

(No Model.)

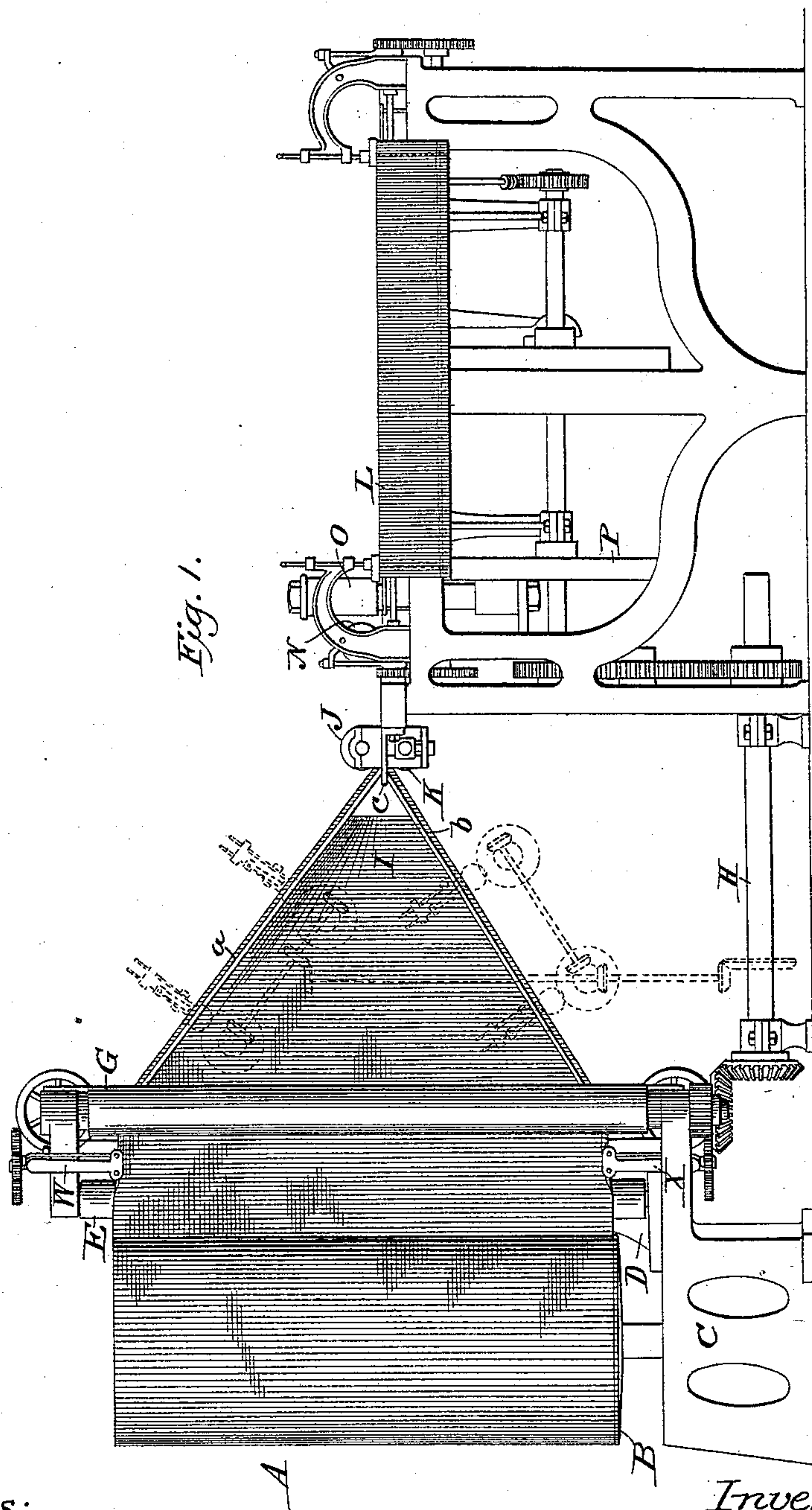
4 Sheets—Sheet 1

W. H. KERR.

METHOD OF AND APPARATUS FOR MAKING BAGS.

No. 532,671.

Patented Jan. 15, 1895.



Witnesses:

James F. Duhamel  
Horace A. Dodge.

Inventor:

William Hall Kerr  
by Dodge & Sons,  
his Atty.

(No Model.)

4 Sheets—Sheet 2.

W. H. KERR.

METHOD OF AND APPARATUS FOR MAKING BAGS.

No. 532,671.

Patented Jan. 15, 1895.

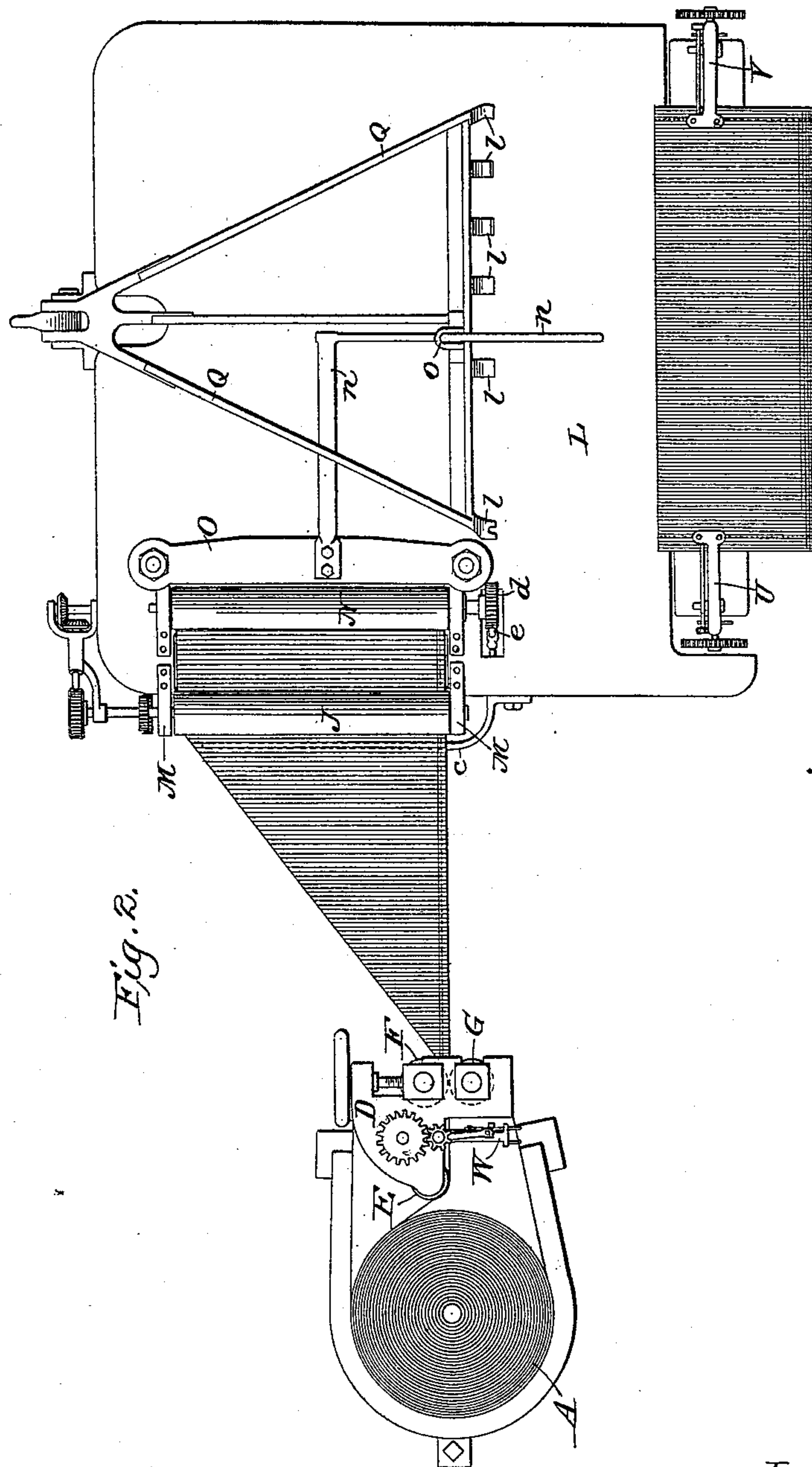


Fig. 2.

Witnesses:

James F. Duhamel  
Horace A. Dodge.

Inventor:

William Hall Kerr,  
by Dodge & Sons,  
his Attys.

(No Model.)

4 Sheets—Sheet 3.

W. H. KERR.

METHOD OF AND APPARATUS FOR MAKING BAGS.

No. 532,671.

Patented Jan. 15, 1895.

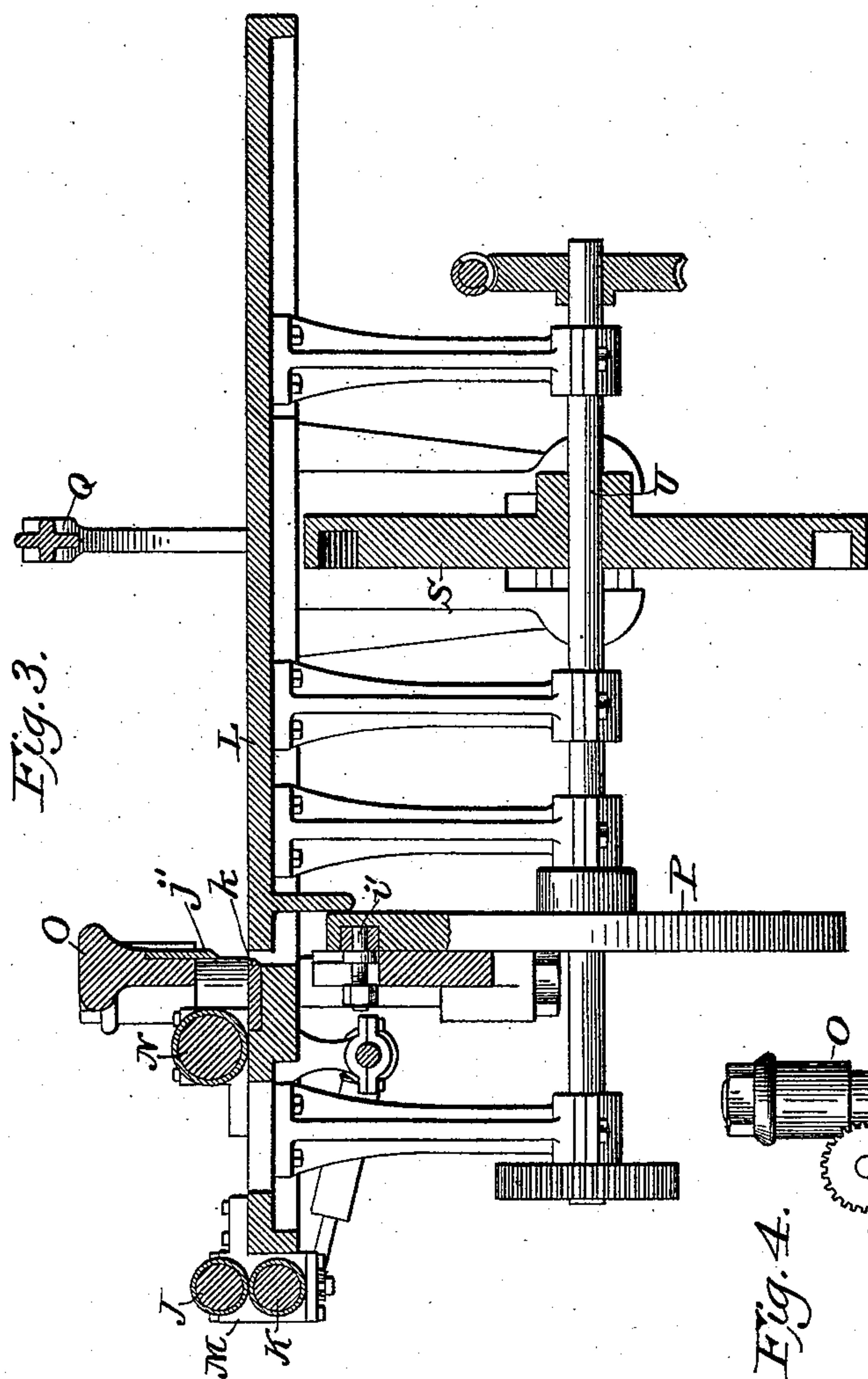


Fig. 3.

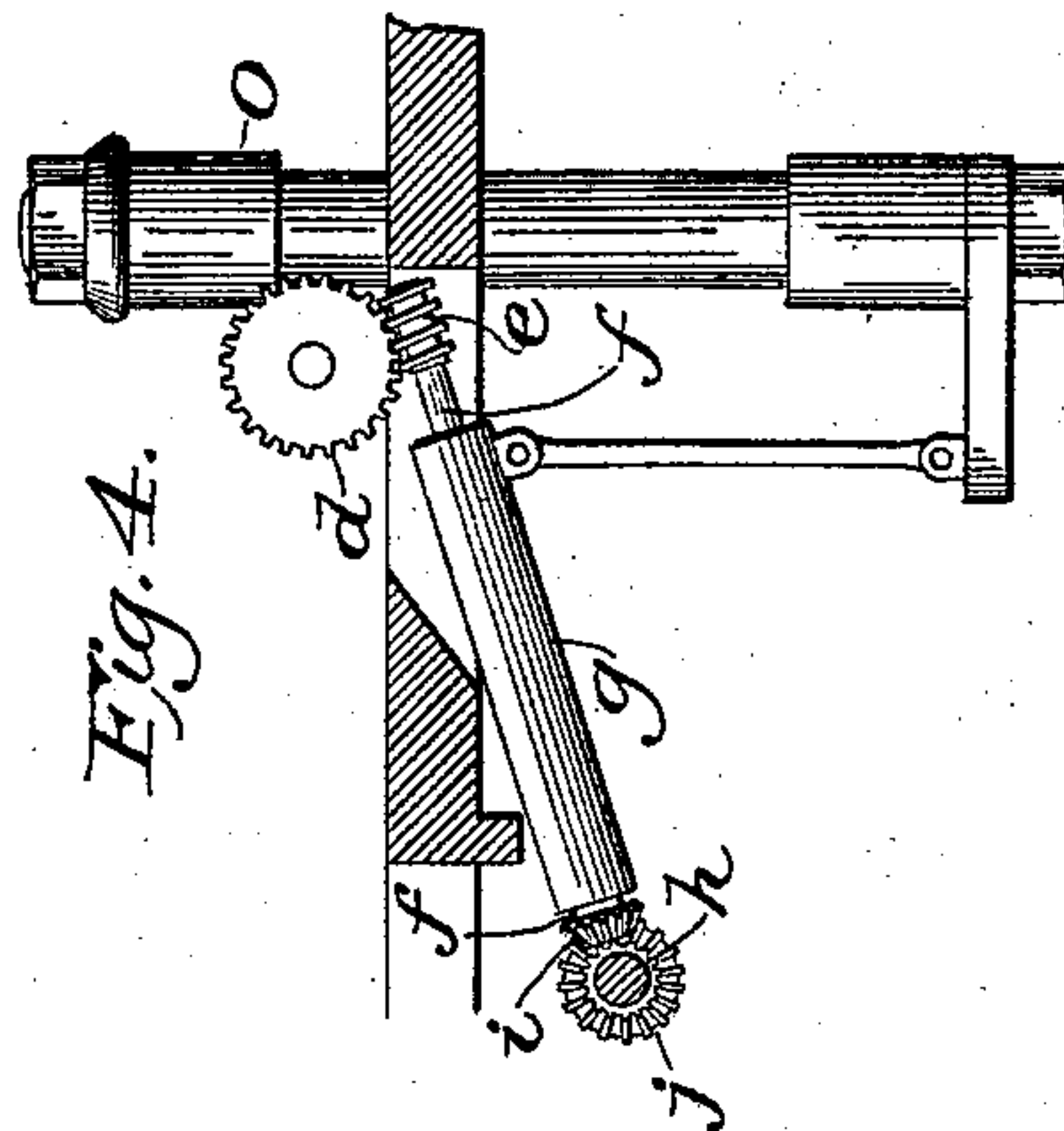


Fig. 4.

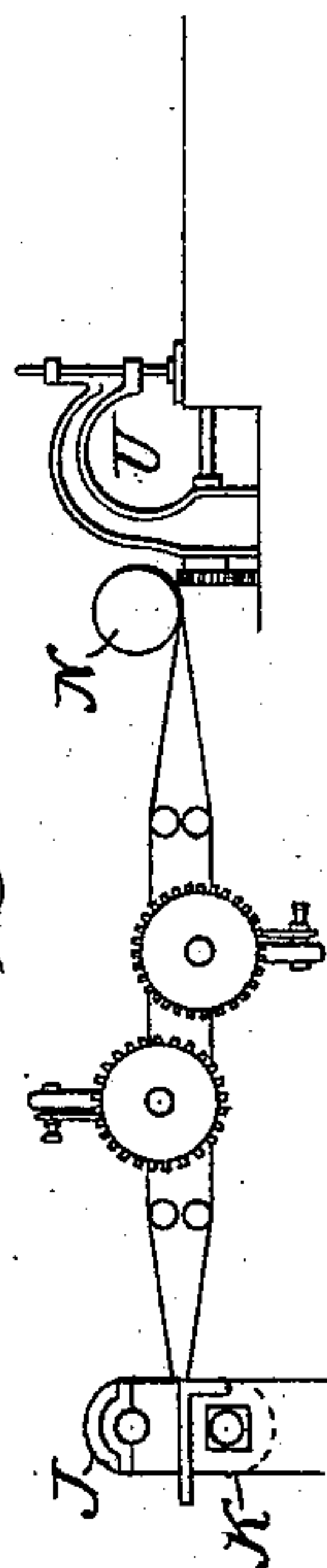


Fig. 8.

Witnesses:

James F. Duhamel.  
Horace A. Dodge.

Inventor:

William Hall Kerr  
by Dodge & Sons,  
his Atty.



(No Model.)

4 Sheets—Sheet 4.

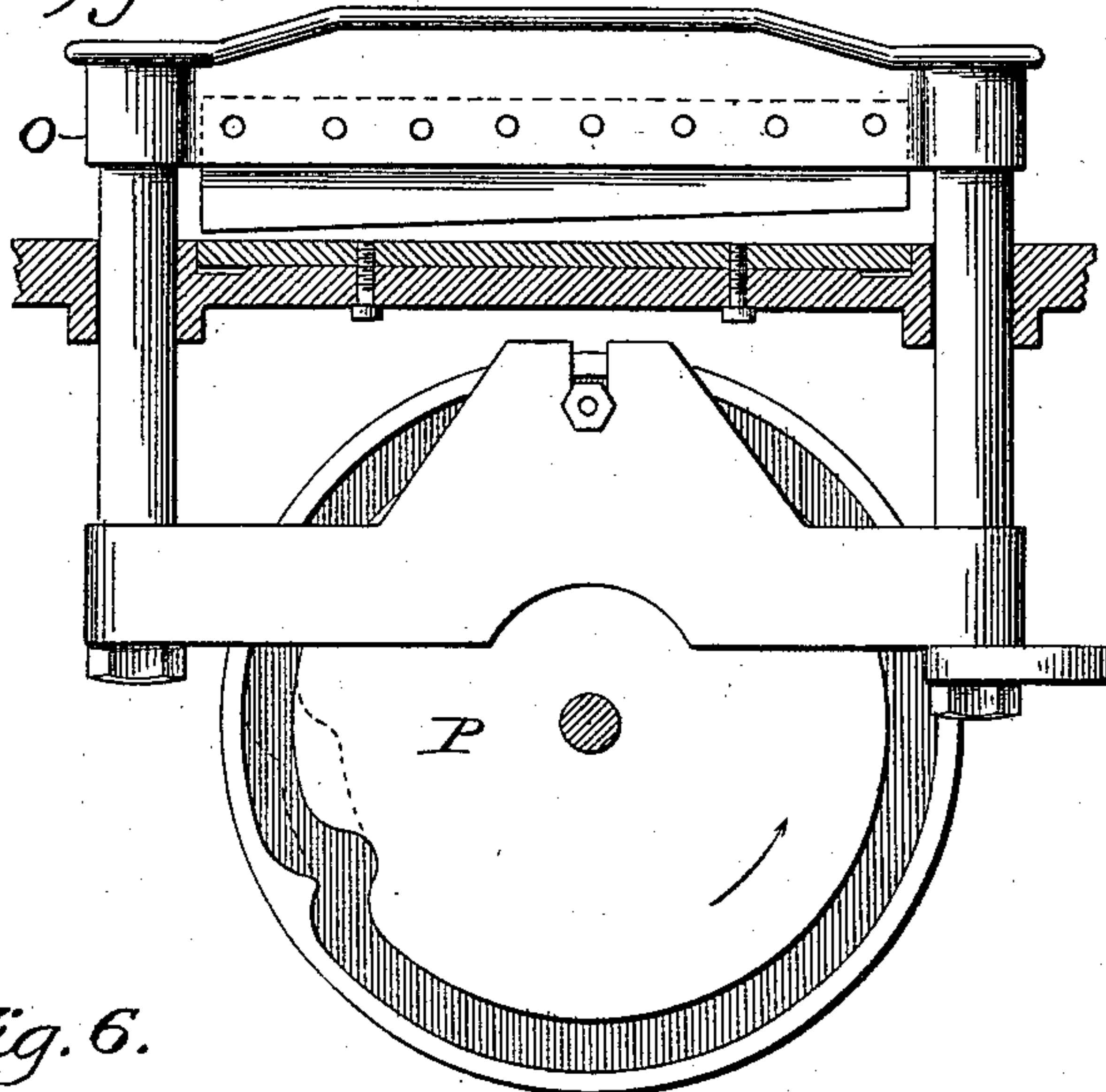
W. H. KERR.

METHOD OF AND APPARATUS FOR MAKING BAGS.

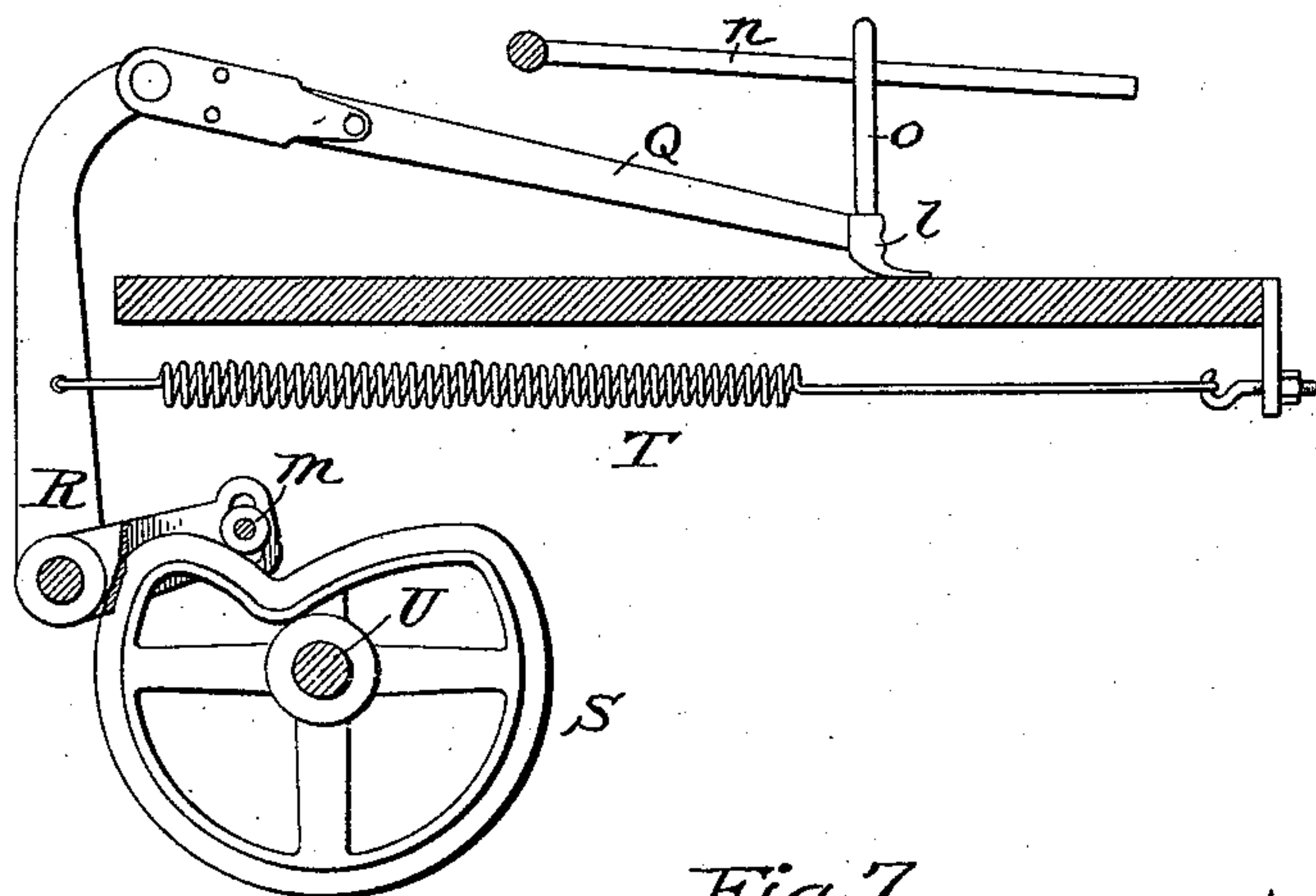
No. 532,671.

Patented Jan. 15, 1895.

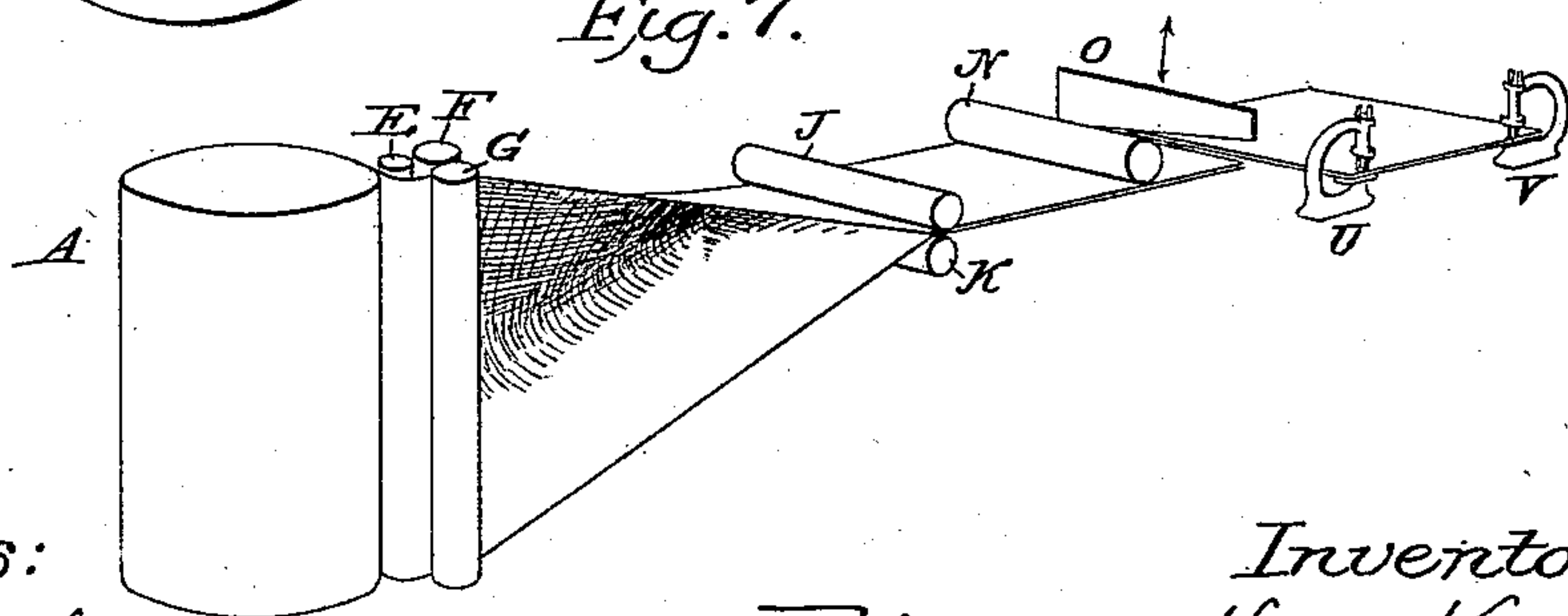
*Fig. 5.*



*Fig. 6.*



*Fig. 7.*



Witnesses:

James F. Duhamel  
Horace A. Dodge.

Inventor

William Hall Kerr,  
by Dodge & Sons,  
His Att'y.



# UNITED STATES PATENT OFFICE.

WILLIAM HALL KERR, OF CONCORD, ASSIGNOR, BY MESNE ASSIGNMENTS, TO  
THE GOLDEN BELT MANUFACTURING COMPANY, OF DURHAM, NORTH  
CAROLINA.

## METHOD OF AND APPARATUS FOR MAKING BAGS.

SPECIFICATION forming part of Letters Patent No. 532,671, dated January 15, 1895.

Application filed January 31, 1890. Serial No. 338,718. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM HALL KERR, a citizen of the United States, residing at Concord, in the county of Cabarrus and State of North Carolina, have invented certain new and useful Improvements in the Manufacture of Bags, of which the following is a specification.

My invention relates to a novel method or process of, and machinery 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; Figs. 3, 4, 5 and 6, detail views of mechanism for giving motion to different parts; Fig. 7, a diagrammatic perspective, illustrating the method of producing bags; Fig. 8, a view illustrating a modified arrangement of the hemming mechanism.

Briefly stated, the method or process consists in folding a continuous sheet or web of material longitudinally through the middle, cutting from the folded sheet or web a length or blank suitable for the formation of a bag, and stitching the blank at both sides at right angles to the fold, the stitched portions forming the sides and the fold forming the bottom of the completed bag.

The method or process may or may not include as an additional step, the hemming of the edges of the web, before, during, or after its longitudinal folding, the hem being formed where puckering strings are to be used, and omitted in other cases.

The mechanical apparatus by which I carry out my method comprises means for folding the material, means for cutting the blanks therefrom, a carrier or feed dog by which the blank is moved into range and subjected to the action of stitching mechanism, and lastly, stitching mechanism for sewing the side seams.

The machine in its complete form, also comprises preliminary hemming mechanisms, but these may be used or not, as circumstances dictate.

Referring to the drawings: A indicates a roll of material from which the bags are to be made, which roll is mounted in a ver-

tical 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 (advisedly) three rollers, E, F, and G, the first roller, E, being intended merely to bring the web or sheet of material 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 into 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 and folding 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 mechanisms 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 hung or 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 arm *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 table L, and designed to stitch the edges or sides 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.

The apparatus thus far described is sufficient to produce bags having unhemmed mouths, but not to produce hemmed bags. If

such hemmed mouths be desired it is only necessary to add to the foregoing stitching mechanisms for hemming the edges of the web, before, during or after, the longitudinal folding thereof. In Figs. 1 and 2, I have represented such stitching mechanisms W, and X, respectively at the upper and lower ends of standard or frame D, so that they will act upon and hem the edges of the web or sheet before it passes to or between the preliminary feed rolls F, and G. I have also shown the said hemming mechanisms by dotted lines, at points between the rollers F, G, and the feed rolls J, K, to indicate that they may be placed at any point between stock rolls A, and feed rolls J, K.

In Fig. 8, I have represented the stitching or hemming mechanisms at points between the feed rolls J, K, and feed roll N.

It is manifestly immaterial except so far as it affects the question of compactness of construction or convenience of access to the machine and to the material, at which of the several points indicated the hemming mechanisms W, and X, be located.

The rolls J K constitute not only a pressing, smoothing and feeding device for the folded fabric as it comes from the "folding device" I, but also a "holder" adapted to hold the edges of the folded strip in alignment. In speaking, therefore, in the claims, of a "folding device" the folder I is referred to; and by the "holder" referred to in the claims, the rolls J K are meant,—these or their mechanical equivalents.

I do not claim herein the guide or folder I; nor broadly the combination with the roll-support D, of a table L, and the folder I; nor the combination of a folding device, a holder, and a sewing mechanism, as these matters are embraced in a divisional application, Serial No. 514,340, filed June 12, 1894.

Having thus described my invention, I claim—

1. The method of forming bags, which consists in the following steps or operations, performed in the order recited: folding a continuous web or sheet of material longitudinally through its middle; severing from the folded web or sheet a blank suitable for the formation of a bag; and finally, stitching the severed blank along the sides, at right angles to the fold.

2. The method of forming hemmed bags, which consists in the following steps or operations, performed in the order recited: hemming the edges of a continuous web or sheet; folding the hemmed web or sheet longitudinally through its middle; severing a bag-length or blank from the folded web or sheet; moving the blank laterally out of the path of the advancing folded web or sheet; and stitching the severed blank along its sides at right angles to the fold.

3. In a bag-machine, the combination of the following elements: folding mechanism, adapted to fold a continuous web or sheet of



material longitudinally through the middle; a cutter adapted to sever from the folded web successive bag-lengths or blanks; a pusher or transferring device adapted to move the severed lengths or blanks out of the path of the incoming web or sheet; and stitching mechanisms arranged in position to receive the lengths or blanks from the pusher, and to stitch the two sides at right angles to the fold; the folding mechanism being located between the web-supply and the cutter.

4. In a bag-machine, the combination of the following instrumentalities, to wit: folding mechanism, adapted to fold a traveling web or sheet longitudinally through its middle; hemming mechanisms adapted to hem the edges of said web or sheet; feeding mechanism, for advancing the web or sheet; a cutter, adapted to sever from the folded web or sheet successive bag-lengths or blanks; a pusher or transferring device, adapted to move the severed lengths or blanks out of the path of the continuous web; and stitching mechanisms located in position to receive the successive blanks or lengths from the pusher, and

adapted to stitch their edges together to form the side seams; the folding mechanism being located between the web-supply and the cutter.

5. In combination with feed rolls F, G, table L, guide or former I, between the feed rolls and table folding rolls J, K, and intermittently-acting feed roll N, a cutter *j'*, pusher Q, and stitching mechanisms U, and V.

6. In combination with a stock roll support, and with feed rolls F, G, table L, guide or former I between the feed rolls and table, folding rolls J, K, intermittent-feed-roll N, stitching mechanisms W, X, arranged to hem the edges of the bag material at points between the stock roll and the intermittent-feed-roll N, knife or cutter *j*, pusher Q, and stitching mechanisms U, and V, all arranged to operate substantially as set forth.

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

WILLIAM HALL KERR.

Witnesses:

L. D. COLTRANE,  
D. B. COLTRANE.