

July 3, 1962

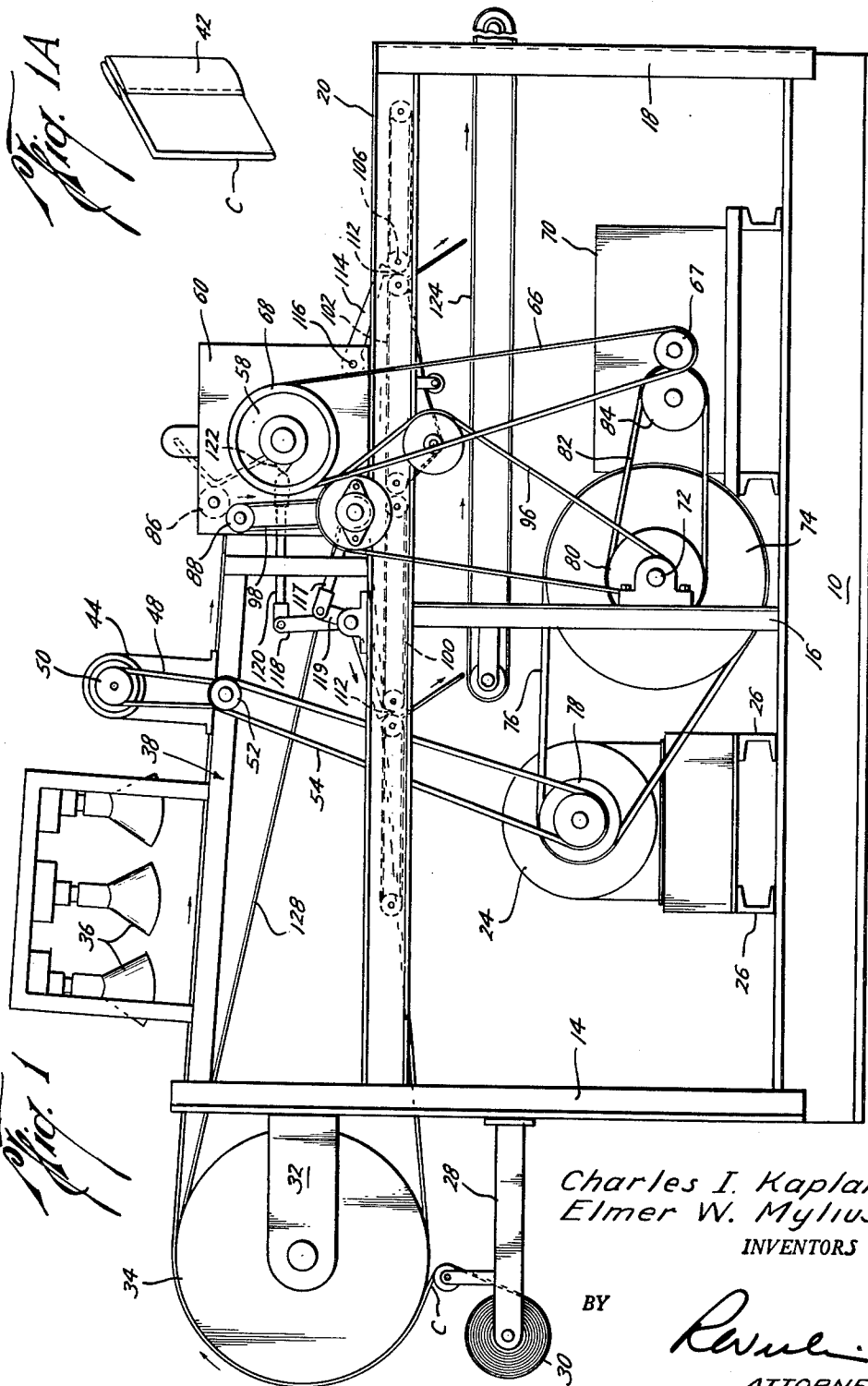
C. I. KAPLAN ET AL

3,041,987

MACHINE FOR MAKING CLOTH BAGS

Filed April 22, 1960

4 Sheets-Sheet 1



July 3, 1962

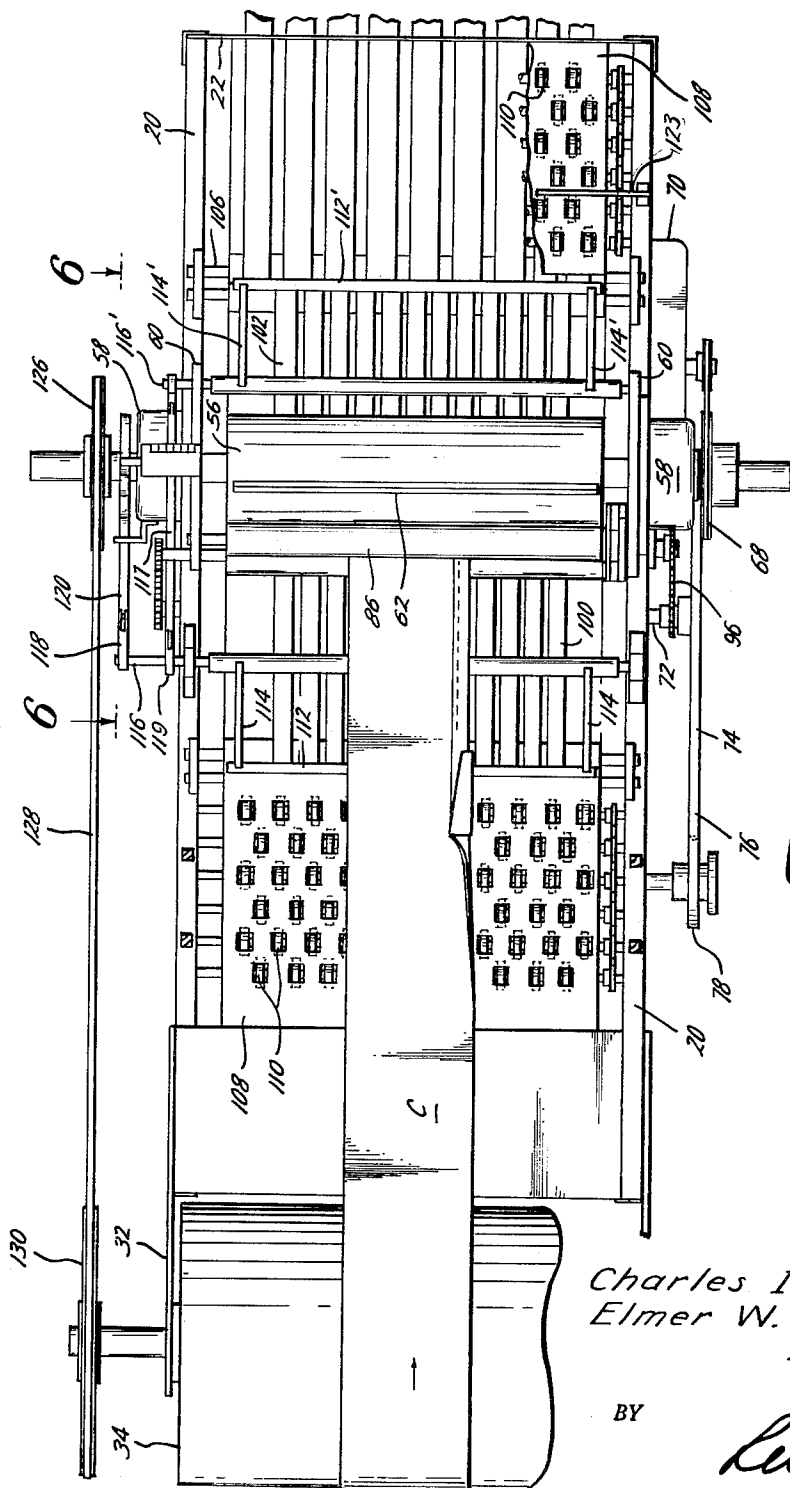
C. I. KAPLAN ET AL

3,041,987

MACHINE FOR MAKING CLOTH BAGS

Filed April 22, 1960

4 Sheets-Sheet 2



July 3, 1962

C. I. KAPLAN ET AL
MACHINE FOR MAKING CLOTH BAGS

3,041,987

Filed April 22, 1960

4 Sheets-Sheet 3

Fig. 3

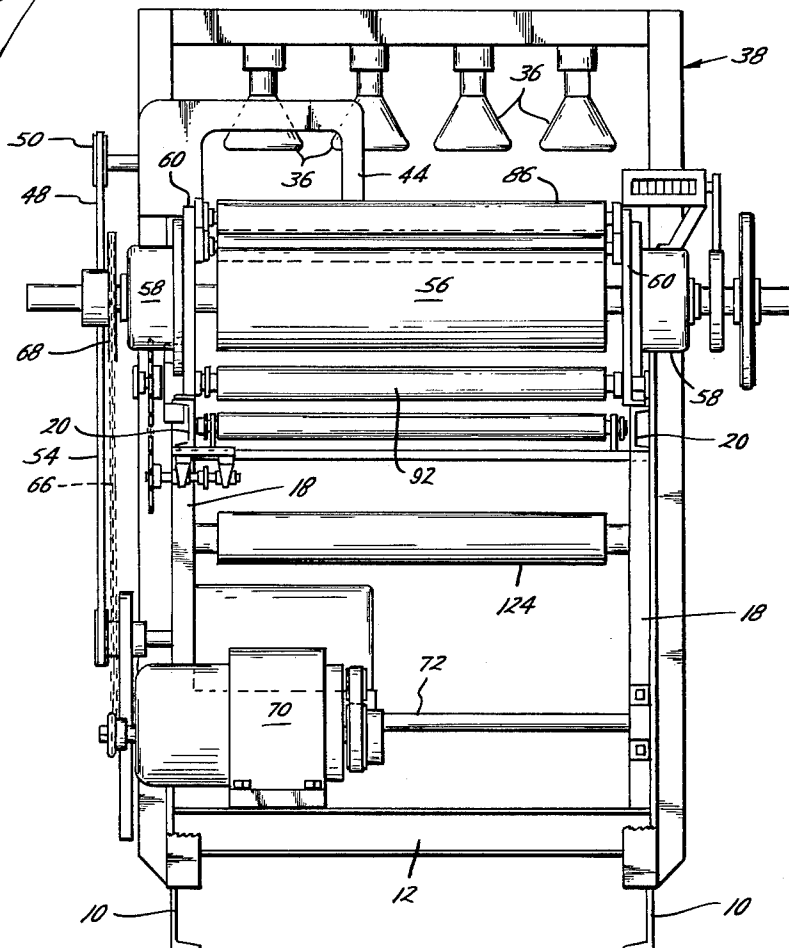
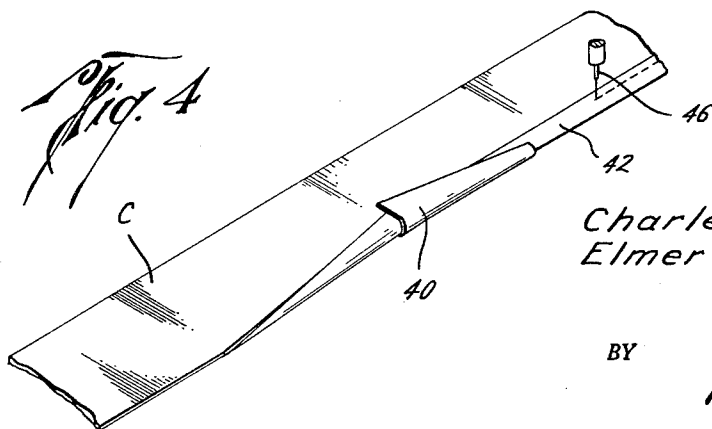


Fig. 4



Charles I. Kaplan
Elmer W. Mylius
INVENTORS

BY

R. W. ...
ATTORNEY

July 3, 1962

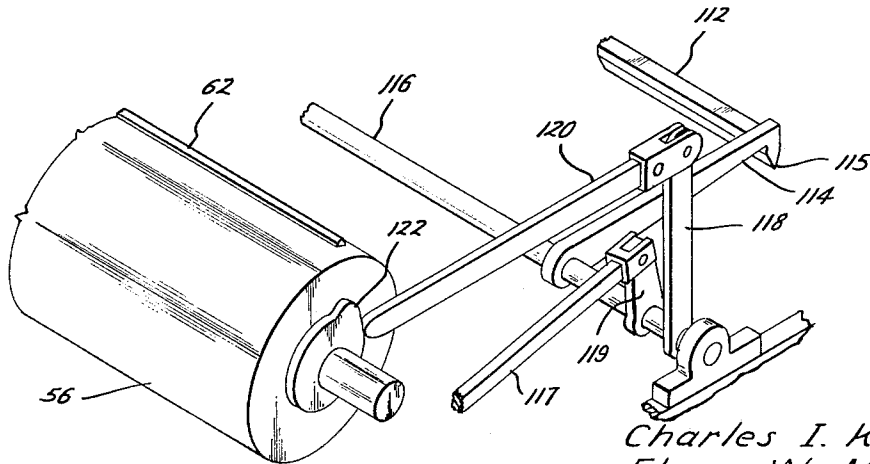
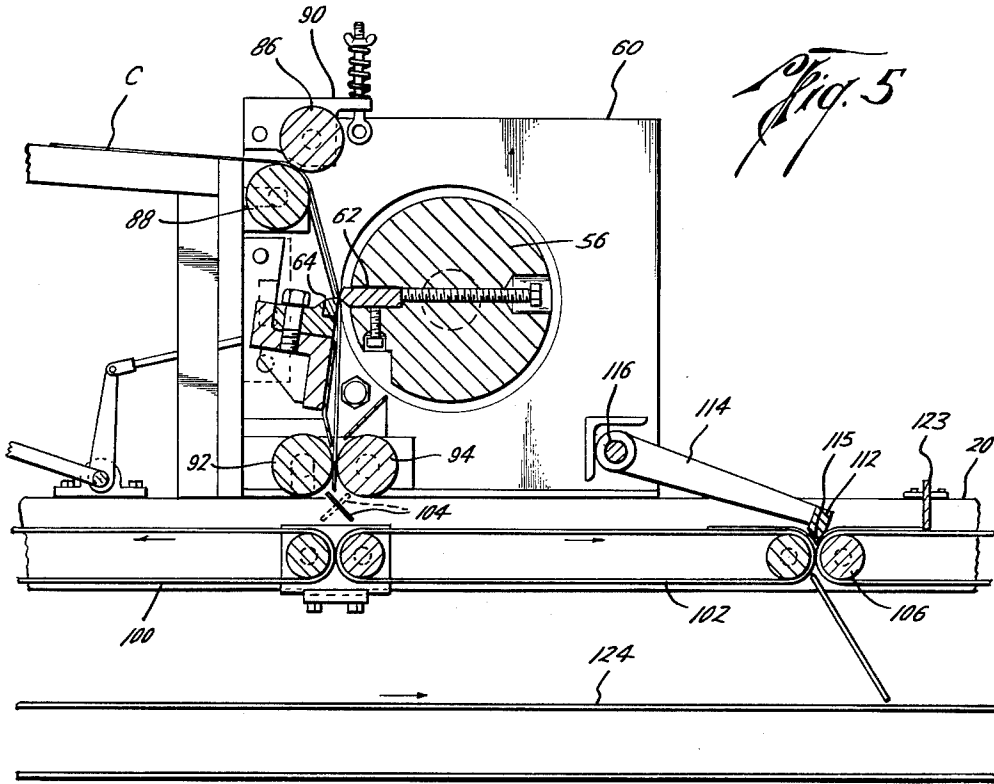
C. I. KAPLAN ET AL

3,041,987

MACHINE FOR MAKING CLOTH BAGS

Filed April 22, 1960

4 Sheets-Sheet 4



Charles I. Kaplan
Elmer W. Mylius
INVENTORS

BY

Reverie
ATTORNEY

1

3,041,987

MACHINE FOR MAKING CLOTH BAGS

Charles I. Kaplan and Elmer W. Mylius, Houston, Tex.,
assignors to Standard Bag Company, Houston, Tex., a
corporation of Texas

Filed Apr. 22, 1960, Ser. No. 24,048

4 Claims. (Cl. 112-10)

This invention relates to the manufacture of bags and more particularly to a machine for sewing, cutting and folding cloth or similar materials in the production of bags.

While not limited to such use, the invention finds particular application in connection with the manufacture of cloth bags of the draw-string type, for the cutting of printed cloth into pieces, each of which bears the printed matter which is to appear on the bag and for the folding of the pieces preliminary to the completion of the bags by sewing.

In the manufacture of cloth bags, and particularly bags of the draw-string type having printed matter thereon, it is customary to print the desired material on the cloth at equally spaced intervals thereon as the cloth is unrolled from a supply roll and to pass the printed strip or web of cloth through drying apparatus, sewing, cutting and folding mechanism, to cut the cloth into pieces and fold the same preparatory to completing the bags by sewing the blanks as formed down one side and across the bottom. In the making of draw-string bags a printed web is customarily passed continuously through suitable folding and sewing mechanism to provide a continuous hem along one margin of the web prior to the cutting of the web into pieces.

Bags of this kind may be furnished with the edges of the cloth located inside of the bag when completed, to provide a finished appearance, or in some instances, they may be furnished with the edges of the cloth located externally. When the bags are to be provided with inturned edges or seams, the pieces of material when cut are folded with the printing inside, so that after the bag has been completed by sewing, the bag may be turned inside out to position the edges of the cloth inside of the bag and the printing on the outside. If the bags are to be furnished with exposed edges or seams, the cut pieces are folded with the printing on the outside, it being then unnecessary to turn the bags inside out when completed.

In the manufacture of cloth bags by the use of machines of the kind commonly used heretofore for this purpose, difficulty is frequently encountered in cutting the cloth between the printed areas to provide pieces which are of uniform size and shape and upon which the printing is properly centralized, due to the difficulty of accurately coordinating the speed of the printing mechanism with that of the cutting mechanism.

Difficulty also frequently arises in properly orienting the pieces of cloth leaving the cutting mechanism as these are fed to the folding mechanism, due to the relatively soft, flexible character of the cloth and the variation in thickness and weight distribution caused by the draw-string hem, which produces a tendency for the pieces to turn to one side, so that the edges of the pieces are not in registration when the pieces are folded.

In bag making machinery of the kind commonly employed heretofore, no means is usually provided for reversing the direction of folding of the cut pieces, so that

2

it becomes necessary to perform expensive and time consuming rewinding operations in order to reverse the cloth in the event that it is desired to fold the pieces with the printing inside instead of outside.

The present invention has for an important object the provision of bag making machinery by the use of which a continuous strip of cloth may be hemmed along one margin, cut into pieces of uniform size and shape and the pieces folded upon themselves with their edges in registration to form blanks adapted to be sewed along one side and across the bottom to complete the bags.

Another object of the invention is to provide in a bag printing and forming machine, means for coordinating the speed of operation of the cutting mechanism with that of the printing mechanism to assure the accurate cutting of the cloth at locations between the printed areas thereon.

A further object of the invention is the provision in bag cutting and folding apparatus of means for orienting the pieces of cloth from the cutting mechanism when the pieces reach the folding mechanism to assure that the pieces will be folded with their edges in registration.

Another object of the invention is to provide bag cutting and folding apparatus embodying means which may be easily and quickly adjusted to reverse the pieces of cloth leaving the cutting mechanism whereby the cloth may be folded one way or the other, as may be desired, without the necessity of rewinding the cloth or otherwise changing the operation of the machine.

A further object of the invention is the provision of bag making machinery having cloth cutting mechanism and feeding mechanism therefor which may be operated to cut pieces of cloth from a continuous strip to be formed into bags, and embodying means for regulating the speed of the cutting mechanism independently of the speed of feeding of the cloth thereto, whereby the size of the pieces to be cut may be varied in accordance with the size of the bags to be made.

The above and other important objects and advantages of the invention may best be understood from the following detailed description of a preferred embodiment of the same, when considered in conjunction with the annexed drawings, wherein—

FIGURE 1 is a side elevational view illustrating a preferred embodiment of the invention;

FIGURE 1A is a perspective view, on a somewhat enlarged scale, showing a folded cloth blank formed by the machine of the invention preparatory to the sewing of the blank into a bag;

FIGURE 2 is a plan view of the machine of the invention as illustrated in FIGURE 1;

FIGURE 3 is an end elevational view, partly broken away, looking at the right hand end of the machine as illustrated in FIGURE 1;

FIGURE 4 is a fragmentary perspective view, illustrating the hem forming mechanism of the invention and showing a portion of the cloth strip and the manner in which the same is folded along one margin and sewed to form a continuous draw-string hem preliminary to the cutting and folding of the cloth to form the bag blanks;

FIGURE 5 is a fragmentary, longitudinal, central cross-sectional view, on a somewhat enlarged scale, showing details of structure and the arrangement of parts of the cloth cutting mechanism of the machine and the folding mechanism of the same; and

FIGURE 6 is a fragmentary, perspective view, partly

in cross-section, on an enlarged scale, taken along the line 6—6 of FIGURE 2, illustrating details of construction of the cloth folding mechanism of the invention and its operating parts.

Referring now to the drawings in greater detail, the invention is disclosed herein in connection with its use in the production of cloth bags of the draw-string type, such bags being made from a continuous strip of fabric, which is subjected to a succession of operations, which may include the printing of the fabric with any desired pattern, drying of the same, feeding of the fabric through suitable folding and sewing mechanism to form a continuous draw-string hem along one longitudinal margin of the strip, passing the hemmed strip through cutting mechanism to cut the material into pieces of predetermined size and shape, and conveying the pieces through folding mechanism to fold the pieces to form bag blanks adapted to be sewed down one side and across the bottom to complete the bags. The machine of the invention includes a main frame, which may be conveniently formed of longitudinal beams 10 adapted to be anchored to the ground in spaced apart parallel relation and suitably connected together as by means of cross-members, such as the member 12, shown in FIGURE 3, to form a generally rectangular structure from which longitudinally spaced uprights 14, 16 and 18 extend upwardly, the uprights being suitably connected together by longitudinal, horizontal, side frame elements 20 and top cross connectors 22.

The machine is powered from a suitable source, such as an electric motor 24, mounted on a sub-frame formed by cross connectors 26, supported on the frame members 10.

Suitable support arms, such as the arm 28, are supported on the uprights 14 at one end of the frame, in position to support a supply roll 30 of cloth from which the bags are to be formed, and above the arms 28, additional support arms, such as the arm 32, are provided, upon which a drum or rotary printing bed 34, forming a part of the printing mechanism of the machine, is rotatably supported, and over which drum the cloth C from the supply roll 30 passes during the printing of the cloth, which is accomplished by suitable printing mechanism, not shown.

Suitable drying means is provided for the printed cloth, such as the electric lamps 36, supported from an upwardly extending auxiliary frame 38 positioned above and supported on the main frame, and beneath which the cloth passes after being printed.

The cloth then passes through a folder, such as the curved plate 40, illustrated in FIGURE 4, whereby one longitudinal marginal portion of the cloth is folded into a hem 42 and passed through a sewing machine 44, of the usual type, suitably mounted on the auxiliary frame 38, by which the hem is sewed, as by means of the needle 46, shown in FIGURE 4. The sewing machine 44 is suitably driven by means of a belt 48, which passes over the usual driving pulley 50 of the sewing machine and is driven by a sheave 52 which is in turn rotated by a belt 54 driven by the motor 24.

The cutting mechanism of the machine, best seen in FIGURE 5, comprises a roller, or rotating cutter body 56, rotatably mounted in suitable flanged pillow blocks 58, attached to the horizontal side frame elements 20, as by means of brackets 60, and which carries an adjustable cutting blade 62, positioned for coaction with an adjustable stationary knife 64, suitably supported adjacent the rotating cutter body to cut the cloth into pieces of predetermined size and shape. The cutter body is driven by a chain or belt 66, which passes over a sprocket 68, and which is driven through a sprocket 67 by a variable speed driving mechanism 70 of conventional construction which is in turn operated from a jack-shaft 72 rotated by the motor 24. The jack-shaft 72 has a sprocket 74 about which a chain 76 operates which is driven by a sprocket 78, operated by the motor 24, and the jack-shaft also

carries a sprocket 80 which operates a chain 82 to rotate a sprocket 84 forming a part of the variable speed mechanism 70.

The cloth is fed to the cutting mechanism by means of upper rollers 86 and 88 suitably journaled on the bracket 60, the roller 86 being adjustable toward and away from roller 88 as by means of a pivotally mounted bracket 90, whereby the cloth may be gripped between the rollers to cause the cloth to be fed into the cutting mechanism. Suitable means, such as the lower rollers 92 and 94 may also be provided for feeding the cut pieces of cloth away from the cutting mechanism, these rollers being also suitably journaled on the brackets 60 and being driven by means of a chain 96, which is operated from the jack-shaft 72. The upper rollers are in turn rotated by a chain 98 which is operated from the lower rollers.

The folding mechanism of the machine comprises belt conveyors 100 and 102, which are suitably mounted on rollers for horizontal movement in opposite directions away from and located immediately beneath the lower rollers 92 and 94. The belt conveyors are positioned to receive the cut pieces of cloth discharged from between the lower rollers and to convey the same in either direction horizontally away from the cutting mechanism. The conveyors are provided with suitable operating means such as sprockets and chains, adapted to be driven in a conventional manner from the jack-shaft 72. An adjustable vane or plate 104 is positioned beneath the lower rollers in position to guide and deflect the cut pieces either onto the conveyor 100 or the conveyor 102, depending upon whether the pieces are to be folded with the printing on the inside or the outside. At the discharge end of each of the conveyors 100 and 102, there is a folder roller 106, which is in rolling contact with the conveyor belt to form the fold in the pieces of cloth, and beyond each folding roller there is a perforated plate 108 upon which a bank or series of rollers 110 are mounted in staggered rows, the peripheries of these rollers extending slightly above the upper surface of the plate, in position to engage the pieces of cloth as the same move off of the conveyor belt preparatory to folding. The rollers 110 are rotated by conventional driving mechanism from the jack-shaft 72.

In order to cause the pieces of cloth to move downwardly between the conveyor belts and the folder rollers, the folding mechanism, as shown in detail in FIGURE 6, is provided with the folder bars 112, 112' which are mounted on rocker arms 114, 114' attached to rotatably mounted shafts 116, 116' which folder bars have downwardly directed edges 115, 115' positioned for engagement with the pieces of cloth mediate their ends to push the cloth downwardly between the conveyor belt and the folder roller to cause the cloth to be folded. The shaft 116 is rotated by an arm 118, connected to a shaft 120, which is in turn actuated by a cam 122 carried on the cutter body 56, whereby the folder bar 112 is moved downwardly at the proper time to engage a cut piece of the cloth across the middle of the piece when the piece reaches the folder roller 106, to cause the cloth to move downwardly through the folding mechanism to fold the same. The shaft 116' is rotated by means of a link 117 connected to an arm 119 mounted on the shaft 116 for rotation therewith which link is also connected to the shaft 116', as by means of a crank arm, not shown, to rotate the shaft 116' with the shaft 116.

A stop bar 123 is adjustably carried on the side frame elements 20, for adjustment longitudinally thereof, as by means of clamps, not shown, whereby this bar may be positioned at any desired location spaced from the folder bar 112, extending across the plate 108 in position to be engaged by the forward edge of a piece of cloth when the cloth reaches the proper position for engagement by the folder bar, so that the cloth will be properly oriented in the folding mechanism at the beginning of the folding operation.

An additional horizontal conveyor belt 124 is positioned beneath the conveyor belts 100 and 102 in position to

receive the folded pieces as the same are discharged from the folding mechanism and to convey the same away to one end of the machine. The belt 124 is adapted to be operated by conventional driving mechanism from the jack-shaft 72.

For the purpose of coordinating the speed of the printing mechanism with that of the cutter mechanism to assure that the cloth will be cut at proper locations between the printed matter on the cloth, so that the bags will have the printed matter properly centralized thereon, the cutter body carries a sprocket 126 which is connected by a chain 128 to a sprocket 130, which is carried by and drives the drum 34. By selecting the sprockets 126 and 130 of suitable diameters, it will be apparent that the speed of the drum 34 may be regulated in accordance with the speed of the cutter body 56 in a manner to space the printing on the cloth at predetermined intervals, such that the cutting of the cloth will take place between the printing, so that the printing will be uniformly positioned on the bags.

In the operation of the machine, the cloth from the supply roll 30 is passed about the drum 34, beneath the driers 36, through the hem folder 40 and the sewing machine 44, between the upper rollers 86 and 88, over the stationary knife 64. Upon actuation of the machine, the cloth is drawn by the upper rollers 86 and 88 over the drum 34 upon which the cloth is printed, the cloth then passing beneath the driers 36 through the folder 40 to form the hem 42, and through the sewing machine 44 to sew the hem. The cloth then passes through the cutting mechanism, the rotary blade 62 coacting with the stationary knife upon each rotation of the cutter body to cut off a piece of the cloth of predetermined size, which then passes downwardly between the lower rollers 92 and 94 and is deposited on one of the conveyors 100 or 102. If the cloth is printed on its upper surface and it is desired to fold the pieces with the printed matter on the inside, the deflector plate 104 is positioned, as shown in solid lines in FIGURE 5, to cause the pieces of cloth to be deposited on the conveyor 102 with the printing facing upwardly so that when the pieces reach the folding mechanism, they will be folded with the printed matter between the folds. On the other hand, should it be desired to fold the pieces with the printed matter on the outside, then the deflector plate 104 is moved to the position shown in dotted lines in FIGURE 5 to direct the pieces onto the conveyor 100 with the printing facing downwardly, so that when the pieces reach the folding mechanism, they will be folded with the printing on the outside of the folds.

As each piece is moved along on the conveyor 100 or 102, the forward end of the piece passes off the conveyor at the discharge end of the conveyor and onto the rollers 110 of the plate 108, so that the cloth is maintained in a substantially horizontally extended position without wrinkling or flexing until the forward edge of the piece engages the stop member 123, at which time the folder bar 112 is actuated to engage the piece across the mid-portion of the piece to push the cloth downwardly into the folding mechanism.

Due to the hem 42, the pieces of cloth are often deposited in an irregular manner on the conveyor, so that the pieces are somewhat askew, resulting in the folds being somewhat out of registration when the pieces are folded. Should the piece of cloth be askew on the conveyor when the piece reaches the folding mechanism, then the piece will be moved to position its forward and rear edges in parallel with the folder bar 112 by engagement of the forward edge of the piece with the stop member 123. By this means the pieces when folded, as shown in FIGURE 1A, will have the folds thereof in proper registration, so that the folded bag blanks may be subsequently completed by sewing down the side and across the bottom.

The folded pieces, as they are discharged from the

folding mechanism, are deposited on the conveyor 124 to be discharged and collected at one end of the machine.

In the operation of the machine, the speed of rotation of the cutter body 56 and the rate of feed of the cloth to the cutting mechanism may be separately adjusted through the speed change mechanism 70, so that the size of the pieces of cloth cut may be varied in accordance with the size of the bags which are to be formed.

It will thus be apparent that the invention, constructed and operated as described above, provides a bag making machine which is easily adjustable to coordinate the printing of the cloth with the cutting of the same to assure uniformity in the centering of the printed matter on the bags, and in which the pieces of cloth are automatically oriented and folded to accurately register the folds of the bags.

The invention is disclosed herein in connection with a certain specific embodiment of the same, but it will be understood that this is intended by way of illustration only and that various changes may be made in the construction and arrangement of the parts within the spirit of the invention and the scope of the appended claims.

Having thus clearly shown and described the invention, what is claimed as new and desired to secure by Letters Patent is:

1. A machine for making bags comprising cutting means through which a strip of fabric is passed to cut the strip into free separate identical pieces, folding rolls, conveyor means positioned to receive the pieces discharged from the cutting means and to convey the same to said rolls, stop means located beyond the rolls and parallel to the axes thereof in position for engagement with the leading edges of the pieces to center the pieces over the rolls, aligning rollers positioned between the folding rolls and the stop means cooperating with the latter to align the centers of the pieces transversely of the folding rolls, and means positioned for coaction with the pieces and folding rolls to cause the pieces to be drawn between the folding rolls to fold the pieces.

2. A machine for making bags comprising cutting means through which a strip of fabric is passed to cut the strip into free, separate identical pieces, first and second conveyor means positioned to receive the pieces and convey the same in opposite directions away from the cutting means, folding rolls positioned to receive the cut pieces discharged from the respective conveyor means, stop means spaced from the respective folding rolls in position for engagement with the leading edges of the pieces passing over the rolls to arrest the movement of the pieces when the pieces reach a predetermined position relative to the rolls, means positioned for coaction with the pieces and rolls when the pieces reach said positions to cause the pieces to be drawn between the rolls and pivoted guide means positioned beneath the rolls for receiving the pieces and angularly shiftable to selectively cause the pieces to be deposited on one of said conveyor means with one side of the pieces facing in one direction and on the other of said conveyor means with the other side facing in said one direction.

3. A machine for making bags comprising cutting means through which an elongated strip of cloth is passed to cut the strip into free, separate identical pieces of rectangular shape, conveyor means positioned to receive and convey the pieces away from the cutting means, folding rolls over which the pieces pass from the conveyor means, stop means positioned for engagement with the pieces to limit the extent to which the pieces extend over the rolls to center the pieces over the rolls, means cooperating with the stop means to position the pieces with their front and rear edges in parallel relation to the axes of the rolls and means engageable with the pieces when the pieces are in said position to cause the pieces to be drawn between the rolls to fold the pieces upon themselves with the edges of the folds in registration.

4. A machine for making bags, comprising, cutting

7

means through which a strip of fabric is passed to cut the strip into free, separate identical pieces, means for forming a hem only along one margin of the strip prior to the cutting of the same, folding rolls over which the separate pieces are moved, stop means having a face parallel to the axes of the rolls positioned for engagement with the forward edges of the cut pieces to center the pieces over the rolls, aligning means including rollers cooperating with the stop means to transversely align the pieces with the folding rolls, and means positioned to

5

1,054,867
1,877,456
2,962,989

8

direct the centered and aligned pieces between the rolls to fold the pieces.

References Cited in the file of this patent**UNITED STATES PATENTS**

Plass	Mar. 4, 1913
Gurwick	Sept. 13, 1932
Golden	Dec. 6, 1960