Nov. 15, 1955 R. LARSEN 2,724,110

ELECTRIC GRAIN ELEVATOR CHUTE INDICATOR

Filed July 11, 1951 2 Sheets-Sheet 1

Fig. 1.

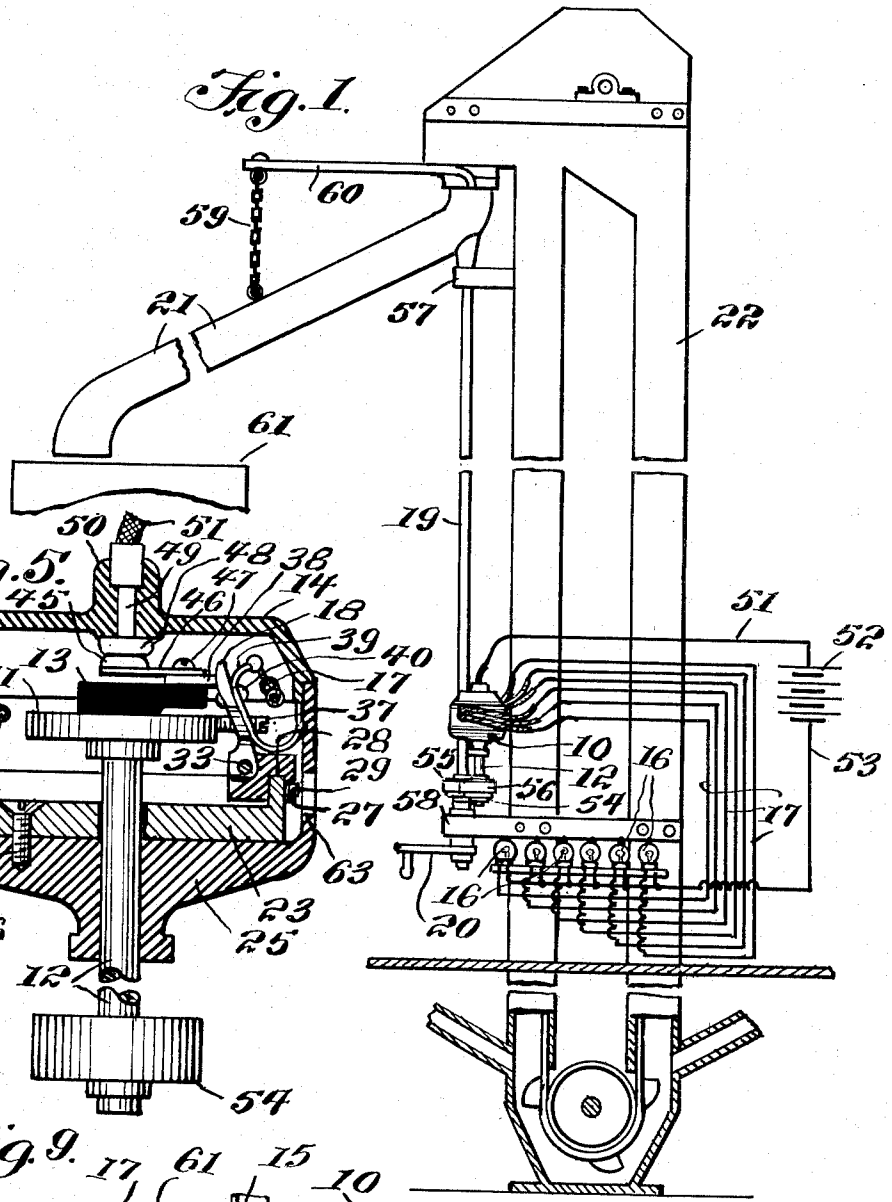
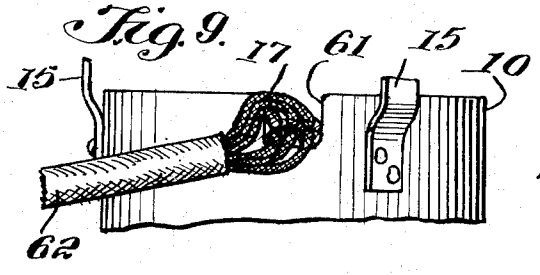


Fig. 5.

Fig. 9.



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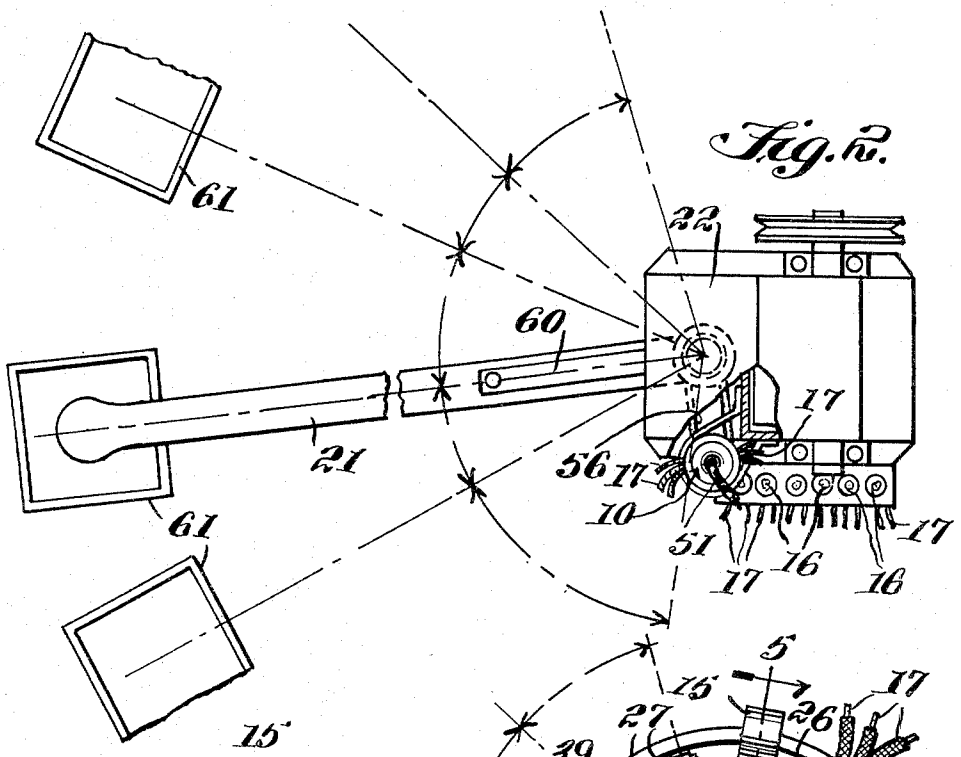


Fig. 2.

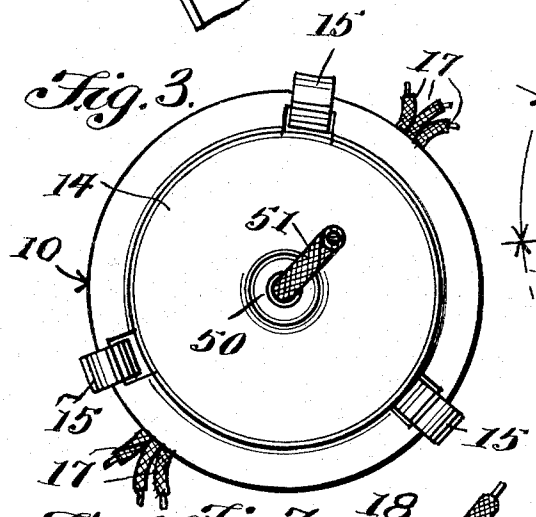


Fig. 3.

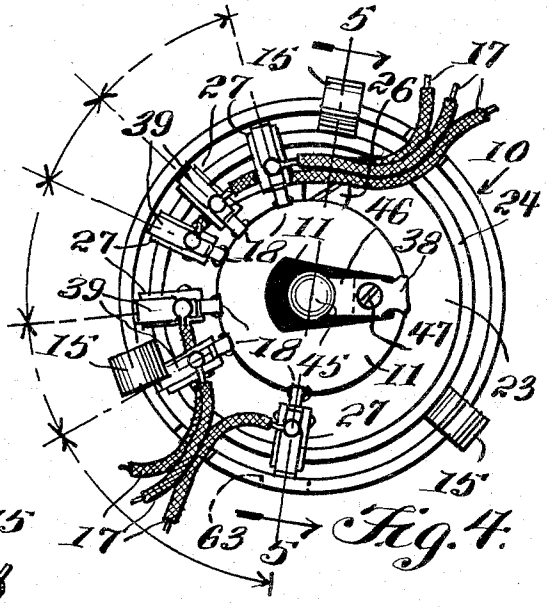


Fig. 4.

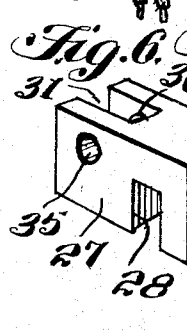


Fig. 6.

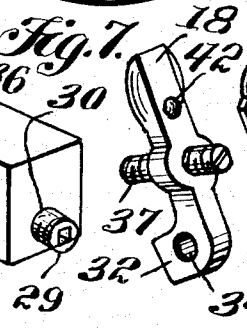


Fig. 7.



Fig. 8.

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ELECTRIC GRAIN ELEVATOR CHUTE INDICATOR

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Application July 11, 1951, Serial No. 236,238

1 Claim. (Cl. 340—282)

This invention relates to electric indicating devices of the type used in combination with conveying machinery and equipment, and in particular an indicating device having a plurality of lights in combination with contact points for indicating the position of a chute extended from the upper end of a grain elevator whereby an operator at the lower end or boot of the elevator may readily determine over which bin the chute is positioned.

The purpose of this invention is to provide means in an elevator having a chute actuated by a crank for determining when the chute is in position over the center of a bin so that the chute may be accurately positioned over bins by an operator located at a remote point.

Where grain elevators are used in combination with a battery of bins it is necessary to shift the chute from the elevator to the different bins, particularly as the bins are filled or where it is desired to deposit different grains in the bins and when the chute is shifted from one bin to another it is necessary to reset the chute at the upper end of the elevator. With this thought in mind this invention contemplates a shaft having a crank on the lower end thereof positioned on the side of an elevator and operatively connected to a chute whereby the chute is turned with the crank, and in combination therewith a plurality of contacts positioned to be engaged by a contact arm of a spindle in a casing similar to a motor vehicle distributor whereby with the contact points connected in circuits to lights, the circuits are completed to the lights as the outer end of the chute arrives at a predetermined point, such as in the center of a bin.

The object of this invention is, therefore, to provide means for indicating the position of the outer end of a chute of a grain elevator whereby an operator can tell when the outer end of the chute is in position over a bin or the like.

Another object of the invention is to provide an electric indicating device for grain elevators that is adapted to be used in combination with elevators now in use.

A further object of the invention is to provide a chute indicating device for grain elevators that lights a light when the chute is in operative position over a bin, which is of a simple and economical construction.

With these and other objects and advantages in view the invention embodies a grain elevator, a plurality of bins positioned around the elevator, a chute extended from the upper end of the elevator to a position over one of the bins, means shifting the chute from one bin to another, a battery of lights corresponding with the bins, a plurality of contact points corresponding with the lights and connected by circuits to the lights and to a source of current supply and a contact arm actuated by means for adjusting the position of the chute whereby a light corresponding with a bin is supplied with current to light the light as the chute arrives at a desired position over the bin.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings wherein:

Figure 1 is a side elevational view of an elevator showing a chute extended from the upper end thereof and also showing a plurality of lights with wires connecting the lights to a distributor and in which a wiring diagram is included illustrating the means for connecting the lights to the distributor.

Figure 2 is a plan view of the elevator shown in Figure 1 illustrating the chute extended to a bin and having parts broken away showing the means for driving the contact device.

Figure 3 is a plan view of the distributor.

Figure 4 is also a plan view of the distributor showing the contact points in the upper end thereof and with the cap omitted.

Figure 5 is a vertical section through the distributor taken on line 5—5 of Figure 4.

Figure 6 is a detail showing one of the blocks for mounting the contact arms on the inner base of the distributor.

Figure 7 is a detail showing one of the contact arms of the distributor.

Figure 8 is a detail showing a spring for urging one of the contact arms of the distributor inwardly toward the rotating contact.

Figure 9 is a detail showing the wires of the distributor extended through a single opening in the side of the base whereby the wires extend to the lights through a single conduit.

Referring now to the drawings wherein like reference characters denote corresponding parts the improved elevator chute indicator of this invention includes a distributor housing **10** having a rotor **11** mounted on a shaft **12** therein with a contact arm **13** of insulating material mounted on the upper end of the shaft, a cap **14** held by spring clips **15** to the housing, a battery of lights **16**, connected by wires **17** to contact arms or members **18** in the distributor housing, a shaft **19** having a crank **20** on the lower end and a chute **21** extending downwardly from the upper end of an elevator **22**.

An inner base **23** having an annular flange **24** on the upper edge is secured to the main base **25** of the housing **10** by screws **26** and, as illustrated in Figure 5 the contact arms **18** are positioned on the flange **24** through blocks **27**.

The blocks **27** are provided with slots **28** that fit over the upper edge of the flange **24** and these blocks are secured in position by set screws **29** that are threaded in openings **30** in the ends of the blocks. The screws **29** are positioned to register with an opening **63** in the side wall of the distributor housing, as shown in Figure 5, to provide access to the users. The blocks are also provided with slots or slits **31** in which ends **32** of the contact arms are secured by pins **33** which extend through openings **34** in the arms and openings **35** and **36** in the blocks.

The contact arms **18** are provided with adjusting screws **37** that bear against the edge of the member **11** on the upper end of the shaft **12** and these arms are urged inwardly to engage a contact **38** of the arm **13**, by springs **39**. The springs are secured to the arms **18** by screws **40** which extend through openings **41** in the springs and are threaded in openings **42** in the arms. The springs are also provided with openings **43** that are positioned to receive the adjusting screws **37**.

The contact arm **13** is also provided with a contact piece **45** that is mounted on the contact **38** by a spring **46** and the spring is held in position by a screw **47**. The contact **45** is positioned to engage a contact **48** on a stem **49** that extends through a hub **50** in the upper end of the cap **14** and the contact wire **51** extends from the end of the stem **49**. The wire **51** extends to a battery **52** and from the battery current is carried by a wire **53** to one terminal of the light **16**, the opposite terminal of the light being connected by the wire **17** to the contact arm **18**.

The shaft **12** of the distributor **10** is rotated by a sheave **54** from a sheave **55** on the shaft **19** by a cable or belt.

The shaft **19** is journaled in bearings **57** and **58** extended from the elevator housing **22** and the upper end of the shaft is connected to the chute **21**, which is suspended from the upper end of the elevator by a chain **59** which extends from an arm **60**.

Upon turning the crank **20** the shaft **19** is rotated to turn the chute **21** whereby the outer end of the chute is accurately positioned over one of the bins **61** as illustrated in Figure 2 and when the chute is in position over a bin the contact **38** engages one of the contact arms **18** which completes a circuit to one of the lights **16**, and with the light connected to the contact arm that corresponds with the bin the operator may readily determine which bin the chute is positioned over and also when the chute is in position on the center of the bin.

The wires **17** are shown in Figure 4 extending through openings in both sides of the housing, however, it will be understood that the wires extend through a single opening **61** and are combined in a single conduit **62**.

It will be understood that modifications may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

In a switch for a rotary elevator chute, a housing, a shaft projecting into said housing and having a rotor thereon, a contact arm of insulated material mounted on the upper end of said shaft, a plurality of contact members mounted in said housing, wires having one end connected to said contact members and their other ends connected to a battery of lights, a base secured within said housing at the bottom thereof and having an annular flange extending upwardly from the outer edge thereof, spaced apart blocks mounted on said flange and having said contact members secured thereto, adjusting screws extending through intermediate portions of said contact members and engaging said rotor, springs urging said contact members into engagement with a contact on said contact arm, a contact piece arranged above said contact arm, a stem extending upwardly from said housing, a wire leading from said stem to a source of electrical energy, a sheave on the lower end of said shaft, means for rotating said sheave and said elevator chute simultaneously, said means comprising a crank for positioning said chute and for driving the sheave, a shaft extending between said rotary chute and said crank, a pulley on said last named shaft, and an endless belt trained over said pulley and over said sheave whereby the respective light indicates the position of the chute.

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