2 Sheets—Sheet 1

G. L. JAEGER.

MACHINE FOR CUTTING PAPER AND OTHER MATERIAL.

No. 186,133. Patented Jan. 9, 1877.

Fig. 2.

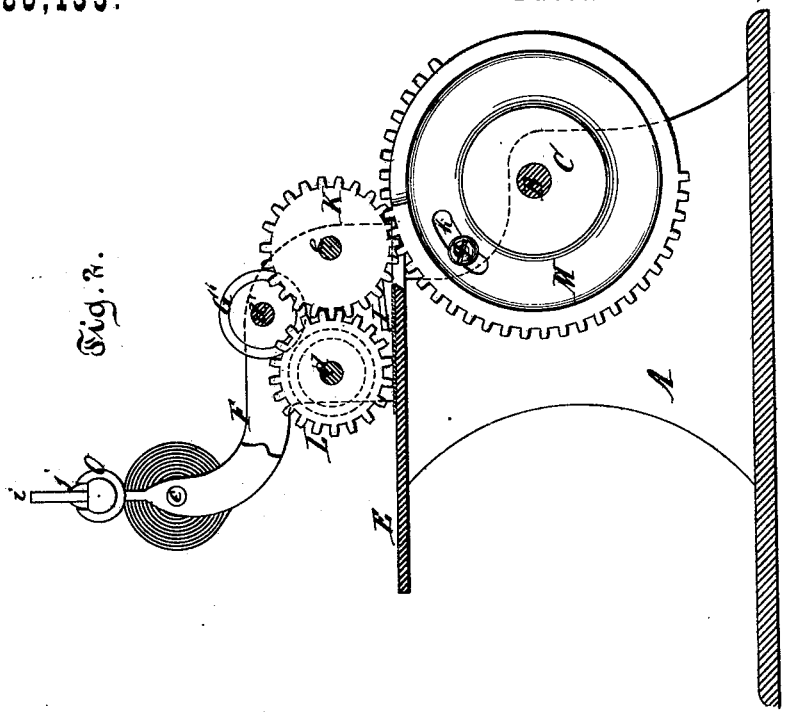
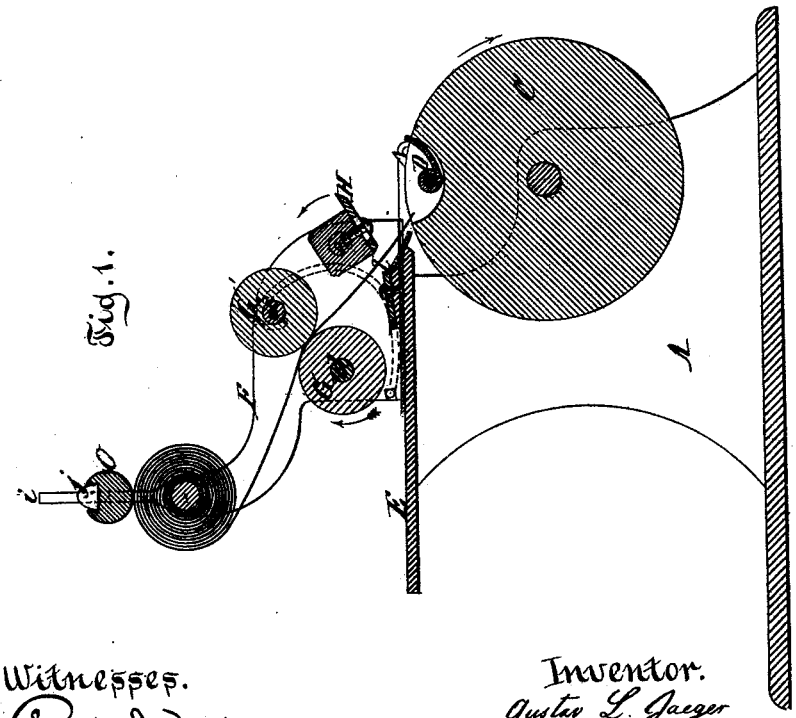


Fig. 1.



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2 Sheets—Sheet 2.

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Fig. 3.

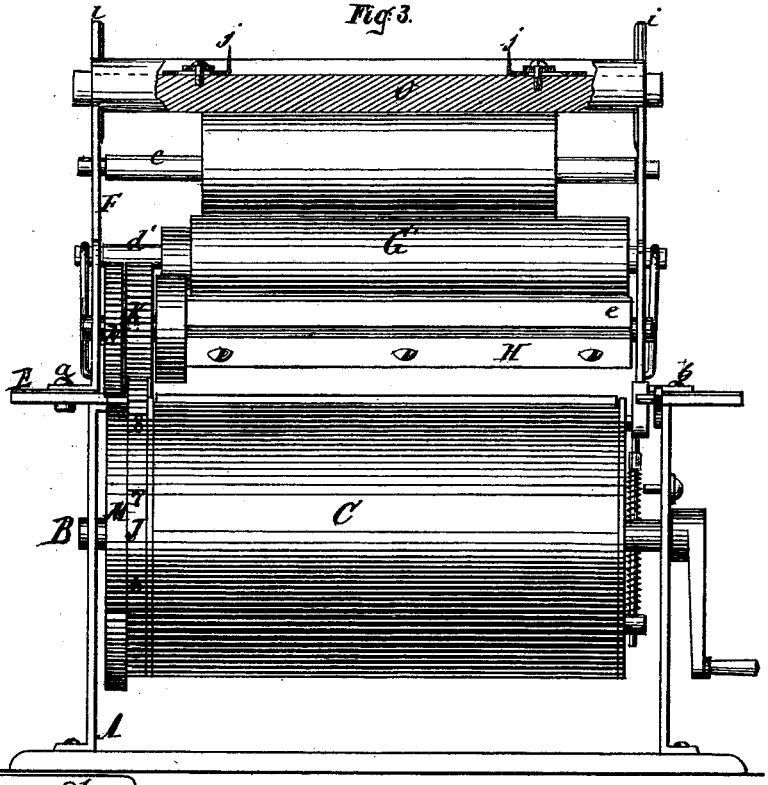
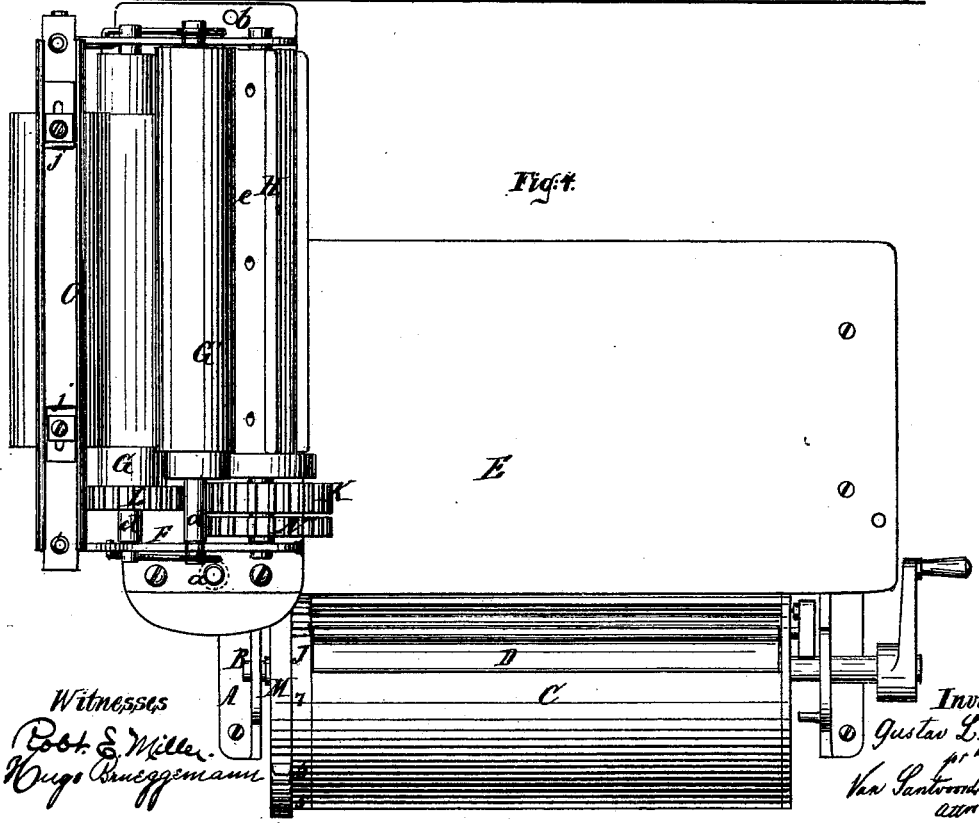


Fig. 4.



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UNITED STATES PATENT OFFICE.

GUSTAV L. JAEGER, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINES FOR CUTTING PAPER AND OTHER MATERIAL.

Specification forming part of Letters Patent No. **186,133**, dated January 9, 1877; application filed December 2, 1876.

To all whom it may concern:

Be it known that I, GUSTAV L. JAEGER, of the city, county, and State of New York, have invented a new and Improved Machine for Feeding and Cutting Paper and other Materials, which invention is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a longitudinal vertical section. Fig. 2 is a sectional side elevation. Fig. 3 is a front view. Fig. 4 is a plan or top view.

Similar letters indicate corresponding parts.

This invention consists in the combination with a roll of paper or other material, and with a griper-cylinder, of two intermittent feed-rollers and a revolving knife, which has an intermittingly-revolving motion, so that by the action of the feed-rollers the web is drawn off from the roll, delivered to the gripers of the griper-cylinder, and, after having been drawn out to the desired distance, said web is cut by the action of the revolving knife into sheets. The length of these sheets can be regulated by changing the gear which imparts motion to the knife. The feed-rollers receive their motion by means of a segmental gear-wheel mounted on the shaft of the griper-cylinder, an intermediate gear-wheel mounted loosely on the knife-shaft, and another gear-wheel mounted firmly on the shaft of one of the feed-rollers. The knife receives its motion by a segmental gear-wheel, which is adjustably mounted on the shaft of the griper-cylinder, and by a cog-wheel mounted firmly on the knife-shaft, said segmental gear-wheel being so proportioned that it leaves the knife, after each cut, in a position to permit the web to pass freely to the griper-cylinder. The frame which carries the feeding and cutting mechanism is mounted on a table over the griper-cylinder, so that it can be moved out of the way, and the paper, or other material, can be fed to the griper-cylinder by hand.

With the cutting and feeding mechanism, the griper-cylinder, and the roll of paper, or other material, are combined slitting-blades, for cutting the web to the required width during the operation of feeding the same to the griper-cylinder.

In the drawing, the letter A designates a frame, which forms the bearings for the shaft B of a cylinder, C. This cylinder is provided with a griper, D, which is constructed and operated in the manner usually employed for the gripers on the cylinders of printing-presses, and which requires no further description.

On the top of the frame A is firmly secured a table, E, in such a position that sheets of paper or other material can be conveniently fed from the same to the griper-cylinder by hand.

On the table E is situated a secondary frame, F, which is secured in position on one side by a pivot, *a*, and on the opposite side by a set-screw, *b*. When this set-screw is taken out, the frame F can be swung out to the position shown in Fig. 4, and the table E is left free for feeding sheets of paper, or other material, to the griper-cylinder by hand.

In the frame F is mounted a shaft, *c*, which carries a roll of paper or other material, and which revolves freely in its bearings. Said frame also forms the bearings for the shafts *d d'* of the feed-rollers G G', and for the shaft *e* of the revolving knife H. This knife consists of a blade which is fastened on the shaft *e*, and the length of which exceeds somewhat the width of the widest fabric intended to be cut by it. Said knife co-operates with a stationary blade, I, which is securely fastened to the bottom plate of the secondary frame F. On the shaft of the griper-cylinder is firmly secured a segmental gear-wheel, J, Figs. 3 and 4, on the plain face of which is a scale to determine the length of the sheets to be cut. (See Fig. 3.) The cogs of said segmental gear-wheel engage with a cog-wheel, K, which is mounted loosely on the shaft *e* of the revolving knife H, and which meshes into a cog-wheel, L, that is firmly mounted on the shaft *d* of the lower feed-roller G, the upper feed-roller being depressed upon the lower one by springs, (see Fig. 4,) so that it revolves by frictional contact. As the griper-cylinder is turned in the direction of the arrow shown near it in Fig. 1, the web is drawn out by the feed-rollers, and its end is presented to the griper D, which catches hold of it, and holds it down upon the surface of the griper-cylinder, while the feed-rollers continue to draw the web from the roll until the cogs of the

segmental gear-wheel J run out of gear with the loose cog-wheel K. Immediately thereafter the web is cut by the action of the knife H, and while the feed-rollers remain stationary the griper-cylinder carries off the cut sheet, and releases the same at the proper moment.

In the example shown by the drawing, both feed-rolls are made with unbroken surfaces; but the lower feed-roller may be made segmental, and so timed that the web is drawn out far enough to be caught by the griper of the cylinder, and then released by the feed-rollers. In this case the web will be drawn out partially by the feed-rollers and partially by the griper-cylinder.

The motion of the knife H is produced by a segmental gear-wheel, M, which is adjustably mounted on the shaft of the griper-cylinder, and connected to the segmental gear J by set-screw, *g*, which passes through a slot, *h*. (See Fig. 2.) By releasing the set-screw *g*, the gear M can be turned, and the time when the knife acts can be adjusted so as to increase or decrease the length of the sheets cut from the web. After the gear M has been adjusted to the length of the sheets to be cut, (which operation is facilitated by the scale marked on the plain portion of the gear J,) the griper-cylinder is turned, and a little before the web has been drawn out by the feed-rollers to the desired extent, the cogs of the gear M engage with a cog-wheel, N, which is firmly mounted on the knife-shaft, so as to turn the knife H and cause the same to cut the web at the desired point; and after the web has been cut, and while the feed-rollers remain stationary, the motion of the knife-shaft continues for a short time, so as to leave the knife in the position shown in Fig. 1, before the gear M passes out of gear with the cog-wheel N. If the knife-shaft should remain stationary immediately after the web has been cut, the knife would impede the passage of the web from the roll to the griper-cylinder.

It will be seen that by this arrangement the web is drawn out to the desired point entirely by the action of the feed-rollers, so that no strain is exerted on the web by the griper-cylinder, and all the gripers have to do is to hold the end of the web down upon the surface of their cylinder, and to carry off the sheets after the same have been cut by the web. Furthermore, by combining with the griper-cylinder independent feed-rollers and an independent revolving knife, I am enabled to draw out the web with absolute certainty to the desired distance, and to cut it exactly at the required point, and also to adjust the cutting mechanism, with the greatest ease, for sheets of various length.

From the secondary frame F, above the bearings of the shaft *c*, rise two standards, *i i*, which form the guides for a bar, O, that bears down upon the roll of paper or other material, and exerts thereon sufficient pressure to prevent the web from unwinding spontaneously, and to arrest the motion of said roll immediately when the motion of the feed-rollers stops. If it were not for this bar, or other equivalent means, the roll of paper, after having acquired a certain velocity, would continue to turn after the motion of the feed-rollers ceases, and the correct action of my apparatus would be liable to be disturbed.

On the bar O are secured two cutting-blades, *j j*, which serve to slit the web as the same is drawn off from the roll. In this case, however, the web, in its passage from the roll to the feed-rollers, must be carried over the bar O, from the upper surface of which project the cutting-blades *j j*; or the bar O may be reversed, so that the cutting-blades bear upon the roll and cut the web as the roll turns round. The cutting-blades *j j* are adjustable on the bar O, so that they can be set for slits of different distances apart.

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

1. The combination, in a machine for feeding and cutting paper, of a griper-cylinder, two intermittent feed-rollers, and a knife which has an intermittent revolving motion, all constructed and operating substantially in the manner and for the purpose shown and described.

2. The combination, with the griper-cylinder, and with the feed-rollers, of a segmental gear mounted firmly on the shaft of the griper-cylinder, and serving to transmit motion to the feed-rollers, substantially as set forth.

3. The combination, with the griper-cylinder, the feed-rollers, and the revolving knife, of a segmental gear, which is adjustably mounted on the shaft of the griper-cylinder, for imparting an intermittent revolving motion to the knife, and for adjusting this motion to sheets of different length, substantially as shown and described.

4. The combination, with the feed-rollers and the griper-cylinder, of slitting-knives *j j*, secured in a bar, O, substantially as and for the purpose set forth.

5. The combination, with the main frame A, griper-cylinder C, and table E, of a secondary frame, F, forming the bearings for the feeding and cutting mechanism, so that, by removing said secondary frame out of the way, the paper or other material can be fed to the griper-cylinder by hand, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 28th day of November, 1876.

GUSTAV L. JAEGER. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.