

(No Model.)

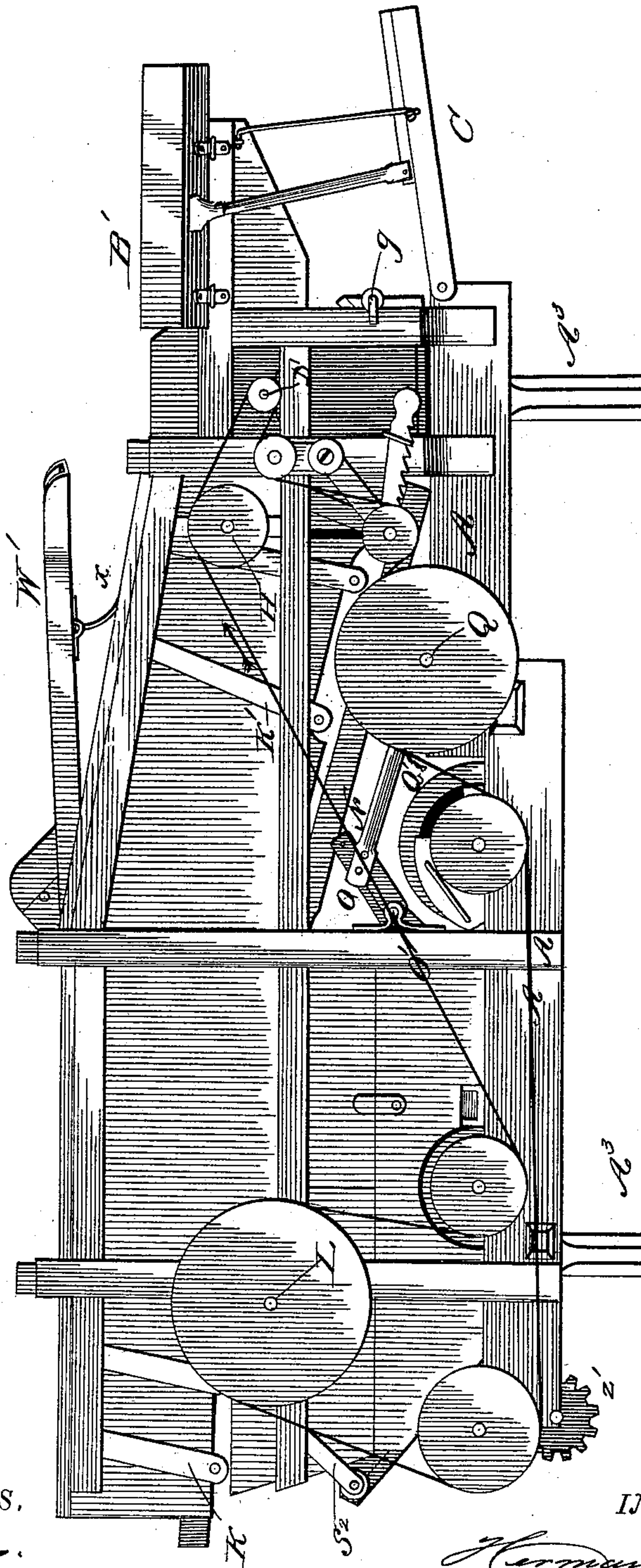
5 Sheets—Sheet 1.

H. STOKER.
GRAIN SEPARATOR.

No. 400,965.

Patented Apr. 9, 1889.

Fig. 1.



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(No Model.)

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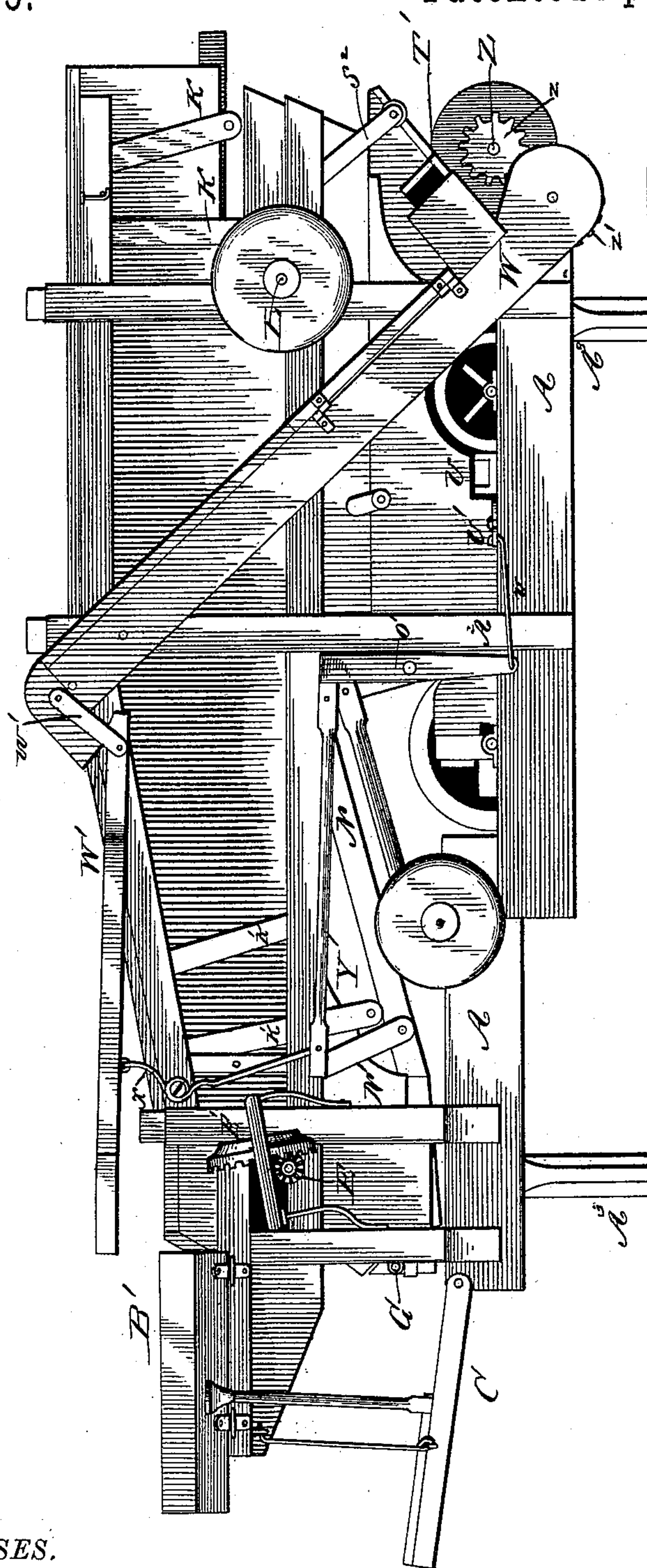


Fig. 2.

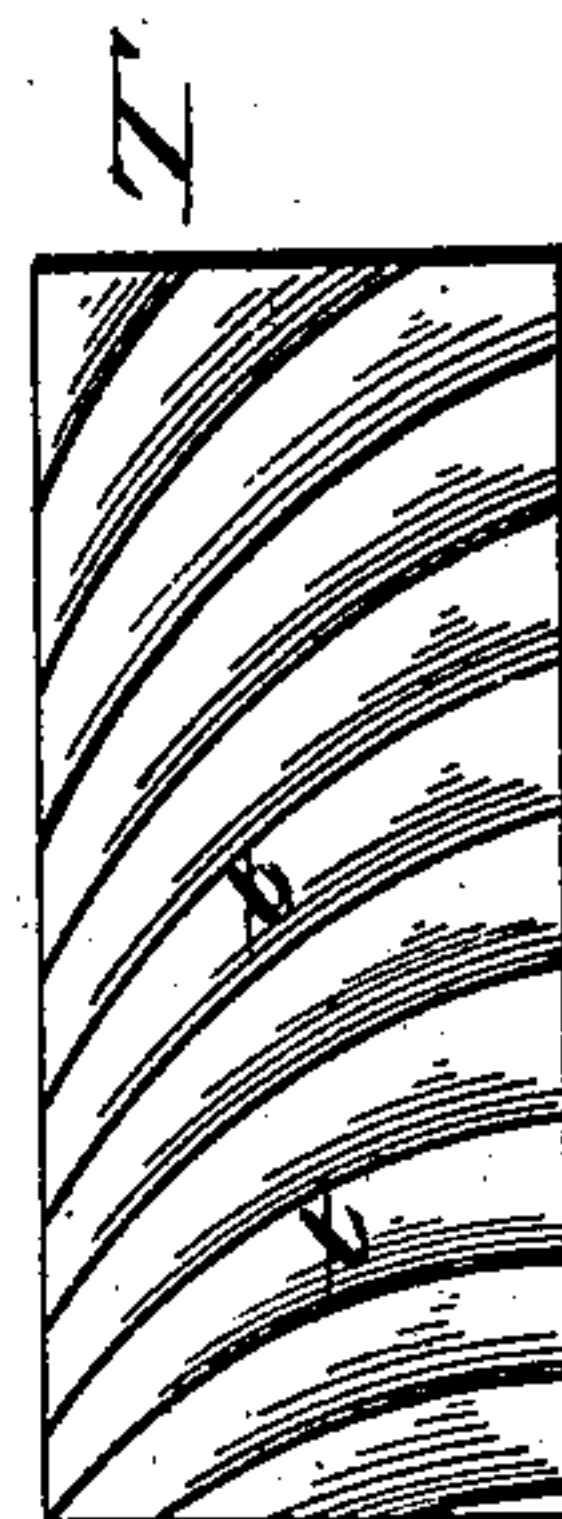


Fig. 2a

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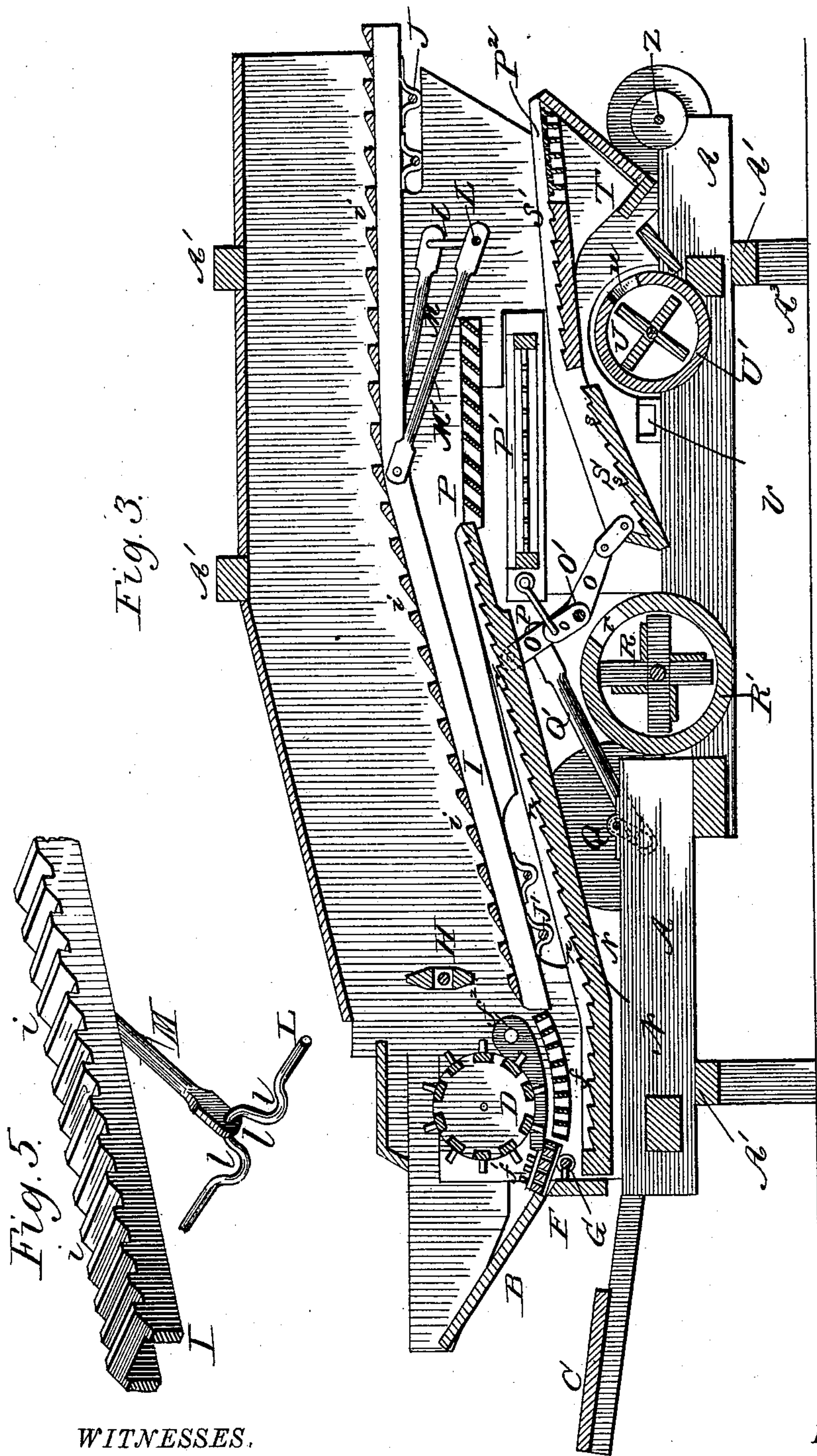
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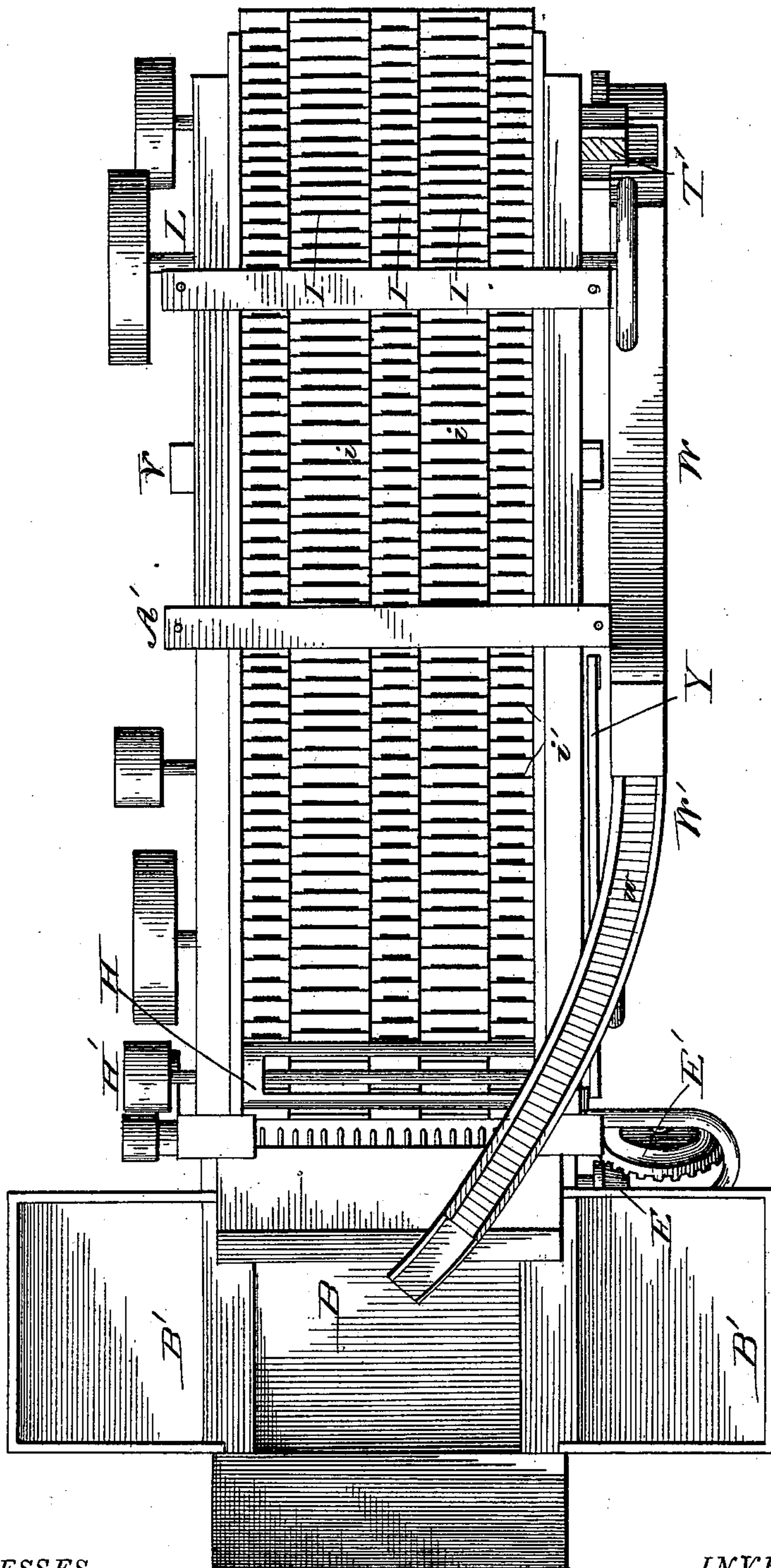


Fig. 4.

WITNESSES.

$$a, s, m, c, c, o, y$$

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Fig. 6.

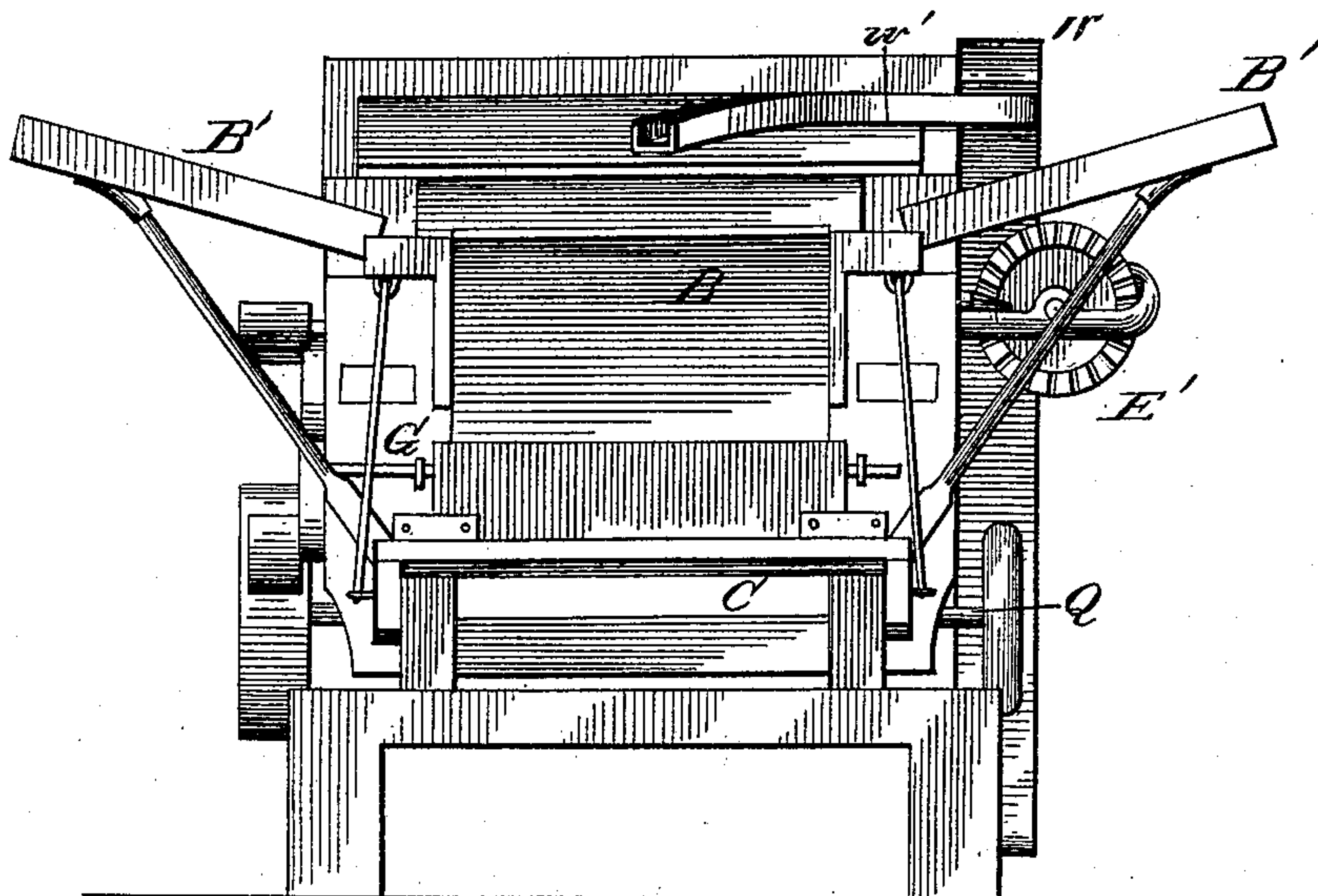
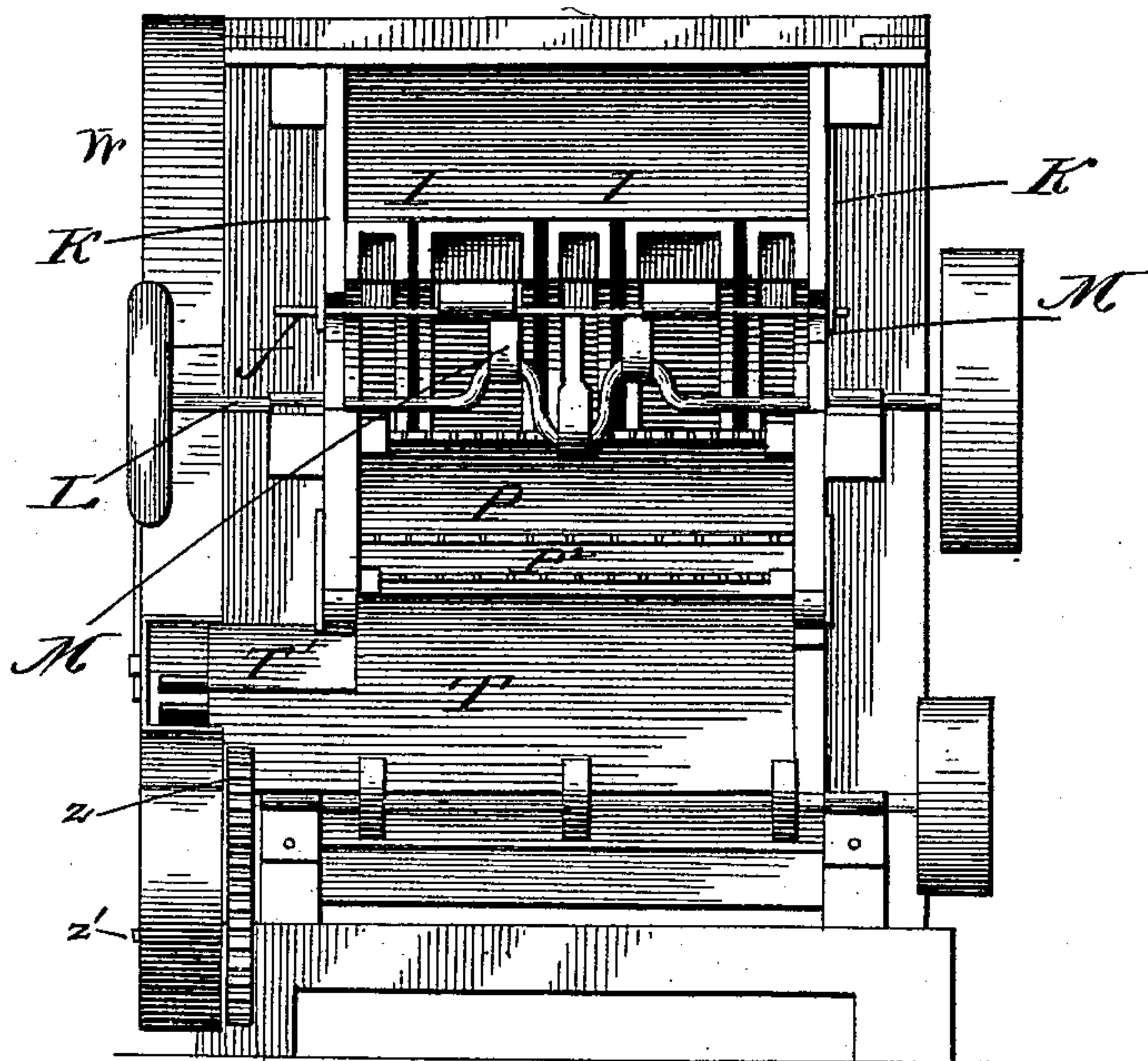


Fig. 7.



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UNITED STATES PATENT OFFICE.

HERMAN STOKER, OF POTOSI, WISCONSIN.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 400,965, dated April 9, 1889.

Application filed May 9, 1888. Serial No. 273,365. (No model.)

To all whom it may concern:

Be it known that I, HERMAN STOKER, a citizen of the United States, residing at Potosi, in the county of Grant and State of Wisconsin, have invented certain new and useful Improvements in Grain-Separators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to machines for thrashing and separating grain; and its object is to improve certain parts of the machines now in use for that purpose in order to obtain better results, as is described hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of the left-hand side of the machine, showing the belt-gearing. Fig. 2 is an elevation of the right-hand side. Fig. 2^a is a plan view of the delivery-trough. Fig. 3 is a vertical longitudinal section. Fig. 4 is a plan view with the top of the casing removed. Fig. 5 is a detail view of one of the shakers and carrier-bars. Fig. 6 is a view of the front end of the machine, and Fig. 7 a view of the rear end.

The same letters refer to the same parts in all the figures.

The frame of the machine is composed of sills A, cross-girts A', and uprights A². In the drawings the machine is shown as standing upon legs A³; but in practice it is mounted upon wheels for transportation. The moving parts are inclosed in a casing, as usual, certain portions being removable to afford ready access to the machinery.

The grain is fed to the thrashing-cylinder over a feed-table, B, on either side of which are tables B' for the band-cutters. The feeder stands upon a hinged platform, C, that can be turned up against the end of the machine when not in use.

The cylinder D is mounted on a shaft, D', driven by a bevel-pinion and gear-wheel, E E'.

Below the cylinder D is the concave F, consisting of a stationary grate, *f*, and a movable toothed portion, *f'*, carried on curved arms *f*², which are pivoted to the casing behind the cylinder and loosely linked to a crank-shaft, G, extending across the front of the machine. A handle, *g*, enables the shaft to be turned, thereby elevating or depressing the front end of the concave to accommodate it to the condition of the straw.

Behind the cylinder is a beater, H, mounted on a shaft, H', and consisting of two flat blades diametrically opposite each other. The straw shaker and carrier consists of a series of parallel bars, I, lying close together and extending from the end of the concave F to the rear end of the machine. They are preferably of the form shown, with flat tops and depending side flanges, and are inclined upwardly to a point at or near the middle of their length, whence they run in a substantially horizontal direction to their rear ends. They form a complete floor across the machine, and are provided on their upper surfaces with a succession of transverse grooves, *i*, one face of which is inclined rearwardly, while the other face is vertical. At the base of each groove is a narrow slit, *i'*, running nearly across the bar between the side flanges. The bars are divided into two sets, every alternate bar belonging to the same set and each set being pivotally connected with a rod, J or J', whose ends are supported in swinging links or hangers K K', respectively.

Motion is communicated to these shaker-bars by means of a shaft, L, provided with oppositely-disposed cranks *l*, which impart a reciprocating movement to the pitmen M M', connected, respectively, with the two sets of bars. The sets move alternately back and forth, each acting as a stripper for the other, and carrying the straw steadily to the rear. The loose grain falls through the slits *i'* upon the grain-table N, which also receives the grain that is thrashed out by the cylinder D and falls through the grate *f*. The grain-table reaches from the front of the machine to a point near the middle of the shaker-bars, being inclined upwardly substantially parallel with the inclined portion of the shaker. The

grain-table is solid, and is provided with a series of transverse grooves, *n*, having vertical front walls and inclined rear walls, as shown. The table N is hung at its front end on links N', while its rear end is supported on rocker-arms O, mounted upon a shaft, O', extending across the machine below the grain-table. Secured to the rear end of the table M is a riddle or screen, P, preferably of coarse mesh, and below it is a second screen, P', of finer mesh, sliding on horizontal ledges on the inside of the casing of the machine. Short links *p* connect the screen P' with rock-arms *o* on the shaft O'. The grain-table N and its screen P and the screen P' are reciprocated by means of a crank-shaft, Q, which actuates two pitmen, Q', one on each side of the machine, the pitmen being connected with the rock-arms on the shaft O'.

Located in front of the screens, but on a lower plane, is a fan, R, inclosed in a casing, R', that is provided with an opening, *r*, so arranged as to direct the current of air upwardly and rearwardly against the under side of the screens, thereby removing most of the chaff and blowing it out at the rear end of the machine.

The grain falls upon the inclined plate S, provided with transverse grooves *s*, like the grain-table N, and secured to the front end of the shoe. The tailings drop upon another similarly-grooved but nearly horizontal plate, S', also attached to the shoe and located to the rear of and below the screens P P'. At the back edge of the plate S' and in the same plane, is a screen, P², below which is a V-shaped trough, T, extending across the machine and ending in a spout, T'. The rear side of the trough is provided with curved grooves *t*, that sweep toward the spout T'. Under the plate S' is a fan, U, inclosed in a casing, U', which is provided with a blast-opening, *u*, directed toward the screen P², the front side of the trough T being comparatively low to allow the air to pass over it to the screen.

The plate S' not only catches the tailings from the screens P P', but also any grain that may be blown over by the fan R. Between the plates S and S' is an opening through which the grain passes to the delivery-spout V, located just in front of the fan-case U' and projecting at each side of the machine.

On the end of the shaft O' is a double rock-arm, *o'*, the lower end of which is connected by a rod, *v*, with a bell-crank lever, V', by which a reciprocating movement is given to the delivery-spout V. The spout is made reversible, so as to deliver the grain at either side of the machine, and it is arranged at such a height from the ground as to readily deliver into a bag or a measuring-vessel.

The rear end of the shoe is suspended by the hangers S² and its front end is connected by short links with the lower ends of the rock-

arms O, the upper ends of which support the grain-table N. The weight of the table thus balances that of the shoe, thereby enabling the machine to be run at high speeds.

The matter delivered from the spout T is carried by the elevator W to a trough, W', provided with transverse grooves *w*, inclined toward the receiving end of the trough, which is hung at its rear end on hangers *w'* and is supported near its front end on the end of a lever, X, the lower end of which is connected by a rod, Y, with rock-arm *o'*. A reciprocating shake is thereby given to the trough W', which delivers its contents upon the cylinder D to be rethashed. The elevator is driven by a belt-pulley on shaft Z, which carries a cog-wheel, *z*, meshing with another cog-wheel, *z'*, on the driving-shaft of the elevator.

The several shafts are provided with suitable belt-pulleys, all driven by one belt, as shown. A belt-tightener is provided, as shown in Fig. 1, to take up the slack.

The operation of the machine will be readily understood from the above description of its various parts and need not be set forth in detail. The straw and the grain are moved forward by the reciprocating grooved bars, table, plates, and troughs, thus dispensing with all endless belts. The reciprocating parts are all balanced against each other, as described, thereby permitting increased speed and less racking of the machine.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with the grain-table N and the screens P P', of the shaft O', the rock-arms O, the fan R, the shoe provided with the grooved plate S, grooved bed S', screen P², and means for oscillating the shaft, substantially as described.

2. The combination, with the grooved grain-table N, of the links N', the screens P and P', the shaft O', the rock-arms O and *o*, the links *p*, the shoe provided with the inclined grooved plate S under screen P', the grooved plate S', receiving the tailings from screen P', and means for oscillating the shaft O', substantially as described.

3. The combination of the shaft O', the rock-arm *o'*, the grain-spout V, bell-crank lever V', attached to the spout, rod *v*, connecting the lever and the rock-arms, the tailings-spout W', the hangers *w'*, supporting the rear end thereof, the lever X, supporting the front end of the spout, and the rod Y, connecting the lever X with the rock-arm *o'*, substantially as described.

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

HERMAN STOKER.

Witnesses:

CHAS. V. ARTZ,
JOSEPH GROSS.