

Mar. 13, 1923.

1,448,065

P. HARRICH
LACQUERING MACHINE
Filed Oct. 25, 1921

Fig. 1.

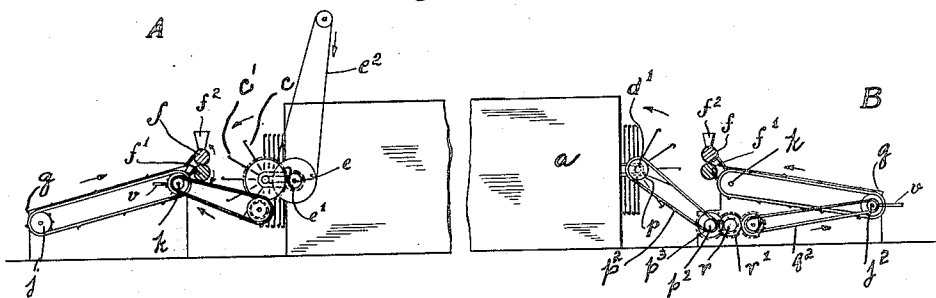


Fig. 2.

Fig. 3.

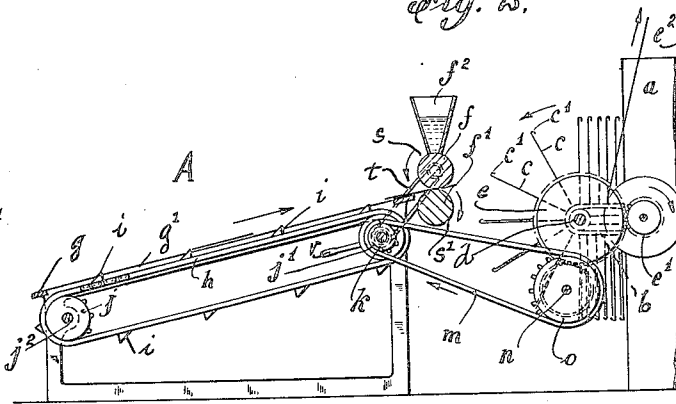
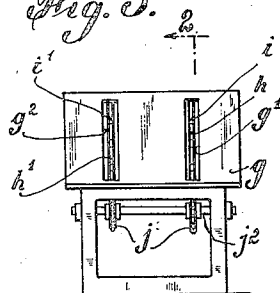


Fig. 4.

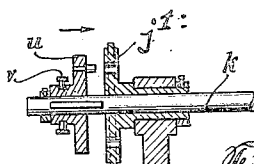
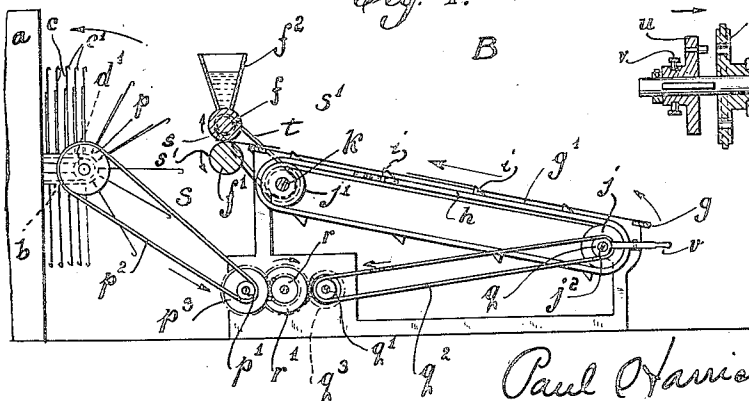


Fig. 5.

Paul Harrich Inventor

By his Attorney
Paul J. Westworth

Patented Mar. 13, 1923.

1,448,065

UNITED STATES PATENT OFFICE.

PAUL HARRICH, OF ROCHELLE PARK, NEW JERSEY, ASSIGNOR TO NEW PROCESS
CORK COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

LACQUERING MACHINE.

Application filed October 25, 1921. Serial No. 510,371.

To all whom it may concern:

Be it known that I, PAUL HARRICH, a citizen of Germany, residing at Rochelle Park, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Lacquering Machines, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to lacquering machines, and more particularly to a type of such machine adapted to rapidly coat tin or other non-flexible sheets with lacquer, shellac, or other composition, and rapidly dry such sheets.

Heretofore it has been the practice to coat such sheets with lacquer, shellac, or other similar fluids, and immediately deliver them thereafter to the carriers of the drying oven, which carriers pass through the oven at low speed so that the coating will be hardened when the sheets reach the delivery end of the oven. The sheets were fed to the coating or lacquering rollers by hand and after being lacquered were ordinarily delivered by hand to the racks of the carrier.

With the above conditions in mind, I have devised a machine wherein the sheets are delivered to the oven carrier from the coating rollers which have associated therewith a feeding mechanism which will automatically advance the tin or other sheets toward the coating rollers at a speed commensurate with that of said rollers so as to ensure high speed in the machine, and the speed of the feeding and the coating means will be synchronized with that of the oven carrier so that no attention is required from the operator except a delivery of the sheets one at a time to the delivery mechanism.

To secure the desired results, it is essential that the speed of the traveling members of the delivery mechanism be relatively higher than that of the traveling racks and that these speeds be accurately proportioned with relation to each other in order to ensure the sheets entering between succeeding racks, a condition which is due to the fact that while the racks of the carrier are in close juxtaposition to each other and the lineal speed of these racks is fairly low, the travel of the sheets when entering the racks is much greater than the lineal speed of the racks, and there is a limited time within

which the sheets must pass through, and become free of, the coating rollers.

The machine embodying my invention has the further advantage that the sheets will be delivered to the racks without any material rubbing action.

While passing through the delivery mechanism, the sheets are held perfectly flat by means of a table, the rear edge of said sheets in the direction of their feeding movement being engaged by rectangularly arranged clips upon parallel feed chains, succeeding clips being so spaced with relation to each other as to afford sufficient clearance between clips to avoid necessity for nicety in adjustment of the sheets upon the table, while at the same time affording that dwell between the delivery of succeeding sheets to permit a rack to receive a sheet and move from the path of delivery of the succeeding sheet before that sheet has been coated and is delivered by the coating rollers.

In a machine embodying my invention, I preferably employ on opposite ends of the machine, delivery and coating mechanisms operating in substantially the same manner, with the exception that the mechanisms at one end deliver sheets to racks entering upon the top reach of the carrier, while that at the other end delivers sheets to the racks about to enter the lower reach of the carrier, which construction will permit the doubling of the output of the machine, or its utilization for coating opposite sides of sheets with different materials and subjecting them to different portions of the oven wherein the temperatures vary.

Since when the drying oven is once filled with lacquered or otherwise coated sheets, it is essential to continuously operate it until all the sheets have been delivered, and since in shutting down the machine, there is a considerable time interval between the delivery of a sheet by the coating mechanism and the delivery of the sheet from the drying oven, it is essential that the delivery mechanism be so constructed that it may be made inoperative entirely independently of the actuation of the carrier in the drying oven, in order to prevent waste of the coating material and fouling of the machine therewith.

The invention consists primarily in a lacquering machine embodying therein the combination with a drying oven and an end-

less carrier mechanism having movement therethrough, and including therein angularly extending racks adapted to receive coated sheets, of a coating mechanism adapted to deliver sheets directly to said racks successively, a feeding mechanism adapted to deliver sheets to said coating mechanism, and actuating means for said carrier, said coating mechanism and said delivery mechanism, whereby said coating mechanism and said delivery mechanism will have a relatively higher speed than said carrier; and in such other novel features of construction and combination of parts as are hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings,

Fig. 1 is a view of a lacquering machine embodying my invention;

Fig. 2 is a vertical section through the delivery and the coating mechanisms at the left of Fig. 1, with one end of the carrier mechanism and drying oven shown in elevation, said view being taken on the line 2—2 of Fig. 3;

Fig. 3 is an end view of the delivery mechanism shown in Fig. 2;

Fig. 4 is a view similar to Fig. 2 of the mechanism at the right of Fig. 1; and

Fig. 5 is a detail view of the means by which the delivery mechanism may be made inoperative without affecting the operation of the drying oven.

Like letters refer to like parts throughout the several views.

In the embodiment of my invention shown in the drawings, I provide an ordinary drying oven *a* which may be of any desired or approved construction, having mounted therein a sheet carrying mechanism consisting of oppositely disposed endless chains *b* carrying racks *c* having hooked ends *c'*, which racks extend at right angles thereto. Said racks are closely juxtaposed with relation to each other, being spaced apart sufficiently to receive sheets of tin or other material having thereon the lacquer or other coating to be dried. The hooks *c'* are provided to permit sheets to be carried by the racks on both the upper and the lower reaches of the chains *b*, intermediate the end sprocket wheels or other driving means indicated at *d—d'*. This construction is old and well known in the arts, and I make no claim of invention thereto.

The chains *b* have continuous slow traverse imparted thereto in any desired manner as by means of intermeshing gears *e—e'* shown in Figs. 1 and 2, driven from any desired source of power by means of the belt and pulley drive *e''*.

At each end of said oven *a*, I provide a coating mechanism having associated there- with a sheet delivery mechanism, said coat-

ing mechanism being adapted to deliver coated sheets directly to the racks *c* and said delivery mechanism being adapted to deliver such sheets to the coating mechanism, it being essential, however, to deliver the sheets by hand to said delivery mechanism.

Each of the coating mechanisms and delivery mechanisms is identical in construction with the other, so that a detailed description of but one of them is necessary, it being understood that one set of said mechanisms indicated at A in Fig. 1 is designed to deliver sheets to the racks *c* in a position to cause them to be conveyed along the lower reach of the carrier chains *b*, while the other, as B, is designed to deliver them to the racks in a position to cause them to be conveyed along the upper reach of said carrier chains.

The similarity in the coating and the feeding mechanisms A—B extends to all the essential characteristics thereof, there being, however, certain structural differences in the actuating means for the feed mechanism which will be described in detail, these structural differences, however, in no way modifying the functioning of the feeding mechanism.

The coating mechanism which is shown more or less conventionally in the drawings, consists of opposed feed rollers *f—f'*, one of which, as *f*, receives a film of the lacquer or other coating material, from a suitable fount *f''*. Said rollers *f—f'* are so set in relation to each other as to receive a sheet of the desired thickness therebetween and advance it toward the racks *c* while applying a coating to one surface thereof only, the coating being in a thin film.

Arranged adjacent the receiving side of the rollers *f—f'* is a feed shelf *g* having longitudinally extending slots *g'—g''* forming runways for oppositely disposed parallel feeding chains *h—h'*, each carrying at spaced distances apart, a series of clips *i—i'* adapted to engage the edge of the sheet and advance it toward the rollers *f—f'* and deliver it from the table in a position where it will pass between said rollers.

The chains *h—h'* pass about a sprocket wheel *j* carried by one shaft *j''* at one end of the table *g*, and sprocket wheels *j'* carried by a shaft *k* adjacent the other end of said table, said wheels being arranged in pairs, the wheels of each pair being adjacent the slots *g'—g''* respectively. Power is applied to said chains in the mechanism A through the medium of said shaft *k* through the chain and sprocket mechanism *m* receiving power from the shaft *n* through the medium of intermeshing gears *o—e*, one of which is carried by the shaft of the sprocket wheels *b'* driving the carrier chains *b*, and the other of which is carried by the shaft *n*. The di-

ameter of the driving sprockets j' for the chains $h-h'$ is not only relatively greater than that of the sprocket wheel d , but the driving means connecting the shaft carrying the sprocket wheel d for the chains b , with the shaft k is so constructed as to impart to the shaft k , relatively higher speed than that of the shaft carrying said sprockets d . In this manner the lineal speed of the chains $h-h'$ will be relatively greater than that of the chains b to compensate for the difference in the time interval of the positioning of succeeding racks c to receive sheets and of the coating of the sheets and their delivery to these racks.

By properly synchronizing the speed of the carrier racks c and that of the chains $h-h'$ and the rollers $f-f'$, notwithstanding the variance in the lineal traverse of said racks and of said chains, and of the angular speed of the rollers $f-f'$, a coated sheet will be delivered to said racks successively as they reach a substantially horizontal position in passing about the sprocket wheels d for the chains b . In fact, if desired, the angular speed of the rollers $f-f'$ may be slightly greater than the lineal speed of the chains $h-h'$, which may be accomplished by increasing the R. P. M. of said rollers or increasing their diameters, although no advantage is secured in this manner over a structure in which said rollers will advance the sheet at the same speed as said chains.

By spacing the clips $i-i'$ a distance apart greater than a sheet of the maximum length which may be handled in the machine, any necessity for accuracy in feeding these sheets to the table g is avoided, since the clips $i-i'$ will straighten each sheet upon the table g before it reaches a point where it is delivered to the rollers $f-f'$. To facilitate the straightening of the sheets, I preferably arrange the table g upon an incline toward the rollers $f-f'$ so as to take advantage of the weight of the sheet, as well as the friction between same and the table.

Referring to the mechanism B, the structural characteristics of the table g and its appurtenances and of the coating mechanism, are identical with that heretofore described, the sole difference between said mechanism and the mechanism A residing in the mechanism for transmitting power from the shaft carrying the sprockets d' to the chains $h-h'$, while preserving the desired speed ratio of said chains and of the chains b . In the mechanism B, I secure a large sprocket wheel p to the shaft carrying the sprocket wheels d' , said sprocket wheel p being connected with a small sprocket wheel p' by a sprocket chain p^2 .

The shaft j^2 carries a sprocket wheel q which is driven from a sprocket wheel q' of substantially the same diameter by means of the sprocket chain q^2 . The sprocket wheels

p' and q' are connected by means of speed increasing gearing consisting of a large gear p^3 carried by the sprocket wheel p' , a smaller gear wheel q^3 carried by the sprocket wheel q' and connected intermediate gears r and r' , the former of which is of smaller diameter than the latter, and is enmeshed with the gear p^2 while the gear r' is enmeshed with the gear q^2 .

The rollers $f-f'$ may be driven in any desired manner as by means of the intermeshing gears $s-s'$, the latter of which is driven from the shaft k by means of a sprocket and chain connection t .

To permit the carrier chains b to be actuated after the stoppage of the feeding mechanism, I connect the sprocket wheel j' with the shaft k , and the sprocket wheel q with the shaft j^2 by means of a suitable clutch mechanism carried by said shafts respectively, and adapted to operatively engage said sprocket wheels, this arrangement being common to both mechanisms A and B and involving merely mechanical skill as to its structural characteristics. A detailed description of the clutch used is not given. Fig. 5 showing a conventional toothed clutch member u associated with the sprocket wheel j' , and splined upon the shaft k , said member u being engaged with, or disengaged from, the wheel j' by means of the hand lever v .

The operation of the herein described machine is substantially as follows:—

When power is applied to a machine embodying my invention, the chains b with their racks c will be moved slowly through the oven a , this speed being determined by the length of the oven and the time interval required to properly oxidize or dry the coating material upon sheets delivered to said racks. If the sheets be delivered to the racks upon the upper reach of said chains, the lower edges thereof as they reach the vertical position will rest upon said chains, while if such sheets be delivered to the racks approaching the lower reach of said chains, the lower edges thereof will be engaged by the hook c' of said racks. By using small sprocket wheels $d-d'$ the racks c as they are passing about said wheels, will be flared to permit clearance for the delivery of sheets to the racks or their removal therefrom. This is the usual operation in dryers of the type shown.

The clutch u may then be set by means of the handle v as to either mechanism A or B or both said mechanisms, to apply power thereto according to whether it is desired to feed coated sheets to one reach of the rack chains b or to both reaches thereof.

When a delivery and a coating mechanism are thus placed in operation, it is merely necessary for the operator to lay sheets to be coated upon the delivery table g , no care

being required in the positioning of these sheets since they will either fall between succeeding pairs of clips $i-i'$ in engagement with the clips rearward of the feeding movement of the sheet, or in a position where they will subsequently be engaged by said clips with the continued lineal traverse of the chains $h-h'$.

Following the passage of the forward edge of each sheet from the table g , it will be brought to a position where it will be engaged between the rollers $f-f'$ and thereafter the sheet will be advanced by the frictional engagement of said rollers therewith.

Since the peripheral or angular speed of the rollers $f-f'$ and the lineal speed of the chains $h-h'$ is materially greater than that of the chains b , it will be apparent that if the functioning of said chains and said rollers is properly synchronized, the forward part of said sheets will be closely adjacent the chains b before the rear edge thereof clears the rollers $f-f'$, and that the sheet will be positioned in practically its entirety between two adjacent, flaring racks c and will drop upon said rack substantially simultaneously with its reaching a horizontal position, thus avoiding any material rubbing action of the sheet upon the frame forming the rack.

By spacing the succeeding pairs of clips $i-i'$ apart a distance greater than the length of the sheet being fed, sufficient dwell is afforded between the delivery of succeeding sheets to permit a rack to pass from its horizontal position, and the succeeding rack to be approaching this position before the next sheet is in a position to pass from the rollers $f-f'$ and be delivered to this succeeding rack.

By the use of a delivery mechanism made in accordance with my invention and operating in the manner described, no attention is required from the feeder beyond the mere laying of the sheets upon the table g in substantially the correct lateral position, there being considerable latitude in the lateral placing of the sheets.

After the sheets have been passed by the carrier through the oven a , they are removed from the racks by hand and stacked, thus ensuring an ample supply of sheets at the delivery end of the oven.

While one feeder is delivering sheets to the mechanism A it is apparent that another feeder may also be delivering sheets to the mechanism B so as to utilize both the upper and the lower reaches of the carrier mechanism, and the operation of each mechanism will be the same as the other as to the handling of the sheets.

It will be noted that in both mechanisms A and B the freshly coated or lacquered side of each sheet will be presented away from the rack c to which it is delivered, so that

there is no likelihood of scraping of the freshly coated surface, or marring thereof by reason of impact of the sheet with the rack frame.

It is also apparent that if desired both reaches of the carrier may be used in drying each sheet, since in passing about either pair of sprockets $d-d'$, the sheet will readily pass from the rack to which it was originally delivered, and fall upon the succeeding rack, which will convey it about the ends of the oven.

When it is desired to stop the machine, it is desirable, by reason of the great number of sheets already within the oven a , that the sheet carrier mechanism continue to run after the feeding of freshly coated sheets thereto has ceased. The clutch mechanism $u-v$ is provided primarily for the purpose of permitting the carrier mechanism to continue to function after the delivery and coating mechanisms have ceased to function, so as to avoid unnecessary fouling of the machine with the lacquer or other coating material.

The machine of my invention is particularly adapted for coating or applying lacquer or other material to tin sheets, although it is apparent that it may be used upon sheets of other material. By utilizing both mechanisms A and B, it is apparent that one side of the sheet may be coated with one material while the other side thereof is coated with another material, thus permitting a complete finishing of sheets having opposite sides coated with different materials, with one cycle of the oven carrier.

The difference in construction of the mechanism applying power to the mechanism A, from that applying power to the mechanism B, is due to the necessity for reversing the direction of drives of said mechanisms, the detail construction of the power transmitting mechanisms being immaterial to the invention so long as the proper speed ratio between said mechanisms and the carrier mechanism of the oven is preserved.

It is not my intention to limit the invention to the precise details of construction shown in the drawings, it being apparent that such may be varied without departing from the spirit and scope of the invention.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. A lacquering machine embodying therein the combination with a drying oven and an endless carrier mechanism having movement therethrough, and including therein angularly extending racks adapted to receive coated sheets, of a coating mechanism adapted to deliver sheets directly to said racks successively, a feeding mechanism adapted to deliver sheets to said coating mechanism, and actuating means for said carrier, said coating mechanism and said de-

livery mechanism, whereby said coating mechanism and said delivery mechanism will have a relatively higher speed than said carrier.

2. A lacquering machine embodying therein the combination with a drying oven and an endless carrier mechanism having movement therethrough and about rotatable members at opposite ends thereof, whereby said carrier passes through said oven in parallel horizontal reaches, said carrier mechanism including therein angularly extending racks adapted to receive coated sheets, of a coating mechanism arranged at one end of said oven, adapted to deliver sheets directly to the racks of one reach successively, a feeding mechanism adapted to deliver sheets to said coating mechanism, a coating mechanism adjacent the other end of said oven and adapted to deliver sheets directly to the racks of the other reach of said carrier successively, and a feeding mechanism adapted to deliver sheets to said last named coating mechanism, and actuating means for said carrier, said coating mechanisms and said delivery mechanisms, whereby said coating mechanisms and said delivery mechanisms will have a relatively higher speed than said carrier.

3. A lacquering machine embodying therein the combination with a drying oven and an endless carrier mechanism having movement therethrough, and including therein angularly extending racks adapted to receive coated sheets, of a coating mechanism adapted to deliver sheets directly to said racks successively, a feeding mechanism adapted to deliver sheets to said coating mechanism, actuating means for said carrier, said coating mechanism and said delivery mechanism, whereby said coating mechanism and said delivery mechanism will have a relatively higher speed than said carrier, and means whereby said coating and said delivery mechanism may be made inoperative independently of said carrier mechanism.

4. A lacquering machine embodying therein the combination with a drying oven and an endless carrier mechanism having movement therethrough and about rotatable members at opposite ends thereof, whereby said carrier passes through said oven in parallel horizontal reaches, said carrier mechanism including therein angularly extending racks adapted to receive coated sheets, of a coating mechanism arranged at one end of said oven, adapted to deliver sheets directly to the racks of one reach successively, a feeding mechanism adapted to deliver sheets to said coating mechanism, a coating mechanism adjacent the other end of said oven and adapted to deliver sheets directly to the racks of the other reach of said carrier successively, a feeding mechanism adapted to deliver sheets to said last named coating mechanism, actuating means for said carrier, and actuating means operatively connected with said carrier mechanism and applying power to said coating mechanisms and said delivery mechanisms, whereby said coating mechanisms and said delivery mechanisms will have a relatively higher speed than said carrier.

5. A lacquering machine embodying therein the combination with a drying oven and an endless carrier mechanism having movement therethrough, and including therein angularly extending racks adapted to receive coated sheets, of a coating mechanism adapted to deliver sheets directly to said racks successively, a feeding mechanism adapted to deliver sheets to said coating mechanism, actuating means for said carrier, and actuating means operatively connected with said carrier mechanism and applying power to said coating mechanism and said delivery mechanism, whereby said coating mechanism and said delivery mechanism will have a relatively higher speed than said carrier.

6. A lacquering machine embodying therein the combination with a drying oven and an endless carrier mechanism having movement therethrough and about rotatable members at opposite ends thereof, whereby said carrier passes through said oven in parallel horizontal reaches, said carrier mechanism including therein angularly extending racks adapted to receive coated sheets, of a coating mechanism arranged at one end of said oven, adapted to deliver sheets directly to the racks of one reach successively, a feeding mechanism adapted to deliver sheets to said coating mechanism, a coating mechanism adjacent the other end of said oven and adapted to deliver sheets directly to the racks of the other reach of said carrier successively, a feeding mechanism adapted to deliver sheets to said last named coating mechanism, actuating means for said carrier, and actuating means operatively connected with said carrier mechanism and applying power to said coating mechanisms and said delivery mechanisms, whereby said coating mechanisms and said delivery mechanisms will have a relatively higher speed than said carrier.

7. A lacquering machine embodying therein the combination with a drying oven and an endless carrier mechanism having movement therethrough, and including therein angularly extending racks adapted to receive coated sheets, of a coating mechanism adapted to deliver sheets directly to said racks successively, a feeding mechanism adapted to deliver sheets to said coating mechanism, comprising a feed table having parallel slots therein, chains mounted to

8. A lacquering machine embodying therein the combination with a drying oven and an endless carrier mechanism having movement therethrough, and including therein angularly extending racks adapted to receive coated sheets, of a coating mechanism adapted to deliver sheets directly to said racks successively, a feeding mechanism adapted to deliver sheets to said coating mechanism, comprising a feed table having parallel slots therein, chains mounted to

have movement longitudinally of said slots, and a sequence of pairs of clips carried by said chains respectively, the clips of each pair being rectilinearly arranged as to each other, and actuating means for said carrier, said coating mechanism and the chains of said delivery mechanism, whereby said coating mechanism and said delivery mechanism will have a relatively higher speed than said carrier.

8. A lacquering machine embodying therein the combination with a drying oven and an endless carrier mechanism having movement therethrough, and including therein angularly extending racks adapted to receive coated sheets, of a coating mechanism comprising a fount adapted to receive lacquer or other coating composition and oppositely disposed rollers co-operating therewith, and adapted to deliver sheets directly to said racks successively, a feeding mechanism adapted to deliver sheets to said coating mechanism, comprising a feed table having parallel slots therein, chains mounted to have movement longitudinally of said slots, and a sequence of pairs of clips carried by said chains respectively, the clips at each pair being rectilinearly arranged as to each other, and actuating means for said carrier, said coating mechanism and the chains of said delivery mechanism, whereby said coating mechanism and said delivery mechanism will have a relatively higher speed than said carrier.

9. A lacquering machine embodying therein the combination with a drying oven and an endless carrier mechanism having movement therethrough and about rotatable members at opposite ends thereof, whereby said carrier passes through said oven in parallel horizontal reaches, said carrier mechanism including therein angularly extending racks adapted to receive coated sheets, of a coating mechanism arranged at one end of said oven, adapted to deliver sheets directly to the racks of one reach successively, a feeding mechanism adapted to deliver sheets to said coating mechanism comprising a feed table having parallel slots therein, chains mounted to have movement longitudinally of said slots, and a sequence of pairs of clips carried by said chains respectively, the clips of each pair being rectilinearly arranged as to each other, a coating mechanism adjacent the other end of said oven and adapted to deliver sheets directly to the racks of the other reach of said carrier successively, and a feeding mechanism adapted to deliver sheets to said last named coating mechanism comprising a feed table having parallel slots therein, chains mounted to have movement longitudinally of said slots, and a sequence of pairs of clips carried

by said chains respectively, the clips of each pair being rectilinearly arranged as to each other, and actuating means for said carrier, said coating mechanisms and said delivery mechanisms, whereby said coating mechanisms and said delivery mechanisms will have a relatively higher speed than said carrier.

10. A lacquering machine embodying therein the combination with a drying oven and an endless carrier mechanism having movement therethrough and about rotatable members at opposite ends thereof, whereby said carrier passes through said oven in parallel horizontal reaches, said carrier mechanism including therein angularly extending racks adapted to receive coated sheets, of a coating mechanism comprising a fount adapted to receive lacquer or other coating composition and oppositely disposed rollers co-operating therewith, and adapted to deliver sheets directly to said racks successively, arranged at one end of said oven, adapted to deliver sheets directly to the racks of one reach successively, a feeding mechanism adapted to deliver sheets to said coating mechanism comprising a feed table having parallel slots therein, chains mounted to have movement longitudinally of said slots, and a sequence of pairs of clips carried by said chains respectively, the clips of each pair being rectilinearly arranged as to each other, a coating mechanism comprising a fount adapted to receive lacquer or other coating composition and oppositely disposed rollers co-operating therewith, and adapted to deliver sheets directly to said racks successively, adjacent the other end of said oven and adapted to deliver sheets directly to the racks of the other reach of said carrier successively, and a feeding mechanism adapted to deliver sheets to said last named coating mechanism comprising a feed table having parallel slots therein, chains mounted to have movement longitudinally of said slots, and a sequence of pairs of clips carried by said chains respectively, the clips of each pair being rectilinearly arranged as to each other, and actuating means for said carrier, said coating mechanisms and said delivery mechanisms, whereby said coating mechanisms and said delivery mechanisms will have a relatively higher speed than said carrier.

In witness whereof I have hereunto affixed my signature, in the presence of two subscribing witnesses, this 6th day of October, 1921.

PAUL HARRICH.

Witnesses:

FRIEDA KOHLER,
SOPHIE M. BARDER.