

June 2, 1936.

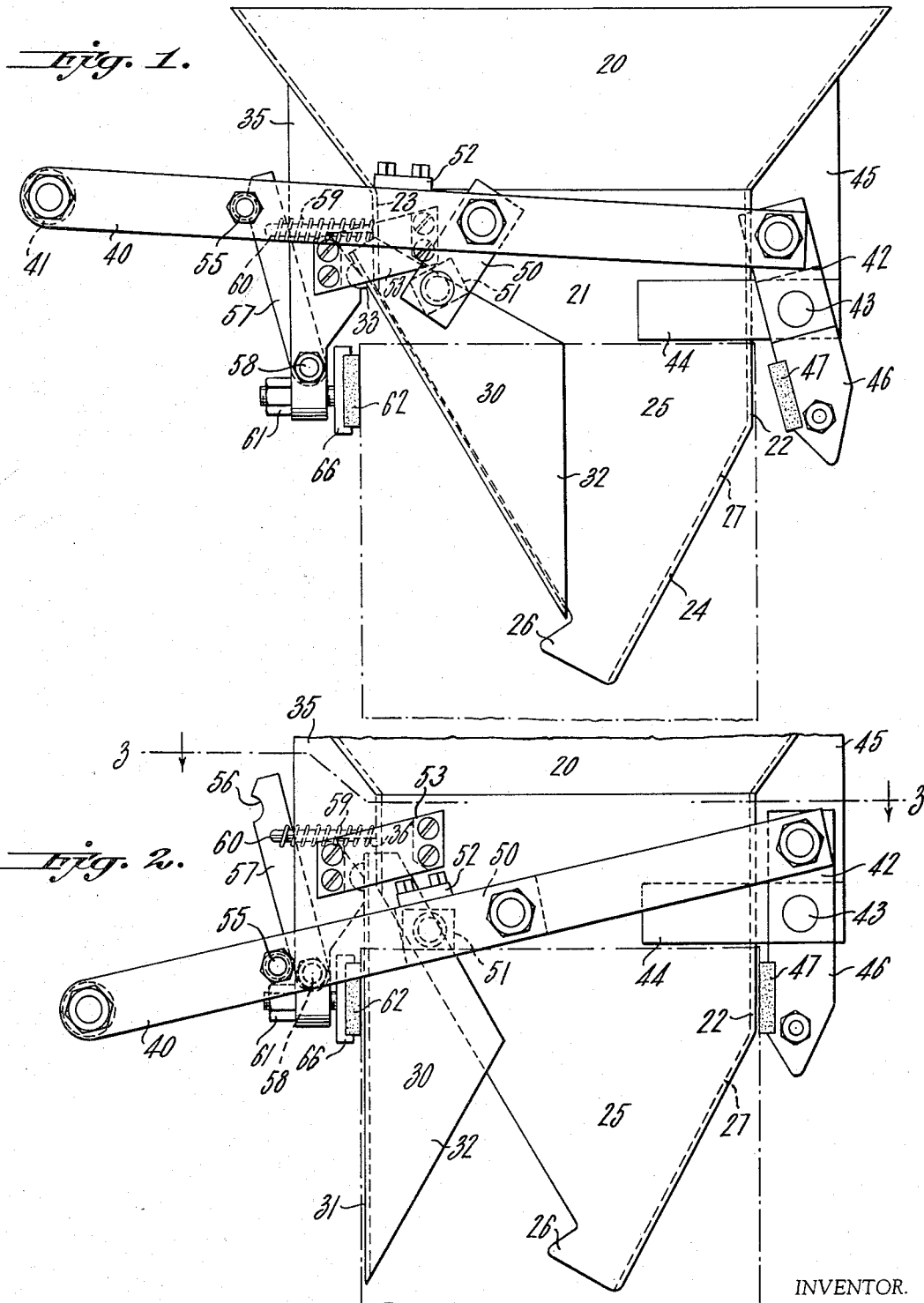
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2,042,858

SPOUT FOR BAG FILLING

Filed Sept. 12, 1935

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

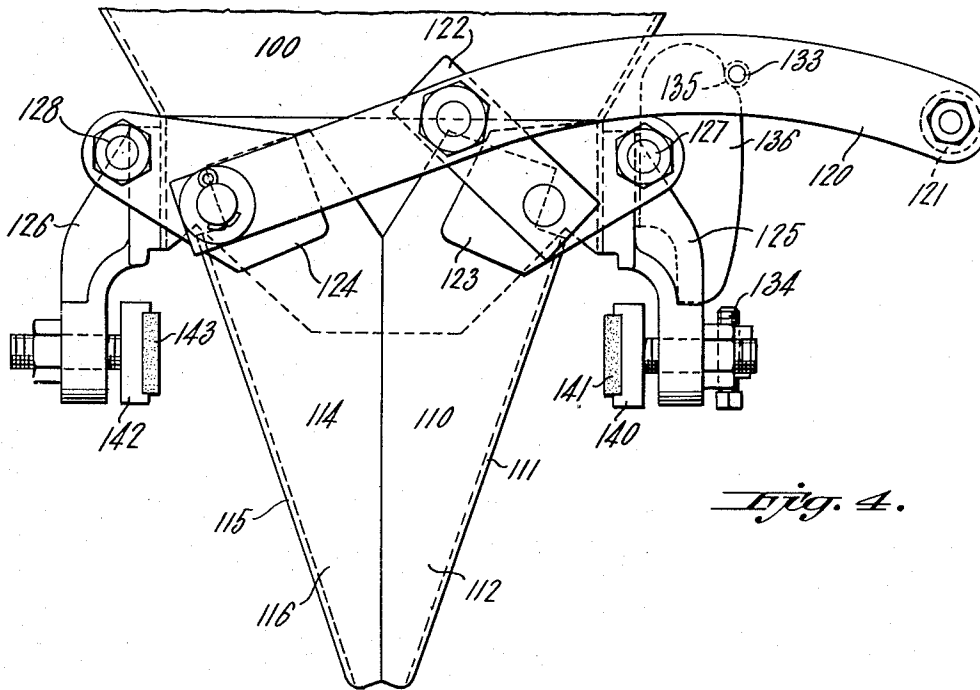


Fig. 4.

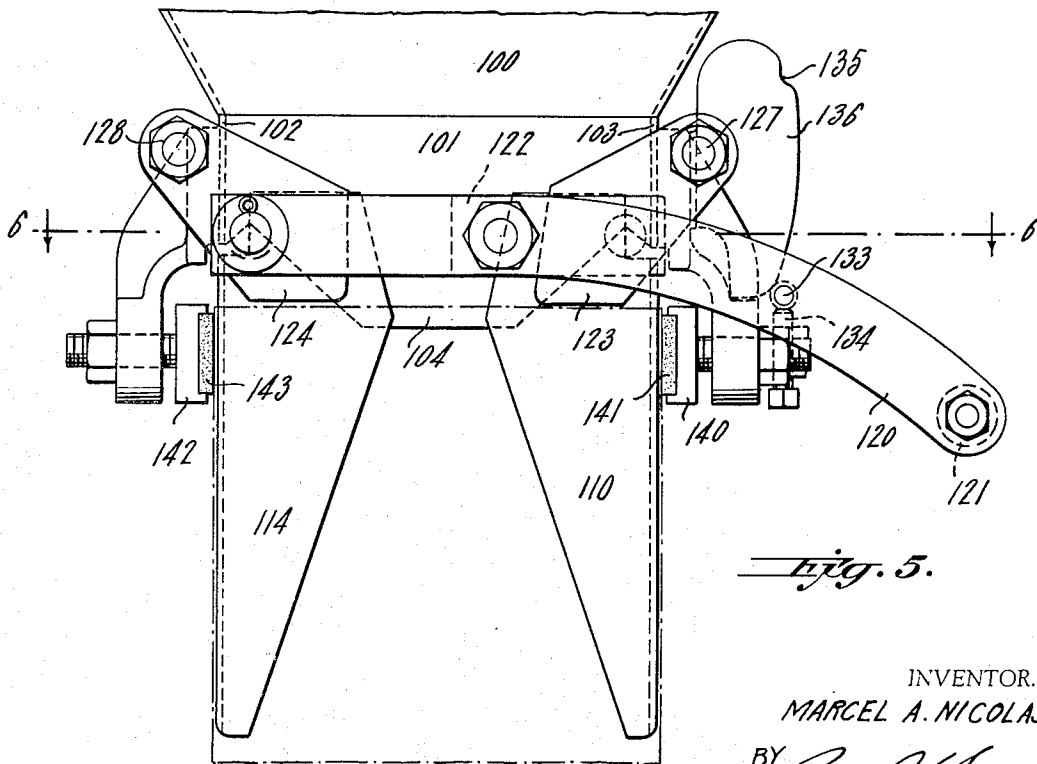


Fig. 5.

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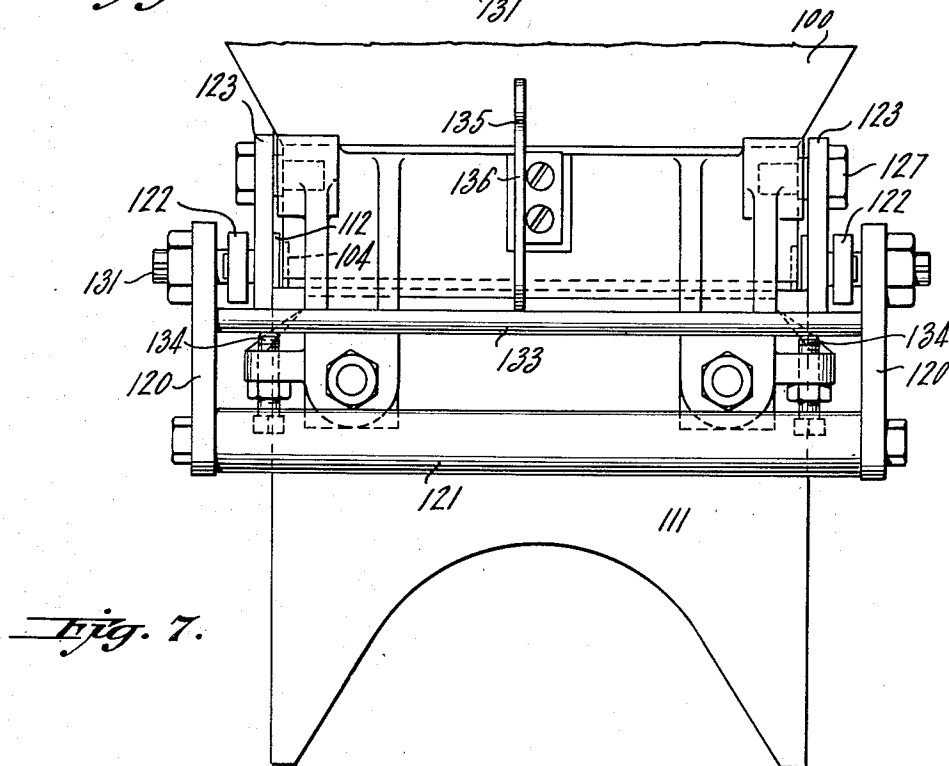
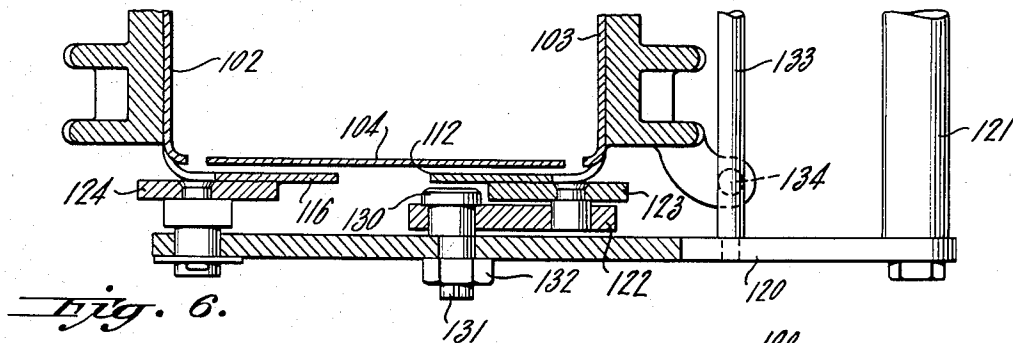
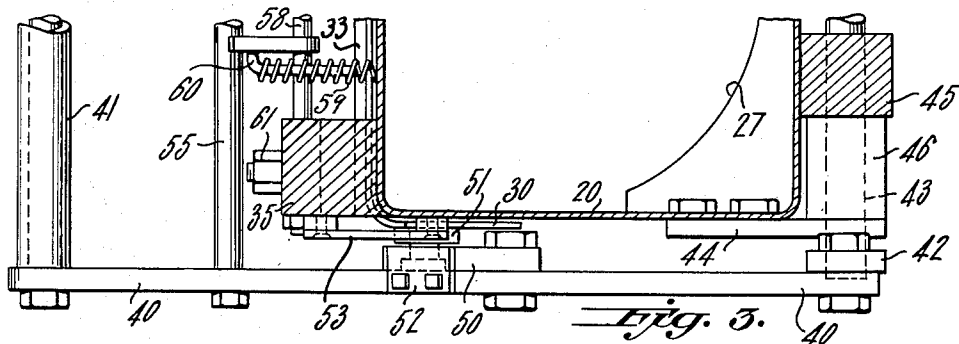
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SPOUT FOR BAG FILLING

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3 Sheets-Sheet 3



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SPOUT FOR BAG FILLING

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Application September 12, 1935, Serial No. 40,205

12 Claims. (Cl. 248-101)

The present invention relates to filling machines for filling open-mouth bags, particularly heavy duty, multi-ply paper bags adapted to contain from fifty pounds up to one hundred pounds or more of material.

There are now in use oval filling spouts, such as disclosed and claimed in the copending application of Howland F. Briggs, Serial No. 757,761, filed December 17, 1934. It will be noted that the bags adapted to be filled thereon are of such size that the inwardly extending gussets do not materially approach the center line of the bag and that therefore the corners of the bags may be gripped during the filling operation, as described. However, in some bags the side walls forming the gussets are substantially the same width as the front and rear walls of the bag between which the gussets are folded. In the use of such a bag it will be appreciated that the bags may not be gripped at the upper corners, as disclosed in the aforementioned application, because the gussets will block, or at least will materially obstruct, the opening between the gripped corners, and in many cases there is not enough clear space through which to fill the bag.

It has heretofore been the practice to form a rigid filling spout about which the mouth of the bag may be drawn and clamped by suitable means. However, in order that this may be accomplished, the filling spout has been made with a smaller cross-sectional area than the cross-sectional area of the bag, thereby constricting the filling spout and limiting the capacity of the machine because of the relatively slow flow of material into the bag. An added disadvantage is that such filling spouts may catch and bend the edge of one or more of the plies of the bag mouth.

The present invention has for its object the provision of a filling spout which may be collapsed to form a very small wedge-shaped tip about which the bag may be very easily positioned, and which may be opened to form a spout of the same or substantially the same cross-sectional area as the cross-sectional area of the bag. A second object of the present invention is to devise a filling spout having at least one swinging leaf forming a side wall which is associated with a bag clamp cooperating with the swinging leaf and against which the bag is clamped by the action of swinging the leaf to its outer position. The

invention also comprises the provision of the swinging leaf and fixed clamp in combination with a fixed leaf and swinging clamp, or a second swinging leaf and fixed clamp, all of which are operated by the same operating handle.

Referring to the drawings wherein like numerals refer to like parts throughout:

Fig. 1 is a side elevation of one form of the device in closed or bag receiving position;

Fig. 2 is a similar view showing the device in open or bag clamping position;

Fig. 3 is a vertical cross-section taken on the line 3-3 of Fig. 2;

Fig. 4 is a side elevation of a second form of the device showing it in closed or bag receiving position;

Fig. 5 is a similar view showing the device in open or bag clamping position;

Fig. 6 is a cross-section taken on line 6-6 of Fig. 5; and

Fig. 7 is a front elevation of the device in open or bag clamping position.

Referring to Figs. 1, 2, and 3, the simplest form of the device is disclosed. The device comprises a hopper 20, the lower end of which terminates in a rectangular depending portion 21 of substantially the same cross-sectional area as the cross-sectional area of the bag. It will be appreciated that various sizes of bags may be used on the one spout but that its maximum efficiency will be realized if designed for a particular bag. The rear wall 22 of the portion 21 extends lower than the front wall 23, and an extension 24 is bent angularly forward toward the center line of the spout. The side walls 25 extend toward the lower edge of portion 24 and are provided with barblike terminals 26. The portion 24 is cut away as at 27 whereby the material falling through the spout is not greatly restricted in its flow.

The movable leaf 30 comprising the side of the spout opposite wall 22 is provided with a front wall 31 and side walls 32 extending about and embracing the side walls 25. The front wall 31 extends above and in front of the front wall 23 of the fixed portion and a substantially horizontal half-round bar 33 is welded or otherwise fixed to its outer face adjacent its upper edge. Brackets 35 fixed to the front wall 23 and hopper 20 are provided with angular notches 36, the lower portions of which are shaped to form a bearing seat for the half-round bar 33. The bar 33 forms a pivot about which the leaf 30 may swing, the upper portion of notch 36 providing clearance for the upper portion of the leaf. The lower tip of

the leaf swings against the edges of side walls 25 whereby the barbs 26 may guide the mouth of the bag around the leaf.

The leaf is operated and the bag is clamped 5 by a lever 40 which may be termed a floating lever inasmuch as it is not pivoted to any fixed point. The forward extremity of lever 40, and it will be appreciated that the opposite side of the spout is provided with a similar lever 40 connected in similar fashion, is provided with an 10 operating handle 41. Levers 40 extend to, and are pivoted to, links 42 which are fixed to a rock shaft 43 carried by brackets 44, mounted upon the side walls 25, and brackets 45, mounted upon 15 the rear wall 22 and the hopper 20. The rock shaft 43 is fixed to clamping levers 46 which carry clamping blocks 47 formed of material which will resist slippage of the bag from between the blocks and the rear wall 22. Materials such as rubber, leather and the like are 20 preferable. Pivoted to an intermediate point along the lever 40 are toggle links 50, the free ends of which are pivotally attached to blocks 51 welded to the outer surfaces of the side walls 25 32 of the leaf. A toggle locking abutment 52 is mounted upon the upper edge of lever 40 above the end of toggle link 50 which is attached to the leaf, and extends inward whereby to engage the upper edge of the link 50 when the handle is in 30 the position of Fig. 2. A brace 53 is attached to but spaced from the side wall 22 and the side of bracket 35 in order to provide a rigid structure having clearance for the upper end of the side wall 32. A rod 55 extends between the levers 35 40 and is engaged (in the position of Fig. 1) by a holding seat 56 in the upper end of a holding lever 57 pivotally mounted upon a rod 58 extending between the brackets 35. A spring 59, retained by a guiding pin 60 mounted on the holding lever 57, urges the lever 57 outward. The 40 rod 55 is seated in the notch 56 and the levers are resiliently urged toward the left of Fig. 1 by the spring 59 thereby holding leaf 30 in the position illustrated and clamping lever 46 in the position illustrated. 45

The lower ends of brackets 35 are provided with threaded openings through which a threaded clamping member 66 is adjustably 50 passed and locked in position by lock-nut 61. The clamping member is provided with block 62 similar to block 47.

The operation of this device is as follows: The operator moves levers 40 to the position of Fig. 1 where they are held by the holding lever 57. It 55 will be appreciated that the rod 55 engages the surface of holding lever 57 which naturally snaps into the notch 56 since the leaf 30 must swing inward to permit movement of lever 40 and since it is limited in its inward movement by the edges 60 of side walls 25. The clamping blocks 47 are thereby spaced from the rear wall 22, providing a space to receive the rear wall of the bag which is now positioned about the spout. Downward pressure on levers 40 removes rod 55 from the 65 notch 56 and causes link 50 to approach alignment with lever 40, thereby swinging the leaf 30 outward. The locking abutment 52 locks the link 50 and lever 40 in parallel relation and, since 70 the lever 40 is now positively limited in forward movement by the pivoting bar 33, the levers 46 are forced to the position of Fig. 2. The bag is therefore clamped between the fixed rear wall 22 and the movable clamping blocks 47 and between the movable front wall 31 and the fixed

clamping blocks 62. The bag is now filled and released upon upward movement of levers 40.

A modification of the device is shown in Figs. 4 to 7, inclusive. This form of the device comprises a hopper 100 which terminates in a rec- 5 tangular portion 101 having a front wall 102, rear wall 103, and side walls 104 preferably extending slightly lower than the front and rear walls. The lower edges of the side walls 104 extend upwards a short distance angularly from the front 10 and rear walls, then downward diagonally toward the center line of the spout.

In this form both the front and the rear walls are pivoted to clamp the bag against fixed clamping 15 blocks. The front portion of the spout comprises a leaf 110 having a front wall 111 and side walls 112, and the rear portion of the device comprises a similar leaf 114 having a rear wall 115 and side walls 116. The adjacent edges of the side walls 112 and 116 are adapted to be 20 brought together when the device is in the position of Fig. 4, as will be explained. The side walls 112 and 116 extend above and about the lower edge of the fixed side wall 104 and the upper edges of the side walls are downwardly 25 recessed so that the front wall 111 may be substantially in vertical alignment with the fixed front wall 103, and the rear wall 115 in substantially vertical alignment with the fixed rear wall 102, when the spout is in the position of Fig. 5, 30 and so that the leaves may be swung inwardly as illustrated in Fig. 4.

The leaves are operated by floating levers 120 having an operating handle 121 at their forward 35 extremities. The levers 120 are pivoted to toggle links 122, each of which extends to and is pivoted to a member 123 welded or otherwise affixed to the outer surface of the side wall 110. The inner extremities of levers 120 are pivoted to members 124, similar to members 123, which are welded 40 or otherwise affixed to the outer surface of side walls 114. Members 123 are pivotally connected to brackets 125 fixed to the front wall 103 and members 124 are pivotally connected to brackets 126 fixed to the rear wall 102. Upon movement 45 of levers 120 from the position of Fig. 4 to the position of Fig. 5 the toggle formed by link 122 is straightened, thereby forcing the leaves 110 and 114 to pivot about the pivots 127 and 128, respectively. The connection of link 122 to lever 50 120 is preferably by means of an eccentric adjusting pin 130 provided with an angular end 131 which may be engaged and turned by a spanner or other means and which is locked in position by a lock-nut 132. The downward movement of 55 levers 120 is limited by a rod 133 extending therebetween and engaging adjustable abutments 134 carried by the brackets 125. The levers 120 are retained in the position of Fig. 4 by engaging a locking notch 135 in a cam 136 mounted upon 60 the front wall 103. The lower extremities of brackets 125 are provided with threaded openings through which are adjustably passed clamping block holding members 140 each provided with a clamping block 141 of rubber, leather, 65 or other suitable material, and the lower extremities of brackets 126 are similarly provided with adjustably mounted clamping block holding members 142 each provided with similar clamping blocks 143. 70

The operation of this form of the device is as previously described in that the operating levers are swung to the position of Fig. 4 and held by the locking notch 135, thereby holding the swinging leaves 110 and 114 in position to provide a 75

very small tapering or wedge-like tip about which the bag is easily positioned. The operating levers are now pulled downward to the position of Fig. 5, thereby swinging the leaves outwardly and causing the upper edge of the bag to be clamped between the front wall 111 and the clamping blocks 141 and between the rear wall 115 and the clamping blocks 143. After the bag is filled the levers 120 are raised, thereby releasing it to be progressed into a closing machine.

It will be noted that both forms of the device provide the advantages of ease and rapidity of applying bags, rapidity of filling due to the larger filling opening made possible, and retention of the shape of the bag due to its being suspended adjacent its four corners.

Other and further modifications and alterations in detail and arrangement may be apparent to those skilled in the art and such alterations and modifications are intended to be included in the scope of the following claims:

I claim:

1. A spout for filling open mouth bags comprising a fixed clamping member, a swinging leaf forming a wall of the spout adjacent said clamping member, and a linkage connected to said leaf whereby said leaf may be swung inwardly to decrease the size of the spout and permit ready insertion thereof into the mouth of a bag, and whereby the leaf may be swung outwardly to clamp a side of the bag between said wall and said member.

2. A spout for filling open mouth bags comprising a fixed clamping member and a movable clamping member, a swinging leaf forming a movable wall of the spout adjacent said fixed member, a fixed wall of the spout adjacent said movable member, and a linkage connected to said leaf and to said movable member whereby said leaf may be swung inwardly to decrease the size of the spout and to separate said movable wall from said fixed member and said movable member may be simultaneously swung outwardly to separate the same from said fixed wall, and whereby said leaf may be swung outwardly to clamp a side of a bag mouth between said movable wall and said fixed member and said movable member may be simultaneously swung inwardly to clamp a second side of the bag mouth between said movable member and said fixed wall.

3. A spout for filling open mouth bags comprising a fixed clamping member at one side of the spout and a second fixed clamping member at the opposite side of the spout, a swinging leaf forming a wall of the spout adjacent the first member, a second swinging leaf forming the opposite wall of the spout adjacent the second member, and a linkage connected to both of said leaves whereby the leaves may be simultaneously swung inwardly to decrease the size of the spout and permit ready insertion thereof into the mouth of a bag, and whereby the leaves may be simultaneously swung outwardly to clamp the sides of a bag mouth between said walls and said members.

4. A spout for filling open mouth bags comprising a fixed clamping member, a swinging leaf forming a wall of the spout adjacent said clamping member, a toggle linkage connected to said leaf whereby said leaf may be swung inwardly upon movement of said linkage in one direction in order to decrease the size of the spout and permit ready insertion of the spout into the mouth of a bag, and whereby the leaf may be swung outwardly upon movement of said linkage

in the opposite direction in order to clamp a side of the bag between said wall and said member, a latching device to hold said linkage at the limit of its movement in the first direction, and means to hold said linkage at the limit of its movement in the other direction.

5. A spout for filling open mouth bags comprising a fixed clamping member and a movable clamping member, a swinging leaf forming a movable wall of the spout adjacent said fixed member, a fixed wall of the spout adjacent said movable member, a toggle linkage connected to said leaf and to said movable member whereby said leaf may be swung inwardly upon movement of said linkage in one direction in order to decrease the size of the spout and to separate said movable wall from said fixed member and said movable member may be simultaneously swung outwardly to separate the same from said fixed wall, and whereby said leaf may be swung outwardly upon movement of said linkage in the opposite direction in order to clamp a side of a bag mouth between said movable wall and said fixed member and said movable member may be simultaneously swung inwardly to clamp a second side of the bag mouth between said swinging member and said fixed wall, a latching device to hold said linkage at the limit of its movement in the first direction, and means to hold said linkage at the limit of its movement in the other direction.

6. A spout for filling open mouth bags comprising a fixed clamping member at one side of the spout and a second fixed clamping member at the opposite side of the spout, a swinging leaf forming a wall of the spout adjacent the first member, a second swinging leaf forming the opposite wall of the spout adjacent the second member, a toggle linkage connected to both of said leaves whereby the leaves may be simultaneously swung inwardly upon movement of said linkage in one direction in order to decrease the size of a spout and permit ready insertion thereof into the mouth of a bag, and whereby the leaves may be simultaneously swung outwardly upon movement of said linkage in the opposite direction in order to clamp the sides of a bag mouth between said walls and said members, latching means to hold said linkage at the limit of its movement in the first direction, and means to hold said linkage at the limit of its movement in the other direction.

7. A spout for filling open mouth bags comprising a pair of fixed clamping members, a swinging leaf forming a wall of the spout located with its edges adjacent said clamping members, and a linkage connected to said leaf whereby said leaf may be swung inwardly to decrease the size of the spout and permit ready insertion thereof into the mouth of a bag, and whereby the leaf may be swung outwardly to clamp a side of the bag at spaced points between said wall and said members.

8. A spout for filling open mouth bags comprising a pair of fixed clamping members and a pair of movable clamping members, a swinging leaf forming a wall of the spout with its edges located adjacent said fixed members, a fixed wall of the spout with its edges located adjacent said movable members, and a linkage connected to said leaf and to said movable members whereby said leaf may be swung inwardly to decrease the size of the spout and to separate said movable wall from said fixed members and said movable members may be simultaneously swung outward-

ly to separate the same from said fixed wall, and whereby said leaf may be swung outwardly to clamp a side of a bag mouth at spaced points between said movable wall and said fixed members and said movable members may be simultaneously swung inwardly to clamp a second side of the bag mouth at spaced points between said movable members and said fixed wall.

9. A spout for filling open mouth bags comprising a pair of fixed clamping members at one side of the spout and a second pair of fixed clamping members at the opposite side of the spout, a swinging leaf forming a wall of the spout with its edges located adjacent the first members, a second swinging leaf forming the opposite wall of the spout with its edges located adjacent the second members, and a linkage connected to both of said leaves whereby the leaves may be simultaneously swung inwardly to decrease the size of the spout and permit ready insertion thereof into the mouth of a bag, and whereby the leaves may be simultaneously swung outwardly to clamp the sides of a bag mouth at spaced points between said walls and said members.

10. A spout for filling open mouth bags comprising a pair of fixed clamping members, a swinging leaf forming a wall of the spout with its edges located adjacent said clamping members, a toggle linkage connected to said leaf whereby said leaf may be swung inwardly upon movement of said linkage in one direction in order to decrease the size of the spout and permit ready insertion of the spout into the mouth of a bag, and whereby the leaf may be swung outwardly upon movement of said linkage in the opposite direction in order to clamp a side of the bag at spaced points between said wall and said members, a latching device to hold said linkage at the limit of its movement in the first direction, and means to hold said linkage at the limit of its movement in the other direction.

11. A spout for filling open mouth bags comprising a pair of fixed clamping members and a pair of movable clamping members, a swinging leaf forming a movable wall of the spout with its edges located adjacent said fixed members,

a fixed wall of the spout with its edges located adjacent said movable members, a toggle linkage connected to said leaf and to said movable members whereby said leaf may be swung inwardly upon movement of said linkage in one direction in order to decrease the size of the spout and to separate said movable wall from said fixed members and said movable members may be simultaneously swung outwardly to separate the same from said fixed wall, and whereby said leaf may be swung outwardly upon movement of said linkage in the opposite direction in order to clamp a side of a bag mouth at spaced points between said movable wall and said fixed members and said movable members may be simultaneously swung inwardly to clamp a second side of the bag mouth at spaced points between said swinging members and said fixed wall, a latching device to hold said linkage at the limit of its movement in the first direction, and means to hold said linkage at the limit of its movement in the other direction.

12. A spout for filling open mouth bags comprising a pair of fixed clamping members at one side of the spout and a second pair of fixed clamping members at the opposite side of the spout, a swinging leaf forming a wall of the spout with its edges located adjacent the first members, a second swinging leaf forming the opposite wall of the spout with its edges located adjacent the second members, a toggle linkage connected to both of said leaves whereby the leaves may be simultaneously swung inwardly upon movement of said linkage in one direction in order to decrease the size of the spout and permit ready insertion thereof into the mouth of a bag, and whereby the leaves may be simultaneously swung outwardly upon movement of said linkage in the opposite direction in order to clamp the sides of a bag mouth at spaced points between said walls and said members, latching means to hold said linkage at the limit of its movement in the first direction, and means to hold said linkage at the limit of its movement in the other direction.

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