Jan. 6, 1931. J. H. FULMER 1,788,099

APPARATUS FOR ARTIFICIALLY CURING HAY

Filed Nov. 7, 1928 3 Sheets-Sheet 1

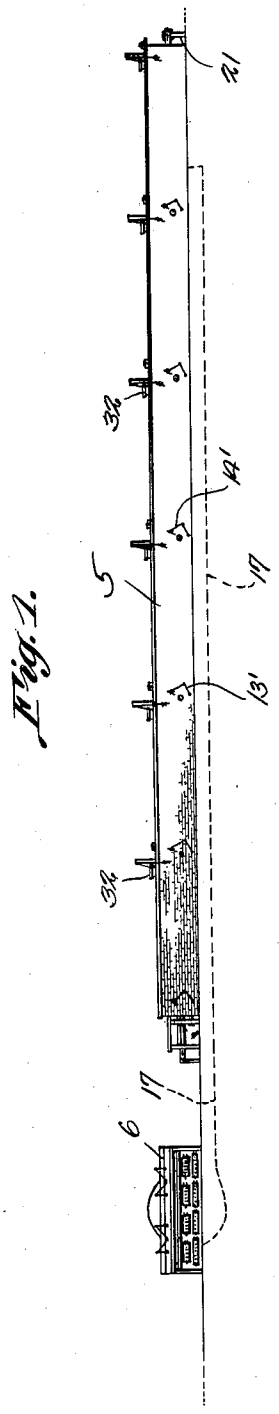


Fig. 1.

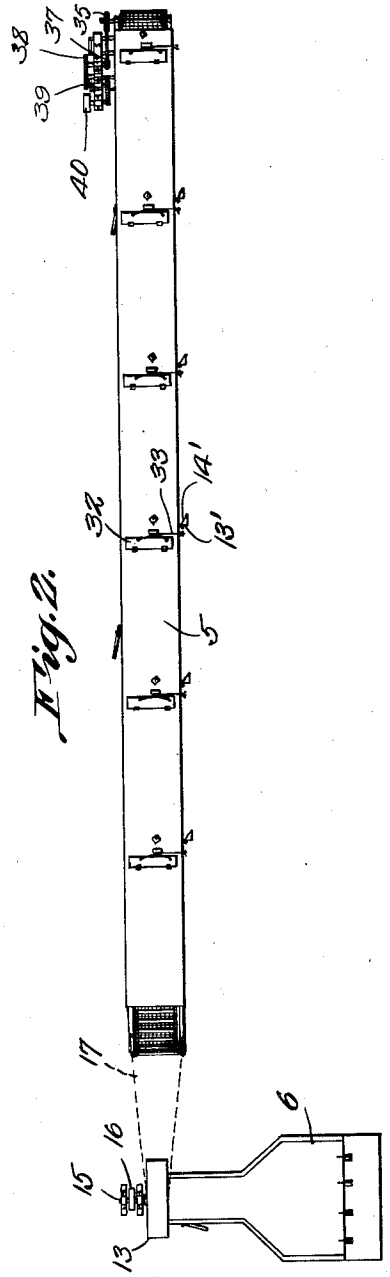


Fig. 2.

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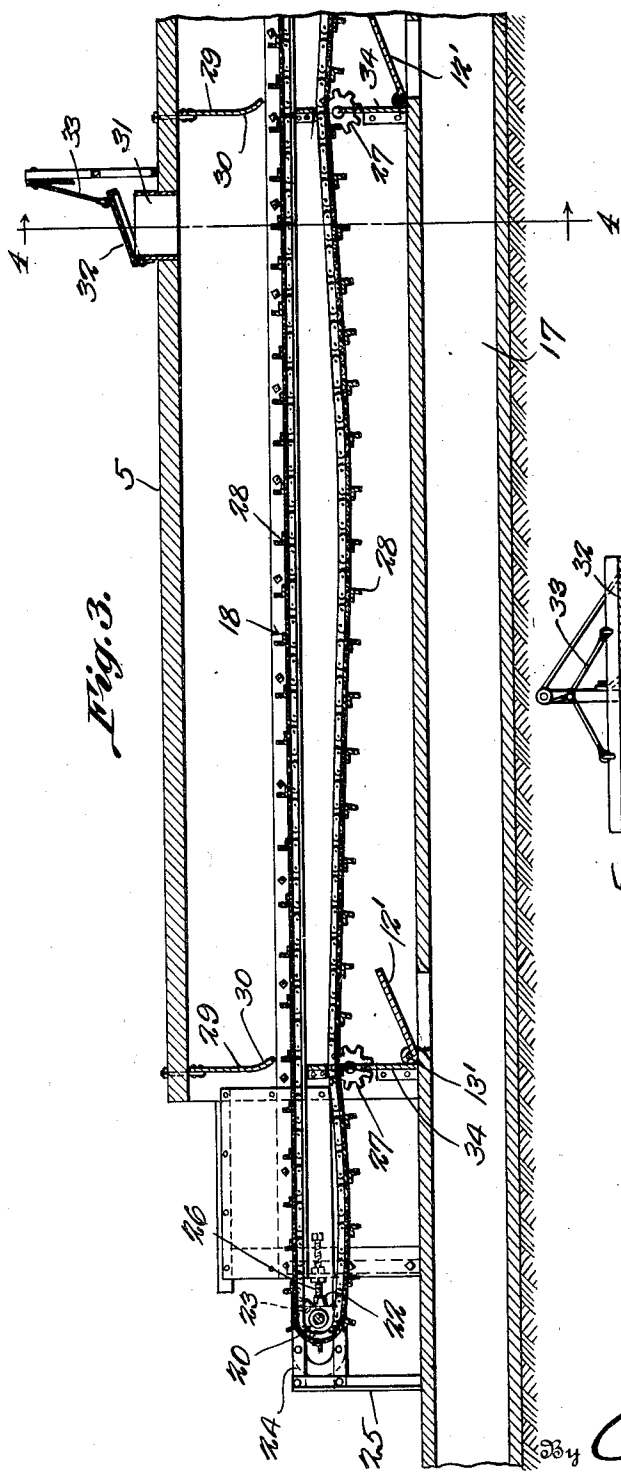


Fig. 3.

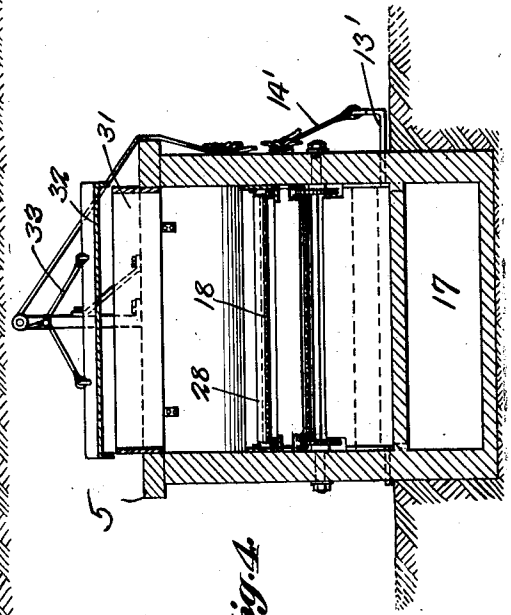


Fig. 4.

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APPARATUS FOR ARTIFICIALLY CURING HAY

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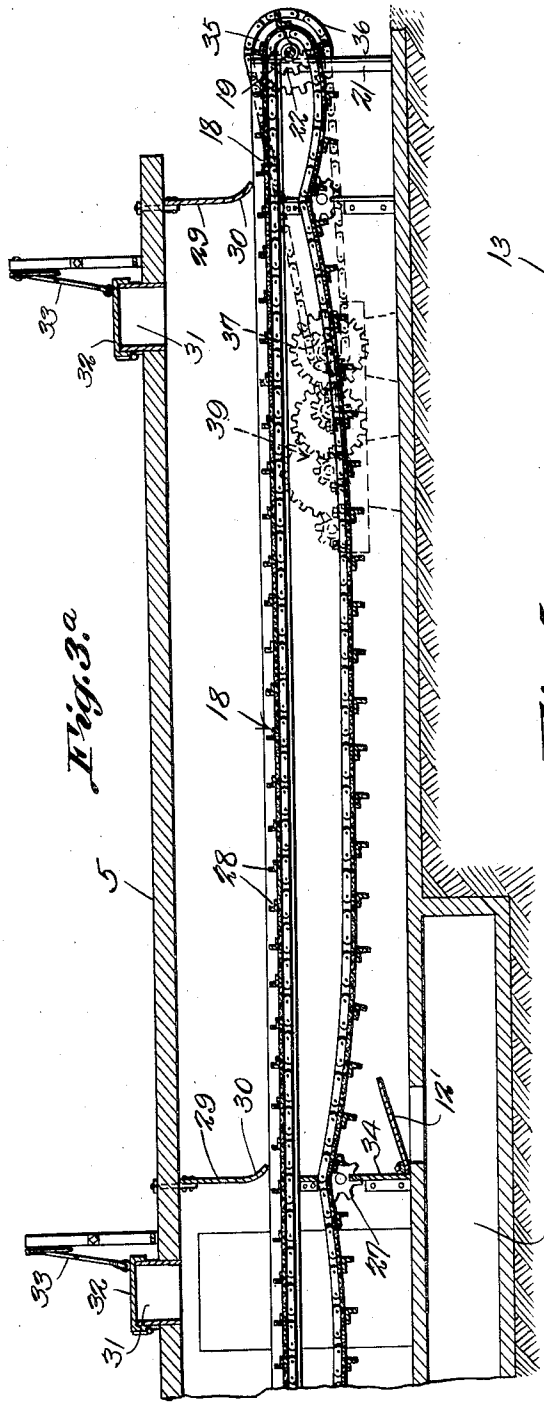


Fig. 3a.

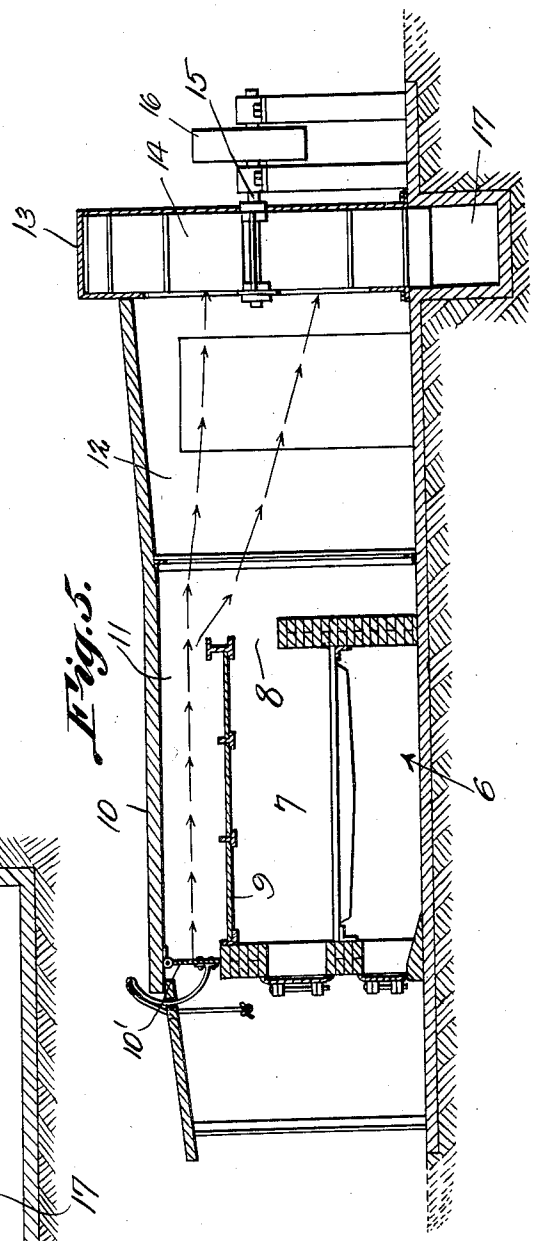


Fig. 5.

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Patented Jan. 6, 1931

1,788,099

UNITED STATES PATENT OFFICE

JOSEPH H. FULMER, OF NAZARETH, PENNSYLVANIA

APPARATUS FOR ARTIFICIALLY CURING HAY

Application filed November 7, 1928. Serial No. 317,867.

This invention has reference to an apparatus designed for curing alfalfa, and aims to provide novel means whereby freshly cut alfalfa may be thoroughly and rapidly cured in such a way that the alfalfa will retain its natural color and natural feeding elements, reducing the moisture content of the alfalfa to approximately 10%.

Another object of the invention is to provide an apparatus of this character including an endless conveyor onto which the alfalfa is deposited, the endless conveyor operating to carry the hay through the heating chamber of the apparatus in such a way that the alfalfa is exposed to the heat for a given period to the end that the alfalfa may be thoroughly cured.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

Referring to the drawings:

Figure 1 is a side elevational view of an apparatus constructed in accordance with the invention.

Figure 2 is a plan view thereof.

Figure 3 is a vertical sectional view through the forward end of the heating chamber of the apparatus.

Figure 3—A is a vertical sectional view through the discharge end of the apparatus.

Figure 4 is a vertical sectional view taken on line 4—4 of Figure 3.

Figure 5 is a vertical sectional view through the furnace and blower of the apparatus.

Referring to the drawings in detail, the apparatus embodies an elongated heating chamber indicated generally by the reference character 5, and a furnace 6, the furnace being designed to supply heat for treating or curing the alfalfa or other hay passed through the apparatus.

The furnace includes a firebox 7 which is open along its upper rear edge defining a passageway 8 through which the products of combustion may pass. The reference character 9 designates the top of the firebox which is spaced from the furnace top, providing a passageway 11 for admitting air to the furnace above the top 9 of the firebox where it is heated by the heat passing upwardly from the firebox. A damper 10′ is arranged at one end of the passageway 11 to control the quantity of air passing into the passageway 11.

Communicating with the furnace is an air mixing room 12 that in turn communicates with the blower housing 13 so that heated air and products of combustion passing through the mixing room may be drawn into the blower housing 13 and passed into the heating chamber of the apparatus. Operating within the blower housing is a blower 14 which is mounted on the shaft 15 on which the pulley 16 is secured, the pulley 16 being operated by a power belt not shown, and which operates thereover.

The heating chamber which is indicated by the reference character 5 is in communication with the blower housing 13 through the passageway 17 which is of a length to extend to a point in proximity with the discharge end of the heating chamber with the result that heat will be supplied throughout substantially the entire length of the heating chamber, insuring an even temperature throughout the length of the heating chamber. Openings are provided for admitting heat from the passageway to the heating chamber, the openings being controlled by the dampers 12′ that have control rods 13′ extending exteriorly of the heating chamber and which are held in positions of adjustment by flexible members 14′.

As shown, the passageway 17 is formed in the ground surface directly under the heating chamber in order that the heated air and products of combustion may pass upwardly into the heating chamber with the least possible resistance.

Operating through the heating chamber is an endless conveyor 18 that operates over rollers 19 and 20 respectively, disposed at the opposite ends of the heating chamber,

the rollers 19 and 20 being supported exteriorly of the heating chamber so that portions of the conveyor will be exposed at the end of the heating chamber to permit the material to be fed to the conveyor, and removed therefrom.

The roller 19 is supported in suitable bearings formed on the uprights 21, the roller 19 being supplied with sprockets 22 at its ends to engage the chains that form a part of the endless conveyor and which are secured adjacent to the side edges of the conveyor. The roller 20 is mounted in bearings 23 that move between the spaced bars 24 supported by means of the uprights 25. Adjusting screws 26 engage the bearings 23 and afford means whereby the slack in the endless conveyor may be regulated for the efficient operation of the apparatus.

Sprockets 27 are arranged in spaced relation with each other throughout the length of the heating chamber, which sprockets support the endless conveyor by contact with the chains forming a part of the endless conveyor.

Mounted on the endless conveyor are transverse flanged members 28 that hold the material on the conveyor while the conveyor is operating through the heating chamber. In order that the heat will be equally distributed throughout the length of the heating chamber, partitioning members 29 are provided throughout the length of the heating chamber and depend from the upper wall of the heating chamber, as clearly shown by Figures 3 and 3—A of the drawings.

These partitioning members 29 are arranged at points adjacent to the openings that provide communication between the passageway 11 and heating chamber so that quantities of heat will be retained within the sections or compartments formed by these partitions 29. The lower edges of the partitions 29 are curved at 30, or in the direction of travel of the endless conveyor with the result that the hay held on the conveyor will be pressed downwardly and spread evenly over the conveyor, to facilitate the curing thereof.

At predetermined points throughout the length of the heating chamber, are ventilating openings 31 which are supplied with closures 32 controlled by the flexible members 33, so that the heat within the heating chamber may be varied.

It might be further stated that upstanding partitions 34 are disposed within the heating chamber and are arranged directly under the partitions 29 there being a small space between the edges of the partitions 29 and 34 through which the endless conveyor moves.

Mounted on one end of the shaft on which the roller 19 is secured, is a sprocket 35 over which the chain 36 operates, the chain 36 also passing over sprocket 37 mounted on one end of the shaft 38 that in turn is operated through the train of gearing 39 rotated by a suitable power generating device that includes a belt to operate over the pulley 40 of the main drive shaft of the train of gearing.

In the use of the device the hay to be cured is thrown onto the feed end of the conveyor and the conveyor is thrown into operation to carry the hay through the heating chamber. The heat in the heating chamber is of course controlled and regulated to the desired temperatures, according to the condition of the hay to be cured.

The construction of the apparatus is such that when the hay has passed through the heating chamber at a predetermined rate of speed, the hay will be thoroughly cured, the curing being accomplished rapidly.

I claim:

In an apparatus for curing hay, an elongated heating chamber, a heat passageway extending under the heating chamber, said heat passageway being of a width equal to the width of the heating chamber, partitions extending upwardly from the floor of the heating chamber, dividing the heating chamber into compartments, an endless conveyor operating through the heating chamber above the partitions, said endless conveyor having a portion thereof extending beyond one end of the heating chamber, the floor of the heating chamber having openings adjacent to the partitions to permit heat to pass from the passageway to the heating chamber, flexible partitioning members extending downwardly from the top of the heating chamber and disposed adjacent to the endless conveyor, closures for controlling the passage of heat from the passageway to the heating chamber, means for releasing air from the compartments, and means for supplying heat to the passageway.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

JOSEPH H. FULMER.