

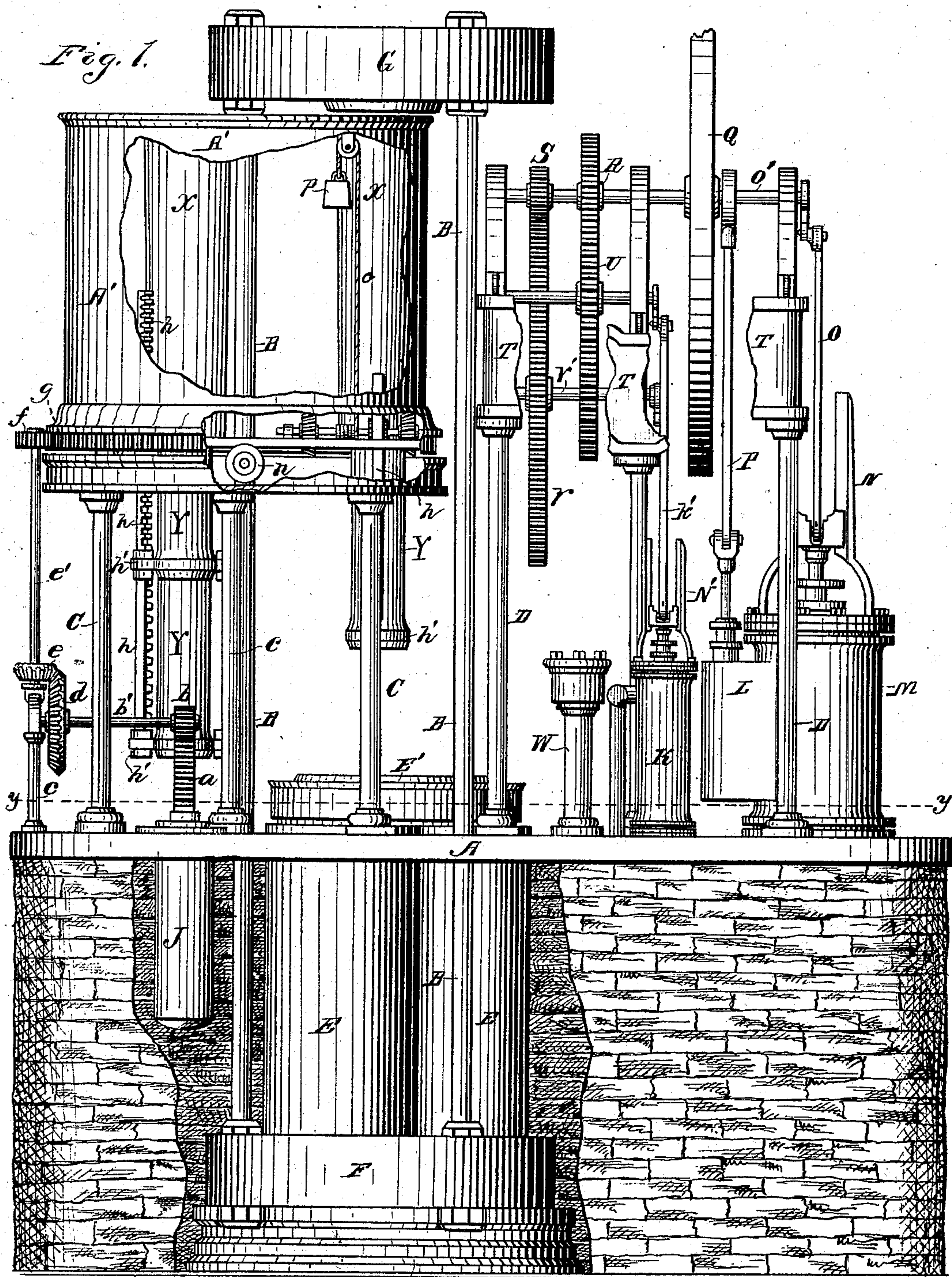
(No Model.)

5 Sheets—Sheet 1.

C. KIMPLEN.
HYDRAULIC PRESS.

No. 255,872.

Patented Apr. 4, 1882.



Witnesses,
Henry Frankfurter,
Albert H. Adams.

Inventor,
Cornelius Kimplen
per. West & Bond
His Attorneys

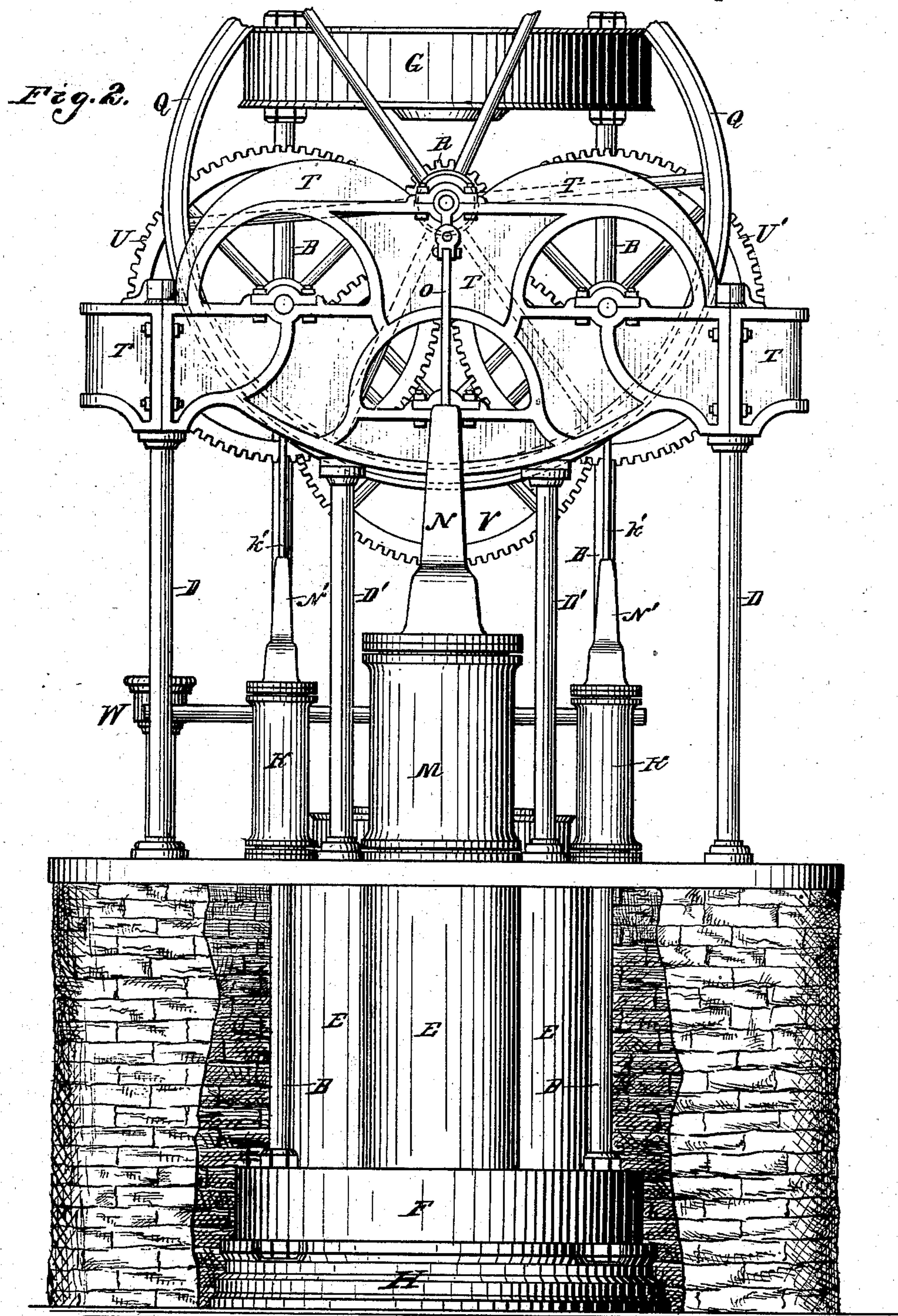
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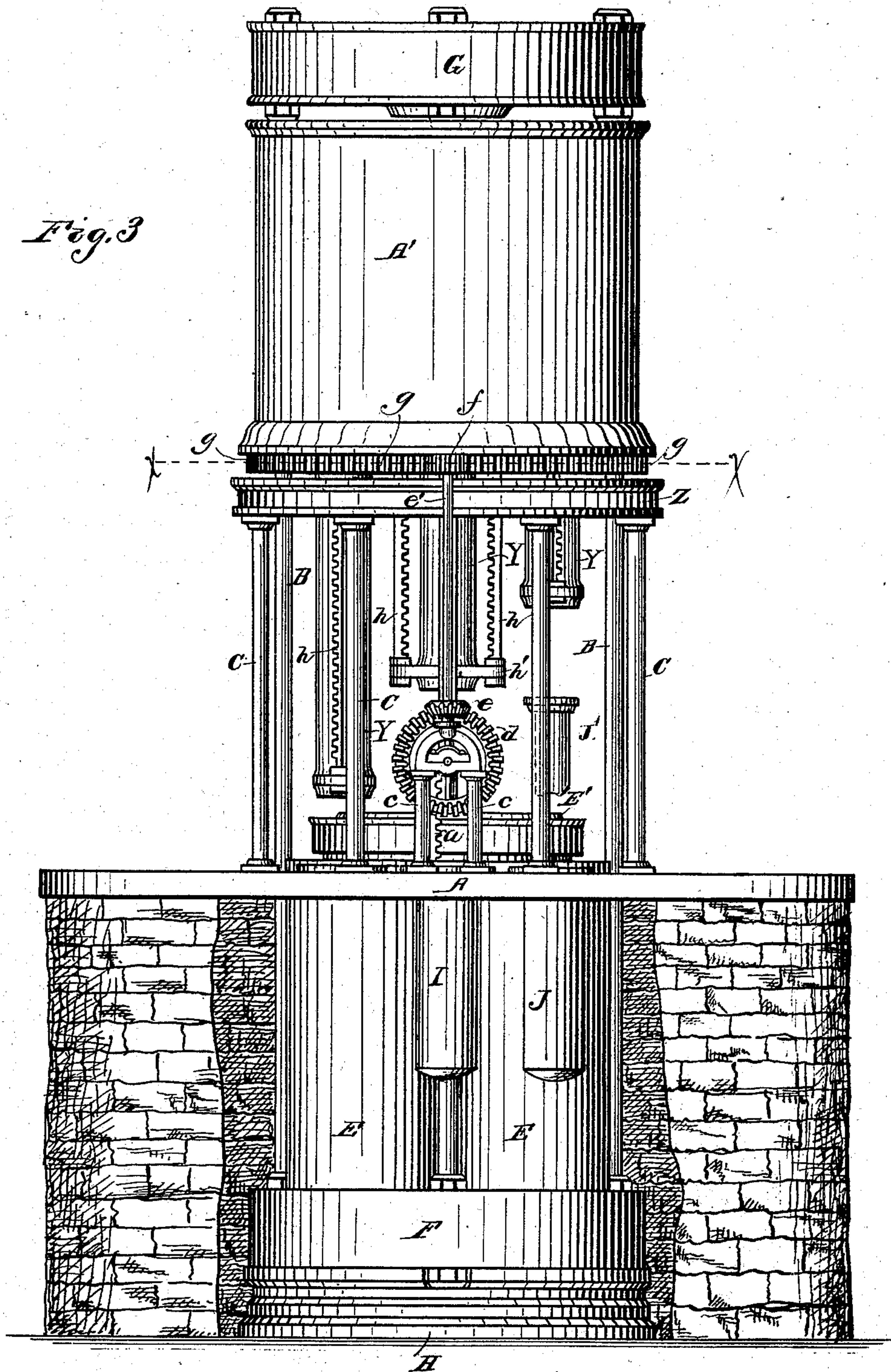
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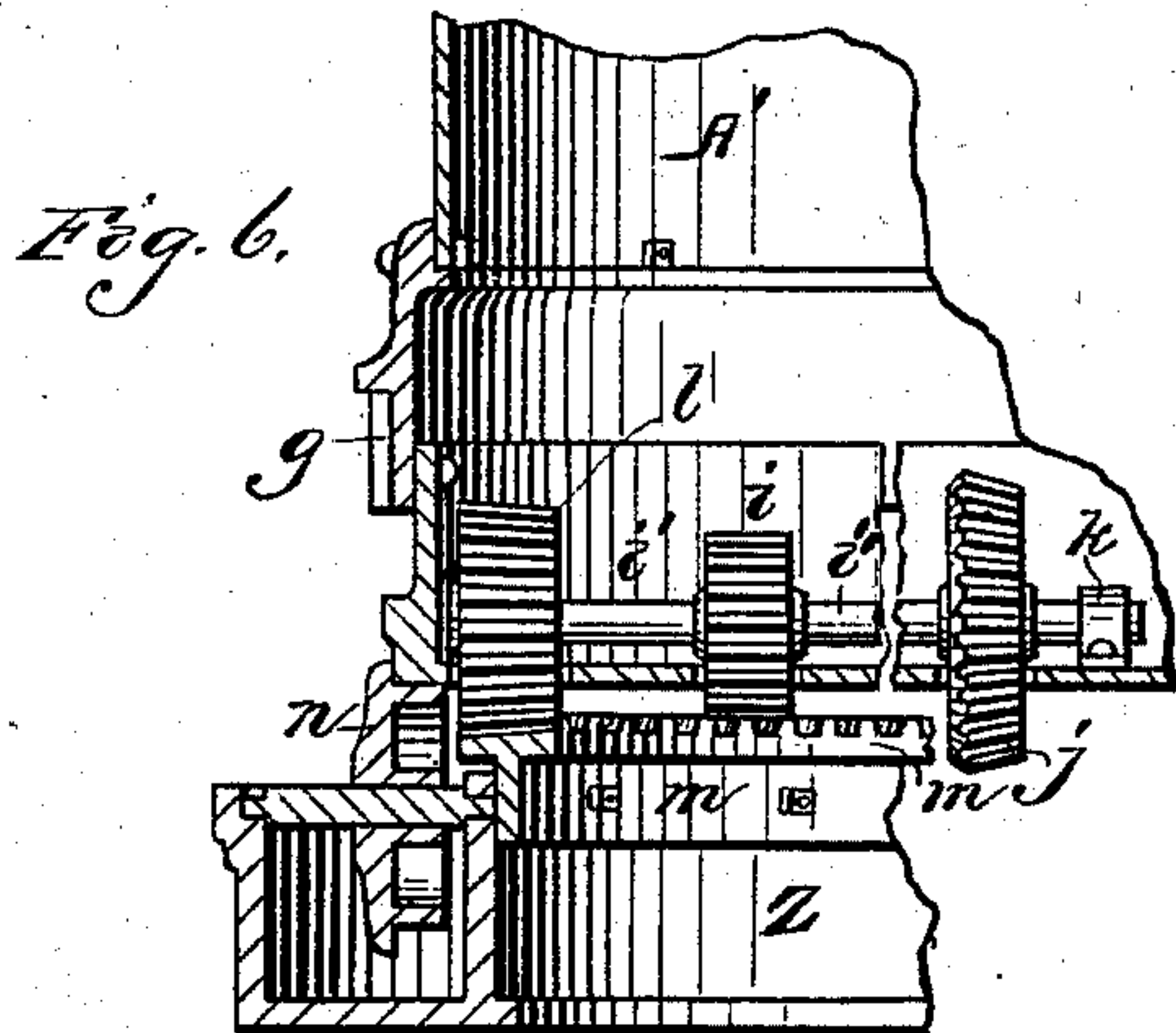
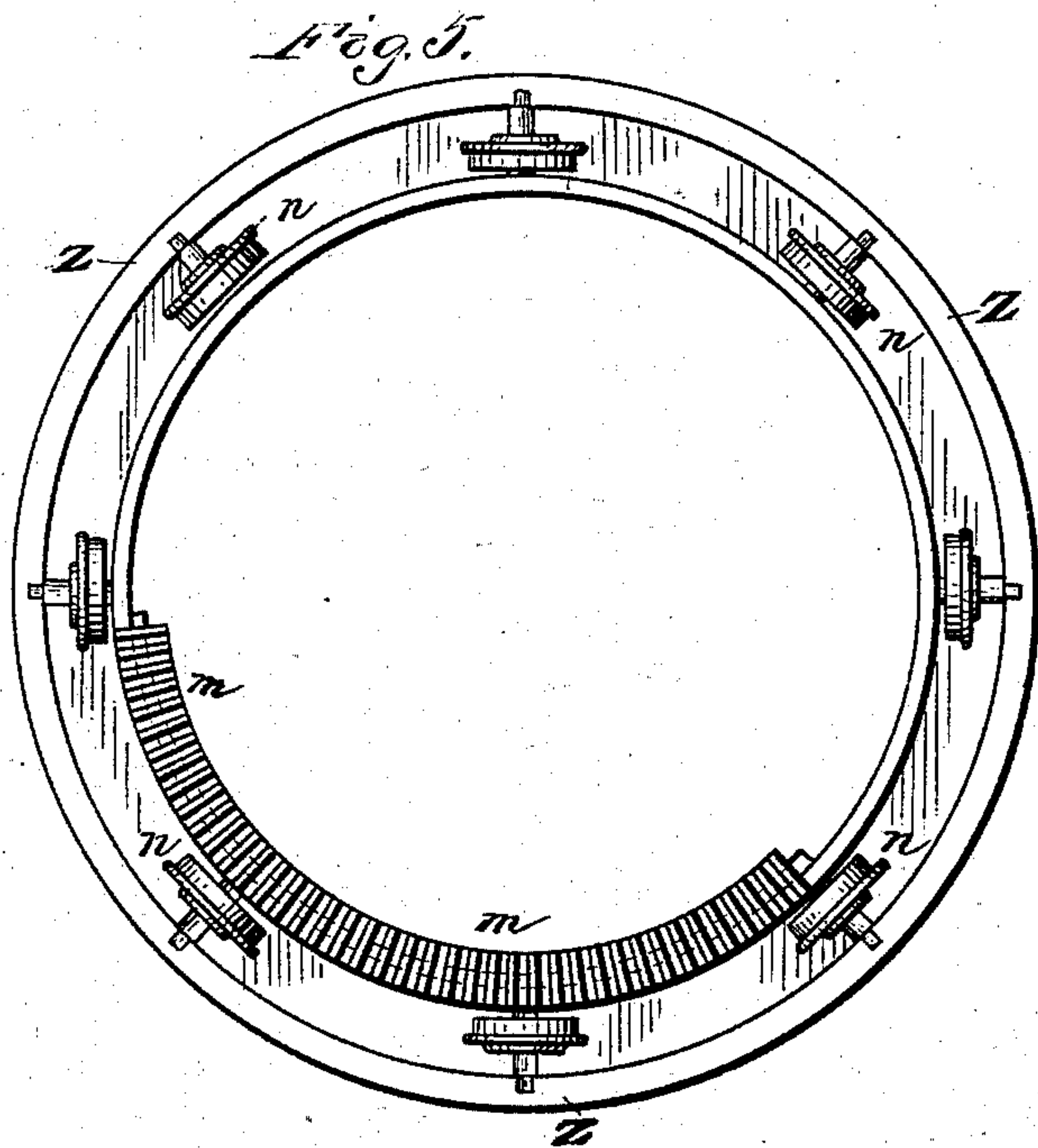
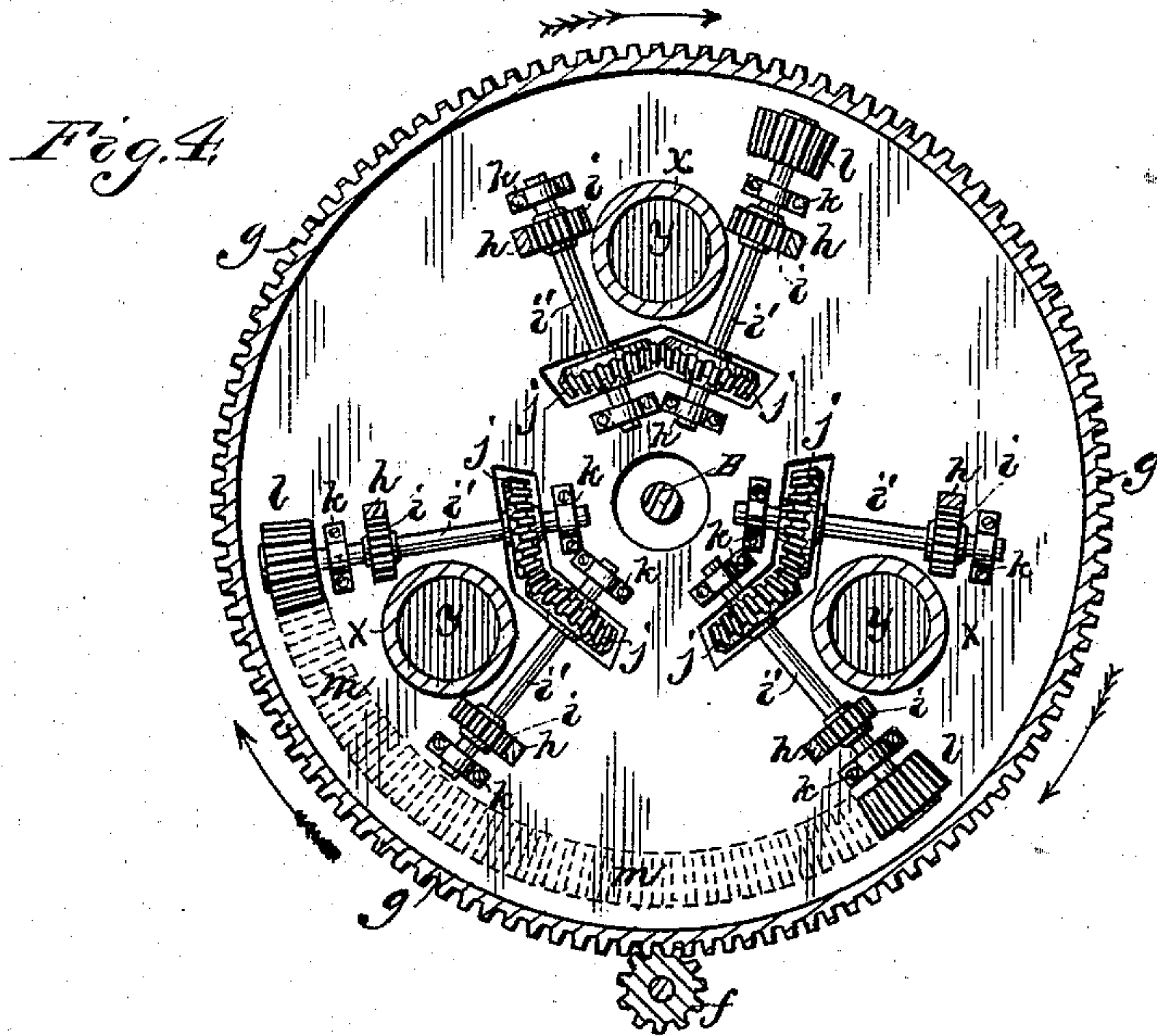
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Witnesses,
Herman Louis Guntter,
Albert W. Adams.

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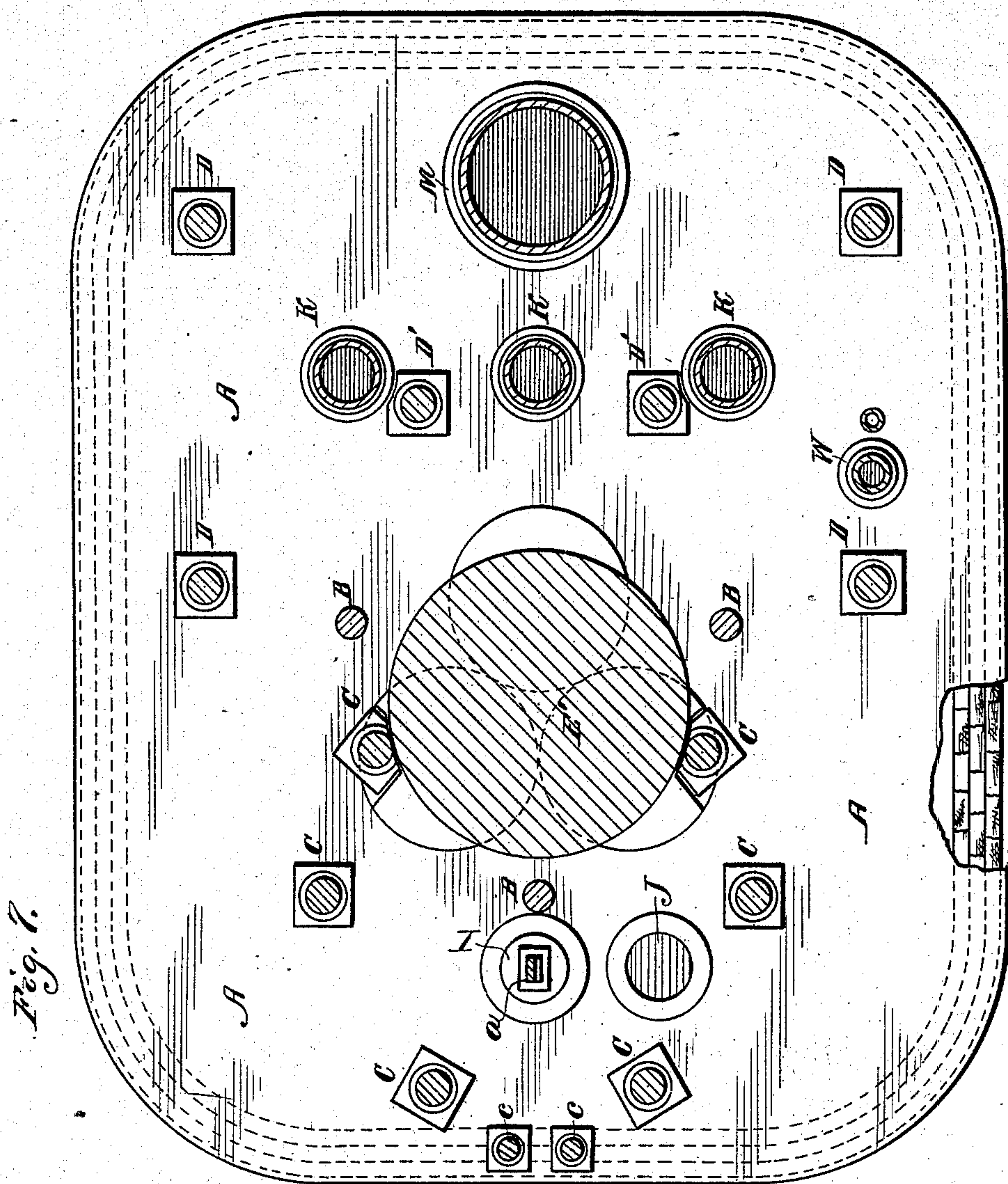
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Albert H. Adams.

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UNITED STATES PATENT OFFICE.

CORNELIUS KIMPLEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND THE NORTHWESTERN FERTILIZING COMPANY, OF SAME PLACE.

HYDRAULIC PRESS.

SPECIFICATION forming part of Letters Patent No. 255,872, dated April 4, 1882.

Application filed July 27, 1881. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS KIMPLEN, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented new and useful Improvements in Hydraulic Machinery, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation with some of the parts partly broken away; Fig. 2, a right-hand end elevation; Fig. 3, a left-hand end elevation; Fig. 4, a cross-section at line *x x* of Fig. 3; Fig. 5, a top or plan view of the frame for supporting the turn-table; Fig. 6, a vertical section across the turn-table and head of the supporting-frame broken off; and Fig. 7, a cross-section on line *y y* of Fig. 1, being in the main a plan view of the bed-plate.

The object of this invention is to construct a hydraulic press for compressing ground tanbark or other bulky articles; and its nature consists in the improved construction, combination, and operation of the parts hereinafter described and claimed as new.

In the drawings, A indicates the bed-plate; A', the casing surrounding the bark-cylinders; B, the rods or bars connecting the base and top of the press; C, posts supporting the turn-table; D and D', posts supporting the gearing for driving the pumps; E, three hydraulic cylinders; E', cap carrying plungers or pistons fitting into each of the cylinders E; F, the base-plate supporting the hydraulic cylinders; G, upper or resisting plate of the press; H, base upon which the hydraulic cylinders are supported; I J, smaller hydraulic cylinders; J', discharging-piston; K, pumps; K', pump rods or pitmen; L, steam-chest; M, steam-cylinder; N N', guides; O, pitman; O', main shaft; P, valve-rod; Q, balance-wheel; R S, pinions on main shaft; T, frame supported upon the posts D D'; U U', gear-wheels for operating the side pumps; V, gear-wheel for operating the middle pump; V', the shaft of the wheel V; W, the change-block; X, bark-cylinders; Y, bark-cylinder pistons; Z, a cylindrical frame, resting on the post C.

a is a rack; *b*, pinion; *b'*, shaft; *c*, support for the shafts *b' e'*; *d e*, bevel-wheels; *e'*, shaft;

f, pinion; *g*, cogs on turn-table; *h*, racks; *h'*, cross-heads; *i*, pinions operating the racks *h*; *i'*, shafts; *j*, bevel-wheels; *k*, bearings for the shafts *i'*; *l*, pinions; *m*, horizontal curved rack; *n*, anti-friction bearing-wheels for the turn-table; *o*, cord; *p*, weight for counterbalancing the bark-cylinder pistons.

The base-plate A is located above the base H and supported upon suitable masonry for sustaining the parts in position. The hydraulic cylinders E, I, and J, as shown, are located below the plate A, and the cylinders I J are supported therefrom; but they may have additional supports, if required. The pressure-cylinders E are supported upon the plate F and base H, and I make three of them, for the reason that it is less difficult to construct them and much easier to repair them than would be the case with a single cylinder of equal capacity. A plunger connected with the cap E is fitted to each of these cylinders, and the water is admitted beneath the plungers or pistons from a single source, so that they will operate equally. The cap E' is a strong cap designed to receive the pressure of all three of the pressure-cylinders E.

By the right side of the press I locate a steam-engine, M, which is provided with an ordinary piston, guided by the plates N, and connected with the main shaft O' by the usual pitman, O, and crank. It is also provided with an ordinary steam-chest, L, the valves of which are operated by a rod, P, and the ordinary eccentric. The balance-wheel Q is also of the ordinary construction, and is located on the main shaft, which shaft is supported in the frame T and carries the two pinions R S. The pinion R drives the large gear-wheels U U', which operate the front and rear pumps K by cranks attached to their shafts on the pitmen K'. The pistons or plungers of these pumps are guided by the guides N' N'. The pinion S drives the large wheel V, which, through its shaft V' and crank and pitman, operates the middle pump, the positions of the pumps being shown in Fig. 7.

The pumps K are all connected by suitable pipes or tubing with the change-block, and the water is discharged into a common space. The

change-block W is provided with valves, by which the water can be directed into the cylinders E, I, or J, as may be desired, one valve admitting the water into all three of the cylinders E, while the cylinders I and J have separate valves. These valves are so arranged that the attendant changes the direction or force of the water as the work progresses to the desired points. I have not shown the change-block in detail, for the reason that it is a common device, well understood by those familiar with the operations of hydraulic machinery. In the forms shown the change-block is to be worked by hand, and is arranged near the engine, so that the same person can attend to both.

The valves, if desired, may be connected with the pumping machinery, so as to shift automatically at stated periods; but in pressing bark the operations are liable to be somewhat irregular, and I have not therefore shown it so operated. The fountain from which the pumps take their water is located beneath the pumps at a point sufficiently low for the waste water or overflow to return back into it, and the apparatus will be provided with one or more safety-valves, to prevent undue strain or breakage.

The bark-cylinders X are made of a size to be sufficient in capacity to hold loosely the desired quantity of bark. There are three of them, and they are arranged as shown in Fig. 4, and are supported upon the turn-table. (Shown in plan in said figure.) They are attached to the turn-table and to the upper plate, and surrounded by a cylinder or casing, A'.

The plungers Y, which operate from below, are made to fit the bark-cylinders, and at their lower ends they are provided with the cross-heads *h'*, to which the racks *h* are attached, and they are counterbalanced by a weight, *p*, on the cord *o*, Fig. 1, which cord winds upon the shaft *i'*, and when not driven by the hydraulic press they are operated by the pinions *i*, which gear in the racks *h*. Each plunger Y is provided with two racks—one on each side. The pinions *i* are operated by the bevel-wheels *j*, attached to the same shafts, which shafts are supported upon the turn-table by the bearings *k*.

One of each pair of shafts *i'* is provided with a pinion, *l*, which, through its bevel-wheel *j*, operates the other shaft of the pair, so that the movements of each pair are always in unison. The pinions *l* are operated by the curved rack *m*, Figs. 4 and 5, which occupies one-third of the circuit traversed by the turn-table, and is permanently attached to the cap or frame Z. The turn-table revolves around one of the rods B, and is supported by the anti-friction wheels *n*, located in the cap or frame Z, which wheels are provided with flanges to keep the turn-table in lateral position. The turn-table has its periphery or rim provided with cogs *g*, which engage with the pinion *f*, attached to the shaft *e'*, which has upon its

lower end a bevel-wheel engaging with the bevel-wheel *d* on the shaft *b'*.

The pinion *b* is operated by a rack, *a*, which is attached to or forms a part of the stem of the piston or plunger operating in the hydraulic cylinder I. The piston J' of the cylinder J is omitted in Fig. 1 of the drawings, in order that this gearing might not be obscured, as it stands immediately in front thereof. The office of the piston J' is to give the bark-plungers Y their final elevation for discharging the compressed bale. It will be understood that the parts are made of iron, and that all of the parts connected with the hydraulic press or with the pumps are to be strongly made.

The operation of the pumping devices will be readily understood from the description. The operation of compressing bark is as follows: The bark is placed in the cylinder X, which has its piston at the lowest point. When filled, water from the change-block W is turned into the cylinder I, which raises its piston and carries the rack *a* upward. This rack is so geared with the intermediate gearing that its complete movement gives the turn-table a one-third turn. This turn carries the cylinder with its depressed piston around over the cap E'. The same movement, through the pinion *l* and the curved rack *m*, carries the next plunger in rear of the one just filled down to its lowest point by means of the pinions *i* and racks *h*. This one-third traverse of the turn-table clears the pinion *l* from the rack *m*, so that its motion may be reversed by the press without interfering with anything; but in this position the succeeding cylinder is ready to be filled, while the advance cylinder is ready for the press. By shifting the change-block the water is let out of the cylinder I and is shifted to the cylinders E, which raises the cap E' and forces the bark-plunger upward, so as to give the contained bark or other material the required pressure against the cap or head-block G. The water is then discharged from the cylinders E, so that the cap E' will descend. The water is then applied to the cylinder I, which again gives the turn-table a one-third movement, which movement advances the second cylinder over the hydraulic press, lowers the plunger for the receiving-cylinder, and brings the one pressed over the cylinder J. Water is then admitted to the cylinders E and J, the cylinders E pressing the bark as before, while the cylinder J raises the plunger to the highest position shown, (the three positions named being respectively shown in Fig. 3,) which discharges the compressed bark upon the top plate of the bark-cylinder casing, ready to be rolled off or otherwise disposed of. From this point the operation is continuous—that is, while the attendant is filling the first cylinder the bark in the second is being compressed and discharged from the third.

The cap or plunger may be arranged with two or a greater number of pistons operating in a corresponding number of cylinders, and I

do not limit the use of my other improvements to a machine having its press-cylinder divided, and the bark-cylinders may be square in cross-section or of other angular form to produce
5 an angular bale.

It will be seen that the piston J' stands at its lowest elevation, as shown in Fig. 3, so as to take the plungers Y in the position at which they are left by the press, so that all of the travel of the piston J' is from that point upward, and as each bark-cylinder is provided with its own piston or plunger Y, the discharging-piston J' does not enter the bark-cylinders. Therefore there is no time lost in retracting the
15 discharging-piston, as the turn-table can be moved as soon as the cake or bale is thrown out, and the movement of the turn-table lowers the piston Y.

It is also evident that more than three cylinders can be placed on the turn-table and all be operated by the described devices, for it makes no difference how far a cylinder travels after its plunger is at the lowest point; but when cylinders are added and the turn-table
25 increased in diameter the length of the rack *m* will not be increased, so that in that event its length will not be equal to one-third of the distance around.

What I claim as new, and desire to secure
30 by Letters Patent, is—

1. In a hydraulic press, the combination of two or more bark-receiving cylinders with a cap carrying two or more pistons or plungers operating within the cylinders, and a pressure
35 cap or plate located at the discharge end of the cylinders and coacting with each of the latter, substantially as and for the purpose described.

2. The hydraulic cylinder I, having a rack, *a*, on the piston-stem, in combination with the pinion *b*, and gears *d*, *e*, and *f* for operating
40 the turn-table, substantially as specified.

3. The pinion *l*, in combination with the rack *m*, pinion *i*, and racks *h* for lowering the plungers Y, substantially as set forth.

4. The combination of the turn-table carrying the fixed cylinders X with the pressure-plate G and cap E', said turn-table being arranged to rotate the cylinders alternately between the plate and cap and out, substantially
45 as set forth.

5. The combination of the turn-table with the fixed cylinders X and the plungers Y, supported and carried by the turn-table, substantially as specified.
50

6. The combination of the turn-table, the cylinders X, supported thereon, and the plungers Y, with the hydraulic press E E' and hydraulic cylinders I and J, said members being arranged for operation substantially as and
55 for the purpose described.

7. The combination of the pumps K, press E E', and hydraulic cylinders I J with the cylinders X and plungers Y, constructed and operating substantially as specified.
60

8. The discharging-piston J' and cylinder J, in combination with a cylinder, X, having a piston or plunger, Y, substantially as and for
65 the purpose specified.

CORNELIUS KIMPLEN.

Witnesses:

B. A. PRICE,
ALBERT H. ADAMS.