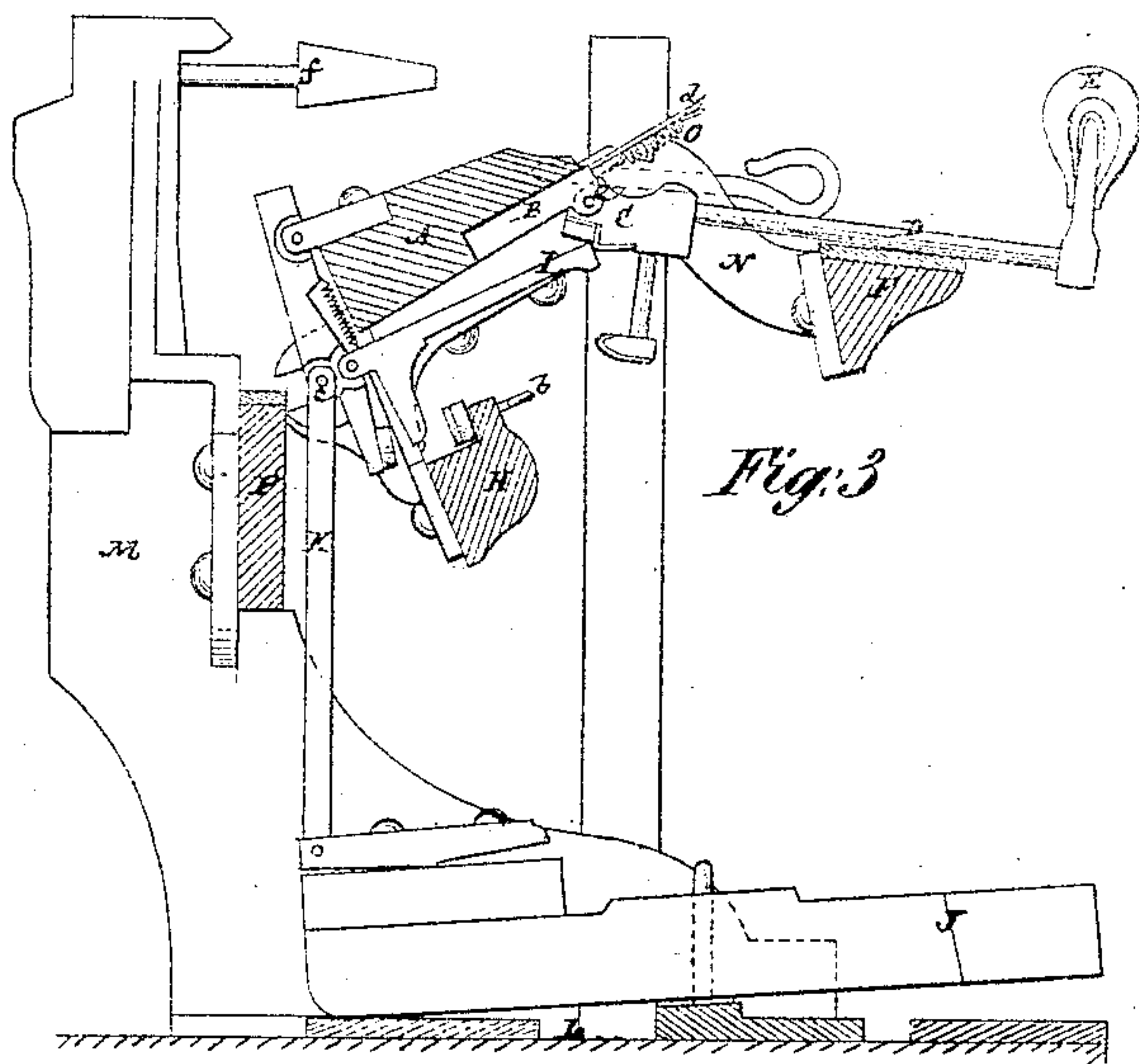
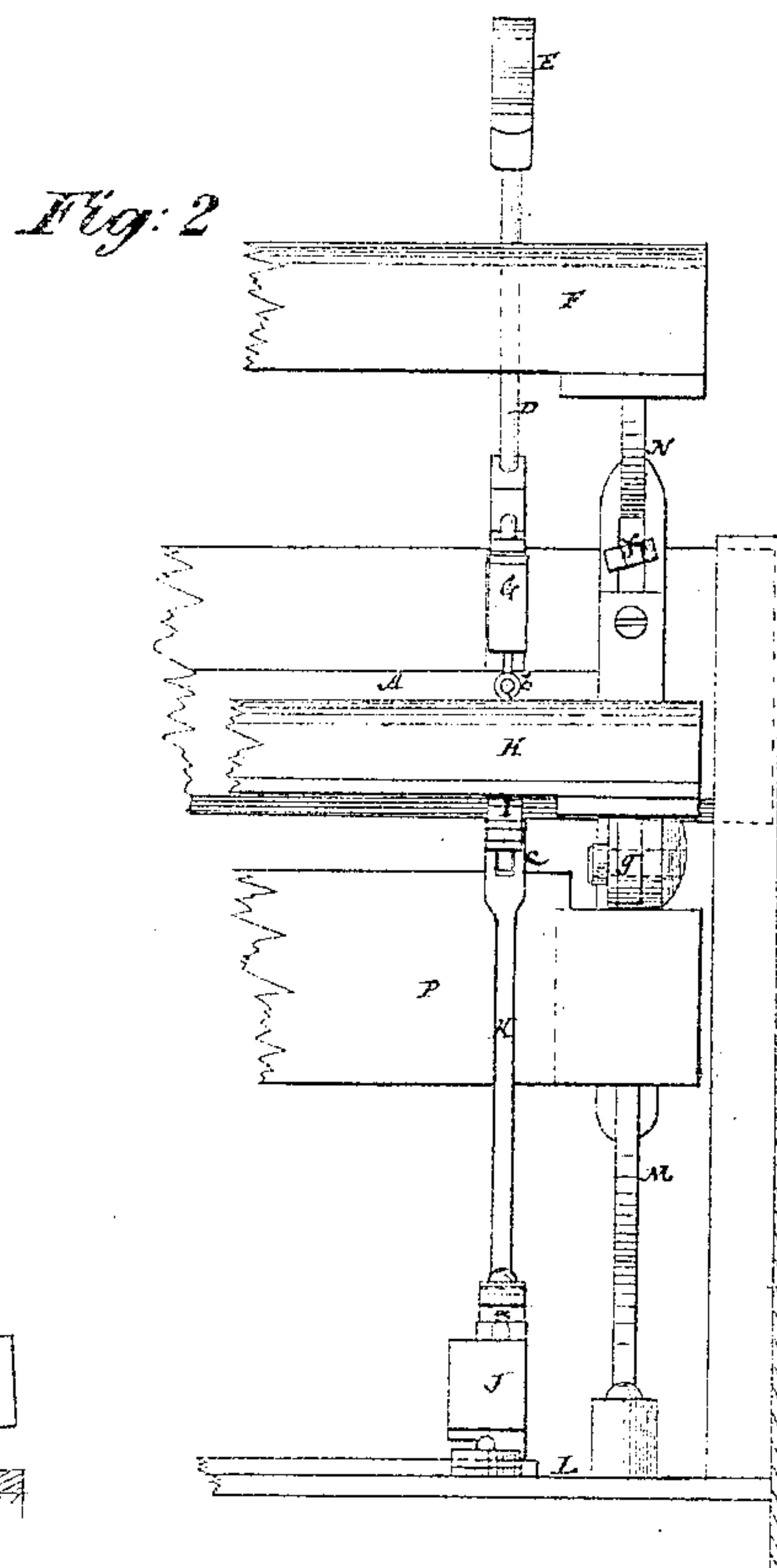
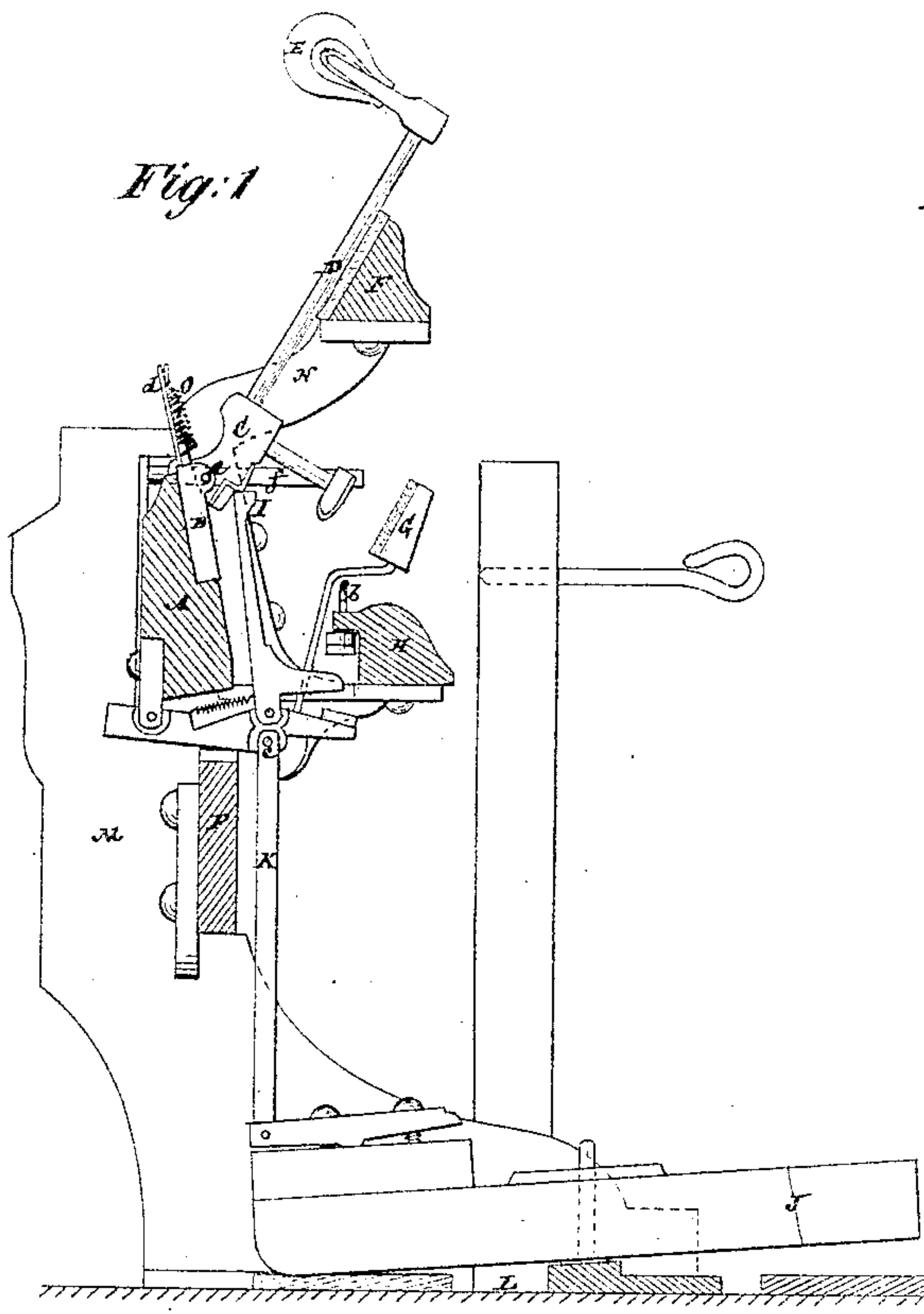


Upright Plane Action.

No. 137,005.

Patented March 18, 1873.



Witnesses:

Wm. H. Hays
J. G. Griswold

Rudolph Kreter.

UNITED STATES PATENT OFFICE.

RUDOLPH KRETER, OF NEW YORK, N. Y., ASSIGNOR TO DAVID DECKER
AND JOHN J. DECKER, OF SAME PLACE.

IMPROVEMENT IN UPRIGHT PIANO ACTIONS.

Specification forming part of Letters Patent No. **137,005**, dated March 18, 1873.

To all whom it may concern:

Be it known that I, RUDOLPH KRETER, of the city, county, and State of New York, have invented a new and useful Improvement in Piano-Forte Actions; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 represents a vertical transverse section of a piano-forte action having my improvement applied; Fig. 2, a similar view, showing the action thrown back; and Fig. 3, a view of the action in part from the front of the instrument.

Similar letters of reference indicate corresponding parts.

This invention relates to piano-fortes having an upright action; and consists in a novel application or attachment of a spiral spring, which throws the hammer back, whereby a lively action is obtained for the hammer and the usual strap for completing the back-throw of it is dispensed with, and a back-throw of the hammer, similar to that dependent upon gravity in horizontal action, is effected. The invention also consists in a suspension about a common center of the hammer-rail, rest-rail, and regulating-rail, with accompanying portions of the action, whereby the whole may be turned back or away from the strings to provide for adjustment and repair without removal of the action from the case of the instrument. The invention likewise consists in a certain divided and pivoted construction of the standards which support the action to facilitate or render more perfect the provision just named.

A in the accompanying drawing represents the hammer-rail of an upright piano-forte action; B, the hammer-butt; C, its knuckle; D, its shank; and E its head. F is the hammer-rest rail; G, the back-check of the action; H, the regulating-rail, provided with a let-off or regulating-screw, *b*; and I the jack. J is one of the playing-keys; and K the connection or action-lift thereof, the same being jointed at *c* to the base-piece of the jack. L is the key-frame, and M N one of the standards by which the action is carried. O is the spring for controlling the action of the hammer. This spring,

which is a light spiral one, and is connected at its one end to an upright or wire, *d*, attached to the butt B or hammer-rail A, is connected at its opposite or free end to the knuckle C of the hammer in a fixed or positive manner by a cord, wire, or strap-like extension of it arranged to lap around a curved portion, so as always to work at the same leverage on the knuckle of the hammer in close proximity to the fulcrum or center of motion of the latter and without change in the effect of the spring by variation in the angle of its pull.

By this application or attachment of the spring a lively action is obtained for the hammer, and the usual strap for completing the back-throw of it is dispensed with, and the hammer is let down or returned to its rest as gently as in horizontal piano-forte actions, in which the hammer is returned or thrown back by gravity.

The standards, by which the action is carried, are each made up of two separate pieces, M N, the one, M, of which is fastened to the key-frame L and carries the lower rail P. The other piece, N, is pivoted to the piece M, so as to be capable of turning on a center, *g*, which is coincident with the center of the lower jack-connection in order that the piece N, which carries the hammer-rail A, rest-rail G, and regulating-rail H, with accompanying parts of the action, may all be turned back together, as shown in Fig. 3, thereby affording the greatest facility for getting at the action, strings, and other parts, to effect adjustment or repair without removing the action from the case of the instrument. Attached to the piece M is a guide or barbed turning fastening, *f*, that, when the piece N is thrown up or closed, passes through the latter and may be turned to hold it in its raised position. Any other suitable fastening, however, may be substituted.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination of the spiral spring O, the upright *d*, and the knuckle C of the hammer, when these parts are arranged in relation with each other and the spring connected to the knuckle in close proximity to its center of motion, *e*, and around the latter, so as to act

at a uniform leverage on the knuckle of the hammer, substantially as shown and described.

2. The arrangement, essentially as herein described, of the hammer-rail A, the rest-rail F, and the regulating-rail H, and accompanying parts of the action with the pivot or joint *c* of the base-piece of the jack, for the purposes specified.

3. The standards which support the action, constructed each of separate pieces M N, the

one, M, of which is fastened to the key-frame, and the other piece, N, which carries the action, is pivoted to the fast piece M so as to turn on a center which is coincident with the center *c* of the lower jack-connection, essentially as herein described.

RUDOLPH KRETER.

Witnesses:

FRED HAYNES,
FERD. TUSCH.