

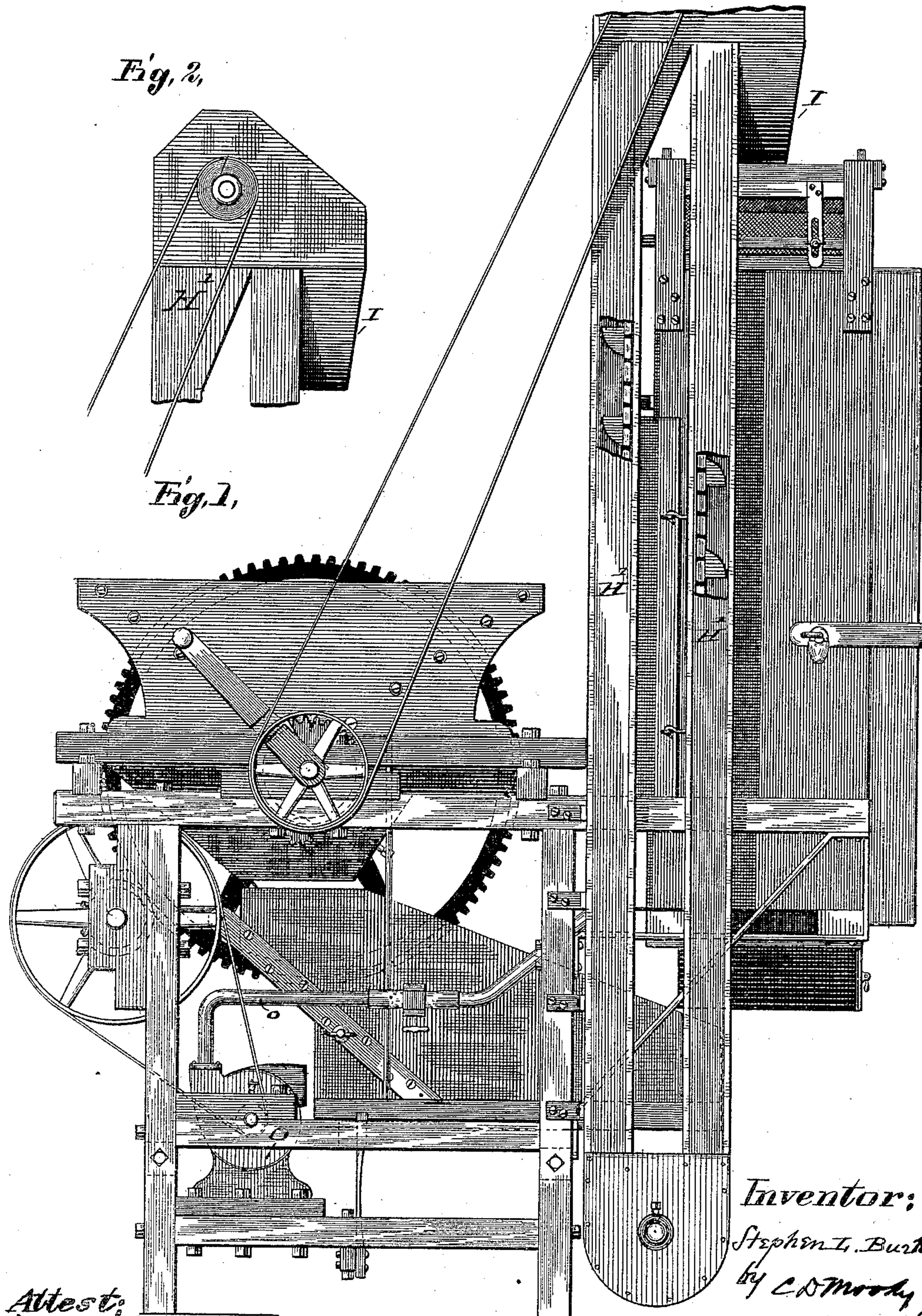
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8 Sheets—Sheet 1.

S. L. BURKE.
ORE CONCENTRATOR.

No. 427,551.

Patented May 13, 1890.



Attest:
J. W. Sanford
Notary

Inventor:
Stephen L. Burke
by C. D. Moody
att'y.

(No Model.)

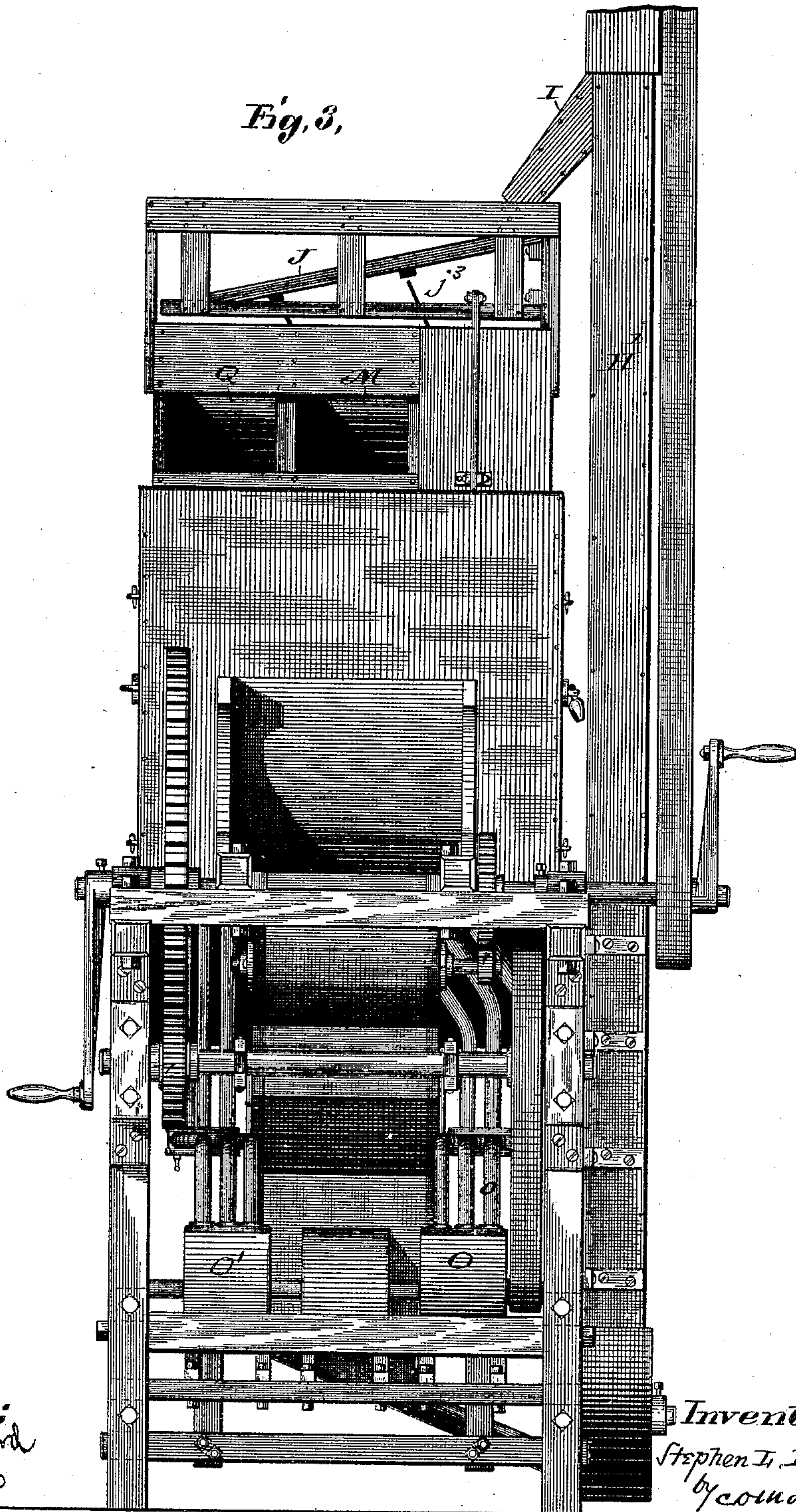
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ORE CONCENTRATOR.

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Patented May 13, 1890.

Fig. 3,



Attest:
J. McLaughlin
R. H. Rex

Inventor:
Stephen L. Burke
by C. M. Moody
att'y

(No Model.)

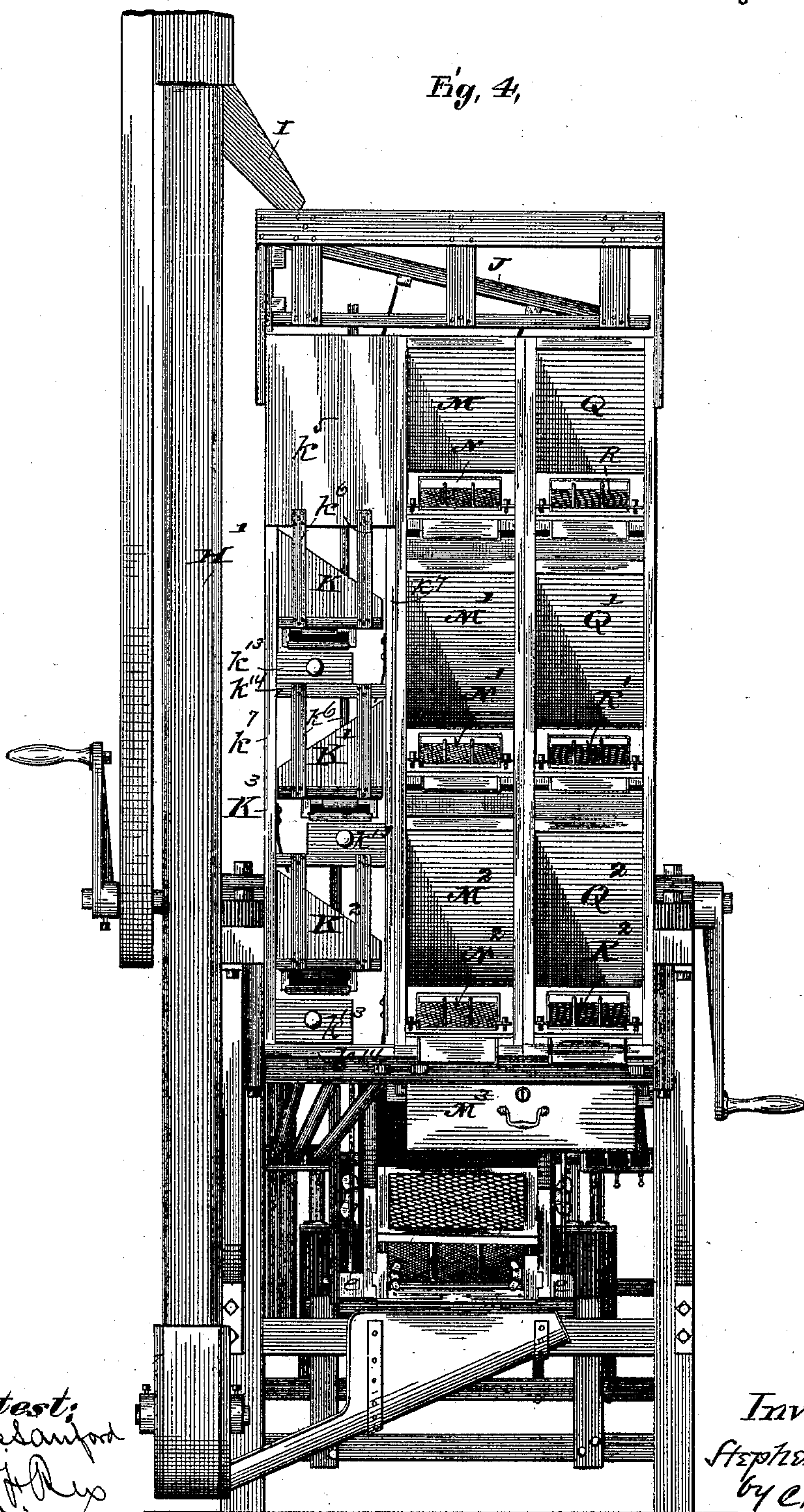
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Patented May 13, 1890.

Fig. 4,



Attest:
S. L. Burke
D. H. Rye

Inventor;
Stephen L. Burke
by C. O. Moody
att'y

(No Model.)

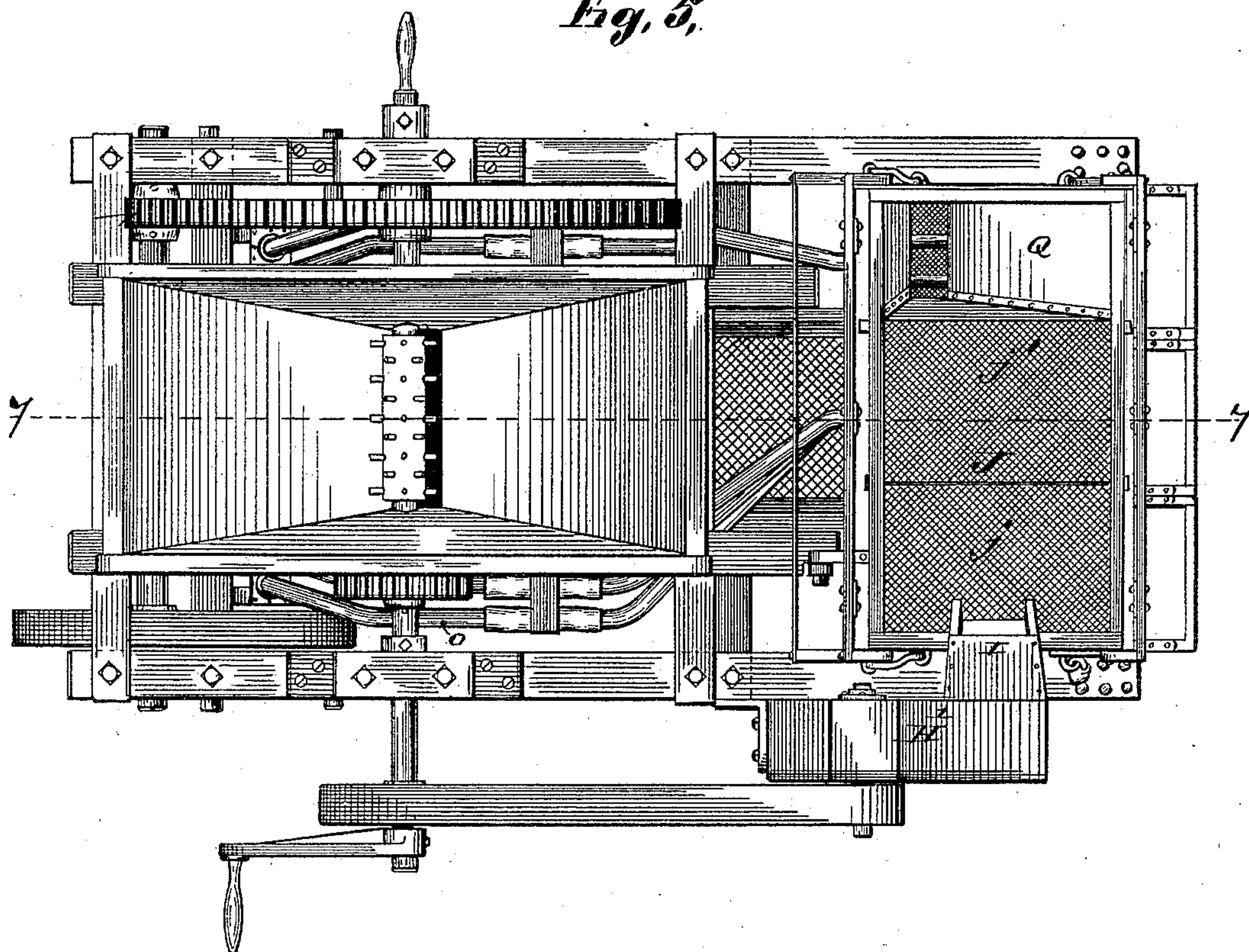
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Fig. 5.



Attest:
Wm. Sanford
Wm. H. Hays

Inventor:
Stephen L. Burke
by C. W. Moody atty

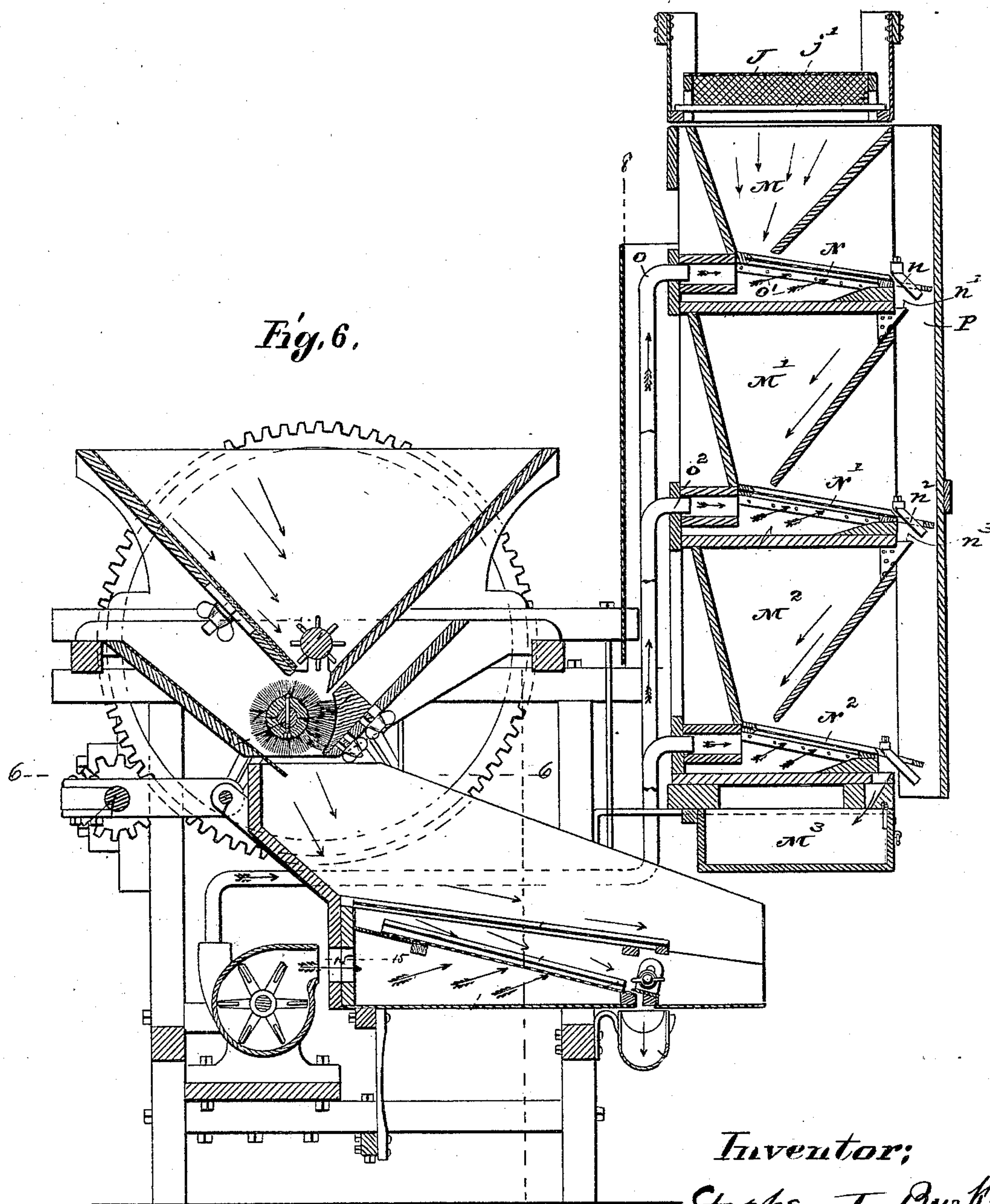
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S. L. BURKE.
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Attest:
Wm. Sanford
R. H. Rex

Inventor;
Stephen L. Burke
by C. H. Moody
att'y

(No Model.)

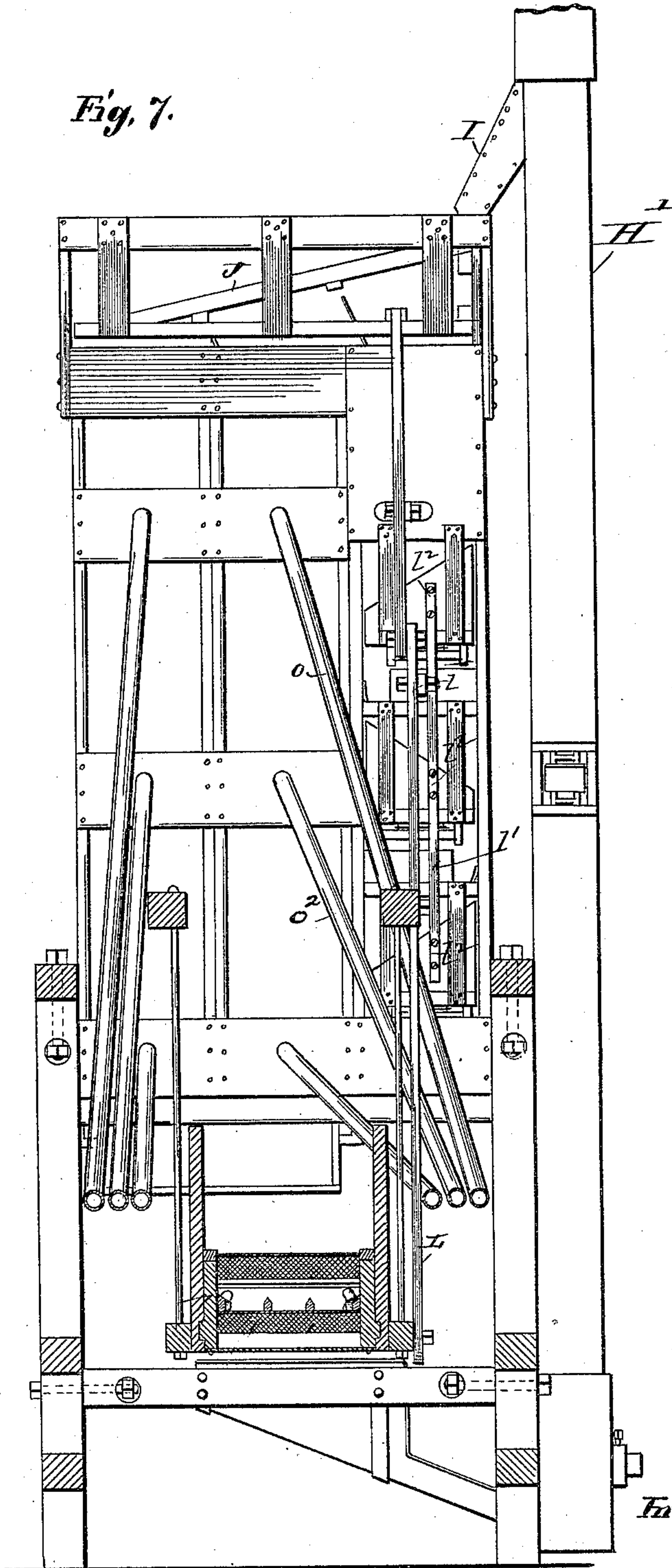
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S. L. BURKE.
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Fig. 7.



Attest:
Wm. Sanford
B. H. Rex

Inventor:
Stephen L. Burke
by C. P. Moody atty

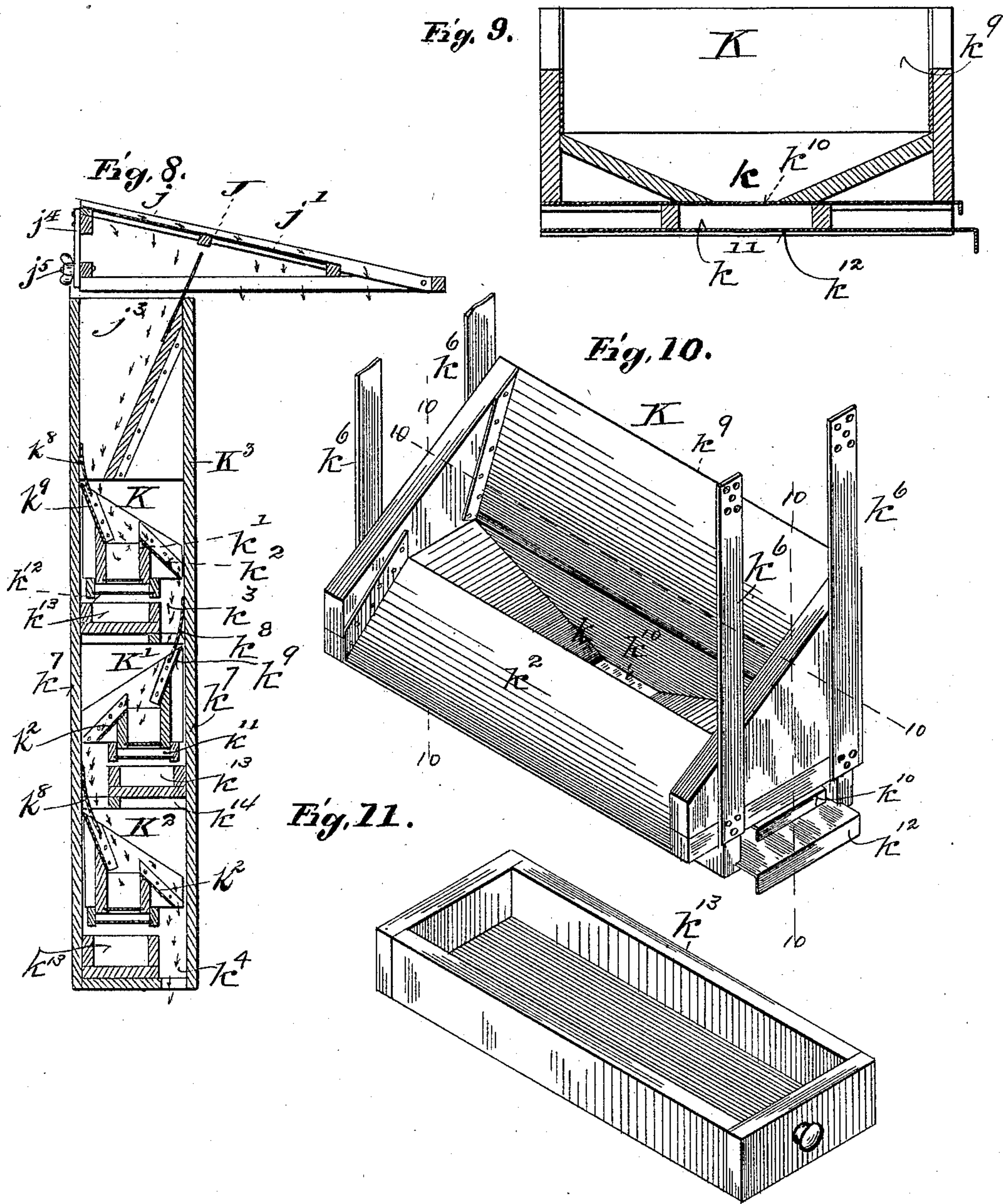
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S. L. BURKE.
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Patented May 13, 1890.



Inventor;

Stephen L. Burke
by *epmoody* atty

Attest:
Wm. L. Sanford
Wm. L. Sanford

(No Model.)

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S. L. BURKE.
ORE CONCENTRATOR.

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Patented May 13, 1890.

Fig. 12.

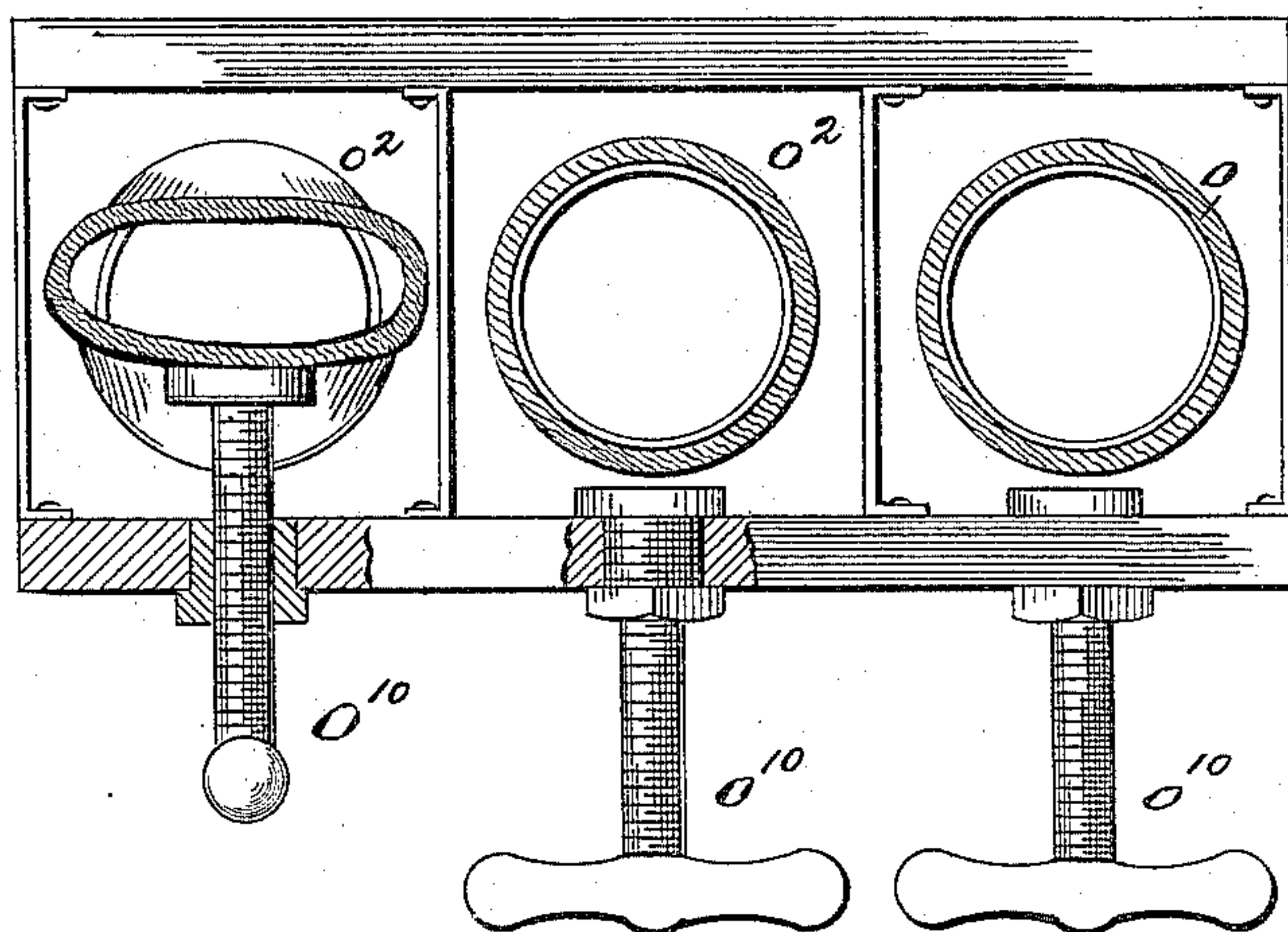
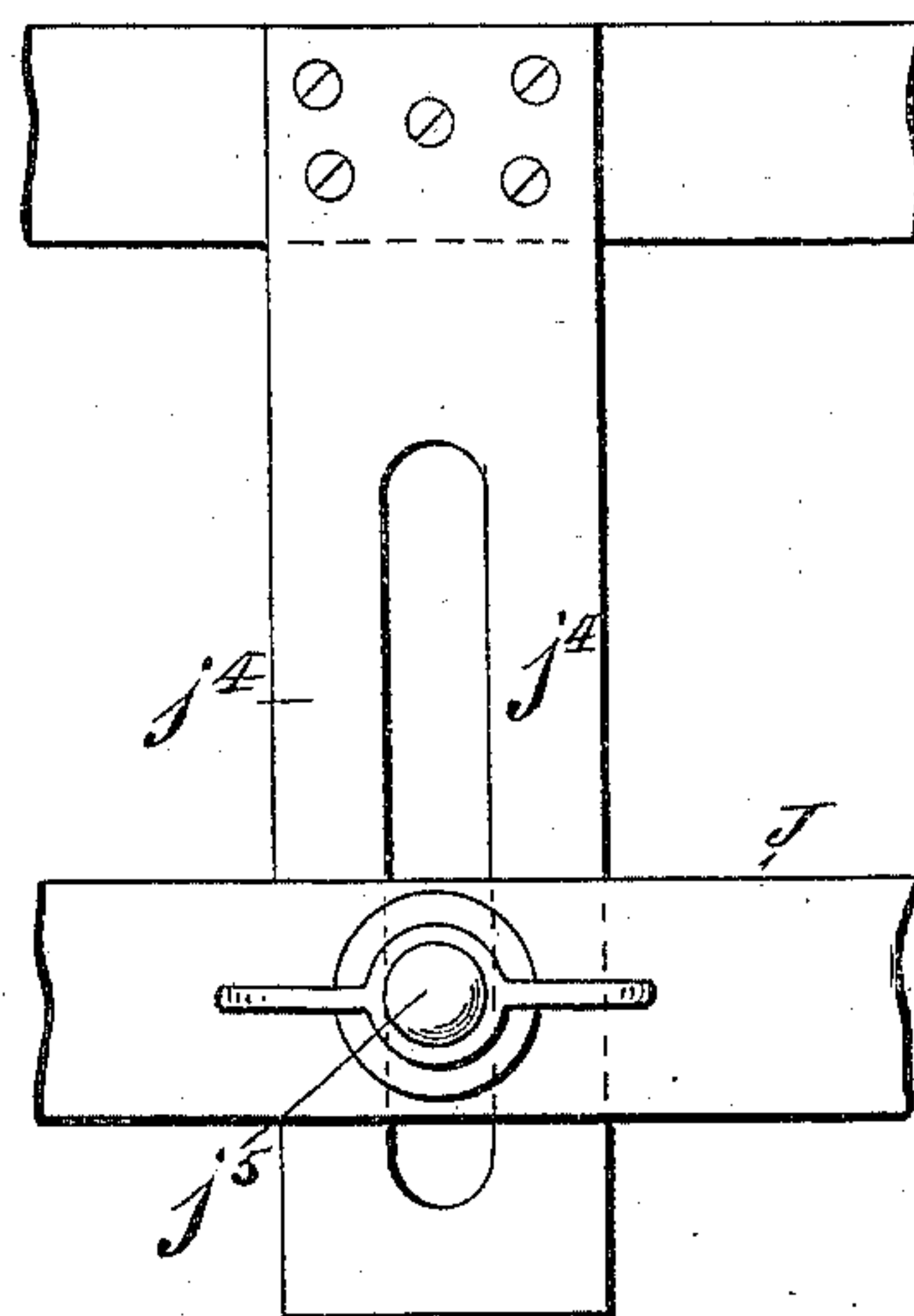


Fig. 13.



Attest:
Wm Sanford
B. H. Day

Inventor:
Stephen L. Burke
by C. D. Moody atty

UNITED STATES PATENT OFFICE.

STEPHEN L. BURKE, OF ST. LOUIS, MISSOURI, ASSIGNOR OF FIVE-SIXTHS, BY DIRECT AND MESNE ASSIGNMENTS, TO FRANCIS M. JENKS, WILLIAM A. JENKS, JOHN C. NIAL, CHARLES L. McDONALD, ROBERT CARRICK, AND ISRAEL E. RUSSELL, ALL OF SAME PLACE, AND JOHN SCHAFFER, OF KIRKWOOD, MISSOURI.

ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 427,551, dated May 13, 1890.

Application filed July 28, 1888. Serial No. 281,334. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN L. BURKE, of St. Louis, Missouri, have made a new and useful Improvement in Ore-Concentrators; and I hereby declare the following to be a full, clear, and distinct description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 In the accompanying drawings, Figure 1 represents a side elevation of an ore-concentrator embodying the invention connected to a pulverizer by an elevator, the machine being broken away at the top for want of space. Fig. 2 is a similar view of the top portion of the machine. Figs. 3 and 4, respectively, represent front and rear elevations of the machine. Fig. 5 represents a plan view of the same. Fig. 6 represents a vertical section on the line 7 7 of Fig. 5. Fig. 7 is a vertical section on the line 8 8 of Fig. 6. Fig. 8 is a vertical transverse section of the concentrator. Fig. 9 is a vertical section on the lines 10 10 of Fig. 10. Fig. 10 is a perspective view of one of the collecting-pockets of the concentrator. Fig. 11 is a perspective view of the drawer below said pocket. Fig. 12 is a detail sectional view of the means for regulating the air-currents to the hoppers of the concentrator. Fig. 13 is a detail view of the device for adjusting the inclination of the sieve at top of the concentrator.

In practice the ore-concentrator is connected to an ore-pulverizer by an elevator. Both pulverizer and elevator may be of common construction, as they form no part of the present invention, but are preferably constructed in the manner indicated in the drawings.

40 Referring to the drawings by letter, K³ designates the casing of the concentrator, of general rectangular form and having the end walls k⁵ and side walls k⁷, as shown in Fig. 4.

I designates a chute or spout, which delivers the pulverized ore from the elevator H' that connects the pulverizer and concentrator. The chute I deposits the pulverized ore upon the upper end of an inclined sieve or

screen J, secured in the upper end of the casing K³ and divided into portions j j', having meshes of different degrees of fineness, the finer-meshed screen being, of course, above. The tail of the sieve J delivers into a hopper Q, which is the highest of a series of hoppers. The screen j' delivers to a similar series of hoppers m m' m'', &c., and the highest screen j delivers to a series of vibrating pockets, which pockets and hoppers are hereinafter described, and the operation thereof explained. The sieve J may have its inclination adjusted by means of the slotted bar j⁴ and set-screw j⁵, Figs. 8 and 13, in the usual manner. From the screen j the finer pulverized ore descends upon the chute j³, secured in the casing K³, into the highest pocket K of the series, all the pockets being similar. The said pocket has a rectangular base and is constructed as follows: The sides and ends of the pocket and the upper edges of the said ends are inclined downward from the delivery side of the pocket, as shown in Fig. 10. The bottom of the pocket inclines downward and inward from its ends to a central opening, which is closed by a slide k¹⁰ that moves in suitable grooves in the sides of the pocket. Below said opening is formed a receiving-chamber k¹¹, open at bottom, which can be closed by a slide k¹², similar to the former slide and moving in similar grooves. These slides have their outer ends turned downward to form handles.

k⁹ is a chute secured to the receiving side of the pocket, and k² is a similar chute secured to the delivery side thereof, to carry the ore material over said pocket to the next below. The receiving sides of the pockets are situated alternately on opposite sides of the casing, and secured to the latter above each chute k⁹ are directing-plates k⁸, that convey material from the chute j³ to the highest pocket K, and from each pocket to the next below. The pockets are vibrated or reciprocated lengthwise by the following means: Each pocket is hung by straps k⁶ to the adjacent wall of the casing K³.

L is a vertical rod secured at the points l² l²

to the corresponding ends of the pockets K, K', and K², Fig. 7, and pivoted at a suitable point *l* to the upper end of a vertical rod L, the lower end of which is secured to the shaker or shoe of the pulverizer with which the concentrator is connected, so that the motion of said shaker is imparted to the pockets. As the material passes down and the pockets reciprocate, the coarser particles caught by each will settle and accumulate therein till it is full, when the finer particles will pass over the pocket, the plate *k*⁸, and chutes *k*² *k*⁹ to the next pocket below, so that each pocket will accumulate finer particles than the one next above, thus giving a number of grades of pulverized ore, the material that passes over the lowest pocket escaping through an opening *k*⁴ in the lower end of the casing K³ and forming the finest grade of ore.

To withdraw the material from the pockets, drawers *k*¹³ are fitted in suitable openings in the casing below the slides *k*¹², so that by drawing outward a slide *k*¹⁰ the corresponding receiving-chamber *k*¹¹ may be filled, and by closing said slide and opening the corresponding slide *k*¹² the contents of said chamber may be discharged into the drawer *k*¹³ below, from whence the material is removed in the usual manner. The material that passes through the screen *j*' descends into the highest hopper of the series M' M² to the inclined perforated ore-bed N therebelow, which is separated from the next lower hopper by a transverse partition, Fig. 6, forming an air-chamber between said ore-bed and hopper.

*n n*² are inclined gates secured to the casing near to and above the lower ends of the ore-beds N N' N² of the series, and *n' n*³ are chutes secured in the mouths of the hoppers below said gates, which stand outward from the ore-beds, leaving a discharge space or opening between the two, which opening is on the side of the concentrator opposite the pulverizer. At the opposite side the air-chambers below the ore-beds are provided with openings, into which enter the adjacent ends of air-pipes *o o*², that extend from a blower O, operated from the main shaft of the pulverizer. The air entering said pipes and chambers passes through the perforations in the ore-beds in the direction of the arrows *o'* and drives the lighter particles of the ore material from said beds over the gates *n n*² into the compartment P, whence they fall out of the casing. The heavier particles pass between the lower ends of the ore-beds and the adjacent gates, (see Fig. 6,) and are directed by the chutes *n' n*³ to the next lower hopper,

the said particles passing from the lowest hopper M² and ore-bed N² into the drawer or receptacle M³, attached to the lower end of the casing. The coarsest material from the sieve J passes into the hopper Q of the series Q Q' Q², similar to the series M M' M², and having similar ore-beds R R' R², gates, chutes, and air-pipes, the latter of which extend from a blower O', similar to the blower O, and operated by the same means. The lowest hopper Q² discharges into the drawer N³, and the lighter particles are blown into the compartment P. By means of set-screws *o*¹⁰ and engaging nuts set into a suitable part of the casing, Fig. 12, the flexible portions of the pipes that convey air to the ore-beds of the concentrator may be compressed, and the currents thus regulated.

Having described my invention, I claim—

1. In an ore-concentrator, the combination, with a reciprocating pocket arranged to receive pulverized material from above and having an opening in its bottom, of a receiving-chamber attached to the pocket below said opening and slides to respectively close the top and bottom of said receiving-chamber, substantially as specified.

2. In an ore-concentrator, the combination, with the casing K³, of a vertical series of similar reciprocating pockets K K' K², hung to the casing by the straps *k*⁶ and provided with openings in their bottoms, the receiving-chutes *k*⁹, secured to the pockets on one side, the delivery-chutes *k*², secured thereto on the opposite side, the receiving-chambers *k*¹¹ below the openings in the bottoms of the pockets, the slides *k*¹⁰ *k*¹², the directing-plates *k*⁸, and the drawers *k*¹³ below the slides *k*¹², substantially as specified.

3. In an ore-concentrator, the combination, with the rectangular casing having the discharge-opening *k*⁴ at its lower end, the inclined adjustable sieve above the casing and the chute below said sieve, of the vertical series of reciprocating pockets hung within the casing and having openings in their bottoms, the receiving-chutes and delivering-chutes attached to said pockets, the directing-plates between each adjacent delivering and receiving chute, the receiving-chambers below and attached to the pockets, the slides to respectively close the tops and bottoms of said chambers, and the drawers below the pockets, substantially as specified.

Witness my hand this 30th day of June, 1888.

STEPHEN L. BURKE.

Witnesses:

D. W. C. SANFORD,
C. C. LOGAN.