

No. 659,976.

Patented Oct. 16, 1900.

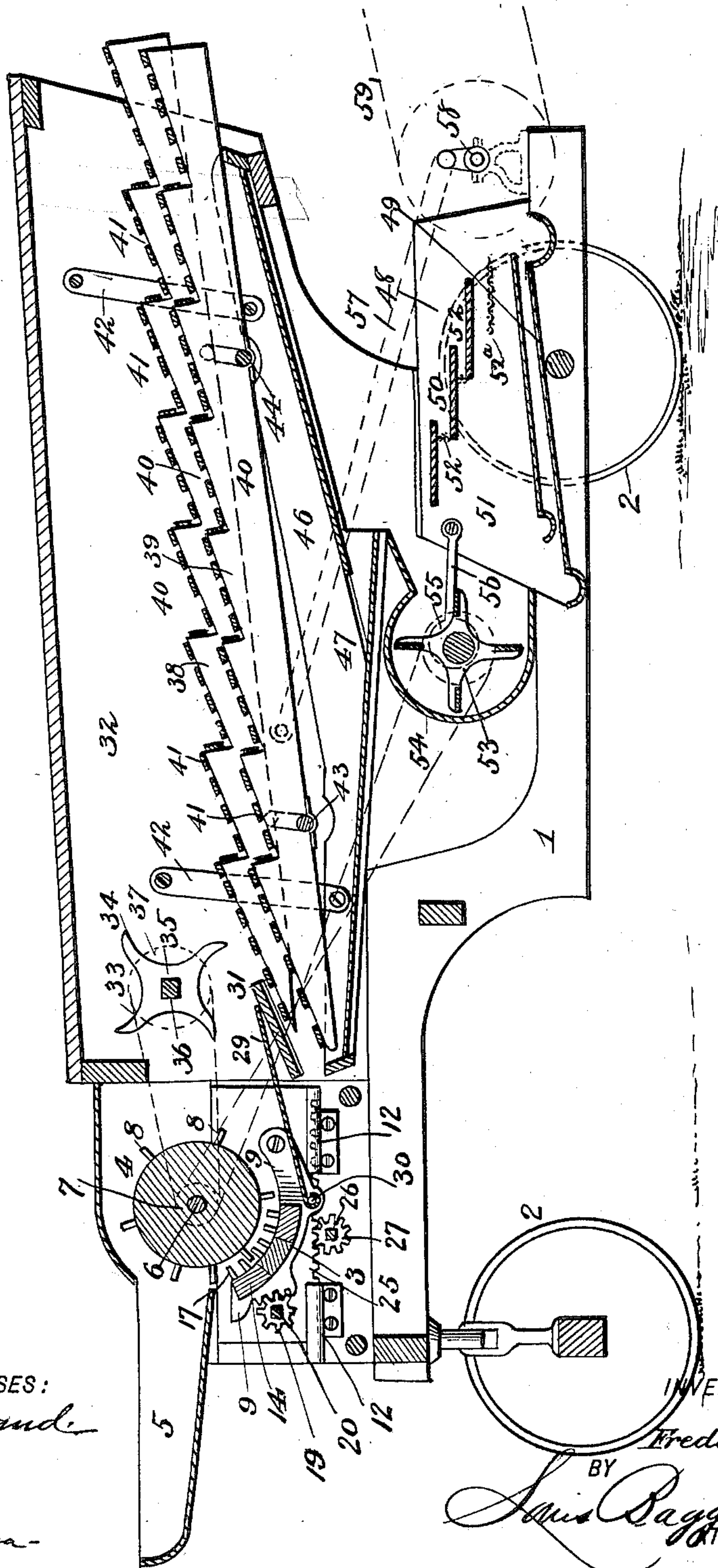
F. M. KELLER.
GRAIN SEPARATOR.

(Application filed Apr. 27, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

F. L. Durand

E. P. Bunge

INVENTOR:

Frederick M. Keller

BY

Smith Packer & Co.,
ATTORNEYS.

No. 659,976.

Patented Oct. 16, 1900.

F. M. KELLER.
GRAIN SEPARATOR.

(Application filed Apr. 27, 1900.)

(No Model.)

3 Sheets—Sheet 2.

Fig. 2.

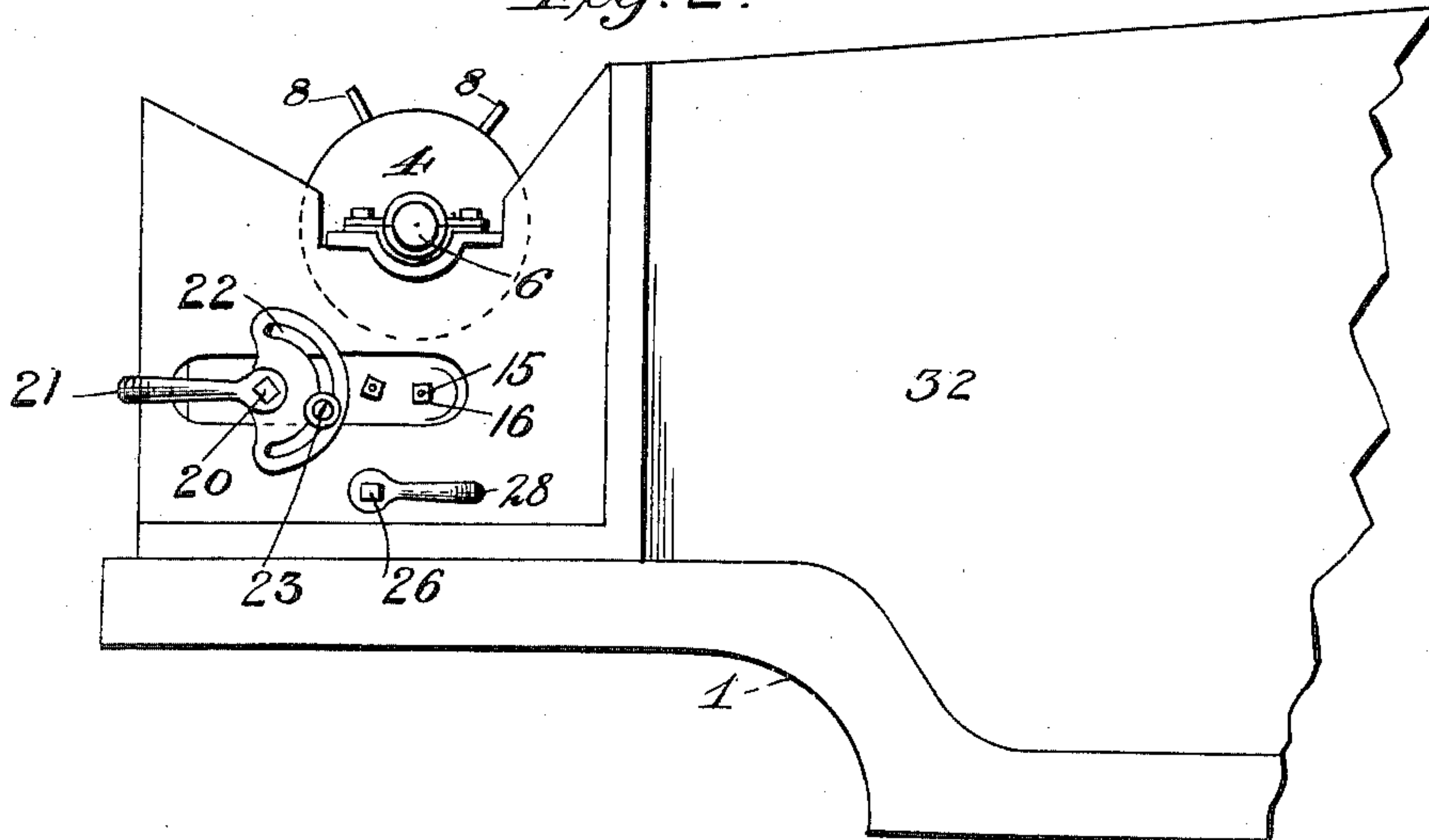
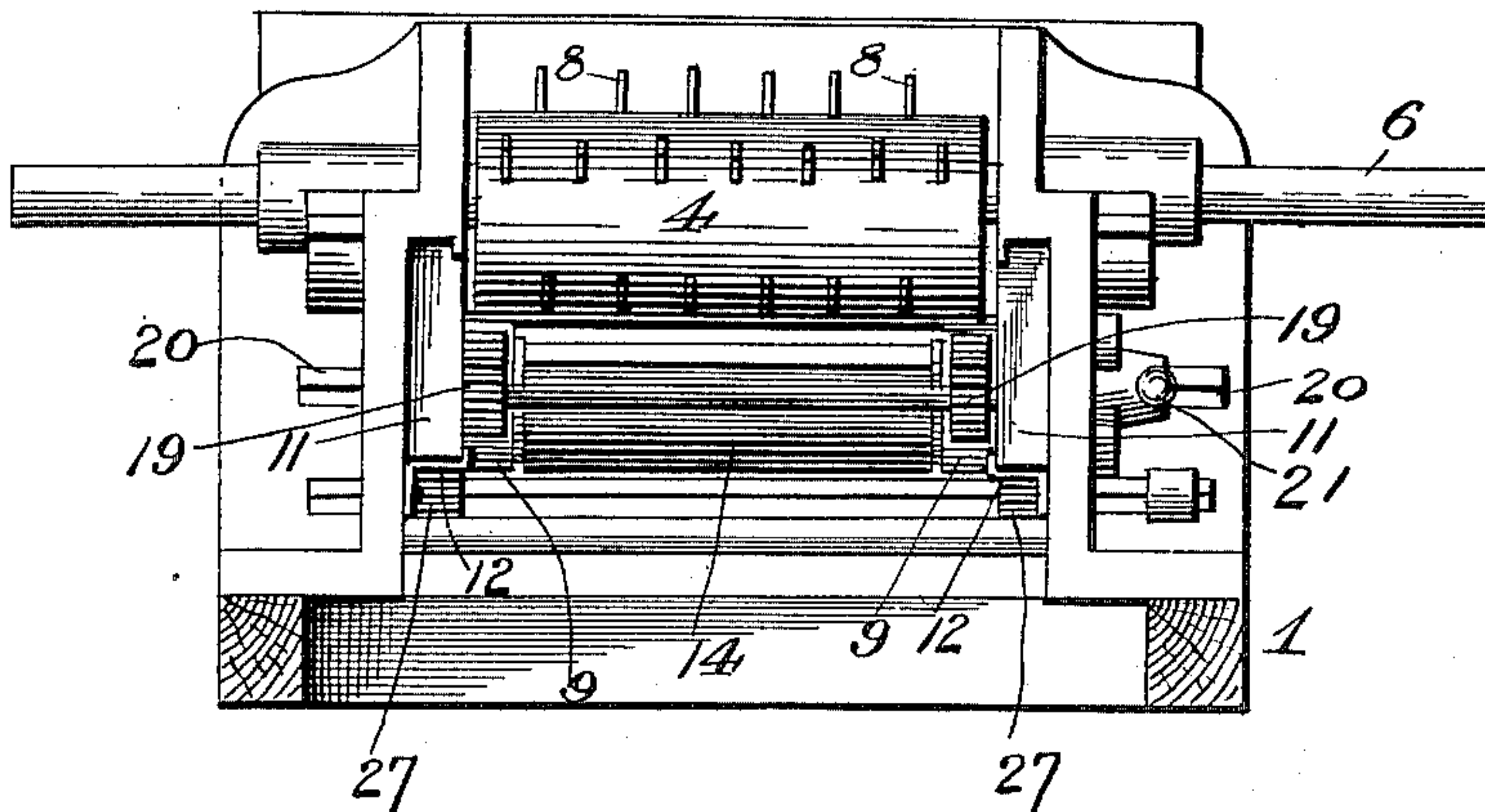


Fig. 3.



WITNESSES:
F. L. Ourand.
E. P. Brinley.

INVENTOR:
Frederick M. Keller,
BY
Louis Dwyer & Co.,
ATTORNEYS.

No. 659,976.

Patented Oct. 16, 1900.

F. M. KELLER.
GRAIN SEPARATOR.

(Application filed Apr. 27, 1900.)

(No Model.)

3 Sheets—Sheet 3.

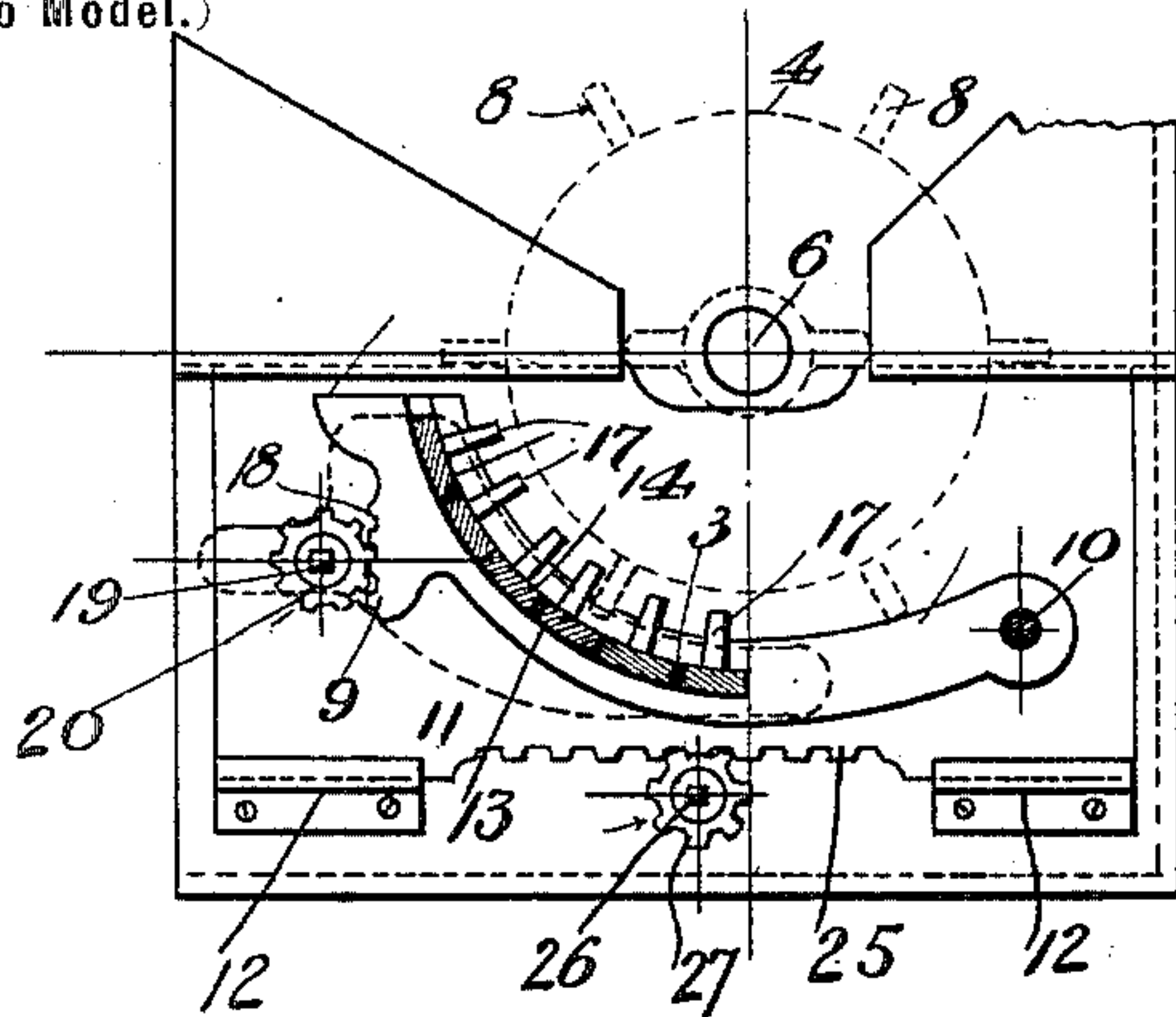


Fig. 4.

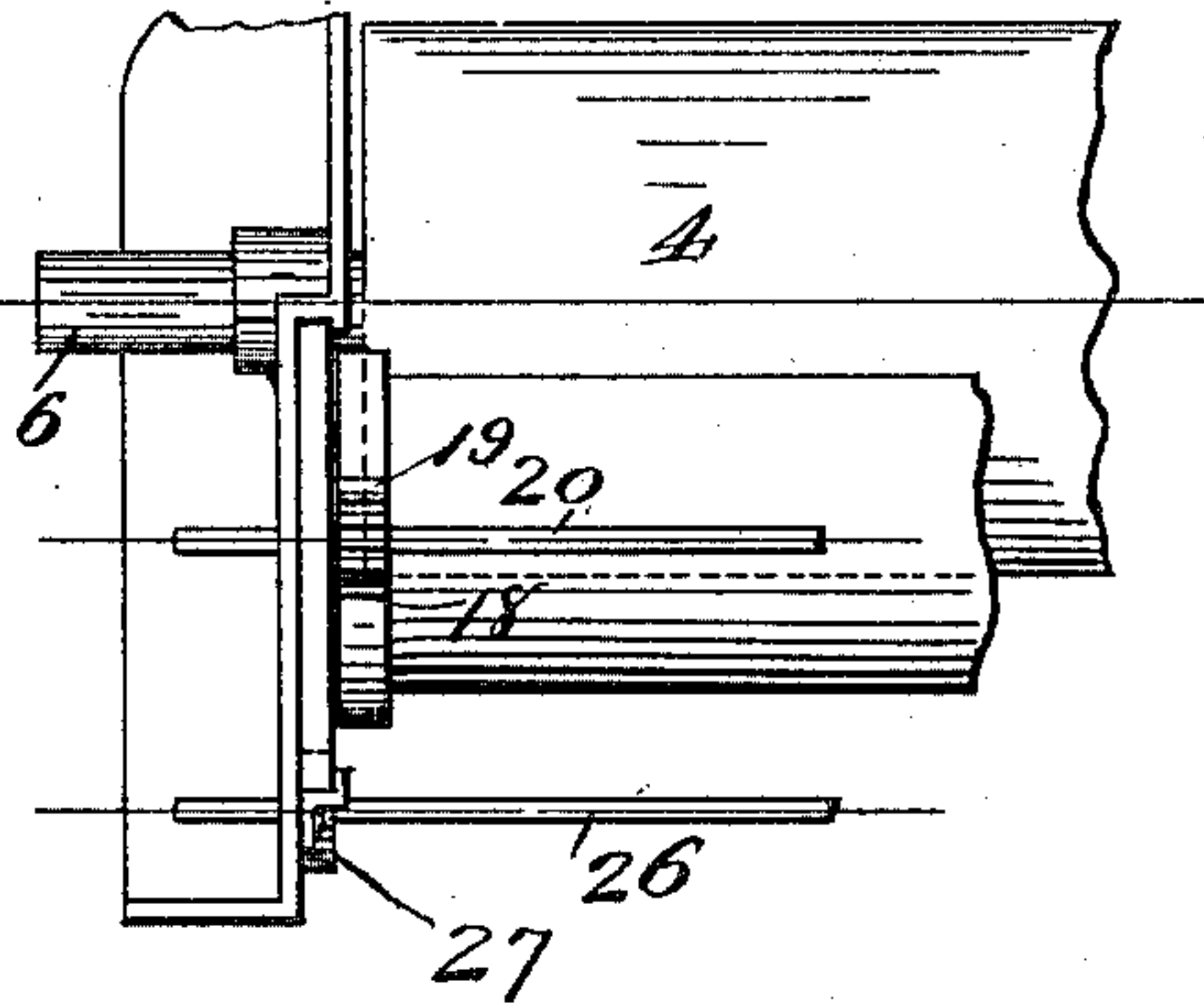


Fig. 5.

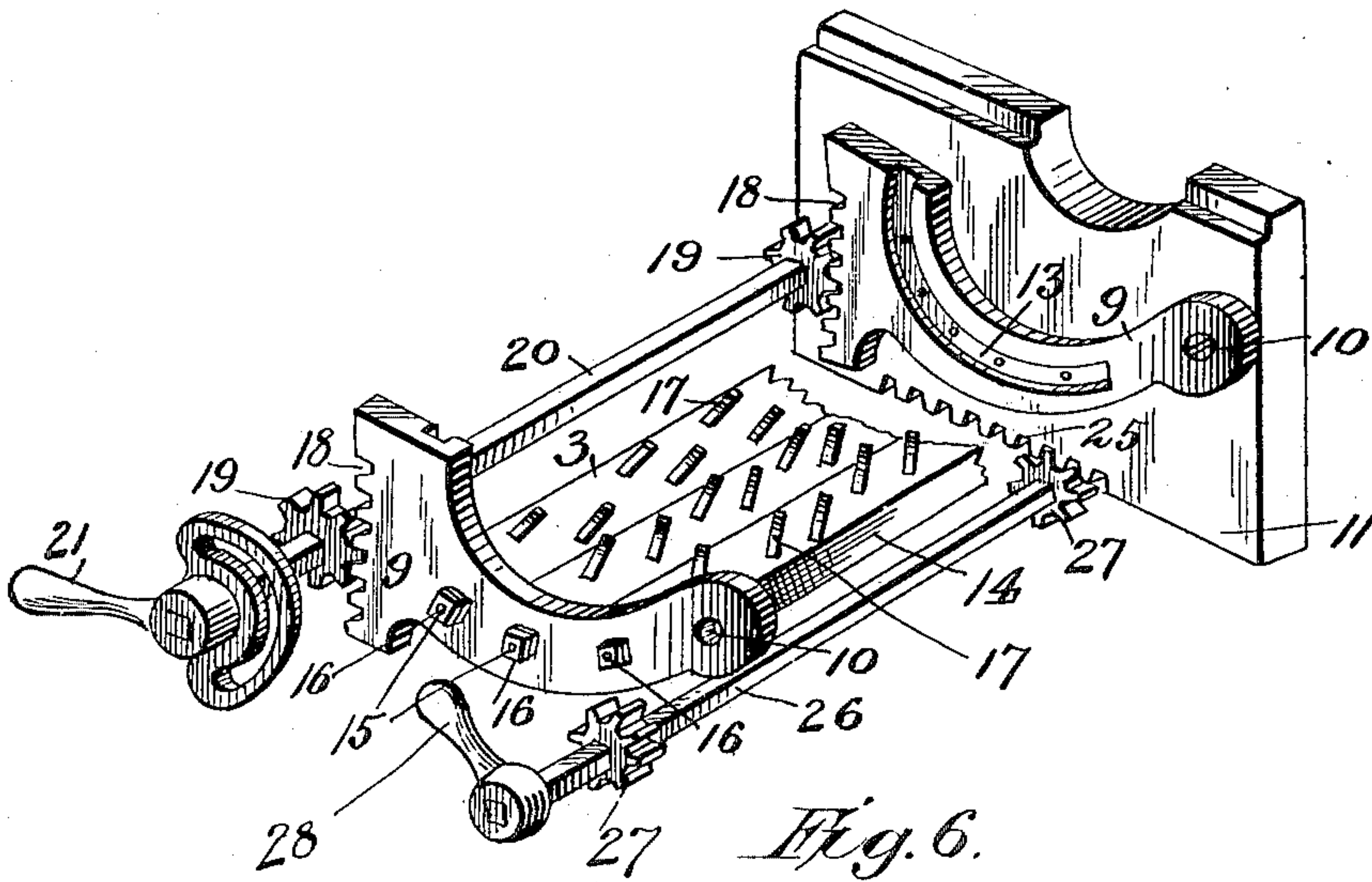


Fig. 6.

WITNESSES:

F. L. Ourand.

E. M. Brainerd

INVENTOR.

Frederick M. Keller.

BY
Louis Bagge & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

FREDERICK M. KELLER, OF YORK, PENNSYLVANIA.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 659,976, dated October 16, 1900.

Application filed April 27, 1900. Serial No. 14,581. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK M. KELLER, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have invented new and useful Improvements in Grain-Separators, of which the following is a specification.

My invention relates to grain-separators; and one object of the same is to provide simple and efficient means for adjusting the concave toward and from the cylinder, back and forth under the cylinder, and laterally thereof, each adjustment being independent of the others.

Another object is to provide simple and efficient means for making these adjustments quickly and reliably.

Still another object is to provide an improved conveyer for carrying the straw to the rear end of the machine.

I have also made provision for readily converting the machine from a grain-separator and thresher to a thresher and cleaner for beans and peas.

I attain the objects referred to by means of the construction shown in the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a longitudinal section of a grain-separator made in accordance with my invention. Fig. 2 is a side view of the front portion of the machine. Fig. 3 is a front view of the concave. Fig. 4 is a side view and partial section of the concave and cylinder. Fig. 5 is a partial end elevation of the concave and cylinder. Fig. 6 is a perspective view of the concave.

Like numerals designate like parts in the different views of the drawings.

The working parts of the machine are mounted on a framework 1, supported upon wheels 2, and the concave 3 and threshing-cylinder 4 are sustained upon a supplemental frame bolted to the framework 1. The tray or hopper 5, upon which the straw is placed, is inclined toward the cylinder 4 and extends from one side of the machine to the other. The cylinder 4 is suitably journaled in the supplemental frame, and the shaft 6 of said cylinder projects outward and is provided with a pulley 7. Concentrically arranged in series around the cylinder are the spikes or

beaters 8. The concave consists of two curved arms 9, pivoted at 10 to a sliding frame comprising the supports 11, which slide in guideways 12. The arms 9 of the concave have curved grooves 13 in their inner faces, and the concaves 14 slide in the grooves 13 and are held in adjusted position therein by bolts 15, provided with lock-nuts 16. The concaves 14 are provided with spikes 17, and as the concaves do not fit tightly in the grooves 13 the bolts 15 serve to adjust them laterally in order to regulate the distance between the spikes 17 and the beaters 8 on the cylinder 4, the lock-nuts 16 being used to hold the bolts when adjusted. The bolts pass through the curved arms 9 and extend into the grooves 13, where they engage the ends of the concaves 14. The front ends of arms 9 are provided with rack-teeth 18, and pinions 19, fixed to a squared shaft 20, journaled in the sliding supports 11, mesh with the rack-teeth. A handle 21 is secured at the outer end of shaft 20, and by moving this handle the concave is vertically adjusted relatively to the cylinder 4. A curved slot 22 is formed in the handle 21, and a set-screw 23 passes through the slot and engages an aperture in the side of the sliding support 11. By tightening the set-screw 23 the concave is held in vertically-adjusted position. The lower edges of the supports 11 slide upon brackets 12, bolted inside the supplemental frame, and at central points of said lower edges of the supports 11 rack-teeth 25 are formed. A square shaft 26, journaled in the supplemental frame, has affixed thereto the pinions 27, which mesh with the rack-teeth 25, and a handle or lever 28 on the end of the square shaft 26 serves to adjust the sliding supports and the concave back and forth under the cylinder for different kinds of work to be done. The supplemental frame, which carries the cylinder and the concave, is entirely separable from the main framework of the machine, and the parts of this portion of the machine may be separately assembled and then bolted to the main frame. Aside from the matter of convenience in shipping, there are other advantages in this construction, such as saving time in assembling the parts, renewal of worn or broken parts, and adjustments. A grain-tight bottom 29 between the concaves and the

straw-carriers is connected at its front end to a rod 30, journaled at its ends in the curved arms 9. The rear end of the tight bottom 29 rests upon an inclined cross-piece 31, extending across the main frame inside the box or housing 32. A reel or beater 33 is journaled in the box or housing, near the front end, and this reel consists of a series of radial arms 34, projecting outward from the hubs 35 of the reels, fixed to the shaft 36. A pulley 37 on one end of the shaft 36 is connected by a belt to the pulley 7 on the cylinder-shaft 6. The straw-carrier may consist of two or more longitudinal sections 38 39, formed of stepped side pieces 40, having slats 41 secured thereto at such distances apart as will permit the grain to drop through the sections 38 39 of the carrier. The carriages are suspended from the crank-shafts 43 44. These sections are simultaneously oscillated in opposite directions by means of the crank-shafts 43 44, journaled in the housing 32 and having their crank portions 45 journaled in the side pieces 40. Under the carrier is an inclined bottom 46, upon which the grain falls as it passes over the carrier. The bottom 46 is inclined toward the front of the machine and is sustained by the hangers 42, and in front of this bottom is a tray 47, which inclines reversely toward the rear end of the machine. At the rear end of the machine a vibrating screen or shaker is provided, and this shaker comprises a frame 48, having guideways 49, in which is removably fitted a stepped screen comprising the risers 50, secured to the side boards 51. Openings 52 are formed between the risers 50, and a screen is secured in each opening 52, and as the shaker is vibrated the grain drops from one riser to the other upon a screen 52^a, a fan being used to force a blast of air through the openings 52 as the grain drops upon the risers. For some classes of work I may substitute an ordinary wire-cloth screen for the shaker shown. The fan 53 is journaled transversely in the frame and inclosed within a boxing 54. An eccentric 55 on the fan-shaft is connected by an arm 56 with the shaker-frame 48, and a pulley on said fan-shaft is connected by a belt to the pulley on the cylinder-shaft. The straw-carrier is operated by a connecting-rod 57, extending from the driving-shaft 58, driven by the belt 59 from any suitable motor.

The operation of the machine is as follows: The straw to be threshed is placed in the tray or hopper at the front end of the machine, the cylinder carrying it down into the concave, where the grain is separated from the straw and with the straw is carried back by the reel to the straw-carrier, the grain dropping through between the slats and the straw being carried to the rear. As the grain drops upon the bottom under the carrier and from

thence upon the tray it slides down and falls upon the screen, where it is thoroughly cleaned by the blast of air from the fan and fed to the discharge-spout.

Whenever it is desired to adjust the concave with relation to the cylinder, this may be done by the use of the bolts and lock-nuts if a lateral adjustment is necessary. By operating the handles 21 or 28 a vertical or a longitudinal adjustment of the concave may be readily accomplished, and those adjustments are very desirable on a machine designed for operation on all kinds and conditions of grain and for peas and beans.

From the foregoing it will be obvious that my machine is comparatively simple in construction and can be readily adjusted for different classes of work and is thorough and efficient in operation.

Certain changes may be made in the details of construction without departing from the spirit and scope of my invention.

Having thus fully described my invention, what I claim is—

1. In a grain-separator, a threshing-cylinder, a concave below the cylinder, said concave comprising curved arms hinged at one end to a horizontally-sliding frame, curved grooves in the arms, concaves seated in the grooves, and means for adjusting the concaves laterally and vertically, and means for adjusting the sliding frame back and forth under the cylinder, substantially as described.

2. In a grain-separator, a threshing-cylinder, a concave below the cylinder, said concave comprising curved arms hinged to a horizontally-sliding frame, curved grooves in the arms, concaves seated in the grooves, bolts passing through the arms for engaging the ends of the concaves, lock-nuts on the bolts, pinions engaging rack-teeth on the ends of the curved arms, for adjusting the concave vertically, and teeth on the edge of the sliding frame engaged by pinions for adjusting said frame and concave back and forth under the cylinder, substantially as described.

3. In a grain-separator, a threshing-cylinder, journaled to revolve in a supplemental frame detachable from the main frame of the separator, a concave pivoted to a sliding frame fitted to guideways in the supplemental frame, and means for adjusting the concave laterally, vertically and longitudinally, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FREDERICK M. KELLER.

Witnesses:

WM. A. MILLER,
G. W. BILLINGER.