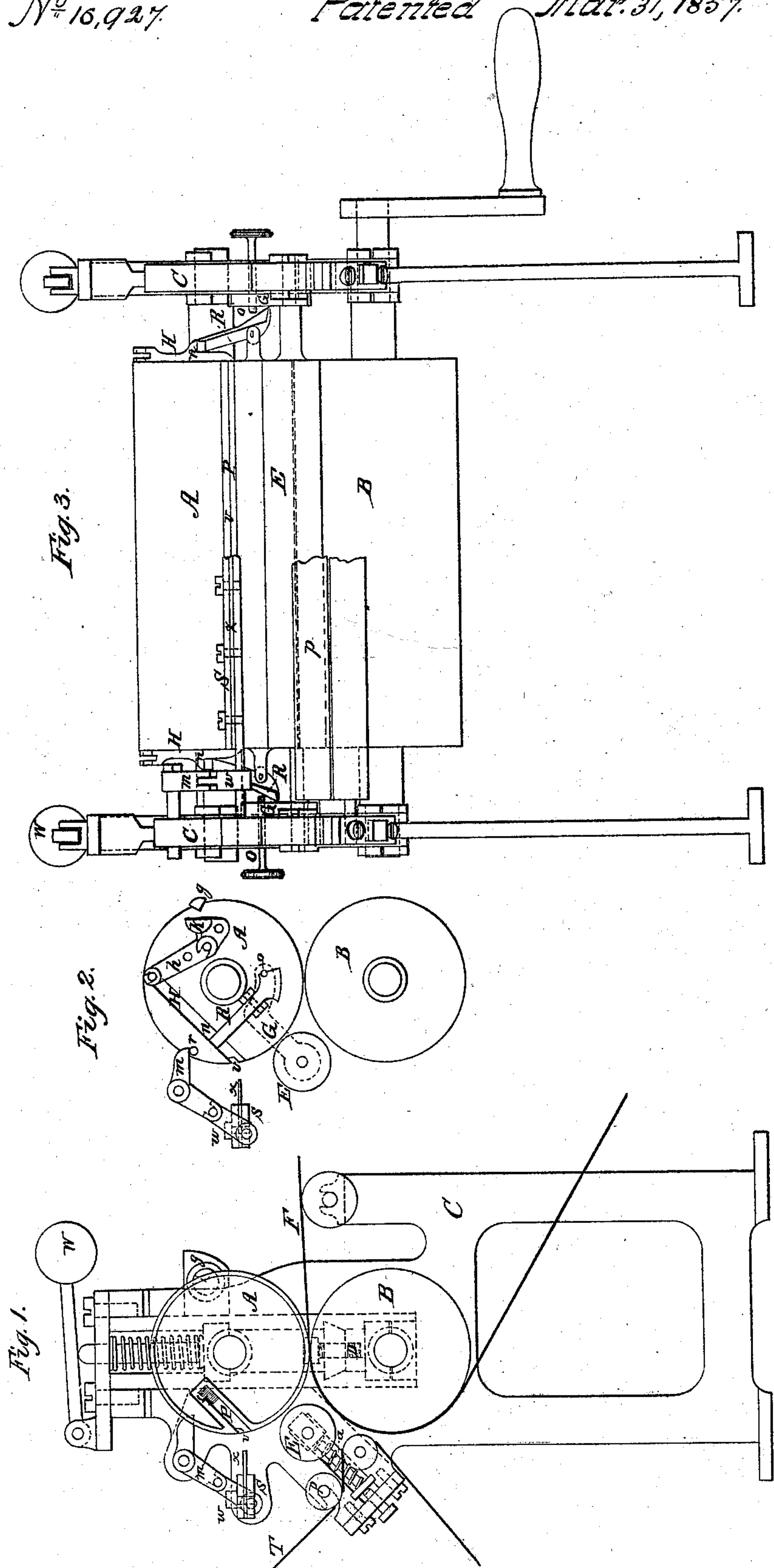


I. Koch
Pasteboard Mach.
N^o 16,927. Patented Mar. 31, 1857.



UNITED STATES PATENT OFFICE.

LOUIS KOCH, OF NEW YORK, N. Y.

MACHINE FOR MAKING PASTEBOARD.

Specification of Letters Patent No. 16,927, dated March 31, 1857.

To all whom it may concern:

Be it known that I, LOUIS KOCH, of New York, in the county and State of New York, have invented a new and Improved Machine
5 for the Manufacture of Pasteboard; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked
10 thereon.

Figure I represents a section of the forming and pressing roller. Fig. II is an outside view of the same and Fig. III is a front view.

15 In the present mode of manufacturing pasteboard, the paper web, formed on the common wire gauze cylinder in the usual manner, is brought by and upon an endless felt between two rollers, the upper one of
20 which is called the forming roller, upon which said paper web is wound during as many revolutions of the said roller, until the required thickness is obtained, when the workman, following with a suitable instrument a groove running the whole length of
25 the roller, cuts the so formed board in two, and then grasping with his hands the corners of the board at the next revolution, tears the same off from said roller, by which
30 arrangement it not only requires great attention to obtain the boards all the same thickness but at same time a great difficulty is experienced in the manner of taking the boards off from the roller without tearing
35 or breaking the same.

My improvement consists first in an arrangement by which the board is cut through or torn asunder by the machine, when the same has obtained any desired
40 thickness which can be easily regulated and secondly combining therewith an arrangement whereby the such cut board is taken off from the roller upon which the same has been formed.

45 The paper web is first prepared upon a common wire gauze cylinder in the usual manner and is then carried upon the felt F between the rollers A and B. The roller A is called the forming roller and is covered
50 with muslin or linen, the adhering property of which with the paper web causes the latter to wind itself around said forming roller A instead of following the felt which runs over the roller B back to the machine. The
55 circumference of this forming roller is made

equal to the required length of one board. These rollers A and B run in boxes fitted into the side frames G of the machine. The boxes of the lower roller B are acted upon by screws D by which said roller is firmly
60 fixed in its place, and the boxes of the upper roller A are acted upon by the weights W so as to press this forming roller against the lower roller B. By the pressure thereby produced the moist surfaces of the paper
65 web will be made to adhere to each other as the same is secured upon the forming roller, and at the same time the water contained in the same will be partially pressed out.

E is a roller turning in suitable boxes capable of sliding in grooves in the frame C
70 and pressed by springs (a), acting against said boxes, against the face of the forming roller A. To the boxes of said roller E an arm G is attached, provided on its other end
75 with a movable screw or projection, O, which is consequently carried backward with this roller E, when said roller is forced away from the forming roller A in consequence of its gradually increasing diameter
80 by the intermediate thickness of the board formed around said roller A.

In the forming roller A a movable slide P, which extends the whole length of said
85 roller, is fitted sliding in a suitable box and acted upon by small springs f. On the outside of the forming roller A an arm H is attached to this slide P, into which the lever R is fitted bearing against a nose, n, on said
90 arm H, and acted upon by a small spring to keep said lever R in its place, preventing thereby the slide P from being pressed outward, by the action of its springs f. The
95 other end of this lever R forms an inclined plane, having at the extremest point of its length and toward the line of motion of the projection or screw O, its higher point. From this point the inclination of the plane diminishes to all sides regularly, so that all
100 other points from this end of the lever R lie in a lower position. The position of the screw O of the arm G when the roller E is in direct contact with the forming roller A, is in the lowest point of the plane on the
105 lever R during the time of their meeting, and it follows that when said roller E is forced away from the roller A by the increasing thickness of the board, the screw O which is moved with and through this roller
110 E will touch at each revolution of the roller

A, the plane on the end of the lever R but without communicating sufficient motion to said lever R, to force the other end of the same away and clear of the nose *n* on the arm H, until the roller E has been so far pressed away from the forming roller A as to bring thereby the screw O on the end of the arm G opposite to that point on the plane on the end of the lever R where the motion thereby produced, is sufficient to force the lever R, clear of the nose (*n*) on the arm H, thereby setting said arm H as well as the slide P at liberty, when the action of the springs *f* will force said slide P outward. By changing the position of the screw O, the distance to which the roller E shall be forced away from the forming roller A before said lever R is acted upon so as to liberate the slide P, can be regulated, and as the roller E is forced away from the forming roller A an amount of the gradually increasing thickness of the pasteboard, wound around the forming roller, the thickness to which the pasteboard shall be wound around said forming roller will therefore be regulated and determined by the position of this projection or screw O.

h and *k* are levers connected with the arm H and consequently with the slide P.

g, is a projection fast on the frames C of the machine.

The roller E which is pressed by the spring *a* against the forming roller A, upon which the paper web is wound, as before described will be gradually forced away from said roller A as the board increases in thickness taking with it the arm G and screw O.—When the paste board has obtained the required thickness which is regulated by the position of the screw O, said screw O acts upon the lever R so as to force the lever R away and clear of the nose *n* on the arm H setting thereby the slide P at liberty which will then be forced outward by the springs *f*, by which action the paste board which has been formed on the roller A will be cut in two. To facilitate this cutting or tearing of the thick pasteboard a recess, *v*, forming a groove running the whole length of the roller A is made on the top edge of the slide P or immediately before the same in the body of the roller A by which consequently the pulpy substance is at that part under no pressure from the roller B, and contains more water than anywhere else. The cohesion of the fiber of the pulp is therefore weakest at this point, and by the springing out of the slide P the board is easily torn asunder at that point, where-as it adheres to the solid part of the slide P, so that the same is, by the springing out of the slide, loosened from the roller A the whole space between the slide P and the touching point of the roller E.

Instead of cutting the board after the

same has obtained the required thickness by means of a movable slide in the manner above described, a hinge, let into the forming roller A the whole length flush with the circumference of the same may be substituted and operated by levers in such a manner as to make said hinge fly open when the required thickness of the board is obtained.

S is a movable frame running the whole length of the forming roller A and turning in bearings in the frames C of the machine, provided with arm *w* connected with levers *m*, which latter are acted upon by projecting pins, *r*, fast on the ends of the forming roller A, by the actions of these pins, *r*, against one end of the levers *m* a downward motion is communicated to the movable frame S, by each revolution of the roller A. A small spring or weight brings this frame S back again into its original position. To this frame S a piece of leather or india rubber *x*, is attached extending the whole length of the forming roller A and projecting toward the roller A so far, that it overlaps the slide P when the same is pressed out about one quarter of an inch.

When the slide P has cut the board and partly loosened the same from the forming roller A as above described, the pins, *r*, on the ends of the roller A act upon the levers *m* and communicate thereby a downward motion to the frame S by which motion the india rubber *x* strips the board off from the end of the slide P when said board falls upon the roller *p* and felt T and is carried away upon this endless felt T.

By the springing out of the slide P the levers *p* and *k* which are connected with the arm H of the slide P have been moved with the same, by which motion the end of the lever *k* has been thrown outward. By the further revolution of the roller A the projection *g* on the frames C comes into contact with the end of the lever *k* pushing the same back, and which later by its action upon the arm H forces thereby the slide P back again into the roller A when the lever R by the action of its spring is again forced against the nose *n* of the arm H holding thereby the slide P fast in the roller A. By the further revolution of the roller A the remaining board is loosened from said roller A, by its own weight and is taken off successively by the roller *p* and endless felt T until the end of the board has left the point of contact between the roller E and the forming roller A.

When the board has passed from between the rollers A and E and said roller E is no more separated from the former by any intermediate thickness said roller E is then again forced into its old position together with its arm G and screw O, by the action of the springs when the above described operation will be repeated.

What I claim as my invention and desire to secure by Letters Patent is—

1. The arrangement of the roller E in connection with the arm G and projection or screw O for the purpose of operating the lever R by which the slide P is held fast or set at liberty when the board has obtained the required thickness, together with the arrangement of regulating by means of said screw O the required thickness of the pasteboard in the manner specified.

2. I claim the movable slide P or its equivalent constructed and operated as described, and for the purpose of cutting or

tearing and lifting the pasteboard which was formed on the roller A from said roller after the same has obtained the required thickness. 15

3. I claim the arrangement of the movable frame S with leather or its equivalent attached, for the purpose of stripping off the cut paste board from the end of the slide P the whole being operated in the manner as specified. 20

LOUIS KOCH.

Witnesses:

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J. AOKENHAUSEN.