

Dec. 22, 1953

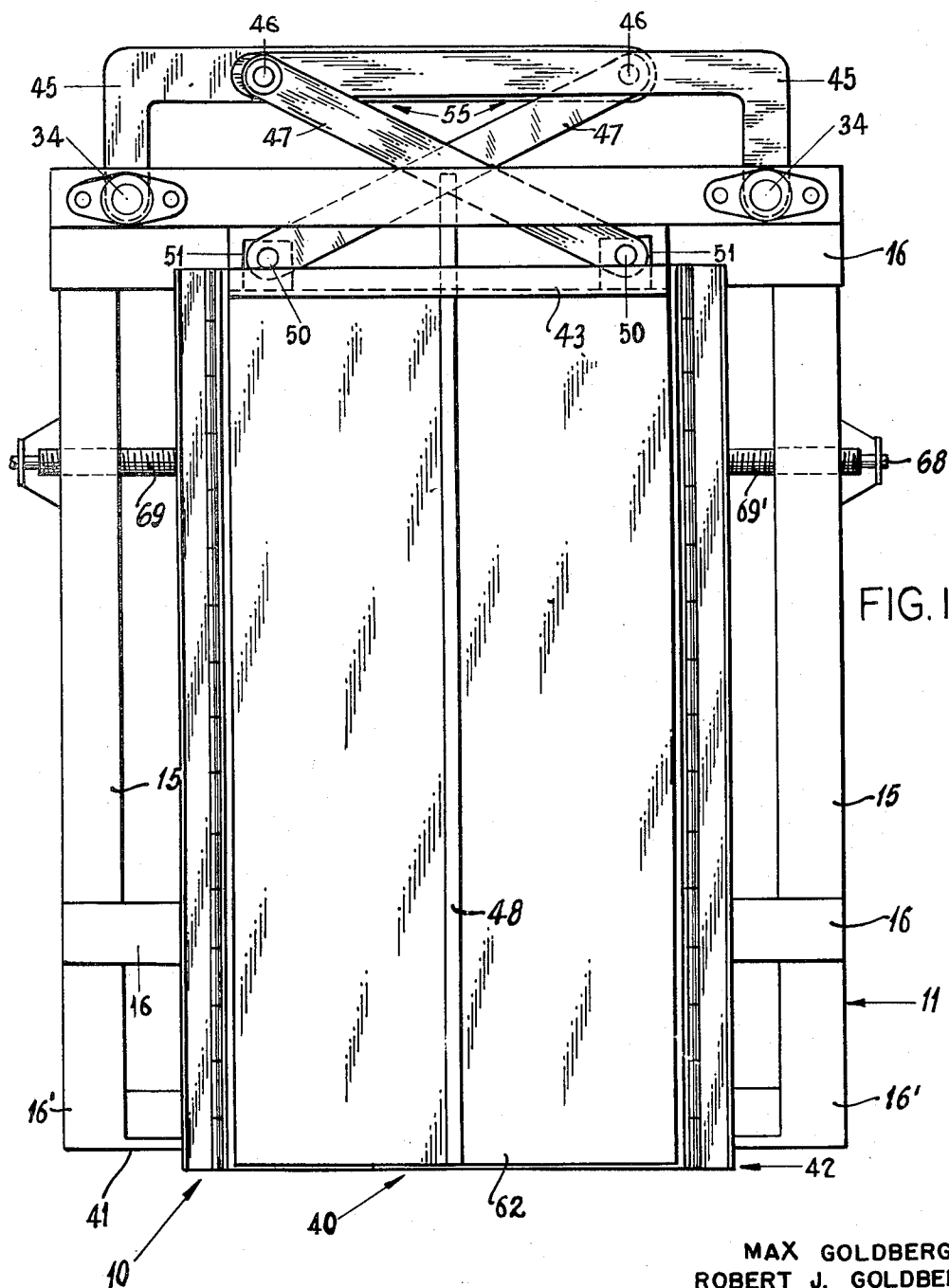
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2,663,476

COMPACT FILLING MACHINE OPERATED BY FOLDABLE LINKAGE

Filed Nov. 19, 1951

4 Sheets-Sheet 1



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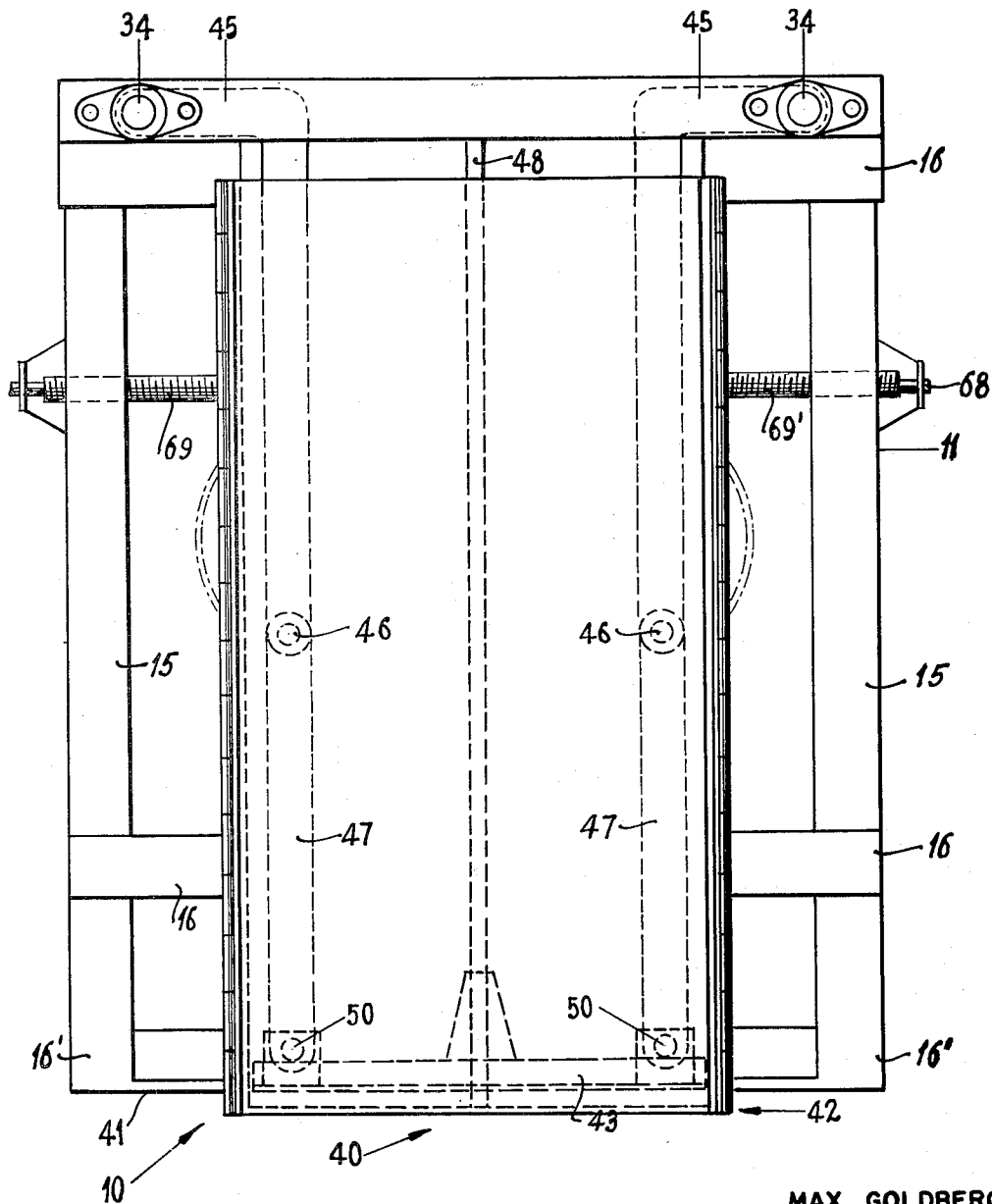
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FIG.2



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FIG.3

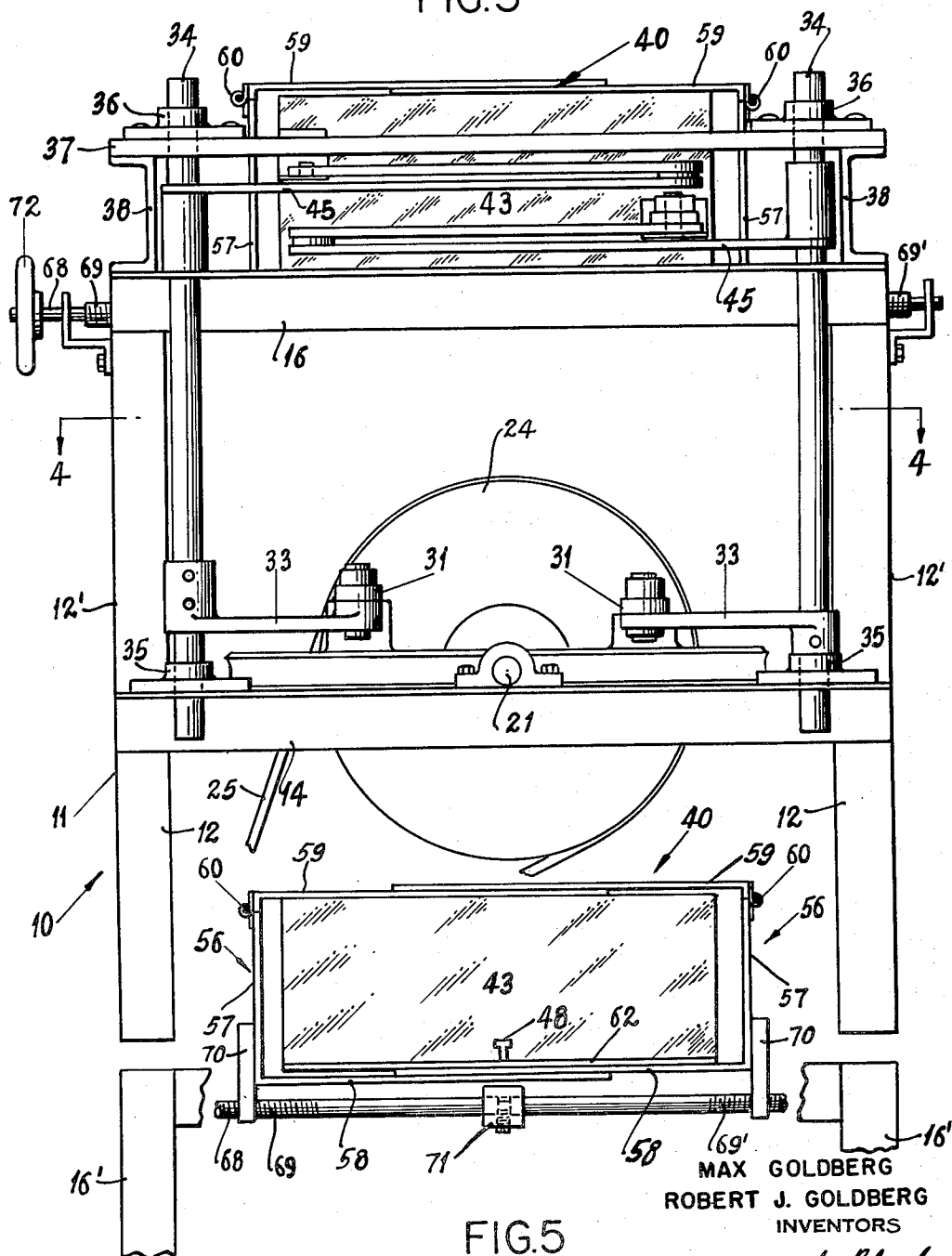


FIG.5

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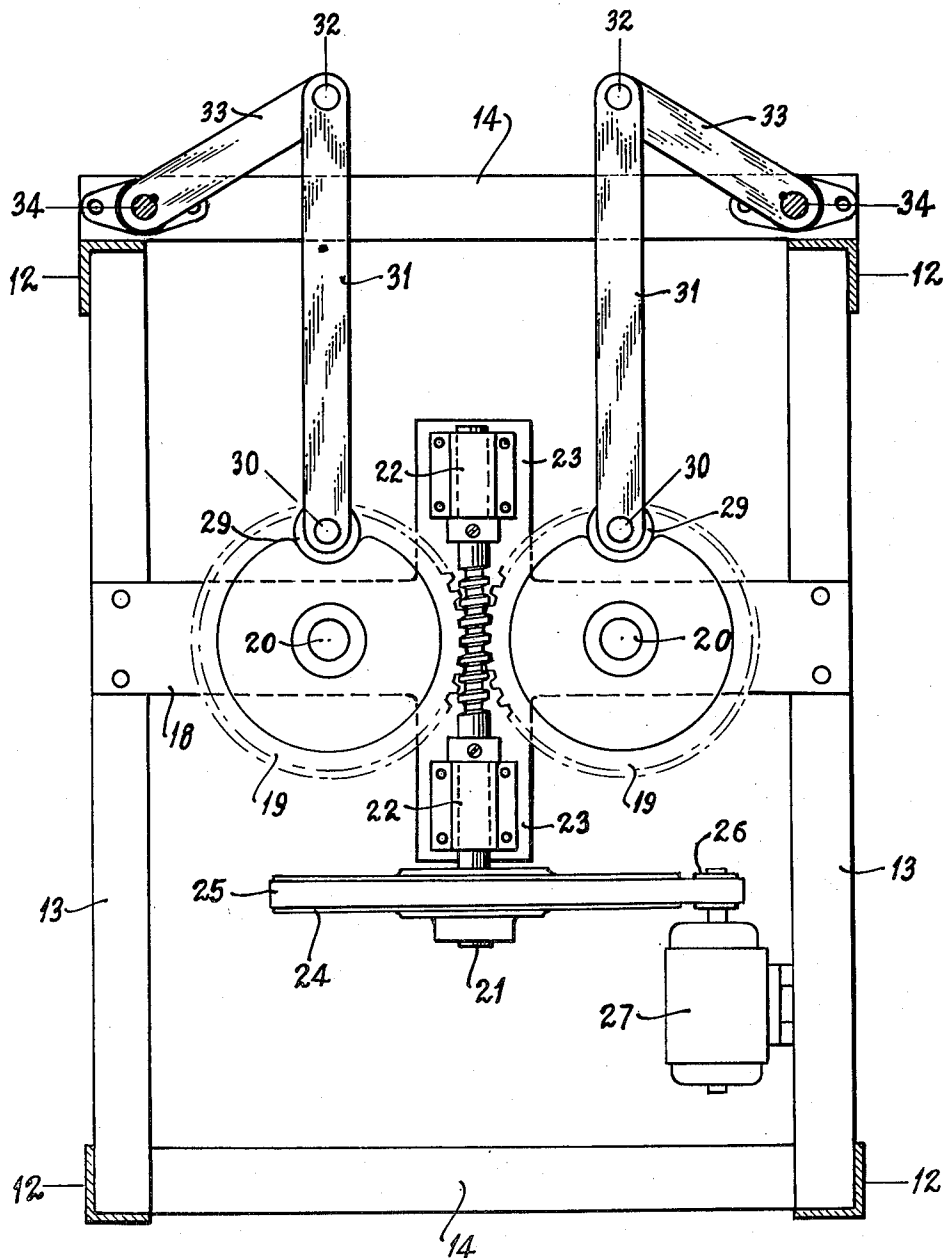


FIG. 4

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COMPACT FILLING MACHINE OPERATED
BY FOLDABLE LINKAGEMax Goldberg and Robert J. Goldberg,
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Application November 19, 1951, Serial No. 257,106

1 Claim. (Cl. 226—46)

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This invention relates to a compact filling machine, for filling cushions, pillows, mattresses, and the like with fibrous materials such as cotton, hair, excelsior, as well as inner spring units.

An object of this invention is to provide a filling machine designed to insert filling material in a cushion casing, and the like, by means of a reciprocable plunger-head which feeds the filling material into the casing, and is then withdrawn to its original position.

Another object of this invention is to provide a filling machine having a two tier frame, comprising a lower tier having two speed reducing gears and jointed linkage, and an upper tier having plunger actuating foldable linkage for actuating a plunger-head, the linkage being arranged to operate wholly within the range of motion of the plunger-head, to thereby conserve floor space.

In prior filling machines of this character a long driving member was used for actuating the plunger-head, and in such arrangement the driving member extended outwardly from the machine a distance at least equal to the length of the filling portion of the machine. This was a disadvantage in that it increased the overall length of the machine. In the disclosure herewith, we have provided a filling machine which reduces the floor space to a minimum, and utilizes a more simplified mechanism.

With the above and other objects in view, the invention will be hereinafter more particularly described, and the combination and arrangement of parts will be shown in the accompanying drawings and pointed out in the claim which forms part of this specification.

Reference will now be had to the drawings, wherein like numerals of reference designate corresponding parts throughout the several views, in which:

Figure 1 is a top plan view of the filling machine, with the plunger-head in retracted position.

Figure 2 is a top plan view of the filling machine, with the plunger-head in operating position.

Figure 3 is a rear elevation of the filling machine.

Figure 4 is a cross-sectional view taken on line 4—4 in Figure 3.

Figure 5 is a front elevation of the receptacle portion of the filling machine, looking in the direction of the filling end of the filling machine.

In the illustrated embodiment of the invention, the numeral 10 indicates a filling machine

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comprising an upright frame 11 mounted on legs 12. Suitably secured to the legs 12 are longitudinal angle members 13 and horizontal cross members 14.

As best shown in Figure 3, the legs 12 have upright extensions 12', to the upper ends of which are secured longitudinal angle members 15 and horizontal cross members 16.

As best shown in Figure 4, an elongated supporting member 18 is secured to the longitudinal frame members 13. Two worm gears 19, are freely rotatably mounted on stub shafts 20 suitably fixed to the supporting member 18.

The gears 19 are positioned in spaced-apart relation and are in meshed relation with an elongated worm 21. The worm 21 is rotatably supported in bearings 22 which are secured to crosswise extensions 23 of the supporting member 18. A pulley 24 is secured at one end of the worm 21 and carries a belt 25 which is in engagement with a pulley 26 carried by a motor 27. The motor is secured to one of the frame members 13.

Extending from each worm gear 19 is a boss 29. Mounted in each boss 29 is a stub-shaft 30 connected by a link 31 and a pin 32 to an arm 33 having one end fixed to an upright shaft 34. Each shaft 34 is rotatably mounted at its lower end in a bearing 35 fixed to a cross-member 14. At its upper end, each shaft 34 is rotatably mounted in a bearing 36 fixed to a cross-plate 37. The plate 37 is supported at each end on a channel 38 fixed to a cross-member 16.

As shown in Figure 4, it will be seen that rotation of the motor 27 will cause the worm shaft 21 to rotate the worm gears 19 in opposite directions. The gears 19 reciprocate the links 31 which oscillate the arms 33 and this causes the upright shafts 34 to oscillate in opposite directions.

As shown in Figures 1 to 3 inclusive, an adjustable receptacle 40 is mounted on the upper surface of the frame 11. The receptacle is of a length which causes an end portion thereof to extend beyond an end wall 41 of the frame 11. The extending portion 42 permits a portion of a pillow casing or the like to be secured thereto prior to the filling operation. The receptacle 40 is mounted horizontally on the frame 11 and both ends of the receptacle are normally open.

As shown in Figures 1 to 3 inclusive, a plunger-head 43 of rectangular form is slidably mounted inside the receptacle 40. Secured to each upright shaft 34 is a right-angular crank 45 having a pin 46 at its free end. A link 47 is connected

by the pin 46 to the free end portion of the crank 45 at one of its ends. At the other end, the link 47 is connected by a pin 50 to a bearing plate 51 suitably fixed to the plunger-head 43.

As shown in the top plan views in Figures 1 and 2, oscillation of the shafts 34 causes the cranks 45 to move the links 47 and the plunger-head 43 from the inoperative position shown in Figure 1 to the operative position shown in Figure 2. During the movement of the plunger-head 43, it is guided by an elongated key 48 centrally positioned in the receptacle 40.

It is to be noted that in the preferred embodiment shown, there are two sets of foldably linked drive members 55, each set consisting of a right-angular crank 45 and its connected link 47. One set of foldably linked drive members 55 is positioned at a higher elevation than the other set to permit the two sets to move towards each other in overlapping relation without interference, so as to provide for maximum travel of the plunger-head.

The receptacle 40 comprises a pair of telescoping enclosure members 56, 56 preferably made of sheet metal. The enclosure members are bent to provide vertical sides 57, 57 and horizontal overlapping bottoms 58, 58. The enclosure members 56, 56 are provided with covers 59, 59 which are secured to the vertical sides 57, 57 by hinges 60. Mounted interiorly of the receptacle 40 is a stationary central plate 62 which is suitably secured to one of the cross members 16.

The covers 59, 59 are made to overlap the same distance as the overlapping bottoms 58, 58. The bottoms and the covers are in equal overlapping relation, and a continuous top and a continuous bottom are formed at all times, and may be varied in width as desired.

For the purpose of moving the members 56 to or from each other, we provide a shaft 68 having threads 69, 69' on opposite ends which rotate in opposite directions. The shaft 68 is rotatably mounted in bearings 70 secured to the horizontal bottoms 58 of the receptacle members 56.

It is to be noted that in the positions shown in Figures 3 and 5 the receptacle 40 is in slightly extended position from that shown in Figures 1 and 2.

The shaft 68 has a middle bearing 71 which is suitably fixed to the frame 11, to retain the shaft in rotatable relation but not movable sideways from the bearings 70. A handwheel 72 attached to one end of the shaft 68 serves to rotate the shaft. By rotating the shaft 68, the enclosure members 56, 56 may be advanced toward each other or moved away from each other depending on the width of the cover to be filled.

The operation of the filling machine 10 is as follows:

The covers 59 are swung on their hinges 60 to a substantially vertical position to receive the filling material. After the filling material is placed in the receptacle, the receptacle covers are closed and the cover of a cushion, etc., is slipped over the end 42 of the receptacle. The handwheel 72 is rotated to cause the enclosure members 56 to move apart so as to extend the cushion cover as much as possible and to hold

the cover in frictional engagement on the receptacle 40. A foot control switch (not shown) supplies electric current to the motor. The operator steps on the switch thereby supplying current to the motor, and causes the motor pulley to rotate. This rotation causes the foldably linked drive members 55 to move the plunger-head 43 into the receptacle 40 and to force the filling material outwardly into the cover of the cushion. The cushion cover is gradually forced off the receptacle while it is being filled with the filling material.

Upon completion of the forward movement of the plunger-head 43, the operator removes his foot from the electric foot switch and raises the receptacle covers 59, 59 preparatory to filling another cushion cover.

It is to be noted that the frame portion 16' at the filling end of the machine 10 as shown in Figures 1, 2 and 5 is at a lower elevation than the main portion defined by the cross members 16, 16. There is thus provided an operating space below the filling end of the receptacle 40 for freedom of movement of the operator's hands when he secures a cushion cover to the receptacle 40.

It is also to be noted that while we have shown two sets of foldably linked drive members, each operating independently, that we may use an interconnected linkage known as the pantograph.

In accordance with the patent statutes we have described and illustrated the preferred embodiment of our invention, but it will be understood that various changes and modifications can be made therein without departing from the spirit of the invention as defined by the appended claim.

We claim:

In a filling machine of the character described comprising an upright frame having upper and lower tiers, an open-ended receptacle mounted horizontally at the upper tier of said frame and having an end portion extending beyond said frame, a plunger-head reciprocably mounted in said receptacle to eject the filling material from said receptacle, two sets of foldably linked drive members mounted in said receptacle for sliding said plunger-head forwardly and reversely within said receptacle, two upright shafts oscillatively mounted at one end wall of said frame, one of the parts of each set of said linked drive members being an angular crank fixed to the upper end of one of said upright shafts, the other part of each set of said linked drive members being a link connecting one of said cranks with said plunger-head, and driving means mounted in said lower tier and connected to the lower ends of said upright shafts for oscillating said shafts, and actuating said plunger-head forwardly and reversely in said receptacle.

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