(No Model.) 4 Sheets—Sheet 1.

W. H. KERR.

MACHINE FOR MAKING BAGS.

No. 526,107. Patented Sept. 18, 1894.

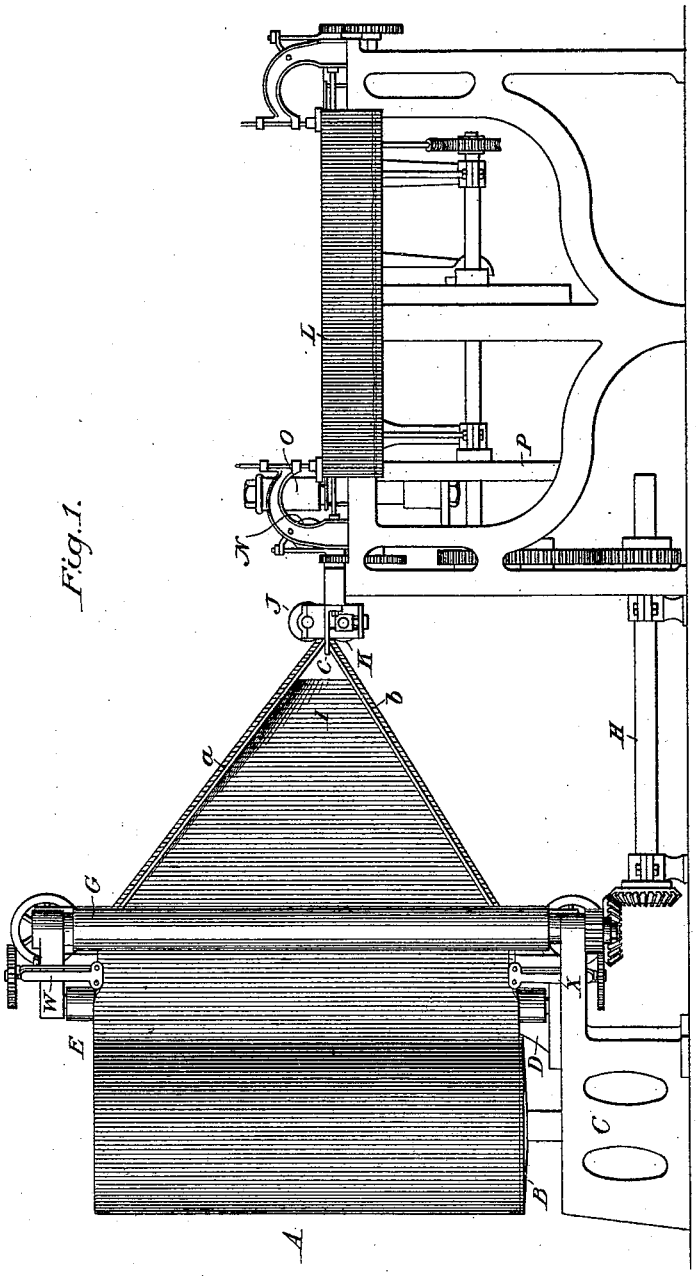

Fig. 1.

Witnesses:
C. B. Bull.
C. C. Burdine

Inventor:
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by Dodger Sons
Attys.

(No Model.) 4 Sheets—Sheet 2.

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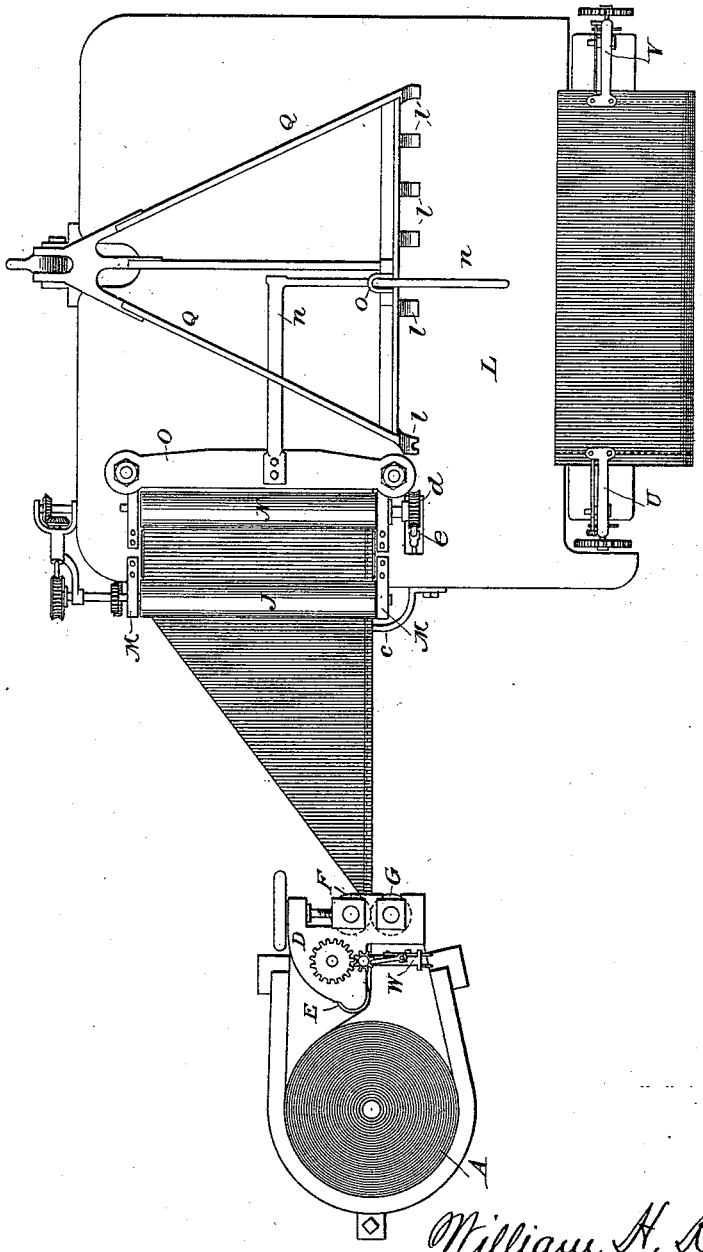

Fig. 2.

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(No Model.) 4 Sheets—Sheet 3.

W. H. KERR.

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Fig. 3.

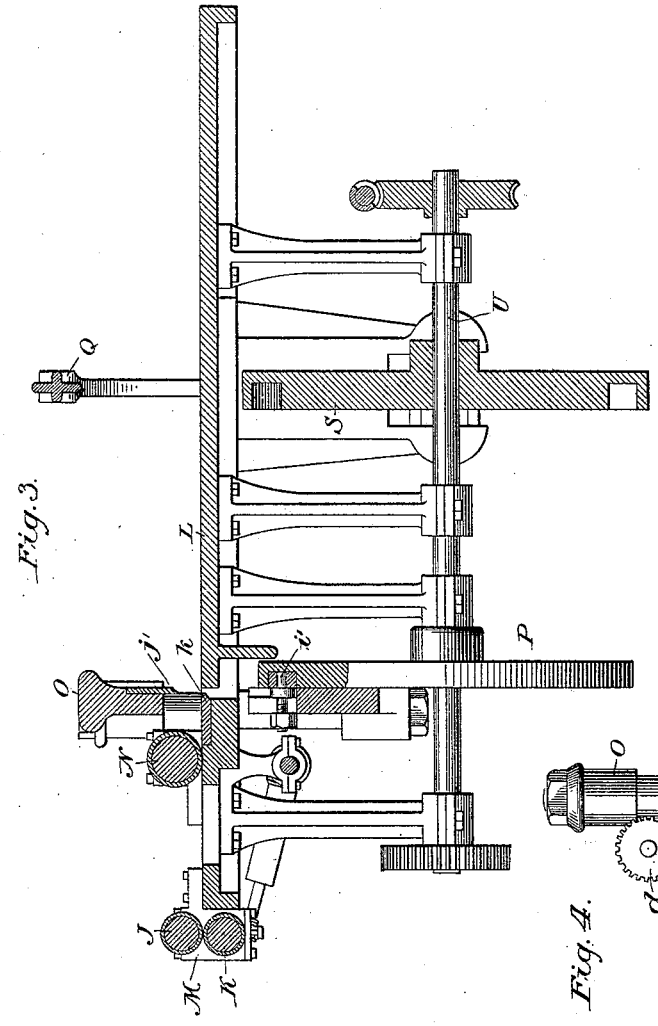
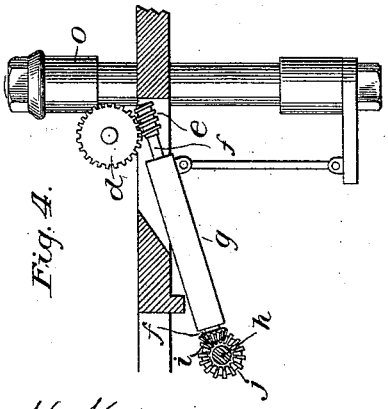


Fig. 4.



Witnesses:
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(No Model.) 4 Sheets—Sheet 4.

W. H. KERR.

MACHINE FOR MAKING BAGS.

No. 526,107. Patented Sept. 18, 1894.

Fig. 5.

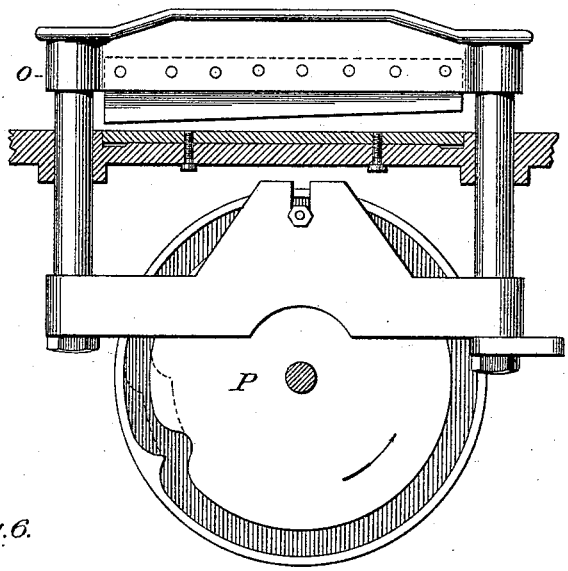
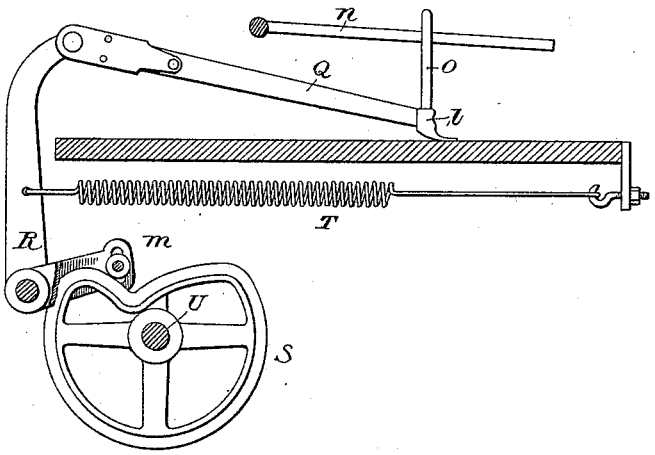


Fig. 6.



Witnesses:
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Ed Burdine

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UNITED STATES PATENT OFFICE.

WILLIAM H. KERR, OF ILCHESTER, MARYLAND, ASSIGNOR TO THE KERR BAG MANUFACTURING COMPANY, OF CONCORD, NORTH CAROLINA.

MACHINE FOR MAKING BAGS.

SPECIFICATION forming part of Letters Patent No. 526,107, dated September 18, 1894.

Original application filed January 31, 1890, Serial No. 338,718. Divided and this application filed June 12, 1894. Serial No. 514,340. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. KERR, a citizen of the United States, residing at Ilchester, in the county of Howard and State of Maryland, have invented certain new and useful Improvements in Machines for Making Bags, (the present application being a division of my application Serial No. 338,718,) of which the following is a specification.

My invention relates to a machine for manufacturing bags, as hereinafter set forth.

In the accompanying drawings, Figure 1 is a side elevation of the machine; Fig. 2, a top plan view of the same; and Figs. 3, 4, 5, and 6, detail views of the mechanism for giving motion to different parts.

The present application is a division of an application filed by me January 31, 1890, and designated by Serial No. 338,718; and no claim is made or intended to be made herein to any of the matters embraced in the aforesaid application Serial No. 338,718.

Referring again to the drawings, A indicates a roll of material from which the bags are to be made, which roll is mounted in a vertical position upon a rotatable base or support B, the supporting stem or standard of which is stepped or journaled in a suitable base C.

Rising from the base C is a vertical frame D, carrying (advisably) three rollers E, F and G, the first roller, E, being intended merely to bring the web or sheet of materal into a vertical plane perpendicular to that in which the axis of the rollers F and G stand, in order that the web or sheet may pass properly in the bite of the latter.

A simple fixed bar may be used in lieu of the roller E, but it would require somewhat greater force to draw the web over it and to feed it forward. Hence the roller is preferred.

Rollers F and G are feed rollers, for drawing the web or sheet from the stock roll A and advancing it to the folding mechanism. These rollers are geared to rotate in unison, as indicated in Fig. 1, and one of them is connected by bevel gearing with the main shaft H of the machine. This arrangement of gearing is merely illustrative and may be varied at will, but it constitutes no part of the invention covered by the present application.

I indicates a frame or guide composed of three rods or bars *a*, *b* and *c*, the rods *a* and *b* lying in a vertical plane parallel and nearly coincident with that of the web as it passes from roller E to the bite of rollers F, G, the rod *a* inclining downward from the upper ends of rolls F, G, and the rod *b* inclining upward from the lower ends of said rolls, until they meet in a horizontal plane midway between the upper and lower ends of the rolls, as shown in Fig. 1. The rod *c* extends horizontally from the meeting point of rods *a* and *b* backward, or in the direction indicated in Fig. 2.

The rods *a* and *b* form guides or supports for the edges of the web or sheet in passing from the vertical rolls F, G, to horizontal feeding rolls J, K, and the rod or bar *c* extending between the upper and lower layers or folds of the double web or sheet, forms a folding and guiding edge, and maintains the folded edge in proper relation to the feeding rolls J, K.

It will be noted that under the arrangement and relation of parts above set forth and illustrated in the drawings, both edges of the web or sheet are subjected to precisely the same tension or strain, and are kept in the same vertical plane from the point where they leave the rollers F, G, to that at which they enter or pass between the rollers J, K, which conditions, experience has shown me, are essential to the successful folding and feeding of a woven and elastic web or sheet.

L indicates a bed or table, the surface of which is arranged horizontally in plane with rod or bar *c* of the frame or guide I, and with the mid-length of stock roll A, though this relation is not essential. To the side or edge of this table nearest the stock roller are secured brackets or hangers M, to carry the journals of the feed rollers J, K, as shown in Figs. 1 and 2, which rollers are arranged just above and below the surface of the table.

As indicated in Fig. 1, the lower roller K is made adjustable toward and from roller J to suit goods of different thickness. Manifestly, the upper instead of the lower roll may be made adjustable.

The rolls J, K are geared to rotate in unison, and receive continuous motion through any suitable connection with the main shaft or other continuously rotating part of the machine.

Inward from the roll J and parallel therewith, is another feed roll N, which is caused

to act intermittently, the material accumulating between rolls J and N during the inaction of the latter, falling into or through the open space left in the table for that purpose.

Secured upon the shaft or journal of the feed roll N is a worm wheel *d*, which receives motion at proper times from a continuously rotating worm or screw *e*, Figs. 2 and 4. As shown in the latter figure, the worm *e* is carried by a shaft *f*, journaled in a sleeve *g*, one end of which sleeve is swiveled upon and movable about a shaft *h*, which latter shaft receives motion through suitable connection with the main shaft or other continuously revolving part of the machine. The shafts *f* and *h* are provided respectively with pinions *i* and *j*, through which motion is imparted to the shaft *f*.

So long as the worm *e* remains in mesh with the worm wheel *d*, the feed roll N will rotate and draw forward the folded web or sheet, and in order that it may take up the amount of material accumulating between the rolls J and N, during the inaction of the latter, the gearing is so proportioned that the roll N shall have a sufficiently greater surface speed than roll J, to compensate for its periods of inaction.

O indicates a vertically-reciprocating yoke or frame, one horizontal member of which is above and the other below the bed or table L, said members being connected by vertical rods or stems which travel in or through guides in the bed or table, as shown in Figs. 3 and 5. Motion is imparted to the yoke or frame O by means of a cam wheel P, the cam groove of which receives a pin or stud *i'* projecting from the yoke.

Secured to the lower edge of the upper member or cross-bar of the yoke, is a cutting blade *j'* which, acting in conjunction with a fixed blade or edge *k*, serves to cut from the folded web or sheet a blank or length suitable for the production of one bag. In order that the knife or cutter may not materially impede the advance of the material, the actuating wheel is made with a groove of the form indicated in Fig. 5, with a nearly full circle concentric with the axis of the wheel and a very short bend or turn out of the concentric path.

The movement required and the power necessary to sever the web or sheet are slight, and the operation is therefore performed with ease and certainty. The concentric portion of the groove holds up the yoke or frame O, and permits the web or sheet to pass freely under it except during the brief intervals of cutting. It is to prevent the advance of material under roll N during the cutting action, that said roller is caused to act intermittently, and to insure the proper relative timing of these parts, I make one control the action of the other, in the manner illustrated in Fig. 4. Upon referring to said figure it will be observed that the sleeve *g*, in which the worm shaft *f* is carried, is connected by a link with the yoke or frame O, so as to rise and fall therewith. From this connection it results that when the knife rises, and so long as it remains elevated sufficiently to permit the material to pass beneath it, the worm *e* will be lifted into and held in mesh or engagement with worm wheel *d*, but as the knife and yoke descend, the worm will be carried downward and out of mesh with worm wheel *e*, thereby stopping the rotation of roller N.

No claim is made in this application to the specific mechanism thus set forth for actuating the cutter or the intermittent feed roller, as these and other features not herein claimed, but necessarily illustrated in order to explain the present invention, are embodied in another application filed in my name on the 28th day of June, 1889, Serial No. 315,920.

As soon as the blank or bag length is cut off, the knife rises and the rotation of the feed roll N begins again. The blank or length thus cut off is free to be fed or moved in any direction, and in order to get it promptly out of the way of the advancing folded web or sheet, I provide a pusher or transferring device Q, which may vary in form, but which is here represented as a triangular frame, provided on its forward edge with flat teeth *l*, which rest upon and engage the material and move it laterally with reference to the main web or sheet.

For the purpose of actuating the pusher or transferring device Q, its rear end is jointed to the longer, upwardly-extending member of an elbow lever R, the short arm of which is furnished with a stud *m*, which bears upon the face or periphery of a cam wheel S, against which it is held by the action of a spring T, one end of which is attached to the lever R, and the other to the main frame of the machine.

Cam wheel S is carried by the shaft U, which carries cam wheel P, and this shaft is connected with the main shaft H by suitable gearing. The cam wheels S and P are set in such relation that just as the knife completes the severance of the material, the transferring device or pusher Q, shall come into action and move the blank laterally out of line with the main sheet or web, the return movement of the pusher and the rise of the knife occurring simultaneously.

For the purpose of guiding the transferring device or pusher Q in its movements back and forth, a supporting arm or bar *n* is carried from the knife or cutter frame outward to a point directly over the middle line of pusher Q, and there turns at a right angle and extends forward in the direction of travel of said pusher, as illustrated in Figs. 2 and 6. A long eye or loop *o*, rising from the top of the front bar of the pusher Q, encircles or straddles the guide bar *n*, and while permitting the pusher to freely rise and fall, holds it against lateral movement.

It is necessary that the pusher Q be lifted up on its return movement, so as to avoid interference with the incoming web or sheet, and this result is insured by the lifting or rising action of the knife or cutter frame and its arm or bar *n* which latter, acting within or under the loop *o*, lifts the pusher clear of the bed or table.

The bar or arm *n* is slightly inclined downward toward its outer end, so that while it serves as a guide for the pusher throughout the movements of the latter, the pusher shall be lifted clear of the table or to its full height only at the latter end of its receding movement.

U and V indicate two stitching mechanisms arranged at or near the front of the severed blank, to form the sides thereof. These mechanisms are in such position relatively to the travel of the pusher Q that the latter shall start the edges of the blank under the needles of said mechanisms or carry them into range and within the action of their feeds, after which said feed devices will carry the blank forward. The teeth *l* ride freely backward over the blank, and the pusher being light, they exert no retarding effect. It is, however, entirely practicable to make the cam wheel P with a delay surface sufficient to hold the knife depressed and roller N out of action during the forward movement of the pusher, and to cause the pusher to be lifted and held up throughout its retrograde movement.

The stitching mechanism U and V will be driven through any suitable connection with the main shaft, and the feed dogs will be arranged according to the position occupied by the mechanisms on right and left, as said mechanisms are arranged in the drawings.

Having thus described my invention, what I claim is—

1. In a bag machine, the combination of a support adapted to hold a roll of bag material, a bed or table located with its surface at right angles to the axis of the roll of material and in plane with the mid-length of said roll, and an intermediate guide or former having three bars or guiding portions, two in the same plane and extending obliquely, one from each end of the roll to a medial line between said ends and the third extending perpendicularly from the plane of the first two and wholly at one side of said plane.

2. In a bag machine, the combination of a stock-roll-support; a guide E, to direct the material therefrom; feed-rolls F, and G, adapted to draw the material from the stock roll; bed or table L, provided with folding rolls J K; and intermediate guide or former I, consisting of bars extending from the upper and lower ends of rolls E, and G, to the table L, substantially as described and shown.

3. In combination with feed rolls F, and G, and table L; intermediate guide or former I, having bars *a*, *b*, extending from the rolls to the table; and folding rolls J K, carried by the table and having their operative feeding portions wholly at one side of and perpendicular to the plane of bars *a*, *b*.

4. In a machine for the manufacture of bags, the combination with a frame D, and an upright-cloth-roll-support; of a horizontal table L, provided with sewing mechanism; and a folder comprising two arms, *a* and *b*, extending from the upper and lower parts of frame D to the table L.

5. In a bag machine, the combination with a frame D, provided with an upright-cloth-roll-support; of a table L; (the top of which is about on line with the mid-length of the cloth-roll;) the arm *a* extending from the upper part of the frame D downward and rearward to the table; and the arm *b* extending from the lower part of the frame D, upward and rearward to the table L.

6. In a machine for making bags from a continuous strip of cloth, the combination of a folding device, adapted to fold the strip longitudinally and to place its inner faces in opposition throughout; a holder adapted to hold the edges of the folded strip in alignment; a cutting mechanism; a transferring device and a sewing mechanism adapted to stitch the opposing edges together and thereby to form a seam which, when the bag is turned, shall have its edges within the bag, all substantially as shown and described.

In witness whereof I hereunto set my hand in the presence of two witnesses.

WILLIAM H. KERR.

Witnesses:
GEO. KRUHM,
T. H. HUNT, Jr.