Oct. 2, 1928.

1,686,404

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SACK FILLER

Original Filed Sept. 18, 1926 7 Sheets-Sheet 1

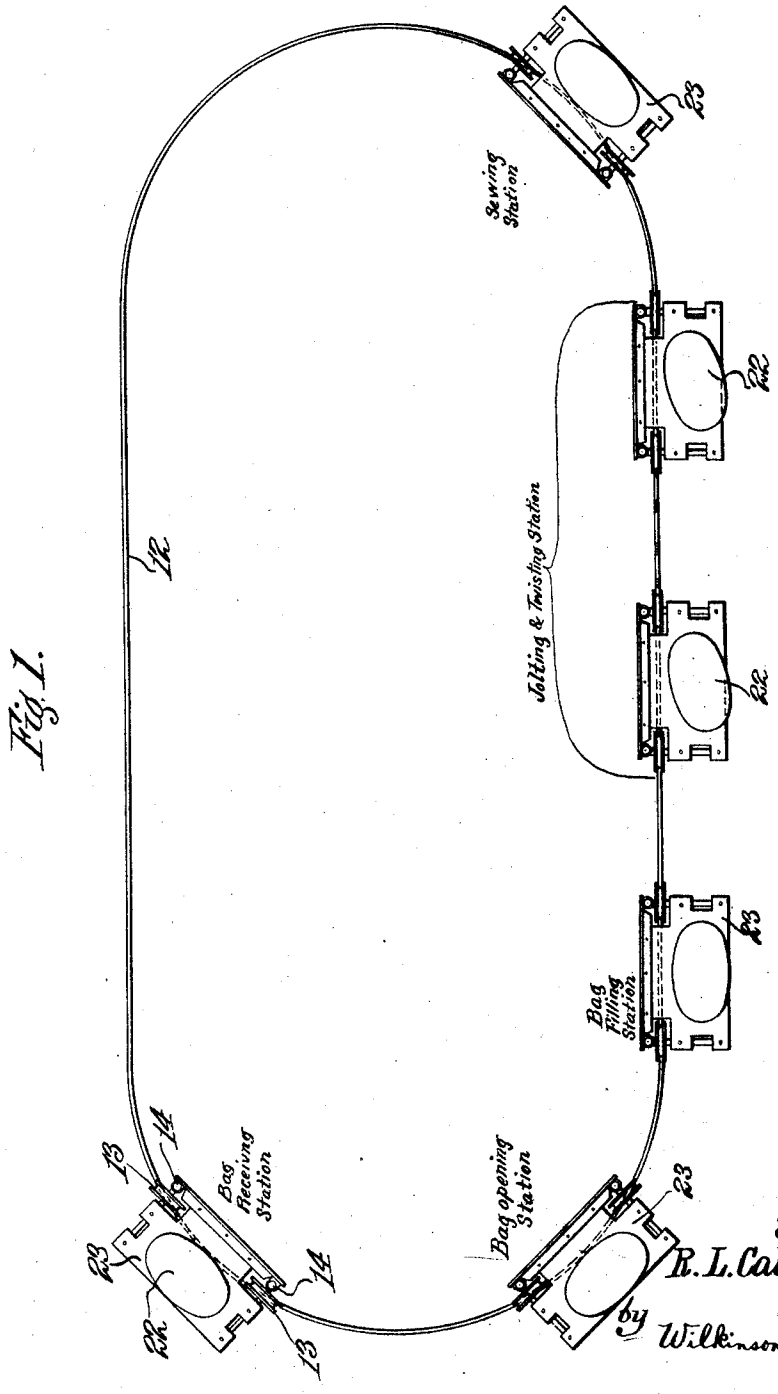


Fig. 1.

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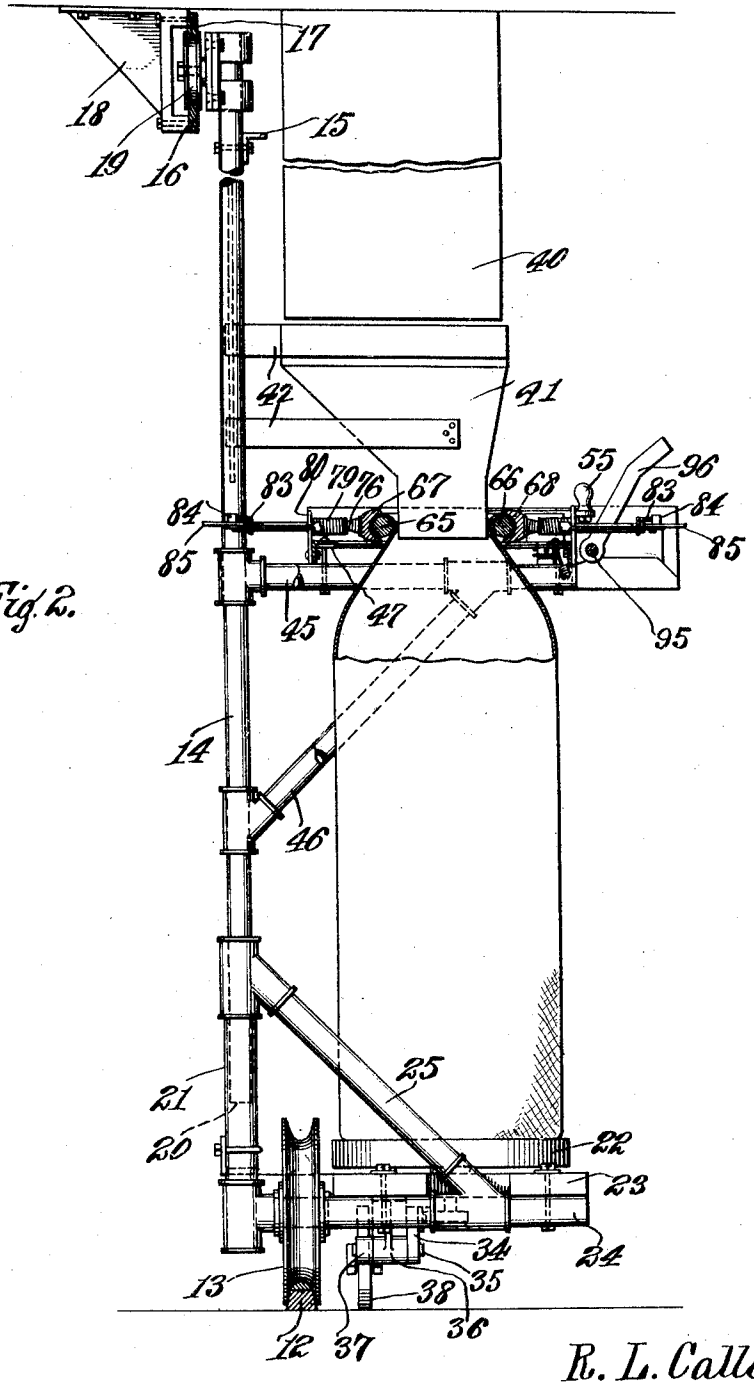


Fig. 2.

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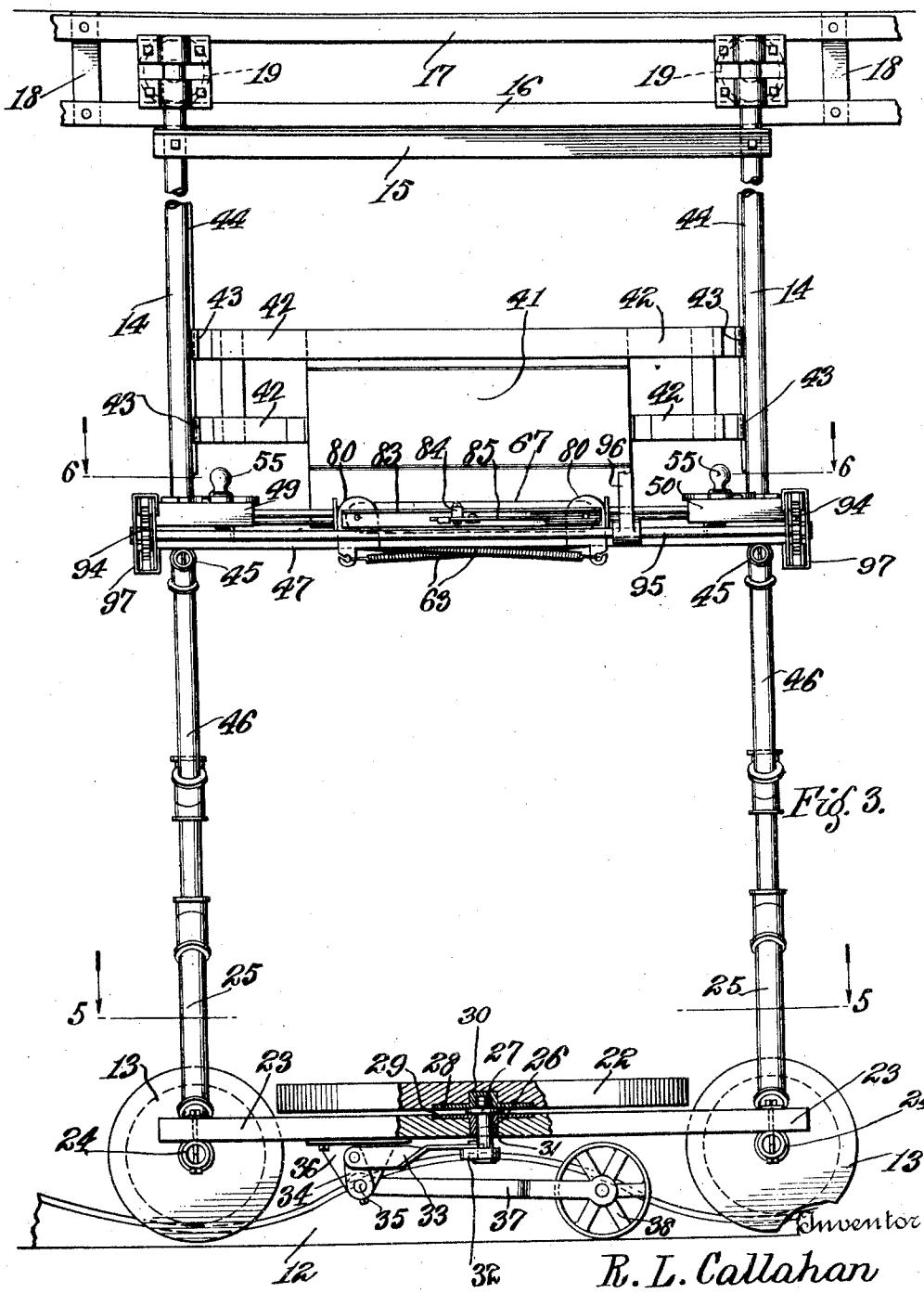


Fig. 3.

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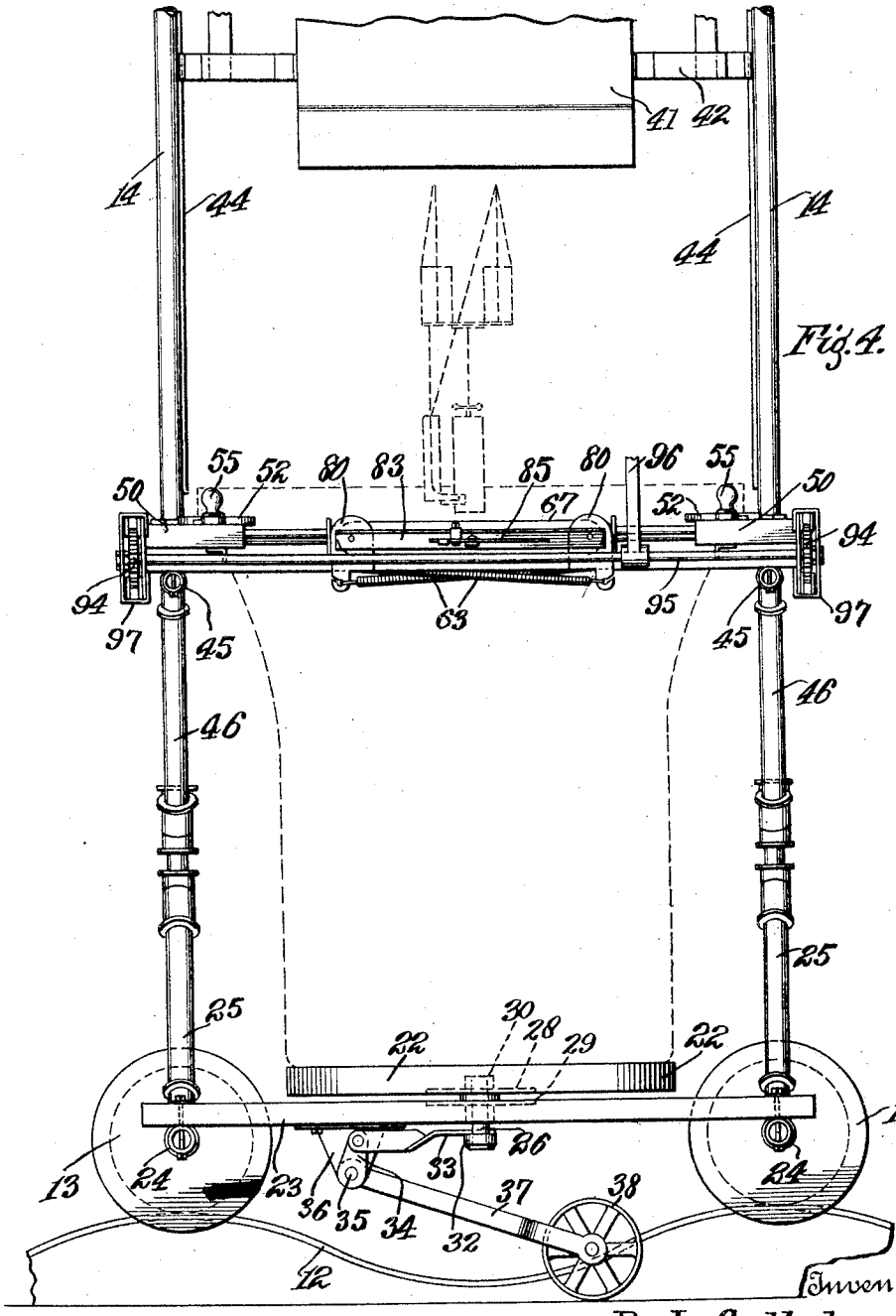


Fig. 4.

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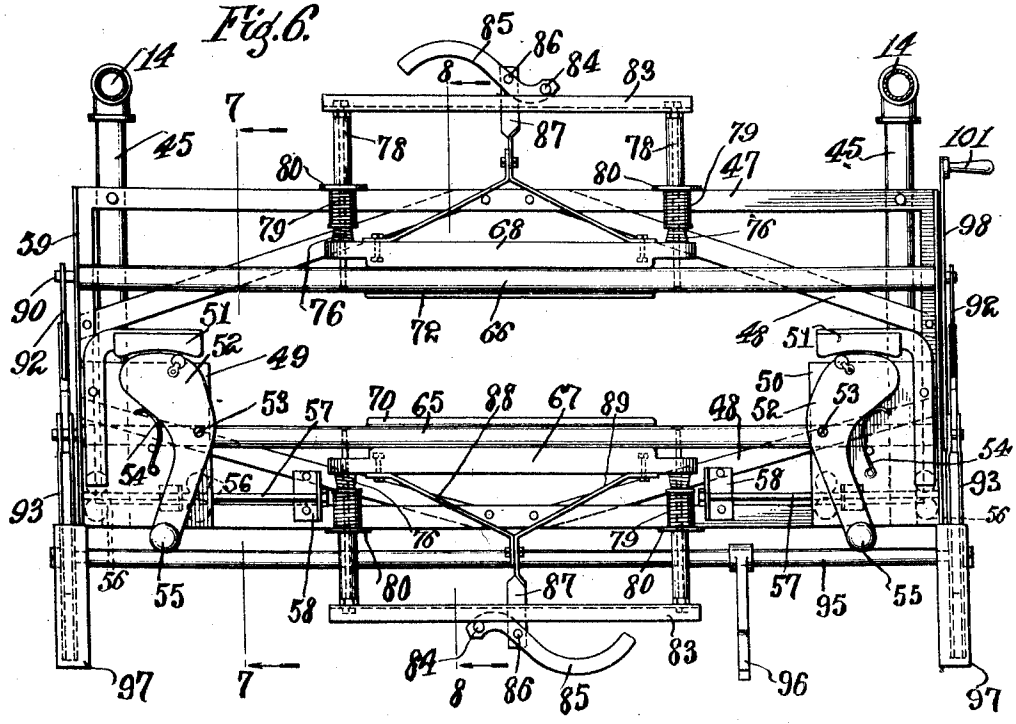
Oct. 2, 1928. 1,686,404

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SACK FILLER

Original Filed Sept. 18, 1926 7 Sheets-Sheet 5

Fig. 6.



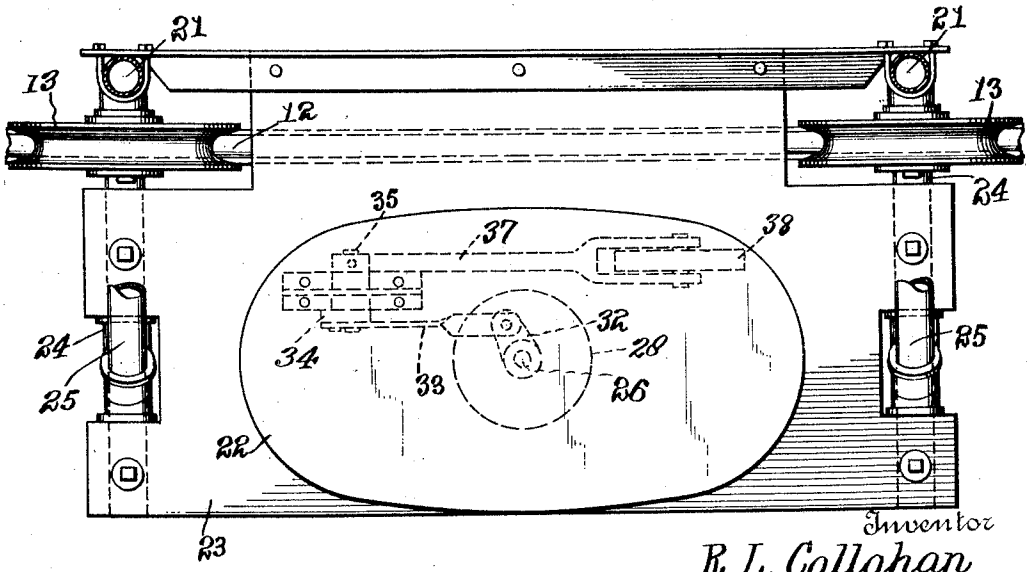


Fig. 5.

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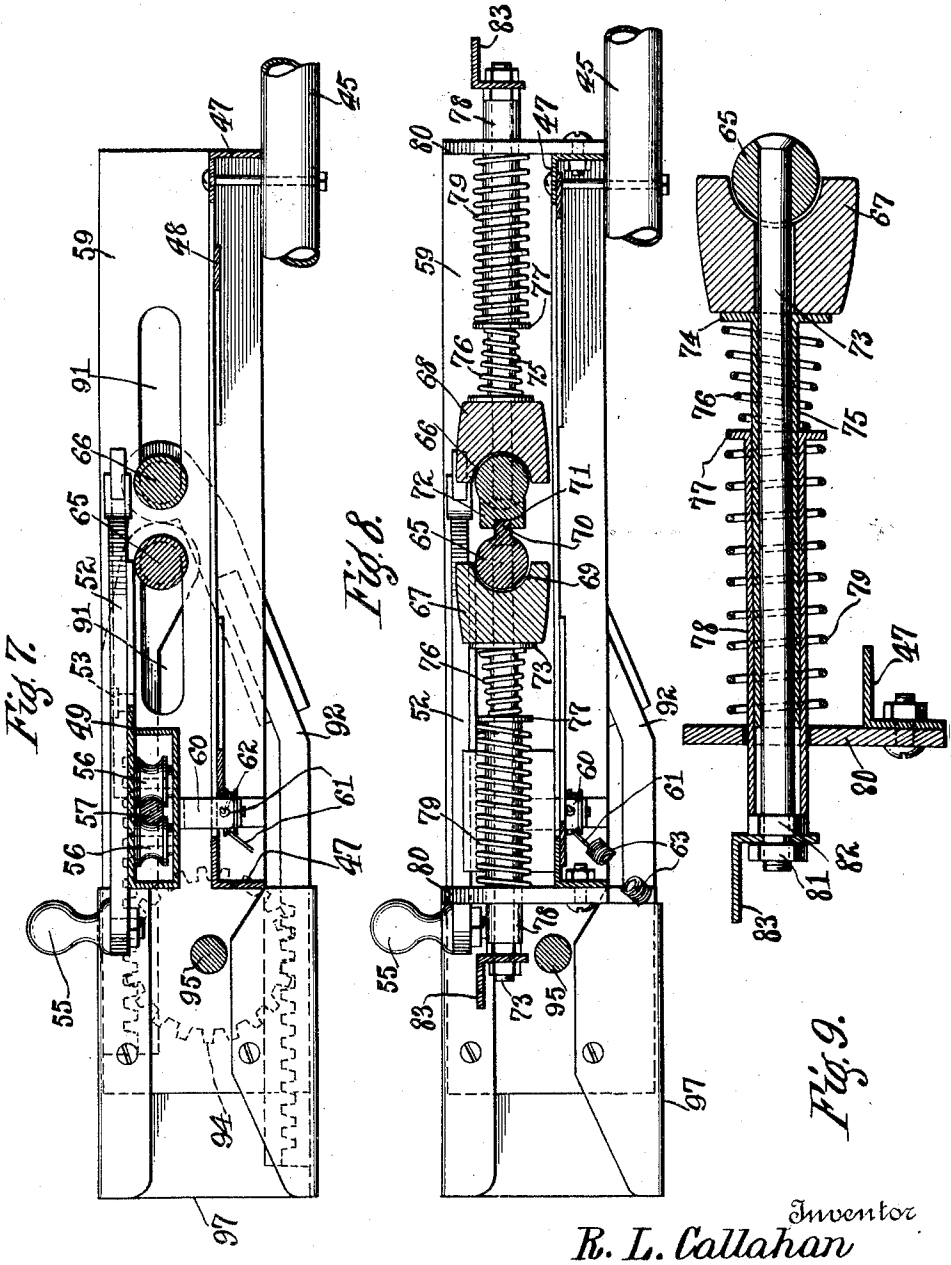


Fig. 7.

Fig. 8.

Fig. 9.

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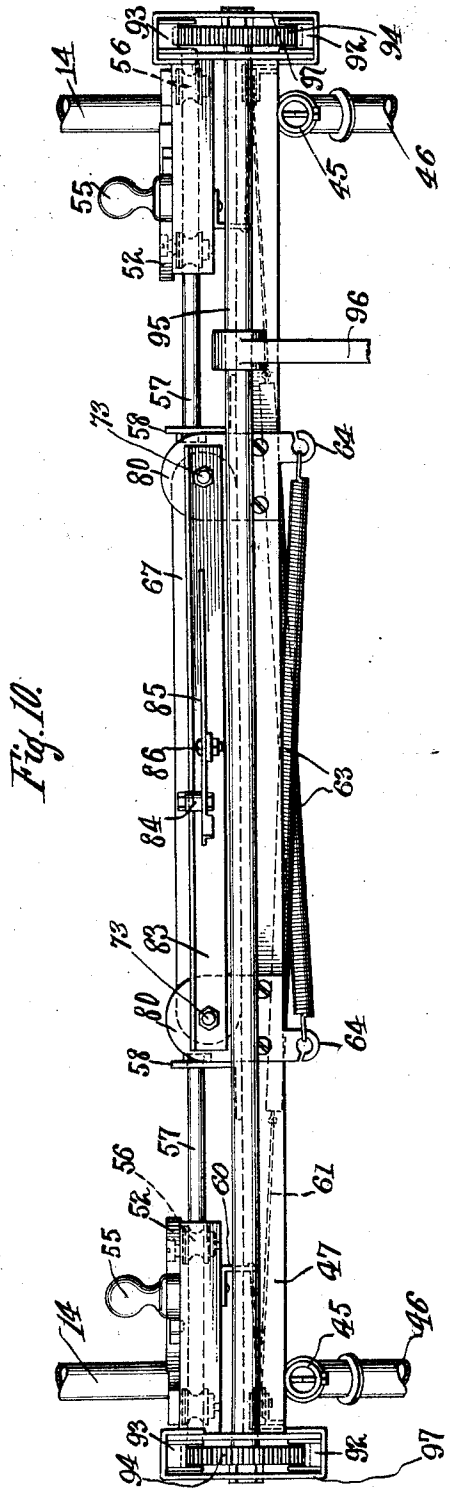


Fig. 10.

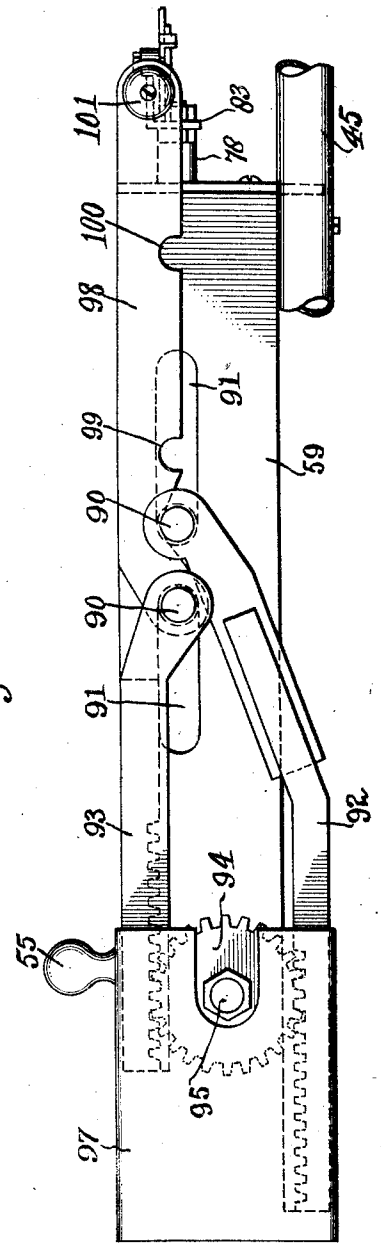


Fig. 11.

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UNITED STATES PATENT OFFICE.

ROBERT LEE CALLAHAN, OF LOUISVILLE, KENTUCKY.

SACK FILLER.

Application filed September 18, 1926, Serial No. 136,295. Renewed April 11, 1928.

The present invention relates to improvements in sack fillers and has for an object to provide an improved device for holding a sack while it is being filled with such commodities as grain, cereals, rice, sugar, coffee, etc., and at the same time providing for the jolting, twisting, closing and sewing of the sacks.

Another object of the invention is to provide an apparatus which admits the speedy handling of great numbers of sacks in order to increase the present possible out-put and to achieve this with a less number of operators at decreased labor cost.

A further object of the invention resides in providing an improved clamping device for the mouth of the bag which will facilitate the placing, removal and holding of the bag.

A still further object of the invention resides in the provision of an improved supporting platform for the bottom of the bag, with mechanism to subject this platform to both an undulating and an oscillating movement, whereby to secure a jolting and a twisting action in the bag to pack the contents tightly therein and to thereby permit freedom at the edges of the bag for the subsequent sewing operation.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a diagrammatic view showing an apparatus according to the present invention.

Figure 2 is a front elevation, with parts shown in section, of one of the carriages with a bag mounted in place thereon.

Figure 3 is a side elevation, with parts shown in section of the carriage with the lower portion thereof in the lowered position.

Figure 4 is a similar view with a lower portion of the carriage in the raised position and with the sewing mechanism and bag indicated in dotted lines.

Figure 5 is a horizontal section taken on the line 5—5 in Figure 3.

Figure 6 is a section on the line 6—6 in Figure 3 with the hopper removed.

Figure 7 is a transverse section taken on the line 7—7 in Figure 6.

Figure 8 is also a cross section taken on the line 8—8 likewise in Figure 6.

Figure 9 is a section taken on an enlarged scale through one of the clamping devices.

Figure 10 is an enlarged fragmentary front elevation of the bag holding mechanism, and

Figure 11 is an end elevation of the bag holding device.

Referring more particularly to the drawings, Figure 1 shows diagrammatically a substantially oval track on which are mounted a number of carriages. Each of these carriages is supplied with a bag holding device, and by means of the carriages the bag is shifted about the track to a number of different stations where the bag is initially placed in the holder, subsequently filled, jolted, twisted, closed, sewed and finally removed.

One of the carriages is shown in Figures 2, 3 and 4 in which figures, 12 designates the oval, circular or other track placed upon the platform, floor of the factory or other appropriate support and engaged by the wheels 13 of the carriage which includes the frame work made from tubular metal or other suitable material.

The side or vertical bars of the frame work are indicated at 14, and these bars may be two in number, as indicated in Figures 3 and 4, coupled together by rails 15 and hung from an upper track, shown in Figures 2 and 3 which preferably comprises the lower and upper rails 16 and 17 carried by a bracket 18 held upon the roof, ceiling or other support. The rails 16 and 17 receive therebetween the wheels 19, which are journaled upon the upper ends of the posts or standards 14. The upper portion of the carriage frame is thus supported from the upper track which is of like oval, circular or other form conforming to that of the lower track 12. The rails or standards 14 have their lower ends indicated at 20 in Figure 2 extending down telescopically and slidably within the lower tubular members 21 of the lower movable portion of the frame work. Rather the tubular members 21 are enabled to slide up and down upon the lower portions 20 of the carriage standards as required by the wave-like or undulating portion of the track 12, as indicated in Figures

3 and 4. This undulating portion of the track subjects the lower carriage frame to a vertically reciprocating or undulating motion suitable for jolting the bag and its contents, the bag bottom being indicated to rest upon a platform 22, which is carried by the lower movable carriage frame.

This lower carriage frame comprises a bed 23 mounted upon the transverse tubes or rods 24, which connect at substantially right angles with the lower portion of the vertical tubes 21. Diagonal braces 25 may also be provided between the upper portions of the vertical tubes 21 and the outer portions of the tubes 24. The wheels 13 support this lower frame structure. The platform 22 is pivoted upon the bed 23 and is adapted to oscillate in a horizontal plane about the central pivot pin 26, which is provided with a flange 27 to engage between the wear plates or discs 28 and 29 mounted respectively flush within the lower face of the platform 22 and the upper face of the bed 23. The upper projecting portion of the pivot pin 26 above the flange 27 is threaded to engage threads in the socket 30 projecting upwardly from the central part of the wear plate 28, and the flange 27 is wedged tightly against this wear plate in order to bind the platform upon the pin. The flange 27 also prevents the pin 26 from dropping through the bushing 31, which projects downwardly from the lower wear plate 29 and through an opening in the bed 23. The lower end of the pin is provided with an arm 32, as shown more particularly in Figure 5. This arm is connected to one end of a link 33, shown in Figures 3 and 5 and the link at its other end is pivotally coupled to an upstanding arm 34 upon a rock shaft 35 journaled in brackets 36 below the bed 23. The rock shaft is affixed to an arm 37 having a forked or other end for carrying a weighted wheel 38 adapted to roll along the supporting surface beside the track 12, but to avoid traveling upon said track. In other words, while the lower carriage portion partakes of the undulating movement derived from the wave-like track portion, the wheel 38 travels beside such wave-like track upon a continuously and uniformly horizontal supporting surface thereby setting up an oscillating movement in the rock shaft 35, which is communicated by the connections described to the vertical pivot pin 26 and consequently to the platform 22 which receives the bottom of the bag. By this means the bag and its contents are subjected to a twisting movement, which serves to insure the settling of the contents toward the bottom of the bag. This twisting movement, aided by the vertical reciprocating movement occasioned by the undulating track, will cause the contents to be packed tightly in the bag and to leave a space above the contents and the bag mouth for enabling the bag to be closed and sewed.

In Figure 2 there is shown the spout or delivery portion 40 of the weighing machine by which the feed, grain or other material is delivered in measured quantities to the sacks or containers. The carriages containing the bags are brought under this delivery spout and material is permitted to descend into a hopper 41 carried by the upper portion of the carriage and having its lower end projecting into the mouth of the bag. The hopper 41 will be movably carried by the carriage, so as to enable an operator to lift it out of the bag mouth when the bag has been filled. The hopper 41 is for this purpose carried upon arms 42 having shoes 43 for engaging flanges 44 on the carriage standards 14.

The device for holding the upper end of the bag in place and for holding the mouth open is supported upon the tubular arms 45, which extend laterally from the carriage standards 14 and are braced by the diagonal braces 46. Upon these arms 45 is secured a rectangular frame 47, clearly shown in Figure 6. The open rectangular frame 47 is reinforced by the diagonal braces 48. Two slides 49 and 50 are mounted at opposite ends of the rectangular frame and each such slide carries a pair of clamp jaws for clamping the doubled thicknesses at opposite end portions of the mouth of the bag. The fixed jaws are indicated at 51 and the movable jaws at 52, such movable jaws being pivoted as indicated at 53 upon the slide plates and urged by coil springs 54 into tight wedging engagement with the bag material. The movable or pivoted jaws are provided with tail pieces having handles 55 by which the jaws can be swung apart to release the bag.

The slide plates 49 and 50 are movable toward and away from each other to provide for the holding of bags of various sizes to permit initially gripping the bag mouth when in closed condition, but subsequently permitting of the opening of the bag mouth by the stretching apart of its sides as later referred to. The slide plates 49 and 50 are provided with a number of sets of grooved rollers 56 for engaging upon opposite sides of horizontal guide rods 57, such guide rods being carried in angle clips 58 on the rectangular frame and in upwardly extending flanges 59 upon the opposite ends of the frame 47.

As shown in Figure 10, the slides are provided with brackets 60 to which are secured the ends of flexible cords or cables 61. These cables extend about pulleys 62 carried by the rectangular frame 47. The other ends of the cables 61 are secured to the coil spring 63. The coil springs have their opposite ends secured in appropriate brackets 64 on the frame. When the slides

carrying the clamp jaws are drawn together, the coil spring 63 will be distended, so that when the slides are released these springs will tend to draw them to the outward position, shown in Figure 6. The springs 63 subserve the further function of drawing the bag ends outwardly or taut and serve to hold the bag mouth open.

While the doubled end portions of the bag mouth are held in the clamp jaws of these slides, the opposite side edges of the bag mouth are, as shown in Figure 2, rolled over in opposite directions about the rounded jaws 65 and 66, to which the bag is held affixed, because of the pressure of the companion jaws 67 and 68. These jaws are best shown in Figures 8 and 9 and the companion jaws at each side constitute side clamps which, with the end clamps above referred to, serve to hold the mouth of the bag distended. The jaws 65 and 66 are preferably round in cross section to permit of easily rolling the ends of the bag there over, while the outer jaws 67 and 68 are of larger dimensions and provided with concave or partially cylindrical sockets 69 in order to envelop a great area of the bag about the rounded jaw and to encompass a relatively great area of such companion jaw, whereby greater hold will be secured upon the bag. The jaw 65 is provided with a tongue 70, as shown in Figures 6 and 8 along its central portion to fit within a groove 71 provided in a projecting rib 72 upon the opposite jaw 66. This tongue and socket arrangement is to initially clamp the bag below the edges, while such edges are being rolled about the jaws 65 and 66.

During this rolling process, the larger jaws 67 and 68 are drawn away from the jaws 65 and 66 and for this purpose said rounded jaws are fixedly carried upon the supporting rods 73, while the outer jaws 67 and 68 are freely slidable over these rods 73. This construction is shown in Figure 9 wherein the jaws 67 and 68 are shown as engaged by the flanges 74 of sleeves 75, which slide freely over the rods 73. A coil spring 76 engages the flange 74 at one end and a flange 77 at its other end, which flange 77 is upon a second sleeve 78 slidable freely over the inner sleeve 75. A coil spring 79 is wound about the outer sleeve 78 and engages against the flange 77 at one end and against a guide plate 80 at its other end. This guide plate is secured to the rectangular frame 47. The outer ends of the rods 73 are reduced and threaded to receive the lock nuts 81 and 82 by which these rods are secured to the cross pieces 83. The cross pieces are shown more particularly in Figure 6 as joining the two rods 73. The cross pieces 83 serve the further function of acting as abutments for the rollers or pins 84 on the ends of the curved hand levers 85, which are pivoted at 86 upon the ends of the yoke piece 87 having the branches 88 and 89 for connecting the same to opposite end portions of the larger outer jaws 67 and 68. By pulling upon the handle 85, the yoke piece 87 and its connecting jaw may be pulled outwardly away from the companion rounded jaw 65. The sides of the bag mouth are thus free to be rolled about the jaws 65 and 66 whereupon the handles 85 are swung back to the positions, shown in Figure 6, whereupon the coil springs will force the jaws 67 and 68 back upon the rounded jaws 65 and 66 and clamp the bag in place, as shown in Figure 2. When the hand levers 85 are thus manipulated, the coil springs 76 only are compressed in the act of drawing back the larger jaws 67 and 68. These springs 76 again force the jaws together when the hand levers 85 are released. The coil springs 79, however, are useful for forcing the one jaw assembly 65, 67 yieldably toward the other jaw assembly 66, 68. It is, of course, necessary that the two jaw assemblies be separated as indicated in Figure 6 when the bag is to be initially put in place and also when the bag is to be finally removed after filling. To this end the inner rounded jaws 65 and 66, as shown in Figure 6, are extended out to the ends of the rectangular frame 47, and as shown in Figures 7 and 11 these reduced trunnions 90 on these rounded jaws slide in slots 91 provided in the end flange or plate 59. As shown in Figures 7 and 11 the trunnions of the opposite jaws 65 and 66 are coupled to pairs of rack bars 92 and 93 having opposed teeth in mesh at opposite sides with a pinion 94. A cross shaft 95, shown in Figure 6, joins both of the pinions for simultaneous operation.

In Figure 6 is also shown a handle 96 for manually operating this shaft 95. The two pinions referred to are mounetd in housings 97 at opposite corner portions of the rectangular frame 47 and these housings also provide suitable guide ways for the sliding of the rack bars 92 and 93.

As shown in Figure 11 a latch 98 in the form of an arm pivoted to one of the trunnions 90 is provided, having notches 99 and 100 in its lower edge for engaging and interlocking with the companion trunnions. A handle 101 is provided upon the free end of the latch for lifting the engaged notch out of the trunnions to permit the separation of the jaws or the bringing of the same together.

As shown in Figure 4 in dotted lines a sewing mechanism is indicated as operating upon the bag while still in the holder.

In operation, the side jaw assemblies are separated as indicated in Figure 6 and the end jaw slides are in the outermost position as also shown in this figure. This condition is brought about by operating the

handle 96 to rotate the pinions 94 and through the rack bars 92 and 93 separate such jaws. The latch 98 in Figure 11 will automatically drop in place and hold the jaw assemblies thus separated without further attention on the part of the operator. This is desirable while securing the ends of the bag mouth in the end jaws carried by the slides 49 and 50. The bag is therefore let down between the two jaw assemblies or inserted upwardly therebetween, the two walls of the bag near one end of the mouth are inserted between the jaws 51 and 52 at one end of the rectangular frame 47, the movable jaw 52 being swung back to admit the bag edge. When released the movable jaw 52 due to the spring pressure exterted thereon will automatically hold the bag end. This operation is repeated at the other end by engaging the walls of the bag mouth in the two jaws of the opposite slide 50.

The side portions of the bag mouth are now to be secured in the side jaw assemblies and to this end the jaw assemblies are initially moved together, by the lever 96, so that the parts are brought into the condition shown in Figure 8. Here the tongue 70 and groove 71 construction will bind upon the bag, the intermediate portion of the bag mouth being lifted up before this clamping action takes place, so as to leave adequate material for rolling about the jaws 65 and 66, which operation is then performed, only of course after the larger jaws 67 and 68 are withdrawn by manipulation of the hand levers 85. These hand levers are subsequently released to enable the springs 76 to again force the jaws together upon the overturned edges of the bag mouths, as shown in Figure 2.

It now becomes necessary to spread the mouth of the bag in order to receive the material and for this purpose the lever 96 is again resorted to, by which the pinions 94 are rotated and the side jaw assembled separated a sufficient distance. The latch 98 in Figure 11 will hold the parts in this distended position against the action of the coil springs 79 which restore the parts to the closed position immediately after lifting the said latch.

In the diagrammatic Figure 1 a possible installation of a number of carriages is shown. These carriages may be moved about the oval track indicated by hand or by appropriate mechanical power. The various stations through which these carriages pass are indicated on the drawings, but it will be understood that the operations may be performed at any desired stations.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims.

What is claimed is:—

1. A sack filler comprising a movable carriage, means thereon to support the mouth of the sack, and a vibrating platform on the carriage on which the bottom of the sack continually rests.

2. A sack filler comprising a movable carriage, means thereon for holding the open end of the sack, and a platform movable on the carriage for continually supporting the bottom of the sack only and movable relatively toward and from the mouth of the sack to jolt the contents of the sack, and means for so moving said platform.

3. A sack filler comprising a movable carriage having a vibratable lower portion, means for subjecting said lower portion when the carriage is moving to vibration, and means on the carriage for supporting the mouth of the sack with the bottom continually resting upon the lower vibrating portion of the carriage.

4. A sack filler comprising a movable carriage, means on the carriage for holding the mouth of the sack, and an oscillating platform on the carriage for receiving the bottom of the sack and for twisting the same about the axis of the sack.

5. A sack filler comprising a wheeled carriage having a vibratable lower portion, a track for the wheeled carriage having an undulating portion, and means on the carriage for holding the mouth of the sack with the lower portion of the sack continually supported by the lower vibrating portion of the carriage.

6. A sack filler comprising a movable wheeled carriage having a vibratable lower portion, a track having an undulating portion for receiving the wheels of the carriage, an oscillatable platform on the lower vibratable portion of the carriage, means for oscillating said platform on movement of the carriage over the undulating portion of the track, and means on the carriage for holding the mouth of the sack with the bottom portion thereof continually supported upon the platform.

7. A sack filler comprising an endless track having an undulating portion, a carriage having a lower vibratable portion with wheels fitted to travel on said track, an oscillating platform on the lower vibratable portion of the carriage, said platform adapted to oscillate in a plane at substantially right angles to the plane of vibration of the lower carriage portion, means for subjecting the platform to vibration while the carriage travels over the undulating portion of the track, and means on the carriage for holding the mouth of the sack with the bottom thereof resting upon said platform.

8. A sack filler comprising upper and lower endless tracks, said lower track having an undultaing portion therein, a carriage having an upper fixed portion with wheels for traveling upon said upper track, and having a lower vertically vibratable portion with wheels adapted to travel upon the lower track, a horizontally oscillatable platform on the lower portion of said carriage, means for oscillating said platform during the interval that the carriage is passing over the undulating part of the track, and means on the upper portion of the carriage for suspending a sack from the mouth with the bottom portion thereof resting on said platform.

9. A sack filler comprising a track having an undulating portion, a carriage having wheels for engaging the track, a platform for receiving a bag on the carriage mounted for oscillating movement, and means for engaging the supporting surface adjacent said track for causing oscillation of the platform when the carriage is traveling the undulating portion of the track.

10. A sack filler comprising a wheeled carriage, a track having an undulating portion for receiving the wheeled carriage, an oscillating platform on the carriage for receiving the sack, a pivot pin for the oscillating platform, a rock shaft journaled on the carriage beneath the platform, connections between said rock shaft and pivot pin for rocking the same simultaneously, and a wheeled lever coupled to said rock shaft and engaging the horizontal supporting surface alongside said track for subjecting the platform to an oscillating movement when the carriage is passing over said undulating portion of the track.

11. A sack filler comprising movable clamps for holding the end portions of the mouth of a sack, means yieldably drawing said clamps apart, and movable side clamps for receiving the side portions of the sack mouth and adapted to draw said mouth apart and to draw the end clamps together whereby to hold the mouth of the sack distended.

12. A sack filler comprising end clamps to hold the end portions of the mouth of the sack, side clamps for receiving and holding the side portions of the sack mouth, said side clamps having means for initially holding the sack while the side mouth portions thereof are being engaged with the side clamps, and means for moving said side clamps toward and from one another.

13. A sack filler comprising end clamps for holding the end portions of the sack mouth, means for yieldably drawing said end clamps apart, movable side clamps for receiving and holding the side portions of the sack mouth, one of said clamps having a tongue and the other of said clamps having a groove to receive said tongue whereby to hold the sack while the side portions thereof are being engaged with the clamps, and means for moving said side clamps toward and away from each other.

14. A sack filler comprising means for holding the end portions of the mouth of the sack, side clamps for holding the side portions of the sack mouth, each of said side clamps comprising a pair of jaws, one of such jaws being of substantially round cross section to permit the rolling there about of the end portion of the sack, the other of said jaws having a partially cylindrical socket for receiving the companion round jaw, resilient means for urging said clamp jaws together upon the sack, and means for moving the two side clamps toward and away from each other.

15. A sack filler comprising means for holding the end portions of the mouth of the sack, side clamps movably mounted for receiving the side portions of the sack mouth, means for moving said side clamps toward and from each other, means for yieldably urging the side clamps together, and a latch means for holding the side clamps apart.

16. A sack filler comprising means for holding the end portions of the sack mouth, movable side clamps for receiving the side portions of the sack mouth, each of said side clamps comprising cooperating jaws movable relatively, yieldable means for forcing the jaws together, and yieldable means operated with said last named means for urging the side clamps together upon the sack mouth.

17. A sack filler comprising means for holding the end portions of the sack mouth, a pair of side clamps for receiving the side portions of the sack mouth, each of said side clamps comprising cooperating relatively movable jaws, movably mounted rods for holding one of said jaws, the other of said jaws being slidably mounted on said rod, yieldable means on the rod for both urging the two jaws of each side clamp together and also for yieldably urging the clamps as a whole toward one another, and means for shifting the side clamps apart.

18. A bag filler comprising means for holding the end portions of the bag mouth, said clamps for holding the side portions of the bag mouth, each of said side clamps comprising a pair of cooperating jaws for receiving the bag material therebetween, movably mounted rods connected to one of the jaws, the other of said jaws sliding on said rods, sleeves loosely extending over said rods and having flanges abutting against the last mentioned jaws, second sleeves slidably mounted on the last mentioned sleeves and having flanges thereon, coil springs wound about the first mentioned sleeves between the two flanges, fixed abutments, coil spring wound about said second sleeves between the flanges

thereof and said abutments, means for drawing the slidable jaws away from the companion jaws carried on said rods, and means for drawing both jaws as a unit away from the opposite clamp member.

19. A sack filler comprising a pair of slides adapted to move toward and from each other, yieldable means for retaining the slides apart, clamp means carried by said slides for engaging the end portions of the sack and for maintaining the same under tension, and movable means for holding the side portions of the mouth of the sack.

20. A sack filler comprising a pair of movably mounted slides adapted to be shifted toward and from each other, yieldable means for maintaining the slides apart, clamp jaws for receiving and holding the end portions of the mouth of the sack, movably mounted side clamps shiftable in directions at substantially right angles to the direction of movement of said slides and for engaging the side portions of the sack mouth, and means for shifting said side clamps toward and from one another.

21. A sack filler comprising clamp means for holding the end portions of the mouth of a sack, side clamps for holding the side portions of the sack mouth, rack bars coupled to said side clamps, connected pinions for meshing with said rack bars, and means for simultaneously shifting said pinions and rack bars whereby to open and close said side clamps.

22. A sack filler comprising clamp means for securing the end portions of the mouth of a sack, movable side clamps for engaging the side portions of the sack mouth, opposed rack bars secured to the end portions of said side clamps, connected pinions meshing with said opposed rack bars, means for rotating said pinions, and a latch pivoted to one clamp member and adapted to engage with the other clamp members to hold the clamp members either together or apart.

23. A sack filler comprising a carriage, a track for the carriage having an undulating portion, means for holding the mouth of the sack in open position, a movable mounted hopper on the carriage above the sack, an oscillating platform on the carriage below said means and for receiving the bottom of the sack, and means for oscillating said platform when the carriage is passing over the undulating part of the track.

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