

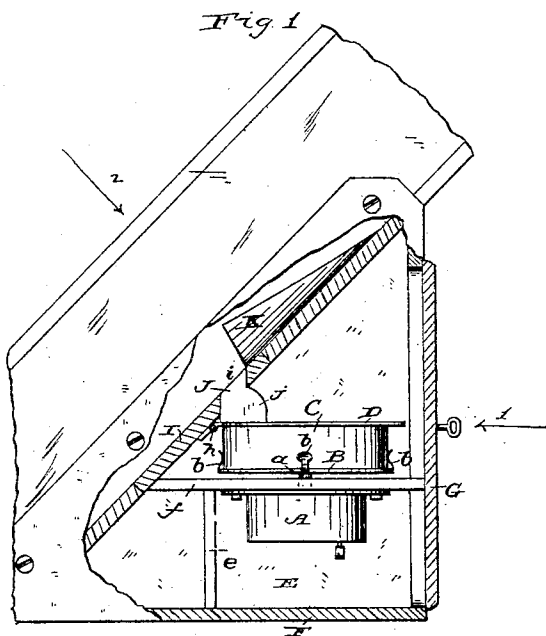
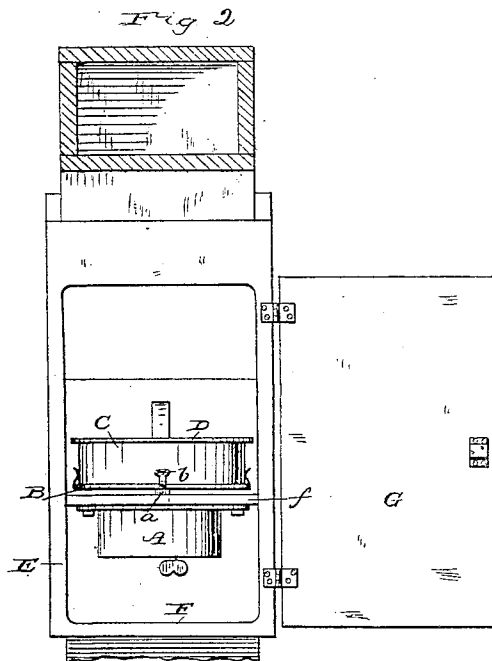
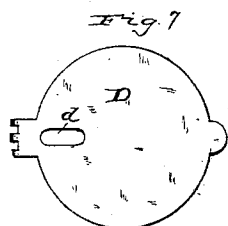
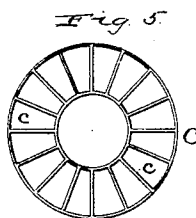
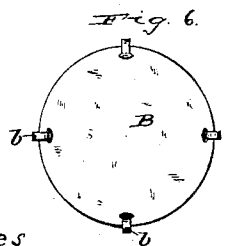
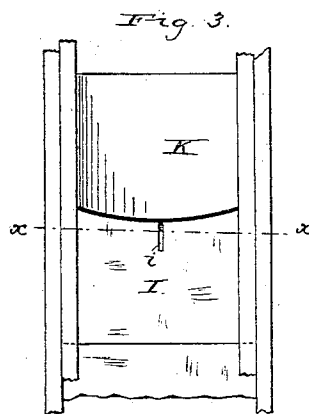
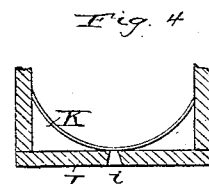
(No Model.)

J. M. FINCH.

AUTOMATIC GRAIN AND FLOUR SAMPLER.

No. 291,474.

Patented Jan. 1, 1884.



Witnesses

H. V. Low
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Inventor

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UNITED STATES PATENT OFFICE.

JOHN M. FINCH, OF JACKSON, MICHIGAN, ASSIGNOR OF ONE-HALF TO
GEORGE S. BENNETT, OF SAME PLACE.

AUTOMATIC GRAIN AND FLOUR SAMPLER.

SPECIFICATION forming part of Letters Patent No. 291,474, dated January 1, 1884.

Application filed March 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. FINCH, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Automatic Grain and Flour Samplers, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of this invention is to take out or subtract, automatically and at regular intervals, samples of flour, grain, or other material which is passing, practically continuously, through a conduit, in order that, when desired, an attendant may be able to determine the character and quality of the material which was passing through said conduit at any specified predetermined hour.

Figure 1 is a side elevation, partly in section, of a spout or conduit having my automatic sample-catcher applied thereto, a portion of the inclosing-case having been broken away. Fig. 2 is an elevation, looking in the direction of the arrow 1, Fig. 1, the door of the casing being open. Fig. 3 is a view of a portion of the inner surface of the conduit over which the material is to pass, looking in the direction indicated by arrow 2, Fig. 1, the upper wall of the conduit being removed. Fig. 4 is a transverse section taken on line *x*, Fig. 3. Fig. 5 is a top plan view of the rotating compartment-case. Fig. 6 is a circular rotating plate which supports the compartment-case, and Fig. 7 is a plan view of a hinged cover.

Similar letters indicate like parts in all the figures.

In the drawings I have represented my device as adapted for use in connection with and applied to an ordinary flour or grain spout of a flouring-mill.

A represents a suitable clock-work or time-movement, so constructed and regulated that a vertical shaft, *a*, shall make one complete revolution in a certain number of hours—say sixteen; but as this clock may be of any desired or usual construction which will answer the purpose, it need not be specifically described.

B is a circular carrying-plate mounted upon and rotated by the vertical shaft or spindle *a* of the clock-work, and provided with three or more springs, fingers, or clasps, *b*, which project upwardly from its upper surface and engage with the outer walls of a compartment-case, *C*, which is provided with a number—say sixteen—of pockets or receptacles, *c c*, (see Figs. 1 and 5,) these pockets being formed by an outer and an inner circular wall and a series of radial partitions.

D (see Figs. 1, 2, and 7) is a cover, preferably circular in form, and adapted to cover the upper face of the compartment-case. The cover is provided with a slot, *d*, through which material passes into the compartment-case, which is connected with the lower surface of the conduit or spout by means of a chute, to be described. By mounting the compartment-case upon the upper surface of the rotating plate, which is keyed to the upper end of the driving-shaft, I provide for the ready removal of said case without disturbing any part of the driving mechanism.

The parts thus far described I by preference support upon a suitable inclosing-case, consisting of side walls, *E E*, bottom *F*, and partitions *e f*, with a door, *G*, this inclosing and supporting case being, by preference, made of such size and form as will adapt it to fit closely and be attached to the under side of a flour or grain spout, the side walls, *E E*, projecting upward beyond the line of the door, and overlapping the sides of the conduit, thus forming flanges by means of which the device may be supported by screws.

I is a removable section of the lower wall of the spout, and has a throat *i*, (see Figs. 3 and 4,) formed therein at a point about midway between the side walls.

J *j* is a chute connecting slot *i* with the compartment-case, the part *j* constituting an arc of a circle of which the pivot *h* is the center. This pivot is, by preference, attached to the under side of the removable section I; but when preferred said pivot may be supported by brackets from the horizontal partition *f*.

K is a guiding-sheet, its lower end being

concave in form, as shown in Fig. 4, to insure that the material in passing down the spout shall be properly directed, so as to pass over the slot *i*, even though the stream of material may be small. It is apparent, however, that the same result substantially could be attained by constructing this guide of wood or material other than metal. By the employment of the rotating case and a stationary feeding-chute arranged eccentrically thereto, I insure a free and certain delivery of flour to the pockets, and also provide a construction which can be placed in immediate contact with the under surface of either an inclined spout or a horizontal conveyer, even though the space for the reception of the machine be limited as to its height, it being apparent that much less vertical space is required with my construction than would be necessary in case I used an inclined delivery-chute which is required to sweep around the circumference of the machine, as is done in that class of devices wherein is employed stationary pockets and a chute which travels around a central shaft, it being also apparent that the presence of a central shaft which extends up through the center of the horizontal compartment-case interferes seriously with the removal of the case from the machine for the purpose of examining its contents.

From an examination of the drawings it will readily be understood that when this machine is operated each of the pockets *c* will in turn be filled with the material which is passing down the spout and over the slot *i*, so that the operator can, by examining the contents of these pockets, inform himself with great accuracy as to the quality of such material which was passing slot *i* during each and every hour that the machine was in operation—a result which is very desirable, particularly when the machine is applied to a spout leading to the chest of a flour-packer in a mill, because it enables the mill owner or other person in charge to determine with accuracy the quality of the work which has been done in his absence, and at any portion of the time during which he has been absent or the machine has been in operation. The machine is also desirable for use in connection with a spout through which grain is passing from cleaning machinery to a bin in a mill or elevator, to assist in determining whether the work has been properly done; and when applied to a spout through which the refuse from either flour or grain has been passing it will enable the operator to detect any wastage which may have occurred. The compartment-case may be rotated with a continuous movement, or with an intermittent or step-by-step movement.

I am aware that an English patent of A. D. 1855, for time-checks, shows a horizontally-rotating compartment-case subdivided into a series of receptacles by means of substantially radial partitions mounted upon a vertical shaft in such manner that by removing the

throat or passage through which the tickets pass into the compartments, together with the top of the casing, and the bearing which is essential as a support for the upper end of the vertical shaft, the horizontal compartment-case can be taken out.

I am also aware that a stationary compartment-case containing a series of receptacles arranged around a common center has been employed in combination with a hopper and a delivery-spout the upper end of which is arranged in line with the center of the compartment-case, and a mechanism which moves the lower end of the delivery-spout in a circular path, so that material may be deposited in the receptacles successively; but it is apparent that my construction possesses many advantages over such prior machines. For instance, my device can be placed below any one of the common forms of horizontal conveyers, from the bottom of which material can be conveniently abstracted through an opening or throat formed therein, and can be placed in very close proximity thereto, thus enabling me to use it in many locations where a sampler could not be placed with a revolving feed spout or chute. So, also, I am enabled to use a stationary cover, *D*, by means of which to protect the compartments against the accidental introduction of dirt or dust from the mill, such cover being hinged to a stationary part of the device; and, again, my construction is much more durable than one having such a rotating spout as has been heretofore used, because of the wear which would necessarily ensue at the junction between the stationary part or hopper of the spout and the traveling portion, in case a suitably tight joint were made at that point.

What I claim is—

1. In an automatic grain and flour sampler, the combination of an inclosing-casing, a rotating vertical shaft, a horizontal carrying-plate mounted on the upper end of the shaft, a compartment-case provided with pockets arranged around a common center and mounted on the upper surface of the carrying-plate, means for connecting the case with the horizontally-rotating carrying-plate and permitting its removal therefrom, and a stationary feeding-chute arranged eccentrically to the compartment-case, substantially as set forth.

2. In an automatic grain and flour sampler, the combination of a horizontally-rotating carrying-plate provided with upwardly-projecting fingers, and a compartment-case provided with a series of circularly-arranged pockets supported upon and carried by the rotating plate, substantially as set forth.

3. In an automatic grain and flour sampler, the combination of an inclosing-casing, a horizontally-rotating carrying-plate mounted upon the upper end of a driving-shaft, a removable compartment-case provided with pockets arranged around a common center, means for connecting the case with the rotating plate and

permitting its removal therefrom, a feeding-chute arranged eccentrically to the compartment-case, and the cover adapted to close the open upper ends of the pockets, and provided
5 with an opening for the feeding-chute, substantially as set forth.

4. In an automatic grain and flour sampler, the combination, with the horizontally-rotating removable compartment-case, the hinged
10 cover provided with a slot for the feeding-

chute, and the feeding-chute provided with a curved portion, *j*, formed on an arc of a circle described from the hinge of the cover, substantially as set forth.

In testimony whereof I affix my signature in 15
presence of two witnesses.

JOHN M. FINCH.

Witnesses:

G. R. BYRNE,

WM. M. THOMPSON.