

D. LIPPY & J. S. BLYMYER. 2 Sheets--Sheet 1.

Thrashing-Machines.

No. 137,695.

Patented April 8, 1873.

Fig.1.

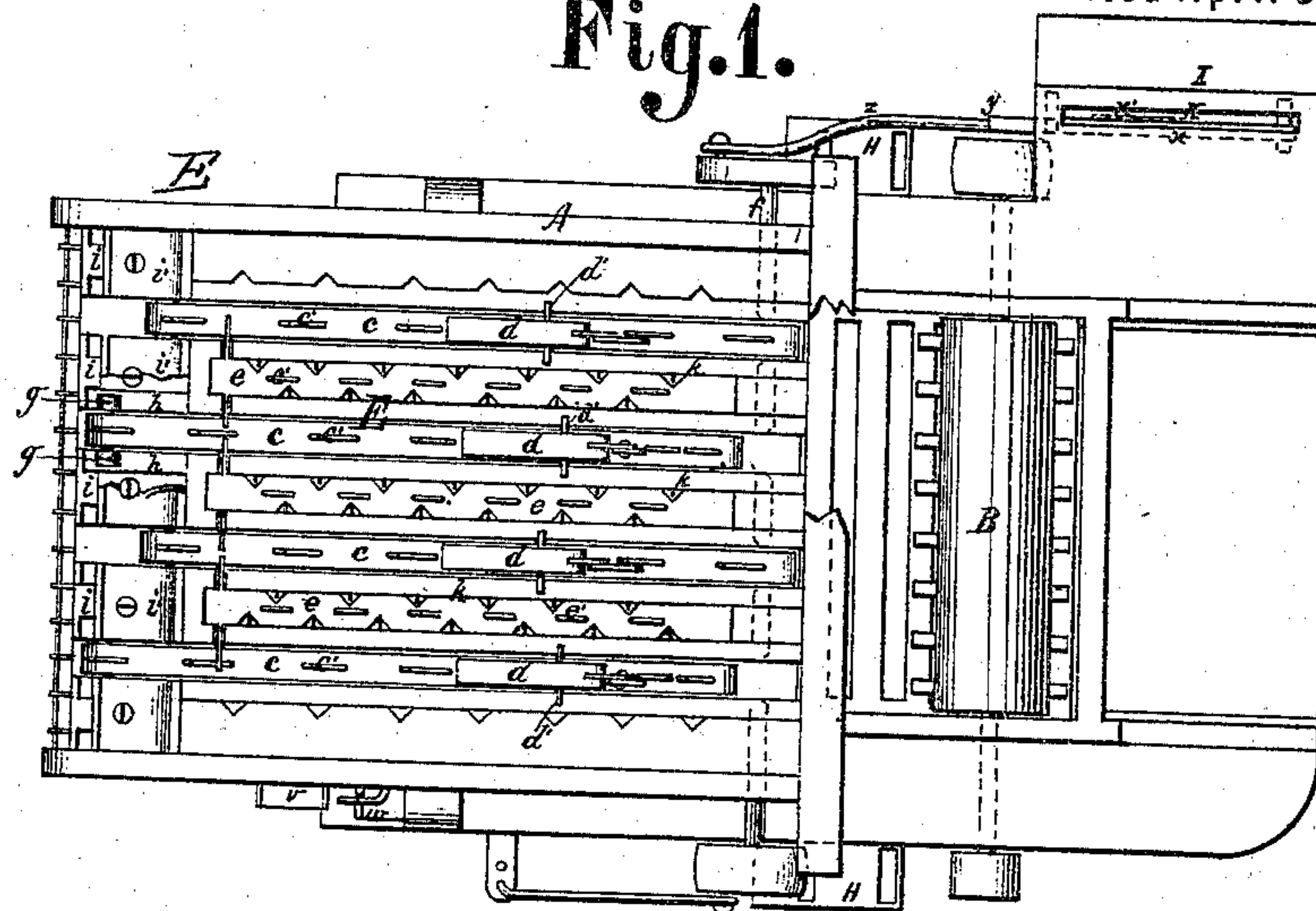


Fig.2.

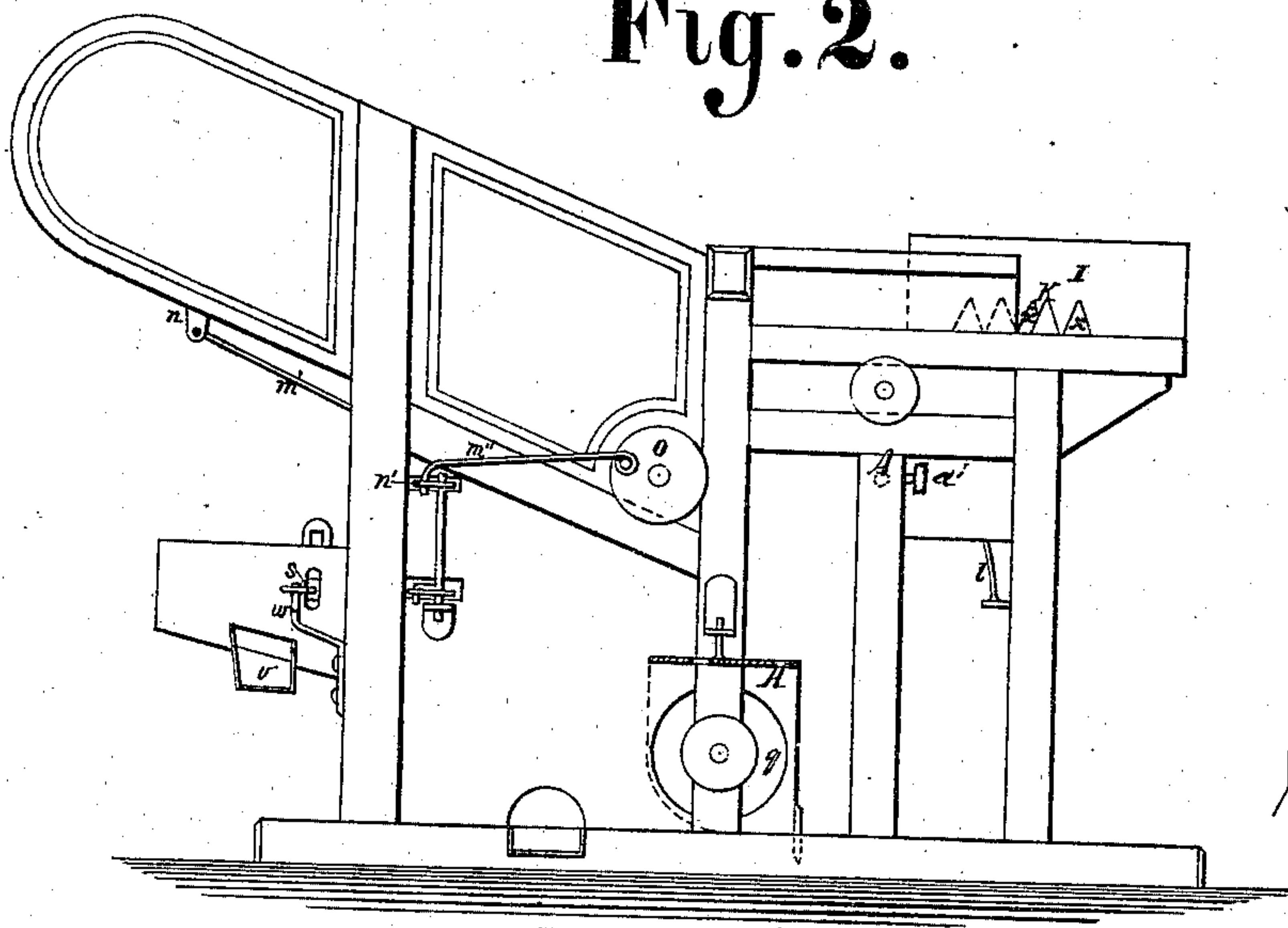
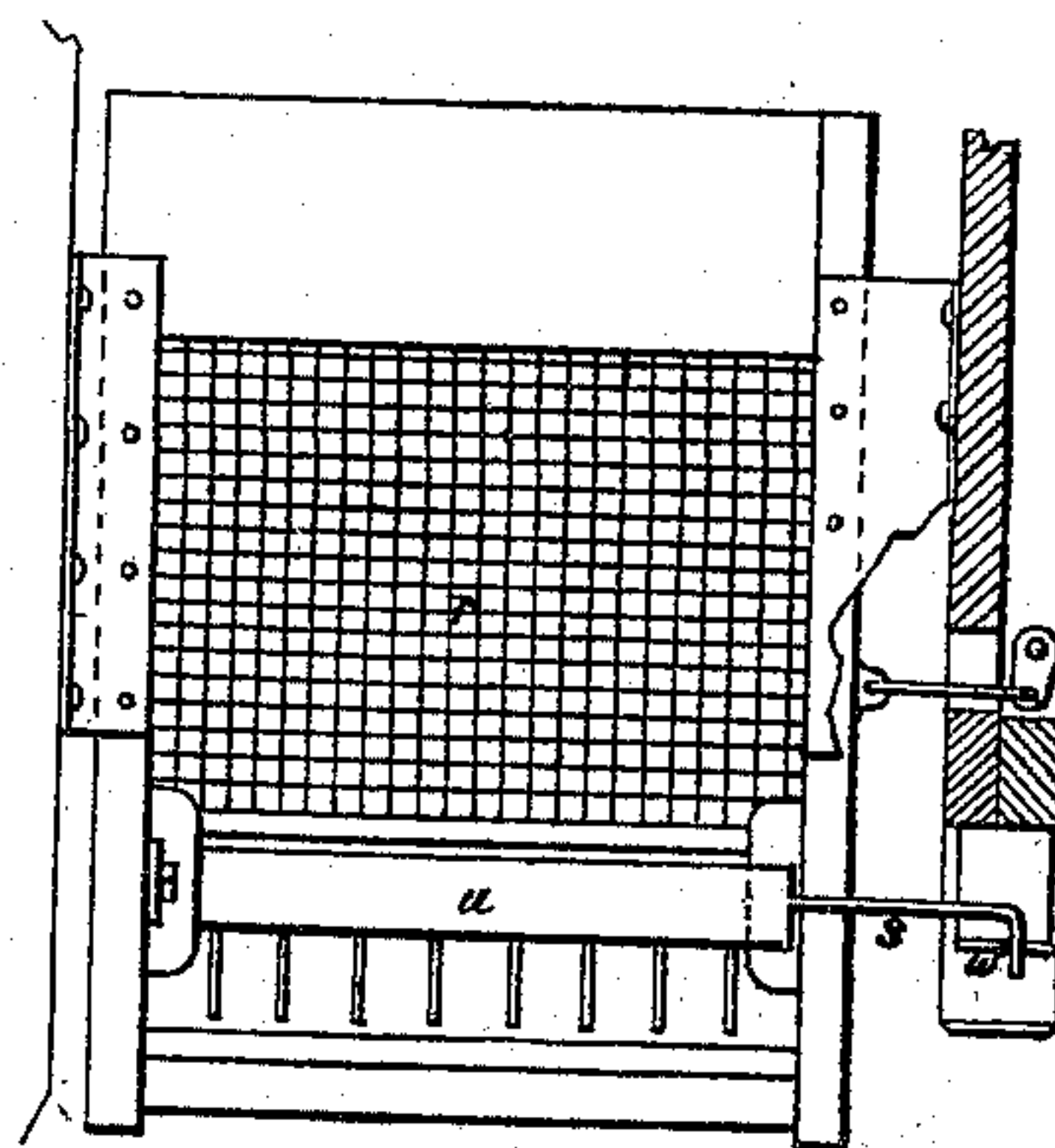


Fig.3.



Witnesses:
C. Shumway
H. B. M. W.

David Lippy
J. S. Blymyer Inventors.

D. LIPPY & J. S. BLYMYER.
Thrashing-Machines.

No. 137,695.

Patented April 8, 1873.

Fig. 4.

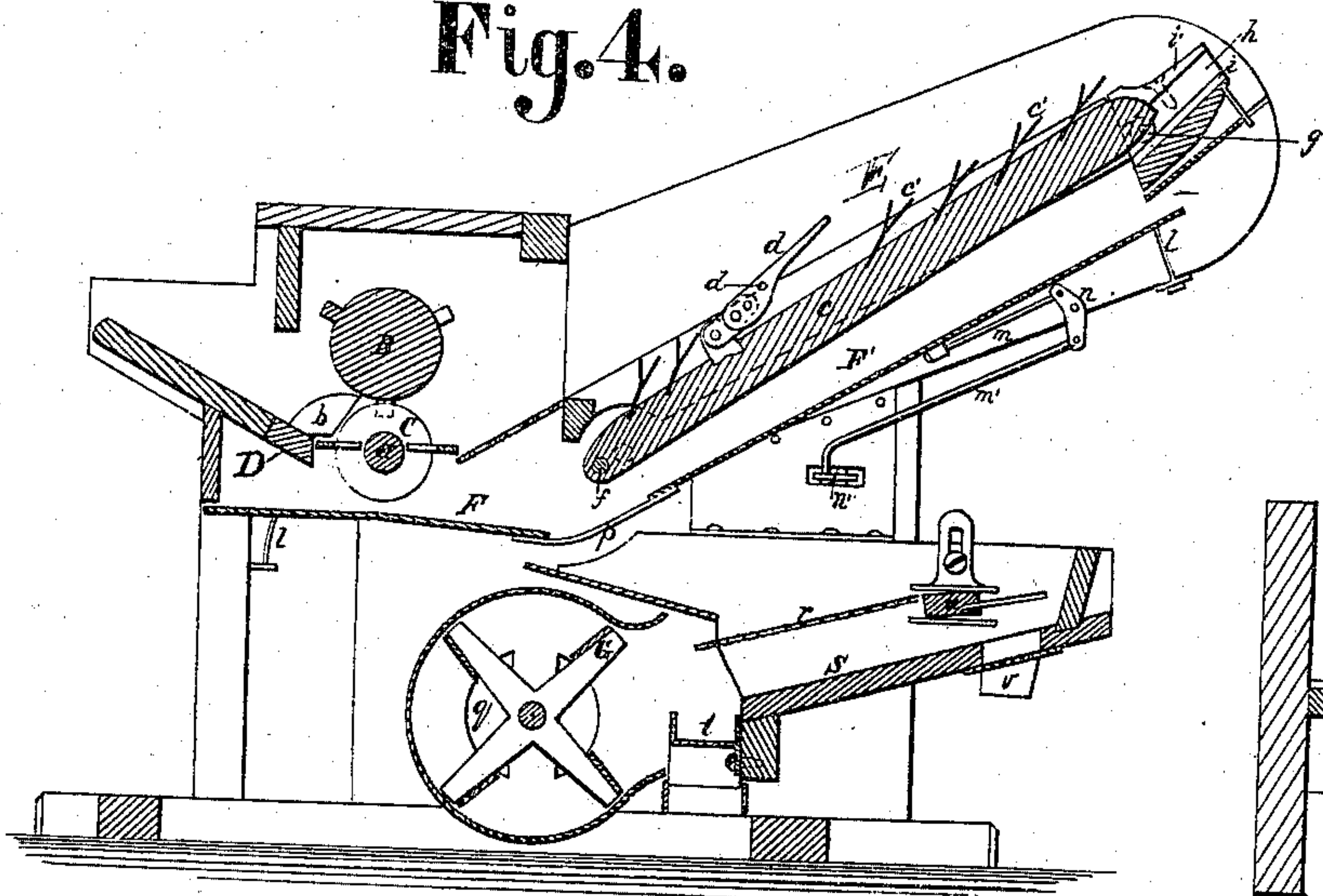


Fig. 6.

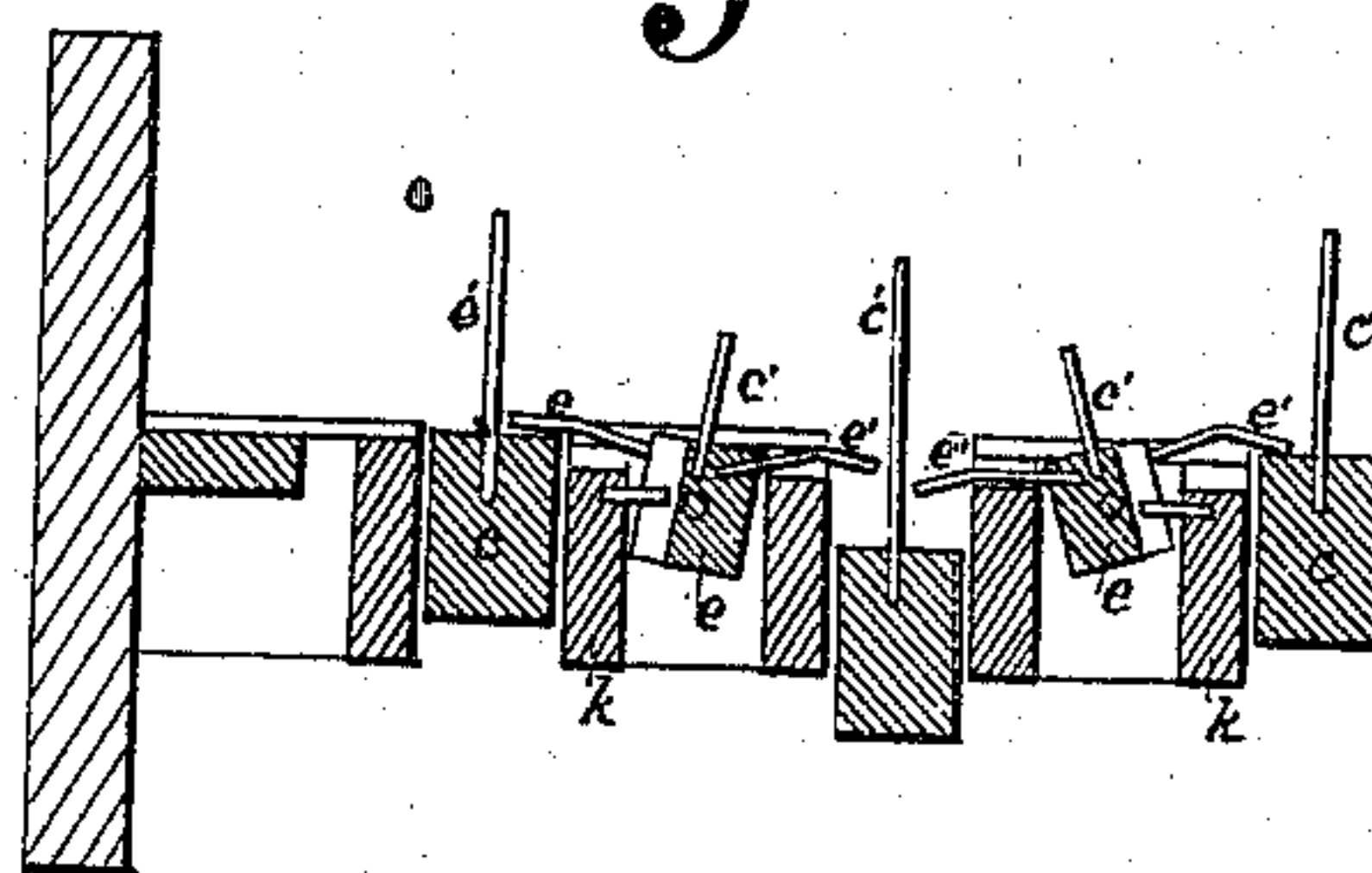


Fig.5.

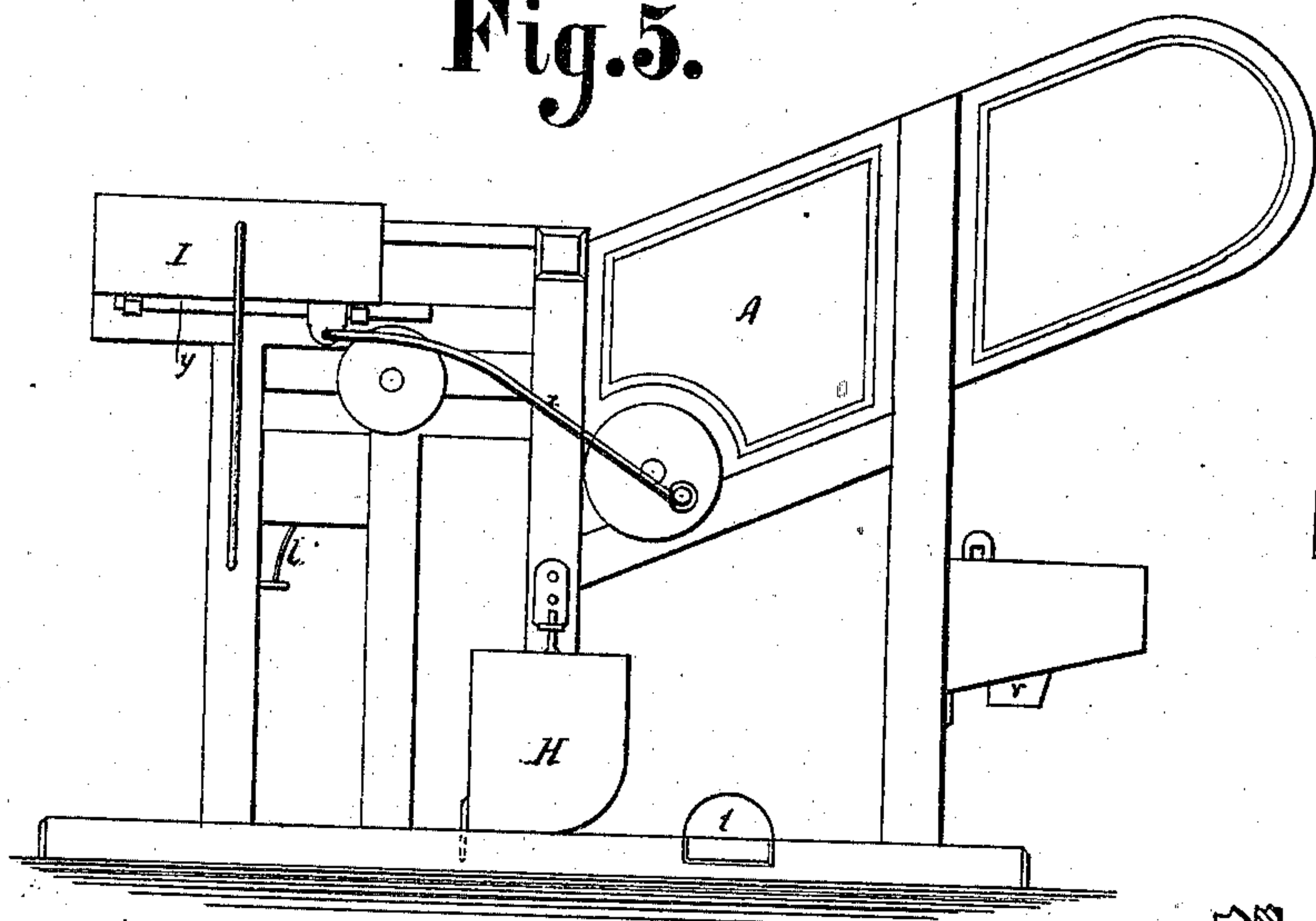


Fig.7.

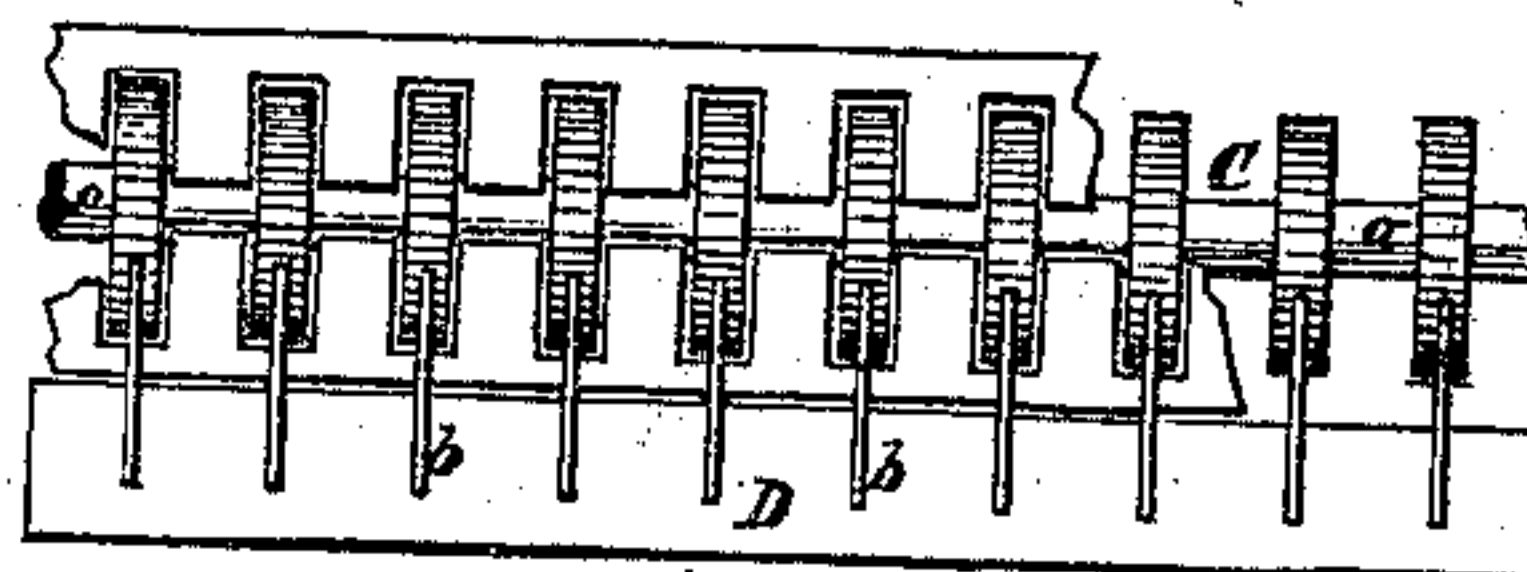
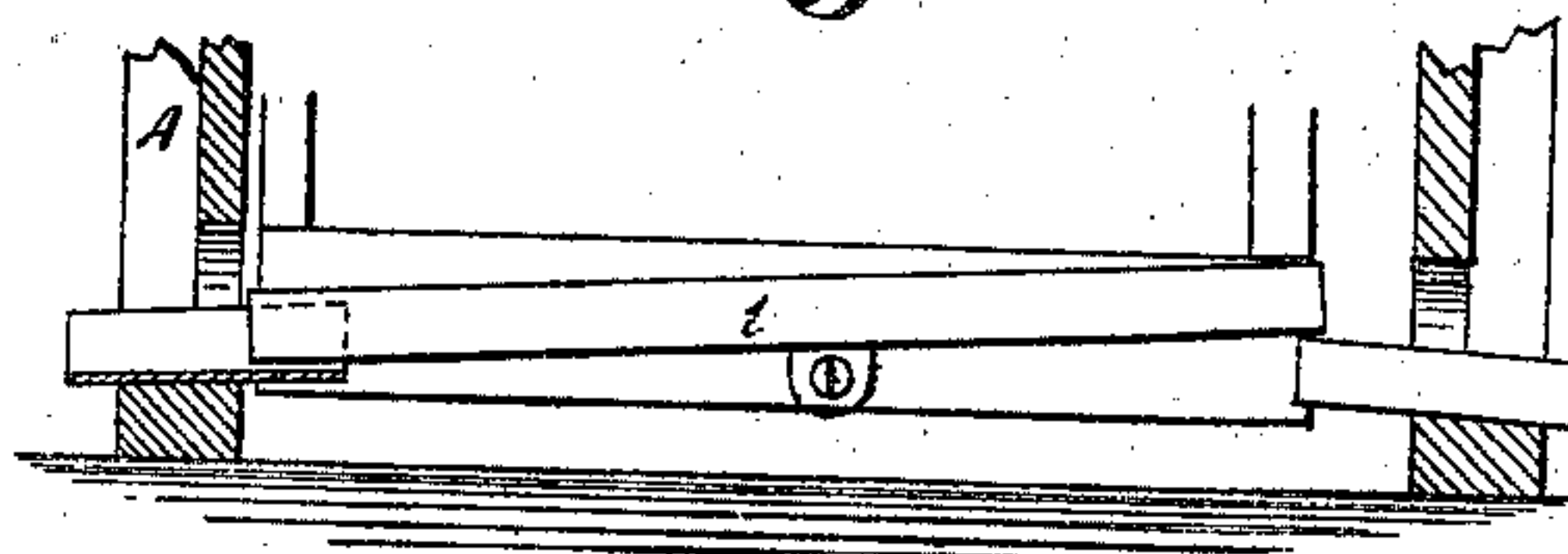


Fig. 8.



Witnesses:
 Emma
 J. B. May

Inventors.
David Lipp
J. S. Plympton

UNITED STATES PATENT OFFICE.

DAVID LIPPY AND JOHN S. BLYMYER, OF MANSFIELD, OHIO.

IMPROVEMENT IN THRASHING-MACHINES.

Specification forming part of Letters Patent No. 137,695, dated April 8, 1873; application filed June 13, 1870.

To all whom it may concern:

Be it known that we, DAVID LIPPY and JOHN S. BLYMYER, both of Mansfield, in the county of Richland and State of Ohio, have invented certain Improvements in Grain Thrashers, Separators, and Cleaners, of which the following is a specification:

Nature and Objects of the Invention.

Our invention relates to the employment of a counter-cylinder in combination with the revolving toothed cylinder, presenting a convex surface to the surface of the latter in lieu of a toothed plane or concave, such as has been commonly used; also to dividing-plates at the entrance to the cylinder; also to anti-friction rollers at the ends of the rakes; also to the construction of the teeth of the rakes; also to the method of operating the beaters; also to vibrating bars, as explained; also to connecting the bottom board under the cylinder with the bottom board under the separator, so that both are vibrated or shaken by one system of mechanism; also to the mode of operating the toothed separator for the tailings; also to a peculiar and novel band-cutter.

Description of Accompanying Drawing.

Figure 1 is a top view of a thrasher, separator, and cleaner in which our improvements are embodied, the top boards being removed to display the working parts. Fig. 2 is a side elevation of same. Fig. 3 is a top view of screen and separator for tailings. Fig. 4 is a longitudinal sectional elevation of the machine. Fig. 5 is a side elevation, reverse of side represented in Fig. 2. Fig. 6 is a transverse section on an enlarged scale through the separator, showing straw, rakes, and shakers. Fig. 7 is a plan view, on an enlarged scale, of the counter-cylinder. Fig. 8 is a side elevation of the reversible grain-spout.

General Description.

A is the frame-work and outer casing of the machine; B, the revolving toothed cylinder by which the grain is stripped from the straw. C is a counter-cylinder, which we have provided in lieu of the toothed concave heretofore used in thrashers. This cylinder presents a convex surface to the action of the revol-

ving cylinder, thus diminishing greatly the resistance to the passage of straw through the machine, while at the same time it produces an appropriate and an adequate resistance, so that the grain is thoroughly stripped from the straw. Moreover, this cylinder may be supported in journals and rotated to present new and different surfaces to the action of the revolving cylinder adapted to different kinds or conditions of the grain; or, if a uniform cylinder is used, it may be left free and allowed to revolve temporarily in case the feed should be excessive, or any substance enter offering an undue obstruction to the motion of the revolving toothed cylinder, thus affording a practical security against clogging and diminishing greatly the risks of accident and injury which attend the use of these machines; but it is not intended that the counter-cylinder shall have any motion while the machine is in operation other than that which occurs incidentally, and occasionally resulting from the action of the working-cylinder when an undue resistance is present. The counter-cylinder may consist of a series of plain or serrated disks or of a toothed cylinder, and its freedom of motion may be controlled by a temper-screw, as at *a'*, Fig. 2. D is a movable feed-board, placed at the throat of the machine, upon which are placed adjustable dividing-plates *b*, by which the straw is separated and caused to enter the machine more evenly and appropriately. E is the separator, composed of rakes *c* with teeth *c'*, beaters *d*, vibrating bars *e* with teeth *e'*, and dividing-rails *h*. The lower or front end of the rakes are carried by cranks formed in continuous shaft *f*; the rear ends have each a transverse pin prolonged through upon either side carrying small anti-friction rollers *g*, which work in oblique ways or grooves *h*, these being formed in blocks *i* recessed appropriately to form with the movable cap *i'* the ways or grooves. The rollers at the end of the rakes, and working in their ways, permit the rakes to be reciprocated even when elevating and conveying straw with very little friction. The teeth *c'* upon the rakes are forked, as represented in Fig. 4, by which they lift and loosen the straw at the same time that they convey it to the rear, thus causing the grain to be more per-

fectly separated. The beaters *d* linked to and carried by rakes *c* have a pin, *d'*, passing through them a short distance from their linked end, and projecting so far on either side as to encounter the dividing-rails *k*, the construction and arrangement being such that as the rakes descend and recede after a forward movement these pins encounter the rails, and the free ends are suddenly and violently raised, beating the straw from below and serving to separate grain therefrom. The vibrating bars *e* are pivoted at either end, and these also have pins *e'* passing through them and beyond the dividing-rails *k* into the track of the rakes *c*, the construction and arrangement being such that as the rakes are operated and ascend performing their rearward stroke they encounter these pins, alternately upon opposite sides, and communicate a sharp vibrating motion, thus disturbing and violently agitating the straw in a lateral direction. *F* is the bottom board under the cylinder, and *F'* the bottom board under the separator, which receive the grain and conduct it toward the blast. They are held in their position by elastic corner-supports *l*, but so that they are free to vibrate, the vibrations being produced by rod *m* from vibrating bar *n*, operated by rod *m'*, the latter extending from bell-crank *n'*, which derives its motion from crank-rod *m''*, operated by crank-wrist upon pulley *o*. These bottom boards *F* *F'* are connected together by connecting-bars *p*, and are thus both shaken or vibrated by one system of mechanism, as above described. *G* is the fan. The openings *q* in case *A*, through which air is admitted, are protected by an outer case or hood, *H*, so constructed and arranged as to prevent the entrance of straw and trash, but without excluding air.

The grain having been separated and cleaned falls through screen *r* upon bottom board *S*, and thence descending falls into grain-spout *t*. This spout is supported by a pivot centrally, and may be vibrated and set with an inclination in either direction, and thus made to discharge the grain on either side of the machine. The tailings, straw, and chaff-inclosed grain which pass over the surface of the screen *r* discharge upon toothed bar *u*, carried by the screen-frame, and vibrating laterally with it, but it is also free to vibrate upon its axis. *s*, Fig. 3, is an axial rod prolonged from one end of *u* and bent at a right angle at its outer extremity, and so arranged in contact with inclines upon the upper edge of upright plate *w* that as the bar *u* is carried back and forth laterally by the screen-frame it is also caused by the inclines to vibrate upon its axis, thereby separating grain from the straw and facilitating the escape of straw over the tailing-board, the grain falling into

tailing-spout *v* and the straw escaping over upon the floor.

At the front of the machine, and at the side table *I*, is a band-cutter, *K*, consisting of two series of reaper-knives, *x* *x'*, the former stationary and the latter carried by a reciprocating bar, *y*, operated by a pitman-rod, *z*, from a crank-wrist carried by shaft *f*.

The construction and arrangement of this device is such that when a bundle of grain is thrown appropriately upon the side table its band is instantly severed by the cutters.

It would be appropriate as a protection to the hands of the operator to have the side table supported upon springs which could be depressed by force, temporarily exposing the bands to the action of the cutters, but which would elevate the table instantly and support it above the points of the cutters upon the removal of the temporary pressure.

We claim as our invention—

1. The combination, in a thrashing-machine, of the revolving cylinder *B* and the loose cylinder *C*, arranged to operate substantially as described.

2. The cylinder *C*, arranged loosely in its bearings and disconnected from the operating mechanism, whereby it is permitted to receive an incidental motion from the friction of the straw as it is fed into the machine, and may also be clamped fast and adjusted so as to bring different parts of its periphery into operation, substantially as described.

3. In combination with the revolving cylinder *B*, the feed-board *D* having dividing-plates *b*, substantially as and for the purpose specified.

4. The reciprocating rakes *C* having their rear ends supported on friction-rollers, substantially as described.

5. The beaters *d*, linked to and carried by the rakes *C*, substantially as described.

6. In combination with rakes *c*, the vibrating bars *e*, constructed, arranged, and operating substantially in the manner and for the purpose specified.

7. The bottom-boards *F* and *F'*, connected and arranged substantially as described, whereby both are operated together and by the same means or driving-power, as set forth.

8. The toothed bar *u*, arranged to vibrate on its axis in a vertical plane, and also horizontally, substantially as herein described.

9. The band-cutter *K*, consisting of the series of stationary cutters and the series of reciprocating cutters, arranged on the feeding-table and operated from the mechanism of the machine, substantially as described.

DAVID LIPPY.

J. S. BLYMYER.

Witnesses:

ABEL R. PROCTOR,

CHAS. H. FISK.