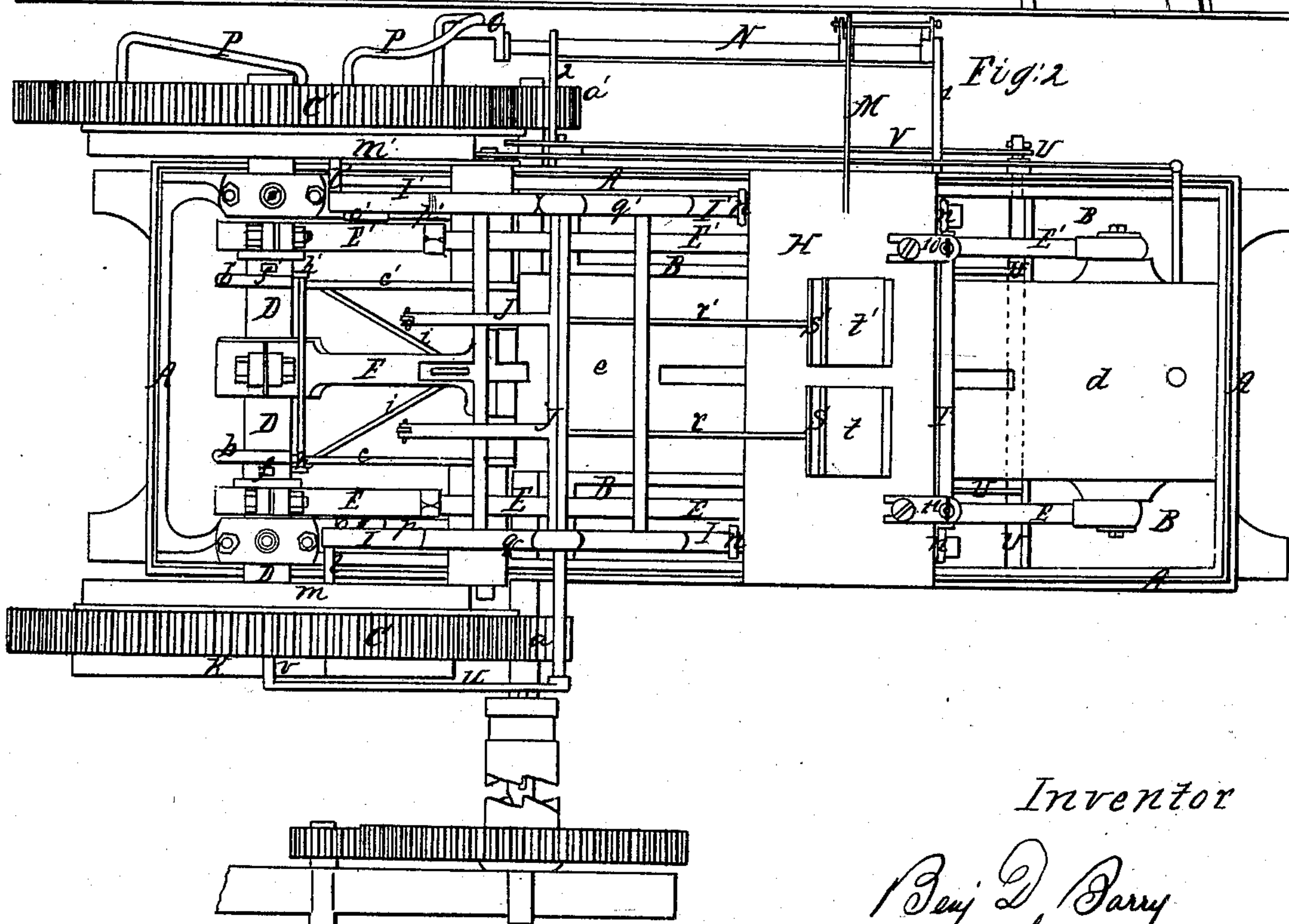
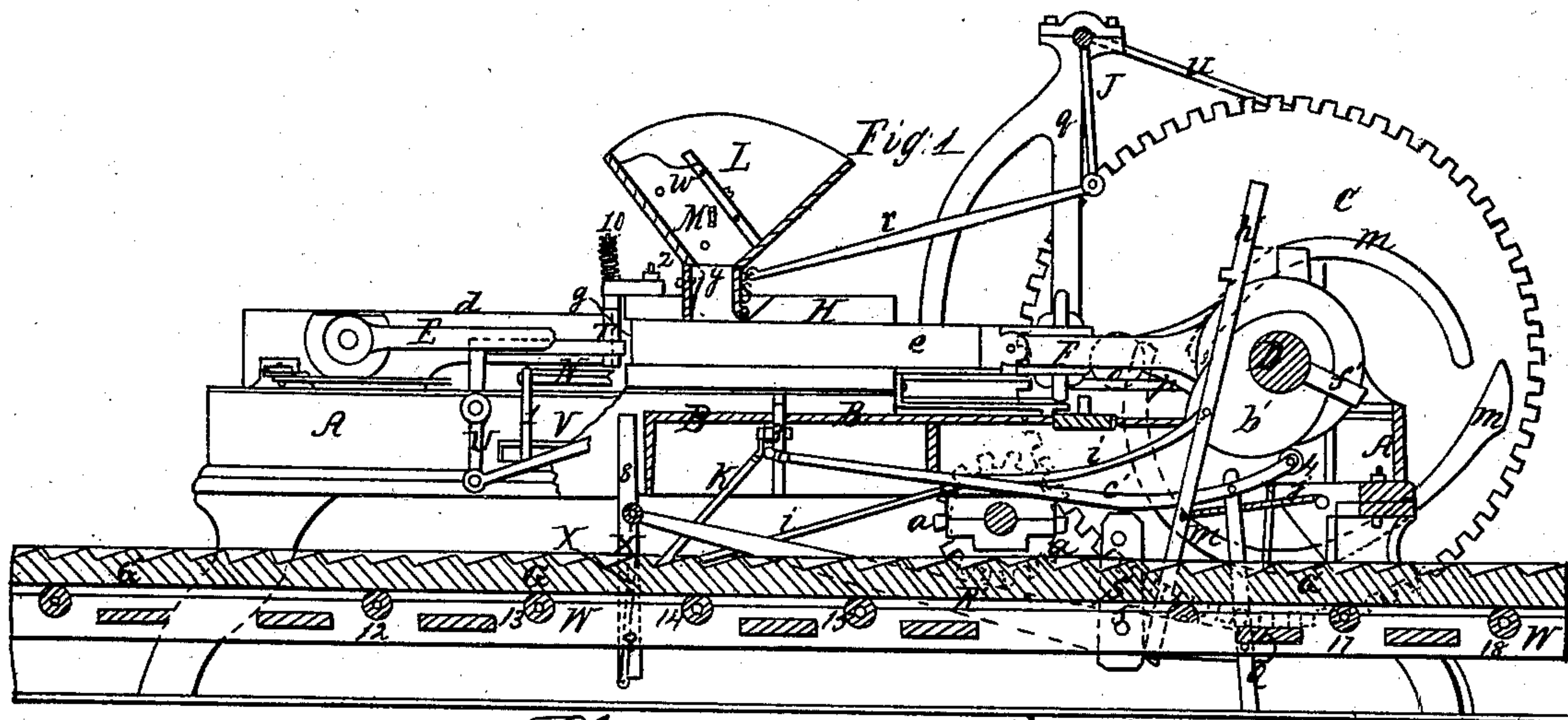


B. D. BERRY.

MACHINERY FOR THE MANUFACTURE OF BRICKS.

No. 86,633.

Patented Feb. 9, 1869.



Inventor

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J. Fraser & Co
attys

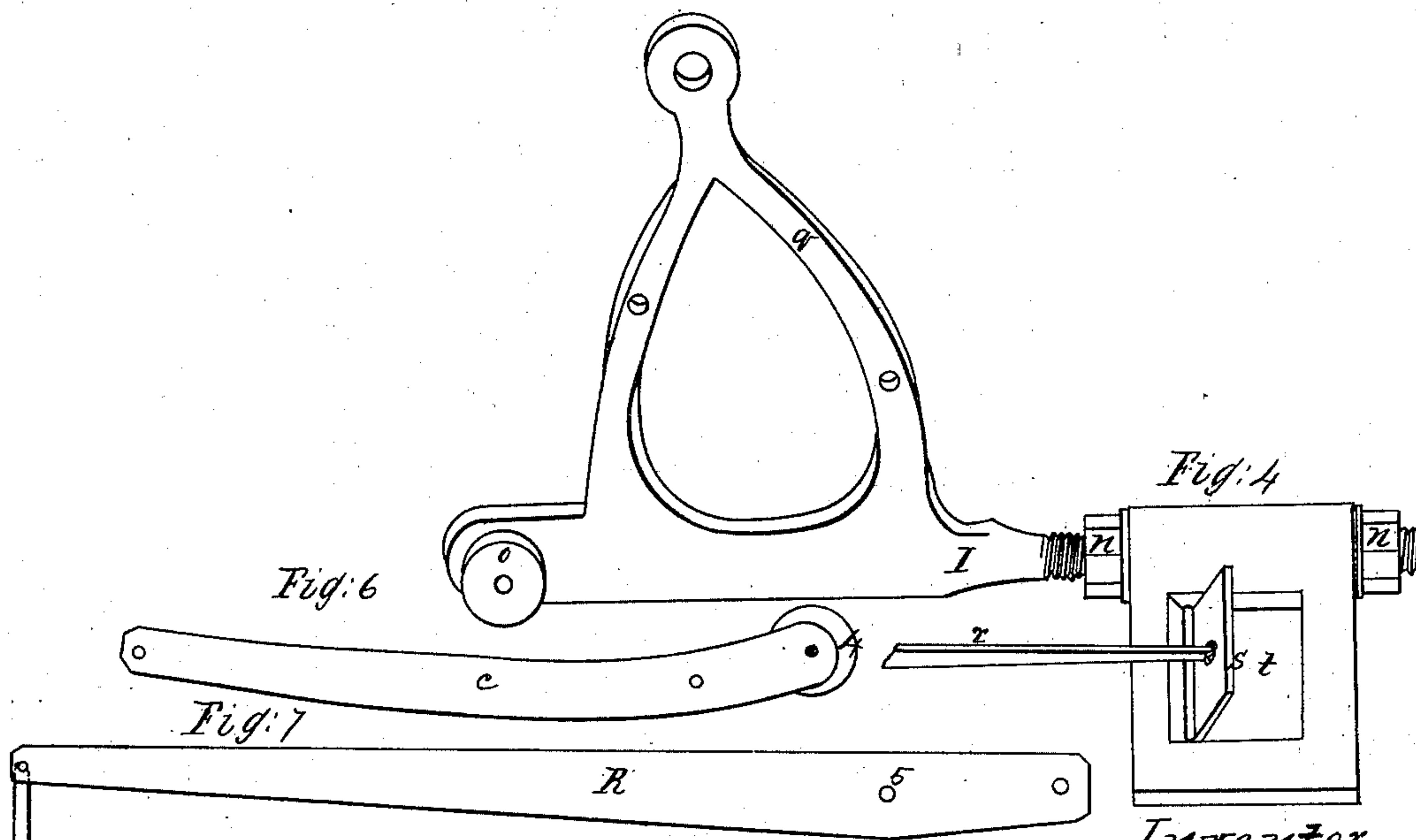
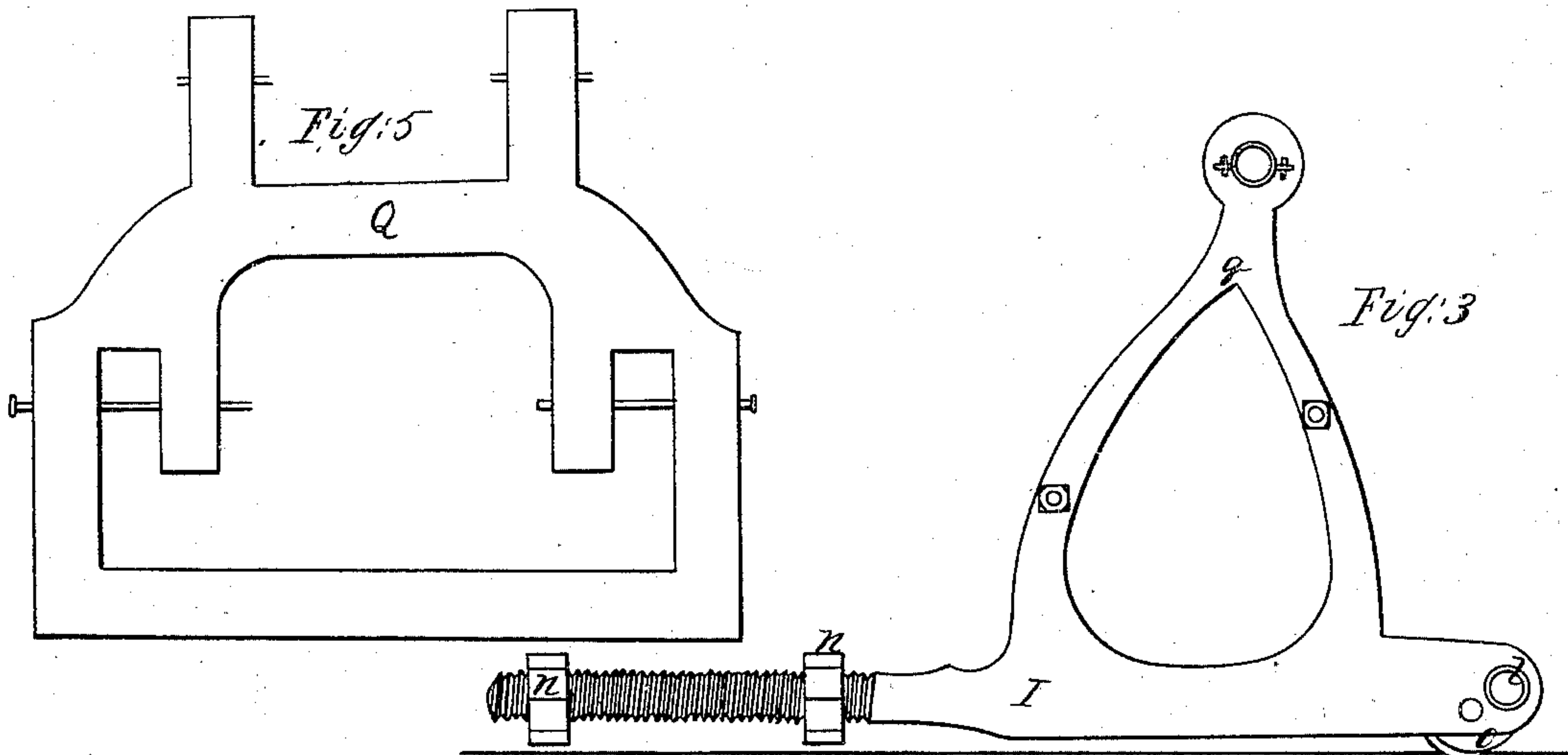
Witnesses

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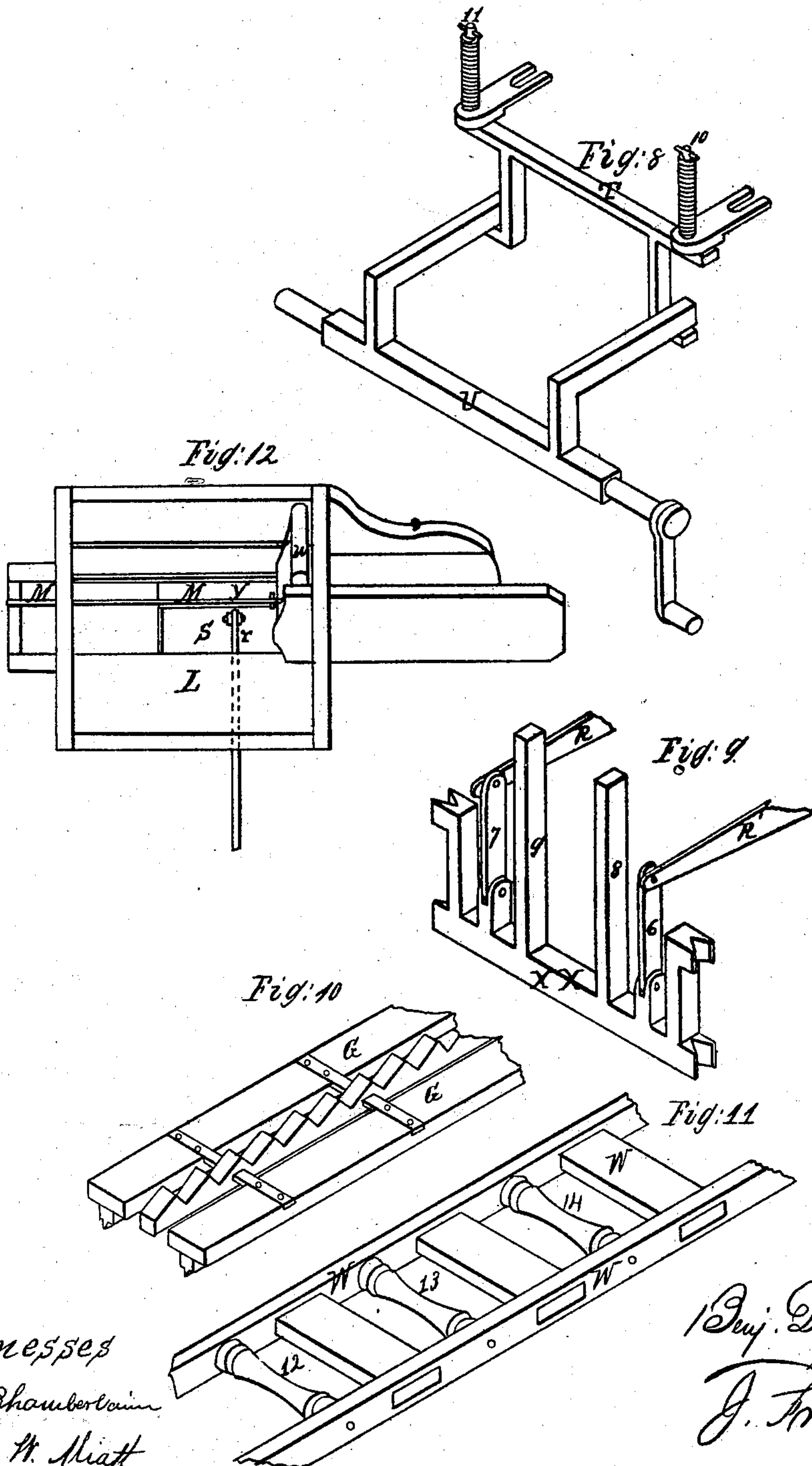
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BENJAMIN D. BERRY OF EDWARDSVILLE, ILLINOIS, ASSIGNOR TO
LAUREN C. WOODRUFF, OF BUFFALO, NEW YORK.

Letters Patent No. 86,633, dated February 9, 1869.

IMPROVEMENT IN MACHINERY FOR THE MANUFACTURE OF BRICKS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, BENJAMIN D. BERRY, of Ed-wardsville, in the county of Madison, and State of Illi-nois, have invented new and useful Improvements in Machinery for the Manufacture of Bricks; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accom-panying drawing, making a part of this specification, in which—

Figure 1 is a longitudinal elevation, mostly in sec-tion, showing the working of the machine.

Figure 2 is a plan of the machine without the hop-per, having, as proposed in a full-sized machine, two valves in the pressing-box, instead of one.

Figure 3 is an outside view in elevation of the con-necting-rod, or arm, which moves the pressing-box.

Figure 4 is an inside view of the same in perspec-tive, with the pressing-box attached, showing the posi-tion of the adjustable screw.

Figure 5 is the yoke of the gate-levers.

Figure 6 is the upper lever for working the upper part of the yoke.

Figure 7 is the lower lever, with pitman attached, for operating the gate.

Figure 8 is a perspective view of the rock-shaft and depressing-bar with springs attached.

Figure 9 is a perspective view of the gate and fingers.

Figure 10 shows a portion of the brick-car, and the ratchet-seat by which it is moved.

Figure 11 shows a portion of the ways on which the brick-car runs.

Figure 12, plan view of the hopper.

Like letters of reference indicate corresponding parts in all the figures.

My invention consists in improvements in brick-ma-chines, to equalize the quantity of clay used in forming a brick; also in equalizing and regulating the strain on the machine in pressing the brick; in providing certain and effectual means for giving equal pressure to all sides of a brick while being moulded and pressed; in providing means, by automatic movement, for receiv-ing and removing the brick from the machine after the same are moulded and pressed; in reducing the amount of friction on the machine; and also in the mode of discharging the waste clay from the hopper while the machine is in motion, to be hereinafter fully described.

In the drawings—

A represents the frame;

B, the bed-plate.

O O' are the two master-cog wheels, one on each side of the machine, giving to the same motion by means of pinions *a a'*, as clearly shown in the drawings.

D represents the main shaft by which all the appli-ances are moved. On it are formed two eccentrics, *b b'*, which, in revolving, move levers *c c'*, their functions to be hereinafter fully explained.

E E' are long arms, receiving a slight forward and

backward motion by means of other eccentrics attached to main shaft, and situated inside the collar of each arm. These are not fully shown in the drawings, as they form no part of my improvements, being used in other brick-machines. The other ends of these arms are attached to (one each side) and move a presser or plunger, *d*.

Another presser or plunger, *e*, arranged opposite the other, is moved forward and back by a short arm, F, which works on shaft D, by means of an eccentric at-tached to the same, and working in collar of said shaft. Not forming a part of the invention, it is not shown in the drawings. These presses are thus moved together, and press the moulded clay. A space, *g*, shows the situation of the brick.

Also placed on said shaft D, are two cam-pins *f f'*. These pins, at each revolution of the shaft, strike the uprights of ratchet-frame *h h'*, moving them for-ward. The lower ends of the frame are pivoted to the machine-frame. As this frame *h* moves forward, it carries with it a ratchet-foot, *i*, which shoves the brick-car G ahead one ratch or notch. This frame and foot are brought back in place, ready to push forward the car at next revolution, by means of spring *j*. If desired, or preferred, a weight may be used, instead of the springs. To hold the car in place after it has been pushed for-ward, I employ a pawl, *k*, which falls by its own weight, the lower end of the pawl dropping into the notch ahead of the one the foot has just left—the situation shown in fig. 1.

H represents the pressing-box through which the pressers *d e* move.

Fig. 1 shows the pressing-box with only one mould-ing-chamber, but it is my intention, in a full-sized ma-chine, to use two, as shown in fig. 2.

This pressing-box is placed across the top of the ma-chine, and is moved forward and back over the two pressers, by means of two arms, I I', (figs. 3 and 4 show them detached,) attached to the pressing-box.

The ends of the arms are made adjustable, by pro-viding each arm with a screw-thread, shown in figs. 3 and 4, and are fastened to the pressing-box by nuts *n n n*, by which means they can be easily and readily adjusted to meet the face of the pressers as may be-come necessary.

At the other end of these arms, and on the outside, are attached wrist-pins *l l'*, which come in contact with cams *m m'*, situated inside of and on master-wheels O O'.

Nearly opposite the wrist-pins, and on the inside of the arms, are attached rollers *o o'*, by which said arms are supported on the frame of the machine, the roll-ers being kept on their respective ways by means of guides P P'. This arrangement obviates a great amount of friction and that torsional strain experienced in the slot and slide-methods used in other brick-machines.

Attached to and extending up from each of these arms, is a standard, *q*, in the top of which works a rock-

shaft, J. (In a large machine I use two.) To the lower end of this is attached a pitman, *r*, (fig. 2 shows two pitmen,) which operates a valve, *s*, which opens or shuts over the opening or openings *t*, in the top of the pressing-box, shown in fig. 2.

This valve *s* acts in conjunction with the movement of the cut-off, and forces into the mould, or pressing-box, and retains there, the exact amount of clay left in the hopper by the action of the cut-off, as will be hereinafter fully explained.

This rock-shaft and pitman obtain their movement by means of arm *u*, attached at one end to the rock-shaft, the other end being provided with a wrist-pin, *v*, moving in cam *k*, on outside of master-wheel C.

Immediately over the mould-opening or openings *t*, is situated a hopper, L, which is provided with a cut-off, or scraper, *w*, moving endwise back and forth in the hopper, to cut off the exact amount of clay to be used for the formation of the brick.

This is done in conjunction with an adjustable fur-ring, *y*, situated in the lower part of the hopper, and made adjustable by means of a screw, *z*. (See fig. 1.)

The motion of this cut-off is produced by means of a leader, or arm, M, one end attached to the cut-off inside the hopper, the other end arranged on a rock-shaft, N, which moves in brackets 1 and 2, attached to the outside of the main frame.

One end of this rock-shaft is provided with a crank and wrist, O, which receives its motion by the cams P P' located on the outside of the master-wheel C.

Underneath the pressing-box and pressers, is located a gate, X X, provided with vertical fingers 8 and 9, for the purpose of receiving and delivering the bricks when made. This gate moves up and down in guides fastened to the frame by means of four levers, two on each side. The upper two, *c c'*, are pivoted at one end, shown at 3, to main frame. Near the other end they are pivoted to a yoke, Q. Their extreme ends are provided with rollers 4, 4', which travel on the outer surface, or periphery, of the eccentrics *b b'*, which raise and lower the yoke Q.

Near the lower part of this yoke are pivoted large levers R R'. They are also pivoted at 5 to hangers S S', which act as fulcras to the levers.

To the other end of these levers are attached pitmen 6 and 7, which operate the gate.

The upward and downward vertical movement of the gate is produced by the levers *c* and R, and yoke Q, by the action of the eccentrics *b b'* on main shaft, all of which are above fully described.

When the eccentrics *b b'* are at their lowest point, they press down the levers, which raise the gate to its required position to receive the brick from the mould, or pressing-box, on the end of the fingers of the gate.

When the eccentrics are at their highest point, the gate, by action of the side levers, is lowered, and deposits the brick on the car G, by means of the depressing-bar T, provided with springs 10 and 11, for adjustment of the same, which performs its work in union with the gate, by a movement received from a rock-shaft, U, and arm, V, the latter receiving its motion from a cam on the inside of the master-wheel C, by detaching the brick from the end of the presser, and placing the same on the fingers of the gate, as before described, and by them placed on and conveyed forward by car G.

This car runs on ways W, which are provided with grooved rollers 12, 13, 14, &c., being, in fact, an intersection of rollers, so regulated as to accurately receive

and maintain the cars in their position and correct working in conjunction with the movements of ratchet *i* and holding-pawl *k*, passing the brick, when made, clear from under the pressing-box and face of pressers, or plungers, at every revolution of the main shaft, thereby leaving another section on the car G clear, and in position to receive the next-made brick, when deposited by the gate X X, thus obviating the possibility of a brick being carried up again on the return of the gate to its duty, as previously described.

As many cars may be used as desired, each car being provided with self-acting couplings.

My inventions, within described, can be used, and are necessary to the manufacture of brick by any machine, of whatever form.

The advantages of my improvements are to reduce friction in the working of brick-machines, and consequently require less motive-power.

They work and move automatically, and therefore save a large amount of manual labor.

They prevent a waste of clay, and insure the production of a more finished, hard, and durable brick than can be produced by any other known means or machinery.

A uniform quantity of clay is secured in the mould, and all unequal strain on machinery is thereby avoided.

By the operation of the valves, the clay is held in position in the mould while undergoing pressure, and by this means a uniform pressure on all sides is produced.

The bricks are depressed from the mould, received on the cars, and moved off with precision and regularity, thus avoiding all injury by handling.

The various parts of the machine work together automatically.

I do not claim the main frame, the mould, pistons, perforators, master-wheels, and bed-plates.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the hopper L, slide or cut-off *w*, the arm or leader M, rock-shaft N and strip *y*, all operating substantially as above described and shown.

2. The combination of the valve *s*, pitman *r*, rock-shaft J, the arm *u*, and standards *q q'*, all operating substantially as herein described and shown, for the purpose specified.

3. The gate X X, and its vertical arms or fingers 8 and 9, with the levers *c c'* and R R', yoke Q, and pitmen 6 and 7, all combined and operating as and for the purpose herein described and shown.

4. The car G, on ways W, provided with rollers 12, 13, 14, and operated by means of the cam-pins *f f*, on shaft D, the pivoted frame *h h'*, a spring or weight for retracting the same, the pusher *i*, and pawl *k*, all combined and arranged to operate as herein set forth and shown.

5. The combination of the arms I I', rollers *o o'*, and side-guides *p p'*, all arranged to operate substantially as and for the purpose herein shown and described.

6. The depressing-bar T, in combination with the adjustable springs 10 and 11, the rock-shaft U, and arm *v*, for working the same, as herein fully set forth and shown.

In witness whereof, I have hereunto signed my name, in the presence of two subscribing witnesses.

B. D. BERRY.

Witnesses:

J. R. DRAKE,

N. J. CHAMBERLAIN.