2 Sheets—Sheet 1.

L. THEOBALD.

GRAIN-SEPARATOR.

No. 171,066. Patented Dec. 14, 1875.

Fig. 1.

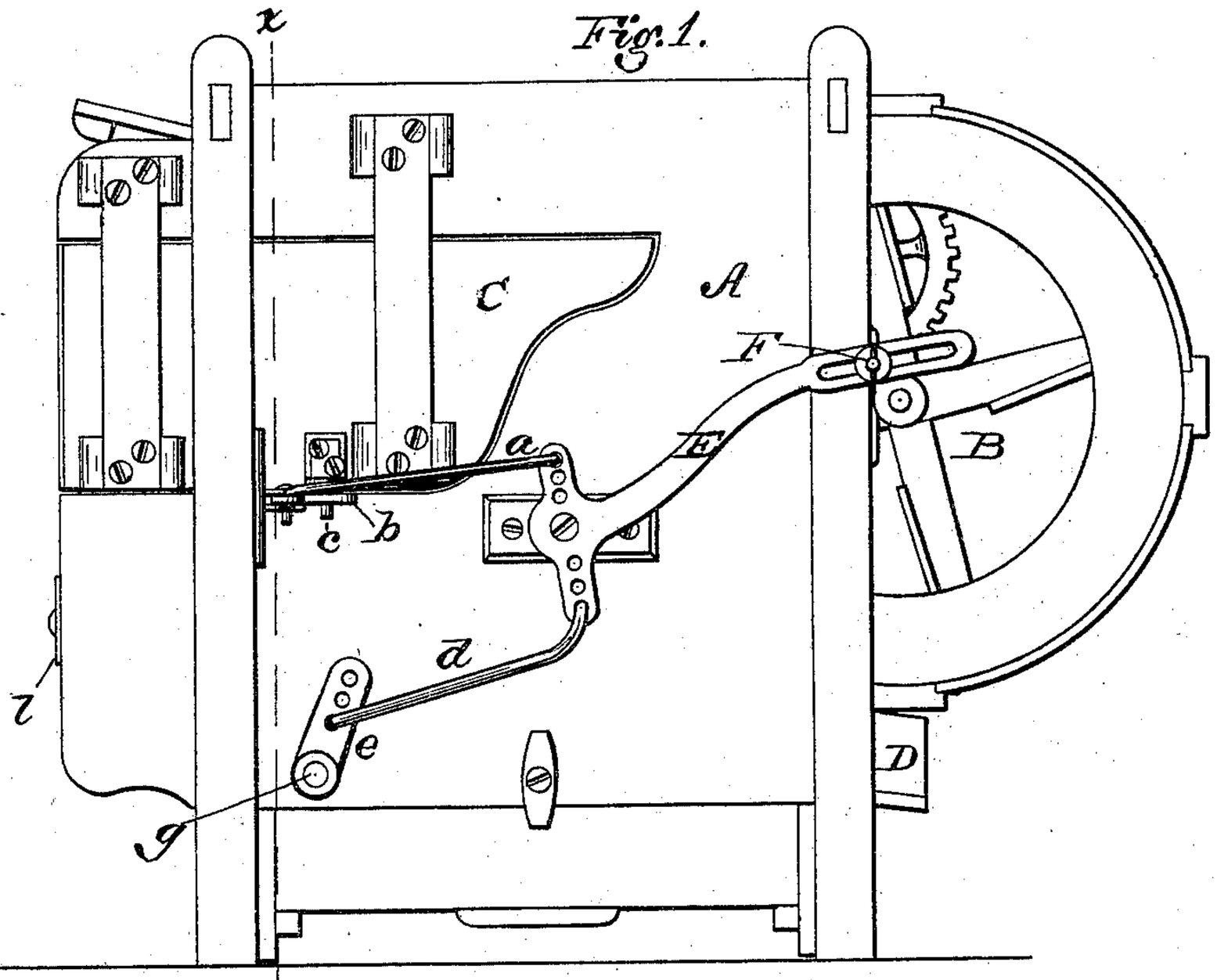
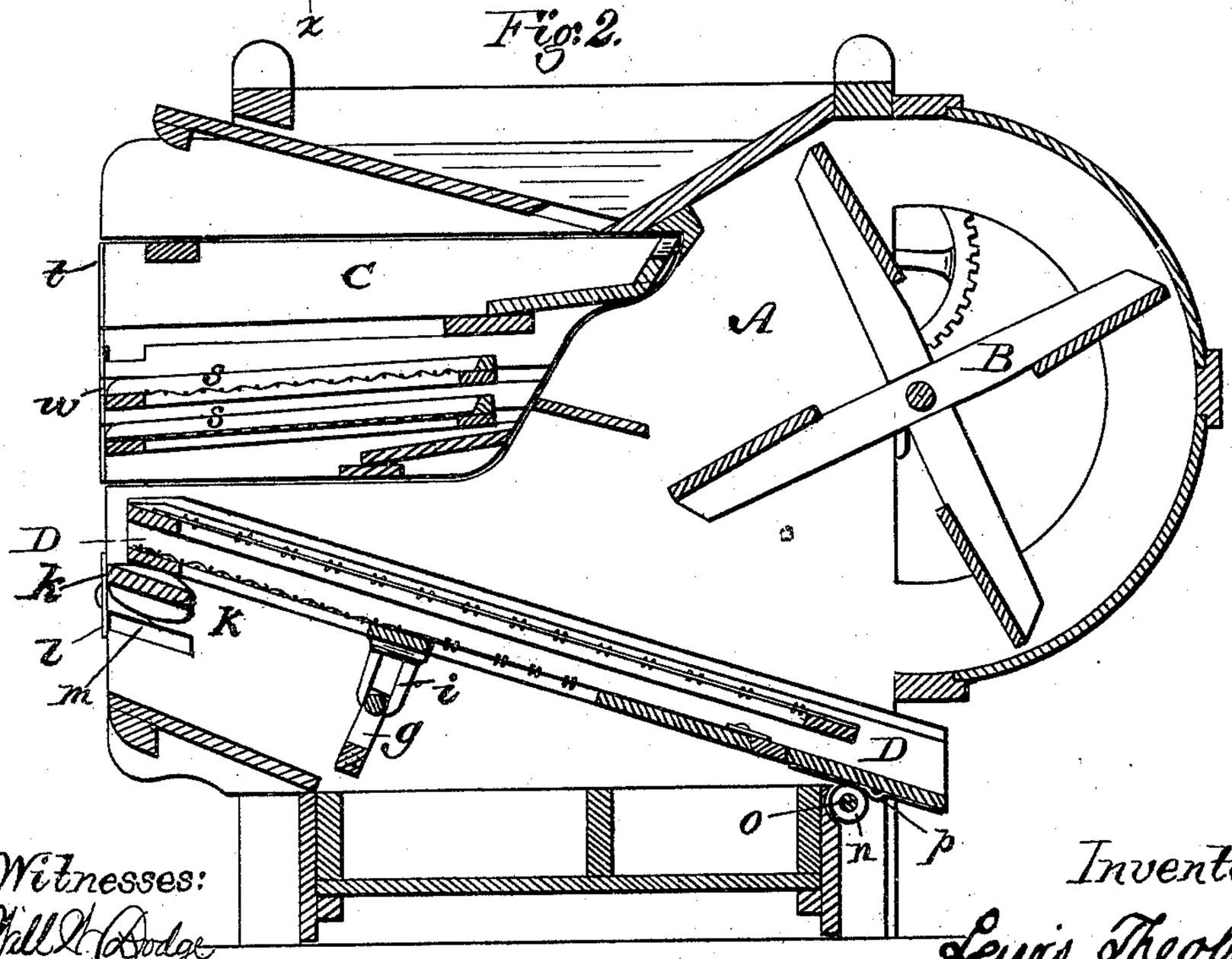


Fig. 2.



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By his attys
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2 Sheets—Sheet 2.

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No. 171,066. Patented Dec. 14, 1875.

Fig: 3.

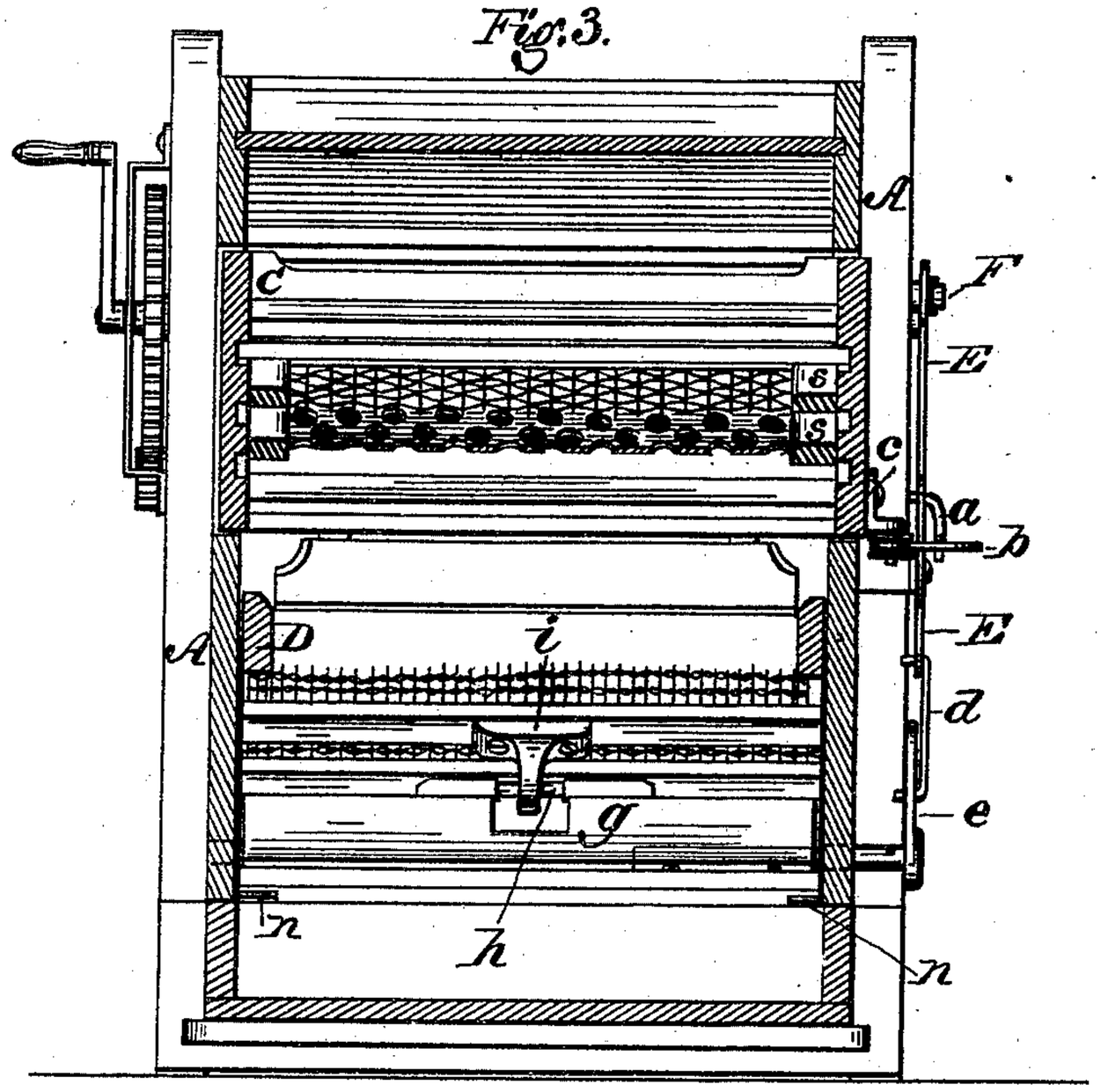
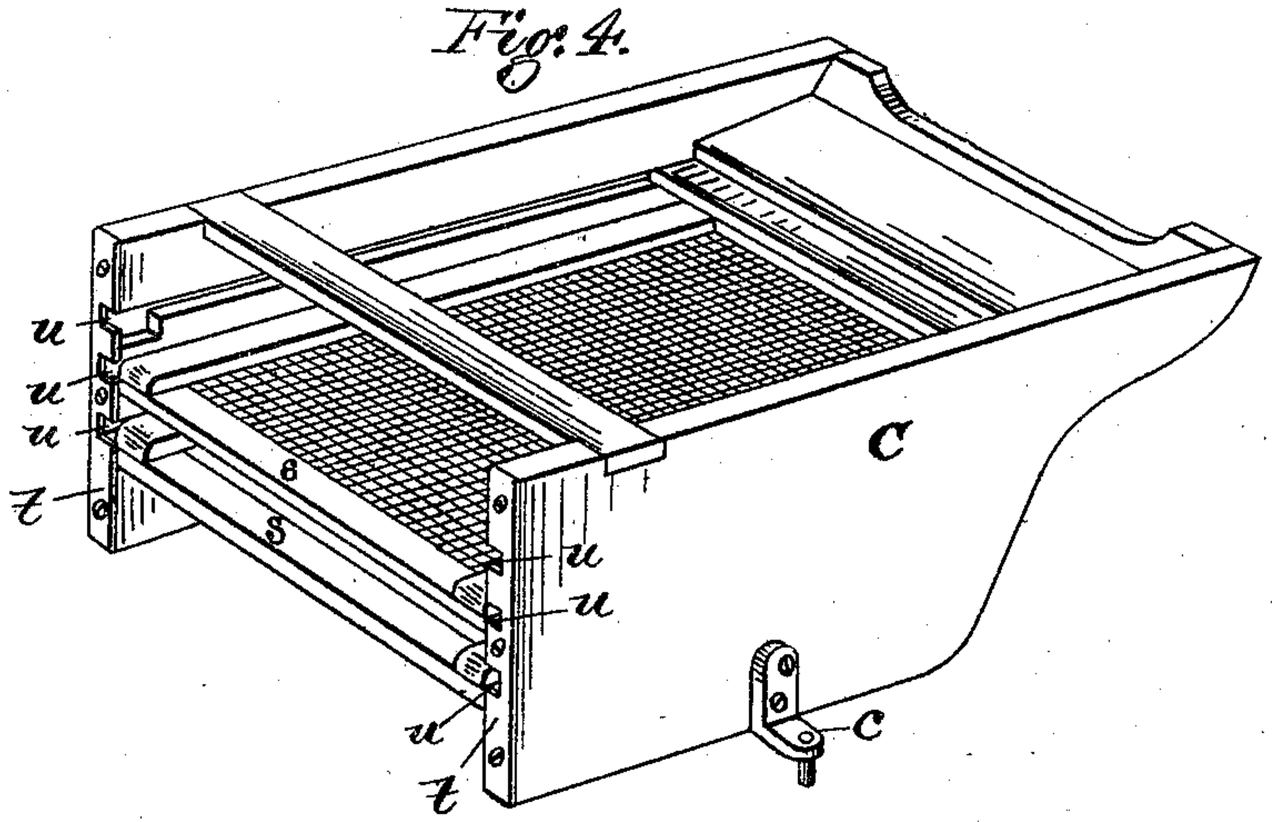


Fig: 4.



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UNITED STATES PATENT OFFICE.

LEWIS THEOBALD, OF PLAINWELL, MICHIGAN.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **171,066**, dated December 14, 1875; application filed June 5, 1875.

To all whom it may concern:

Be it known that I, LEWIS THEOBALD, of Plainwell, in the county of Allegan and State of Michigan, have invented certain Improvements in Fanning-Mills, of which the following is a specification:

My invention consists in a combination of mechanism for operating the two shoes or shakers, in the manner of securing the screens in place in the upper shoe, and in other details hereinafter explained.

Figure 1 represents a side elevation of my machine; Fig. 2, a vertical longitudinal section of the same; Fig. 3, a transverse vertical section of the same on the line *x x;* Fig. 4, a perspective view of the upper shoe.

The machine, in its general construction and operation, is the same as those now in common use, consisting essentially of a body, A, containing a blast-fan, B, in one end, a laterally-moving shoe or shaker, C, in its top, and a longitudinally-moving shoe or shaker, D, in its bottom. In order to communicate motion to the two shoes, I pivot on the outside of the body A a lever, E, having arms, which extend above and below the pivot, and also a horizontal arm, which has its end slotted and mounted on a crank, F, which is secured to the shaft of the fan, as shown in Fig. 1. The upper arm of the lever E is connected by a link, *a*, with one arm of a horizontal elbow-lever, *b*, which is pivoted to the side of the frame, and connected at its opposite end by a plate, *c*, to the upper shoe C, as shown in Figs. 1 and 3. The lower arm of the lever E is connected by a link, *d*, to an arm, *e*, secured to one of the journals of a rocking bar, *g*, which extends transversely across the inside of the machine under the lower shoe D. The rocking bar is provided at its upper edge with a wrist or journal, *h*, over which a depending forked arm, *i*, on the under side of the shoe D engages, as shown. The shoe is sustained at its upper end by a cross-bar, *k*, the ends of which are seated in notches in the sides of the body, and secured therein by buttons *l*. The body will be provided, as shown, with two sets of the notches *m*, to receive the bar at different heights, so that by changing the bar from one to the other, the end of the shoe may be raised or lowered, and its inclination thereby varied. The buttons *l* are pivoted between the two notches, as shown, so that the single pair serves to lock the cross-bar in both positions. The lower end of the shoe D is supported by two rollers, *n*, mounted on the ends of a transverse shaft, O, as shown in Figs. 2 and 3. In order to prevent wear on the shoe, its under side is provided with plates to run upon the rollers, and in order to give the shoe a vertical motion the plates may be provided each with one or more ribs, *p*, in such position that as the shoe reciprocates they will be carried back and forth over the rollers. The screens *s*, which are shoved loosely into grooves in the upper shoe, are held in place by plates *t*, which are secured to the rear end of the shoe, and provided with notches *u*, through which the screens may be withdrawn after first raising their rear ends. In inserting the screens they are simply pushed through the notches into the shoe, and then permitted to drop at the rear end below the notches.

When the machine is set in motion, the crank on the fan-shaft imparts a vibratory motion to the lever E, which imparts a lateral motion to the upper shoe through the link *a* and lever *b*, and a longitudinal motion to the lower shoe through the link *d*, arm *e*, and rock-shaft *g*, acting upon the arm *i*. In order that the length and the rapidity of motion of the shoes may be varied as required, I provide the arms of the main lever, of the elbow-lever, and of the rock-shaft with a series of holes, permitting the links to be adjusted as desired; and, in order to lessen the friction of the parts, I provide the crank-wrist with a roller, working in the slot of the lever, as shown.

The combination of parts for operating the shoes is cheap, simple, and durable; the rollers at the foot of the lower shoe render its operation smooth and easy; the employment of the removable supporting-bar permits a ready change in the inclination of the shoe; the manner of arranging the screens admits of their ready removal and insertion, and avoids the danger of their being rattled out of place, and the ribs to ride over the rollers and lift the shoe will cause a tossing of the grain thereon, in such manner as to facilitate and improve the separation.

What I claim as my invention is—

1. In combination with the grooved shoe C and its removable screens, the notched plates or bars *u*, secured to the rear end of the shoe, as shown and described.

2. The shoe or screen D, provided with the depending slotted arm *i*, in combination with the body A, provided with the notches *m* and adjustable bar *k*, and the rock-shaft *g*, engaging in the arm *i*, as shown, whereby a vertical adjustment of the upper end of the shoe is permitted without affecting its operation.

LEWIS THEOBALD.

Witnesses:

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