No. 867,041. PATENTED SEPT. 24, 1907.

O. HOFFMANN.

MACHINE FOR MAKING PAPER OR PASTEBOARD WITH FIBROUS INSERTIONS.

APPLICATION FILED JUNE 25, 1906.

3 SHEETS—SHEET 1.

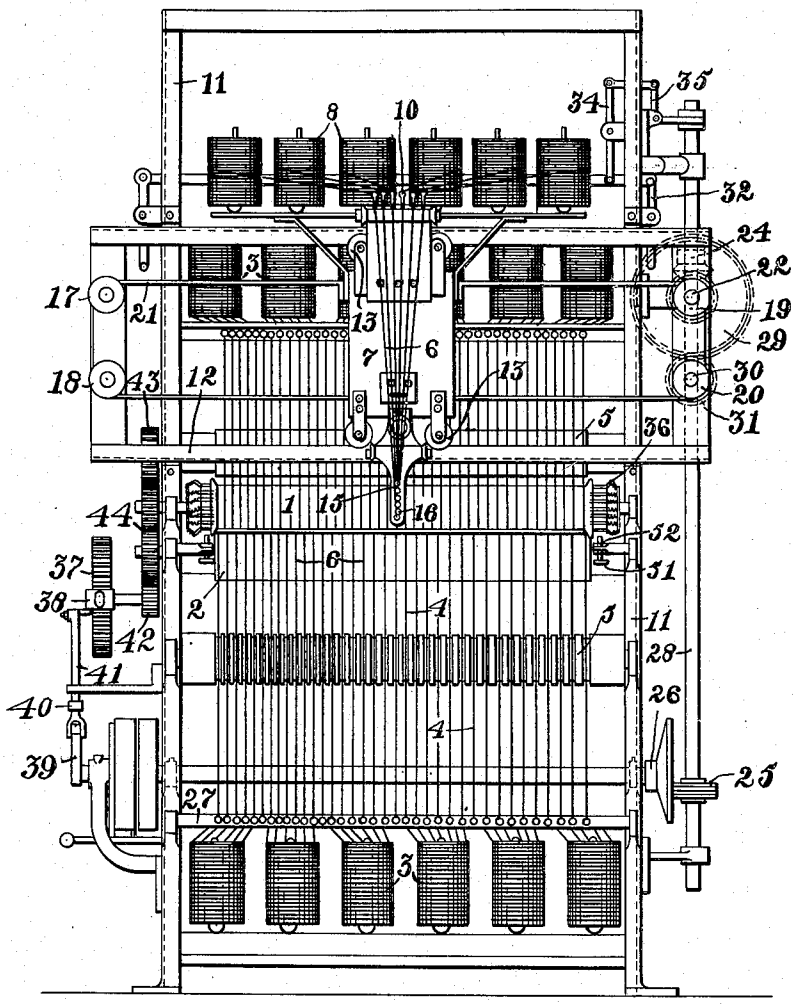


Fig. 1.

Attest
Edwd L. Polson.
Beatrice G. Phillips.

Inventor,
Oscar Hoffmann,
By Richard & Co
Attys.

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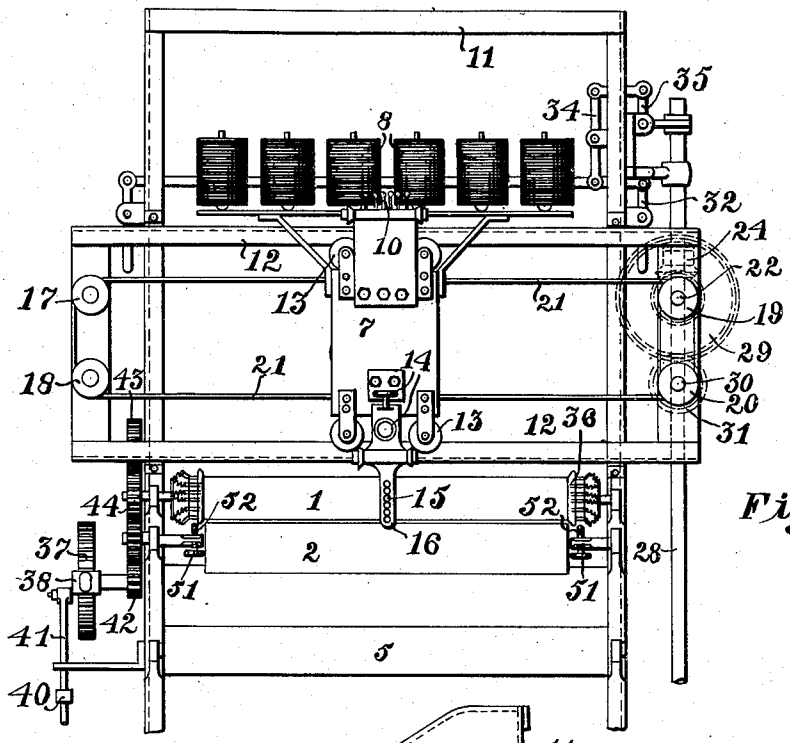


Fig. 2.

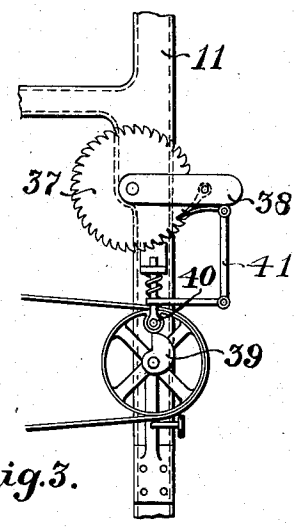


Fig. 3.

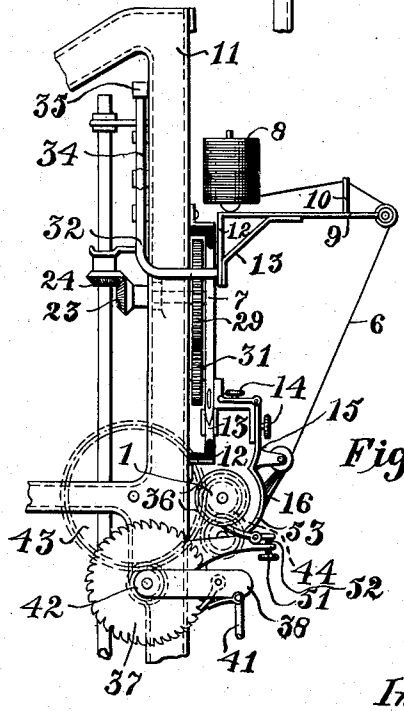


Fig. 4.

Attest:
Edwd L. Tolson.
Beatrice G. Phillips.

Inventor,
Oscar Hoffmann
By Richard & Co
Attys.

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3 SHEETS—SHEET 3.

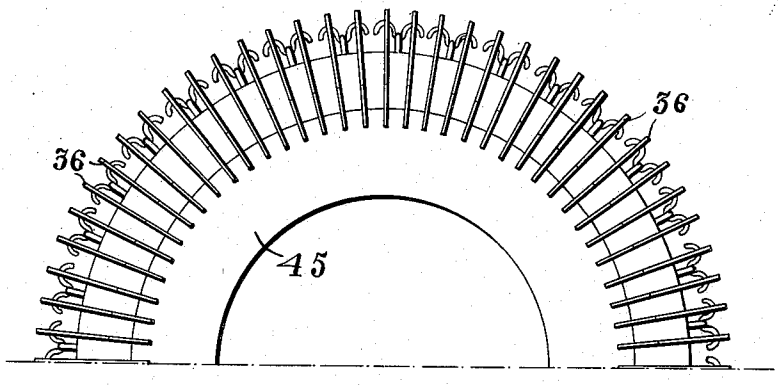


Fig. 5.

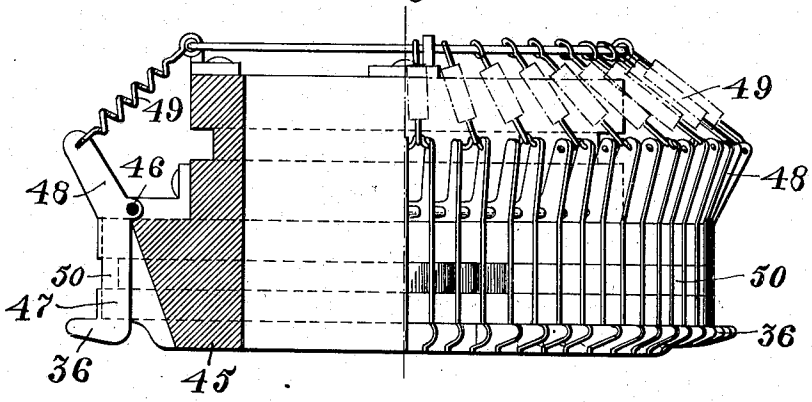


Fig. 6.

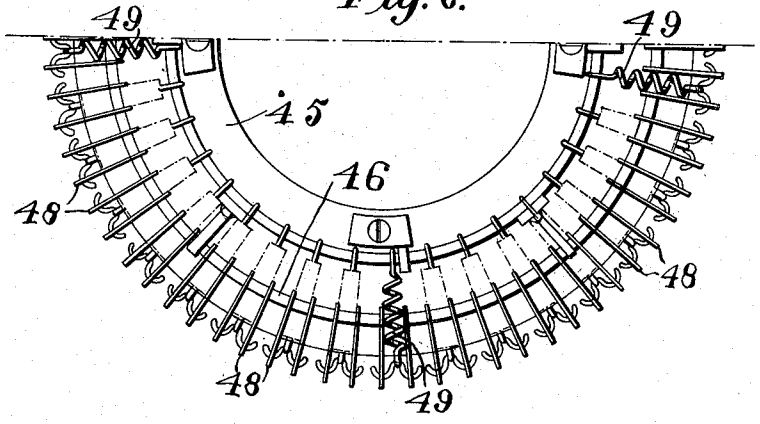


Fig. 7.

Attest:
Edwd C. Polson.
Beatrice G. Phillips

Inventor,
Oscar Hoffmann.
By Richards & Co
Attys.

UNITED STATES PATENT OFFICE.

OSCAR HOFFMANN, OF NUREMBERG, GERMANY.

MACHINE FOR MAKING PAPER OR PASTEBOARD WITH FIBROUS INSERTIONS.

No. 867,041. Specification of Letters Patent. Patented Sept. 24, 1907.

Application filed June 25, 1906. Serial No. 323,298.

To all whom it may concern:

Be it known that I, OSCAR HOFFMANN, merchant, a subject of the German Emperor, residing at Nuremberg, Bavaria, Germany, have invented new and useful Improvements in and Relating to Machines for Making Paper or Pasteboard with Fibrous Insertions, of which the following is a specification.

This invention relates to an improvement in the machines for making paper or pasteboard with thread or fiber insertions, in which the separate crossing threads or the like are embedded between two bands of paper or pasteboard adapted to be connected with one another by an adhesive, and passing between pressure rollers. The known machines of this kind have the drawback that they have a comparatively small productive capacity, because at each reciprocation of the inserting carriage, only one thread or fiber is inserted.

Now this invention has for its object to substantially increase the productive capacity of these machines by a larger number of cross threads being embedded or inserted simultaneously at each reciprocation of the carriage. For this object an arrangement is adopted, one form of constructions of which is shown in Figures 1—7 of the accompanying drawings.

Fig. 1 is a front view of the machine; Figs. 2—4 show the inserting mechanism and means for operating the same; while Figs. 5—7 are a front view, cross section and rear view respectively of the heads of the tightening or stretching pins mounted on the ends of the pressure roller.

The paper bands which are coated on one side with an adhesive substance by passing over gumming rollers, are conveyed to two encountering rollers 1, 2, rotating in opposite directions and passed through between the adjacent surfaces of these two rollers, the gummed surfaces of the paper bands being thereby united. Between these rollers 1 and 2 longitudinal threads 4 from a series of lower and upper bobbins 3 are drawn in over grooved guide rollers 5.

The transverse threads 6 which are to be simultaneously drawn up, are, in the form of construction of the machine shown, wound off six bobbins 8 revolubly mounted on a carriage 7 and drawn downwards through eyelets 10 mounted on a projection 9 of the carriage and over a guide roller. The carriage 7 itself is, in order to diminish friction, carried by means of rollers 13 on two bars 12, mounted on the frame 11, and has at its lower end a curved insertion arm 15, adjustable, by means of the screw 14, concentrically to the upper pressure roller 1, which insertion arm is provided with perforations 16, serving for drawing the cross threads 6 through, and also with inwardly projecting eyelets 17^1, entering between the stretching pins, for the transverse threads.

In order to impart to the carriage 7 a reciprocating motion, it is attached to the upper side of an endless band 21 stretched over pulleys 17, 18, 19, 20. On the shaft 22, on which the pulley 19 is loosely revolubly mounted, there is a bevel wheel 23 which meshes with a bevel wheel 24 on a vertically displaceable shaft 28 rotated by a friction disk gear 25, 26, from the driving shaft 27. The shaft 22 also has a toothed wheel 29 which is in engagement with a pinion 31 keyed on the shaft 30 of the driving pulley 20. The reversal of the movement of the carriage 7 at both ends of its course is effected by its encountering a double lever 32 and, by the intermediary of rods 33, 34, 35, axially displacing the vertical shaft 28, so that the friction disk 25 alternately encounters the flat disk 26 above and below its center whereby the direction of movement is reversed. In order during this operation to be able to displace the upper pressure roller carrying the stretching pins 36 through a distance equal to six of the stretching pins, a ratchet wheel 37 is mounted on the frame 11, the shaft of which wheel is loosely engaged by a yoke 38 carrying a pawl. This yoke is raised by rods 40, 41, actuated from a cam disk 39, but on this rod under the action of a spring snapping over the beak of the cam disk 39, the yoke is drawn downwards and thereby, by the intermediary of gearing 42, 43, 44, produces the displacement or moving forward of the stretching pins 36. The latter are mounted on two armed levers 47, 48, pivotally secured on the collar 45, (Figs. 5—7), by means of a wire ring 46. These levers are made of comparatively thin sheet metal so as to reduce as much as possible the space required by them together with the stretching pins 36, and their arms 48 are arranged in pairs under the influence of spiral springs 49 in such a way that the stretching pins 36 project beyond the periphery of the collar and the upper pressure roller. In order to allow of the release of these stretching pins from the thread loops at the encountering parts of the two pressure rollers 1 and 2, the collar 45 is provided with an annular groove 50 on the side against which the arms 47 of the two armed levers 47, 48, lie, in which groove a lever 52, adjustable by means of a pressure screw 51, and mounted on the frame 11 engages. The arms 47 carrying the stretching pins rest on the upper side of this lever and are thereby depressed into the annular groove 50 of the disk 45, and are by that means drawn out of the thread loops, so that the double band provided with the crosswise inserted threads or fibers may be drawn off by the pressure rollers.

I declare that what I claim is:—

1. A machine for making paper and the like having fibrous insertion comprising a pair of pressure rollers and a device for feeding transverse threads thereto, which device consists of a carriage, means for reciprocating said carriage in front of said rollers, means mounted on said

carriage for supplying the threads and means for engaging and stretching said threads parallel with one of said pressure rollers substantially as described.

2. A machine for making paper and the like having fibrous insertion comprising a pair of pressure rollers and a device for feeding transverse threads thereto, which device consists of a carriage, means for reciprocating said carriage an extending arm on said carriage having a portion concentric with one of said rollers, a plurality of inwardly projecting eyelets on said arm, means for supplying one thread to each of said eyelets and means mounted at the ends of said roller for engaging, stretching and releasing said threads at each reciprocation of said frame substantially as described.

3. A machine for making paper and the like having fibrous insertion comprising a pair of pressure rollers and a a device for feeding transverse threads thereto, which device consists of a carriage, means for reciprocating said carriage, means for supplying threads from said carriage to one of the pressure rollers, means mounted at the ends of said roller for engaging said threads during a reciprocation of the frame, and means for rotating and then disengaging said engaging means at the end of each reciprocation substantially as described.

4. A machine for making paper and the like having fibrous insertion comprising a pair of pressure rollers and a device for feeding transverse threads thereto, which device consists of a reciprocating carriage, means for supplying threads from said carriage to one of said pressure rollers, a series of pins carried by two armed levers pivotally mounted on rings at the ends of said roller adapted to engage and stretch said threads, an annular groove in each of said rings and means engaging in said grooves for releasing the threads from said pins substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OSCAR HOFFMANN.

Witnesses:

WILHELM BÄUN,

OSCAR BOCK.