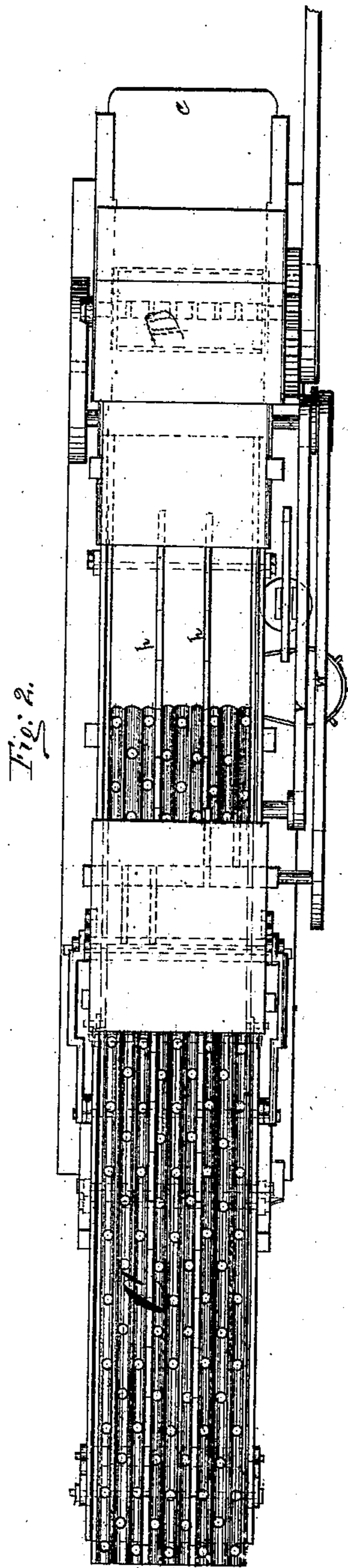
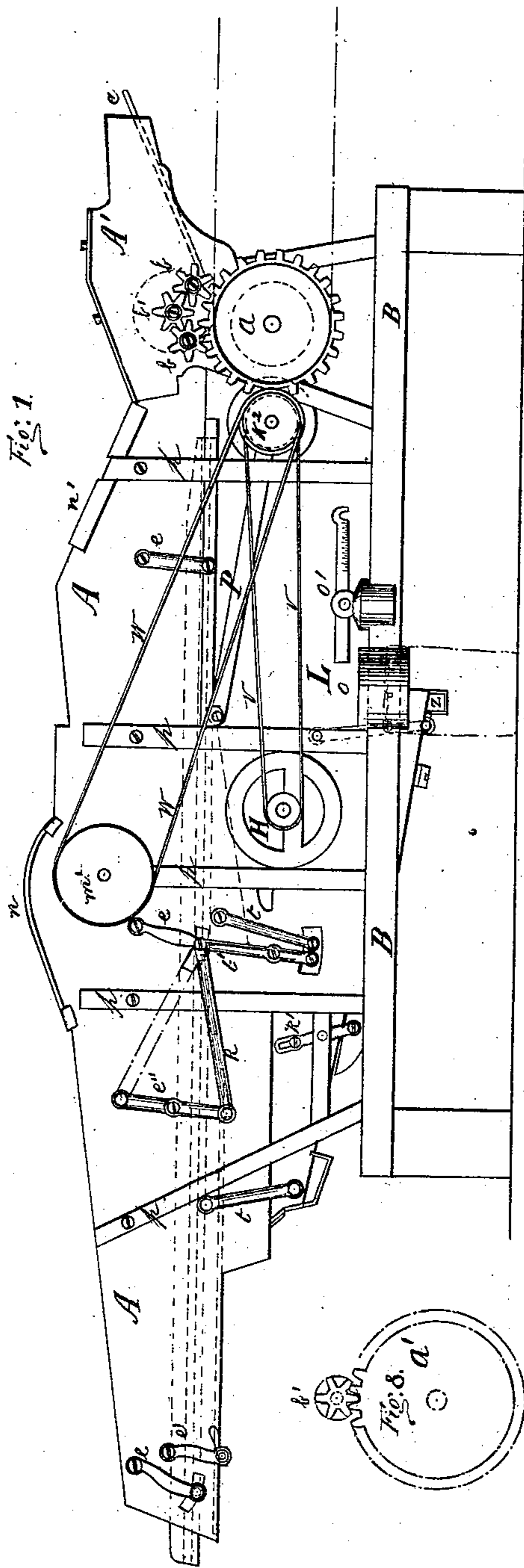


F. W. PAMPEL.
Thrashing-Machine.

No. 103,769.

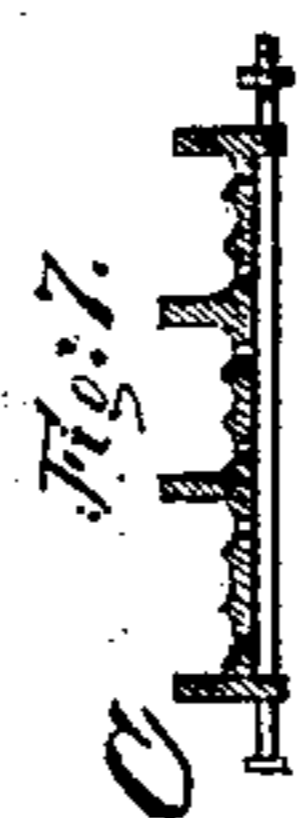
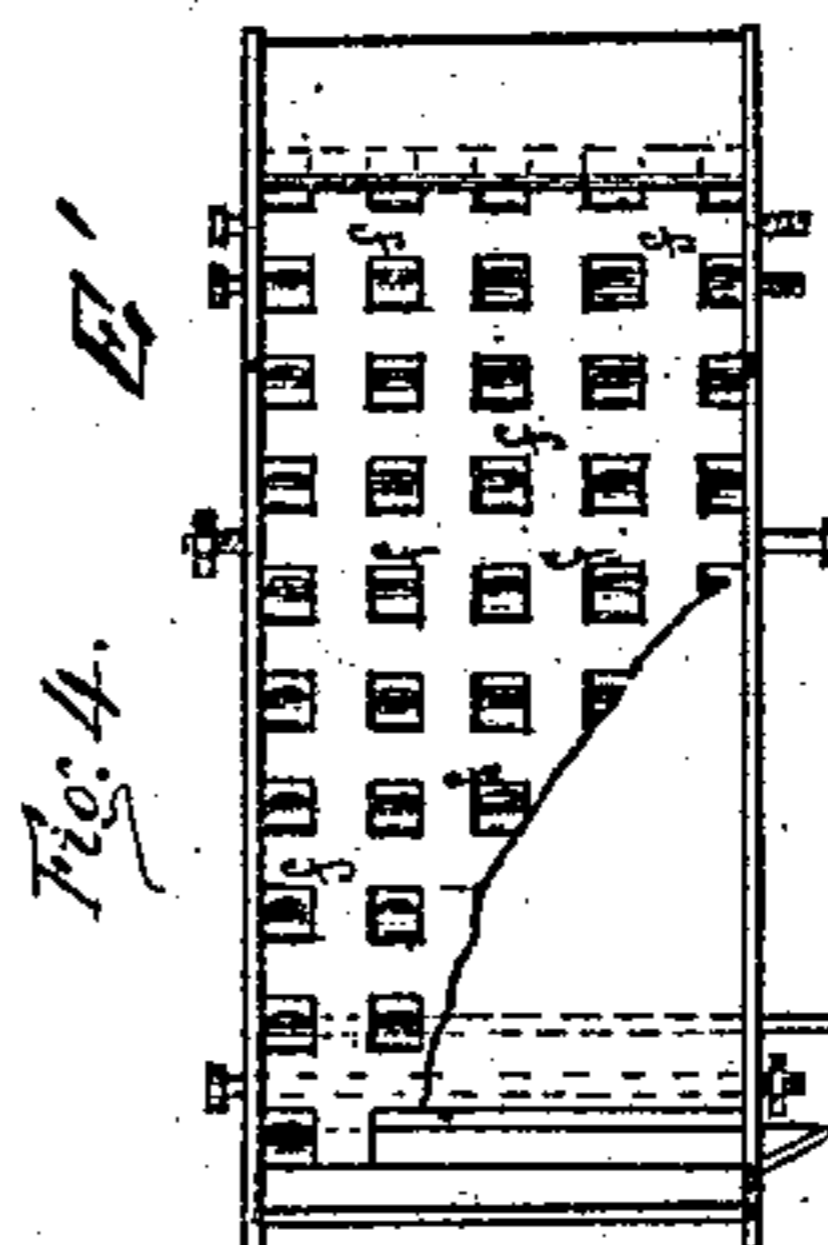
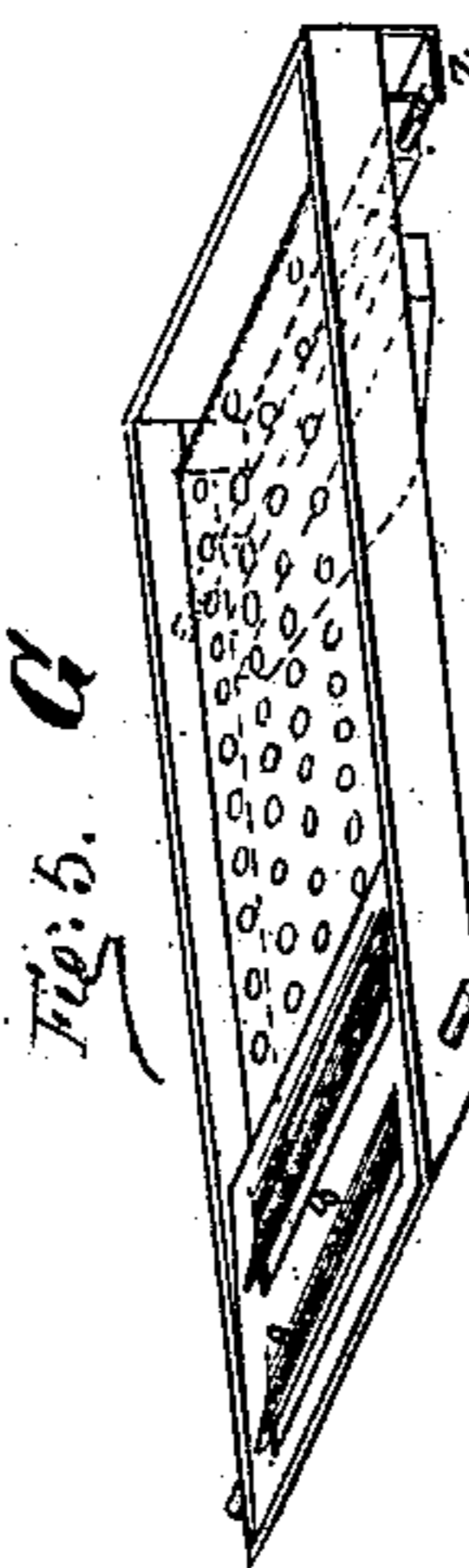
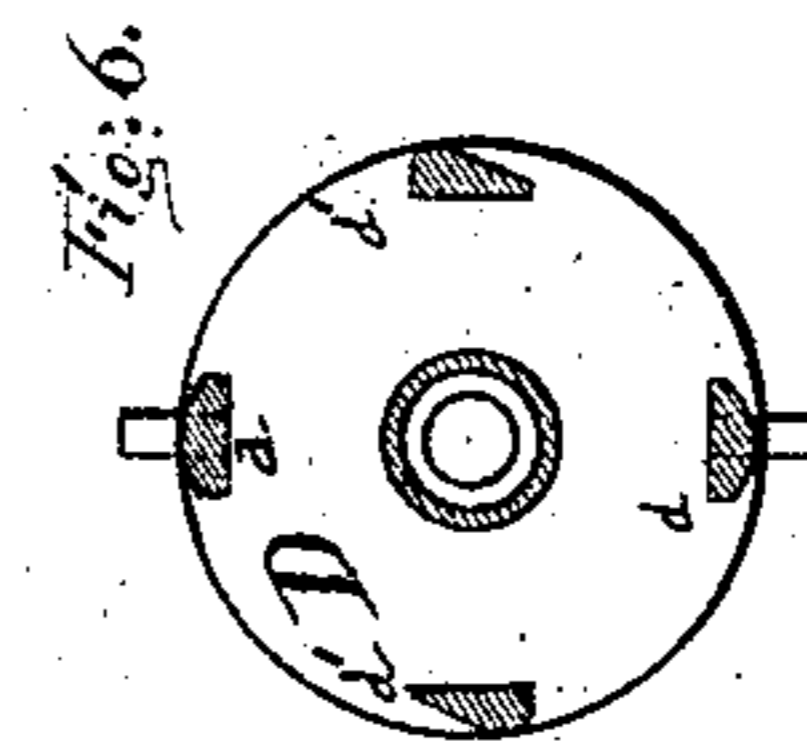
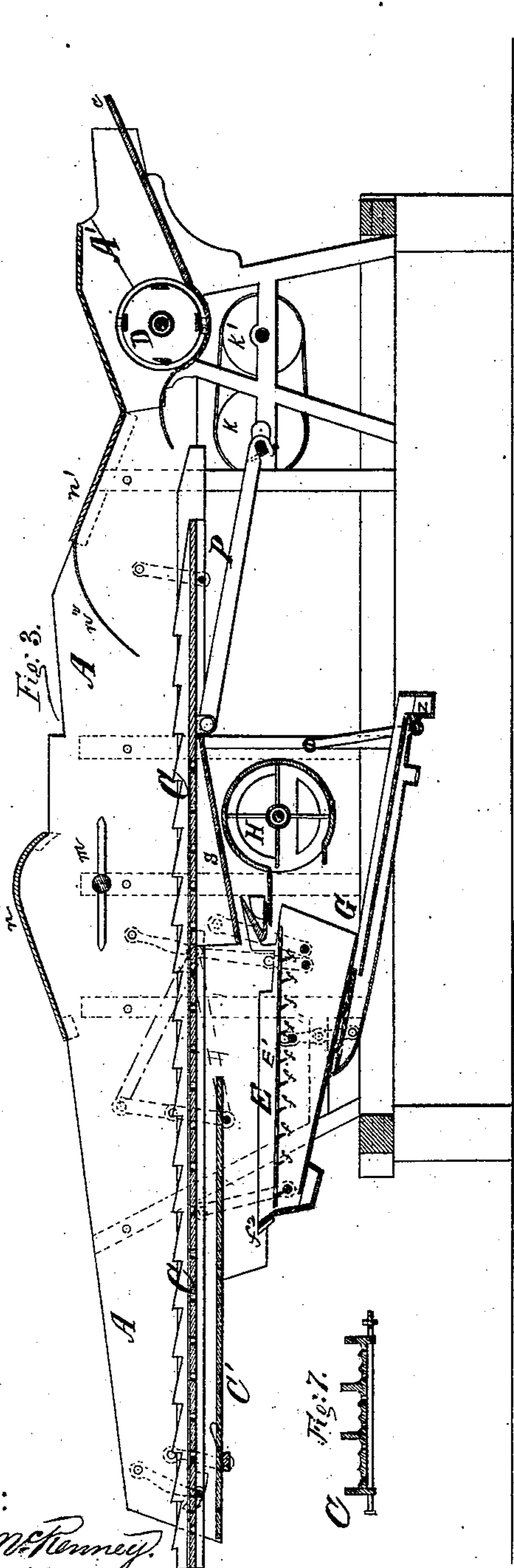
Patented May 31, 1870.



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Witnesses:

Wm. A. McKenney
J. McKenney

Inventor:

F. W. Pampel
per. McKenney & Co. attys.

UNITED STATES PATENT OFFICE.

FREDERICK W. PAMPEL, OF FREDERICK, MARYLAND, ASSIGNOR TO HIMSELF AND THOMAS H. SCHAEFFER, OF SAME PLACE.

IMPROVEMENT IN THRASHING-MACHINES.

Specification forming part of Letters Patent No. **103,769**, dated May 31, 1870.

To all whom it may concern:

Be it known that I, FREDERICK W. PAMPEL, of Frederick, in the county of Frederick and State of Maryland, have invented a new and useful Improvement in Grain Thrashing, Separating, and Cleaning Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to that class of machines which combine a grain thrasher, separator, and cleaner with a weighing and bagging attachment, my object being to produce a machine which will thrash and clean grain with little or no waste, and at the same time require much less than the usual power to operate it, obviating, also, by a novel arrangement of driving-wheel and pinions, the usual wearing and grinding of the boxes, in which the driving-wheel and cylinder-shafts have their bearings, caused principally by the great strain brought to bear upon them in the use of the old band-and-pulley arrangement; the nature of my invention consisting of the peculiar arrangement of the driving-wheel and pinions, the cylinder, the upper and lower shakers, the riddle, screen, fan, and whipper, reference being had to the accompanying drawing, and to the letters of reference marked thereon, like letters indicating like parts.

Figure 1 shows a side elevation of my invention. Fig. 2 shows a top view. Fig. 3 is an elevated section, taken longitudinally through the center. Fig. 4 shows a top view of the riddle. Fig. 5 is a perspective view of the screen. Fig. 6 shows a cross-section of the cylinder. Fig. 7 shows a cross-section of the shaker. Fig. 8 shows the extra device for driving the cylinder.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Fig. 1 shows the usual form of my machine, consisting of the side plates A A, supported by the stanchions *p p p p p* on the bed-rail B B, and shows more particularly the running gear for driving the cylinder, said running-gear consisting of one large toothed driving-wheel, *a*, having a side pulley attached and working in gear with the three small pinions, *b, b,* and *b'*, set directly above the driving-wheel, and having three times its velocity, the center pinion, *b'*, being set on the end of the cylinder-

shaft and above the level of the side pinions, *b b*, so that it does not touch the driving-wheel, which turns in an opposite direction.

The utility of this arrangement is apparent. It relieves the heavy strain and pressure and prevents the wearing and grinding out of the boxes of the cylinder and lower shaft, which has always been the great objection in other machines.

In addition to the above arrangement for driving the cylinder, I use the device shown in Fig. 8, which consists of the toothed driving-wheel *a'* in gear with the center pinion, *b'*, the pinion in this case also having three times the velocity of the driving-wheel, the driving-wheel being furnished with a side pulley, as in the first-described arrangement, and answering substantially the same purpose.

The cylinder, Fig. 6, is made about the size of an ordinary cylinder, and consists of four staves, two being furnished with teeth and two being plain, with the edges of each of the staves beveled, so that no grain is lost by the heads of grain being cut off before they are thrashed out.

A' is the thrasher-box, having the movable slide *c*, which joins the bottom of the box under the cylinder. The bottom is made concave, and is so arranged as to carry the straw and grain in an upward direction just above the lower part of the apron, which forces the straw immediately on the back part of the shaker.

The shaker C, Fig. 2, is constructed in the manner shown in the drawing, being furnished with parallel racks running its full length, and is grooved or fluted, with the perforations in the depressions, so that no grain can lie between the holes, but, being thrown on the ridges, is forced to fall back and through to the next shaker below.

It may be well to state that the shaker C operates most effectually when it is made at least eighteen feet in length, experiment having shown that this length gives ample time to shake all the grain from the straw before it is carried out on the stacker.

The shaker is propelled by means of a pitman, P, working on a crank on the axis of the wheel *k*, giving the shaker a reciprocal motion, while at the end of the machine, and near the extremity of the shaker, a slot is made in

the frame A, and so arranged as to throw the end of the shaker up by means of a pin on it working in the slot and attached by a small lever hung from the upper portion of the frame, so that when the shaker falls back to its place a slight jar is produced, which facilitates the falling of the grain. The small levers *e e* and *e* support the shaker, and at the same time allow its free motion.

The under shaker, C', is made tight, and is but half the length of the upper shaker, and has an incline of about five inches in an ordinary-sized machine. This shaker is also hung on a short lever and a double lever, suspended from pivots in the frame A, and marked in the drawing *e'* and *e''*. The upper shaker, C, and the lower shaker, C', usually have the same motion; but the motion is, by the use of the double lever *e''*, made susceptible of change—that is, while the upper shaker is going backward the lower shaker will have a forward movement. This result is obtained by changing the bar R from the lower end of the lever *e''* to the upper end. Directly under the shakers, and nearer the center of the machine, the shoe E is suspended by the rods *t t*, and receives its motion from the rod *t'*, which is hung from a pin on the shaker. This shoe is made of the shape as is shown in the drawing, and contains the riddle E', Fig. 4. It is usually made in the form of an oblong square, with square perforations having flanges or directors projected diagonally below the perforations.

Underneath, and with the back hung on a double lever, R', from about the center of the shoe, is the screen C, Fig. 5, which is made somewhat in the shape of the riddle, but with the back or end rounded off, and consists of two, the top or screen proper and the bottom, which forms the bottom of the machine, the top or screen being perforated for about three-fourths of the whole distance toward the back part, the other fourth consisting of a single plate without perforations, but is slotted crosswise, and the openings are furnished with flanges slightly raised from the surface of the plate, so that they will catch any waste or chaff which may fall from the riddle and conduct it to the bottom, in which there is a sleeve with an opening under the center, to allow the waste to escape, while the cleaned grain passes over the top of the screen into the sleeve at the lower end, and from thence to the weighing and bagging attachment, the cheat and cockle going through the screen to the bottom and passing out through the waste-sleeve.

The fan H is placed about the center of the machine, immediately under the main shaker and directly opposite the shoe, made in the usual form, and inclosed in a drum or case having an opening of about one-fourth the circumference, directly facing the shoe. The portion of the drum at the top of the opening extended in a horizontal line over the end of the shoe and about two and a half ($2\frac{1}{2}$) inches

above the riddle. There is also a shorter projection of the drum at the lower part of the opening, extending in a straight line toward the shoe, but not more than one-third the distance.

Immediately above the fan is the plate or slide S, which is attached to the bottom of the shaker C and extends down over the edge of the shoe, and conveys a portion of the grain to the riddle E'.

I do not claim the fan in itself, but its peculiar arrangement in relation to the riddle by which this effect is obtained. Two currents of air are produced, and by the action of the upper current the wind is forced from the fan in a forward and upward direction about two and a half inches above the riddle and blows the chaff and filth back and out over the end board *f*², which can be raised or lowered to suit wet or dry chaff. The lower current, going in a forward direction, strikes the directors or projections under the riddle and passes up through the apertures, thus blowing the chaff out and allowing the grain to fall through to the screen. At the back of the riddle is an opening of about one inch in breadth, which gives the wind full play to carry the chaff and waste out over the end board.

The whipper *m* is placed about midway the machine and directly over the shaker, and consists of an axle with four or more arms or whippers extending from it in a straight line, it being used to lighten up the straw, and is driven by a band over the wheel *m'*, connected with the pulley *k*².

The bagging attachment I use consists of a flat piece of metal or other material, bent to the desired shape, *o*, with the ends slotted, so as to rest on the rail B, and is furnished with hooks, on which the bag is supported.

The weighing apparatus *o'* consists of an ordinary beam, with graduated scale and weight attached to the rail by a block set on the rail.

The motive power used may be either steam or horse power, and is applied as follows: A band over the side pulley on the wheel *a* gives it motion, which motion is imparted to the cylinder D by means of the pinions *b b'*. The wheel *a* also gives its motion to the wheel *k*¹ on the opposite end of its axis, which in turn moves the wheel *k* by a band connecting them, and the wheel *k*, by the use of a crank on its axis, transmits its motion to the pitman P, which in turn gives motion to the shakers C and C', and from thence the motion is transmitted to the shoe E and screen G by the use of the rods and levers hereinbefore described.

The fan H and the whipper *m* receive their motion from the bands V and W, stretched from the double pulley *k*² to the pulleys on the end of the axles on the fan and whipper.

The operation of the machine is as follows: The grain and straw are placed on the slide *c* at the mouth of the thrasher A' and are carried to the cylinder D, which tears the husk from the grain. The cylinder forces them through onto the back part of the shaker C,

which works them back, carrying the straw and depositing it at the end, while the grain drops through the perforations onto the lower shaker, C', and the slide S, which deposits it on the riddle E'. From the riddle it drops to the bottom of the shoe, which carries it to the screen G, and from thence it is discharged in the sleeve Z, and from there it is carried to the weighing and bagging apparatus.

n and *n'* are covers placed across the top of the machine, to prevent the straw and chaff from flying out and over the sides.

Having thus fully described the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The cylinder D, having the exterior face

of the staves *d d'* rounded and beveled from their longitudinal center to the forward edge of the stave, as shown and described.

2. The grooved or fluted shaker C, furnished with parallel racks *h h*, with the lower shaker, C', and the slide S.

3. The combination and arrangement of the driving-wheel *a* and the pinions *b*, *b'*, and *b* with the cylinder D, the shakers C and C', and slide S, the shoe E, screen G, and fan H, all arranged in relation to each other substantially as hereinbefore described, and for the purposes set forth.

F. W. PAMPEL. [L. S.]

Witnesses:

WILLIAM WALSH,
PERRY B. MCCLEERY.