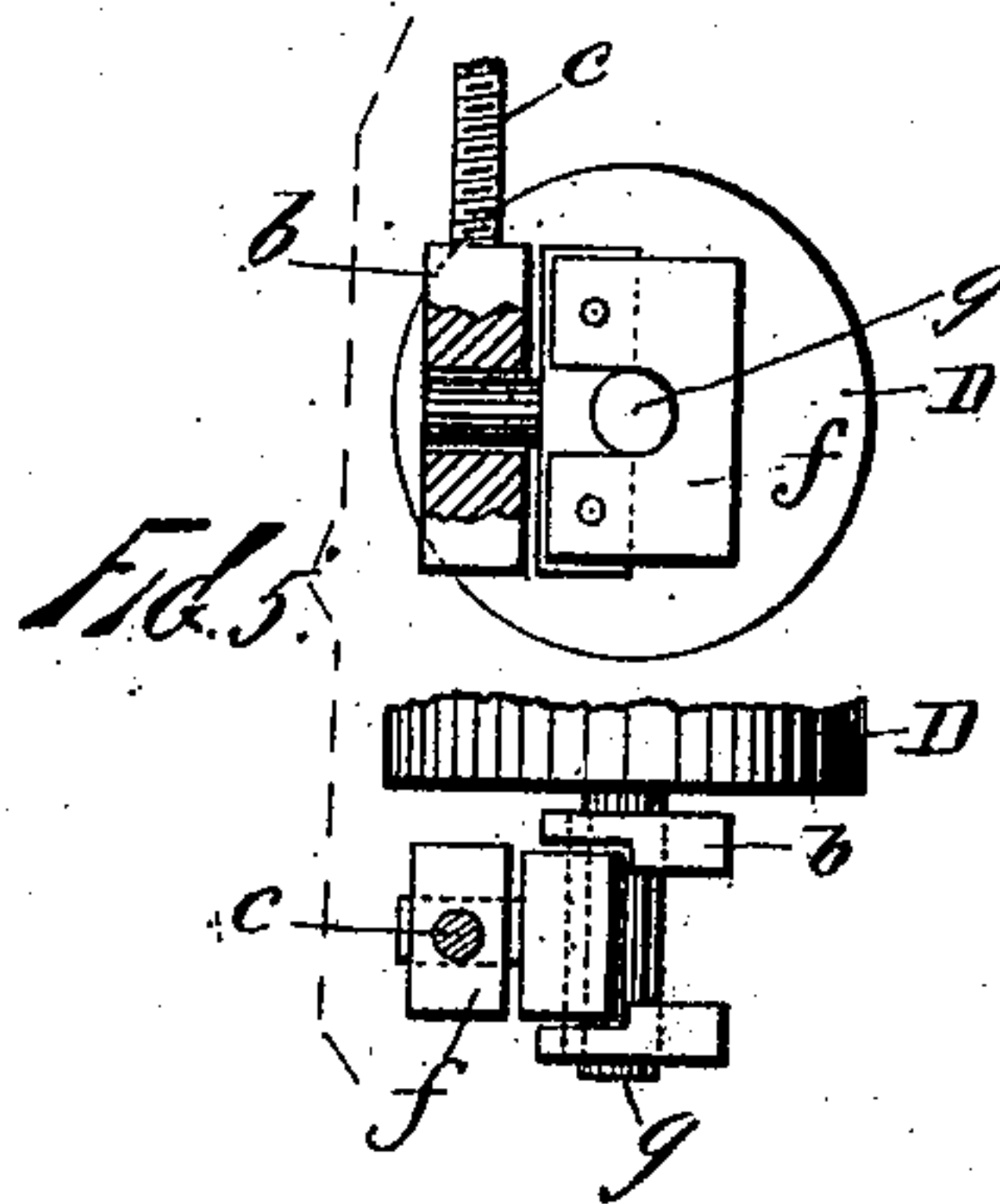
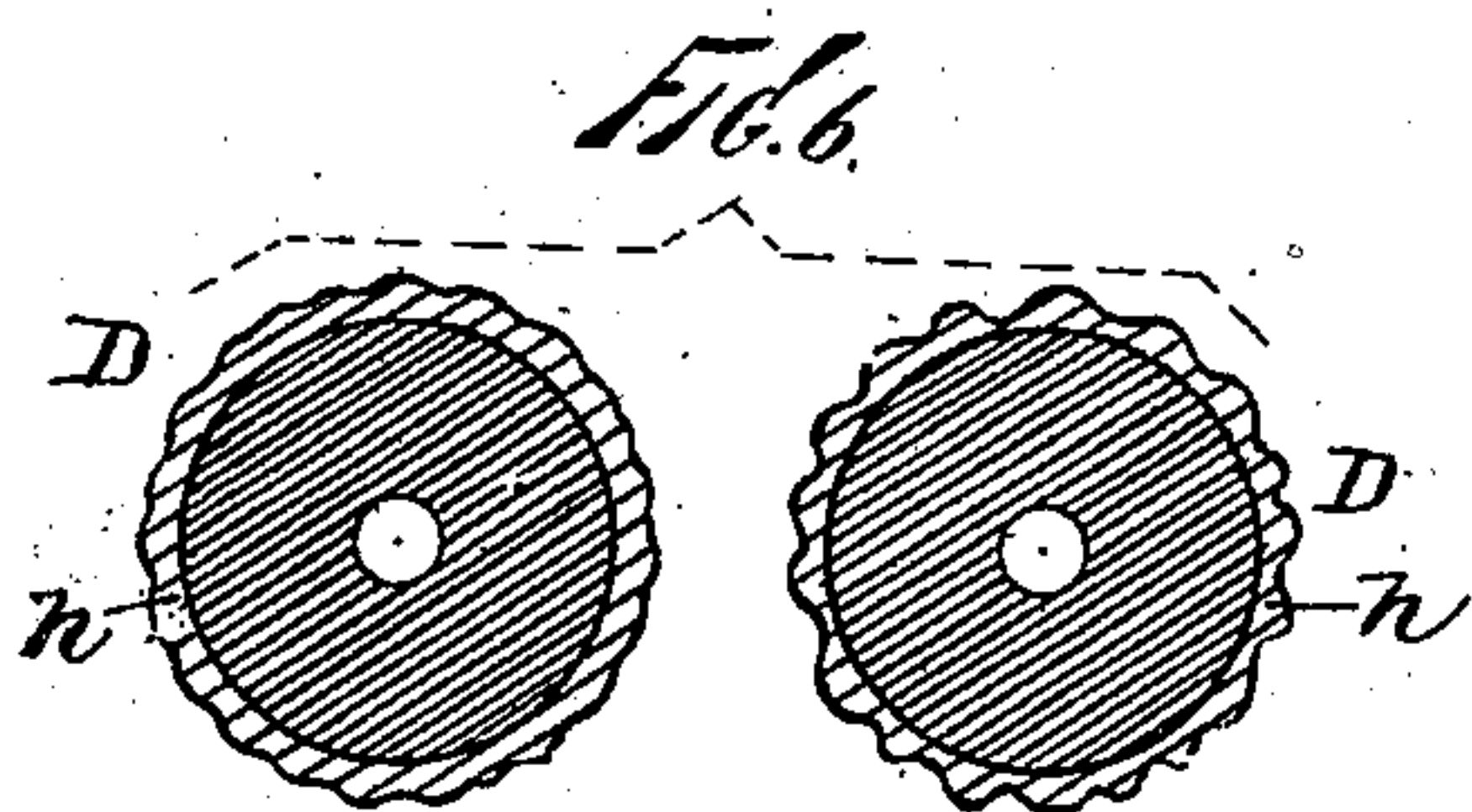
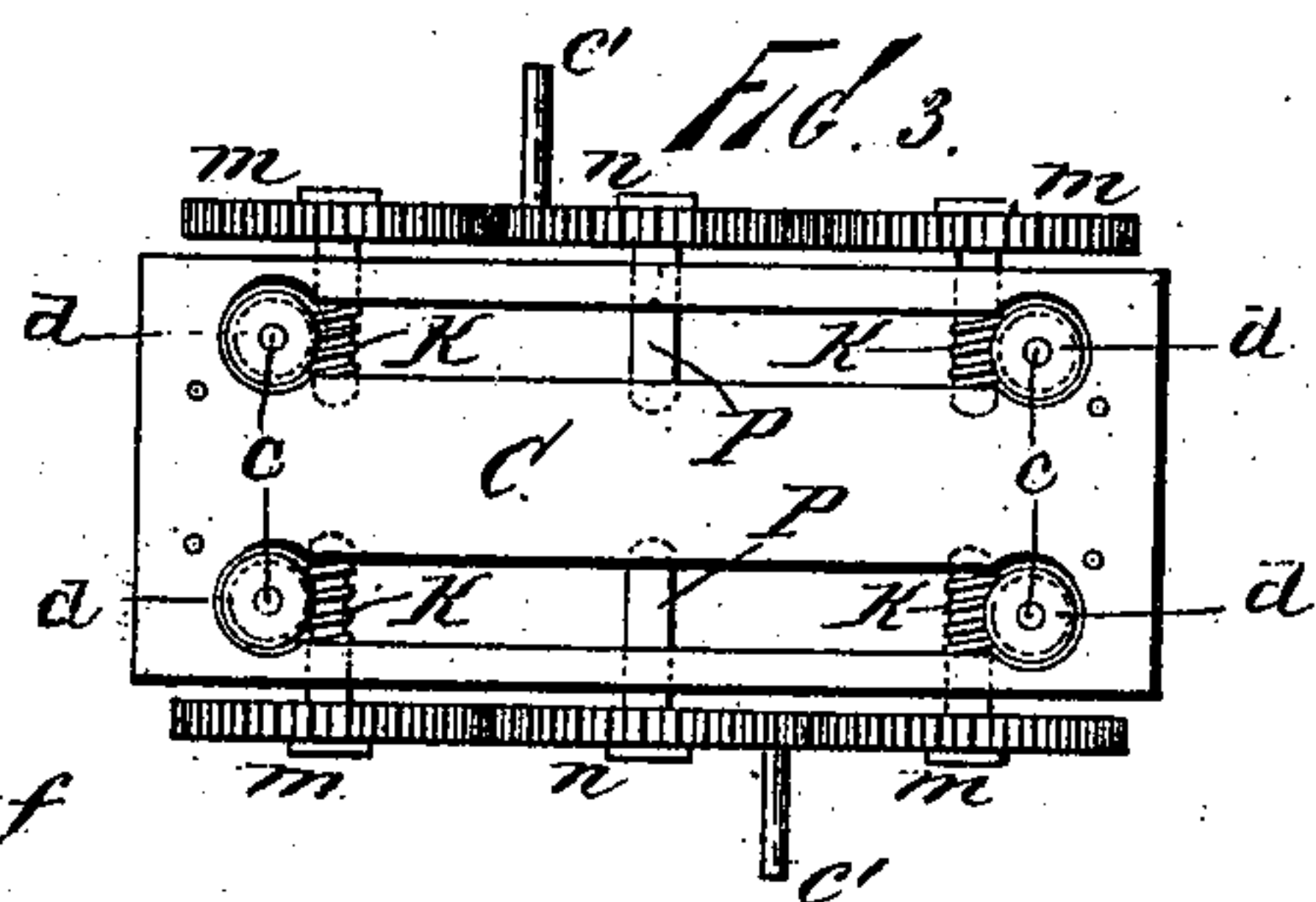
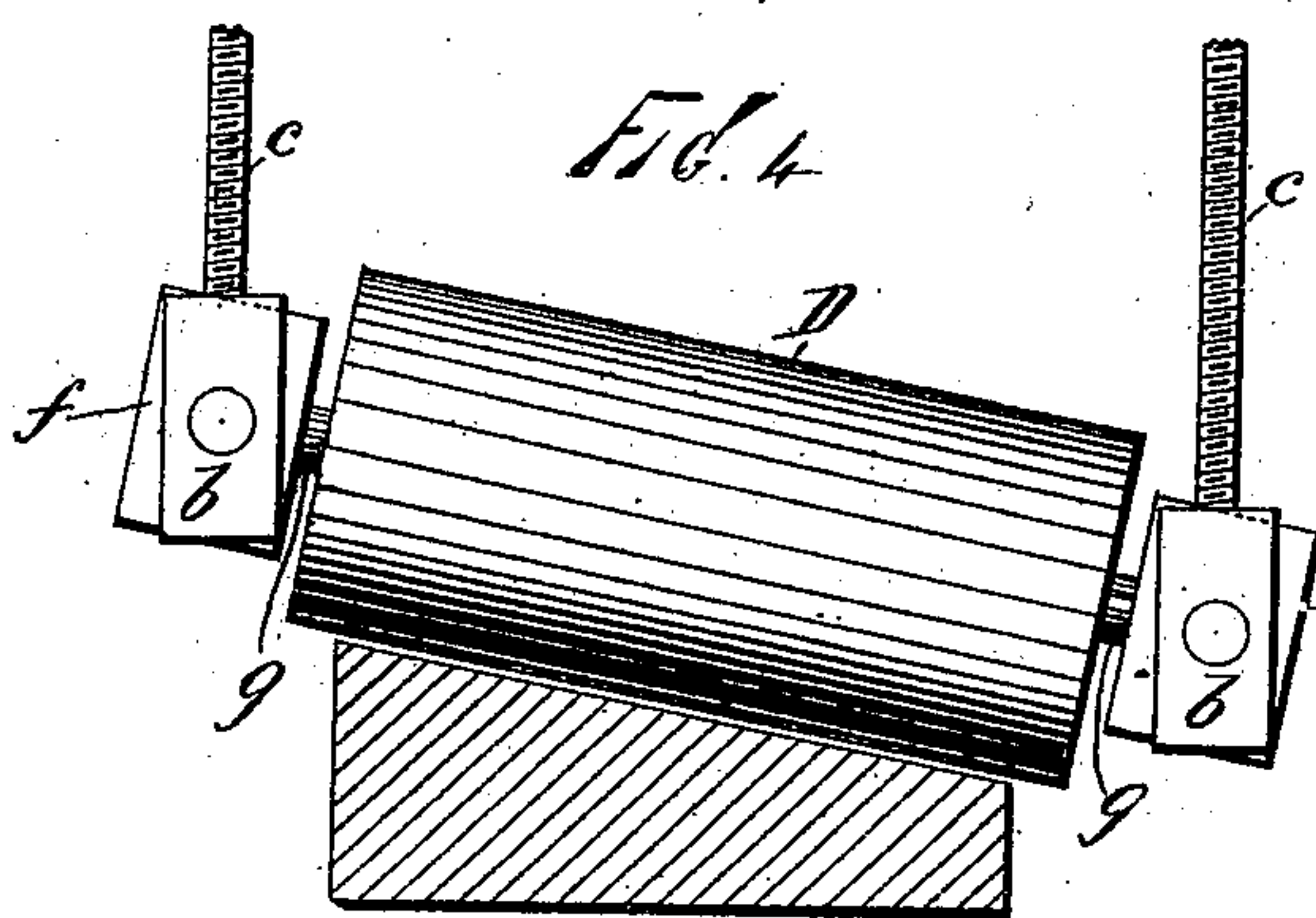
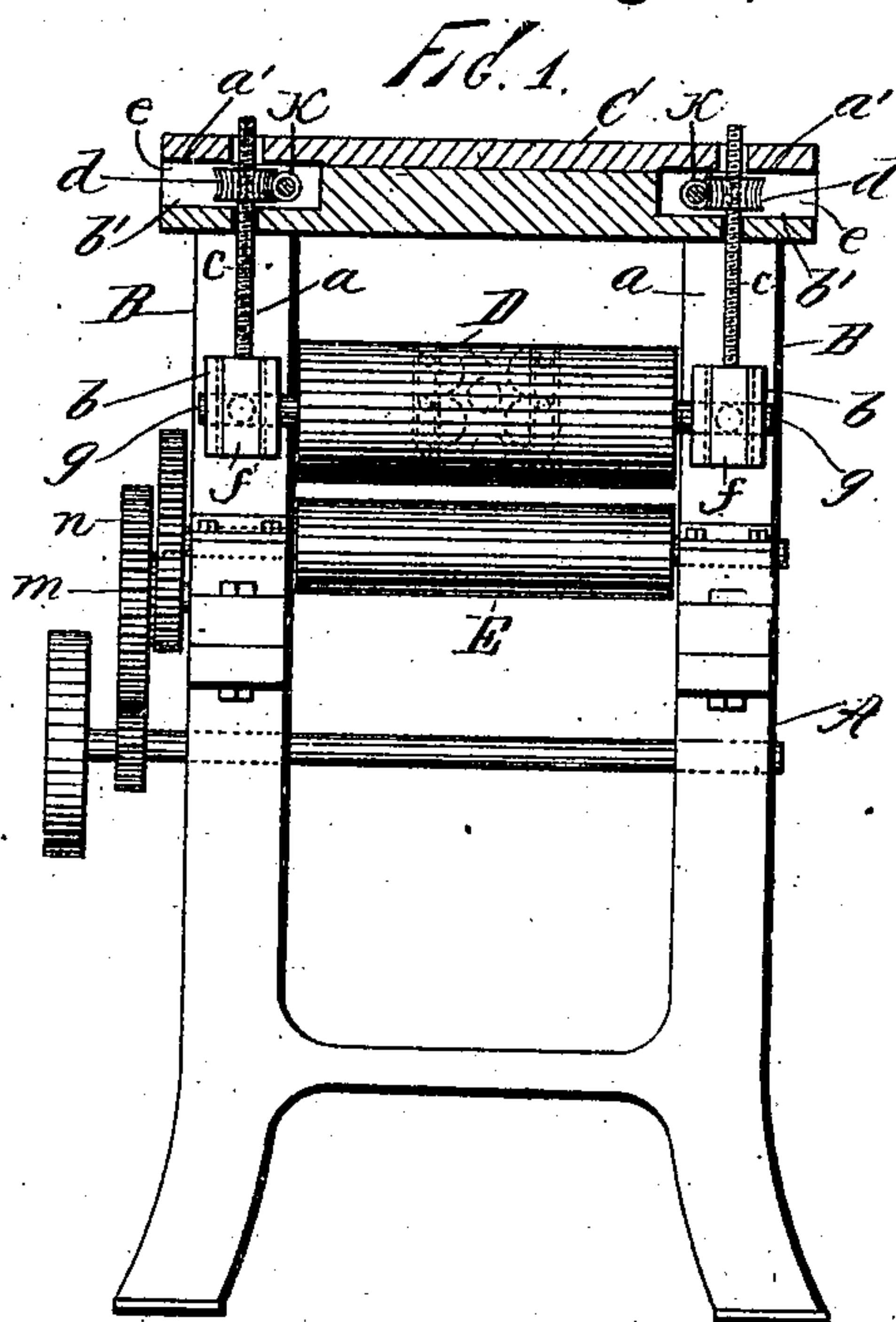
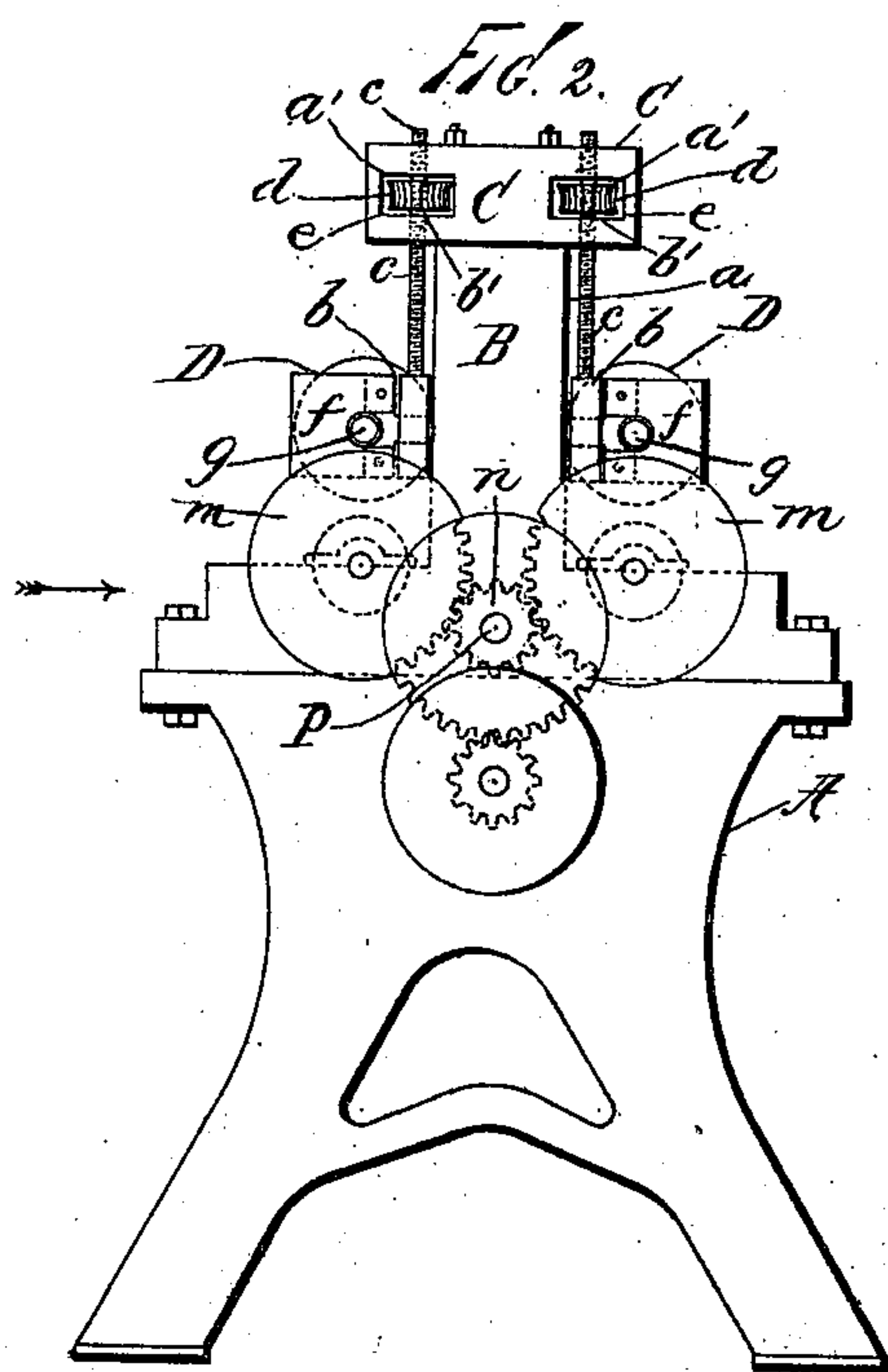


(No Model.)

S. L. DAVIS.
MEANS FOR EMBOSSING WOOD.

No. 502,850.

Patented Aug. 8, 1893.



WITNESSES:

John Buehler,
Edward L. Walsh.

INVENTOR.

Spencer L. Davis

BY

Jama Whitney
ATTORNEY

UNITED STATES PATENT OFFICE.

SPENCER L. DAVIS, OF BROOKLYN, NEW YORK.

MEANS FOR EMBOSSING WOOD.

SPECIFICATION forming part of Letters Patent No. 502,850, dated August 8, 1893.

Application filed July 27, 1891. Serial No. 400,891. (No model.)

To all whom it may concern:

Be it known that I, SPENCER L. DAVIS, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Means for Embossing Wood; 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, in which—

Figure 1 is a front elevation and partial vertical transverse sectional view of an apparatus comprised in my said invention. Fig. 2 is an end elevation of said apparatus. Fig. 3 is a plan view of the same. Figs. 4, 5 and 6 are detail views of certain parts of said apparatus.

This invention relates to means for embossing wood by the action, under pressure, of suitable engraved or embossing rolls, and its object is to diminish that liability of fracturing the fibers of the wood which has heretofore been experienced when the embossing actions of the rolls has been exerted to a considerable depth upon the surface of the wood. A further object of my said invention is to enable shapes or pieces of wood of unequal thickness in their cross-section, as, for example, portions of furniture, &c., which are thicker at one lateral edge than at the other, to be readily embossed regardless of such inequalities of form.

My said invention comprises certain novel means as hereinafter described and claimed whereby the objects hereinbefore indicated are effectually secured.

In the drawings, A, is a suitable supporting frame for the operative or essential parts of the apparatus. This frame work may be of any suitable construction. Projecting upward therefrom are two vertical guides or standards, B, B, which may also serve the purpose of supporting the bearings for the system of gears, &c., hereinafter described.

Upon the opposite sides, *a, a*, of each standard, B, are sliding boxes, *b, b*, so fitted to the contiguous surface of the standard as to be capable of sliding up and down the same. From each of these boxes, *b*, extends upward a screw, *c*, so connected with the box as to be able to operate without hinderance therefrom. Each of these screws, *c*, extends through a worm-wheel, *d*, which is placed within a suit-

able space or bearing, *e*, provided in a frame or top-plate, C, supported by the standards, the upper side, *a'*, of such bearing, *e*, preventing the worm-wheel from moving upward and the lower side, *b'*, thereof preventing the worm-wheel from moving downward out of its place. By rotating the worm-wheel in the one direction or the other as the case may require, the screw, *c*, and consequently the box, *b*, at the lower end of the latter may be moved up or down.

Upon the outer face of each of the boxes, *b*, is pivoted a journal block, *f*. Each of these blocks, *f*, has a journal box or bearing for the reception of the ends of the adjacent journal, *g*, of one of the embossing rolls, D, D. The said rolls being thus suspended at their ends in bearings which are capable of a pivotal movement upon pivots at right angles to the screws, *c*, and also at right angles to the axes of their respective rolls, the latter may be raised higher, or depressed lower, at one end than at the other, by independently operating the proper screw, *c*, at one or the other end of each roller.

Under each of the embossing rolls, D, D, is placed a feed-roll, E, to support and feed the work—that is to say, the piece of wood to be embossed, underneath the embossing rolls and to support the same against the pressure exerted by said rolls. Instead of the feed rolls any other suitable or usual means such as are used in the art for supporting the work against the pressure exerted during the embossing operation may be used. The embossing rolls, aside from the distinctive features hereinafter set forth, may be of any ordinary or suitable construction, and when in use and operation should be heated in the usual or in any suitable manner. It is preferred that the embossing surface or portion of the roll consist of a detachable and suitably engraved annular die, *h*, but when desired the embossing surface may be integral with the body of the roll. The periphery of each worm-wheel is in mesh with a worm, *k*, which works in fixed bearings in the supporting frame-work which is itself supported by the standards, B, B. One end of each worm, *k*, is provided with a gear, *m*. Each embossing roll is thus provided with its own duplicate adjusting screws, *c*, worms, K, K, and gears,

m, m. Between the latter is placed a removable gear, *n*, the shaft, *p*, of which is supported on suitable fixed bearings corresponding to those of the worms. Each of these 5 gears, *n, n*, meshes with the two gears *m* between which it is placed, and is provided with a crank, *c'* or other suitable device by which it may be turned. When thus geared with the gears, *m*, movement of each intermediate gear, *n*, of course actuates with an 10 equal movement its connected gears, *m, m*, and through the worms *K* and worm-wheel nuts, *d, d*, and screws, *c, c*, simultaneously raises or depresses, as the case may be, the 15 two ends of the connected embossing roll, with an equal and uniform movement. The embossing roll may be adjusted at any desired angle to the supporting or feeding surface upon which the wood to be embossed is 20 laid, as for example, the feed rolls, *D, D*, by temporarily removing the intermediate gear, *n*, and raising or lowering, as the case may require, the one end or the other of the roll by independently operating the proper screw, *c*. 25 It will be observed that each embossing roll has its own pair of screws, *c, c*, by which it may be adjusted independent of the other embossing roll; and that either the screws, *c, c*, of each of said rolls is capable, when the 30 intermediate gear *n* is removed, of being adjusted independently of the other.

The two embossing rolls, *D, D*, differ the one from the other in this regard, namely, that the one has its compressing surface of a 35 character calculated to depress the portion or surface to be embossed, only to a moderate depth, and preferably to provide an outline of the design to be embossed upon the wood, while the other of said embossing rolls carries an embossing surface constructed, ar- 40 ranged and calculated to depress the sunken portions of the wood to a still greater depth, and, preferably to impart the finer lines, surfaces in relief, &c., to the design as 45 formed by the first roll. Thus for example, the work being fed from the left as indicated by the arrow in Fig. 2 the die or embossing surface of the left hand rolls, *D*, will have, say, the comparatively low or 50 shallow character indicated by the surface, *A'*, shown in the sectional detail view Fig. 6, while the right hand roll will have the deeper and more acute embossing surface, *B'*, shown upon the right hand roll in said Fig. 6. By 55 this means the embossed design instead of being formed by a sudden, deeply crowding and practically instantaneous action upon the fibers of the wood is formed at two successive steps, the first of which prepares the 60 fibers for the second. In the action of the first roll the fibers are depressed to a mate-

rial degree but not sufficient to break or injure their structure or continuity to any substantial degree. In the action of the second roll, the pressure is upon fibers already to some 65 extent depressed and which, being already adjusted to their new position, are not subject to fracture from a repetition of the pressure to carry the depression of the fiber still further, to complete the required design and 70 surface configuration upon the wood. By this means a much more effective, smooth and finished embossed surface is secured in the ornamentation of the wood, than where the embossing is done by a single and comparatively rough impression of the emboss- 75 ing die to the full depth of the completed ornamentation.

By the mechanical means described I am, furthermore, enabled successfully to emboss 80 the surface of shapes or pieces of wood of irregular cross-section, thicker at one lateral edge than at the other, and thereby many shapes not heretofore capable of being embossed by pressure may now, by means of my 85 invention, be so ornamented at no greater expense than with shapes of uniform thickness from the one edge to the other.

What I claim as my invention is—

1. In a machine for embossing wood, feed 90 rollers having a fixed position with relation to their supporting frame, in combination with duplicate embossing-rollers, one of which rollers carries the initial die and the other the finishing die, vertically movable journal- 95 boxes in which the rollers are supported, a screw shaft connecting with each of the said boxes and carrying a worm-wheel at its free end, a screw in mesh with the said wheel, gears carried by each of the said screws, an 100 intermediate pinion in mesh with both gears, and a crank carried by the said pinion, substantially as described.

2. In a machine for embossing wood or other materials, a supporting-frame carrying du- 105 plicate feed-rollers arranged in parallel relation with each other, duplicate vertical screw-shafts arranged on each side of the frame, journal-boxes carried by the said shafts, and embossing rollers journaled in the boxes, in 110 combination with a screw-gear carried by each of the said duplicate shafts, a worm meshing with each of the said gears, and mechanism for rotating the worms, whereby one of the shafts may be rotated to adjust one 115 of the embossing rollers independently of the other embossing roller, as set forth.

SPENCER L. DAVIS.

Witnesses:

GRAHAM MCADAM,
EDWARD L. WALSH.