

April 8, 1930.

A. PODEL

1,753,998

LACQUERING MACHINE AND OVEN

Filed Oct. 18, 1924

6 Sheets—Sheet 2

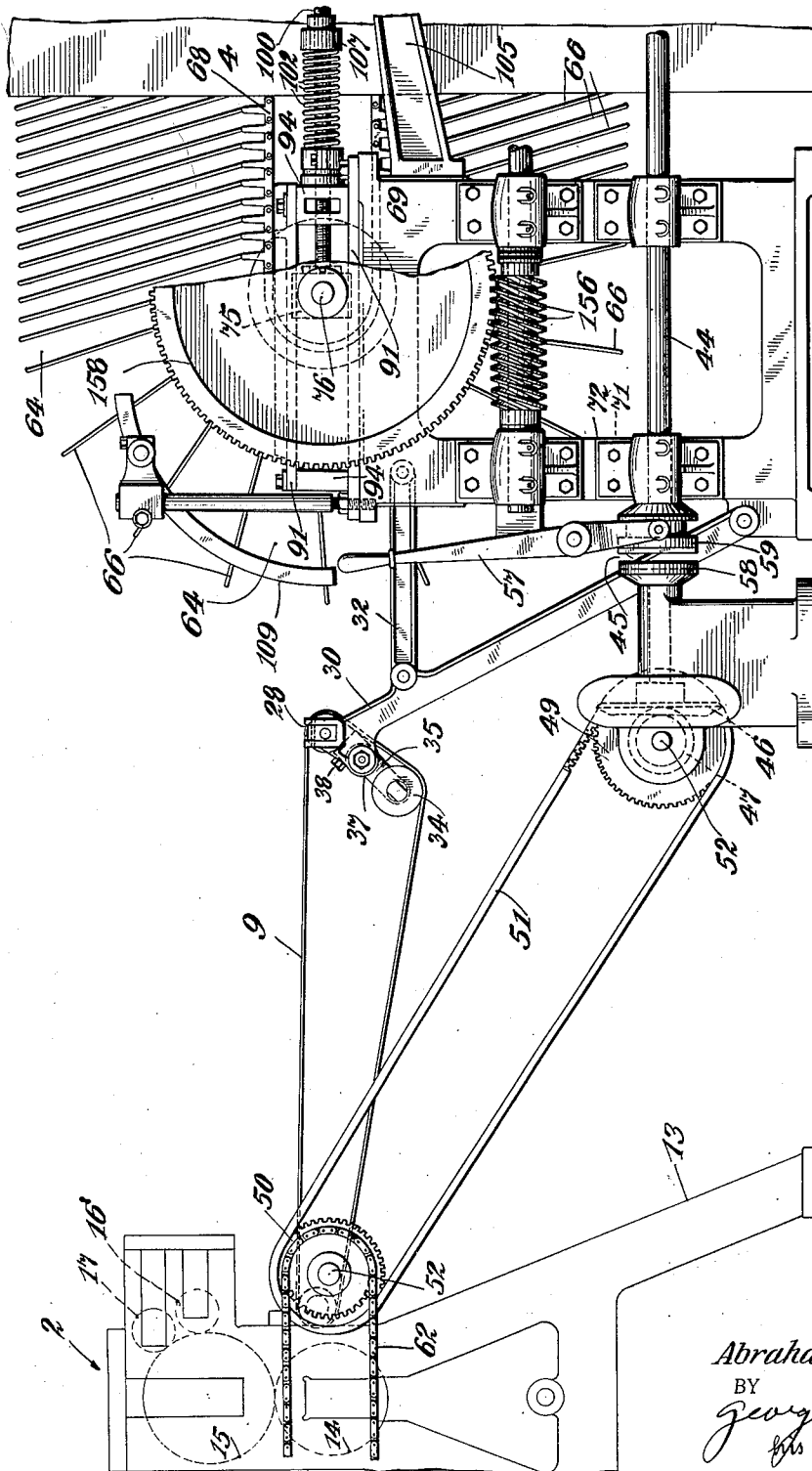


Fig. 4.

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LACQUERING MACHINE AND OVEN

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6 Sheets-Sheet 3

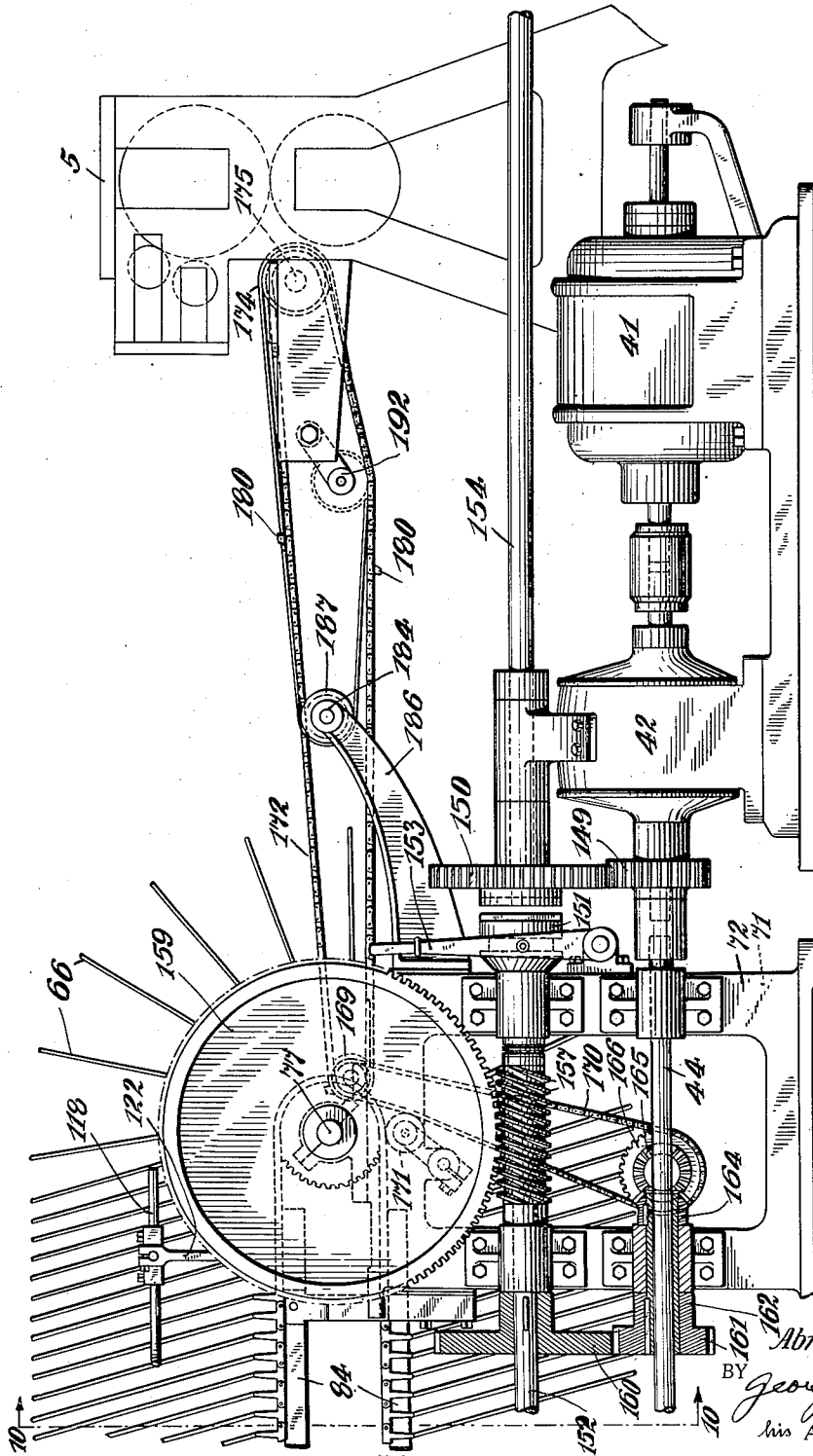


Fig. 5.

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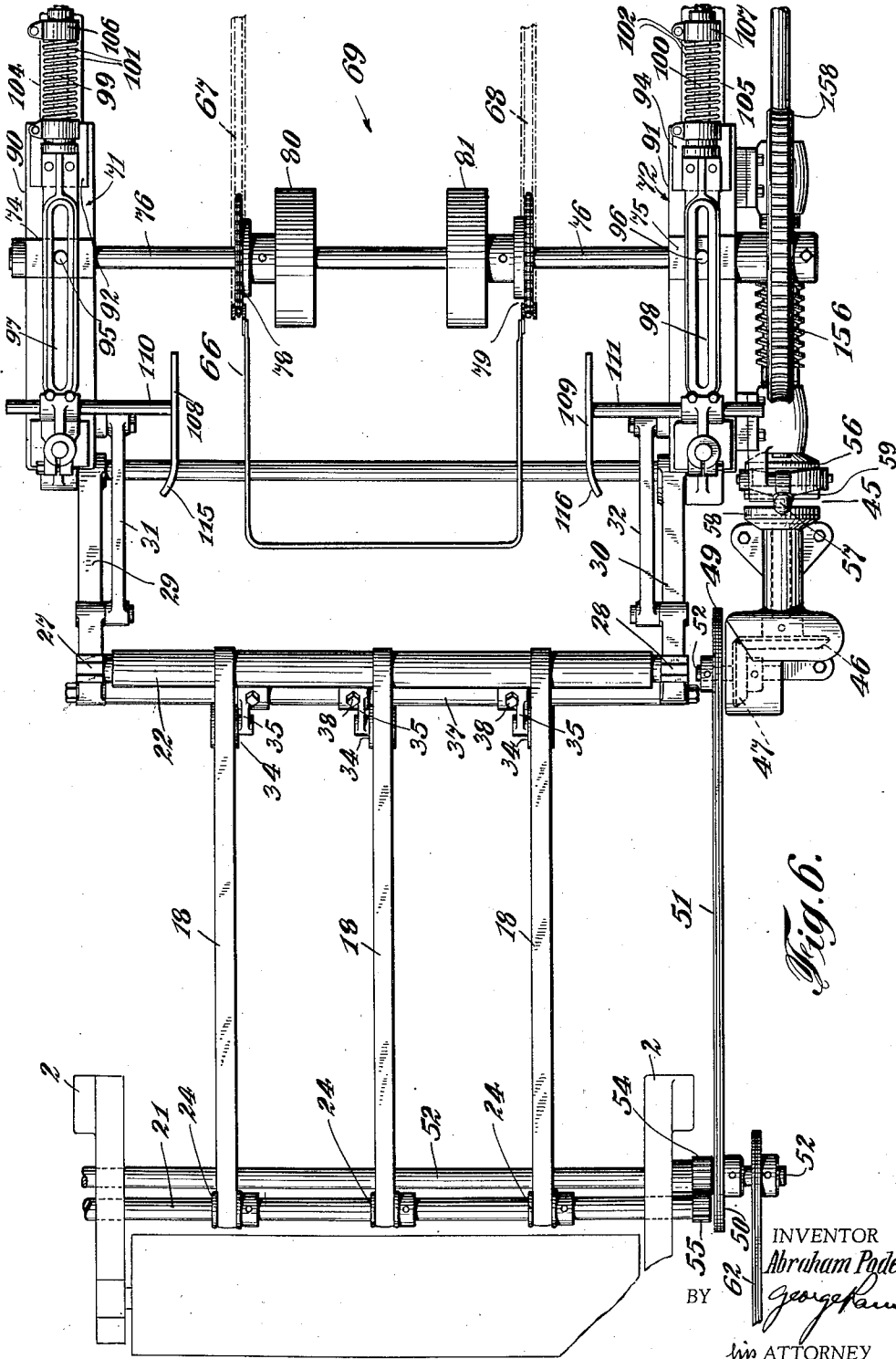
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6 Sheets-Sheet 4



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LACQUERING MACHINE AND OVEN

Filed Oct. 18, 1924

6 Sheets-Sheet 5

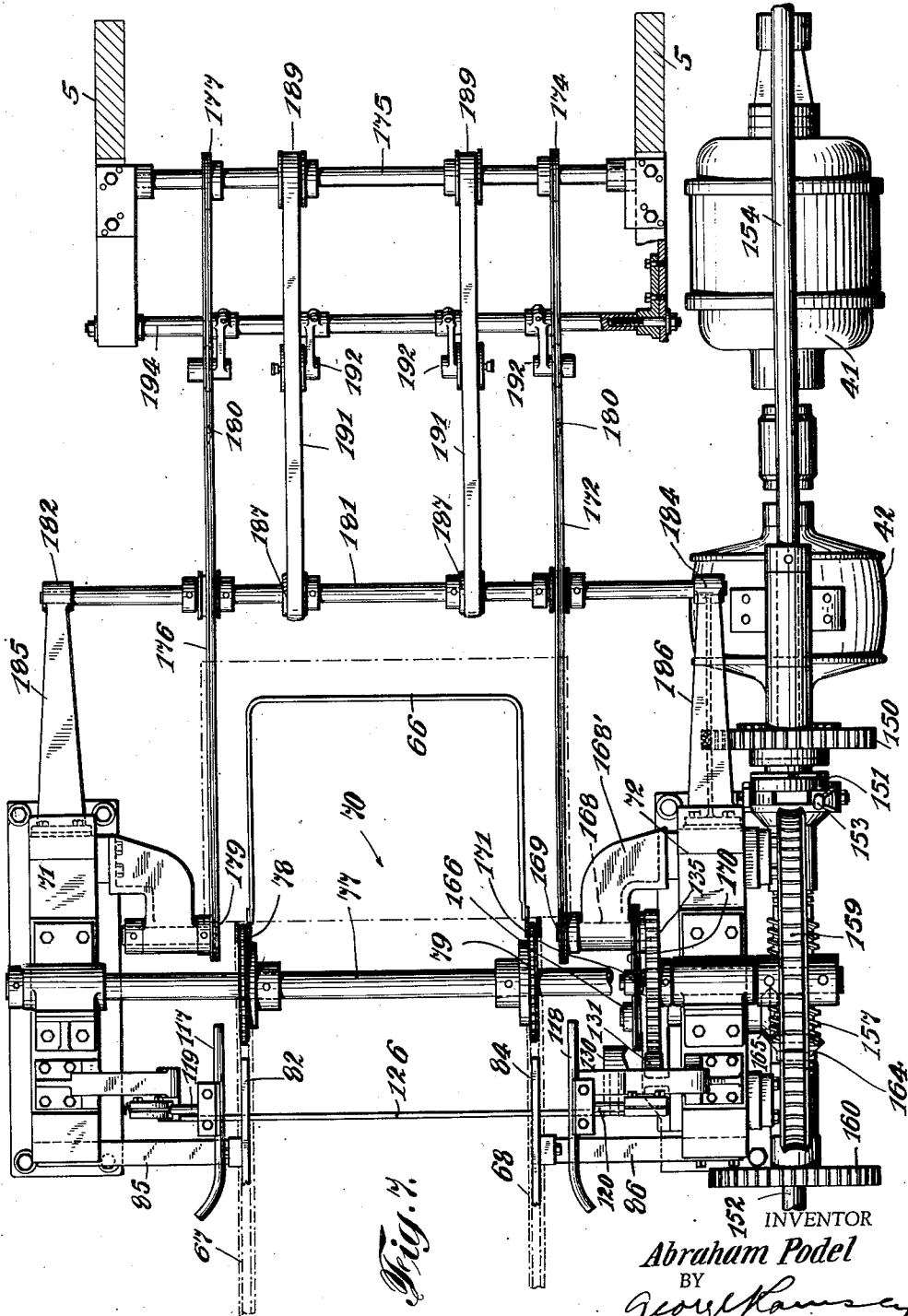


Fig. 1.

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LACQUERING MACHINE AND OVEN

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6 Sheets—Sheet 6

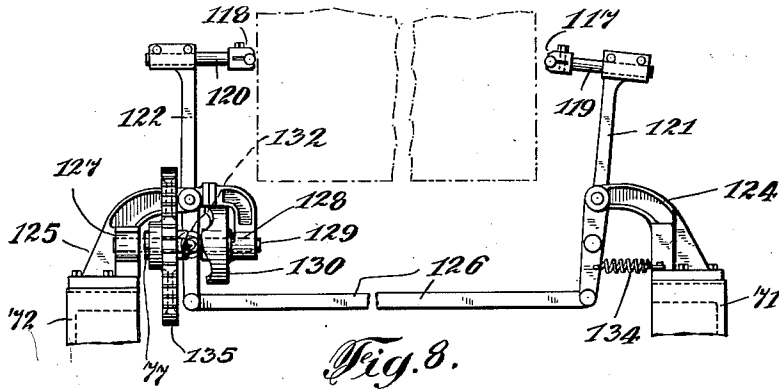


Fig. 8.

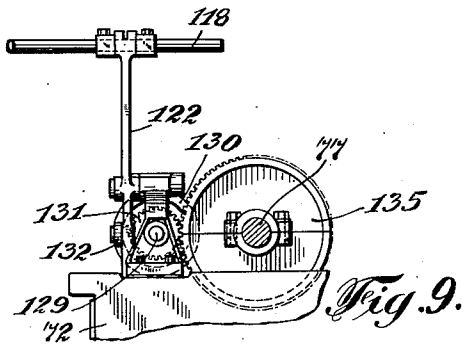


Fig. 9.

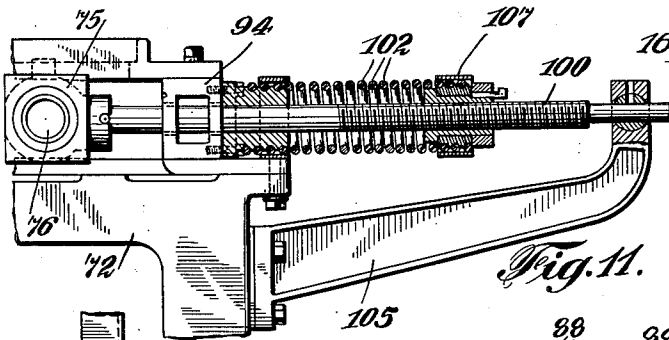


Fig. 11.

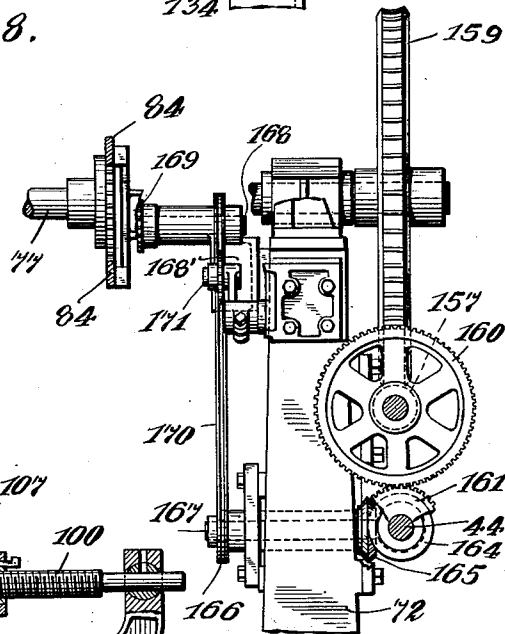


Fig. 10.

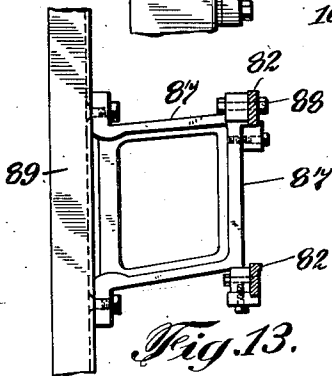


Fig. 13.

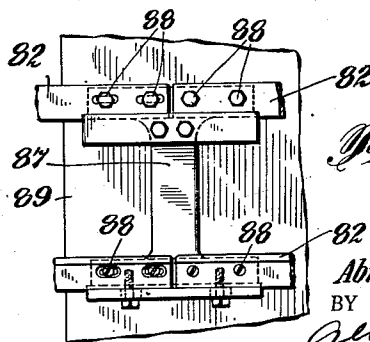


Fig. 12.

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LACQUERING MACHINE AND OVEN

Application filed October 18, 1924. Serial No. 744,340.

The present invention relates to apparatus for coating sheet material, and more particularly to apparatus for coating sheets of tin or the like and baking same in a continuous operation.

An object of the present invention is the provision of lacquering machines and baking ovens and assembling same to permit continuous and expeditious handling and coating of sheet material with a minimum expenditure of time and labor.

Another object is the provision of automatic sheet feeding and sheet stacking devices to cooperate with the lacquering and associated machines to receive sheet material from trucks or the like, feed individual sheets to the lacquering machines, receive the individual sheets delivered by said machines and stack them on suitable supports which may be readily mounted on trucks.

A still further object is the utilization of a single source of power to properly time the respective mechanisms in relation to each other; and the utilization of a separate source of power for driving certain mechanisms whose operations are independent of the operations of other mechanisms.

A more specific object of the present invention is the provision of apparatus adapted to receive sheets of tin or the like from a truck to feed them individually to a lacquering machine, which coats one side only and delivers the sheets to a conveyor which transports them through an oven wherein the lacquer is partially baked or oxidized; to run the sheets in this state through a second lacquering machine and a second oven to coat the other side of the sheets and completely bake or oxidize the lacquer on each side thereof; then to deliver the sheets to a stacking machine which places them in position to be mounted on a truck; and to do this without utilizing manual labor in the handling of the sheet material.

Further objects of this invention contemplate an apparatus of the above characteristics, which is of such strong and simple construction and such accurate operations as to insure its proper performance under all conditions commonly encountered in this

class of work; to provide an apparatus which will coat the respective sides of sheet material and bake same in a continuous operation each step of which is automatic, thereby minimizing the amount of labor required in the operation.

Other and further objects of the invention will be obvious upon an understanding of the illustrated embodiment about to be described or will be obvious from the accompanying drawings, or indicated in the appended claims; and various advantages secured by the invention other than those hereinafter specifically referred to will occur to one skilled in the art or become evident upon the employment of the invention in practice.

In the drawings, Fig. 1 is a diagrammatic side elevation of the apparatus assembled;

Fig. 2 is a side elevation of the second oven, certain parts being broken away to show the internal construction.

Fig. 3 is an end view of an oven;

Figs. 4 and 5 are side elevations respectively of the front and rear ends of the first oven with certain parts broken away to disclose clearly the driving mechanism;

Figs. 6 and 7 are top plan views of the structures shown in Figs. 4 and 5 respectively;

Fig. 8 is a detail drawing of the sheet straightening mechanism;

Fig. 9 is an end view of the sheet straightening mechanism shown in Fig. 8;

Fig. 10 is a cross-section along line 10—10 of Fig. 5;

Fig. 11 is a detail drawing of the mechanism for subjecting the chain to a substantially constant tension;

Figs. 12 and 13 are detail views of brackets, forming supports for the rails upon which the chains slide; and

Fig. 14 is a plan view of the burners, used in the ovens as seen from the line 14—14 of Figure 2 with the baffle plates dotted in position.

In the manufacture of various articles from sheet metal or other sheet material it is desirable to lacquer or coat the sheets of raw material prior to their being formed into finished articles. This is particularly true

in connection with the manufacture of metallic containers and metallic caps for other containers. In some instances the sheet material is coated on one side only and in other instances it is coated on both sides; in either case the sheets must be fed individually from a stack to a lacquering machine which applies a coating to one side and then delivers the sheets to an oven for baking purposes. If the other sides are to be coated also, the sheets may be run through the same machines a second time, or the second side of the sheet may be coated by running it through a second lacquering machine and a second oven from which they are delivered with a permanent coating on each side.

Several types of apparatus have been used heretofore for lacquering or coating sheet material. Some lacquer the two sides independently, others utilize two consecutive stages, one for each side of the sheets. In all apparatus known heretofore there has been considerable waste of power, due to inefficient operation, and a great loss of labor in handling the sheets and in watching and controlling the apparatus.

The present invention overcomes the difficulties of the prior art by providing an apparatus which receives sheet material in quantities, delivers individual sheets to the lacquering machine automatically and constantly. The sheets move continuously through the lacquering machine to an oven where the coating applied is partially baked or oxidized by suitable burners at the bottom of the oven; they are then cooled and delivered to a second lacquering machine where the other sides of the sheets are coated. The sheets continue in their travel to a second oven where the coatings on both sides are completely baked, cooled sufficiently to be handled, and delivered to a stacking machine from which they are removed in quantities. The entire operation from the raw material to the coated sheet is automatic and continuous in every respect.

A single workman can superintend the operation of all the different mechanisms whereas heretofore several men have been required to operate apparatus for similar purposes which was of much smaller capacity. Lack of uniformity in the feeding of such apparatus and the necessity of frequent interruptions in previous types of apparatus occasioned a small output and less efficient operation causing a loss of labor, fuel, and the like. Further economy in power, labor, and space is provided by driving all the coordinate mechanism from a single source of power and preferably from a single shaft. Independent mechanisms may be driven from the same or other sources of power.

Referring to the drawings, there is shown diagrammatically in Fig. 1 the arrangement of the various elements of the apparatus in

the preferred embodiment of the present invention. A sheet of tin in passing through the apparatus engages consecutively the automatic feeding machine 1, lacquering machine 2, oven 4, a second lacquering machine 5, a second oven 6, and stacking machine 7. These machines with the exception of the lacquering machine 5 are operatively connected to the same source of power through clutches which permit independent operations of the various elements. The entire group of machines are connected to each other by suitable conveyors 8, 9, 10, 11 and 12. The various elements of the apparatus and their associated mechanisms will now be described more specifically.

The feeding machine 1 and conveyor 8 may be similar to that shown in my copending application, Serial No. 729,043, filed July 30, 1924. It is adapted to receive sheet material in quantities, maintain the height of the stack constant, and if desired feed the sheets automatically to the conveyor 8 which in turn delivers them to the lacquering machine 2.

The lacquering machine 2 is the usual type comprising a frame 13 and a pair of rollers 14 and 15, through which the sheets pass, the upper roller being supplied with lacquer from a pair of contacting rollers 16 and 17, one of which is partly immersed in a suitable lacquer. Conveyor 9 consisting of a series of belts 18 mounted on shafts 21 and 22 and retained in position by pulleys 24, on shaft 21, operatively connects lacquering machine 2 with oven 4. Shaft 22 is mounted in suitable bearings 27 and 28 formed in the members 29 and 30, which are attached to the frame of the oven 4 and held in position by braces 31 and 32. The belts 18 may be tightened by proper adjustment of the belt tighteners 34 mounted on arms 35 extending from shaft 37 also mounted on the members 29 and 30. Such adjustment may be accomplished by loosening set screws 38, and changing the angular position of the arms 35 with respect to shaft 37.

An electric motor 41 operates lacquering machine 2 through a gear reduction box 42, shaft 44, clutch 45, bevelled gears 46 and 47, sprockets 49 and 50 and chain 51. Sprocket 50 rotates shaft 52 mounted on the lacquering machine 2. Gear 54 on shaft 52 rotates shaft 21 and the pulleys and belts mounted thereon through gear 55. Clutch 45 has a sliding sleeve 56, operated by lever 57, pivoted at its center to the frame of oven 4, to engage clutch jaws 58 and 59 for connecting the shaft upon which bevel gear 46 is mounted, to shaft 44.

The feeding machine 1 is directly connected to shaft 52 of lacquering machine 2 by sprockets 60 and 61, on shaft 52 and feeding machine 1 respectively, and chain 62. Clutch 45 controls both the feeding machine 1 and lacquering machine 2 so that these two machines of the apparatus may be shut down

without interfering with the operation of the other machines.

The sheets are delivered from the lacquering machine 2 by the conveyor 9 to oven 4 wherein the coating applied is partly oxidized or baked so that it may be run through an additional lacquering machine and oven for lacquering its other side. The sheets, lacquered on one side, are received from the machine 2 and conveyor 9 into the pockets 64 of the oven conveyor 65, which comprises a series of U shaped wire brackets 66 having their ends attached to chains 67 and 68. A pair of frames 69 and 70 are at the ends of oven 4 and each consists of rectangularly shaped members 71 and 72 suitably connected, the lower sides of which are bolted to the floor or other suitable foundation. The upper sides of the rectangular members 71 and 72 have bearings 74 and 75, to accommodate shafts 76 and 77. Suitable sprocket wheels 78 and 79 are mounted on shafts 76 and 77 to accommodate chains 67 and 68. A pair of wooden bumper rollers 80 and 81 are mounted also on shaft 76 to act as stops for the sheets of tin sliding on the brackets 66. Chains 67 and 68 slide upon and are supported by rails 82 and 84, (see Figs. 6 and 7) to prevent sag and to eliminate excessive tension in the chains due to the weight of the sheet material supported thereby and also the weight of brackets 66 mounted thereon. The rails may be supported in any suitable manner but preferably they engage at their ends brackets 85 and 86 on the rectangular members 71 and 72. Other supports 87 bolted to the hood 89 of oven 4 and shown in Figs. 3, 12, and 13 engage the rails 82 and 84 about every six feet. It will be noted in Fig. 12 that one end of each rail on supports 87 is slotted to receive the bolts 88; this is to permit free expansion and contraction of the rails 82 and 84 due to changes of temperature.

The bearings 74 and 75 are resiliently mounted on the upper portion of the supporting frame 69 and are slidably retained there by bars 90 and 91 which are bolted to the rectangular members 71 and 72 and spaced therefrom by members 92 and 94. Bearings 74 and 75 slide in the space between the bars 90 and 91 and the upper side of the rectangular members. Projections 95 and 96 on bearings 74 and 75 move in slots 97 and 98 to retain the bearings accurately in position at all times. Shaft 76 is resiliently retained in position against the pull exerted by chains 67 and 68 by bars 99 and 100 and springs 101 and 102. Brackets 104 and 105, bolted to the rectangular frames 70 and 71, form slidable supports for the bars 99 and 100, one end of each engaging the slidable bearings.

Springs 101 and 102 are mounted on bars 99 and 100 between members 92 and 94 and the threaded sleeves 106 and 107. Said sleeves may be adjusted in position to increase or

decrease the compression of the springs, thereby increasing or decreasing the pressure exerted on shaft 76 to maintain it in its outermost position. These springs 101 and 102 are necessary because there is a temperature change in the ovens of as much as several hundred degrees and a resultant change in the length of the conveyor chains of as much as several inches. It is therefore desirable to allow free contraction and expansion of the chains without materially increasing or decreasing the tension therein. This is particularly true with respect to oven 6, which is much longer than oven 4 and in which the increase and decrease in the lengths of chains 67 and 68 is much greater.

Shafts 76 and 77 are driven by motor 41 through mechanisms described hereinafter; and these shafts through sprocket wheels 78 and 79 convey the sheets on brackets 66 through the oven 4. At the front end of the oven 4 is a pair of stationary curved positioning members 108 and 109, mounted on the arms 110 and 111 extending from the bearing on the frame 69 which engage any deranged sheets on the brackets 66 and push them into line with the other sheets by means of the curved ends 115 and 116.

At the rear end of oven 4 a pair of reciprocation sheet straightening members 117 and 118 are mounted on the extensions 119 and 120 of arms 121 and 122 and engage the respective sheets as they pass and correct their alignment. A pair of brackets 124 and 125 bolted to the rectangular frames 71 and 72 form pivotal supports for arms 121 and 122 at their central portion, their lower portions being joined by bar 126. Bracket 125 is extended into a U shape in which bearings 127 and 128 for shaft 129 are formed and upon which cam 130 and gear 131 are mounted. Cam follower 132, on arm 122 below its pivot, is retained in engagement with cam 130 by spring 134. Gear 135 on shaft 77 engages gear 131 on shaft 129 and rotates cam 130 to reciprocate the sheet positioning members 117 and 118 through the cam follower 132 thereby correcting the position of the sheets as they leave the oven conveyor.

Suitable heating and cooling devices for ovens 4 and 6 are provided as shown in Figs. 2 and 3. A plurality of gas burners 133 having baffles 136 supported from the rails 82 and 84 by wires 137 distribute the heat and give uniform treatment to all material on the oven conveyor. Gas is supplied to burners 133 through pipes 138 and valves 139. A suitable quantity of air is supplied through pipes 140 and valves 141 leading from the blower 145 and entering the gas pipes 138 at 140°. Valves 141 may be adjusted or the pressure at the source may be varied to give a suitable supply for the proper functioning of burners 133. Since the sheets are raised to a fairly high temperature, it is

desirable to reduce this to one at which they may be handled prior to their exit from the ovens. Accordingly, a series of air cooling tubes 146 are connected to the blower 145 or to a separate source of compressed air where-
 5 by cold air is circulated between the hot sheets to reduce their temperature. Suitable flues 147 shown in Fig. 2 (but not shown in the other figures for simplification of the
 10 drawings) conduct the waste gases away through the main flue 148. Ordinarily 3 flue pipes in the hood of oven 4 are sufficient; that is one at each end and another in the middle. In the longer oven six, eight or ten
 15 flues joining main flue 148 are desirable.

Power for the operation of the mechanism in oven 4 is derived from the electric motor 41 through the reduction gear box 42, gears 149 and 150, clutch 151 and shaft 152. Gear
 20 150 is mounted on shaft 154 and operatively connected to shaft 152 through clutch 151 which is similar to clutch 45 described hereinbefore. Shaft 152 is suitably mounted on the rectangular members 72 and worms 156
 25 and 157 thereon engage gears 158 and 159 on shafts 76 and 77. Thus by the operation of clutch 151 by lever 153, the mechanism of oven 4 can be cut in or out independently of the other machines.

Gear 160 keyed to shaft 152 engages and drives gear 161 on sleeve 162 loosely mounted about shaft 44. Bevel gear 164 keyed to sleeve 162 engages bevel gear 165 to rotate
 35 sprocket 166 on shaft 167 which in turn operates shafts 168 and sprocket 169 through chain 170 (see Fig. 10). Shaft 168 is mounted in a bearing 168' attached to one of the rectangular frames 72. A suitable chain tightener 171 adjustably mounted on an extension from the rectangular frame takes up
 40 the slack in chain 170. Sprocket 169 through chain 172 and sprocket 174 rotates shaft 175 which is mounted in a suitable bearing on the frame of lacquering machine 5. A second
 45 chain 176 is mounted on sprocket 177 at the other end of shaft 175 and on sprocket 179 which is mounted similarly to sprocket 169 but driven from shaft 175. Chains 172 and 176 have projections 180 for engaging the
 50 sheets conveyed by brackets 66 and to convey them to the lacquering machine 5.

An additional shaft 181 mounted in bearings 182 and 184 on extensions 185 and 186 from rectangular frames 71 and 72 has pulleys 187 mounted between chains 172 and 176.
 55 Pulleys 189 on shaft 175 drive shaft 181 through belts 191. Shaft 194 mounted on the lacquering machine 5 has a series of belt tighteners 192 to take up sag in chains 172 and 176
 60 and belts 191.

In the operation of the conveyor 10 the chains 172 and 176 engage the sheets by the projections 180 and move them until they are frictionally engaged by the belts 191 which
 65 move at a greater rate than chains 178 and

therefore move the sheets away from the projection 180 and feed them to the lacquering machine 5 with the rear edges out of engagement with projections 180 preventing thereby any buckling of the sheets.

Lacquering machine 5 with its conveyors 70 10 and 11 is similar in all respects to lacquering machine 2 and its conveyors 8 and 9 excepting that the lacquering machine 2 and its conveyors are driven by motor 41 while the
 75 lacquering machine 5 is driven from motor 197 through pulleys 198 and belts 199 and 200. Shaft 52 is driven by belt 199 whereas in lacquering machine 2 it is driven by chain 51.

Oven 6 is similar to oven 4 excepting that it is approximately three times as long and the sheets of tin remain therein about three times the period necessary in oven 4. In this oven, the lacquer on both sides of the sheet is completely baked after which the sheets are exposed to the air cooling tubes 146 and their temperature reduced sufficiently to be handled. The various mechanisms of oven 6 are driven by the electric motor 41 through
 80 gear box 42, gears 149 and 150, shaft 154, clutch 202, and shaft 204. Clutch 202 is similar to clutches 45 and 151.

The stacking machine 7 is adapted to receive the sheets from conveyor 12 and place
 85 them on the stack 205 in the manner fully disclosed in my copending application, Serial No. 683,930, filed January 2, 1924.

In the operation of the apparatus described herein, a stack of tin which may weigh several hundred pounds is moved by means of a truck under the feeding machine 1 which is then operated as described in my copending application referred to hereinbefore to raise the stack from the truck to a position from
 100 which the sheets are fed individually to the conveyor 8. The lacquering machine 2 receives the sheet between the rollers 14 and 15, the upper one of which applies a coating of lacquer to the upper surface of the sheet.
 105 The conveyor 9 receives the sheets from the lacquering machine and delivers them to the pockets between brackets 66 of the conveyor of oven 4. The sheets are then moved by this conveyor over the burners 133 for a period of about five minutes at which time the coating applied by lacquering machine 2 is partially oxidized or baked and is sufficiently hard to prevent their being sticky. Prior to their exit from the oven 4 they pass over the air cooling tubes 146 and their temperature is reduced. The conveyor 10 receives the sheets from the brackets 66 with the lacquered side down and delivers them to the lacquering machine 5 which coats the upper sides of the
 110 sheets and delivers them to conveyor 11. The brackets 66 on the conveyor mechanism of oven 6 receives the sheets from the conveyor 11 and passes them over burners 133 for a period of fifteen minutes about three times
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as long as the baking period in oven 4 whereupon coatings of lacquer on both sides of the sheet are completely baked and oxidized.

The sheets are then cooled by means of the air cooling tubes 146 and delivered to the conveyor 12. The stacking machine 7 receives the sheets from conveyor 12 and places them upon the stack 205, at the same time lowering the stack an amount corresponding to the thickness of the sheet. When a considerable quantity has accumulated in the stack, a truck is placed under the stacking machine and the table is lowered to the top of the truck and the lacquered sheets are removed.

It will be seen that the present invention provides an apparatus for coating sheet material completely automatic in all its features. The various machines are simple in construction easy to manufacture from readily obtainable material. Furthermore, the machines may be cut in or out without affecting the operation of other machines. The invention minimizes the labor required and provides a highly efficient apparatus adapted for commercial usage.

While the preferred embodiment of the invention is described in detail with reference to the drawings herein, it is not intended to limit the invention to the present disclosure as many changes can be made without departing from the essential principles disclosed. The description is to be taken as illustrative and not in a limiting sense as the scope of the invention is defined in the following claims:

Having thus described my invention, what I claim is:

1. In an apparatus of the class described in combination, a machine for coating sheet material, automatic means for supplying individual sheets to said coating machine, an oven adapted to receive the sheets from the coating machine for partially baking the coating thereon, a second coating machine adapted to receive the sheets from said oven for coating the other side of the sheet material, a second oven adapted to receive the sheets from said second coating machine, an independent source of power for said second coating machine, and a common source of power for the other elements of the apparatus.

2. In an apparatus of the class described, in combination, a machine for coating one side of the sheet material, automatic means for feeding individual sheets from a stack to said coating machine, an oven for partially baking the coating on the sheets received from the coating machine, a second coating machine for coating the other side of the sheet material received from the oven, a second oven for receiving the sheets from the second coating machine and for completely baking both sides of the sheets, a source of power for said second coating machine to permit independent operation thereof, a common

source of power for the other elements of the apparatus, and devices for controlling certain of said machines connected to the common source of power without affecting other machines.

3. In an apparatus of the class described, in combination, a machine for coating one side of sheet material, automatic means for feeding individual sheets to said coating machine, an oven for baking the coating on the sheets received from the coating machine, a second coating machine for coating the other side of the sheet material received from the first oven, a second oven for completely baking the coating on both sides of the sheets received from said second coating machine, a stacking machine associated with said second oven to receive and stack the sheets received therefrom, a source of power for said second coating machine, and a common source of power for the other elements of said apparatus.

4. In an apparatus of the class described, in combination, a machine for coating one side of sheet material, an oven for receiving the sheet material and for baking the coating thereon, a second coating machine for coating the other side of the sheet material received from said oven, a second oven for completely baking the coating on both sides of the sheets received from the second coating machine, a stacking machine associated with said second oven adapted to receive and stack the sheets received therefrom, a source of power for said second coating machine, and a common source of power for the other elements of said apparatus.

5. In an apparatus of the class described, in combination, a machine for coating one side of sheet material, means for supplying sheets to said coating machine, an oven for partially baking the coating applied thereto having a conveyor mechanism adapted to receive sheet material from said coating machine, and reciprocating means at the delivery end of said oven for aligning said sheets prior to their delivery to another machine.

6. In an apparatus of the class described, in combination, a machine for coating one side of sheet material, means for supplying sheets to said coating machine, an oven for baking the coating applied thereto having a conveyor mechanism adapted to receive sheet material from said coating machine, an additional coating machine for receiving the sheets directly from the conveyor mechanism in said first oven, an oven for coating and baking the other side of the sheet material received from said second coating machine, and a reciprocating sheet aligning device on the delivery end of each of said ovens for aligning the sheets leaving the ovens.

7. In an apparatus of the class described, in combination, a machine for coating sheet material, a conveyor leading to said coating

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- machine, an automatic feeding machine for supplying sheets individually to said conveyor from a stack, an oven having conveying devices adapted to receive individual sheets from said coating machine, and means on the forward end of said oven adapted to engage the respective ends of said sheets for aligning said sheets prior to their entry thereto.
8. In an apparatus of the class described, in combination, a machine for coating sheet material, means for supplying sheets from a storage supply individually to said coating machine, mechanism for transferring said sheets individually from said coating machine, an oven having conveying devices adapted to receive individual sheets from said transferring mechanism, and means on the forward end of the said oven for engaging the ends of the sheets to position them properly on said conveying devices.
9. In an apparatus of the class described, in combination, a machine for coating one side of the sheet material, means for supplying sheets from a storage supply to said coating machine, an oven for baking the coating applied thereto having a conveyor mechanism adapted to receive sheet material from said coating machine, an additional coating machine adapted to receive sheets from said conveyor for coating the other side of said sheet material and reciprocating means at the delivery end of each of said ovens for positioning the sheets as they leave the ovens.
10. In an apparatus of the class described the combination, a machine for coating one side of sheet material, a conveyor leading to said coating machine, an automatic feeding machine for feeding sheets individually from a stack to said conveyor, an oven for baking the coating applied thereto, having a conveyor mechanism adapted to receive sheet material from said coating machine, automatic means for turning said sheets to permit the other side to be coated, an additional coating machine for coating the other side of sheet material, and an additional oven for baking the coating on said sheet material.
11. In an apparatus of the class described, in combination, a machine for coating one side of sheet material, an automatic feeding machine for feeding sheets from a storage supply to said coating machine, an oven for partially baking the coating applied thereto having a conveyor mechanism adapted to receive sheet material from said coating machine, and reciprocating means for positioning the sheet on said conveyor at one end of said oven.
12. In a machine of the class described, the combination of a coating machine for applying lacquer to one side of sheet material, an automatic feeding machine for feeding sheet material from a stored supply individually to said coating machine, an oven having a conveyor therein for receiving the sheets from said coating machine, a second oven and a coating machine between said ovens adapted to coat the other sides of said sheets and deliver them to the second oven, an independent source of power for driving said second coating machine, a shaft extending along the sides of said oven operatively connected to drive the mechanisms with the exception of the second coating machine, and means for disconnecting the respective mechanisms from said shaft independently.
13. In a machine of the class described, the combination of a machine for applying lacquer to one side of sheet material such as tin and the like, an automatic feeding machine for feeding said sheet material from a stored supply individually to said lacquering machine, an oven having a conveyor therein for receiving the sheets from said lacquering machine, a second oven and a lacquering machine between said ovens adapted to coat the other sides of said sheets and deliver them to the second oven, a shaft extending along the sides of said oven operatively connected to drive the conveyors in said ovens, and means for disconnecting the respective conveyors in said ovens from said shaft independently.
14. In a machine of the class described, the combination of a lacquering machine for applying lacquer to one side of sheet material, an automatic feeding machine for feeding sheet material from a stored supply individually to said coating machine, an oven having a conveyor therein for receiving the sheets from said coating machine, a second oven likewise having a conveyor therein, a coating machine between said ovens adapted to coat the other sides of said sheets and deliver them to the second oven, and reciprocating means adapted to position the sheets on the conveyors in the said ovens.
15. In a machine of the class described, the combination of a lacquering machine for coating one side of sheet material such as tin and the like, an oven having a conveyor therein for receiving the sheets from said coating machine, a second oven likewise having a conveyor therein, a lacquering machine between said ovens adapted to receive the sheets from the conveyor in the first oven, coat the other sides thereof and deliver them to the conveyor in the second oven, and reciprocating means adapted to engage the ends of said sheets on said conveyors to position same.
16. In an apparatus of the class described, the combination of a machine for coating sheet material, an oven for partially baking the coating applied thereto having a conveyor mechanism adapted to receive sheet material from said coating machine, and reciprocating means for positioning the sheets on said conveyor at one end of the oven.

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