June 9, 1931. F. W. THOMPSON 1,809,497

APPLIANCES FOR TRIMMING GRAIN THAT IS BEING LOADED IN BULK

Filed May 2, 1929 2 Sheets-Sheet 1

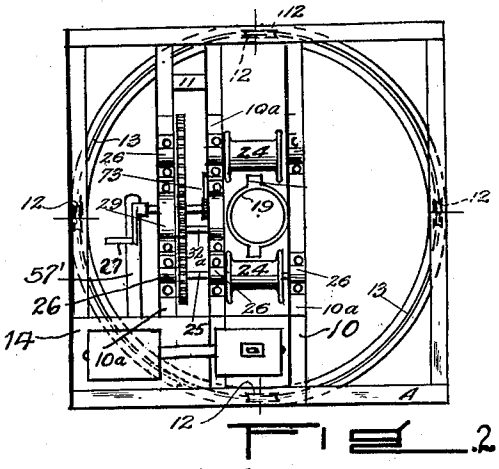


FIG. 2.

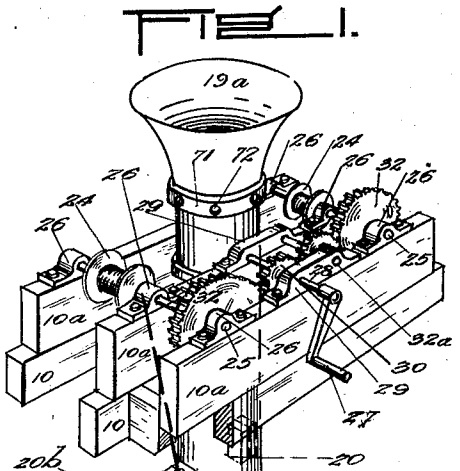


FIG. 1.

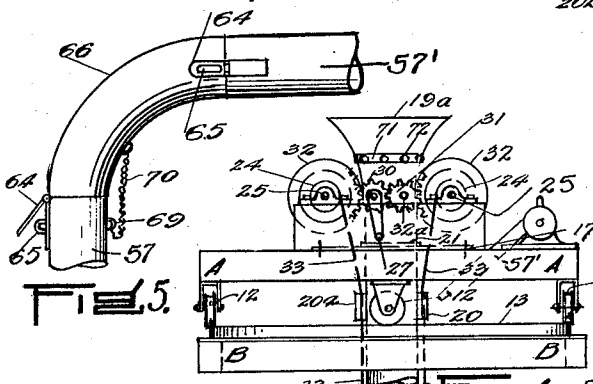


FIG. 5.

FIG. 4.

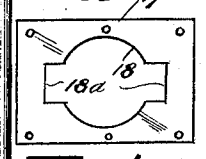


FIG. 3.

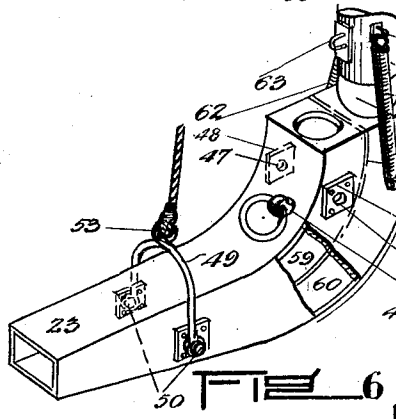


FIG. 6.

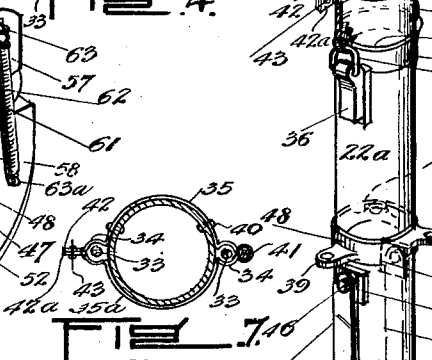
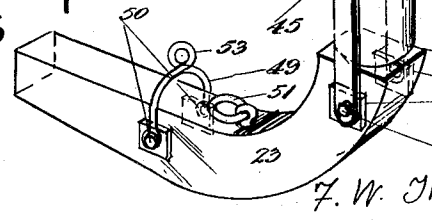


FIG. 7.



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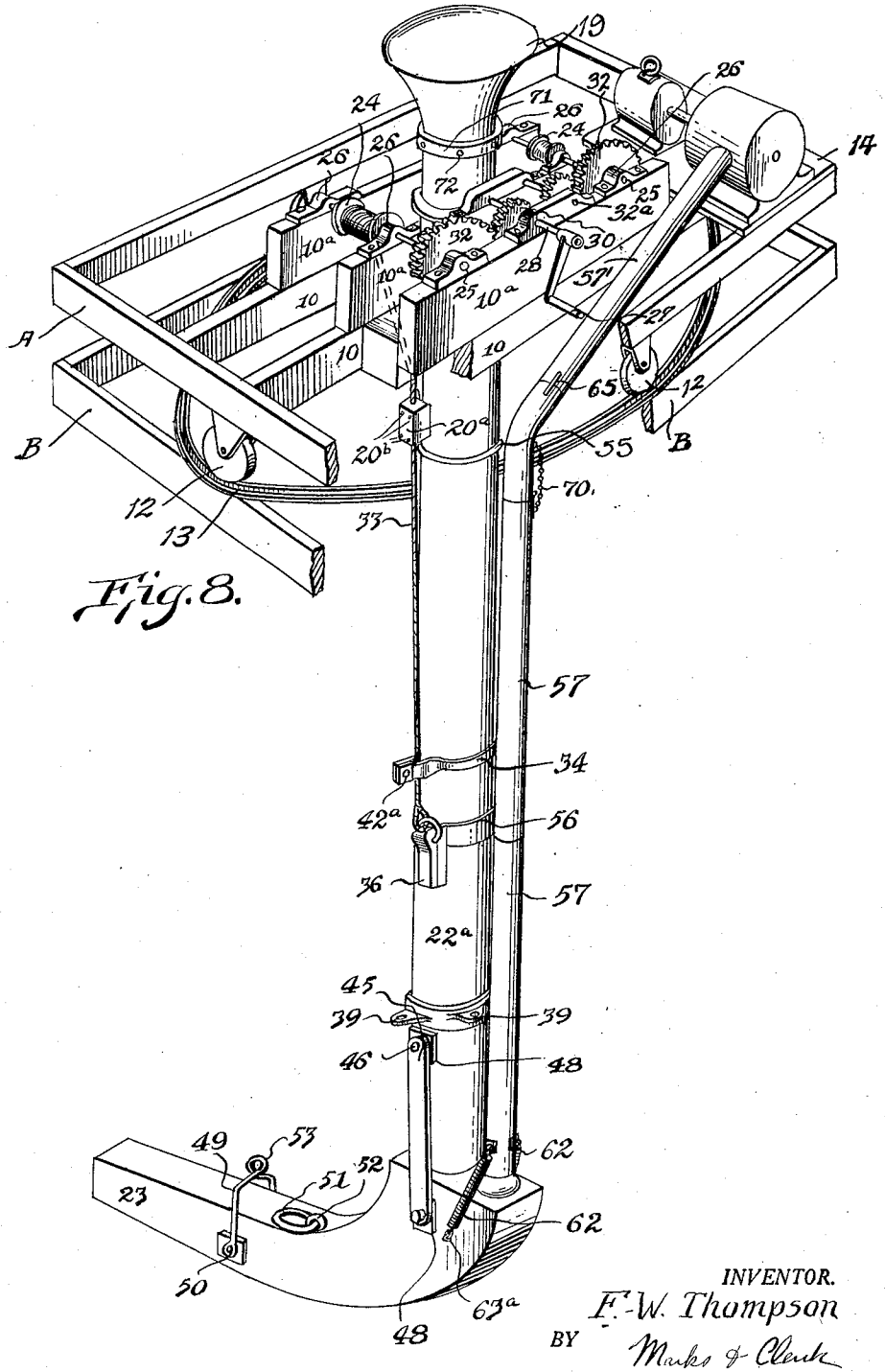


Fig. 8.

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UNITED STATES PATENT OFFICE

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APPLIANCES FOR TRIMMING GRAIN THAT IS BEING LOADED IN BULK

Application filed May 2, 1929, Serial No. 359,968, and in Australia August 27, 1928.

The method at present adopted for trimming grain that is being loaded in bulk involves a considerable amount of labor and is therefore comparatively costly.

The object of this invention is to provide appliances for trimming whilst the loading of grain in bulk is taking place, thus obviating the necessity for shovelling as has hitherto been done.

The appliances are mounted upon and suspended from a platform either seated directly upon the sides of a hatchway or upon bearers resting upon the sides of the hatchway. They consist of a pipe provided with a bell mouth or funnel at its upper end, and a curved metal shoot at its lower end. The curved shoot is loosely connected to the vertical pipe in order that it may be turned for the purpose of directing the grain to various parts of the compartment into which it is being loaded. The grain is fed through this curved shoot by gravitation but in a modification it is divided to form two channels for a portion of its length near the inlet, the second channel being connected by pipe to a blower for the purpose of ejecting the grain when it is necessary to direct it to a point above the lowest point of the shoot. Means are provided for raising and lowering the shoot and for shortening or lengthening the pipe line when necessary by inserting an additional length of pipe or removing a length therefrom.

The appliance has been designed with a view to enable the parts to be quickly assembled and connected together or disconnected and removed, but in order that the invention may be thoroughly understood a detailed description will now be given and reference will be made therein to the accompanying sheet of drawings, in which:—

Figure 1 is a perspective view of the appliance, assembled in readiness for use.

Figure 2 is a plan showing the frame whereon some of the parts are mounted the other parts being suspended therefrom.

Figure 3 is a plan of a plate which is secured to the frame and which supports the upper length of pipe whereon is formed or secured a funnel.

Figure 4 is a side elevation of Figure 2.

Figure 5 is a side elevation of the method adopted for inserting and securing a bend in the air pipe line.

Figure 6 is a side elevation of a curved shoot wherein the passage is divided longitudinally at one end for the admission of air for ejecting the grain in certain circumstances.

Figure 7 is a plan of a ring that surrounds the shoot and is designed for the purpose of clamping the supporting ropes to the shoot.

Figure 8 is a perspective view of a slightly modified form of the device.

The manner in which the platform is constructed may be greatly varied but it need only be a skeleton formation of stout wooden beams 10 secured together in any appropriate manner by cross beam or ties 11. The less costly structure illustrated at Figure 1 will perform the work effectively but it will be necessary to raise the shoot more frequently than would be the case if the complete outfit as shown at Figures 2, 5, 6 and 8 were used. When the complete outfit is used, however, a slight variation in the formation of the platform will be necessary. In the latter case there would be an upper and lower platform A and B respectively (Figure 5), the upper one A being in the nature of a rectangular turn-table provided with wheels 12 adapted to roll upon a circular rail 13 secured to the upper face of the lower platform B. A base plate 14 will also be required for the purpose of carrying a blower 15 and an electric motor 16 for driving the same.

Referring now more particularly to Figure 1 of the accompanying drawings two opposite sides of a heavy steel plate 17 of suitable dimensions are placed between two adjacent pairs of beams 10 and blocks 10*a* and securely fastened in that position by bolts and nuts. The plate 17 is provided with a specially shaped orifice 18 to permit the lower end of the uppermost section 19 of the shoot to be passed therethrough, the oppositely positioned extension 18*a* of the orifice 18 being for the purpose of enabling the rope clamping blocks 20—20*a*, which are fixed to the lower end of the section 19 of the shoot to

pass through the orifice so that an external metal ring 21 (Figure 5) that is rigidly secured by riveting or welding to the section 19 may rest upon the plate 17 and thus assist in supporting the shoot and its attachments. The shoot consists of the upper section 19, any number of intermediate sheet metal pipes 22, 22*a* and the lowermost curved outflow section 23. The upper end of the upper section 19 will be shaped to form a funnel 19*a* into which the grain to be loaded will be fed from a silo or the like by any known means.

Whilst loading is proceeding it will be necessary from time to time to raise the shoot 19, 19*a*, 22, 22*a* and 23, and for that purpose, and also to assist in the operation of installing the shoot or removing one of the intermediate pipes 22, a pair of winch barrels 24 are each secured to a shaft 25 that is mounted in bearings 26 bolted to upper faces of the blocks 10*a*. The winches are manually driven by means of a crank handle 27 that is fixed to a shaft 28 which is mounted in bearings 29 bolted to two of the blocks 10*a*. The shaft 28 has a driving pinion 30 fixed thereto and is adapted to gear with a gear wheel 31 of similar dimensions, mounted upon a shaft 32*a* also carried by the bearings 29. It is also provided with a ratchet wheel and pawl 73 for locking purposes. The pinion 30 and gear wheel 31 gear with the respective gear wheels 32 which are keyed upon the respective shafts 25. One end of each of the separate flexible wire ropes 33 are attached to the respective winch barrels 24, the other end thereof passing downwardly through the eye formed by the clamping blocks 20—20*a* thence through the respective eyes 34 formed in the clamping ring 35—35*a* and their extremities made fast by means of a shackle 37 to the respective blocks 36—36*a* in each of which is formed an eye for that purpose. The blocks 36 and 36*a* should be positioned near the top of the pipe 22*a* and at diametrically opposite points thereon. The lower end of each section of the shoot will be smaller than the upper end so that the lower end of one section may fit tightly into the upper end of the next adjacent section, except in the case of the upper section 19 which will slide into the upper end of the next adjacent section as far as the blocks 20, 20*a* will permit for a purpose that will be hereinafter explained. The section 22*a* will be provided with a slidable ring 38 having radial lugs 39 wherein are holes through which the ends of guy ropes may be passed for the purpose of steadying the lower end of the shoot.

The clamping ring is specially shaped and is formed in two halves 35 and 35*a*, one half 35 partly surrounding and being riveted at 40 to the pipe 22, the other half 35*a* being hinged thereto at 41. Both parts are shaped so that when they are closed together they will form the eyes 34, one of which will lie radially between the hinge 41 and the pipe 22 the other eye being located diametrically opposite thereto, the extremities 42—42*a* being provided with a hole to enable them to be fastened together by a bolt and nut 43.

The curved metal outflow section 23 of the shoot may be rectangular in cross section, its intake end being covered by a plate 44 having a circular orifice formed therein to receive the lower end of the shoot section 22*a*, the two parts being removably held together by connector bars 45 located at opposite sides of the two parts; at or near the respective extremities of the connector bars 45 are holes through which the screws 46 may pass and engage in screw threaded holes 47 (Figure 6) in the respective blocks 48 for the purpose of fastening the bars in that position. The blocks 48 are riveted or welded respectively to the pipe section 22*a* and outflow section 23. To facilitate the movement of the outflow section 23 when necessary a yoke like member 49 may be pivotally secured thereto at 50, and a ring 51 and eye bolt 52 may also be provided for that purpose if desired. The yoke like member 49 will be provided with an eye 53 to enable one end of a rope 54 to be fastened thereto, the other end being secured to any convenient overhead fixture or it may be passed through a pulley block and manipulated by any known means.

From the foregoing description it will be seen that when it is necessary to direct the grain to a point in the compartment that is being loaded and such point lies above the outlet orifice of the curved section 23 of the shoot, it may be done by manually turning the handle 27 so as to wind the ropes 33 upon their respective barrels 24. By doing this the sections 22, 22*a* and 23 of the shoot will be raised the section 22 sliding upwardly over the lower end of the section 19 as far as the blocks 20 and 20*a* will permit or as far as is required.

Should it be necessary however to raise the shoot a distance greater than that permitted by the blocks 20, 20*a* without raising the section 19 from its seating the ropes 33 may be lowered and the sections 22, 22*a* and 23 will recede from the lower end of the pipe section 19 until the latter becomes disconnected from the socket end 55 of the pipe section 22; this having been done the bolt 43 will be removed and the clamping ring 35 and 35*a* opened so that the ropes 33 will be free to be removed from the eyes 34 when the pipe section 22 may be removed by raising it sufficiently to disengage its lower end from the socket 56. The pipe section 22 having been removed the winches will be operated so as to raise the remaining shoot sections 22*a* and 23 until the lower end of the section 19 enters the socket 56 formed at the upper end of the section 22*a*.

Some of the operations just described, how-

ever, will be unnecessary if the curved outflow section 23 is constructed as illustrated at Figure 6 is installed and connected by a pipe 57 to the blower 15 (Figures 2 and 8). According to this construction the section 23 will be tapered in formation and divided by a metal dividing wall 58 into two separate channels 59 and 60 extending longitudinally from the extremity of the larger end to approximately the centre of the section. The larger end will be covered by a plate wherein are two circular orifices located centrally over the ends of the respective channels 59 and 60, one to receive the lower end of the section 22*a* as previously explained in reference to Figure 1, and the other to form a seating for a hollow metal ball 61 rigidly secured by any suitable means to the lower end of the pipe 57. The hollow ball 61 is provided with oppositely positioned holes (not shown in the drawings) axially in a line with the pipe 57, so that air may pass through the ball from the pipe channel 60 in the shoot section 23 (Figure 6.) The hollow ball 61 will be movably held upon its seating by means of the springs 62 each of which will be held in tension between a pair of metal eyes 63—63*a*, one of which will be riveted or otherwise rigidly secured to the pipe 57, the other end to the shoot section 23. The intervening length of pipe connecting the pipe 57 to the blower 15 may consist of a number of lengths of sheet metal pipes provided with socket connections and held together by means of hasps 64 and staples 65 (Figures 5 and 8) either of which may be rigidly secured near the end of one length of pipe the other being rigidly secured near the end of the next adjacent pipe, or the connection between the pipe 57 and the blower may be by a suitable length of flexible pipe. If the air pipe line consists entirely of lengths of sheet metal pipes and it is necessary to provide a bend this may be done as illustrated at Figures 5 and 8 wherein the bend 66 is secured to the adjacent straight lengths 57—57′ by means of the hasps 64 and staples 65 which may be locked by a pin 69 secured to one of the lengths of pipe or to the bend by means of a chain 70.

It will from time to time be necessary to turn the shoot in order that the outlet orifice may be directed towards different parts of the compartment that is being loaded. For this purpose when the construction shown at Figure 1 is adopted, the clamping nuts 20*b* may be tightened upon the screws which secure the two halves of the respective clamping blocks 20 and 20*a* together so that the ropes 33 will be firmly gripped therein. The sections 22, 22*a* and 23 will now be suspended from the blocks 20 and 20*a* and the winch ropes 33 may be loosened by turning the handle 27 sufficiently to allow the shoot to be turned as required. To facilitate the operation of turning a ring 71 surrounds the bell mouth portion of the shoot and is rigidly secured thereto; this ring 71 is provided with a number of spaced perforations 72 to enable a gland nut wrench to be used for turning the shoot. The perforated ring will, however, be unnecessary when the platform is constructed as shown at Figures 2 and 5 as when it is necessary to turn the shoot the turn-table A may be turned upon the platform B.

I claim:

1. Appliances for trimming grain as it is being loaded in bulk comprising a supporting platform, a tubular shoot formed in three sections and passing through the platform downwardly for any suitable distance, a bell mouth at the upper end of the shoot and a curved outflow section at the lower end thereof, a winch mounted upon the platform, means for shackling the winch rope to the section adjacent to the outflow section, means for increasing the length of the shoot by inserting an additional length of pipe and means for detachably clamping such additional pipe to the rope.

2. Appliances for trimming grain as it is being loaded in bulk as claimed in claim 1 in combination with a blower, means for driving the blower and means for connecting the blower to the shoot at a point adjacent to the outflow orifice for the purpose of ejecting the grain.

3. Appliances for trimming grain as it is being loaded in bulk as claimed in claim 1 characterized in this that a platform is constructed to form a turn-table, wheels carried by the platform, a secondary platform removably seated upon the sides of a ship's hatchway and constructed so that the shoot may pass freely therethrough and an annular rail carried by the second platform for supporting the wheels of the first platform.

4. Appliances for trimming grain as it is being loaded in bulk, comprising superposed platforms one of which is constructed as a turn-table to turn about the other platform, a shoot passing through the platforms and secured to the turnable platform, a bell mouth at the upper extremity of the shoot, a curved outflow at the other extremity of the shoot divided into two passageways one of which communicates with the shoot, a blower on the turnable platform, air conducting means between the blower and the other passage in the curved section, and means for raising and lowering the shoot.

In witness whereof I have signed this specification.

FREDERICH WILLIAM THOMPSON.