

J. LOUFEK.
SEPARATING MECHANISM.
APPLICATION FILED MAY 5, 1908.

951,321.

Patented Mar. 8, 1910.

3 SHEETS—SHEET 1.

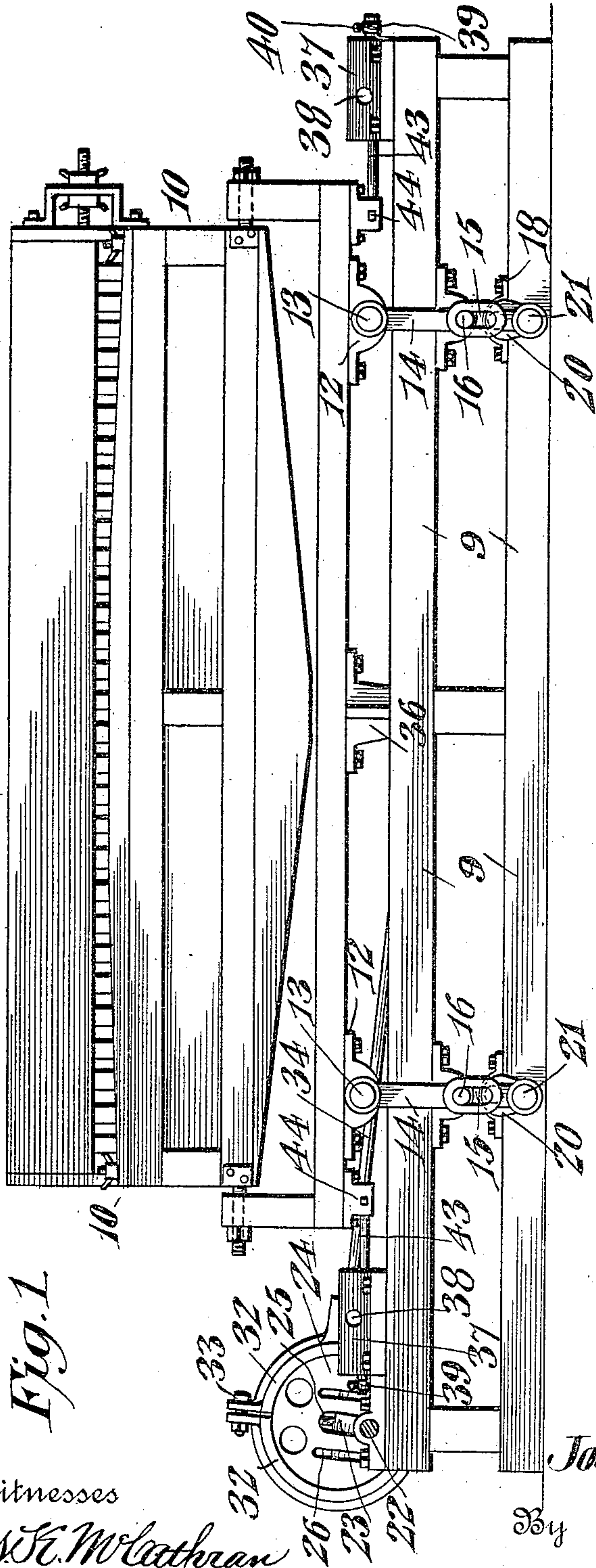


Fig. 1.

Fig. 8.

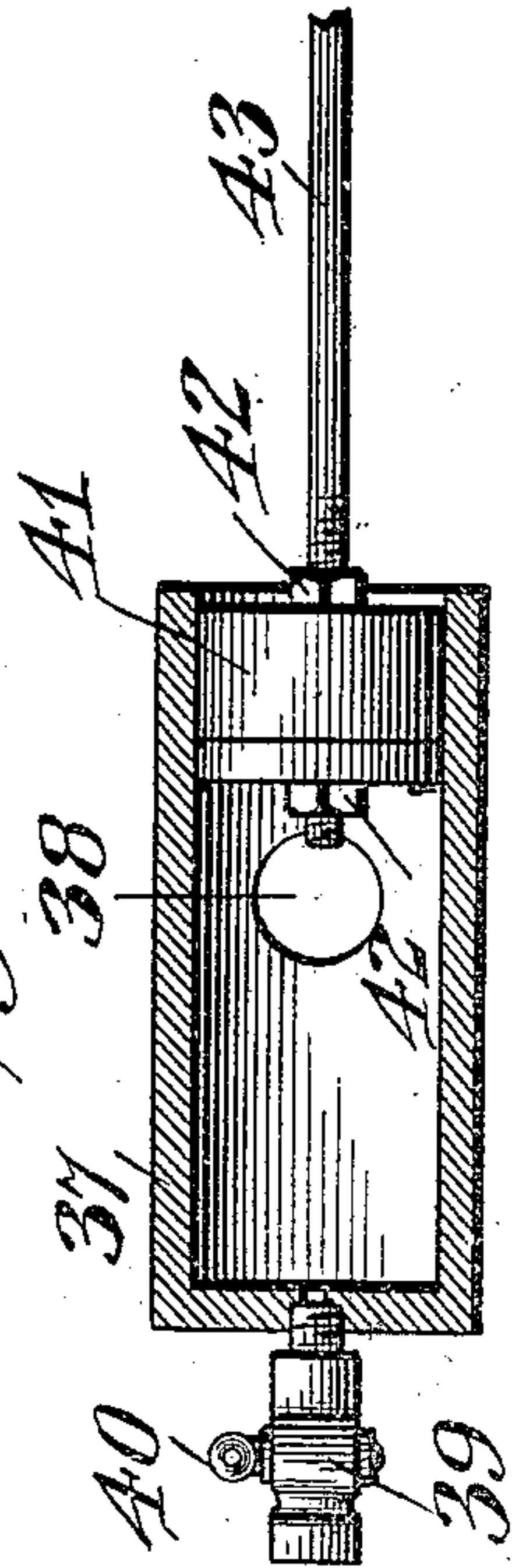
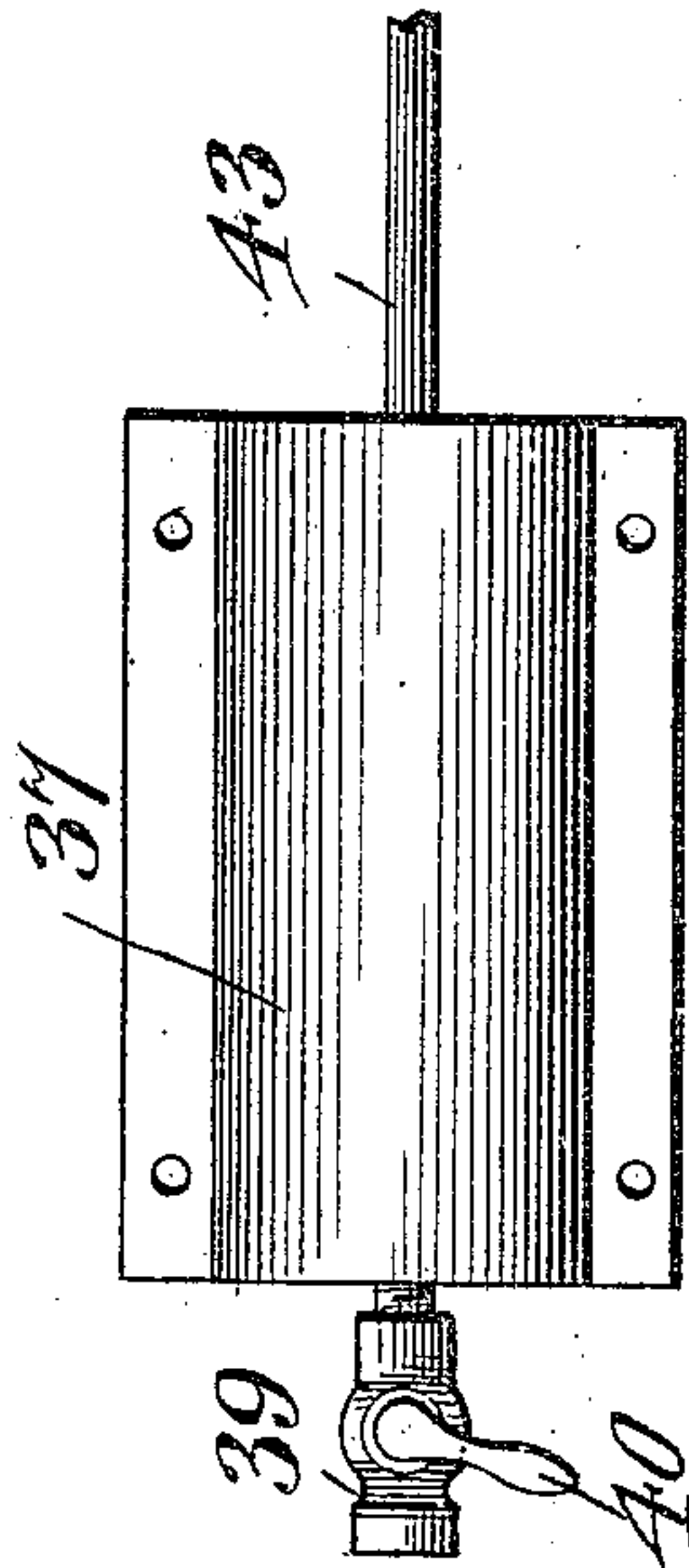


Fig. 7.



Witnesses
Jas. E. McLaughlin
R. L. Foster

Joseph Loufek, Inventor

E. G. Siggers

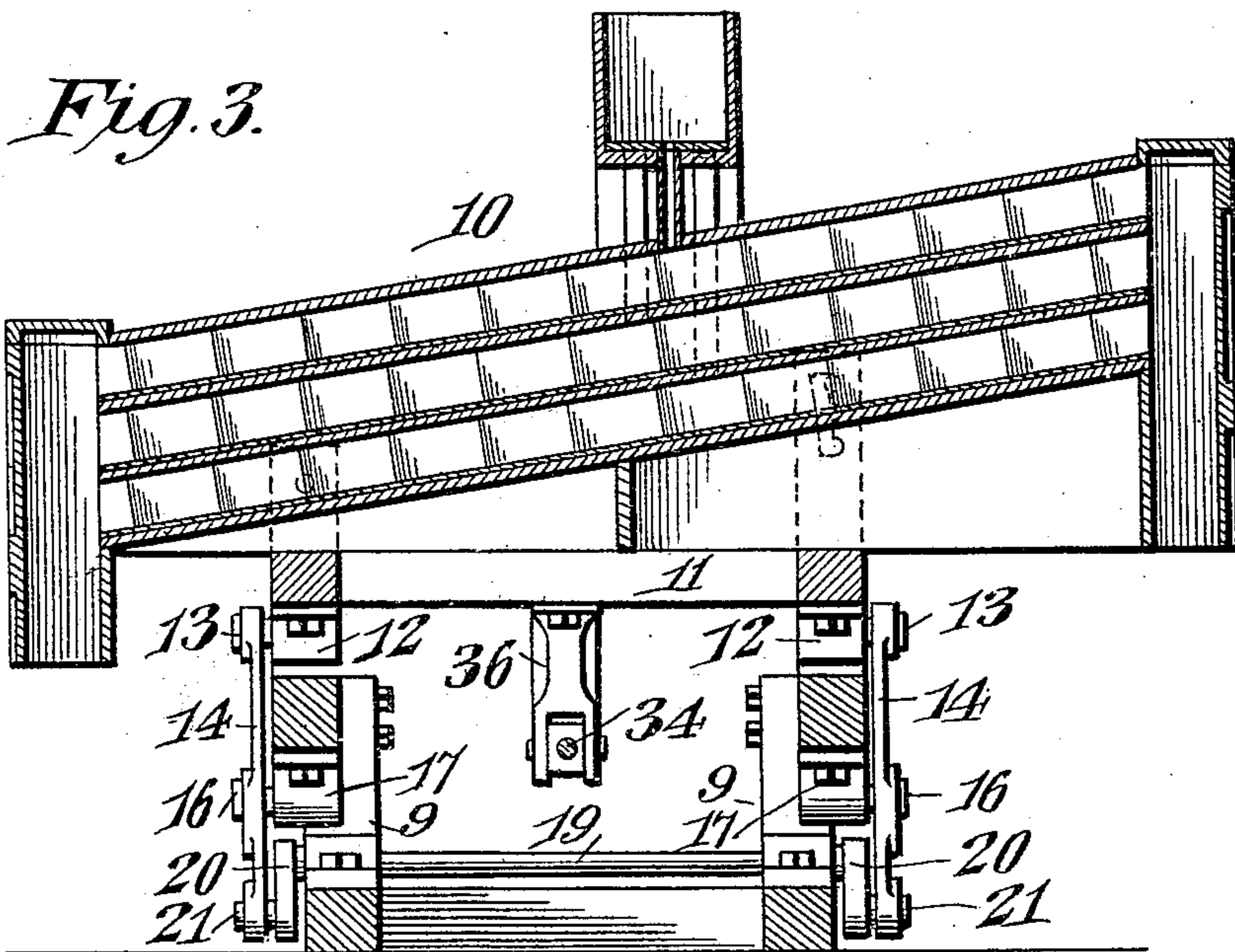
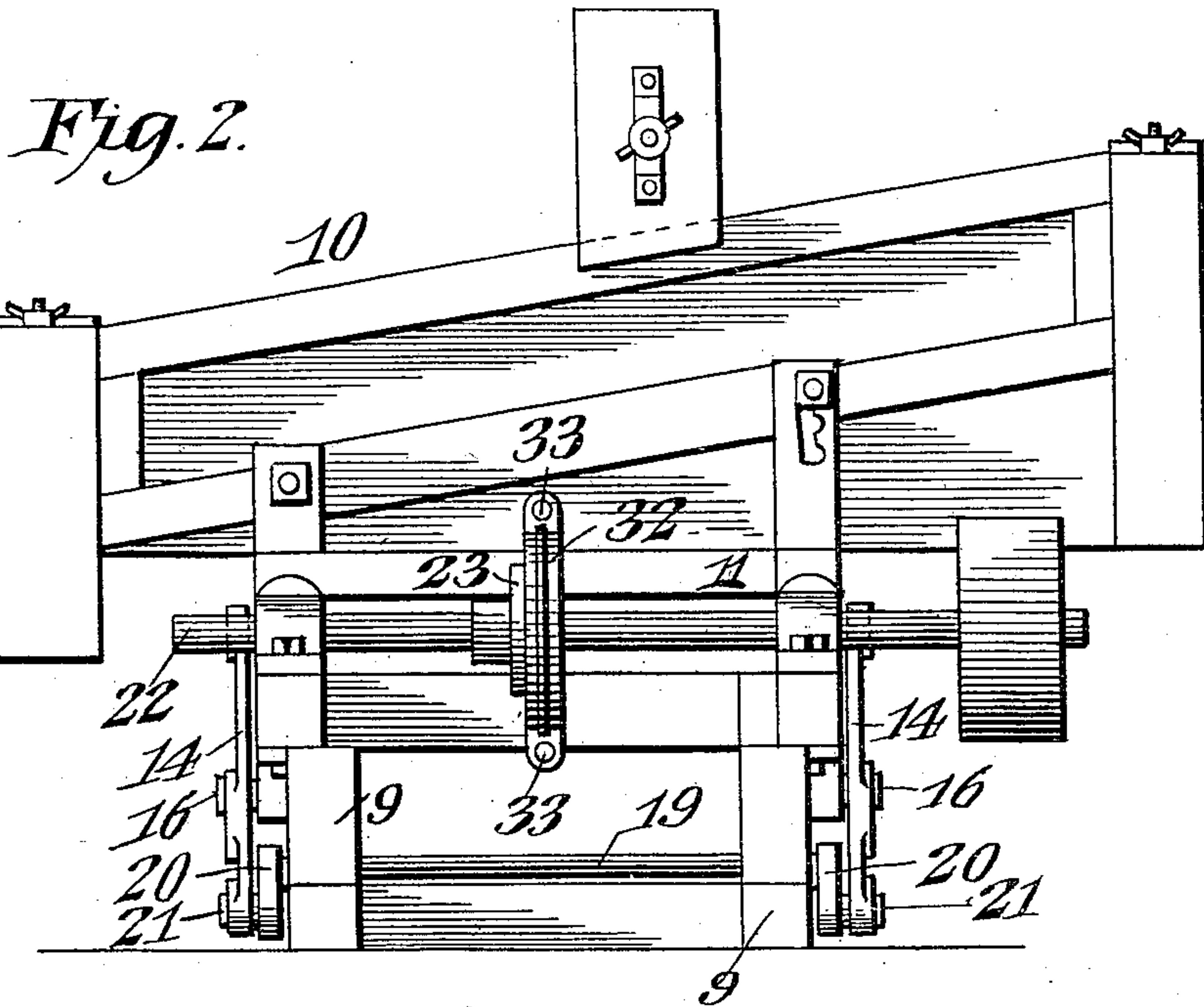
Attorney

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3 SHEETS—SHEET 2.



Joseph Loufek, Inventor

By

E. G. Siggers

Attorney

Witnesses
James M. Cathran
B. G. Foster

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3 SHEETS—SHEET 3.

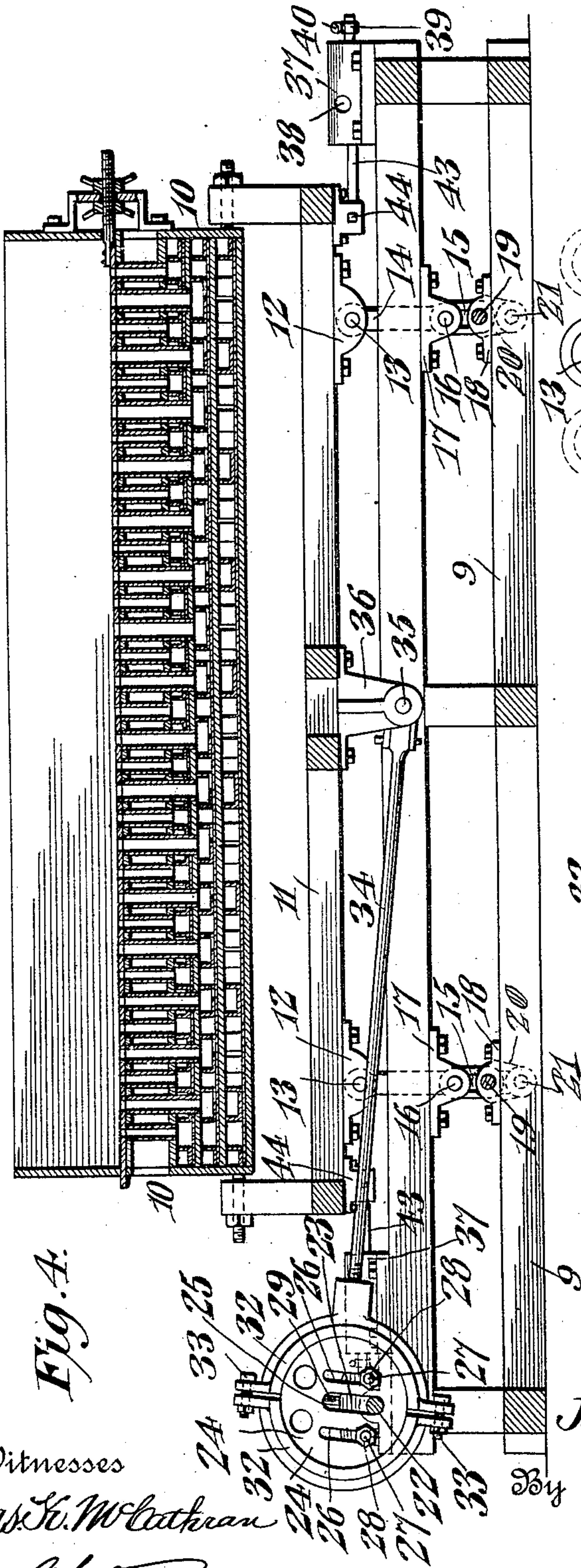


Fig. 4.

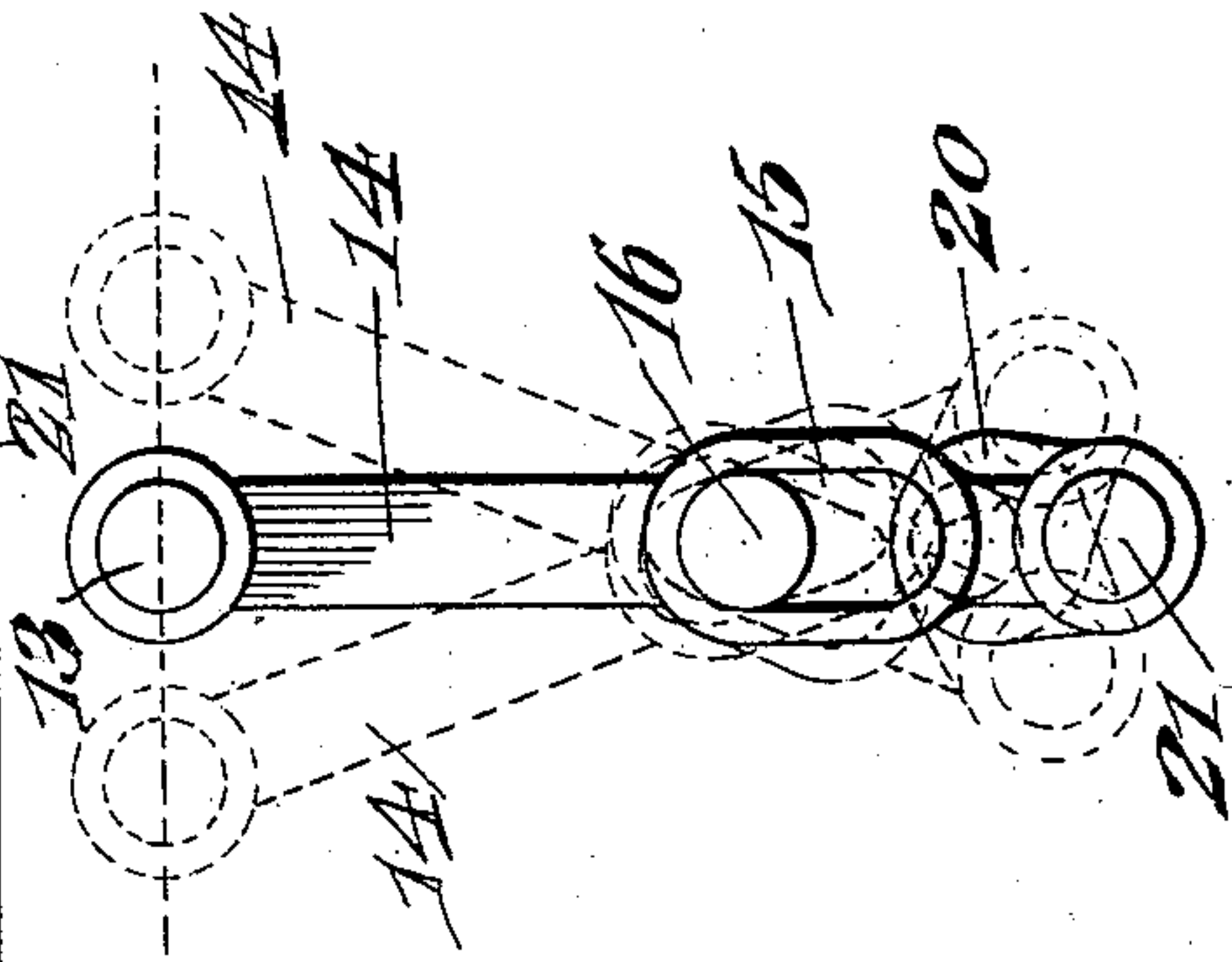


Fig. 6.

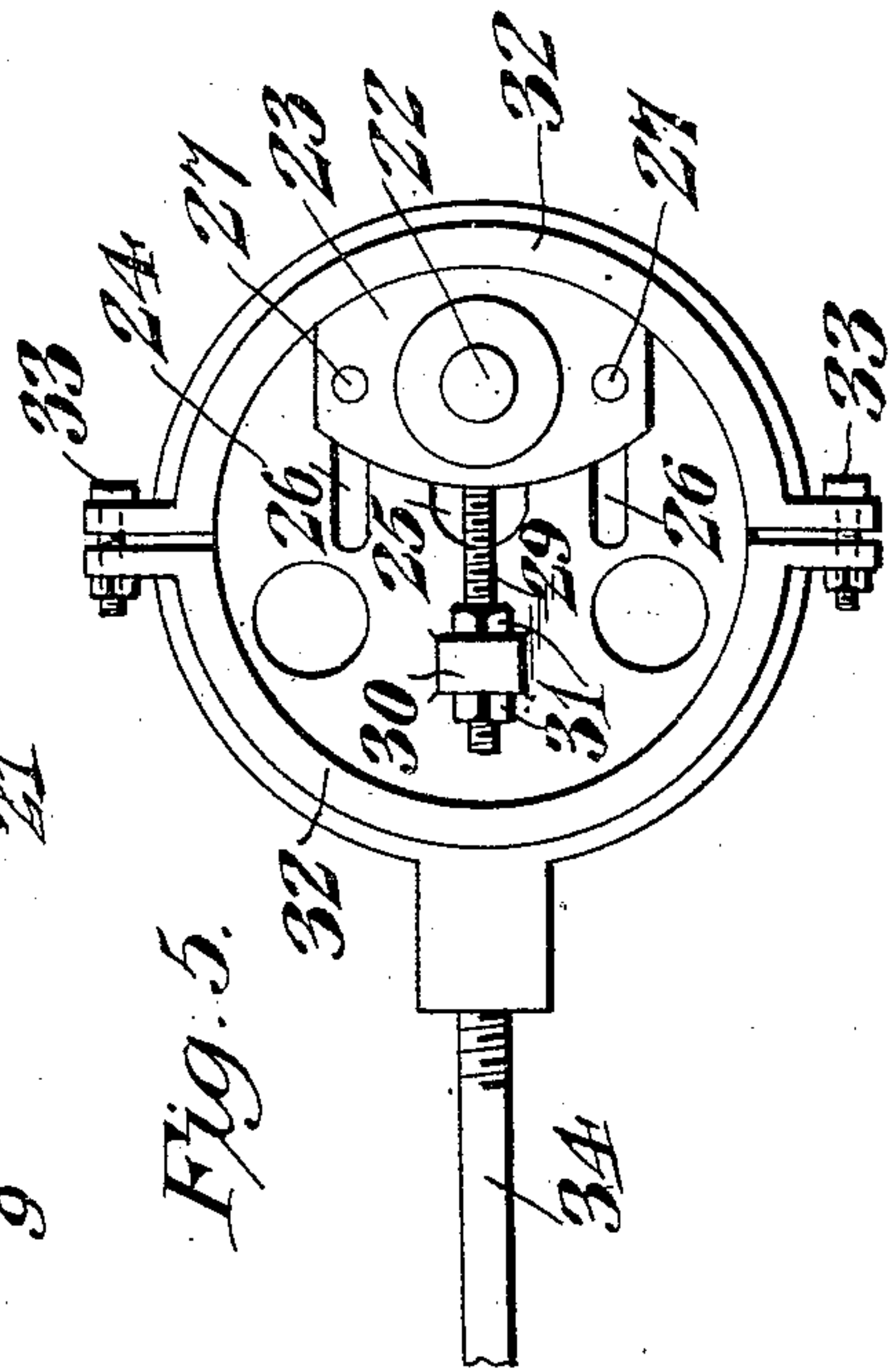


Fig. 5.

Witnesses

James K. McLaughlin

B. A. Foster

Joseph Loufek, Inventor

E. G. Siggers

Attorney

UNITED STATES PATENT OFFICE.

JOSEPH LOUFEK, OF ATCHISON, KANSAS.

SEPARATING MECHANISM.

951,321.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed May 5, 1908. Serial No. 431,061.

To all whom it may concern:

Be it known that I, JOSEPH LOUFEK, a citizen of the United States, residing at Atchison, in the county of Atchison and State of Kansas, have invented a new and useful Separating Mechanism, of which the following is a specification.

This invention relates more particularly to machines for separating cereals and other materials and removing foreign matter therefrom, and while especially suitable for removing oat groats from oats, shelled from unshelled rice, and the like, it is by no means limited in its usefulness to treating such articles, but it may be employed for various other materials.

The primary object is to provide a novel compact structure, which will have a comparatively great output and require a relatively small amount of power.

The separating mechanism *per se*, constitutes the subject-matter of a separate application, filed simultaneously herewith, and having Serial No. 431,062, and the present case embodies more particularly the operating and supporting mechanism therefor.

One of the principal objects of this invention therefore is to provide novel means that will constitute a swinging support for the separating mechanism, and will effect the reciprocation of the same, in other words, cause said mechanism to move in substantially the same plane throughout its stroke.

A further object is to provide operating means whereby the length of the stroke of the separating mechanism can be varied as desired, and still another and important object is to provide a machine that is effectively cushioned at the limits of its movement, thus eliminating to a material degree shocks and jars upon the driving means.

The preferred embodiment of the invention is illustrated in the accompanying drawings, but it will be evident from an inspection of the claims hereto appended, that this structure is open to change and modification.

In said drawings:—Figure 1 is a side elevation of the machine. Fig. 2 is an end elevation of the same. Fig. 3 is a vertical cross sectional view. Fig. 4 is a vertical longitudinal sectional view. Fig. 5 is a face view of the adjustable eccentric, showing the opposite side to that illustrated in Fig. 4. Fig. 6 is a detail view of one of the carrier

links illustrating in dotted lines the different positions assumed thereby. Fig. 7 is a top plan view of one of the cushions. Fig. 8 is a longitudinal sectional view through the same.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the particular form of construction disclosed, a supporting frame 9 is provided on which is mounted a shaking separator body 10 that is fully disclosed in the co-pending application to which reference has already been made. This body is fastened to a frame 11, and to the under side of said frame, are secured by means of brackets 12, suitable outstanding pivots 13. These pivots are engaged in the upper ends of swinging carrier links 14 that are provided in their lower portions with longitudinally disposed slots 15. Other pivots 16, outstanding from brackets 17 that are fastened to the supporting frame 9, are engaged in the slots 15. Journal boxes 18, fastened on the lower portion of the supporting frame, form bearings in which rock shafts 19 are journaled, and secured to the ends of said rock shafts, are short depending crank arms 20 terminating in crank pins or pivots 21 that are engaged in the lower ends of the carrier links. It will be noted that the distance between the axes of movement of the rock shafts 19 and pivots 21 is less than the distance between the axes of the pivots 21 and the pivots 16.

A drive shaft 22, operated from any suitable source of power, is journaled on one end of the supporting frame, and fixed to said shaft, is a hub 23 on which is slidably mounted an eccentric disk 24. This disk has a slot 25, through which the drive shaft 22 passes, and it is provided with other slots 26 located on opposite sides of and parallel to the slot 25. Holding bolts 27, secured to the hub 23, pass through the slots 26, and clamping nuts 28 are threaded on the bolts. An adjusting stem or bolt 29 projects from one edge of the hub 23 and passes through an ear 30 outstanding from the eccentric disk 24, while nuts 31, threaded on the stem 29, abut against opposite sides of the ear 30. An eccentric strap, preferably comprising sections 32, surrounds the disk 24, the sections being fastened together by bolts 33, and secured to the strap, is a pitman 34,

which is pivoted as shown at 35 to a depending bracket 36 secured to the central portion of the frame 11.

Oppositely disposed cylinders 37 are secured on top of the supporting frame 9 at the ends thereof, and are provided in their sides with ports 38. They also have outer closed ends, from which project vent nipples 39 having turning valves 40 therein. Pistons 41, operate in the cylinders, and adjustably secured to said pistons, by nuts 42, are piston rods 43 fastened as shown at 44 to the ends of the shaking body frame 11.

It will be evident that if the drive shaft 22 is rotated, the eccentric disk 24 will be revolved, thereby moving the pitman 34 back and forth and causing the frame 11 with the separator body 10 to shake. As a result, the links 14 will be swung back and forth, but their upper ends, or in other words, the pivots 13, will not move in the arc of a circle, but in a substantially horizontal plane. In explanation of this, it will be evident that inasmuch as the pivots 16 are stationary, the lower ends of the links 14 will be swung back and forth, thereby swinging the crank arms 20 of the rock shafts 19. Inasmuch as these arms are shorter than the distance between the pivots 21 and 16, the links will be caused to move longitudinally of the pivots 16 during their swinging movements, and this movement is just sufficient to cause the axes of the upper pivots 13 to remain in the same horizontal plane, as will be clear by reference to Fig. 6. The amount of shaking movement of the separator body can be readily varied, for by loosening the nuts 28 and turning the nuts 31, the disk 24 can be moved to different positions on the hub 23 and re-clamped, thus bringing the center of said disk nearer or farther away from the axis of the shaft 22. The cylinders 37 and pistons 41, operating therein, constitute cushions. Said pistons, as will be noted by reference to Fig. 8, move past the ports 38, and their movements beyond the ports, are not obstructed. After passing said ports, when moving inwardly, however, the air in the closed ends of the cylinders will be compressed, thus producing a continuously augmented resistance until the limit of movement is reached. The vents in said closed ends of the cylinders can be opened to any extent desired in order to secure the best cushioning effect possible.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention, will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In an apparatus of the class described, the combination of a reciprocating body, 70 carriers supporting the weight of the body, means connecting the carriers with the body for tilting the carriers with the reciprocating of the body, and a device connected with the carriers to impart longitudinal 75 movement thereof and operated by the tilting movement of the carriers.

2. In mechanism of the character set forth, the combination with a reciprocating body, of a support, a swinging carrier pivoted to the body and to the support, said carrier having an oscillatory and a longitudinal movement on one of the pivots, means for effecting said longitudinal movement during the oscillatory movement of the carrier, and means for reciprocating the carrier. 85

3. In mechanism of the character set forth, the combination with a body member, of a supporting member, a carrier link pivoted to one member and having a slot, a pivot mounted on the other member and engaged in the slot, and means for effecting a relative sliding movement of the link and pivot during the swinging movement of 95 said link.

4. In mechanism of the character set forth, the combination with a body member, of a supporting member, a carrier link pivoted between its ends to one member and 100 having a longitudinal reciprocatory movement with respect to the pivot axis, said link being also pivoted to the other member, and means engaging the link to cause its reciprocation during its swinging movement. 105

5. In mechanism of the character set forth, the combination with a support, of a reciprocating body, a link pivoted to the body and having a longitudinal slot, a pivot carried by the support and engaged in the 110 slot, means for reciprocating the body and thereby swinging the link, and means engaging the link for effecting its longitudinal movement on the pivot during its swinging movement. 115

6. In mechanism of the character set forth, the combination with a supporting member, of a reciprocating body member, means for reciprocating the latter, a swinging carrier pivoted to both members, and a 120 swinging arm pivoted to one member and to the carrier, the distance between the pivot axes of the arm being different than the distance between the pivot connection between the arm and carrier and the adjacent 125 pivot connection of said carrier with one of said members.

7. In mechanism of the character set forth, the combination with a supporting member, of a reciprocating body member, 130

means for reciprocating the latter, a swinging carrier, pivotal connections between the member and carrier, said carrier having a sliding movement on one of the pivots, and
 5 a swinging arm pivoted to the carrier and effecting the said sliding movement of the carrier on the body.

8. In mechanism of the character set forth, the combination with a support, of
 10 a reciprocating body, means for reciprocating the body, a carrier link pivoted to the body and having a longitudinal slot, a pivot carried by the support and engaged in the slot, and a swinging arm pivoted below
 15 said pivot and having a pivotal connection with the link below said pivot.

9. In mechanism of the character set forth, the combination with a reciprocating body, of means for reciprocating the same, a supporting frame, carrier links pivoted at their
 20 upper ends to the body and having longitudinally disposed slots, pivots carried by the supporting frame and engaged in the slots, rock shafts journaled on the supporting
 25 frame, and crank arms connected to the rock shafts and pivoted to the links.

10. In mechanism of the character set forth, the combination with a reciprocating body, a supporting base, opposed carrier
 30 links each pivoted at one end to the body and pivoted between its ends to the base, said links having a longitudinal reciprocatory movement with respect to the pivotal axis, means engaging the links to cause their
 35 reciprocation during its swinging movement, a driving shaft, an eccentric mounted thereon, a pitman connecting the eccentric with said body, and means whereby the eccentricity of the eccentric may be adjustably
 40 varied.

11. In mechanism of the character set forth, the combination with a supporting base, of a reciprocating body, levers fulcrumed intermediate their ends on the sup-
 45 porting base and connected with the body, means for reciprocating the body and tilting the levers, means for imparting longitudinal movement to the levers during the tilting thereof, means for adjustably limiting

the extent of said reciprocations, a cushion 50 for the body comprising a cylinder member fixed to the supporting base and having a vent opening, a piston member operating in the cylinder and attached to the body, and means for adjustably varying the amount 55 of vent opening in the cylinder to correspond with the adjustment of the reciprocating member.

12. In mechanism of the character set forth, the combination with a supporting 60 frame, of a reciprocating body movably mounted thereon for horizontal movement, an eccentric, a connection between the eccentric and the body, a shaft on which the eccentric is mounted to increase or decrease 65 the extent of reciprocation of the body, a cushion for the body comprising a cylinder member fixed to the support, having a port in one side and a vent nipple in one end, a piston operating in the cylinder and con- 70 nected to the body, said piston having a movement past the port, and a valve in the nipple adjustably controlling the vent opening therethrough in correspondence with the adjustment of the eccentric on the shaft. 75

13. In mechanism of the character set forth, the combination with a supporting frame, of a reciprocating body located there-
 over, links pivoted at their upper ends to the body and having longitudinal slots, 80 pivots carried by the supporting frame and engaged in the slots, rock shafts journaled in the supporting frame and having depending crank arms pivoted to the links, a drive shaft, an eccentric disk adjustably mounted 85 on the drive shaft, a pitman connected to the disk and to the body, oppositely arranged cylinders mounted on the supporting frame and having valved vents, and pistons operating in the cylinders and connected to 90 the body.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOSEPH LOUFEK.

Witnesses:

J. P. ADAMS,
 HENRY DENTON.