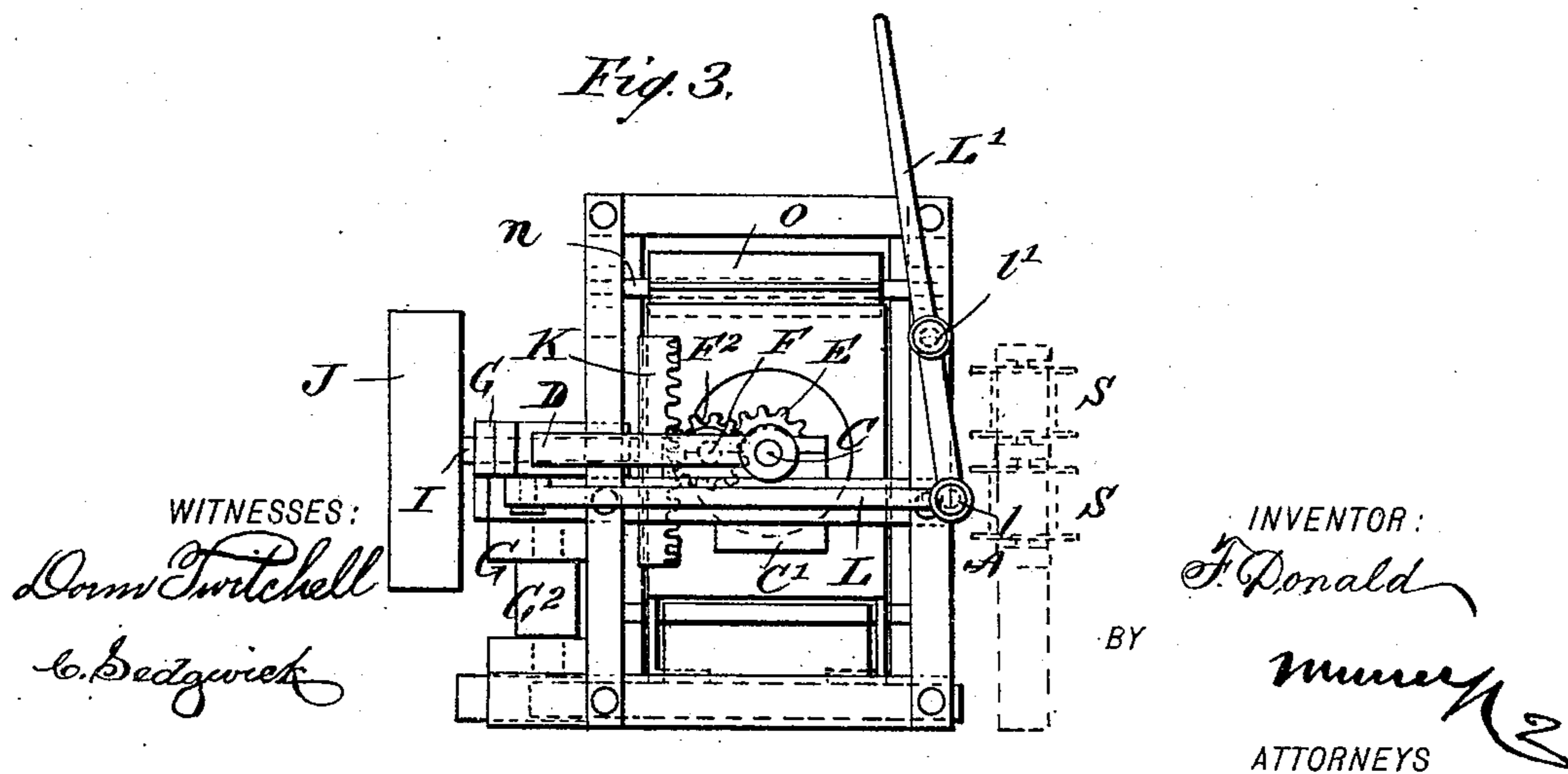
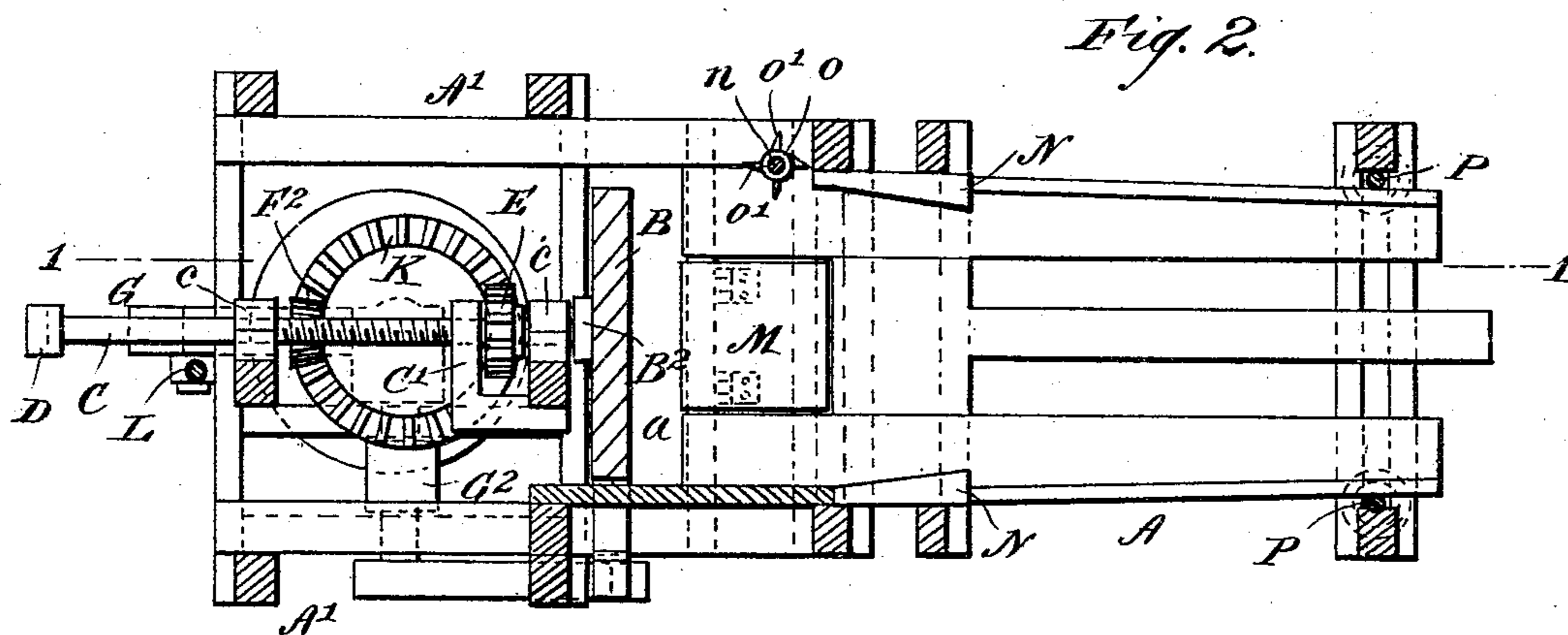
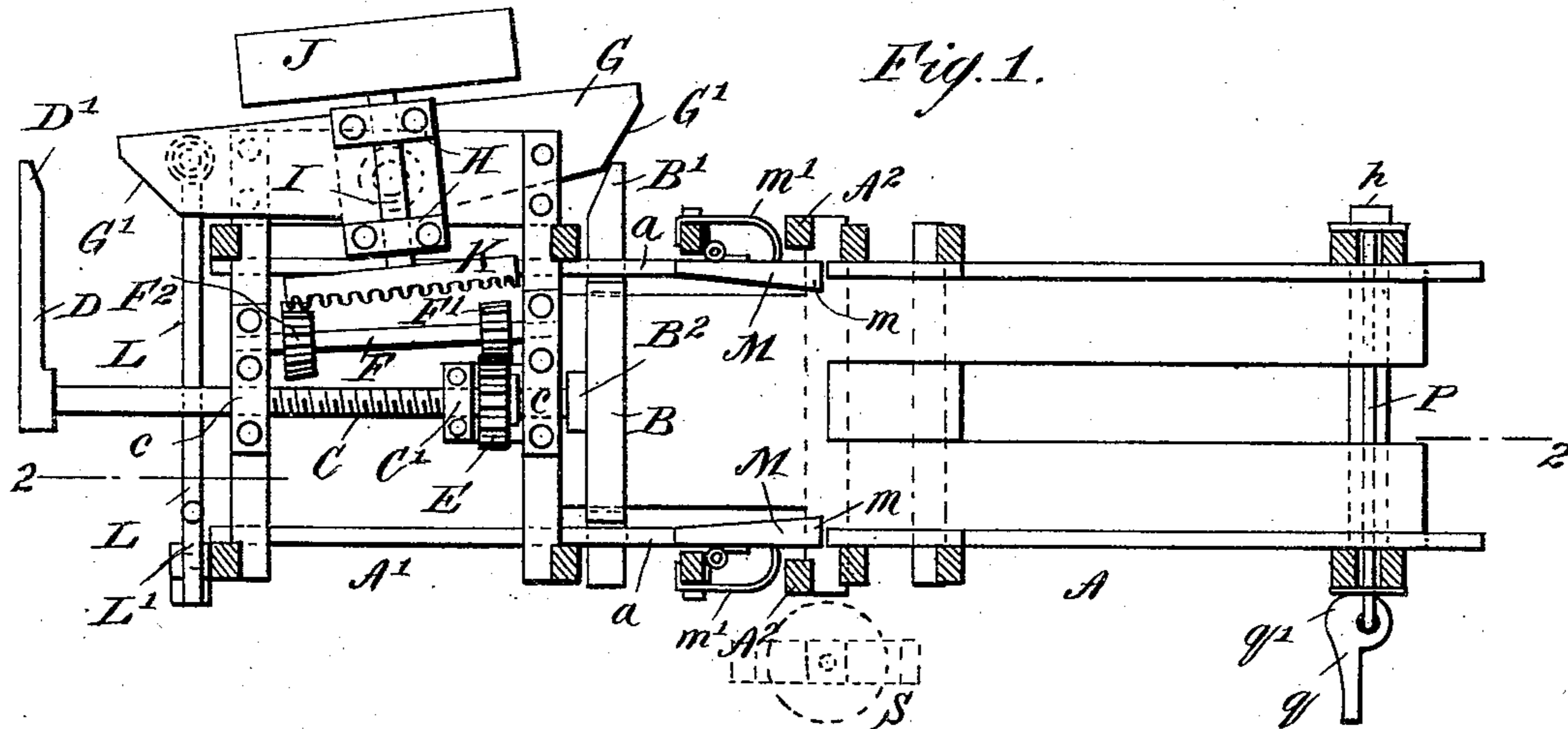


(No Model.)

F. DONALD.
HAY PRESS.

No. 444,667.

Patented Jan. 13, 1891.



UNITED STATES PATENT OFFICE.

FRANK DONALD, OF DENISON, TEXAS, ASSIGNOR TO HIMSELF AND NEANDER S. ERNST, OF SAME PLACE.

HAY-PRESS.

SPECIFICATION forming part of Letters Patent No. 444,667, dated January 13, 1891.

Application filed June 13, 1890. Serial No. 355,356. (No model.)

To all whom it may concern:

Be it known that I, FRANK DONALD, of Denison, in the county of Grayson and State of Texas, have invented a new and Improved Hay-Press, of which the following is a full, clear, and exact description.

My invention relates to improvements in hay-presses; and the object of the invention is to produce a hay-press of simple construction that will work easily and rapidly, that will operate in such a manner that the hay cannot clog in the press, and in which the plunger or follower will be automatically reciprocated by a continuous motion of the main pulley.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a horizontal section of the press embodying my invention on line 1 1 of Fig. 2. Fig. 2 is a vertical longitudinal section on the line 2 2 of Fig. 1, and Fig. 3 is a front end view of the press.

The press is provided with a rectangular frame or press-box A, which is substantially like the ordinary press-box except for certain details of construction, which will be hereinafter described, and a rectangular frame A', connected with the frame A and carrying the follower-propelling mechanism. The plunger or follower B is located in the frame A and adapted to move longitudinally therein in the usual manner, said plunger having projecting ends passing through openings in the side of the frame A, one of said ends being provided with an inclined portion B', adapted to operate the gear-shifting mechanism, as hereinafter described. The plunger B is also provided on one side with a suitable socket B², which is centrally fixed thereon and which firmly incloses the end of the screw-shaft C, said shaft being mounted horizontally in suitable bearings c in the frame A'. A suitable support or keeper C' is fixed to the frame A' and incloses the shaft C, so as to hold the loose gear-wheel E in position upon the shaft.

The shaft C is screw-threaded, as shown, and is provided at its outer end with a laterally-extending arm D, the free end of which is provided with an inclined portion D', adapted to operate the gear-shifting mechanism, as described below.

The gear-wheel E is mounted on the shaft C, between the keeper C' and one of the bearings c, said gear-wheel having an internal screw-thread fitting the thread of the shaft C, so that when the wheel is turned in one direction the shaft C will be forced into the press-box, thus pushing the follower B therein, and when the gear-wheel E is turned in the opposite direction the shaft and follower will be retracted. A shaft F is mounted in the frame A' nearly parallel with the shaft C, said shaft carrying at one end a pinion F', which meshes with the gear-wheel E, and carrying at its opposite end a similar pinion F².

A horizontal frame-work G is pivoted in the frame A' so as to swing horizontally, said frame-work being mounted on a suitable support G², and having each end which projects beyond the frame-work A' provided with an inclined face G', said faces being adapted to engage the similar inclined portions B' of the plunger B and D' of the arm D, thus tilting the frame. A horizontal shaft I is mounted in suitable bearings H on the frame G, said shaft extending at right angles to the frame and having its outer end provided with a suitable driving-pulley J and its inner end provided with a gear-wheel K, adapted to mesh with the pinions F' and F². It will thus be seen that when the gear-wheel K is in engagement with the pinion F' the screw-shaft C and follower B will be moved in one direction, and when the gear-wheel K is in engagement with the pinion F² said parts will be moved in the opposite direction.

A rod L is pivoted to one end of the frame G, said rod extending across the front end of the frame A' and being pivoted at the point l at its end to an upwardly-extending lever L', which is pivoted at the point l' to the frame A'. The lever L' and connecting-rod L will thus afford a quick means of shifting the frame G when desired.

The frame A on opposite sides thereof is provided with vertical openings a adjacent

to the front end of the frame, through which division-blocks may be inserted in the press-box when desired. Pivoted in opposite sides of the press-box A, adjacent to the part in which the plunger B works, are the doors or side pieces M, having their free ends *m* projecting slightly into the press-box, and having suitable springs *m'* fixed to the frame A, so as to normally press said doors inward, and the projecting ends *m* will thus engage the hay in the press-box and prevent it from working back toward the plunger. The press-box A is also provided at top and bottom with projecting portions N, which also serve to prevent the hay from working back in the press-box, and with vertical strips A², which limit the outward movement of the doors M. Pivoted on a horizontal shaft *n* in the upper portion of the press-box and at a point near the end of the follower-stroke is a sleeve *o*, carrying radially-extending knives *o'*, so that as the follower and hay are forced into the press the knives will revolve and cut the hay which extends over the top of the follower and prevent the same from clogging.

A horizontal shaft P extends across the top and bottom of the rear portion of the press-box, one end of each shaft being provided with a nut *p*, and the opposite end of each shaft pivoted to the lever *q*, which has a cam-like projection *q'* thereon, so that by moving the lever in one direction the cam *q'* will be brought next the press-box, thus forcing the sides of the box inwardly, and by moving the lever in the opposite direction the cam will be turned outwardly and the sides of the press-box allowed to spread. It will thus be seen that the tension may be very quickly and easily regulated, and that by forcing the sides of the press-box inwardly the division-blocks, which are such as are ordinarily used in a hay-press, may be tightened and held in a desired position.

Spools of wire S are mounted in suitable supports at one side of the frame A, so that the wire may be convenient for use and may be thrust through the frame A, so as to bind the bales therein.

The press is operated as follows: Any suitable power is applied to the pulley J, and hay is inserted into the press-box through the top in the usual manner. As shown in the drawings, the gear-wheel K is in engagement with the pinion F², and the movement of the gear-wheel turns the shaft F, pinion F', gear-wheel E, and screw-shaft C, thus pressing the follower B into the press-box. As the shaft C and follower B move in the press-box, the inclined face D' of the arm D will be brought in contact with one of the inclined faces G', thus tilting the frame and throwing the gear-wheel K into engagement with the pinion F'. This reverses the movement of the shaft F and retracts the follower B. It will also be seen that by actuating the lever L' and rod L the frame G may be tilted at any time and

the movement of the follower regulated at will.

In constructing the press the press-box A should be long enough to contain several bales of hay, and the bales in the rear end of the press-box will thus serve as abutments for the succeeding bales.

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

1. A hay-press comprising a frame or press-box, a plunger adapted to reciprocate therein, a screw-shaft mounted in suitable supports and connected with the plunger, a gear-wheel mounted on the screw-shaft and having an internal thread to fit the thread of the shaft, a shaft mounted in suitable supports nearly parallel with the screw-shaft and carrying pinions at each end thereof, one of said pinions meshing with the gear-wheel on the screw-shaft, a gear-wheel mounted on a suitable shaft at right angles to the pinion-shaft, and means for bringing said gear-wheel alternately into engagement with the pinions, substantially as described.

2. A hay-press comprising a press-box, a plunger adapted to reciprocate therein, a screw-shaft mounted in suitable supports and connected with the plunger, a gear-wheel mounted loosely on the screw-shaft and having an internal screw-thread to fit the thread of the shaft, a shaft mounted in suitable supports nearly parallel with the screw-shaft and carrying pinions at each end, one of which meshes with the gear-wheel of the screw-shaft, a horizontally-tilting frame mounted on suitable supports, a shaft mounted on said frame substantially at right angles to the pinion-shaft, said shaft having at its outer end a driving-pulley and at its inner end a gear-wheel adapted to engage the pinions, and means for automatically tilting the frame and bringing the gear-wheel mounted thereon into alternate engagement with said pinions at each end of the plunger-stroke, substantially as described.

3. In a hay-press, the combination, with the plunger having a sidewise-extending arm, a screw-shaft connected with the plunger and having a sidewise-extending arm, the pinion E on the screw-shaft, the shaft F, and pinions F' and F², of a tilting frame adapted to be engaged by the arms of the plunger and screw-shaft, the shaft L, and gear-wheel K, substantially as described.

4. A hay-press comprising a press-box A, the frame A', arranged at one end thereof, the plunger B, adapted to reciprocate in the press-box and having an inclined end B', as shown, the screw-shaft C, mounted in suitable supports, said shaft being connected at one end with the plunger and having its opposite end provided with a laterally-extending arm D, having an inclined face D', the gear-wheel E, mounted loosely upon the shaft C and having an internal screw-thread to fit

the thread of the shaft, means, as keeper C',
for holding the gear-wheel in position, the
shaft F, mounted nearly parallel to the shaft C
and carrying the pinions F' and F², the pin-
5 ion F' meshing with the gear-wheel E, the
horizontally-tilting frame G, pivoted in suit-
able supports and having the inclined ends
G', which engage the inclined faces or ends
of the plunger B and the arm D, and a shaft

I, mounted on the frame G, said shaft carry- 10
ing at one end a driving-pulley J and at the
other a gear-wheel K, adapted to engage the
pinions F' and F², substantially as described.

FRANK DONALD.

Witnesses:

S. T. BROWN,
H. TONE, Jr.