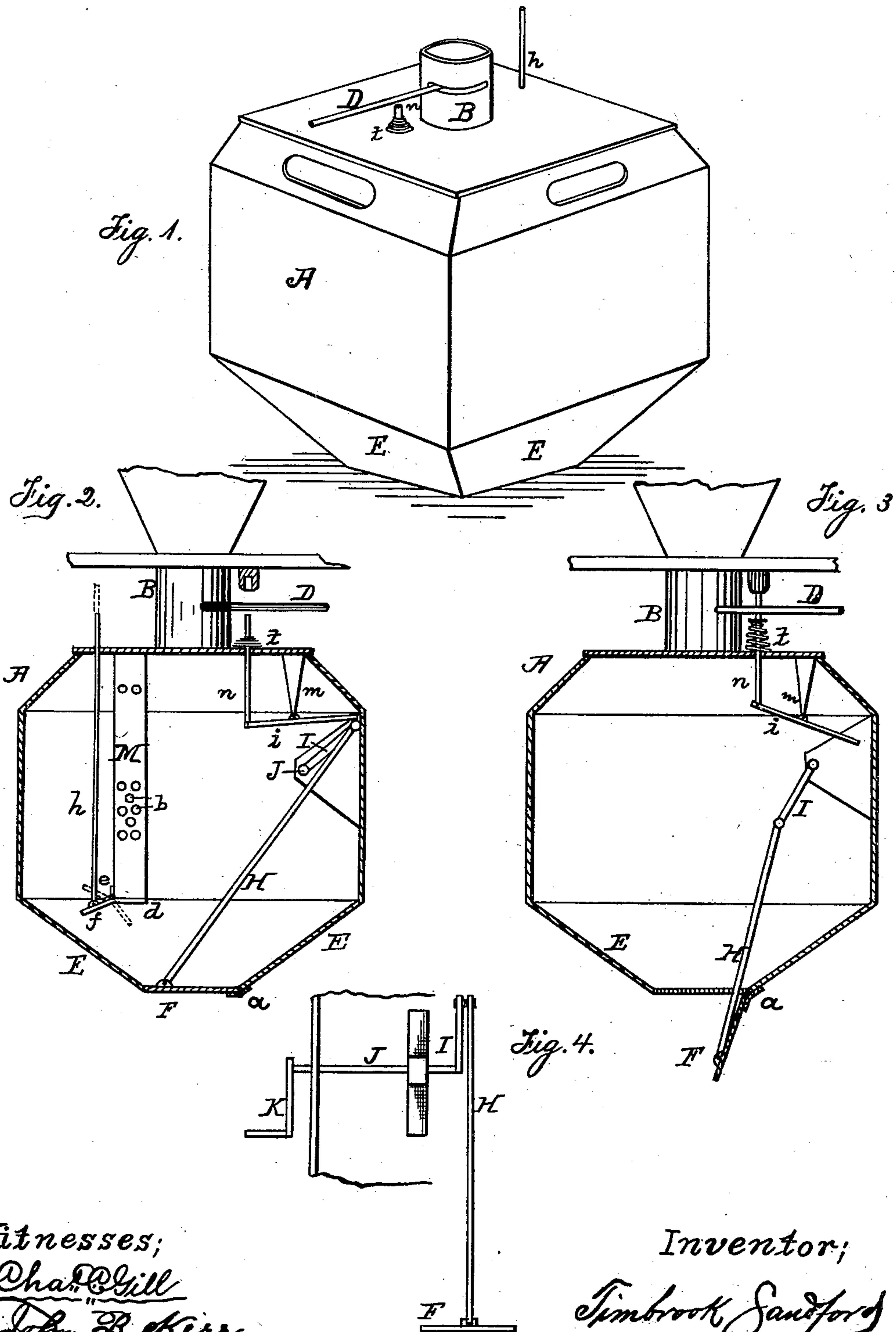


(No Model.)

T. SANDFORD.
Grain Tally.

No. 230,824.

Patented Aug. 3, 1880.



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UNITED STATES PATENT OFFICE.

TIMBROOK SANDFORD, OF BROOKLYN, NEW YORK.

GRAIN-TALLY.

SPECIFICATION forming part of Letters Patent No. 230,824, dated August 3, 1880.

Application filed May 31, 1880. (No model.)

To all whom it may concern:

Be it known that I, TIMBROOK SANDFORD, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful
5 Improvement in Safety Attachments for Grain-Elevator Scales, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to improved safety attachments for grain-elevator scales; and it consists in the devices hereinafter described, and particularly pointed out in the claims.

The hopper of a grain-elevator scale consists usually of a rectangular-shaped receptacle having a valve at its top operated by a
15 hand-lever for the purpose of admitting and shutting off the grain at will, and at its bottom a rectangular-shaped board hinged at one side, forming a valve, which may be opened or
20 closed by the movement of a crank at the outside of the receptacle, the lower portions of the sides of the hopper converging downward and inward around the said rectangular-shaped board. When the elevator is operated, the
25 valve at the bottom of the hopper being closed, the valve admitting the grain is opened by pushing the lever to one side. After a sufficient quantity of grain has entered the hopper this valve is closed by reversing the movement
30 of the lever, and the outlet-valve at the bottom opened by turning the crank, allowing the grain to escape. Each hopper of grain is weighed, and an exact tally thereof must be made by the operator. This tally is usually
35 made in a book kept for that purpose. If by any accident or mistake the valve at the top of the hopper should be opened for the purpose of receiving a second charge of grain before the lower valve has been closed, the grain
40 would escape through the hopper without being weighed at the rate of about eighty pounds or more in a second of time. A mistake of this kind renders void the weighing of the whole cargo of grain and causes very serious
45 inconvenience.

The object of the first part of my invention is to provide an automatic means for tallying the number of charges of grain passing through the hopper independently of the tally kept by
50 the operator, and of the second part of the invention to produce a means which will be

operated by the movement of the connections of the lower valve to serve as a bar to the opening of the inlet-valve until the outlet-valve has been closed.

Referring to the accompanying drawings, 55
Figure 1 is a perspective view of the hopper of a grain-elevator scale. Fig. 2 is a central vertical section of same. Fig. 3 is a like view, showing the inlet-valve barred and the outlet-
60 valve open; and Fig. 4 is a plan view of the devices usually employed for opening and closing the outlet-valve.

A indicates the hopper; B, the usual inlet at the top, containing a valve which is opened
65 or closed by the sweep of the lever D. E represents the inwardly-converging sides of the hopper, and F the outlet-valve, which in reality constitutes the bottom proper of the receptacle, and is hinged at one side or end to
70 one of the sides E.

At the edge of the valve F, opposite to its hinge *a*, is pivoted or secured in an eye the lower end of the rod H, which passes upward to one side, and is pivoted at its upper end to
75 one end of the crank-arm I, the other end of which is secured upon the end of a shaft, J, passing through the side of the hopper, and provided on its outer end with a crank, K, whereby hand-power may be applied when de-
80 sired.

The above is a description of the hopper as now constructed, in the operation of which, the valve F being closed, the inlet is opened and the grain admitted. After a sufficient
85 quantity has entered the hopper the inlet B is closed, and the valve F opened by throwing the arm I and rod H toward the center of the hopper, which is accomplished by a partial revolution of the crank K. After the charge
90 has been tallied and allowed to escape, the valve F is closed by a reverse movement of the crank K, and the inlet B then opened to again admit grain.

The attachment constituting the first part 95 of my invention consists of an indicator, M, which is preferably rectangular or circular in form and suspended from the roof of the hopper and having apertures *b* in its sides.

The bottom of the indicator will consist, 100 preferably, of a sheet-iron plate, *d*, hinged to the lower edge of the box at *e*, and having an

extension, *f*, which passes beyond the hinge *e*, and has pivotally secured, by an eye or otherwise, upon the central portion of its upper surface the lower end of the rod *h*, which extends upward through an aperture in the roof of the hopper and connects with any suitable form of registering apparatus that will operate to tally the charges of grain by the vertical movement of the rod *h*. As the grain enters the hopper it fills beneath and around the indicator *M*, and enters the same through the apertures *b*, filling it, or nearly so. When the grain is allowed to escape that portion within the indicator forces the bottom *d* open and escapes, after which the bottom of its own weight closes. The opening of the bottom *d* drives the extension *f* and rod *h* upward, thereby actuating the registering mechanism. This movement occurs as each charge of grain passes through the hopper, and each charge is consequently registered or tallied. After the grain has passed from the indicator-box the bottom will be closed again by the weight of the extension *f* and rod *h*. The bottom of the indicator is prevented from opening at the wrong time by the weight of the grain on the extension *f*.

The construction of the second part of my invention is shown in Figs. 2 and 3, in which *i* indicates a bar suspended at about its center by the hanger *m*, so as to oscillate freely thereon when actuated.

When the bar *i* is in position one of its ends comes just over the arm *I*, while the other end extends inward in line with the sweep of the said arm, and has pivoted or otherwise secured in its extremity the lower end of the rod *n*, which passes upward through an aperture in the roof of the hopper in appropriate relation to the lever *D*.

Upon the rod *n*, above the hopper, is arranged the coiled spring *t*, the tension of which is exerted to draw the rod upward. In that part of the apparatus directly above the hopper will be formed or attached a suitable guide, in which the upper end of the rod *n* will be thrust by its upward movement and braced against any lateral pressure.

After the hopper has received the required amount of grain the inlet-valve is closed by the lever *D*, and the outlet-valve *F* opened by turning the crank *K* to throw the upper ends of the arm *I* and rod *H* inward, as aforesaid. The upper ends of the arm *I* and rod *H* being thrown inward are withdrawn from under the outer end of the bar *i*, leaving it unsupported,

when the spring *t* will draw the rod *n* upward in front of the lever *D*, preventing it from being moved. The upward movement of the rod *n*, of course, raises the inner end of the bar *i* and depresses the outer end. This is the condition of the hopper while discharging its grain. After the grain has all run out the crank *K* is turned to its former position, thereby lifting the arm *I* and rod *H* to the position they occupied before opening the valve *F*. This upward movement of the arm *I* and rod *H* brings their upper ends against the outer end of the bar *i*, carrying it back to its former position, and thereby lowering its inner end and the rod *n* to their former position, when the lever *D* may be again operated to open the inlet *B*, allowing the grain to enter the hopper, as before.

It will be observed that the opening of the lower valve, *F*, operates the rod *n* to bar the moving of the lever *D* to open the inlet *B*, and that the closing of the valve *F* withdraws the rod *n* from the lever *D* and permits the inlet to be opened at will.

I do not limit myself to the exact form or arrangement of the mechanism herein described; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. As an attachment for a grain-elevator-scale hopper, the indicator-box *M*, having apertures in its sides, and provided with a hinged bottom, *d*, having an extension, *f*, supporting the rod *h*, substantially as specified.

2. An attachment for grain-elevator-scale hoppers which may be actuated by opening the escape-valve to thrust a rod upward in front of the lever which operates the inlet-valve to prevent said valve being opened until the escape-valve has been closed, substantially as set forth.

3. In a grain-elevator-scale hopper having an inlet-valve and an outlet-valve operated by a rod, *H*, and arm *I*, the pivotally-secured bar *i*, supporting the rod *n*, provided with the spring *t*, substantially as specified.

In testimony that I claim the foregoing improvement in safety attachments for grain-elevator scales, as above described, I have hereunto set my hand this 27th day of May, 1880.

TIMBROOK SANDFORD.

Witnesses:

WM. BRO. SMITH,
CHAS. C. GILL.