

(No Model.)

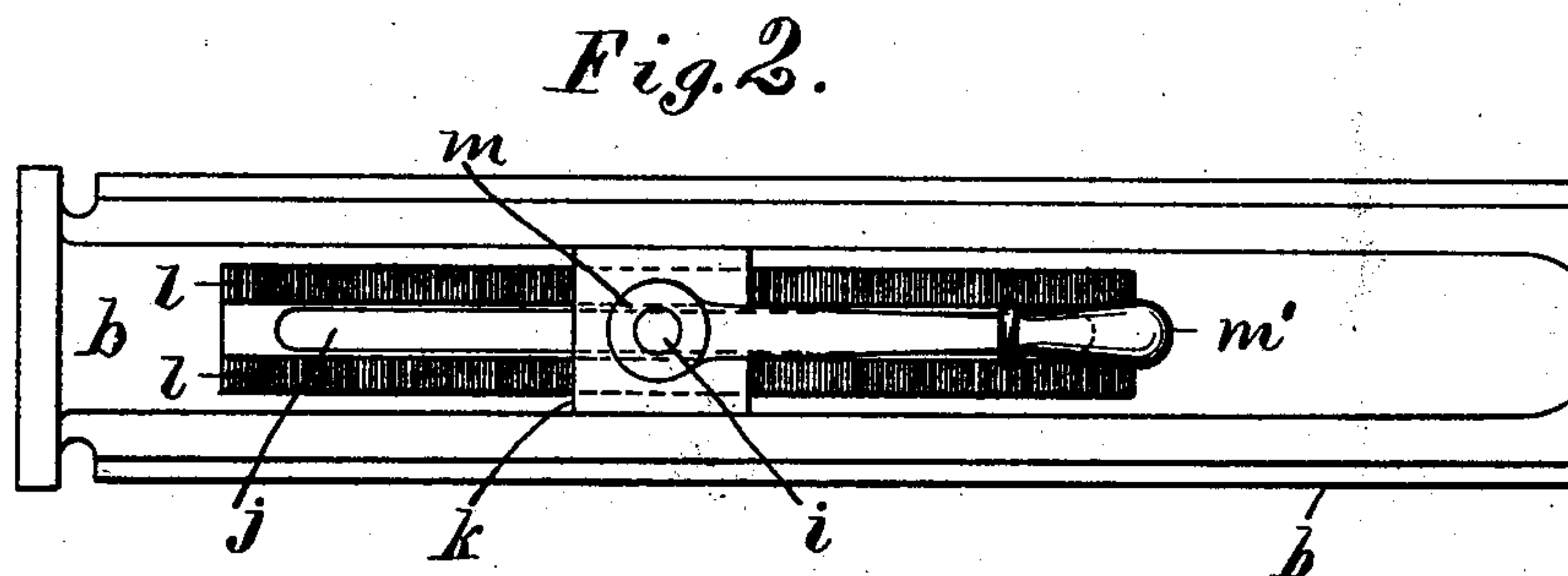
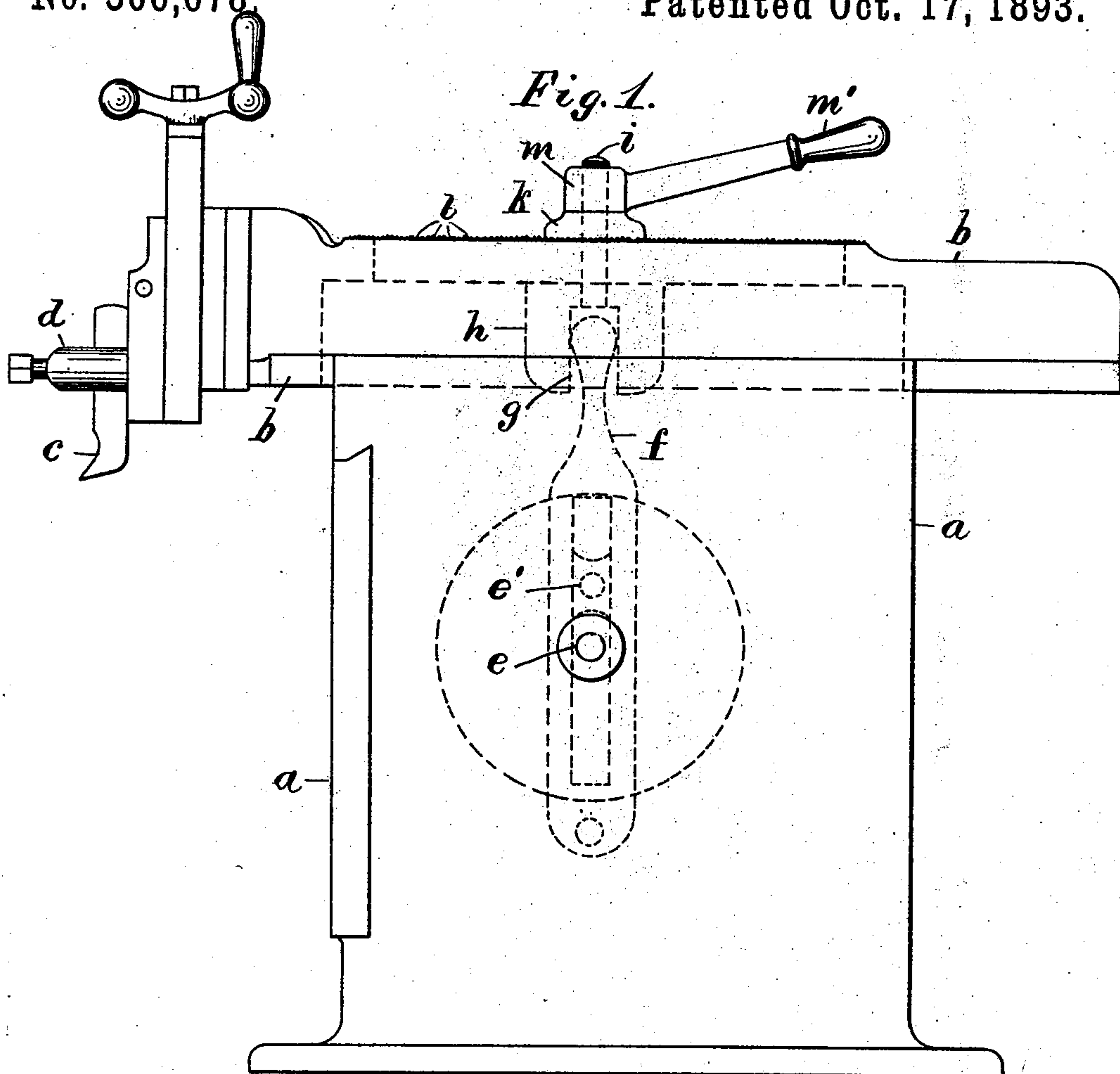
2 Sheets—Sheet 1.

U. EBERHARDT.

RAM CONNECTION FOR SHAPING OR SLOTTING MACHINES.

No. 506,678.

Patented Oct. 17, 1893.



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Fig. 3.

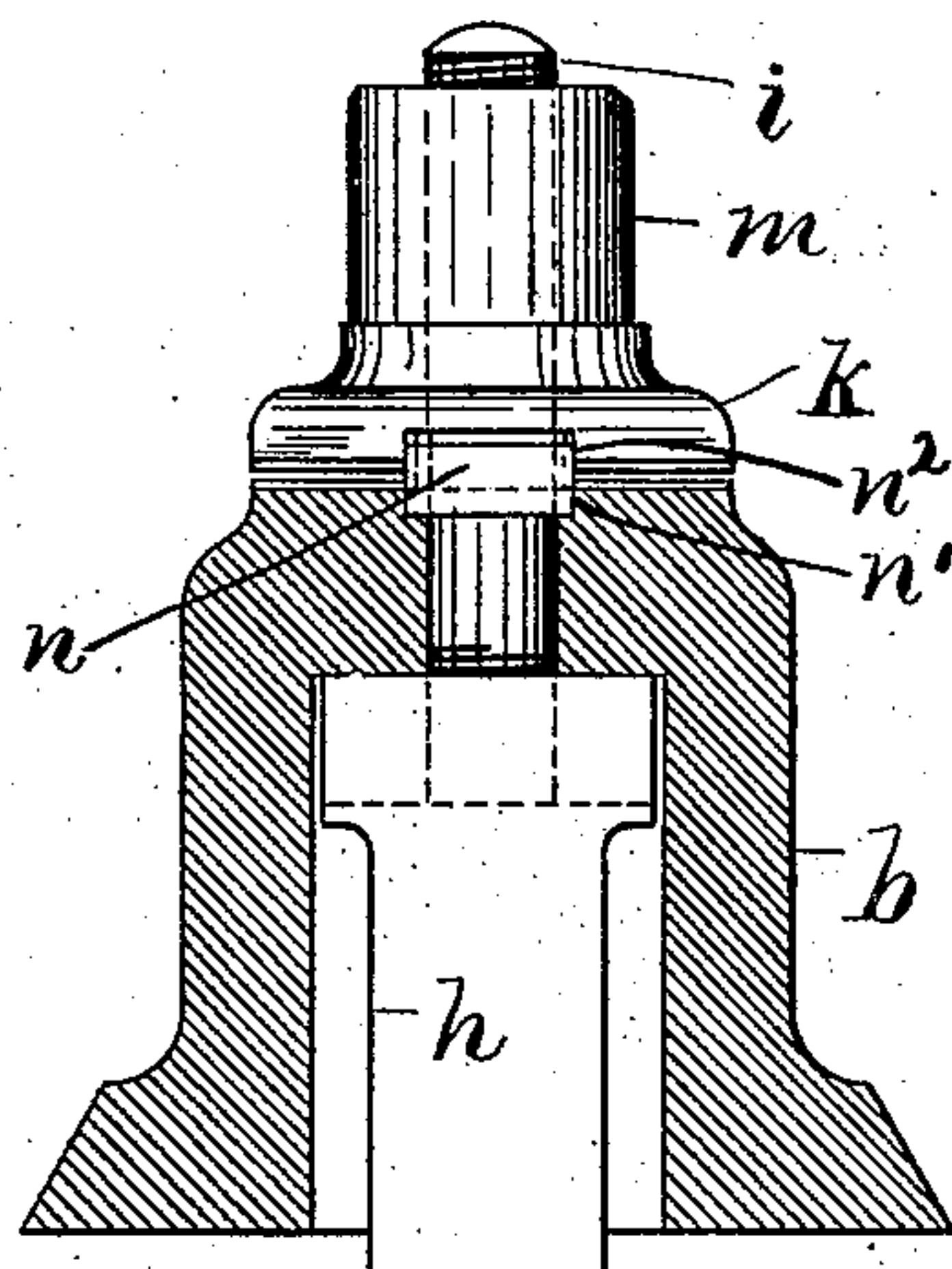


Fig. 4.

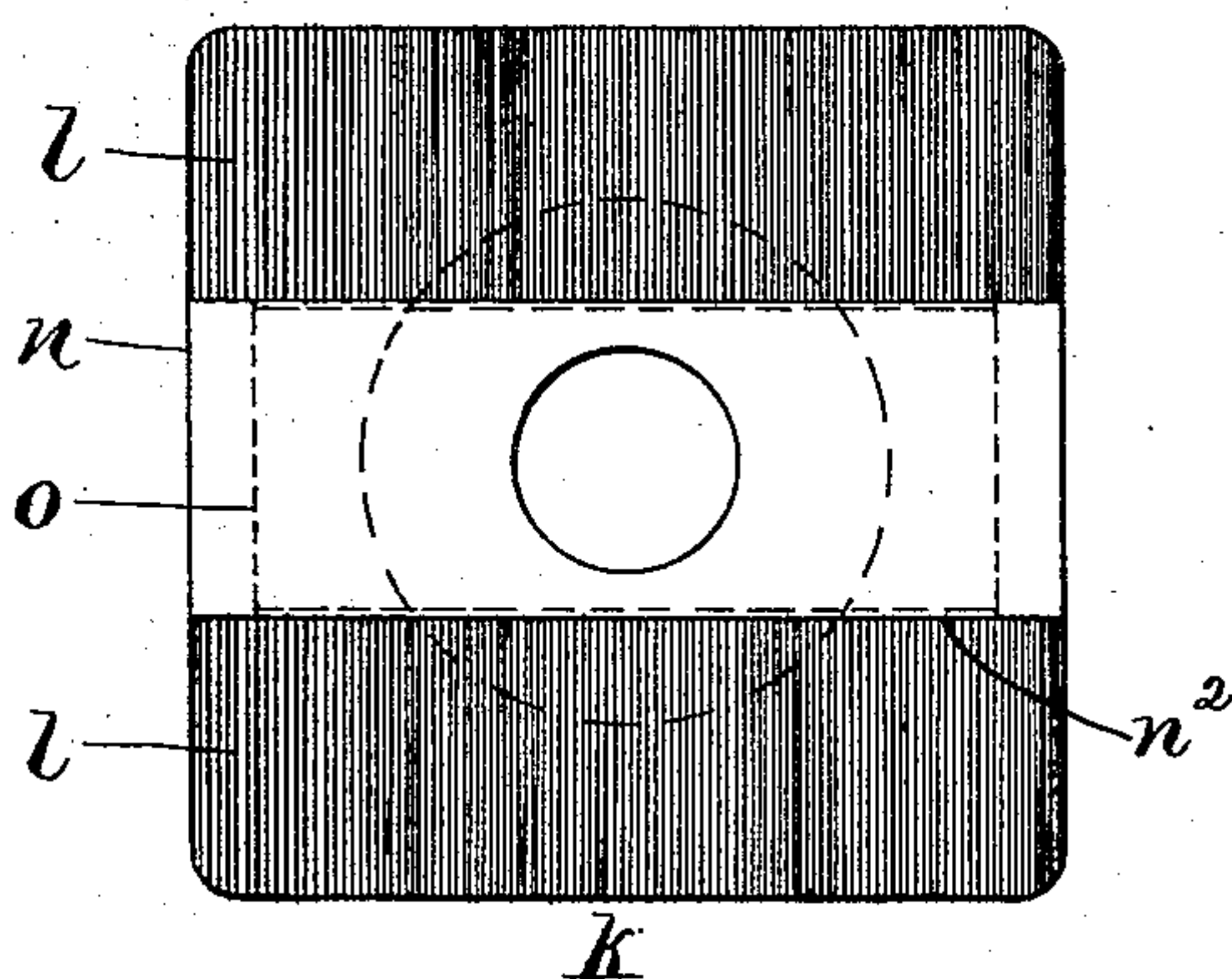


Fig. 6.

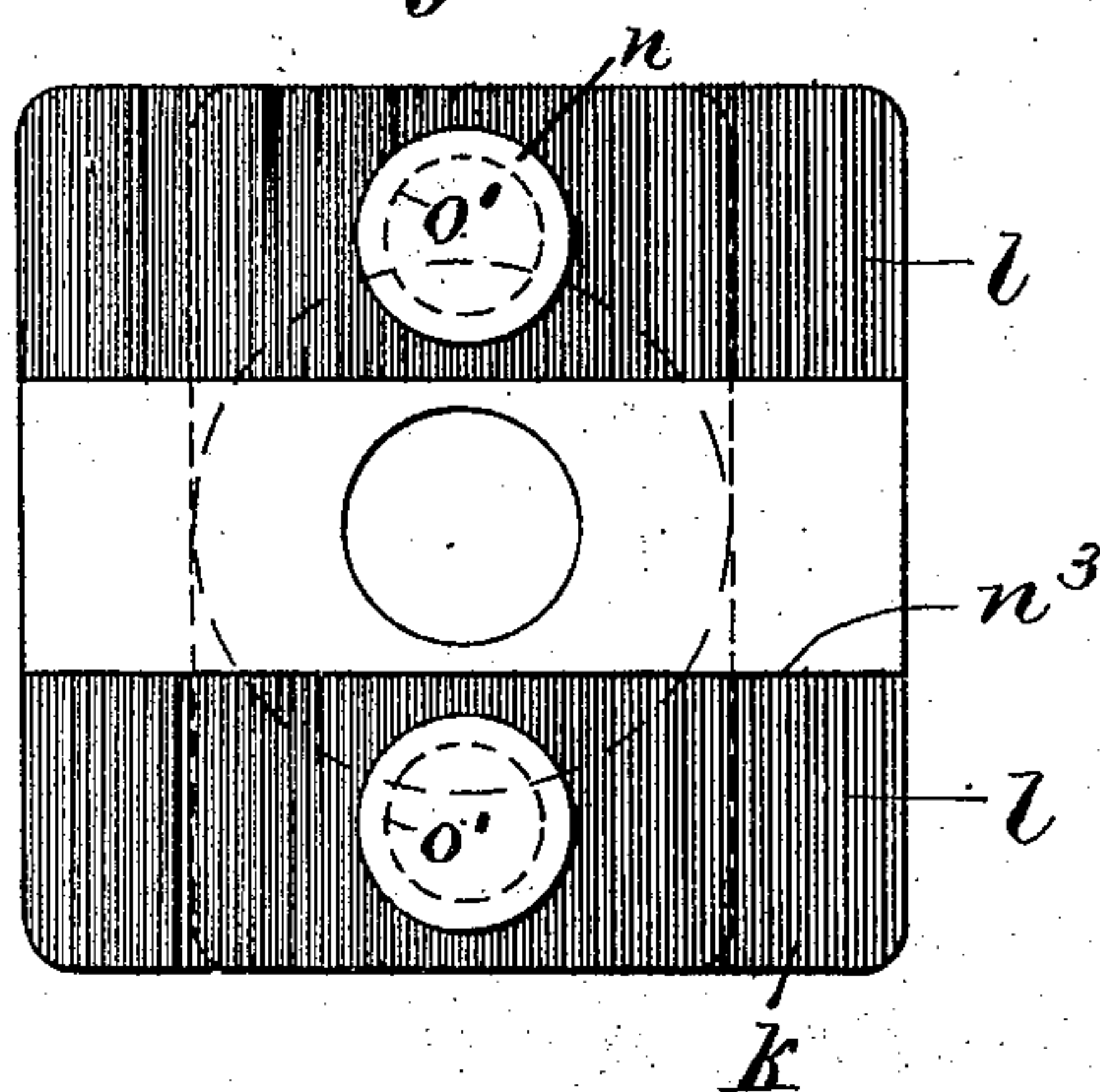


Fig. 5.

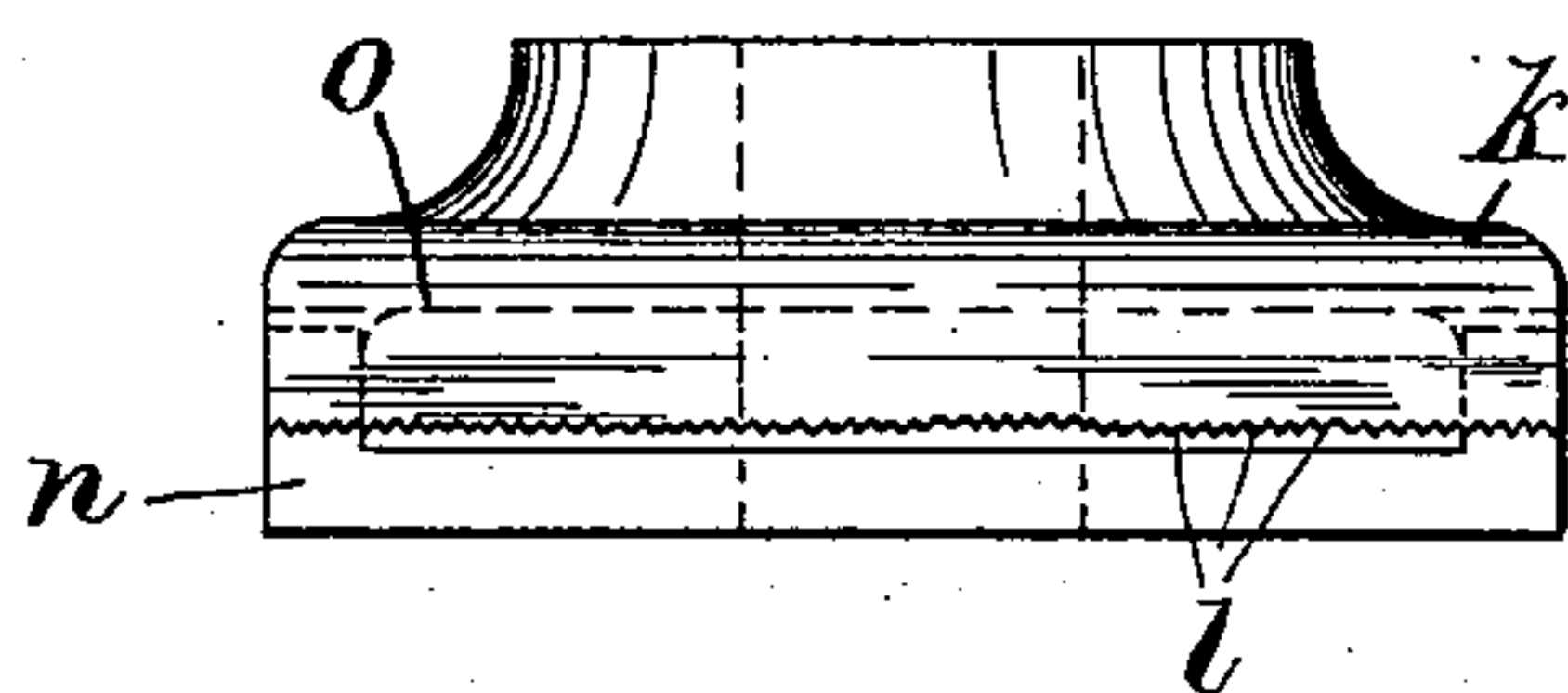
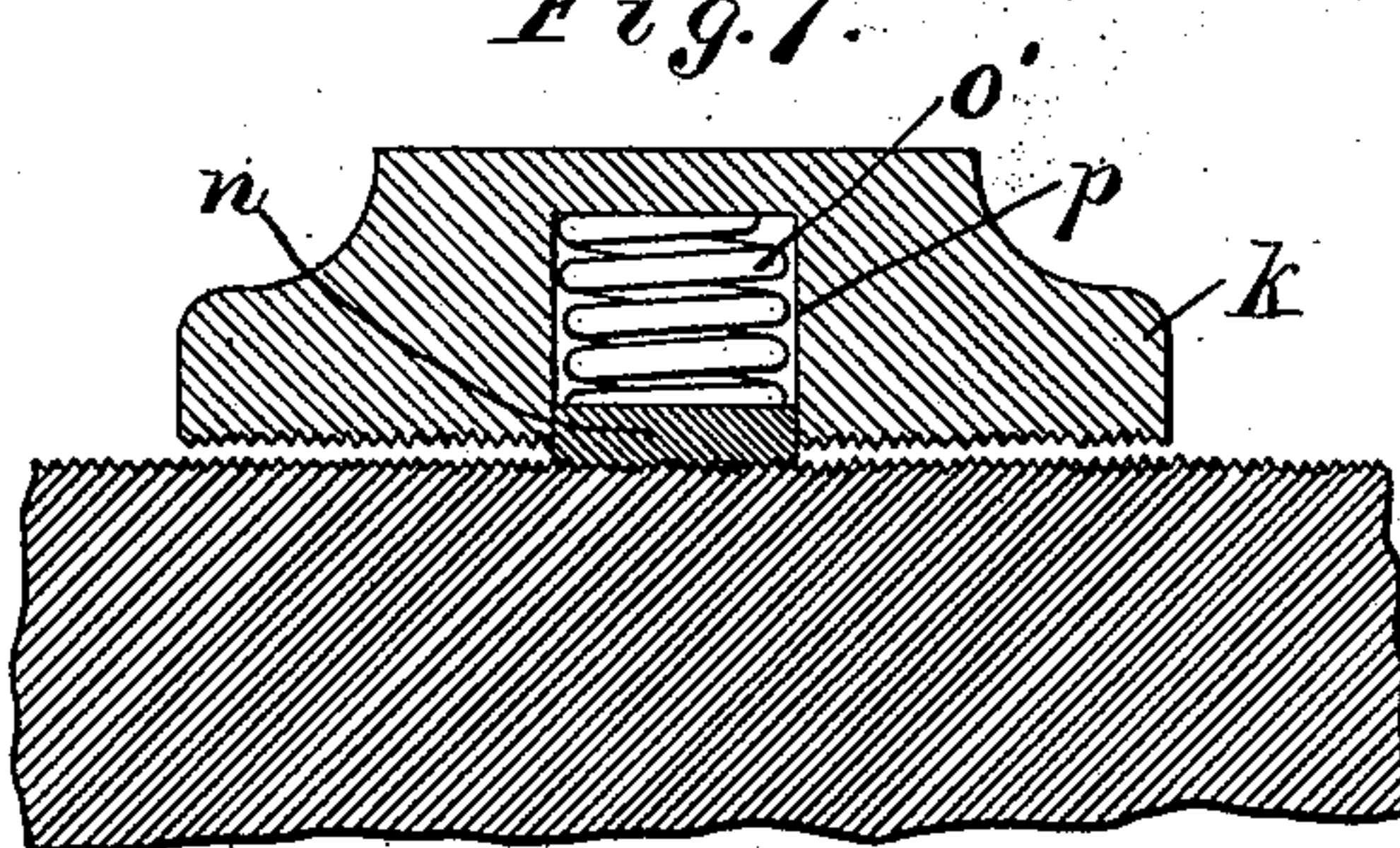


Fig. 7.



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UNITED STATES PATENT OFFICE.

ULRICH EBERHARDT, OF NEWARK, NEW JERSEY.

RAM CONNECTION FOR SHAPING OR SLOTTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 506,678, dated October 17, 1893.

Application filed September 26, 1892. Serial No. 446,877. (No model.)

To all whom it may concern:

Be it known that I, ULRICH EBERHARDT, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Ram Connections for Shaping or Slotting Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to shaping machines or crank planers in which a reciprocating ram is provided with a movable block or pin by which it is connected to the driving crank. The block or pin is commonly secured to the ram by means of a screw stud projected through a slot in the same and provided upon the top with a washer and clamping nut. To prevent the ram from slipping when resisted by the work the top side of the ram and the under side of the washer have sometimes been corrugated transversely to make them engage one another. The tool carried by the ram is, by the clamping nut, rendered adjustable over different parts of the work-piece, and to avoid delay in effecting such adjustment, it is common for skilled workmen to slacken the clamping nut and to shift the ram without arresting the vibrating motion of the crank. In such cases, the nut and washer continue their vibrations under the control of the crank while the operator is adjusting the ram, and the corrugations which serve a useful purpose when the washer is clamped are an actual hinderance in making such adjustment, and cause a disagreeable jerking and rasping of the washer by the friction upon its under side.

It is the object of the present invention to utilize the corrugations when required and to positively disengage them when the nut is slackened, so that the ram may be adjusted without any friction or jarring from such cause.

The invention consists in the combination with the ram and the clamping washer, of a clearance spring acting between the adjacent surfaces of the two parts to lift the washer as soon as the nut is slackened, and to thus separate the corrugated surfaces until the nut is retightened. As the nut, and the parts attached to the stud, rest upon the washer, the

spring is made of sufficient force to overcome their entire weight when the nut is slackened.

The invention will be understood by reference to the annexed drawings, in which—

Figure 1 is a side elevation of a shaping machine showing only the parts related to this improvement. Fig. 2 is a plan of the ram with the washer and clamping nut. Fig. 3 is an end view of the ram and clamping devices with the washer lifted by the spring. Fig. 4 is a plan of the washer (inverted) with a longitudinal spring gib; and Fig. 5 a vertical section on line *x, x*, in Fig. 4. Fig. 6 is a plan of a washer (inverted) with two circular gibs, and Fig. 7 is a side view of the top of the ram and clamping devices, with the washer in section on line *z, z*, in Fig. 6.

a represents the frame of a shaping machine, and *b* the ram carrying tool *c* in a tool post *d* at its forward end.

e is the crank shaft, and *e'* the crank pin adapted to vibrate the ram through the medium of an oscillating arm *f*. The head of the arm is fitted to a slot *g* in an adjustable block *h*, and the block is held adjustably to the under side of the ram by a screw bolt or stud *i* projected upward through a slot *j* in the ram. A washer *k* rests upon the top of the ram, and the adjacent surfaces of the washer and ram are formed with fine transverse corrugations *l* to prevent slipping.

m is a nut applied to the stud above the washer and provided with lever handle *m'* by which the washer may be clamped firmly upon the ram, and the block *h* thus held securely to the same. The washer is held from rotation when the nut is turned by means of a tongue fitted to a groove *n'* in the ram. The tongue may be movable and have the clearance spring applied to it, in which case the thrust of the clearance spring is exerted against the bottom of the groove *n'*, as shown in Figs. 3, 4 and 5; or the tongue may be made integral with the washer, as shown in Fig. 6, and the thrust of the clearance spring exerted upon the corrugated surfaces of the ram at opposite sides of the groove. In Figs. 3 to 5 the tongue is shown as a longitudinal gib perforated in the middle to pass over the bolt *i* and fitted to longitudinal grooves *n'* and *n''* formed respectively in the adjacent

surfaces of the ram and the washer. The gib n serves by its engagement with the grooves n' and n'' as a tongue to prevent the rotation of the washer, and thus holds the corrugations in line with one another. The upper part of the gib is recessed to receive a plate or block of india-rubber o , which is made of such thickness as to normally lift the washer from the upper surface of the gib, the lower part of the washer resting permanently in the groove n' . The corrugations are in practice made very fine, as I have found that thirty-two in one inch suffice to prevent slipping, and they are exaggerated in Fig. 7 of the drawings to show them plainly; but the washer is lifted from the ram by the clearance spring sufficiently to clear the corrugations, in any case; as is shown in Fig. 3.

In Figs. 6 and 7, the washer is shown with an integral tongue n^3 which is adapted to fit the groove n' in the ram for a similar purpose; and the clearance springs o' are inserted in round holes p formed in the corrugated faces of the washer at opposite sides of the hole for the bolt i . The gib or plate n^3 against which the spring exerts its downward resistance, is made round to fit the mouth of the hole p , and rests when in use, directly upon the corrugated surfaces of the ram, at opposite sides of the slot j .

It will be noticed by reference to Fig. 1 that the weight of the nut m and block h rest upon the washer, and the clearance spring or springs are therefore made of suitable strength to lift such load promptly as soon as the nut is slackened. The operator in adjusting the ram slackens the nut while the block h is vibrated by the crank pin e' , and the ram is immediately freed from the corrugations upon the washer by the action of the clearance spring. The ram may therefore be adjusted without any hinderance from the corrugations and without any rubbing and wearing of the same during the adjusting operation; and the tightening of the nut m , when the washer is in a proper position over the

ram, then secures the block in its operative position; as the spring immediately yields under the downward movement of the nut upon the bolt.

It is immaterial how the spring be applied to the ram and washer, and as I have shown two constructions for effecting such object, it is obvious that others may be devised. The block h having the slot g to receive the head of the vibrating arm f is shown herein merely to illustrate a single form of crank connection, and it is obviously immaterial what form of crank connection is used, provided it is adjustably held upon the ram by the bolt i , washer k , and nut m , to which the present invention may be applied.

It is obvious that the invention is equally applicable to slotting machines in which the ram is moved vertically; as an adjustable crank connection is required in a slotting machine, the same as in a shaping machine or crank planer.

What I claim herein is—

1. In a shaping or other analogous machine, the combination, with a reciprocating ram having an adjustable crank connection secured thereto by a bolt and washer, of corrugations upon the adjacent surfaces of the ram and washer, and a spring inserted between the ram and washer to separate the same when the nut is relaxed, as set forth.

2. In a shaping machine, the combination, with the ram and adjustable washer having their adjacent faces corrugated as set forth, of the gib adapted to rest upon the ram, and a spring inserted between the upper side of the gib and the under side of the washer, and adapted to lift the same when the nut is relaxed, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ULRICH EBERHARDT.

Witnesses:

FRED L. EBERHARDT,
THOMAS S. CRANE.