

No. 789,465.

PATENTED MAY 9, 1905.

R. VARLEY & A. BAUSCH.
PAPER SLITTING MACHINE.

APPLICATION FILED MAY 15, 1903.

2 SHEETS—SHEET 1.

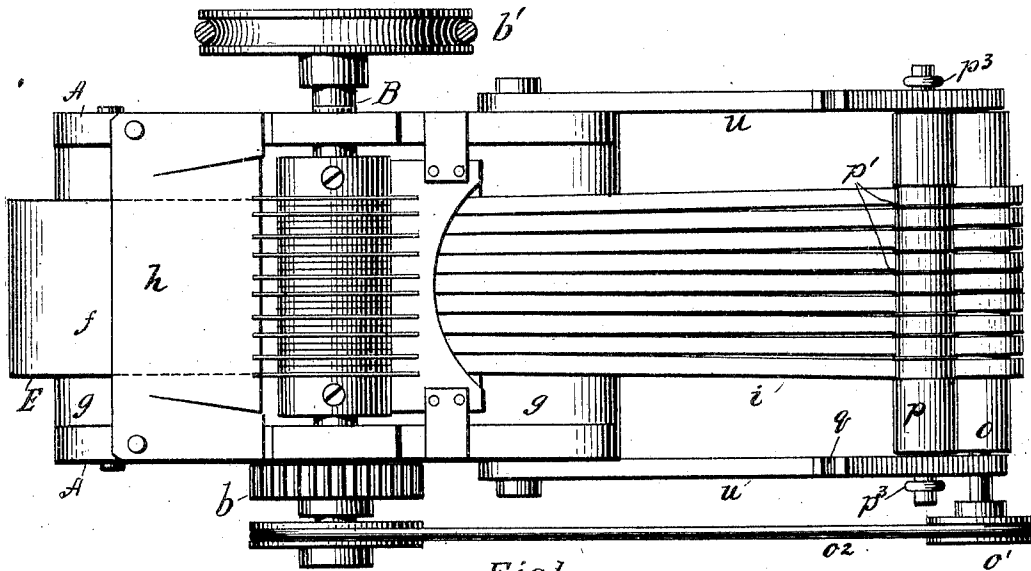


Fig. 1.

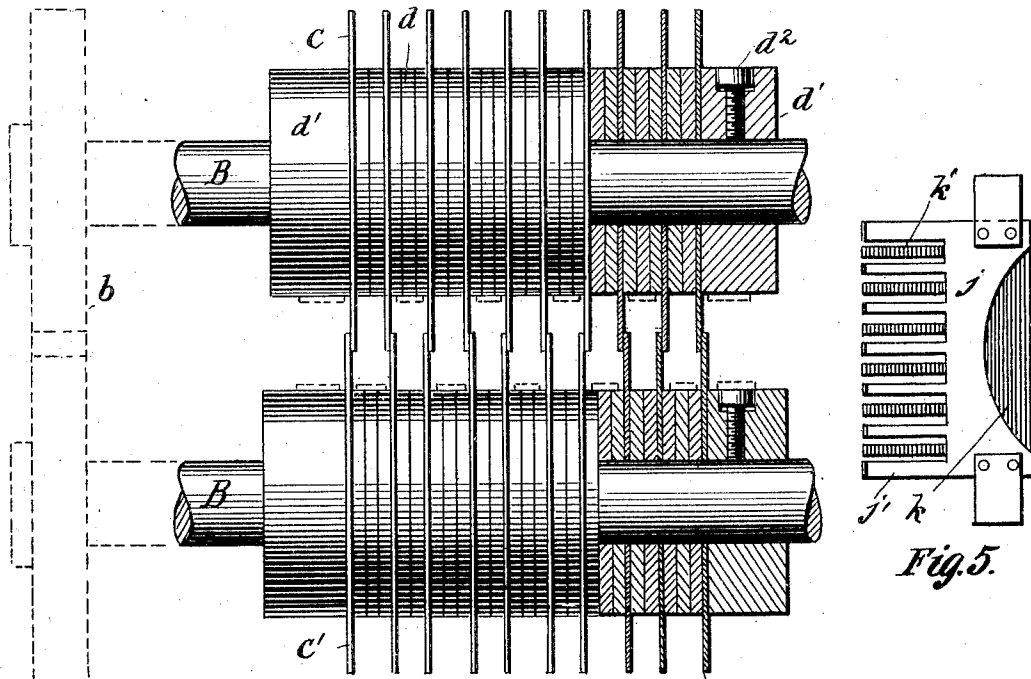


Fig. 5.

Fig. 4.

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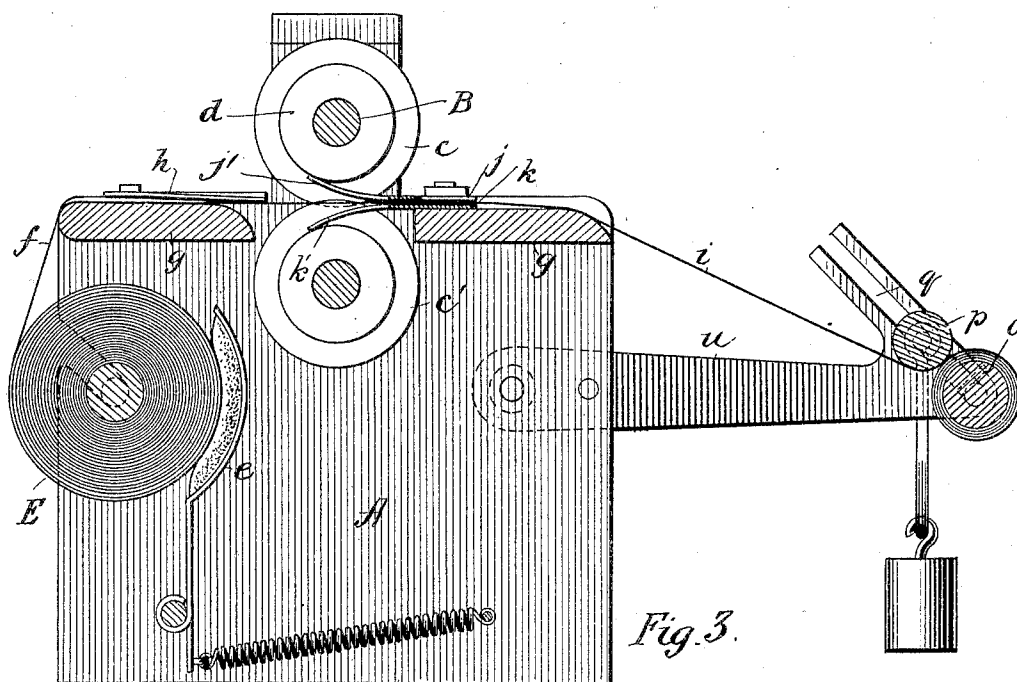
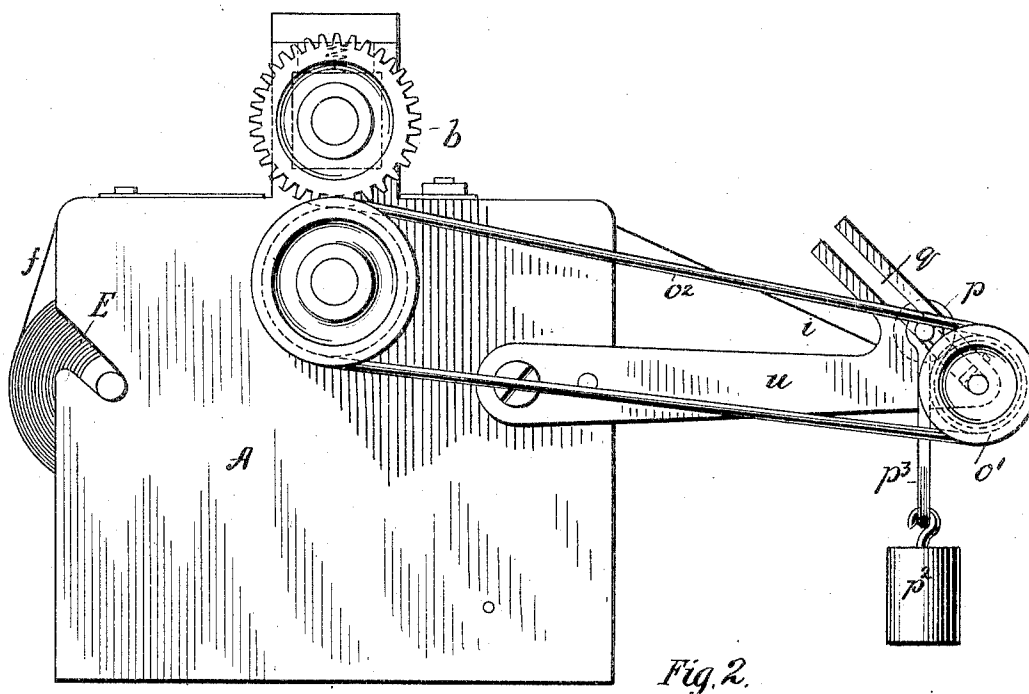
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

RICHARD VARLEY, OF PROVIDENCE, RHODE ISLAND, AND ADAM BAUSCH, OF JERSEY CITY, NEW JERSEY, ASSIGNORS TO VARLEY DUPLEX MAGNET COMPANY, A CORPORATION OF NEW JERSEY.

PAPER-SLITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 789,465, dated May 9, 1905.

Application filed May 15, 1903. Serial No. 157,263.

To all whom it may concern:

Be it known that we, RICHARD VARLEY, residing in the city and county of Providence and State of Rhode Island, and ADAM BAUSCH, residing at Jersey City, in the county of Hudson and State of New Jersey, citizens of the United States, have invented certain new and useful Improvements in Paper-Slitting Machines, of which the following is a full, clear, and exact description.

This invention is a machine for slitting paper or similar fabric into narrow strips and simultaneously coiling the strips into rolls.

Our improved machine comprises two gangs of shearing-disks mounted upon two parallel axes and so arranged in pairs with respect to each other that a wide web of paper passing between them is simultaneously sheared into a plurality of strips without waste and without irregularities due to the crimping or distorting of the individual strips or the uncut lead of the web, suitable guides for the paper on its way to and from the shears, and a winding device so arranged that the cut strips are wound into symmetrical disconnected individual rolls or helices.

The machine will be described in detail with reference to the accompanying drawings, in which—

Figure 1 is a plan. Fig. 2 is an end elevation. Fig. 3 is a vertical central section. Fig. 4 is an enlarged view of the shearing-disks and their mountings, and Fig. 5 is a plan of the guide-plates.

In suitable upright frame-plates A A are mounted two shafts B B, geared together through wheels *b* and driven through pulley and belt *V*. On each of these shafts is mounted a series of disks *c* and *c'*, respectively. The disks are separated by suitable spacing-washers *d* and are all clamped together by end collars *d'*, which are secured in place by set-screws *d''*. The adjoining rims of the two sets of disks overlap each other slightly, so as to form a plurality of shearing or cutting pairs. The overlapping of these disks is peculiarly arranged. For instance, the first two disks on the upper shaft overlap two opposite faces of

the first two disks on the lower shaft, the second and third disks of the lower shaft correspondingly overlap the opposing faces of the second and third disks of the upper shaft, the third and fourth disks of the upper shaft likewise enter between or overlap the opposing faces of the third and fourth disks of the lower shaft, and so on throughout the two co-operating sets of disks. This provides a clearance-space between the first and second disks of the lower shaft of a width equal to the distance between the cutting planes of those two disks. Thus a strip of paper cut by the first two pairs of disks will pass through the space between the disks of the lower shaft freely and without buckling, because it is of substantially the same width as the space. Between the second and third pairs of disks this clearance-space occurs between the disks on the upper shaft, and so on throughout the gang of disks, the clearance being alternately above and below the overlapping edges of the disks. As the edges of the disks are square and of some thickness, they will have the tendency to push the cut strip into the clearance-space.

In the back of the machine there is provision for mounting a roll of the paper or other material to be slitted, (indicated by E.) A pressure-plate *e* bears upon the surface of the roll to provide the necessary tension. The wide length or web of paper *f* leads over a table *g*, whose surface is substantially in the same place with the meeting edges of the disks. The web passes in contact with a broad spring-plate *h* just before it enters between the disks to flatten and even the sheet. After passing through the disks and being slitted into as many individual strips *i* as there are pairs of disks less one the paper passes between two plates or guides *j* and *k*, arranged horizontally one above the other. These plates have rearwardly-projecting spring-fingers *j'* and *k'*, those on the upper plate passing into the clearance-spaces between the disks and gradually curving upward toward the surface of the spacing-washers, while those on the lower plate curve in the oppo-

site direction and enter the clearance-spaces between the lower disks. These fingers serve as strippers and restore the strips to the plane of movement across the table after having
5 been deflected into the clearance-spaces by the cutting-disks.

Between suitable brackets u u , attached to the main frame, is mounted a shaft or spindle o , having a pulley o' , through which it is rotated by means of a belt o'' , driven from one
10 of the shafts B B, as shown in Fig. 2, the speed of the spindle being somewhat faster than that of the rolls to maintain tension on the strips. This shaft carries or serves as
15 a core upon which to wind all of the strips i simultaneously. In order to effect this winding symmetrically under proper tension and entirely independent of each other, we provide another roller, p , which has its bearings
20 in inclined slots q , formed in the brackets u and radiating from the axis of spindle o and in which it is free to rise and fall as the rolls build up or the tension changes. This roll rests on top of the series of strips i and is
25 provided with a number of annular spacing-flanges p' , which enter between the strips to offset them from each other slightly just before they are wound on the spindle o . The weight of roller p constantly applied to the
30 strips and the roll always hugging the peripheries of the paper-rolls insures a symmetrical winding of the latter and that each roll shall be formed independently of the

others. The roller p is preferably weighted and the weight p^2 applied at the middle point
35 of a bale p^3 , whose extremities are fixed to the respective ends of the shaft of the roll. This distribution of the weight helps to maintain the roll horizontally, while permitting it to
40 rise in the inclined slots as the coil is built up.

It will be obvious that by adjusting the number and size of the washers between the cutting-disks the width of the cut strips may be altered as desired.

Having described our invention, we claim— 45

In a machine for slitting paper or like material, the combination of two sets or gangs of disks mounted upon parallel axes and overlapping each other in pairs to form shearing edges, the disks of one set being so spaced
50 that each successive two of them will enter between and overlap the opposing faces of the corresponding two disks in the other set, thus providing clearing-spaces of a width corresponding to the cut strips and two sets of
55 stripping-fingers entering said clearing-spaces and adapted to direct the cut strip into one plane.

In witness whereof we subscribe our signatures in presence of two witnesses.

RICHARD VARLEY.
ADAM BAUSCH.

Witnesses:

M. M. CROSWELL,
WILLETT CHADWICK.