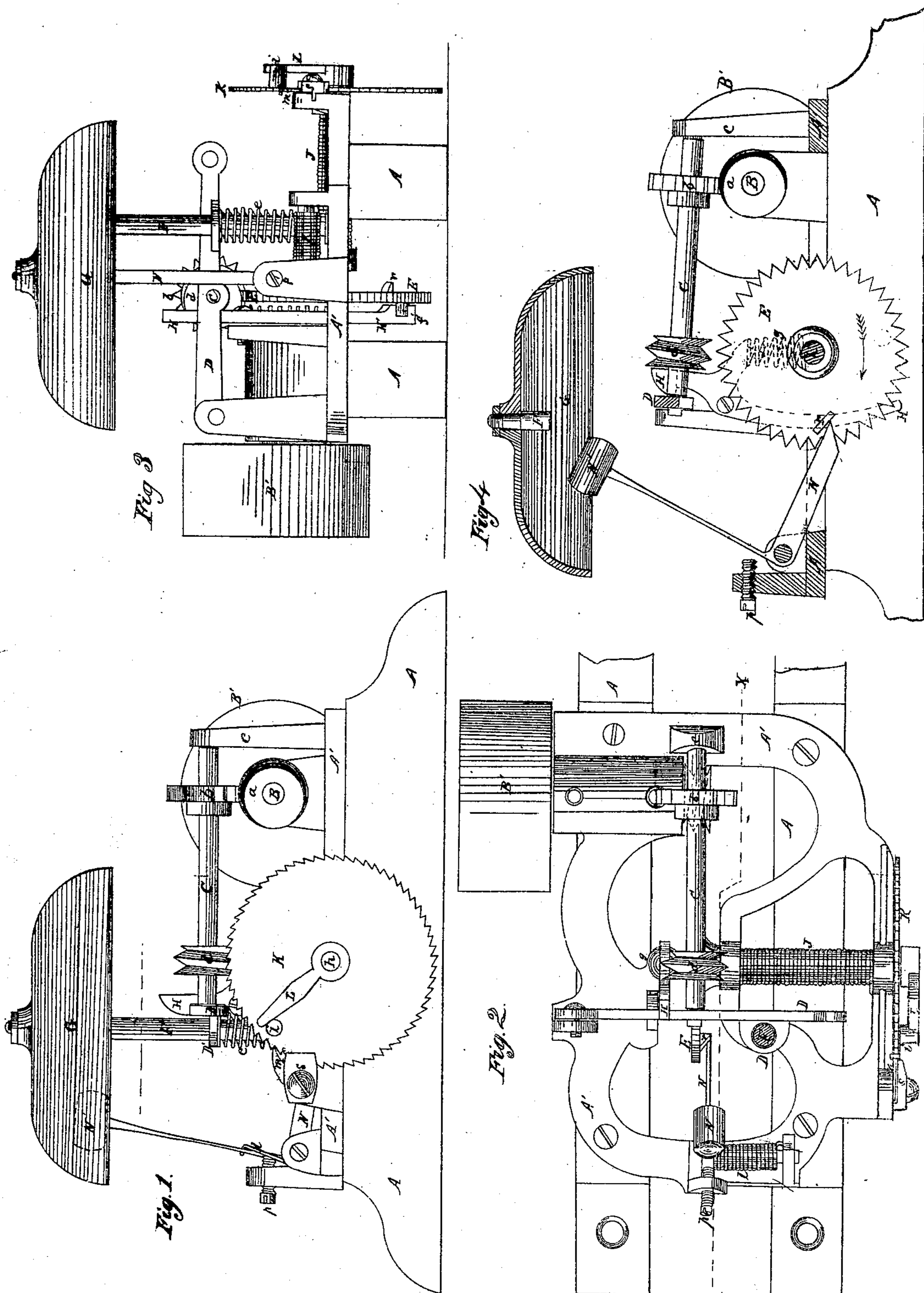


Helton & Redfield.

Automatic Alarm for Grist-Mill.

N^o 73247

Patented Jan. 14, 1868



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Letters Patent No. 73,247, dated January 14, 1868.

IMPROVED AUTOMATIC ALARM FOR GRIST-MILLS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, M. W. HELTON and J. H. REDFIELD, of Bloomington, in the county of Monroe, and State of Indiana, have invented an Automatic Alarm for Grinding-Mills; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an elevation of one side of the automatic alarm.

Figure 2 is a top view of the same, with the bell detached.

Figure 3 is an elevation of one end of the machine.

Figure 4 is a longitudinal section, taken vertically through the machine, in the direction indicated by the course of red line *x x* in fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to apply an automatic alarm-apparatus to grist-mills, which is so constructed that it will give notice to the miller when to change the sacks of one customer for the sacks of the succeeding one. The usual method hitherto practised is to change the bags at the time the grist is changed at the hopper or burrs, by which method the chop between the burrs and the flour-spout is made of the grain of the preceding customer, and, in changing the bags, as hitherto practised by millers, the first flour delivered in the bags is of the grain of the preceding grist, and the last of each grist leaves a like amount for the next one, and so on.

Our invention provides for giving to each person the flour or meal from his own grain, so that there shall not be a mixture of different kinds or qualities of flour in the mill or sacks, as will be hereinafter described.

To enable others skilled in the art to understand our invention, we will describe its construction and operation.

In the accompanying drawings, A represents the frame or foundation, upon which the several parts composing the alarm are applied and supported. B is the driving-shaft, which carries on its outer end a belt-wheel, B', and on its inner end a worm-wheel, *a*, the threads of which engage with and communicate a slow motion to the tangent-wheel *b*, shown in figs. 1 and 4. This tangent-wheel is keyed upon a longitudinal shaft, C, which has its outer end bearing in a standard, *c*, of the metallic frame A', and its inner end bearing in a lever, D, and which has a worm-screw, *d*, keyed upon it that engages, at proper times, with a tangent-wheel, E. This shaft C is so applied to its outer standard-bearing *c* that its inner end can rise and fall with the movements of the lever D, and thereby admit of the engagement of worm-wheel *d* with its tangent-wheel E, or the disengagement of these parts at pleasure. Lever D has an eye, D', formed on one side of it, as seen in fig. 2, through which the bell-standard F passes, which standard is secured to the frame of the machine, and carries upon its upper end a bell, G, of the form shown in the drawings, or of any other suitable form or kind. Beneath the eye D' is a spring, *e*, which is coiled around the bell-standard, so as to press the lever D upward, and disengage the worm-wheel *d* from its tangent-wheel E, when said lever is released from a catch, H. The catch H is pivoted to a standard of frame A', alongside of the tangent-wheel E, and it is constructed with a long arm, H', which, at certain times, is struck or acted upon by a stud, *f*, upon the face of said tangent-wheel. The catching or hooked end H is pressed against the lever D, when this lever is disengaged from it, by means of a spring, *g*, shown in dotted lines in fig. 4, so that when lever D is depressed, and the worm-wheel *d* engaged with its tangent-wheel, the catch will hook over said lever, and hold it down in place. The tangent-wheel E is keyed upon a transverse shaft, *h*, which has its bearings in the frame A', as shown, and which has applied to it a helical spring, J, a ratchet or index-wheel, K, and a pointer or stop-arm, L. The spring J is coiled around the shaft *h*, and secured to it at one end, and to the frame A' at the other end, so that, by turning said shaft *h*, the spring J may be wound tightly. The wheel K is applied loosely upon shaft *h*, and constructed with a stud or stop-pin, *i*, upon its outer face, against which the arm L is held by spring J, when the worm-wheel *d* is not engaged with its tangent-wheel E. The ratchet-teeth upon said wheel K are engaged with a pawl, *m*, upon frame A', as shown in fig. 1, which pawl will hold said wheel in any desired position, and admit of the adjustment of the wheel E, so that its stud *f* will act upon and release arm or catch H from its lever D in any desired given number of revolutions of the main shaft. The pawl *m* is provided with a screw-pivot and clamping-plate, *s*, by means of which this pawl can be fixed rigidly to its support after adjusting the wheel K. On the inner side of the tangent-

wheel E, a bevelled lug, *r*, is secured, as shown in figs. 3 and 4, the object of which is to trip the arm N of the hammer N', when the wheel E is released from its worm-wheel *d*, and allow the spring *l* to bring this hammer suddenly against its bell G, and thereby sound an alarm. The force of the blows of hammer N' can be regulated by means of the set-screw *p*, which is tapped through a standard of frame A, back of the pivot of the hammer, as shown in figs. 1, 2, and 4.

It will be seen, from the above description, that when the wheels E and K are properly adjusted for sounding an alarm, at the proper times for changing the sacks, and the machine connected, by means of a belt passing around the drum B', with any movable machinery of the mill, the wheel E will receive a slow movement, in the direction indicated by the arrow in fig. 4, until its stud *f* releases the lever D from its latch H; when the worm-wheel *d* will rise, and thereby allow the spring J to turn wheel E quickly backward until the arm L strikes the stud *i* on the wheel K, when it will be arrested. At the same time, the lug *r* on said wheel E will trip the hammer and sound the alarm. The lever D remains in an elevated position, and holds the worm-wheel *d* out of gear until this lever is again depressed by hand, and caught by the latch or catch H, as above described.

The operation or manner of using the machine is as follows: The machine being adjusted to the running of the mill, the alarm is put into gear with the driving-shaft at the moment the grist is changed at the hopper, by engaging the lever D with its catch, as before stated. When the driving-shaft B has performed the required number of revolutions, to allow all the chop to be carried out of the mill-machinery, viz, the elevators, conveyors, bolts, &c., the alarm will be sounded, which is the signal to the miller to change the sacks. At the time the signal is given, the alarm-apparatus will be automatically thrown out of gear, and the hand or arm L will turn back against the fixed stud *i* or starting-point, in which positions the said parts will remain during the grinding of the rest of the grist.

We wish it to be distinctly understood that the machine we have described is not adjusted to the amounts of grain passed through the mill, as the alarm or signal given has no reference to the amount of grain in the grist, but to the amount contained in the mill-elevators, conveyors, bolts, &c.

We do not confine our invention to the precise contrivances herein described, as they may be modified and differently arranged without departing from the principle specified.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The apparatus, substantially as described, and which is constructed so that when applied to mill-machinery, and properly adjusted thereto, it will automatically give an alarm at the proper time for changing the sacks, for the purpose set forth.
2. In combination with alarm-mechanism and devices, which will automatically sound the alarm, and then be disengaged from the main driving-power, substantially as shown and set forth, we claim means, substantially as described, by which the machine can be adjusted and set to sound the alarm at any given time, for the purposes set forth.
3. The adjustable index-wheel K, with its stop *i* and pawl *m*, or their respective equivalents, in combination with the hand or arm L upon the shaft *h*, and an alarm-mechanism, operating substantially as described.
4. The vibrating lever D and catch H, in combination with the tripping-wheel E, worm-wheel shaft C, and driving-shaft B, operating substantially as described.
5. The pawl and clamp *m s*, or their equivalents, applied to the wheel K, for holding this wheel firmly in place when properly adjusted, substantially as described.
6. Sustaining the worm-wheel shaft C at one end, by means of a lever, D, in combination with a catch, H, and also with means for tripping this catch, when said shaft C has made a given number of revolutions, substantially as described.

M. W. HELTON,
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Witnesses:

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