crank rock-lever 19 pivoted upon a bracket 20, suitably secured upon the base 1. The other end of the rock-lever 19 is adapted to be engaged by the rear end of a foot-operated lever or treadle 21 pivotally supported intermediate its ends by means of a screw 22 upon a plate 23 suitably secured upon the base 1. The forward end of the lever 21 is provided with an up-turned lip 24 adapted to be engaged by the foot of an operator and swung to the right as viewed in Fig. 3 to start a stitching operation. During the swinging movements of the lever 21 it is guided by a depending lug 25 of said lever projecting within an arcuate slot 26 formed in a plate 27, suitably secured upon the base 1 and covering a cut out portion 28 of the base. From the foregoing it is apparent that the driving mechanism for the sewing mechanism and the control therefor is a complete unit.

In order to convey the filled sacks past the sewing mechanism there is employed an endless carrier in the present instance comprising a belt 29 passing around an idle roller 30 and a driven roller 31 both journaled in a conveyer frame 32. To support the belt against the weight of the filled sacks, the conveyer frame is provided with a plurality of small rollers as 33. The conveyer frame 32 is adapted to be adjusted vertically by the provision thereon of lugs 34 and 35 formed with threaded apertures entered by vertical screw-rods 36 and 37 suitably journaled in bearings provided in the standards 3 and 4, said standards supporting and guiding the lugs and therefore the conveyer frame. At their ends the screw-rods 36 and 37 respectively carry bevel gears 38 and 39 meshing with similar gears 40 and 41 upon the horizontal shafts 42 and 43. The shafts 42 and 43 are journaled in suitable bearings provided for the purpose upon the under side of the table 5 and respectively carry manually operated crank-handles 44 and 45. It will be readily apparent that rotation of the crank-handles adjusts the vertical position of the conveyer frame.

Projecting rearwardly from the conveyer frame 32 is a bracket 46 carrying a motor 47 provided with a sprocket-gear 48. This sprocket-gear is connected by means of a chain 49 with a similar gear 50 carried by a horizontal shaft 51 journaled in bearings, as 52, on a bracket 53 secured by screws, as 54, to the conveyer frame 32. The shaft 51 carries a worm 55 adapted to drive a worm-wheel 56 on a vertical shaft 57 journaled in a bearing 58 provided on the bracket 53. Secured to the shaft 57 is a bevel-gear 59 constantly in mesh with two bevel gears 60 and 61 loosely supported for rotation upon a shaft 62 and held against endwise movement by bearing lugs, as 63 on the bracket 53.

Secured upon the shaft 62 by means of a screw 64 is a reversing clutch element 65 formed with teeth as 66 adapted to engage the teeth, as 67 upon the bevel-gear 60 or the teeth 68 upon the bevel-gear 61 or be in a neutral position. In order to cause the clutch-element to drive either of the bevel-gears 60 and 61 the shaft 62 is slidingly mounted in the bearing lugs 63 and the clutch element 65 secured thereupon is formed with a peripheral groove 69 entered by a stud 70 carried by a shifting lever 71 fulcrumed upon the bracket 53. In order to permit vertical adjustment of the conveyer frame the rearward end of the shifting lever 71 is provided with a fork entered by a rod 72 secured upon lateral arms 74 and 75 projecting respectively from sleeves 76 and 77 mounted for pivotal movement upon a vertical rod 78 supported by suitable brackets as 79 secured upon the table 5 and the base 1. To the upper sleeve 76 is secured a rod 80 having a sack contacting plate 81 adjustably secured thereto. The plate 81 may obviously be secured upon the rod in position either to throw the reversing clutch element into neutral position when the sack contacts with said plate or it may be secured nearer the end of the rod 80 to thereby completely reverse the direction of movement of the carrier, as may be desired. In either event, the connections described form means for automatically controlling the reverse movements of the carrier.

The movement of the carrier may however be entirely controlled at the will of the operator by a hand-lever 82 secured to the rod 80 and projecting through a slot 82′ in the table 5. This lever 82 is shown as provided with a spring actuated detent 83 adapted to engage notches as 84 formed in a plate 85 suitably secured upon the table 5. The rod 80 is adapted to be retained until manually or automatically released, in any of three positions, *i. e.*, that of forward drive, reverse drive or in neutral position by means of a notched position-determining plate 80′ secured to the under side of the table 5.

Secured upon the shaft 62 by means of a pin 86 is a flanged sleeve 87. The flange of this sleeve is formed with apertures entered by pins as 88 projecting from a clutch-element 89 slidingly mounted on said sleeve and formed with a plurality of teeth 90. The teeth of the clutch element 89 are adapted to interlock with similar teeth 91 formed on a complemental clutch element 92 pinned to a shaft 93 upon which the belt-roller 31 is secured. In order to throw these clutch elements into and out of interengaging rela-

tion, the element 89 is formed with a peripheral notch 94 entered at diametrically opposite sides thereof by studs, as 95 carried by the forked end of a shifting lever 96 fulcrumed by means of a screw 97 upon the bracket 53. In order to permit vertical adjustment of the carrier the tail end of the shifting lever 96 is held in contact with a vertical rod 98 by means of a spring 99, one end of which is secured to the lever 96 and the other end to the conveyer frame 32.

The vertical rod 98 is carried by lateral arms 100 suitably secured upon the vertical rod 78. A collar 101 also secured to said rod 78 carries a laterally extending arm 102 connected by means of a chain 103 with a crank-arm 104 carried by a treadle actuated rock-shaft 105. The rock-shaft 105 is journaled in bearings as 106 suitably secured upon the base 1 and at its forward end carries a laterally projecting curved treadle 107, in normal position extending from the shaft downwardly through a slot 108 formed in the plate 27, thence upwardly above the upper surface of said plate and thence downwardly to a point adjacent the lip 24 of the treadle lever 21. The treadle 107 is normally held in the raised position indicated in Fig. 1 of the drawings in addition to the action of the spring 99 by means of a spring 109, coiled about the shaft 105 and of which one end bears against the base 1 and the other end against a pin 110 secured to said shaft. An adjustable stop-pin 111 secured to the shaft 105 and adapted to contact with the base 1 determines the normal raised position of the treadle 107.

Normally in the operation of sewing the mouths of filled sacks, the clutch element 65 is in driving engagement with the gear-wheel 60 to drive the sack-carrier 29 to the left as viewed in Fig. 3, the motors operating to continuously drive the sewing machine belt 13 and the chain 49. A filled sack having been placed upon the carrier, the operator steps on the treadle 107 which is thereby depressed in substantially a vertical plane to, through the connections described, slide the clutch element 89 upon the sleeve 87 and into driving engagement with the clutch element 92. The carrier 29 is now in operation to present the sack to the sewing mechanism to be stitched and normally the movement of the carrier is continuously maintained in this direction during the sewing of a large number of sacks.

As the sack approaches the stitch-forming mechanism, the operator adjusts the mouth of the sack to properly present the same to be stitched. The operator then starts the operation of the sewing mechanism by swinging his foot to the right, (maintaining the treadle 107 depressed) thereby actuating the treadle 21 in substantially a horizontal plane and through the described connections shifting the belt 13 from the loose pulley 8 to the tight pulley 9. After the sewing operation is completed, the treadle 21 is released by a return swinging movement of the operator's foot, which remains however, upon the treadle 107. The weight 15 upon the lever 14 is sufficient to return the treadle 21 to its original position. It may be here observed that the curvature of the treadle 107 is such that when the treadle 21 is operated to start the stitch-forming mechanism, the foot of the operator overlies the downwardly inclined portion of the treadle 107 which adjacent the foot of the operator rises somewhat above the plane of the base 1. This construction acts to offset any tendency on the part of the operator to unconsciously withdraw his foot from the treadle 21 before the sewing operation is completed. It will be further observed that the present arrangement of the treadles 21 and 107 is highly advantageous in that they permit of their operation without any particular attention on the part of the operator who stands firmly on the floor or platform while the carrier and the sewing mechanism are in operation.

If for any reason such as heretofore mentioned it becomes necessary to repeat the stitching operation of a filled sack that has traveled past the sewing head it is only necessary to throw the hand-lever 82 in reversing position and the carrier 29 will convey the sack in the reverse direction past and without operating the sewing mechanism. The carrier 29 may now be stopped either by releasing the treadle 107, by shifting the hand-lever 82 into neutral position or by permitting the plate 81 to automatically arrest the carrier preparatory to readjusting the mouth of the sack. If the readjustment necessary is very slight, it may be made while the carrier 29 is in motion, the hand-lever 82 being operated to again reverse the direction of drive of the carrier and the treadle 21 being operated in the manner before mentioned to start the stitch-forming mechanism. The present construction therefore, besides the advantages heretofore mentioned, provides manual and automatic means for controlling the movement of the carrier.

Having thus set forth the nature of the invention, what we claim herein is—

1. In a filled sack sewing apparatus, the combination with a framework, a sewing mechanism, and an endless carrier for conveying a filled sack past said sewing mechanism, of driving means for said carrier including a connection permitting the carrier to be freely moved in opposite directions.

2. In a filled sack sewing apparatus, the combination with a framework, a sewing mechanism, and an endless carrier for conveying a filled sack past said sewing mech-

anism, of driving means for said carrier including gearing, and a connection between the gearing and carrier for permitting the carrier to be freely moved in opposite directions.

3. In a filled sack sewing apparatus, the combination with a framework, a sewing mechanism, and an endless carrier for conveying a filled sack past said sewing mechanism, of driving means for said carrier including gearing, a clutch intermediate said gearing and the carrier, and manually operable means for shifting said clutch to permit the carrier to be freely moved in opposite directions.

4. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, an endless carrier for conveying a filled sack past said sewing mechanism, and means for driving said endless carrier in reverse directions.

5. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, driving means for said sewing mechanism, an endless carrier for conveying a filled sack past said sewing mechanism, driving means for said carrier, treadle-connections whereby said driving means may be controlled independently of each other, and means for reversing the direction of drive of said carrier.

6. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, an endless carrier for conveying a filled sack past said sewing mechanism, reversible driving means for said carrier, and work controlled means for controlling the effective action of said driving means.

7. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, an endless carrier for conveying a filled sack past said sewing mechanism, means for driving said endless carrier in reverse directions, and means for automatically arresting the carrier when driven in one of said directions.

8. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, an endless carrier for conveying a filled sack past said sewing mechanism, driving means for said endless carrier, treadle connections for controlling the effective action of said driving means, and manually controlled means for reversing the direction of movement of said carrier while under said treadle control.

9. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, an endless carrier for conveying a filled sack past said sewing mechanism, means for driving said endless carrier in reverse directions, and manually controlled mechanisms for arresting the carrier operating in each of said reverse directions.

10. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, an endless carrier for conveying a filled sack past said sewing mechanism, means for driving said carrier in reverse directions, and means for manually controlling the direction of movement of said carrier.

11. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, an endless carrier for conveying a filled sack past said sewing mechanism, means for driving said carrier in reverse directions, treadle connections for arresting the effective action of said driving means in one of said directions, and automatic means for arresting the effective action of said driving means in the other of said directions.

12. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism supported by said framework, a carrier for conveying a filled sack past said sewing mechanism, a motor, driving connections between said motor and said sewing mechanism, treadle connections for controlling the effective action of said driving means, an adjustable frame for supporting said endless carrier, and a motor sustained by said frame and adapted to drive said carrier in reverse directions.

13. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, a carrier for conveying filled sacks past said sewing mechanism, a supporting frame for said carrier, a motor sustained by said supporting frame, and driving connections intermediate said motor and said carrier including a carrier reversing mechanism.

14. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, a carrier for conveying filled sacks past said sewing mechanism, means for positively driving said endless carrier in reverse directions, and an arm projecting into the path of said filled sack when said carrier is driven in one of said directions to automatically control the effective action of said driving means.

15. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, driving means for said sewing mechanism, an endless carrier for conveying filled sacks past said sewing mechanism, driving means for said endless carrier, a treadle operable in substantially a horizontal plane for controlling the effective action of one of said driving means, and a treadle operable in substantially a vertical plane for controlling the effective action of the other of said driving means.

16. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, driving means for said sewing mechanism, a carrier for conveying a filled sack

past said sewing mechanism, driving means for said carrier, and treadles operable in substantially transverse directions with respect to each other for controlling the effective action of each of said driving means.

17. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, a carrier for conveying filled sacks past said sewing mechanism, means for driving said sewing mechanism and for driving said carrier, and contiguously arranged treadles operable by a single foot of an operator for controlling the operation of said sewing mechanism and said carrier, one of said treadles tending to maintain the operator's foot against the other treadle in the stitching of a filled sack.

18. In a filled sack sewing apparatus, in combination, a framework, a sewing mechanism, driving means for said sewing mechanism, a carrier for conveying a filled sack past said sewing mechanism, driving means for said carrier, a treadle for controlling the sewing mechanism driving means, and a treadle for controlling the carrier driving means and operable in a direction transverse to that of the other treadle, said treadles being contiguously arranged and adapted to be operated successively and independently each of the other by a single foot of an operator.

In testimony whereof, we have signed our names to this specification.

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