R. MASON.

BLANK FORMING MACHINE.

APPLICATION FILED APR. 10, 1905.

965,919.

Patented Aug. 2, 1910.

3 SHEETS—SHEET 1.

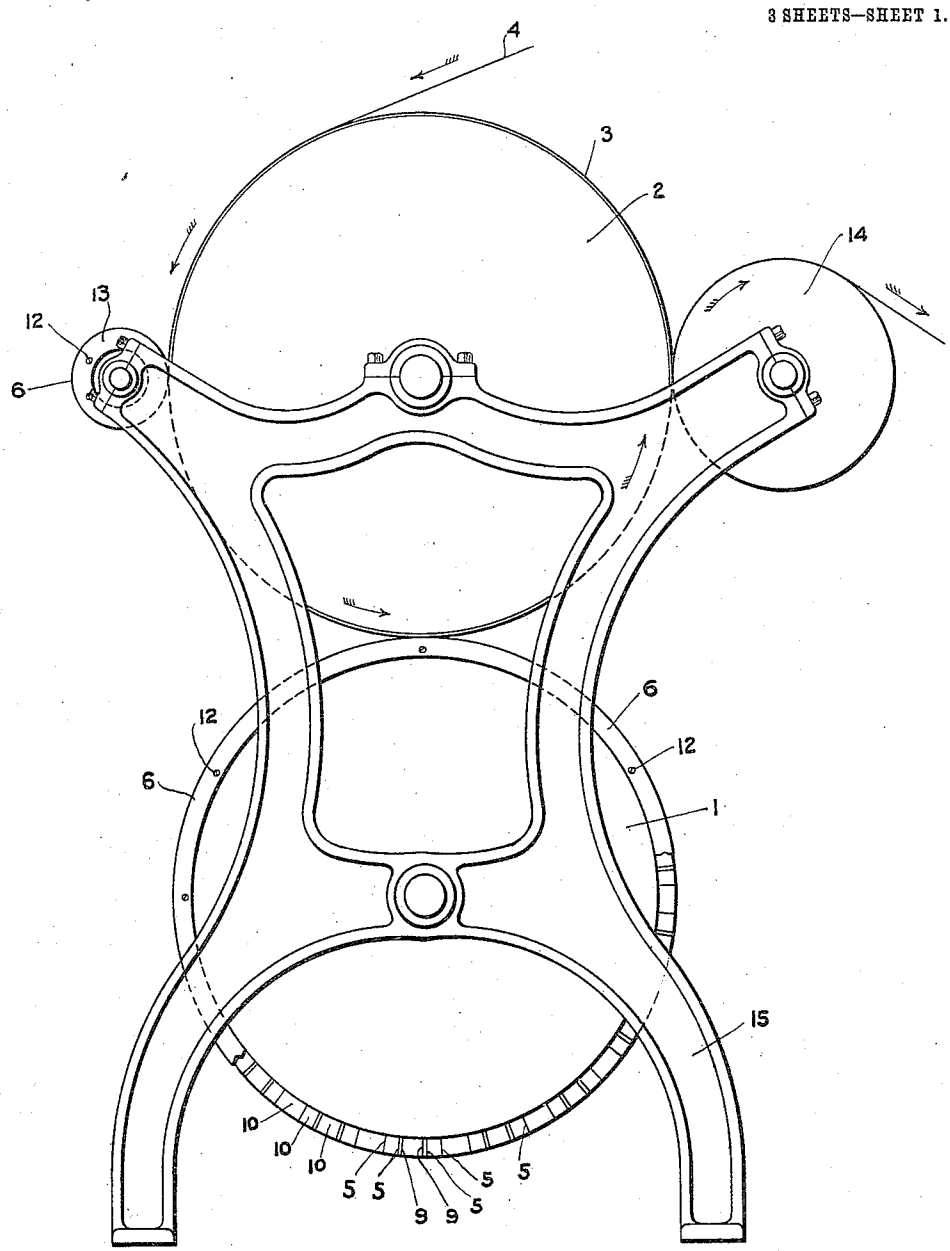

Fig. 1.

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3 SHEETS—SHEET 2.

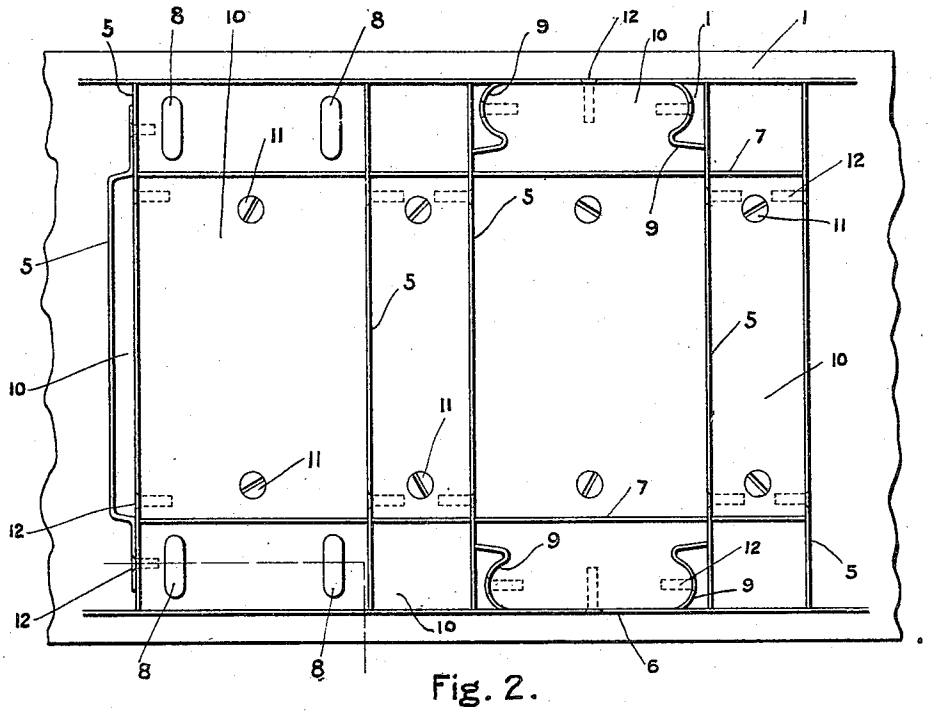

Fig. 2.

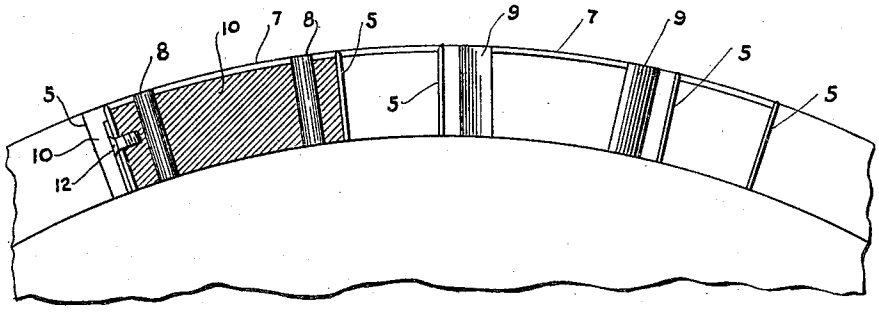

Fig. 3.

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3 SHEETS—SHEET 3.

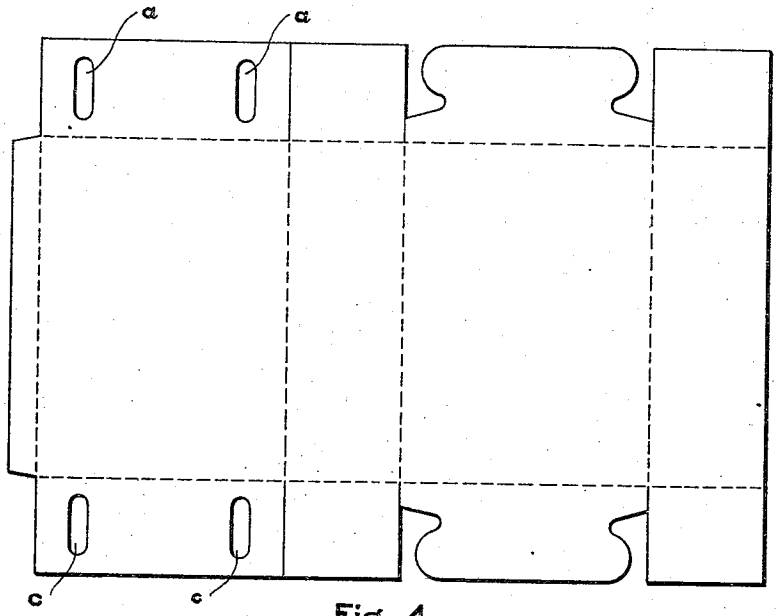

Fig. 4.

Fig. 6.

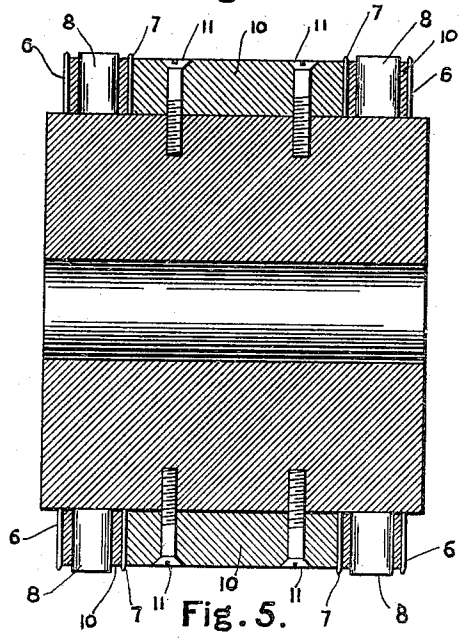

Fig. 5.

WITNESSES:

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UNITED STATES PATENT OFFICE.

ROBERT MASON, OF DOVER, NEW HAMPSHIRE, ASSIGNOR TO KIDDER PRESS COMPANY, OF DOVER, NEW HAMPSHIRE, A CORPORATION OF WEST VIRGINIA.

BLANK-FORMING MACHINE.

965,919. Specification of Letters Patent. Patented Aug. 2, 1910.

Application filed April 10, 1905. Serial No. 254,784.

To all whom it may concern:

Be it known that I, ROBERT MASON, residing at Dover, in the county of Strafford and State of New Hampshire, have invented certain new and useful Improvements in Blank-Forming Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to blank forming machines and the like; and in a more specific relation thereof, to means in box rotary cutting and scoring or creasing machines for forming paper blanks into shapes preliminary to making boxes thereof.

One of the objects of my invention is to provide a simpler, cheaper and more efficient means than has been heretofore known, being of special utility in rotary machines, adapted to prepare blanks of paper or other desired material for use as folding boxes.

Another object is to provide means of the class mentioned which shall be characterized by ready adaptability for use in connection with a variety of constructions and processes of which some will be hereinafter specifically mentioned.

Other objects will be in part obvious and in part pointed out hereinafter, among which is the feature of adjustability of elements.

My invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the devices hereinafter described and the scope of the application of which will be indicated in the following claim.

In the accompanying drawings wherein is shown one of the various possible embodiments of my invention Figure 1. is a side elevation of the same. Fig. 2. is a plan of a portion thereof. Fig. 3. is a side elevation of a section thereof, a part being shown in cross section, and the remainder with a knife removed. Fig. 4. is a plan of a blank of box forming material which has been cut and scored. Fig. 5. is an elevation in cross-section of a possible embodiment of my invention. Fig. 6. is a side elevation of a combined cutting and scoring knife.

Similar reference characters refer to similar parts throughout the several views.

Preliminary to a more specific discussion of my invention, and in order to better understand the scope thereof, it should be noted that serious defects have existed in the economic and efficient preparation of blanks for folding box purposes. Where flat beds have been used employing box forms for the purpose indicated, many obvious defects and objections thereto have inhered therein and the result has been a relatively inefficient one. One of the causes thereof has been the inconvenient arrangement of parts required in a machine of such a character, and the inevitable slowness in operation thereof. In the case of rotary machines wherein steel dies have ordinarily been employed, the expense attendant upon their use has proved a costly and important factor. Not only the inherent cost of these dies and the necessity for large numbers thereof, owing to the many shapes and sizes of boxes desired by the trade, but the heavy expense of maintenance in addition thereto, have contributed to this condition of affairs. In my invention the desired objects and results are attainable by the employment of a combination of elements which are not only inexpensive themselves, but which admit of ready arrangement, simple adjustability and a maximum of efficiency in operation.

Referring now to the drawings, my invention contemplates as shown in Fig. 1, the employment in a blank forming machine of any desired type, provided with a frame 15, of a form member 1, operatively positioned with reference to a platen or roller 2, which latter member may, if desired, have a paper web 3, pasted or otherwise affixed thereto, adapted to carry a blank strip of box forming material 4, as indicated by arrows, so that it may be cut or scored, or both, as may be desired, by knives 5, 6, 7, 8, 9, carried, as more clearly appears in Fig. 2, upon said member 1. Continuing with Fig. 2 all knives perpendicular to the straight edge of the portion of the member 1, have the common numeral 5; the outer knives parallel therewith, 6, the inner ones, 7; and the elliptic and 2 shaped knives 8 and 9 respectively. To this member is secured a series of blocks 10, made of wood, stereotype metal or other material. The connection thereof may be attained in a variety of ways, but inasmuch as I prefer to use wooden blocks, it is done by screws 11, as shown herein. These blocks are conformable in outline to

the sections of boxes which are to be formed in the machine. Knives are positioned between the various blocks or within sections thereof and may be secured thereto by screws 12, or other appropriate means, and are in turn conformable in shape to the outline of the various blocks which support them. In order that there may be no necessity for previously cutting strips of paper or other material to the desired width, strip knives 6, are preferably secured about the member 1, to the outer sides of the blocks. If it is desired to cut and score various sized blanks during one operation by the same form member, the strip knives, as well as all others employed, may be placed accordingly. The edges of the knives protrude above the surface of the blocks, to which they are secured, sufficiently to operate efficiently upon the box forming material. Wherever it is desired to cut the latter, the section of the knife blade corresponding thereto, as *a*, in Fig. 6, is sharp, and wherever a mere scored or creased result is desired, the corresponding section *b*, is blunt.

In Fig. 1, it may be noted that two detachable members 13 and 14, are shown. It has been found desirable, under certain circumstances to have the member 13, carry certain of the knives required for a complete cutting and scoring operation. These knives are usually those which cut and score a box forming blank longitudinally thereof, and therefore comprise, as shown in Fig. 5, strip knives 6, for cutting the blank into the width desired, and scoring knives 7, corresponding thereto. It has also been found desirable to place upon this member the knives 8, which are adapted to punch the parts *c*, of Fig. 4. I prefer to merely set these latter knives in the blocks without screws or other securing means. It is obvious, however, that the precise selection of knives, or the precise number of members adapted for the carrying thereof, is largely a matter of choice based upon experience as to what has been found to be practical and economical. The member 14, may be used as a guide for the strips of box forming material. If short strips or blanks are used, there may be employed any desired means adapted to grip the same; or the member 14, may be dispensed with.

When my invention is used in its most elementary form, where only two members are used, one acting as a form and the other as an impression member, strips or blanks of box forming material are fed therebetween, and are acted upon by the knives carried thereon. The result, as indicated in Fig. 4, is an efficiently and economically prepared box blank adapted to be folded into and used as a box.

It should be noted that the term "knives" as employed throughout specifically contemplates knife blades without regard to the condition of the edges thereof, but may evidently comprehend other constructions. The terms "scoring" and "creasing" are deemed for the purpose hereof synonymous. Moreover, the knives referred to as "cutting and scoring knives" may comprise either a series made up of independent cutting and independent scoring knives, or a combination of both; and "strip" knives may comprise "slitters."

It will thus be seen that I have provided a construction which embodies the advantages, and obviates the difficulties heretofore indicated. It is especially characterized by cheapness, simplicity, and efficiency, and permits the economical employment of rotary machines for box making purposes.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention could be made without departing from the scope thereof, I intend that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. I desire it also to be understood that the language used in the following claim is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

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

In a blank forming machine, in combination, a rotary platen, a rotary form cylinder adapted to coact therewith, continuous marginal cutting knives positioned around said form cylinder, a plurality of knives operatively associated with said form cylinder between said marginal knives, blocks secured to said form cylinder for detachably retaining said second mentioned knives in position thereon whereby the same may be easily removed and the pattern changed and means for holding the material to be operated upon in contact with said rotary platen throughout a substantial portion of its surface.

In testimony whereof I affix my signature, in the presence of two witnesses.

ROBERT MASON.

Witnesses:
R. P. Lee,
E. G. Whitney.