

J. WEZEL.

APPARATUS FOR THE PRODUCTION OF ARTIFICIAL LITHOGRAPHIC STONES.

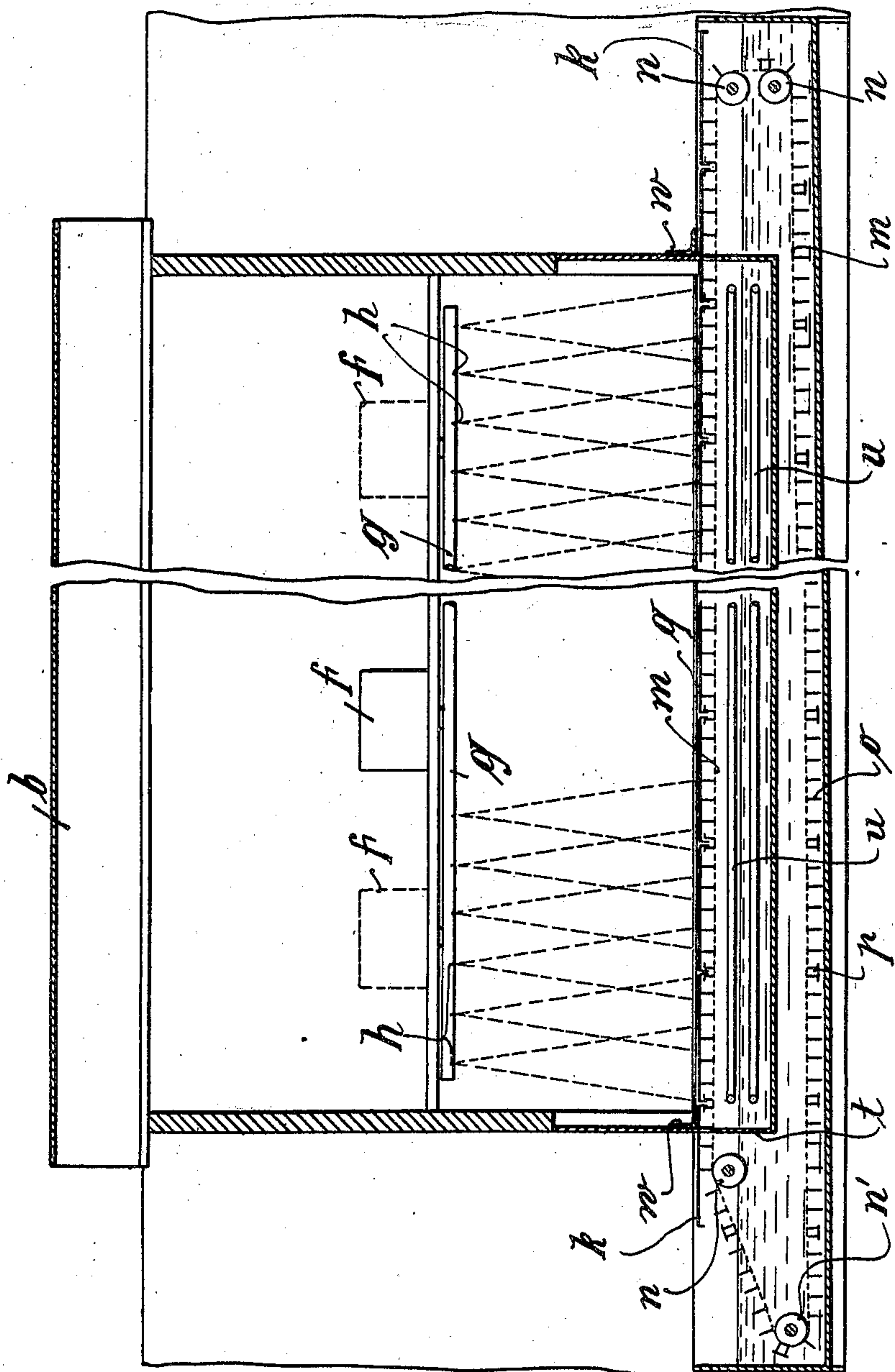
APPLICATION FILED JAN. 6, 1908.

917,218.

Patented Apr. 6, 1909.

3 SHEETS—SHEET 1.

Fig. 1



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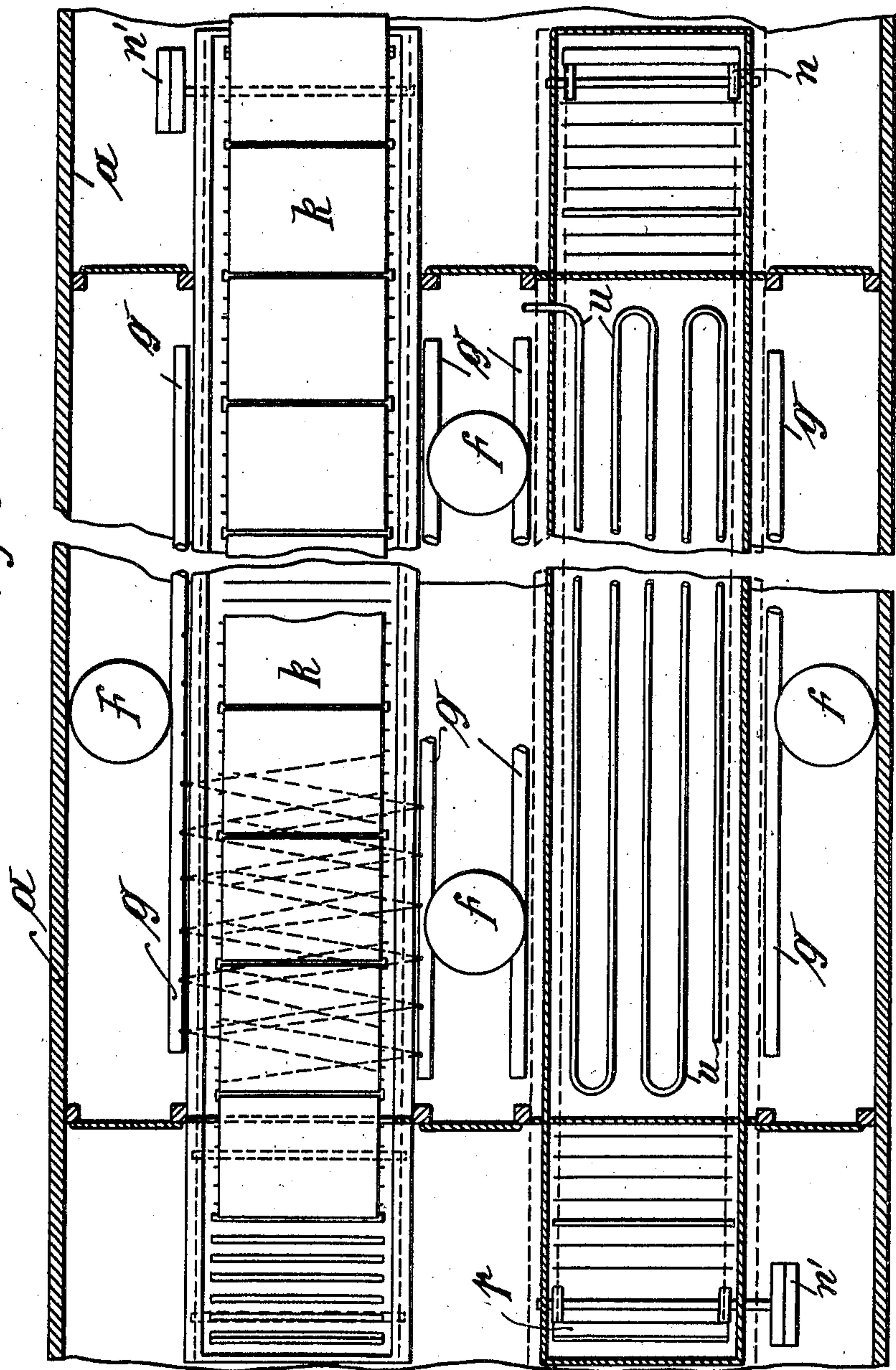
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3 SHEETS—SHEET 2.

Fig. 2



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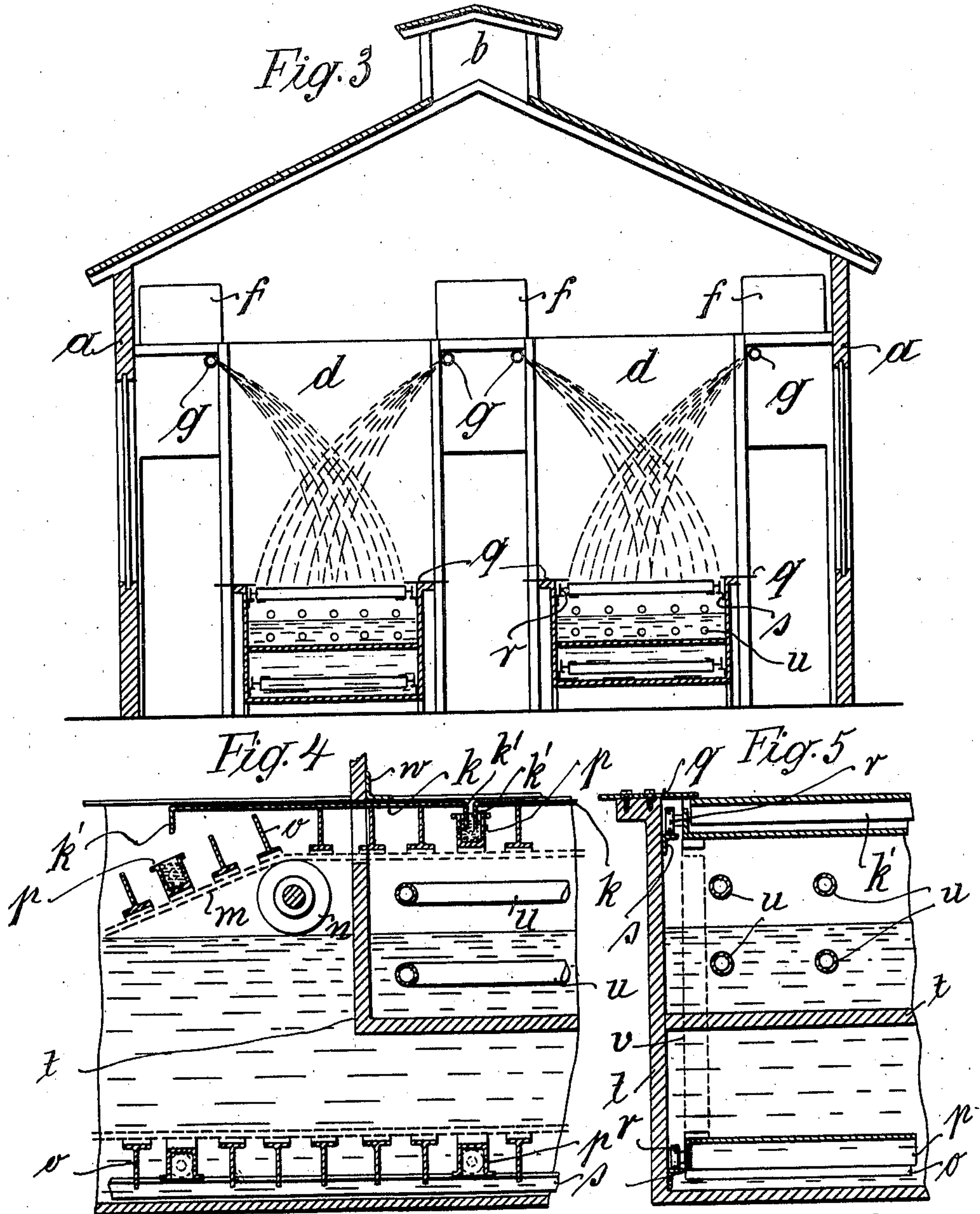
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3 SHEETS—SHEET 3.

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# UNITED STATES PATENT OFFICE.

JULIUS WEZEL, OF LEIPZIG-STÖTTERITS, GERMANY.

## APPARATUS FOR THE PRODUCTION OF ARTIFICIAL LITHOGRAPHIC STONES.

No. 917,218.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed January 6, 1908. Serial No. 409,590.

*To all whom it may concern:*

Be it known that I, JULIUS WEZEL, a subject of the German Emperor, residing at Leipzig-Stötterits, in Germany, have invented certain new and useful Improvements in Apparatus for the Production of Artificial Lithographic Stones, of which the following is a specification.

The production of artificial lithographic stones by depositing a layer of lime on metal plates has hitherto been performed by hand, a finely divided solution of lime being projected on to the plates from a spray-producer guided by hand, while the plates are heated by steam from below. When the solution impinges on the hot metal the water is immediately evaporated and a very thin layer of lime is deposited. This treatment is repeated until the layer has acquired the necessary thickness. The success of the operation depends entirely on the skill and care of the operator. Great difficulty is found in producing a uniform layer. The cost of manufacture in this manner is high, since each plate must be separately treated by the operator. The process is also injurious to the health of the operator, who must inhale the ascending steam mixed with residual lime. The present invention obviates these disadvantages. By treating the plates by means of mechanically controlled apparatus, the difficulty relating to uniformity, and the objection on hygienic grounds, are at once removed.

According to the present invention, the metal plates are placed on a slowly moving band which conveys them through a chamber in which they are heated from below and sprinkled with atomized solution of lime from above. The thickness of the layer deposited during one passage of the plates can be exactly regulated by regulating the speed of the band. As many plates as the chamber can contain may be simultaneously treated in the manner described. The workmen need not enter the chamber, but need only place the plates on the band at one end and remove them at the other end. Continuity of action can be obtained by using two bands placed side by side and moving in opposite directions.

A construction embodying the invention is shown in the annexed drawings. In this construction there are two bands moving in opposite directions through the same chamber.

Figure 1 is a longitudinal vertical section. Fig. 2 a horizontal section, and Fig. 3 a vertical cross-section of the building and apparatus. Figs. 4 and 5 show details of the conveyor band.

The shed *a* has a steam-outlet *b* and comprises two compartments *d d*, containing the two parallel conveyers. Elevated tanks *f* contain a solution of lime which can flow through pipes *g* to sprayers or jets *h*, at which the solution is atomized by means of compressed air.

While the metal plates *k* are passing under the sprayers the said plates are heated from below by steam. It is of great importance that this steam does not reach the upper surfaces of the plates, since otherwise water would be deposited on said upper surfaces and would prevent the formation of a good printing layer. It is, therefore, necessary to make steam-tight joints between the plates and the walls of the heaters, and also between the individual plates. The edges of the plates must not be largely overlapped by the devices which prevent the passage of steam, since the parts covered do not receive a deposit of lime, and it is of course desirable to utilize as much as possible of the area of each plate. Moreover, the said devices must be adjustable for plates of different sizes.

The metal plates *k* are conveyed through the compartments *d* by endless conveyers, each consisting of two parallel chains or bands *m* which pass over rollers *n* actuated by a pulley *n*<sup>1</sup>. On the bands *m* are placed detachable cross-bearers *o*, and at intervals there are placed, between said bearers *o*, troughs of uniform height, parallel with the bearers. The troughs serve for making steam-tight joints between consecutive metal plates. The edges of the metal plates are bent down as at *k*<sup>1</sup>, at two sides, for the purpose of fixing the plates in the printing press, and these bent edges are placed in the troughs, and the latter sufficiently supplied with a suitable liquid that the edges of the plates are immersed. The troughs are adjustable on the conveyer-bands, to suit plates of different sizes. At the sides of the metal plates *k*, tight joints are made by means of slidable plates *q* which engage and pass for a short distance over the edges of the plates *k*, and are adjustable to suit plates *k* of different widths. Other methods of making the joints can be used.



It is, of course, of advantage if the metal plates are not screened at all from the spray, so that the entire upper surface of the metal can become coated with lime. The conveyer belts are carried by runners *r* which roll on rails *s*. Below the upper part of each conveyer is a vessel *t* partly filled with water and containing a coiled steam pipe *u* which is partly immersed in the water. The coils in the water serve to generate steam, and the coils above the water dry the steam thus generated. Below the vessel *t* is a vessel *v*, well insulated from the steam generator. The empty, returning part of the conveyer passes through said vessel *v*, which also contains water, and the troughs *p* are by this means re-filled. The conveyer extends beyond the spraying chamber at each end, so that plates *k* can be placed thereon, and removed. At that end where the conveyer enters the chamber the conveyer is inclined so that the troughs *p* in rising from below the water level takes up a sufficient quantity of water to make a seal for the bent ends of the plates as aforesaid. The plates *k* are washed after their passage through the said chamber, to remove therefrom the lime which does not firmly adhere. The operation is repeated until the coating is perfect.

The spraying chamber is preferably made tight by means of pieces of cloth, rubber, or other packing *w* hung in front of the apertures through which the conveyers pass in and out. In the construction illustrated the sprayers are distributed over the entire chamber. Preferably there are no sprayers close to the entrance aperture, so that the metal plates are thoroughly heated before the solution is sprinkled thereon. The plates travel in opposite directions through the two compartments, and continue to travel backward and forward until the coating thereon has acquired sufficient thickness.

Hot water, steam, hot air, electricity or any other suitable means may be used for heating the plates. If dry, superheated steam or hot air is used, part of the heating agent may be admitted to the space above the metal plates, in order to assist in evaporating the solvent.

What I claim as my invention and desire to secure by Letters Patent of the United States is:—

1. Apparatus for the production of artificial lithographic stones, comprising in combination a chamber, an endless conveyer extending through the chamber and projecting beyond the same at both ends, adapted for the reception of metal plates, means for heating the lower surface of said plates, a series of nozzles through which liquid is sprayed onto the upper surface of said plates

and means for imparting relative movement to the plates and nozzles.

2. Apparatus for the production of artificial lithographic stones, comprising an endless conveyer, adapted for reception of metal plates, and capable of movement in a horizontal plane, means for imparting heat to the lower surfaces of said plates, a series of nozzles through which liquid is sprayed onto the upper surface of said plates and means for securing tight joints between the ends of adjacent plates.

3. Apparatus for the production of artificial lithographic stones, comprising a chamber, an endless conveyer adapted for the reception of metal plates, said belt traversing said chamber and extending beyond the ends thereof, means for moving said belt slowly through the chamber in a horizontal plane, means for imparting heat to the lower surfaces of said plates, a series of nozzles through which liquid is sprayed onto the upper surfaces of said plates, means for securing tight joints between the ends of adjacent plates, and means for securing tight joints between the lateral surfaces of the plates and the walls of the chamber.

4. Apparatus for the production of artificial lithographic stones, comprising two endless conveyers adapted for reception of metal plates, means for moving said plates in opposite directions, means for imparting heat to the lower surfaces of said plates, and a series of stationary nozzles through which liquid is sprayed onto the upper surfaces of the plates.

5. Apparatus for the production of artificial lithographic stones, comprising a chamber, an endless conveyer adapted for the reception of metal plates having bent rectangular ends, said belt traversing said chamber and extending beyond the ends thereof, cross-bearers on the conveyer for supporting the plates, liquid containing troughs carried by the conveyer for reception of the bent ends of the plates, means for filling said troughs, means for moving said belt slowly through the chamber in a horizontal plane, means for generating steam for heating the lower surfaces of said plates, a series of nozzles through which liquid is sprayed onto the upper surfaces of said plates, and means for securing tight joints between the lateral surfaces of the plates and the walls of the chamber.

In witness whereof I have signed this specification in the presence of two witnesses.

JULIUS WEZEL.

Witnesses:

HERM. TACK,  
RUDOLPH FRICKE.