June 5, 1934. W. J. CAMPBELL 1,961,959

SLICING MACHINE

Filed March 11, 1932 5 Sheets-Sheet 1

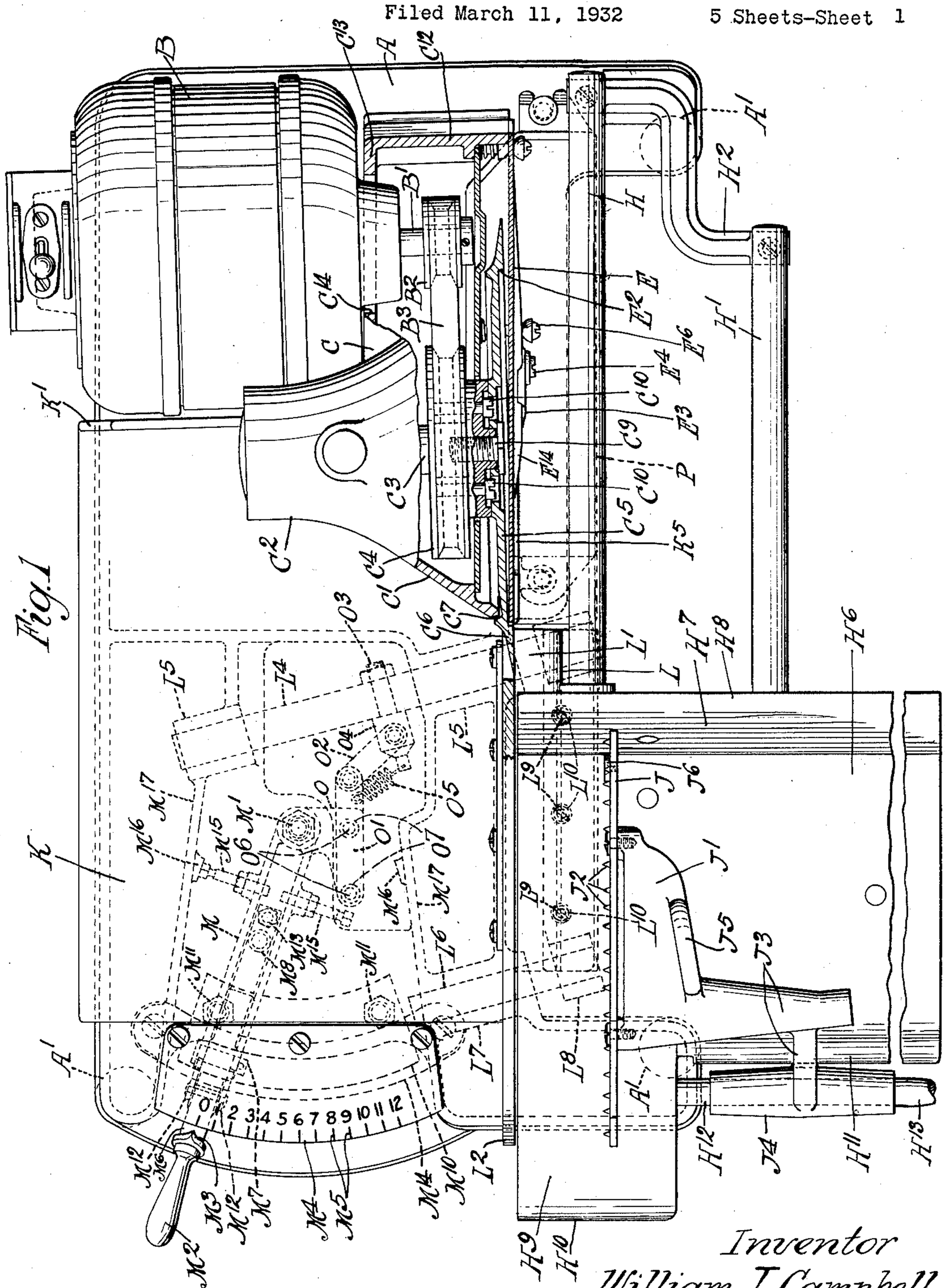

Fig. 1

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5 Sheets-Sheet 2

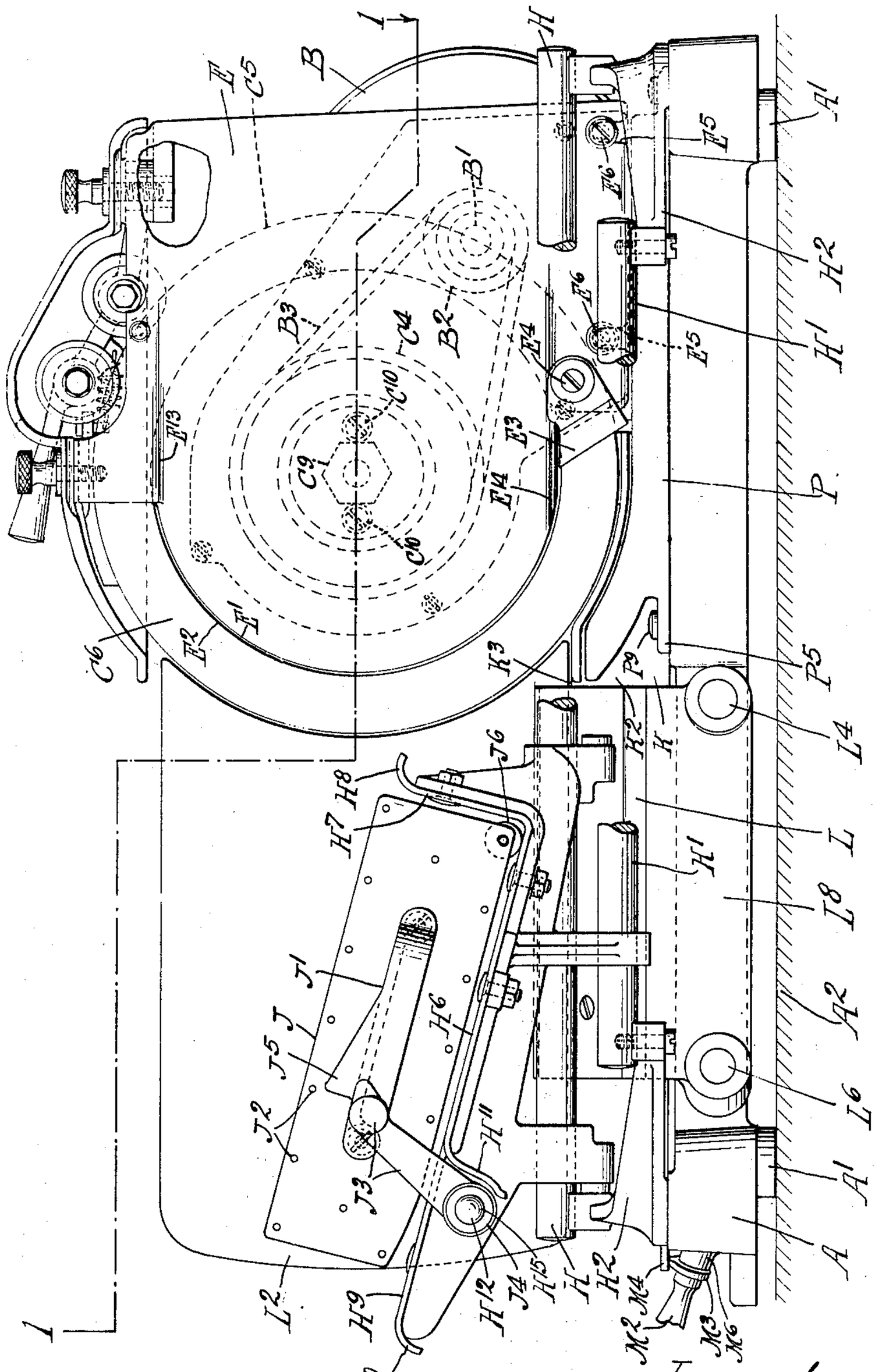

Fig. 2

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5 Sheets-Sheet 3

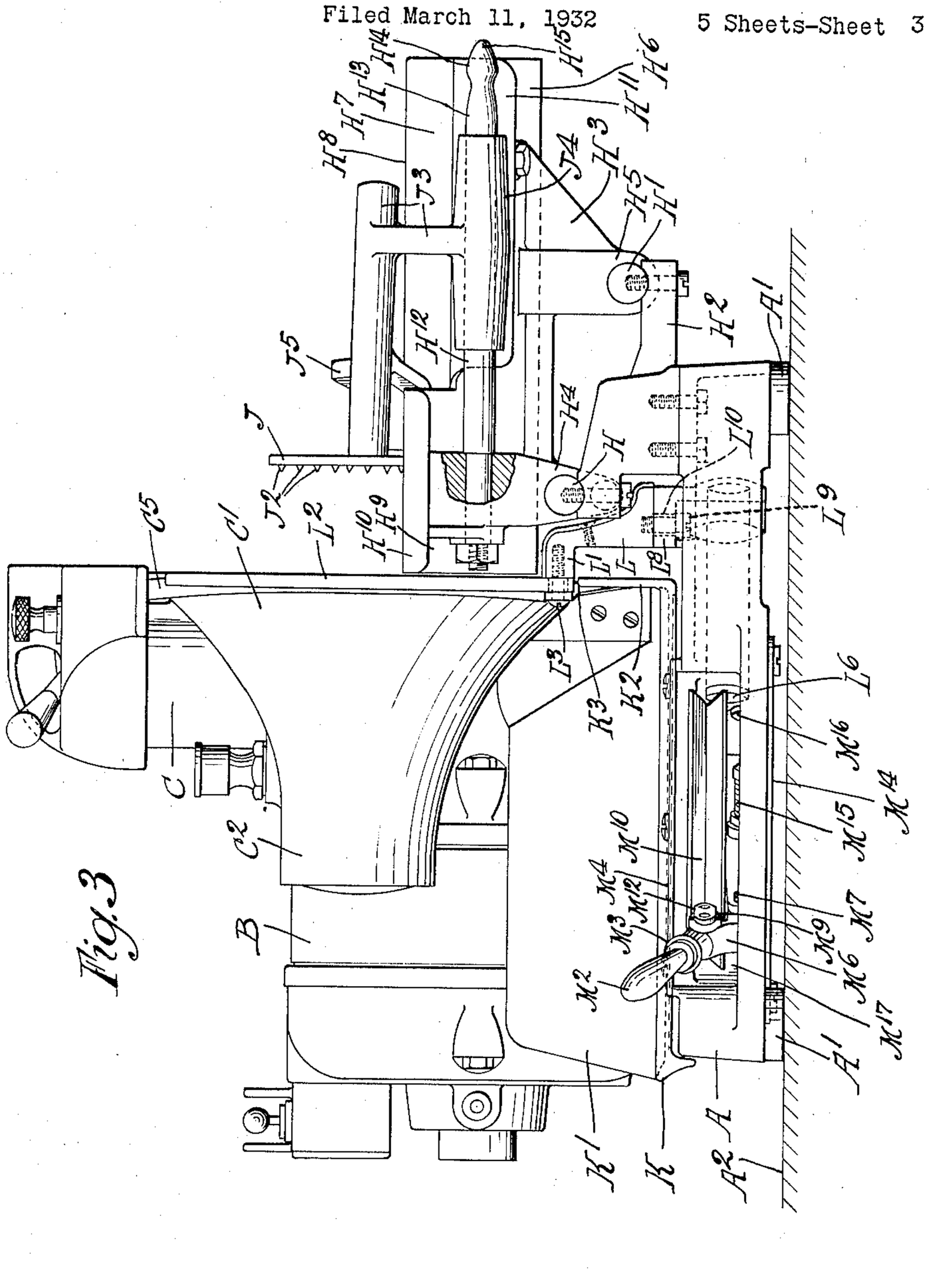

Fig. 3

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SLICING MACHINE

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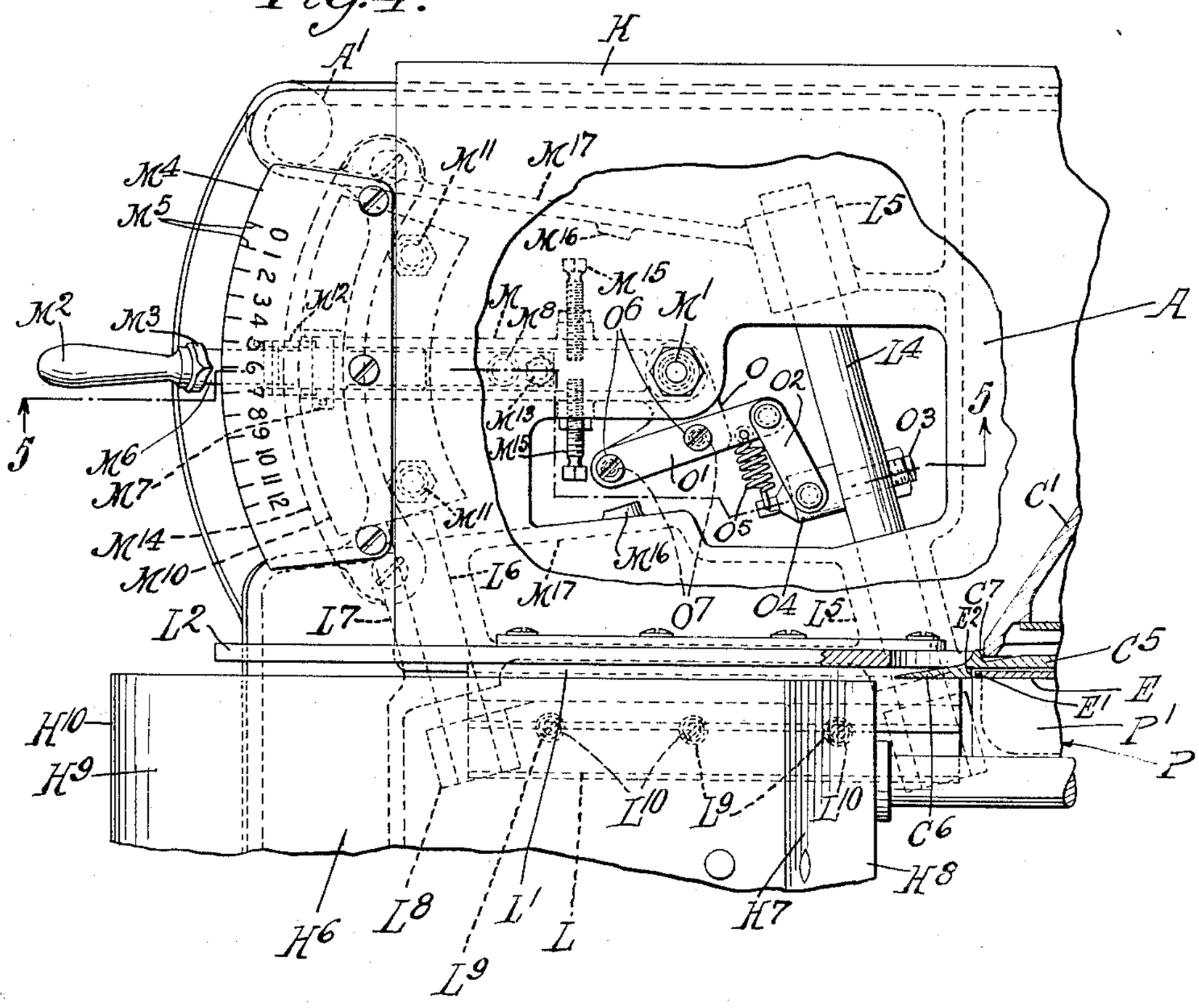
Fig. 4.



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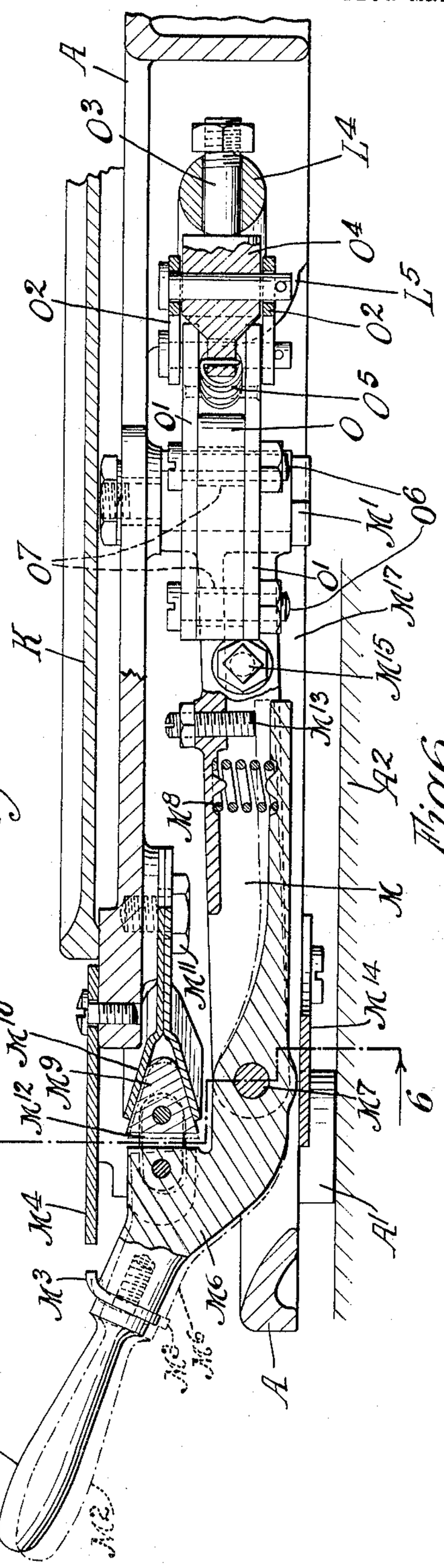

Fig. 5.

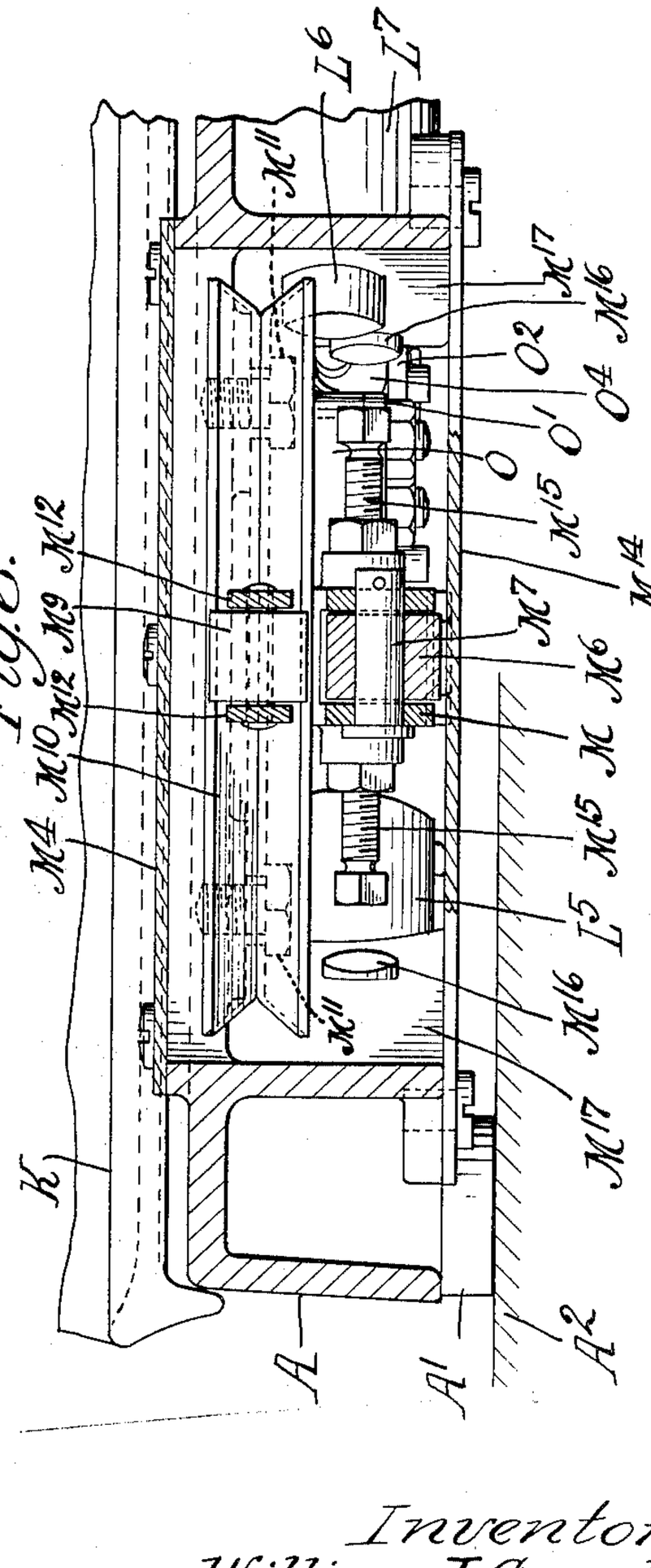

Fig. 6.

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1,961,959

UNITED STATES PATENT OFFICE

1,961,959

SLICING MACHINE

William J. Campbell, Indianapolis, Ind., assignor to American Slicing Machine Company, Chicago, Ill., a corporation of New York

Application March 11, 1932, Serial No. 598,131

17 Claims. (Cl. 146—102)

My invention relates to an improvement in slicing machines and has for one purpose the provision of a slicing machine which shall be light, small, and easy to handle but which shall have the efficiency, speed and capacity of considerably larger machines. Another purpose is the provision of an improvement in gauge plate adjustment and operation for a slicing machine. Other objects will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawings, wherein—

Figure 1 is a plan view with parts in horizontal section, taken along the line 1—1 of Figure 2;

Figure 2 is a front elevation;

Figure 3 is an end elevation;

Figure 4 is a partial plan view similar to Figure 1, illustrating the gauge plate adjusting mechanism in a different position;

Figure 5 is an enlarged section along the line 5—5 of Figure 4, and

Figure 6 is a section along the line 6—6 of Figure 5.

Referring to the drawings, A generally indicates any suitable base having anti-vibrational pads or supports A^1 which rest upon any suitable supporting surface A^2 for example a counter or the like.

B indicates a motor housing mounted on the base A. B^1 is the motor shaft and B^2 a pulley on the shaft about which passes a belt B^3.

C indicates a housing extension projecting upwardly from the base A. Formed integrally with it is a flared sleeve C^1 terminating rearwardly in a generally cylindrical portion C^2. Positioned within the portion C^2, the details of which form no part of the present invention and are not indicated herein, is any suitable bearing means for the knife shaft C^3 on which is mounted a pulley C^4 and the knife C^5. As will be seen for example in Figure 1 the pulley is positioned within and is housed by the member C^1 but the cutting edge of the knife C^5 extends outwardly beyond it as at C^6, the rear face of the knife being notched or recessed as at C^7 to receive and overlap the outer edge of the member C^1. Any suitable means may be employed to hold knife and pulley in place, for example the axial screw C^9 and the radially spaced screws C^{10}. The knife may be removed from the knife shaft, while leaving the pulley in place, by removing the screw C^9. The pulley may be removed by loosening the screws C^{10}. C^{12} indicates an end wall of the upward housing projection C and C^{13} the rear wall. As is shown in Figure 1, the rear wall is apertured as at C^{14} to permit the passage therethrough of the motor shaft B^1 and of a portion of the motor housing B.

The forward face of the upstanding housing member C is closed as by the guard plate generally indicated as E. As is shown in Figure 1 the axis of the knife is slightly tilted to permit the arcuate edge E^1 of the guard plate to penetrate a forward hollow E^2 of the knife and to lie substantially flush with the very slightly bowed cutting plane defined by the cutting edge of the knife. The guard plate carries a scraper E^3 secured thereon in any suitable manner, for example by the adjusting screw E^4. The details of the scraper do not of themselves form part of the present invention. The lower edge of the guard plate is notched as at E^5 E^5 to seat upon supporting pins E^6 which may be screwthreaded for adjustment into the portion of the base or frame to which they are secured. The plate E is outwardly offset at top and bottom as at E^{13} E^{14} in order to permit the arcuate edge E^1 to penetrate the forward hollow of the knife C^5.

Positioned on the base, and forwardly of the knife, are the tracks H H^1, the outer tracks H^1 being for example mounted on outwardly extending arms H^2. Movable along said tracks is a carriage member generally indicated as H^3 which includes track engaging members H^4 H^5. Mounted on the carriage H^3 is the work receiving member which includes a main portion H^6 downwardly inclined forwardly toward the knife when the parts are in the position shown in Figure 2. At the lower edge is an angle H^7 at right angles thereto, and with the rounded upper edge portion H^8. The portion of the member H^6 adjacent the cutting plane extends outwardly as at H^9 to terminate in the roller edge H^{10}. The outer portion terminates as at H^{11}. H^{12} indicates a guide pin mounted on the carriage and terminating in a tapered portion H^{13}, a rounded enlargement H^{14} and a final taper H^{15}. The maximum diameter of the portion H^{14} is substantially the same as the maximum diameter of the body of the pin or shaft H^{12}.

J indicates a pusher plate having the handle J^1 and forward work engaging pins or points J^2. Extending rearwardly from the handle is the arm J^3 which terminates in a sleeve J^4 adapted to ride on the pin or guide H^{12}. It will be understood that the arm J^3 is of sufficient length to clear the portion H^9 of the work receiving member H^6. The taper H^{13} and the outer tapered member H^{15} permit the sleeve J^4 readily to be

applied to or withdrawn from the pin H^{12}, with no initial cramping or jamming. This is an advantage in permitting the ready and quick application of or removal of the pusher plate assembly. The handle J^1 is provided with an upwardly extending rib J^5, as illustrated in Figures 1 and 2. J^6 indicates a fiber washer secured to the lower edge of the pusher plate J, and in slidable relationship with the work receiving member H^6.

Positioned to the rear of the cutting plane is any suitable slice receiving tray, normally fixed in position, indicated as K. It is upwardly extended at one end as at K^1 and is also upwardly extended forwardly as at K^2. It may be removed, but is normally locked in position in relation to the slicing machine assembly. The forward edge K^2 is herein indicated as terminating along a rectilinear horizontal plane as at K^3.

L indicates a gauge plate support or bracket which extends rearwardly as at L^1 and has a gauge plate L^2 secured thereto as by the screws L^3. It will be seen, as in Figure 3, that the extreme lower edge of the gauge plate L^2 engages and is secured to the rearward horizontal extension L^1 of the support L. L^4 is an inclined guide rod for the gauge plate assembly which may be mounted as in the securing sleeves L^5 L^5. L^6 is a similar but shorter guiding rod. The two rods L^4 L^6 are parallel and the bearing sleeves L^7, L^5 are so located that the rods L^4 L^6 may move in unison and in parallel. They are connected by the cross member L^8 to which the gauge plate supporting member L may be secured as by the screws L^9. It will be understood that in order to permit adjustment of the gauge plate support or bracket L in relation to the cross member L^8 the screws L^9 are made to pass through apertures in the member L^8, indicated as L^{10} in Figure 3, which are of sufficient diameter to permit L to be adjusted in relation to L^8. Thus L may be adjusted endwise or transversely in relation to L^8 or may be somewhat rotated or tilted in relation to L^8.

In order to move the gauge plate assembly toward and away from the cutting plane I provide a control lever M pivoted as at M^1 and having an outer manual control handle M^2, and a pointer M^3 movable along the arcuate indicating table M^4 which is calibrated as at M^5 or provided with a plurality of numbered or indicated marks to determine the desired setting of the gauge plate structure. As shown, the lever is formed of two sections. A separate outer section M^6 which carries the handle M^2, is pivoted to the main lever as at M^7. A spring M^8 is normally effective to impart a clockwise movement to the lever M^6, referring to the position of the parts as shown in Figure 5. This movement tends to thrust a wedge M^9 into or against a segmental wedge receiving trough M^{10}, which trough is secured to the frame as by screws M^{11}. The wedge M^9 is secured to the lever M^6 by a plurality of links M^{12}. Therefore, when the device is in the full line position of Figure 5 the spring M^8 holds the handle M^2 and the associated lever structure against rotation, whereby unintended changes of adjustment of the gauge plate are prevented. In using the device the operator has merely to thrust down slightly on the handle M^2, moving it into the dotted line position of Figure 5, compressing the spring M^8 and releasing the wedge M^9 from the locking segment M^{10}. M^{13} is any suitable abutment herein shown as an adjusting screw whereby the limit of the permitted manual movement of the handle M^2 and the lever M^6 is controlled. M^{14} is any suitable plate positioned on the bottom of the frame which may have for effect to limit the downward movement of the lever structure as a whole in case there is any play or loosening of the lever in relation to its pivot M^1. M^{15} are limit members adapted to engage bosses M^{16} on the frame or on depending webs M^{17} of the frame, whereby the arc of movement of the lever M and the handle M^2 may be limited and adjusted.

The actual movement of the gauge plate in response to rotation of the lever M is obtained as follows. The lever M is provided with a projecting wing O to which are bolted or otherwise secured the arms O^1 to the outwardly extending ends of which are pivoted links O^2 which in turn are pivoted to the shoulder O^4 of the bolt O^3 which passes through the shaft L^4 previously described. O^5 is a slack take-up spring connecting the shoulder O^4 with the members O^1. It has for its function to take up the lost motion between the gauge plate guide rod L^4 and the operating lever M. It will be understood that the arms O^1 are adjustable in relation to the projecting wing O. For example, if the handle M^2 is in the position in which it is shown in Figure 1 with the pointer at zero, the gauge plate must also be at the zero position or at its closest approach to the cutting plane. The screws or bolts O^6 may be slacked off and the arms O^1 are adjusted into the desired position, when the screws or bolts are then tightened to hold the arms permanently in their proper adjustment. It will be understood that the apertures O^7 through which pass the bolts O^6 are of somewhat greater diameter than the bolts, sufficiently so to permit whatever degree of adjustment is necessary.

It will be realized that whereas I have described and shown a practical and operative device, nevertheless many changes might be made in the size, shape, number and disposition of parts without departing from the spirit of my invention. I therefore wish my description and drawings to be taken as in a broad sense illustrative and diagrammatic rather than as limiting me to my specific showing.

The use and operation of my invention are as follows:

The structure herein described and shown forms a light, easily operated and efficient slicing machine of the manual feed type, in which the rotary knife C^5 is rotated at relatively high speed by electric motor means. The carriage H^3 is guided by the tracks H H^1, but the carriage is moved manually by the hand of the operator. Mounted on the carriage for movement along a path preferably at right angles to the cutting plane is the pusher plate J, which is also manually operated. For example, the operator may grasp with his hand the sleeve J^4, the arm J^2 or the handle H^1. By thrusting forwardly along the cutting plane and somewhat inwardly toward the cutting plane the work is thrust into effective contact with the forward face of the gauge plate L^2. A continuation of the inclined thrust carries the carriage and the work, properly gauged, against the cutting edge of the knife C^5. The slice is cut and falls upon the slice receiving tray K. The work meanwhile continues across the face of the guard plate E until the work has been entirely carried past the cutting edge and the slice has been severed. The operator then manually withdraws the carriage and repeats his inclined thrust for the ensuing stroke and slice.

In the gauge plate control structure herein shown the operator sets the gauge plate for any

desired thickness of slice by merely moving the handle M^2 and the pointer M^3 along the segment M^4. As closer regulation is desired for the finer slices, and the ability to cut thin slices of varying thinness, I have so disposed the lever M and its associated parts that the initial movement causes a minimum movement of the gauge plate L^2. As the handle is moved downwardly, referring to the positions of the parts in Figure 1 the further movement of the handle and lever M causes a constantly increasing movement of the gauge plate L^2. In other words, a movement of one notch or space at the initial end of the segment M^5 causes a corresponding movement of the gauge plate L^2 which is quite slight. The movement of the handle M through a similar arc toward the end of the scale of the segment M^5 causes a much greater movement of the gauge plate L^2. This disposition is highly advantageous, as it is at the narrow end of the scale that precise regulation of the thickness of the slices in most important.

I claim:

1. In a slicing machine including a base, a knife mounted thereon and means for actuating it, and a gauge plate, means for actuating the gauge plate, including a thrust plunger mounted within said base, guiding means for constraining said thrust plunger and gauge plate to movement along a predetermined path and means for moving said thrust plunger, including a lever pivoted for rotation, in said base, about a vertical axis, said lever including a handle portion extending outwardly through one side of the base, the base being provided with a generally horizontal aperture to permit movement of said handle portion, and a link connection between said lever and said thrust plunger.

2. In a slicing machine including a base, a knife mounted thereon and means for actuating it, and a gauge plate, means for actuating the gauge plate, including a thrust plunger mounted within said base, guiding means for constraining said thrust plunger and gauge plate to movement along a predetermined path and means for moving said thrust plunger, including a lever pivoted for rotation, in said base, and a connection between said lever and said thrust plunger, including an additional lever member rigid in relation to the first mentioned lever and a flexible connection between said second lever member and the thrust plunger.

3. In a slicing machine including a base, a knife mounted thereon and means for actuating it, and a gauge plate, means for actuating the gauge plate, including a thrust plunger mounted within said base, guiding means for constraining said thrust plunger and gauge plate to movement along a predetermined path and means for moving said thrust plunger, including a lever pivoted for rotation, in said base, and a connection between said lever and said thrust plunger, including an additional lever member rigid in relation to the first mentioned lever and a link connection between said second lever member and the thrust plunger, and a spring interposed between said thrust plunger and said second lever member.

5. In a slicing machine including a base, a knife mounted thereon and means for actuating it, and a gauge plate, means for actuating the gauge plate, including a thrust plunger mounted within said base, guiding means for constraining said thrust plunger and gauge plate to movement along a predetermined path and means for moving said thrust plunger, including a lever pivoted for rotation, in said base, and a connection between said lever and said thrust plunger, and frictional brake means adapted positively to hold the lever against unintended movement when released, said frictional brake means being normally at all times operative to hold the lever against movement, and means for moving said frictional brake means into inoperative position.

6. In a slicing machine including a base, a knife mounted thereon and means for actuating it, and a gauge plate, means for actuating the gauge plate, including a thrust member, guiding means for constraining said thrust member and gauge plate to movement along a predetermined path and means for moving said thrust member, including a lever pivoted for rotation, on said base, and a connection between said lever and said thrust member, and brake means adapted positively to hold the lever against unintended movement when released, said brake means including a brake band mounted on the base and an opposed brake member mounted on the lever and means tending normally to hold said braking members in braking relationship.

7. In a slicing machine including a base, a knife mounted thereon and means for actuating it, and a gauge plate, means for actuating the gauge plate, including a thrust member, guiding means for constraining said thrust member and gauge plate to movement along a predetermined path and means for moving said thrust member, including a lever pivoted for rotation, on said base, and a connection between said lever and said thrust member, said lever being provided with a handle portion movable in relation to the lever, a brake member on the base, an opposed brake member on the handle portion and means tending normally to hold said opposed members in braking relationship.

8. In a slicing machine including a base, a knife mounted thereon and means for actuating it, and a gauge plate, means for actuating the gauge plate, including a thrust member, guiding means for constraining said thrust member and gauge plate to movement along a predetermined path and means for moving said thrust member, including a lever pivoted for rotation, on said base, and a connection between said lever and said thrust member, said lever being provided with a handle portion movable in relation to the lever, a brake member on the base, an opposed brake member on the handle portion and means tending normally to hold said opposed members in braking relationship, including yielding means tending to rotate the handle portion in relation to the lever.

9. In a slicing machine including a base, a knife mounted thereon and means for actuating it, and a gauge plate, means for actuating the gauge plate, including a thrust member, guiding

means for constraining said thrust member and gauge plate to movement along a predetermined path and means for moving said thrust member, including a lever pivoted for rotation, on said base, and a connection between said lever and said thrust member, said lever being provided with a handle portion movable in relation to the lever, an arcuate brake member on the base, an opposed brake member on the handle portion and means tending normally to hold said opposed members in braking relationship.

10. In a slicing machine including a base, a knife mounted thereon and means for actuating it, and a gauge plate, means for actuating the gauge plate, including a thrust member, guiding means for constraining said thrust member and gauge plate to movement along a predetermined path and means for moving said thrust member, including a lever pivoted for rotation, on said base, and a connection between said lever and said thrust member, said lever being provided with a handle portion movable in relation to the lever, an arcuate brake trough on the base, an opposed brake member on the handle portion, and means tending normally to move said brake member into wedging contact with the brake trough.

11. A slicing machine including a base, a knife thereon and means for actuating it, and a carriage and means for guiding the carriage past the cutting edge of the knife, a gauge plate and means for actuating it, including a lever rotatably mounted within the base about a generally perpendicular axis, and an actuating connection between said lever and the gauge plate including a link pivoted to said lever, a member pivoted to said link and a connection between said member and the gauge plate and yielding wear take-up means interposed between said lever and said member.

12. A slicing machine including a base, a knife thereon and means for actuating it, and a carriage and means for guiding the carriage past the cutting edge of the knife, a gauge plate and means for actuating it, including a lever rotatably mounted within the base, and an actuating connection between said lever and the gauge plate, said lever being mounted for movement about a generally vertical axis, and means spaced from said axis for restricting movement of said lever to its normal plane of rotation, and a handle member, extending exteriorly of the base, said handle member being pivoted to said lever for rotation in relation to the lever about an axis transverse to the axis of rotation of said lever.

13. In a slicing machine including a base, and a knife and means for actuating it, a carriage and means for guiding the carriage past the cutting edge of the knife, and a gauge plate and means for actuating the gauge plate including a compound lever structure said compound lever structure being mounted for rotation as a whole about a generally vertical axis and including a main lever member rotatable about said axis and a supplemental member, and a connection between the main member of said lever structure and the gauge plate, the supplemental member of said lever structure being rotatable about a horizontal axis in relation to the main member and means for limiting relative rotation of said two lever elements.

14. In a slicing machine including a base, and a knife and means for actuating it, a carriage and means for guiding the carriage past the cutting edge of the knife, and a gauge plate and means for actuating the gauge plate including a compound lever structure said compound lever structure being mounted for rotation as a whole about a generally vertical axis and including a main lever member rotatable about said axis and a supplemental member, and a connection between the main member of said lever structure and the gauge plate, the supplemental member of said lever structure being rotatable about a horizontal axis in relation to the main member and adjustable means for limiting relative rotation of said two lever elements.

15. A slicing machine including a base, a knife thereon and means for actuating it, a carriage and means for guiding the carriage past the cutting edge of the knife, a slice receiving member on the base, a gauge plate and means for actuating it, including a lever mounted beneath the slice receiving member for rotation about a perpendicular axis, a wing normally fixed on the lever, and offset from the handle portion thereof, a connection member adjustable on said wing, a gauge plate actuating plunger associated with the gauge plate, and a link pivoted to said connecting member and to said plunger.

16. A slicing machine including a base, a knife thereon and means for actuating it, a carriage and means for guiding the carriage past the cutting edge of the knife, a slice receiving member on the base, a gauge plate and means for actuating it including a lever pivoted beneath the slice receiving member for rotation about a generally vertical axis, a plunger member and a connection between said plunger member and the gauge plate and an adjustment member intermediate said plunger member and lever, adapted to adjust the position of the gauge plate in relation to any predetermined position of the lever, and a link connection between the plunger member and the lever, the link connection and the adjustment member being operatively connected.

17. In a slicing machine including a base, and a knife and means for actuating it, a carriage and means for guiding the carriage past the cutting edge of the knife, and a gauge plate and means for actuating the gauge plate including a compound lever structure, said compound lever structure being mounted for rotation as a whole about a generally vertical axis and including a main lever member rotatable about said axis and a supplemental member, and a connection between the main member of said lever structure and the gauge plate, the supplemental member of said lever structure being rotatable about a horizontal axis in relation to the main member and means for limiting relative rotation of said two lever elements, and a brake member associated with the supplemental lever member and an additional brake member, fixed on the base, to which it is opposed.

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