Sept. 9, 1924. 1,508,283

E. B. KERST

DRIER

Filed Aug. 15, 1923 2 Sheets-Sheet 1

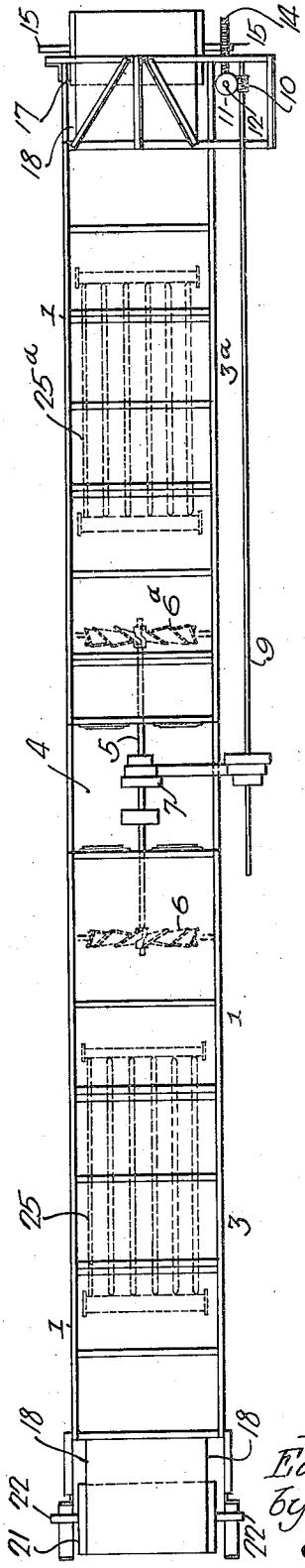


Fig. 2.

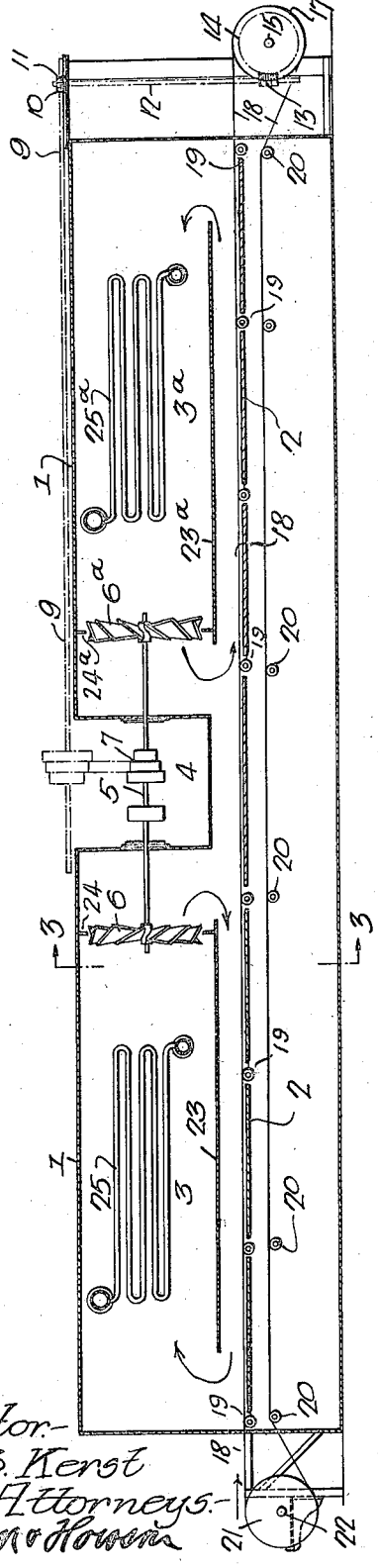


Fig. 1.

Inventor.-
Edgar B. Kerst
by his Attorneys.-
Howson & Howson

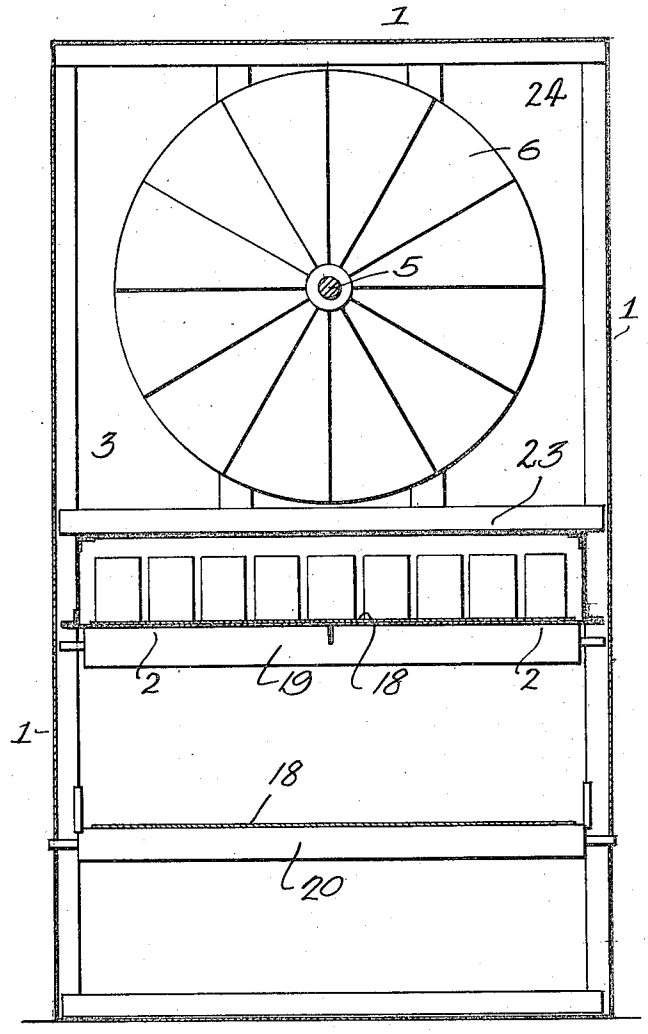
Sept. 9, 1924. 1,508,283

E. B. KERST

DRIER

Filed Aug. 15, 1923 2 Sheets-Sheet 2

Fig. 3.



Inventor—
Edgar B. Kerst.
by his Attorneys—
Howson & Howson

Patented Sept. 9, 1924. 1,508,283

UNITED STATES PATENT OFFICE.

EDGAR B. KERST, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO PROCTOR & SCHWARTZ, INCORPORATED, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DRIER.

Application filed August 15, 1923. Serial No. 657,578.

To all whom it may concern:

Be it known that I, EDGAR B. KERST, a citizen of the United States, residing in Providence, Providence County, Rhode Island, have invented certain Improvements in Driers, of which the following is a specification.

The object of my invention is to construct a drier that is especially adapted for drying labels which have been pasted on cans, although it will be understood that the drier can be used for other purposes without departing from the essential features of the invention.

In the accompanying drawings:

Fig. 1 is a longitudinal sectional elevation, illustrating my improved drier;

Fig. 2 is a plan view; and

Fig. 3 is an enlarged transverse sectional view on the line 3—3, Fig. 1.

Referring to the drawings, 1 is the casing of the drier. 2 is a longitudinal partition, which extends substantially the full length of the drier. This partition is made in sections spaced apart to accommodate the carrying rollers 19, which aid in supporting the conveyer belt 18. The return run of the belt is supported at intervals by rollers 20. This conveyer belt is driven by a shaft 15 on which is the drum 17. Also on the shaft 15 is a worm wheel 14, which meshes with a worm 13 on a vertical shaft 12 having a worm wheel which meshes with a worm 10 on a longitudinal driving shaft 9. The opposite end of the belt passes around a drum 21 that is mounted on a shaft 22. The drum 21 is at the feed end of the machine, in the present instance, and the drum 17 is at the discharge end of the machine.

Above the partition 2 are two circulating chambers 3, 3^a, separated by an open space 4, Fig. 1. In the circulating chamber 3 is a horizontal partition 23, directly above the partition 2. This partition is connected to a vertical partition 24, in which is a fan opening. Located in this opening is a circulating fan 6, mounted on a shaft 5. On this shaft is a pulley 7, around which passes a belt from a belt pulley on the driving shaft 9.

Above the partition 23 are coils of steam pipes 25 for heating the air in circulation. The fan 6 drives the air in the direction of the arrow and the cans move against the air in circulation in this half of the drier. In the other circulating chamber 3^a of the drier is a horizontal partition 23^a, connected to a vertical partition 24^a, in which is an opening for a circulating fan 6^a mounted on the shaft 5. Above the partition 23^a are coils of steam pipes 25^a for heating the air in circulation.

The fan 6^a circulates the air in the chamber 3^a in a direction opposite to the circulation of air in the chamber 3^a and the cans travel, in this portion of the conveyer, in the same direction as the air in circulation. The shaft 5 crosses the open space 4 and in this open space is the pulley 7 by which the fans are driven.

The cans are placed on the belt 18 at the feed end of the machine and are carried through the drier. As the cans pass through the first circulating chamber, they are subjected to air circulated in one direction. When passing through the second circulating chamber, they are subjected to air moving in the opposite direction. When the cans emerge from the machine at the discharge end of the drier, the labels, which were previously pasted on the cans, are dry and adhere to the cans with unbroken surfaces.

While the invention is especially adapted for use in drying labels on cans, or other containers, it will be understood that it can be used for drying objects that can be arranged on the endless conveyer.

I claim:

1. The combination in a drier, of a casing; an endless conveyer extending throughout the length of the drier; a horizontal partition between the two runs of the conveyer; two circulating chambers above the horizontal partition, said chambers being spaced apart; a horizontal partition in each circulating chamber; means for heating the air in circulation in each chamber; and a fan, in each chamber, for causing the air to circulate around each horizontal partition.

2. The combination in a drier, of a horizontal partition extending the full length of the drier; an endless conveyer, the carrying run of the conveyer being located above the partition; two circulating chambers spaced apart and located above the carrying run of the conveyer; a circulating fan in each chamber; and means for driving the

fans so that the air in one chamber is circulated in a direction opposite to the circulation of air in the other chamber.

3. The combination in a drier, of a horizontal partition extending the full length thereof; an endless conveyer, the upper run of which is located directly above the partition; two circulating chambers above said partition; a short horizontal partition in each circulating chamber above the conveyer; a vertical partition in each chamber connected to the horizontal partition; a fan located in an opening in each vertical partition; means for heating the air in each chamber; a shaft on which the two fans are mounted; and means for driving the shaft, the fans being so arranged that the fan in the first chamber circulates the air against the moving articles carried by the conveyer, while the fan in the other chamber circulates the air in a direction with the movement of the conveyer.

4. The combination in a drier, of a horizontal partition extending the full length thereof; rollers located at intervals in the partition; an endless belt conveyer, the carrying run of the conveyer extending above the partition and supported by said rollers; two circulating chambers, above the partition, spaced apart by an open section; a horizontal partition located in each circulating chamber above said first mentioned horizontal partition; a circulating fan in each chamber; a horizontal shaft extending across the open space that separates the two chambers and on which the circulating fans are mounted; and steam coils mounted in each circulating chamber above the partition, one fan circulating the air in one direction and the other fan circulating the air in the opposite direction so that the cans, as they are carried through the drier, are first subjected to air moving in one direction and are then subjected to air moving in the opposite direction.

EDGAR B. KERST.