

T. ROBJOHN.
APPARATUS FOR MAKING RUFFLING.

No. 39,328.

Patented July 21, 1863.

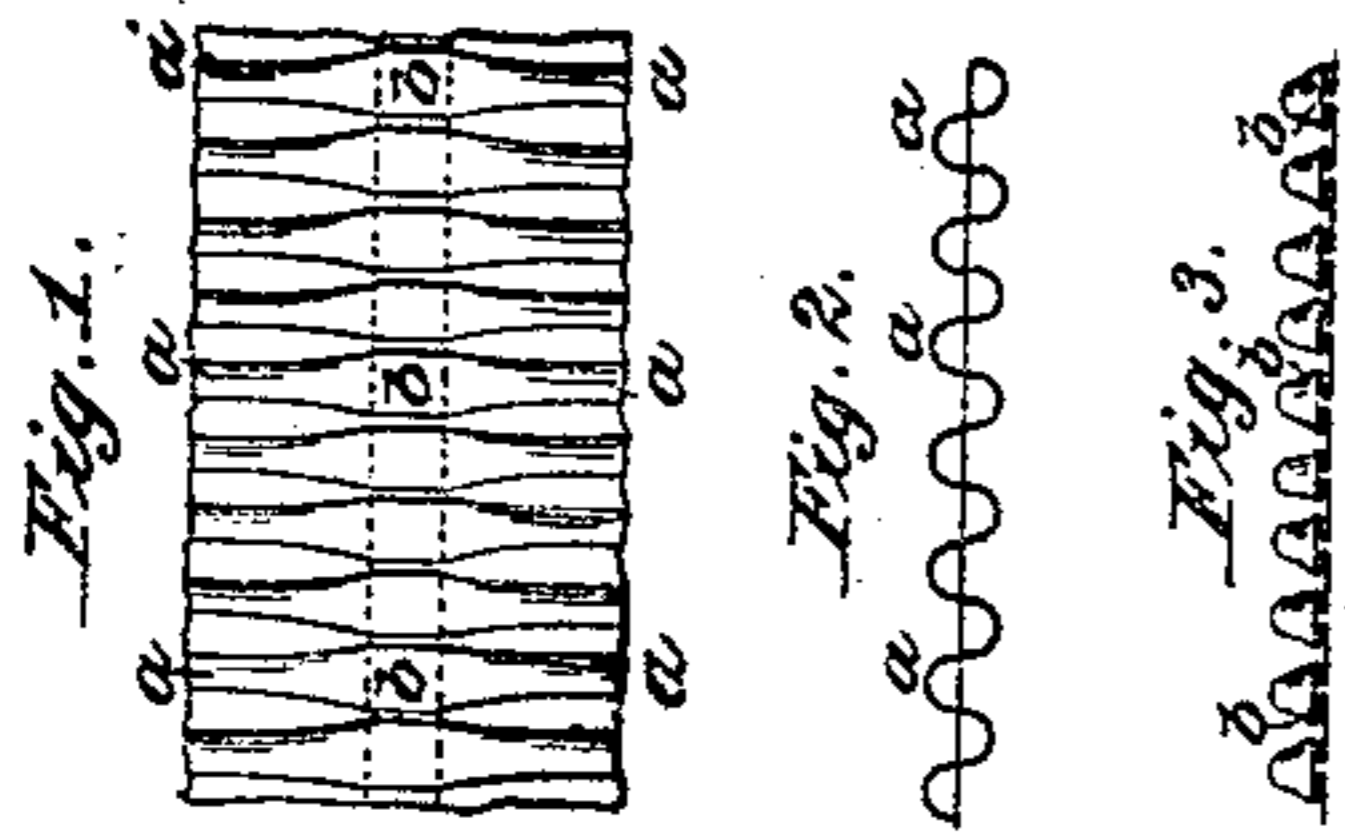
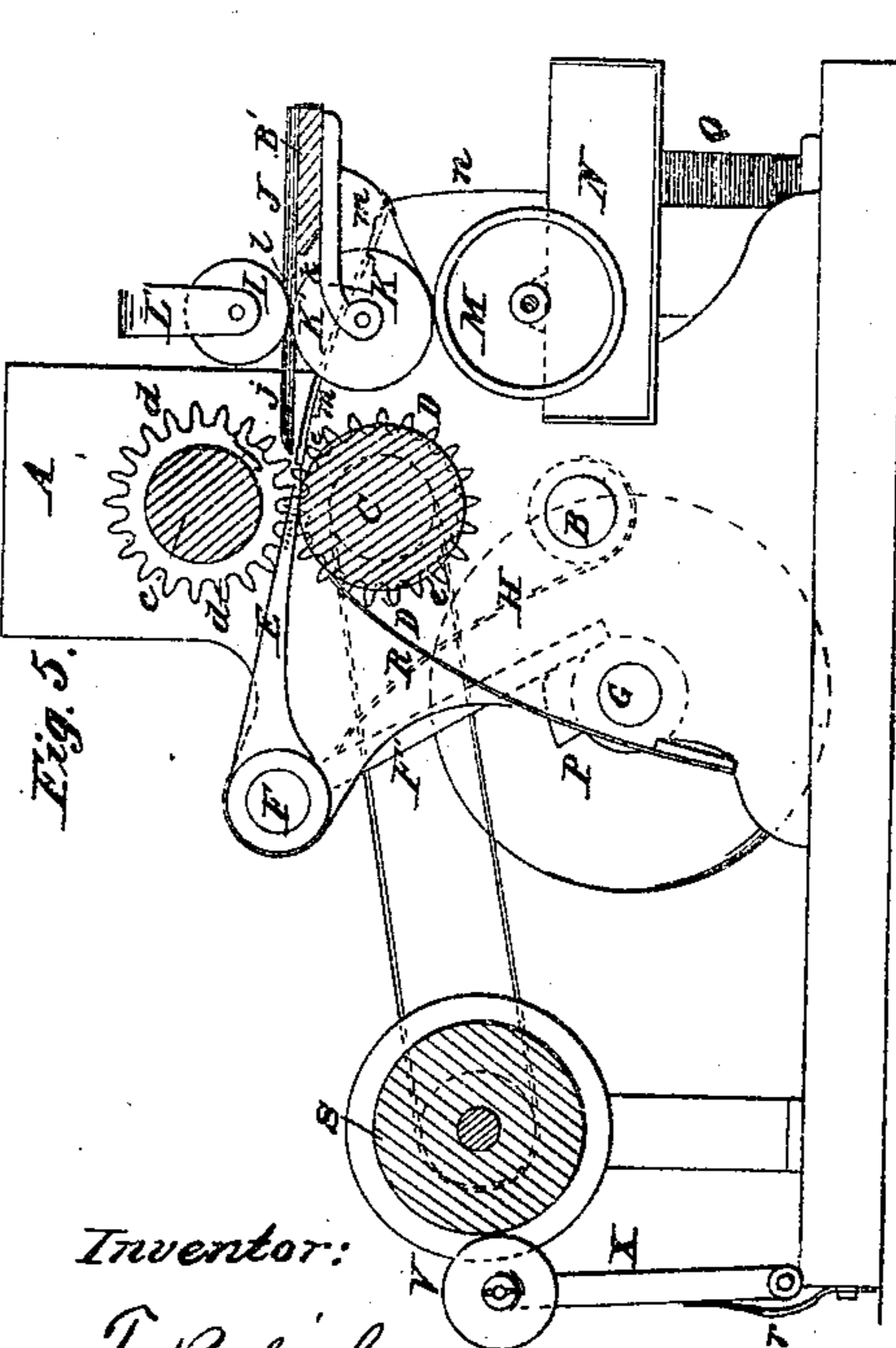
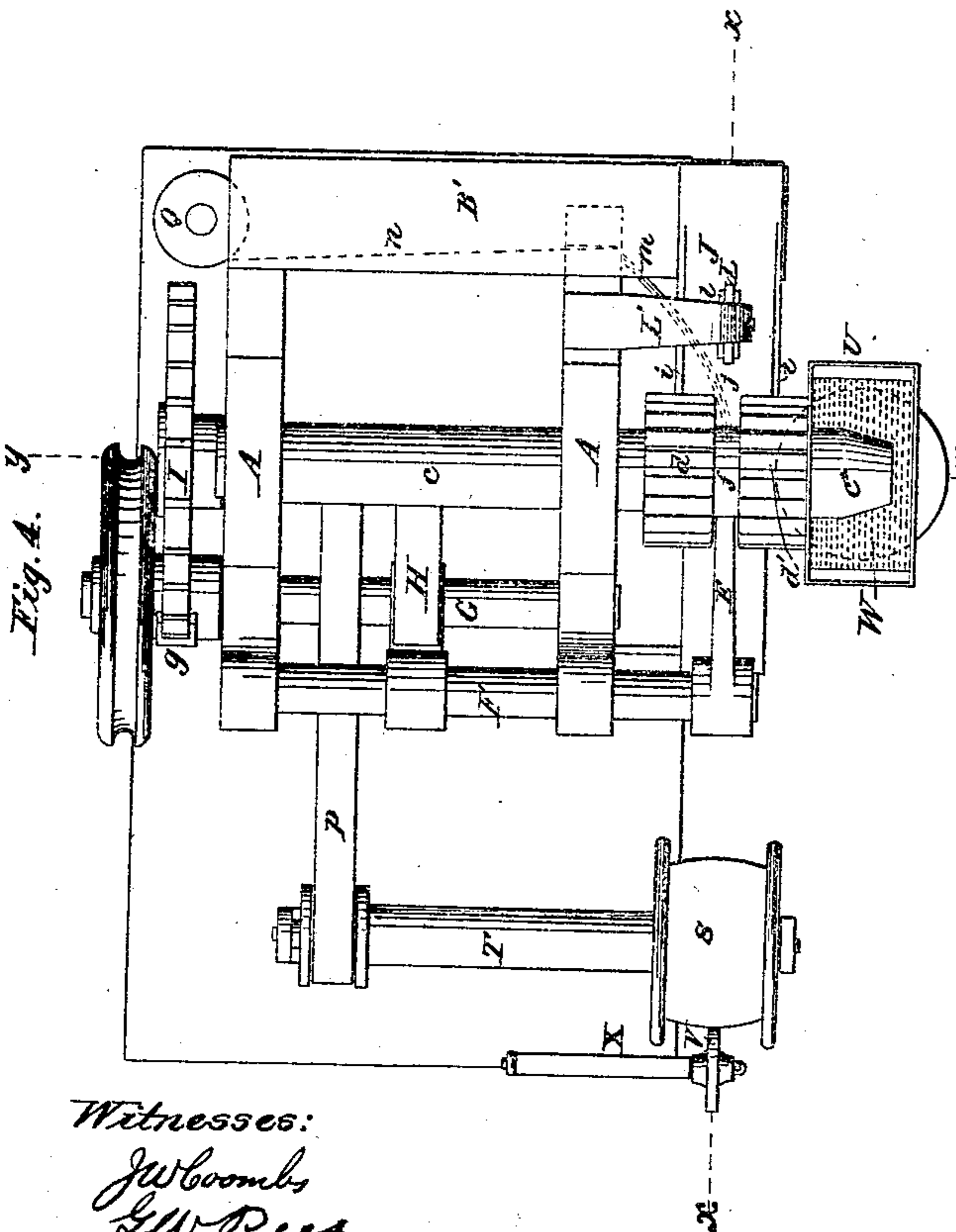
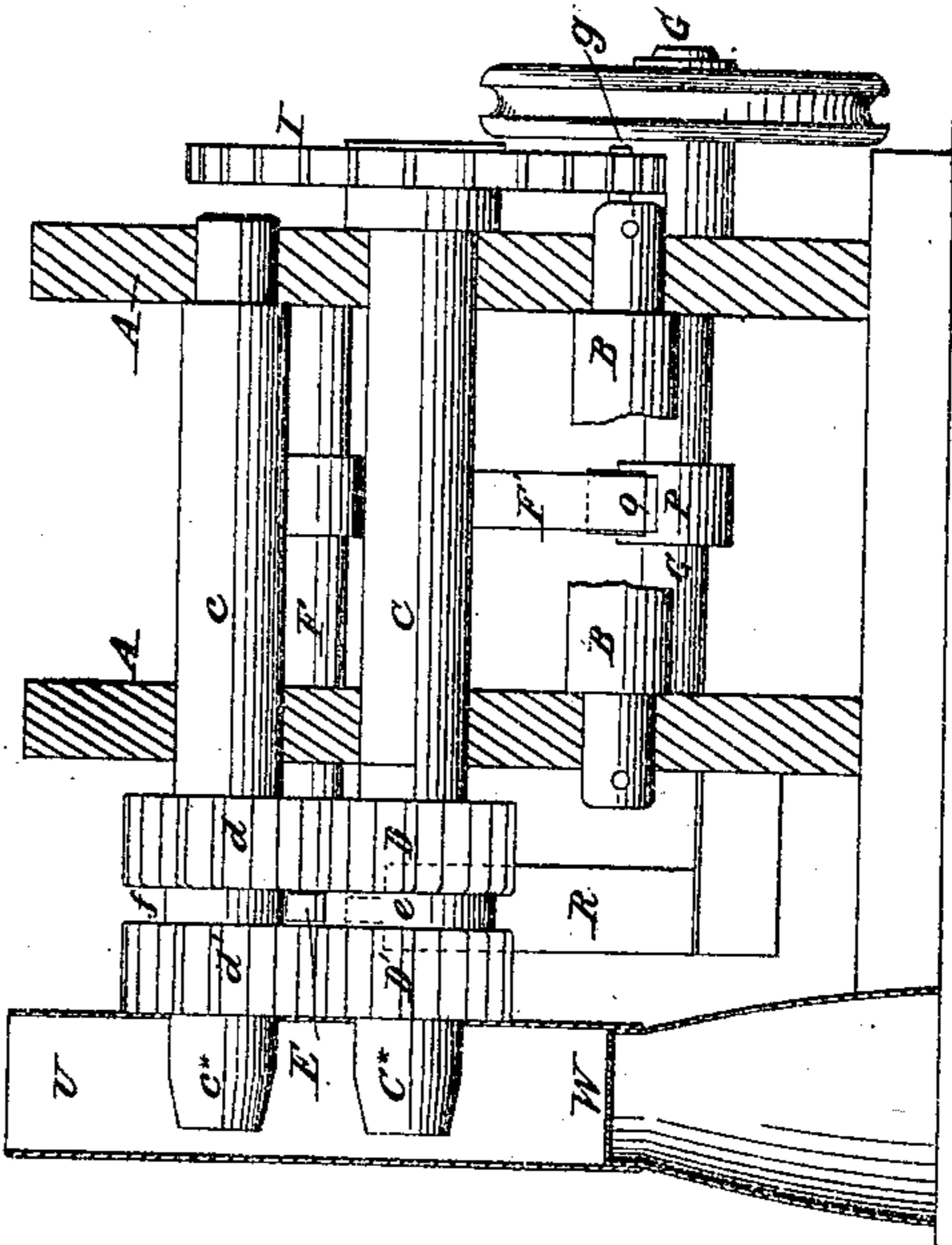


Fig. 6.



Witnesses:
J. W. Coombs
L. W. Reed

Inventor:
T. Robjohn
per Munn & Co
Attorneys

UNITED STATES PATENT OFFICE.

THOMAS ROBJOHN, OF NEW YORK, N. Y., ASSIGNOR TO E. C. WOOSTER, OF
SAME PLACE.

IMPROVEMENT IN APPARATUS FOR MAKING RUFFLING.

Specification forming part of Letters Patent No. 39,328, dated July 21, 1863.

To all whom it may concern:

Be it known that I, THOMAS ROBJOHN, of the city, county, and State of New York, have invented a new and Improved Machine for Making Double Ruffling or Frilling; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is face view of the ruffling made by the machine. Fig. 2 is an edge view of the same. Fig. 3 is a central longitudinal section of the same. Fig. 4 is a plan of the machine. Fig. 5 is a vertical section of the same in the plane indicated by the line *x x* in Fig. 4. Fig. 6 is a vertical section of the same in the plane indicated by the line *y y* in Fig. 4.

Similar letters of reference indicate corresponding parts in the several figures.

The double ruffling or frilling which this machine is intended to make is composed of a single strip of muslin or other fabric, and fluted in such a manner as to present ruffles or frills *a a* at both edges, as shown in Figs. 1 and 2, but has the flutes folded and flattened along the center of the strip, as shown at *b b* in Figs. 1 and 3, in the form of plaits which are to be secured by one or more rows of stitching.

The invention consists in a novel system of fluting-rollers and a folding device operating in combination therewith for producing the ruffles or frills at the edges of the strip and the plaits along the center thereof.

It also consists in the employment of a starching apparatus applied in combination with the said fluting-rollers and folding device to apply starch to one side of the central portion of the strip to enable the plaits to better retain their folded condition.

It also consists in certain means of delivering a thread to one surface of the plaits in such a manner that it may be caused by the starch to adhere to the plaits and hold them together until they can be secured by stitching; and it further consists in a certain mode of heating the fluting-rollers by a flame of gas.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A A are two standards, united by cross-bars

B B', to constitute the framing of the machine.

C c are the shafts of the fluting-rollers *D D' d d'*, arranged horizontally one above the other in suitable bearings in the standards *A A*. The rollers—two upon each shaft—are arranged outside of one of the standards *A A*, and arranged in pairs one above another, *D d* constituting one pair and *D' d'* the other, and the two pairs are arranged at a distance apart a little greater than the desired width of the central flattened or plaited portion of the ruffling. The rollers are constructed substantially like ordinary fluting-rollers, and those of each pair have their fluting-ridges rounded off slightly at the ends next the other pair, as shown in Figs. 4 and 6, to prevent them from cutting the fabric. Between the two lower rollers *D D'* there is provided on the shaft *C* a concentric collar, *e*, which is of slightly larger diameter than a circle inscribing the bottoms of the flutes or grooves of the rollers, so that the upper part of the periphery of the said collar comes slightly above the bottoms of these grooves, which are uppermost, to form a pressing surface upon which the flutes produced in the fabric by the fluting-rollers are folded down by the folding device or presser *E*, and flattened into plaits between the two pairs of rollers.

Between the two upper rollers *d d'* there is formed a recess, *f*, deep enough for the presser *E* to work up and down in to enable it to press down separately the central portion of every flute that is formed by the fluting-rollers, and convert it into a plait, *b*. This presser consists of a flat, pointed metal finger, secured to a horizontal rock-shaft, *F*, which works in bearings in the standards *A A* behind the fluting-rollers. The upward movement of the presser is obtained from a cam, *P*, on the constantly-rotating main shaft *G* of the machine, which acts upon an arm, *F'*, on the rock-shaft *F*, and the downward movement to press down the central portions of the flutes and convert them into plaits is produced by a spring, *H*, which is attached to the cross-piece *B* of the framing, and bears upon the arm *F'*. The pressure thus produced upon the plaits, being of a yielding nature, does not injure the goods. The movements of the fluting-rollers are intermittent, and alternate with the movements of the pres-

ser E, so that every flute, after being formed, is kept stationary while the presser acts upon it. The intermittent movements of the fluting-rollers are obtained by the operation of a single tooth, *g*, on the main shaft G, upon a toothed wheel, I, on the roller-shaft D, the number of the teeth of the said wheel corresponding with the number of ridges in each fluting-roller, the said tooth moving the wheel I to the extent of one tooth during every revolution of the main shaft. The main shaft rotates at a very high velocity.

J is a stationary guide, arranged in front of the fluting-rollers for conducting the strip of muslin or other material to the said rollers, composed of a flattened horizontal tube of metal, of a width just sufficient for the strip to pass through it. The upper part of the said tube is slit, as shown at *i i* in Fig. 4, to form a tongue, *j*, (shown in Figs. 4 and 5,) to press upon the upper part of the strip, and cause it to be presented in a flat and smooth condition to the fluting-rollers. In the top and bottom of this guide there are central openings, *k* and *l*, for the entrance of the rollers K and L, arranged above and below it, the lower roller K taking starch from a roller, M, which rotates in the starch-box N, and the upper one L holding the strip in contact with the lower one K and causing the starch to be applied all along the middle of its under surface as it passes through the guide on its way to the fluting-rollers. The roller K is supported in a rigid arm, K', secured to the cross-bar B'; but the roller L is supported by an elastic arm, L', which keeps it pressed down upon the strip and presses the strip against the starched surface of K. Both of these rollers derive motion from the friction produced by the strip in passing between them. The roller M, which is supported in bearings in the sides of the starch-box, derives rotary motion from the friction of the roller K, which works in contact with it.

m is a thread-conductor, consisting of a tube secured to one of the standards A A, for the purpose of conducting a thread, *n*, (shown in blue color,) from a spool, Q, under the guide J to the surface of the collar *e* under the strip *p*, which is shown in red color in Fig. 5. This thread is kept out of contact with the strip until it has been fluted, and meets it at the point where the flattening and conversion of the central portions of the flutes into plaits takes place, and is caused by the action of the presser to adhere to the starched surfaces of the plaits. The thread thus adhering to the plaits serves to hold them together, and keeps them in place until they have been secured by stitching. The plaits will generally be secured by stitching them in a sewing-machine in two parallel rows, which are dotted in Fig. 1.

R is a flexible blade, with a thin end secured to the framing of the machine behind the lower fluting-rollers, and pressing upon the collar *e*

between the lower rollers, for the purpose of detaching the fluted and plaited strip and the thread *n* from the surface of the collar *e* in case of its having been stuck thereto by the starch.

S V are two rollers, by which the ruffling or frilling is taken from the fluting-rollers and delivered into a suitable receptacle as fast as it is made. The roller S is as wide as the whole width of the frilling, and secured upon a shaft, T, which is driven by a belt, *p*, from the roller-shaft C. The roller V has a narrow face to press upon the central plaited or flat part of the frilling, and is held in contact therewith by means of a spring, *r*, which presses against a swinging frame, X, in which the said roller is arranged, and the said roller rotates by the friction of the frilling passing between it and the roller S. The velocity of the periphery of the roller S is slightly greater than that of the periphery of the collar *e* between the rollers D D', that it may produce a slight draft upon the frilling and so prevent it from being cockled up by the drying of the starch or by adhesion to the collar *e*.

To provide for the heating of the fluting-rollers by the flame of gas the roller-shafts are extended beyond the outer pair of rollers, D' d', as shown at C* c*, and made enter openings in one side of a metal chimney, U, which is placed upon a gas-burner, W, arranged below the said extended portion of the shafts. This burner is made with a grate of wire-gauze or finely-perforated sheet metal to present a broad horizontal sheet or bed of flame. The portions C* c* of the shafts fit the openings in the chimney in such a manner as to prevent the smoking of the rollers, and the said portions becoming heated impart a desirable degree of heat to the rollers.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the two pairs of intermittently-rotating fluting-rollers D d' and D' d', and a presser, E, applied and operating substantially as herein described, in combination with said rollers, for the purpose herein set forth.

2. The employment, in combination with the guide J for conducting the strip of muslin or other fabric to the fluting-roller, of a starching-roller, K, and a pressure-roller, L, applied and operating substantially as herein specified.

3. The employment of a thread-conductor, *m*, applied substantially as herein specified, in combination with the fluting-rollers D d' D' d' and presser E, for the purpose herein set forth.

4. The combination of the gas-burner W, chimney U, and extremities C* c*, of fluting-roller shafts C c, substantially as shown and described.

THOS. ROBJOHN.

Witnesses:

M. S. PARTRIDGE,
ROB. H. SOULLER.