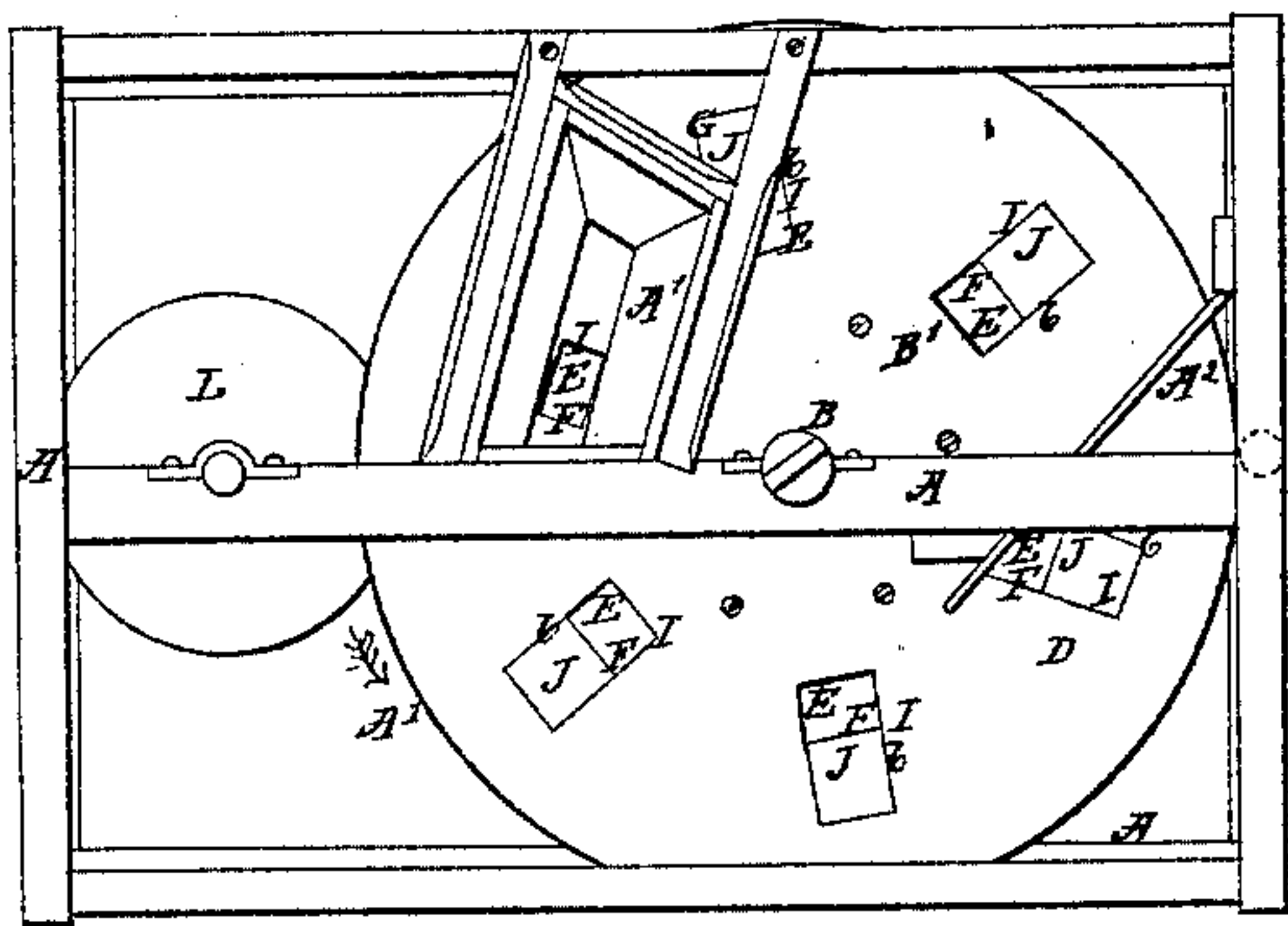


R. P. Harbour, Brick Machine.

No. 17,546.

Fig 1.



Patented June 9, 1857.

Fig 2.

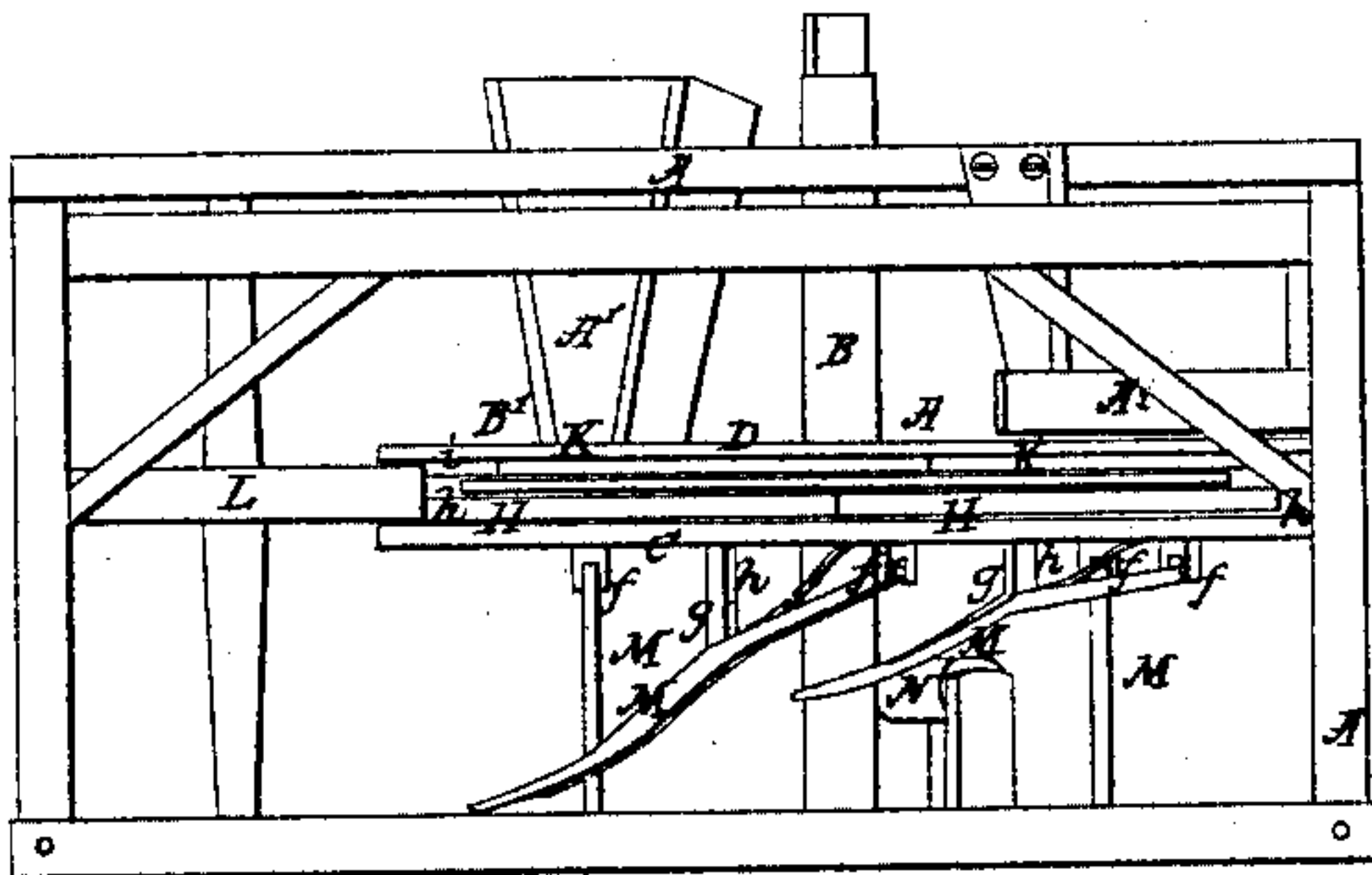


Fig 3.

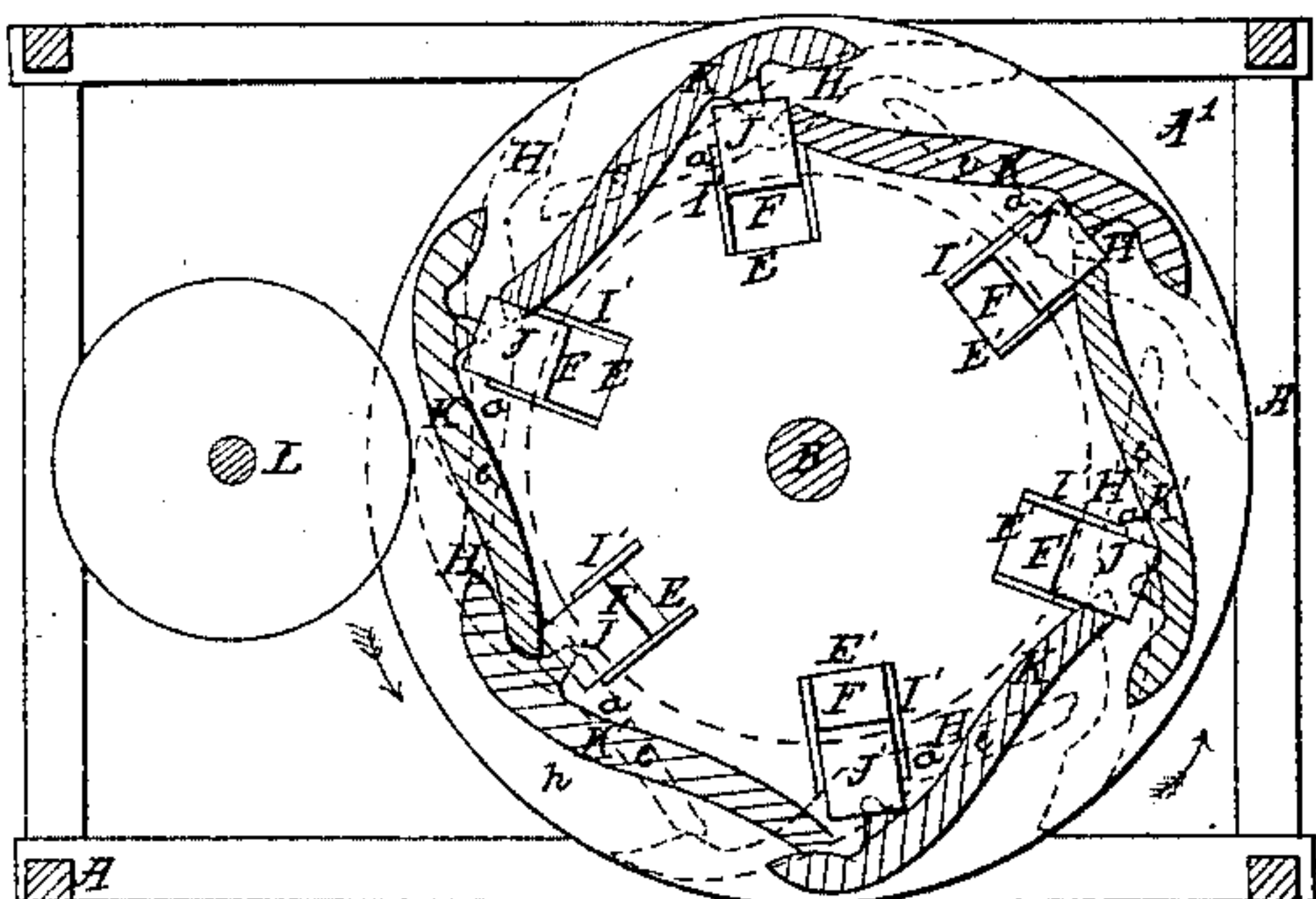


Fig 5.

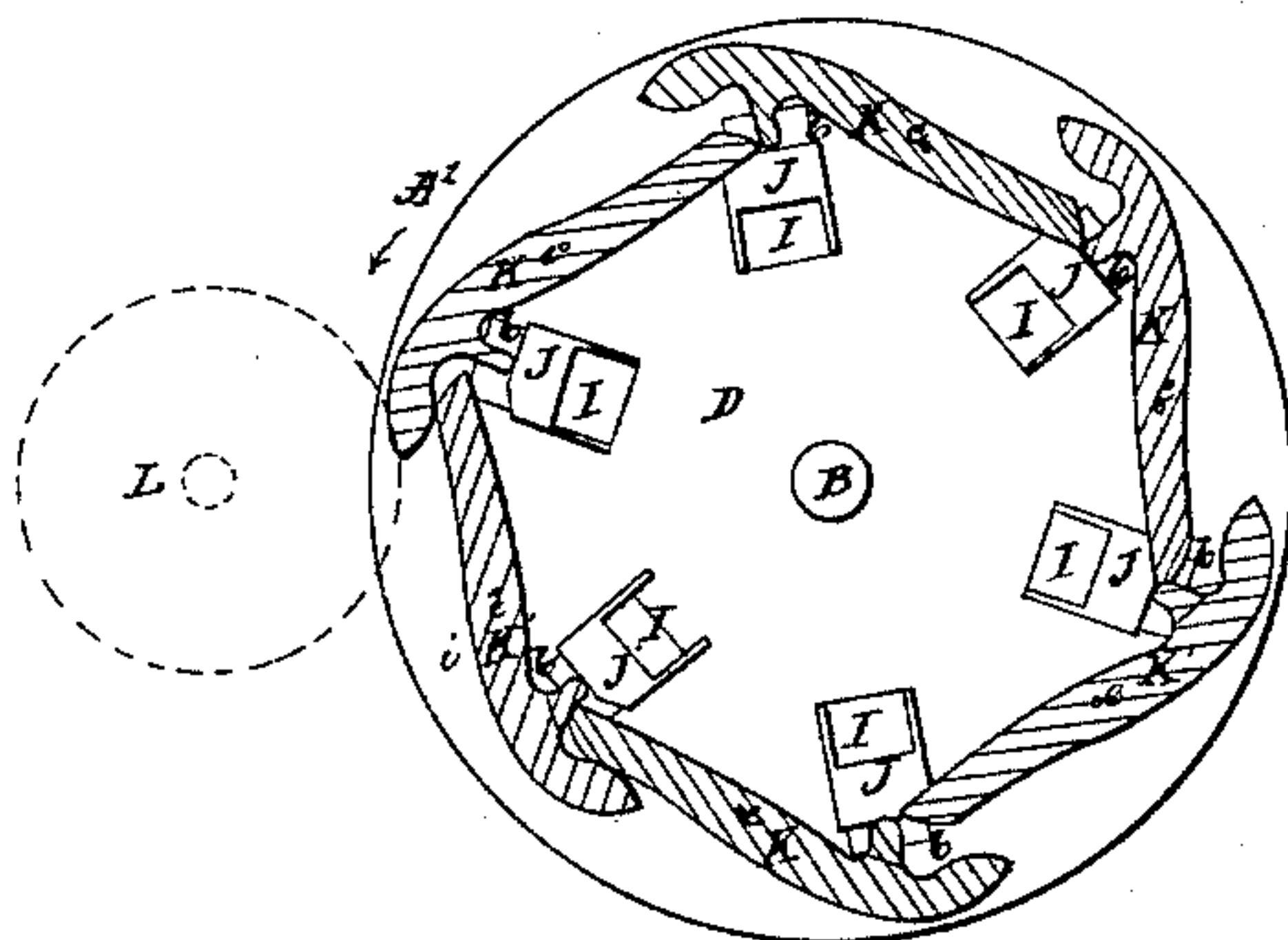


Fig 4.

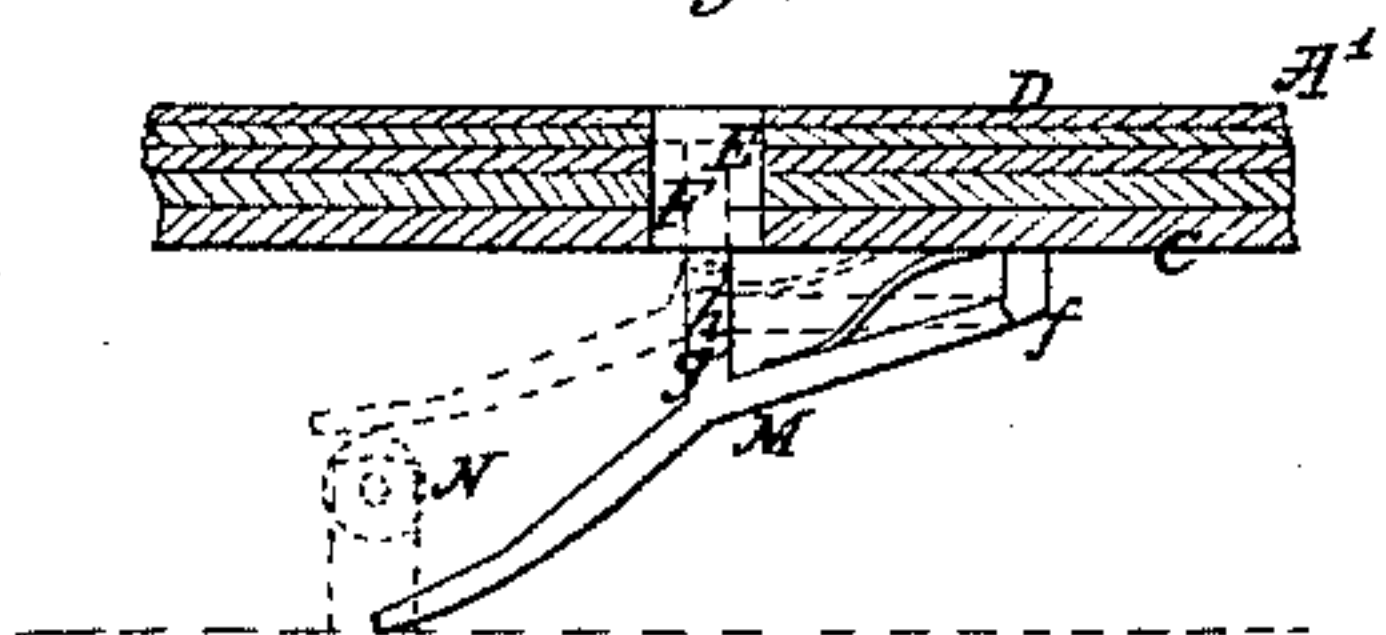
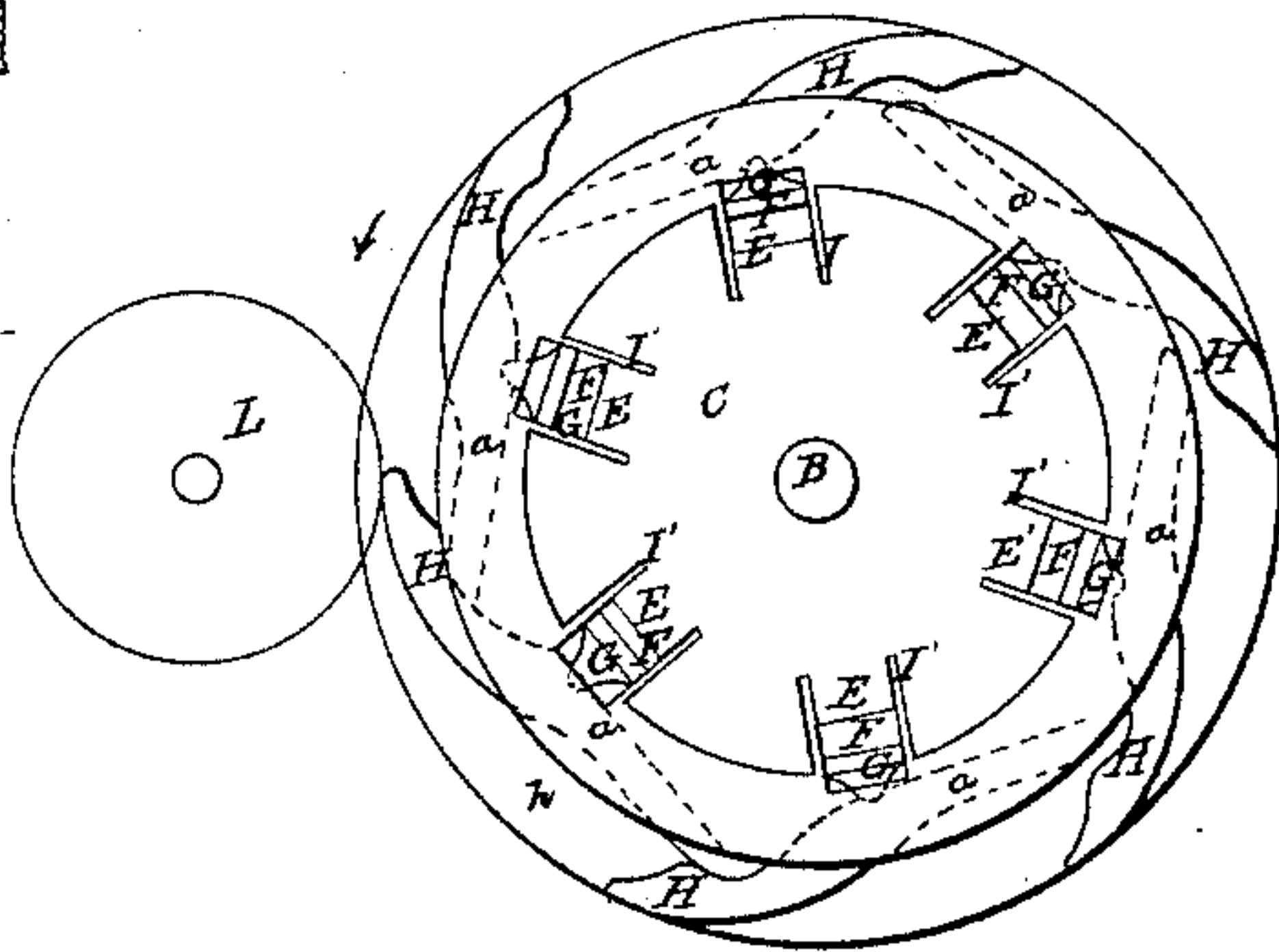


Fig 6.



UNITED STATES PATENT OFFICE.

R. R. HARBOUR, OF OSKALOOSA, IOWA.

BRICK-PRESS.

Specification of Letters Patent No. 17,546, dated June 9, 1857.

To all whom it may concern:

Be it known that I, R. R. HARBOUR, of Oskaloosa, in the county of Mahaska and State of Iowa, have invented a new and useful Improvement in Brick-Presses; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, Sheet 1, is a plan or top view of a brick press with my improvements. Fig. 2 is a side view of the same. Fig. 3, Sheet 2, is a horizontal section of the same. Fig. 4 is a broken vertical section showing how the brick is discharged from the mold. Fig. 5 is an inverted view of the upper disk carrying the moving tops of the molds and the levers for operating the same. Fig. 6 is a plan of the mold disk, or the lower disk which carries the pressing followers, and the levers which operate the same.

Similar letters of reference in each of the several figures indicate corresponding parts.

My invention consists in the employment, in combination with a wheel, of two sets of levers within a circle and on a revolving circle plate, for opening and closing the top of the molds and for exerting pressure upon the followers of the same, said levers being shaped so as to act on the principle of a wedge and thereby exert a gradually increasing pressure, and one set having its fulcra slightly in advance of the other so that when one of one set has just finished performing its duty one of the other set shall be in position for commencing operations, the levers of each set also being so constructed and arranged relatively to one another that when one lever is operated and caused to force the top, or the follower of one of the molds toward the axis of the circle plate, another will be operated by the free end of the lever thus forced toward the center and made to force the top or follower of another of the molds toward the circumference of the circle, and thus leave the molded brick free to be discharged when it arrives at the proper place.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A, represents a frame of rectangular form.

B, is a vertical shaft having its bearings in the frame A.

B¹, is the circle plate. It is formed of two disks C, D, united firmly together and fitted or keyed fast on the shaft B.

A', is a hopper for receiving the steamed clay dust for forming the brick. It is arranged on the frame so as to stand just clear of the upper surface of the circle plate.

A², is the board for sweeping off the bricks as fast as made and discharged on to the top disk. It is arranged diagonally on the frame and so as to stand just clear of the upper surface of the circle plate as shown.

E, E', are a series of oblong rectangular brick molds formed in the lower disk C.

F, F, are vertical plungers fitted loosely in the molds E. These plungers serve as the bottom of the molds during the pressing of the brick and for discharging the brick after it has been pressed, as will be hereafter shown.

G, G', are horizontal radial followers arranged so that their bottom stands just clear of the top of the vertical plungers. These followers move in enlarged guide spaces b, b, formed in the top of the disk C.

H, H', are a series of levers fitted in a groove h, formed in the periphery of the lower disk C. These levers have their fulcra at a, a, on the lower disk and are jointed to the followers by ball and socket joints. Their outer edge is curved in such a manner as to be eccentric to the disk and act on the principle of a wedge, i. e. exerting a gradually increasing pressure upon the followers.

I, I, are guide spaces in the upper disk D; J, J', the movable horizontal radial slides or tops of the molds, fitted to the disk D, and sliding radially in the guide spaces I, I, of the upper disk and those I', I' of the lower disk.

K, K', are a series of levers similar to those H, H. They have their fulcra e, e, in rear of the fulcra of the levers H, H', and are pivoted near one of their ends to the tops J, J', of the molds.

L, is the stop or friction roller which causes the levers to move toward the shaft. It is arranged on a vertical axis placed in line with the shaft B, outside of the periphery of the circle plate A'. The periphery of this roller is wide enough to bear against the edges of both sets of levers and in order to have the periphery of the same bear upon the levers from * to * the levers are set ec-

centric to the periphery of the disks, and the roller is made to enter the groove *i*, formed between the two disks for the levers to play in, sufficiently far to first touch the portion of the levers which is nearest to the axis of the disk and then gradually to be brought in contact with the portion which stands farthest from said axis. It is by this arrangement that a gradually increasing pressure, which is so desirable and necessary in the manufacture of bricks, is secured.

It will be observed that the levers *K*, *K'*, have their fulcra near the center of their length while the levers *H*, *H'*, have their fulcra somewhat in rear or beyond the center of their lengths. This is so because the levers *K*, have no pressure to exert while those *H*, *H'*, are required to exert all the pressure necessary for the perfect formation of the brick. It will also be observed from the drawing that the rear end of each of the levers of both sets stands behind the front end of each of the same, and that consequently when the front end of one is forced toward the center the front end of the one in rear of it will be forced out toward the circumference, or in other words as the follower or top of one mold is forced toward the center the follower or top of another is forced out toward the circumference. It will likewise be seen from the drawing that the set of levers *H*, *H'*, stand slightly in advance of the set *K*, *K'*, and that consequently just as one of the set *H*, completes its movement, one of the set *K*, comes in contact with the stop or friction wheel, or in other words as soon as the top of one of the molds has been forced in far enough to close the top of the mold the follower of the same mold commences to move toward the center or axis of the disk and perform the pressing operation.

M, *M*, are the levers which operate the plungers which form the bottom of the molds. They are pivoted by one end, as at *f*, to the underside of the disk *C*, and at the center of their length, as at *g*, to the handle *h*, of the plungers.

N, is a stop or friction roller for the loose ends of the levers *M*, to move over or come in contact with as the disks *C*, *D*, revolve. By thus having the loose ends of the levers *M*, pass over the rollers the plungers or bottoms of the molds are caused to rise even with the top surface of the upper disk of the circle plate, and thus force the brick out of the mold and place it in a position for being swept off by the diagonal board on to a suitable conveyer as the disks revolve.

Operation: The steamed clay dust being introduced into the hopper and all the parts of the machine in operative condition, the circle plate is revolved in the direction of

the arrow by means of a band passing from a large pulley on the shaft or preferably by means of cog gears near the periphery of the circle plate. As the circle plate revolves its molds come successively under the hopper and are charged. As soon as one of those *E*, is charged, one of the levers *K*, comes in contact with the friction wheel *L*, and is caused to force in the slide or top *J*, of said mold, and at the same time to force out the slide or top *J'*, of the mold *E'*, in front of it. As soon as this occurs one of the pressing levers *H*, comes in contact with the friction wheel and is gradually forced with its follower toward the axis of the circle plate, and thereby caused to exert the pressure upon its follower necessary to the complete formation of the brick. At the same time that the said lever forces its follower inward it is caused to force the follower *G'*, of the lever *H'*, in front of it out toward the circumference of the circle plate. One brick having now been molded another mold comes under the hopper, is charged, closed at top, and then the follower moves in and performs the pressing operation. As the closing and pressing takes place the top or slide *J'*, and follower *G'*, of the mold *E'*, which is next to and in front of the mold just in use are moved out and thus made to leave the brick free for being discharged when it arrives at the proper place. A series of bricks being molded and the circle plate continuing its revolution, the lever *M*, of the first filled mold is caused to rise over the stop *N*, and the plunger or bottom of the said mold is caused to rise and force the brick of the same out upon the top of the circle plate and behind the diagonal board, where it is held and gradually forced by the board toward the periphery—onto a conveyer.

This machine is very simple in construction compared with others working on the same principle. It also exerts a very powerful and gradual pressure in the formation of the brick by the use of the levers on a circle, and yet can be operated with small amount of power on account of the circle plate serving as a lever from its axis to its circumference.

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

The employment, in combination with the wheel *L*, of the two sets of levers *H*, *H'*, and *K*, *K'*, arranged eccentrically within a circle, and on a revolving circle plate, and connected with the tops of the molds of said plate and with the followers of the same; substantially as and for the purpose set forth.

R. R. HARBOUR.

Witnesses:

R. W. FENWICK,
EDM. F. BROWN.