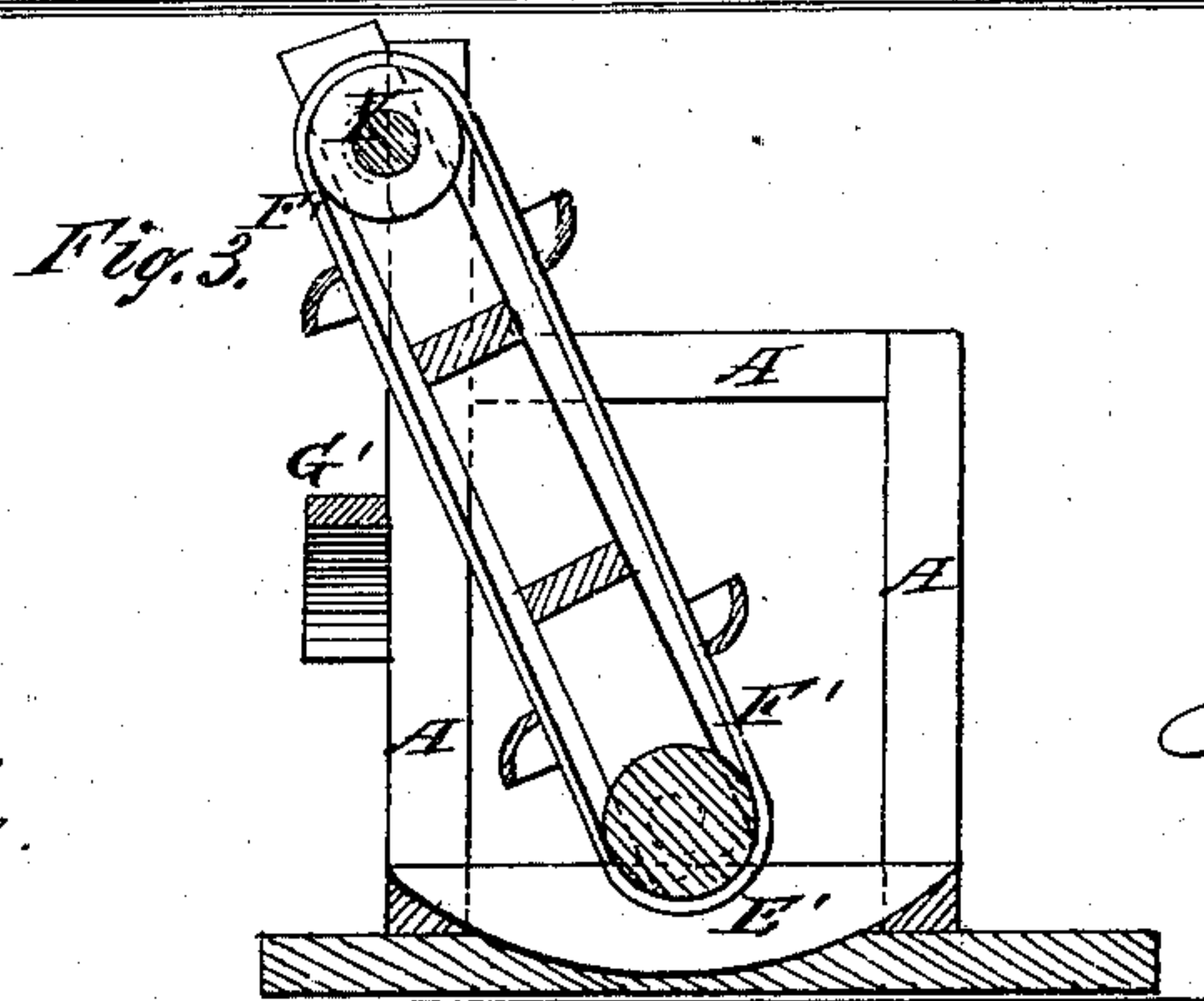
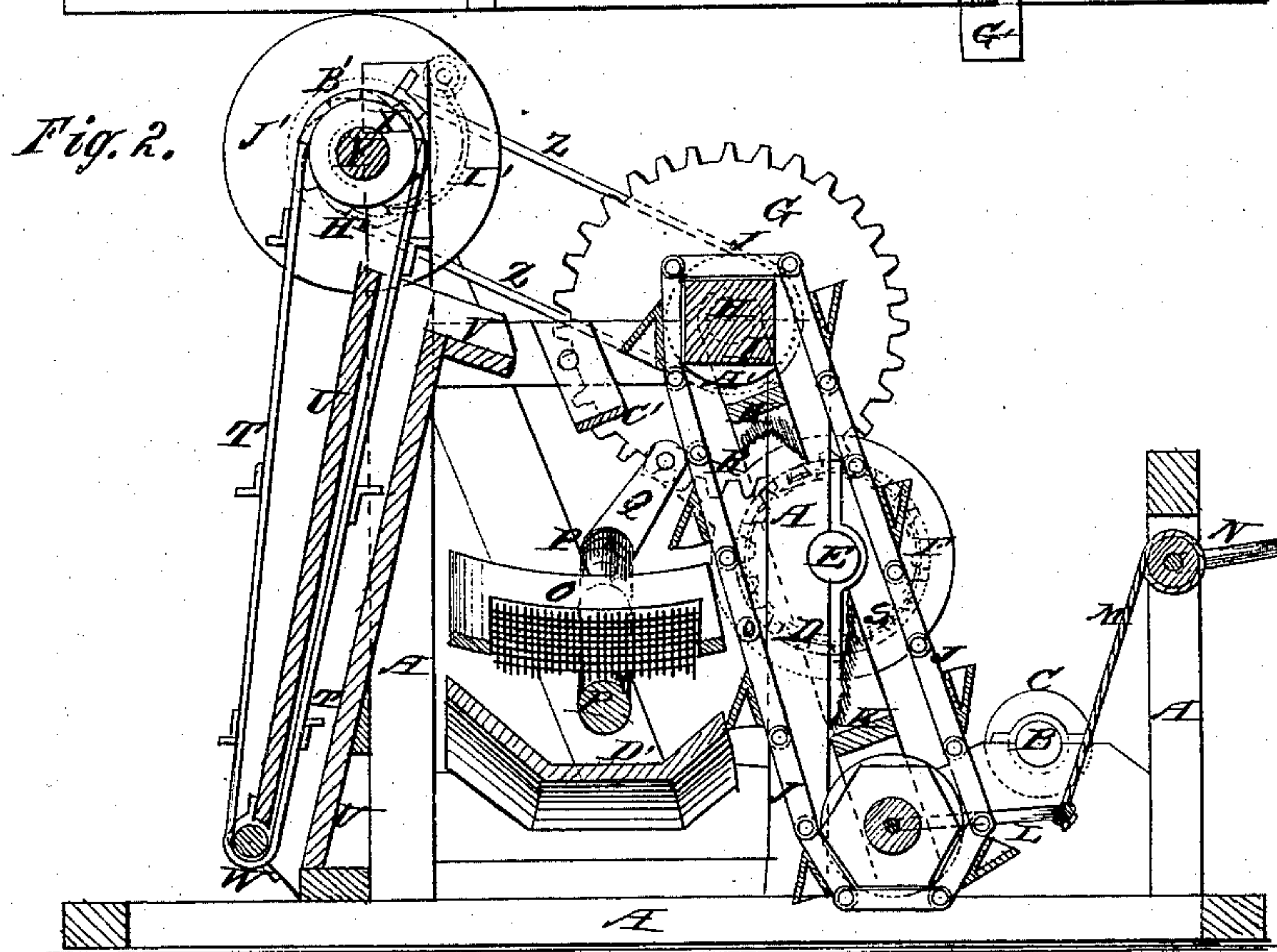
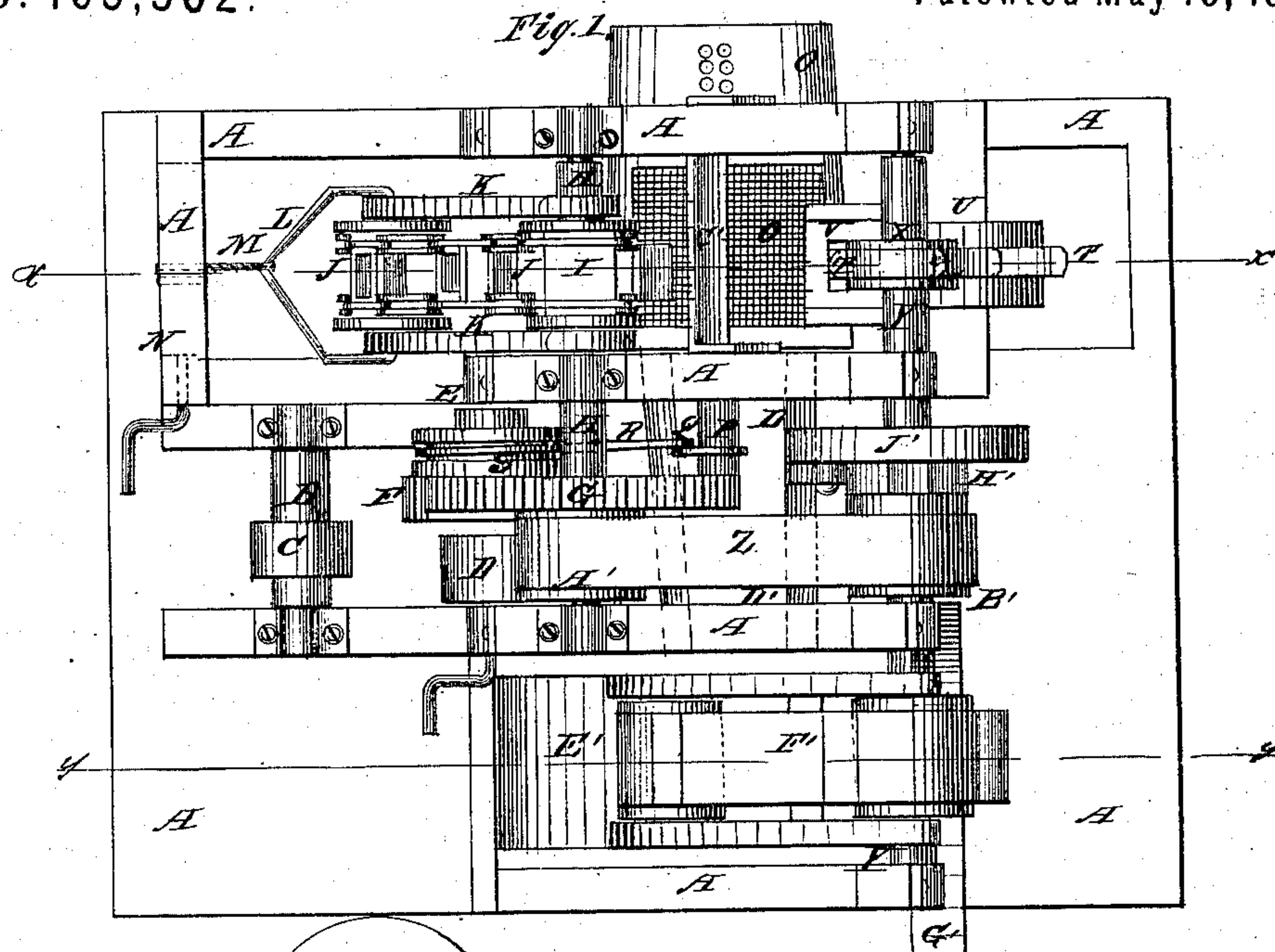


N. J. KELLER.  
Sand and Gravel Separator.

No. 163,382.

Patented May 18, 1875.



Witnesses:  
P. C. Dieterich  
A. J. Ferry

Inventor:  
N. J. Keller  
PER  
Munn  
Attorneys.



# UNITED STATES PATENT OFFICE.

NICHOLAS J. KELLER, OF PITTSBURG, PENNSYLVANIA.

## IMPROVEMENT IN SAND AND GRAVEL SEPARATORS.

Specification forming part of Letters Patent No. **163,382**, dated May 18, 1875; application filed April 17, 1875.

*To all whom it may concern:*

Be it known that I, NICHOLAS J. KELLER, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Sand and Gravel Separator, of which the following is a specification:

Figure 1 is a top view of my improved machine. Fig. 2 is a detail vertical section of the same, taken through the line *xx*, Fig. 1. Fig. 3 is a detail vertical section of the same, taken through the line *yy*, Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention has for its object to improve the construction of the sand and gravel separator for which Letters Patent No. 126,968 were issued to me May 21, 1872, so as to make it more convenient in use and more effective in operation.

The invention consists in the combination of the concave inclined screen, constructed as hereinafter described, the inclined rock-shaft, the rigid arm, the connecting-rod and the cam, with the shaft and the sand and gravel elevator; in the combination of the endless-chain pump or water-elevator with the sand and gravel elevator and rocking screen; in the combination of the inclined trough, the box, the sand-elevator, and the discharging-slide with the sand and gravel elevator, the rocking screen, and the endless-chain pump; and in the combination of the band, the loose pulley, the ratchet-wheel, the pawl, and the wheel with the shaft that drives the endless-chain pump and the sand-elevator, and with the sand and gravel elevator and the rocking screen, as hereinafter fully described.

A is the frame-work of the machine. B is the driving-shaft, to which motion is given from any convenient power. To the shaft B is attached a pulley, C, around which passes a belt, which also passes around a pulley, D, attached to the shaft E, to which shaft E is also attached a small gear-wheel, F, the teeth of which mesh into the teeth of a larger gear-wheel, G, attached to the shaft H, which revolves in bearings attached to the upper part of the frame A, and to which is attached a polygonal drum, I, around which passes, and

which gives motion to, the endless chains of the elevator J. The elevator J also passes around a polygonal drum or wheels attached to a short shaft pivoted to the frame K, the upper part of which is pivoted to and supported by the shaft H. The lower end of the swinging elevator-frame K is connected, by a bail, L, and rope or chain M, with a crank-shaft, N, so that by turning the said shaft in one or the other direction the lower or free end of the elevator may be raised or lowered to adjust it as required. The elevator J is designed to take the sand and gravel to be separated from a dredge-boat or other place, and discharge it upon the concave wire screen O. The screen O is set at an inclination of forty-five or fifty degrees, more or less, and is attached to an inclined shaft, P, which works in bearings in the frame A, and to its upper end is attached a rigid arm, Q, the outer end of which is pivoted to the end of a connecting-rod, R, the other end of which is connected by a strap with a cam, S, attached to the shaft E, so that the screen may be agitated from the driving mechanism of the elevator J. T is an elevator, the buckets of which pass up through a spout or pipe, U, to serve as an endless-chain pump to raise water and discharge it through a spout, V, upon the screen O. The lower part of the elevator T passes around a pulley, W, attached to the lower end of the pipe U, and its upper part passes around a pulley, X, attached to the shaft Y, which revolves in bearings attached to the frame A, and is driven from the shaft H by a belt, Z, which passes around the pulleys A' B', attached, respectively, to the shafts H Y. The water from the spout V is projected upon the inclined board or plate C', attached to the frame A, so as to be spread out as it falls upon the sand and gravel in the screen O. The finer parts of the material pass through the screen O into the trough D', while the coarser parts slide down the screen-board, and the finer parts of said refuse drop through the holes in the lower part of the said screen-board. The lumps of coal and other coarse refuse drop from the lower end of the screen-board into a flat or other suitable receptacle. The sand and finer gravel, that pass through the screen O, slide down the inclined spout or trough D', down



which they slide into the box E', whence they are taken by the elevator F', and discharged upon the inclined slide G, down which they slide into a flat or other convenient receptacle. The elevator F passes around, and is driven by, a pulley attached to the shaft Y. The pulley B' runs loosely upon the shaft Y, and has a ratchet-wheel, H', formed upon or attached to it, upon the teeth of which the pawl I' takes hold. The pawl I' is attached to a wheel, J', rigidly attached to the shaft Y, so that by throwing the pawl I' out of gear, the elevators T and F' may be stopped without stopping the elevator J and the screen O.

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

1. The combination of the concave inclined screen O, constructed as described, the inclined rock-shaft P, the rigid arm Q, the connecting-rod R, and the cam S, with the shaft H and elevator I J K, substantially as set forth.

2. The combination of the endless-chain pump or elevator T U V with the elevator I J K and rocking screen O, substantially as described.

3. The combination of the inclined trough D, the box E', elevator F', and slide G' with the elevator I J K, the rocking screen O, and the endless-chain pump T U V, substantially as described.

4. The combination of the band Z, loose pulley B', ratchet-wheel H', pawl I', and wheel J' with the shaft Y, that drives the elevators T, U, V, and F', and with the shaft H, that drives the elevators I J K, and the screen O, substantially as herein shown and described, and for the purpose set forth.

NICHOLAS J. KELLER.

Witnesses:

H. J. BIGGER,  
I. K. P. DUFF.