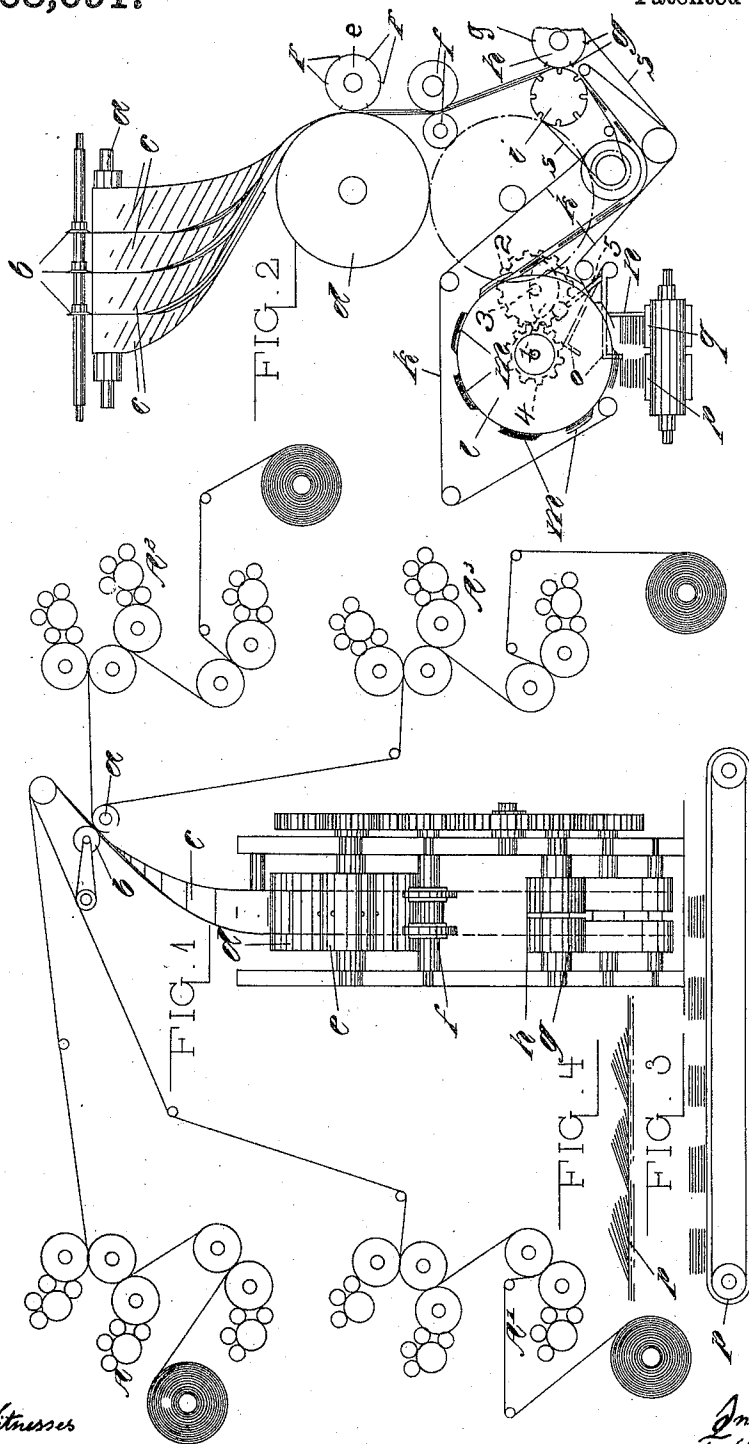


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MACHINE FOR MAKING PAPER BLOCKS.
APPLICATION FILED MAY 5, 1909.

968,091.

Patented Aug. 23, 1910.



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FRANZ STEPHAN, OF UNTERMHAUS, NEAR GERA, GERMANY.

MACHINE FOR MAKING PAPER BLOCKS.

968,091.

Specification of Letters Patent. Patented Aug. 23, 1910.

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To all whom it may concern:

Be it known that I, FRANZ STEPHAN, a subject of the Emperor of Germany, and resident of Untermhaus, near Gera, Principality of Reuss, Germany, have invented certain new and useful Improvements in Machines for Making Paper Blocks, of which the following is a specification.

It is already known that paper blocks for calendars in slips are produced in such a manner that several paper-courses lying at first flatly over each other are made one series of webs which are cut by lengthwise-cutters in several parts lying at first beside each other whereupon the latter are once more united to one string with correspondingly more layers. If, however, in making calendars in slips a whole calendar is to be produced by printing, every part of the block consisting of a comparatively large number of leaves it becomes impossible to employ, as customary, for paper-courses running over each other, the turning head-pieces or guide-pulleys turned toward each other by 90° because in passing the latter the paper-layers are in the first place much thicker at the edges than in the middle in as much as the former have to pass a greater distance and may consequently tear and in the second place because in both places a dislocation of the layers toward each other is taking place owing to the growing radius of curvature in proportion to the increase of the size of the block while the paper is running over the turning-head pieces or the crossed guide-pulleys respectively. The dislocation may become so great that it will be fully impossible to produce calender-blocks by means of these contrivances. With this invention, however, cylindrical or conically bent shovels are employed in order to conduct the paper-courses over each other whereon the strips lie perfectly even and move with every fiber in exactly the same direction, so that neither a tearing nor a mutual dislocation of the paper-layers can take place.

The drawing represents such a contrivance in its particulars.

Figures 1 and 2 are views in positions turned toward each other by 90° and Figs. 3 and 4 show different layers of the ready made blocks.

In the drawing (Fig. 1) the profile of four rotary-machines A, A¹, A², A³ are given in a diagrammatic way and these machines are

grouped in the manner known on the left and right sides of the contrivance for the formation of blocks.

For the sake of a better understanding the rotary machines are provided with simple broad paper-rolls, so that four paper webs run together over roller *a*. It is possible, however, to use rotary machines with double or several times broader paper-rolls, in which case the machine would best answer the purpose by being turned at 90° toward the plane of the drawing, and the paper courses cut into two more courses by rotary knives at every single machine and conducted over each other by the employment of any means used with broad newspaper-rotary-machines, such as turning-bars or funnels while being turned off at 90°, so that for instance every machine produces with one rotary knife two paper courses. Provided that four machines of double breadth are in operation eight paper courses run over each other on the roller *a* and are cut by the three rotary knives *b* into four narrow endless strips, so that there are situated beside each other four strips of eight paper-layers each. To unite the latter without difficulty to one single strip there are arranged four firmly standing shovels *c* and bent in such a manner that their upper ends lie beside each other in one and the same plane, while their lower ends run off into planes situated over each other. The four strips clinging to the shovels and situated at the beginning beside each other are correspondingly associated while running over each other on the roller *d* in a single band which is conducted farther on by means of a counter roller *e*. In this connection the registering of the broad paper-webs is effected in the same manner as with rotary machines of more rollers. The position of registering necessary after the cutting into narrow strips is always attained by a measurement of the length of the shovels all of which must be changed if the form is changed. A second pair of delivering rollers *f* serve for the still surer conveyance of the narrow strong strip now consisting, according to the foregoing description, of 2 multiplied by 4 equal to 8 and 8 multiplied by 4 equals 32 layers.

The rotating knife-roller *h* provided with a number of shearing blades *g* thereupon separates while catching in the grooved-roller *i*, short pieces of the strips gathered

which correspond to the length of the blocks. These separated parts of the blocks are brought with known means (cords, catchers or the like) through the band conveyers *k* to the laying-drum *l* common in printing machines and which is provided with catchers *m* into which by means of a difference in the rapidity of the transportation-bands the short paper strips are delivered. There is arranged with this invention in addition to a firmly standing stripping-apparatus *n* a second stripping-contrivance *o* having an oscillating motion imparted thereto by means of a cam 1 on one side of a gear wheel 2, supported on shaft 3 and driven by a pinion 4 on the shaft of the drum *l* which engages arm 5 as shown in Fig. 2.

From the second contrivance are stripped off the parts of the paper-blocks delivered to the laying drum during a single revolution of the drum whereupon it goes upward or downward, so that the following parts of the blocks run a little farther and are detained by the other stripping-apparatus *n*.

The parts of the block stripped off fall on the transportation-bands *p*, *q* respectively and are so piled upon the latter in the manner given in Fig. 3 as to form complete blocks.

While one of the transportation-bands is receiving the parts of the block the other one advances periodically a conformable distance, so that the block following is delivered to the other transportation-band and the single blocks are carried on sideways at certain distance from each other (Fig. 3).

By the application of a uniform speed to the transportation-bands *p* and *q*, the blocks would pile up and separate (Fig. 4).

The transmission-roller *e* is provided with narrow knives, which cut in advance the finished strong strip at those places where gaps are necessary at the principal

clearing blades of the roller *h* if chords or bands *s* are required for the transmission to the band-conduction *k*.

What I claim is:

1. In a device of the character described, the combination of means for supplying a multiplicity of layers, a laying drum, rotary knives, means for conducting said layers over each other comprising conically bent shovels, and means whereby the layers separated by the knives are again united.

2. In a machine of the character described for severing webs to form parts of blocks, the combination with means for feeding said webs, rotary shearing knives constructed to sever said webs to form said parts of blocks, a laying drum, stripping devices, band-transmission devices, and means for bringing the parts of the blocks alternately upon said band-transmission devices.

3. In a machine of the character described for severing webs to form parts of blocks, the combination with means for feeding said webs, rotary shearing knives constructed to sever said webs to form said parts of blocks, a laying drum, stripping devices, band-transmission devices, and means for bringing the parts of the blocks alternately upon said band-transmission devices, said band-transmission devices being arranged side by side.

4. In a device of the character described, the combination with the narrow fore-cutting knives and a cylinder on which they are carried, of the principal cutting rollers, means for cutting the strips at the gaps of the principal cutting rollers and means for conducting the strips over each other, comprising conically bent shovels and deflection bands.

In testimony whereof I affix my signature.

FRANZ STEPHAN.

In the presence of—

PAUL H. M. RICH,

CHARLES NEUER.