W. T. PERKINS & R. R. HICKCOX.

ROTARY DRIER.

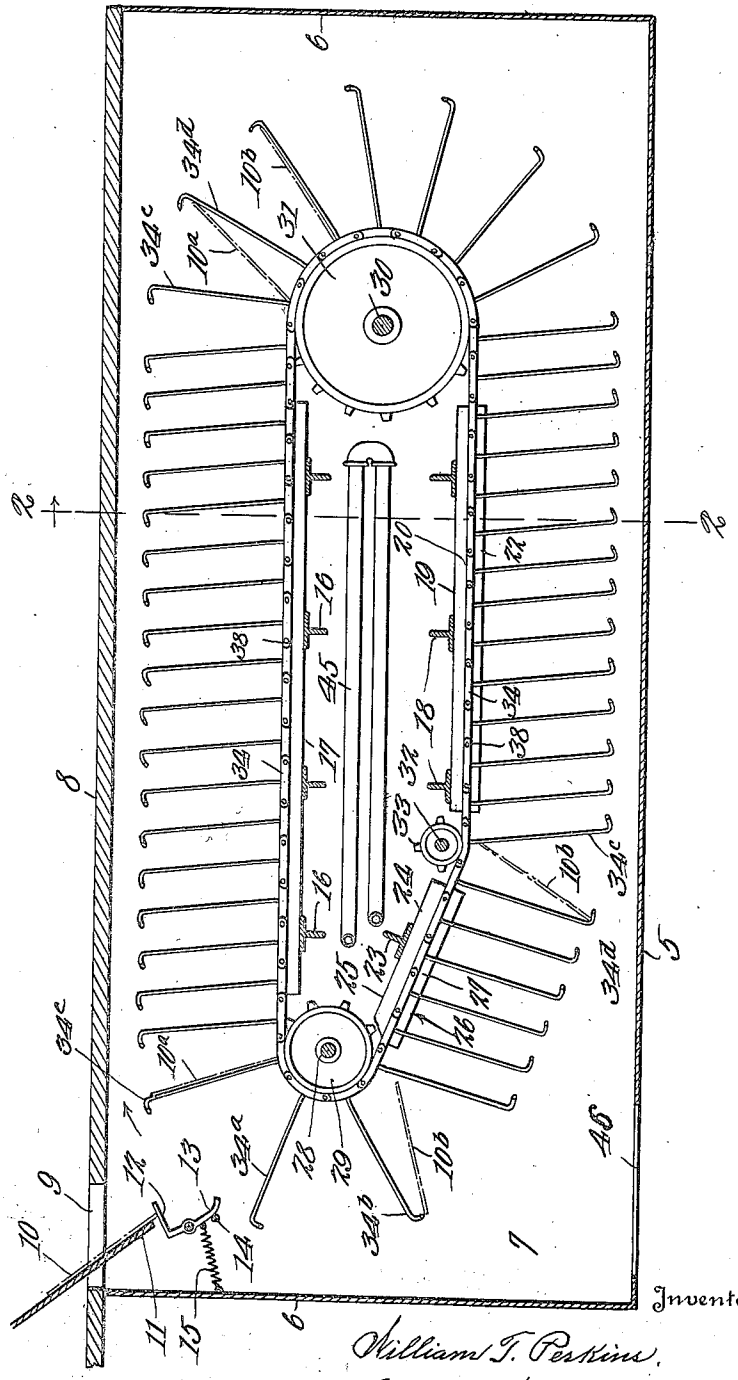
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1,150,302.

Patented Aug. 17, 1915.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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2 SHEETS—SHEET 2.

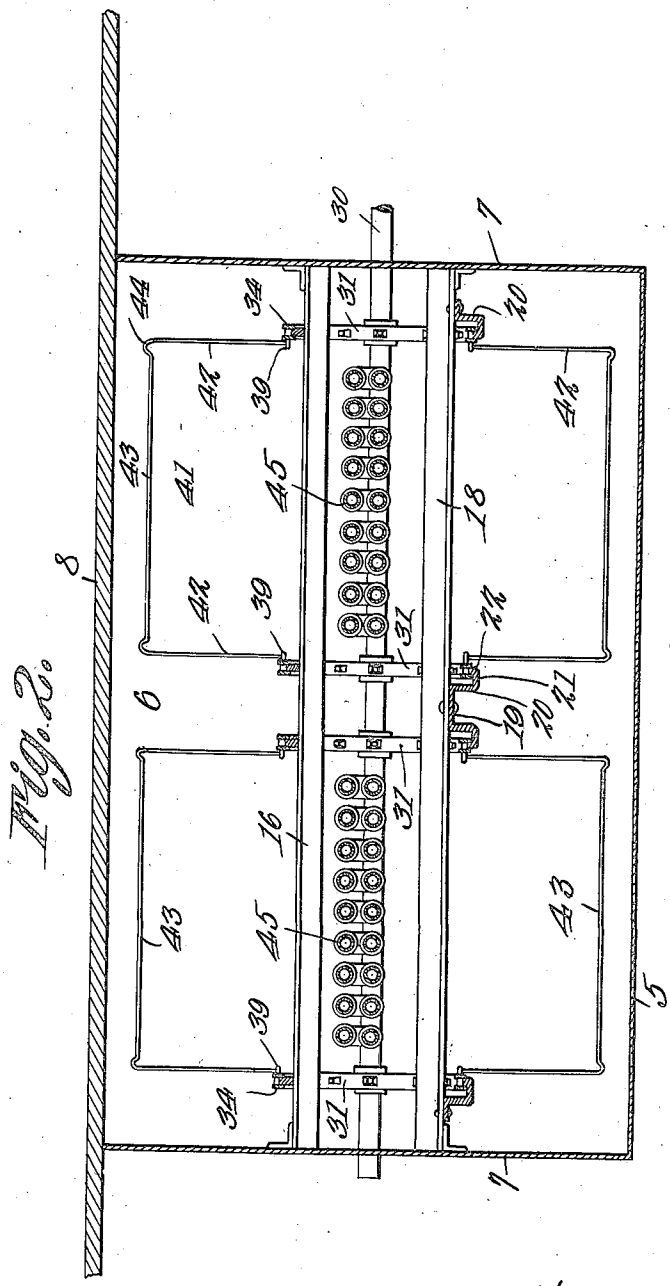


Fig. 2.

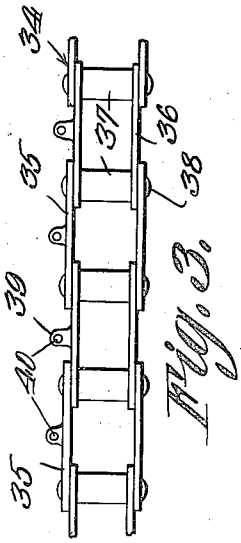


Fig. 3.

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UNITED STATES PATENT OFFICE.

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ROTARY DRIER.

1,150,302. Specification of Letters Patent. Patented Aug. 17, 1915.

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To all whom it may concern:

Be it known that we, WILLIAM T. PERKINS and ROY R. HICKCOX, citizens of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Rotary Driers, of which the following is a specification.

This invention is in the nature of a rotary drier especially designed for drying lithographic plates.

Lithographic plates are usually made of metal and when they come from the press are wet, or at least damp, and must be handled carefully until they are thoroughly dried, as the slightest touch of the fingers on the surface while handling the plate will smudge the printing on the plate and ruin the plate. These plates are handled for the most part by hand, being passed from the press to a rotary belt from which they are carefully lifted by hand, placed in racks and sent to the oven or drier room in which they are dried. Besides the danger of smudging or ruining the plates before drying, the present methods of handling the plates involve much expense and delay, and it is the special object of this invention to provide a mechanical drier which will obviate the necessity of handling the plates and with this object in view, the invention consists in the approved construction, arrangement and combination of the parts of a drier which will be hereinafter fully described and afterward specifically claimed.

In order that the operation and construction thereof may be readily comprehended, we have illustrated an approved embodiment of the invention in the accompanying drawings and will now proceed to fully describe the same, having reference to said drawings, in which—

Figure 1 represents a sectional view taken on a vertical plane cutting longitudinally through the drier, some plates being shown in broken lines. Fig. 2 represents a transverse sectional view taken on the plane indicated by the broken line 2—2 of Fig. 1. Fig. 3 represents, in plan view, a portion of the conveyer chain.

Like parts will be indicated by the same reference characters wherever they appear in a plurality of the figures of the drawings.

Referring specifically to the drawings, 5 indicates the bottom, 6, 6, the ends, 7, 7, the sides and 8 the top of the main body or what might be termed the casing of the drier. The parts mentioned may be of any approved material and this, as well as the particular size and shape of the main body or casing, form no part of the present invention.

At 9 is indicated an opening at the top of the casing through which the lithographic plates are entered from the press, one of said plates being indicated by broken lines at 10, partly projecting through the opening 9, resting upon a deflector 11, and supported by an arm 12 of a latch 13 which in turn rests against a pin 14 and is normally held in yielding contact therewith by the spring 15 secured at its outer end to the casing, the arm 12, in its normal position as shown in Fig. 1, being in proper position to receive the plate 10 from the press, not shown.

At 16 are indicated cross bars, preferably T-beams, secured in the side walls 7, and upon these beams rest longitudinal track beams 17. Similar cross bars 18, supported in a like manner, carry track beams 19 which depend therefrom and comprise vertical sections 20, horizontal sections 21 and vertical track bars 22, as clearly indicated in Fig. 2. Other similar cross bars 23 have similar track bars 24 depending therefrom and in the position inclined from the horizontal, said track bars 24 comprising vertical sections 25, horizontal sections 26 and turned up vertical sections forming track bars 27.

At 28 is indicated a transverse shaft properly journaled and carrying the sprocket wheels 29, a similar shaft 30 carrying sprocket wheels 31 and a third shaft 32 carrying idler sprocket wheels 33. We have shown in Fig. 2 duplicate sets of sprocket wheels 31, there being a pair in each set, but it will be obvious that the drier might be made with only a single set of sprocket wheels or three or more sets as may be desired. Inasmuch as the sets are substantially duplicates of each other, a specific description of one set will suffice for both except that it may be well to mention that the track beam 19 between the two sets, as shown in Fig. 2, is in a single piece.

The transverse beams 16, 18 and 23 are secured to the walls of the casing in any suitable manner and the track beams 17 rest upon the top of the transverse beam 16,

while the track beams 19 and 24 are suitably riveted or otherwise fastened to the under side of the transverse beams 18 and 23.

In Fig. 3 we have shown in detail the sprocket chain 34 which is passed around the sprocket wheels 29 and 31 and under the idler wheels 33, said sprocket chain comprising side bars 35, 36, between which are rollers 37 on the journals or pins 38, said pins serving to connect the side bars 35 and 36 together and at the same time as shafts upon which the rollers 37 may be rotated.

In operation the sprocket chain is rotated to carry its upper half to the right, as shown in Fig. 1, the rollers in said upper half resting upon the upper edges of the track beams 17. After passing around the sprocket wheels 31, the chain passes under the track beam 19 and its rollers 37 rest upon the upturned track bars 22 until the idler wheels 33 are reached, from which point the rollers of the lower half of the chain rest upon the track bars 27, until the sprocket wheels 29 are reached.

On one side of the plates 35 of the sprocket chain 34, ears 39 are provided which project laterally and horizontally and are provided with openings 40, the ears 39 of the right hand sprocket chain of each pair extending to the left and those of the left hand sprocket chain to the right, thus both sets of ears projecting inwardly as shown in Fig. 2.

In the openings 40 are mounted arms of heavy wire or rod which we shall denominate trays 41 each of which comprises radial side bars 42 and transverse cross bars 43, connected to said bars by curved bars 44 extending rearwardly, with relation to the direction of movement of the chain as clearly shown in Fig. 1.

The oven or drying chamber may be heated in any suitable manner, steam pipes 45 being shown in Fig. 1, located within the lines of travel of the sprocket chains whereby all parts of the chains and their contents, are subjected to the heat from said pipes.

In operation, a lithographic plate as at 10 is passed from the press, not shown, into and virtually through the opening 9, resting against the deflector 11 and arm 12 as before described, as shown in Fig. 1. The sprocket wheels being set in motion, the tray 34^a of Fig. 1 soon strikes the lower end of the latch 13, pressing it forward against the action of the spring 15 until the supporting arm 12 slips from under the plate 10, allowing said plate to drop upon the upper surface and in front of the succeeding tray 34^b and the tray 34^c is shown in advance of the tray 34^a with a plate 10^a resting upon its forward face in the same manner as the plate 10 will rest upon the tray 34^b when it has been carried forward beyond the latch 13 as before described. With the plate 10^a resting upon the tray 34^c, the further operation of the mechanism will carry all of the trays on the upper side of the chain, including said tray 34^c, to the right, and as soon as that part of the chain which carries a tray having a plate thereon goes to turn around the sprocket wheels 31, the plate 10^a will drop off the tray 34^c upon the advanced tray 34^d, lodging on the rear face thereof as clearly shown in Fig. 2. In the position indicated at 10^b, the plate is carried around on the rear face of the tray, being supported by the curved connecting bar 44 of the tray until the tray 34^d bearing the plate 10^b has reached the idler wheels 33 and the chain starts to travel up the inclined track bars 27. This changes the angle of the tray 34^d and causes the inner end of the plate 10^b to drop back against the succeeding tray and the plate will be carried along in this position with its lower end resting in the curved bars of the tray 34^d and its upper edge resting against the forward side of the tray 34^e until the tray 34^d reaches substantially the position of the tray 34^b at the left hand end of Fig. 1, when the plate will drop off the tray and through the opening 46 in the bottom of the casing where suitable disposition of it may be made.

From the foregoing it will be apparent that we have provided effectual means whereby lithographic plates are raised from the press and are duly dried without the necessity of handling them at any time, thereby obviating the danger incurred in handling wet or damp plates, and dispensing with the expenditure of time and labor necessary to such manual manipulation.

In the foregoing description we have particularly specified the construction, location and operation of the various parts comprised in our invention, but it will be obvious to those skilled in the art to which the invention most nearly appertains, that many slight changes and variations may be made within the scope of the claims, without departing from the spirit and scope of the invention.

Having thus fully described our invention, what we claim as new and desire to secure by United States Letters Patent is—

1. In a drier of the class specified, a pair of conveyer chains, and a series of radially projecting metallic trays carried by said chains, each tray comprising radial bars and outer cross bars connected to said radial bars by rearwardly projecting curved bends.

2. In a drier of the class specified, a pair of conveyer chains, and a series of radially projecting metallic trays carried by said chains, in combination with a transverse pin, a latch pivoted thereon, a second pin, a spring yieldingly holding the latch against the second pin and an arm on the latch projecting in the path of a plate entering the

casing, the latch being located to be tripped by the trays.

3. In a drier of the class specified, the combination with a casing, of three shafts, a pair of sprocket wheels on each shaft, a pair of conveyer chains passing around said wheels, ears projecting inwardly from the links of each of the chains, metallic rods mounted in said ears and connected at their outer ends to form the trays to receive plates.

4. In a drier of the class specified, the combination with a casing, of three shafts, a pair of sprocket wheels on each shaft, a pair of conveyer chains passing around said wheels, ears projecting inwardly from the links of each of the chains, metallic rods mounted in said ears and connected at their outer ends to form trays carried by said chains, track beams supported within the casing in the paths of the conveyer chains, and rollers forming parts of the links of the chains and engaging said track beams.

5. In a drier of the class specified, the combination of a casing, transverse beams secured in said casing, track beams resting upon said transverse beams, a pair of conveyer chains mounted to cause their upper sides to pass over said beams, rollers forming parts of the links of said chains and resting upon the track beams, ears projecting inwardly from the links of each of the chains, metallic rods mounted in said ears and connected at their outer ends to form radially projecting trays carried by the chains.

6. In a drier of the class specified, the combination of a casing, transverse beams secured in said casing, track beams resting upon said transverse beams, a pair of conveyer chains mounted to cause their upper side to pass over said beams, rollers forming parts of the links of said chains and resting upon the track beams, ears projecting inwardly from the links of each of the chains, metallic rods mounted in said ears and connected at their outer ends to form radially projecting trays carried by the chains, reversed transverse beams secured to the casing, track beams depending from said reversed transverse beams and having upturned track bars, the under sides of the chains being below the reversed transverse beams with their rollers resting upon the upturned track bars.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM T. PERKINS.
ROY R. HICKCOX.

Witnesses:
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HOWARD D. ADAMS.