Sept. 7, 1943. A. GAERTNER 2,328,639

TEA BAGGING MACHINE

Filed July 2, 1941 3 Sheets-Sheet 1

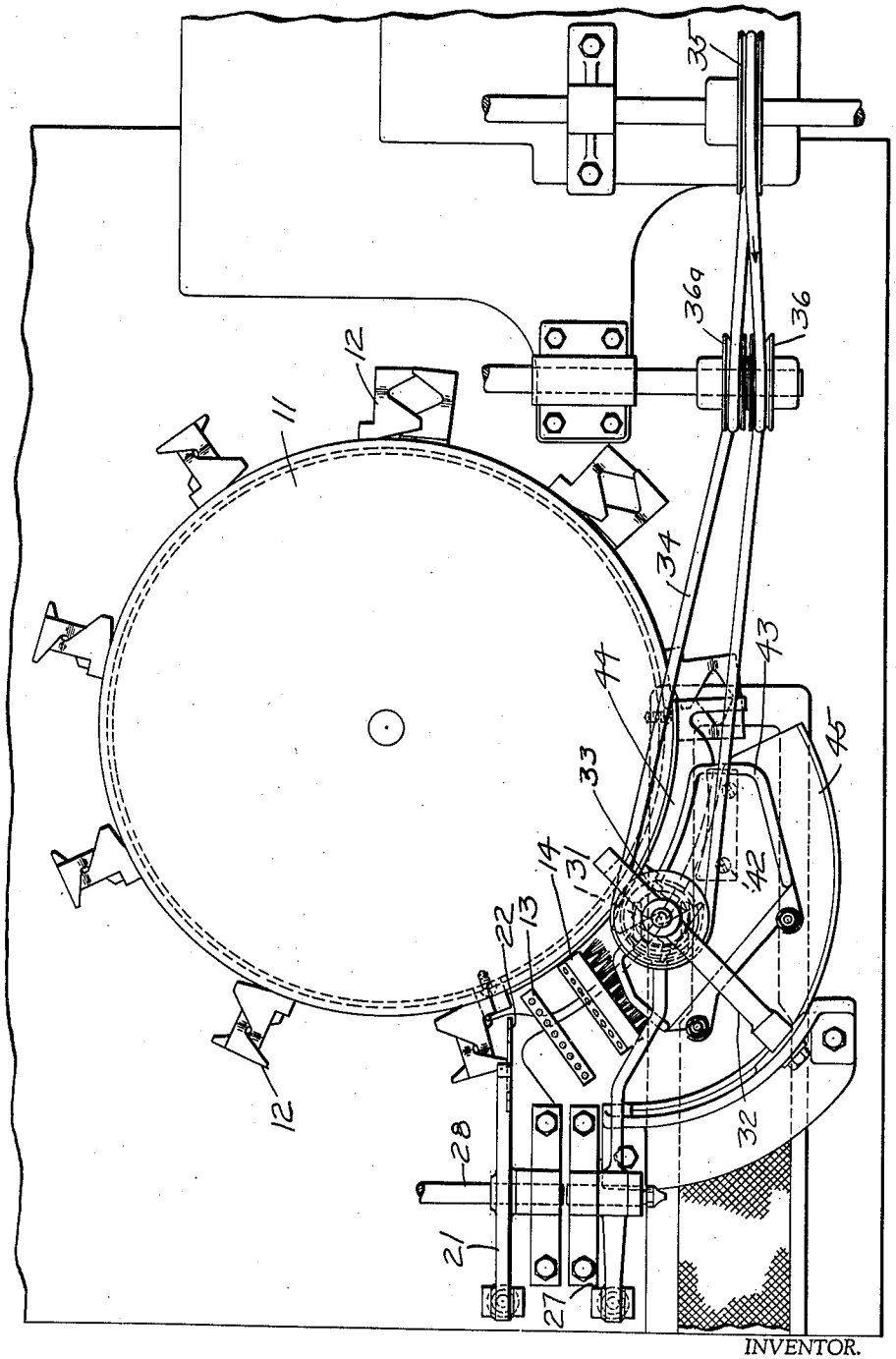


FIG. 1

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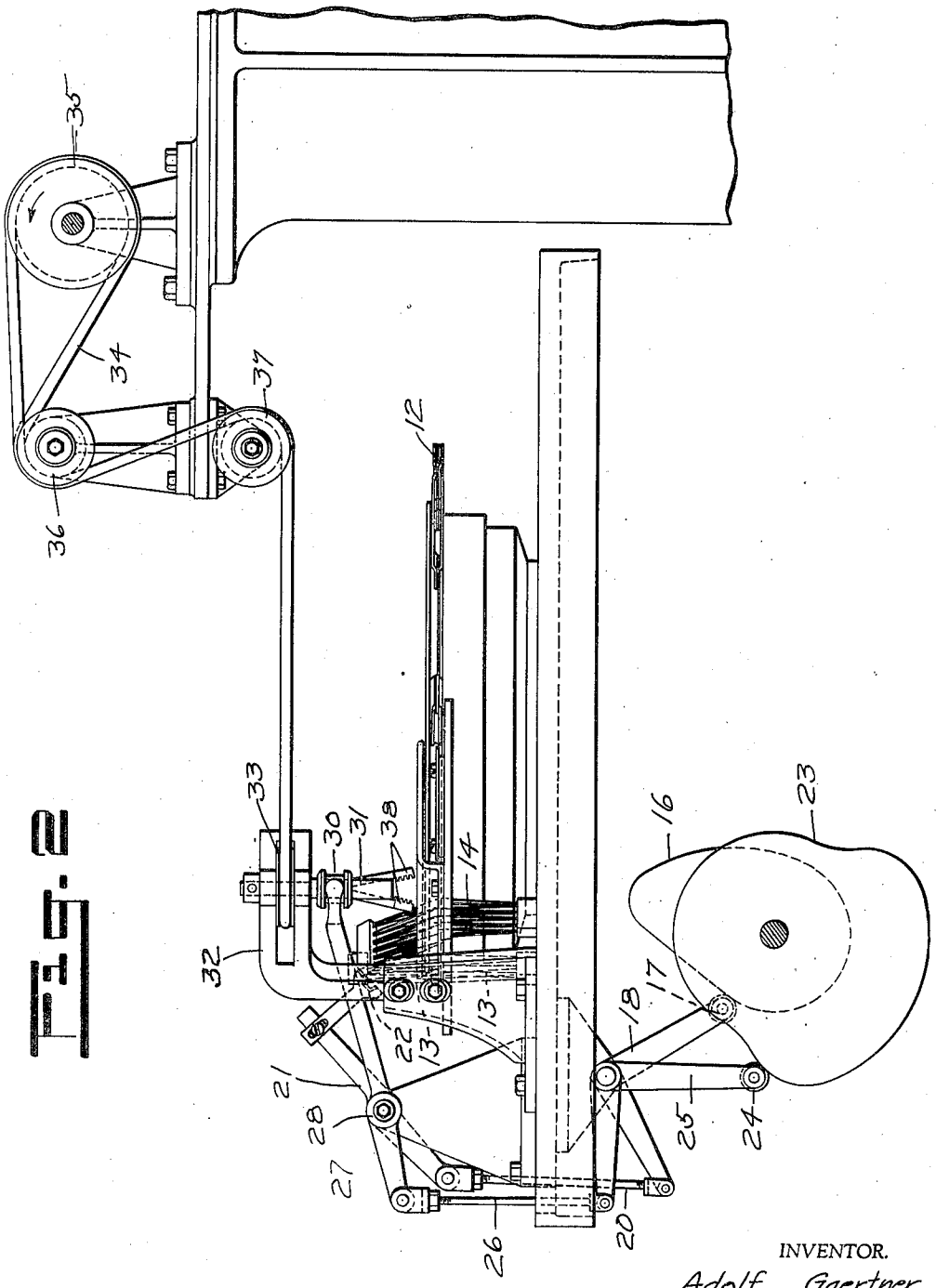


Fig. 2

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Fig. 3

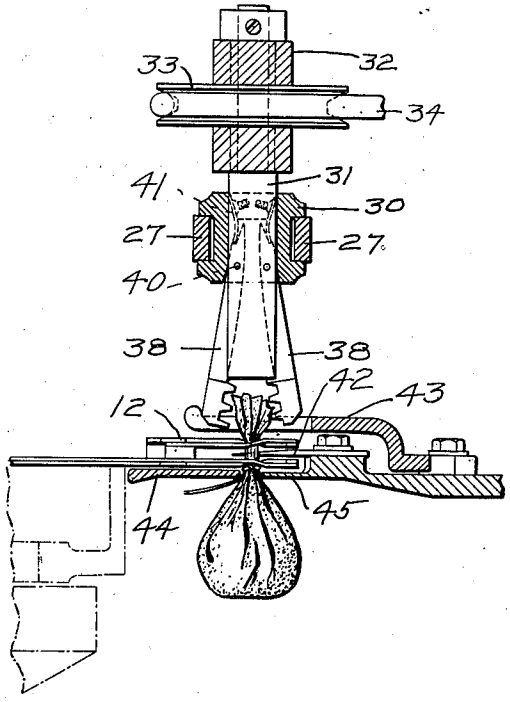


Fig. 4

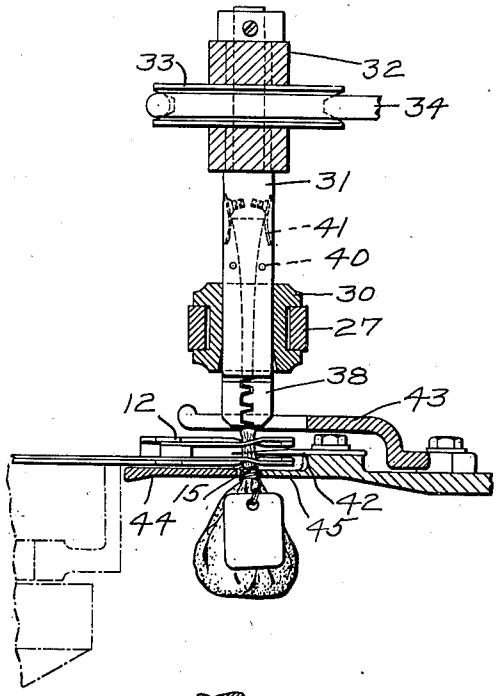
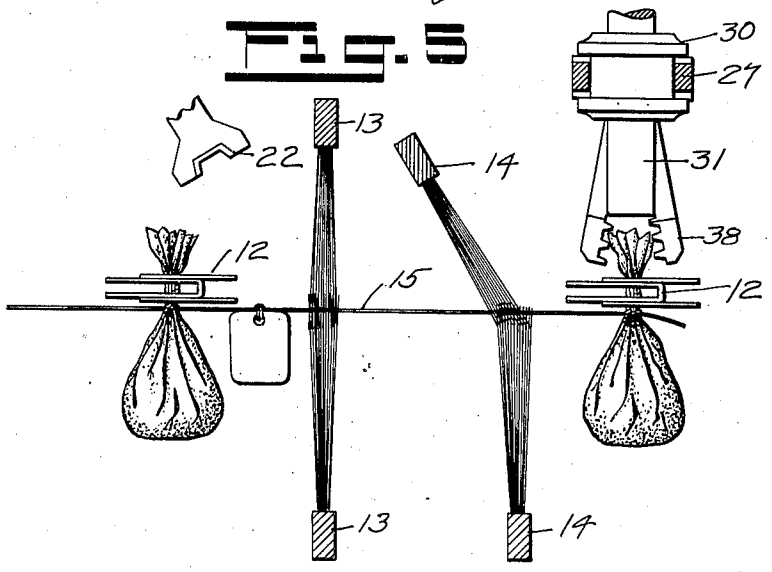


Fig. 5



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Patented Sept. 7, 1943 2,328,639

UNITED STATES PATENT OFFICE

2,328,639

TEA BAGGING MACHINE

Adolf Gaertner, St. Albans, N. Y.

Application July 2, 1941, Serial No. 400,777

2 Claims. (Cl. 226—56)

The present invention relates to a machine for packaging materials and specifically to a machine for packaging tea in bags. More particularly still, this invention is an improvement upon the device of Rohrig, Patent No. 1,857,662 filed February 6, 1931, and issued May 10, 1932.

In the patent just mentioned there is disclosed and claimed a mechanism for winding a string about the neck of a tea bag in order that the tags which are attached to the strings may lie close to the bags and not become entangled when the tea bags are put in a box or similar container.

In the Rohrig device the bag is held stationary and an annular brush is moved to position surrounding the bag and rotated in order to wind the string about the bag neck. The Rohrig device as well as the device of my invention is preferably formed as an attachment to or alteration of the general construction of the automatic tea bagging machine disclosed in the patent of Ralph N. Doble, No. 1,726,060, issued August 27, 1929.

The Doble machine as modified by Rohrig has not proven completely satisfactory and my invention is designed to overcome the disadvantages of the Rohrig structure but is as has been mentioned above an improvement upon the general machine construction disclosed in the Doble patent.

It is an object of the invention to provide a packaging machine designed to pack a commodity in a bag, to close the mouth of the bag and to wind a flexible handle or string around the mouth of the bag and to place the handle and bag in a condition ready for shipment when it is discharged from the machine.

Another object of the invention is to provide an efficient automatic machine having means for automatically winding the string around the mouth of the bag which means shall be simple in operation and shall not be subject to failure brought about by lack of tension upon the string during the winding process as is true in the Rohrig device above mentioned.

A further object of the invention is to provide such a machine in which the tensioning means for the string is stationary and the tea bag itself is rotatable in order to cause winding of the string or so-called flexible handle, about the neck of the bag.

Other objects and features of the invention will appear when the appended drawings are considered in connection with the following description in which:

Figure 1 is a fragmentary view of a tea bagging machine with the attachment of my invention applied thereto.

Figure 2 is a side elevation of the machine of Figure 1.

Figure 3 is a detailed sectional drawing showing particularly the mode of rotating the tea bag and the jaws for gripping the bag during this rotating operation. In this figure the parts are shown in the position which they occupy prior to the winding or rotating operation.

Figure 4 is a view similar to Figure 3 but showing the parts in the position which they occupy at the completion of the winding operation.

Figure 5 is a view generally similar to Figure 3 showing, however, in addition to the parts shown in Figure 3, the prior step in the sequence of operations, namely the continuous string extending from one bag to another prior to being cut. This figure also shows the stationary brushes which serve to maintain tension upon the string during the winding operation.

In general the machine of this invention is designed to automatically feed a predetermined length of filter paper gauze or the like through a supply roll and to then form a pocket or a bag from this length of filter paper by means of a hollow plunger, through which plunger tea (in a weighed quantity) is fed at the same time that the bag is being formed. Thereupon the partially formed bag is seized by jaws fixed to an intermittently rotating turret and is advanced step by step through portions of the machine which serve to tie a string about the bag neck, to tie a tag upon the string, to sever the string between each bag and the succeeding bag, to wind the string or cord about the bag neck, to cut off the excess material at the top of the bag neck and to discharge the completed bag from the machine.

Inasmuch as the only portion of the mechanism which is involved in my invention is that for winding the string about the bag, the other portions will be described only very briefly.

Referring to the drawings there is shown at 11 a turret disk fixed to a rotatable shaft which shaft is rotated by any suitable means not shown. On the periphery of the disk there are a plurality of clamps or jaws 12 which are actuated by suitable mechanisms and at proper times from their open to the closed positions and from their closed to their open positions so that a bag which has been formed as hereinabove described is held in the jaws during substantially three-quarters of a revolution of the turret 11.

At various ones of the steps of movement of the

turret a string is attached to the bag and a tag attached to the string so that at the stage where my invention comes into play two bags, one of which is following the other through the machine and is, of course, in the pair of jaws next following those in which the first bag is gripped, appear as in Figure 5, namely with a string extending from one bag to the next and with a tag attached to the string between the bags.

Between the two stages in the progress of the operation as just above mentioned, there are supplied two pairs of brushes, 13 and 14, one pair being arranged with the bristles extending vertically and the other pair being arranged so that the bristles of one of the brushes extend vertically while those of the other extend at an angle as is best shown in Figure 5. The brushes of each pair intermesh with one another as shown in Figure 5. It will be seen that due to this arrangement a particular bag will pass through the resilient bristles of the brush whereupon the brushes will spring into their normal position and will serve to hold and retard the string which for purposes of convenience has been designated 15 (see Figure 5). When the formed bags are in the position in which they are shown in Figure 5 a cam 16, driven from the shaft of the machine operates upon a cam roller 17, in turn mounted upon the lower arm of a bell crank 18, suitably fixed to the frame of the machine to bring about movement of link 20 and lever 21, to cause the adjustable cutter blade 22 to descend and cut the string 15.

When the turret has progressed so that there is a bag in the position shown at the right in Figure 5, another cam 23 causes operation of a cam roller 24 mounted upon a bell crank lever 25 similar to lever 18. Lever 25 is in turn connected by link 26 to a lever 27 which latter lever is pivoted at 28 and terminates at its right hand end in a bifurcation as seen in Figure 2.

The bifurcated end of lever 27 fits in a groove of a collar 30, which collar is slidable along a constantly rotating member 31, this member 31 being driven by means of a pulley 33, fixed thereto. Member 31 is mounted in bearings in a bracket 32, see Figure 2, which extends outwardly from the frame of the machine. Pulley 33 is driven from the main shaft of the machine through the belt 34 which passes around the drive pulley 35 and the train of pulleys 36, 36*a*, 37 and a fourth pulley positioned behind pulley 37, as shown in Figure 2 of the drawings.

The jaws 38 are pivoted, by means of pivot pins 40, in a slot in member 31. The upward ends of the jaws 38 are notched as shown in Figure 3 so that leaf springs 41, likewise fastened to member 31, exert pressure to cause the jaws to be normally open.

However, upon operation of lever 27 by means of the cam arrangement previously described, the collar or sleeve 30 is lowered to force the jaws together thereby causing the serrated ends of the jaws 38 to grip the upper extremity of the tea bag whereupon, due to the continuous rotation of the jaws 38, together with member 31, the tea bag is caused to spin rapidly causing the cord or string 15 to be wound tightly about the neck of the bag. Of course, substantially at the time when jaws 38 are closed the jaws 12 are opened to release the bag. The string is held taut during this spinning operation by brushes 13 and 14.

The machine is properly timed so that upon the completion of the winding operation and when the tag is drawn up close to the bag the particular set of jaws 12 close and the jaws 38 again open.

Following this the turret steps ahead to its next position and during this travel the upper portion of the tea bag moves against the stationary knife 42 fixed to the frame of the machine as best shown in Figure 4. The configuration of this knife is such that it extends at an angle to the circular path of travel of the turret 11, and turret jaws 12, so that as the tea bag proceeds from the winding position, the upper extremity of the neck thereof and particularly the portion above the now wound string is severed from the bag. The final severing occurs at a point immediately beneath a suction pipe, not shown, so that the trimmed portion is removed from the machine. Shortly after this severing, the jaws 12 again open and the bag drops out of the machine completed and in condition to be packed in a box or other suitable container. It is to be noted that a guide bracket 43 is provided as well as a pair of guide plates 44 and 45 the latter of which are spaced apart to permit the neck of the tea bag to pass between them. These plates thus prevent the tag and string from moving upwardly and becoming entangled in the gripping jaws 12 or in the jaws 38 while, of course, the bracket 43 properly locates the neck of the bag for seizure by the jaws 38.

While I have described a preferred embodiment of my invention, it is obvious that modifications thereof may be made without departing from the spirit of the invention. Therefore, I desire to be limited not by the foregoing description but solely by the annexed claims.

What is claimed is:

1. A string winding attachment for machines for bagging tea or the like comprising a rotatable member having a pair of jaws pivoted thereon in position to grip the neck of a bag, means for opening and closing said jaws in timed relationship to the operation of the machine, means for constantly rotating said rotatable member, and means comprising stationary brushes located adjacent said rotatable member and in the path of a string on the bag to tension the string whereby said string will be tightly wound about the neck of the bag as the bag is rotated by said jaws.

2. A string winding attachment for tea bagging machines comprising gripping jaws mounted for movement toward and from each other and also mounted for rotative movement together, means for continuously rotating said jaws, means operating in timed relationship to the operation of the tea bagging machine for opening and closing said jaws to grip and release a bag, means comprising stationary brushes mounted adjacent said jaws and in the path of movement of a tea bag and its attached string and tag through said machine for tensioning the string, and means for rotating said gripping jaws to cause winding of said string about the neck of the bag.

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