

April 18, 1933.

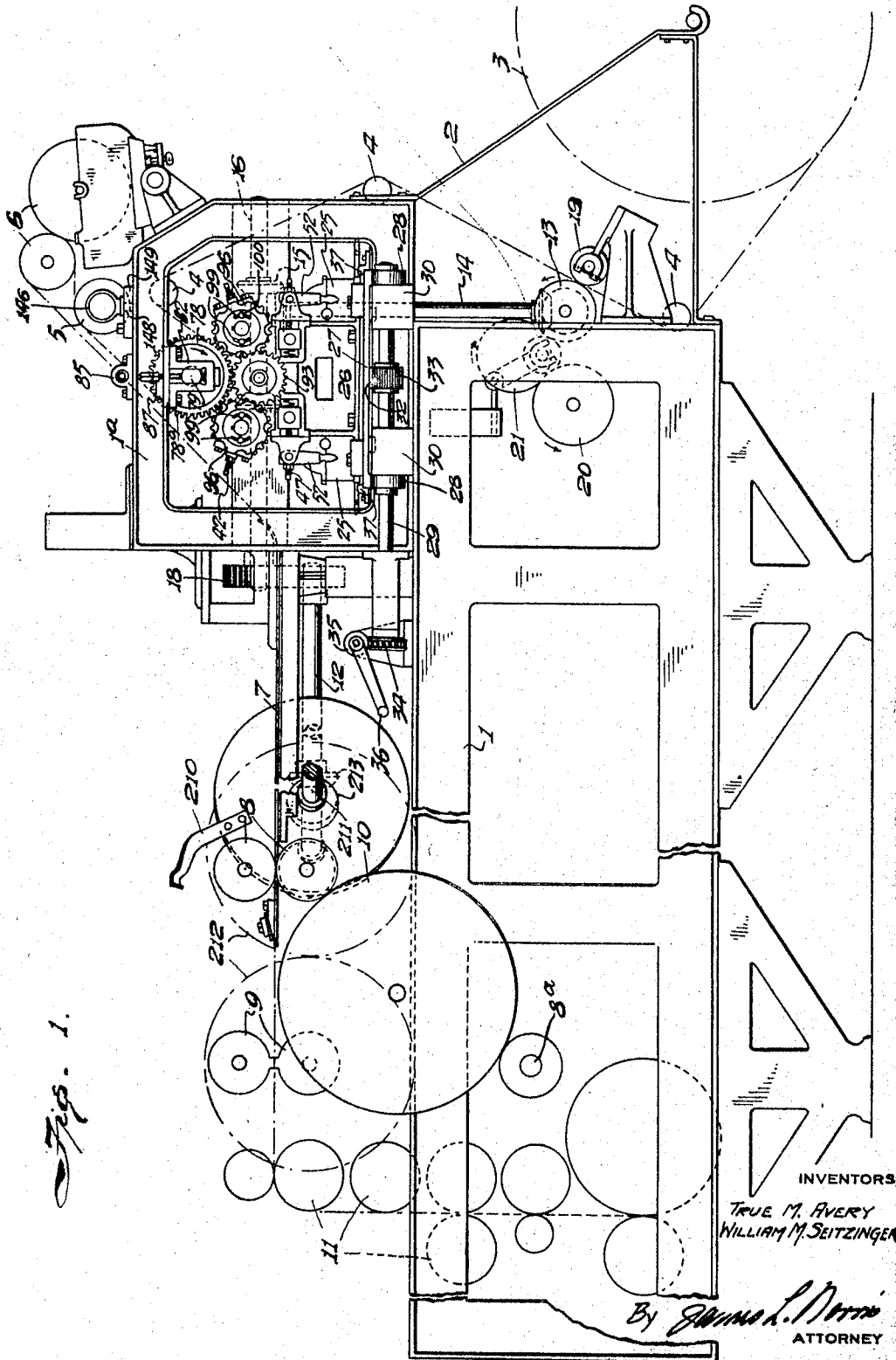
T. M. AVERY ET AL

1,904,709

PRINTING ATTACHMENT FOR BAG MAKING MACHINES

Filed May 26, 1930

12 Sheets-Sheet 1



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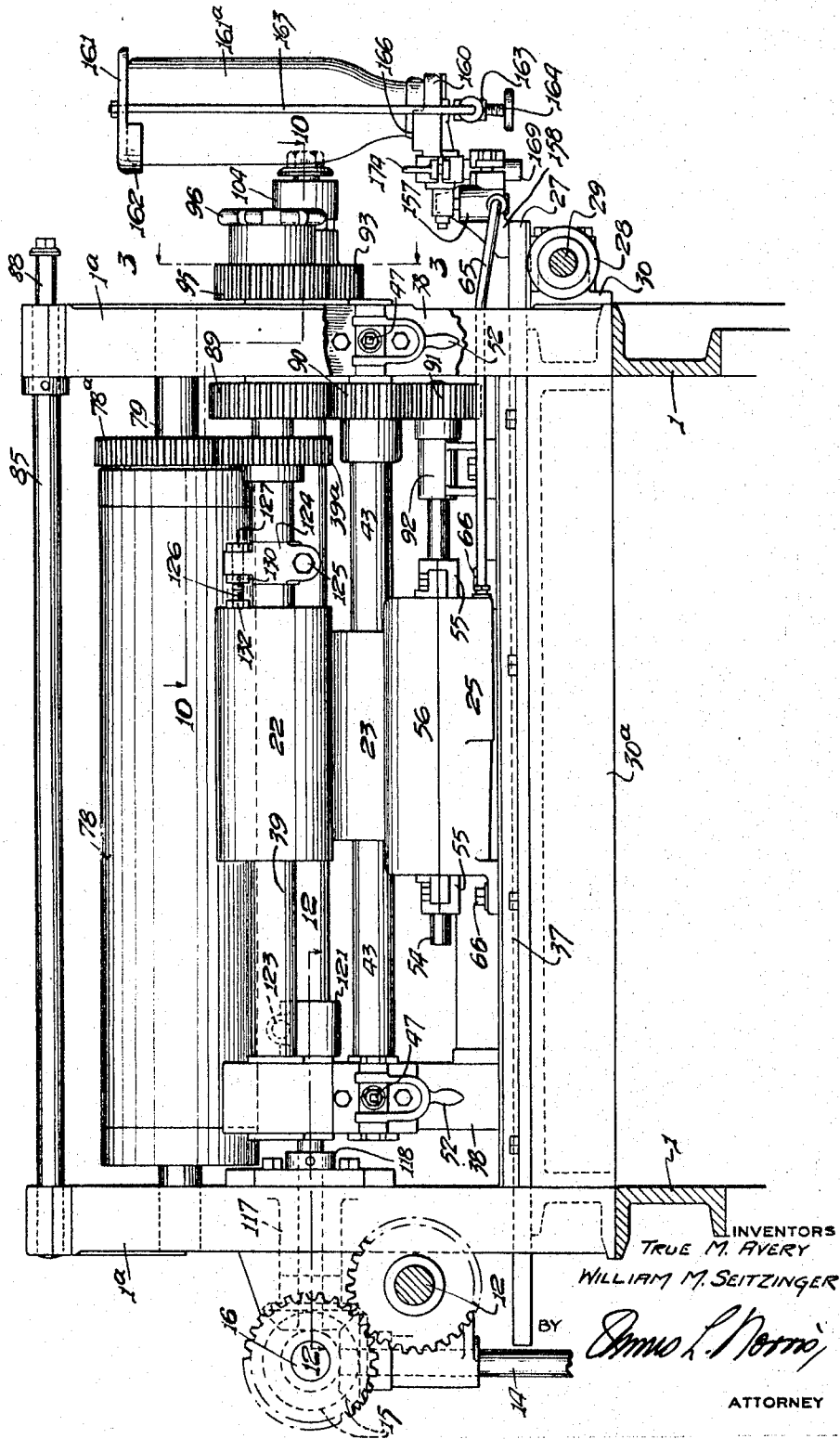
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12 Sheets-Sheet 2

Fig. 2.



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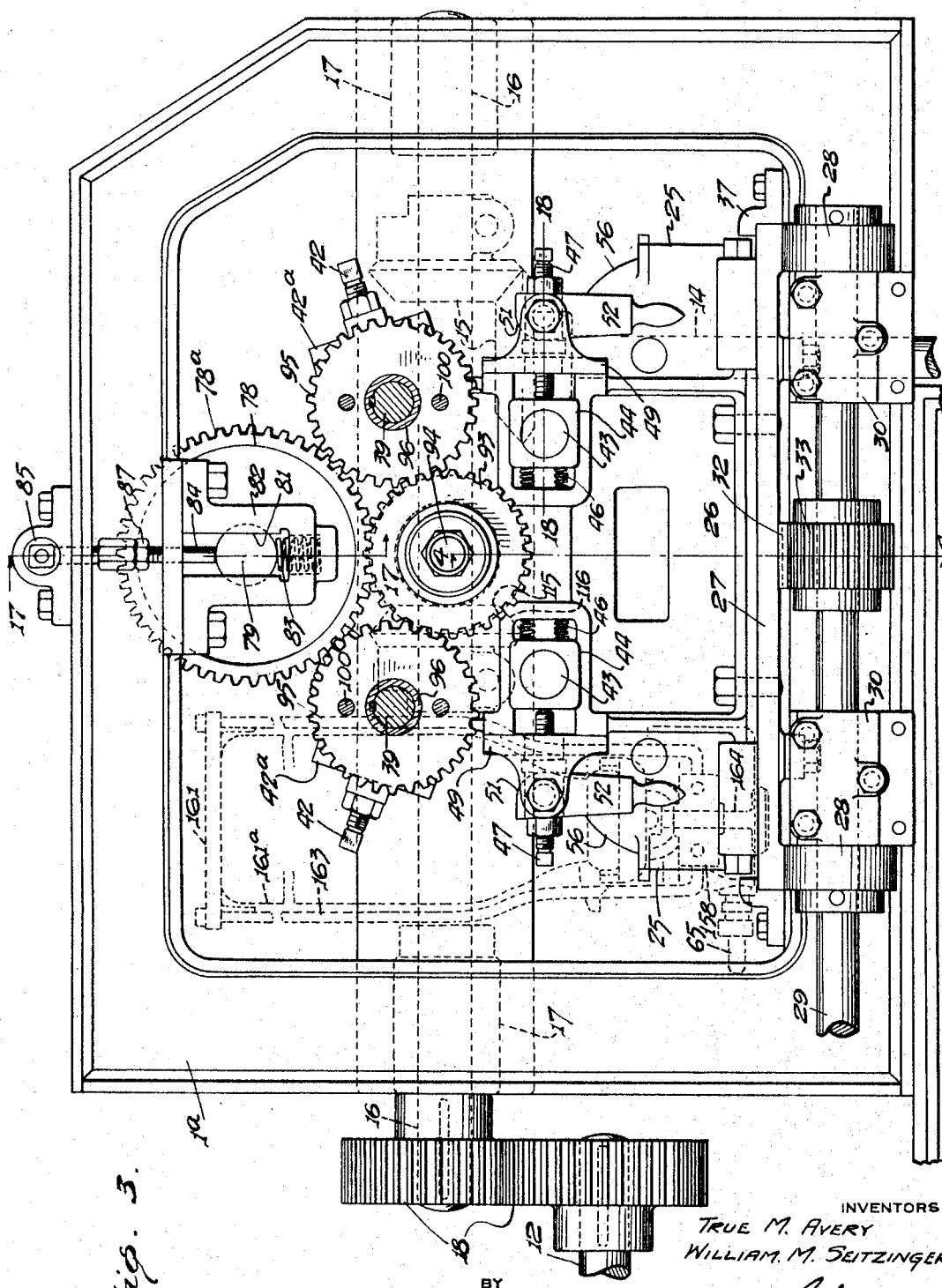
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1,904,709

PRINTING ATTACHMENT FOR BAG MAKING MACHINES

Filed May 26, 1930

12 Sheets-Sheet 3



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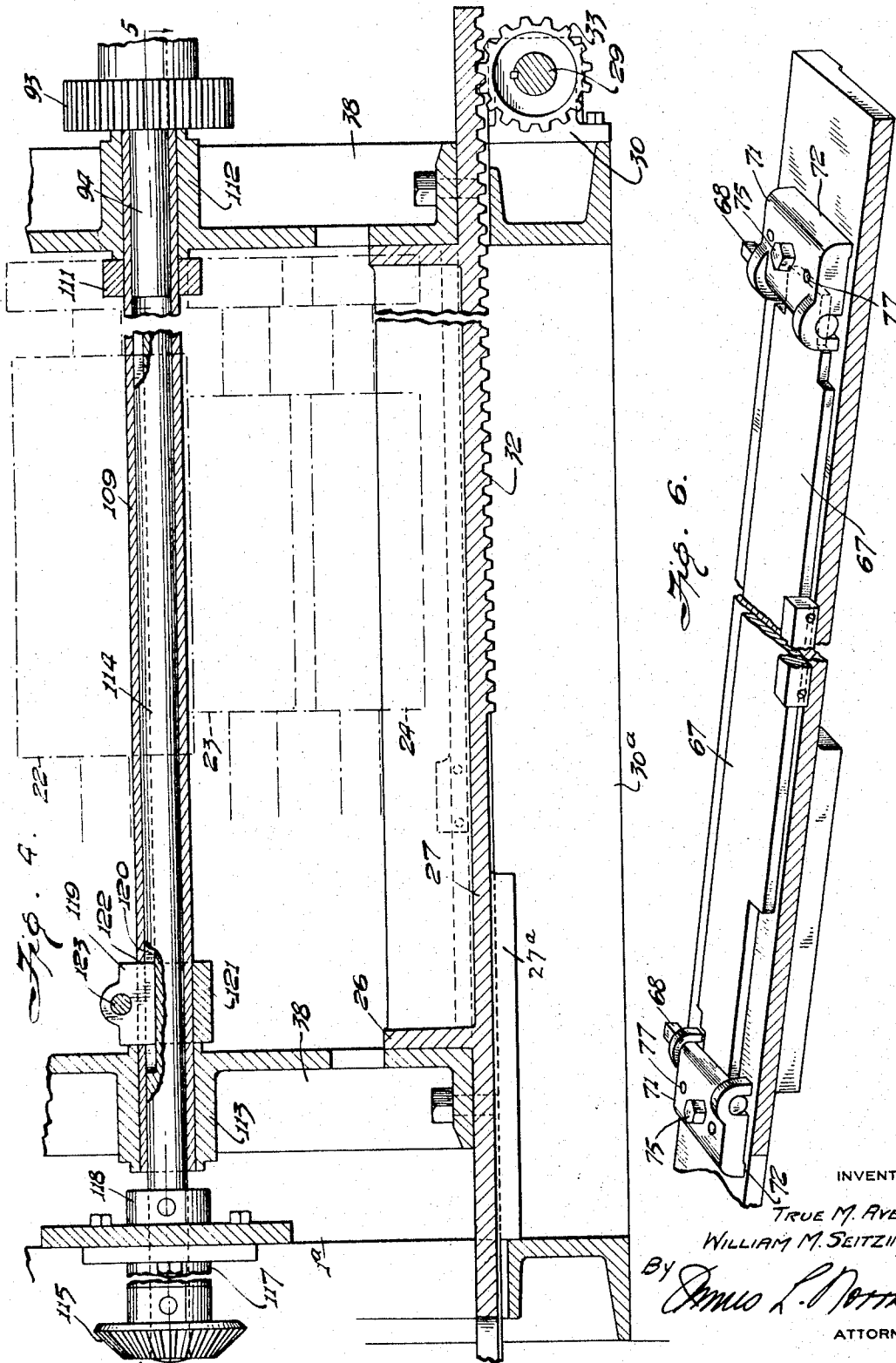
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PRINTING ATTACHMENT FOR BAG MAKING MACHINES

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12 Sheets-Sheet 4



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PRINTING ATTACHMENT FOR BAG MAKING MACHINES

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12 Sheets-Sheet 5

Fig. 5.

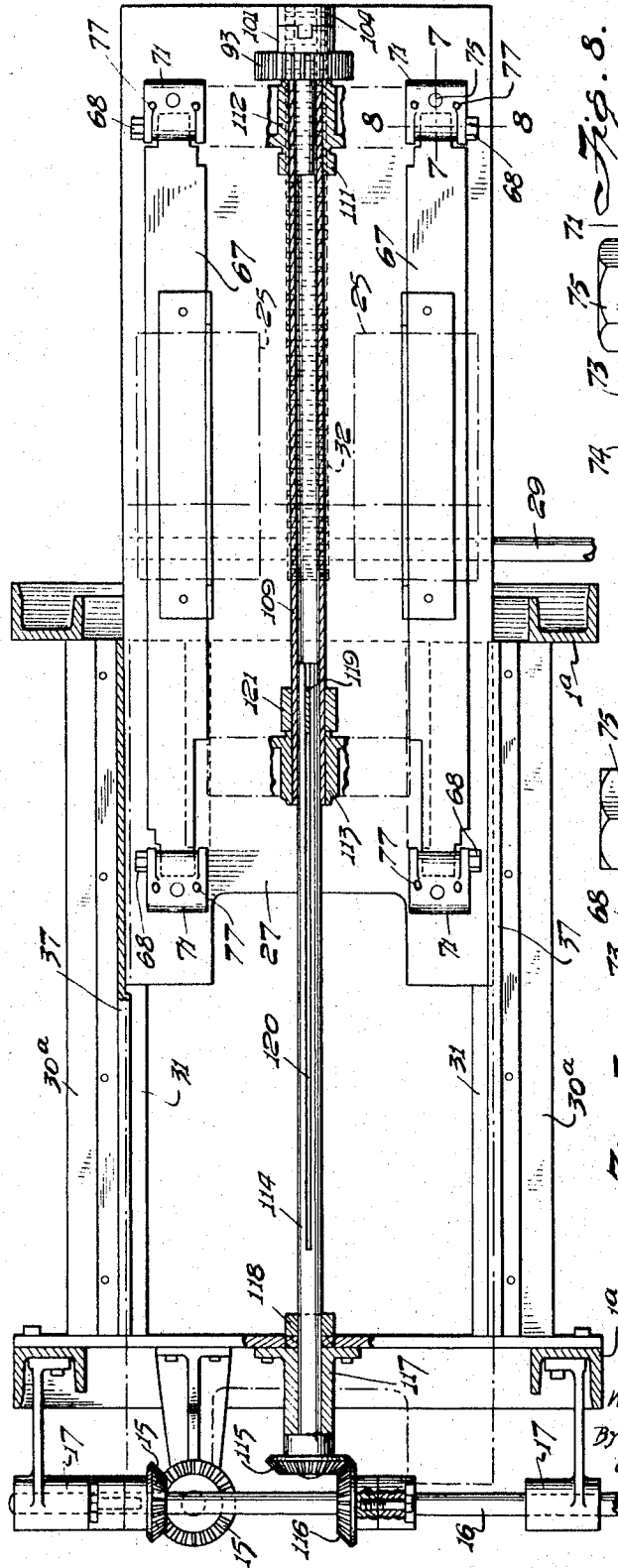


Fig. 8.

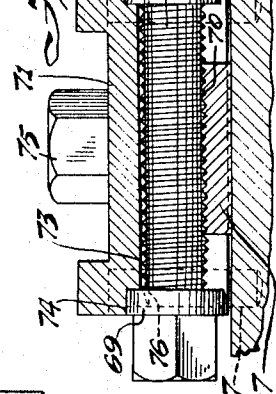
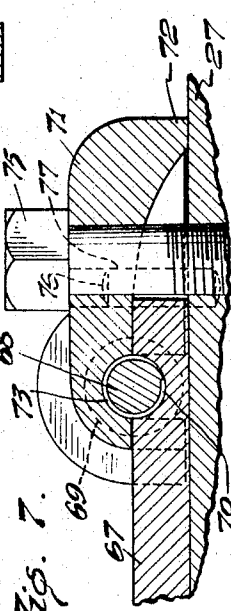


Fig. 7.



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12 Sheets-Sheet 6

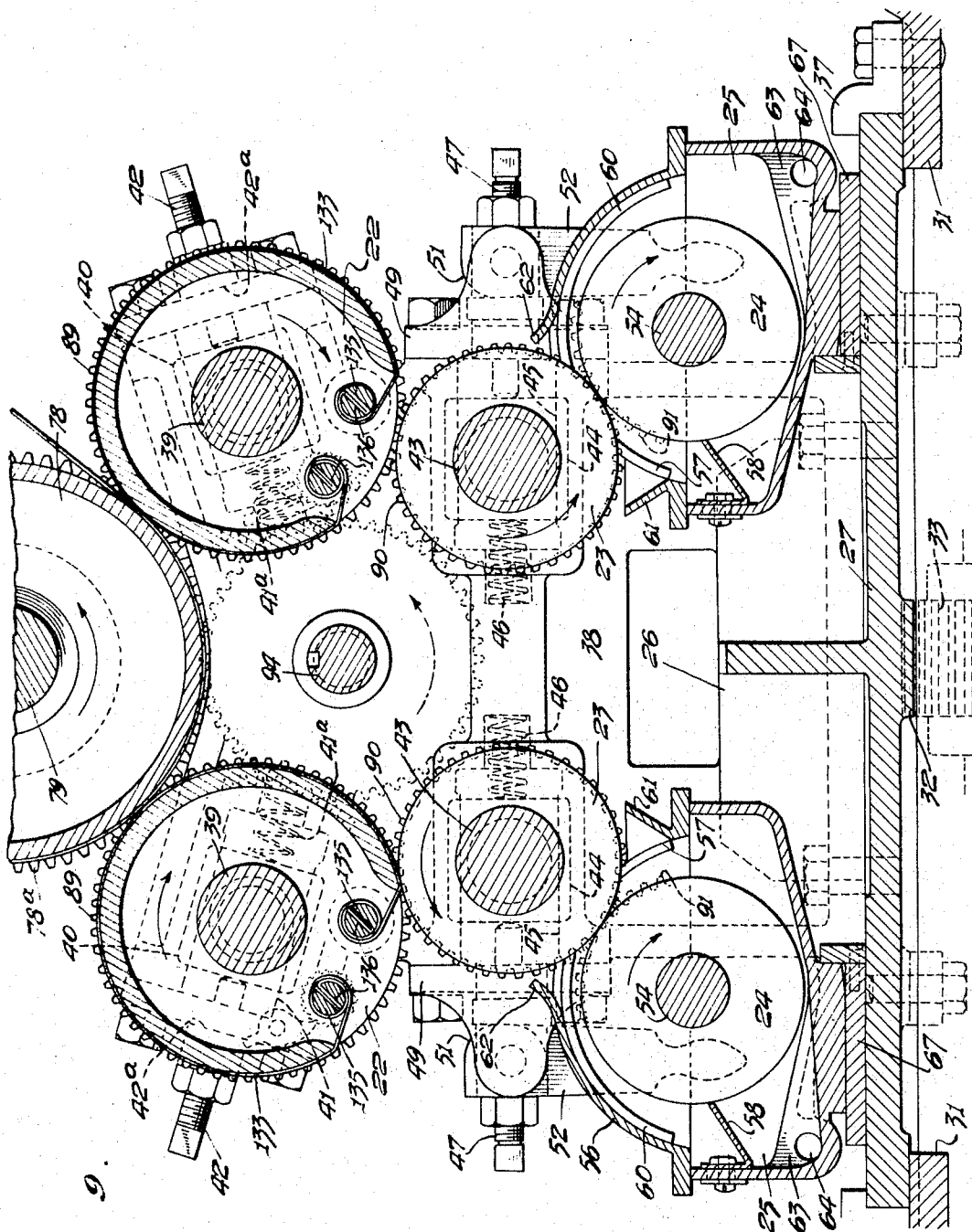


Fig. 9.

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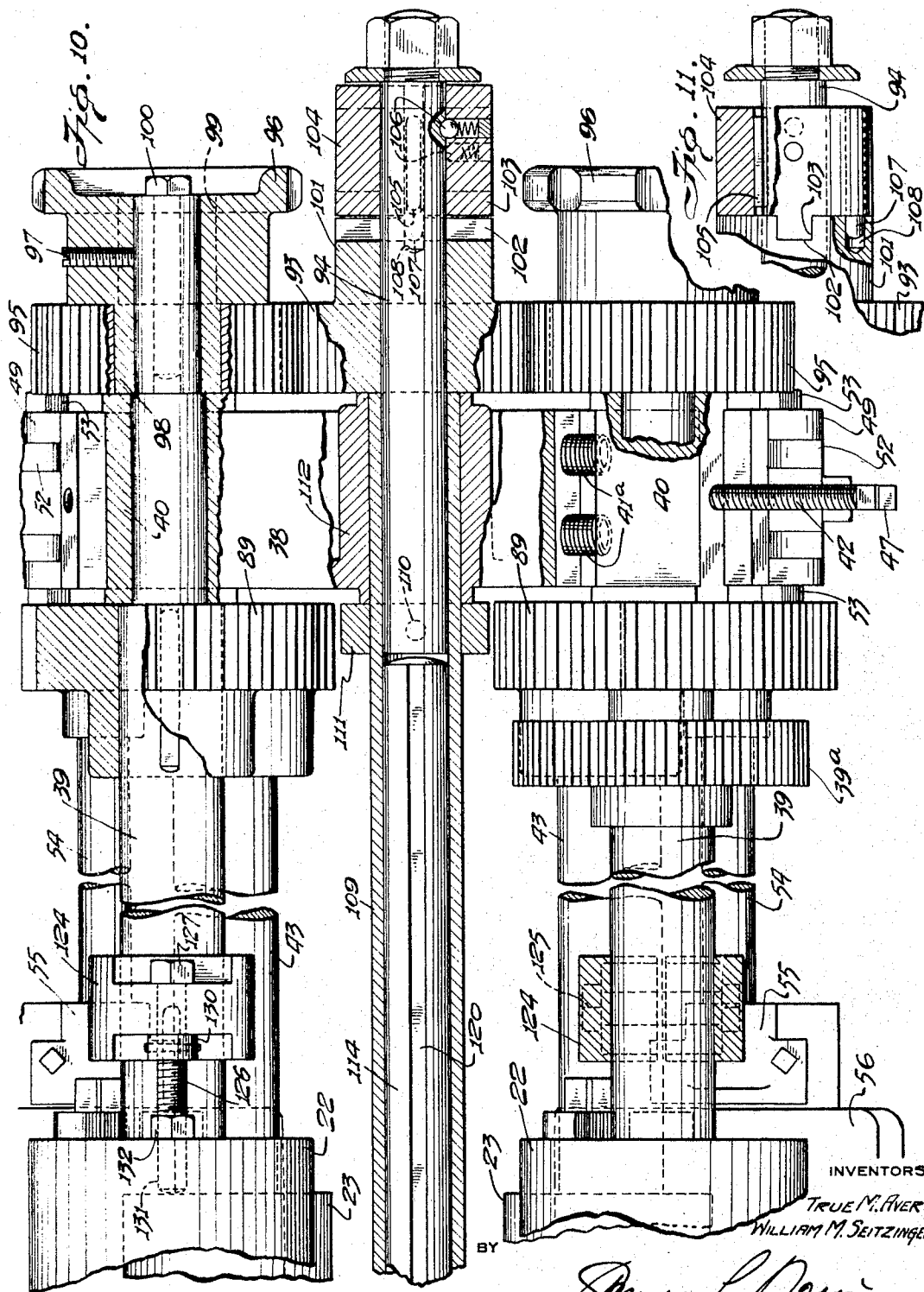
T. M. AVERY ET AL

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PRINTING ATTACHMENT FOR BAG MAKING MACHINES

Filed May 26, 1930

12 Sheets-Sheet 7



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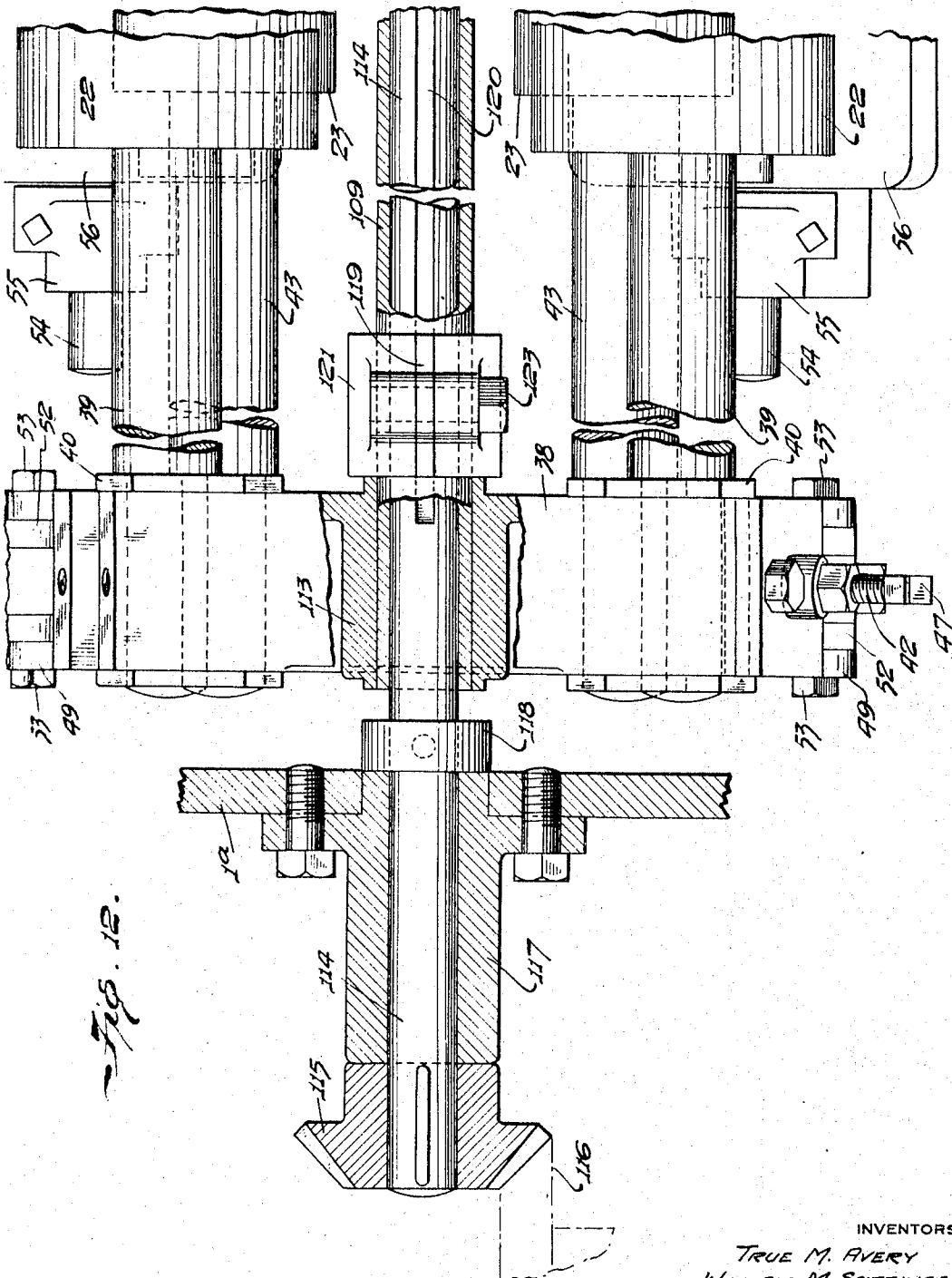
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PRINTING ATTACHMENT FOR BAG MAKING MACHINES

Filed May 26, 1930

12 Sheets-Sheet 8



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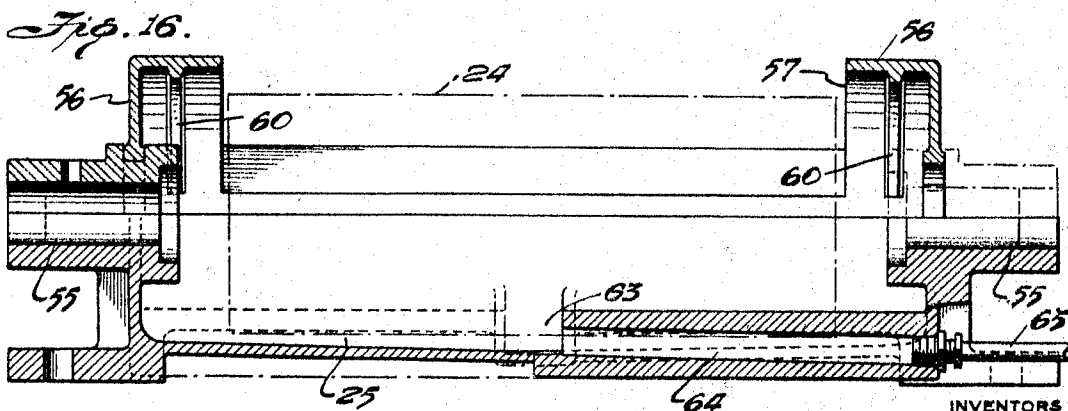
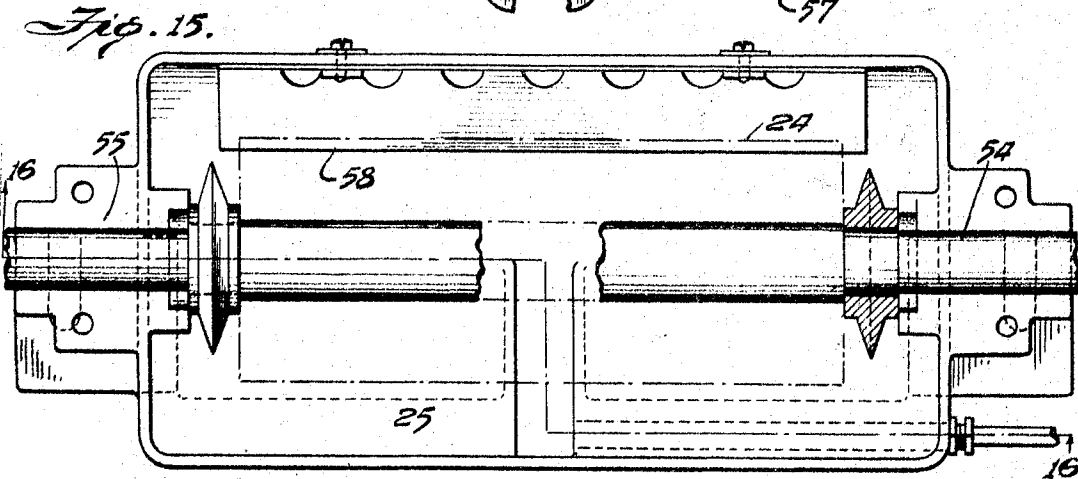
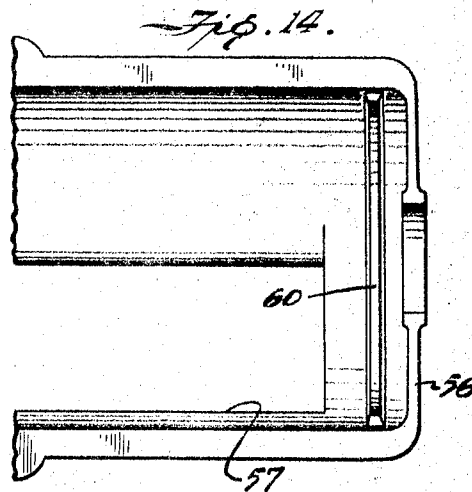
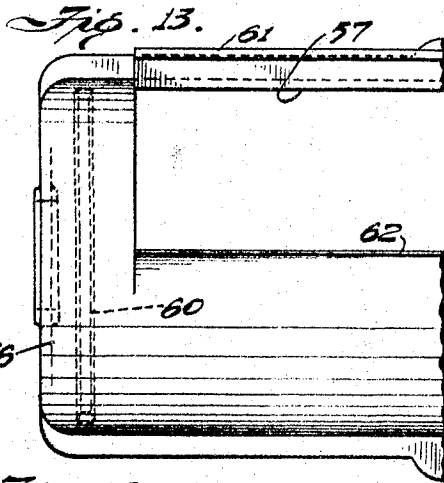
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12 Sheets-Sheet 9



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PRINTING ATTACHMENT FOR BAG MAKING MACHINES

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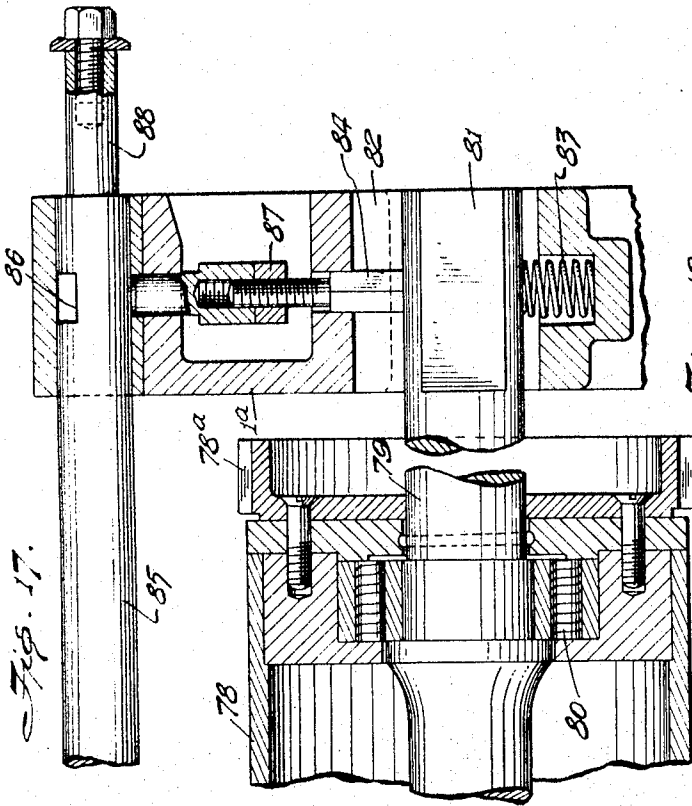


Fig. 17.

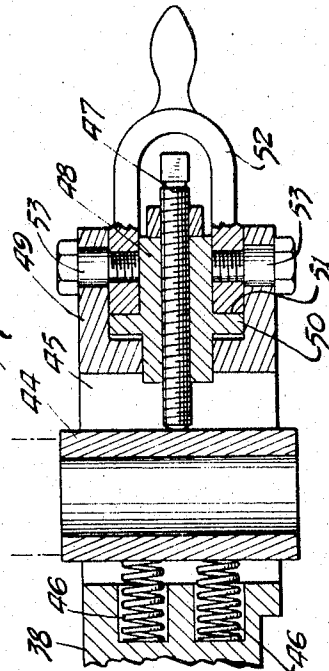


Fig. 18.

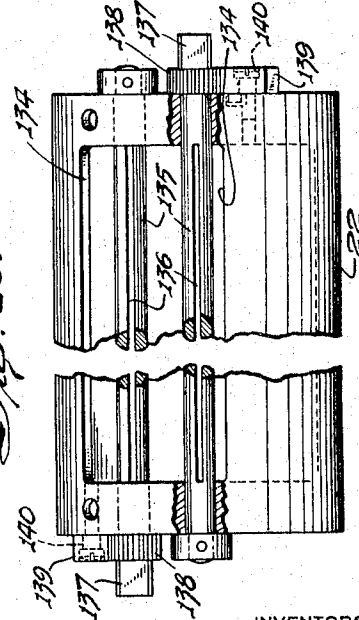


Fig. 19.

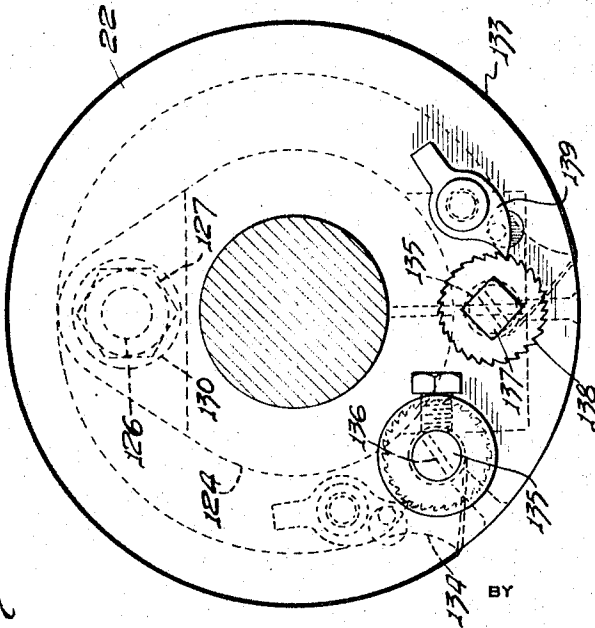


Fig. 20.

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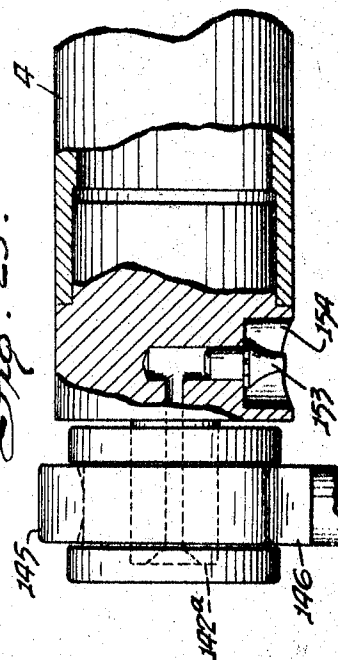
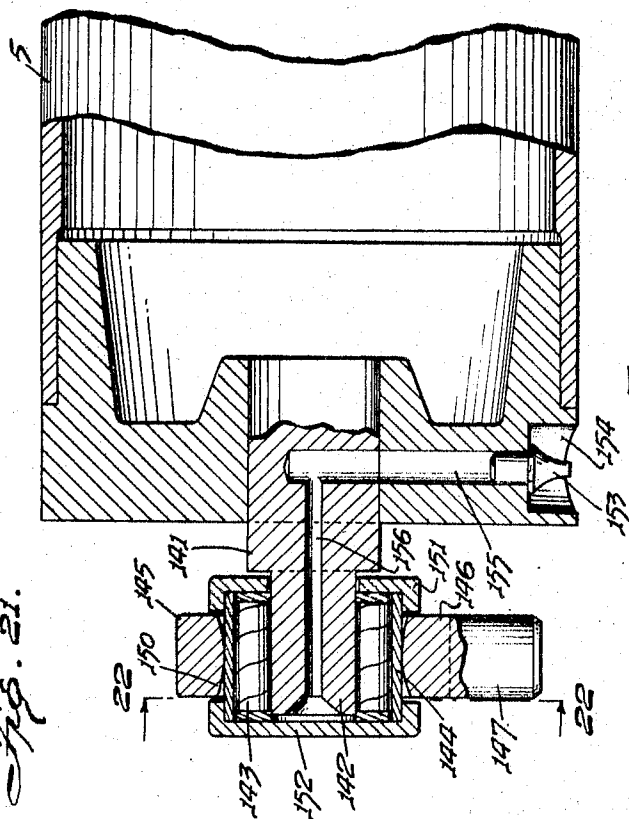
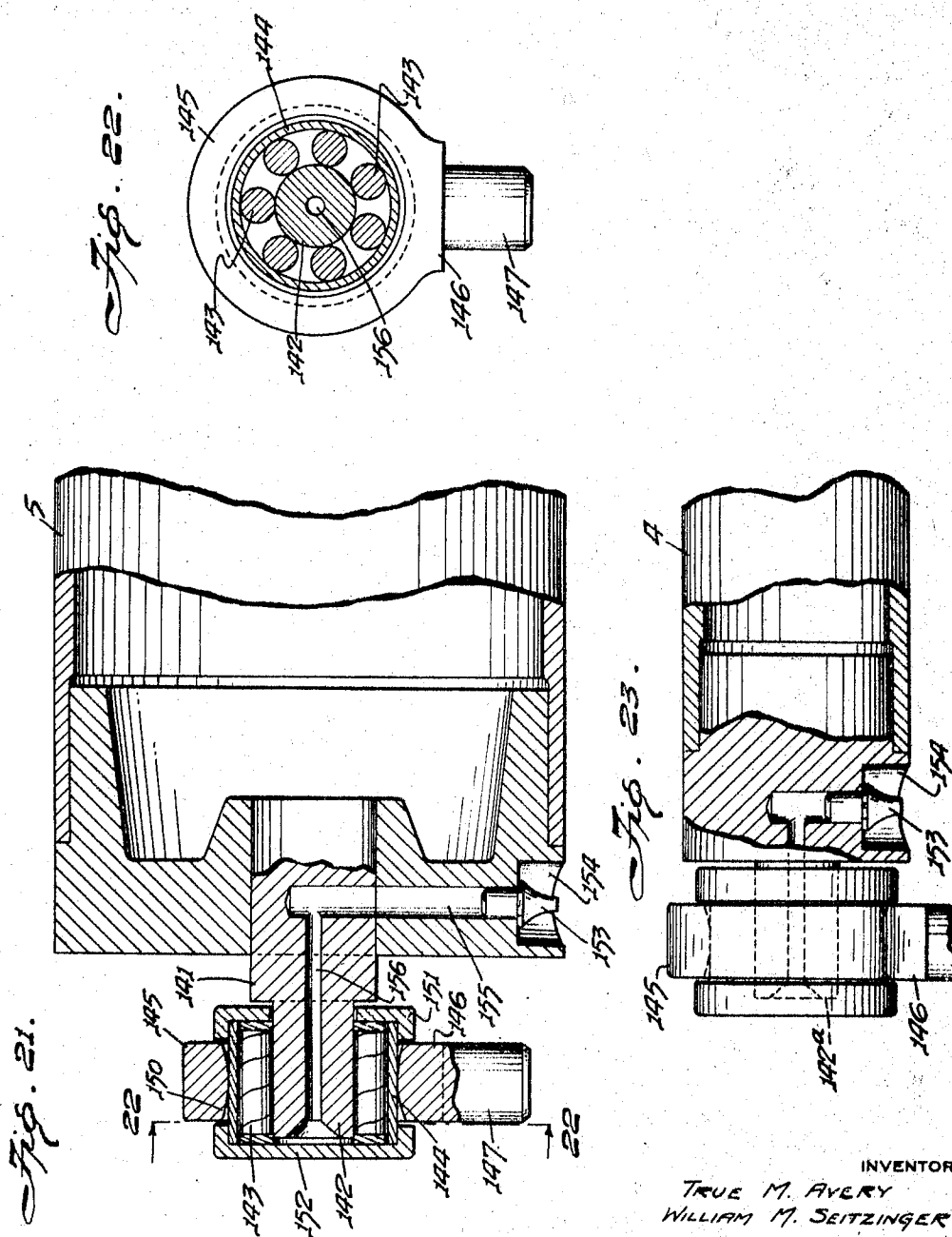
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PRINTING ATTACHMENT FOR BAG MAKING MACHINES

Filed May 26, 1930

12 Sheets-Sheet 11



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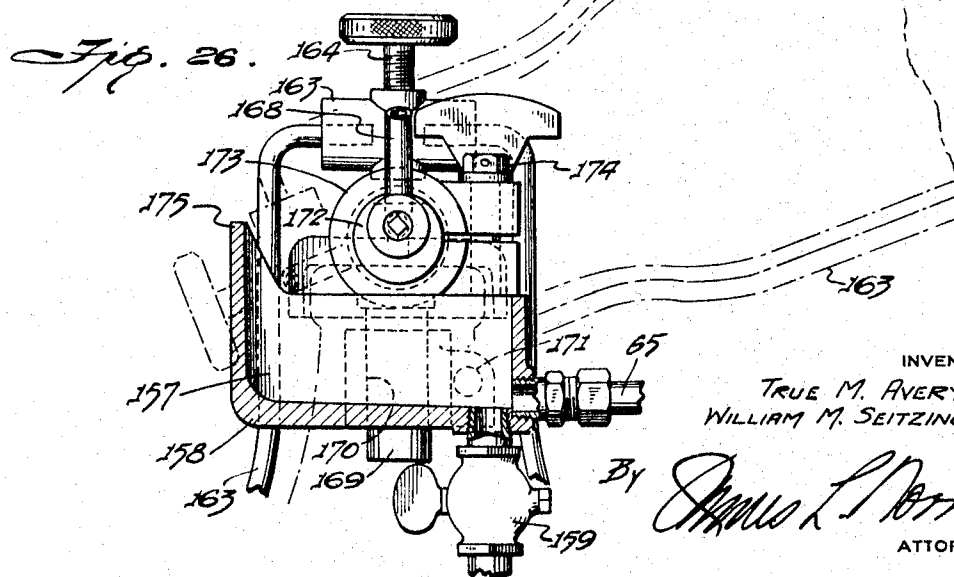
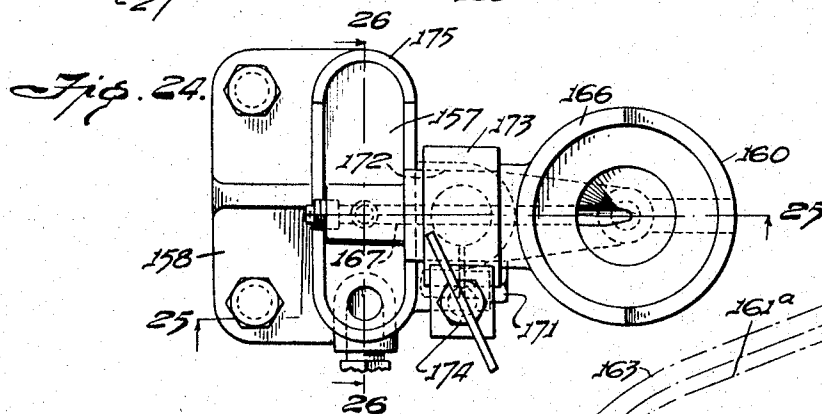
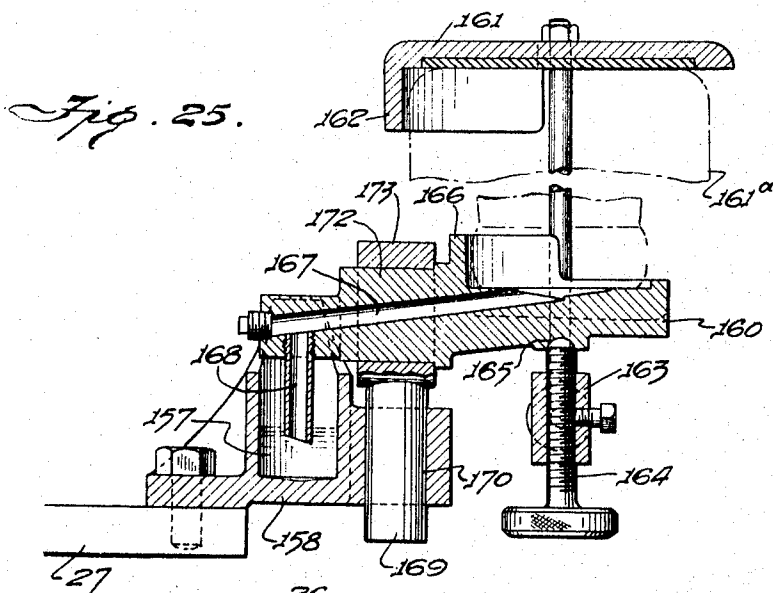
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Filed May 26, 1930

12 Sheets-Sheet 12



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UNITED STATES PATENT OFFICE

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PRINTING ATTACHMENT FOR BAG MAKING MACHINES

Application filed May 26, 1930. Serial No. 455,919.

The present invention relates to improvements in printing mechanism and more particularly to printing attachments for bag making machines, and it provides an improved mechanism or attachment of this kind whereby the construction thereof is improved and rendered more compact and accessible and the operation thereof is improved and adjustments of the elements are facilitated.

One of the objects of the invention is to provide a printing attachment for bag making machines wherein the printing mechanism is capable of being withdrawn from the frame of the machine to facilitate changing of the printing surfaces or for other purposes, such withdrawal rendering the printing mechanism easily accessible, and means being provided for maintaining the elements of the printing mechanism in proper timed relation with the bag making machine, such withdrawable mounting of the printing mechanism enabling the same to be constructed more compactly than heretofore.

Another object is to provide improved means for mounting and driving the printing rolls and their cooperating rolls whereby some of these rolls may be thrown out of operation, or the entire printing mechanism may be thrown out of operation if desired to enable the printing mechanism to remain idle while unprinted bags are being made in the machine.

A further object of the invention is to provide other improvements in printing attachments for bag making machines whereby such machines are rendered capable of operating rapidly and in an improved manner and the printing attachment may be placed closely adjacent to the bag making mechanism, thereby materially shortening the length of the machine.

To these and other ends, the invention consists in certain improvements and com-

binations and arrangements all as will be hereinafter more fully described, the features of novelty being pointed out particularly in the claims at the end of the specification.

In the accompanying drawings:—

Fig. 1 is a side elevation, with parts broken away of a bag making machine equipped with a printing attachment constructed in accordance with the present invention;

Fig. 2 is an end elevation of the printing attachment on an enlarged scale and as viewed from the left in Fig. 1;

Fig. 3 is a side elevation of the printing attachment on an enlarged scale, it being shown partly in section on the line 3—3 of Fig. 2;

Fig. 4 represents a vertical section through the printing mechanism, taken on the line 4—4 of Fig. 3, some of the elements of the printing mechanism being omitted;

Fig. 5 represents, on a reduced scale, a horizontal section taken on the line 5—5 of Fig. 4 but showing the printing mechanism withdrawn or in laterally extended relation to the frame of the machine;

Fig. 6 is a detail perspective view, partly broken away, of one of the ink fountain supports;

Fig. 7 is a detail sectional view on an enlarged scale, taken on the line 7—7 of Fig. 5;

Fig. 8 is a detail sectional view on an enlarged scale, taken on the line 8—8 of Fig. 5;

Fig. 9 is a vertical sectional view through the printing mechanism, showing the printing and impression rolls and the inking means therefor;

Fig. 10 is a detail view on an enlarged scale and taken partly in section on the line 10—10 of Fig. 2;

Fig. 11 is a detail view partly in section, of the clutch for connecting and disconnect-

ing the printing attachment relatively to the bag making machine;

Fig. 12 is a detail view on an enlarged scale, partly in section on the line 12—12 of Fig. 2;

Fig. 13 is a top plan view of a portion of one of the ink fountain covers;

Fig. 14 is a bottom plan view of a portion of one of the ink fountain covers;

Fig. 15 is a top plan view of one of the ink fountains showing the shaft for the ink feeding roll mounted therein;

Fig. 16 represents a vertical section through one of the ink fountains on the line 16—16 of Fig. 15, the cover being shown in position and the shaft for the ink feeding roll being removed;

Fig. 17 represents a section on an enlarged scale taken on the line 17—17 of Fig. 3;

Fig. 18 represents a section on an enlarged scale taken on the line 18—18 of Fig. 3;

Fig. 19 is an end elevation of one of the printing rolls;

Fig. 20 is a face view, partly in section, of one of the printing rolls;

Fig. 21 is a sectional view of an end of one of the idler rolls and its bearing;

Fig. 22 represents a section taken on the line 22—22 of Fig. 21;

Fig. 23 is a view partly in section, of one of the relatively smaller idler rolls, showing the lubricating means for the bearing thereof;

Fig. 24 is a top plan view of the ink feeding device;

Fig. 25 represents a vertical section through the ink feeding device taken on the line 25—25 of Fig. 24; and

Fig. 26 represents a vertical section through the ink feeding device taken on the line 26—26 of Fig. 24.

Similar parts are designated by the same reference characters in the different views.

The invention is shown in the present instance as a printing attachment for bag making machines, but some of the improvements provided by the present invention may be used in printing mechanisms employed for other purposes. The preferred construction of the printing mechanism is shown in the accompanying drawings and will be hereinafter described in detail, but it is to be understood that the invention is not restricted to the precise construction shown as equivalent constructions may be used and such will be included within the scope of the claims.

The printing attachment is shown in the accompanying drawings as applied to a bag making machine of well known construction which receives the paper or bag material in the form of a continuous strip from a roll or other supply and folds the longitudinal edges of the strip inwardly to form a tube

which is then cut off to form bag sections which are folded to close the bottoms thereof, bag making machines of this kind being well known to those skilled in the art and examples thereof being shown and described in U. S. Letters Patent Nos. 1,517,099 and 1,539,624 granted Nov. 26, 1924 and May 26, 1925 respectively to T. M. Avery, so that detail illustration and description thereof is deemed unnecessary, it being sufficient to set forth that 1 represents a main stationary frame of the bag making machine having a bracket 2 at one end to receive a roll of paper 3 from which the bags are to be made, the strip of paper being passed over idler rollers 4 and 5 and between paste applying rollers 6 which apply a line of paste along one edge of the strip, after which the strip passes under a former 7 having folding devices associated therewith and which fold the longitudinal edges of the strip inwardly and paste them to form a tube, the tube thus formed passing between draw rolls 8 driven from the main drive shaft 8^a through the gear 10, and between pinch rolls 9 and being severed in suitable lengths to form bag sections by the usual striker or breaker 210 carried by a shaft 211 driven by the gears 212 from one of the pinch rolls 9, the bag sections being then fed on to the rollers 11 and the associated mechanism commonly used in machines of this class for folding, and closing the bottoms of the bags, the striker and the draw rolls 8 and pinch rolls 9 and other parts of the machine being driven, as is well known, in proper timed relationship, and a shaft 12 driven by the gears 213 from the striker shaft 211, serves to drive the printing attachment in proper timed relationship with the bag making machine to maintain correct registry between the printing impressions produced on the strip and the lengths or portions of the strip which subsequently form the bag sections. A trade-mark printer such as commonly used on bag making machines of this class, is shown, it comprising a printing roll 13 which is driven from a shaft 14, the latter being connected by gearing 15 to a shaft 16, the latter being maintained in bearings 17 fixed to the upper part of the main frame of the machine and connected by gears 18 to the drive shaft 12. The paper strip passes between the printing roll 13 and impression roll 19 and the printing roll receives ink from an ink feeding roll 20 through an intermediate inking roll 21.

Since the construction and mode of operation of trade-mark printers as thus applied to bag making machines is well known, further illustration and description thereof is believed unnecessary.

The printing attachment provided by the present invention is mounted on the main frame of the bag making machine in the

path of the strip of paper or material from which the bags are made, so that it will apply printed impressions to the strip while the latter feeds continuously into the machine, and according to the present invention, the printing attachment, or the major portion thereof including the printing rolls, is mounted movably in the main frame so that it may be withdrawn laterally therefrom so that it will be exposed at a side of the machine, thereby rendering the printing attachment readily accessible for the changing of printing surfaces on the printing rolls. In the construction shown, the printing rolls 22, the inking rolls 23 and the ink feeding rolls 24 together with their ink supply fountains 25 and the driving means for such rolls are carried as a unit on the frame 26 which latter is bolted or otherwise fixed to a base plate 27 which extends transversely within the relatively fixed upper portion 1^a of the main frame of the machine so that it may shift laterally into and out of position within said frame, the base plate 27 resting at its longitudinal edges on rollers 28 which are fixed or otherwise mounted on a horizontal shaft 29, the latter being supported in bearings 30 fixed to the outer side of the frame section 1^a, and frame section 1^a is provided with cross members 30^a which rigidly connect the two sides of the frame section 1^a, these cross members being provided with rails 31 on which the portion of the base plate 27 within the frame rests slidably. The construction just described enables the printing mechanism to occupy either an operative position within the stationary frame as shown in Figs. 2 and 4 or to be shifted laterally out of operative position within the frame so as to expose the printing mechanism at a side of the machine, as shown in Fig. 5, where the printing mechanism will be readily accessible. Preferably, the under side of the shiftable base plate 27 has a rack 32 secured thereto and the shaft 29 has a pinion 33 fixed thereon and meshing with the rack and shaft 29 preferably has a worm wheel 34 fixed to an end thereof and meshed with a worm 35, the latter having a crank or handle 36 connected thereto whereby the base plate carrying the printing mechanism may be easily and quickly removed from the main frame of the machine or returned to operative position therein, by rotation of the crank or handle 36. By providing the rollers 28 on the shaft 29 to support the laterally shiftable base plate, the weight of the latter and of the printing mechanism thereon, will have an antifriction support on the shaft 29 which will relieve friction between the laterally shiftable base plate and the stationary main frame, especially when the base plate and the printing mechanism thereon are in extended posi-

tion, thereby enabling the printing mechanism to be shifted to and from operative position with minimum effort. Downward tipping of the outer end of the base plate 27 when the latter is extended laterally from the stationary frame, is prevented by flanges 37 which are bolted or otherwise secured to the cross members 30^a of the stationary frame and overhang the longitudinal edges of the base plate, as shown in Figs. 1, 2, 3 and 5, and the movement of the base plate to and from operative position are limited by a stop strip 27^a fixed to the under side thereof and arranged to abut against the respective sides of the main frame.

The framework 26 which carries the printing mechanism as a unit thereon, comprises a pair of end members 38 having bearings in which the different rolls comprising the printing mechanism are mounted. The shafts 39 of the printing rolls are journaled at their ends in bearings 40 which are preferably mounted slidably in guides 41 in the respective end frames 38, compression springs 41^a being mounted at the inner sides of the bearings and acting to force the bearings and the printing rolls thereon outwardly and set screws 42 carried by removable caps 42^a on the end frame members 38 acting on the bearings 40 and serving as means for adjusting the printing rolls inwardly and outwardly and of maintaining them in different set adjustments. The shafts 43 of the inking rolls 23 are journaled at their ends in bearings 44 which are preferably slidably mounted in guides 45 formed in the members 38 of the framework so that the inking rolls may be adjusted toward and from the respective printing rolls to bring the peripheries of the inking rolls into proper ink transferring relationship with the printing surfaces on the printing rolls, springs 46 being preferably mounted at the inner sides of the bearings 44 and acting to yieldingly force the inking rolls against the respective printing rolls and set screws 47 abutting against the outer sides of the bearings 44 and providing adjustable means for limiting the pressure of the inking rolls against the printing rolls. Preferably, the set screws 47 are each carried by a sleeve 48 which is movably mounted in a cap 49 bolted or otherwise fixed to the respective end frame member 38 as shown in Fig. 18, the sleeve 48 having a flange 50 thereon against which bear eccentric or cam surfaces 51 formed on the arms of a fork shaped lever 52, said arms being pivoted to the cap 49 by the pivot screws 53 whereby, when the levers 52 are swung downwardly into the position shown in Fig. 9, the low portions of the cam surfaces 51 will engage the flange of the sleeve 48 and the springs 46 will then be able to force the inking rollers 23 outwardly and

into working contact with the respective printing rolls 22 but when the levers 52 are swung upwardly or into substantially horizontal position, the high portions of the cam surfaces 51 will engage the flange of the sleeve 48 and said sleeve and the said screw 47 carried thereby will be forced inwardly against the action of the springs 46 and the inking rollers 23 will then be held out of contact with the respective printing rolls. The shiftable mountings for the inking rolls enable either or both of these rolls to be disengaged from the respective printing roll or rolls as for example when one of the printing rolls is not to receive ink or when the machine is standing idle, the disengagement of one or the other of the inking rolls from its respective printing roll while the machine is in operation rendering the respective printing roll inoperative so that no inked impression will be produced thereby so that printing may be done with one ink or one color when such is desired, and the disengagement of both inking rolls from the respective printing rolls while the machine is idle avoiding flattening of the inking rolls, which are usually composed of rubber, by contact with the printing rolls.

Ink is supplied to the inking rolls by the feed rolls 24 which are preferably composed of rubber and are maintained in contact with the printing rolls during the printing operation. These ink feeding rolls are mounted on shafts 54 which are journaled in bearings 55 formed in the ends of the ink fountains 25, as shown in Figs. 15 and 16, each of these ink fountains comprising a pan-like receptacle to contain a supply of ink and into which the respective ink feeding roll 24 dips, and a cover 56 which is bolted or otherwise removably secured to the bottom section and has an opening 57 therein through which the ink feeding roll is exposed so that it may contact with the periphery of the respective inking roll 23, as shown in Fig. 9. The ink feeding roll 24 picks up ink from the lower portion of the ink fountain and transfers the ink to the respective inking roll 23, and in order to prevent the picking up of excess ink by the ink feeding roll 24, a doctor or scraper 58, preferably in the form of a strip of flat sheet metal, is bolted or otherwise secured within the ink fountain so that its free edge contacts with the periphery of the ink feeding roll 24 and scrapes or otherwise removes surplus ink therefrom. In order to prevent the escape of ink along the ends of the shaft 54 and its escape through the bearing 55, disks 59 are fixed on the shaft 54 beyond each end of the ink feeding roll 24, these disks presenting circumferentially extending flanges or edges which will throw any ink reaching them from the shaft, and in order to prevent ink thrown from the disks 59 from reaching the bearings 55 from the under side of the cover 56, beads 60 are preferably formed on the under side of the cover 56 at the outer sides of the opening 57 to intercept any ink thrown against the under side of the cover and to conduct such ink along the beads and back into the ink fountain at opposite sides of the center of the shaft. The cover 56 of each ink fountain is also preferably provided with a lip 61 which underlies the respective inking roll 23 and serves to catch any ink dropping therefrom and to conduct such ink back into the ink fountain and this lip will also catch any ink which might be thrown from the peripheries of the rollers 23 and 24 or either of them as shown in Fig. 9. The top of the cover 56 is also preferably provided with an upturned lip 62 which extends toward the periphery of the respective inking roll 23, this lip being opposite to the line of contact between the rolls 23 and 24 and serving to catch any excess ink which might be squeezed between these rolls and thus thrown backwardly, spilling and waste of the ink being thereby avoided. The bottom wall of each ink fountain preferably slopes toward the center from the sides and ends thereof, as will be clear from Figs. 9 and 16, and a trough 63 leads from the lowermost point in the fountain to a conduit 64 to which a pipe 65 is connected, this pipe serving to supply ink to the fountain and also providing a drain through which the ink may be removed from the fountain when the operation of the machine is to be discontinued or a different ink is to be substituted, the sloping surfaces of the bottom of the ink fountain enabling all of the ink to drain completely and by gravity therefrom.

Means is provided for adjusting the ink fountains and the ink feeding rolls 24 to bring them into proper working relation with the respective inking rolls 23. As shown in the present instance, the ink fountains and the ink feeding rolls 24 mounted therein are each supported on and secured by the bolts 66 to the upper side of a bar 67, and each of these bars is slidably mounted on the laterally shiftable base plate 27, and means is provided for shifting the bars 67 to move the ink feeding rolls 24 in directions toward and from the inking rolls 23 to produce the precisely correct pressure between these rolls and for holding said bars in adjusted position. Preferably and as shown in the present instance, screws 68 are provided at the ends of the bars, each screw having flanges or heads 69 at its ends and having a threaded portion between such flanges, one end of the screw having a wrench-receiving head as shown in Figs. 5, 6 and 8. Each end of each bar 67 is reduced with width to provide spaces between

the bar and the flanges on the ends of the screw, and the upper side of the bar has a semi-cylindrical or threaded portion 70 formed therein to receive and fit the threaded portion of the screw. A clamp 71 is provided to overhang each end of each bar 67, each of these clamps having a foot 72 thereon to bear on the upper surface of the base plate 27 and having a semi-cylindrical or segmental unthreaded recess 73 which overlies the respective end of the bar 67 and is adapted to rotatably receive the threaded portion of the screw 68, as shown in Figs. 7 and 8, the edges of the clamp at the ends of the unthreaded recess 73 thereof being formed with semi-cylindrical or segmental recesses 74 to rotatably receive the flanges 69 on the ends of the screw. The recessed end of the clamp 71 which overlies the screw 68 is clamped frictionally upon the top of the bar 67 by a screw 75 which extends through the clamp and is secured in the base plate 27, this screw being located between the screw receiving recess 73 and the foot 72 of the clamp so that tightening of the screw will force the recessed end of the clamp downwardly against the top of the bar 67, and in order to prevent displacement of the clamp about the screw 75 as an axis, dowel pins 76 may be fixed in the clamp and engaged in holes 77 in the base plate 27. In the construction just described, the screws 68 at the ends of each bar 67 may be rotated in the respective clamps 71 and during such rotation of the screws the latter will be held by the heads or flanges 69 against axial movement relatively to the clamps, and since the clamps are held in fixed positions on the base plate 27 and the screws engage threaded portions in the ends of the bar 67, rotation of the screws will shift the bars 67 transversely of their lengths and the ink fountains and the ink feeding rolls 24 which are carried by bars 67 will be thereby shifted so that the precisely correct pressure between the inking rolls 23 and the respective ink feeding rolls 24 is produced to insure the proper transfer of ink from the latter rolls to the former rolls, the individual adjusting screws at the ends of each bar enabling the ink feeding rolls to be adjusted angularly as well as bodily relatively to the respective inking rolls.

The impression roll 78 with which the printing rolls 22 coact, is preferably mounted in the stationary upper frame section 1^a, it being held in working relation with the printing rolls while the printing mechanism is in operation but means is provided for withdrawing the impression roll from such working relation when the printing mechanism is to be withdrawn laterally from the main frame. The impression roll 78 is mounted to revolve substantially free of

friction on its supporting shaft 79 by roller or other antifriction bearings 80 interposed between the roller and its shaft, the impression roll being driven at the same peripheral speed as that of the printing rolls, as by the gear 78^a fixed to one end of the impression roll and the cooperating gear 39^a fixed to the shaft 39 carrying one of the printing rolls 22, these gears having pitch diameters equal to the diameters of the impression and printing rolls respectively and insuring accurate registration of the impressions made by the two printing rolls. Each end of the shaft 79, as shown in Figs. 3 and 17, is flattened at its opposite sides, as indicated at 81 to fit vertically in a guide 82 which is bolted or otherwise secured to the stationary frame portion 1^a. A spring 83 is supported in the bottom of each guide 82, these springs being of sufficient strength to normally support the impression roll in a raised position out of contact with the printing rolls. A plunger 84 is mounted to reciprocate in the upper portion of each guide 82 and to bear on the upper side of the respective end of the shaft 79, and these plungers are simultaneously operated by a shaft 85 which is journaled in bearings fixed to the top of the stationary frame portion 1^a so that the plungers will force both ends of the impression roll shaft downwardly to bring the impression roll into working relationship with the printing rolls or to permit the springs 83 to lift the impression roll out of working relationship with the printing rolls. As shown, the shaft 85 is provided near each end with a recessed or flattened portion 86 at one side thereof into which the plungers will be forced when such recesses are brought opposite thereto, the remainder of the circumference of the shaft where it is engaged by the plungers being unrecessed so that they will hold the plungers in lowered position and will thereby maintain the impression roller in working relation with the printing rolls. In order to enable the correct impression pressure to be obtained between the impression roll and the printing rolls each of the plungers 84 is preferably composed of threaded sections as shown in Fig. 17 and which are relatively rotatable to lengthen or shorten the plungers as may be required, and a lock nut 87 is provided for holding the sections of each plunger in adjusted relation. The shaft 85 preferably extends beyond a side of the frame section 1^a and is provided with a portion 88 which is angularly or otherwise formed to receive a suitable operating crank.

The printing rolls and the inking and ink feeding rolls are driven by gearing which insures rotation thereof at equal peripheral speed. The printing roll shafts 39 have gears 89 fixed thereon, these gears be-

ing of equal diameter and having a pitch diameter equal to the diameter of the printing rolls, and the shafts 43 of the inking rolls have gears 90 fixed thereon, these gears
 5 being of equal diameter and having a pitch diameter equal to that of the inking rolls, the gears 90 meshing with and being driven from the gears 89 on the respective printing rolls. The shafts 54 of the ink feeding
 10 rolls 24 have gears 91 fixed thereon which are of equal diameter and have a pitch diameter equal to that of the ink feeding rolls, these gears 91 meshing with and being driven from the gears 90 of the respective
 15 inking rolls. The gears 89, 90 and 91 are preferably located at the inner side of the framework 38, as shown in Fig. 2, and in order to suitably support the end of each ink feeding roll shaft 54, a bearing 92 is
 20 preferably provided for this shaft, engaging the same adjacent to the gear 91 thereon and being bolted or removably mounted on the upper side of the respective bar 67 as shown in Fig. 2.

25 Motion is imparted to the printing rolls to drive them and the inking and ink feeding rolls by a gear 93 which is fixed to a main driving shaft 94 which is located equidistantly from the centers of the printing
 30 roll shafts 39, this gear being located on the forward or outer side of the framework 38 and meshing with a pair of gears 95 of equal size on the print roll shafts 39. The gears 95 are preferably adjustable angularly
 35 on the respective printing roll shafts in order to enable the printing rolls to be rotated or set to bring them into proper working relationship with each other and with the portions of the strip of paper which
 40 are to form the bag sections. For this purpose, a hand wheel 96 is fixed by a set screw 97 or other suitable means to the end of the respective printing roll shaft as shown in
 45 Fig. 10 and the respective gear 95 is rotatably mounted on a hub 98 formed on the hand wheel, and each hand wheel is formed with segmental slots 99 which extend there-
 50 through to the respective gear 95 and bolts or screws 100 extend through the slots 99 in each hand wheel and are threaded or otherwise secured to the respective gear 95
 so that tightening of these bolts or screws firmly or immovably locks each gear 95 to its respective hand wheel 96.

55 The main driving gear 93 is preferably provided with means for connecting and disconnecting it relatively to its driving shaft 94 whereby the printing mechanism may remain idle while the bag making machine is being operated to produce unprinted
 60 bags. As shown in the present instance, the hub 101 of the gear 93 is formed with a diametrically extending clutch groove 102 to receive a clutch tooth 103 which extends
 65 diametrically on the rear face of a clutch

collar 104, the latter being splined on the shaft 94 by a key 105 which permits the clutch collar to be shifted to engage the clutch jaw 103 with the clutch groove 102 in the hub of the gear 93 as shown in Fig. 11,
 70 at which time the gear 93 will be clutched to the main driving shaft 94 or the clutch collar 104 may be shifted in an opposite direction to disengage the clutch jaw 103 from the clutch groove 102 as shown in Fig.
 75 10 at which time the gear 93 will be disconnected from the main driving shaft 94 and the latter may be revolved freely while the printing mechanism remains idle. A spring pressed ball 106 is preferably fitted into the
 80 clutch collar 104 and is arranged to engage one or another of two suitably located recesses 106 formed in the shaft 94 whereby the clutch collar 104 will be yieldingly held in either clutched or unclutched condition.
 85 In order to insure re-engagement of the clutch collar 104 with the gear 93 so that the latter will be in proper timed relation with the main driving shaft 94, a pin 107 is fitted into the side of the clutch collar 104
 90 opposite to the hub of the gear 93 and the hub of the gear 93 is formed with a recess 108 which will receive the pin 107 when the clutch collar 104 is properly engaged therewith and this pin will prevent improp-
 95 erly timed engagement of the clutch jaw 103 with the recess 102.

The main driving shaft 94 for the printing attachment is driven from the shaft 16 which connects it in predetermined timed
 100 relation with the bag making machine, and the present invention provides means which permits lateral withdrawal of the printing mechanism from the main frame of the machine while maintaining the predetermined
 105 timed relationship between the printing mechanism and the bag making machine. As shown in the present instance, the main driving shaft 94 of the printing mechanism is inserted into the end of a sleeve 109 and
 110 is fixed therein by a transverse pin 110 and a collar 111 which surrounds the sleeve and in which the pin is secured, and this collar bears against the inner side of a bearing 112 in the respective end member 38 of the
 115 shiftable framework 26, the end of the sleeve 109 adjacent to the gear 93 being journaled in this bearing, as shown in Fig. 10 and the opposite end of the sleeve 109 being journaled in a bearing 113 in the other end
 120 member 38 of the shiftable framework 26. A shaft 114 is fitted telescopically or slidably within the end of the sleeve 109 opposite to that carrying the gear 93, this shaft being provided at its rear end with a bevel gear
 125 115 which is fixed thereon and meshes with a cooperating bevel gear 116 which latter is fixed on the shaft 16. The end of the shaft 114 adjacent to the gear 115 is journaled in a bearing 117 which is mounted in
 130

fixed position on the stationary section 1^a of the main frame. Axial movement of the shaft 114 relatively to the main frame is prevented by a thrust collar 118 which is
 5 fixed on said shaft and bears against the inner end of the bearing 117 as shown in Figs. 5 and 12, the hub of the gear 115 bearing against the outer end of said bearing, so that the shaft 114 is held from axial movement while the printing mechanism carrying the sleeve 109 is shifted into and out of the main frame and axial movement of the sleeve 109 with the printing mechanism while the shaft 114 is held from axial
 10 movement is permitted by the telescopic fit between said sleeve and shaft, but means is provided for maintaining the sleeve 109 and shaft 114 in connected or driving relationship at all times, such means consisting preferably of a key 119 (see Figs. 4, 5 and 12), fitted into a key-way 120 formed longitudinally in a side of the shaft 114 and
 15 slidable endwise therein, this key being clamped by a split collar 121 which surrounds the sleeve 109 and abuts against the inner side of the bearing 113, the key extending through a slot 122 in the sleeve 109 and into the key-way 120 in the shaft 114 so that it forms a driving connection between said sleeve and shaft although permitting relative axial movement between them, the key being held in working position by the clamping action of the split collar 121 thereon and being retained against
 20 displacement by the screw or bolt 123 which clamps the collar on the sleeve and clamps the key between its ends and also extends through the key, thereby preventing it from becoming displaced from the key-way 120. According to the construction just described, the sleeve 109 together with the main driving shaft 94 of the printing mechanism and the gear 93 fixed thereon will shift axially when the framework 26 carrying the printing mechanism is withdrawn laterally from or returned to its normal position within the stationary frame section 1^a but the shaft 114 will be held against axial movement by the relatively fixed bearing 117 in which it
 25 is journaled, the axial key 109 sliding longitudinally in the key-way 120 in the shaft 114 and thus permitting axial movement of the sleeve 109 relatively thereto to take place, but the key and slot connection between said sleeve and shaft will maintain the driving connection between these elements or in other words, will prevent relative rotation between them, in consequence of which the timed relationship between the printing attachment and the bag making machine is maintained or is not disturbed by lateral withdrawal of the printing mechanism from the framework of the machine.

The present invention provides novel and
 30 improved printing rolls and means for ad-

justing them whereby accurate positioning or registration of the printed impressions therefrom upon the portions of the paper strip which are to constitute the bag sections and accurate registration of impressions in different colors in relation to each other when printing in a plurality of colors is being done, are attained. As shown in Figs. 2 and 10, each printing roll 22 is mounted on its respective shaft 39 so that it may shift axially thereon and a collar 124 is fixed on its respective shaft 39, this collar being preferably in the form of a split clamp surrounding the shaft and immovably secured in proper adjusted position thereon by a clamping bolt 125. The collar 124 for each printing roll has a screw 126 rotatably mounted therein and arranged with its axis parallel to that of the printing roll shaft 39, axial movement of the screw relatively to the collar being prevented by the engagement of the head 127 of the screw against one side of the collar and the engagement of a thrust member 130 fixed to the screw against the other side of the collar. The end of the screw 126 which extends toward the printing roll has a threaded engagement in a hole 131 formed in the adjacent end of the printing roll, the latter being thereby connected to the collar 124 so that rotation of the screw 126 will shift the printing roll axially, in one direction or the other, along the respective printing roll shaft, and a lock nut 132 is preferably threaded on the screw and arranged to abut against the end of the printing roll to lock the screw against rotation after it has been adjusted. The axial adjustment thus provided for each printing roll enables the printing rolls and the printing surfaces thereon to be adjusted in a direction transversely of the length of the strip of paper or other bag making material which passes the printing rolls and receives printed impressions therefrom, although it will be understood that the printing rolls are driven from their respective shafts 39 so that they rotate in proper timed relation therewith.

The printing surface for each printing roll is preferably composed of rubber which is flexible and is vulcanized on a strip of tough paper 133 or other flexible backing, the paper or backing 133 carrying the printing surface which is exposed on its outer side being extended around the major portion of the circumference of the printing roll which is cylindrical and smooth and provides a suitable support therefor, and one side of the circumference of each printing roll is formed with a slot or opening 134 as shown in Figs. 19 and 20, into which the ends of the type carrying strip 133 are extended. A pair of winding shafts 135 are journaled in the opposite ends or heads
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of the printing roll and extend across the slot 134 at points within the circumference of the printing roll, these shafts having slots 136 formed to extend diametrically therein to receive the respective ends of the type carrying strip 133, and rotation of these winding shafts will wind the ends of the type carrying strip upon the respective winding shafts. Each winding shaft is provided with a squared or wrench-receiving end 137 by means of which it may be rotated, and each winding shaft has a ratchet wheel 138 fixed thereon and arranged to cooperate with a ratchet pawl 139 pivotally mounted on a screw 140 secured in the outer side of the head of the printing roll, the ratchet wheels and pawls for the respective winding shafts being preferably located at opposite ends of the printing roll as shown so that a wrench or crank may be applied to each of these shafts and operated to adjust the same without interfering with a wrench or crank applied to the other winding shaft. By rotating the winding shafts in appropriate directions to wind the respective ends of the strip 133 thereon, this strip which carries the printing surface may be drawn taut around the periphery of the respective printing roll, the ratchet wheels and cooperating pawls serving to lock the winding shafts and thereby maintain the strip 133 under suitable tension. By releasing the pawl holding either winding shaft and rotating the other winding shaft in a direction to wind the strip 133 thereon, the strip 133 may be adjusted in a direction circumferentially of the printing roll, and this adjustment of the strip 133 which carries the printing surface enables registration of the printed impressions in a direction longitudinally of the bag forming strip to be accomplished, thereby enabling the printed impressions to be located at the proper points in the height of the bags subsequently made from the bag forming strip and also enabling the impressions produced on the bag forming sections of the strip from the two printing surfaces to be accurately registered with one another, this being particularly advantageous when printing is being done in inks of different colors from the different printing rolls.

The idler rolls 4 and 5, over which the strip of paper or other bag making material passes are preferably supported by anti-friction rollers to enable these rolls to revolve very freely and with minimum resistance to the bag forming strip, and means is provided for effectively lubricating the bearings. In Fig. 21, the relatively large idler roll 5 has a pin or journal 141 pressed or otherwise fixed in each end so as to project axially therefrom, and each of these pins has a journal portion 142 which is reduced in diameter and adapted to receive a roller

bearing 143 the rollers of which bear thereon, the roller bearing having a surrounding annular race 144 which fits closely within the ring-like portion 145 of a bracket 146, each of these brackets one of which is provided at each end of the idler roll, having a cylindrical stem 147 which is adapted to removably and rotatably fit into a cylindrical socket 148 formed in the stationary frame of the machine or in a bracket 149 which is bolted or otherwise secured thereto, the rotatable fit of the stem 147 of each bracket 146 in its socket enabling the bearing carried by the bracket 146 to align itself with the journal of the idler roll in a plane parallel to the plane of rotation of the stem 147, and the annular opening in the bracket 146 which receives the annular outer bearing 144 is preferably flared or tapered toward the opposite ends thereof to provide an annular surface 150 within the bracket which is of relatively short axial length, the engagement of the outer bearing race 144 with this relatively short annular bearing surface 150 enabling the outer bearing race and the bearing rollers carried by it to occupy different angular positions within the bracket 146 in a plane parallel to the axis of the stem 147, whereby the bearing will align itself with the respective journal of the idler roll in such plane. The inner side of the bearing is preferably closed by a ring 151 having an annular flange which is pressed over the inner end of the bearing race 144 and the outer end of the bearing is preferably closed by a cap 152 which has an annular flange on its periphery which is pressed over the outer end of the bearing race 144 as shown in Fig. 21, the bearing being thereby closed to retain a lubricant therein. In order to lubricate the bearings of the idler roll, the latter is provided at each end with a fitting 153 which is counter-sunk in a recess 154 so that it lies below the periphery of the roll and will not be engaged by the paper thereon, this fitting being of any suitable type to receive grease or other lubricant from a high pressure grease gun of any of the well known kinds in common use. The fitting is threaded or otherwise secured in the outer end of a duct 155 which extends radially inwardly from the peripheral recess 154 to the center of the idler roll and into the journal pin 144, and the latter is formed with an axially extending duct 156 which leads from the inner end of the duct 155 to the outer end of the journal pin 141. By this arrangement, grease or other lubricant forced into the duct 155 by the application of a grease gun to the fitting 153 will pass through the axial duct 156 and from the outer end of this duct the grease will enter the bearing.

Each of the relatively smaller idler rolls 4 is provided with bearings and lubricating

means similar to the bearing and lubricating means just described respecting the idler roll 5, the only difference being that the bearing engaging journal 142^a on each end of the smaller idler roll as shown in Fig. 23 is formed integrally with the head or end of this roll instead of being formed as a separate journal pin, the construction being otherwise the same as that described above in connection with the idler roll 5 so that further description is unnecessary. The bearings for the relatively smaller idler rolls 4 are self-aligning in their brackets 146 and the cylindrical stems of these brackets rotatably fit into sockets in the frame of the machine so that the bearings for these smaller idler rolls will align themselves in the planes of rotation of the brackets.

The present invention provides relatively simple and efficient means for feeding ink to the ink fountains and for maintaining the ink at a predetermined desired level therein. The ink feeding means for each of the ink fountains 25 are preferably of duplicate construction so that a description of one will be sufficient for both. The ink supply pipe 65 which communicates with each ink fountain in the manner hereinbefore described is connected at its outer end to the bottom of a well 157 which is formed in a bracket 158 which is bolted or otherwise secured to the base plate 27 of the machine as shown in Figs. 24, 25 and 26, this well being preferably provided with a drain cock 159 which communicates with the bottom thereof and serves to remove all ink therefrom when such is desired. It will be seen from Fig. 2 that the well 157 is located on the same level with the ink holding portion of the respective ink fountain so that the ink in the ink fountain will always be on the same level with the ink in the well 157 the pipe 65 providing a constant free communication between the ink fountain and said well. The bracket 158, which is located at a side of the machine, carries a support 160 on which a bottle 161^a or any suitable form of closed-bottom liquid ink supply receptacle may be mounted, it being preferable to employ an ordinary bottle like a milk bottle to contain the liquid ink and to place the open mouth of the bottle on the support 160 with the bottle in inverted position, and a clamp is provided for holding the bottle in position with its mouth against the support 160 and its closed bottom uppermost, this clamp comprising a plate 161 to fit against the bottom of the bottle, it having a semi-circular flange 162 at one side to fit against the bottle and thereby center it, and a yoke 163 serves to draw the plate 161 against the bottom of the bottle and to hold the bottle mouth against the support 160, this yoke engaging the plate 161 at its ends and having a threaded portion 163

intermediately of its ends into which a screw 164 is threaded, the end of the screw engaging a recess 165 in the side of the support 160 opposite to that engaged by the bottle mouth so that tightening of the screw will draw the bottle mouth firmly against the support 160. The latter is preferably provided with a semi-circular flange 166 at one side of the bottle mouth engaging portion thereof and against which the bottle mouth may be placed to center the bottle mouth on the support 160.

An ink conduit 167 leads at an inclination downwardly from the bottle mouth engaging surface of the support 160 so as to conduct ink from the bottle, and the lower end of this duct communicates with a pipe 168 which extends downwardly into the ink well 157, this pipe being of such a length that its lower end is level with the ink level to be maintained in the ink fountain. By the arrangement just described, liquid ink will flow from the inverted bottle through the duct 167 and pipe 168 into the well 157 until the ink level rises in the well sufficiently to cover the lower end of the pipe 168. While the lower end of this pipe is uncovered by the ink in the well 157, air will enter the lower end of the pipe and flow upwardly through the duct 167 into the bottle, thereby relieving the vacuum in the bottle and permitting ink to flow therefrom into the well 157 and when the ink level in said well is sufficiently high to cover the lower end of the pipe 168, the latter will be sealed against the entrance of air and the vacuum in the bottle will then stop the further feed of ink therefrom until the ink level in the well 157 has dropped sufficiently to uncover the lower end of the pipe 168, the level of ink in the well and in consequence, in the respective ink fountain, being thereby regulated or controlled automatically.

In order to enable the level at which the ink is maintained in the ink fountain to be varied, the support 160 which carries the pipe 168 is carried on a stem 169 which is adjustable vertically in a socket 170 formed on the bracket 158, this socket being preferably in the form of a split clamp having a bolt 171 for contracting it whereby the stem 169 may be released to permit vertical adjustment thereof and then clamped to hold it in the desired vertically adjusted position. Vertical adjustment of the stem 169 varies the height of the lower end of the pipe 168 in the well 157, thereby controlling the level at which the ink will be maintained in the well.

In order to facilitate the removal of an empty ink bottle or receptacle 161^a from the support 160 and to enable another bottle or receptacle containing ink to be applied to this support without spilling the ink, the support 160 is preferably swiveled so that

it may swing about a horizontal axis to bring the bottle either into upright or into inverted position. As shown, the support 160 is formed with a cylindrical portion 172 which is rotatably fitted into a split clamp 173 formed on the upper end of the stem 169, this split clamp having a screw 174 for operating it. By loosening this screw, the cylindrical portion 172 of the support 160 is released by the clamp 173 so that the support 160 and the bottle thereon and the yoke 163 may be rotated about a horizontal axis concentric with the clamp 173, and when the support 160 is swung into a position to bring the bottle 161^a into upright position beneath it, the yoke 163 may be manipulated to unclamp and release the bottle and to receive another bottle containing ink, and after the yoke has been tightened to clamp such bottle on the support 160, the latter may be swung through a half revolution to bring the ink containing bottle into inverted position above the support 160, and the bottle will be maintained in such position to feed ink to the well 157 by tightening of the screw 174. In order to prevent the throwing of ink from the lower end of the pipe 168 when the bottle support is swung out of its operative position as shown by the dotted lines in Fig. 26, one side of the wall of the well 157 is provided with an upstanding lip 175 which will catch any ink lifted or thrown by the pipe 168 during its upward swing and return such ink to the well. The lower end of the pipe 168 is preferably bevelled as shown so as to facilitate the steady flow of air into the lower end of this pipe into the ink containing bottle as the ink is withdrawn therefrom, thereby insuring a steady or even feed of the ink from the bottle into the well 157.

In operating a bag making machine provided with a printing attachment as hereinbefore described, the roll of paper or other material 3 from which the bags are to be made is placed on the bracket 2 and the paper is led around the idler rolls 4, past the trade-mark printing roll 13, around the under side of the impression roll 78, thence over the upper idler roll 5 and between the pasting rolls 6 which apply a strip of paste along one edge of the strip, then beneath the former 7 and past the usual devices which turn the longitudinal edges of the strip inwardly to form the strip into a tube and to affix the pasted edge of the strip to the other longitudinal edge of the strip over which it is lapped, the tube then passing between the draw rolls 8 which advance the tube, usually continuously, and between pinch rolls 9 which intermittently grip the tube, the striker or breaker commonly used in bag making machines of this class acting upon the strip stretched between the draw

rolls 8 and pinching rolls 9 to sever it into bag lengths or sections, and the latter are advanced past the rolls 11 and folding mechanism such as commonly used in machines of this class to fold or close the bottoms of the bags.

As the strip passes round the impression roll 78, it passes the printing rolls 22 which carry the desired printing surfaces on their peripheries to which ink is applied by the inking rolls 23 which in turn receive ink from the ink feeding rolls 24 operating in the ink fountains 25, and the printing rolls 22 are so adjusted by the set screws 42 relatively to the impression roll 78 as to apply sufficient pressure between the printing surfaces on the printing rolls and the strip while the latter is backed by the impression roll, the latter being driven at the same peripheral speed as the printing rolls and thereby insuring accurate registration of the impressions made by the printing rolls on the strip. During the running of the machine with the printing attachment in operation, ink is fed to and maintained at a predetermined constant level in the ink fountains 25 by the ink bottles or receptacles 161^a and the tubes 65, through the intermediary of the wells 157, the tubes 168 then dipping into the ink in the respective wells 157 and maintaining the ink at a constant set level therein in the manner hereinbefore described. The provision of two printing rolls and their inking means enables each bag length of the strip to receive printed impressions either entirely in ink of the same color or in inks of different colors, the printing surfaces on the two printing rolls for example forming different portions of the complete impression, but when it is desired to print the bag forming sections of the strip with a single impression or in a single color, one or the other of the printing rolls 22 may be rendered inoperative by backing out its adjusting screws 42, the springs 41 then acting to shift the printing roll to remove its printing surface from contact with the strip and to shift the driving gear 95 on the respective printing roll out of mesh with the driving gear 93 so that the printing roll thus shifted will remain idle and out of contact with the strip during the operation of the machine. While a printing roll is thus held out of operation, its respective inking roll 23 will also be idle since it is driven from its respective printing roll, and its periphery will be out of contact with the printing roll due to the shifting of the latter out of operative position. If it is desired to operate the bag making machine for the making of unprinted bags, the entire printing attachment may be rendered inoperative by pulling the clutch 104 on the main drive shaft 94 outwardly, the main drive shaft being then disconnected from the

gear 93 which drives the printing rolls and the inking and ink feeding rolls of the printing attachment and by rotating the shaft 85 so that the cam-like portions thereon will permit the plungers 84 and the impression roll shaft 79 to rise under the action of the springs 83, the strip being then enabled to pass around the impression roll without contact with the printing rolls, the impression roll then revolving freely on its anti-friction bearings since the gear 78^a will be lifted out of engagement with the driving gear 39^a, and while the printing attachment is thus idle or inoperative or during periods when the entire machine is shut down, the levers 53 may be swung outwardly to force the inking rolls 23 inwardly, thereby disengaging them from the respective printing rolls 22 and ink feeding rolls 24 and thus avoiding flattening of the inking rolls or the ink feeding rolls, which are preferably composed of rubber, by standing idle under pressure against one another or against the printing rolls. The printing rolls used are of such diameter that they make one revolution during the passage of each bag section, and the main drive shaft 94 is connected to the bag making machine in such timed relation therewith that it makes one revolution during the passage of each bag section, the gear 93 on this shaft and the gears 95 meshing therewith and fixed to the printing rolls being all of the same diameter. In order to adapt the printing attachment for the printing of bag sections of different lengths, printing rolls of larger or smaller diameter may be substituted in which case the gears 93 and 95 will be replaced by others of a correspondingly larger or smaller diameter, the shafts of the printing rolls of larger or smaller diameter being adjusted by set screws 42 to bring the printing surfaces on such rolls into proper contact with the strip on the impression roll and to conform with the change in diameter of the connecting gears, and the inking rolls 23 may be adjusted to produce the proper amount of pressure against the printing surfaces on the printing rolls by manipulation of the set screws 47, the driving gears 90 for these inking rolls meshing with gears 89 of different diameters on the different printing rolls owing to the inclined angles at which the shafts of the printing rolls are adjusted to bring printing rolls of different diameters into correct working position. The ink fountains 25 and the ink feeding rolls 24 carried thereby may be adjusted by the screws 68 to bring the peripheries of the ink feeding rolls into positions to produce the exactly correct pressure between them and the inking rolls 23 to insure the application of the correct amount of ink to the printing surfaces on the printing rolls. The rotatable spindles 135 on each printing roll on

which the ends of the flexible strip or backing carrying the printing surface is wound enable the printing surface to be shifted in one or the other direction around the circumference of the printing roll to position the same circumferentially thereon, and by loosening the bolts or screws 100 which connect the gears 95 to the respective printing rolls, the latter may be manually rotated by means of the hand wheels 96 to bring the printing surfaces on the printing rolls accurately into such positions relatively to the bag making strip that the impressions produced thereby will register exactly in a direction longitudinally of the bag strip, after which the bolts or screws 100 are tightened, and by adjusting the screws 126, the printing rolls may be shifted axially of their respective shafts, thereby enabling accurate registration or positioning of the printed impressions in a direction laterally or transversely of the bag making strip to be obtained.

Normally and while the machine is in operation, the printing mechanism will occupy a position within the frame section 1^a with the printing rolls in alinement with the bag former 7, the printing mechanism being shown in such position for example in Fig. 2, but when it is desired or necessary to obtain access to the printing mechanism, the base plate 27 carrying the printing mechanism is shifted laterally of the machine frame by operation of the crank 36 which rotates the shaft 29 and the pinion 33 which meshes with the rack bar 32 on the under side of the base plate 27, the base plate being thereby shifted into a position where it projects laterally from the front or side of the machine as shown by the full lines in Fig. 5 so that the printing mechanism is exposed and readily accessible from the outside of the machine frame. While the printing mechanism is thus shifted laterally to a position outside of the machine frame, the printing rolls may be easily reached for changing of the printing surfaces thereon or for other purposes, and the various other parts of the printing mechanism may be easily reached for inspection, adjustment, repair or other purposes, after which the printing mechanism may be returned to its normal position within the machine frame by rotation of the crank 36 in the reverse direction. The telescopic sections 109 and 114 which connect the main driving shaft 94 of the printing attachment to the bag making machine maintain the timed relationship between the printing attachment and the bag making machine while the printing attachment is shifted out of its operative position, the key 119 carried by the section 109 and working in the keyway 120 in the section 114 forming a splined connection between these sections which per-

mits relative axial movement thereof but prevents rotation between them. The printing attachment shown in the present instance is adapted to use aniline inks which dry quickly and in consequence, the printing attachment may be located much closer to the heel or bag strip receiving end of the former 7 than has heretofore been possible, and by mounting the printing mechanism so that it may be shifted laterally out of the machine frame to render the parts thereof accessible, the printing mechanism may be constructed with its parts in closer relationship so that the printing mechanism may be built much more compactly than has heretofore been possible.

The ink feeding means provided enables the ink to be supplied conveniently from ordinary bottles or similar receptacles to the ink fountains, the swivelled mounting of the bottle or receptacle enabling the same to be readily refilled or replaced by filled bottles without spilling or wasting the ink, the level of the ink in the ink fountain being maintained automatically and the level of the ink in the ink fountains being easily varied in the manner hereinbefore described. The ink supplying means for the ink fountains are preferably mounted on the forward or outer end of the laterally shiftable base plate carrying the printing mechanism so that the ink supply means will not only remain in proper working relationship with the printing mechanism when the latter is shifted into or out of the frame of the machine but the inking means will always be easily accessible at the outer side of the frame of the machine so that the ink receptacles may be conveniently applied and removed, and the drain cock at the bottom of the well 157 of each ink well, which is at the lowest point in the ink feeding system, enables the ink to be drained from the ink fountains after completion of a printing operation, and by sloping the bottom of each ink fountain from the sides and ends thereof to the passageway through which the ink enters the fountain, draining of the ink completely from each fountain is rendered possible.

We claim as our invention:—

1. A printing attachment of the class described comprising a main frame, means for guiding a strip to move longitudinally therein, printing mechanism including inking means and a cooperative printing roll to operate on said strip, a base plate supporting the inking means and printing roll of said printing mechanism as a unit thereon, and means contained substantially within the width of the main frame for supporting said base plate to move laterally into and out of said frame.

2. A printing attachment for bag making machines comprising a main frame,

means for guiding a bag strip to move longitudinally therein, printing mechanism for producing printed impressions on said strip, means supporting said printing mechanism to move laterally into and out of said frame, driving means on said frame, a driving shaft for the printing mechanism movable laterally therewith, a clutch on said shaft for driving the printing mechanism therefrom, and means cooperative with said clutch for maintaining the printing mechanism in timed relation with said driving means when the printing mechanism is withdrawn from the frame.

3. A printing attachment for bag making machines comprising a main frame, means for guiding a bag strip longitudinally therein, printing mechanism to cooperate with said strip, means supporting the printing mechanism to shift laterally in said frame and into overhanging position outside thereof, a driving shaft mounted in said frame and extending parallel to the direction of shift of the printing mechanism, and means including a tubular member connected at its outer end to the printing mechanism and having its inner end open and provided with a spline connection with said shaft for maintaining a driving connection between said shaft and the printing mechanism during the shifting movement of the latter.

4. A printing attachment for bag making machines comprising a main frame having means for guiding a bag making strip for movement therein, printing mechanism to act on said strip, means supporting the printing mechanism to shift laterally in said frame to carry the printing mechanism into and out of the same, driving means supported by the main frame, and means for maintaining a driving connection between said driving means and the printing mechanism including telescopic members having a spline connection between them, one of said members being relatively movable into and withdrawable from the other member, one of said members being connected to the driving means on the main frame and the other member being connected to and shiftable with the printing mechanism.

5. A printing attachment of the class described comprising a main frame, printing mechanism mounted to shift into and out of said frame, driving means on said frame, and means for maintaining a driving connection between said driving means and printing mechanism during the shifting movements of the latter including inner and outer telescopic members, one connected to said driving means and the other connected to the printing mechanism, one of said members having a keyway therein and the other member carrying a key and a clamp securing said key thereto and in operative relation with said keyway.

6. A printing attachment of the class described comprising a frame having guide rails therein extending to a side thereof, printing mechanism, a slide movable on said rails in said frame and carrying the printing mechanism for shifting it into and out of the frame, and means for shifting said slide embodying a shaft mounted on the side of said frame adjacent to the ends of said rails and having a pinion thereon, and a cooperative rack on the slide.

7. A printing attachment for bag making machines comprising a frame having means including an impression roll for guiding a bag strip, printing mechanism to cooperate with the impression roll and act on the bag strip, means for setting the impression roll into and out of cooperative relation with the printing mechanism, and means for driving the printing mechanism including a driving shaft and a clutch between said shaft and the printing mechanism for disconnecting the latter from the driving shaft.

8. A printing attachment for bag making machines comprising a revoluble impression roll over which a bag strip is adapted to pass, a pair of printing rolls cooperative with the impression roll, and means for driving the impression roll from one of the printing rolls, the impression roll being movable out of cooperation with both of the printing rolls and rendering said driving means inoperative and the impression roll freely revoluble relatively to the printing rolls.

9. A printing attachment of the class described comprising a frame, printing mechanism, a slide movable in said frame and carrying the printing mechanism for shifting it into and out of the frame, a shaft connected to the slide for shifting it, and rollers on said shaft and on which the slide rests for supporting the slide.

10. Printing mechanism comprising a supporting frame, a printing roll having means supporting it for movement into and out of said frame, an impression roll having bearings supporting it in said frame for movement into and out of cooperation with the printing roll, and means for setting the impression roll in operative and inoperative positions with respect to said printing roller.

11. Printing mechanism for a bag making machine comprising a pair of laterally spaced printing rolls, an impression roll around which a bag strip is adapted to pass, a shaft on which the impression roll is freely revoluble, means guiding said shaft for movement in a plane passing between the axes of the printing rolls to carry the impression roll into and out of cooperation with respect to both of the printing rolls, and gears connected to one of the printing rolls and impression roll, said gears being

in mesh when said rolls are in cooperative relation and disengaged when said rolls are out of cooperative relation.

12. A printing attachment for a bag making machine comprising an impression roll for guiding a bag strip, a printing roll to cooperate with the impression roll, a drive shaft, gears connected to said printing roll and shaft respectively, a clutch cooperative with one of said gears for connecting the printing roll to said shaft to be driven thereby and for disconnecting the printing roll from said shaft to render the printing roll rotatable independently thereof, and means for removing the impression roll from cooperation with the printing roll to permit independent rotation thereof.

13. A printing attachment for a bag making machine comprising an impression roll for guiding a bag strip, a printing roll to cooperate with the impression roll, means for removing the impression roll from cooperation with the printing roll to permit independent rotation of the impression roll, a drive shaft, and means for connecting and disconnecting the printing roll and drive shaft including a clutch the members of which are engageable only when the printing roll and said shaft are in predetermined timed relationship.

In testimony whereof we have hereunto set our hands.

TRUE M. AVERY.

WILLIAM M. SEITZINGER.

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