

March 14, 1967

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3,308,555

DRIER PARTICULARLY FOR PHOTOGRAPHIC SHEET MATERIAL

Filed April 13, 1964

3 Sheets-Sheet 1

FIG. 1

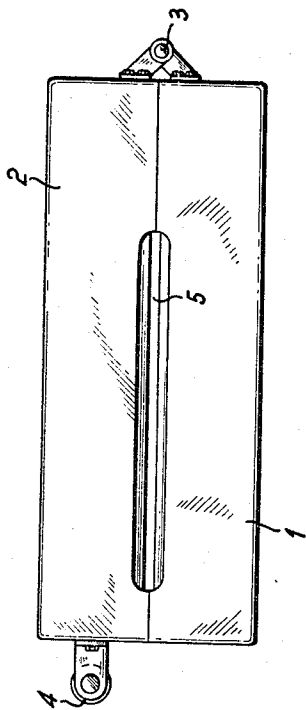
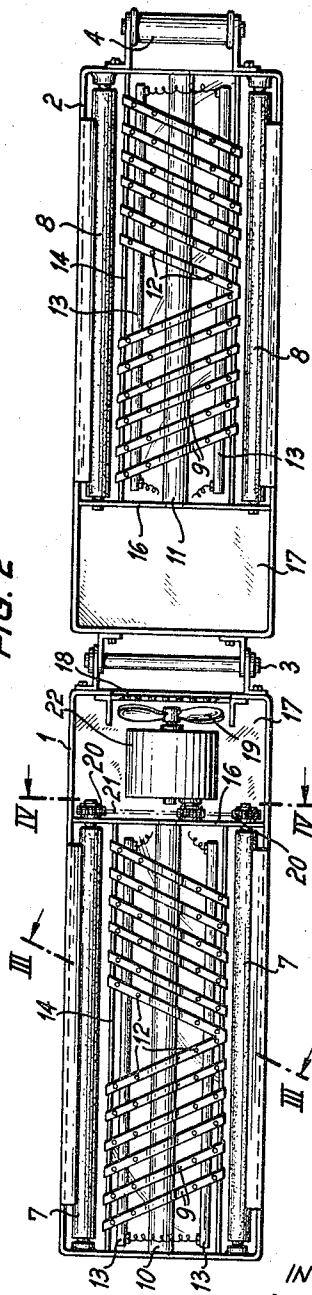


FIG. 2



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3 Sheets-Sheet 2

FIG. 3

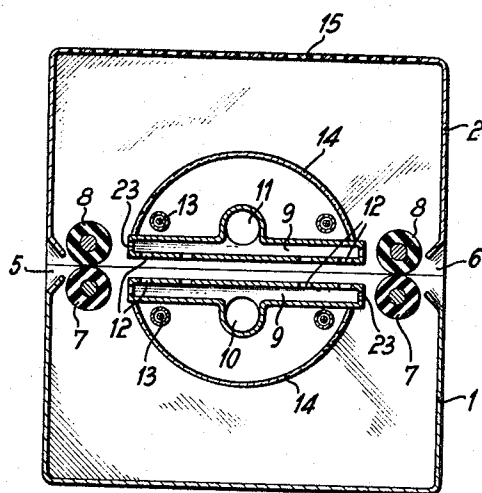
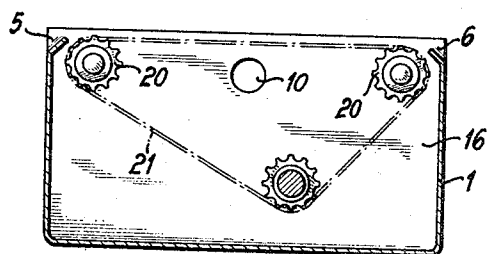


FIG. 4



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3 Sheets-Sheet 3

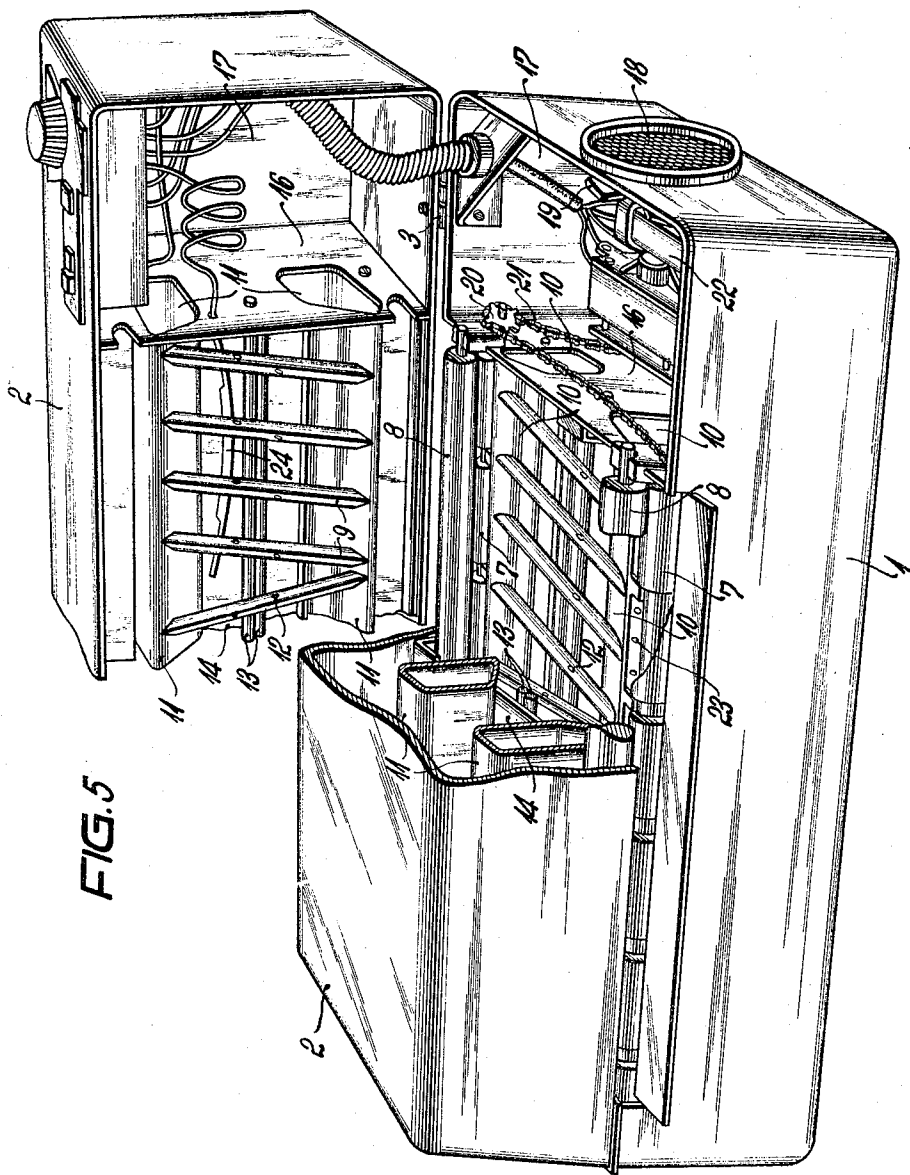


FIG. 5

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DRIER PARTICULARLY FOR PHOTOGRAPHIC SHEET MATERIAL

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Claims priority, application Germany, Apr. 13, 1963, J 23,547

15 Claims. (Cl. 34—155)

The present invention relates to driers.

More particularly, the present invention relates to driers which are particularly suitable for drying sheet material such as photographic sheet material.

In driers of this type it is conventional to provide a guide means in the housing of the drier for guiding the sheet material from an inlet through which the sheet material is introduced into the housing to an outlet through which the sheet material discharges from the housing, and in addition there is conventionally a heating means in the housing for heating the sheet material as it moves through the housing.

With driers of the above type it is required that the path along which the sheet material moves while it is dried be extremely short. In fact, this path is required to be so short that sheet material in the form of a photograph or a film strip or the like must at its leading end issue from the outlet of the drier before the trailing end of the sheet material has entered through the inlet into the housing. In other words, the path along which the sheet material moves while it is dried must be shorter than the greatest length of the shortest photograph, negative, or the like which is to be dried.

In order to provide an efficient and complete drying with such a short path for the sheet material it is essential to use a high drying temperature of over 200° C. in the drying chamber. Experience has shown that when operating with temperatures on this order the photographic sheet material quite frequently becomes damaged and discolored at the emulsion side of the sheet material.

The present invention recognizes the fact that such damaging of the sheet material takes place at locations where the emulsion side of the sheet material engages the guide means which guides the sheet material through the drying chamber because the guide means itself becomes so hot that at the place where the guide means engages the sheet material, particularly at the emulsion side thereof, the heat is so great that the sheet material becomes damaged.

It is accordingly a primary object of the present invention to provide a drier of the above type which will not damage photographic sheet material but which will at the same time provide a complete and efficient drying of the sheet material even though the path along which the sheet material moves while it is dried is extremely short.

In particular, it is an object of the present invention to provide a structure of the above type which will cool the guide means which engages the sheet material to an extent sufficient to prevent the guide means from damaging the sheet material while at the same time applying to the sheet material a temperature sufficiently high to efficiently and completely dry the same in the extremely short period of time during which the sheet material passes through the drying chamber.

Furthermore, it is an object of the present invention to use the cooling of the guide means for the sheet material to contribute to the drying of the sheet material and to also contribute to the efficient guiding of the sheet material through the drying chamber.

It is also an object of the present invention to provide for a structure of the above type a cooling of the guide

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means which will prevent the latter from damaging the sheet material and which in addition will not only contribute to the drying and guiding of the sheet material but which will also contribute to the elimination of moisture from the interior of the drying chamber.

Also, the objects of the present invention include the provision of a structure which will cool not only the guide means for the sheet material but also other structure which engages the sheet material and which might damage the same if such other structure were excessively heated.

With these objects in view the invention includes, in a drier, particularly for photographic sheet material, a housing having a pair of opposed walls respectively formed with an inlet and an outlet which are aligned with each other and through which the sheet material is introduced into and discharged from the housing. A plurality of elongated hollow guide members are situated in the interior of the housing for guiding the sheet material along a given path from the inlet to the outlet, and a heating means is also located in the housing for heating the sheet material as it moves along this path. In accordance with the present invention a conduit means communicates with the interior of the hollow guide members for directing to the interior of the hollow guide members a cooling fluid, so that in this way the guide members will be maintained at a temperature low enough to prevent damaging or discoloration of the sheet material, and in particular of the emulsion side of photographic sheet material.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

FIG. 1 is a front elevation of one possible embodiment of a structure according to the present invention;

FIG. 2 is a plan view of the structure of FIG. 1 shown in a position where the housing of the drier has been displaced to an open position, so that the details of the structure in the interior of the housing are apparent from FIG. 2;

FIG. 3 is a transverse sectional view of the closed housing taken along line 3—3 of FIG. 2 in the direction of the arrows and showing the structure on an enlarged scale, as compared to FIGS. 1 and 2;

FIG. 4 is a transverse sectional view taken along line 4—4 of FIG. 2 in the direction of the arrows; and

FIG. 5 is an enlarged perspective illustration of another embodiment of a drier of the invention, the upper part of the housing of the drier of FIG. 5, and the structure carried by this upper part being shown at the right half of the upper part in an open position and at the left half in a closed position.

Referring now to the drawings and more particularly to FIGS. 1—4, it will be seen that the drier illustrated therein includes a housing which has a lower part 1 and an upper part 2, these housing parts being hingedly connected to each other by a hinge 3 so that the housing can be displaced between the closed position shown in FIG. 1 and the open position shown in FIG. 2. In order to facilitate the displacement of the upper part 2 of the housing between the positions of FIGS. 1 and 2 the upper housing part 2 carries at one end a handle 4.

The front and rear walls of the housing are respectively formed with an elongated inlet 5 and an elongated outlet 6 which are aligned with each other and through which the photographic sheet material or the like can be intro-

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duced into and discharged from the housing. It is to be noted that the plane at which the lower housing part 1 and the upper housing part 2 join each other when the housing is closed passes substantially midway through the inlet 5 and outlet 6 in alignment therewith so that the lower half of the inlet 5 and outlet 6 is formed in the lower housing part 1 while the upper half of the inlet 5 and outlet 6 is formed in the upper housing part 2.

A pair of lower rollers 7 and a pair of upper rollers 8 which are respectively located over and engage the lower roller 7 are located within the housing with one pair of rollers 7 and 8 in alignment with and located next to the inlet 5 so as to form a pair of feed rollers for feeding sheet material introduced through the inlet 5 into the interior of the housing toward the outlet 6, while the other pair of rollers 7 and 8, shown at the right in FIG. 3, are situated in alignment with and closely adjacent to the outlet 6 so as to form a pair of discharge rollers which will discharge dried sheet material out through the outlet 6. The pair of lower rollers 7 are supported for rotary movement in the lower housing part 1 while the upper rollers 8 are supported for rotary movement in the upper housing part 2.

A guide means is provided for guiding the sheet material for movement along a given path from the inlet to the outlet, and this guide means takes the form of a lower bank of elongated hollow guide members 9 carried by the lower housing part 1 and an upper bank of elongated hollow guide members 9 carried by the upper housing part 2, and it will be noted that these banks of hollow guide members 9 are situated adjacent the plane at the interface between the housing parts when the housing is in its closed position shown in FIG. 3. A conduit means communicates with the interiors of the hollow guide members 9, and this conduit means includes a lower elongated conduit 10 which extends across and communicates with the interiors of the lower bank of hollow guide members 9, this conduit 10 being situated beneath the lower bank of guide members 9, as shown in FIG. 3, and the conduit means further includes an upper elongated conduit 11 extending across and communicating with the hollow interiors of the upper bank of conduits 9, this upper conduit 11 being located over the upper bank of conduits 9, as shown in FIG. 3. The upper faces of the lower bank of guide members 9 and the lower faces of the upper bank of conduits 9 are each formed with a plurality of openings 12 directed toward the path along which the sheet material moves, so that in this way when a cooling gas such as air is introduced by the conduits 10 and 11 into the interiors of the hollow guide members 9, this cooling fluid will issue through the openings 12 toward the sheet material which is guided between the banks of guide members 9.

Below the lower bank of guide members 9 and above the upper bank of guide members 9 are elongated heating elements 13 which extend parallel to the rollers 7 and 8 and which take the form of, for example, electrically conductive resistance wires which when supplied with current will heat the interior of the housing 1, 2. A pair of reflectors 14 in the form of elongated troughs are arranged as shown in FIG. 3 with their concave surfaces directed toward the heating elements 13 so that the heating rays will be reflected by the reflectors 14 toward the sheet material guided by the guide members 9, and the upper reflector 14 is formed with unillustrated openings through which heated humid air can pass upwardly, the top wall of the housing being formed with openings 15 through which the hot humid air will pass to the exterior of the heater so that in this way moisture will be removed therefrom.

The ends of each guide member 9 are respectively formed with a pair of additional openings 23, and these openings are directed toward the rollers 7 and 8 so that in this way the cooling fluid will also cool the rollers 7 and 8.

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All of the above-described structure is located in a drying chamber of the housing which is separated from a fan chamber 17 thereof by a partition 16 divided into a pair of sections respectively carried by the lower and upper parts of the housing. When the housing is in the closed position as shown in FIG. 3 the sections of the partition 16 engage each other so as to form a continuous partition separating the fan chamber 17 from the remainder of the interior of the housing which forms the drying chamber. It is to be noted that many of the above elements such as the elongated reflectors 14 and the conduits 10 and 11 are supported at their ends by an end wall of each housing part 1 and 2 and the partition 16, and the guide elements 9 may be supported by the edges of the reflectors 14 as well as by the conduits 10 and 11. The rollers 7 and 8 respectively have their ends supported for rotary movement in bearings carried by the partition sections 16 and the ends of the housing parts 1 and 2 which are distant from fan chamber 17.

The end wall of the lower housing part 1 which defines part of the fan chamber 17 is formed with an air inlet 18, and a fan 19 is located in the fan chamber and driven by a motor 22 in a direction which causes the fan 19 to suck air into the interior of the chamber 17 through the air inlet 18. This air which is in this way sucked into the chamber 17 is delivered into the interior of the conduits 10 and 11, and as may be seen from FIG. 4 the conduit 10 has an open end communicating with the interior of the chamber 17 through the lower section of the partition 16. In the same way the upper conduit 11 communicates at one end with the interior of the chamber 17 through the upper section of the partition 16, and thus the air which is sucked into the chamber 17 by the fan 19 will be driven by the latter into the conduits 10 and 11 to flow therefrom into the interiors of the several guide elements 9 from where the air will issue through the openings 12 to the path along which the sheet material moves and through the openings 23 to the rollers 7 and 8.

The lower rollers 7 have ends which extend through the lower section of the partition 16 into the chamber 17 where these ends respectively carry a pair of sprocket wheels 20, as shown most clearly in FIG. 4, and the motor 22 which drives the fan 19 also drives through a suitable step-down transmission an endless chain 21 which rotates the sprockets 20 and thus rotates the roller 7 in the same direction for advancing the sheet material from the inlet 5 toward the outlet 6. The upper rollers 8 are turned only by frictional engagement with the rollers 7 or with sheet material between the rollers 7 and 8.

After the drier has been started so that the heating elements 13 are energized and the motor 22 is running, a sheet material which is to be dried is introduced through the inlet 5 into the interior of the housing to be fed there-through by the feed rollers 7 and 8 which are adjacent the inlet 5, and as the sheet material moves beyond the feed rollers 7 and 8 shown at the left of FIG. 3 the sheet material will pass between the upper and lower banks of guide elements 9 to be guided thereby toward the outlet 6. In this way the sheet material will progress to the discharge rollers 7 and 8 which are adjacent the outlet 6 to be discharged by the discharge rollers out through the outlet 6. During its movement through the drier the sheet material is dried by the heating rays produced by the heating bars or wires 13 as well as by the air which is directed toward the sheet material through the openings 12. This air while cooling the guide elements 9 is of course in heat-exchanging relation therewith so that the air becomes heated and thus it is air at an elevated temperature which is directed from the openings 12 against the sheet material to contribute to the drying thereof as well as to the ease with which the sheet material moves along the path defined between the banks of guide elements 9.

The embodiment of the invention which is illustrated in FIG. 5 operates on the same principle as the embodi-

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ment thereof illustrated in FIGS. 1-4 and described above. However, in the embodiment of FIG. 5 the upper part 2 and the lower part 1 of the housing are hingedly connected to each other by hinge elements 3 which are connected to the longitudinal side of the housing parts 1 and 2, as is apparent from FIG. 5.

Moreover, instead of a single lower conduit 10 and a single upper conduit 11, the embodiment of FIG. 5 includes a pair of lower conduits 10' and a pair of upper conduits 11', and these conduits each have a trapezoidal cross section and are arranged so that their widest wall extends vertically, and it will be noted that the wider vertical walls of the conduits are directed away from each other while the shorter vertical walls are directed toward each other so that in this way the upper pair of conduits 11' respectively have a pair of lower inclined walls which are inclined away from the front and rear walls of the housing upwardly toward the interior thereof while the lower pair of conduits 10' have upper inclined walls which extend in a direction from the front and rear walls of the housing downwardly toward the interior thereof. These upper inclined walls of the conduits 10' are fixed to the opposed ends of the lower bank of hollow guide members 9 so as to support the latter, and these guide members 9 have open ends which communicate through the walls of the conduits 10' with the interior thereof, and in the same way the upper bank of conduits 9 extend between and are carried by the lower walls of the conduits 11', the upper bank of guide members 9 also having hollow ends which communicate with the interiors of the conduits 11'.

In the embodiment of FIG. 5, the openings 23 through which air issues to cool the rollers 7 and 8, instead of being formed at the ends of the guide members 9, are formed adjacent the lower corners of the conduits 11' and the uppermost corners of the conduits 10', and all of these openings 23' are directed toward the rollers 7 and 8 so that in this way cooling fluid will issue from the conduits 10' and 11' toward and into engagement with the rollers 7 and 8 to maintain the latter at a temperature low enough to prevent injury to the sheet material, in the same way that the rollers 7 and 8 of FIGS. 1-4 are maintained at a temperature low enough to prevent injury to the sheet material.

FIG. 5 illustrates in the upwardly turned portion of the upper housing part 2 a sensing element 24 of a thermostat, this element 24 sensing the temperature in the interior of the housing and preventing the temperature in the interior of the housing from moving above a predetermined upper limit. In this case the thermostat, which is conventional, is electrically connected in a known way into the circuit of the heating elements 13 to control the temperature thereof, and this thermostat will maintain the temperature of heating elements 13 between predetermined limits by automatically opening the circuit at an upper temperature limit and closing the circuit at a lower temperature limit of the heating elements 13.

In the embodiment of FIG. 5, instead of elongated trough-shaped reflectors, the reflectors 14 are in the form of plates 14'. The upper plate 14' is fixed to and supported by the conduits 11' substantially at the junction between the inner vertical wall thereof and the lower inclined walls while the lower plate 14' is fixed to and carried by the lower conduits 10' substantially at the junction between the inner vertical walls thereof and the upper inclined walls of these conduits 10'. At least the upper reflector 14' is formed with openings 25 through which the hot humid air can pass upwardly to the openings in the top wall 2 so as to move out through these latter openings to the exterior of the drier.

Furthermore, the upper rollers 8 in the embodiment of FIG. 5 are not supported for rotary movement in the upper housing part 2. Instead they remain at all times with the lower housing part 1 and are supported in suitable brackets so as to remain above and in engagement

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with the lower rollers 7. Thus, it will be seen that the upper rollers 8 terminate in free ends guided in vertical notches formed in bearing blocks 26 which are carried only by the lower housing part 1. These upper rollers 8 simply rest by their own weight on the lower rollers 7, respectively.

Except for the above-noted differences, the embodiment of FIG. 5 is the same as that of FIGS. 1-4.

With the structure of the invention it is possible to maintain the interior of the drying chamber at a temperature between 200 and 300° C. The sheet material can pass through the interior at a period of time of between 12 and 15 seconds, to be thoroughly dried, and photographic sheet material having the format DIN A 6 has been preferably dried in this manner in a period of from 12 to 15 seconds at a temperature range of between 200 and 300° C.

The heating fluid which issues through the openings of the guide elements provides a turbulence in the air in the drying chamber, and this turbulence improves the drying action and enhances the movement of the sheet material through the housing as well as the flow of damp air out of the drying chamber.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of driers differing from the types described above.

While the invention has been illustrated and described as embodied in driers for photographic sheet material, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a drier, particularly for photographic sheet material, in combination, a housing formed with an inlet and an outlet through which a sheet material which is to be dried is introduced into and moves out of said housing, respectively; spaced guide means in said housing engaging and guiding sheet material which is to be dried along a given path from said inlet to said outlet; heating means arranged in said housing for heating the air within said housing so as to thereby heat the sheet material while it moves along said path, said guide means engaging the sheet material being also subject to the heating action of said heating means and separate cooling means communicating with said guide means for cooling the latter to thereby prevent heating of said guide means above a predetermined temperature beyond which the sheet material engaged by said guide means is susceptible to heat damage.

2. In a drier, particularly for photographic sheet material, in combination, a housing formed with an inlet through which a sheet material to be dried is inserted into said housing and an outlet through which dried sheet material issues from said housing; spaced hollow guide means located in said housing for engaging and guiding sheet material along a given path from said inlet to said outlet; heating means arranged in said housing for heating the air within said housing so as to thereby heat the sheet material as it moves along said path so as to dry the sheet material, said guide means engaging the sheet material being also subject to the heating action of said heating means; and cooling means, including conduit means communicating with the interior of

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said hollow guide means for directing a cooling fluid thereto so as to cool said guide means to thereby prevent heating of said guide means above a predetermined temperature beyond which the sheet material engaged by said guide means is susceptible to heat damage.

3. In a drier as recited in claim 2, said housing having opposed walls respectively formed with said inlet and outlet, and said inlet and outlet being aligned with each other.

4. In a drier particularly for photographic sheet material, in combination, a housing having opposed walls respectively formed with an inlet and an outlet which are aligned with each other and through which sheet material is respectively introduced into and issued from said housing; a plurality of spaced elongated hollow guide members located in said housing for engaging and guiding sheet material along a predetermined path from said inlet to said outlet; heating means arranged in said housing for heating the air within said housing so as to thereby heat the sheet material moving along said path; and separate cooling means, including conduit means communicating with the interiors of said elongated hollow guide elements for directing into the latter a cooling fluid to thereby prevent heating of said guide means above a predetermined temperature beyond which the sheet material engaged by said guide means is susceptible to heat damage.

5. In a drier, particularly for photographic sheet material, in combination, a housing having opposed walls respectively formed with an inlet and an outlet which are aligned with each other so that sheet material which is to be dried can be introduced into said housing through said inlet and can issue from said housing through said outlet; a plurality of spaced elongated hollow guide members located in said housing for engaging and guiding sheet material along a given path from said inlet to said outlet, said guide members each being formed with a plurality of openings directed toward said path; heating means arranged in said housing for heating the air within said housing so as to thereby heat, and thus dry, sheet material moving along said path; and separate cooling means, including conduit means communicating with the interiors of said guide members for directing into the latter a cooling gas which cools said guide members and which issues through said openings thereof into the interior of said housing toward said path to thereby prevent heating of said guide means above a predetermined temperature beyond which the sheet material engaged by said guide means is susceptible to heat damage while the cooling fluid itself, after acquiring heat, will contribute to the drying of the sheet material.

6. In a drier, particularly for photographic sheet material, in combination, a housing having a pair of opposed walls respectively formed with an inlet and an outlet which are aligned with each other and through which sheet material which is to be dried can be introduced into and will discharge from said housing; a pair of feed rollers located in said housing in alignment with said inlet thereof and adjacent to said inlet for receiving the sheet material introduced through said inlet and feeding the sheet material toward said outlet; a pair of discharge rollers located in said housing in alignment with and adjacent said outlet for receiving sheet material which has moved from said inlet toward said outlet and discharging the same through said outlet; a plurality of spaced elongated hollow guide members located in said housing between said feed rollers and discharge rollers for engaging and guiding sheet material along a given path from said inlet to said outlet, said hollow guide members each being formed with openings directed toward said path and directed toward said feed and discharge rollers; heating means arranged in said housing for heating the air therewithin to thereby heat the sheet material, said guide members engaging the sheet material being also subject to the heating action of said heat-

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ing means and separate cooling means, including conduit means communicating with said guide members for directing into the latter a cooling fluid which cools said members and which issues through said openings thereof to also cool said rollers to thereby prevent heating of said guide means above a predetermined temperature beyond which the sheet material engaged by said guide means is susceptible to heat damage.

7. In a drier, particularly for photographic sheet material, a housing carrying in its interior a partition dividing the interior of said housing into a drying chamber and a fan chamber, a wall of said housing which defines part of said fan chamber being formed with an air inlet, and a pair of opposed walls of said housing which define part of said drying chamber being respectively formed with an inlet and an outlet which are aligned with each other and through which sheet material which is to be dried is introduced into and discharged from said drying chamber; a plurality of spaced elongated hollow guide members located in said drying chamber for engaging and guiding sheet material along a given path from said inlet to said outlet; heating means arranged in said drying chamber for heating the air within said housing so as to thereby heat the sheet material moving along said path, said guide means engaging the sheet material being also subject to the heating action of said heating means; conduit means communicating with the interiors of said guide members and communicating through said partition with said fan chamber; and cooling means for cooling said guide members, said cooling means including fan means in said fan chamber for drawing air into the latter through said air inlet and for discharging air from said fan chamber into said conduit means to enter therefrom into said hollow guide members for cooling the latter to thereby prevent heating of said guide means above a predetermined temperature beyond which the sheet material engaged by said guide means is susceptible to heat damage.

8. In a drier as recited in claim 7, a pair of feed rollers located adjacent said inlet in alignment therewith in the interior of said housing for feeding material introduced through said inlet along said path toward said outlet and a pair of discharge rollers located in said housing in alignment with said outlet adjacent the latter for discharging sheet material out of said housing through said outlet thereof, each of said pairs of rollers having at least one roller which extends at an end portion through said partition into said fan chamber, said fan means including a fan and a motor which drives the same, and transmission means operatively connected to said rollers which extend into said fan chamber and said motor for transmitting a drive therefrom to said rollers.

9. In a drier, particularly for photographic sheet material, in combination, a housing having a pair of opposed walls respectively formed with an inlet and an outlet which are aligned with each other and through which sheet material to be dried is introduced into and discharged from said housing, said housing being divided into two parts which join each other at a plane which passes substantially centrally through and is aligned with said inlet and said outlet; spaced guide means in said housing for engaging and guiding sheet material from said inlet to said outlet, said guide means including a plurality of elongated hollow members; heating means arranged in said housing for heating the air within said housing so as to thereby heat the sheet material engaged and guided by said hollow members, said guide means engaging the sheet material being also subject to the heating action of said heating means; and separate cooling means, including conduit means communicating with the interiors of said hollow members for directing a cooling fluid into the latter to thereby prevent heating of said guide means above a predetermined temperature beyond which the sheet material engaged by said guide means is susceptible to heat damage.

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10. In a drier as recited in claim 9, hinge means operatively connected to said parts of said housing for hingedly connecting the same to each other so that one of said parts is turnable toward and away from the other of said parts of said housing.

11. In a drier, particularly for photographic sheet material, in combination, a housing having front and rear walls respectively formed with an inlet and an outlet which are aligned with each other and through which sheet material which is to be dried is introduced into and discharged from said housing, said housing also having a top wall formed with openings passing therethrough; a plurality of spaced elongated hollow guide members located in said housing and extending between said inlet and outlet thereof for guiding sheet material along a given path from said inlet to said outlet, said guide members being respectively formed with openings directed toward said path; heating means in said housing for heating sheet material moving along said path; and conduit means, including a pair of elongated conduits of trapezoidal cross-section respectively connected to and communicating with opposed ends of said elongated hollow guide members for directing into the latter a cooling gas which passes through said openings of said guide members to contribute to the drying of the sheet material and which then passes out of said housing through said openings in said top wall thereof.

12. In a drier, particularly for photographic sheet material, in combination, a housing having front and rear walls respectively formed with an inlet and an outlet which are aligned with each other and through which sheet material which is to be dried is introduced into and discharged from said housing; a bank of spaced lower elongated hollow guide members and a bank of spaced upper elongated hollow guide members extending between said inlet and outlet, said banks of guide members defining between themselves a path along which sheet material moves from said inlet to said outlet and being arranged to engage such sheet material during this movement; heating means in said housing for heating the air within said housing so as to thereby heat the sheet material moving along said path, said guide means engaging the sheet material being also subject to the heating action of said heating means; and separate cooling means, including at least one pair of conduits respectively communicating with said banks of hollow guide members for directing cooling fluid into the latter to thereby prevent heating of said guide means above a predetermined temperature beyond which the sheet material engaged by said guide means is susceptible to heat damage.

13. In a drier, particularly for photographic sheet material, in combination, a housing having front and rear walls respectively formed with an inlet and an outlet which are aligned with each other and through which sheet material to be dried can be introduced into and discharged from said housing; a lower bank of spaced elongated hollow guide members and an upper bank of spaced elongated hollow guide members located in said housing, said banks of guide members defining between themselves a path along which sheet material is guided during movement from said inlet to said outlet and being arranged to engage such sheet material during this movement; heating means in said housing for heating the air within said housing so as to thereby heat the sheet material moving along said path; one pair of elongated hollow conduits respectively communicating with opposed ends of the lower bank of elongated hollow guide members for directing

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a cooling fluid into the latter; and a second pair of elongated hollow conduits respectively communicating with opposed ends of the upper bank of elongated hollow guide members for directing cooling fluid into the guide members of said upper bank; and separate cooling means connected with said pairs of conduits for supplying cooling fluid thereto so that said conduits will direct such cooling fluid to said hollow guide means.

14. In a drier, particularly for photographic sheet material, in combination, a housing having front and rear walls respectively formed with an inlet and an outlet which are aligned with each other and through which sheet material to be dried can be introduced into and discharged from said housing; a lower bank of elongated hollow guide members and an upper bank of elongated hollow guide members located in said housing, said banks of guide members defining between themselves a path along which sheet material is guided during movement from said inlet to said outlet and being arranged to engage such sheet material during this movement; heating means in said housing for heating the air within said housing so as to thereby heat the sheet material moving along said path; one pair of elongated hollow conduits respectively communicating with opposed ends of the lower bank of elongated hollow guide members for directing a cooling fluid into the latter; and a second pair of elongated hollow conduits respectively communicating with opposed ends of the upper bank of elongated hollow guide members for directing cooling fluid into the guide members of said upper bank; and separate cooling means connected with said pairs of conduits for supplying cooling fluid thereto so that said conduits will direct such cooling fluid to said hollow guide means; a pair of feed rollers located in said housing adjacent and in alignment with said inlet for feeding material introduced through said inlet between said banks of guide members toward said outlet, and a pair of discharge rollers located in said housing in alignment with and adjacent said outlet for receiving sheet material which has passed between said banks of guide members and discharging the sheet material through said outlet, said conduits respectively being formed with openings directed toward said rollers for cooling the latter with the fluid which said conduits direct to the interiors of said guide members.

15. In a drier as recited in claim 14, said guide members being formed with openings directed toward said path and said housing having a top wall formed with openings, said fluid being air so that the air introduced by said conduits into said guide members will on the one hand cool said rollers, will on the other hand pass through said openings of said guide members to said path for contributing to the drying of the sheet material, and will finally pass out of said housing through said openings in said top wall thereof.

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