

(No Model.)

2 Sheets—Sheet 1.

W. W. WALLACE.
BRICK AND TILE MACHINE.

No. 315,358.

Patented Apr. 7, 1885.

Fig. 1.

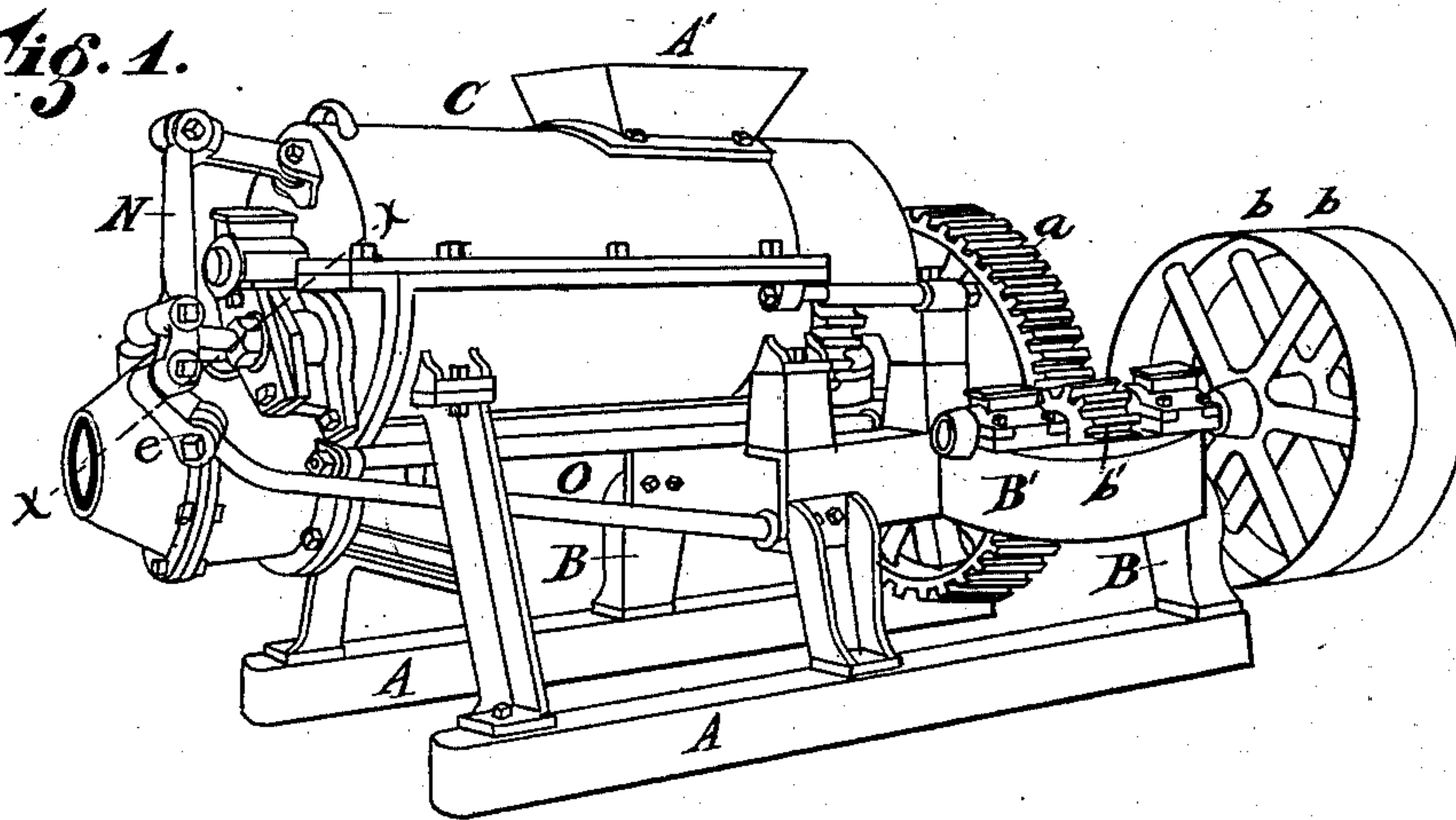


Fig. 9.

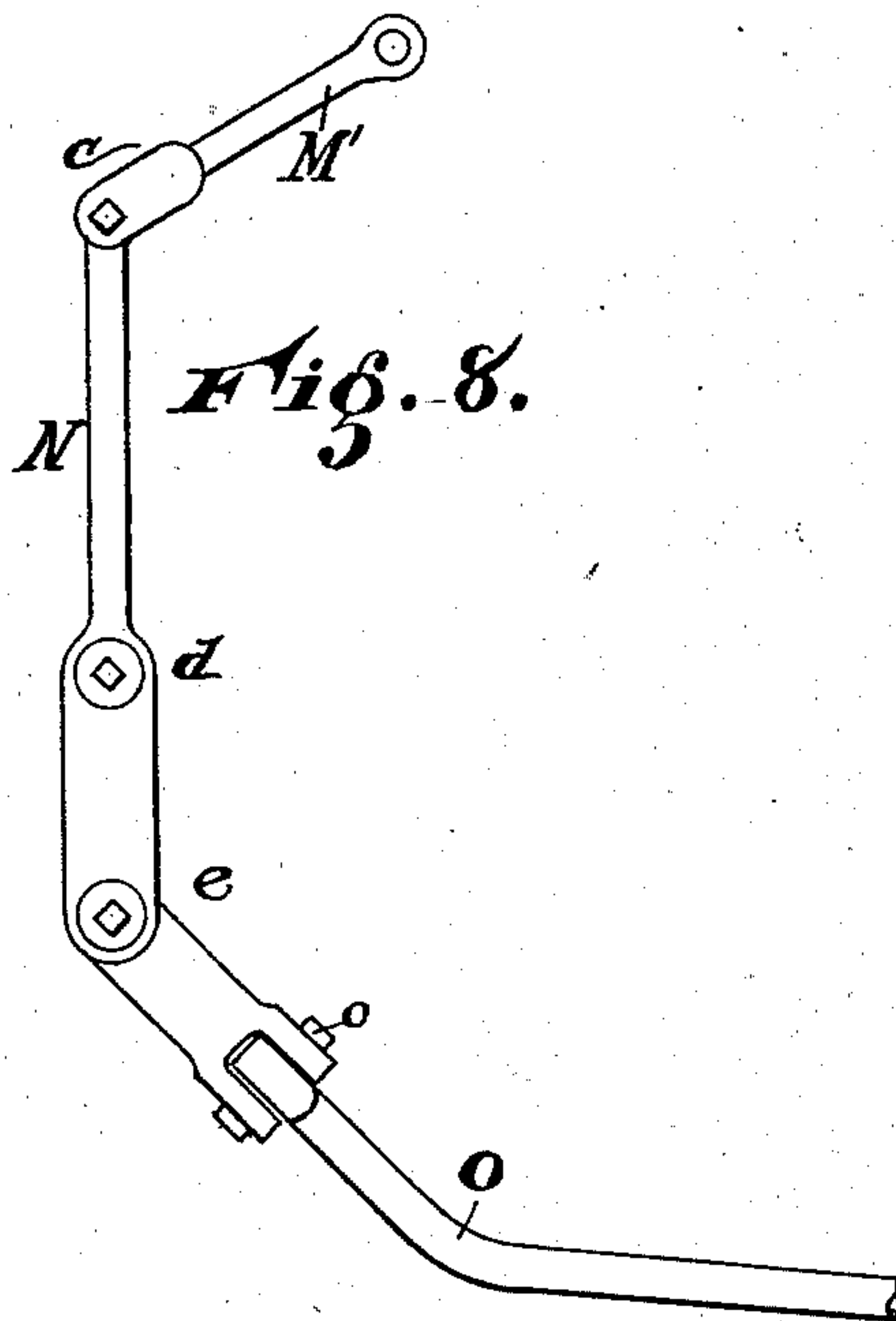
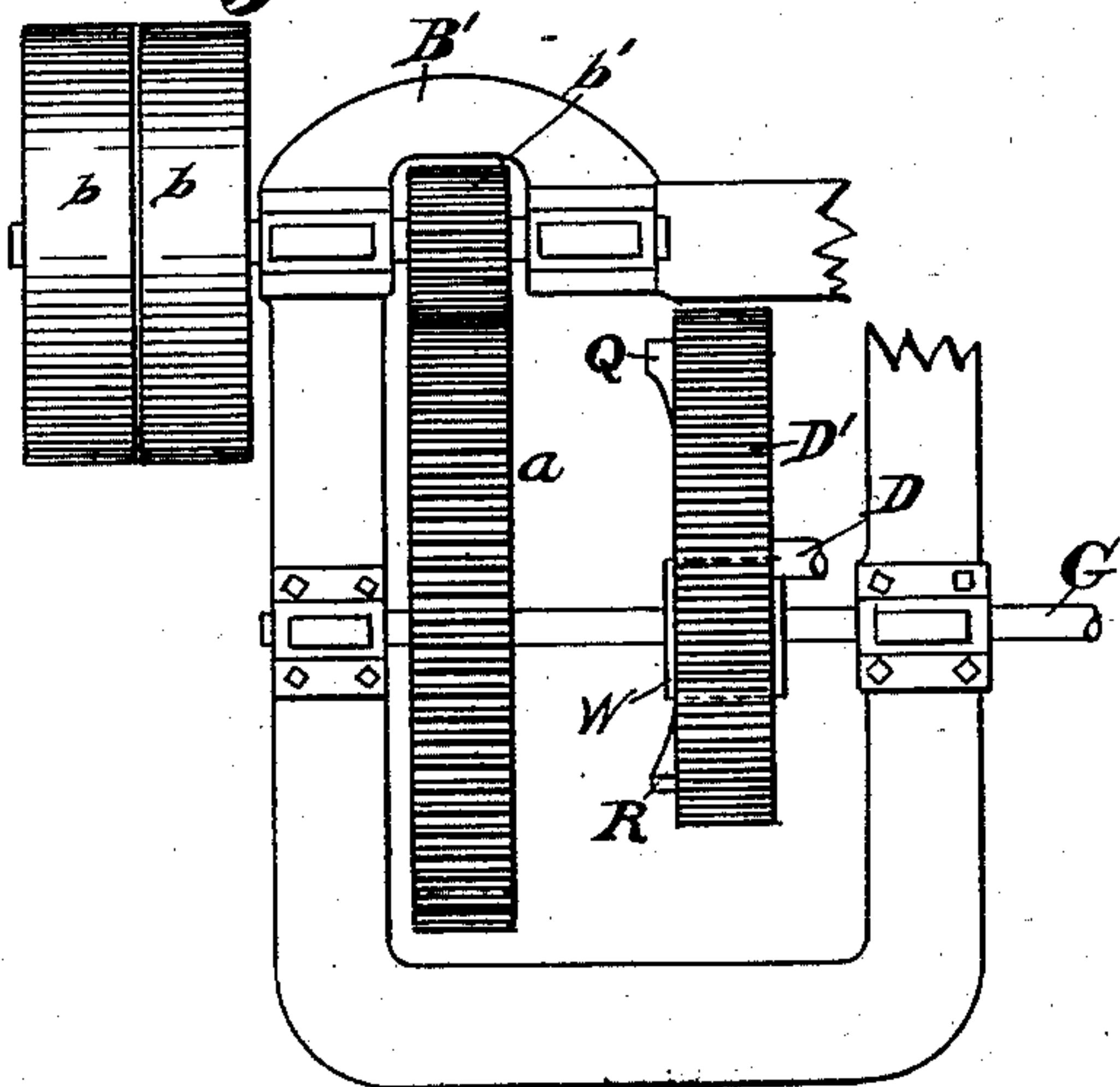
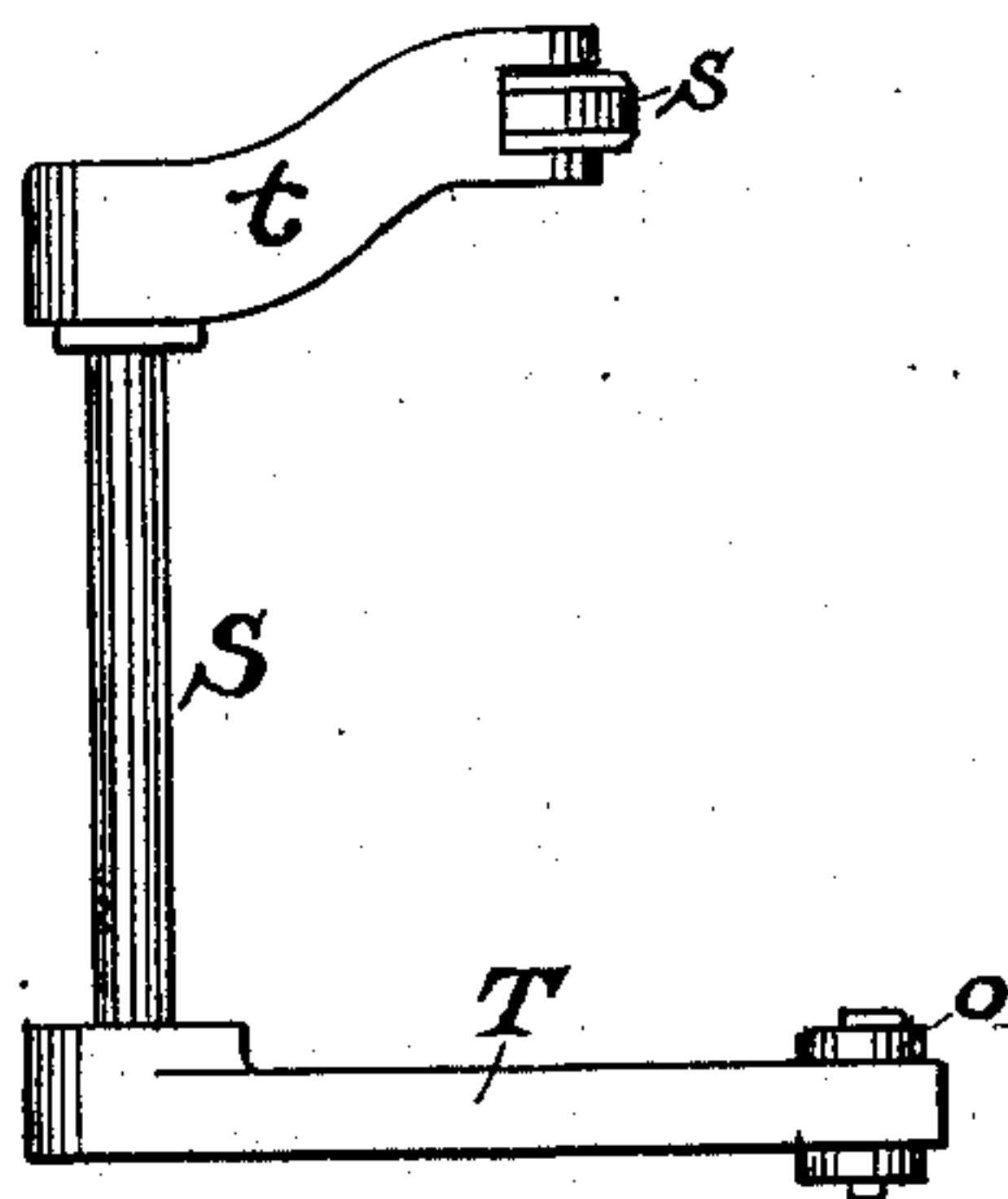


Fig. 7.



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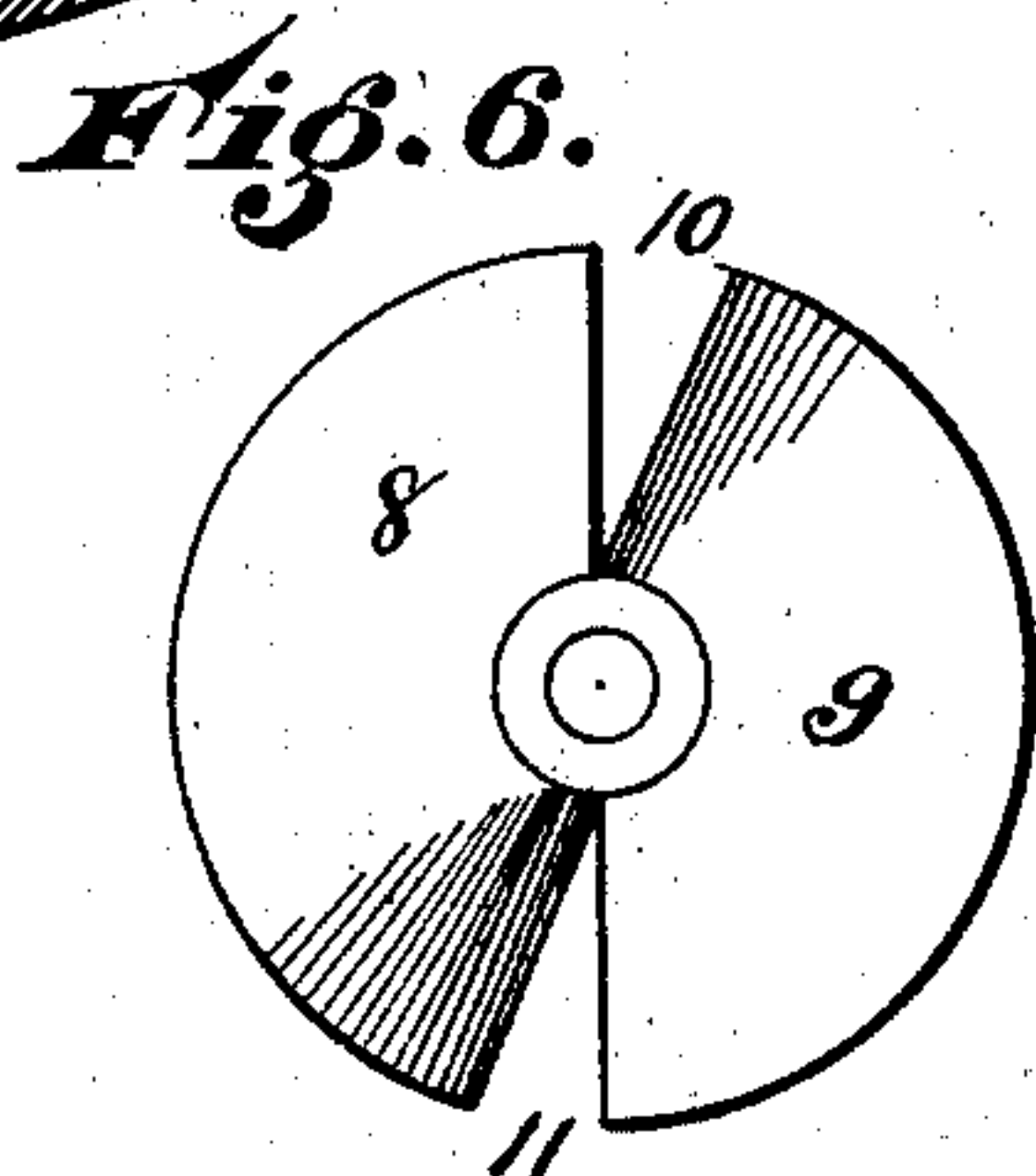
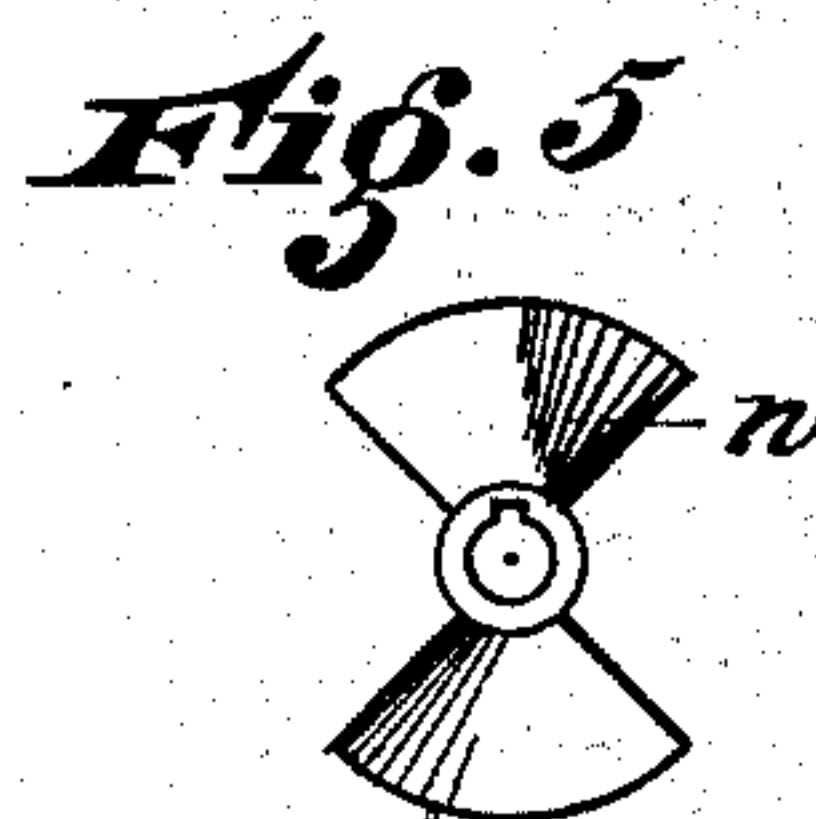
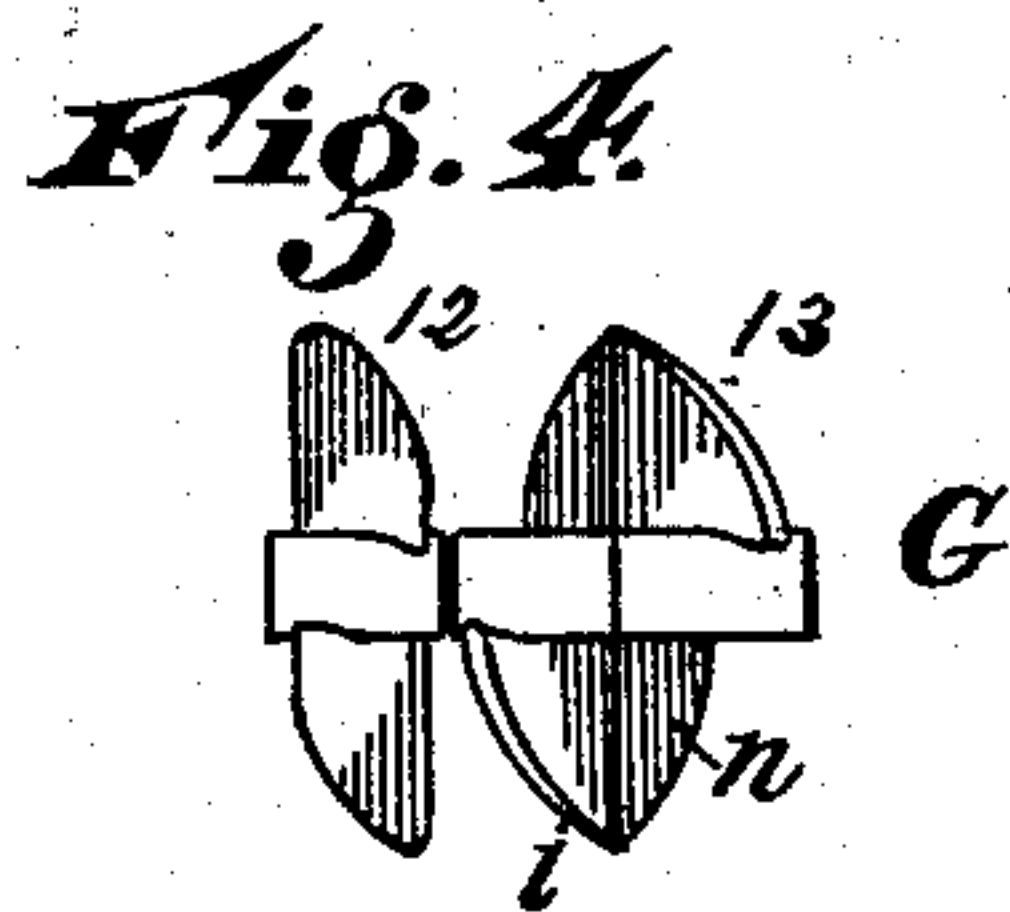
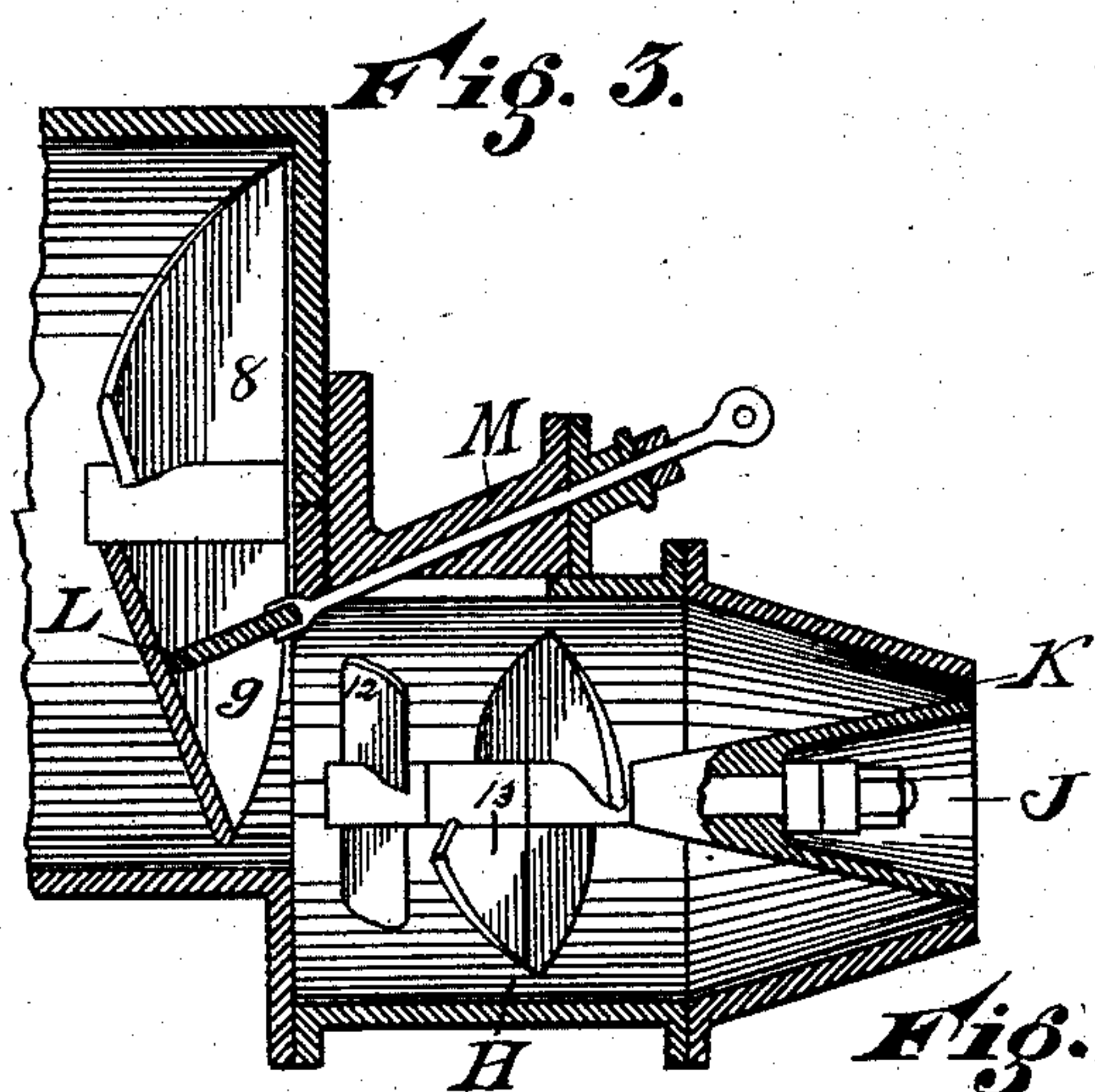
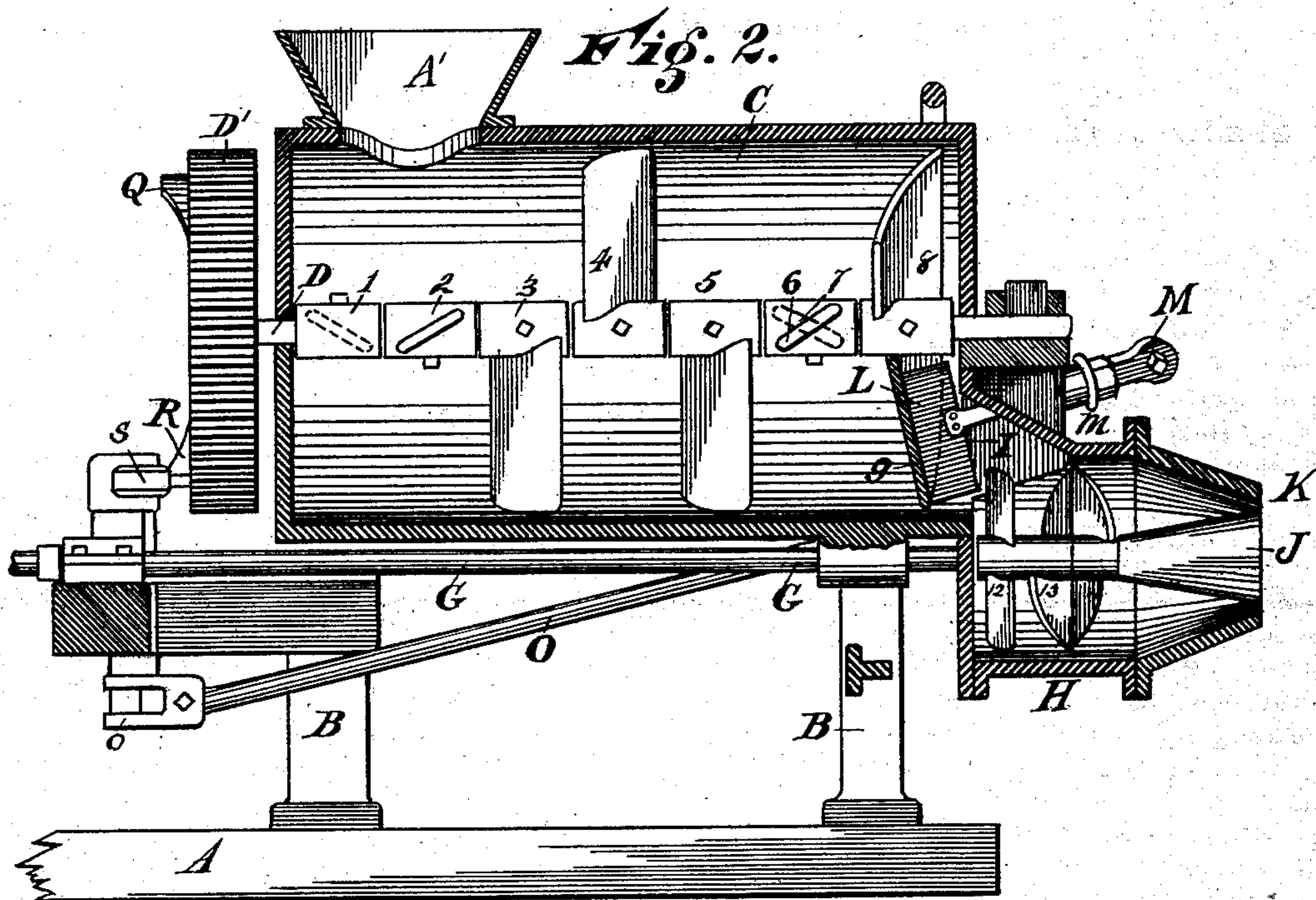
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UNITED STATES PATENT OFFICE.

WILLIAM W. WALLACE, OF FRANKFORT, INDIANA.

BRICK AND TILE MACHINE.

SPECIFICATION forming part of Letters Patent No. 315,353, dated April 7, 1885.

Application filed November 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, WM. W. WALLACE, a resident of Frankfort, in the county of Clinton and State of Indiana, have invented certain new and useful Improvements in Brick and Tile Machines, of which the following is a specification.

One of the objects of my invention is to use a mixing or pug-mill shaft in combination with an independent feed-shaft.

Another object of my invention is to provide suitable means for cleaning the clay off the ejectors of the mixing-shaft arranged to work automatically in connection therewith.

Another feature of my invention consists in the peculiar manner of constructing the feeding-shaft.

Other features of my invention will be specifically set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my improved machine. Fig. 2 is a longitudinal sectional elevation of the mixing and feeding shaft devices. Fig. 3 is a sectional elevation on line *x x*, Fig. 1. Figs. 4 and 5 are detail views of the ejector. Fig. 6 is a plan view of the spiral ejector on the mixing-shaft. Figs. 7 and 8 are detail views of the devices for operating the scraper. Fig. 9 is a plan view of the driving-gears.

A represents the bed-sills on which the machine is placed.

B represents legs for supporting the same.

B' represents the frame-work on which the gearing devices are mounted.

A' represents the hopper into which the clay is fed into the shell of the mill C.

D represents the mixing-shaft.

Means for driving shafts D and G are as follows:

b represents driving-pulleys on the main shaft, to which gear *b'* is keyed, which drives the gear-wheel *a*.

W represents a gear keyed upon shaft G, which transmits power to shaft D through gear D'.

1 2 3 4 5 6 7 represent spiral blades, which serve as conveyers to carry the clay forward from under the hopper A' as it mixes and tempers the clay.

8 9 represent double spiral ejector-blades provided with openings 10 11, through which the clay is forced by the conveyers 6 7 to be discharged to the feeding-cylinder.

G represents the feeding-shaft. It is driven by gear *a*.

H represents the feeding cylinder, into which the clay is discharged through the opening I in cylinder C.

I have shown the feeding cylinder and shaft as provided with a nozzle suitable for pressing tile.

J represents a mandrel around which the tile is crowded.

K represents an annular orifice between the mouth of the cylinder and mandrel J, around which the tile is formed.

It is obvious that a suitable die for feeding the brick may be substituted for the circular orifice K and conical mandrel J.

In order to clear the clay off the ejector-blades 8 and 9, I have provided the following instrumentalities.

L represents the scraper or blade, secured to plunger M, which is operated automatically by the following devices:

m represents a stuffing-box secured to the head of cylinder C, and through which the plunger M works. This stuffing-box prevents the clay from interfering with or clogging the action of the plunger M.

N represents a crank-arm pivoted on stud *c*, as shown in Fig. 1, which connects it to governing-link M'.

D represents a stud, pivoting plunger M to the crank-arm N.

e represents a yielding link pivoted at one end to crank-arm N, and at the other end to bent pitman O. This mechanism allows the pitman O to operate the plunger M in a plane presenting the scraper L at right angles to the blades 8 and 9. The yielding link *e* allows the pitman O to move in its plane, and the governing-link M' with the link *e* allows the plunger M to move in a plane at a right angle to the line of pitman O.

In order that the scraper may be effective to clean both blades 8 and 9, I operate pitman O by cams Q R on the face or rim of gear D'.

S represents a crank-shaft, on one end of

which is keyed the crank T, and on the other end the crank *t*. Crank T is provided with a wrist-pin, *o*. Crank *t* is provided with a friction-roller, *s*, which engages alternately with the cams Q R, so that as the gear-wheel is revolved once around, the cams Q R have respectively caused a stroke of pitman O, bringing the scraper L down upon the blades 8 and 9 successively. As the cams Q R act momentarily only on the friction-roller *s*, the crank-shaft S and cranks T *t* and pitman O, hinged by link mechanism to plunger M, are free to move back automatically by the action of the inclined spiral blades 8 and 9 pushing against the face or edge of scraper L as they revolve around. The weight of these parts and the friction of the revolving edges hold the scraper L sufficiently tight against the blades as it is being pushed back to clean or cleave off the clay clinging to blades 8 and 9, and cause it to be discharged through the opening I into the feeding-cylinder H, where it is taken by the spiral blades or augers 12 and 13 and forced through the dies into the proper form for making brick or tile. The spiral blade 12 is a conveyer to force the clay forward to the outward spiral or auger, 13, which acts as a plunger to force the clay out of the die. The blades 8 and 9, therefore, push the scraper L out a distance corresponding with their spiral twist, and the cams in turn bring the scraper L down in position for scraping the next successive blade as it revolves. Material advantages are derived from this form of constructing the mill.

In order to feed the clay properly and force it out of dies, a comparatively high speed of the feeding shaft or auger is required. If the entire mass of clay in the mixing-box is to be subjected to this high speed, it requires great power as well as immense strain upon the pug-mill and shaft; whereas by my method the pug-mill can be made large and run slow with much less power, and the discharge or cleaning devices will force the clay into the feeding-cylinder H, which is operated by an independent shaft, G, which can be speeded much higher than the mixing-shaft, as but a small amount of clay is at any one time let within the cylinder H, and a continuous high-speeded tube or bar of clay may be discharged and cut into suitable lengths for brick or tile in the usual manner of such machines. I prefer to make the delivering-blade 13 of two sections, *i n*, which are joined together in any suitable manner, either by a collar attaching them to shaft G or by bolts. I construct these feeding-augers of two sections, because the outer

section, *n*, is subject to much greater wear than the inner section, *i*, and permits a ready renewal of these parts. By constructing the mill with the two independent shafts, and having the feed-auger on the pug-mill shaft, and running the latter at a low rate of speed, the clay is not heated, which is apt to be the case with fast-revolving pug-mill shafts, and if not heated the clay is apt to work back instead of being forced out, thereby working it over too much, when it is molded into tile with difficulty. By means of the independent feeding cylinder and shaft, in combination with the mixing-shaft, the clay is positively fed from the dies without the difficulties hitherto experienced.

Having described my invention, what I claim is—

1. In a brick or tile machine, the combination, with the mixing and feeding cylinder, of the feeding-cylinder H, and the shaft G, having the feeding-auger 13, located beyond the blades 8 and 9 of the mixing and feeding shaft, so as to receive the clay endwise therefrom, substantially as described.

2. In a brick or tile machine, the combination, with the mixing-cylinder and mixing and feeding shaft, of the feeding-cylinder H, and the shaft G, having the conveyer-blades 12, and feeding-auger 13, located beyond the blades 8 and 9 of the mixing and feeding shaft, and the inclined passage forming the communication between the cylinders C and H, substantially as described.

3. In combination with the feeding-blades 8 and 9 upon a pug-mill shaft, the scraper L, automatically operated by connecting mechanism on the driving-gear, whereby the scraper is positively brought down upon the blades 8 and 9 and automatically pushed back by the revolution of the blades, substantially as specified.

4. In combination with the scraper L, operated by plunger M, the operating mechanism consisting of pitman O, cranks T *t*, and cams Q R, substantially as specified.

5. In combination with the cylinder C, the scraper L, operated by a plunger, M, and suitable driving devices, and provided with a stuffing-box, *m*, for securing it in position on the head of the cylinder, substantially as specified.

In testimony whereof I have hereunto set my hand.

WILLIAM W. WALLACE.

Witnesses:

ELI MARVIN,
S. C. BOOKER.