No. 695,029. Patented Mar. 11, 1902.

J. C. BLEVNEY.

MACHINE FOR MAKING BLANKS FOR PAPER BOXES.

(Application filed Feb. 18, 1901.)

(No Model.) 2 Sheets—Sheet 1.

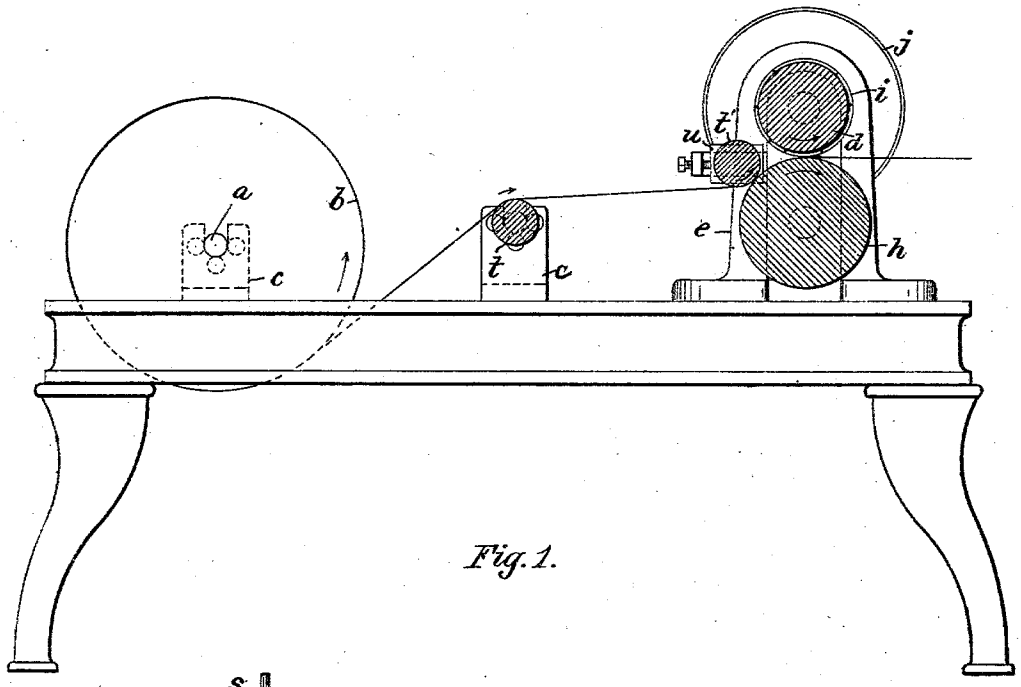


Fig. 1.

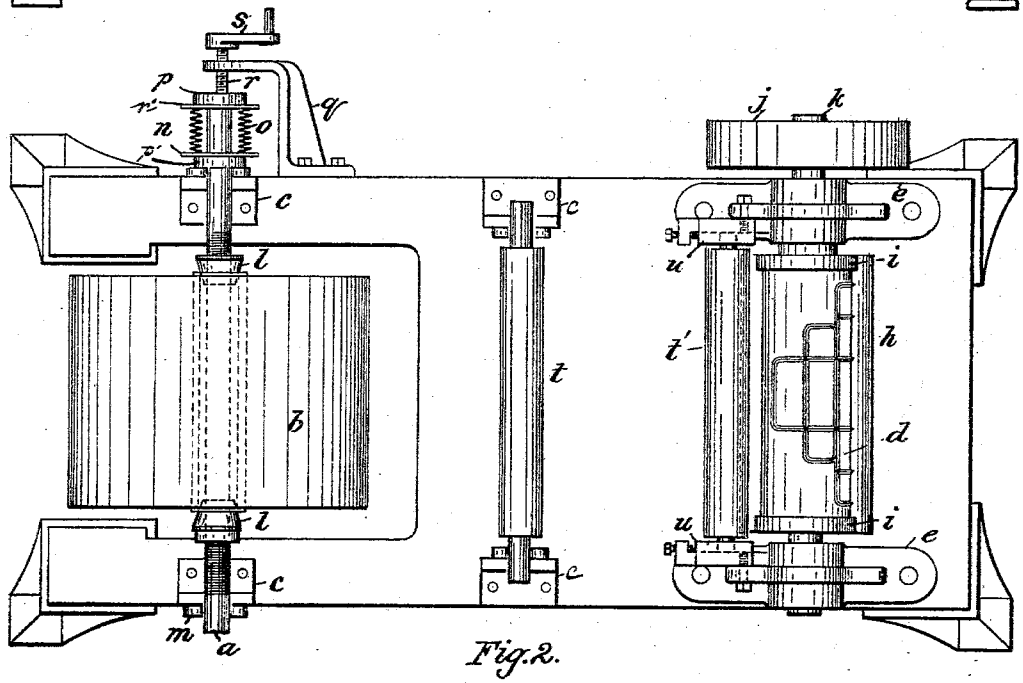


Fig. 2.

WITNESSES

J. Fred Whurry

INVENTOR

John C. Blevney

per Frank C. Fischer.

ATTY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 695,029. Patented Mar. 11, 1902.

J. C. BLEVNEY.

MACHINE FOR MAKING BLANKS FOR PAPER BOXES.

(Application filed Feb. 18, 1901.)

(No Model.) 2 Sheets—Sheet 2.

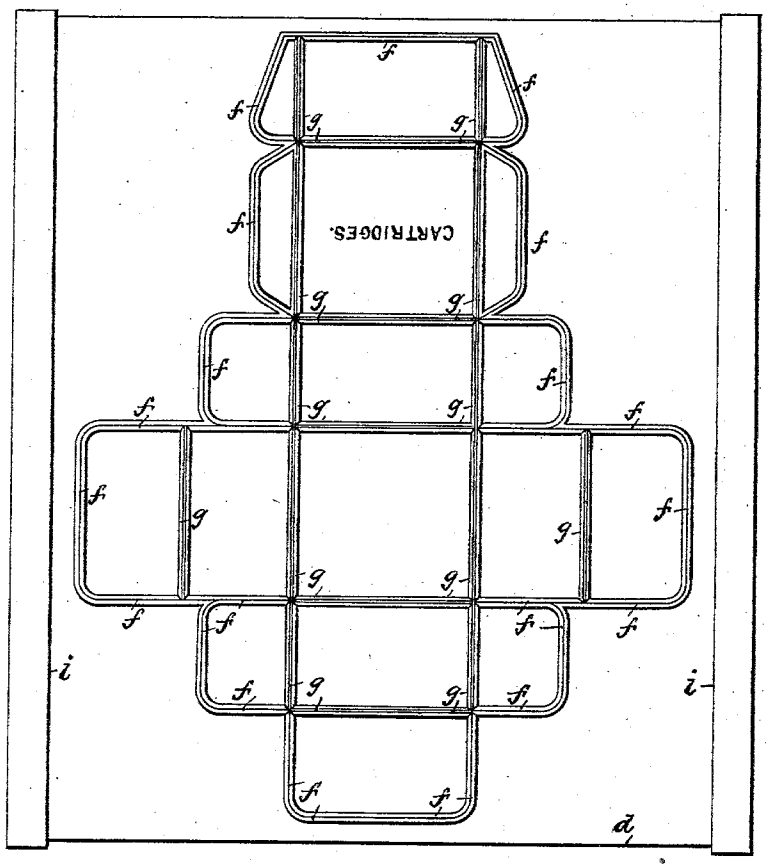


Fig. 4.

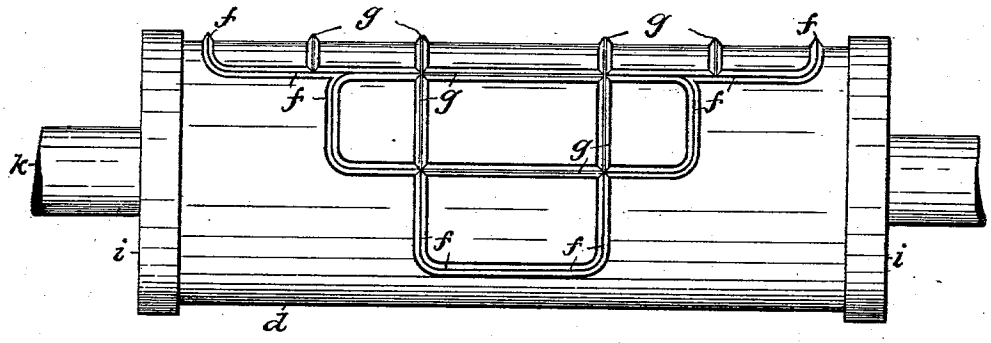


Fig. 3.

WITNESSES

J. Fred Wherry

INVENTOR

John C. Blevney.
per Fredk C. Fischer.
ATTY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN C. BLEVNEY, OF NEWARK, NEW JERSEY, ASSIGNOR TO JOHN S. W. THOMPSON, OF MORRISTOWN, NEW JERSEY.

MACHINE FOR MAKING BLANKS FOR PAPER BOXES.

SPECIFICATION forming part of Letters Patent No. 695,029, dated March 11, 1902.

Application filed February 18, 1901. Serial No. 47,716. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. BLEVNEY, a citizen of the United States, residing at Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Machines for Making Blanks for Paper Boxes, of which the following is a specification.

This invention relates to machines for scoring and cutting paper or the like for blanks for making folding paper boxes in which the web of paper is mounted on a suitable shaft at one end of the machine and while being unwound therefrom and drawn through the machine is cut and scored into any desired blank pattern of predetermined length and design.

The object is to provide a roll which has on its peripheral surface a complete pattern of a box-blank in relief, said pattern to contain both the cutting and scoring blades which operate simultaneously and accurately in performing their function of cutting and scoring box-blanks of any desired length or design from a continuous web of paper.

After exhaustive experiments I discovered that if two rolls were used, one of which serves as a bearing-roll, having a perfectly smooth hard surface and being of larger diameter than the opposite roll, and the opposite roll having a complete pattern of a box-blank in relief on its peripheral surface, containing both the cutting and scoring blades and hardened end collars which are of such diameters as to prevent the cutters from coming in contact with the surface of the bearing-roll, the said end collars also serving to impart rotation to the bearing-roll, the cutting and scoring roll will cut cleanly and for a long time. In order to produce perfect work, it is only necessary to keep the rolls perfectly parallel, so that the cutting and scoring blades would be kept at the proper distance from the bearing-roll. When so arranged, the rolls can be turned rapidly, and they will last for a long time and produce perfect work.

In the accompanying drawings, which form part of this specification, Figure 1 is a vertical longitudinal section of my improved machine. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation of the cutting and scoring roll, on which is formed a complete pattern of a box-blank in relief. Fig. 4 is a plan view of said roll flattened out and showing the pattern of the desired blank in full.

In order that my invention may be fully understood, reference is had to the accompanying drawings, in all of which like letters represent like parts wherever used.

In the drawings, *a* represents a revolving shaft or spindle which carries the web of paper *b* which is to be cut and scored and from which it is fed through my improved machine. This shaft *a* has its bearing *c* arranged on the rear of the machine.

The cutting and scoring roll *d* is mounted in bearings *e* and has on its peripheral surface a complete pattern of a box-blank in relief. Said pattern contains both the cutting-blades *f* and scoring-blades *g*. I have also included in my cutting and scoring roll a device for imprinting and embossing suitable designs, trade-marks, or any other desirable matter. This combination I believe to be new in the art. The box pattern is preferably made integral with the roll; but it can be made from any suitable material and attached to the roll in any well-known manner. I have also found it very economical to construct a roll having three box-blanks patterns in relief on the same, as, for instance, a large one and two small ones, the small ones arranged one on each side of the large one, thereby utilizing such parts of the paper which would otherwise be wasted. The wedge-like action of the cutting-blade spreads and supports the texture of the paper, and as this takes place quickly a clean separation results. It will be seen that if the stock is of a fibrous nature a separation takes place before the cutting-blades pass quite through it. It will not be necessary for the cutting-blades to bear upon and come in contact with the bearing-roll. I have found that when the impact-points of the cutting and scoring blades are made of an obtuse angle of about forty-five degrees they give the best desired results.

i represents hardened-steel collars arranged at the ends of the roll *d* and which bear upon the surface of the hardened plain bearing-roll *h*, thereby imparting rotation by means of friction to said roll. The collars *i* are of

slightly-greater diameters than the pattern in relief on the roll, which serve to keep the cutting-blades from striking the smooth bearing-surface. The rolls are rotated in the proper direction by means of a belt and friction-pulley *j*, mounted on the axis *k* of the roll *d*. The plain bearing-roll *h* is of larger diameter than the cutting and scoring roll *d*, and the sizes of the rolls are so arranged that the diameter of one roll is not a perfect multiple of the other, so that the different cutting and scoring blades will change their points of pressure against the bearing-roll with every rotation of the roll. This feature of my invention is valuable, in that it prolongs indefinitely the life of the bearing-roll.

The web of paper *b* is wound on a suitable hub and carried with a revolving shaft *a*. The shaft is partly threaded and provided with two screw-cones *l*, which enter the hub, thereby firmly securing the web of paper in position. The revolving shaft *a* revolves in antifriction-bearings *c*, it being supported on the circumferences of three small rolls *m*, which form part of the bearing. In order to accommodate the paper to the pattern on the cutting and scoring roll *d*, two steel plates *n* and *n'* are loosely mounted on the shaft *a* outside of the antifriction-bearing, so that such shaft is free to move in such plates, and interposed between said plates are two heavy spiral steel springs. The collar *p* is securely fastened on the end of the shaft outside of one of the steel plates. An additional collar *p'* is loosely mounted on the shaft, against which the inner plate *n* bears. The small bracket *q* is arranged on one side of the machine through which the screw *r* passes. The screw is provided with a crank *s*, and the end of said screw bears against the end of the shaft *a*, so that by turning the crank in one direction the screw moves the shaft forward, thereby compressing the spiral springs, and by turning the crank in the opposite direction the springs expand and cause the shaft to return to its former position. This affords a very convenient adjustment, whereby the web of paper, which in many instances is unevenly wound, can be readily adjusted so as to enter the rolls to the best advantage and also prevents the paper from being fed between the collars and the bearing-roll.

t is an idler, which serves to keep the paper taut before it reaches the cutting and scoring roll. The idler *t* is mounted in bearings which are secured to the machine.

t' is an adjustable feed-roll, which is mounted in adjustable bearing-blocks *u*, and which are secured to the main bearings *e* in order to properly feed the paper to the cutters, the adjustable feed-roll being driven by friction imparted to it by the smooth bearing-roll *h*.

Without desiring to be limited to the exact construction shown, as I am aware that changes and modifications may be made in the details of construction without departing from the spirit and scope of my invention.

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

1. In a machine for making paper-box blanks; the roll bearing a pattern in relief and provided with end collars, in combination with a smooth bearing-roll of larger diameter so that new points of pressure are presented at every rotation, and which is rotated by means of friction imparted to it by the collars on said cutting-roll, substantially as described.

2. In a machine for making paper-box blanks; two opposed parallel rolls, one having a smooth hardened face serving as a bearing, and the other containing a pattern of a box-blank in relief and end collars, the plain bearing-roll being of larger diameter so that new points of pressure are presented at every rotation and being rotated by means of friction imparted to it by the end collars on the cutting-roll, and said end collars serving to keep the cutting and scoring blades from striking the bearing-roll, as and for the purposes described.

3. A machine for making blanks for paper boxes, comprising a frame carrying an imprinting-roll *d*, provided with end collars, a bearing-roll *h*, an adjustable feed-roll *t'*, all mounted in brackets *e*, the bearing-roll being driven by friction imparted to it by means of the collars on said imprinting-roll, substantially as described.

4. In a machine for cutting blanks, a bearing-roll having a hardened surface, a second roll provided with end collars, which are adapted to rest upon and rotate the bearing-roll, cutting-blades having a cutting edge of approximately forty-five degrees secured to the cutting-roll, the cutting-blades being kept from coming in absolute contact with the bearing-roll by means of the end collars.

5. In a device for carrying a roll of paper, a shaft adapted to pass through the roll, means for securing the roll to the shaft, a screw arranged to bear upon the shaft to force it in one direction, and a spring adapted to force the shaft in the other direction, as and for the purposes set forth.

6. In a device for carrying a roll of paper, a shaft adapted to pass through the roll, means for securing the roll to the shaft, a screw arranged to bear upon the shaft to force it in one direction, a plate surrounding the shaft and resting against the bearing, a second plate arranged to engage the shaft, and a spring interposed between the plates to force the shaft in the other direction, as and for the purposes set forth.

In testimony whereof I, JOHN C. BLEVNEY, have signed my name to this specification, in the presence of two subscribing witnesses, this 7th day of February, 1901.

JOHN C. BLEVNEY.

Witnesses:
FREDK. C. FISCHER,
JOHN E. HELM.