G. W. SWIFT, JR.

MACHINE FOR FACING CORRUGATED PAPER.

APPLICATION FILED JAN. 12, 1911.

1,086,097. Patented Feb. 3, 1914.

FIG. I.

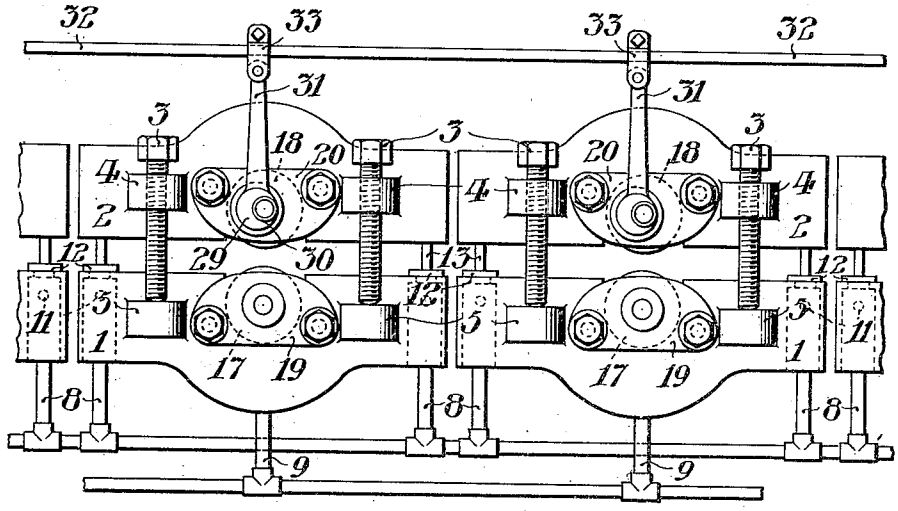


FIG. II.

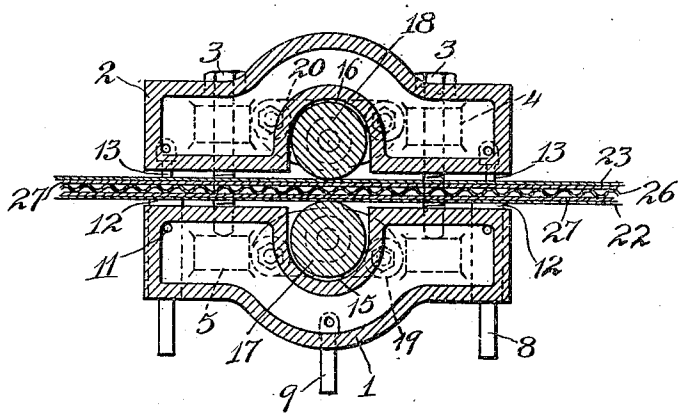
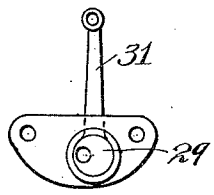


FIG. III.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE W. SWIFT, JR., OF BORDENTOWN, NEW JERSEY.

MACHINE FOR FACING CORRUGATED PAPER.

1,086,097. Specification of Letters Patent. Patented Feb. 3, 1914.

Application filed January 12, 1911. Serial No. 602,139.

To all whom it may concern:

Be it known that I, GEORGE W. SWIFT, Jr., of Bordentown, in the State of New Jersey, have invented a certain new and useful Improvement in Machines for Facing Corrugated Paper, whereof the following is a specification, reference being had to the accompanying drawings.

My invention may be advantageously employed in machines of the class described in Letters Patent of the United States #917,503 granted to me April 6th, 1909, which being supplied with a web of corrugated paper having plane paper webs upon opposite sides thereof and adhesive material at the contiguous surfaces of said webs, progresses said plane webs in contact with said corrugated web and contemporaneously dries the same; thus producing a multiple web which is a plane faced cellular paper board. The machine described in said Letters Patent includes endless belts of flexible sheet metal having opposed runs between which the paper webs are fed; means for driving said belts in unison; means for varying the space between said runs to fit webs of different thickness; and means for drying said webs, comprising opposed normally stationary heaters embracing said belt runs and relatively adjustable in correspondence with variations in the space between said runs. Said stationary heaters are plane faced steam boxes over which said belt runs are drawn, in frictional contact therewith, to maintain the belt runs in engagement with the paper webs so as to maintain and progress the latter in proper relation during the drying operation.

It is the object of my invention to provide such heaters with means to support such belt runs, or the paper webs without frictional contact with the plane surfaces of the heaters, and, as hereinafter described, my invention includes opposed steam boxes which are relatively adjustable to vary the space between them in accordance with the thickness of the fabric which is to be produced, having recesses in their respectively opposed and otherwise plane surfaces in which are mounted cylindrical rollers which may be co-extensive with the width of the steam boxes transversely with respect to said webs, or may consist of cylindrical sections transversely spaced upon a common shaft, but in either event each roller projects slightly beyond the plane face of the box in which it is mounted so as to support the contiguous belt run or web without frictional contact with the box.

My invention comprises the various novel features of construction and arrangement hereinafter more definitely specified.

In the drawing: Figure I is an end view of a series of heaters embodying my invention, having means to simultaneously move the axes of the upper rollers, to vary the space between the upper and lower rollers. Fig. II is a sectional view showing the interior construction of a pair of heaters having a pair of flexible metal belts and the cellular fabric embraced between them. Fig. III is an inner face view of one of the adjustable roller bearings shown in Fig. I.

In said figures; the opposed heaters 1 and 2 are separable metal boxes, the former being maintained in stationary position on the frame of the machine and said boxes 2 being vertically adjustable to vary the space between them and the boxes 1 by means of the set screws 3 which extend through the lugs 4 and bear upon the upper surfaces of the lugs 5. Steam or other calefactive fluid may be conveniently supplied to and condensate drained from said heaters 1 and 2 by means of the stationary pipes 8 and 9. Said pipes 8 have stationary branch connections 11 with the boxes 1 and have stuffing boxes 12 through which the branch connections 13 leading to the boxes 2 may be reciprocated without disconnection, so as to not only permit of such variation in the space between the upper and lower heaters as is necessitated by the differing thicknesses of the cellular board products of the machine but also to permit the upper heaters 2 to be raised to an abnormal extent so as to afford access to the space between the heaters and thus permit removal of any obstruction from said space. As shown in Fig. II said boxes 1 and 2 have respective recesses 15 and 16 in their opposed plane faces in which are mounted respective rollers 17 and 18 which are journaled in the detachable bearings 19 and 20 at the opposite ends of said boxes so that said rollers project slightly beyond the plane faces of the respective boxes in which they are mounted and respectively engage the proximal runs 22 and 23 of the flexible metallic belts aforesaid, so as to prevent contact thereof with the opposed plane faces of said boxes while maintaining said belt runs in predetermined

close relation to fit the cellular fabric comprising the corrugated web 26 and opposite plane webs 27. It may be observed that in the form of my invention shown in Figs. I and II, the space between the upper and lower rollers and the space between the upper and lower heaters may be contemporaneously increased or diminished by the rotary adjustment of said screws 3; the telescopic arrangement of the branch pipes 13 permitting such adjustment without breaking the connections to the steam supply and drain. However, I find it advantageous under some circumstances to provide means to increase or diminish the space between the upper and lower rollers without changing the relative position of the upper and lower heaters, and in Figs. I and III I have shown convenient means for effecting such independent adjustment including the eccentric bushings 29 for the shafts of the upper rollers 18 mounted in the bearings 20 and prevented from displacement by collars 30 on said shafts. Said bushings are provided with levers 31 by which they may be turned to raise and lower said rollers. Although said rollers may be arranged to be independently adjusted by the bushings aforesaid, I find it convenient to provide means to simultaneously operate all of said levers 31 and as shown in Fig. I such means includes a rod 32 connected in common to said levers 31 by the adjustable couplings 33. It may be observed that the space between the rollers 17 and 18 may be increased by moving said rod 32 in one direction to simultaneously raise all of said rollers 18, or, said space may be decreased by moving said rod 32 in the opposite direction to simultaneously lower all of said rollers 18.

I do not desire to limit myself to the precise details of construction and arrangement above described, as it is obvious that various modifications may be made therein without departing from the essential features of my invention as defined in the appended claims.

I claim:—

1. In a machine for facing corrugated paper, the combination with belts of flexible sheet metal; of opposed heaters comprising plane faced boxes supplied with a calefactive fluid, spatially supported upon respectively opposite sides of said belts and having respectively opposite recesses in their opposed plane faces extending transversely with respect to said belts; detachable bearings at the ends of said recesses; eccentric bushings in said bearings; levers respectively connected to said bushings; a rod connecting said levers, arranged to simultaneously adjust them; rollers journaled in said bushings and extending in said recesses, the circumference of each roller projecting beyond the plane face of the box in which it is mounted so as to support the contiguous belt without frictional contact with said box; mechanism whereby the space between said heaters may be varied; and, means arranged to connect said heaters with such fluid supply and drain, permitting adjustable variation in the space between said heaters and comprising a telescopic pipe connection.

2. In a machine for facing corrugated paper, the combination with belts of flexible sheet metal; of opposed heaters comprising plane faced boxes supplied with a calefactive fluid, spatially supported upon respectively opposite sides of said belts and having respectively opposite recesses in their opposed plane faces extending transversely with respect to said belts; bearings at the ends of said recesses; eccentric bushings in said bearings; levers respectively connected to said bushings; means connecting said levers, arranged to simultaneously adjust them; rollers journaled in said bushings and extending in said recesses, the circumference of each roller projecting beyond the plane face of the box in which it is mounted so as to support the contiguous belt without frictional contact with said box; mechanism whereby the space between said heaters may be varied; and, means arranged to connect said heaters with such fluid supply and drain, permitting adjustable variation in the space between said heaters and comprising a telescopic pipe connection.

3. In a machine for facing corrugated paper, the combination with opposed heaters comprising plane faced boxes supplied with a calefactive fluid, spatially supported and having respectively opposite recesses in their opposed plane faces; of bearings at the ends of said recesses; eccentric bushings in said bearings; levers respectively connected to said bushings; a rod connecting said levers, arranged to simultaneously adjust them; rollers journaled in said bushings and extending in said recesses; mechanism whereby the space between said heaters may be varied; and, means arranged to connect said heaters with such fluid supply and drain, permitting adjustable variation in the space between said heaters and comprising a telescopic pipe connection.

4. In a machine for facing corrugated paper, the combination with opposed heaters comprising plane faced boxes supplied with a calefactive fluid, spatially supported and having respectively opposite recesses in their opposed plane faces; of bearings at the ends of said recesses; eccentric bushings in said bearings; levers respectively connected to said bushings; means connecting said levers, arranged to simultaneously adjust them; rollers journaled in said bushings and extending in said recesses; mechanism whereby the space between said heaters may be varied; and, means arranged to connect said heaters with such fluid supply and

drain, permitting adjustable variation in the space between said heaters and comprising a telescopic pipe connection.

5. In a machine for facing corrugated paper, the combination with opposed heaters comprising plane faced boxes supplied with a calefactive fluid, spatially supported and having respectively opposite recesses in their opposed plane faces; of bearings at the ends of said recesses; eccentric bushings in said bearings; levers respectively connected to said bushings; a rod connecting said levers, arranged to simultaneously adjust them; rollers journaled in said bushings and extending in said recesses; mechanism whereby the space between said heaters may be varied; and, means arranged to connect said heaters with such fluid supply and drain.

6. In a machine for facing corrugated paper, the combination with opposed heaters comprising plane faced boxes supplied with a calefactive fluid, spatially supported and having respectively opposite recesses in their opposed plane faces; of bearings at the ends of said recesses; eccentric bushings in said bearings; levers respectively connected to said bushings; means connecting said levers, arranged to simultaneously adjust them; rollers journaled in said bushings and extending in said recesses; mechanism whereby the space between said heaters may be varied; and, means arranged to connect said heaters with such fluid supply and drain.

7. In a machine for facing corrugated paper, the combination with opposed heaters comprising plane faced boxes supplied with a calefactive fluid, spatially supported and having respectively opposite recesses in their opposed plane faces; of bearings at the ends of said recesses; eccentric bushings in said bearings; means connecting said bushings, arranged to simultaneously turn them; rollers journaled in said bushings and extending in said recesses; and, mechanism whereby the space between said heaters may be varied.

8. In a machine for facing corrugated paper, the combination with opposed heaters comprising plane faced boxes supplied with a calefactive fluid, spatially supported and having respectively opposite recesses in their opposed plane faces; of bearings at the ends of said recesses; eccentric bushings in said bearings; means connecting said bushings, arranged to simultaneously turn them; and, rollers journaled in said bushings and extending in said recesses.

9. In a machine for facing corrugated paper, the combination with opposed heaters comprising plane faced boxes supplied with a calefactive fluid, spatially supported and having respectively opposite recesses in their opposed plane faces; of bearings at the ends of said recesses; eccentric bushings in said bearings; means arranged to adjustably turn said bushings; rollers journaled in said bushings and extending in said recesses; and, mechanism whereby the space between said heaters may be varied.

10. In a machine for facing corrugated paper, the combination with opposed heaters comprising plane faced boxes supplied with a calefactive fluid, spatially supported and having respectively opposite recesses in their opposed plane faces; of bearings at the ends of said recesses; eccentric bushings in said bearings; means arranged to adjustably turn said bushings; and, rollers journaled in said bushings and extending in said recesses.

11. In a machine for facing corrugated paper, the combination with opposed heaters comprising boxes supplied with a calefactive fluid; of bearings on said boxes: eccentric bushings in said bearings; rollers journaled in said bushings; and, means arranged to adjustably turn said bushings.

12. In mechanism of the class described, the combination with opposed heaters; of opposed rollers carried by said heaters; mechanism whereby the space between said heaters may be varied; and, mechanism whereby the space between said rollers may be varied independently of said heaters.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this twenty-second day of December, 1910.

GEORGE W. SWIFT, JR.

Witnesses:
ARTHUR E. PAIGE,
ANNA ISRAELVITZ.