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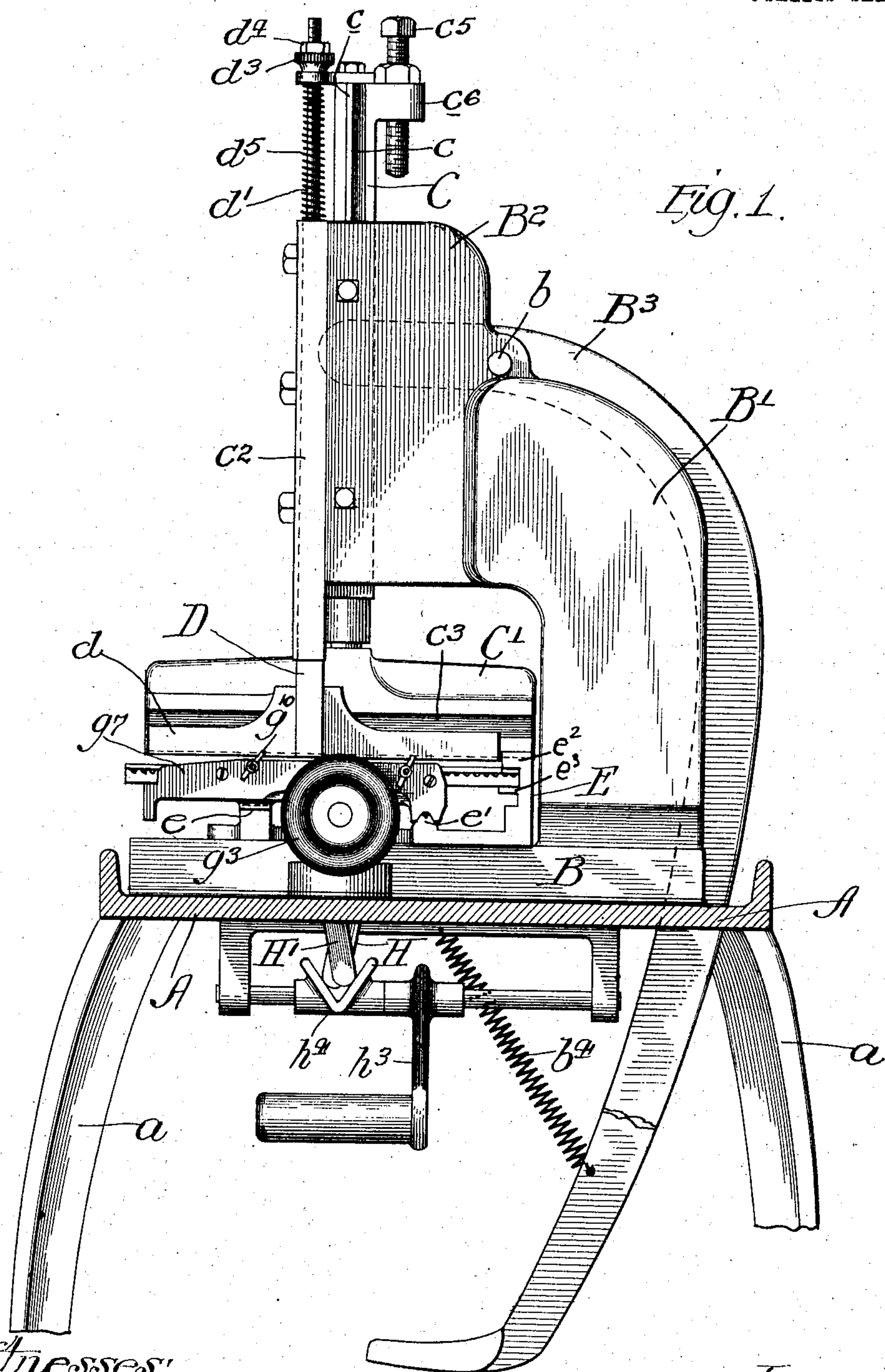
PATENTED JAN. 24, 1905.

B. F. KERN & W. J. O. JOHNSON.

CUTTING MACHINE FOR RUBBER TYPE OR THE LIKE.

APPLICATION FILED DEC. 4, 1903.

3 SHEETS—SHEET 1.



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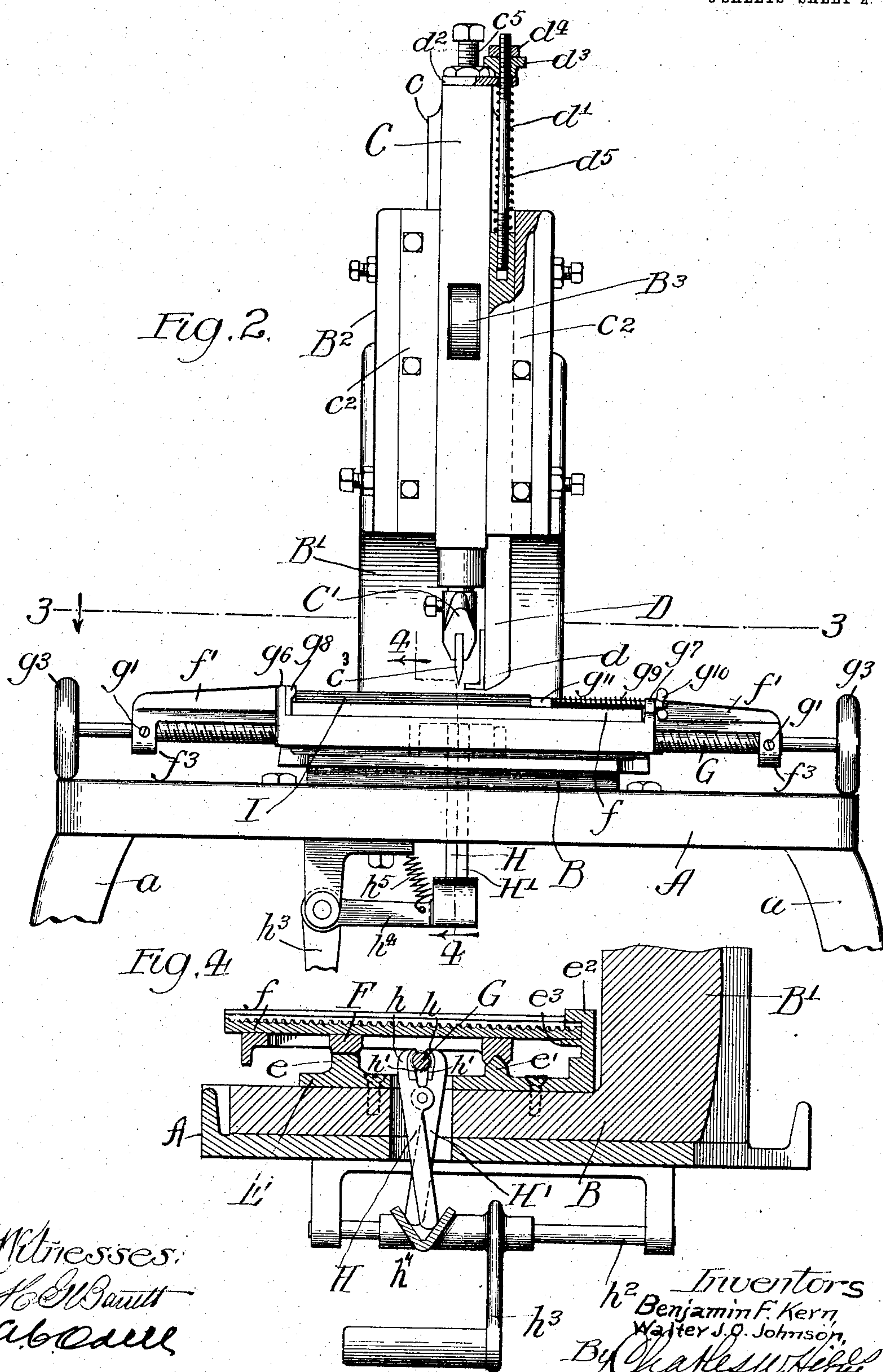
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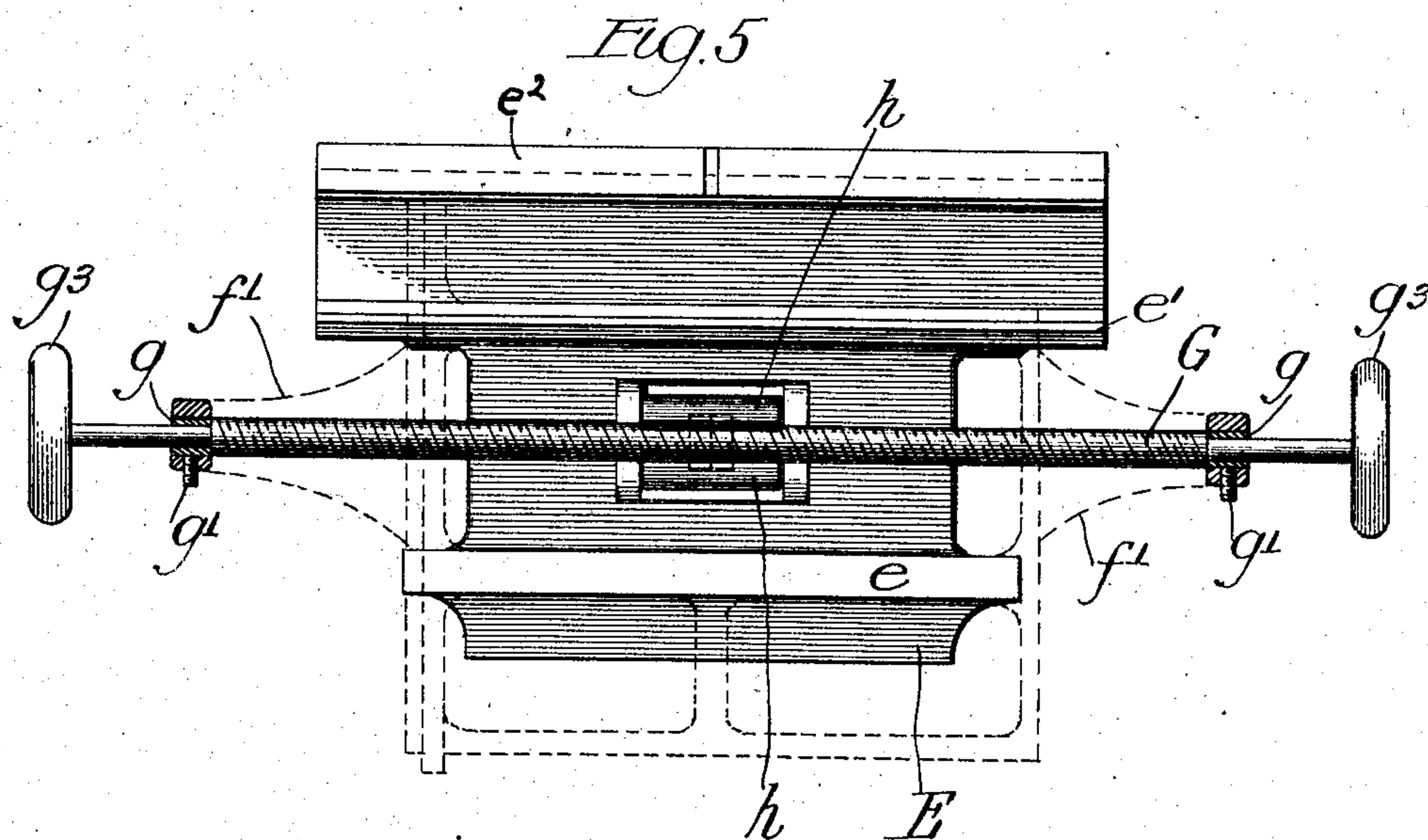
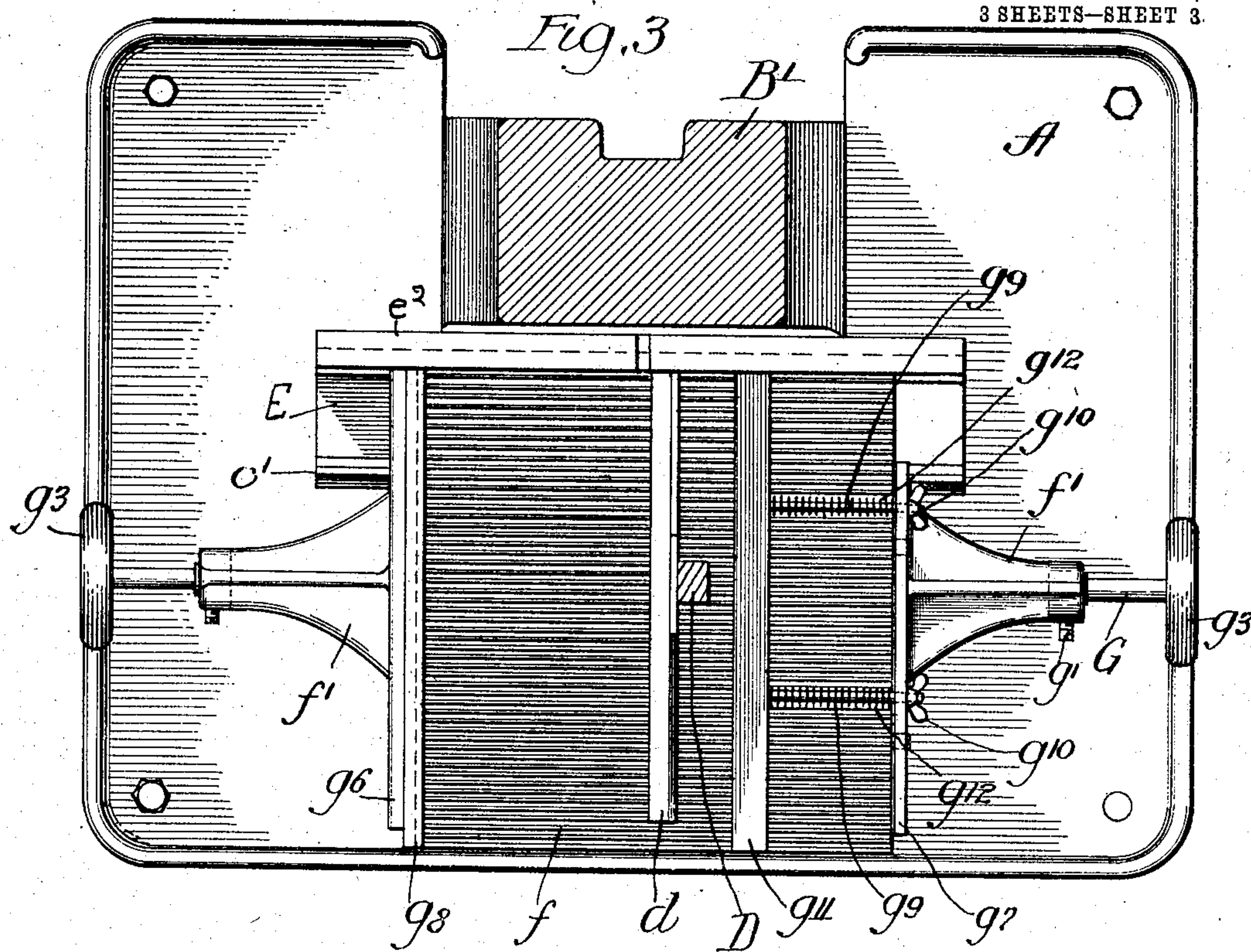
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

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## CUTTING-MACHINE FOR RUBBER TYPE OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 780,667, dated January 24, 1905.

Application filed December 4, 1903. Serial No. 183,784.

*To all whom it may concern:*

Be it known that we, BENJAMIN F. KERN and WALTER J. O. JOHNSON, citizens of the United States, and residents of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Cutting-Machines for Rubber Type or the Like; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in cutting-machines for rubber type or the like, and has for its object the construction of a strong and accurately-operating machine adapted to sever a plurality of type-strips into sections of appropriate length connected at the bottom of the strip with filamentous portions of the rubber, adapting the same for more ready handling.

It is also an object of the invention to provide means for adjusting the material to be operated upon with the greatest exactitude to the knife, thereby insuring that the type sections or blocks are all severed to corresponding sizes and obviating the loss due to the imperfect means of adjustment for machines of the class described frequently used.

The invention embraces many novel features; and it consists in the matters hereinafter described, and more fully pointed out and defined in the appended claims.

In the drawings, Figure 1 is a side elevation of a device embodying our invention, showing the supporting-table, partly in transverse section. Fig. 2 is a front elevation of the same, partly broken. Fig. 3 is a section taken on line 3 3 of Fig. 2. Fig. 4 is a section taken on line 4 4 of Fig. 2. Fig. 5 is a top plan view of the track with the carriage removed.

As shown in said drawings, A indicates a supporting-table, having legs *a*, which may be of any desired material, but which in the construction shown are of cast metal, rigidly bolted to afford a secure support for the mechanism hereinafter described, which comprises

a bed B, of cast metal and of any desired width, which extends transversely across the table and is provided at its rear end with an integral upwardly-extending bracket B', provided at its upper end with a downwardly-directed head B<sup>2</sup>, provided in its front face, which is vertically above the center of said base, with guide-slides *c*<sup>2</sup>, in which engages the vertically-reciprocating knife-bar C, provided on each side of the same with the angular guides *c*, which engage in said guide-slides and at all times hold said knife-bar in operative relation. As shown, said guide-slides embrace an adjustable plate seated longitudinally in the face of said head and which bear against the guides on said knife-bar, thereby enabling the same to be adjusted with respect to the guide-slides in said head to take up any play produced through wear. Secured on the lower end of said knife-bar is a cutter-head C', extending longitudinally of the bed and transversely of the table A and in the lower face of which is secured the elongated knife *c*<sup>3</sup>, as shown in Fig. 2. Carried on said knife-bar and also engaged in guide-slides in the head B<sup>2</sup> is the pressure-bar D, on the lower end of which is a pressure-plate *d*, adapted to engage on the material to be operated upon. Said pressure-bar is connected with the knife-bar by means of the vertical rod *d*<sup>1</sup>, which has threaded engagement in the upper end of said pressure-bar and extends upwardly through a laterally-extending plate *d*<sup>2</sup>, rigidly secured on the top of said knife-bar, and is provided on the outer end thereof with a nut and jam-nut *d*<sup>3</sup> *d*<sup>4</sup>, whereby the adjustment of the same with respect to the knife-bar may be varied as may be necessary. A spiral spring *d*<sup>5</sup> is engaged on said rod and bears against the under side of said plate and the upper end of said pressure-bar and acts to hold the same downwardly as the knife-bar reciprocates. Means are provided for reciprocating said knife-bar, comprising a curved lever B<sup>3</sup>, which is pivoted on the rear side of the head by means of a pivot-pin *b*, as shown in Fig. 1, and the shorter or upper end of which engages in a slot in said



knife-bar and acts to reciprocate the said knife-bar vertically when the lower end of said lever, which extends downwardly and rearwardly below the table A, is actuated by  
 5 the foot of the operator or otherwise. As shown, a set-screw  $c^5$  is carried in a rearwardly-directed lug  $c^6$  at the top of the knife-bar C and is adapted to limit the reciprocation of the same by engagement at its lower end  
 10 against the upper end of the head when the knife has reached the downward limit of its movement.

Rigidly bolted to the bed B is the track-base E, which, as shown, comprises a plate provided  
 15 with parallel raised ribs  $e$   $e'$ , respectively, which extend longitudinally of the table. The rib  $e$  is provided with a flat top and the rib  $e'$  with a V-shaped or angular top in a familiar manner, and at the rear side of said plate is  
 20 provided an upwardly-directed flange  $e^2$ , provided on the front face thereof at a point above the top of said tracks  $e$   $e'$  with a longitudinal groove providing a flat outwardly-projecting ledge  $e^3$ . Slidably supported on  
 25 said track is a carriage F, embracing a frame provided with longitudinal members spaced on the under side complementally with the rails  $e$   $e'$  and adapted to slide thereon, as shown in Fig. 4. Secured on the top of said carriage  
 30 in any desired manner and with its inner edge slidably supported on the ledge  $e^3$  is a comparatively thin plate  $f$ , of aluminium or other suitable material, having an upper corrugated surface at right angles with the blade of the  
 35 knife, as shown in Fig. 3. Said carriage, as shown in dotted lines in Fig. 5, is provided at its ends with integral longitudinal extensions  $f'$ , provided at their ends with downwardly-turned apertured flanges  $f^3$ , forming  
 40 collars within which are bearing-bushings  $g$ , held from rotation by set-screws  $g'$ , as indicated in Figs. 2 and 5. Journaled in said bushings is a screw-shaft G, which is threaded between said collars. Said screw-shaft acts  
 45 to move said carriage upon its track transversely of the knife, and for this purpose levers H and H' are pivoted in a vertical aperture centrally of said bed and at their upper ends are provided with clamping-jaws  $h$ , in  
 50 which is secured a facing of rawhide  $h'$  or the like, as shown in Fig. 4, in position to engage said screw-shaft when the carriage is supported upon its track. The lower ends of said levers cross each other below the pivot.  
 55 Journaled below the table on a shaft  $h^2$  is a bell-crank lever. One end,  $h^3$ , is adapted for engagement by the knee of the operator or manually, if preferred. The other end,  $h^4$ , of said bell-crank lever is provided with a V-shaped  
 60 recess in the upper side, at the end thereof, adapted to engage the ends of said levers, as shown in Figs. 1 and 4, and affording a cam-surface to force the clamping-jaws inwardly into positive engagement with said screw-shaft. As shown, a strong pulling-spring  $h^5$

is engaged on said arm  $h^4$  of the bell-crank and connects the same with the table and holds said V-shaped recess at the end of said arm in constant engagement with the extremities  
 70 of said levers, so that when said clamping-jaws are engaged upon said screw-shaft rotation of said shaft in either direction moves the carriage correspondingly in a direction transversely of the knife.

As shown, the flange  $g^6$ , integral with the  
 75 carriage and which extends above the corrugated plate  $f$ , affords a bearing for the rubber sheet at one end of the same, or, if preferred, a lead or filling strip  $g^8$  may be secured against the said flange  $g^6$  within the carriage and pro-  
 80 vided on its side adjacent to the rubber sheet with a downwardly and inwardly inclined beveled surface, as shown in Fig. 2 and indicated in dotted lines in Fig. 3, against which the end of the sheet engages. At the other  
 85 end of said carriage a flange  $g^7$  extends upwardly above the plate  $f$  and is apertured to receive the push-pins  $g^9$ , two of which are shown and on the outer end of which are ad-  
 90 justing-nuts  $g^{10}$ , which bear against said flange  $g^7$ . A horizontal presser-bar  $g^{11}$ , slidable on said corrugated plate, is secured on the inner ends of said push-pins and is normally held  
 95 extended from said flange by means of springs  $g^{12}$ , secured on said push-pins, as shown in Fig. 3.

The operation is as follows: With the rubber sheet I supported on the corrugated plate, as shown in Fig. 2, and bearing against the fill-  
 100 ing-strip  $g^8$  at one end and the presser-bar  $g^{11}$  fitted against the other the carriage F is adjusted, by means of said screw-shaft, trans-  
 105 versely of the knife to provide the desired width of cut. The presser-foot  $d$  is adjusted with respect to the knife-bar by means of the  
 110 rod  $d'$ , so that the presser-foot  $d$  is about on a level with the cutting edge of the knife and rests on the rubber sheet with a slight pressure until the knife clears the same, thus holding  
 115 the sheet from distortion by the retraction of the knife. When the lever B<sup>3</sup> is actuated to bring the knife down into cutting relation upon the sheet, said presser-foot presses the  
 120 sheet, but does not exert sufficient pressure thereon to cause distortion thereof. Owing to the fact that the upper surface of the plate  $f$  is corrugated transversely of the knife, the down-  
 125 ward pressure of the knife thereon forces a portion of the rubber into said corrugations, so that the same is not entirely severed, but remains attached at the bottom by a plurality  
 130 of small filamentous connections of the rubber, causing said sheets or strips to maintain their form until the cutting operation is completed. Owing to the under-beveled surface of the  
 135 filler-strips  $g^8$  and the fact that horizontal presser-bar  $g^{11}$  is held in engagement with the opposite end of the sheet by means of the push-pin  $g^9$ , any distortion of the sheet caused by the pressure of the knife thereon



is compensated by the slight elongation of the sheet due to the same being forced partly beneath said beveled surface of the filler and causing the presser-bar  $g^{11}$  to move slightly outward against the tension of said spring on the push-pins. Said presser-bar  $g^{11}$  by contacting with the partly-severed type-strips also acts to hold the same from spreading and distortion, holding the strips at all times in alinement until the last cut is completed. Should it be desired to adjust the carriage for a considerable distance on the track, the bell-crank lever may be actuated by the knee or hand to release the levers H H' therefrom, thereby permitting the carriage to be freely slid to any desired point of adjustment, after which same may be more accurately adjusted by means of the hand-wheels  $g^3$  on the screw-shaft before described. Preferably said knife-bar is normally held retracted or in its elevated position, as shown in Figs. 1 and 2, and ordinarily the weight of the lower end of the lever is sufficient for this purpose. If preferred, however, and as shown in Fig. 1, a strong pulling-spring  $b^4$  is engaged on the lower end of said lever and connected with the under side of the table in position to draw the lower end thereof inwardly to elevate the knife-bar.

While we have described our invention as adapted for use in partly severing type-strips from sheets of rubber or the like, if preferred a plain plate may be substituted for the corrugated plate  $f$  and the strips completely severed from the sheet, thus enabling the device to be used for slitting the sheet between the lines of type and adapting the device for general use as a cutting-machine in the manufacture of rubber type and for many other purposes. Obviously said carriage may be moved by other means than those herein described and, if preferred, the track and carriage may be differently constructed and many details of construction may be varied without departing from the principles of our invention.

We claim as our invention—

1. The combination with a vertically-reciprocating knife, of a carriage movable beneath the same and adapted for normally coarse adjustment transversely thereof, a plate corrugated transversely of the knife supported on the top of said carriage, a screw-shaft journaled in the carriage, a pair of gripping-levers pivoted beneath the same and a grooved lever adapted to engage the lower ends thereof and throw said levers into gripping engagement with the shaft.

2. In a cutting-machine the combination with a vertically-reciprocating knife and means for actuating the same, of a presser-foot carried thereon and extending longitudinally thereof and engaging the material to be cut while the knife is rising therefrom, a carriage movable transversely of the cutter and means engaged thereon affording both coarse

and fine adjustment therefor and a horizontally-yielding presser-bar carried on the carriage and acting to normally hold the material thereon in position for operation.

3. In a cutting-machine of the class described, the combination with a table of a reciprocating knife adapted for operation on plastic material supported thereon, a presser-foot yieldingly engaged on said knife and a rod having threaded connection with said knife for adjusting said presser-foot with respect to the table.

4. In a cutting-machine, the combination with a table, having a standard thereon, of a knife adapted to reciprocate in said standard, a plate carried on said knife, a presser-foot yieldingly engaged therein and adapted to normally extend below the knife and a rod adjustably engaged on said plate and said foot adapted to adjust said foot with respect to the knife.

5. In a cutting-machine the combination with a bed, of an upwardly-extending bracket thereon, a forwardly-directed head carried on the bracket, a vertically-reciprocating knife supported on said head, a track extending transversely of the knife, a carriage movable thereon provided with a corrugated surface, a screw-shaft on said carriage and movable therewith, a lever pivoted on the bed, a mutilated nut thereon and means acting to throw said nut into engagement with said screw-shaft thereby admitting of fine adjustment of the carriage by means of rotation of said shaft.

6. The combination in a cutting-machine with a vertically-reciprocating knife of a table beneath the knife provided with an inwardly-directed ledge, a carriage movably engaged on said table, and supported at one side on said ledge, a shaft journaled on said carriage, a pair of gripping members pivoted on the table and adapted to grip said shaft with their upper ends, a bell-crank lever journaled beneath the table and a grooved shaft thereon adapted to engage the lower ends of said members and throw them into gripping engagement.

7. In a machine of the class described, the combination with a vertically-movable knife, of a movable carriage beneath the same, an under-beveled face at one end of said carriage adapted for engagement with the material to be operated upon, an adjustable spring-pressed bar at the other end, laterally-directed arms on said carriage, a shaft journaled therein, a pair of stationary gripping-jaws pivoted beneath said shaft and adapted to grip the same, a bell-crank lever adapted to operate said jaws and a presser-foot extending longitudinally of the knife and adapted to hold the material while the knife is retracted.

8. In a cutting-machine of the class described, the combination with a table, of a track thereon, a carriage movable on said track, a standard on said table provided with



guideways, a knife-bar thereon adapted to reciprocate in said guideways, a laterally-directed plate on said bar, a presser-foot slidably engaged in said standard and a rod adjustably engaged in the upper end thereof and slidably engaged in said plate, springs intermediate said foot and said plate and means engaging said rods above the plate adapted to limit the movement of said foot.

10 9. In a machine of the class described the combination with the table, of a track supported thereon, a carriage slidable on the track, a screw-shaft journaled longitudinally of the carriage, hand-wheels on opposite ends thereof, oppositely-acting clamping-jaws pivoted  
15 on a rigid part of the frame below said screw-shaft, levers connected therewith, a bell-crank in operative relation with said levers, one arm of said bell-crank affording a handle for manual operation, the other arm thereof having a  
20 V-shaped recess adapted to engage the ends of said levers and acting to rigidly clamp the

screw-shaft between said jaws and a bushing on the inner faces of said jaws thereby affording a nut for said shaft. 25

10. A cutting-machine of the class described comprising a standard having a laterally-directed recessed head thereon, a vertically-reciprocating knife engaged in said recess, a pressure-foot carried on said knife and slidable in said recess independent of the knife, a carriage movable transversely of the knife, a bar parallel with the knife and means for adjusting said bar with respect to the material being operated upon. 30 35

In testimony whereof we have hereunto subscribed our names in the presence of two subscribing witnesses.

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Witnesses:

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