(No Model.)

J. KAM.

DRY KILN FOR MALTING.

No. 489,746. Patented Jan. 10, 1893.

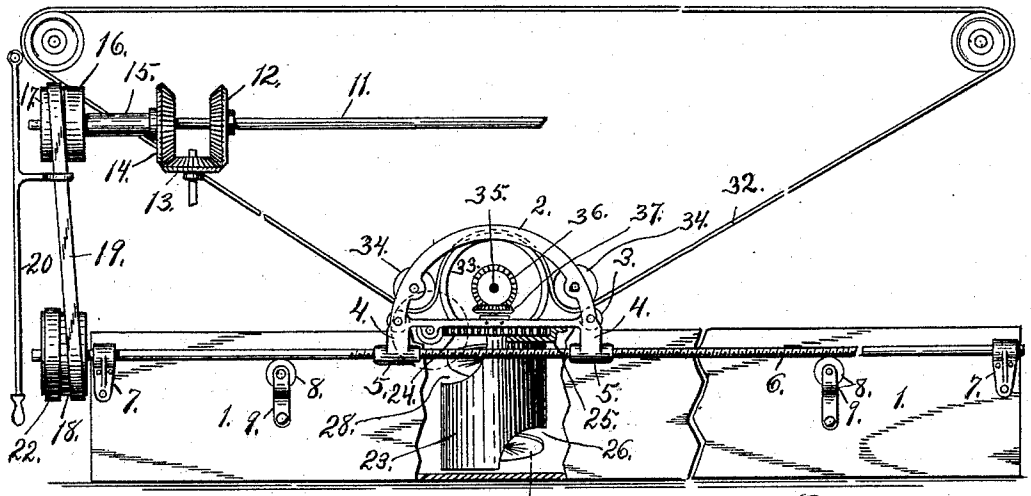

Fig. 1.

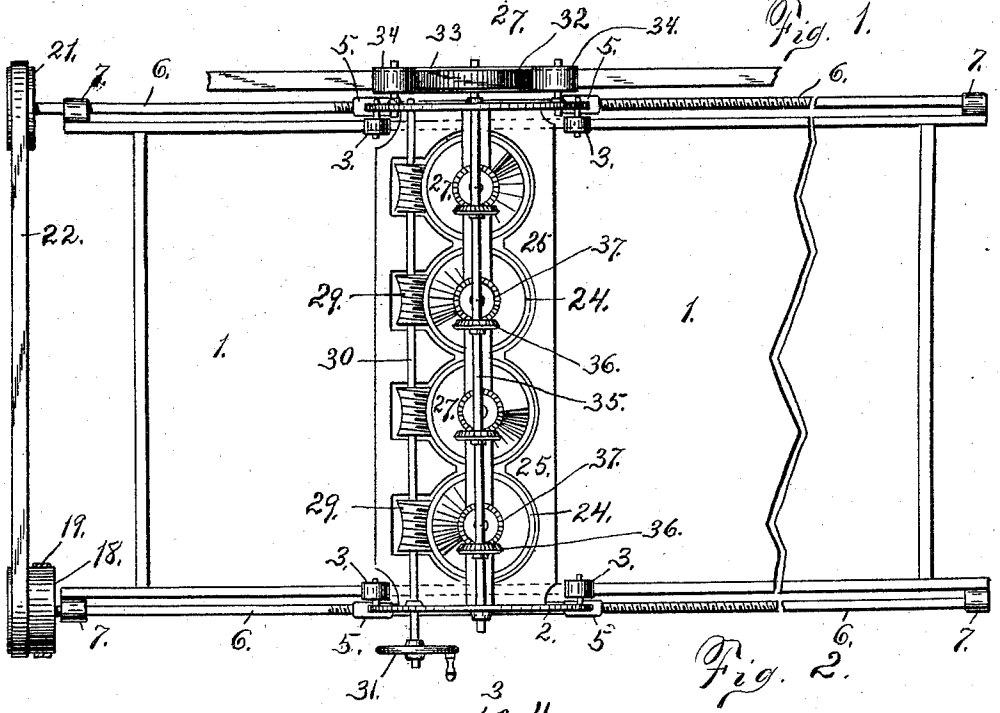

Fig. 2.

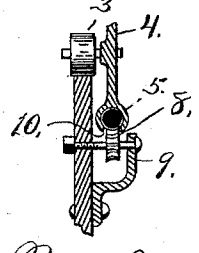

Fig. 3.

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UNITED STATES PATENT OFFICE.

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DRY-KILN FOR MALTING.

SPECIFICATION forming part of Letters Patent No. 489,746, dated January 10, 1893.

Application filed August 19, 1892. Serial No. 443,484. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH KAM, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Dry-Kilns for Malting; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

On the 14th day of April 1891, Letters Patent No. 450,237 were issued to me for an improvement in grain-kilns for malting which covers a cylindrical kiln containing certain apparatus for turning the grain in the kiln for drying purposes and improved means for revolving such apparatus with the cylindrical kiln.

My present invention has for its object the turning of the grain in substantially the same manner in a rectangular kiln and consists in special improved apparatus for reciprocating the turning mechanism within the rectangular kiln in place of revolving it as in the cylindrical kiln.

I will now proceed to minutely describe the manner in which I have carried out my invention and then claim what I believe to be novel.

In the drawings, Figure 1 is a side elevation of my improved apparatus with portions broken away to show interior construction. Fig. 2 is a top plan view of the same, and Fig. 3 is a detail view.

Referring to the drawings: 1 is a rectangular kiln in which the grain to be dried is placed.

2 is a carriage which is mounted upon the small rollers 3 which ride upon the top of the kiln. This carriage 2 has depending brackets 4 extending downwardly from its side frames and having screw threaded sleeves 5 at their lower ends which engage with horizontal screw-threaded shafts 6, running parallel with the sides of the kiln and secured to the kiln by the rigid brackets 7.

8 are supporting wheels which are mounted in brackets 9, (a detail of which is shown in Fig. 3,) and having its periphery cut into a worm gear so as to engage with and support the screw-threaded shaft 6. An open passage 10 is left in the bottom of the sleeves 5 so as to permit them to pass over the supporting wheels 8.

11 is the power shaft from which a reciprocating motion is given to the carriage 2, this is accomplished as follows. Arranged upon the power shaft 11 are the bevel gears 12, 13 and 14, the gear 14 being mounted upon a sleeve 15 at the opposite end of which the pulley 16 is mounted. This pulley 16 being connected to the power shaft by the changeable gearing as shown, causes the pulley to revolve in the opposite direction from that given to the shaft. Adjoining this pulley I have arranged the pulley 17, which is rigidly mounted upon the shaft 11, and turns with it. These pulleys 16 and 17, are alternately connected to the pulley 18 by the endless belt 19, the alternate connection with the pulley 16 to the pulley 17 or vice-versa being accomplished by the belt lever 20. The pulley 18 is rigidly mounted upon one of the screw-threaded shafts 6, and a second pulley 21 is mounted upon the opposite shaft, the two pulleys 18 and 21 being connected by the belt 22, (as seen in Fig. 2.) In this manner the shafts are revolved in either direction according to the adjustment of the belt 19. From the carriage 2 is suspended a series of cylindrical jackets 23 which rest upon annular collars 24 projecting over the bed-plate 25 of the carriage. These jackets 23 are placed as shown in Fig. 2, so as to span the kiln and have their lower forward ends cut away as at 26, so as to permit the grain to enter them where it is carried up by the endless conveyers 27, and fall out at the rear of the jackets through the cut-away portions 28.

Worm gears are cut into the annular collars 24 which engage with a series of worm wheels 29 mounted upon the shaft 30 at the outer end of which the hand wheel 31 is secured. By this arrangement I am enabled to turn the jackets 23 in their seats so as to have their lower open end face either end of the kiln desired.

The endless conveyers are operated from the belt 32 which passes over the drive wheel 33 and under the friction wheels 34. This

drive wheel 33 is mounted upon the shaft 35 which has mounted upon it, over each conveyer a bevel-gear 36 which in turn operate bevel gears 37 mounted upon the same shaft with the conveyers.

In operation motion is first imparted to the conveyers from the belt 32 by which the drive wheel 33 is turned and with it the bevel gears 36 and 37. The carriage with its conveyers and jackets is then caused to travel in either direction by the screw-threaded shafts 6, and as the carriage reaches either end of the kiln the jackets are turned (so as to have their lower openings 26 face the direction in which they are to travel), by the hand wheel 31.

I claim:

1. A dry kiln for malting and other purposes consisting essentially of a rectangular kiln for the reception of the stock, a series of vertical cylinders secured to a moving frame, and extending across said kiln, said cylinders having openings at their lower forward ends and upper rear ends, a series of endless conveyers, an endless belt operating a pulley and shaft secured to a moving carriage, a series of bevel gears secured to said shaft and each engaging with bevel gears upon the series of conveyers all combined and operating substantially as shown and described.

2. In a dry kiln for malting and other purposes a series of cylinders resting within a frame or carrier, said frame or carrier being made to travel back and forth within a rectangular kiln said cylinders being cut away at each end forming openings on opposite sides and adapted to be turned within the frame or carrier so as to have their lower openings face in the direction in which the cylinders are traveling substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

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