J. T. FERRES.

MACHINE FOR MAKING CORRUGATED PAPER.

APPLICATION FILED NOV. 26, 1912.

1,100,065.

Patented June 16, 1914.

2 SHEETS—SHEET 1.

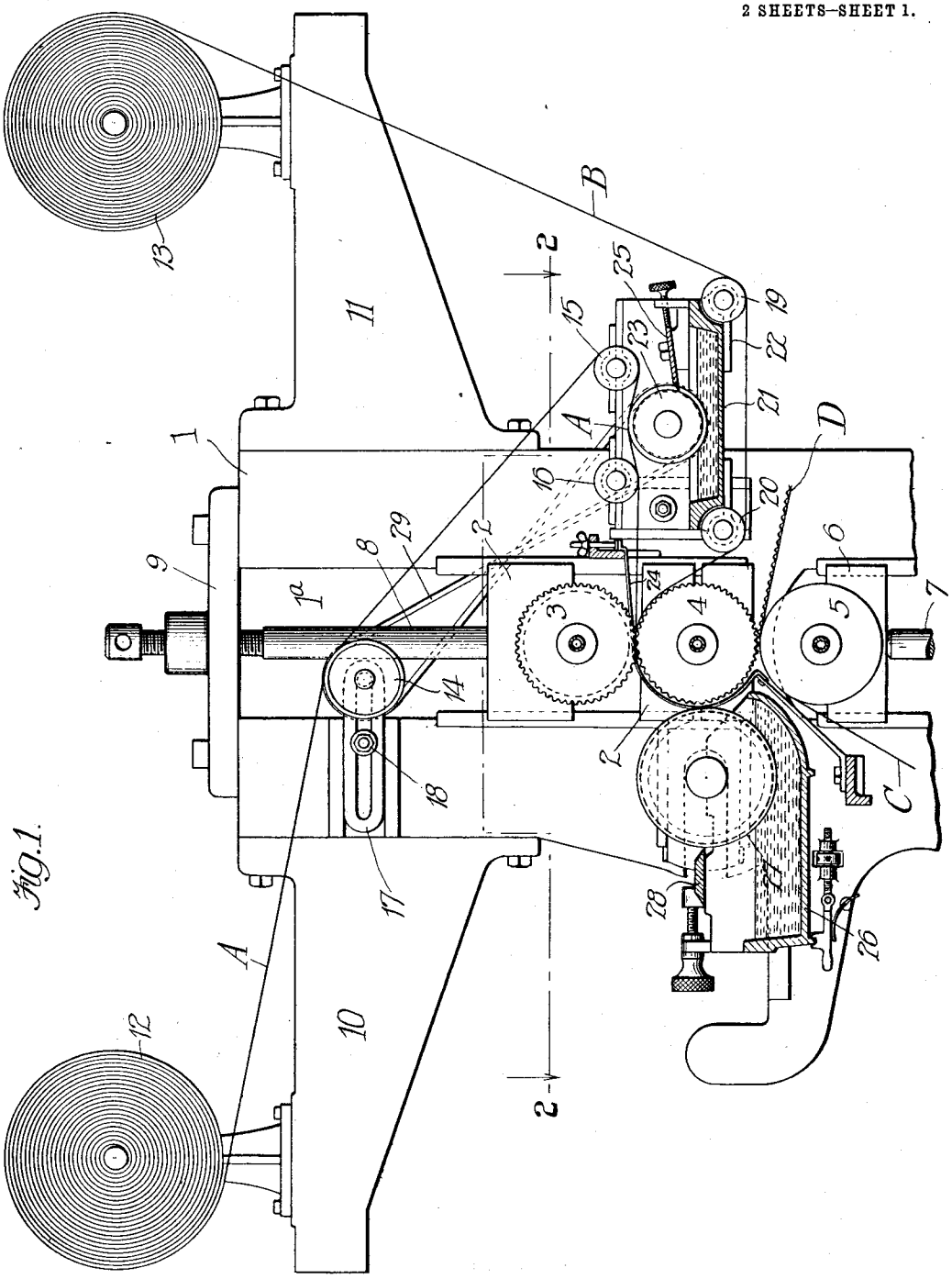


Fig. 1.

Witnesses
Martin H. Olsen.
Robert Dobberman

Inventor
Jeffrey T. Ferres
By Rector, Hibben Davis & Macaulay
His Attys.

J. T. FERRES.

MACHINE FOR MAKING CORRUGATED PAPER.

APPLICATION FILED NOV. 26, 1912.

1,100,065.

Patented June 16, 1914.

2 SHEETS—SHEET 2.

Fig. 2.

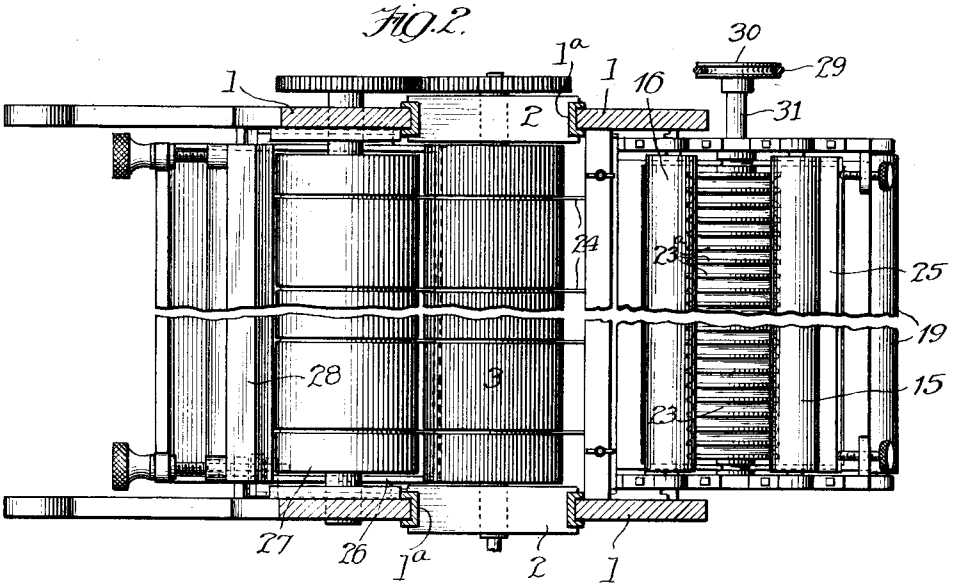
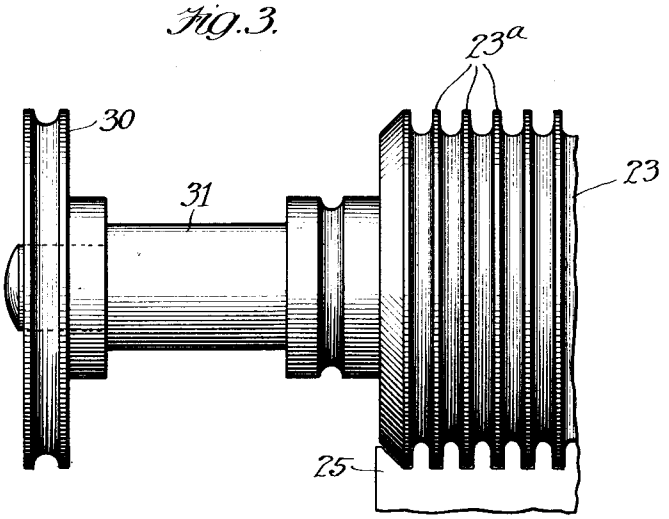


Fig. 3.



Witnesses
Martin H. Olsen.
Robert Dobberman

Inventor
Jeffrey T. Ferres
By Rector, Hibben Davis & Macaulay,
His Attys.

UNITED STATES PATENT OFFICE.

JEFFREY T. FERRES, OF LOS ANGELES, CALIFORNIA.

MACHINE FOR MAKING CORRUGATED PAPER.

1,100,065. Specification of Letters Patent. Patented June 16, 1914.

Application filed November 26, 1912. Serial No. 733,643.

To all whom it may concern:

Be it known that I, JEFFREY T. FERRES, a citizen of the United States, residing at Los Angeles, county of Los Angeles, State of California, have invented certain new and useful Improvements in Machines for Making Corrugated Paper, of which the following is a specification.

My invention relates to a machine for making corrugated paper and the object thereof is to provide a machine of this general character adapted to corrugate a plurality of sheets simultaneously and to apply to one or more of the sheets before being corrugated a series of strips of adhesive, in order to produce a corrugated board which is stronger than the usual board but yet capable of being properly scored and bent for box construction.

My machine is also adapted to apply a facing sheet or sheets to the corrugated paper board produced in the manner explained.

In the drawings Figure 1 is an elevation of the upper portion of a machine illustrating my invention; Fig. 2 a sectional plan on the line 2—2 of Fig. 1; and Fig. 3 a detailed view on an enlarged scale of the adhesive applying roll.

Referring to the present embodiment of my invention as illustrated in the drawings, the machine has a main frame including the opposite side pieces or frames 1 which support the various working parts of the machine. These side frames are provided with vertical openings or slots 1^a within which are arranged the bearing boxes 2—2 of the upper and lower corrugating rolls 3 and 4 between which the paper is corrugated. Below the lowermost roll 4 is a plain roll 5 whose bearing box 6 is vertically movable or adjustable in the opening 1^a like the other boxes, the box 6 being vertically adjustable by any suitable means such as the adjusting screw 7 whose upper end is illustrated in Fig. 1. The uppermost box 2 is adjustable by means of the screws 8 whose lower ends engage said box and whose upper ends are screw-threaded through a horizontal cross bar 9 secured to the tops of the side frames 1.

The main frame carries at its upper end, in the present instance by means of the brackets 10 and 11, the rolls of paper 12 and 13. A sheet or strip of paper A from the roll 12 passes over the idler roller 14 and around and under two idler rollers 15 and 16 and thence between the two corrugating rolls 3 and 4, the paper when corrugated then passing between the lowermost roll 4 and the plain roll 5 and being delivered from the machine at this point. The roller 14 is preferably adjustable in suitable manner as by means of the supporting slides 17 which are adjustable in the end frames 1 and secured in place by means of the bolts 18. A sheet or strip of paper B from the other roll 13 passes downwardly and around the two idler rolls 19 and 20 and thence upwardly between the two corrugating rolls where it meets the other sheet A. The two sheets or strips of paper A and B are thus simultaneously corrugated and they are at the same time caused to adhere by the adhesive applied to the sheet A in a manner now to be described.

The pan 21 which contains the adhesive is mounted between the side frames 1 upon the ledges or shelves 22 of said frames and in such a position that the adhesive roll 23 will dip thereinto and supply adhesive to the sheet A as it passes underneath the idler rollers 15 and 16, which rollers are so arranged as shown in Fig. 1 that such sheet will be brought into proper contact with the adhesive roll. This roll is of the peculiar formation illustrated in detail in Figs. 2 and 3, the same being circumferentially grooved so as to provide a series of adhesive applying surfaces 23^a. Consequently the adhesive, instead of being applied over the entire surface of the sheet A, is applied in a series of parallel lines extending in the direction of the line of movement of the sheet. The adhesive is applied to the sheet A before it is introduced between the corrugating coils 3 and 4 so that the corrugating of the two sheets and the pressing of the same together in order that they may adhere are done at one and the same time between the corrugating rolls 3 and 4 and around the lowermost roll 4 and between such latter roll and the plain roll 5. Furthermore the corrugated board thus produced is held in contact with the lower corrugating roll 4 by means of the rods or wires 24. The proper amount of adhesive carried by the roll 23 is regulated by the adjustable scraper 25 and the amount of the adhesive applied to the sheet A is determined by the width of the cir-

cumferential grooves in the adhesive roll and consequently the number and width of the adhesive applying surface 23^a.

While the machine just described is capable of producing a corrugated board composed of two corrugated sheets, it is evident that three or more sheets can be united as well as the two by simply using additional adhesive applying rolls and additional sheets of paper.

The board produced by means of the machine as thus far described is a corrugated board of the plain or unlined type and used for different purposes. If it is desired to apply a liner or facing strip or strips to this corrugated board, additional paste applying mechanism or mechanisms are incorporated in the machine. For instance, I have shown in the present machine a second adhesive applying mechanism comprising the pan 26 adapted to contain the adhesive, the adhesive applying roll 27, and adjustable scraper 28, the same being mounted and arranged between the side frames. The roll 27 preferably positively actuated is in a position to apply the adhesive to the outer crowns of the corrugated board as it is being carried around by the lowermost corrugating roll 4. The facing or lining sheet or strip which is shown at C comes from a suitable roll (not shown) and passes upwardly over the plain roll 5 and there meets the corrugated board whose crowns have been supplied with the adhesive in the manner just explained with the result that the single facing corrugated board shown at D is produced. In case it is desired to produce merely the corrugated board, the adhesive roll 27 is backed off from its operative position shown, for which purpose the mountings or bearings of this adhesive mechanism are made adjustable in the side frames as shown.

By preference and as herein shown, the adhesive roll 23 is positively actuated. It may be driven in any suitable manner and as shown it is driven by means of the cross belt 29 extending over the pulley 30 on extended shaft 31 of said roll and over the roller 14 which is itself positively driven in any suitable manner. It will also be understood that the corrugating rolls 3 and 4 and the plain roll 5 are suitably driven, but as the driving connections for such rolls are so common the same have not been illustrated.

As shown and by preference, the scraper 25 is adapted to fit the raised and depressed surfaces of the adhesive roll 23.

I claim:

1. In combination with corrugating rolls, means for feeding thereto a plurality of sheets of paper to be corrugated, and means arranged in advance of said rolls for applying to one or more of said sheets a series of continuous lines of adhesive running in the direction of the travel of the paper.

2. In combination with corrugating rolls, an adhesive roll having a series of circumferential adhesive applying surfaces, means for feeding a sheet of paper against said surfaces and to the corrugating rolls, and means for feeding another sheet of paper to the corrugating rolls to be corrugated simultaneously with the other sheet, said adhesive roll being arranged and operating upon the paper in advance of the corrugating rolls.

3. In combination with corrugating rolls, an adhesive roll having a series of circumferential adhesive applying surfaces, means including rollers 15 and 16 located on opposite sides of the adhesive roll for feeding a sheet of paper over said surfaces and to the corrugating rolls, and means for feeding another sheet of paper to the corrugating rolls to be corrugated simultaneously with the other sheet, said adhesive roll being arranged and operating upon the paper in advance of the corrugating rolls.

4. In combination with corrugating rolls, means for feeding thereto a plurality of sheets of paper to be simultaneously corrugated and stuck together, mechanism for applying to one of said sheets before being corrugated a series of lines of adhesive, mechanism for applying adhesive to the crowns of the sheets thus corrugated, and means for feeding a facing sheet thereto.

JEFFREY T. FERRES.

Witnesses:
JAMES S. FREDERICK,
MORTON T. SAYRE.