Sept. 20, 1949. L. DELIVUK 2,482,159

GRAIN ELEVATOR

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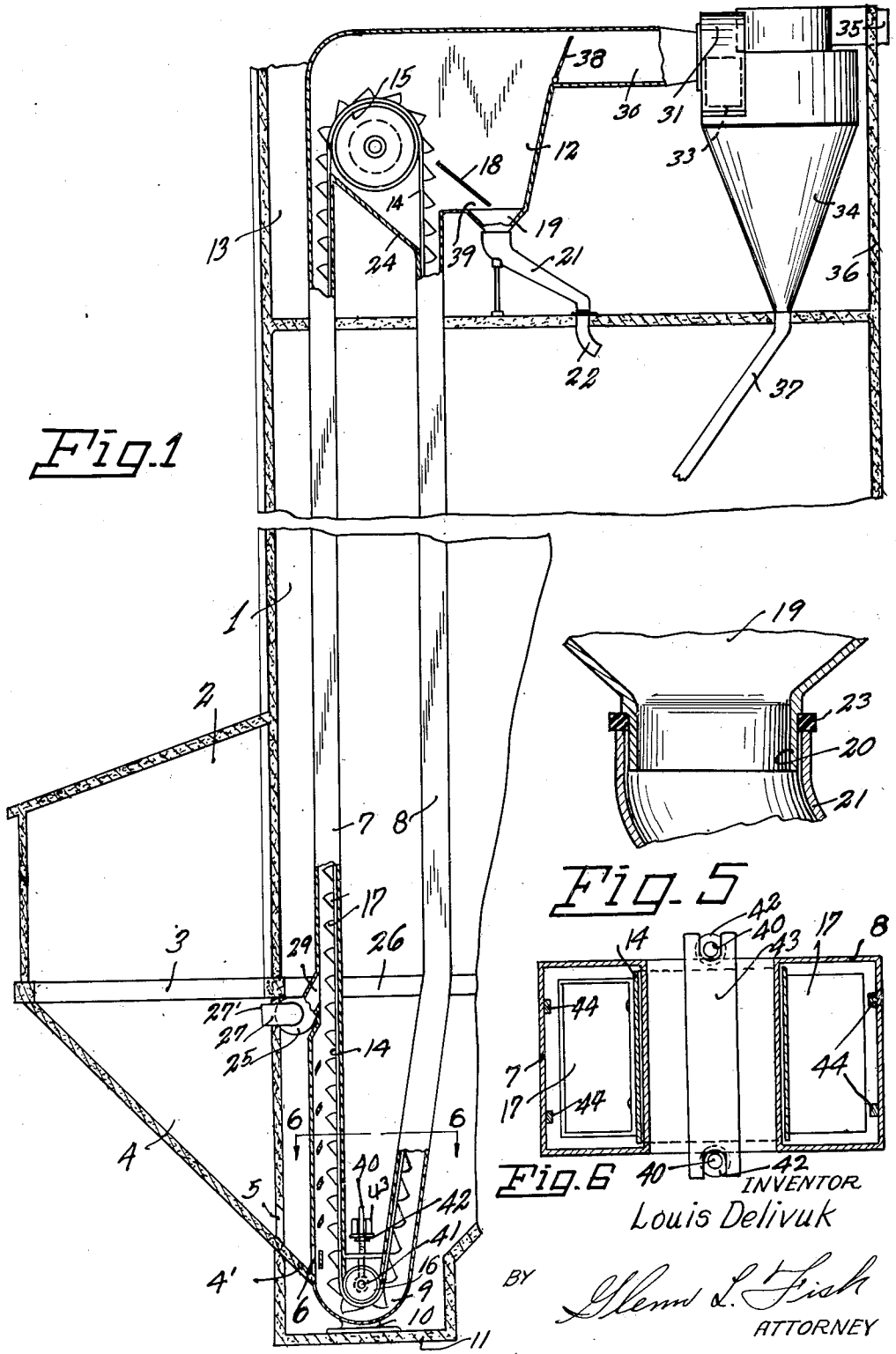


Fig. 1

Fig. 5

Fig. 6

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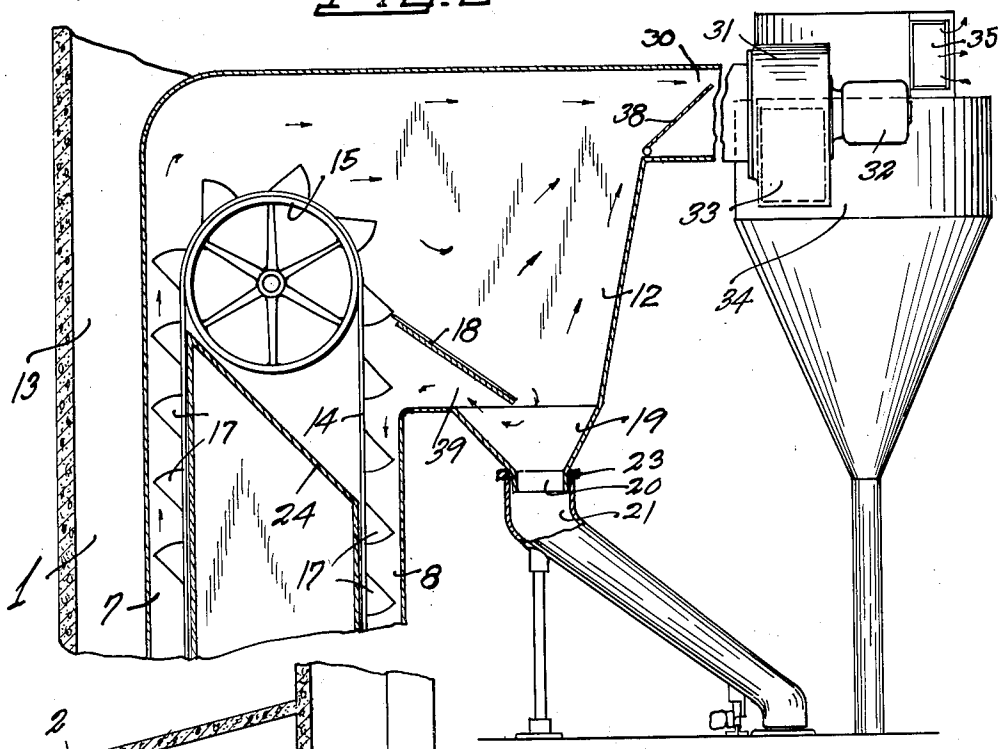
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GRAIN ELEVATOR

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Fig. 2



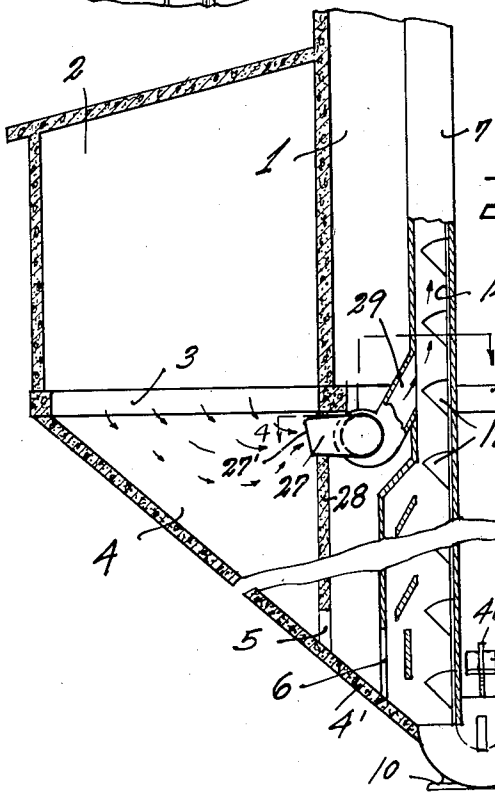


Fig. 3

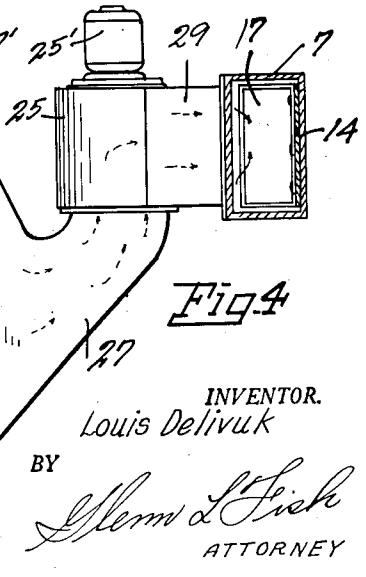


Fig. 4

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UNITED STATES PATENT OFFICE

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GRAIN ELEVATOR

Louis Delivuk, Spokane, Wash.

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1 Claim. (Cl. 209—147)

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This invention relates to a grain elevator and grain cleaner and constitutes an improvement upon the mechanism covered by my patent issued June 24, 1941, and having Patent No. 2,246,723 and it is one object of the invention to provide a grain elevator having an improved arrangement of grain pit and elevator legs, together with means for directing an air blast upwardly through the elevator leg through which buckets move upwardly and serve as means for withdrawing dust from the grain pit and also supplying air for removing dirt and trash from grain as it is dumped from the buckets for delivery to storage bins.

Another object of the invention is to provide a grain elevator with a fan so arranged that dust will be withdrawn from the upper portion of the grain pit and this dust prevented from rising into the shed over the pit and impairing the health and comfort of persons dumping grain from the wagons.

Another object of the invention is to provide a grain elevator means for withdrawing dust and light seeds from the head at the upper end of the elevator legs and delivering the seeds and light grain into a separator which separates the seeds and light grain from the dust so that the seed and light grain may be saved and used as poultry feed.

Another object of the invention is to provide a grain elevator so constructed that the buckets moving upwardly through an elevator leg will be prevented from striking the walls of the bucket and causing sparks which would be liable to start a fire in the elevator.

Another object of the invention is to provide in the elevator head at the upper ends of the elevator legs a spreader board along which grain dumped from the buckets flows towards a distributing spout, thus allowing dirt and light seed and grain to be very effectively withdrawn from the grain and delivered to the separator.

The invention is illustrated in the accompanying drawings wherein:

Fig. 1 is a sectional view taken vertically through the improved elevator.

Fig. 2 is a view upon an enlarged scale taken vertically through the upper portion of the improved elevator.

Fig. 3 is a sectional view taken vertically through the lower portion of the elevator.

Fig. 4 is a fragmentary sectional view taken along line 4—4 of Figure 3.

Fig. 5 is a sectional view upon an enlarged scale taken vertically through the distributor spout and the hopper from which it extends.

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Fig. 6 is a sectional view taken transversely through the lower portions of the elevator legs along the line 6—6 of Figure 1.

This grain elevator which is indicated in general by the numeral 1 may be of any size desired and in many respects is similar in construction to that disclosed in my prior Patent 2,246,723, issued June 24, 1941. A shed 2 is provided at a side of the elevator and this shed has a floor in the form of a grating 3 so that when a truck or other vehicle loaded with grain is driven into the shed and dumped the grain may flow through the grating and downwardly into a grain pit 4 having a sloping bottom leading to an opening 5 through which the grain passes and along an extension 4' of the bottom of the pit to an opening 6 at the lower end of an elevator leg 7. The lower end of this leg 7 is connected with the lower end of a companion elevator leg 8 by an elevator boot 9 which rests upon a support 10 at the bottom 11 of the base of the elevator. The two elevator legs 7 and 8 extend vertically in the grain elevator and their upper ends communicate respectively with a side and the bottom of the elevator head 12 in the head house 13 of the grain elevator. A belt 14 extends vertically through the legs 7 and 8 with its upper and lower portions trained about pulleys 15 and 16 and the belt carries a multiplicity of buckets 17 by means of which grain is lifted from the boot and the lower portion of leg 7 and then carried upwardly through leg 7 and into the elevator head 12 where it is emptied from the buckets as they pass about the pulley 15. A spreader board 18 directs the dumped grain to a hopper 19 which projects downwardly from the head 12 and has at its lower end a neck 20 about which is mounted the upper end of a distributor spout 21, the spout being rotatable about the neck so that by turning the spout grain dumped from the buckets 17 may be directed into a selected one of the number of chutes 22 leading to bins in the elevator. A gasket 23 forms a tight joint between the spout and the neck. A sloping wall 24 is provided under the pulley 15 so that any grain which may spill from the buckets before reaching the board 18 will be directed into the upper end of the leg 8 and pass downwardly through this leg to the boot 9 where it will be again taken up by buckets and carried upwardly through the leg 7. The spreader board 18 has its lower end spaced upwardly from the hopper 19 in order that air may pass under it and enter the upper end of the leg 8, as indicated by arrows in Figure 2.

When the wheat or other grain is dumped into

the pit 4 through the grating 3 a great deal of dust and fine dirt is released, and in order to prevent this dust from passing upwardly through the grating there has been provided a suction fan 25 which is driven by an electric motor 25' mounted in the elevator under the floor 26 and has its inlet neck 27 passing through a wall 28 and into a pit 4 close to the grating 3, and formed with a flaring mouth 27'. This fan serves to withdraw dust and other fine dirt from the pit and discharges it through the outlet neck 29 into the elevator leg 7 and since the neck 29 extends from the fan housing at an upward incline the dust and dirt will be discharged upwardly into the leg 7 and be carried upwardly through this leg into the head 12 over the pulley 15.

A pipe 30 extends from the upper portion of the head 12 and communicates with a suction fan 31 driven by an electric motor 32 and having a discharge neck 33 which communicates with a dust collector 34. This collector separates weed seeds and light grain which may enter the collector from dust, the dust and light dirt being discharged through the outlet pipe 35 which passes through the wall 36 of the elevator and the weed seeds and light grain being discharged through the outlet pipe 37 leading from the lower end of the separator. The seeds and light grain are known as screenings and are used as feed for chickens and other poultry. A baffle plate 38 at the entrance of pipe 30 serves to divert good wheat and prevent it from passing through the pipe with the air and dust and weed seed and light grain.

The grain dumped from the buckets flows across the spreader board 18 so that dirt, weed seeds, light grain may be withdrawn by the air sucked from the head through the pipe 30 and since a certain amount of air will be sucked downwardly through the leg 8 from space 39 under the board 18, as indicated by arrows in Figure 2, the wheat flowing from the lower end of the board will be thoroughly cleaned and only clean grain of good quality will drop into the hopper 19 and pass through the spout 21.

The belt 14 must be kept sufficiently tight to be frictionally held for driving engagement with the pulleys 15 and 16 and cause it to move when the driving pulley 15 is turned and in order to do so there has been provided belt tightening means associated with the pulley 16. This belt tightener consists of hangers or rods 40 which extend upwardly from the shaft 41 of the pulley 16 and carry collars 42 upon which rest ends of a heavy bar or block 43 formed of heavy metal. The weight of the block urges the pulley 16 downwardly and tensions the belt so that as the pulley 15 turns the belt will be driven and moved longitudinally through the legs 7 and 8 and the buckets will remove grain from the boot 9 and the lower portion of leg 7 and carry it upwardly through leg 7 and dump it upon the spreader board 18 as the buckets pass about pulley 15. The fact that the belt is held under tension also serves to prevent the buckets from striking walls

of the legs and causing sparks which would be liable to cause a fire to be started in the elevator. There have also been provided strips 44 which extend longitudinally in the legs 7 and 8 and are formed of material which will not cause sparks if they should be struck by edges of the buckets as the buckets move through the pipes.

Having thus described the invention, what is claimed is:

In a grain elevator having a grain pit at a side thereof, elevator legs extending vertically in the elevator, one leg being adjacent the pit, a U-shaped boot connecting lower ends of said legs and disposed adjacent the bottom of the grain pit, the grain pit being formed with an outlet opening at its bottom communicating with the lower end portion of the leg adjacent the pit through an opening in a side portion with said leg, a hollow head with which upper ends of the leg communicates a pulley rotatably mounted in said head between the legs, a bar extending between lower end portions of said legs, a pulley under the bar, hangers extending downwardly from the bar and rotatably mounting the second pulley between arms of the boot with a lower portion of the pulley extending into the boot through an opening in the boot, an endless conveyor belt extending upwardly through the leg adjacent the pit and downwardly through the other leg and about the pulleys and carrying buckets, said hangers being shiftable vertically through the bar to tension the conveyor belt, a suction fan having an inlet communicating with the upper portion of the pit and an outlet neck extending at an upward incline and communicating with the leg adjacent the pit, the portion of the said tube between the fan and the boot being of increased diameter, the bottom of the head being formed with an outlet, a spreader bar extending at a downward angle between the downwardly moving portion of the conveyor belt and the outlet of the head, and an air and dust outlet pipe leading from the upper portion of the head.

LOUIS DELIVUK.

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