

Jan. 25, 1927.

W. M. SCHWARTZ

1,615,237

CONVEYER FOR A DRIER

Filed Jan. 21, 1924

6 Sheets-Sheet 1

Fig. 1.

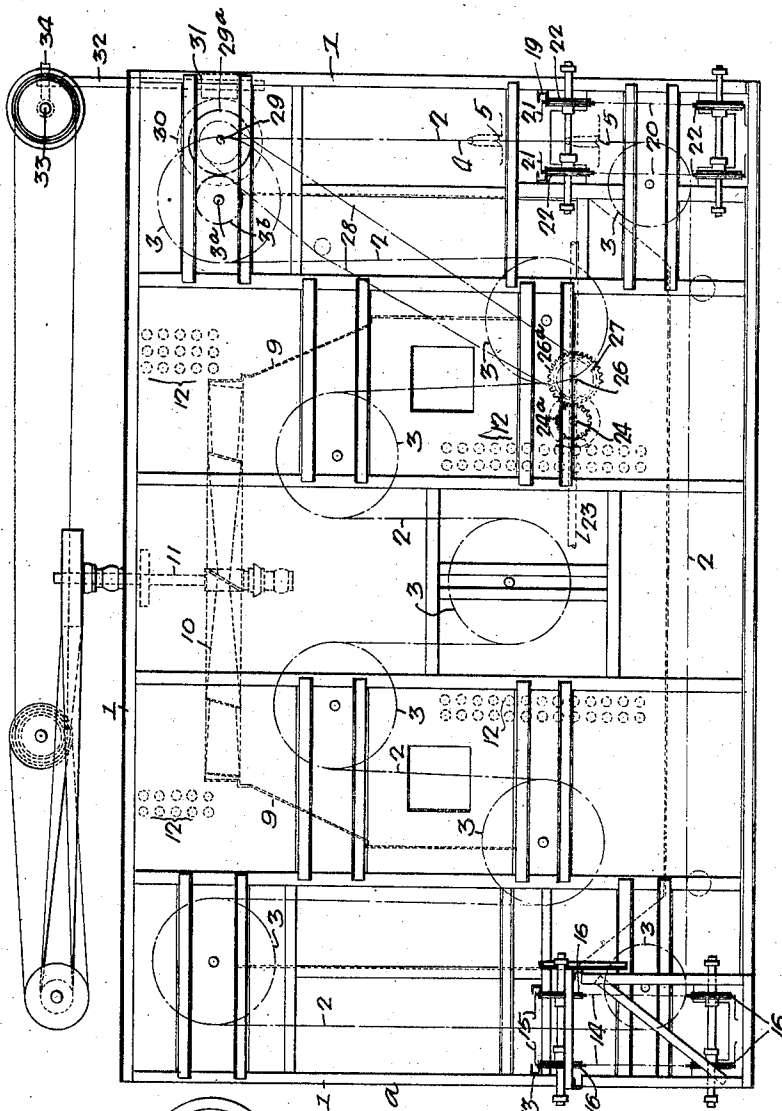


Fig. 10.

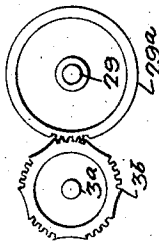
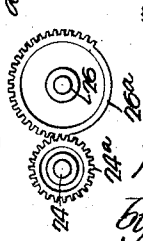


Fig. 11.



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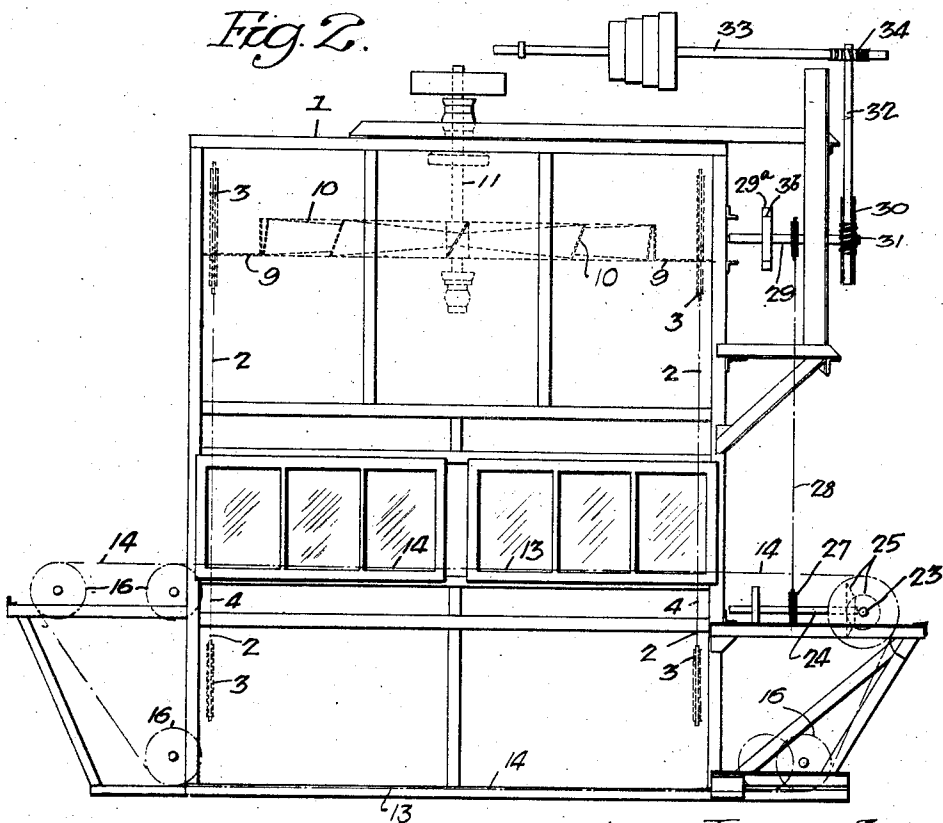
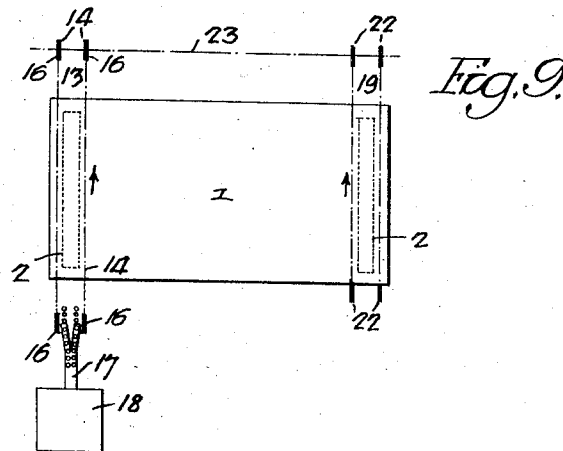
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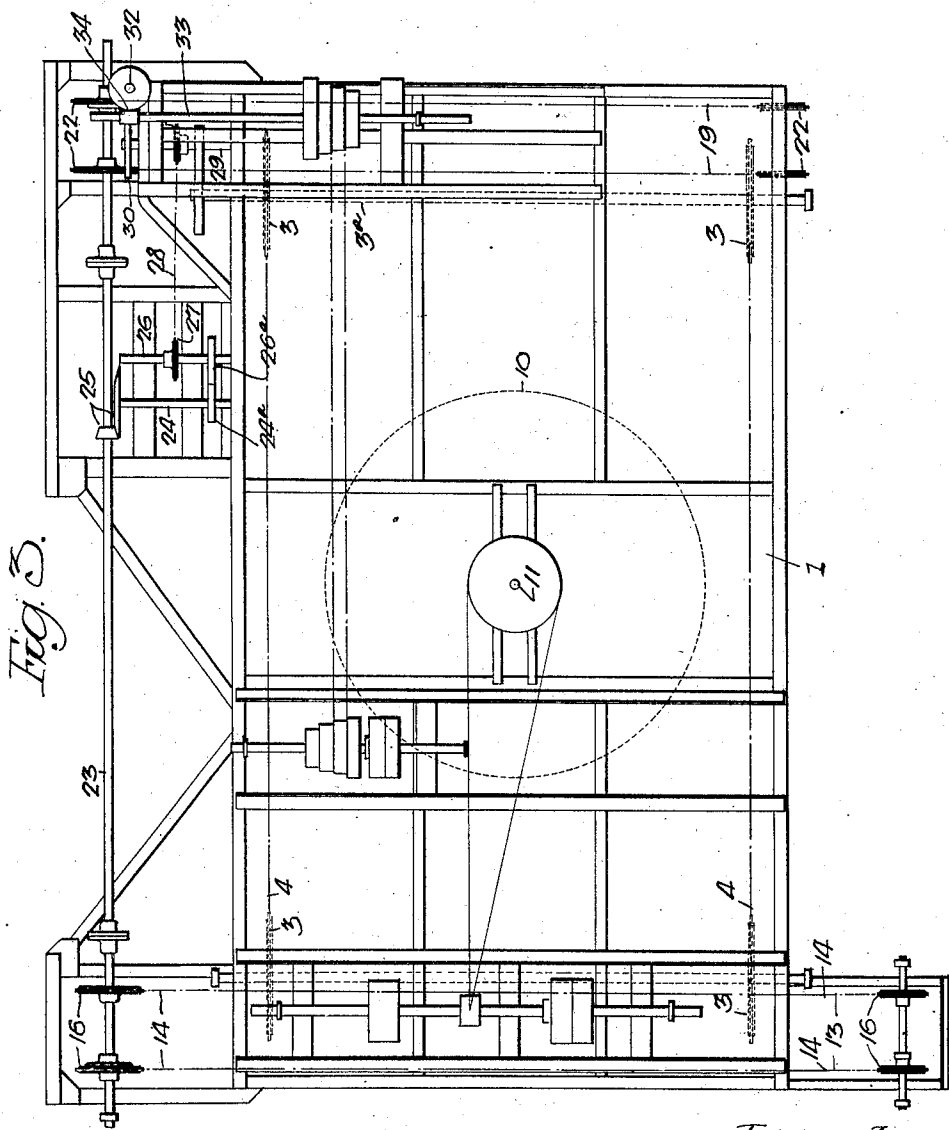
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CONVEYER FOR A DRIER

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6 Sheets-Sheet 3



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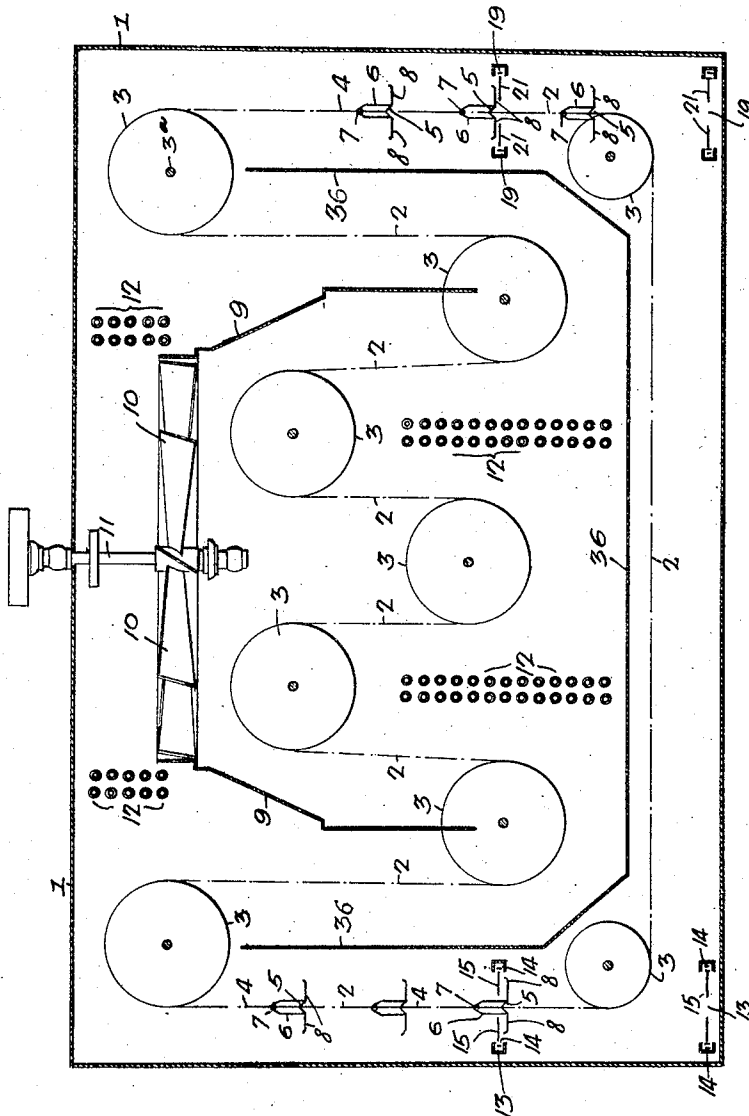
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Fig. 4.



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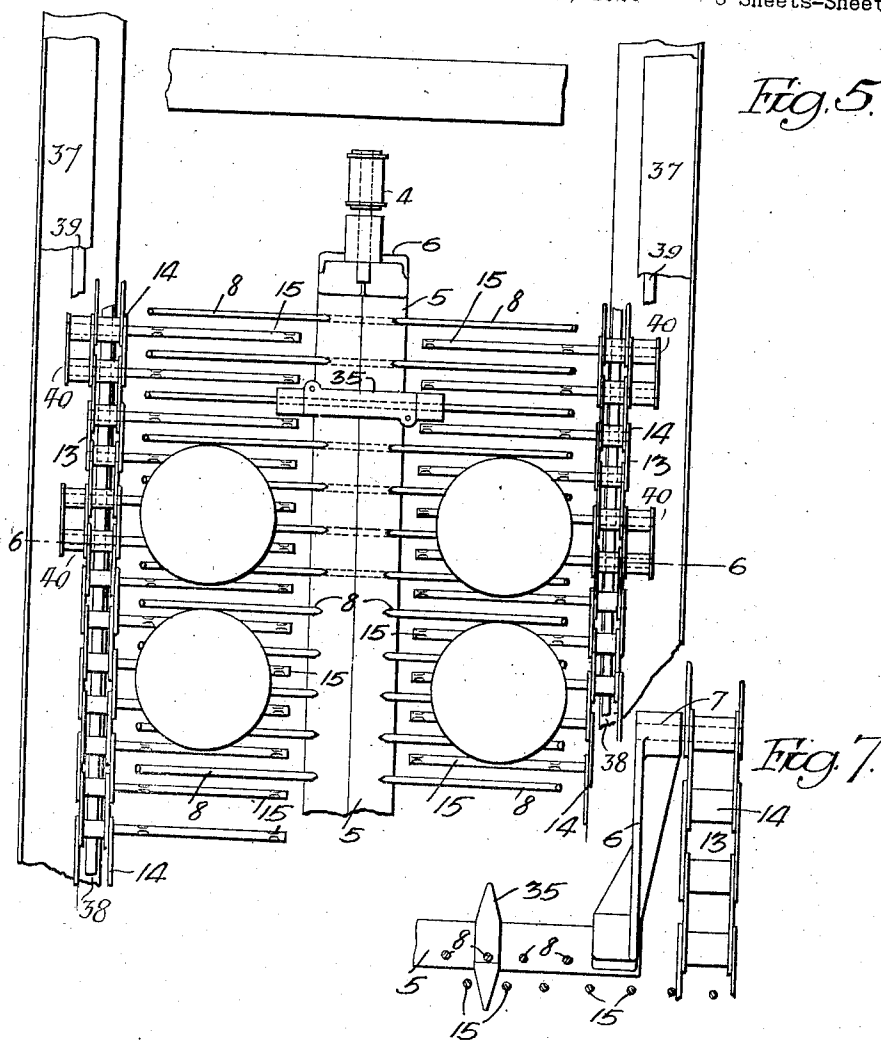
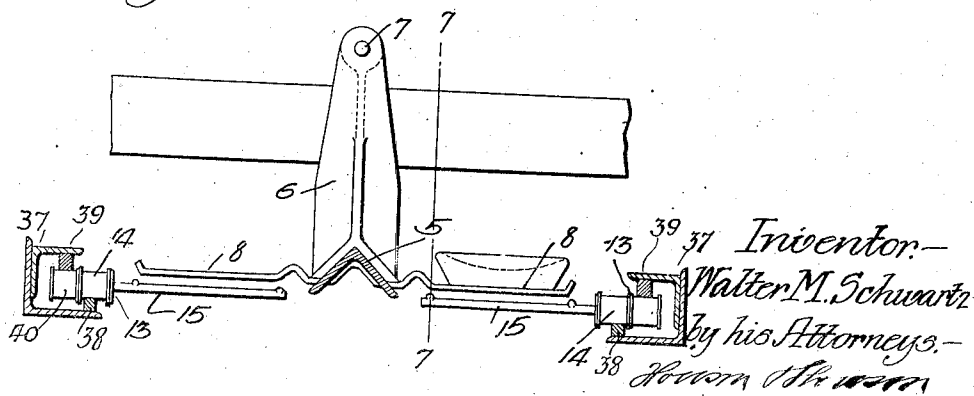


Fig. 6.



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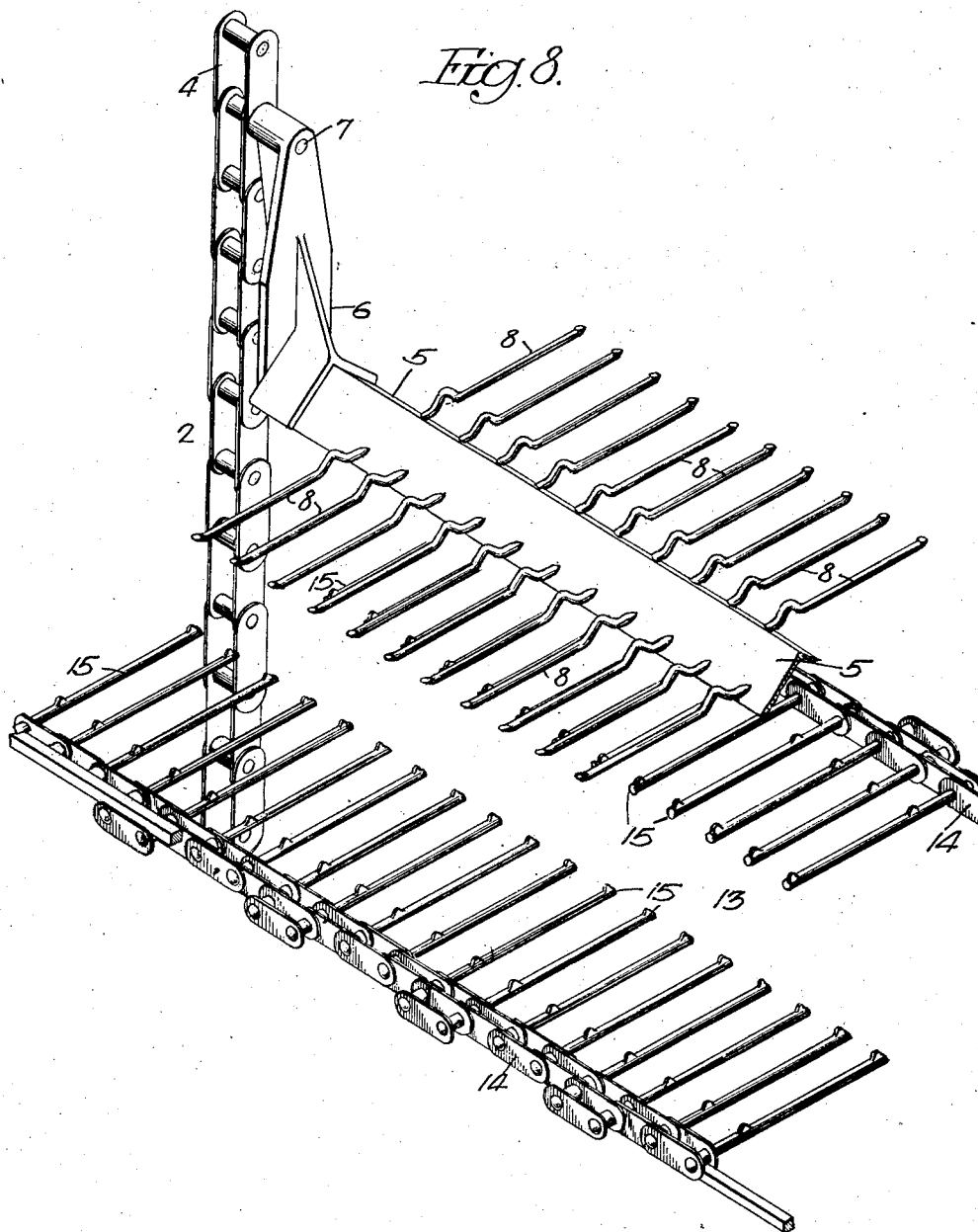
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CONVEYER FOR A DRIER

Filed Jan. 21, 1924

6 Sheets-Sheet 6



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UNITED STATES PATENT OFFICE.

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CONVEYER FOR A DRIER.

Application filed January 21, 1924. Serial No. 687,535.

One object of my invention is to construct a drier for articles of manufacture so that the articles can be fed into the drier by one conveyer; fed through the drier by another conveyer; and transferred to a conveyer for carrying the articles away from the drier.

A further object of the invention is to arrange the conveyer, on which the articles to be dried are placed, so that the articles can be placed on a feeding conveyer, preferably, as they are formed, the feeding conveyer being arranged transversely to the drying conveyer. The articles are removed from the feeding conveyer by the drying conveyer. After the articles have passed through the drier, they are placed on the discharge conveyer, which is arranged transversely to the drying chamber.

The invention is especially adapted for use in drying pottery and other ceramic ware. It will be understood that it can be used for drying other articles without departing from the main features of the invention.

In the accompanying drawings:

Fig. 1 is a side view of my improved drier;

Fig. 2 is an end view;

Fig. 3 is a plan view;

Fig. 4 is a longitudinal sectional view;

Fig. 5 is a plan view of a portion of one end of the drier, showing the relation of the feeding conveyer to the drying conveyer;

Fig. 6 is a sectional view on the line 6—6, Fig. 5;

Fig. 7 is a sectional view on the line 7—7, Fig. 6;

Fig. 8 is a detached perspective view, showing the relation of two conveyers;

Fig. 9 is a diagrammatic plan view, showing the relation of the drying conveyer to the feeding and discharge conveyers; and

Figs. 10 and 11 are views of details of the invention.

Referring to the drawings, 1 is the casing of a pottery drier, having a drying chamber. 2 is a conveyer for carrying the articles to be dried through the drying chamber. 3, 3 are guide sheaves for the conveyer. This conveyer consists of two chains 4—4, connected by cross bars 5 that have brackets 6 at each end, pivotally connected at 7 to links of the chains. On the cross bars 5 are a series of arms 8 that are made

of wire bent into shape, in the present instance, as shown clearly in Fig. 6, and spaced a given distance apart, as illustrated in Figs. 5 and 8, so as to hold a plate, or other article of pottery, to be dried.

9 designates one transverse partition within the drying chamber of the drier. In the upper portion of this partition is an opening for the circulating fan 10, which is mounted on a vertical shaft 11 that extends through the top of the drier and is mounted in suitable bearings therein. This shaft is driven by a belt, as shown in Fig. 1, or by other suitable means. When the fan is in motion, air is circulated through the drying chamber. Heating pipes 12 are located at given points to heat the air in circulation properly.

36 designates another transverse partition, as shown in Fig. 4, forming end channels and a bottom channel for the conveyer. While a certain arrangement of heating pipes and partitions is illustrated, other means of heating and circulating the air may be used without departing from the main features of the invention.

The cross bars 5 and the arms 8 form a tray on which a number of articles can be carried. One series of articles is carried by the arms on one side of the bar and another series of articles is carried by the arms on the other side of the bar, as shown clearly in Fig. 5.

At the feed end *a* of the drier is a transversely arranged feeding conveyer 13, which consists of two chains 14 that are spaced a given distance apart. Each chain has a series of fingers 15. One series of fingers projects towards the other series, as shown in Figs. 5, 6 and 8. They are spaced apart to allow the cross bars 5 of the drying conveyer to pass.

The chains 14 pass around sprocket wheels 16, which are mounted in suitable bearings in the frame of the machine. Each chain travels through a guide box 37, Fig. 6, which has lower rails 38 and upper rails 39 that hold the chains and their fingers in a horizontal position. The chains have a series of rollers 40 on side extensions, which bear against the rails 39.

The feeding conveyer moves in the direction of the arrows, Fig. 9, and carries the articles from a conveyer 17, which receives the

articles from a press 18. The discharge conveyor 19 is made similar to the feeding conveyor 13 and consists of chains 20 and has fingers 21. The fingers are spaced apart to allow the arms 8 of the drying conveyor to pass between them and are guided similarly to the chains 14. They pass around sprocket wheels 22. The discharge conveyor moves in the direction of its arrow, Fig. 9.

In the present instance, the drying conveyor is moved intermittently through the drying chamber. Each intermittent movement is sufficient to allow one tray to pass the carrying run of the feeding conveyor and another tray to pass the receiving run of the discharge conveyor. The drying conveyor remains stationary, while the feeding conveyor moves transversely across the machine, in order to carry a series of articles to be dried into position to be removed by the arms of the trays of the drying conveyor. The discharge conveyor remains stationary while articles are being placed upon its fingers by the drying conveyor. Suitable means may be provided for driving the conveyers in the manner above set forth. In the present instance, a longitudinal shaft 23 is shown on which the outer sprocket wheels 16 and 22 are mounted. This shaft is driven from a shaft 24 through bevel wheels 25. The shaft 24 is geared to a shaft 26 through "Geneva lock gears" 24^a and 26^a, Fig. 11, on which is a sprocket wheel 27, around which passes a drive chain 28 from a sprocket wheel on a shaft 29 that has a worm wheel 30 with which meshes a worm 31 on a shaft 32, geared to a shaft 33 through a worm and worm wheel 34. The shaft 29 drives a shaft 3^a on which is mounted a pair of sprocket wheels for the drying conveyor. The drive is a "Geneva lock gear" 29^a and 3^b, Fig. 10. This lock has five flats so that, at each revolution of the shaft 29, the shaft 3^a is given a one-fifth turn, which is sufficient to carry the trays past the carrying run of the feeding conveyor and the receiving run of the discharge conveyor. The "Geneva lock gears" 24^a and 26^a are so designed that when the drying conveyor is at rest and the feeding conveyor and the discharge conveyor are moved—one to place articles in position within the drier to be taken by the drying conveyor—and the other to remove articles taken from the drying conveyor.

On the cross bars 5 of the trays are guides 35, Figs. 5 and 7, which project above and below the arms 8, and are shaped to guide the trays as they pass the fingers of the feeding and discharge conveyers.

By the above construction, it will be seen that where a machine is designed for drying pottery and other ceramic ware, the plates, or other articles, can be molded and placed on a belt, such as the belt 17, and can be fed onto the projecting portion of the

feeding conveyor, while the said conveyor is at rest. As motion is imparted to the feeding conveyor, the feeding of the articles to the belt can be continued until the belt is loaded, when it is stopped automatically. At the same time, the drying conveyor is set in motion automatically. A tray of the drying conveyor passes the carrying run of the feeding conveyor. The arms of the said tray remove the articles from the fingers of the feeding conveyor. When the tray is clear of the feeding conveyor, the drying conveyor is stopped automatically and the feeding conveyor is again set in motion to feed other articles in position to be removed by the drying conveyor.

At the discharge end of the machine, the dried articles are deposited by the arms of the trays onto the fingers of the discharge conveyor. When the trays pass the receiving run of the discharge conveyor, the drying conveyor is stopped automatically and the discharge conveyor is set in motion, removing the articles from the drier.

The mechanism is so timed that the feeding conveyor and the discharge conveyor work in unison.

In some instances, the conveyers may be moved continuously, the movement being slow and the feeding so regulated that the articles can be transferred from one conveyor to another.

I claim:

1. The combination in a drier, of a drying conveyor having a series of trays, each tray having arms; a transverse conveyor arranged at right angles to the drying conveyor and having fingers arranged to alternate with the arms of the drying conveyor, said fingers being spaced apart to allow for the passage of the trays so that articles carried by one conveyor can be transferred to the other conveyor; means for intermittently moving the drying conveyor when the transverse conveyor is at rest; and means for moving the transverse conveyor when the drying conveyor is at rest.

2. The combination in a drier, of a conveyor therein having a series of trays, each tray consisting of a cross bar and spaced arms; a transversely arranged feeding conveyor and a transversely arranged discharge conveyor, each consisting of chains having fingers, the opposite fingers of each conveyor being spaced apart to allow for the passage of the cross bars of the trays; means for intermittently moving the drying conveyor when the feeding and discharge conveyers are at rest; and means for moving the feeding and discharge conveyers when the drying conveyor is at rest.

3. The combination in a drier, of a drying chamber; a drying conveyor therein for carrying articles side by side through said drying chamber; means for intermittently

moving the conveyer; a transversely arranged feeding conveyer at one end of the drier for placing a number of articles side by side to be engaged by the drying conveyer; a transversely arranged discharge conveyer at the opposite end of the drier onto which a series of articles are transferred from the drying conveyer; and means for intermittently moving both transverse conveyers when the drying conveyer is at rest.

4. The combination of a conveyer having side chains and a series of trays, each tray having arms spaced apart; and a conveyer arranged at an angle to the first mentioned conveyer and consisting of two chains, each having a series of fingers spaced apart and arranged so that the arms of the first mentioned conveyer pass through the spaces between the fingers of the other conveyer.

5. The combination of a conveyer having side chains and a series of trays, each tray having arms spaced apart; a conveyer arranged at an angle to the first mentioned conveyer and consisting of two chains, each having a series of fingers spaced apart and arranged so that the arms of the first mentioned conveyer pass through the spaces between the fingers of the other conveyer; and

guide rails for the fingered chains, which act to hold the fingers in a horizontal position.

6. The combination of a conveyer having side chains and pivotally connected trays provided with spaced arms; a transversely arranged conveyer consisting of two chains spaced apart, each chain having a series of fingers, one series projecting towards the other series, but spaced apart to allow for the passage of the trays of the other conveyer, each chain having lateral projections; a guide box for each transverse chain; and a lower rail and an upper rail in each box, the lower rails supporting the chains and the upper rails being in line with the projections and acting to retain the chains and their fingers in a horizontal position.

7. The combination in a drier, of an intermittently moving drying conveyer having a series of trays provided with arms on which the articles to be dried are carried; a transverse conveyer having fingers spaced apart to allow for the passage of the arms of the trays; and means for moving the transverse conveyer across the full width of the drying conveyer at each intermittent movement of said transverse conveyer.

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