A. R. HINTON.

MECHANISM FOR AUTOMATICALLY APPLYING BAGS TO FILLING MACHINES.

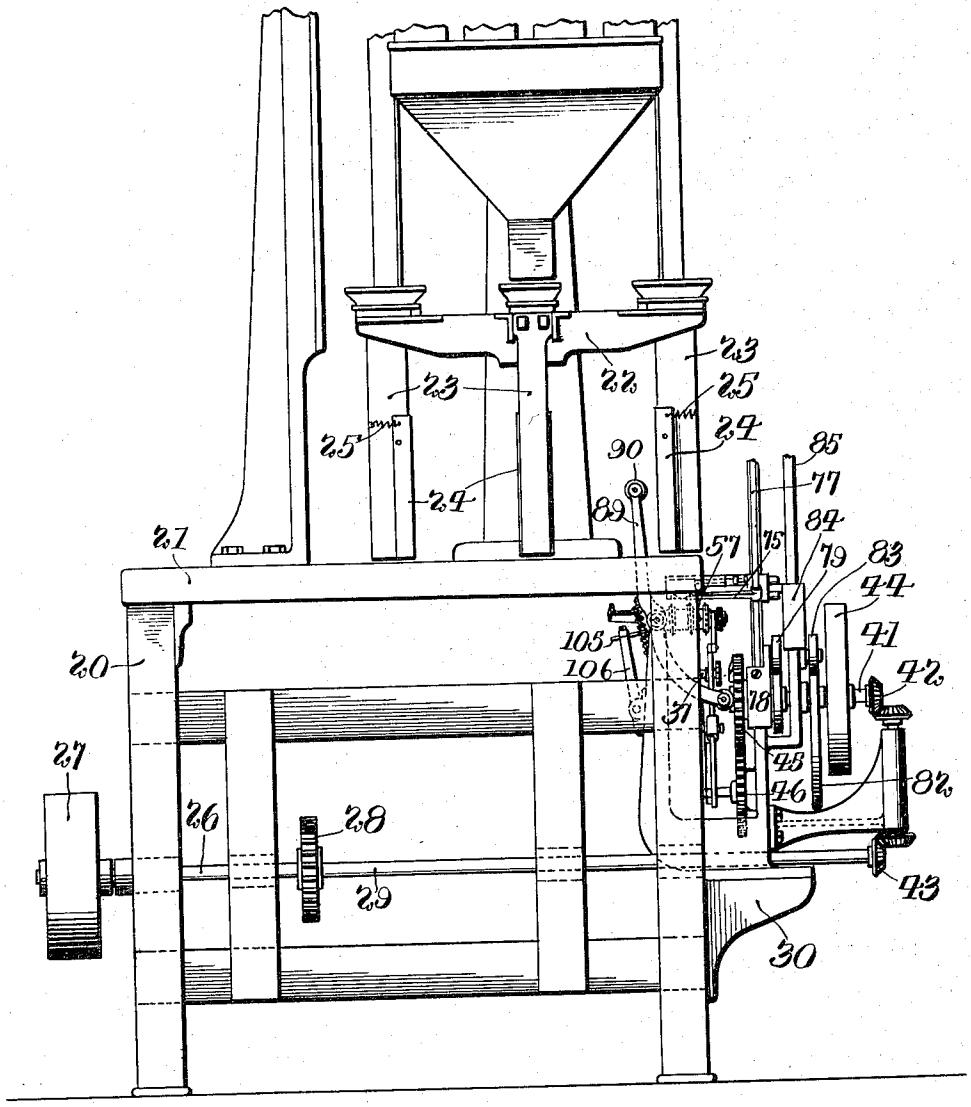
APPLICATION FILED MAY 19, 1915.

1,190,898.

Patented July 11, 1916.

8 SHEETS—SHEET 1.

Fig. 1.



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Witnesses

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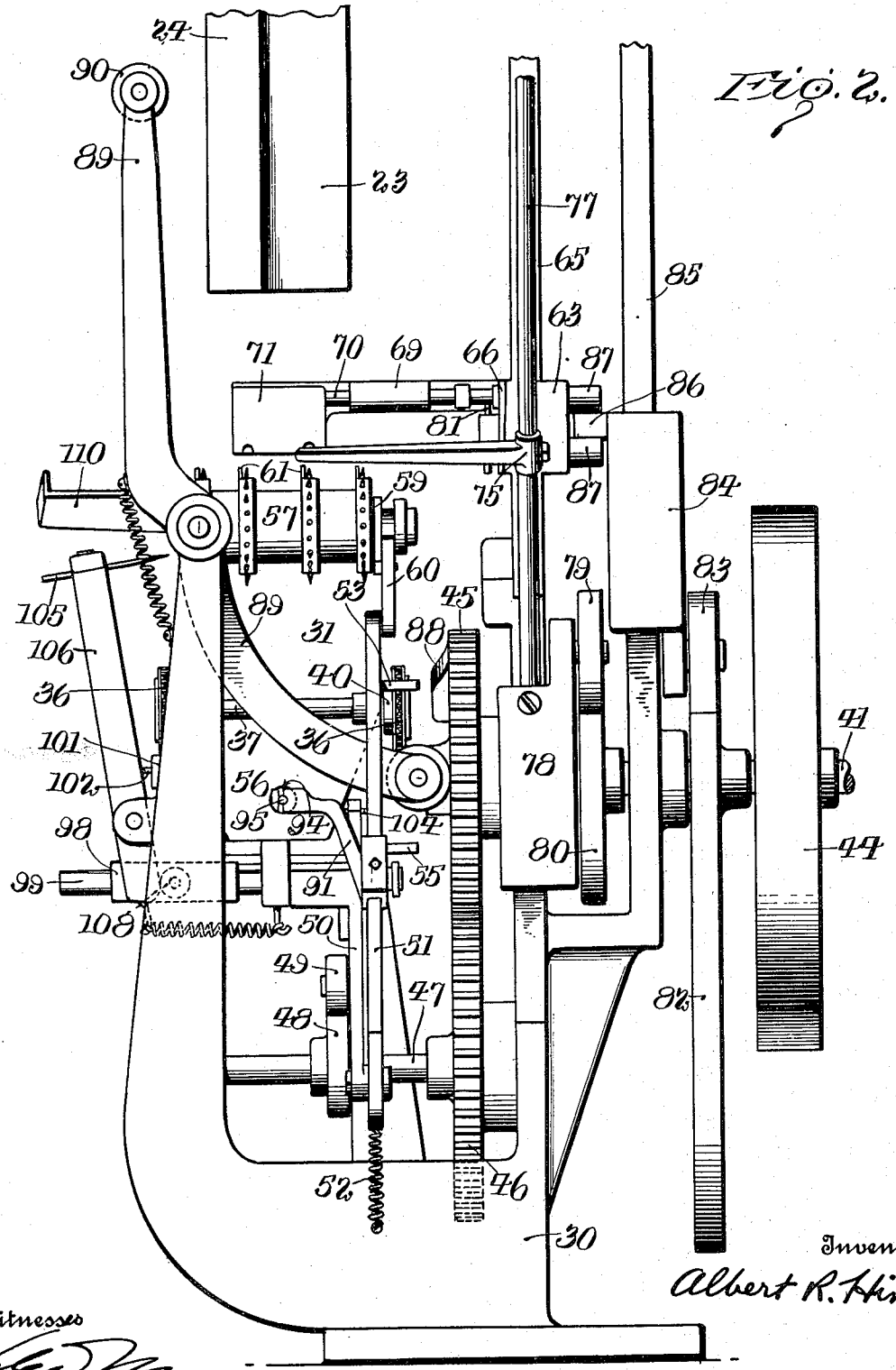
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8 SHEETS—SHEET 2.

Fig. 2.



Witnesses

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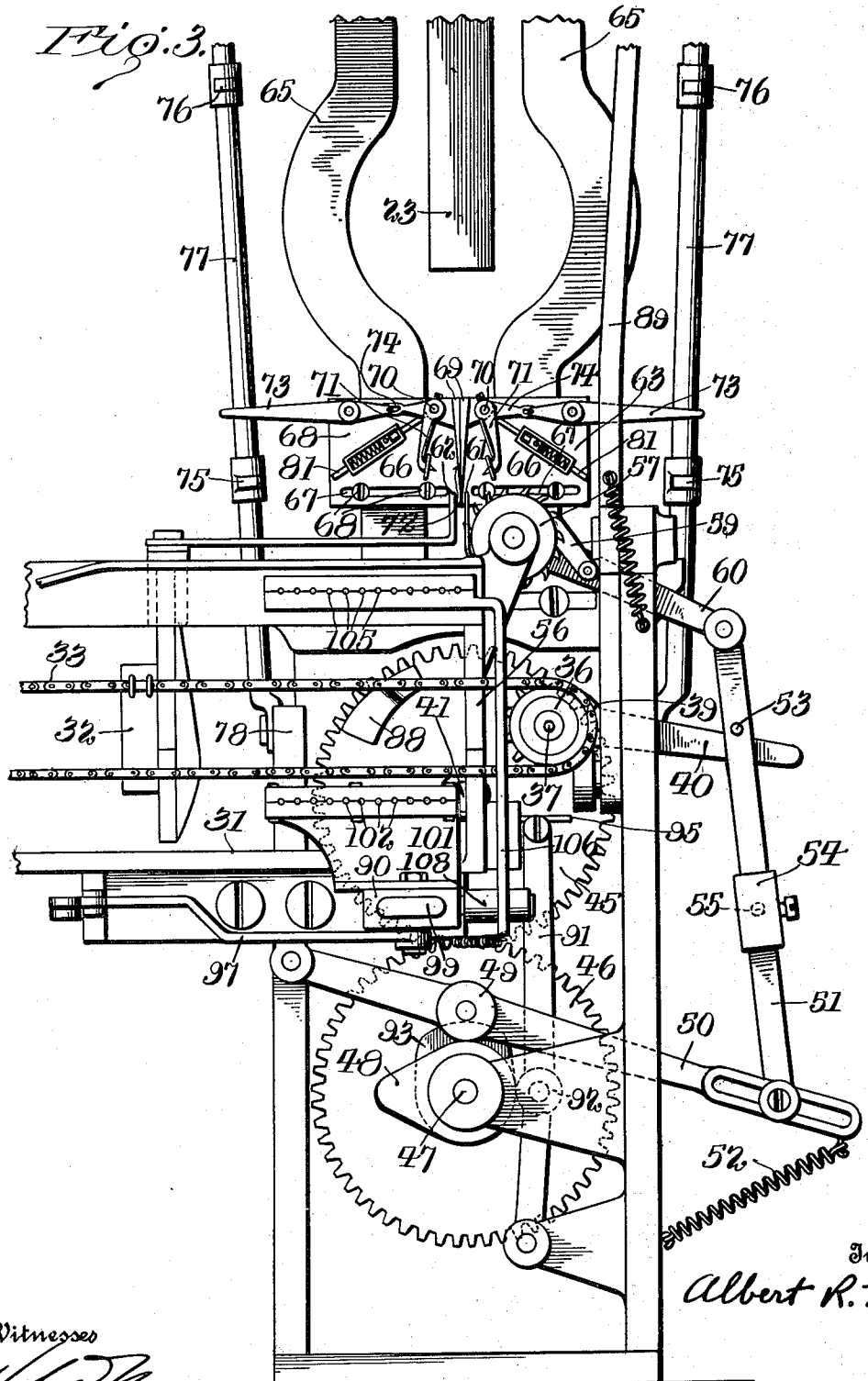
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8 SHEETS—SHEET 3.

Fig. 3.



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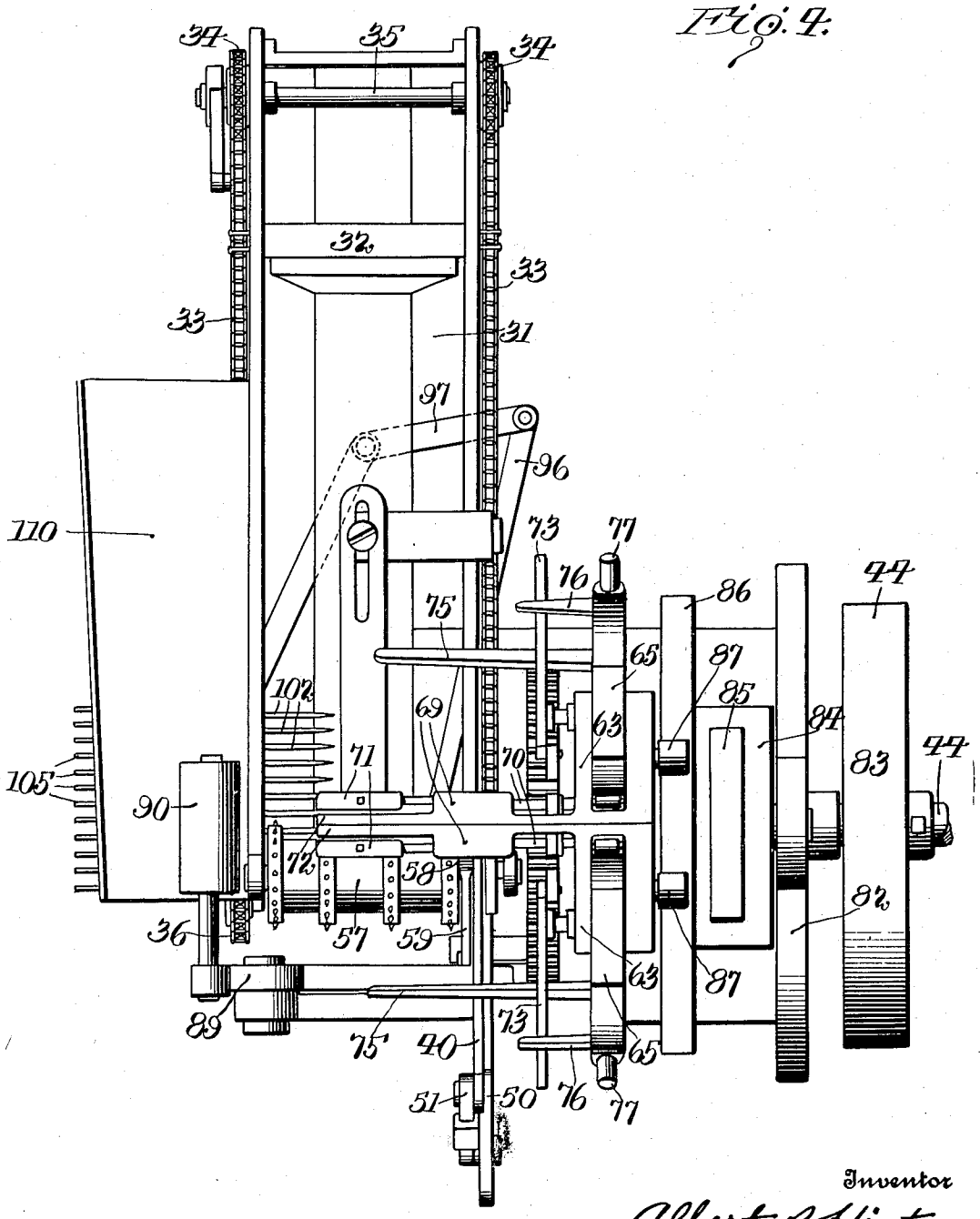
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8 SHEETS—SHEET 4.

Fig. 4.



Witnesses

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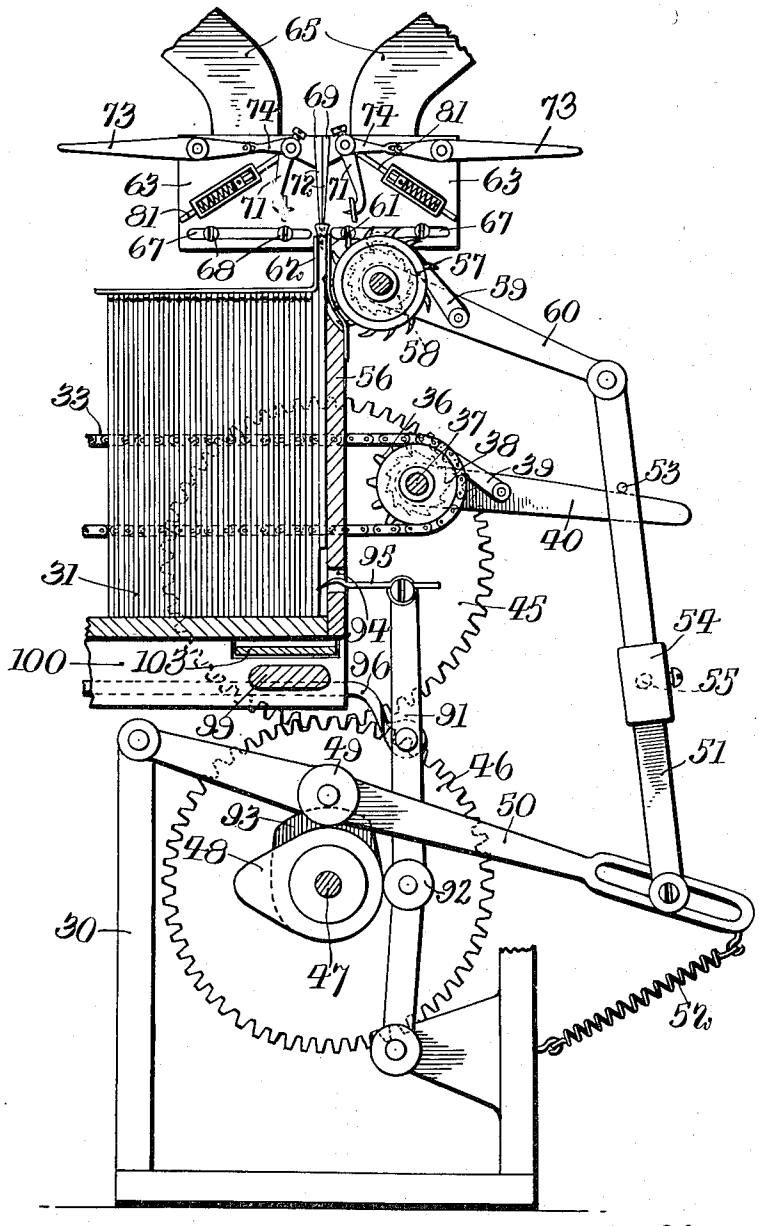
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8 SHEETS—SHEET 5.

FIG. 5.



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8 SHEETS—SHEET 6.

Fig. 6.

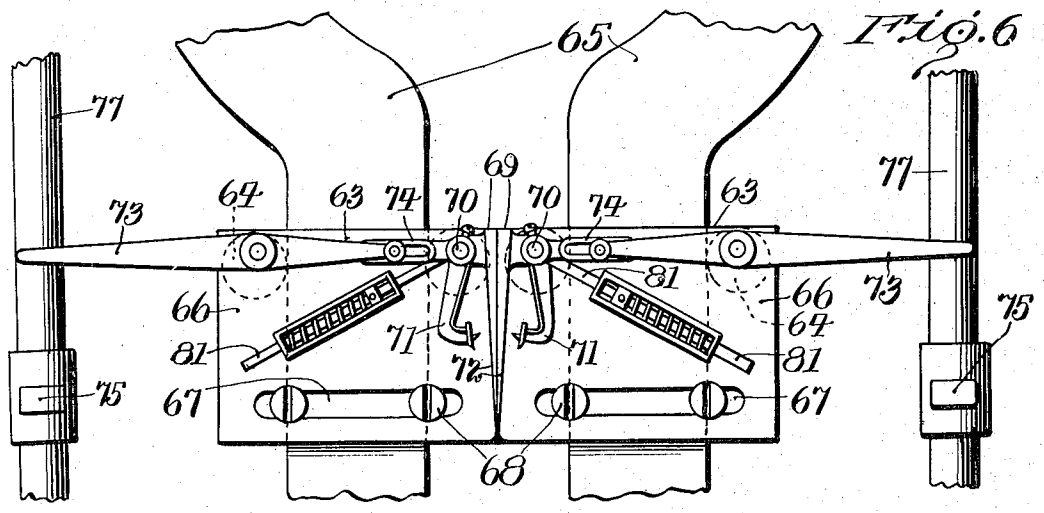


Fig. 7.

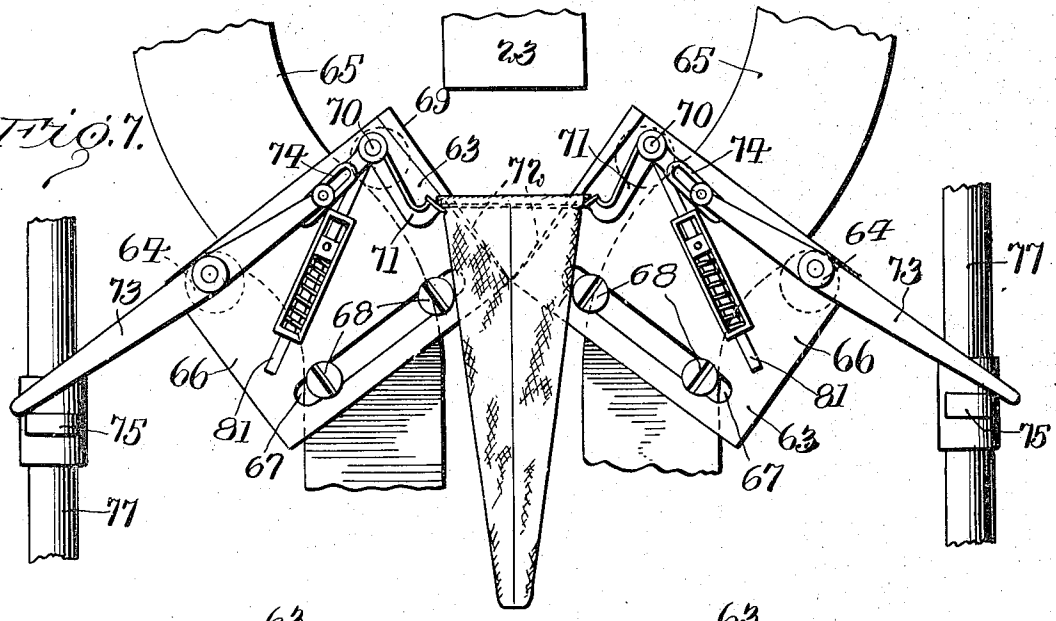
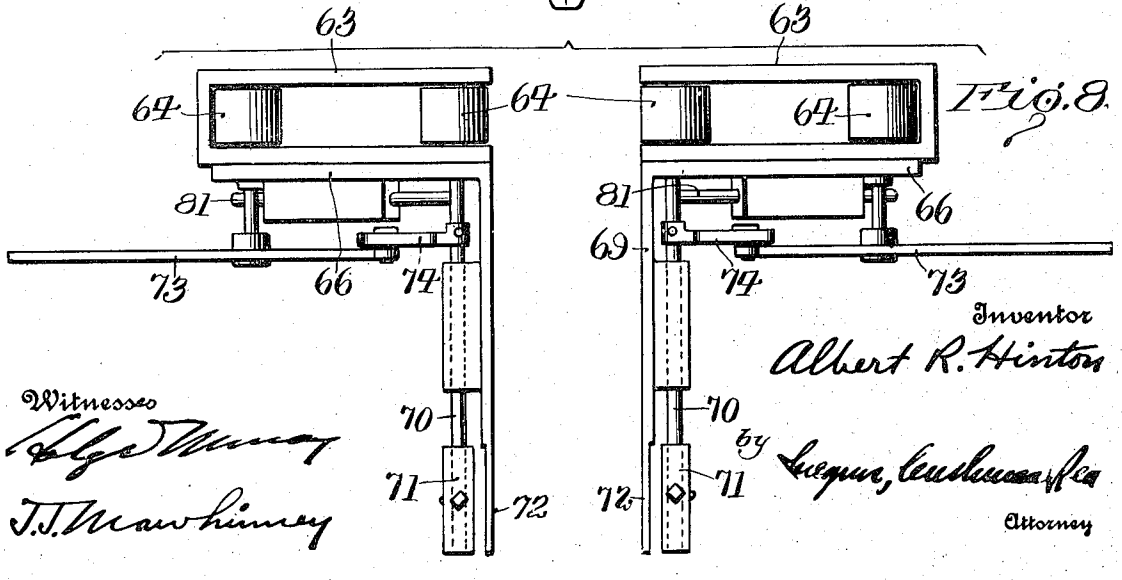


Fig. 8.



Witnesses

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8 SHEETS—SHEET 7.

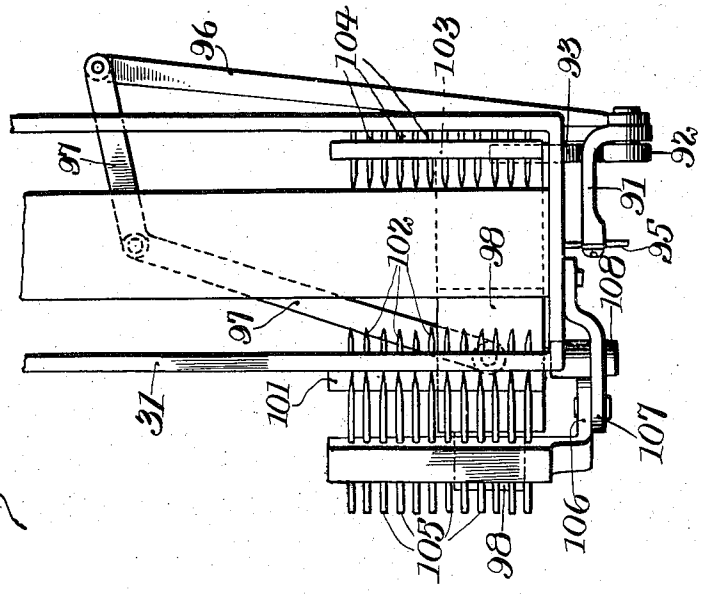


Fig. 9.

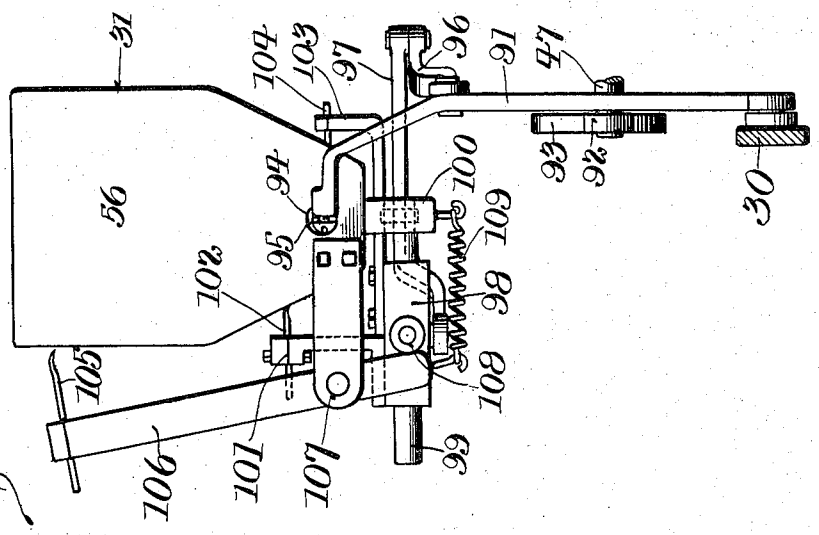


Fig. 10.

Witnesses

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MECHANISM FOR AUTOMATICALLY APPLYING BAGS TO FILLING MACHINES.

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8 SHEETS—SHEET 8.

Fig. 11.

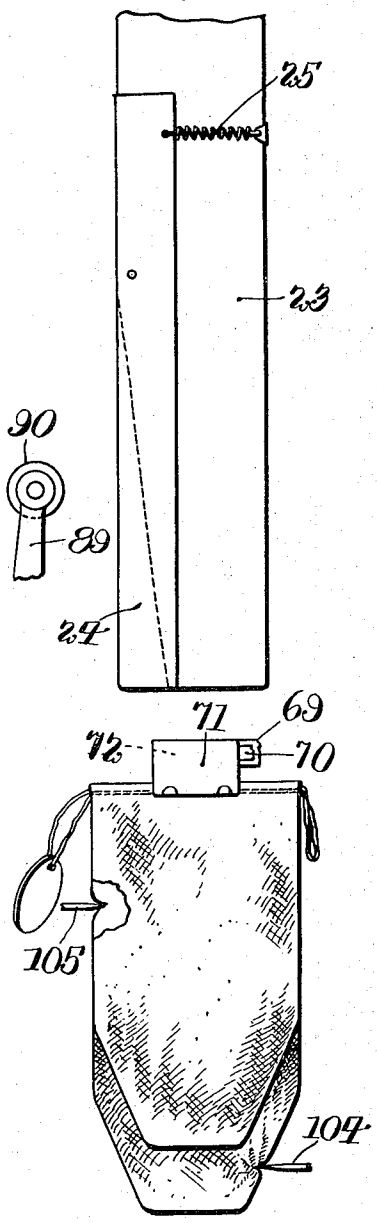


Fig. 12.

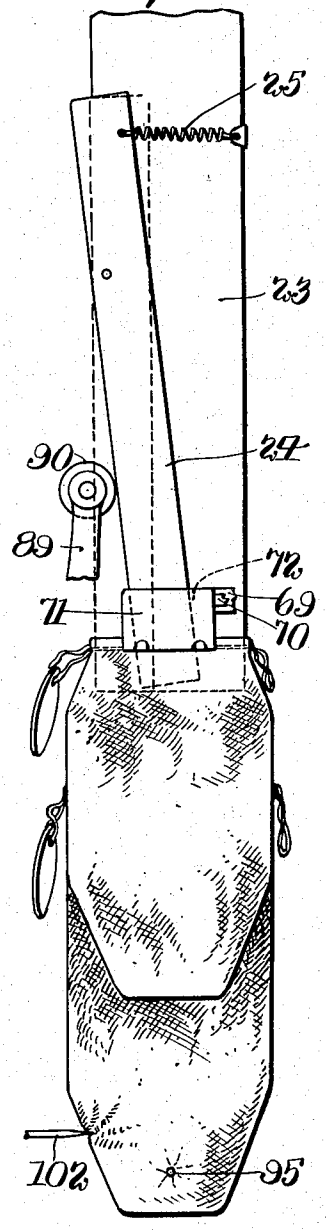
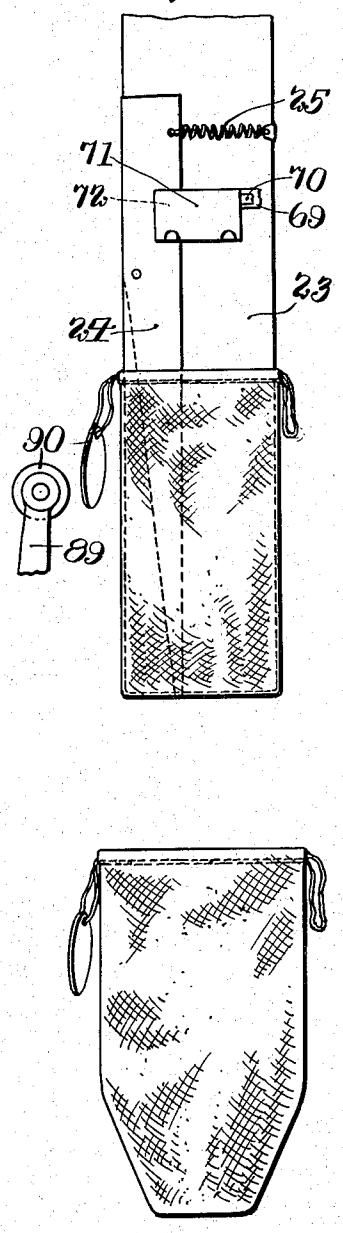


Fig. 13.



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UNITED STATES PATENT OFFICE.

ALBERT R. HINTON, OF GREENSBORO, NORTH CAROLINA.

MECHANISM FOR AUTOMATICALLY APPLYING BAGS TO FILLING-MACHINES.

1,190,898. Specification of Letters Patent. Patented July 11, 1916.

Application filed May 19, 1915. Serial No. 29,095.

To all whom it may concern:

Be it known that I, ALBERT R. HINTON, a citizen of the United States, residing at Greensboro, in the county of Guilford and State of North Carolina, have invented new and useful Improvements in Mechanism for Automatically Applying Bags to Filling-Machines, of which the following is a specification.

This invention relates to a mechanism for automatically applying bags to a filling machine, for instance the machine for packing tobacco covered by Letters Patent No. 829,288, granted Rufus L. Patterson, August 21, 1906.

Broadly, the invention comprises a mechanism which may be applied to a bag filling machine of any type; which supports the bags in a row or stack; which picks off the bags one at a time from the row or stack; which opens the bags, and which applies the bags when open to the lower end of a spout or other material feeding device. The invention contemplates certain instrumentalities for effecting these various movements which have heretofore been accomplished by hand.

The principal object of this invention is to provide an accurate, positive and rapidly operating mechanism for automatically applying bags to filling machines to take the place of operatives who are now employed for this work and who necessarily cannot apply the bags with sufficient rapidity to admit of the running of the filling machine at a high rate of speed.

Various other important objects and advantages of this invention will appear from the following detail disclosure of the present embodiment of this invention, the same being disclosed for the purposes of illustration and description in connection with the above-mentioned Patterson machine for packing tobacco.

In the accompanying drawings showing this present preferred embodiment and its application to the said Patterson packing machine—Figure 1 is a side elevation of the improved bag applying mechanism as attached to said Patterson packing machine. Fig. 2 is a detail enlarged side elevational view of the bag-applying mechanism. Fig. 3 is an inner side elevation of the bag-applying mechanism. Fig. 4 is a top plan view thereof. Fig. 5 is a vertical section through the improved mechanism taken through the magazine. Fig. 6 is a detail enlarged view of the grippers and guides therefor, the grippers being disclosed in their lowermost position. Fig. 7 is a similar view showing the grippers raised and slightly spread apart for opening the bag. Fig. 8 is a detail top plan view of the grippers and the guides therefor, shown in the position of Fig. 7. Fig. 9 is a detail plan view of the bag magazine showing the stack-retaining needles and the mechanism for operating the same. Fig. 10 is a detail view showing in elevation the end of the magazine with the needles and mechanism therefor. Fig. 11 discloses the end of the stack of bags subsequent to the initial movement of the first bag under the action of the picker roll, and showing the relative position of the bag with respect to the form or material feeding spout. Fig. 12 is a similar view disclosing the bag partly open and engaging over the lower end of the material feeding spout or form. Fig. 13 is a similar view disclosing the bag in position upon the form.

In Fig. 1 of the drawings a packing machine is diagrammatically shown, for the purposes of illustrating the packing machine shown in the above-noted Patterson Patent No. 829,288. The structure diagrammatically shown comprises a main frame 20 having a table 21 above which rises the turret 22 provided with a plurality of depending forms or spouts 23, downwardly through which the material to be packed in the bags is fed. The forms or spouts 23 are provided at their lower ends with a hinged section 24 adapted to be collapsed as shown in Fig. 12, to admit of the easy slipping of the bag up over the lower end of the spout. Springs 25 normally urge the hinged sections 24 outwardly to hold the spout in normal condition. The frame 20 is provided in its lower end with a main shaft 26 driven through a suitable mechanism by means of the pulley 27 and having connection by gears 28 with a secondary shaft 29, the latter shaft being utilized in the present instance for operating the improved automatic bag applying mechanism.

Suitably bracketed upon the front of the bag filling machine is the frame 30 upon which is mounted the mechanism of this invention. The frame 30 carries near its upper end a bag magazine 31, which is preferably of the cross sectional shape of the contour of the flat folded bag, and

which is adapted to support a large number of the bags. As may be best seen from Fig. 4 of the drawings, this magazine 31 extends horizontally and laterally from the frame 30 and is provided therein with a follower 32 movable longitudinally in the magazine to advance the bags. This follower 32 is attached to chains 33 arranged outside of and against the magazine. The outer ends of the chains 33 are supported on sprocket wheels 34 fixed to a shaft 35 extending transversely through the outer end of the magazine 31 to effect the simultaneous and even movement of the chains 33. The forward ends of the chains 33 pass over sprockets 36, as shown to advantage in Figs. 3 and 5. The sprockets 36 are fixed upon a transverse shaft 37 to one end of which is secured a ratchet wheel 38 with which engages a pawl 39 carried on a swinging arm 40, the pawl 39 and ratchet 38 being so relatively disposed as to intermittently advance the chains 33 upon the downward stroke of the arm 40. The frame 30 is provided in its forward end with a horizontal shaft 41 constituting the main shaft of the bag applying mechanism and having connection through gears 42 and 43 with the secondary shaft 29 of the bag filling machine, as shown in Fig. 1. Thus the bag applying mechanism is driven or operated through the secondary shaft 29, when the bag filling machine is in motion. The shaft 41 is provided with a fly-wheel 44 to balance the mechanism, and has upon its inner end a gear 45 meshing with a second gear 46 fixed upon a counter-shaft 47 in the lower end of the frame 30. As shown to advantage in Figs. 2, 3 and 5, the counter-shaft 47 has a pointed cam 48 thereon adapted to engage, by means of a friction roller 49, an arm 50 pivoted at its inner end to the frame 30 and having a pin and slot connection at its outer end with an upwardly extending pitman or connecting rod 51. A spring 52 urges the arm 50 downwardly against the cam 48, and draws the follower operating arm 40 downwardly by a pin 53 projecting laterally from the connecting rod or pitman 51 and bearing against the upper edge of the arm 40. An adjustable collar 54 is carried upon the connecting rod 51 and has a pin 55 projecting laterally from one side thereof to engage the lower edge of the arm 40 when the rod 51 is raised so as to advance the pawl 39 one tooth upon the ratchet 38 and place the arm 40 in position to move the follower to a distance equal to the thickness of one of the bags in the magazine subsequent to the removal of the latter.

The bags in the magazine are pressed by the follower 32 against the front wall 56 of the magazine, the wall 56 being fore-shortened to uncover the upper edge of the bag. A picker roll 57, of any approved type, is mounted upon the frame 30 and extends across the top of the wall 56 with its teeth in engagement with the upper edge of the foremost bag, as shown to advantage in Fig. 5. This picker roll 57 is intermittently advanced by means of a ratchet 58 fixed to the roll 57 and a pawl 59 pivoted upon a swinging arm 60 concentrically pivoted with the roll 57 and having pivoted connection at its outer end with the connecting rod 51, so that by each upward thrust of the rod 51 the pawl 59 is advanced over the ratchet 58 and upon the downward movement of the connecting rod 51, under the action of the spring 52, the arm 60 draws the pawl 59 and ratchet 58 therewith to impart rotation to the picker roll 57 to lift the first bag in contact therewith. The foremost bag in the magazine which is raised up from the stack by the picker roll 57 is guided in a substantially true vertical plane and held from following the picker roll by means of a plurality of fingers 61 which rise between the teeth of the picker roll and bear against the outer side of the bag, as shown in Fig. 5. The top of the magazine is flanged upwardly to provide an inner guide 62, the members 61 and 62 forming therebetween a throat through which the bags are adapted to be fed one at a time upwardly to the hereinafter described grippers.

From the throat of the magazine the bag passes into engagement with a pair of grippers 63. The grippers comprise a pair of blocks, each of which is hollow and provided with spaced-apart rollers 64 adapted to bear against the opposite sides of a pair of spaced-apart guides or tracks 65. Each hollow block 63 has secured to the face thereof a plate 66, the same being adjustable by means of a transverse slot 67 in the plate and set screws 68 engaging in the slot and carried by the block. In this manner the plates 66 may be adjusted toward and from each other as found expedient in the operation of the machine. From the outer side of each plate 66 extends an arm 69, the arms having inner flat faces adapted to abut, as shown in Fig. 6, when the grippers are in their lowermost position. The outer ends of the arms 69 have their outer faces inclined or beveled off to a practically straight line and are enlarged to form blades for insertion in the top of the bag when in the throat of the magazine. It will be observed from Fig. 2 that the outer ends of the arms 69 extend laterally into a position immediately over the throat of the magazine, and that the grippers are located upon the guides 65 in the outer end of the frame 30. The arms 69 carry rock shafts 70 extending longitudinally of the arms and mounted against the outer sides of the same. Gripping fingers 71 are fixed upon the outer ends of the rock shafts 70 directly opposite to

the blades 72 on the outer face of the arms 69, and are adapted to be swung inwardly against the blades when the shafts 70 rock for the purpose of gripping the sides of the bag subsequent to the insertion of the blades 72 into the top thereof. The shafts 70 are operated by means of levers 73 suitably hinged upon the plates 66, one end of each lever having pin and slot connection with an arm 74 fixed to each shaft 70. The opposite ends of the levers 73 project laterally beyond the grippers and lie in the path of abutments 75 and 76. The abutments 75 and 76 are adjustably mounted upon vertically movable uprights 77 fixed to a slide 78 mounted for vertical movement upon the frame 30. The slide 78 has upon its outer face a roller 79 bearing against a cam 80 mounted upon the main shaft 41. The movement of the slide 78 adjusts the position of the abutments 75 and 76 to effect the gripping and release of the sides of the bag at the desired time. The rock shafts 70 are held yieldingly in either engaging position or in released position by means of tension rods 81 mounted upon the faces of the plates 66 and bearing against the sides of the shafts 70 to hold them yieldingly in the adjusted position. It will be noted from Figs. 1 and 2 that the guides or tracks 65 are so positioned with respect to the spout or form 23 that the lower end of the spout or form lies a short distance above the point of divergence of the guides or tracks 65 so that as the grippers which engage the opposite sides of the bag are spread by the separation of the same upon the guides 65 the lower end of the spout enters the top of the bag.

The grippers 63 are raised and lowered upon the guides or tracks 65 by means of a cam 82 fixed upon the main shaft 41, which cam bears against a roller 83 mounted on a block 84 slidable vertically upon a guide 85. The block 84 has across its inner face a cross bar 86 against the upper and lower faces of which work pairs of rollers 87 mounted upon the grippers 63.

The gear 45 is provided upon its inner face with a cam block 88 adapted to engage the lower end of an arm 89 hinged at an intermediate point upon the frame 30 and having upon its upper end a friction roller 90 arranged opposite to the hinged section 24 of the spout. When the cam block 88 strikes the lower end of the lever or arm 89 the friction roller 90 is moved inwardly into engagement with the hinged section 24 at a point below the pivotal support thereof to collapse the lower end of the spout and admit of its easy entrance into the open mouth of the bag.

Means is provided for retaining the bags in the magazine from displacement when the innermost bag is moved up through the throat of the magazines. This means, as shown in Figs. 2, 4, 5, 9 and 10, comprises an arm 91 hinged at its lower end to the frame 30 and having intermediate its ends and at one side a friction roller 92 bearing against a cam 93 fixed upon the countershaft 47. The upper end of the arm 91 registers with an opening 94 in the lower end of the wall 56 of the magazine and has detachably and adjustably mounted thereon a retaining pin 95 passing through the opening 94 and adapted to engage the lower end of the second bag in the stack. The cam 93 is so timed that subsequent to the initial movement of the first bag under the action of the picker roll 57 the pin 95 is thrust inwardly through the wall 56 into engagement with the second bag to hold the same from curling or distortion during the withdrawal of the first bag by the grippers 63. The arm 91 is connected by a link 96 with a bell crank 97 which is pivoted beneath the magazine 31 at a point considerably spaced from the inner end thereof and having its long arm extending inwardly and having a pin and slot connection with a slide 98 mounted on a transverse bar 99 projecting from beneath the inner end of the magazine 31. The bar 99 is mounted upon a post 100 depending from the magazine so as to space the bar 99 slightly below the same. The slide 98 is provided with an upstanding bracket 101 carrying a row of pins 102 adapted for engagement with the edges of the bags at one side of the magazine to assist the pin 95 in retaining the bags in position during the withdrawal of the first bag. The slide 98 is further provided with a second bracket 103 which extends beneath the magazine to the opposite side thereof and carries a second row or set of pins 104 for engagement with the opposite edges of the bags in the magazine. It will be noted that the movement of the slide 98 brings the pins 102 and 104 alternately into engagement with the opposite edges of the bags in the magazine. For the purpose of holding the bags in the magazine upon the initial movement of the first or innermost bag into the position shown in Fig. 5, an upper set or row of pins 105 is provided, the same being mounted on an arm 106 located at one side of the magazine and being pivoted near its lower end upon a bracket 107 projecting from the magazine. The lower end of the arm 106 lies in the path of a roller 108 projecting laterally from the slide 98 so that upon the outward movement of the slide 98 the upper end of the arm 106 is swung inwardly to bring the pins 105 into engagement with the lateral edges of the bags at the top of the magazine. A spring 109 fixed at one end to the post 100 and at its opposite end to the lower extremity of the arm 106 urges the pins 105 out of engagement with the bags and the slide 98

inwardly toward the post 100. Through the connection of the bell crank 97 and link 96, the arm 91 is thus normally held in the position shown in Fig. 5 to engage the pin 95 with the front face of the second bag.

From Figs. 2 and 4 it will be noted that the magazine 31 is provided upon its outer side with a tray or table 110 at the top of the magazine in which may be placed the ends of draw strings, tags, or the like, which are attached to the bags so that these bag attachments will not interfere with the operation of the mechanism and will not become tangled or destroyed in the handling of the bag.

In the operation of the bag applying mechanism of this invention, the filling machine, such as shown in Fig. 1, is set in motion through the pulley 27 and main shaft 26, the latter operating the secondary shaft 29 through the gears 28. The operation of the filling machine intermittently rotates the turret 22 to bring the spouts 23, one at a time, at the front of the machine, at which point the bags have heretofore been applied by hand. In the use of the attachment, a stack or row of bags is placed in the magazine 31 in front of the follower 32. The rotation of the secondary shaft 29, through the gears 43 and 42 respectively, drives the main shaft 41 of the improved mechanism, and through the gears 45 and 46 operates the counter-shaft 47. As the counter-shaft 47 rotates, the cam 48 thereon strikes the arm 50 and raises the rod 51 to swing the arm 60 into a raised position to advance the pawl 59 upon the ratchet 58. At the same time the pin 55 carried by the rod 51 strikes the under side of the arm 40 at the approaching of the limit of the upward movement of the rod 51, and advances the pawl 39 a short distance upon the ratchet 38. As soon as the cam 48 passes beyond its point of contact with the arm 50, the spring 52 draws the arm 50 down and the rod 51 and arm 60 are swung down into the position shown in Fig. 5 of the drawings. In moving into this position the pawl 59 draws the picker roll 57 around a short distance to raise the innermost bag through its initial movement into the throat of the magazine, as shown in Fig. 5. Near the completion of the downward stroke of the rod 51, the pin 53 strikes the upper edge of the arm 40 and through the pawl 39 and ratchet 38 advances the follower chains 33 a short distance to move the follower 32 and the bags forwardly in the magazine.

Prior to the advancing of the follower in the magazine, or the striking of the pin 53 against the arm 40, the cam 82 on the main shaft 41 releases the roller 83 and admits of the movement of the slide 84 into its lowermost position, and consequently the dropping of the grippers 63 into their lowermost position, as shown in Fig. 5. When in this position the blades 72 of the grippers enter the mouth of the bag as the picker roll 57 raises the bag into the throat of the magazine. As soon as the bag is in the position shown in Fig. 5, the lower abutments 75 are raised into engagement with the outer ends of the arms 73 to swing the gripping fingers 71 into engagement with the opposite sides of the bag when the latter is moved up upon the blades 72. The cam 82 now raises the roller 83 and slide 84 which, by means of the transverse bar 86, raises the grippers 63 and draws the first bag up out of the throat of the magazine. As the grippers 63 rise they follow the diverging guides or tracks 65 and separate, as shown in Fig. 7. This separation opens the mouth of the bag, and as the lower end of the spout 23 is located immediately above the point of divergence of the guides 65. the bag is carried up over the lower end of the spout. Immediately prior to the divergence of the grippers, the cam block 88 upon the gear 45 is brought into engagement with the lower end of the arm 89. This operation swings the upper end of the arm 89 inwardly and brings the roller 90 thereof into contact with the hinged section 24 of the spout, collapsing the spout and admitting of the easy entrance of the same into the mouth of the bag.

In Fig. 11 of the drawings there is a diagrammatic showing of the end of the stack of bags, wherein the first or innermost bag has been raised through its initial movement into the throat of the magazine. It will be noted that the blades 72 engage in the upper end of the bag before the bag is open. In Fig. 12 the roller 90 is shown in contact with the hinged spout connection, the full lines showing the spout collapsed. This figure also discloses the first bag after it has been partly raised by the grippers, and the grippers have been separated to open the mouth of the bag, the spout 23 being shown as extending slightly into the bag. In Fig. 13 the bag is shown in its final position upon the spout 23. When in this position, the upper abutments 76 are moved down by the cam 80 into engagement with the outer ends of the levers 73 to move the same into the position shown in Fig. 6, and wherein the gripping fingers 71 are retracted from the sides of the bag to release the same. While the grippers are thus raised and released from the bag which is now placed on the spout, the next bag in the magazine is moved into the throat thereof and in position to be engaged by the grippers when the same are moved down.

Referring now particularly to Figs. 5, 9, 10, 11, 12 and 13, it will be noted that when the first bag is initially drawn up into the throat of the magazine, the cam 93 holds

the arm 91 outwardly away from the first bag to disengage the pin 95 therefrom and admit of the uninterrupted lifting of the bag. At the same time, as shown in Fig. 11, the slide 98 is moved outwardly to engage the lower row or set of pins 104 in engagement with the lower edges of the next adjacent bags to hold the lower ends thereof from curling or following the first bag. At the same time, the roller 108 on the slide 98 swings the arm 106 and brings the upper pins 105 into engagement with the edges of the next adjacent bags near their upper ends. These pins 104 and 105 firmly hold the bags in the magazine during the initial movement of the first bag. After the completion of the initial movement of the first bag, the cam 93 releases the arm 91. The spring 109 now draws the arm 106 outwardly and moves the slide 98 inwardly. The movement of the slide disengages the pins 104 from the bags and moves the opposite pins 102 into engagement with the opposite edges of the bags. At the same time, through the bell crank 97 and link 96, the arm 91 is drawn inwardly to engage the pin 95 in the bottom of the second bag of the stack. This arrangement of the pins 95 and 102 is shown to advantage in Fig. 12. When the bag has been raised into the desired position upon the form or spout 23, as shown in Fig. 13, the cam 93 operates the arm 91 to change the position of the various pins connected thereto, so that for a slight interval of time the bags are disengaged at all points from the pins and are free to move in the magazine. It is simultaneous with this changing of the various pins that the pin 53 strikes the arm 40 to operate the chains 33 and advance the follower 32.

It is, of course, understood that the above-mentioned mechanism is but one embodiment of this invention, it being contemplated to make various changes and modifications therein within the scope of the following claims.

What I claim is:

1. In a machine of the class described, the combination with a filling instrumentality, of means for bringing a closed bag to a predetermined position, means for gripping and opening such positioned bag, means for moving said gripping and opening devices and the bag to said filling instrumentality and raising and applying said gripped and opened bag thereto, and means for effecting the withdrawal of said gripping and opening devices from said bag after its application to said filling instrumentality.

2. In a machine of the class described, the combination with a suitable filling instrumentality, of a bag support, means for advancing a stack of closed bags on said support, means for selecting and protruding a bag from said stack, means for gripping and opening said protruded bag, and means for moving said gripping and opening devices to said filling instrumentality and raising and applying the opened bag thereto.

3. In a machine of the class described, the combination with a suitable filling instrumentality, of means for supporting a stack of bags, means for removing bags singly from the stack, means for gripping and opening the bag removed from the stack, said removing and opening means being movable to filling position relative to said filling instrumentality, and means for withdrawing the bag removing and opening means after the bag has been brought to filling position.

4. In a machine of the class described, the combination with a suitable filling instrumentality, of means for supporting a stack of bags, means for removing the bags singly from said stack, and means independent of the removing instrumentalities for gripping and opening said bag and applying it to the filling instrumentality.

5. In a machine of the class described, the combination with a suitable filling instrumentality, of means for supporting a stack of bags, means for removing the bags singly from the stack, gripping devices to engage the removed bag, mechanism for separating said grippers to open such bag after it has been removed from the stack, and means for moving said gripping devices and open bag to filling position beneath said filling instrumentality.

6. In a machine of the class described, the combination with a suitable filling instrumentality, of a support for a stack of bags, means for advancing said stack on said support, means for removing the bags singly from the front of said stack, gripping devices to engage and open said removed bag, means for moving said gripping devices to said filling instrumentality to raise and apply the opened bag thereto, and means for then withdrawing the gripping devices from said opened and applied bag.

7. In a mechanism as specified, the combination with a suitable filling instrumentality, of means for advancing a stack of bags, means for selecting the bags one at a time from the stack, blades for insertion in the open end of the bag, gripping fingers for engagement with the sides of the bag to hold the same against said blades, means for separating the blades whereby to open the top of the bag, and means for operating the blades to apply the open bag to said filling instrumentality.

8. In a mechanism as specified, the combination with a suitable filling instrumentality, of means for supporting a stack of bags, means for selecting the bags one at a time from the stack, a pair of wedge-shaped blades adapted for insertion in the top of

the bag, means for clamping the sides of the bag against the respective blades, and means for separating the blades and raising the same whereby to open the bag and apply the same to said filling instrumentality.

9. In a machine of the class described, the combination with a filling spout, of means for gripping and opening a bag, and means for moving said gripping and opening devices and raising and applying the opened bag to the end of said filling spout.

10. In a mechanism as specified, the combination with filling instrumentalities, including a spout, and a hinged section on the spout, of means for selecting a bag, means for opening the bag, means for collapsing the spout, and applying means for moving the open bag over the collapsed end of the spout.

11. In a machine of the class described, the combination with a laterally collapsible filling spout, of a bag support, means for removing a bag therefrom, means for gripping and opening said removed bag, means for collapsing said spout, and means for moving said gripping and opening devices to said collapsed spout and applying the bag thereto.

12. In a mechanism as specified, the combination with filling instrumentalities, of a support for a plurality of bags, means for picking off said bags one at a time, grippers adapted to engage the opposite edges of the mouth of the bag, means for raising said grippers, and guides for the grippers adapted to separate the same when raised to open the mouth of the bag and apply the same to said filling instrumentalities.

13. In a mechanism as specified, the combination with a filling instrumentality, of a magazine for supporting bags, means for selecting the bags one at a time from the magazine, means for retaining the remaining bags in position in the magazine, independent movable means adjacent to the bags for applying the selected bag to said filling instrumentality, and means for advancing the remaining bags in the magazine forwardly to said selecting means.

14. In a mechanism as specified, the combination with a filling instrumentality, of a bag magazine, a picker roll adapted to select the bags one at a time from the magazine, a pair of grippers for engagement with the opposite sides of the bag, means for raising the grippers to withdraw the bag from the magazine, and guides for the grippers adapted to spread the same apart to open the bag and apply the same to said filling instrumentality.

15. In a mechanism as specified, the combination with a suitable filling instrumentality, of a bag magazine, a picker roll for selecting the bags one at a time from the magazine, a plurality of pins arranged at the opposite sides of the magazine, means for operating said pins simultaneously with the selection of the bags from the magazine whereby to engage the pins alternately with the opposite edges of the remaining bags in the magazine, grippers for engagement with the selected bag, and means for operating the grippers whereby to open the bag and apply the same to said filling instrumentality.

16. In a mechanism as specified, the combination with a suitable filling instrumentality, of means for selecting a bag, grippers for engagement with the opposite sides of the bag, means for raising said grippers whereby to open said bag and apply the same to said filling instrumentality, and means for releasing said grippers from said bag upon its application to said filling instrumentality.

17. In a mechanism as specified, the combination with a suitable filling instrumentality, of means for selecting a bag, a pair of grippers adapted for engagement with the opposite sides of the bag, arms projecting from the grippers, abutments in the path of said arms, means for operating the abutments to actuate the arms and engage the grippers with the bag, means for raising said grippers to apply the bag to said filling instrumentality, and other abutments for engagement with said arms to actuate the grippers to release said bag when applied to the filling instrumentality.

18. In a mechanism as specified, the combination with a suitable filling instrumentality, of means for selecting a bag, grippers for engagement with the opposite sides of the bag, means for raising the grippers, guides for the grippers to separate the same when raised whereby to open the bag and apply the same to said filling instrumentality, and means for releasing the grippers from the bag when applied.

19. In a mechanism as specified, the combination with a filling instrumentality, of a bag magazine, a picker roll for engaging the bags one at a time and advancing the same toward said filling instrumentality, a pair of grippers adapted for engagement with the upper end of the bag, means for raising the grippers, whereby to draw the bag out of the magazine, and means for spreading said grippers apart during their upward movement whereby to open the mouth of said bag and draw the same over said filling instrumentality.

20. In a mechanism as specified, the combination with a suitable filling instrumentality, of a bag magazine, means for raising said bags one at a time into the throat of the magazine, a pair of grippers having abutting wedge-shaped blades adapted for engagement in the upper end of the bag

when in the throat of the magazine and having fingers adapted to clamp the opposite sides of the bag against the adjacent gripping blades, means for elevating the grippers simultaneously, and diverging guides for the grippers adapted to separate the same when elevated whereby to spread open the mouth of the bag to receive said filling instrumentality.

21. In a mechanism as specified, the combination with a suitable filling instrumentality, of a bag magazine having a throat at one end thereof, a picker roll for engagement with the bags one at a time to advance the same into the throat, a pair of grippers adapted for engagement in the upper end of the bag when in the throat of the magazine, means for actuating the grippers to grasp the opposite sides of the bag, diverging guides for the grippers, and operating means for the grippers adapted to raise the same upon said guides whereby to spread apart the grippers and open the mouth of the bag to receive said filling instrumentality.

22. In a mechanism as specified, the combination with a suitable filling instrumentality, of means for selecting a bag, a pair of grippers having abutting blades adapted for insertion in the top of the bag and having gripping fingers arranged opposite to the blades, means for moving the gripping fingers into contact with the sides of the bag whereby to hold the same against the respective blades, diverging guides for the grippers, means for elevating the grippers simultaneously whereby to raise said bag and to open the upper end thereof for engagement with said filling instrumentality, and means for releasing said gripping fingers from the sides of said bag when the latter is in position on said filling instrumentality.

23. In a mechanism as specified, the combination with a suitable filling instrumentality, of a main shaft, means for continuously operating the shaft, a bag magazine, a follower in the magazine, a counter-shaft geared to said main shaft, a cam on said counter-shaft, a reciprocating rod actuated by said cam, a connection between said rod and said follower adapted to intermittently advance said follower, a picker roll having connection with said rod and engaging the foremost bag in said magazine whereby to select a bag upon the movement of the rod, grippers for engagement with the selected bag, and means for actuating said grippers connected to said main shaft.

24. In a mechanism as specified, the combination with a suitable filling instrumentality, of a bag magazine, means for advancing the bags in the magazine including a reciprocating arm, a picker roll adapted to select the bags one at a time from the magazine, a counter-shaft, a cam on said counter-shaft, a lever connection for engagement with the cam and with said follower arm and said picker roll whereby to actuate the latter upon the rotation of the cam, a pair of grippers adapted to receive the selected bag, a main shaft for actuating said counter-shaft, and a cam on said main shaft for actuating said grippers.

25. In a mechanism as specified, the combination with a suitable filling instrumentality, of a pair of grippers, means for feeding a bag to said grippers, a shaft, a cam on the shaft, a block engaging the cam for vertical movement thereby, a pair of diverging guides for said grippers, and a connection between said block and said grippers, whereby upon the actuation of said cam to raise and spread apart the grippers and open and apply a bag to said filling instrumentality.

26. In a mechanism as specified, the combination with a suitable filling instrumentality, of a pair of guides diverging upwardly about the sides of the filling instrumentality, a pair of grippers on said guides, means for moving said grippers vertically upon the guides to bring the grippers together beneath the instrumentality and to spread the grippers apart at the opposite sides thereof, means for feeding a bag to the grippers when in lowered position, means for actuating the grippers to grasp the opposite sides of the bag when lowered, said grippers being adapted to rise on said guides and open said bag for the reception of said filling instrumentality, and means for releasing the grippers from the bag when the latter is applied to the filling instrumentality.

27. In a mechanism as specified, the combination with a suitable filling instrumentality, of a pair of grippers adapted for vertical reciprocation, means for separating the grippers when the latter are moved upwardly, blades carried by the grippers adapted to engage in the upper end of a bag, pivoted fingers upon the grippers adapted to secure the sides of the bag against said blades, means for yieldingly holding the gripper fingers in engaging and released position, finger operating levers projecting laterally from the grippers, vertically moving rods at the opposite sides of the grippers, abutments on the rods for engagement with said levers, and means for moving said rods whereby to bring said abutments into engagement with the levers at the upper and lower positions of the grippers whereby to actuate the gripping fingers to grasp and release the bag.

28. In a mechanism as specified, the combination with a suitable filling instrumentality, of a pair of vertically movable grippers, blades on the grippers for insertion in

a bag when in lowermost position, gripping fingers on the grippers for securing the opposite sides of the bag against the blades, levers extending laterally from the grippers and having connection with said fingers, means for actuating the levers at the upper and lower positions of the latter whereby to move said gripping fingers toward and from said blades, and means for yieldingly holding the gripping fingers in released and engaging positions.

29. In a mechanism as specified, a pair of grippers, blades on the grippers for engagement in the top of a bag, fingers on the grippers for engagement with the opposite sides of the bag to secure the same against the blades, and means for adjusting said blades toward and from each other.

30. In a mechanism as specified, a pair of grippers, blades on the grippers for insertion in the top of a bag, gripping fingers pivoted on the grippers, means for actuating said fingers to engage the opposite sides of a bag and hold the same against the adjacent blades, means for adjusting said blades toward and from each other, and means for raising and spreading apart said grippers to open the bag.

31. In a mechanism as specified, a pair of guides, grippers mounted on the guides, lifting means for the grippers to raise the same, blades on the grippers for engagement in the top of a bag when in lowermost position, gripping fingers to bind the sides of the bag against the respective blades, means for yieldingly holding the gripping fingers in engaging position, and means for releasing the bag from said fingers and said blades when the said grippers are raised.

32. In a mechanism as specified, a pair of diverging guides, a pair of grippers embracing the guides, movable plates secured to the grippers and having outstanding arms, blades on said arms adapted for insertion in the top of a bag when said grippers are in lowered position, means for securing the opposite sides of the bag against the respective blades, means for raising the grippers whereby to separate the same and open the bag, and means for releasing said fingers from the sides of the bag when the grippers are raised.

33. In a mechanism as specified, the combination with a filling spout having a section adapted to be contracted, of means for selecting a bag, a pair of grippers to engage the selected bag, means for separating the grippers to open the bag, and means for engaging said spout section to contract the same prior to the raising and separating of said grippers.

34. In a mechanism as specified, the combination with a filling spout having a laterally collapsible section, of bag selecting means, lifting and opening devices for engagement with the bag, whereby to apply the bag to said spout, and collapsing means engaging said spout section to collapse the same prior to the raising of the opening device.

35. In a mechanism as specified, the combination with a laterally collapsible filling spout, of means for selecting a bag, means for opening the bag, means for collapsing said spout, and separate means for applying the open bag to said collapsed spout.

36. In a mechanism as specified, the combination with a laterally collapsible filling spout, of means for selecting a bag, means for opening the bag, and separate means for applying the open bag upon the collapsed spout.

37. In a mechanism as specified, the combination with a collapsible filling spout, of a pair of grippers for engagement with a bag, means for raising said grippers for raising and applying the bag to the spout, means for collapsing the spout and to receive the bag.

38. In a mechanism as specified, a frame, a main shaft on the frame, a counter-shaft geared to said main shaft, a bag magazine in the frame, feeding mechanism for the bags to advance the same in the magazine, a cam on said counter-shaft, an arm hinged in the frame in the path of said cam, a rod connected to said arm and having connection with said bag feeding mechanism, selecting means for engagement with the bags one at a time to withdraw the same from the magazine and having connection with said movable rod, and means actuated by the main shaft for engagement with said selected bag for drawing the same out of said magazine, opening the bag, and raising the same while in open position.

39. In a mechanism as specified, a frame, a bag magazine on the frame, bag selecting means for engagement with the bags to raise the same one at a time out of the magazine, a follower mechanism in the magazine for advancing the bags one at a time, a single cam having connection with said selecting means and said follower mechanism whereby to actuate the same at predetermined intervals, means for engaging, opening and raising the open bag from the selecting means, and a second cam connected to said last-named means for actuating the same.

40. In a mechanism as specified, a bag magazine, means for initially withdrawing the first bag from the magazine to expose the upper edge thereof, lateral pins for engagement with the next adjacent bags to retain the same in the magazine during the initial movement of the first bag, applying-mechanism for engagement with the exposed edge of the first bag for withdrawing the bag, and a front pin for engagement with the bottom forward side of the sec-

ond bag during the withdrawal of the first bag.

41. In a mechanism as specified, a bag magazine, means for initially withdrawing the first bag from the magazine, a set of pins for engagement with the lateral edges of the next adjacent bags to retain the same in the magazine, and a second set of pins for engagement with said adjacent bags during the complete withdrawal of the first bag.

42. In a mechanism as specified, a bag magazine, a picker roll for initially withdrawing the first bag, opposed pins arranged at opposite sides of the magazine, means for alternately engaging said pins with the edges of the next adjacent bags, a front pin for engagement with the forward side of the second bag at its lower end subsequent to the initial withdrawal of the first bag, and means for withdrawing said initially moved bag from the magazine.

43. In a mechanism as specified, a bag magazine, pins arranged at the opposite sides of the magazine, a front pin for insertion through the front wall of the magazine for engagement with the bags therein, means for initially moving the first bag from the magazine, means for finally withdrawing the first bag from the magazine, and operating means for the pins to first engage the lateral pins with the edges of the next adjacent bags during the initial movement of the first bag, and for subsequently engaging the front pin with the bottom of the remaining bags during the withdrawal of the first bag.

44. In a mechanism as specified, a bag magazine, a plurality of sets of pins arranged at opposite sides of the magazine, a front pin adapted for insertion through the front of the magazine, means for initially withdrawing the first bag, means for finally withdrawing the first bag, operating means for engaging the lateral pins with the next adjacent bags during the initial movement of the first bag and for engaging the front pin with the next adjacent bags during the final withdrawal of the first bag, and means for advancing the bags in the magazine during the interchanging of said pins.

45. In a mechanism as specified, a bag magazine, means for initially withdrawing the first bag from the magazine, applying-means for finally withdrawing the first bag from the magazine, a set of pins for engagement with the remaining bags during the initial movement of the first bag, a second set of pins for engagement with the remaining bags during the operation of the applying means, a lever for interchanging said pins, a cam for engagement with said lever to operate the same, and an intermittently operated mechanism for advancing the bags in the magazine during the interchanging of said pins.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ALBERT R. HINTON.

Witnesses:
L. B. JEFFIN,
R. L. CLARK.