C. THIÉBAUT.

MACHINE FOR MANUFACTURING CORRUGATED PAPERS OR CARDBOARDS.

APPLICATION FILED MAR. 31, 1910.

990,080. Patented Apr. 18, 1911.

Fig. 1

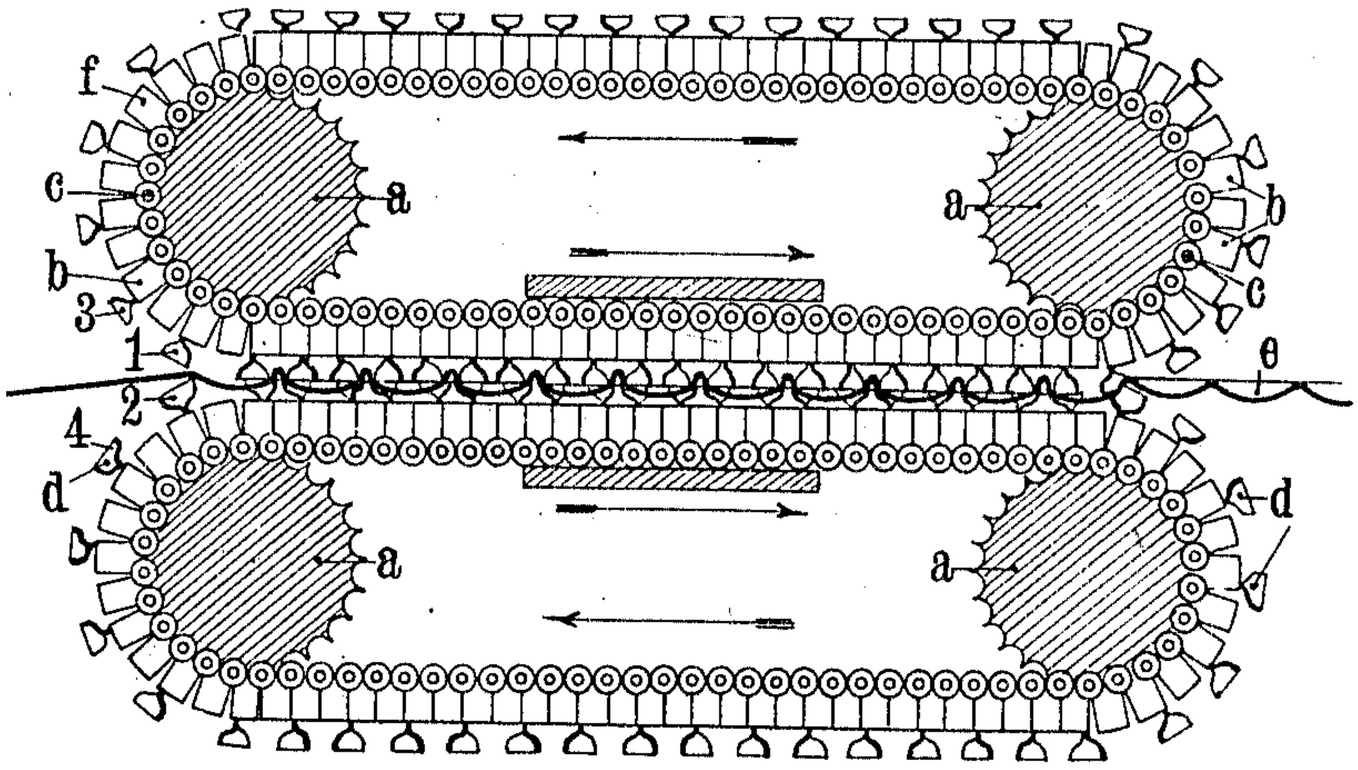


Fig. 2

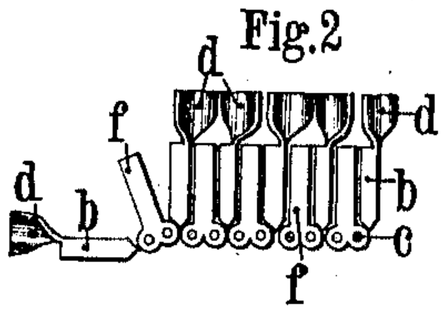


Fig. 3

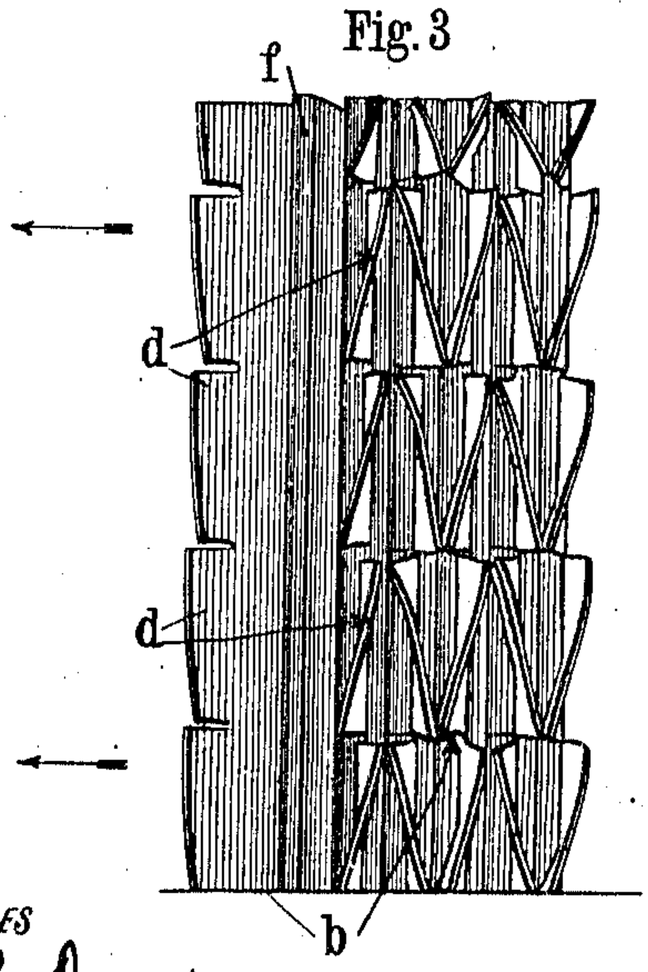


Fig. 4

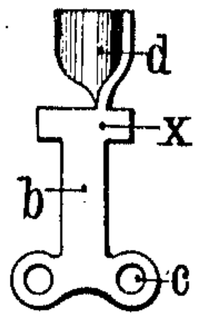
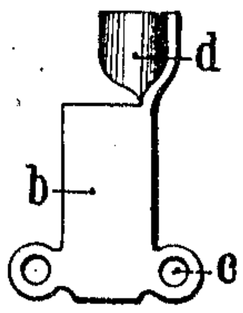


Fig. 5



WITNESSES

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MACHINE FOR MANUFACTURING CORRUGATED PAPERS OR CARDBOARDS.

990,080. Specification of Letters Patent. **Patented Apr. 18, 1911.**

Application filed March 31, 1910. Serial No. 552,577.

To all whom it may concern:

Be it known that I, CAMILLE THIÉBAUT, a citizen of the French Republic, and a resident of Paris, France, have invented a new and Improved Machine for Manufacturing Corrugated Papers or Cardboards, of which the following is a full, clear, and exact description.

This invention has for its object an improved machine for manufacturing corrugated papers or cardboards such as that described in the specification of Patent No. 810,891 of 23rd January, 1906, comprising endless chains between which the paper or other substance to be corrugated passes.

The invention has more particularly in view to permit of the mechanical and continuous manufacture of papers or cardboards in which the corrugations are arranged in such a manner as to partly overlap in order to increase the strength of the product and to render its strength substantially equal in every direction of the sheet. It has already been proposed to utilize for this purpose machines such as described in American Patent No. 235,698 for example in which the substance to be treated is seized between rollers provided with wedge shaped teeth arranged in the direction of the displacement of the paper, but this arrangement presents the defect that the teeth on the drums on seizing the paper or the cardboard tear it so that this machine can only be utilized for paper which is still in the pulp state or for high class papers with very long fibers and very expensive. The invention obviates this defect by arranging the wedges not as heretofore in the direction of their displacement but at right angles to this direction and on dividing each wedge into two wings and rendering these wings, which by their juxtaposition form a wedge, independent of each other in such a manner that the paper can be deformed without tearing it so that paper or cardboard in the dry state can be operated on thus accelerating the manufacture.

In the accompanying drawing which illustrates an embodiment of the invention by way of example, Figure 1 is a partial section of the paper corrugating machine. Figs. 2 and 3 show a part of the chain in elevation and in plan. Figs. 4 and 5 are modifications.

The chain carried by the drum *a* similar to those described in the French Patent No. 324,067 and German Patent No. 144,455 is constituted by operative links or plates *b* hinged to a shaft *c* and comprising at their upper part a series of parallel wings *d* (Figs. 2 and 3) directed obliquely to the axis of the plates and arranged in such a manner that each wing of a plate forms with the corresponding wing of the adjacent operative plate a complete wedge directed perpendicularly to the direction of displacement of the chain. These operative plates are separated by the interposition of a plate *f*.

During the operation of the machine the paper or cardboard *e* (Fig. 1) is seized between the wings 1 and 2 belonging respectively to two corresponding operative plates of the upper and lower chains and these wings form the first fold or first part of the wedge. Owing to the progress of the movement the paper is then seized by the wings 3 and 4 of the following plates also belonging to corresponding plates of the upper and lower chains and these wings, in the same conditions form a fresh fold or second part of the wedge which wedge is thus completely constituted. The paper seized between the wings of the two upper and lower chains contacts with these chains only to a small extent which gives the paper time to become plaited without breaking, contrary to what is the case in the known machines in which the paper engaging with wedges in a single piece, that is to say not divided into parts or wings is suddenly subjected to great strain which causes it to tear or crack. Tearing is also facilitated owing to the fact that the points of the wedges first of all come in contact with the paper so that the sheet being held between the chains by the part which has already been treated and constituting a surface which is not very pliable at the point where it is to be plaited is only stamped with difficulty and is liable to tear. If, however, the paper is seized as in the present machine by the wings which form a relatively short broken line a sort of plaiting of this paper is obtained which is produced softly, progressively and successively and without strain; this paper experiences a progressive stamping so to speak.

The chains of the machine might of course be carried by fluted or other rollers, the driving being effected in any convenient manner. The plates and the wings may present any form appropriate for the re-

sult to be obtained, their number, arrangement and width being variable.

Instead of interposed plates *f* the operative plates might be provided with noses *x* suitably arranged (Fig. 4) and maintaining these plates at a suitable distance apart or these plates *b* might be formed with a thickened part (Fig. 5).

This machine is applicable to the manufacture of corrugated papers or cardboards of all kinds but more particularly papers comprising overlapping or staggered corrugations.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. In a machine of the type indicated, for corrugating paper or paper-board, the combination with drums, of endless chains traveling thereon and comprising a series of links or plates pivotally connected and having their outer parts formed as wings which are arranged transversely but oblique or inclined to the direction of movement of the chains, the succeeding and adjacent wings in the direction of length of each chain being arranged as shown, whereby such wings approach each other at one end and diverge at the other end, thus forming wedges that act on the paper or paper-board, in the manner described.

2. In a machine of the type indicated, for corrugating paper or paper-board, the combination with drums, of endless chains traveling thereon and comprising a series of links or plates pivotally connected and having their outer parts formed as wings which are arranged transversely but oblique or inclined to the direction of movement of the chains, the succeeding and adjacent wings in the direction of length of each chain being arranged as shown, whereby such wings approach each other at one end and diverge at the other end, thus forming wedges that act on the paper or paper-board, in the manner described, and devices interposed between the shanks of adjacent wings of each chain for holding such wings separated or out of contact with each other, as shown and described.

3. In a machine of the type indicated, for corrugating paper or paper-board, the combination with drums, of endless chains traveling thereon and comprising a series of links or plates pivotally connected and having their outer parts formed as wings which are arranged transversely but oblique or inclined to the direction of movement of the chains, the succeeding and adjacent wings in the direction of length of each chain being arranged as shown, whereby such wings approach each other at one end and diverge at the other end, thus forming wedges that act on the paper or paper-board, in the manner described, and plates interposed between the shanks of adjacent wings of each chain for holding the wings separated, as specified.

In witness whereof I have hereunto set my hand, at Paris, France this 18th day of March 1910.

CAMILLE THIÉBAUT.

Witnesses:
H. C. Coxe,
Henry Schwab.