No. 815,091. PATENTED MAR. 13, 1906.

J. F. JONES & C. T. ODENA.

APPARATUS FOR FILLING AND PACKING BAGS.

APPLICATION FILED AUG. 20, 1904.

4 SHEETS—SHEET 1.

Fig. 6.

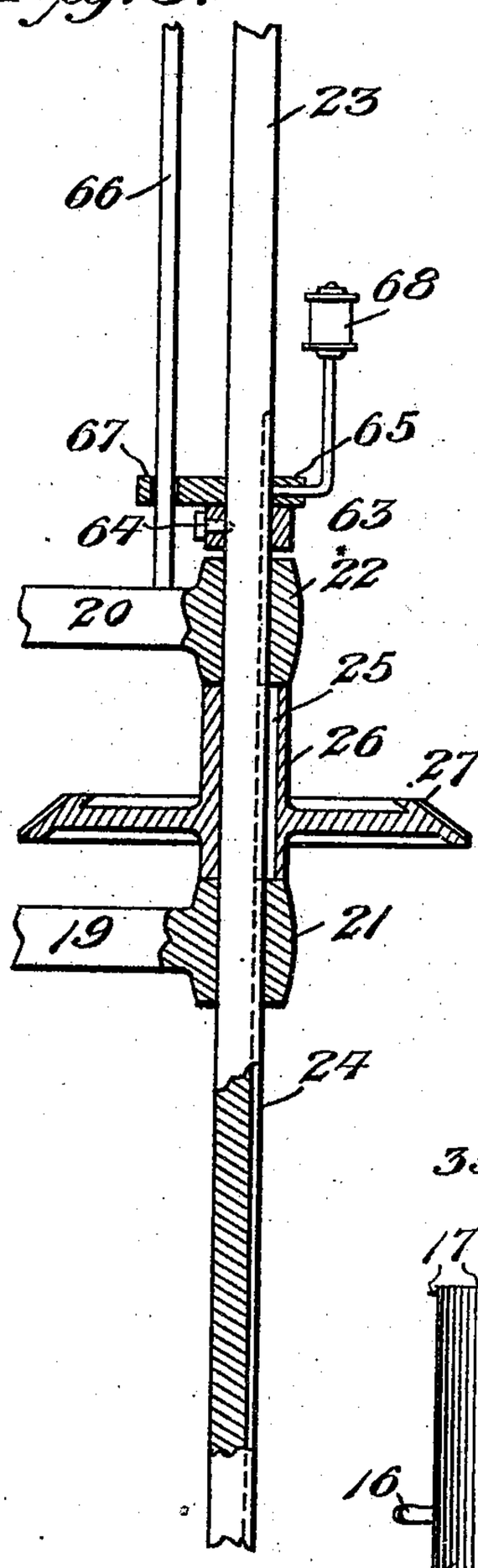
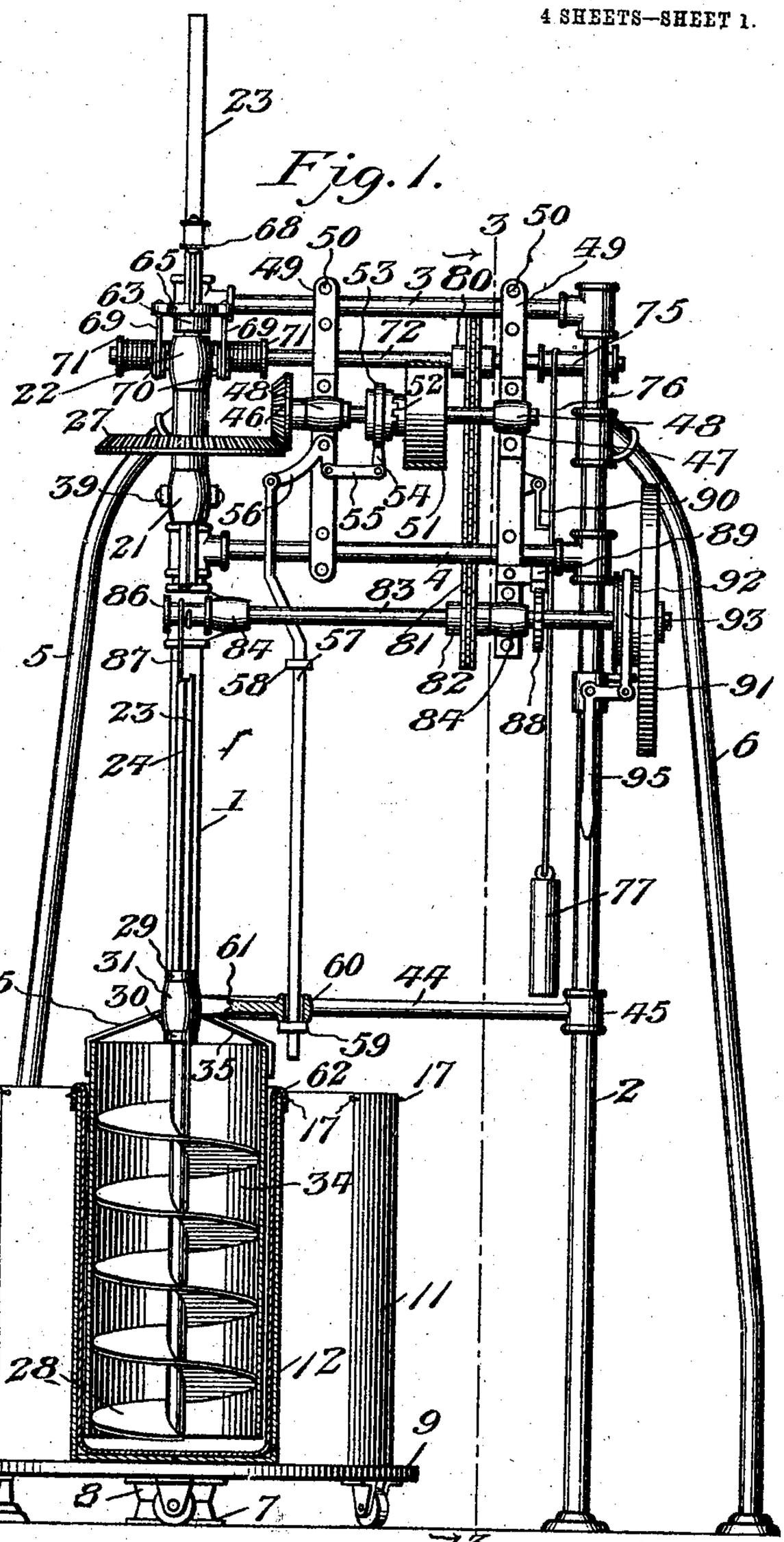


Fig. 1.



Witnesses

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4 SHEETS—SHEET 2.

Fig. 2.

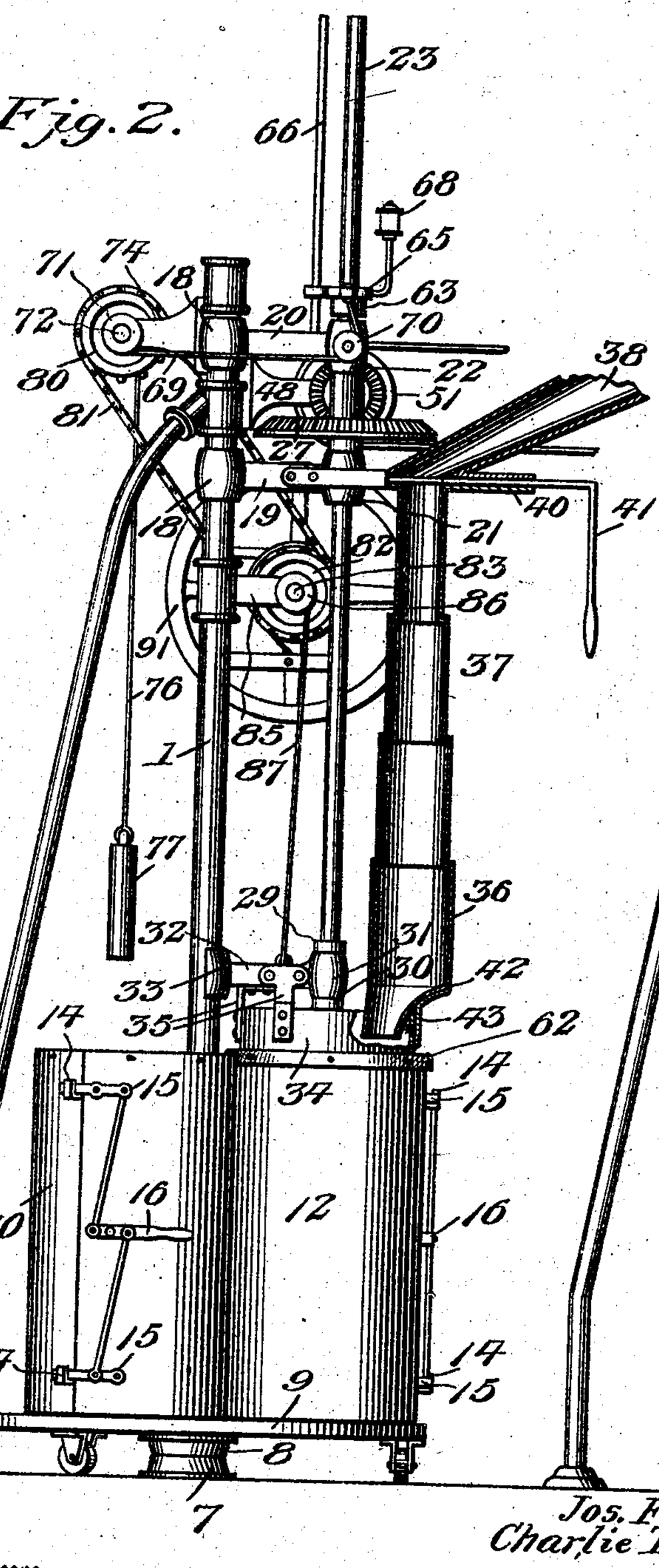
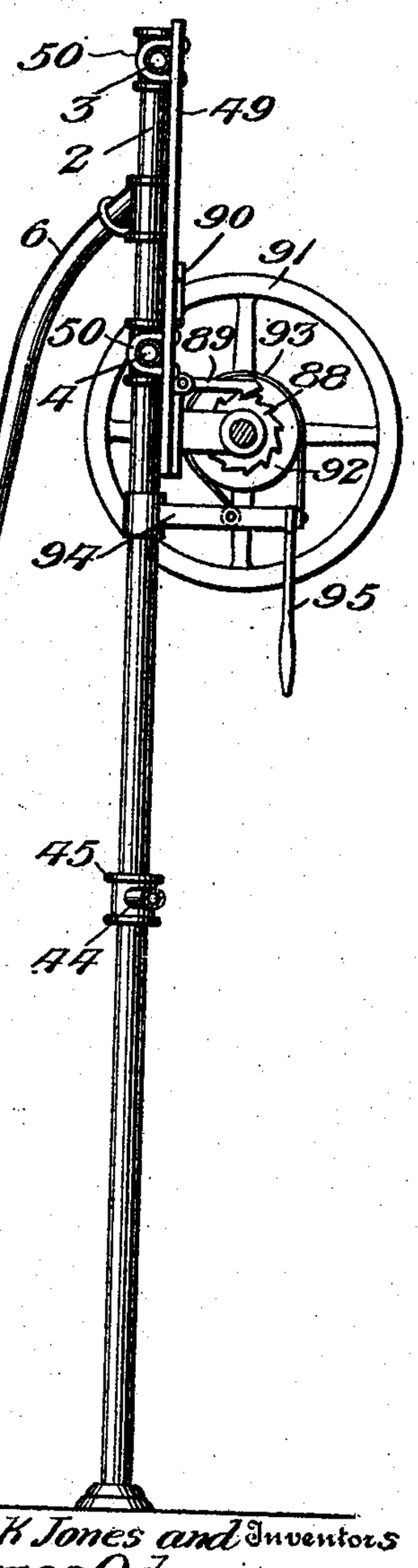


Fig. 3.



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4 SHEETS—SHEET 3.

Fig. 4.

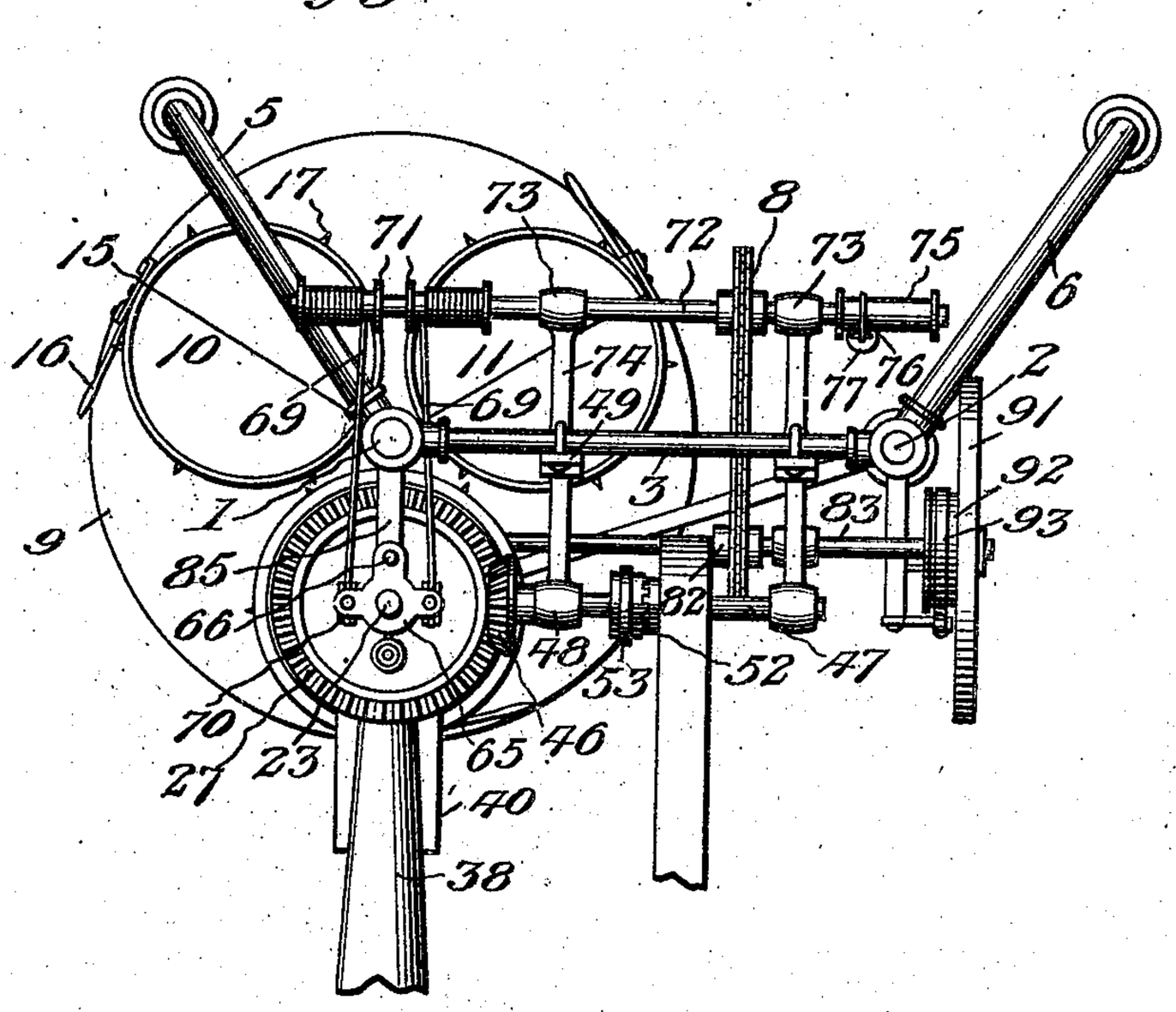
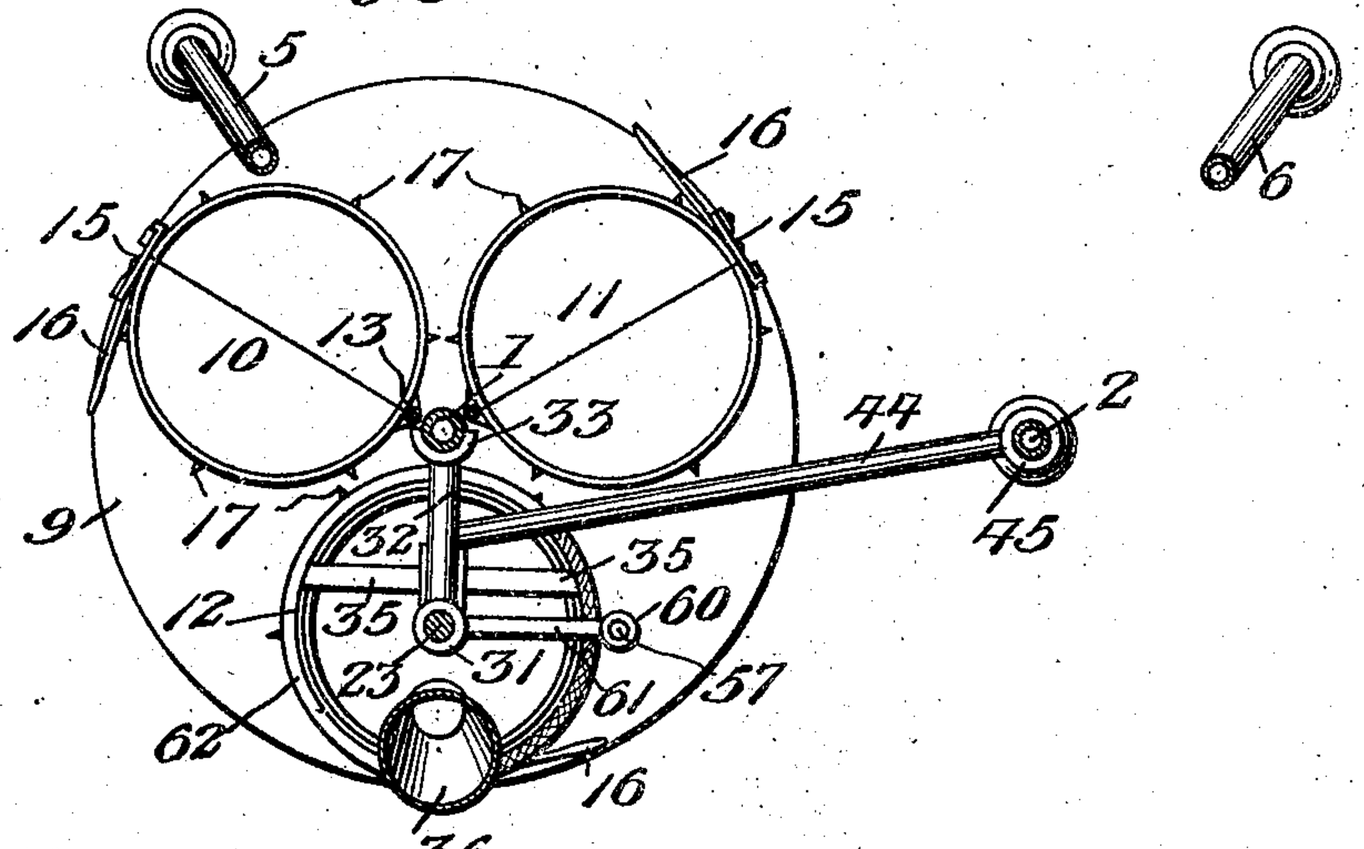


Fig. 5.



WITNESSES:

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4 SHEETS—SHEET 4.

Fig. 7.

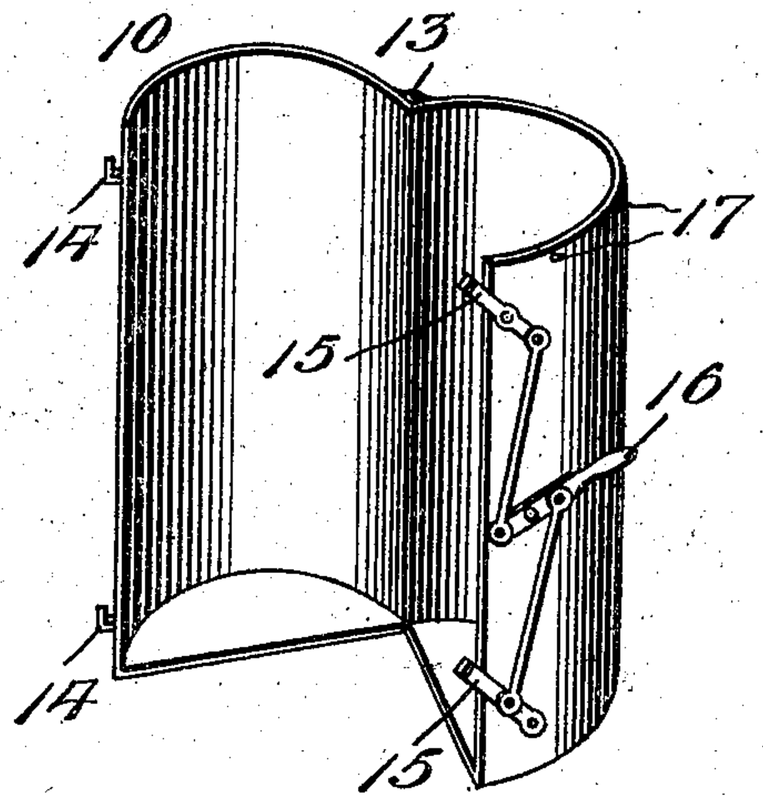
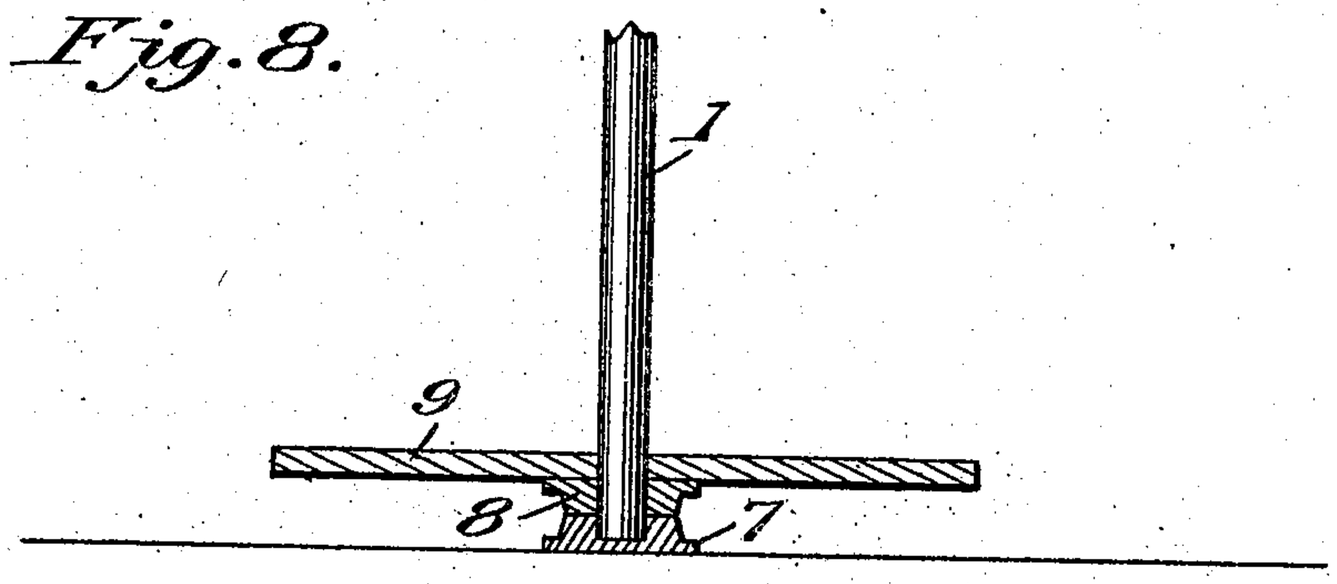


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOSEPH FRANK JONES AND CHARLIE THOMAS ODENA, OF HAMPTON, MISSISSIPPI.

APPARATUS FOR FILLING AND PACKING BAGS.

No. 815,091. Specification of Letters Patent. Patented March 13, 1906.

Application filed August 20, 1904. Serial No. 221,578.

To all whom it may concern:

Be it known that we, JOSEPH FRANK JONES and CHARLIE THOMAS ODENA, citizens of the United States, residing at Hampton, in the county of Washington and State of Mississippi, have invented new and useful Improvements in Apparatus for Filling and Packing Bags, of which the following is a specification.

This invention relates to apparatus for filling and packing bags, barrels, and other portable receptacles.

The principal objects of the invention are to improve and simplify the feeding means, the packing means, and the holding means.

With the foregoing and other minor objects in view, which will appear as the description proceeds, the invention resides, primarily, in an apparatus of the character specified, comprising a rotary table supporting a plurality of holding devices, such as cylindrical casings, adapted to receive bags or barrels, a spiral element or packing-screw adapted to descend in turn into each of the holding devices and to rise gradually therefrom in an automatic manner as it packs the material fed thereinto, and a telescopic feed-tube adapted to feed any suitable material—such, for instance, as cotton-seed hulls or bran—into the holding device in which the packing-screw is operated, and to rise therefrom or telescope as the packing-screw rises.

The invention also resides in novel mechanism for regulating the tension or pressure of the spiral element or packing-screw in order to control the hardness with which material is to be packed into the bag, barrel, or other receptacle.

Furthermore, the invention resides in the particular combination and arrangement of parts and in the precise details of construction hereinafter described and claimed as a practical embodiment of the invention.

In the accompanying drawings, forming part of this specification, Figure 1 is a front elevation, partly in section, of an apparatus constructed in accordance with the invention. Fig. 2 is a side elevation thereof. Fig. 3 is a vertical section on the line 3 3 of Fig. 1. Fig. 4 is a plan view of the improved apparatus. Fig. 5 is a horizontal section taken on a line above the rotary table and holding devices disposed thereon. Fig. 6 is a detail view of the shaft of the spiral element or packing-screw and the parts connected therewith. Fig. 7 is a perspective view showing one of the holding devices or cylindrical casings in open position. Fig. 8 is a vertical section through the rotary table on which the holding devices are supported.

Like reference-numerals indicate corresponding parts throughout the different views.

The framework of the improved apparatus preferably comprises a pair of parallel uprights 1 2, connected by cross-pieces 3 4 and maintained in rigid position by braces 5 6. As shown in Fig. 8, the upright 1 is stepped in a suitable socket 7, upon which rests a collar 8, attached to the lower surface of a rotary element or table 9. Mounted upon the rotary element or table 9 is a plurality of holding devices 10 11 12. As shown in Fig. 7, each of the holding devices 10 11 12 preferably comprises a cylindrical casing divided into two parts, which are hinged to each other, as shown at 13, and provided with hooks 14, adapted to be engaged by pivoted latches 15, operated by means of a handle 16 to lock the casing in closed position and to permit it to be opened readily to remove therefrom the bag, barrel, or other receptacle which has been filled. In order to facilitate its use as a bag-holding device, each of the casings 10 11 12 is provided with pins or projections 17, which engage the bag when it is placed in position.

Upon the upright 1 is a plurality of fixed collars or sleeves 18 18, from which extend stationary arms 19 20, formed at their outer ends with bearing-sleeves 21 22, in which is journaled a rotary vertically-adjustable shaft 23, which, as shown in Fig. 6, is formed with a spline-groove 24, into which projects a key or spline 25, formed on the interior of the hub 26 of a beveled gear-wheel 27, which, as shown, is mounted between the bearing-sleeves 21 22. It will be seen that the construction described permits the shaft 23 to move in a vertical direction when necessary and at the same time to be rotated by means of the gear-wheel 27 in a manner hereinafter to be described. Upon the lower end of the shaft 23 is a spiral element or packing-screw 28. Above the packing-screw 28 the shaft 23 is provided with a pair of stationary collars 29 30, between which is mounted a sleeve 31, which is formed with an arm 32, having a semicylindrical bearing-sleeve 33, which rests

against the upright 1 and slides thereon when the shaft 23 is raised or lowered, as hereinafter described. Surrounding the spiral element or packing-screw 28 is a cylindrical casing 34, which is supported by brackets 35, attached to the arm 32 of the sleeve 31, so that said casing 34 always surrounds the packing-screw 28 and ascends and descends therewith. It will be observed that the casing 34, which surrounds the packing-screw, is adapted to fit concentrically into each of the holding devices 10 11 12 in turn.

Resting upon the upper edge of the casing 34 is the lower enlarged section 36 of a telescopic feed-chute 37, connected with the lower end of a feed-pipe 38, supported by brackets 39, attached to opposite sides of the arm 19, carried by the upright 1. A slide-valve 40, operated by means of a handle 41, is provided to control the passage of material through the feed-pipe 38. The lower section 36 of the telescopic feed-chute 37 is curved or contracted, as shown at 42, so as to rest securely upon the casing 34, and said section 36 is held securely in place by means of a bracket 43. It will be understood that the feed-chute 37 will telescope as the shaft 23, with its packing-screw 28 and casing 34, ascends and descends during the operation of filling and packing bags, barrels, and the like.

As shown in Fig. 5, the arm 32, which connects the sleeve 31 on the lower portion of the shaft 23 with the semicylindrical bearing-sleeve 33 on the upright 1, is braced by means of an arm 44, provided with a bearing-sleeve 45, which encircles the upright 2 and is adapted to slide up and down thereon during the operation of the packing-screw. The arms 32 and 44 securely brace and steady the lower end of the shaft 23, so as to guide the casing 34 and packing-screw 28 accurately into each of the holding devices 10 11 12 in turn as the table 9 is rotated.

The vertically-movable packing-screw shaft 23 is operated by means of a bevel-wheel 46, mounted upon an operating-shaft 47 and meshing with the bevel-wheel 27 upon said packing-screw shaft 23. The operating-shaft 47, which is mounted in bearings 48, carried by the metallic straps 49, connected with the cross-pieces 3 and 4 of the machine-frame by means of staples 50, is operated by means of a belt-wheel 51, having a toothed or serrated hub 52, adapted to be engaged by a clutch member 53, which is longitudinally movable upon said operating-shaft 47. Connected with the clutch member 53 is an arm 54, to which is attached a link 55, connected with one arm of a bell-crank lever 56, pivoted upon one of the straps 49. Pivotally connected with the other arm of the bell-crank lever 56 is a downwardly-depending rod 57, which is formed with two fixed collars 58 and 59 in spaced relation to each other. Surrounding the rod 57, between the collars 58 and 59, is a sleeve 60, to which is connected an arm 61, attached at its other end to the sleeve 31, carried by the packing-screw shaft 23. When the packing-screw shaft 23 is lowered into one of the holding devices 10 11 12, the sleeve 60 slides down the rod 57 until it strikes the lower collar 59, thereby depressing the rod 57 sufficiently to throw the clutch member 53 into engagement with the belt-wheel 51. It will be understood that the clutch member 53 is splined upon the shaft 47 and that when said clutch member is engaged with the belt-wheel 51 the shaft 47 will be actuated to rotate the packing-screw shaft 23. During the rotation of the packing-screw shaft 23 the valve 40 in the feed-pipe 38 is opened to permit material to be fed into the casing 34 on top of the packing-screw 28. As said packing-screw rotates it effectually packs or treads the material into the sack 62, which in Fig. 1 is shown in position upon one of the holding devices 10 11 12. As the packing-screw 28 rotates the material which it gradually compresses or packs into the sack causes said packing-screw, together with the surrounding casing 34 and shaft 23, to rise gradually from the holding device and bag or barrel, thus packing the material evenly throughout the entire length of said bag or barrel. As the packing-screw 28 and casing 34 rise the sleeve 60, carried by the arm 61 on the sleeve 31 of the packing-screw shaft 23, gradually slides up the rod 57 until when the bag or barrel is completely filled said sleeve 60 strikes against the upper fixed collar 58 of said rod 57, and thus throws the clutch member 53 out of engagement with the belt-wheel 51 to stop the rotation of said feed-screw shaft 23.

In order to regulate the tension or pressure of the packing-screw 28, so as to control the hardness with which the material is packed into the bag or barrel, the following mechanism is employed: Upon the packing-screw shaft 23 above the sleeve 22, which is connected with the arm 20 of the upright 1, is a fixed collar 63, that is held in position by means of a screw 64. Loosely surrounding the shaft 23 above the fixed collar 63 is a plate 65, which is prevented from rotating with said packing-screw shaft 23 by means of a stationary vertical rod 66, mounted upon the arm 20 and extending through a suitable perforation 67 in said plate 65. A lubricating device, such as 68, is connected with the plate 65 in order to permit the packing-screw shaft 23 to rotate freely therein. It will be understood, of course, that the plate 65 ascends and descends with the shaft 23, but, as stated, is prevented from rotating by the rod 66. Attached in any suitable manner to opposite sides of the plate 65 is a pair of flexible elements, such as chains or cords 69, which pass around suitable pulleys 70, mounted upon the sleeve 22. After passing around the pulleys 70 the flexi-

ble elements 69 are wound around and connected to suitable drums 71, which are mounted rigidly upon a shaft 72, journaled in suitable sleeves 73 on the outer ends of arms 74, connected with the metallic straps 49. Mounted upon the shaft 72 is a drum 75, similar to the drums 71. Connected with the drum 75 is a flexible element 76, to which is attached a suitable weight, such as 77. The flexible elements 69 and 76 are wound upon the drums 71 and 75 in opposite directions, whereby as the packing-screw shaft 23 rises vertically when packing material into one of the holding devices on the rotary table the plate 65 draws the flexible elements 67 upwardly, thus unwinding them from the drums 71 and causing the shaft 72 to rotate, which rotation causes the flexible element 76 to be wound upon the drum 75, thus elevating the weight 77. As the weight 77, through the mechanism described, offers a resistance to the upward movement of the packing-screw shaft 23 by reason of the fact that said weight is forced to be elevated as said shaft 23 rises it will be apparent that by using different-sized weights the tension of the packing-screw 28 can be regulated so as to control the hardness with which it will pack material into the holding devices 10 11 12.

It will be obvious that when the feed-screw shaft 23 is about to be lowered into an empty holding device prior to filling and packing the bag, barrel, or other receptacle contained therein the tendency of the weight 77, together with the natural weight of the packing-screw 28 and shaft 23, will be to cause these parts to descend with a rush and clatter which would be injurious to the mechanism. In order to permit the packing-screw 28 and shaft 23 to be lowered gently into one of the holding devices 10 11 12, and, further, to permit said packing-screw and shaft to be raised out of said packing device in some other manner than by the operation of packing material thereinto, as described, the following mechanism is employed: Mounted upon the drum-shaft 72 is a sprocket-wheel 80, with which is connected a sprocket-chain 81, leading to a similar sprocket-wheel 82 upon a shaft 83, journaled in sleeves 84, carried by arms 85, mounted one on the upright 1 and the other on one of the metallic straps 49, as shown. Mounted upon the shaft 83 is a drum 86, with which is connected a flexible element 87, attached at its lower end to the arm 32, carried by the sleeve 31 on the packing-screw shaft 23, as shown in Figs. 1 and 2, the shaft 23 in Fig. 1 being partly broken away to show the drum 86 and flexible element 87. Mounted upon the shaft 83 is a ratchet-wheel 88, with which coöperates a pivoted pawl 89, adapted to be held in raised position out of engagement with the ratchet-wheel 88 by means of a hook 90. By throwing the pawl 89 into engagement with the ratchet-wheel 88 the packing-screw shaft 23 may be held in raised position whenever necessary through the medium of the shaft 83, drum 86, and flexible element 87. Mounted rigidly upon the shaft 83 is a hand-wheel 91, the hub 92 of which is surrounded by a band-brake 93, connected to an arm 94 on the upright 2 and operated by means of an angle-lever 95, pivoted upon said arm. It will be understood that as material is packed into one of the holding devices 10 11 12 the rotation of the packing-screw 28 causes the shaft 23 to rise, as previously indicated, thus operating the shaft 72 through the drums 71 and flexible elements 69. The shaft 72, through the sprocket-chain 81, causes the shaft 83 to rotate, and the slack of the flexible element 87 is taken up by the rotation of the drum 86 as the packing-screw shaft rises. When it is desired to lower said packing-screw 28 and shaft 23 into an empty receptacle or holding device, the brake-band 93 is tightened upon the hand-wheel hub 92 and the pawl 89 is lifted out of engagement with the ratchet-wheel 88. The weight of the packing-screw shaft 23 is now supported by the flexible element 87, and by controlling the brake-lever 95 said shaft 23 and packing-screw 28, together with the weight 77, may be lowered slowly and gently into the empty receptacle which is to be filled. In the event that it should be found desirable to raise the packing-screw 28 from one of the receptacles or holding devices 10 11 12 without filling and packing said receptacle, the hand-wheel 91 is rotated, and said packing-screw 28 is thus raised through the medium of the flexible element 87 and drum 86.

It will be understood that in using the improved apparatus of this invention the table 9 is rotated each time one of the holding devices is filled to bring an empty holding device beneath the packing-screw 28. The operative can thus busy himself in removing a filled and packed receptacle from one of the holding devices 10 11 12 and in placing an empty receptacle into another holding device while the receptacle contained in the third holding device is being filled and packed in the manner described.

Changes in the precise embodiment of invention illustrated and described may be made within the scope of the following claims without departing from the spirit of the invention or sacrificing any of its advantages.

Having thus described the invention, what is claimed is—

1. A filling and packing apparatus comprising a holding device, an automatically-movable packing-screw, means for automatically starting and stopping the operation of said screw, and means including a weight for regulating the pressure of said screw.

2. A filling and packing apparatus com-

prising a holding device, a packing-screw, a vertically-movable packing-screw shaft, means for rotating said shaft, means including a pawl and ratchet for holding said shaft in raised position, means including a brake for lowering said shaft, and means for regulating the pressure of said packing-screw.

3. A filling and packing apparatus comprising a holding device, an automatically-movable packing-screw, a casing surrounding said packing-screw and movable therewith, and means for feeding material to said casing.

4. A filling and packing apparatus comprising a holding device, an automatically-movable packing-screw, a casing surrounding said packing-screw and movable therewith, and telescopic means for feeding material to said casing.

5. A filling and packing apparatus comprising a rotary table, a plurality of holding devices on said table, an automatically-movable packing-screw adapted to coöperate in turn with each of said holding devices, a vertically-movable packing-screw shaft, a pair of fixed collars on said shaft, a sleeve on said shaft between the collars, a casing supported by said sleeve and surrounding said packing-screw, a laterally-projecting arm on said sleeve, a gear-wheel on said packing-screw shaft, an operating-shaft having a gear-wheel in mesh with the gear-wheel on the packing-screw shaft, a belt-wheel on said operating-shaft, a clutch member on said operating-shaft adapted to be thrown into and out of clutch with the belt-wheel, a rod connected with said clutch and having collars adapted to be struck by the laterally-projecting arm on the sleeve of the packing-screw shaft, a non-rotatable plate adapted to move longitudinally with the packing-screw shaft, a plurality of flexible elements connected with said plate, a first shaft having a plurality of drums connected with said flexible elements, a weight connected with said first shaft, a second shaft, a sprocket-chain connecting said first and second shafts, a flexible element connecting said second shaft and the sleeve on the packing-screw shaft, a ratchet-wheel on said second shaft, a pawl coöperating with said ratchet-wheel, a hand-wheel on said second shaft, a brake-band connected with said hand-wheel, and a brake-lever connected with said brake-band.

In testimony whereof we affix our signatures in presence of two witnesses.

JOSEPH FRANK JONES.
CHARLIE THOMAS ODENA.

Witnesses:
J. A. HARVEY,
EDWIN TURLEY.