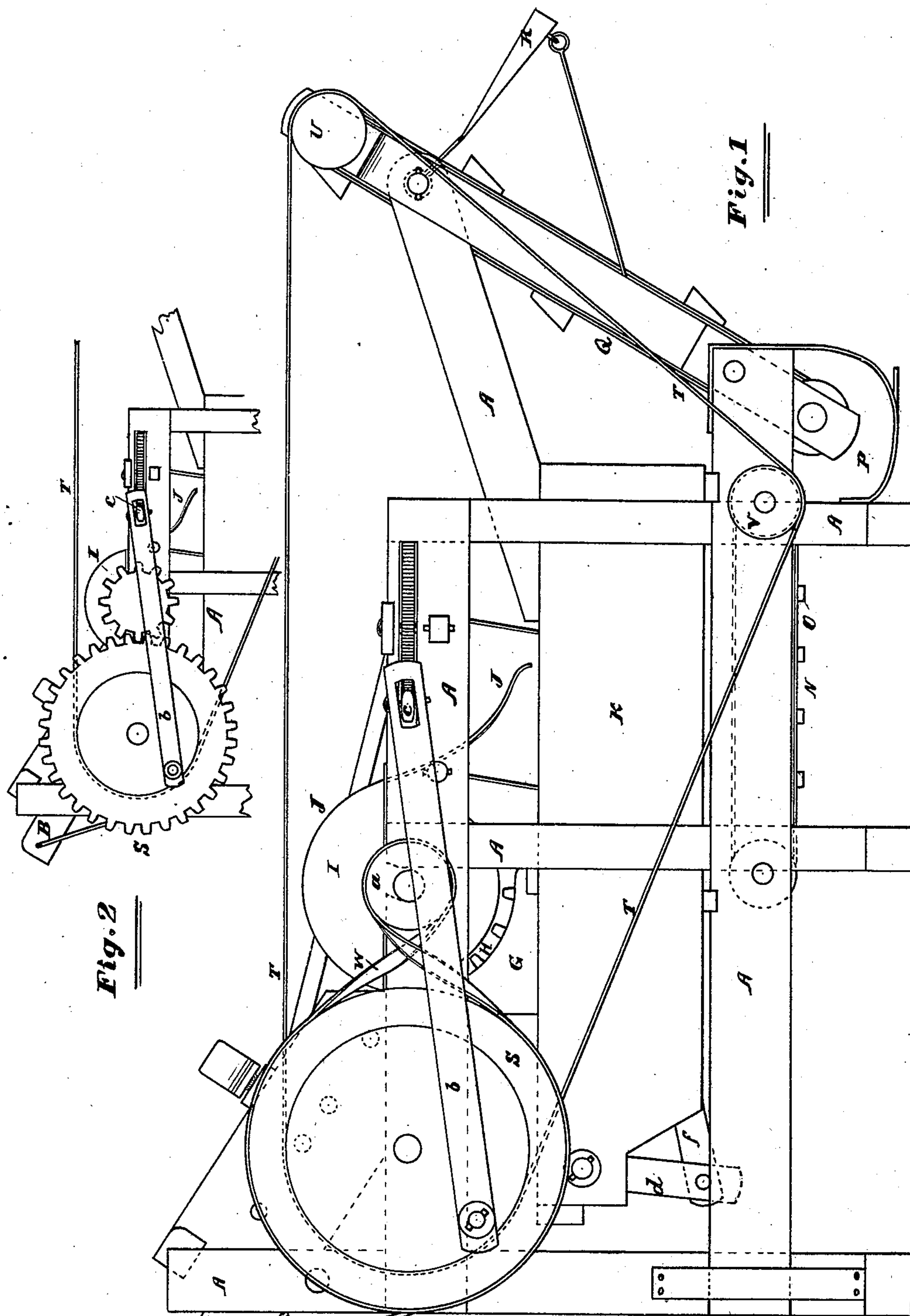


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Clay Grinder and Mixer.  
No. 215,754. Patented May 27, 1879.



Attest:

*Charles H. Schoff*  
*C. H. Schoff*

INVENTOR:

*John M. Kennedy*  
*By Boyne Geo-*  
*hio. Atty.*

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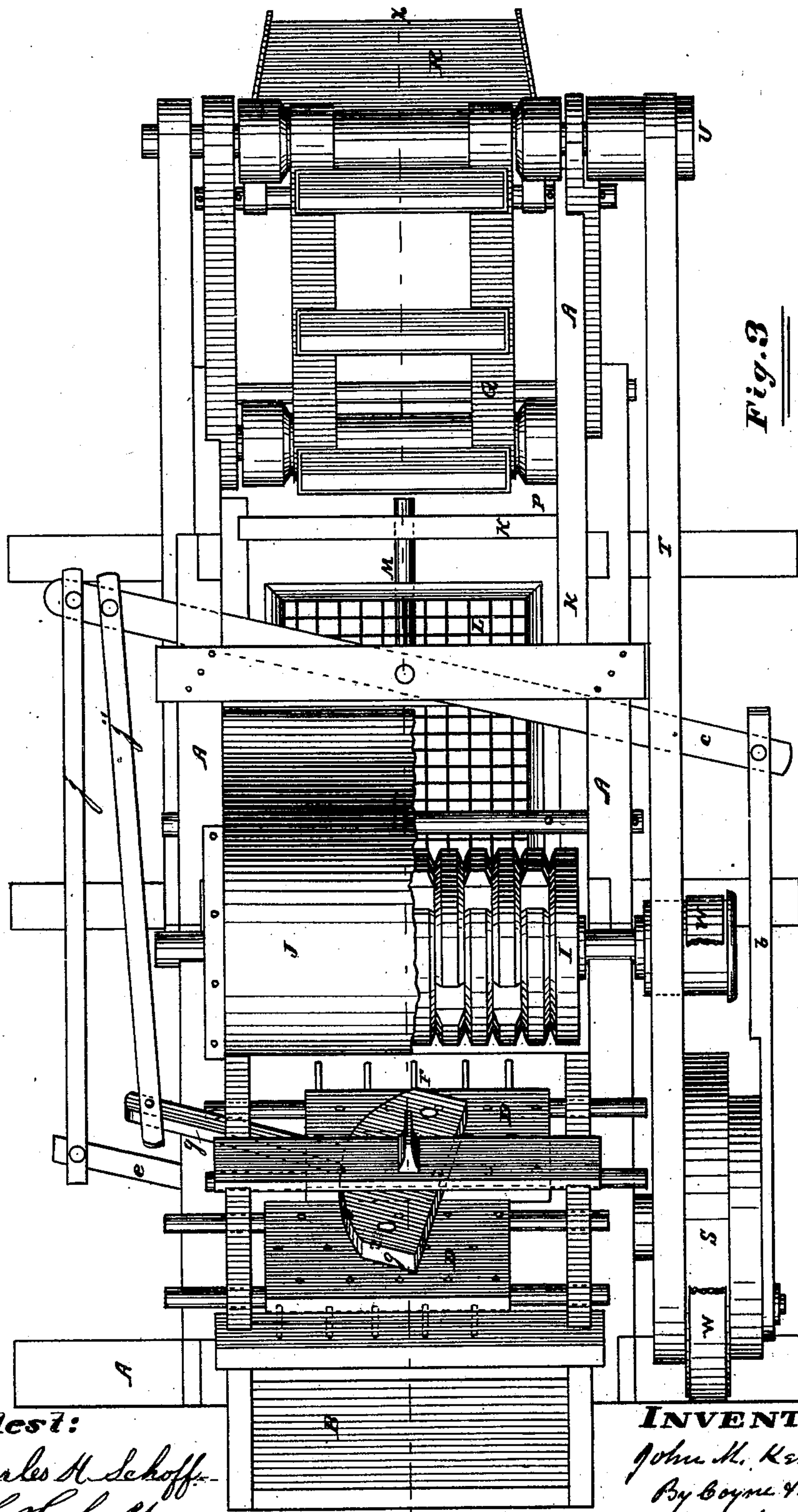


Fig. 3

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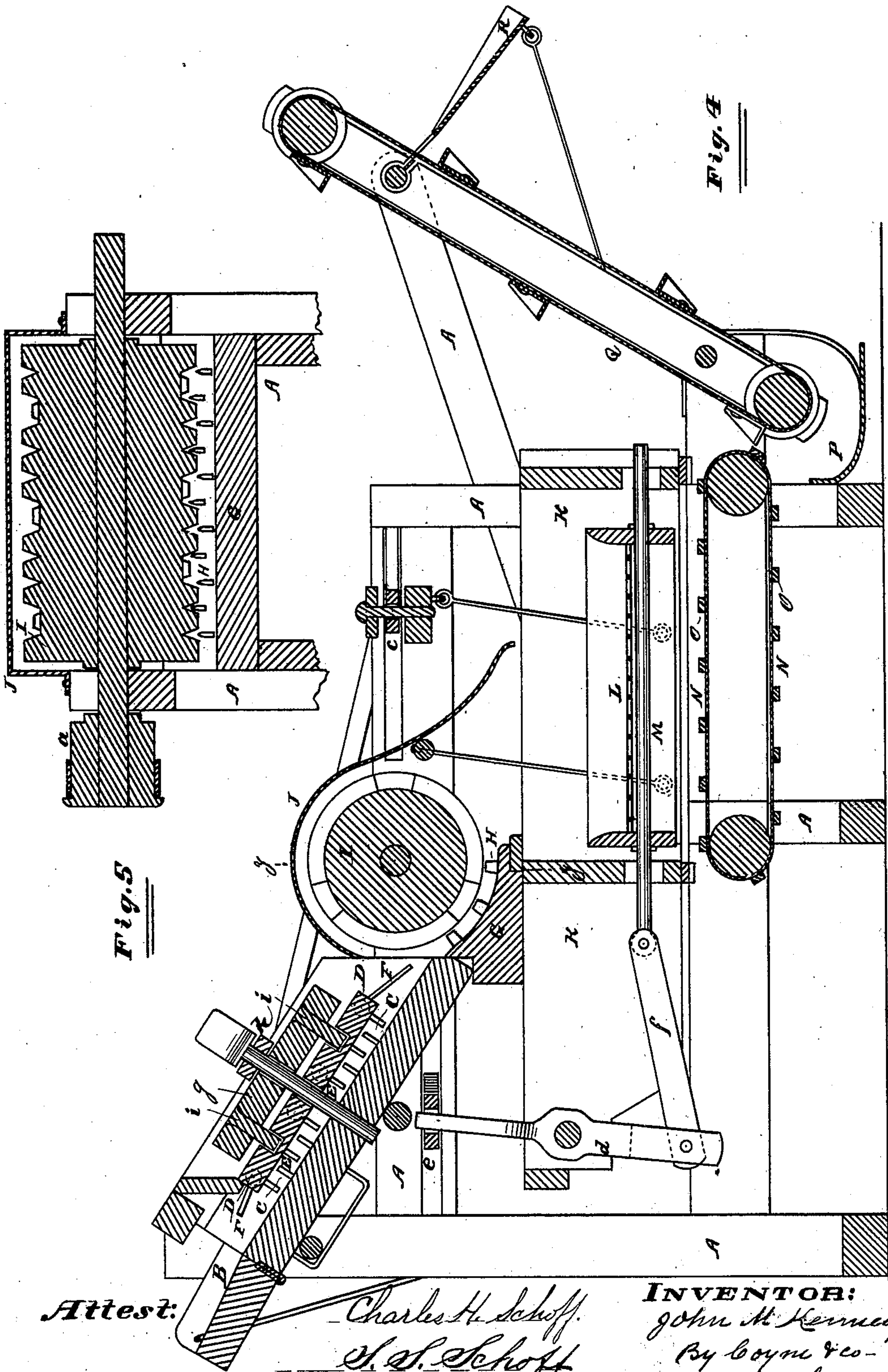
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John M. Kennedy  
By Boyne & Co.  
his attys.



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Attest:

Charles H. Schoff.  
S. S. Schoff

INVENTOR:  
John M. Kennedy,  
By Coyne & Co.  
his attys.

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Fig. 7

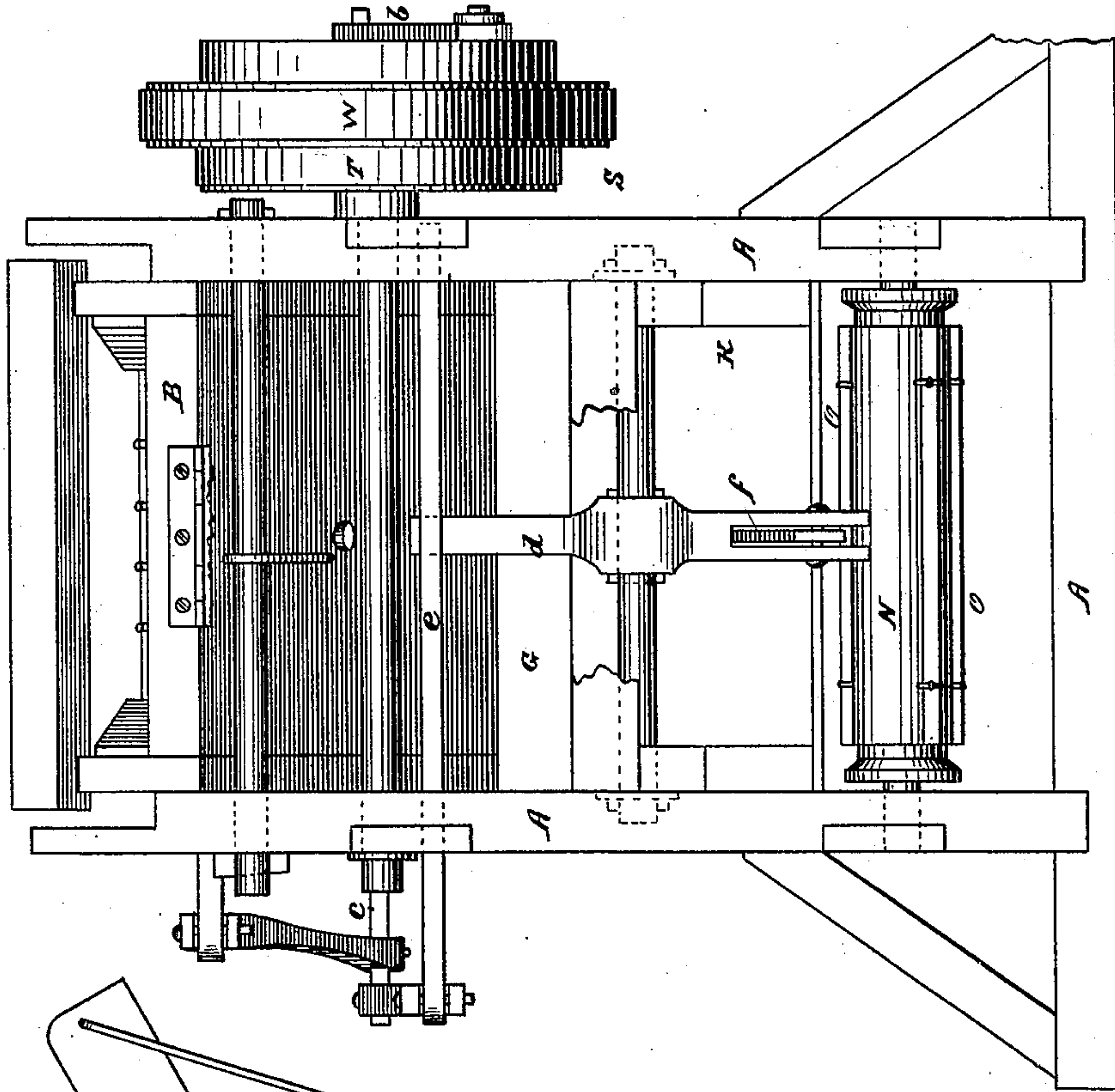


Fig. 6

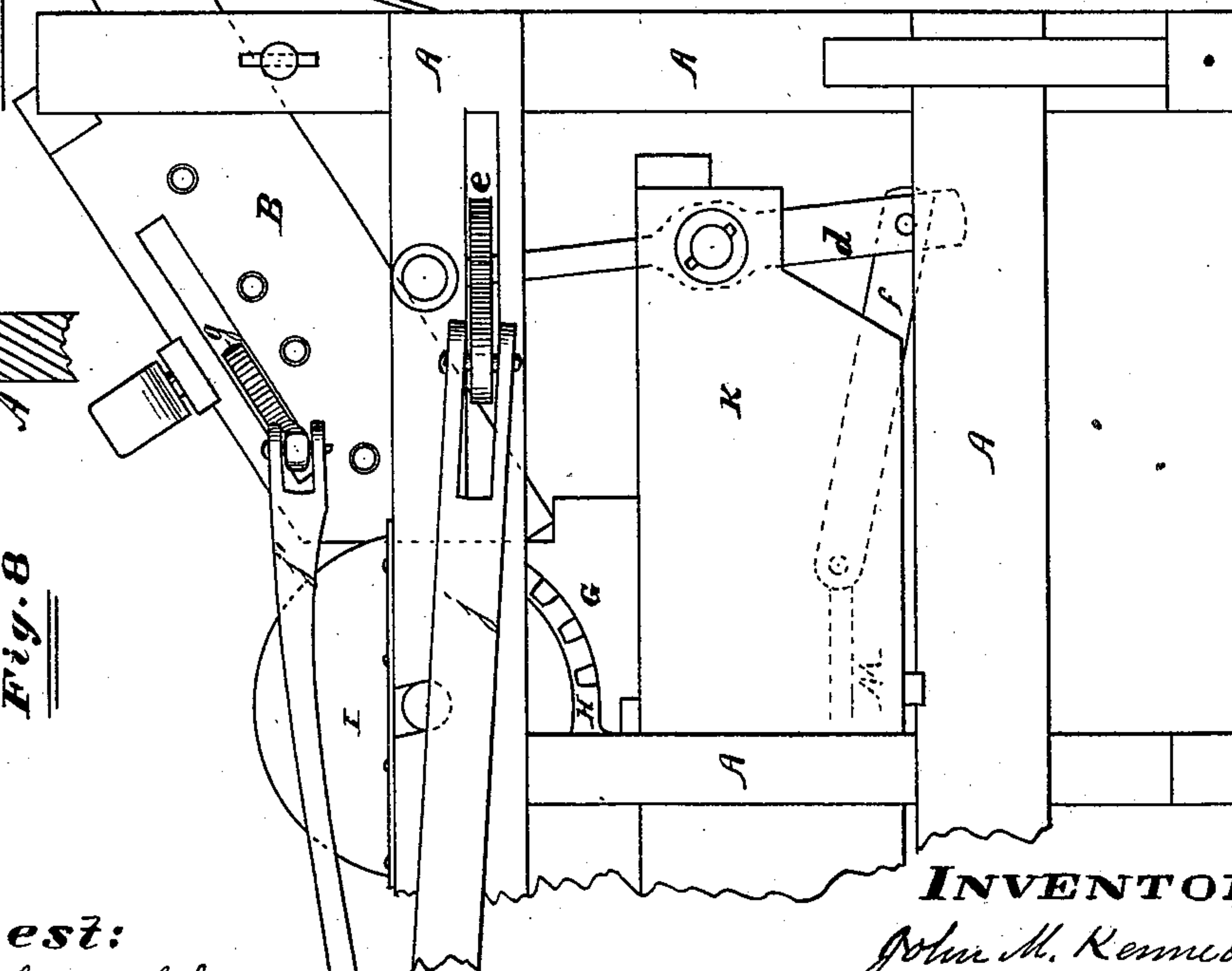
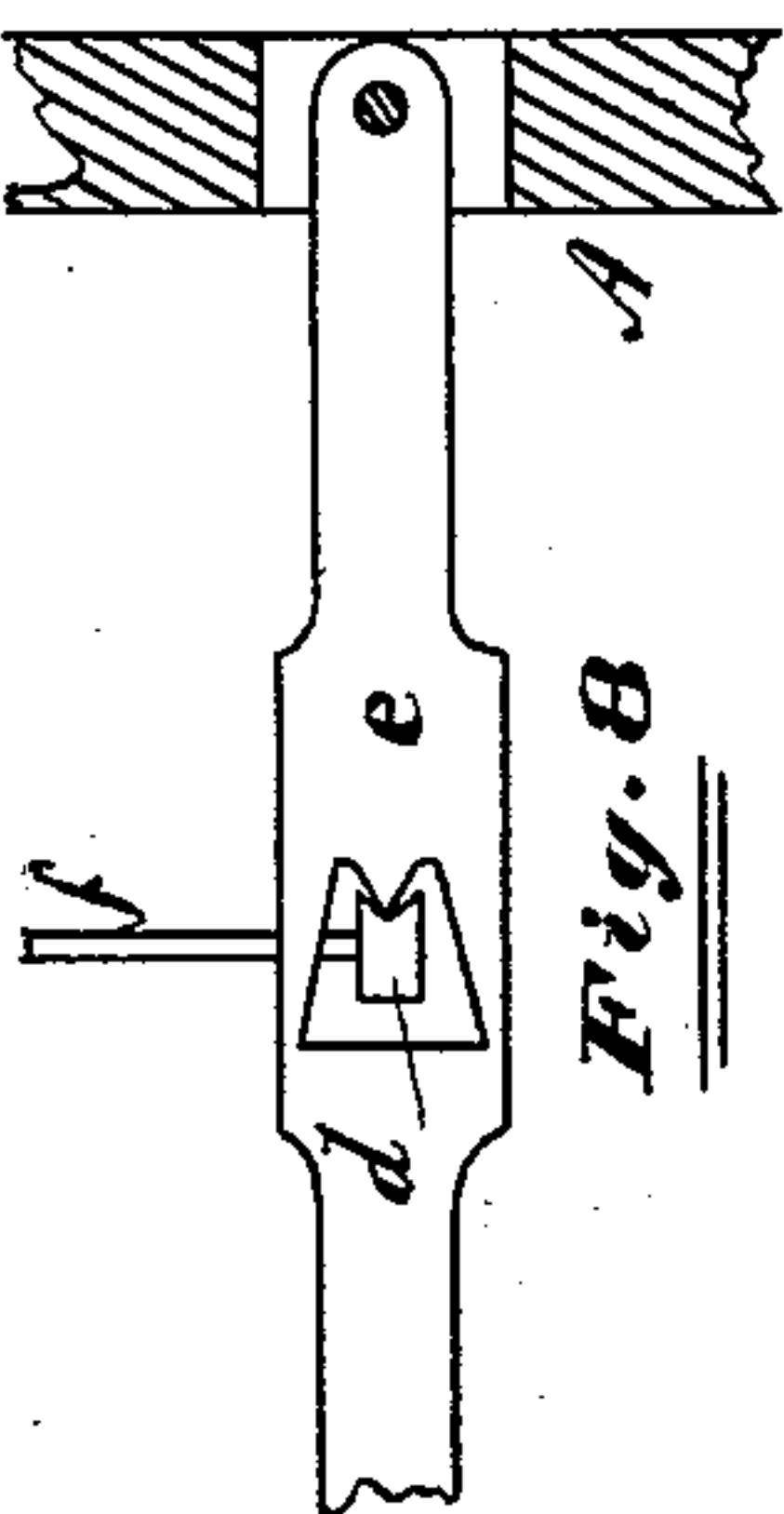


Fig. 8



Attest:

Charles H. Schoff  
S. S. Schoff

INVENTOR:

John M. Kennedy  
By Coyne & Co-  
his Attys.



# UNITED STATES PATENT OFFICE.

JOHN M. KENNEDY, OF WAXAHACHIE, TEXAS.

## IMPROVEMENT IN CLAY GRINDER AND MIXER.

Specification forming part of Letters Patent No. **215,754**, dated May 27, 1879; application filed March 17, 1879.

*To all whom it may concern:*

Be it known that I, JOHN M. KENNEDY, of Waxahachie, in the county of Ellis and State of Texas, have invented certain new and useful Improvements in Clay Grinder and Mixer, of which the following, in connection with the accompanying drawings, is a specification.

Figure 1, Sheet 1, is a side elevation of a machine embodying my invention; Fig. 2, Sheet 1, a like representation, showing a modification of construction; Fig. 3, Sheet 2, a top or plan view of the machine; Fig. 4, Sheet 3, a section in the plane of the line *xx*; Fig. 5, Sheet 3, a section in the plane of the line *yy*; Fig. 6, Sheet 4, a side elevation of the side opposite that shown in Figs. 1 and 4; Fig. 7, Sheet 4, an end view of the receiving-end of the machine; and Fig. 8, Sheet 4, a top view of one of the screen-actuating levers.

Like letters of reference indicate like parts.

A represents the frame of the machine. B is a hopper or chute, into which the earth to be ground and mixed is placed to be fed or supplied to the working parts of the machine. C C are fixed teeth or pegs projecting upward from the floor of the hopper. D D are laterally-movable slides, arranged somewhat above the floor of the hopper, and having suitable bearings in the sides of the hopper. E E are teeth or pegs projecting downward from the slides D D, and F F are pins or arms extending horizontally from the upper edge of the upper slide and from the lower edge of the lower slide. These slides have their lower faces parallel to the floor of the hopper, and the pins or pegs E E extend down between the pegs C C, and are arranged to work between the rows of the fixed pins during the sliding movement of the slides.

The hopper or chute B terminates at its lower end in, or there meets, a downwardly-curved shelf, G, in which are the fixed teeth H H, which project from its upper face. I is a corrugated roller, arranged over the shelf G, the corrugations consisting of ribs extending around the roller in parallel lines. These corrugations, however, are, by preference, not continuous, as is clearly represented in Figs. 3, 4, and 5.

The teeth H H are arranged, as shown, to extend to or between the corrugations of the

roller I, and this roller is quite near to the shelf G. I deem it best to make the roller I of cast metal, and in three or more sections. J is a cap arranged over the roller I. K is a box arranged with the frame A, and in the lower part of the machine. L is a sieve arranged and suspended in the box K, and mounted on a sliding bar, rod, or shaker, M, passing through the ends of the said box. The sieve L is so arranged with relation to the shelf G as to catch the earth dumped from the said shelf.

N is an endless apron arranged below the sieve L, and, by preference, carrying cross cleats or bars O O, arranged on its outer face. P is a receiver arranged below and extending beyond the outer end of the apron N. Q is an elevator, consisting of a frame, rollers, endless belts, and buckets, substantially as shown. The frame of this elevator is connected to the frame A, and is so arranged that the buckets will enter the receiver P one after another during the operation of the machine, and take out the earth deposited in the receiver, as will be hereinafter more fully explained.

R is a chute connected to the upper part of the elevator Q, and arranged to receive the earth dumped from the elevator-buckets. The box K, instead of being regarded as such, may be regarded as a part of the frame A. The elevator-frame may also be regarded as a part of the main frame of the machine.

Various means may be employed for the purpose of properly setting in motion the parts now described. I have shown means which I consider preferable, and will now describe the same with particularity.

S is the driving-wheel, which may be driven by any power suitably applied. T is a belt passing from one step on the wheel S to and over a wheel or pulley, U, rigidly mounted on the driving shaft or roller of the elevator Q, and also to and about a driving wheel or pulley, V, for setting the endless apron N in motion, thus using one belt to drive both these parts.

W is a belt passing from another step on the wheel S to and over a driver, *a*, rigidly connected to the shaft or axle of the roller I, this belt being crossed, as shown, and the roller I being rigid on its shaft or axle. The



roller I, however, instead of being driven by a belt, may be driven by a pinion in the place of the driver *a*, the pinion engaging cogs on the wheel S, as indicated in Fig. 2.

*b* is a pitman connected to the outer face of the wheel S at one end, and at the other to a horizontal lever, *c*, extending across the machine, and centrally pivoted to the frame A. *d* is a vertical lever turning on spindles extending from its central part, and having suitable bearings. *e* is a horizontal lever pivoted at one end to the frame A at a point above the spindle or supporting-bar of the lever *d*, and laterally from the said lever, as represented in Fig. 7. The upper end of the lever *d* passes freely through the lever *e*; and to prevent the lever *e* from tending to twist the lever *d* when the lever *e* is moved back and forth, I make the opening in the latter broader at one end than at the other, and make a V-shaped projection in the narrow end of the opening, and a vertical groove, also V-shaped, in that side of the lever *d* which is next to the said projection, as is clearly shown in Fig. 8. *f* is a connecting-arm connecting the lower end of the lever *d* to the bar M, the said arm being jointed or pivoted to the parts connected by it. *g* is an angular or T-shaped lever or double bell-crank pivoted to a cross-bar, *h*, and having pins or studs *i i* extending freely into openings or holes in the slide D D. *j j'* are connecting-arms connecting the lever *e* to the levers *c* and *g*, respectively.

The wheel S should be rotated in the direction indicated by the arrow, and the earth fed into the chute B. The inclination of this chute is such that the earth will find its way to the teeth arranged in the chute. The rotary movement of the driver S imparts a laterally-sliding movement to the slides D D, which move reversely or in opposite directions, owing to the action of the lever *g*, which receives a vibrating motion from the joint action of the pitman *b*, lever *c*, and connecting-arm *j'*. The earth is thus broken up or pulverized sufficiently to pass between the teeth in the chute and to fall upon the shelf G. The earth in falling upon the shelf G is subject to the action of the roller I and the teeth H H, and its larger lumps are reduced. The reverse movement of the slides D D not only breaks up the earth, but thoroughly mixes it, so that by the time it falls into the sieve L it is well ground and mixed. It is also still further mixed in the sieve, for the latter, owing to its connection with the lever *d*, is moved back and forth, the said lever receiving its motion through the pitman *b*, lever *c*, connecting-arm *j*, and lever *e*. The earth which passes through the sieve falls upon the endless apron N, and is by it carried to and dumped into the receiver P. From the receiver P the earth is raised to the chute R by means of the elevator-buckets, and from this chute it may be passed to any suitable place for use.

This machine will be found to be especially useful in connection with brick-machines. It

frequently happens that clay and earth suitable for making brick differ sufficiently in different places to impair the operation of a machine in one place, or while working on material from one locality, when the same machine, working at a different place, or on material from a different place, would give entire satisfaction. In such cases the machine which I have now described will prepare the clay or earth for a brick-machine in such a manner as to render the action of the latter machine uniformly satisfactory, although the character of the material operated upon may vary.

Letters Patent of the United States of America No. 206,247 were issued to L. B. Kennedy the 23d day of July, A. D. 1878, for improvements in brick-machines, and in using that machine in connection with the one herein particularly described the earth is deposited from the chute R upon the revolving table in the manner described in the said Letters Patent, and with the advantageous results already set forth.

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

1. The combination, substantially as described, in a machine for grinding and mixing earth, of the hopper or downwardly-inclined feedway or chute B, having therein the upwardly-projecting teeth C C, and the reversely and laterally movable slides D D, provided on their lower faces with the teeth E E, extending downward between the teeth C C, for the purposes set forth.

2. The combination, in a machine for grinding and mixing earth, of the feedway or chute B, the curved shelf G, arranged at the lower end of the said feedway, the corrugated roller I, arranged over the said shelf, the fixed teeth C and H, and the laterally-movable teeth E E, for the purposes set forth.

3. The combination, substantially as described, in a machine for grinding and mixing earth, of the chute B, the fixed teeth C C, the movable teeth E E, and the sliding sieve L, all arranged substantially as specified with relation to each other, for the purposes set forth.

4. The combination, substantially as described, in a machine for grinding and mixing earth, of the chute B, the fixed teeth C C, the movable teeth E E, the sliding sieve L, and the endless apron N, all arranged substantially as specified with relation to each other, for the purposes set forth.

5. The combination, substantially as described, in a machine for grinding and mixing earth, of the chute B, the fixed teeth C C, the movable teeth E E, the sliding sieve L, the endless apron N, the receiver P, and the elevator Q, all arranged substantially as described with relation to each other, for the purposes set forth.

6. The combination, in a machine for grind-



ing and mixing earth, of the chute B, the shelf G, the fixed teeth C and H, the movable teeth E E, the corrugated roller I, and the sliding sieve L, all arranged substantially as specified with relation to each other, for the purposes set forth.

7. The combination, in a machine for grinding and mixing earth, of the chute B, the shelf G, the fixed teeth C and H, the movable teeth E E, the corrugated roller I, the sliding sieve L, and the endless apron N, all arranged substantially as specified with relation to each other, for the purposes set forth.

8. The combination, in a machine for grinding and mixing earth, of the chute B, the shelf G, the fixed teeth C and H, the movable teeth E E, the corrugated roller I, the sliding sieve L, the endless apron N, the receiver P, and the elevator Q, all arranged substantially as specified with relation to each other, for the purposes set forth.

9. The combination, in a machine for grinding and mixing earth, of the chute B, the shelf G, the fixed teeth C and H, the movable teeth E E, the corrugated roller I, the sliding sieve L, the endless apron N, the receiver P, the elevator Q, and the chute R, all arranged substantially as specified with relation to each other, for the purposes set forth.

10. The combination of the corrugated roller

I, the driver S, the endless apron N, the elevator Q, and the belt T, the latter arranged over the said driver and the drivers of the said apron and elevator, all arranged substantially as specified with relation to each other and the feedway or chute of a machine for grinding and mixing earth, and for the purposes set forth.

11. The combination of the toothed chute or feedway B, the toothed slides D D, the double bell-crank *g*, and the connecting-arm or pitman *j'*, the latter in connection with the said crank and the driving mechanism of the machine, substantially as and for the purposes specified.

12. The combination of the sliding sieve L, the shaker M, the pivoted vertical lever *d*, the horizontal pivoted lever *e*, the connecting-arm *j*, and the driving mechanism of the machine, when the said lever *d* is grooved vertically on one edge, near its upper end, and the said lever *e* has a tapering opening having therein a projection extending into the said groove, substantially as shown and described, and for the purposes set forth.

JOHN M. KENNEDY.

Witnesses:

E. P. HAWKINS,  
F. E. DEY.