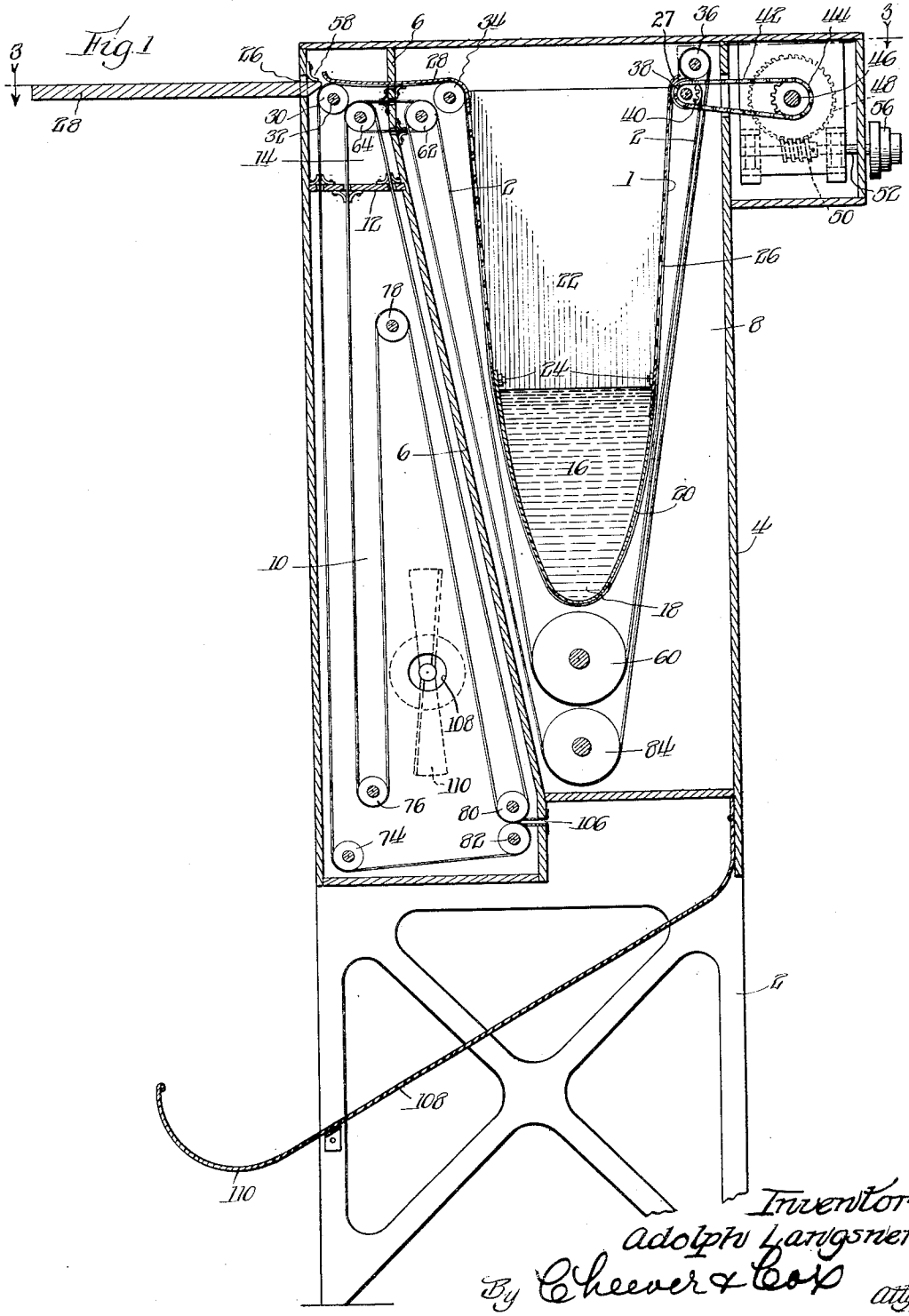
March 3, 1931. A. LANGSNER 1,795,220

DEVELOPING APPARATUS

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Fig. 1



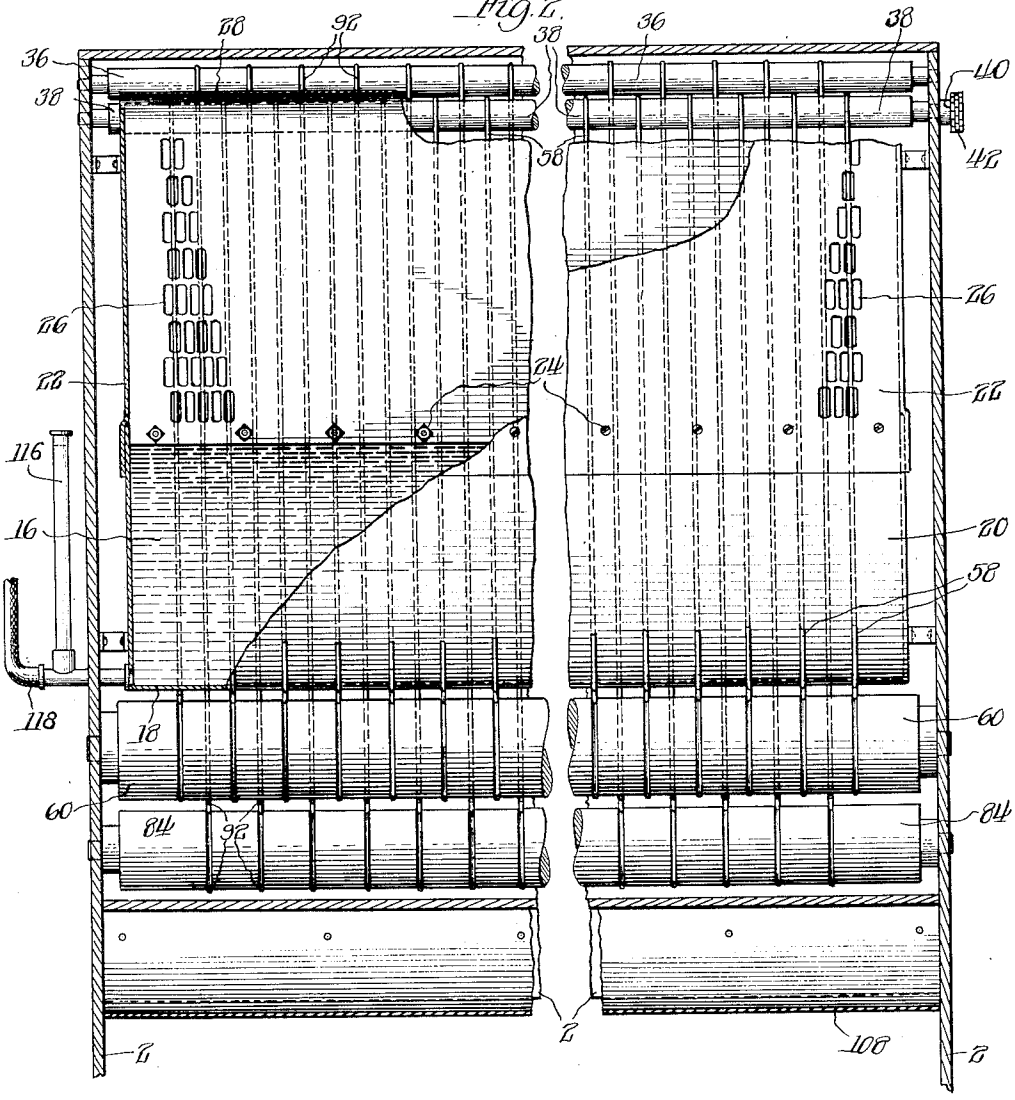
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Fig. 2.



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DEVELOPING APPARATUS

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Fig. 3.

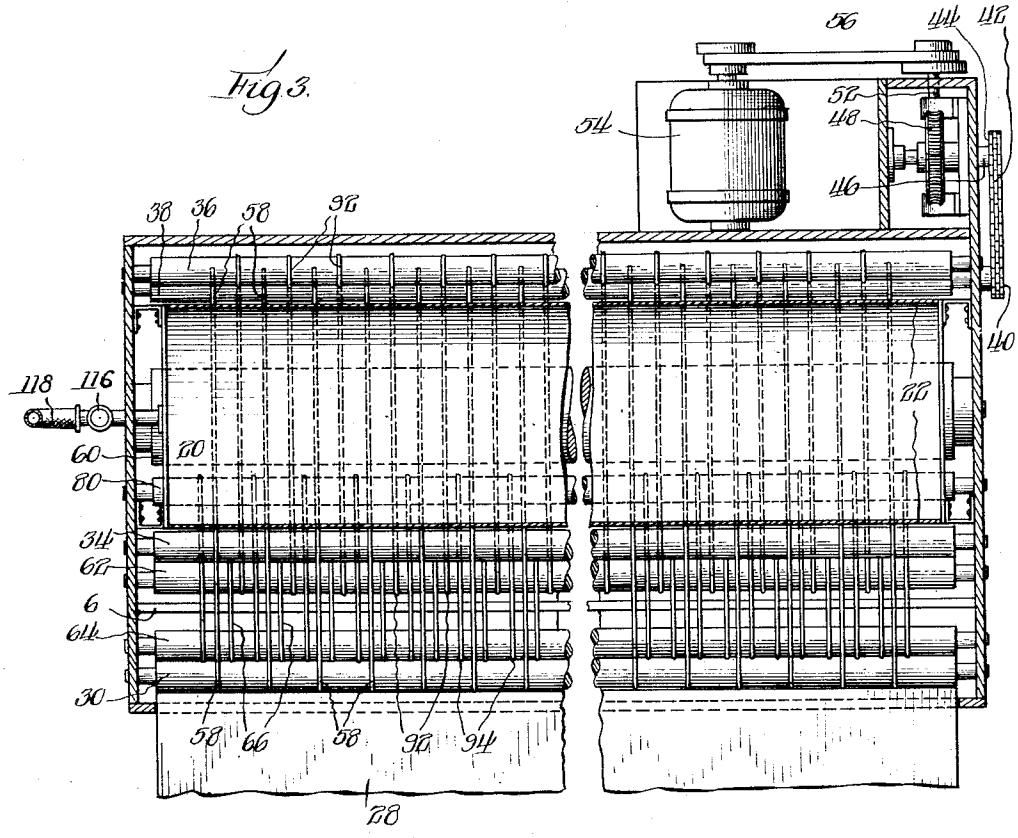
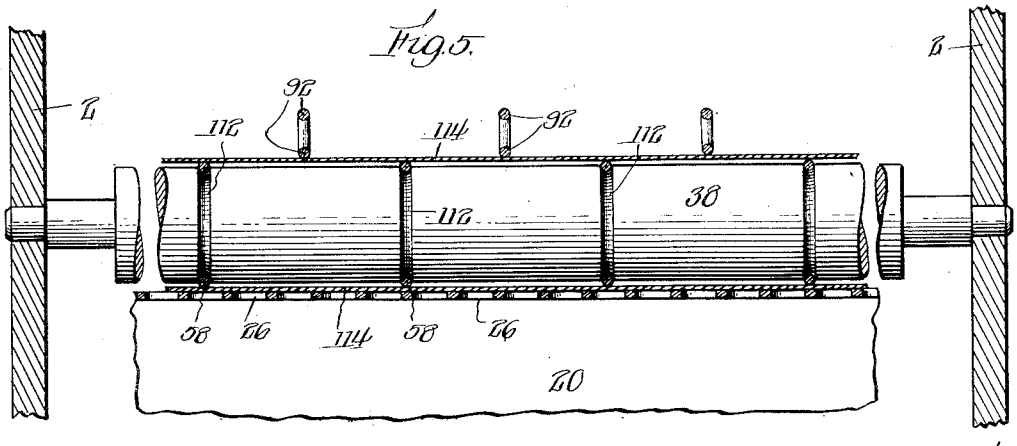


Fig. 5.

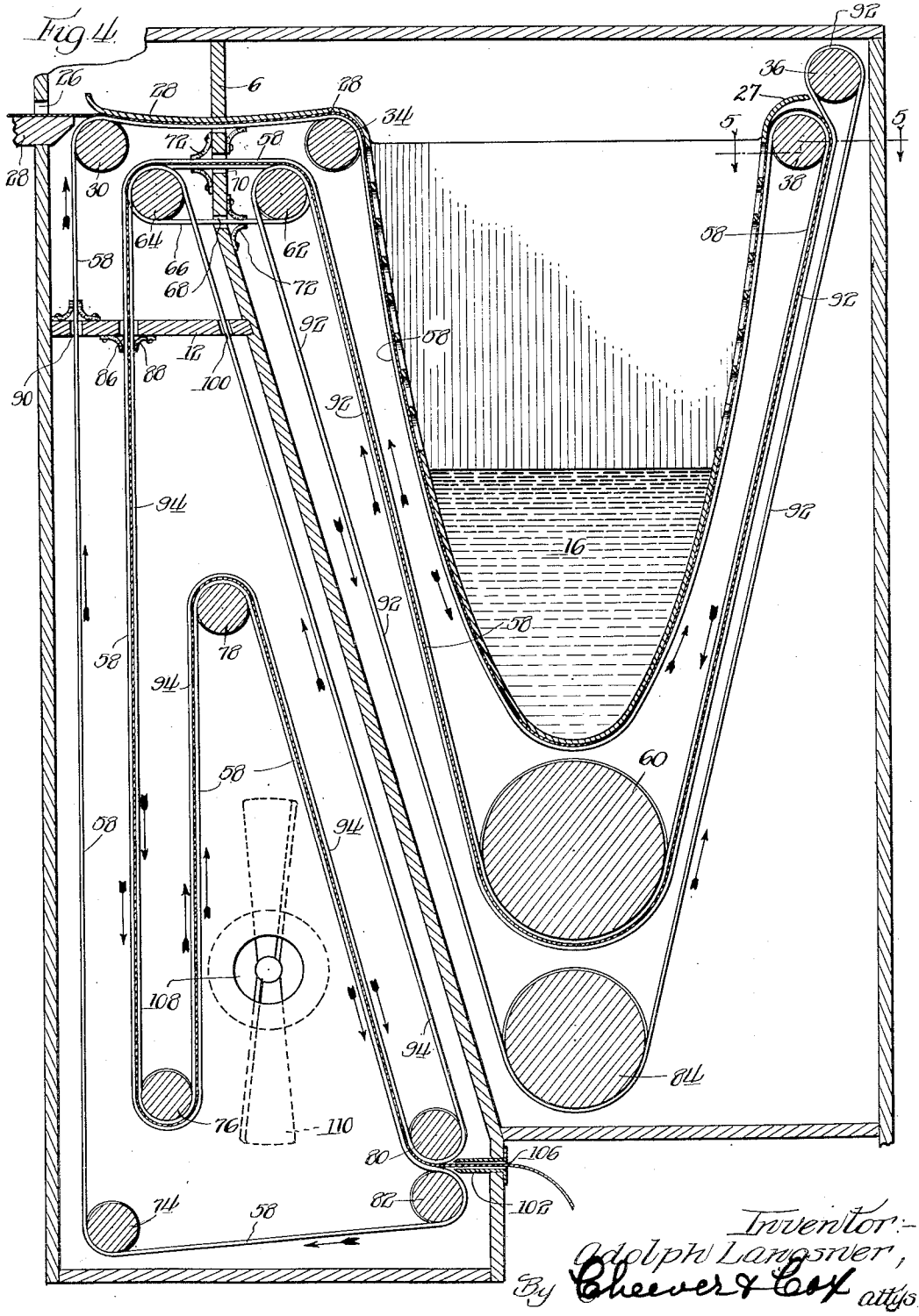


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Patented Mar. 3, 1931 1,795,220

UNITED STATES PATENT OFFICE

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DEVELOPING APPARATUS

Application filed January 23, 1928. Serial No. 248,744.

My invention relates to a developing apparatus for developing light sensitive material, such as sheets or continuous strips of light sensitive paper, by the action of an alkaline developing gas, such for instance, as ammonia gas.

One of the objects of my present invention resides in providing a very compactly arranged developing device containing a tank adapted to hold liquid ammonia, the gas arising from which is brought into contact with traveling sheets or continuous strips of the light sensitive material for the purpose of developing the same, and wherein the walls of this developing tank are utilized as one of the elements of the feeding means for causing the light sensitive material to travel along while being developed.

Yet another object of my invention resides in the novel and compact arrangement of a tank containing the developing liquid and the arrangement of the walls of the tank so as to provide a reactive feeding surface, over which traveling belts or cords are arranged to pass as to draggingly feed the light sensitive material across said tank walls, and which walls are perforated so as to permit the developing gas arising from the liquid within the tank to have free access to the sensitive side of the light sensitive material as it is fed across the tank.

Yet another object of my invention resides in the arrangement of this tank, and particularly in the compact, convenient and effective arrangement of the traveling cords or belts whereby the light sensitive material is fed about the walls of the tank and in contact therewith so as to be developed and is thereafter carried in a circuitous path through a ventilating chamber, wherein the material is freed, or substantially freed, of occluded developing gases.

Yet another object of my invention resides in the novel arrangement of a plurality of separate sets of traveling cords or belts and in the novel manner in which the separate sets are arranged to co-operate with each other and to carry the light sensitive material therebetween from one set to the next set in sequence whereby to carry the material in a continuous and circuitous path through the developing and degassing chambers.

Yet another object of my invention resides in the details of construction of the tank itself and in the manner in which it forms a reactive or drag surface in conjunction with the feeding cords or belts and in the manner in which it is perforated to permit the gases to contact with the light sensitive material and thus affect its development and in the manner in which the upper walls of the tank are provided with integral flanges forming deflecting fingers for the feeding of the light sensitive material through the guide rolls of the belt or cord feeding members. Still another and ancillary feature of this part of my invention resides in the construction of the walls of the tank whereby the lower portion of the tank is adapted to hold the liquid developing medium and wherein the upper portion of the tank is perforated to permit the escape of the developing gas and to provide an outer, substantial, rigid reactive surface, across which the belts drag the light sensitive material during the feeding movement.

Yet another object of my invention resides in the general arrangement of the enclosing cabinet and the manner in which it is constructed to provide a compactly arranged developing chamber including a liquid ammonia holding tank forming also a part of the paper feed; in the arrangement of the traveling belts thereabout for feeding the paper, and in the manner in which the cabinet is provided with a separate ventilating chamber including sequentially arranged belts therein and communicating with the developing chamber for continuously feeding the light sensitive material from the inlet of the cabinet through the developing chamber, through the ventilating chamber, and thence finally discharging the same into a receiving trough at the base of the machine.

Yet another object of my invention resides in the especial arrangement of the tank to provide a lowermost liquid containing member and two oppositely disposed reactive feeding surfaces disposed above the liquid level and perforated to permit the escape

of the gases, and wherein the exterior surfaces of the tank are arranged to provide two oppositely disposed feeding surfaces over which traveling belts pass for draggingly feeding the light sensitive material across the tank for the developing operation.

Still another object of my invention resides in the arrangement of means forming a plurality of chambers, the first of which forms a pre-developing chamber and degassing chamber and the means for passing the light sensitive material through the pre-developing or degassing chamber, thence through the developing chamber proper in which an atmosphere of a suitable developing gas is created, thence back through the pre-developing or degassing chamber and finally into the airing chamber, it being apparent that as the light sensitive material passes from the developing chamber through the degassing chamber, a certain amount of developing gas will be thrown off from the light sensitive material into the degassing chamber and that these gases will attack the paper as it is first introduced through the pre-developing chamber and before it is introduced into the developing chamber, thus providing a pre-developing operation on the light sensitive material and using the exhaust vapors for this purpose.

These and other objects of my invention will be apparent from a perusal of the following specification when taken in connection with the accompanying drawings wherein:

Figure 1 is a section through the center of my improved type of developing apparatus.

Figure 2 is a front view of the machine with the frame in section and with a portion of the tank broken away.

Figure 3 is a plan view with the frame in section.

Figure 4 is a diagrammatic view of the cords and rolls, and

Figure 5 is a section on line 5—5 of Figure 4.

Referring now to the drawings in detail, the present improved type of developing apparatus comprises a basal support 2, of any desired construction, on which is mounted a rather compactly disposed cabinet 4, which in general, is of preferably rectangular shape arising upwardly from the support 2. This cabinet is provided with an interior partition 6, dividing the cabinet into the developing chamber 8 and the ventilating chamber 10. In addition, at the upper portion of the ventilating chamber there is provided a substantially horizontal partition 12, forming with partition 6 a third relatively smaller chamber 14 providing a preliminary developing and a preliminary degassing chamber hereinafter referred to.

Referring now to the developing chamber, it will be seen that it includes a tank constructed and arranged to hold a quantity (16) of liquid ammonia. This tank is preferably arranged in vertical formation. The bottom of the tank which holds the liquid (16) is in cross section, somewhat elliptical having its bottom or nose rounded, as at 18, so as to provide a rather smoothly flowing curved bottom, about which the light sensitive material is adapted to be fed as hereinafter described. This bottom portion 20, of the tank is preferably formed separate from the upper portion, 22, being attached thereto by means of suitable fastener means, 24, which may also be formed integrally therewith. The upper portion of tank is provided with a plurality of perforations 26, such for instance, as slots, which extend from a point above the liquid level of the ammonia, 16, to the top of the tank on both of its lateral walls. As shown clearly in Figure 1, these two walls provide opposed and spaced apart surfaces continuously joined together by means of the bottom portion of the tank. This tank extends the width of the developing machine, which is somewhat greater than the maximum width of the sheets, or strips of paper, to be used.

The upper portions of the wall of the tank are provided with integral, outwardly curved portions 27 and 28, forming deflectors for the feeding of the light sensitive material through the guide rolls, as hereinafter disclosed.

Means is provided for draggingly feeding the light sensitive material across the walls of the tank in a continuous manner, such for instance, as along the left hand upper perforated wall of the tank (viewing Fig. 1,) and thence downwardly across the imperforate portion which holds the liquid ammonia, 16, around the nose at 18, thence upwardly around the opposite imperforate wall, and thence continuing upward across the opposed perforated wall of the tank. This feeding means which co-operates with the tank, is preferably in the form of spaced apart cords running over grooved rollers located adjacent to the exterior walls of the tank, as for intance, as is shown in the drawing, and these grooved rollers extend the width of the tank. In the particular details of the feeding arrangement illustrated, the front of the tank is provided with a feeding inlet opening, 26, adjacent to which is located a shelf or bracket, 28, across which the sheets or strips of light sensitive material are fed to the opening 26.

The inner part of the cabinet opposite the opening, 26, is provided with a strip of felt or rubber, extending the length of this opening and arranged so that while it permits the in-feed of the light sensitive material, it will prevent the egress of the developing gas. Just opposite the inner end of the shelf 28, there is located a feed roll 30, mounted on a shaft, 32, and on the other side of the upper

portions of the partition 6 within the developing chamber 8, there is mounted another feed roll 34, likewise rotatable on a shaft. Also, at the opposite upper corner of the developing chamber is mounted a still further feed roll 36, which has arranged adjacent to it and slightly beneath the same, another feed roll, 38, so that the rolls 36 and 38 constitute a co-operating pair. The latter feed roll 38 is provided with a sprocket, 40, about which passes a sprocket chain 42, passing over another sprocket 44, on a shaft 46, on which is also mounted a relatively large gear 48, meshing with the worm 50, on power driven shaft 52. This shaft is driven in any appropriate manner by means of the motor, 54, as by means of the belt drive 56, and the speed of this motor and the gearing may be controlled to vary the speed of travel of the guide roll, 40. These various guide rolls, 32, 34, 36, 38, and 40, are grooved at desired spaced apart intervals along their width to receive a plurality of endless cord belts, 58, which pass about these guide rolls, and thence pass downwardly along the left-hand side of the tank around the bottom nose, and then upwardly across the opposite perforated side of the tank, thence around guide roll, 40. The manner in which these cords pass around the guide rolls 34, is clearly illustrated more or less diagrammatically in Figure 4 of the drawing. Belt, 58, as it passes over the guide roll, 38, thence passes downwardly and around a lower guide roll, 60, disposed immediately beneath the nose, 18, of the tank. It thence passes around such roll, upwardly, and thence over a guide roll, 62, located substantially adjacent to the guide roll, 34, at the upper portion of the developing tank. The upper deflecting flange, 28, of the tank extends through the upper portion of the partition wall, 6, and terminates in a curl, opposite the guide roll, 30, and opposite the inlet opening, 26, of the cabinet, adjacent to the shelf 28, whereby any strip or sheet of light sensitive material that is fed in through opening, 26, will be immediately projected between the belts or cords, 58, and the oppositely disposed flange or deflecting lip 28 of the tank; hence, the belts 58, in conjunction with deflecting lip, 28, will serve to drag the light sensitive material across the under surface of this lip, 28, thence around the guide roll, 34, and thence around the tank, the paper being confined between the belts and the outer surface of the tank walls, which thus constitute a reactive feeding surface. During the passage of the light sensitive material with the belt, 58, into contact with lip, 28, and tank walls, the feeding action is of a dragging nature, the belts by their frictional grip on the paper serving to drag it across the perforated surface of the tank, with the light sensitive side of the material facing inwardly, whereby the gases arising from the liquid ammonia in the tank, will pass through the openings in the upper portions of the tank and will develop the light sensitive material. The cabinet also contains a plurality of other feed rolls and additional sets of feeding cords or belts which are arranged and associated with the tank, and feed rolls 30 to 38, inclusive, so as to carry the light sensitive material through the pre-developing and developing chambers and thence through the degassing chamber and finally into the ventilating chamber, and since these sets of belts work sequentially and at times in overlapping relation one to the other, and in a manner so as to carry the light sensitive material always between either two sets of cords for positive feeding, or between a traveling set of cords or stationary abutment, which provide the drag feed, or at times between three sets of cords, which are located at the junction of any two interconnecting or independent sets, it will be necessary to now describe the arrangement of the ventilating chamber, the preliminary ventilating chamber and their connection with the developing chamber. Within the smaller preliminary ventilating chamber and adjacent to the guide roll, 30, I provide an additional guide roll, 64, which is adapted to co-operate with the complementary guide roll, 62, disposed on the opposite side of partition 6. These two guide rolls, 62 and 64 are grooved like the others, and receive thereover the relatively short continuous cords, 66, which pass through openings, 68 and 70 in the partition 6. These openings are provided with packing gaskets, 72, for the purpose hereinbefore described. In addition, the ventilating chamber is provided with a plurality of guide rolls, 74, 76, 78, 80, and 82, and the developing chamber is provided with an additional guide roll, 84, located preferably immediately beneath the guide roll, 60, therein.

A plurality of sets of cords or belts are provided for certain of these guide rolls, and certain of these rolls are arranged to receive the different belts, for instance, feed belt or cord 58, which passes in contact with the walls of the tank after passing over guide rolls, 38 and 60, passes upwardly and over guide roll 62, between the grooves in which the short belt 66, runs, and thence, belt 58, passes through opening 70, over guide roll 64, thence down through opening 86, in partition 12, which opening is fortified with packing strips, 88, which wipe off a large portion of the gases adhering to the paper as it is carried therebetween and thence this belt 58, passes downwardly and around guide roll 76, the same being shown on the outside; thence upwardly, around guide roll 78, and thence downwardly around guide roll 80 between guide roll 80 and guide roll 82, and thence around guide roll 82, forwardly to the front of the machine where it passes around guide

roll 74 and thence travels upwardly through opening 90, in partition 12, back through the preliminary ventilating chamber and around guide roll 30, again completing its circuit.

I provide additional cords or blankets cooperating with the cords 58 in the developing chamber. To this end a set of cords 92, pass around the upper guide roll 36, thence downwardly as indicated at the upper right hand corner of Fig. 4, and into contact with the blanket or cords 58, as it passes around guide roll 38; cords 92 then pass downwardly and around the guide roll 60, thence upwardly in contact with the set of cords 58, to the guide roll 62, whence the three cords, 58, 66 and 92 pass around the guide roll 62, all in spaced relation. The cords 92 thence pass downwardly around the lower guide roll 84, and thence pass upwardly again around the upper roll 36. It will thus be seen by means of this travel, when the light sensitive material emerges from the upper right hand wall of the tank it is brought by the deflecting lip 27, into the bite between the cords 58 and 92, so that the light sensitive material is carried bodily and between these two sets of cords downwardly around the roller 60 and thence upwardly to the guide roll 62. At this point the cords 92 leave the cords 58; however, their place is immediately supplied by the traveling cords 66, which travel in a counterclockwise direction, so as to replace the cords 92, hence the light sensitive material is still carried between the upper and lower sets of cords by the uper cords 58, and by the lower cords 66 as the material passes from the guide roll 62, toward the left and to the guide roll 64. As the light sensitive material reaches guide roll 64, it is carried into the preliminary degassing chamber.

The light sensitive material is then carried around roll 64. At this point a third set of cords is utilized continuously to convey the light sensitive material between the blanket 58 and the cords herein designated as 94. As clearly shown in Fig. 4, these cords 94 after passing around their own grooves in guide roll 64, travels downwardly around the lower guide roll 76, thence upwardly around the guide roll 78, thence downwardly around the guide roll 80, at which point the cords 94 leave the cords 58 and thence the cords 94 travel alone upwardly through an opening 100, in the partition member 12, returning as they do to guide roll 64. At the junction between guide rolls 80 and 82 where the cords 92 leave the cords 58, I provide deflecting members 102 and 104, thus forming a discharge outlet 106, at which point the light sensitive material is discharged from between the belts and to the exterior of the cabinet. This ventilating chamber is provided with suitable opening to the atmosphere and a conduit 108 connected to a suction exhaust fan 110, which serves to pull a column of fresh air through this ventilating chamber. With regard to the arrangement and location of the various cords which pass about the rollers, it will be seen that in Figure 5 one of the guide rolls is shown as being provided with a series of grooves 112, within which the cords run so as to keep these cords in proper spaced apart relation. The light sensitive material 114, in this view is indicated as being carried between the cords 58 and the perforated wall of the tank having the slots, or openings 26, therein. In a similar way the remaining rollers, and particularly rollers 62 and 64, are provided with an even greater number of slots which keep the separate cords of the independent belts maintained in spaced relation and in a manner such that the sequential belts operate to transfer the light sensitive material from one to the other with the light sensitive material always lying between two sets of cords, except at the time when it passes between one set of cords and the deflecting lip 28 and the walls of the tank.

By reference to Figure 1 of the drawing, it will be seen that as the light sensitive material is discharged from the outlet 106, it will pass on to the inclined chute 108, where it rolls down to the outwardly curved lip 110, arranged at the front of the machine. Furthermore, by reference to Figure 2 of the drawing it will be seen I have provided the tank with a suitable liquid level gauge and sight glass 116, to indicate the level of the ammonia in the tank, and have also provided the end of the tank with a filling hose 118, which may also be used for emptying the tank by merely turning the end of the hose downwardly.

It will be apparent that by reason of my compact arrangement, I am enabled to accomplish effective developing and degassing within a relatively small cabinet, and particularly by the arrangement of the tank and traveling cords I am enabled to feed the light sensitive material across the reactive developing surface in two different directions while causing it to travel in a continuous manner (thus utilizing the full extent of the tank surfaces for developing action and utilizing the inner walls of these surfaces as a container for the liquid ammonia and at the same time permitting the gas from the ammonia to rise upwardly through the perforated walls into contact with the traveling light sensitive material. It will also be appreciated that by reason of the compact arrangement of the developing and ventilating chambers and by the arrangement of the sets of cords which are adapted to carry the light sensitive material either between the one set and the stationary reacting surface such as the tank or deflecting lip, or between two sets of cords, I am enable to continuously feed the light sensitive material either in relatively small sheet form or

in the form of continuous strips from the entrance of the machine in a continuous procession or in a continuous strip through the developing and degassing and ventilating chambers and out at the discharge end of the machine without interruption, thereby accomplishing continuous developing in a minimum time and space. Furthermore, by reason of the various openings between the partitions in the interior of the cabinet and by reason of the packing members thereat, and at the front and discharge opening of the cabinet, the escape of the ammonia developing gas is prevented and the operator is at all times assured of relatively pure air free of ammonia gases and fumes. It will also be understood that by reason of the ventilating chamber, the occluded gases which pass with the strips into the ventilating chamber are removed by the suction conduit which carries these gases to a point removed from the developing apparatus.

One of the particular features of my improved construction resides in the manner in which independent sets of cords are arranged in overlapping relation so that the sheet of material is always carried between two sets of cords, there being three independent sets always arranged in pairs, the set of cords 66 forming the coupling or junction between the cords 92 and 58 and in a manner to provide a continuous, sequential feeding through the machine.

It is thought that the invention and numerous of its attendant advantages will be understood from the foregoing description and it is obvious that numerous changes may be made in the form, description and arrangement of the various parts without departing from the spirit and scope of my invention or sacrificing any of its attendant advantages, the form hereinbefore described being a preferred embodiment for the purpose of illustrating my invention.

I do not claim herein the broader features of my invention, since the same form the subject matter of my copending application, Serial No. 246,137, nor do I claim herein any of the subject matter of invention set forth and claimed in my co-pending applications, Serial No. 248,745, Serial No. 253,558, Serial No. 252,717, Serial No. 259,751, Serial No. 287,139, and Serial No. 327,242.

Having thus described my invention, what I claim is new and desire to secure by Letters Patent is:

1. In a developing apparatus, the combination of an enclosing cabinet, a relatively long tank disposed therein in substantially vertical position and adapted to contain a quantity of liquid developing medium, the upper walls of said tank being perforated above the liquid level, and the bottom portion of said tank being slightly rounded to provide a relatively smooth continuous reactive surface extending from the upper side wall of the tank downwardly around the lowermost nose and upwardly to include the opposite wall of said tank, a movable carrier disposed to contact with the continuous walls of said tank, means for feeding said carrier through said cabinet and in contact with said tank and means for introducing light sensitive material between the tank and the carrier, whereby to drag said material across the perforated surfaces of said tank and to develop the same during its feeding.

2. In a developing apparatus, the combination of an enclosing cabinet, a tank having a lower portion provided with imperforate walls adapted to hold a quantity of a liquid developing medium and having detachably mounted upper walls provided with perforations to permit the passage of gas therethrough, the outer walls of said tank being relatively smooth to provide a stationary feeding surface.

3. In a device of the class described, the combination of an enclosing cabinet, a tank disposed in said cabinet and adapted to contain developing liquid, said tank having perforated walls to permit developing gas to pass therethrough, guide rolls within said cabinet, certain of said rolls being associated adjacent to the walls of said cabinet, and certain of said rolls being associated at points removed from the walls of said cabinet and a continuous traveling carrier passing about said rolls and into contact with the walls of said tank so as to drag there across during the feeding movement of said carrier, means for introducing the light sensitive material between the walls of said tank and said traveling carrier, and an additional continuous traveling carrier passing around certain of said rolls, said additional traveling carrier moving in contact with said first mentioned traveling carrier for a portion of its travel and moving out of contact therewith during the remainder of its travel and constructed and arranged to receive the light sensitive material discharged from between the first mentioned carrier and the tank and to convey the same through the cabinet independently of the tank.

4. In a device of the class described, the combination of an enclosing cabinet, a tank therein adapted to contain liquid ammonia, the walls of said tank being relatively smooth and providing a stationary reactive feeding surface and two continuous and independent traveling carriers mounted in said cabinet and adapted to pass over guiding members, means for feeding said traveling carriers, said carriers and said tank being constructed and arranged within the cabinet so that one of said carriers passes in contact with the walls of said tank and thence out of contact with the walls of said tank and into contact with the other traveling carrier,

whereby when the light sensitive material is introduced between the walls of said tank and the first traveling carrier, it will be dragged along the surface of the tank and will thence be fed along by the two travelling carriers.

5. In a device of the class described, the combination of an enclosing cabinet, means therein forming a developing chamber, and a separate ventilating chamber, a tank disposed in the developing chamber and containing a quantity of liquid developing material adapted to give off developing gas, a traveling carrier of continuous formation disposed in said cabinet and arranged to travel in the developing chamber and in the ventilating chamber, said carrier being constructed and arranged to drag across the exterior wall of the tank and to carry the light sensitive material between it and the tank to feed said material across the walls of the tank to be developed by the action of the gas, a second traveling carrier of continuous formation, said second carrier being disposed in the developing chamber and arranged to travel in contact with said first traveling carrier for a portion of the path of travel of said two carriers, a third traveling carrier disposed within the ventilating chamber and arranged to travel in contact with the first traveling carrier for a portion of its path of travel, whereby to discharge the light sensitive material carried between said two carriers from the cabinet, and a fourth traveling carrier of continuous formation disposed at the junction of the developing and ventilating chambers and constructed and arranged to travel with said first carrier, said second carrier and third carrier for a portion only of their paths of travel and adapted to receive the light sensitive material from said first and second carrier and to automatically feed it between said first and third carriers.

6. In a device of the class described, the combination of an enclosing cabinet and a tank containing developing material adapted to evolve a developing gas, said tank having its exterior walls relatively smooth and forming a reactive stationary feeding surface, a traveling carrier of continuous formation arranged to drag across the surface of said tank, a second traveling carrier of continuous formation adapted to travel with said first carrier at a location removed from the location of the tank, and additional traveling carriers adapted to travel with the first and second mentioned carriers and with each other, and constructed and arranged to convey the light sensitive material from the discharge face of the tank to a point between said second mentioned carrier and the first mentioned carrier.

7. In a developing cabinet, a stationary feeding element forming a relatively smooth perforated reactive surface, means creating an atmosphere of a chemically active developing gas on one side of said surface, a plurality of guide members disposed in said cabinet, a plurality of separate traveling members of endless formation, certain of said traveling members being arranged to drag across said reactive surface whereby light sensitive material introduced therebetween will be carried across the perforated surface and into contact with developing gases escaping through said perforations, certain others of said members being arranged in pairs with their paths of travel running together whereby to feed the light sensitive material introduced therebetween, one of the traveling carriers which forms the member of one pair being disposed in overlapping relation with the members of certain of the other pairs, whereby to feed said material passed from between one pair in a continuous manner into position between the next succeeding pair.

8. In a device of the class described, a stationary feeding element forming a relatively smooth perforated reactive surface, means creating an atmosphere of a chemically active developing gas on one side of said surface, a plurality of guide members in said cabinet, cord conveyors of endless formation arranged on said guide members, certain of said cord conveyors being arranged to drag across said reactive surface whereby light sensitive material introduced therebetween will be carried across the perforated surface and into contact with developing gases escaping through said perforations, the remainder of said conveyors being arranged to provide pairs of conveyors traveling together, certain of said pairs having a common guide member whereby the light sensitive material introduced between the cords of one pair is conveyed in a continuous manner by said pairs.

9. In a device of the class described, a stationary feeding element forming a relatively smooth perforated reactive surface, means creating an atmosphere of a chemically active developing gas on one side of said surface, a plurality of guide rolls in said cabinet, said guide rolls being provided with spaced apart peripheral grooves, a plurality of cords forming endless conveyors passing about certain of said rolls and lying in the grooves, certain of said traveling members being arranged to drag across said reactive surface whereby light sensitive material introduced therebetween will be carried across the perforated surface and into contact with developing gases escaping through said perforations, certain others of said cord conveyors being arranged in pairs with the ends of one cord conveyor of a pair overlapping and passing around the same guide roll as do the ends of another conveyor of the adjacent pairs, whereby to feed through the cabinet

the light sensitive material carried between the cords of each pair.

10. In a device of the class described, the combination of an enclosing cabinet having a partition therein forming separate degassing, developing and ventilating chambers, a source of developing gas in said developing chamber, a continuous cord belt passing through openings in the partition and passing in a continuous manner through the developing, degassing and ventilating chambers, said openings having means for preventing the escape of developing gas therethrough while permitting the passage of the cords, a separate endless cord belt arranged in the developing chamber and co-operating with a portion of the first cord belt to carry the light sensitive material there-between through the developing chamber, a third endless cord belt disposed in the ventilating and degassing chambers and co-operating with the first endless cord belt to carry the light sensitive material there-between, and a fourth endless cord belt having a portion disposed in the developing chamber and a portion disposed in the degassing chamber and passing through openings in the partition, said fourth endless cord belt being constructed and arranged to co-operate with the first and second cord belts in the developing chamber and having a portion constructed and arranged to co-operate with the first and third cord belts in the degassing chamber.

11. In a device of the class described, the combination of an enclosing cabinet provided with a partition forming a developing chamber and a ventilating chamber, a tank in said developing chamber having perforate and imperforate wall portions and containing a quantity of liquid developing material adapted to evolve a developing gas, said tank being vertically disposed in said chamber and having a curve forming a nose in the imperforate walls said perforated walls forming oppositely disposed surfaces on each side of said nose and providing a continuous reactive feeding surface, two feeding rolls mounted in said cabinet, below said nose, and in superimposed spaced apart relation, a pair of feed rolls disposed at the upper portion of the tank on each side thereof, a continuous cord belt passing about one member of each pair of guide rolls and around the walls of said tank and downwardly and around one of the lower spaced apart feed rolls and thence around other rolls in the developing chamber, and thence back to the feed roll at the top of the tank in a closed cycle, and a second endless cord conveyor passing about the outer row of pair of feed rolls at the upper portion of the tank, and thence downwardly about the other row of spaced apart feed rolls disposed beneath the nose of the tank, and thence upwardly and about the remaining row of said feed rolls at the top portion of the tank and in a closed cycle, and an additional endless cord conveyor passing about certain feed rolls in the ventilating chamber and adapted to travel in contact with the first mentioned cord conveyor for part of its travel in the ventilating chamber, and a fourth endless cord conveyor passing about feed rolls, one located in the ventilating chamber and the other located in the developing chamber, said fourth conveyor adapted to co-operate with the pairs of conveyors in said chambers.

12. In a device of the class described, the combination of a cabinet provided with a tank containing suitable means for creating developing gases, and having upper perforated surfaces for the escape of the developing gas, said cabinet having partitions forming a developing chamber, a degassing chamber and a ventilating chamber, said partitions having openings therein and an endless belt of cord formation disposed about guide rolls in said cabinet and passing through said partitions about said guide rolls and about the walls of said tank, through said developing and degassing chambers and thence through said ventilating chamber in continuous sequence whereby to drag light sensitive material across the walls of said tank to be developed, and a plurality of separate endless cord belts disposed in said chambers, said latter conveyors being constructed and arranged to travel together with each other for a portion of their travel and with the first mentioned cord conveyor for a portion of its travel whereby to feed the light sensitive material from the discharge of the tank walls through the developing chamber and thence through the ventilating chamber in a continuous manner.

13. In a device of the class described, the combination of an enclosing cabinet provided with a partition formed with openings therein, and providing a developing and ventilating chamber, a tank disposed in the developing chamber and containing a quantity of liquid ammonia, and provided with perforated surfaces thereabove to permit of the escape of the ammonia gas, said tank carrying a laterally extending deflecting flange passing through an opening in the partition, a plurality of guide rolls disposed in said cabinet, certain of said guide rolls being disposed adjacent to said deflecting flange and adjacent to the walls of the tank in an endless cord belt passing around grooves in said rolls and adapted to drag across the base of said deflecting flange and across the walls of said tank, and thence to pass around the guide rolls, passing through the developing chamber and through an opening in the partition and thence through the ventilating chamber, and a plurality of separate endless cord belts, one located in the developing chamber, another located in the ventilating chamber,

and another located in both chambers and passing through the walls of the partition and around the guide rolls of the second and third mentioned cord conveyors, said additional cord conveyors being constructed and arranged to be associated in pairs whereby to feed the light sensitive material from the discharge wall of the tank in continuous feeding movement through the developing chamber, thence through the opening in the partition and through the ventilating chamber, finally discharging the material from the cabinet.

14. In a device of the class described, the combination of an enclosing cabinet provided with a partition formed with openings therein, and providing a developing and ventilating chamber, a tank disposed in the developing chamber and containing a quantity of liquid ammonia, and provided with perforated surfaces thereabove to permit of the escape of the ammonia gas, said tank carrying a laterally extending deflecting flange passing through an opening in the partition, a plurality of guide rolls disposed in said cabinet, certain of said guide rolls being disposed adjacent to said deflecting flange and adjacent to the walls of the tank in an endless cord belt passing around grooves in said rolls and adapted to drag across the base of said deflecting flange and across the walls of said tank, and thence to pass around the guide rolls, passing through the developing chamber and through an opening in the partition and thence through the ventilating chamber, and a plurality of separate endless cord belts, one located in the developing chamber, another located in the ventilating chamber, and another located in both chambers and passing through the walls of the partition and around the guide rolls of the second and third mentioned cord conveyors, said additional cord conveyors being constructed and arranged to be associated in pairs whereby to feed the light sensitive material from the discharge wall of the tank in continuous feeding movement through the developing chamber, thence through the opening in the partition and through the ventilating chamber, finally discharging the material from the cabinet, said partition in the cabinet having packing strips mounted at the openings therein adapted to permit passage of the cords and light sensitive material through the openings while preventing the escape of gas therethrough.

In witness whereof, I have hereunto subscribed my name.

ADOLPH LANGSNER.