

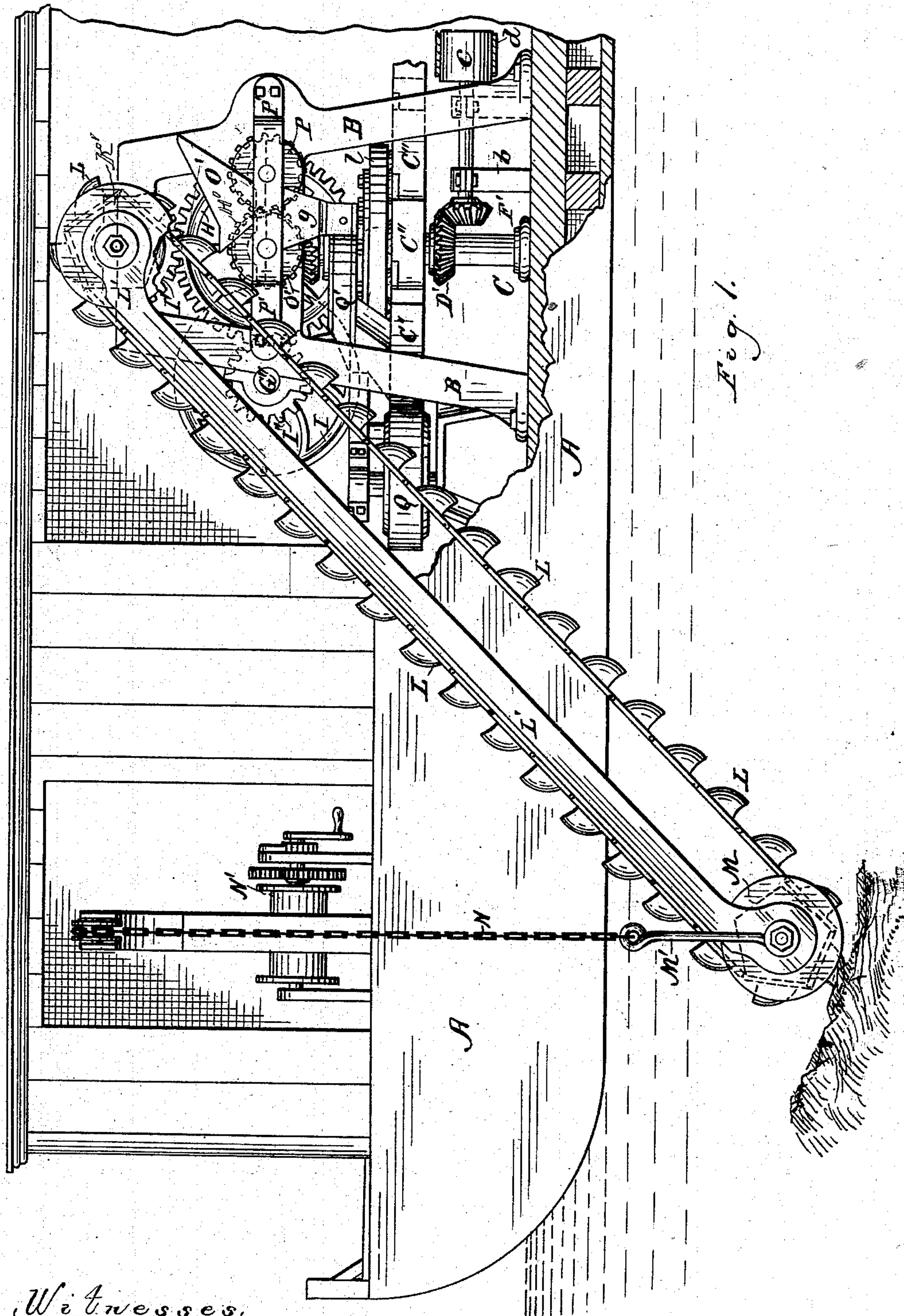
(No Model.)

3 Sheets—Sheet 1.

J. C. ANDERSON.
BRICK MACHINE.

No. 276,992.

Patented May 8, 1883.



Witnesses,
Henry Frankforter,
W. P. Kumbier

Inventor
J. C. Anderson

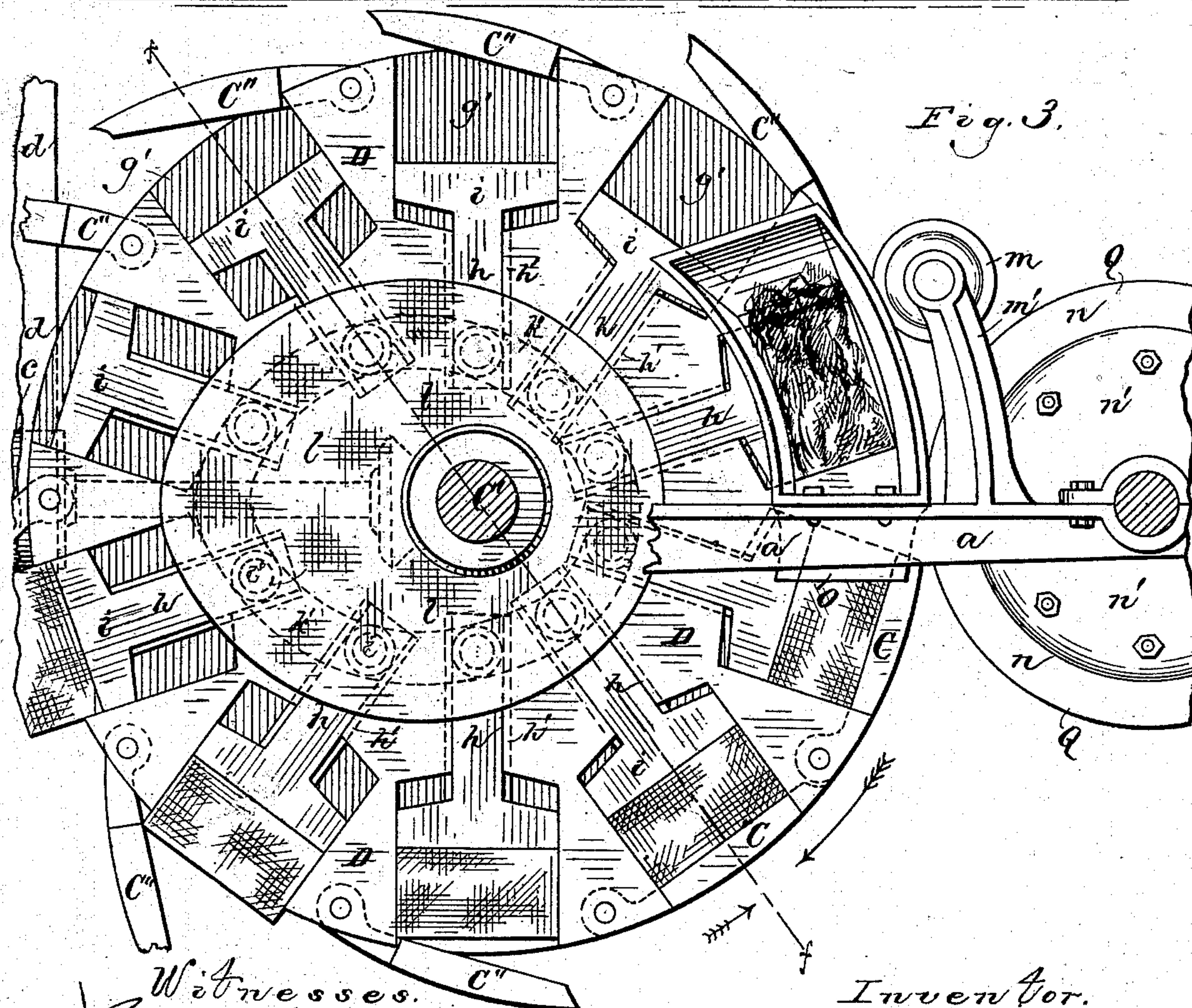
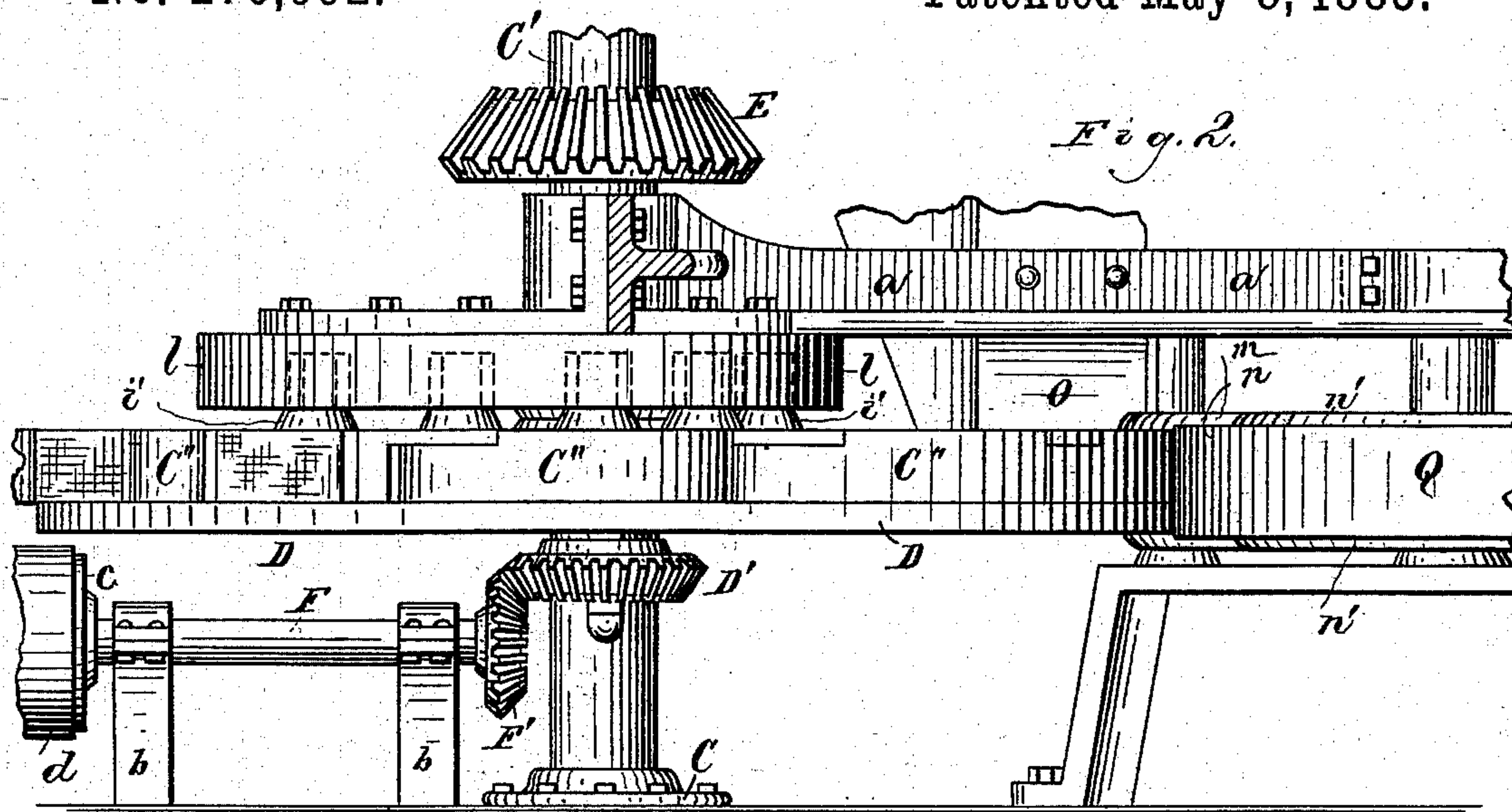
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Witnesses. C"
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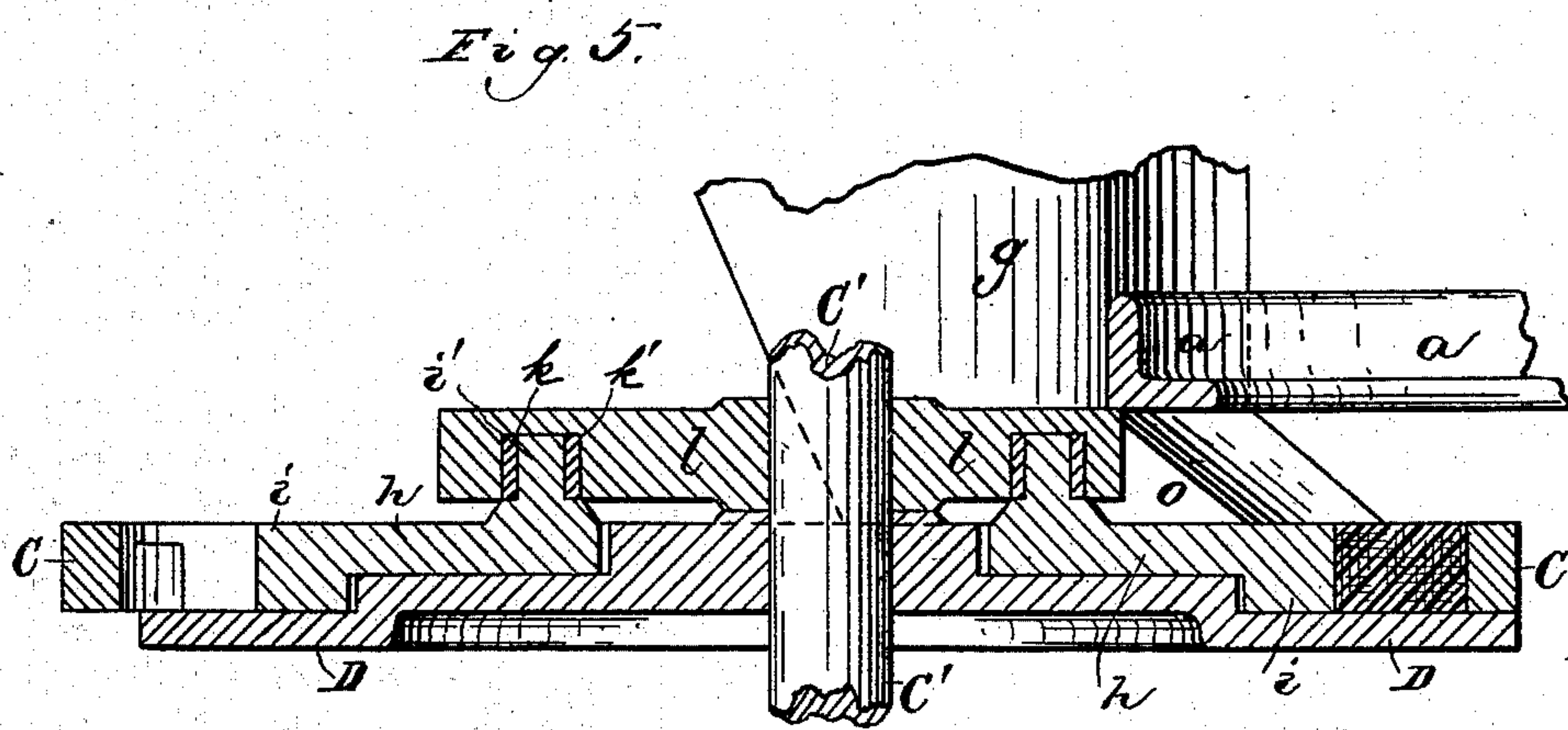
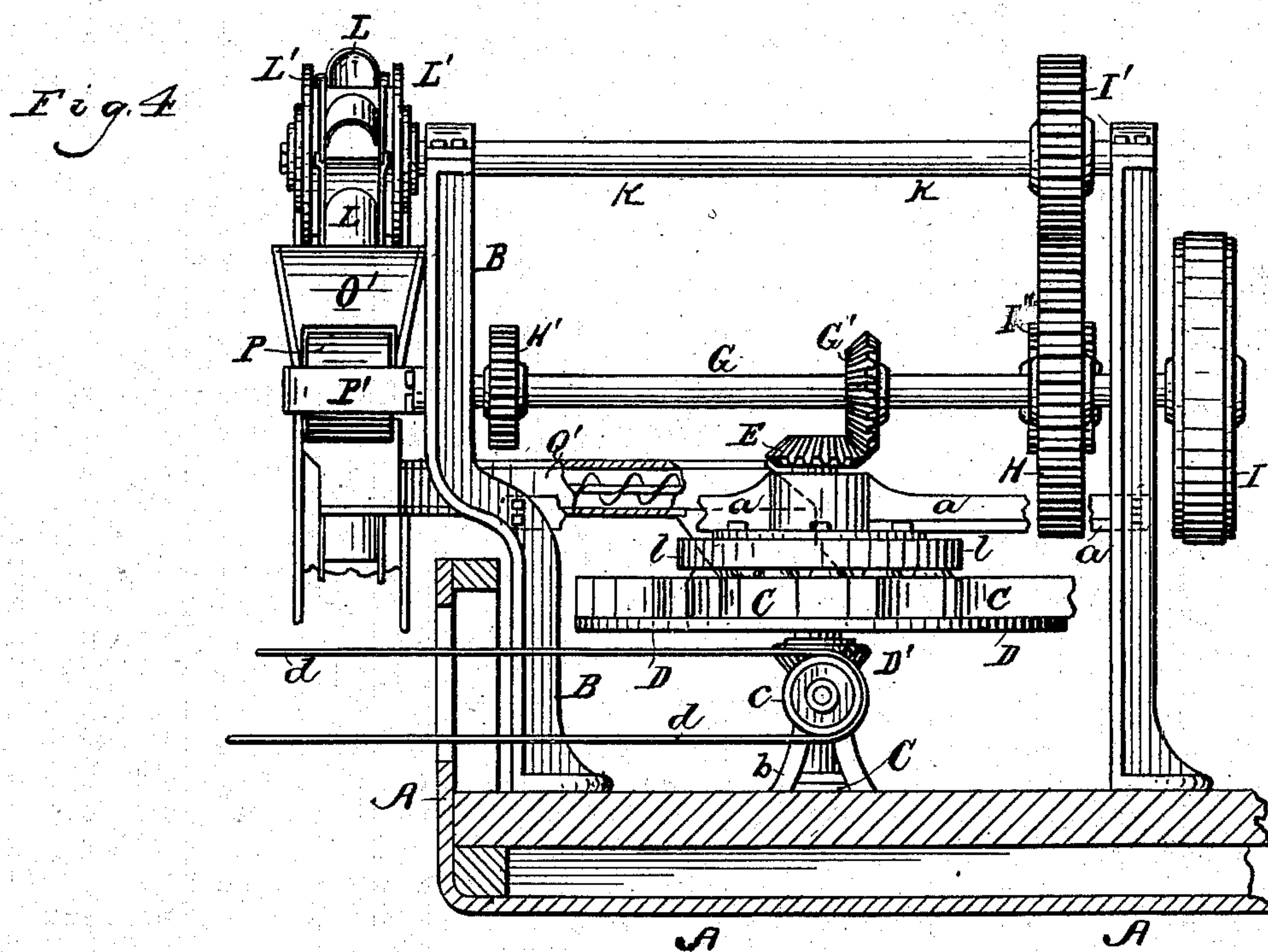
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Witnesses.
Camp Frankfort,
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UNITED STATES PATENT OFFICE.

JAMES C. ANDERSON, OF HIGHLAND PARK, ILLINOIS.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 276,992, dated May 8, 1883.

Application filed February 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. ANDERSON, a citizen of the United States, residing at Highland Park, in the county of Lake and State of Illinois, have invented a new and useful Improvement in Machines for the Manufacture of Brick; and I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of the specification.

My invention relates to the manufacture of brick from the sedimentary deposits and the excavated clay from river-beds; and my invention consists in mounting the brick-making machinery and the excavating mechanism on a boat or scow, excavating the earth, and conveying direct to the disintegrating and pressing mechanism.

My invention consists, further, in the construction of the molds and the pressing-plungers, as will be more fully hereinafter described, and pointed out in the claims.

Figure 1 is a side elevation, partly in section, of my improved mechanism for excavating, disintegrating, and pressing the clay into bricks. Fig. 2 is an elevation of the mold-wheel, pressure-wheel, and the plunger-operating disk. Fig. 3 is a top view of the same. Fig. 4 is an end view of the excavating and disintegrating mechanism and mechanism for conveying the clay from the disintegrating-rolls to the pressing mechanism. Fig. 5 is a sectional view of the mold-wheel and plunger-operating disk, together with a portion of the feed-hopper.

By the machine described in Letters Patent 268,976, granted to me December 12, 1882, the clay is excavated and thrown onto an endless chain or series of traveling molds, which convey the clay to the pressing mechanism, and retain the same until the requisite pressure has been applied to form the brick. The brick is then thrust on to a carrying-belt, and thence to the drying-yard, thus dispensing with the frequent handling of the clay. In the present invention a like result is accomplished, but with different mechanism, and the clay is excavated, carried to the disintegrating and pressing mechanism, and formed into bricks of the desired shape without manipulating the clay by means of manual labor, and the process of pug-ging, tempering, kneading, and mixing the clay by hand is obviated.

Referring to the drawings, A designates a vessel, of any suitable or desirable construction, on which is securely mounted the frames or brackets B, which support the disintegrating and pressing mechanism, together with the dredging mechanism. I do not limit myself, however, to the use of a vessel in the operations of my machine, as it is obvious that it can be applied to a land carriage or other vehicle without departing from the spirit of my invention. Furthermore, the disintegrating and pressing mechanism may be mounted on a fixed bed and the clay brought to the machine without detracting from the novelty and effectiveness of such mechanism.

C is a socket secured firmly in position in the bed of the machine to receive and support the vertical shaft C', to which the mold-wheel D and gear-wheels D' and E are rigidly secured, the top of said shaft C' being steadied and held in position by means of a yoke, E', the ends of which are secured to the standards or brackets B B.

F is a shaft mounted in the brackets b b, which are secured to the bed of the machine in a strong and durable manner. The inner end of the shaft F is provided with a bevel-gear, F', which meshes with the bevel-gear D' on the shaft C', while the outer end of the shaft F is provided with a pulley-wheel, C, over which an endless belt, d, passes for conveying the finished brick away from the machine.

G is a shaft mounted or secured in bearings in the standards B, and is provided with a bevel-gear, G', and pinion-wheels H and H'.

A shaft, G², similar to the shaft G, is mounted in bearings in the brackets or frames B on a level with and parallel with the shaft G, said shaft being provided with a pulley-wheel, I, which is connected by means of a belt or other suitable mechanism to any convenient source of power. The shaft G² is also provided with a pinion-wheel, I², which meshes with the pinion-wheel H on the shaft G, and by means of the bevel-gears G' and E' motion is imparted in a rotary direction to the mold-wheel. The pinion-wheel H meshes with a pinion-wheel, I', on the shaft K, which is also mounted in bearings in the standards B. The outer end of the shaft K is provided with an octagonal or other shaped drum, K', which supports and drives

the endless chain of excavating and elevator buckets L. The shaft K also supports the elevator-frame L', in the lower end of which is secured the drum M, around which the excavating and excavating buckets pass, while the frame is adjusted toward or from the work or raised entirely out of the water or pit by means of the bail M', chain N, and windlass N', as in my patent above referred to, so that a further description of the excavating mechanism is deemed unnecessary. Suffice it to say that the clay, when brought up from its bed, is thrown into a hopper, O, where it is crushed and ground into the proper consistency for the manufacture of bricks.

The crushing and grinding rolls above referred to are shown in Figs. 1 and 4, and are designated by the letters O' and P, the roll O' being mounted on the end of the shaft G, the outer end of which finds its support in the bar P', secured to the frame of the machine. The roll P is secured to shaft e, which has its bearings in the frame B and bar P', while the shaft e is provided with a pinion-wheel, f, which meshes with the pinion H' on the shaft G, and through which power is applied to the rolls. I have shown and described the grinding-rolls of this construction more for the sake of illustration and to show their relative arrangement with the other parts of the machine; but I prefer to use, in connection with the pressing mechanism, the disintegrating mechanism patented to me August 8, 1882, No. 262,340. I do not, however, wish to be understood as confining myself to such. The clay, after leaving the disintegrating-rolls, gravitates into a spout, g, and into the molds of the pressing mechanism, which I will now proceed to describe.

As before stated, the mold-wheel is secured to the main driving-shaft C', and is driven thereby in a continuous rotary direction. The mold-wheel D consists of a disk of metal or other suitable material, and is provided on its top surface with a series of mold-cavities, g', having inwardly-projecting cavities h, which receive the stems h' of the pressing-plungers i. The rear ends of the plunger-stems are provided with an upwardly-projecting pintle, i', on which is secured a friction-wheel, k, which fits or works in the cam-groove k' in the disk l, said disk being secured to the yoke E', which in turn is secured by means of the extensions or arms a to the frames B. To the periphery of the mold-wheel are hinged a series of doors or flaps, C'', which, when closed against the mold-wheel, form the outside or outer wall of the mold. These flaps or doors C'' are opened by the pressure of the plungers in the process of ejecting the brick from the mold; but, to prevent injury to the newly-formed brick, spiral or other springs may be so placed as to impinge on the rear side of the flaps or doors, so that when they are freed from the devices which close and hold them against the mold-wheel during the pressing operation they will be forced open by the action of the spring and

permit the plungers to eject the brick. m is a friction-wheel mounted in the arms m', which project from the cross-bar or arm a, and impinges on the doors or flaps as the mold-wheel is rotated, and presses them against the side of the mold-wheel while the mold-cavity is being filled with clay, and continues to hold the same until the wheel Q comes in contact with the flap or door and holds the same rigidly against the mold-wheel during the pressing operation of the brick, which occurs at this point. The wheel Q is mounted in suitable bearings, and is composed of a paper body, n, made up of a series of paper disks held firmly together by metallic disks or flanges n', bolted thereto or therethrough. The wheel m may be made of paper also, and of the same construction as the wheel Q. The object of making the wheels of paper is to give an elastic or cushion-like surface, and as these wheels are rotated by frictional contact with the mold-wheel alone better and more satisfactory results can be attained than would be the case if these wheels were made of metal.

o is a solid extension of the feed-hopper, which serves to hold back or scrape off the surplus clay, and also to inclose the top portion of the mold during the pressing operation. The cam-grooved disk l, which operates the plungers, is rigidly secured to the yoke E', as before stated. The cam-groove k' is elliptical in form, and is eccentric to the axis or central shaft of the mold-wheel, as shown in Fig. 3, the apexes of the elliptical groove being the points at which the pressure is exerted to form the brick and eject the same from the mold, while the longer sides of the elliptical groove gradually push out and draw in the plungers. It may be convenient and desirable in some instances to carry the clay from the disintegrating-rolls to the mold-wheel, especially where it is not convenient or desirable to elevate or raise the disintegrating mechanism, so that the clay will be conveyed to the molds by gravity alone. Such a device I have shown in Fig. 4, and it consists of a closed spout or channel, Q', leading from the chamber below the disintegrating-rolls to the feed-hopper above the mold-wheel, in which is mounted an Archimedean screw, R, driven by any suitable means. This method of feeding the clay to the mold-wheel from the disintegrating-machine enables me to build my machine in a more compact form and obviate the necessity of carrying the clay so high as would be necessary where the molds are fed by gravity direct from the disintegrating-rolls.

The operation of my machine is as follows: The clay is elevated and thrown into the disintegrating apparatus, where it is reduced to a proper degree of fineness, from whence it is conveyed or falls by gravity into the feed-hopper, which lies close to the upper side of the mold-wheel. The clay falls into the mold-cavity which is formed by the closing of the hinged flaps onto the outer side or edge of the mold-wheel. The mold having been filled with clay,

the surplus clay is held back in the hopper by the shoe *o*, which forms the top of the mold when the mold is fairly under it, and it is at this point of travel in the rotation of the mold-wheel that the plungers are thrust forward by the action of the cam-groove, on the ends of the plungers to compress the clay within the mold-cavity and form the brick. After the mold-wheel has passed the pressing-point, or the point where the pressure is applied in forming the brick or other article, the doors or flaps which form the outer wall of mold are relieved from the pressure or from contact with the wheels *m* and *Q*, and the doors or flaps fly open, if a spring is used for that purpose; but if no spring is used the force exerted by the plungers to eject the brick opens the flaps or doors, and allows the brick to be pushed out onto the bearing-off belt. It will be observed that no manual manipulation of the clay is required by the use of this machine, and all the force necessary (except one or two attendants of the machine) will be boys or unskilled labor to hack up the brick to dry.

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

1. In a dredging, excavating, and brick-pressing machine, the combination of the dredging and excavating mechanism, substantially such as described, with a disintegrating mechanism and a pressing mechanism, as set forth.

2. In a machine for pressing plastic or other material into blocks or forms, a mold-wheel composed of a disk having depressions or cavities in its upper surface, plungers located within said cavities, and doors or flaps hinged to the periphery of the mold-wheel, which form

the outer wall of the mold during the filling of the mold and during the pressing operation, as set forth.

3. A mold-wheel in which plastic or other material is pressed into form, composed of a disk recessed in its upper surface, and provided on its periphery with hinged flaps or doors, which form, when closed, the outer wall of mold, as set forth.

4. In a machine for pressing clay and other material into form, a horizontally-rotating mold-wheel provided with mold-cavities in its upper surface, in combination with the plungers and with the stationary cam-grooved disk, as set forth.

5. The mold-wheel *D*, provided with the hinged doors or flaps *C''*, in combination with the friction-wheels *m* and *Q*, whereby the doors or flaps are folded against the periphery of the mold-wheel to form the outer wall of the mold, and retained in such position while the mold is being filled and the pressure applied to form the article, as set forth.

6. The mold-wheel *D*, provided with the hinged doors or flaps *C''*, in combination with the solid extension *o* of the hopper, the wheels *m* and *Q*, and the plungers *i*, as set forth.

7. In a machine for pressing brick and other material, the horizontally-rotating mold-wheel constructed, substantially as described, with a feed-hopper provided with a solid foot or extension, *o*, lying close to the top of the mold-wheel to form the top wall of the mold during the pressing operation, as set forth.

J. C. ANDERSON.

Witnesses:

LILLIE E. ANDERSON,
J. F. ANDERSON.