

Jan. 5, 1932.

C. CARCANO

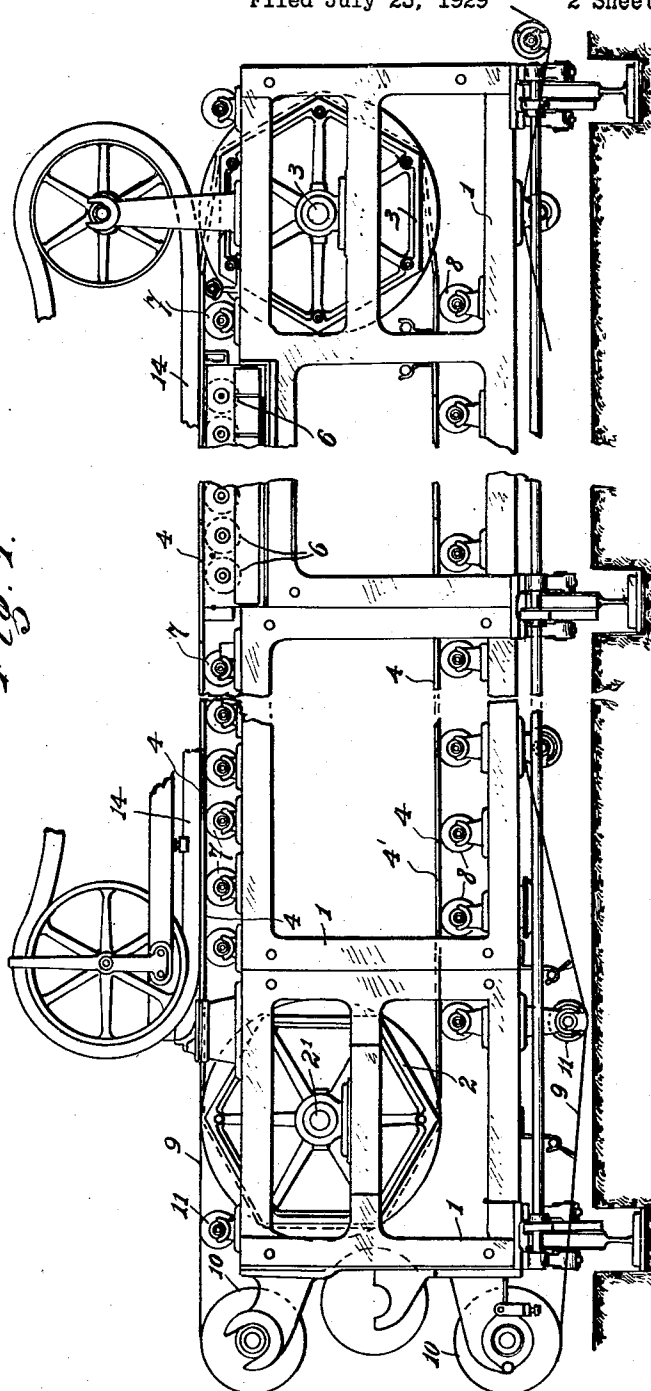
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CONTINUOUS MACHINE FOR MAKING PAPER, ARTIFICIAL LEATHER, AND THE LIKE

Filed July 23, 1929

2 Sheets-Sheet 1

Fig. 1.



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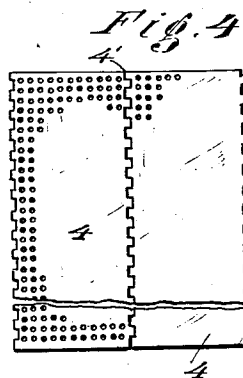
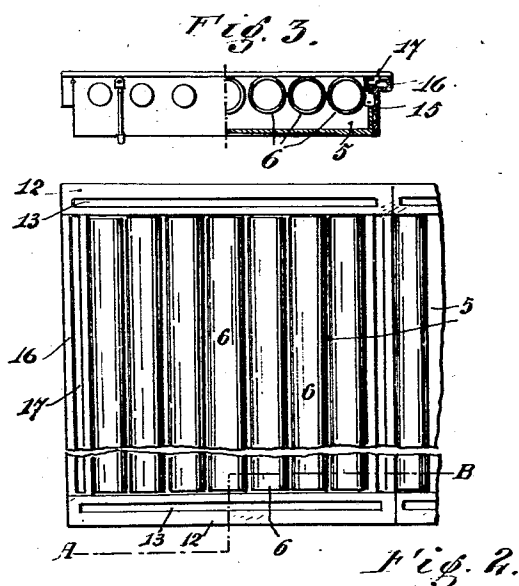
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CONTINUOUS MACHINE FOR MAKING PAPER, ARTIFICIAL LEATHER, AND THE LIKE

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The present invention relates to dehydration machines used in the manufacture of special papers and webs, including artificial leather, and particularly to machines of the continuous type for successfully treating pulp which is hard to drain by virtue of its great thickness and density.

The main object of my invention is to provide a machine of the character indicated with a novel and efficient support for the pulp band thereof, whereby to permit a considerable acceleration in the operation of said machine, with a resulting increased output.

Another object is to reduce wear and strain upon the pulp band of the machine in order to effect economy in operation which is reflected in a cheapened product, and a greater range of output as well.

Other objects and the various advantageous features of my invention will appear more fully in detail as the specification proceeds.

In the accompanying drawings forming part hereof:

Fig. 1 is a diagrammatical side elevation of a machine made according to my invention and embodying the novel and useful features thereof in a practical form.

Fig. 2 shows a portion of the same machine as seen from above.

Fig. 3 is a section of the machine on line A—B of Fig. 2.

Fig. 4 is a detail view of some of the perforated plates of which the pulp band support is chiefly composed.

Throughout the views, the same reference characters indicate the same or like parts.

In the manufacture of paper and certain webs from a pulp hard to be drained and more particularly in the manufacture of artificial leather it is not practicable to remove the water from the pulp band by aspiration in ordinary continuous machines, because the endless wire carrying the pulp is liable to become wedged in its travel which may very likely result in rupture of the pulp band.

In such a machine of the continuous type the pulp to be dried is spread on a wirecloth and travels over a suction chamber provided with rollers supporting and driving the wirecloth. Such a machine, however, shows the

inconvenience that the wirecloth, under the action of a strong suction such as is required to secure a good dehydration sags between one roller and the next and undergoes a strong bending at its edges, whereby air gets in and destroys the suction; besides, a damaging of the wirecloth is likely to result, the wirecloth thus becoming inserviceable after a short time.

The present improvement is proposed with the thought in mind of eliminating the mentioned troubles from continuous dehydration machines so as to make it possible to economically and rapidly drain heavy and otherwise difficultly drained pulp such as is used for artificial leathers and special papers as already indicated in part.

The improvement essentially consists in forming the plane of the continuous machine with suction chambers containing rollers on which a covering plane is made to slide. This covering plane is built up of perforated plates hinge-connected to one another and forming an endless chain driven by polygonal drums. On said perforated plates travels the wirecloth carrying the pulp to be dried, so that the pulp travels over the suction chambers and is subjected to a continuous sucking action from the latter without the wirecloth being subjected to friction, pulls or harmful bending as is the case with the systems heretofore in use.

Referring now again to the drawings 1 is the machine frame; 2 and 3 are two polygonal drums arranged at the two ends of the machine and adapted to be revolved about their axes 2' and 3' by means of any convenient drive; 4 refers to the perforated plates, all of which are alike and interconnected or linked by means of hinges 4' so as to form an endless chain wound about the drums 2 and 3, the side faces of which engage the said plates so as to drive the chain.

The suction boxes 5, similar in principle to those commonly used in machines of this class, here constitute the whole or a portion of the machine plane. In these boxes are mounted the support rollers 6 driven in any convenient manner and connected to the main driving shaft of the machine. Exterior aux-

iliary rollers noted 7 on which the perforated plates are supported in their travel through the first section of the machine in which, as a rule, no suction boxes are present. In the bottom stretch of the band formed by the perforated plates 4, this band is supported on rollers 8 mounted in the bottom portion of the machine.

The wirecloth 9 normally runs on driving and supporting rollers 10 and 11, and is not necessarily different from the wirecloth used in similar machines. The top stretch of the endless band formed by the wirecloth extends over the perforated plates 4; it covers them throughout and its side edges project past the said plates and, when travelling, are supported by and slide on the edges of the suction boxes.

The edges of the suction boxes are provided with water seal chambers 12 having top windows 13 through which the water maintains the wirecloth edges moist in order to secure a tight joint, as used in the other machines already known.

Actual tightness of the joint is obtained with the assistance of two india rubber ribbons 14 as in other similar machines, these ribbons pressing down the edges of the wirecloth and simultaneously closing the windows 13 of the waterseal 12.

On the partition walls 15 of the suction boxes 5, cross water seal chambers 16 are formed, these chambers being provided with top windows 17 flush with the top surface of the perforated plates 4.

The operation of the machine is as follows:

The perforated plates 4, hinge-connected or linked to one another to form an endless chain, are driven by the drums 2 and 3 and travel on the rollers 6 in the direction of the arrow X at a variable speed according to the length of the suction boxes and the quality and thickness of the pulp sheet to be dehydrated. On the said plates, the pulp-carrying wirecloth is spread out, and the side edges of the wirecloth are tightly pressed against the corresponding sliding surfaces by means of endless resilient caoutchouc bands 14. The water begins to run off the pulp sheet in the first portion of the machine and falls through the wirecloth 9, plates 4 and rollers 7; then, as the pulp sheet passes over the suction boxes, it is gradually dehydrated by atmospheric pressure across the meshes of the wirecloth 9 and the holes of the plates 4, the water trickling down past the rollers 6 and falling into the underlying reservoirs or troughs.

On reaching the drum 3, the plates 4 and the wirecloth 9 separate, the wirecloth 9 with the dehydrated pulp thereon setting forth on its travel to the further machines where the pulp sheet undergoes the usual successive treatments by the means and the processes already known.

Of course the constructive and form details may vary in practice without departing from the spirit and scope of the invention.

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 continuous dehydrating machine of the character described, the combination, with a suction chamber, a continuous filter cloth passing over said suction chamber and rolls arranged within said chamber for supporting said filter cloth, of an endless chain of linked and individually perforate rigid plates, which has one branch thereof interposed between said rolls and said filter cloth, for the purpose of supporting said filter cloth upon said suction chamber under relatively great load and atmospheric pressure.

2. In a continuous dehydrating machine of the character described, the combination, with a suction chamber provided with rolls therein and an endless filter cloth passing over said suction chamber and supported upon said rolls, of an endless chain including a series of linked perforate plates of rigid construction and having one branch thereof interposed between said filter cloth and said supporting rolls, and a pair of corresponding rotary polygonal drums for driving said chain, the faces of said drums being coextensive with individual plates of said chain so as to accurately register therewith and form positive driving means for the chain as a whole.

3. In a continuous dehydrating machine of the character described, the combination, with a suction chamber provided with rolls therein and an endless filter cloth passing over said suction chamber and supported upon said rolls, of hydraulic closure means bounding said suction chamber and opening to the upper portion thereof to be effective beneath said filter cloth as a seal between said cloth and said chamber, and relatively rigid means for supporting said filter cloth under great load and pressure including a series of linked perforate plates forming an endless chain having one branch thereof interposed between said filter cloth and said rolls.

4. In a continuous dehydrating machine of the character described, the combination, with a suction chamber provided with rolls therein and an endless filter cloth passing over said suction chamber and supported upon said rolls, of an endless chain including a series of linked perforate plates of rigid construction and having one branch thereof interposed between said filter cloth and said supporting rolls, a series of perforate plates linked to form a chain, one branch of which is interposed between said rolls and said filter cloth in order to support the same upon said suction chamber under relatively

great load and pressure, and movable resilient pressure bands arranged upon the edges of said filter cloth so as to move therewith and exert sealing pressure upon said cloth and supporting chain over portions of said hydraulic closure means.

5. In a continuous dehydrating machine of the character described, the combination, with a plurality of suction chambers having supporting rolls disposed therein, of an endless movable filter cloth arranged over said suction chambers and completely covering the upper portions thereof, a series of perforate plates linked together to form a chain for supporting said filter cloth and having one portion thereof interposed between said filter cloth and said rolls, a plurality of hydraulic sealing chambers arranged laterally and transversely about said suction chambers and opening to the upper portions thereof beneath said filter cloth and chain, and resilient movable means arranged over the lateral edges of said filter cloth and supporting chain as well as over the lateral hydraulic sealing chambers in order to cooperate therewith and seal the edges of said cloth and chain upon said suction chambers.

Signed at Milan (Italy), this 5th day of July, 1929.

CRISTOFORO CARCANO.