(No Model.)

H. B. BALCH & F. BURTT.

GRAIN CLEANING MILL.

No. 316,722. Patented Apr. 28, 1885.

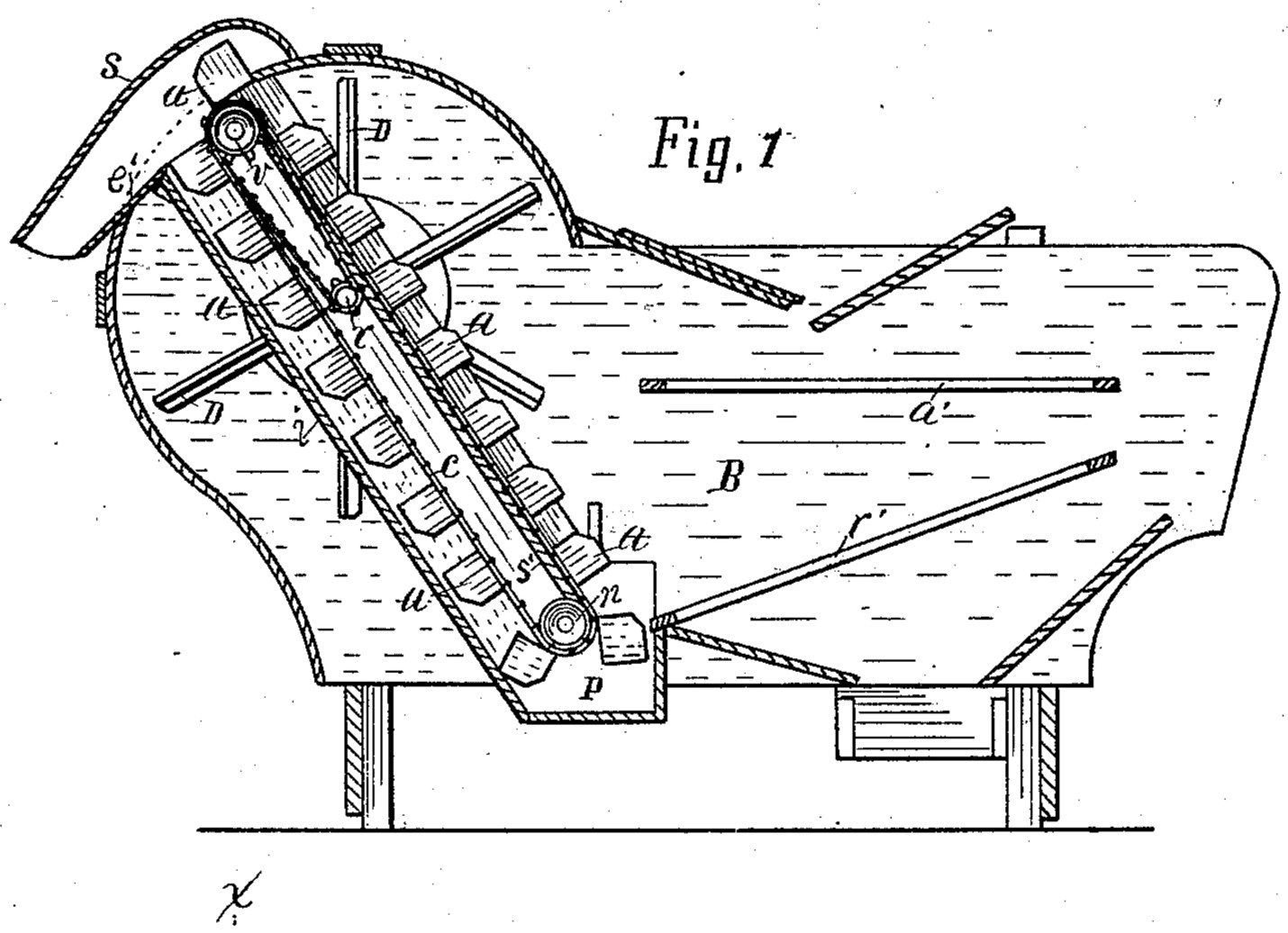

Fig. 1

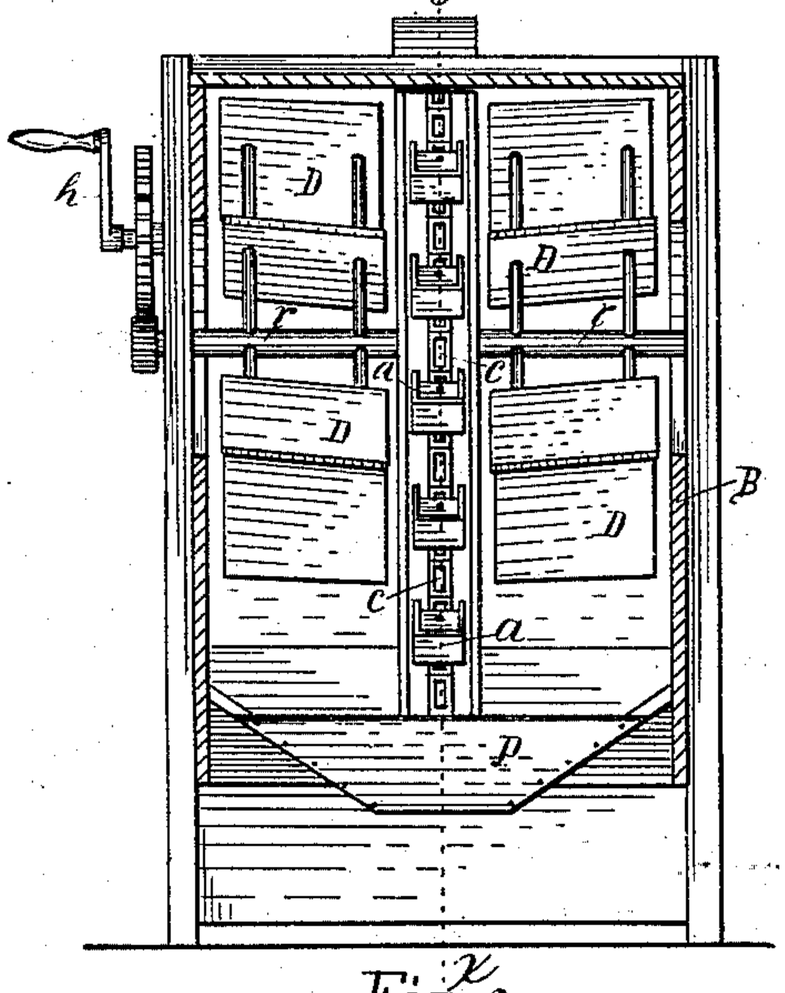

Fig. 2

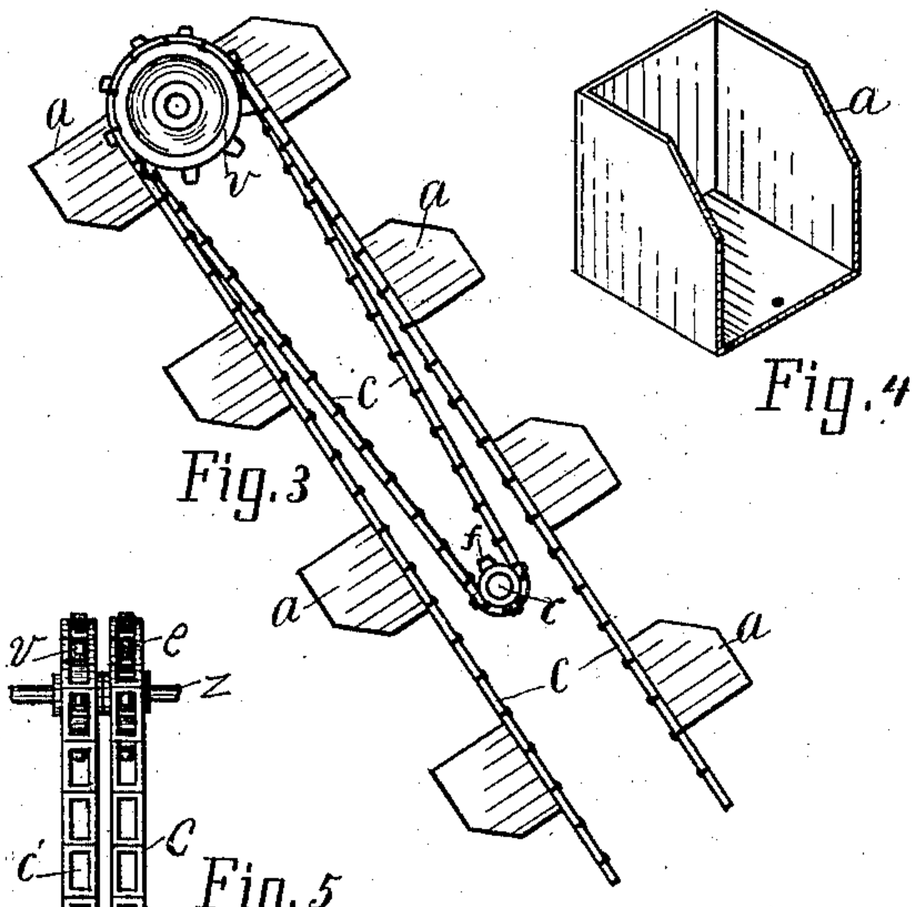

Fig. 3

Fig. 4

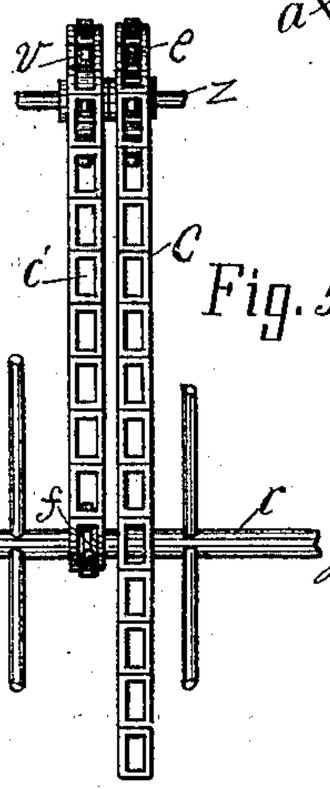

Fig. 5

Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY B. BALCH AND FRANK BURTT, OF KALAMAZOO, MICHIGAN, ASSIGNORS OF ONE-THIRD TO HENRY L. BISHOP, OF SAME PLACE.

GRAIN-CLEANING MILL.

SPECIFICATION forming part of Letters Patent No. 316,722, dated April 28, 1885.

Application filed October 16, 1884. (No model.)

To all whom it may concern:

Be it known that we, HENRY B. BALCH and FRANK BURTT, citizens of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented a new and useful Grain-Cleaning Mill, of which the following is a specification.

This invention has for its object certain improvements in that class of grain-cleaning mills in which the cleaned grain is elevated for the purpose of bagging.

The most important result attained by this invention is the locating of the elevating-cups in the center of the rear portion of the mill. Other results and the points of utility will appear in the following detailed description.

In the drawings forming a part of this specification, Figure 1 is a vertical section of the mill on the dotted line *x x* in Fig. 2. Fig. 2 is a front view of the internal construction in the rear portion of the mill. Fig. 3 is a detail of Fig. 1, enlarged, hereinafter described and pointed out by letters; Fig. 4, an elevating-cup in perspective; and Fig. 5 is a broken detail of parts in Figs. 1 and 2, enlarged, looking from a point at the right hand in Fig. 1, hereinafter described and referred to by letter.

Referring to the drawings, B is the frame inclosure of the mill, similar in most respects to that of all fanning-mills. We make the fan in two parts, separating the wings D D at the center, and leaving sufficient space to centrally locate the elevating-cups *a a* and endless belt *c*, to which they are connected at an oblique angle in the fan-chamber of the mill. The upper rear wall of the mill-casing is provided with a central opening, Fig. 1, which may be roofed over, as at S, said roof, together with the bridge *e'*, forming a spout to deliver the grain into a bag held thereunder by any suitable means. Near this opening in the mill-casing is a revoluble shaft, *z*, having suitable bearings, the latter not here shown. To this shaft are rigidly secured, side by side, two sprocket-wheels, *v e*. The fan-shaft *r* is provided with a rigidly-secured sprocket-wheel, *f*. The sprocket-wheels *v f* carry a sprocket-belt, *c'*, and the sprocket-wheel *e* and the idler *n* at the lower end of the elevating apparatus carry the sprocket-belt *c*, to which belt the elevating-cups *a a* are connected. These sprocket-wheels and belts are preferably made as shown; but, of course, if other styles of belts are used, the belt-wheels *v e f* will be made to conform thereto.

When the fan-shaft *r* is revolved by turning the crank *h*, geared thereto, the belt *c*, with its cups *a a*, is carried around the belt-wheel *e* and idler *n*, ascending over the shaft *r* and descending below it. An inclined wall, *i*, joins the bridge *e'* at the upper end, and terminates at the lower end in a tray, P, beneath the lower end of the incline sieve *r'*, the latter being the sieve which in other mills conveys the grain to the lower rear delivery, discharging the grain onto the floor. The position and arrangement of the cups *a a* are such that the grain runs off the lower end of the sieve *r'* into the cups, and is discharged out of the cups through the opening at the upper end in the wall of the mill-casing, said cups representing in form four sides of a cube, Fig. 4, with the free corners cropped off, if desired. To illustrate, supposing the mill to be in motion, referring to Fig. 1, the cup at the lower end of the sieve *r'* is receiving grain, and the upper cup, which has passed through the opening, is discharging grain onto the bridge *e'*, which forms part of the discharge-spout, as before described. It will be observed that after said cup has emptied its contents it passes on around the sprocket-wheel *e*, and enters the opening again between said wheel and the upper end of the bridge *e'*. Thus while one cup is discharging the grain the cup next beyond has just entered the opening and presented its straight back wall, forming a temporary extension to the bridge *e'*, preventing any grain from entering the opening and running down the incline wall *i*.

It will be understood that the shoe, (not here shown,) with which the screens and sieves of the mill are connected, is connected by suitable mechanism with the fan-shaft, as in nearly all fanning-mills, so that the one crank *h* performs the whole operation in fanning, shaking, and elevating.

A mill thus internally provided with an

elevating apparatus is no more cumbersome or bulky than the old common style of mills. The height of the discharge-opening from the floor nicely corresponds with the height of a bag. The upper rear wall of the mill-casing forms a suitable and convenient support for the roof and bridge composing the spout, and a proper support to the bag. The addition of but a few simple elements is necessary to those already in fanning-mills.

The wings of the double fan are set obliquely to each other, as at D D, Fig. 2, in order to throw wind toward the space between the fan-wings in its outward passage, thus compensating for the absence of the fan-wings in said space.

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

1. A grain-cleaning mill consisting of a casing provided with a grain-discharge in its lower portion, and with an opening through its upper rear wall, means within the casing for cleaning grain, and a grain-elevator extending from said grain-discharge to the opening through said upper rear wall, substantially as set forth.

2. A fanning-mill consisting of a casing provided with an opening through its upper rear wall, suitable screens, a double fan, and an endless belt bearing elevator-cups, and extending from the lower grain-discharge from the screens up between the fans to said opening through the upper rear wall of the casing, substantially as set forth.

3. A grain-cleaner consisting of a casing, means therein for cleaning the grain, said casing having a grain-discharge in the lower portion and an opening through its upper rear wall, a slanting grain-bridge at the lower side of said opening, and an endless belt carrying elevator-cups, the backs thereof being constructed and arranged to form temporary extensions to said grain-bridge, substantially as set forth.

4. A fanning-mill consisting of a casing having an opening in the upper rear wall, screens, a double fan, a shaft having two sprocket-wheels near said opening, an idler near the grain-discharge from the screens, a sprocket-wheel on the fan-shaft between the fans, a sprocket drive-chain on the wheel between the fans and the wheel over it on the upper shaft, and a sprocket-belt bearing elevator-cups on the idler and on the other wheel on the upper shaft, substantially as set forth.

In testimony of the foregoing we have hereunto subscribed our names in presence of two witnesses.

HENRY B. BALCH.
FRANK BURTT.

Witnesses:
GEO. D. B. HALL,
THOMAS WARREN.