(No Model.) 2 Sheets—Sheet 1.

A. A. WOOD.

PAPER BOX MACHINE.

No. 365,766. Patented June 28, 1887.

Fig. I.

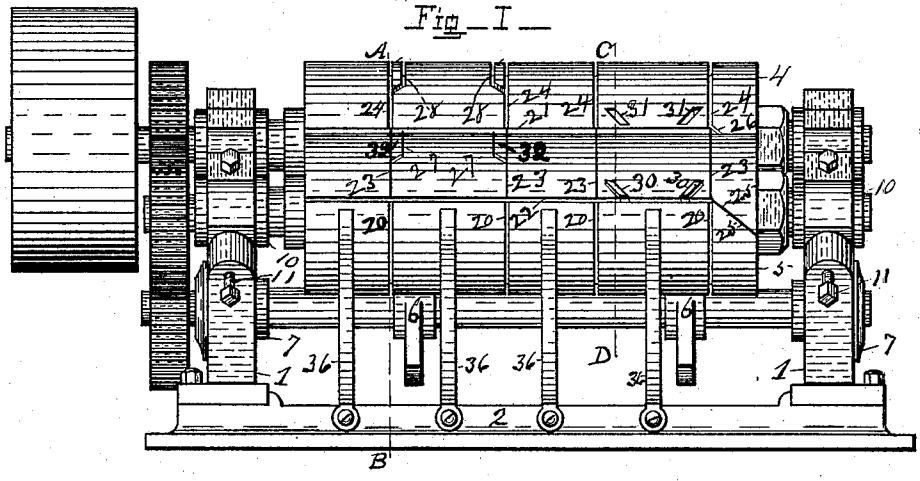
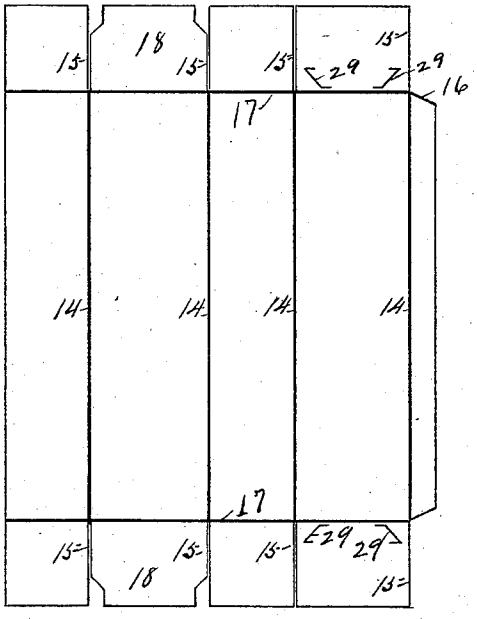


Fig. II.



Witnesses.

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J. Vogt

Inventor.

Albert A. Wood

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. III.

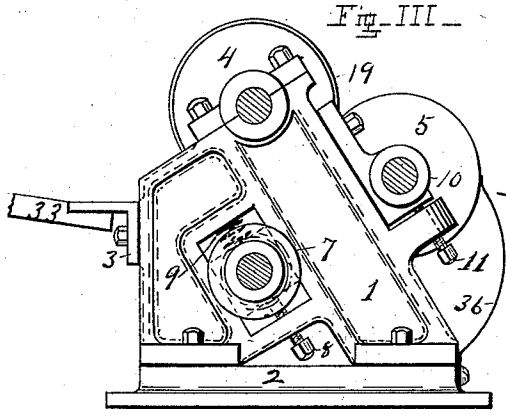


Fig. IV.

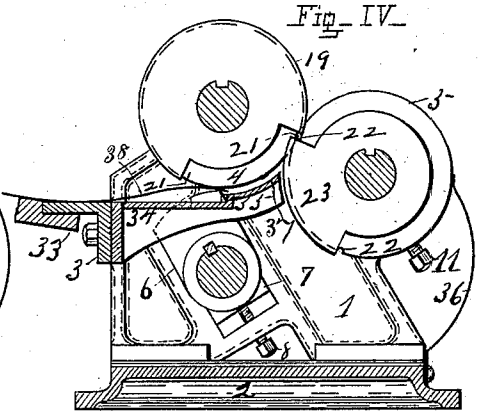


Fig. V.

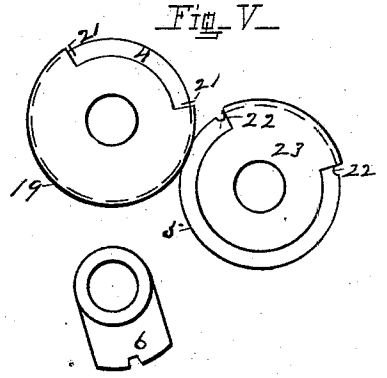


Fig. VII.

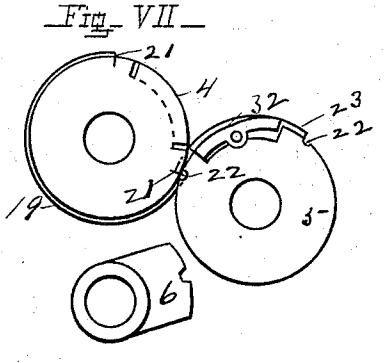
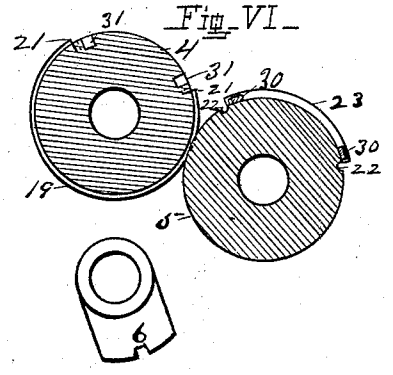


Fig. VI.



Witnesses.

A. G. Wood

J. Vogt.

Inventor.

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UNITED STATES PATENT OFFICE.

ALBERT A. WOOD, OF ATLANTA, GEORGIA, ASSIGNOR TO JOHN R. WILKINSON, OF SAME PLACE.

PAPER-BOX MACHINE.

SPECIFICATION forming part of Letters Patent No. 365,766, dated June 28, 1887.

Application filed July 29, 1886. Serial No. 209,487. (No model.)

To all whom it may concern:

Be it known that I, ALBERT A. WOOD, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented a new and useful Paper-Box Machine; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention is a machine for cutting and creasing paper or card-board blanks for boxes; and it consists in the construction and arrangement of rotary cutters and creasers and other details, which will be hereinafter fully described, and then specifically pointed out in the claims.

In the accompanying drawings, Figure I is a side elevation of the machine with the rollers in the position shown in Fig. V. Fig. II is a diagram of a box-blank that the machine would cut with the combination of rollers that is shown. Fig. III is an end view of the machine, showing the roller-adjusting devices. Fig. IV is a vertical section on the line A B, Fig. I. Fig. V shows a section of the rollers separately from the rest of the machine at either of the two joints at which said rollers are separable nearest the right-hand side in Fig. I, with the knives in place. Fig. VI represents a section through the rollers on the line C D, Fig. I. Fig. VII shows the rolls divided at a point which gives a side view of the lever employed to eject the waste from between the cutters.

In the figures, 1 represents the two ends of the frame, which are connected by the base-plate 2 and bar 3, and carry the boxes for the rollers 4 and 5 and the segmental roller 6. The boxes 7 on the shaft of the roller 6 are adjustable in a housing by means of the screws 8 and springs 9, and the boxes 10 are adjustable by the screws 11. These rollers 4 and 5 are made up of sections, each section being preferably of a length equal to that part of a box-blank between the creases 14 of Fig. II. These sections are preferably arranged adjacent to each other and securely keyed or otherwise fastened upon the shafts which carry them, each series of sections forming a complete roller. By this method of construction I am enabled to form the groove in the peripheries of the rollers at less cost than if the roller was a solid cylinder, as it is much easier to remove the metal needed to form a groove from the edge of a section than it would be to cut it from the solid face of such a cylinder. It also affords greater facilities for repair and changes in the arrangement of the rollers to form blanks for different styles of boxes.

The shafts of each of the rollers 4, 5, and 6 are provided with gears of the same diameter at the pitch-line as the roller, and the shaft of the roller 4 is provided with a pulley, the gears on the shafts of the rollers 5 and 6 engaging with the gear on the shaft of the roller 4. By this arrangement of the driving-gears and their being of equal diameters, the rollers are caused to synchronize, and the several projections and indentations on their surfaces register with each other. The rollers are arranged to cut and crease the paper or board, as shown in Fig. II, the paper being of a proper size for a box. In this blank 14 and 17 are creases and 15 are slits. The creases 14 are formed by the circular blades 19, which project sufficiently to force the paper into the grooves 20, and the creases 17 are formed by the blades 21 forcing the paper into the grooves 22, and the slits 15 are made by the circular knives 23, which cut through the paper and into the grooves 24. The angular cut 16 is made by the knife 25 and groove 26. A tongue is formed on the ends of the parts 18 by the knives 27 and the grooves 28. The slits 29 are cut by the cutters 30 and hole 31, which hole is of the same form as the cutters. 32 are levers to force from between the knives 23 and 27 the pieces cut from the corners of the parts 18. The table 33 is attached to the bar 3 to support the paper. The brackets 34 extend inwardly and have a shoulder, 35, which is an abutment for the paper, 38, as shown in Fig. IV, as it is fed into the machine, from which point the bracket is curved upwardly to the end forming the curved guides 37.

36 are elastic fingers.

The paper, being fed from the table into the machine one sheet at a time, is placed against

the stop or shoulder 35 to insure the paper being taken up uniformly at the same place by the impingement of the segmental roller 6, which lifts the paper above the shoulder 35 and presses it against the roller 4, and carries it forward until it shall have entered between the rollers 4 and 5, its course up to which time is governed by the curved guiding-surfaces 37, the segmental surface of the roller 6 being of sufficient length to carry it forward until that time. After the segmental surface shall have passed the shoulder 35, another sheet may be placed against the shoulder, to be taken up on the next revolution of the roller 6. On the paper entering between the rollers 4 and 5, the cutting-knives on the roller 5 cut through the paper to make the flaps for one end of the box. Then the creases 14 and 17, Fig. II, are formed by the creasing-blades on the roller 4, after which the flaps for the other end of the box are cut by the knives on roller 5. The waste that is cut out to form the tongue on the part 18 is removed from between the knives, where it would otherwise remain, by the levers 32 in passing the point of contact with the roller 4. The blanks that are inclined to follow the roller 5 on account of the friction against the projecting cutters are removed by the fingers 36. The boxes 10 on the roller 5 slide on the frame and are adjustable to give the desired pressure by the screws 11. The boxes 7 on the roller 6 slide in mortises and are adjustable by the screw 8, against which they are held by the springs 9.

I illustrate in the drawings and describe in this specification the form and location of the cutters and creasers that will cut and crease a blank similar to that shown in Fig. II; but it is obvious that blanks of various forms may be cut by this machine by a change in the form of the cutters and creasers without changing the principle of the invention. I do not therefore claim the arrangement of the cutters and creasers so far as relates to the blank they will cut and crease; but

What I do claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a paper-box machine, the combination of the rollers 4, 5, and 6, the brackets 34, having stops 35, and the curved guiding-surfaces 37, all arranged for joint operation, substantially as shown and described.

2. In a paper-box machine, the roller 5, having cutting and creasing knives and grooves, as described, the lever 32, and the take-off finger 36, in combination with the roller having corresponding knives and grooves and the feeding mechanism, arranged and operating as set forth.

3. In a paper-box machine, the feeding devices consisting of the sloping table 33, brackets 34, stops 35, and curved guiding-surface 37, in combination with the stationary roller 4 and adjustable rollers 5 and 6, said rollers 4 and 5 coming nearly in contact and having the same peripheral speed, causing the projections of one to register with the recesses of the other, substantially as specified.

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

ALBERT A. WOOD.

Witnesses:

D. P. MORRIS,

JOHN J. WOODSIDE.