2 Sheets--Sheet 1.

J. GARLAND.

Feed-Mechanism for File-Cutting Machines.

No. 167,833. Patented Sept. 21, 1875.

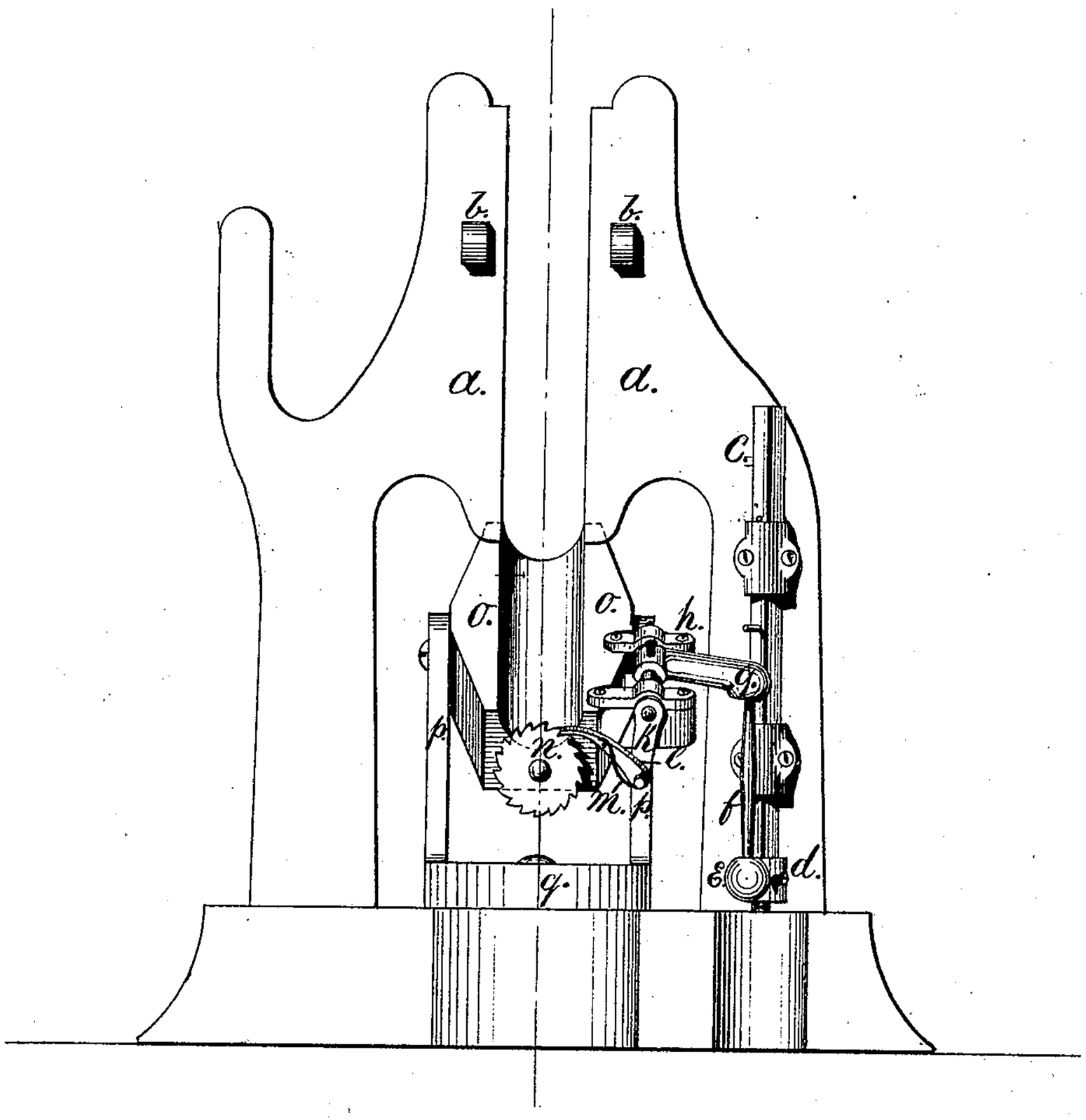

Fig. 1.

WITNESSES.

L. D. Langworthy

J. A. Miller jr.

INVENTOR.

James Garland

by Joseph C. Miller

his Attorney

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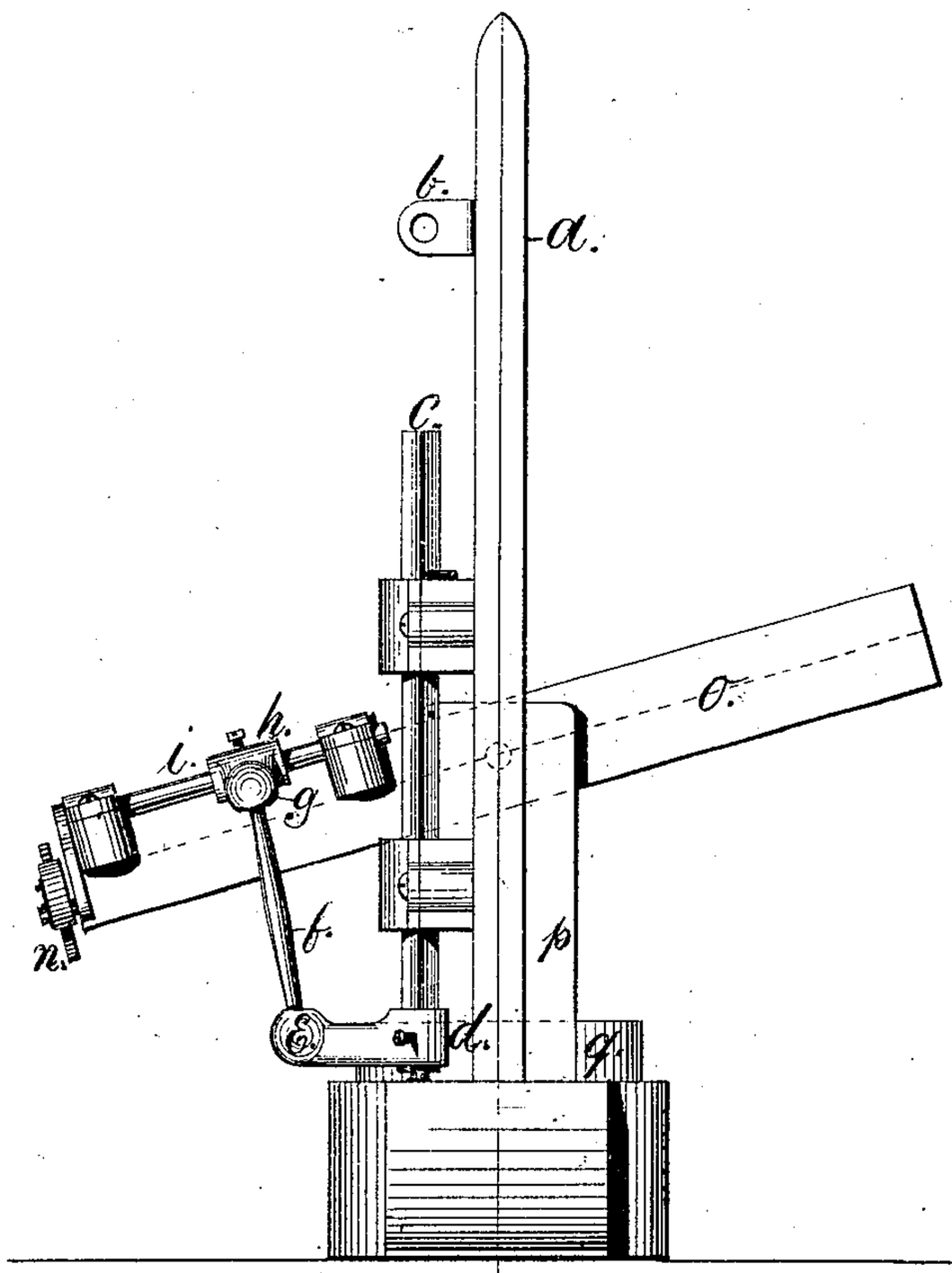

Fig. 2.

WITNESSES.

L. P. Langworthy

J. A. Miller jr.

INVENTOR.

James Garland

by Joseph A. Miller

his Attorney

UNITED STATES PATENT OFFICE.

JAMES GARLAND, OF CENTRAL FALLS, RHODE ISLAND.

IMPROVEMENT IN FEED MECHANISMS FOR FILE-CUTTING MACHINES.

Specification forming part of Letters Patent No. **167,833**, dated September 21, 1875; application filed August 13, 1875.

To all whom it may concern:

Be it known that I, JAMES GARLAND, of Central Falls, in the county of Providence and State of Rhode Island, have invented new and useful Improvements in Feed Mechanism for File-Cutting Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings forming a part of this specification.

Figure 1 is a front elevation of a file-cutting machine, only such parts being shown as have special reference to my improved feed mechanism. Fig. 2 is a side view of the same.

Similar letters of reference indicate corresponding parts.

The object of this invention is to communicate the motion from the vertical reciprocating rod to the bed in which the file-blank is held, by a simple, durable, and easily-adjustable mechanism, as directly as possible, so as to avoid the lost motion incident to the complicated mechanism now used, and without interfering with the free adjustment of the bed to any angle and slash required.

In the drawings, *a a* is the frame or standard of a file-cutting machine. *b b* are the bearings for the horizontal driving-shaft. Connected with this shaft, by a crank or other equivalent device, is the rod *c*, to which, by the revolution of the driving-shaft, vertically reciprocating motion is imparted. To the lower end of the rod *c* the adjustable arm *d* is secured, having at its end a ball-and-socket-jointed connection, *e*. *f* is a connecting-rod secured to the ball-and-socket joints *e* and *g*. In place of these ball-and-socket joints, universal joints or other flexible connections may be used. The arm *h* is secured to the rocking-shaft *i* by a set-screw, and can be adjusted at any point on the shaft *i*. To the end of the rock-shaft *i* the crank *k* is secured, carrying the pawl *m*, which is held in contact with the ratchet-wheel *n* by a spring. *o* is the adjustable bed or trough into which the file-blank is secured. This trough or bed is hung in trunnions supported by the uprights *p p*, which are secured to the disk *q*, so that the bed or trough *o* may be set at any desired horizontal or vertical angle to produce a file cut to any required angle or slash, the cutting-tool reciprocating in fixed vertical slides.

In file-cutting machines as at present constructed, such as the Bernot machine, the bed or trough *o* is adjusted to produce the desired angles and slashes to the teeth of different kinds of files. To allow this free motion of the bed, the motion to operate the feeding device on the bed is transmitted from the vertical reciprocating rod *c* to the feeding device by a complicated arrangement of rods, cranks, and levers to the center of the trough, and thus to the feeding device. This arrangement is not only costly and liable to get out of order, but the numerous joints and connections require some play to avoid excessive friction, and thus cause lost motion, rapidly increasing by the constant wear on these joints and bearings, and requiring constant attention and anxious care. The effect of this lost motion is such that the files cut are very irregular and unsalable, causing great loss in time and labor and material.

The complicated chain of rods and levers must be protected from dust and impurities. They are placed mostly within the frame of the machine, and the constant repairs and adjustments required necessitate the removal of most of the parts of the machine, which is laborious and requires much time.

My feed mechanism, on the contrary, is simple in construction, adjustable to all the angles and slashes required. All the parts are in sight, and can be readily adjusted, and if necessary repaired, without the removal of any other part of the machine. It consists of few pieces and few wearing parts, and not liable to get out of order.

To enable others skilled in the art to make and use my invention, I will more fully describe its operation.

When the rod *c* is secured by a crank or equivalent device to the driving-shaft, the rotative motion of the shaft is converted into the reciprocating motion of the rod *c*. This motion is communicated through the arm *d* and connecting-rod *f* to the arm *h*, which, being secured to the shaft *i*, imparts a rocking mo-

tion to the shaft, and as the shaft is secured to the trough *o*, and has the crank *k* secured to one end, a reciprocating motion is imparted to the pawl *m*, which, engaging with the ratchet-wheel *n*, imparts motion to the same, and thus to the screw, the rotation of which regulates the distance between the file-teeth.

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

1. In combination with the adjustable bed *o*, the rock-shaft *i*, the arm *h* adjustable on the rock-shaft *i*, and the ball-and-socket connection with the reciprocating rod *c*, substantially as and for the purpose specified.

2. The combination, with the adjustable bed of a file-cutting machine, of a feeding device, operated by the reciprocating rod *c* and the intermediate adjustable mechanism, substantially as described, by which the motion is transmitted directly, substantially as and for the purpose set forth.

JAMES GARLAND.

Witnesses:

JOSEPH A. MILLER,

H. C. PIERCE.