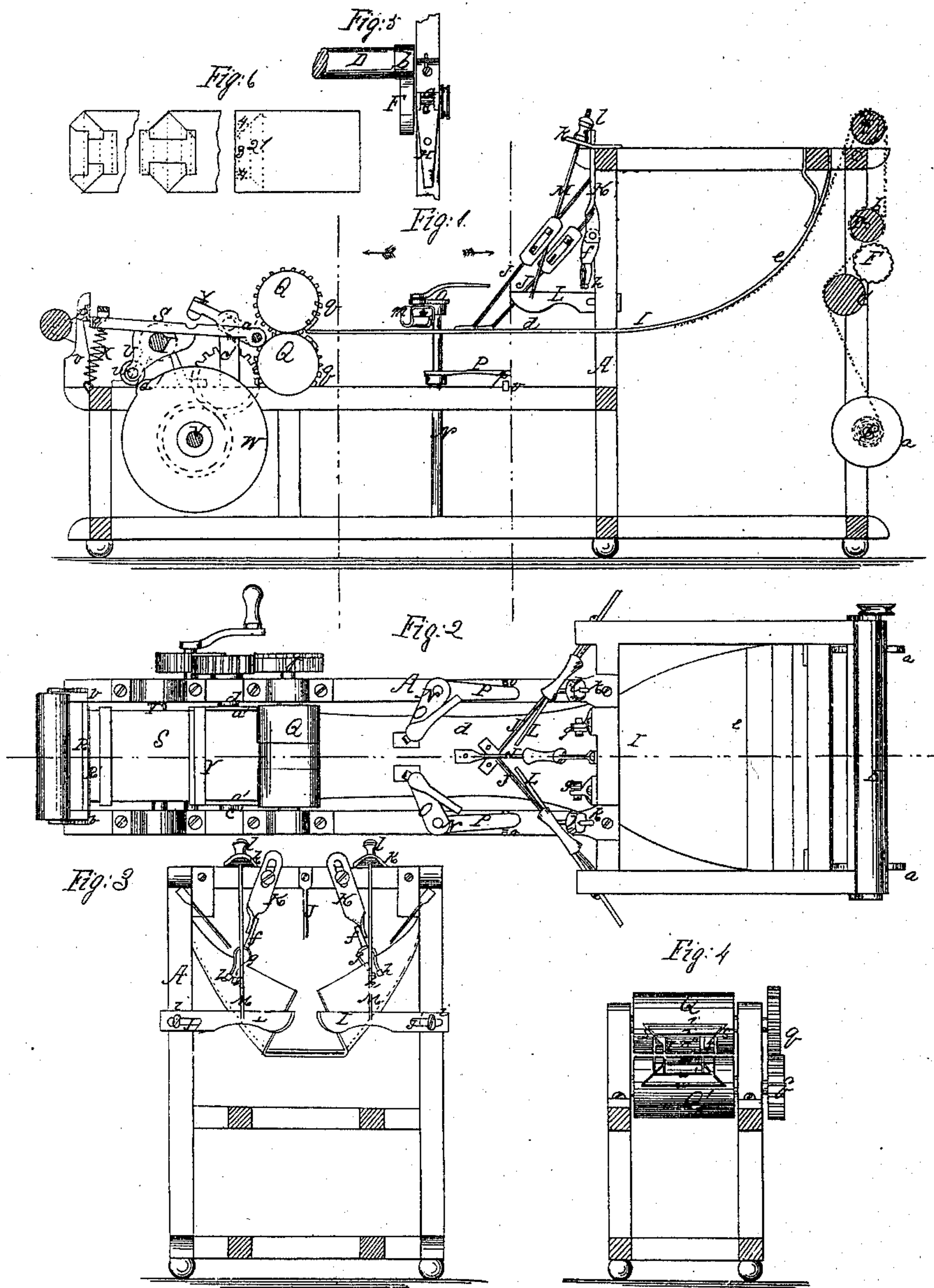


J. ARKELL.
MACHINE FOR MAKING PAPER TUBES,&c.

No. 74,190.

Patented Feb. 11, 1868.



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JAMES ARKELL, OF CANAJOHARIE, NEW YORK, ASSIGNOR TO HIMSELF,
BENJAMIN SMITH, AND ADAM SMITH, OF SAME PLACE.

IMPROVED MACHINE FOR MAKING PAPER TUBES. &c.

Specification forming part of Letters Patent No. 74,190, dated February 11, 1868.

To all whom it may concern:

Be it known that I, JAMES ARKELL, of Canajoharie, in the county of Montgomery and State of New York, have invented a new and Improved Machine for the Manufacture of Paper Tubes; and that the following description, taken in connection with the accompanying drawings hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

This invention relates to a new and improved machine for manufacturing paper and other bags having pasted seams direct from a continuous roll.

The machine folds the paper or other fabric, and pastes it, so as to form a flat tube, and then creases and cuts it at proper points, in such a manner as to admit of the bottoms of the bags being properly folded and formed, and, finally, cuts the pasted flat tube into suitable lengths, the folding and pasting of the bottoms of the bags to complete the same being afterward and separately performed.

In the accompanying sheet of drawings, Figure 1 is a side sectional view of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a plan or top view of the same; Fig. 3, a transverse vertical section of the same, taken in the line *y y*, Fig. 1; Fig. 4, a transverse vertical section of the same, taken in the line *z z*, Fig. 1; Fig. 5, an enlarged view of the pasting apparatus; Fig. 6, a diagram, showing the way in which the paper or other fabric is creased and cut, in order that the bottoms of the bags may be formed.

Similar letters of reference indicate like parts.

A represents the frame of the machine, which may be constructed in any proper manner, to support the working parts; and B is a shaft, having a circular flange, *a*, near each end.

The paper to be operated upon (shown in red) is rolled upon the shaft B, between the two flanges *a a*, in a continuous roll, and the

paper passes around tension-rollers C D E, as shown clearly in Fig. 1.

The roller D has an india-rubber or other suitable flexible covering, *b*, on one end of it, and this flexible covering works over a serrated or notched wheel, F, which is on the inner end of a small shaft, G, the bearing *c* of the latter being at the upper end of a lever, H, by adjusting which the wheel F may be made to press against one edge of the paper to be pasted, or not, as occasion may require. (See Fig. 5.) I represents what I term a former, composed of a metal plate, fitted in the frame A, and curved or bent in such a manner that one part, *d*, will have a horizontal position, and the other part, *e*, extend up with a gradual curve toward the top of frame A, the part *e* gradually contracting in width from its upper to its lower end, where the part *d* commences. (See Fig. 2.) The former I is supported in the frame A by rods J J J, the upper ends of which are attached to the upper part of the frame A, and the lower ends attached to the former. These rods J are each composed of two parts, connected by a screw-swivel, by which they may be lengthened or shortened, and the former I adjusted higher or lower, or more or less to the right or left, as occasion may require. To the upper part of the frame A there are also attached two pendent bars, K K, having small arms *f* pivoted to their lower ends, said arms having springs *g* attached, with rollers *h h* at their ends. The rollers *h h* of the springs *g* of each arm *f* are parallel with each other, and the paper to be operated upon passes down from the upper tension-roller E underneath the curved part *e*, and is folded upward at each side, and fitted between the rollers *h h* of each arm *f*, as shown clearly in Fig. 3. L L represent two adjustable blades, which are connected at one end to the frame A by pivots *i*, which pass through oblong slots *j* in the blades. (See Fig. 3.) The opposite ends of the blades are connected by rods M to the upper part of the frame A, and pass through plates *k* thereon, and have screw-nuts *l* on their upper ends, by turning which the inner ends of the blades may be adjusted higher or lower, as desired. These blades L L assist in

turning over the paper on the upper surface of the part *d* of the former. *NN* are two vertical shafts, placed in the frame *A*, one at each side, and having each a horizontal arm, *O*, on its upper end, said arms extending over the part *d* of the former *I*, and having swivel-brackets *m* in their inner ends, in which bracket-plates *n* are fitted, to press down upon the edges of the paper, and complete the folding operation.

The shafts *N* have each a lever, *P*, attached to them, by which the shafts may be turned and held at the desired point by means of racks *o*, into which lips *p* on the outer ends of the levers *P* catch or engage, as shown in Fig. 1.

By this adjustment of the shafts *NN*, a greater or less degree of obliquity may be given the arms *O*, according to the action the plates *n* are required to have upon the edges of the paper, in order to insure an even lap and a smooth, perfect seam.

This desirable end is still further insured by the adjustment of the plates *n*, as the edges of the paper may be drawn more or less to the right or left, as occasion may require; and in order to avoid friction, plates of glass or other smooth, hard material may be inserted in the part *d* of the former, directly underneath the plates *n*. (See Fig. 2.)

Q Q' represent cylinders, placed one over the other in the same axial plane, and connected at one end by gears *q q*. The upper cylinder *Q* has three longitudinal and parallel grooves, *r r' r''*, made in it, (see Fig. 4,) connected at their ends by oblique grooves *s s*; and two cutters, *t t*, are inserted in said cylinder, said cutters being parallel with each other, and at the inner ends of the oblique grooves *s s*. The lower cylinder *Q'* has three bars, *u u' u''*, fitted in its periphery longitudinally and parallel with each other, as shown in Fig. 4, and at such points that when the cylinders *Q Q'* are rotated the bars *u u' u''* will enter the grooves *r r' r''* and crease the paper, as shown at 1 2 3 in Fig. 6, while the cutters *t t* will make two longitudinal parallel cuts, 4 4, therein. These cylinders also serve to draw the paper through the machine. At the discharge end of the frame *A* there are two horizontal knives or cutters, *R R'*, the former, *R*, being fixed or stationary, and attached to upright bars *v v* on the frame *A*. The other knife or cutter, *R'*, is secured to the outer end of a plate, *S*, which is fitted upon or secured to a rock-shaft, *T*, having a pendant, *U*, attached, in the lower end of which there is a friction-roller, *w*. (Shown clearly in Fig. 1.) *V* is a driving-shaft, placed in the frame *A*, and having a cam, *W*, upon it, on which the friction-roller *w* bears, and is kept in contact with it by a spiral spring, *X*, connected with the plate *S*, as shown in Fig. 1. *Y* represents a loop or guide, through which the paper passes as it comes from the cylinders *Q Q'*. This loop or guide is at one end of two bars,

a' a', the opposite ends of which are secured by bolts *b' b'* to the inner end of the plate *S*. These bars *a' a'* are pivoted to the upper ends of uprights *c' c'* on the frame *A*. The cam *W* is formed of a circular plate, having a projection, *d'*, on its periphery, which, as the cam rotates, strikes the friction-roller *w* at every revolution of the cam, and raises the outer end of the plate *S*, causing the knife or cutter *R'*, as it passes the cutting-edge of the knife or cutter *R*, to sever the paper.

Each time the cutter *R'* rises, the loop or guide *Y* also rises, and takes up the slack in the paper caused by the momentary stoppage of the movement of the paper beyond the cylinders by the action of the cutter *R'*. This is an important feature of the invention, as it insures a perfect continuous feed of the paper over the former.

One edge of the paper is gummed while passing between the notched wheel *F* and the flexible covering *b* on the roller *D*, the paper being pressed into the notches in the wheel, and drawing the paste out from them by suction.

It will be understood, of course, that the wheel *F* rotates in a paste-receptacle, and the notches become filled in passing through the paste.

The pieces of paper, as they are cut off by the knives or cutters *R R'*, are folded at the creased and cut end, to form the bottoms of the bags, as will be understood by referring to Fig. 6.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The notched and laterally-adjustable paste-wheel *F*, in combination with the elastic covering *b* on the roller *D*, arranged to operate for pasting one edge of the paper, substantially as shown and described.
2. The curved former *I*, arranged in relation with the upper tension-roller *E*, for the purpose of admitting of the folding and pasting of the paper in flat-tube form, as set forth.
3. The extension-rods *J*, applied to the former *I* and frame *A*, for the purpose of adjusting the former *I*, substantially as set forth.
4. The pressure-rollers *h*, applied to adjustable bars *K K*, and arranged relatively with the former *I*, to hold up the edges of the paper sheet preparatory to the turning over or folding of the same, as shown and described.
5. The adjustable blades *L L*, arranged and applied substantially as shown and described, in combination with the former *I*.
6. The adjustable blades *n*, fitted in swivel-brackets *m* in adjustable arms *O* on upright shafts *NN*, substantially in the manner as and for the purpose specified.
7. The securing of the shafts *N*, and consequently the bracket-arms *O*, in proper position by means of the levers *P* and racks *o*, arranged substantially as set forth.
8. The two cylinders *Q Q'*, provided, one, *Q*, with the grooves *r r' r'' s s* and the cut-

ters t t , and the other, Q' , with the bars u u' u'' , substantially as and for the purpose specified.

9. The stationary or fixed cutter R , in combination with the cutter R' , attached to the vibrating plate S , substantially as and for the purpose set forth.

10. The loop or guide Y , attached to the

pivoted bars a' a' , which are connected to the plate S , and arranged to operate in the manner as and for the purpose specified.

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Witnesses:

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