

No. 721,597.

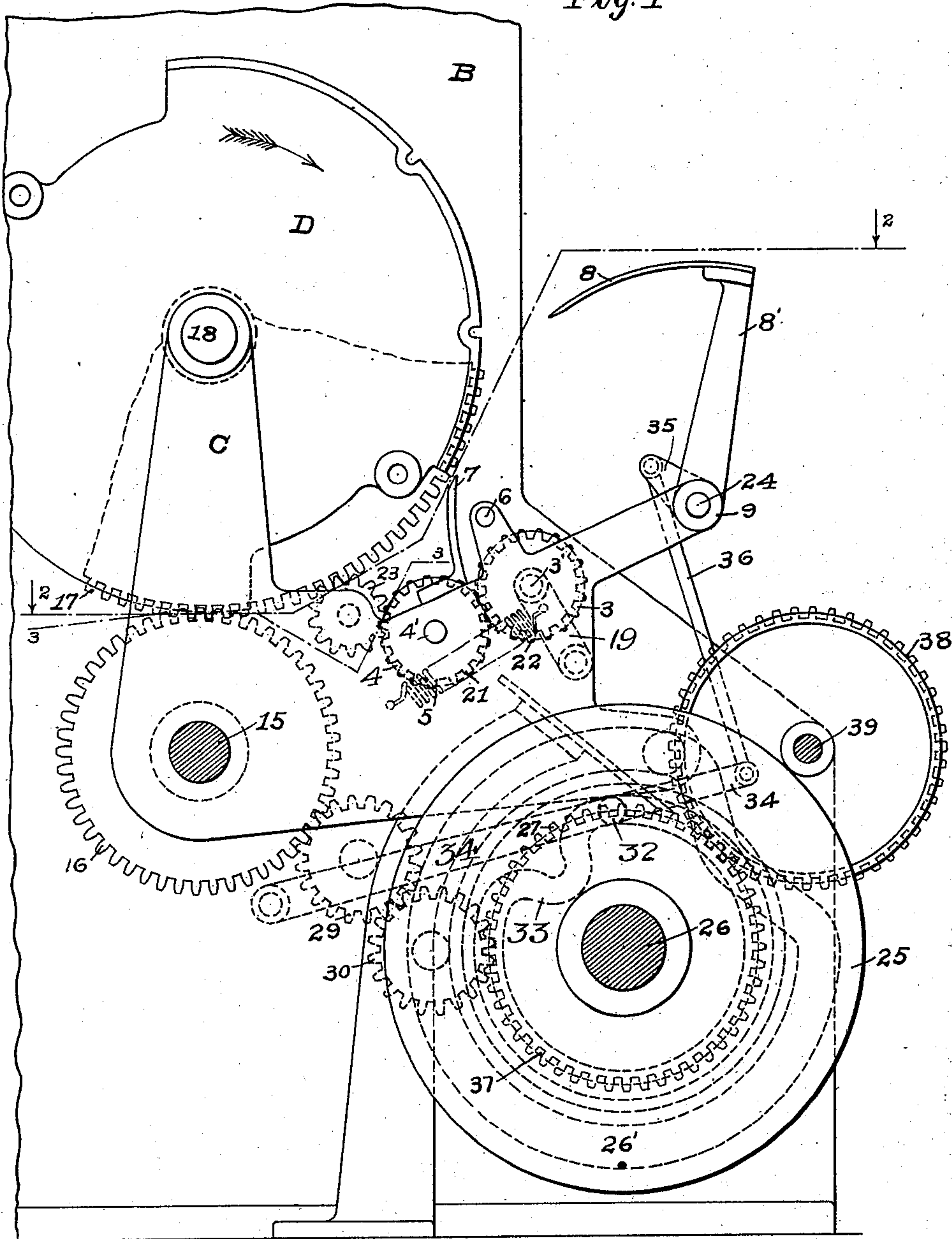
PATENTED FEB. 24, 1903.

G. MORTSON.  
PAPER BAG MACHINE.  
APPLICATION FILED NOV. 2, 1900.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses.  
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By his Attorney

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2 SHEETS—SHEET 2.

Fig. 2

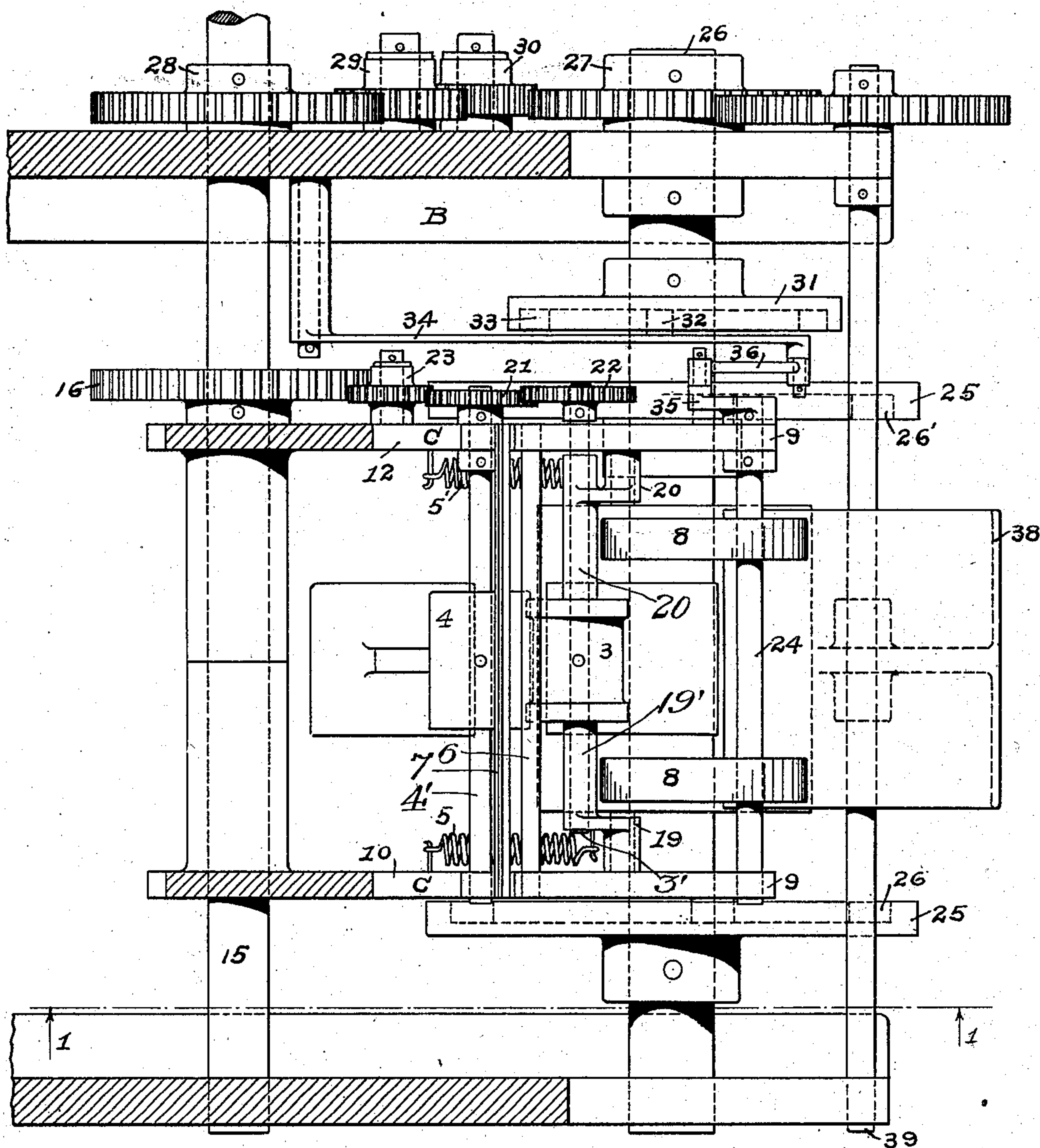
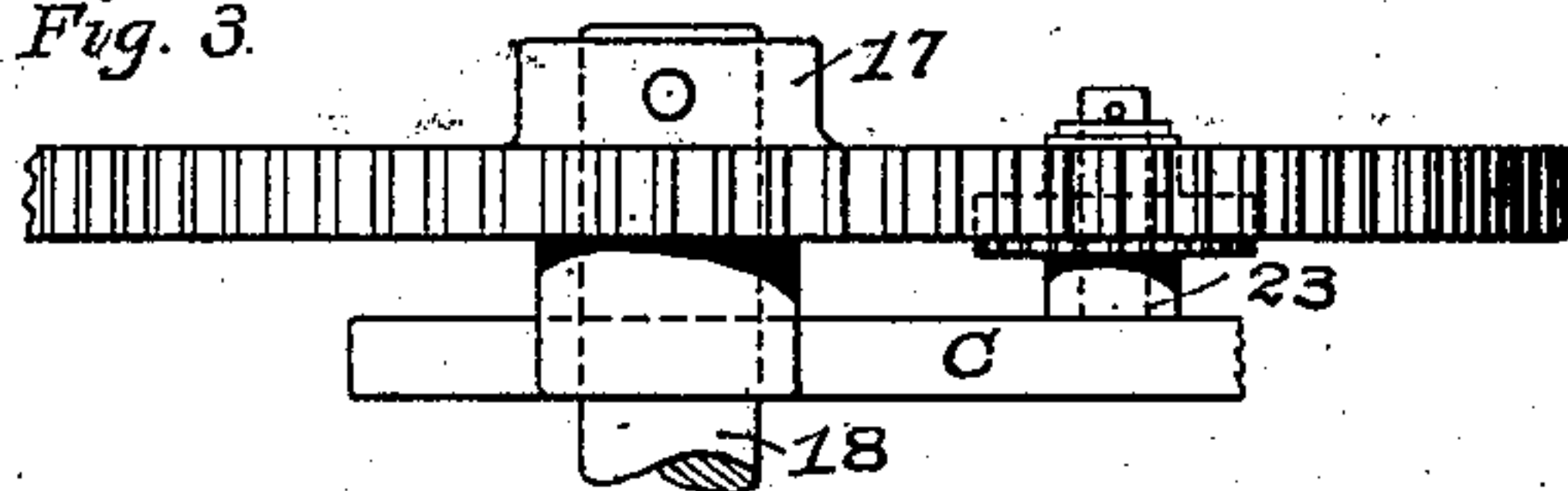


Fig. 3



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# UNITED STATES PATENT OFFICE.

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## PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,597, dated February 24, 1903.

Application filed November 2, 1900. Serial No. 35,301. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE MORTSON, a citizen of the United States of America, and a resident of the city and county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Paper-Bag Machines, of which the following is a specification.

This invention relates to paper-bag machines, and is especially intended as an improvement upon the paper-bag machine illustrated and described in Letters Patent of the United States No. 614,123, granted to me the 15th day of November, 1898, to which reference may be had. In the paper-bag machine of the patent referred to, in which the bag-bottom-forming mechanism included a cylindrical folding-bed supported for rotative and oscillatory movements and means for intermittently imparting oscillatory movements to said bed away from and toward the tuck-plate at predetermined points in the bottom-forming operation, the delivery-rolls which receive the completed bag from the cylinder or bed, the driving-gears for said rolls, and the oscillatory folder finger or blade which turns the last fold of the bottom have fixed axes, and in consequence thereof their positions with respect to the cylinder are during the oscillatory movement of said cylinder constantly changing, thus precluding the possibility of locating these parts in such close relation to the cylinder under these existing conditions as is desirable to secure the best possible results in the final forming of the bag-bottom and to economize in space. In fact, means intermediate the rolls and cylinder for lifting the forward end of the bag outward had to be employed to insure the proper positioning of the forward end of the bag with respect to the folder-finger and the delivery-rolls, as the intervening space was considerable, a space slightly in excess of the distance traveled by the cylinder during one oscillatory movement thereof.

An object of the present invention is to provide a paper-bag machine of improved, simplified, durable, and efficient construction and organization embodying a rotative cylinder or bed supported for oscillatory move-

ments and actuating means therefor and in which the oscillatory folder-blade, the delivery-rolls, and the driving-gears for said rolls are supported for oscillatory movement with the cylinder and always bear a fixed axial relation to said cylinder, thus permitting these elements to be permanently set in closer relation to said cylinder than would be possible if their axes were fixed to the framework and did not have movements with and corresponding to those of the cylinder.

A further object of the invention is to so construct and organize the several coöperative bag-forming instrumentalities that the delivery-rolls may be directly rotated by an intermediate gear meshing with the gear fixed to the cylinder-shaft and also dispense with the use of an intermediate device for lifting the forward end of the bag away from the cylinder to insure the proper positioning of this end with relation to the delivery-rolls.

With these objects in view the invention consists in certain details of construction and in the combination and organization of the several parts of the paper-bag machine, substantially as hereinafter described, and more particularly pointed out in the claims.

In the drawings accompanying and forming part of this specification, Figure 1 is a right-hand side sectional elevation of the paper-bag machine embodying my present improvements, the section being taken on the line 1 1 in Fig. 2 looking in the direction of the arrows and showing the several elements in their normal positions. Fig. 2 is a sectional plan view of the parts illustrated in Fig. 1, the section being taken on the dotted line 2 2 in said Fig. 1 looking in the direction of the arrows; and Fig. 3 is a detail view of certain elements of the machine located above the dotted line 3 3 in Fig. 1.

Similar characters represent like parts in all the figures of the drawings.

In the drawings only so much of a paper-bag machine is shown as will clearly illustrate the construction, organization, and mode of operation of the elementary features constituting the essence of the present invention, and in this connection it is desired to state that these elements are intended for use



in connection with any other suitable coöperative bag-forming instrumentalities, such as are ordinarily employed in cylinder bag-machines of this character or such, for instance, as are described in the patent referred to.

The paper-bag machine as a whole will generally comprise, in addition to the rotative cylinder or folding-bed shown in the accompanying drawings and in connection with the other elements illustrated, means for feeding a tucked or other paper tube to the cylinder, a tucker-plate to coöperate with the cylinder for forming as the cylinder is rotating and oscillating away from the tucker-plate the well-known inside triangular folds to convert the end of the tube into the diamond form, means for holding the opposing edges of the bottom-forming end of the tube in connection with the cylinder and tucker-plate, operating elements for the holding means, means for creasing or forming the transverse folding-lines of the bag-bottom, means for applying paste, means for turning the rear flap, and operating means for the last-mentioned elements, all of which may be of the same general construction and organization as the same elements described in the patent referred to or may be of any suitable construction and organization.

The specific mechanisms constituting the subject-matter of the present invention and which will generally be used in connection with such coöperative bottom-forming elements as recited in the last preceding paragraph comprises in the preferred construction and organization thereof shown in the accompanying drawings, a main or stationary frame B of any suitable construction; a supplemental frame C of any suitable construction pivotally supported on the main frame for oscillatory movements in a vertical direction; a folding-bed D, shown as a peripherally-mutilated cylinder fixed to a horizontally-disposed shaft 18, journaled in bearings on the oscillatory frame C with its axis above and in parallelism with the axis of oscillation of said frame C; two rolls (designated by 3 and 4, respectively) mounted for rotation in the oscillatory frame C with their peripheries in coöperative relation with the cylinder D; means (shown as springs, designated by 5 and 5') for holding the rolls in yielding contact; means for rotating the cylinder and rolls at predetermined comparative peripheral velocities; two coöperative flap-controlling guides 6 and 7, carried by the oscillatory frame with their outer or upper ends intermediate the peripheries of said rolls and cylinder; a front-flap-folding device embodying fingers or blades 8 and pivotally supported at 9 on the oscillatory frame C for oscillatory movements independent of said frame and having its operating end in position to enter between the two guides 6 and 7; means for intermittently imparting oscillatory movements to the frame C and concurrent and corresponding oscilla-

tory movements to the cylinder D, rolls 3 and 4, guides 6 and 7, and folding fingers or blades 8, and means for imparting intermittent and independent oscillatory movements to said folding-finger.

The oscillatory frame C, which is shown somewhat L-shaped in side elevation, preferably comprises two side brackets or plates 10 and 12, each having a vertically and horizontally disposed portion for supporting the different elements, as hereinafter described. This frame C is preferably pivotally supported upon the main driving-shaft 15 of the machine, said shaft being journaled at opposite ends in bearings in the side walls of the main stationary frame B and being in practice provided at one end with a driving-pulley, (not shown,) which receives power from a suitable source and whereby the machine is driven.

Fixed to the shaft 15 is a driving-gear 16, which meshes with a driven gear 17, fixed to the cylinder-shaft 18, journaled for rotation at its ends in bearings in the vertically-disposed portion of the side brackets or plates 10 and 12 of the oscillatory frame C, as will be understood by reference to Figs. 2 and 3 of the drawings, the axis of said shaft 18 being preferably disposed in parallelism with and above the axis of the shaft 15, which constitutes the axis of oscillation of the frame C.

The folding bed or cylinder D, which is shown peripherally mutilated or recessed and which may be of the same general construction as the cylinder in the patent referred to, is fixed to the shaft 18 intermediate the sides of the frame C and has the usual transverse creaser-grooves in its periphery, said cylinder having a normally progressive rotary movement imparted to it through the medium of the intermeshing gears 16 and 17, hereinbefore referred to, the relative pitch diameters of said gears being such as to effect one complete rotation of the cylinder to two complete rotations of the driving-gear 16.

The two delivery-rolls 3 and 4, which are held in yielding engagement by means of a reactionary device, shown as a spiral spring 5, are fixed, respectively, to shafts 3' and 4', one of which, as 4', is journaled in bearings in the horizontal portion of the oscillatory frame C, while the other is supported at opposite ends in elongated bearings 19' and 20' of two cranked hangers or brackets 19 and 20, pivotally secured to the opposite plates 10 and 12 of the frame C. (See Fig. 2.) The means for rotating these rolls 3 and 4 consists of two intermeshing pinions 21 and 22, fixed to the shafts 3' and 4', and an intermediate pinion 23, meshing with the cylinder driven gear 17, said intermediate gear being mounted on a stud secured to the side wall 12 of the oscillatory frame C. The roll-advancing means—i. e., the spiral springs, each of which is designated by 5 and 5'—are fixed at one end to the cranked hangers 19 and 20,



respectively, and at their opposite ends to the oscillatory frame C and act to pull the roll 3 into contact with the roll 4, as will be readily understood.

5 The two flap-controlling guides 6 and 7 are shown secured to the oscillatory frame C in coöperative relation between the axes of the delivery-rolls and the periphery of the cylinder D and in position to receive between them  
10 the bottom of the bag and deliver said bag to another pair of rolls, which may be calendering or printing rolls. The outer or upper ends of the guides are disposed in fixed relation to the periphery of said cylinder and  
15 oscillate therewith, their especial function being to complete the folding over of the front flap of the bag-bottom.

The flap-folder, which coöperates with the guides 6 and 7 to fold the front flap, preferably comprises two parti-circular members, fingers, or blades proper, each of which is secured at one end to the outer end of a carrier or vertically-disposed arm 8', fixed at its inner end to a horizontal shaft 24, journaled in  
25 the oscillatory frame C, as shown in Figs. 1 and 2, the blades having their outer or working ends disposed to enter during the oscillatory movement thereof between the two guides 6 and 7, whereby to turn the front  
30 flap of the bag-bottom and force this end of the bag between the guides and rolls.

The means for intermittently imparting oscillatory movements to the frame C, and consequently to the cylinder D, the two delivery-rolls, the guides, and the folder-fingers, consists of two cams (each designated by 25) fixed to opposite ends of a driven shaft 26, journaled in the main frame B, which have a working face, shown as the opposite face of a  
40 cam-groove 26', between which a roller mounted on a stud secured to the oscillatory frame C is seated; a gear 27, fixed to said shaft 26; a driving-gear 28, fixed to the end of the driving-shaft 15, and two intermediate pinions 29  
45 and 30, operatively connecting the gears 27 and 28, this construction and arrangement of driving mechanism for actuating the supplemental frame being to all intents and purposes the same as like mechanism shown in  
50 the patent referred to.

The means for imparting independent oscillatory movements to the folder-finger is shown consisting of a cam 31, secured to the shaft 26; a roll 32, seated in the cam-groove  
55 33 on said cam; an actuating-lever 34, pivoted at one end to the main frame B and carrying said roll intermediate its ends; a crank-arm 35 on the shaft 24 of the folder-blade, and a link or eyebar 36, pivotally connecting the outer end of said crank-arm and the  
60 outer end of the actuating-lever 34, as will be readily understood by reference to Figs. 1 and 2. The two cams 25 and 31 are so constructed and timed in their movements with respect to the rotative movements of the cylinder D as to impart, respectively, independent oscillatory movements to said cylinder

and folder-blades at predetermined points in the rotative movements of said cylinder and at predetermined points in the bag-bottom-forming operation, as will readily be understood by any one familiar with the machine of the patent referred to or with the art to which this invention appertains.

The operation of the devices for folding the front flap of the bag and of the mechanism controlling the same is as follows: The rotation of the cam 31 causes the roll 32 to move the arm 34. This results in movement of the link 36, crank-arm 35, and the swinging of the  
75 folding-blades 8, which latter engage the unfolded front flap of the bag-bottom, and the turning over of the flap is completed by the flap-controlling guides 6 and 7.

In practice it is preferable to employ in co-operative relation with the delivery-rolls two rolls, such as shown at 37 and 38, to receive the bag as it leaves the delivery-rolls. One of these rolls, as 37, is shown fixed to the cam-shaft 26 and may constitute a bed for receiving a printing-form, and the other roll, as  
85 38, which is shown mounted on a shaft 39, journaled in the main frame B, may constitute a rotative platen, or the two rolls may be in the nature of calendering-rolls and act to roll down the completed bag into condition  
95 for packing, as the case may require.

I claim—

1. In a paper-bag machine, a cylindrical folding-bed supported for rotative and oscillatory movements; a pair of rolls supported in coöperative relation with said bed for rotative and oscillatory movements; means for rotating said bed and rolls at predetermined comparative velocities; and means for imparting oscillatory movements to said bed and rolls in unison, substantially as and for the purpose described.

2. In a paper-bag machine, a cylindrical folding-bed supported for rotative and oscillatory movements; bag-delivering mechanism supported in coöperative relation with said bed for oscillatory movements; means for rotating said bed and moving the delivery mechanism; and means for imparting oscillatory movements to said bed and delivery mechanism in unison, substantially as and for the purpose described.

3. In a paper-bag machine the combination, with the main frame of an oscillatory frame; a folding-cylinder supported for rotative movement in the said frame at one side of the axis of oscillation thereof; rolls supported for rotation in said oscillatory frame in coöperative relation with the cylinder; means for rotating said cylinder and rolls; and means for intermittently imparting oscillatory movements to said frame.

4. In a paper-bag machine, the combination with a main frame of an oscillatory frame; a folding-cylinder supported for rotative movement in said frame at one side of the axis of oscillation thereof; bag-delivery mechanism supported by said oscillatory frame in



coöperative relation with the cylinder; means for rotating said cylinder and moving the delivery mechanism, and means for imparting oscillatory movements to the frame, substantially as and for the purpose described.

5. In a paper-bag machine, a rotative cylinder, supported for oscillating movements, coöperative folding instrumentalities supported for corresponding oscillating movements, and with the axis of the cylinder and folding instrumentalities in unchanging relation; means for rotating said cylinder, and means for oscillating the cylinder and the folding instrumentalities, substantially as and for the purposes described.

6. In a paper-bag machine, the combination with a main frame, of a supplemental frame pivotally supported on the main frame for oscillatory movements; a driving-gear having its axis coincident with the axis of oscillation of the supplemental frame; a cylinder mounted for rotation in the supplemental frame at one side of the axis thereof and having a driven gear in fixed relation thereto meshing with the driving-gear; a pair of delivery-rolls having their shafts mounted in said supplemental frame and having their peripheries in coöperative relation with the cylinder; driving means connecting the rolls and driven cylinder-gear; means for intermittently oscillating the supplemental frame; and coöperative folding elements, substantially as and for the purpose described.

7. A paper-bag machine comprehending a fixed and an oscillatory frame one supported by the other; a rotative cylinder supported in the oscillatory frame; two delivery-rolls mounted for rotation in the oscillatory frame in coöperative relation with the cylinder; means holding said rolls in yielding engagement; rotating means for the cylinder and rolls; and oscillating means for the oscillatory frame, substantially as and for the purpose described.

8. A paper-bag machine embodying a stationary and an oscillatory frame, one supported by the other; a folding bed or cylinder supported in the oscillatory frame; two spring-pressed delivery-rolls mounted in the oscillatory frame; rotating means for the cylinder and rolls; two coöperative guides carried by the oscillatory frame with their outer

ends disposed between the peripheries of the rolls and cylinder; an oscillatory folder-blade mounted on said oscillatory frame in position to enter between the guides; means for oscillating this oscillatory frame whereby to impart corresponding movements in unison to the cylinder, rolls, guides and folder-blade; and means for imparting independent oscillatory movements to said folder-blade, substantially as and for the purpose described.

9. A paper-bag machine embodying a stationary and an oscillatory frame, one supported by the other; a folding-bed supported in the oscillatory frame; bag-delivery mechanism mounted in the oscillatory frame; means for driving the folding-bed and delivery mechanism; coöperative flap-folding guides carried by the oscillatory frame and adjacent to the delivery mechanism; an oscillatory folder-blade mounted in position to enter between the guides; means to oscillate the oscillatory frame, whereby to impart corresponding movements in unison to the folding-bed, delivery mechanism, and guides; and means for independently operating the folder-blade, substantially as and for the purpose described.

10. A paper-bag machine embodying a main stationary frame; a supplemental frame pivotally supported on the main frame for oscillatory movements; two delivery-rolls mounted in the oscillatory frame; two coöperative guides carried by the oscillatory frame intermediate the axes of the rolls and the periphery of the cylinder; rotating means for the rolls; an independently-oscillatory flap-folder having a curved blade in position to enter between the guides and mounted on the oscillatory frame; independent actuating means for the folder; a pair of coöperative rolls disposed to receive the bags delivered by the delivery-rolls and having their shafts supported in the main frame; and actuating means for these rolls, substantially as and for the purpose described.

Signed by me at Hartford, Connecticut, this 8th day of August, A. D. 1900.

GEORGE MORTSON.

Witnesses:

E. C. WHITNEY,  
L. C. WOOD.