Feb. 25, 1930. P. F. NORMANDEAU 1,748,519

GRAIN DRIER

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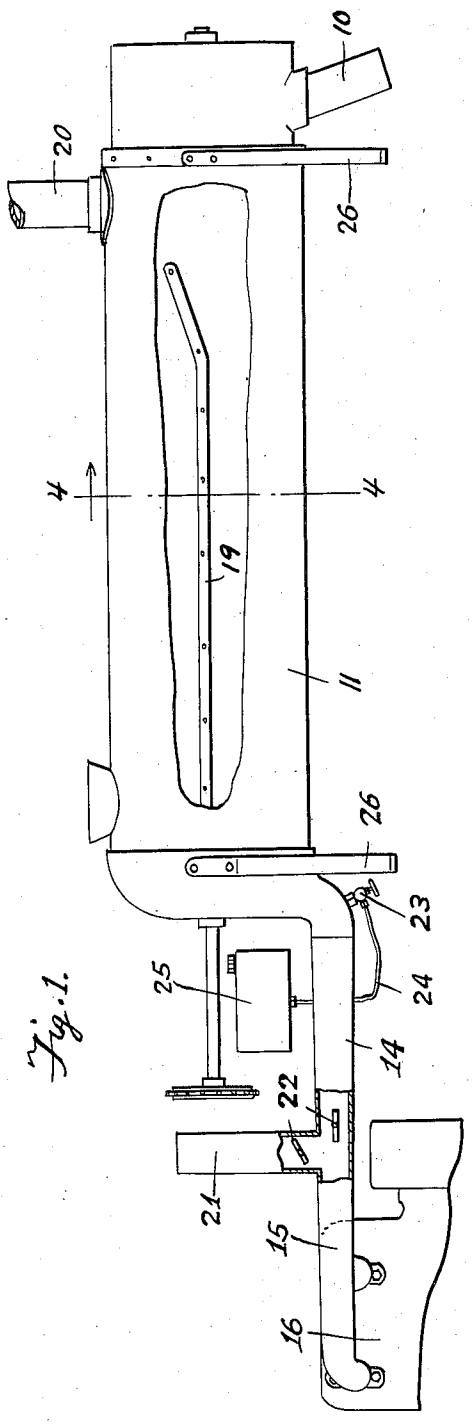


Fig. 1.

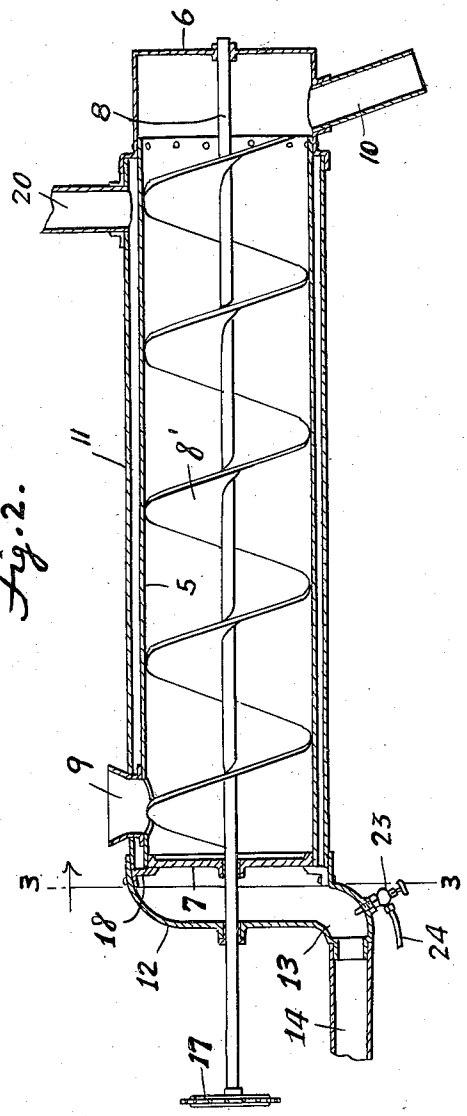


Fig. 2.

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Fig. 3.

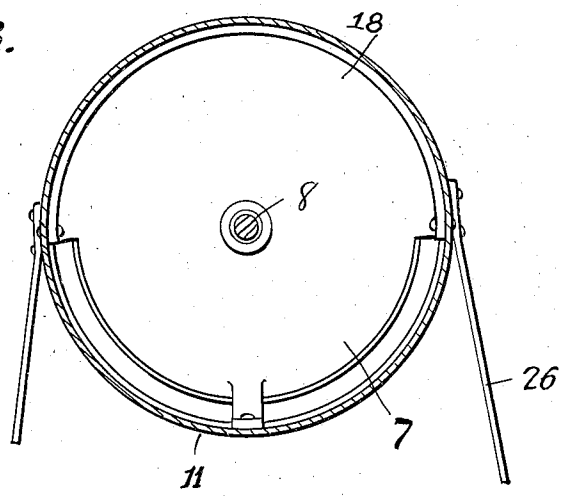
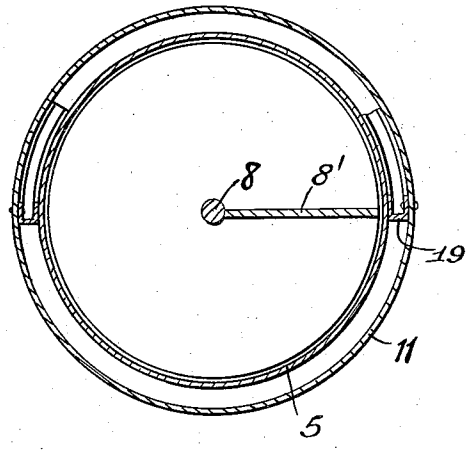


Fig. 4.



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UNITED STATES PATENT OFFICE

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GRAIN DRIER

Application filed April 25, 1928. Serial No. 272,718.

The present invention relates to grain drying apparatus adapted particularly for use in connection with the drying of wheat during the harvesting of the same, and to remove any moisture therefrom, so as to place the grain in a proper condition for storing.

A further object of the invention is to provide an apparatus of this character adapted for attachment to the grain harvester or threshing machine, so that the grain, upon being threshed may be fed into the drier and discharged therefrom into a suitable conveyor or receptacle for delivery to the grainary.

A still further object of the invention is to provide means for utilizing the exhaust gases from the engine, used for operating the thresher to provide the heat for the drying operation.

Another object is to provide an ordinary heating attachment to furnish heat to the drier should the exhaust gas from the engine be insufficient for this purpose.

A still further object of the invention is to provide an apparatus of this character of a simple and practical construction, which is efficient and reliable in performance, which may be easily and conveniently installed in operative position upon the thresher, and which is otherwise well adapted for the purposes for which the same is intended.

Other objects of the invention will become apparent during the course of the following detailed description, taken in connection with the accompanying drawings forming a part of this application, and in which drawings:

Figure 1 is a side elevational view of the apparatus with parts broken away, and illustrating the partition formed in the drier for retaining the heat in the bottom portion thereof.

Figure 2 is a longitudinal sectional view therethrough.

Figure 3 is a transverse sectional view, taken substantially on the line 3—3 of Figure 2, and

Figure 4 is a similar view, taken along the line 4—4 of Figure 1.

Referring now to the drawings in detail, the invention comprises a drying apparatus composed of a cylindrical body 5, having ends 6 and 7 respectively to close the body, each of said ends having concentrically arranged bearings formed therein for rotatably supporting a screw shaft 8, upon which a screw conveyor 8′ is mounted. At one portion of the upper end of the body is arranged an intake opening 9 and at its opposite end at the lower portion therof is formed a discharge spout 10. The grain deposited into the body 5, by way of the intake opening 9 is conveyed longitudinally of the body toward the discharge spout 10, from which the grain is discharged.

Moved about the body 5 is a jacket 11 of a slightly larger diameter whereby to arrange its walls in spaced relation from the walls of the body and provide an air space therebetween. Arranged over the end portion 7 is a hollow casting having a mouth 13 formed at its lower edge and to which is connected an exhaust pipe extension 14 leading from the exhaust manifold 15 of an internal combustion engine 16, provided for operating the thresher or other harvesting machine upon which the drier is mounted.

The adjacent end of the shaft 8 extends through the hollow casting 12 and outwardly thereof with its outer end provided with a sprocket wheel 17 and adapted for operative connection with the drive shaft of the engine, whereby to operate the screw conveyor 8′. The interior of the casting 12 communicates with the space between the walls of the body 5 and jacket 11, so that the exhaust gases from the engine may be fed into such space for heating the body. However, the upper portion of the air space between the body and jacket and its connection with the interior of the casting 12 is closed by means of an arcuate branch strip 18 suitably secured to the upper portion of the casting so as to prevent the heated exhaust gases from entering the upper portion of the air space. Also, at each side of the body 5 is arranged a horizontally disposed partition 19 rearwardly of the body from the ends of the strip 18 and adapted to close communication between the upper and

lower portions of the air space between the body and jacket, so as to cause the exhaust gases to circulate at the lower portion of the body and to travel rearwardly with respect thereto and out of a stack 20 carried at the upper portion of the jacket 11. As clearly illustrated in Figure 1 of the drawings, the rear ends of the partitions 19 at each side of the body terminate short of the end of the jacket and incline slightly upwardly shortly of the stack 20, so that the exhaust gases may pass freely therefrom. The exhaust manifold 15 of the engine is also provided with an auxiliary exhaust pipe 21, each of the exhaust pipes 14 and 21 having control valves 22 arranged therein to control the amount of gases permitted to pass into each of the exhaust pipes. The exhaust pipe 21 is adapted to exhaust the gases into the atmosphere. Should the exhaust gases from the engine be insufficient to properly heat the drier, a burner 23 may be attached at the mouth 13 of the casting 12, said burner having a fuel supply pipe 24, connected thereto for feeding fuel to the burner from the fuel reservoir 25. Supporting legs or braces 26 are arranged adjacent each end of the drier for suitably attaching the same in operative position upon the harvesting machine. It will be apparent from the foregoing that the drier may be operatively mounted upon the thresher in a convenient position for receiving the grain for feeding into the intake 9, whereupon the grain will be thoroughly dried as the same is conveyed through the body 5 and thus permit the grain to be stored, without danger of deterioration.

It is obvious that the invention is susceptible of various changes and modifications, without departing from the spirit or scope of the invention or sacrificing any of its advantages, and I accordingly claim all such forms of the device to which I am entitled.

Having thus described my invention, what I claim as new is:

1. A grain drier comprising a cylindrical body having intake and discharge ports arranged in the opposite ends thereof, a screw conveyor operatively mounted within the body, a jacket disposed entirely about the side walls of the body with its walls in spaced relation from the walls of said body, means for supplying heated air from the space between the body of the jacket, at the end thereof adjacent the intake port, a discharge port for the jacket at the opposite end thereof, and a partition arranged at each side of the body for closing the space between the same and the jacket and adapted to cause the heated air to circulate at the lower side of said body, said partition terminating short of the discharge end of the body whereby to admit the heated air from the lower part of the body into the jacketed space about the upper part of the body.

2. A grain drier comprising a cylindrical body having intake and discharge ports arranged at the opposite ends, a jacket mounted on the body and extending entirely about the side walls thereof in spaced relation from the walls of said body whereby to provide an air space between said walls, a screw conveyor operatively arranged in the body, means for feeding heated air into the space between the body and the jacket at the end thereof provided with the intake port, a control for the air feed means for regulating the volume of heated air admitted into the jacket, a stack carried by the jacket at its opposite end and forming a discharge port thereof, said jacket being closed at its upper portion and the air intake end, and a pair of partitions arranged at opposite sides of the body and extending longitudinally thereof whereby to direct the heated air against the lower portion of the body, said partitions being connected at their forward ends with the lower edges of the closed portion of the jacket and terminating short of the discharge end of the body whereby to admit the heated air from the lower part of the body into the jacketed space about the upper part of the body.

In testimony whereof I affix my signature.

PATRICK F. NORMANDEAU.