

(No Model.)

3 Sheets—Sheet 1.

J. F. WEBSTER & W. H. & C. F. PEASE.

HARVESTER KNIFE GRINDER.

No. 323,244.

Patented July 28, 1885.

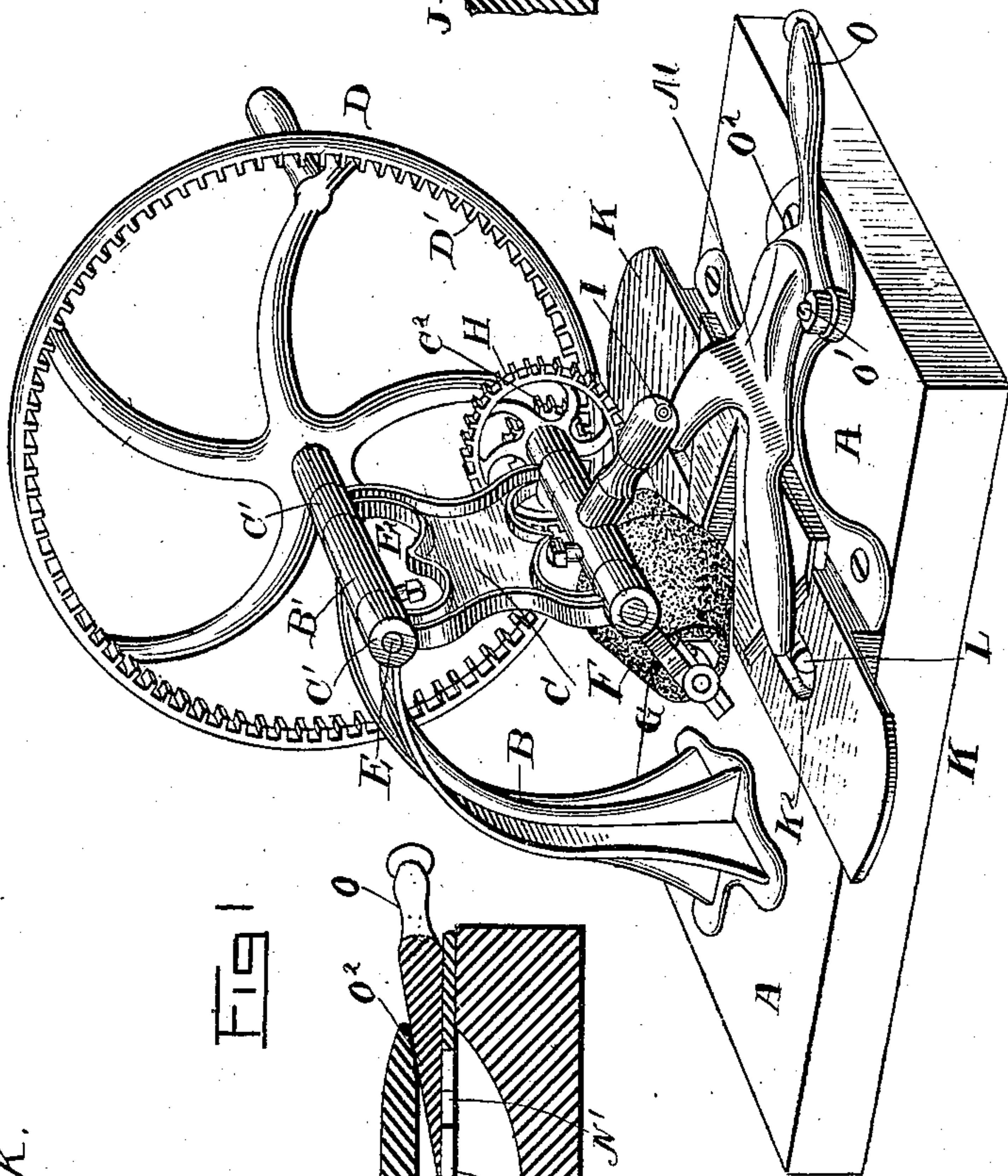
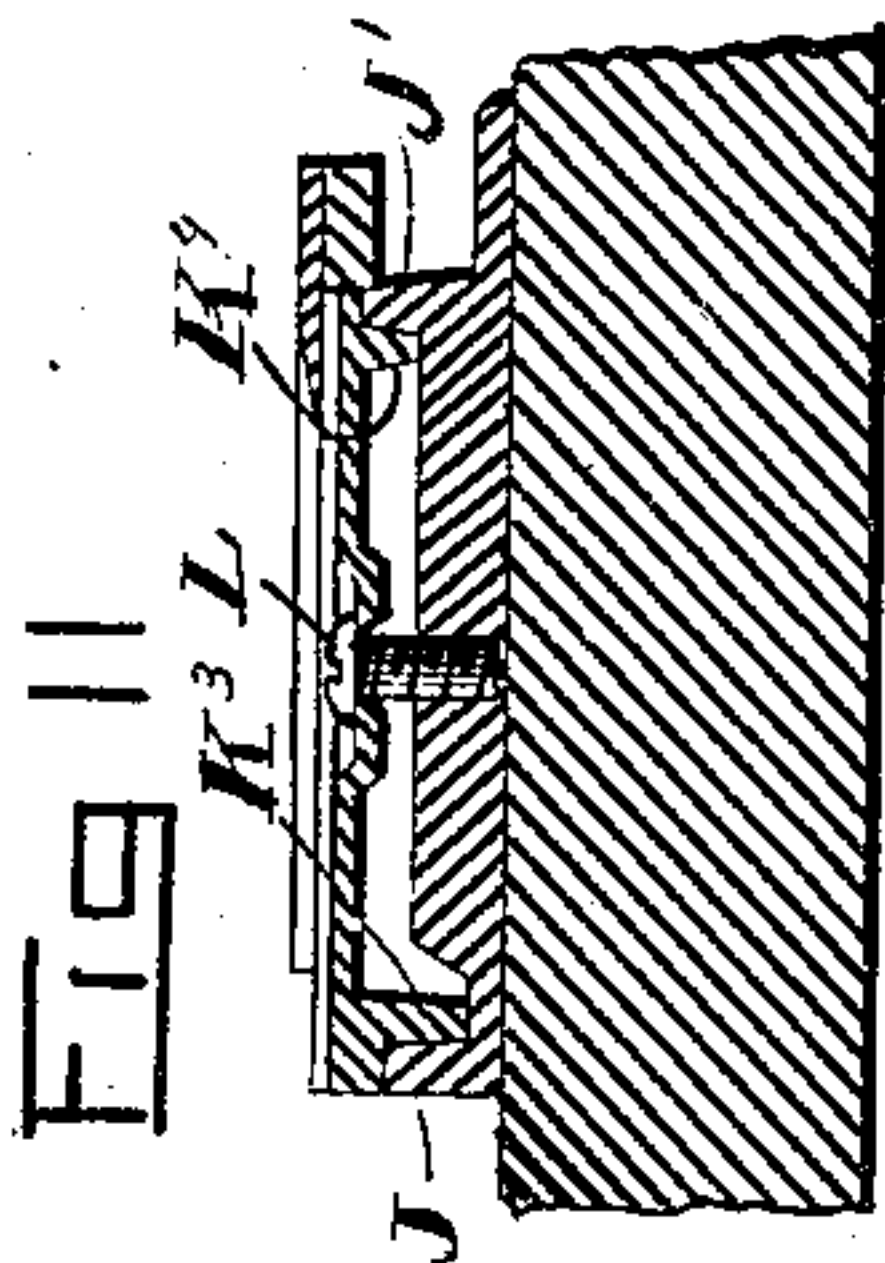
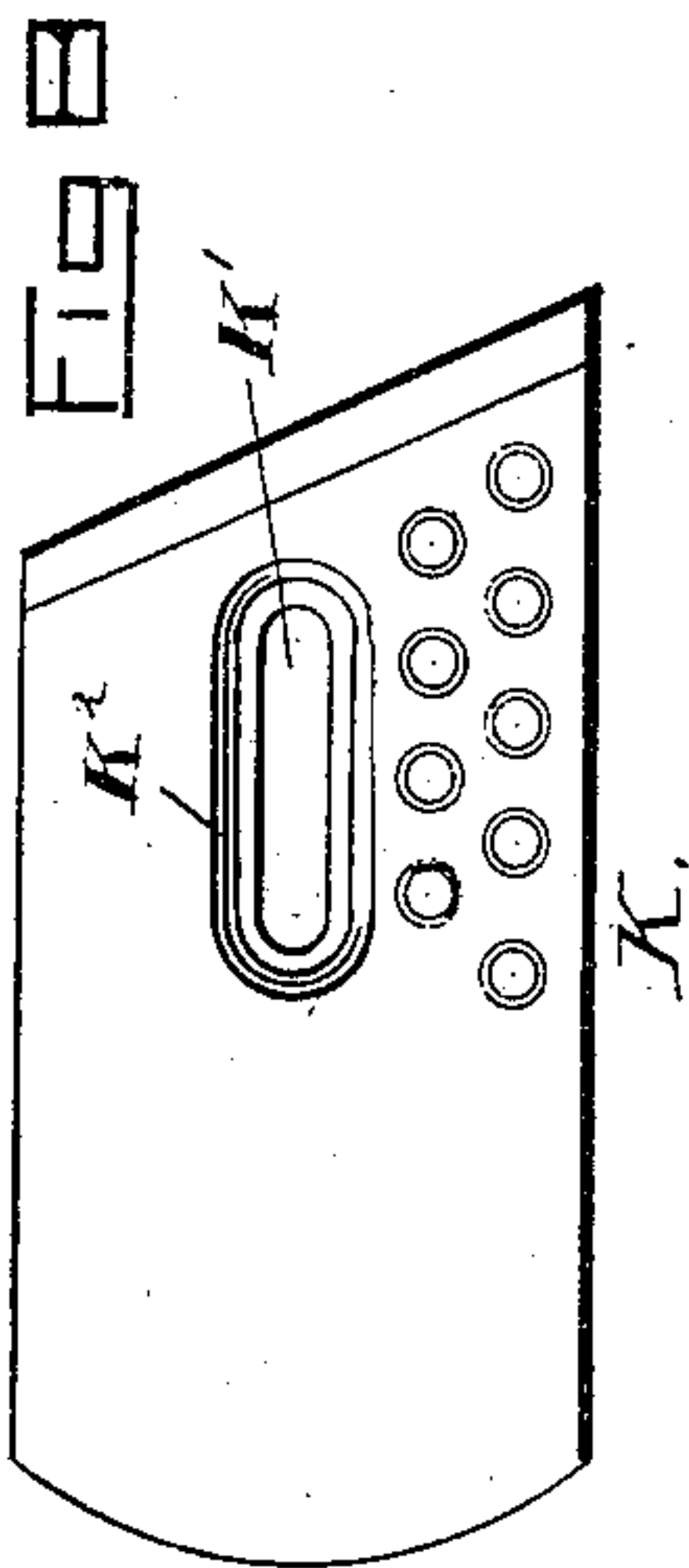
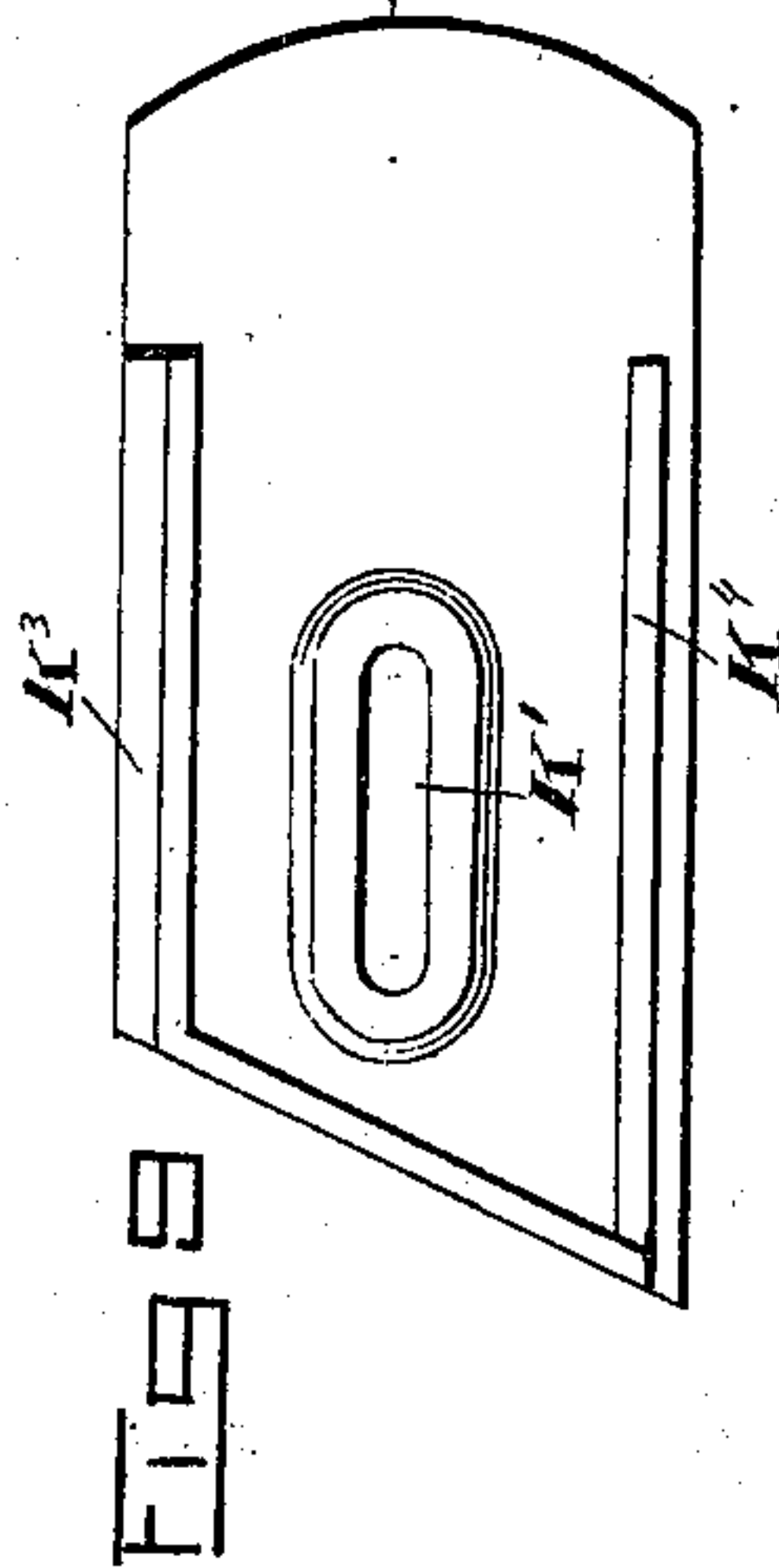
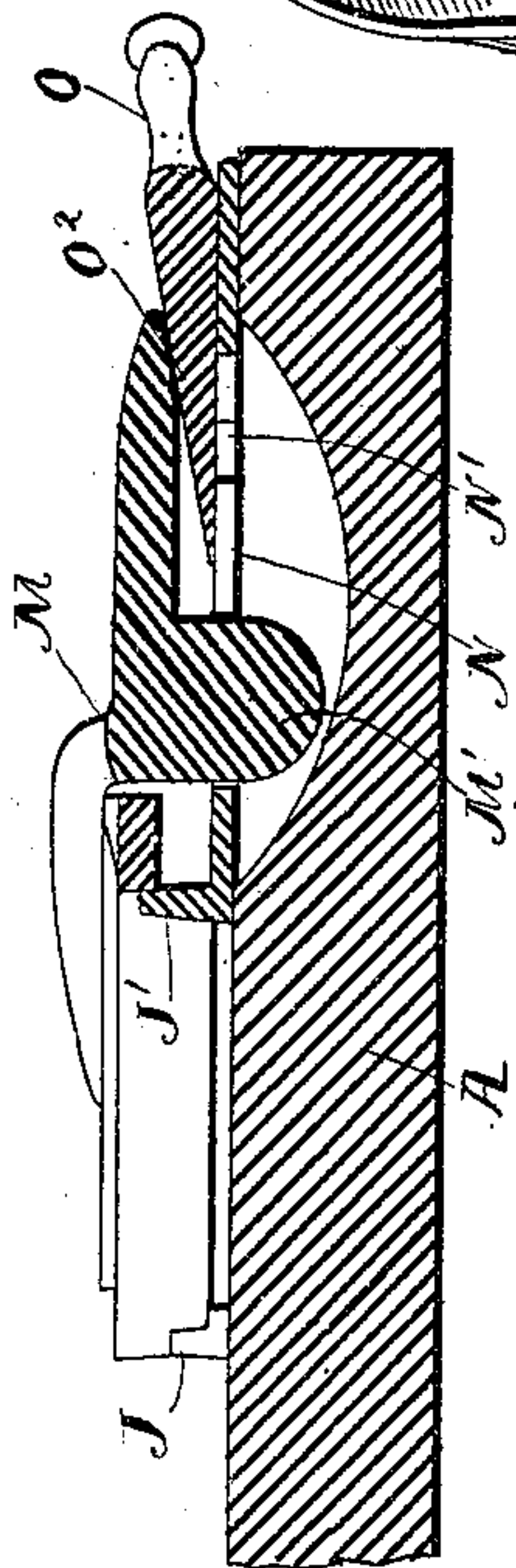


FIG. 10.



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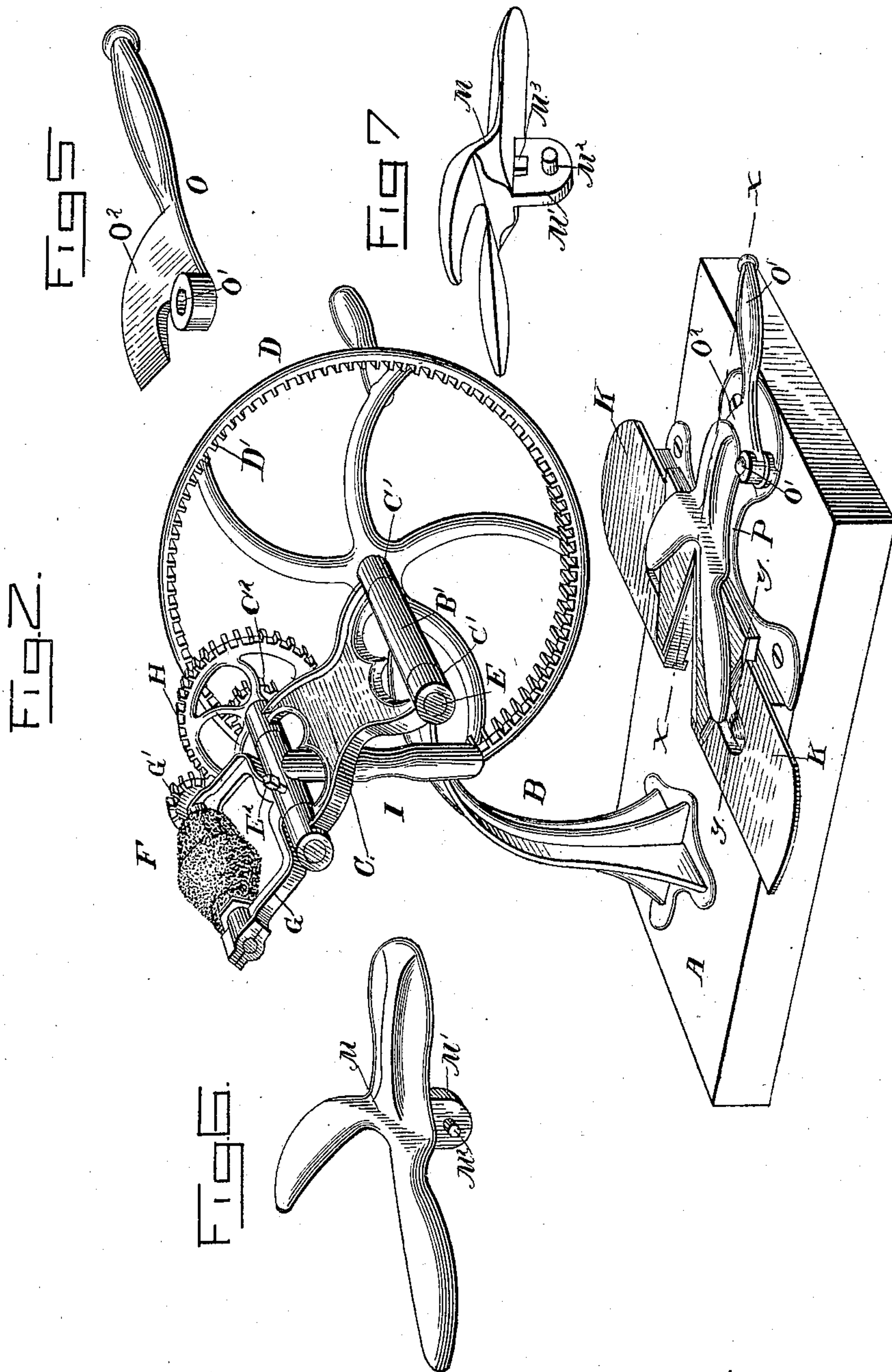
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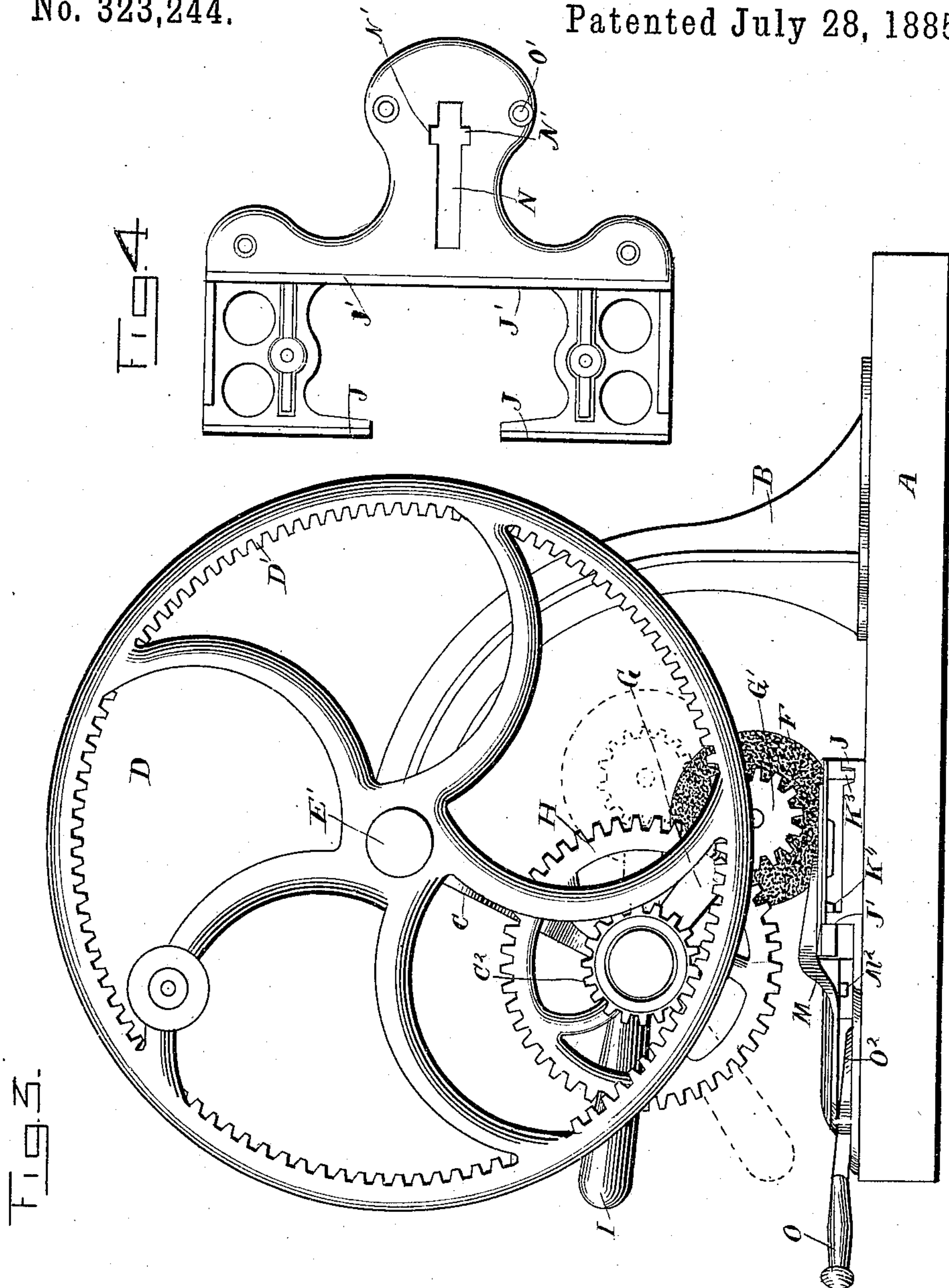
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# UNITED STATES PATENT OFFICE.

JOHN F. WEBSTER, WARREN H. PEASE, AND CHARLES F. PEASE, OF ELKHART, INDIANA; SAID W. H. PEASE AND C. F. PEASE ASSIGNORS TO SAID WEBSTER.

## HARVESTER-KNIFE GRINDER.

SPECIFICATION forming part of Letters Patent No. 323,244, dated July 28, 1885.

Application filed October 31, 1884. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN F. WEBSTER, WARREN H. PEASE, and CHARLES F. PEASE, citizens of the United States, residing at Elkhart, in the county of Elkhart and State of Indiana, have invented certain new and useful Improvements in Harvester-Knife Grinders; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention has relation to improvements in harvester-knife grinders, and has for its object to provide simple and convenient means whereby the grinding-wheel may be driven with great speed, and the machine may be constructed within a small compass.

It has for a further object to so construct the grinding-wheel-supporting devices that the said grinding-wheel may be readily moved in any desired plane or curve.

It has for other objects to provide simple means whereby the harvester-knife may be firmly supported and securely clamped in place.

It has for further objects other improvements, as will be presently described.

The invention consists in certain novel constructions, combinations, and arrangements of the several parts, as will be hereinafter more fully described and claimed.

In the drawings, Figure 1 is a perspective view of our machine with the parts adjusted into position for sharpening a harvester-knife. Fig. 2 is a perspective view of the machine with the grinding-wheel adjusted in position for general grinding. Fig. 3 is a side view of the machine as shown in Fig. 1. Fig. 4 is a plan view of the supplemental base-plate. Fig. 5 is a detail view of the combined lever and wedge. Figs. 6 and 7 are perspective views of the knife-clamp. Figs. 8 and 9 are respectively top and bottom views of the knife-supports. Figs. 10 and 11 are detached sectional views on, respectively, lines *xx* and *yy*, Fig. 2.

In carrying out our invention we usually employ a base, A, at one end of which is mounted a standard, B, preferably curved forward at its upper end, and on the upper forward end of this standard is journaled or pivoted the main frame C and the drive-wheel D, usually by means of the pintle E, passed through a bearing, B', on the standard, and having its ends extended on the opposite sides of the same to receive the bearing C' C' of the main frame and the wheel. The wheel is held on the pintle by the head E' of same, and it is usual to provide a set-screw, E<sup>2</sup>, turned through the bearing B' of the standard and against the pintle E, so as to hold said pintle from longitudinal displacement. It is manifest, however, that the main frame and the drive-wheel may be pivoted to the standard in various manners from that shown without departing from the spirit of our invention, and that the form or arrangement of the standard B might be varied. We prefer, however, to use the standard, and to curve it, as shown, in order to provide the space below and in rear of the pivot, between the main frame and standard, for the purposes of receiving the grinding-wheel and permitting the adjustments and manipulations thereof presently described.

The main frame supports the grinding-wheel F on its outer end, usually, and preferably in the manner presently described, and the said main frame is provided in its outer end with a pinion, C<sup>2</sup>, which is meshed with and drives the grinding-wheel. The drive-wheel D is provided with internal gear-teeth, D', which mesh with the teeth of the pinion C<sup>2</sup>, which pinion is located within the internal radius of the drive-wheel. By this arrangement of gearing we are able to use a large-sized gear-wheel, and yet reduce the length of the main frame, securing at the same time a high rate of speed as is desirable, and economizing space, rendering the machine more compact.

Instead of supporting the grinding-wheel directly on the main frame, as might be done, we prefer to support it on the outer end of the supplemental frame G, the inner end of which is journaled or hinged to the outer end



of the main frame. The shaft of the grinding-wheel is held to the supplemental frame by suitable removable boxes, so that the said grinding-wheel may be removed and one of  
5 cylindrical shape substituted for the double-cone grinder shown, when it is desired to use the machine for general grinding purposes.

The shaft of the grinder F is provided with a pinion, G', which is meshed with gear H, which in its turn is keyed to or formed integral with the pinion C' of the main frame.

The pinions G' C', it will be seen, are of small diameter and the gear H of a larger size, so that the speed is multiplied between the  
15 pinions C' G' in the operation of the device. It is manifest that the gear H might be provided with a handle, and be revolved without the use of pinion C' and wheel D, and that the machine might be operated in such manner; but we prefer to employ the construction  
20 as shown, because thereby a high rate of speed may be obtained and the machine be easily operated.

The supplemental frame G is provided with  
25 a handle, I. This handle might be extended laterally from the side of the said frame; but it is preferred to project it in rear or beyond the pivot of same with the main frame, as shown. The object of this arrangement of the  
30 handle is mainly to give the same the advantage of leverage in the manipulation of the frame. Another object of so arranging the handle I is that it forms a stop engaging against the outer side of the main frame and  
35 holding the parts in position shown in Fig. 2.

It will also be noticed that the handle I is inclined outward, so that in the use of the machine the hand of the operator will be out of the way, and will not obstruct his sight of  
40 the harvester-knife and the grinder in contact therewith. When in use sharpening harvester-knives, the parts are adjusted into the position shown in Figs. 1 and 3. In this position, it will be noticed, the grinder is free  
45 to be adjusted in the arc described by the swinging of the main frame, or it may be moved by properly swinging both the main frames and the supplemental frames in a plane parallel with the base, or at any such angle  
50 to such base as may be desirable in the operation of the machine. By such adjustments the operator is given a large freedom in the handling of the grinder, so that it may be easily manipulated in such manner as to properly  
55 grind away any irregular projections or roughness in any part of the harvester-knife.

On the base A are mounted or formed the transverse ways J J'. The forward ways, J, are broken away centrally to permit the motions of the grinder. On these ways are placed  
60 the knife-supports K, having their inner ends angled to conform, approximately, to the angle of a harvester-knife blade. These supports in operation have their inner edges rested under and close to the edge of the knife-blade  
65 which is being sharpened, and they may be adjusted in the direction of their length, so as

to be set properly to suit the various angles at which different blades are cut.

In order to hold the supports they are provided with slots K', elongated in the direction  
70 of their motion, and set-screws L are turned through slots K' and enter into threaded sockets in the base. The heads of these screws extend in the sides of the slots K', and by  
75 tightening them the knife-supports may be firmly held at any suitable point. These slots K' are preferably formed through the base of a depressed portion, K<sup>2</sup>, of the plates K, as  
80 will be understood from Figs. 8, 9, and 11.

I prefer to provide the plates K, on their forward sides, with a depending flange, K<sup>3</sup>, which extends below the top of and in rear of the forward rail, J, and at their rear sides with the flange K<sup>4</sup>, which depends in front of  
85 the rear rail, J' of the base. By such arrangement the supports are held firmly from any displacement laterally to their line of motion.

The knife-clamp M is pivotally supported midway its ends in rear of the knife-supports  
90 K, and has its forward end extended over the said plates and adapted to bear upon the harvester-knife. We also provide means whereby the rear end of the knife-clamp may be forcibly elevated, so as to depress the forward ends of said clamp firmly onto the knife.  
95 This may be done by a set-screw turned through the rear end of the knife-clamp and bearing against the base, or other expedients could be employed.

It will be also understood that the pivot of the knife-clamp might be formed in any suitable manner without departing from the broad principles of our invention. We prefer, however, to pivot said clamp and to elevate its  
100 rear end in the manner presently described. To such end we provide the clamp at the point which it is desired to pivot it with a depending lug, M', provided near its lower end with lateral studs or pins M<sup>2</sup>, and the clamp is provided at or near the upper end of lug M' with  
105 bearings M<sup>3</sup>. The base is provided with a slot, N, of about the width of the lug M'. This slot is provided or formed at or near its rear end with lateral enlargements or wings N', sufficiently wide to receive the studs M<sup>2</sup> of the lug M'.

In operation the lug M' is placed down through the slot N, the studs M<sup>2</sup> passing through wings N', and the clamp is moved  
110 forward to its proper position, the bearings M<sup>3</sup> resting on top of the base and the lugs M<sup>2</sup> below and on opposite sides of the slot N, so as to permit any desired rocking of the clamp in a vertical plane, and yet prevent it from  
115 being forced out of connection with the base. By this form of pivot and connection between the clamp and the base the clamp may be easily adjusted back from the knife-supports when it is desired to place or remove the harvester-knife.  
120

It is preferred to elevate the rear end of the knife-clamp by means of the lever O, pivoted at O', and provided with a wedge, O<sup>2</sup>, which



wedge is preferably curved in the arc of a circle struck from the pivot of the lever. In operation the point of this wedge is engaged under the rear end of the clamp, between the same and the base, and forced inwardly until the clamp is depressed firmly against the harvester-knife. By this arrangement it will be seen the clamp can be firmly locked and unlocked, and we secure by one feature the advantage of both the wedge and the lever-power greatly increasing the force which may be exerted on the harvester-knife and the ease with which the said force may be applied.

In operation the harvester-knife is placed on the supports with its bar rested against the side of same, and the said knife is adjusted longitudinally from time to time as the blades are sharpened, so as to bring new blades into position to be operated on by the grinding-wheel.

While the ways J J' may be formed on or secured separately to the base A, and the slot N be formed in said base without departing from our invention, we prefer to form the said ways, as well as the outer opening of slot N, in a supplemental plate, P, cast in a single piece suitably secured on the base-plate.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination of the support or standard, the main frame pivoted thereto, a geared drive-wheel keyed to the outer end of the pivotal connection, the supplemental frame pivoted to the outer end of the main frame, a pinion, C<sup>2</sup>, journaled in line with the pivotal connection between the two frames and meshing with the gear of the drive-wheel, the grinding-wheel supported on the outer end of the supplemental frame and having its shaft provided with a gear-pinion, G', a gear-pinion, H, meshed with the pinion G', and journaled in line with the pivot between the main and supplemental frames, and keyed to and rotating with the pinion C<sup>2</sup>, whereby the grinding-wheel may be revolved in any position of the main or supplemental frame, substantially as described.

2. The combination of the curved support or standard B, the main frame, the supplemental frame pivoted to the main frame, the grinding-wheel journaled in the supplemental frame and having its shaft provided with a pinion, G', the gear H, keyed to the pivotal connection between the two frames and meshed with pinion G', pinion C<sup>2</sup>, keyed to gear H, and the drive-wheel geared with pinion C<sup>2</sup> and journaled on the pivotal connection between the standard and the main frame, all substantially as set forth.

3. The combination, with the main frame, of the supplemental grinding-wheel frame pivoted to the main frame and a handle projected from the supplemental grinding-wheel frame in advance of and between its pivotal supports, substantially as set forth.

4. The combination, with the base provided with suitable ways, of the knife-supports mounted and movable on said ways, and provided with a slot elongated in the direction of the line of adjustment of said supports, and a clamping-screw turned through the said slot into the base, whereby the said supports may be held at any desired point of adjustment, substantially as set forth.

5. The combination of the base, the knife-supports, the knife-clamp pivoted midway its length and adapted at its forward end to bear on and secure the knife, and means, substantially as described, whereby to forcibly elevate the rear end of the clamp, whereby its forward end will be caused to bear firmly on the knife, substantially as set forth.

6. The combination of the base provided with a slot, N, enlarged laterally, as at N', near its rear end, the knife-supports, and the knife-clamp provided midway its ends with a depending lug, M', adapted to operate through slot N, and provided on its lower end with lateral pins M' and bearings M<sup>2</sup>, arranged at or near the upper end of the lug M', and means, substantially as described, whereby to forcibly elevate the rear end of the knife-clamp, substantially as set forth.

7. The combination, with the knife-clamp pivoted midway its ends, of the lever O, provided with a wedge, O<sup>2</sup>, and pivoted to work in a plane substantially at right angles to the movement of the clamp, the wedge being suitably arranged to engage under and elevate the rear end of the knife-clamp, substantially as set forth.

8. The combination of the main frame pivotally supported at one end, the supplemental frame provided in one end with the grinding-wheel and pivoted at its other end to the outer end of the main frame, a handle projected from the supplemental frame in rear of its pivot and inclined outwardly, and suitable gearing whereby to operate the grinding-wheel, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN F. WEBSTER.  
WARREN H. PEASE.  
CHARLES F. PEASE.

Witnesses:

W. H. KIMBERBOCKER,  
M. KASKEI.