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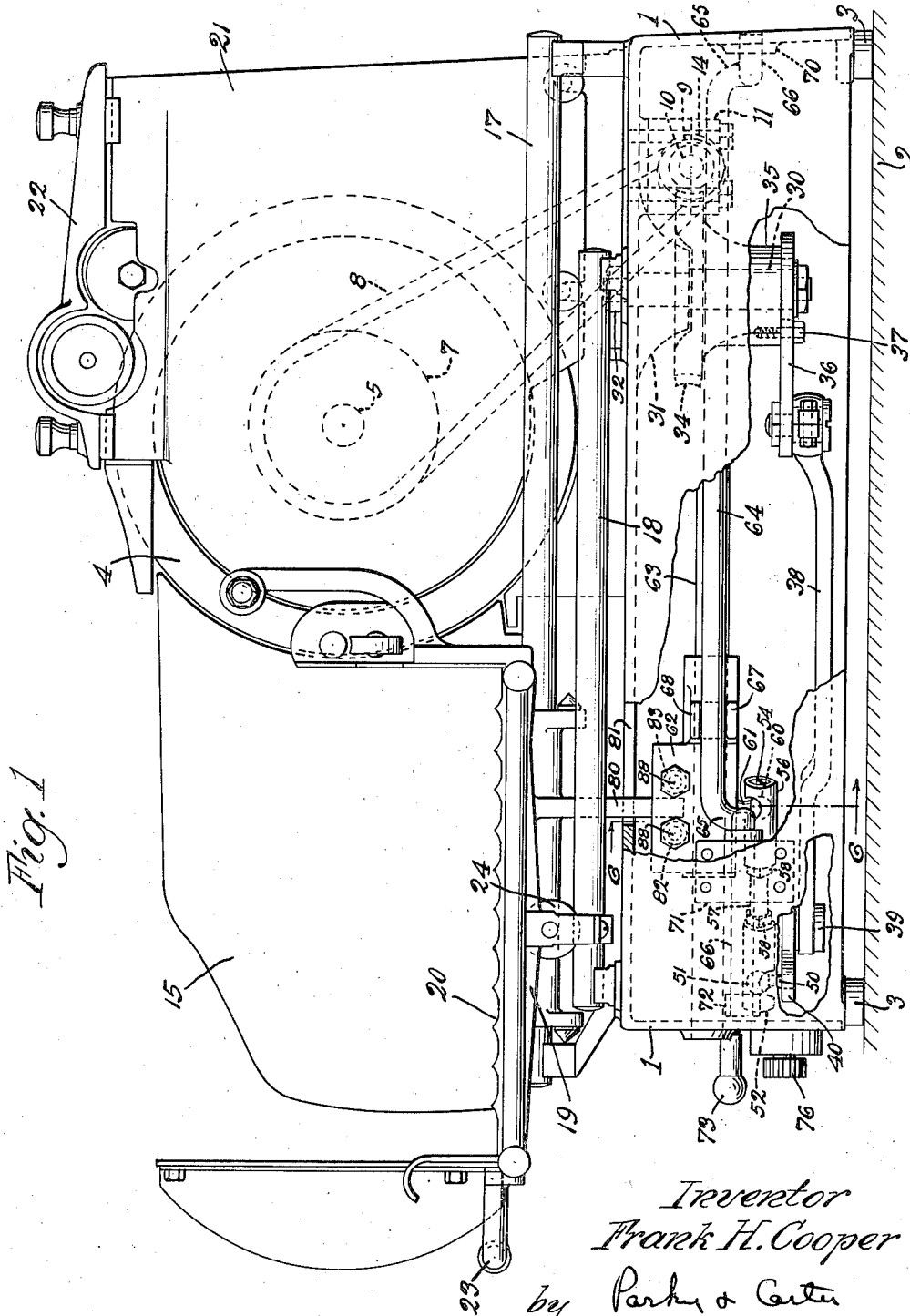
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2,108,306

SLICING MACHINE

Filed Sept. 24, 1936

4 Sheets-Sheet 1



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SLICING MACHINE

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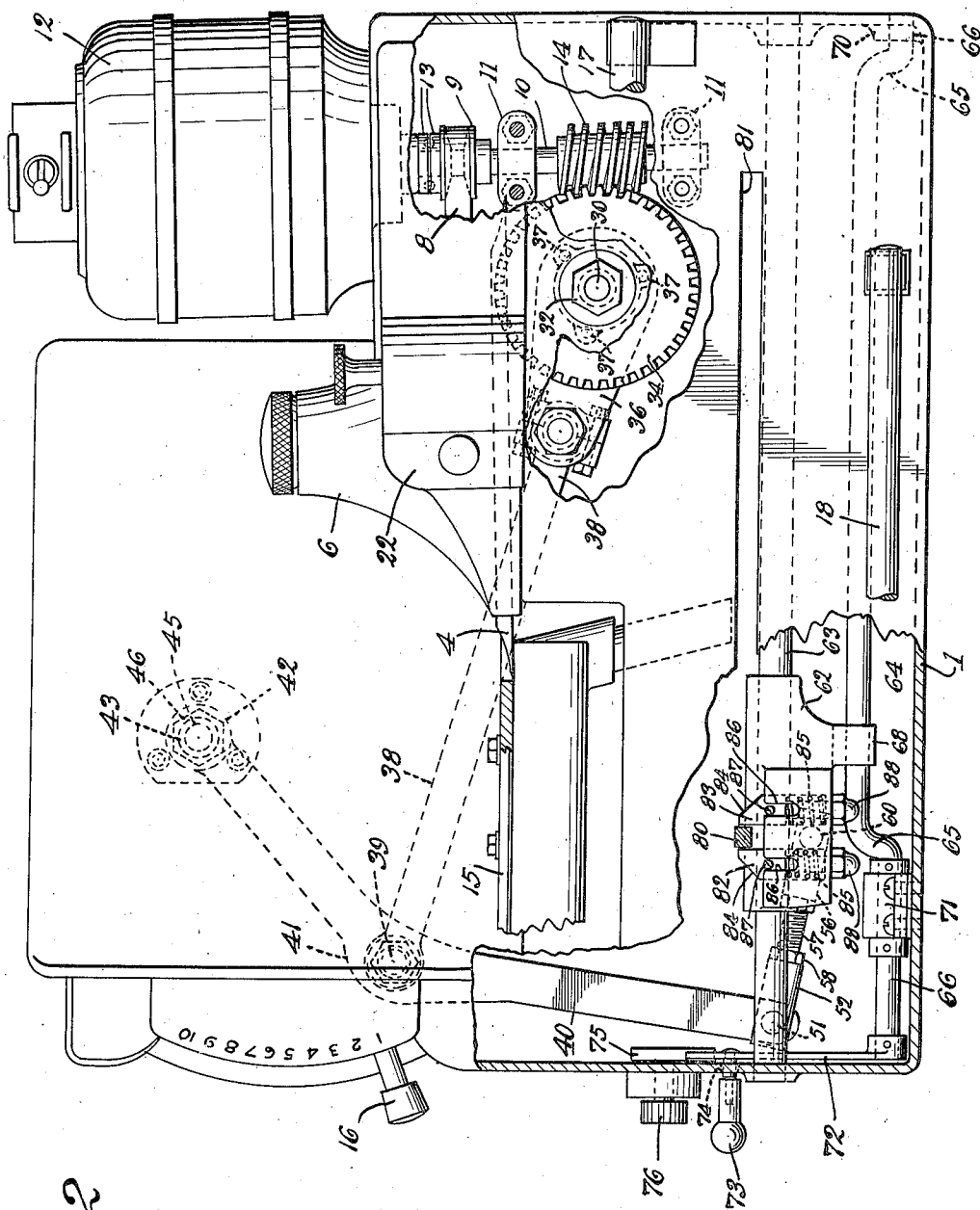


Fig. 2

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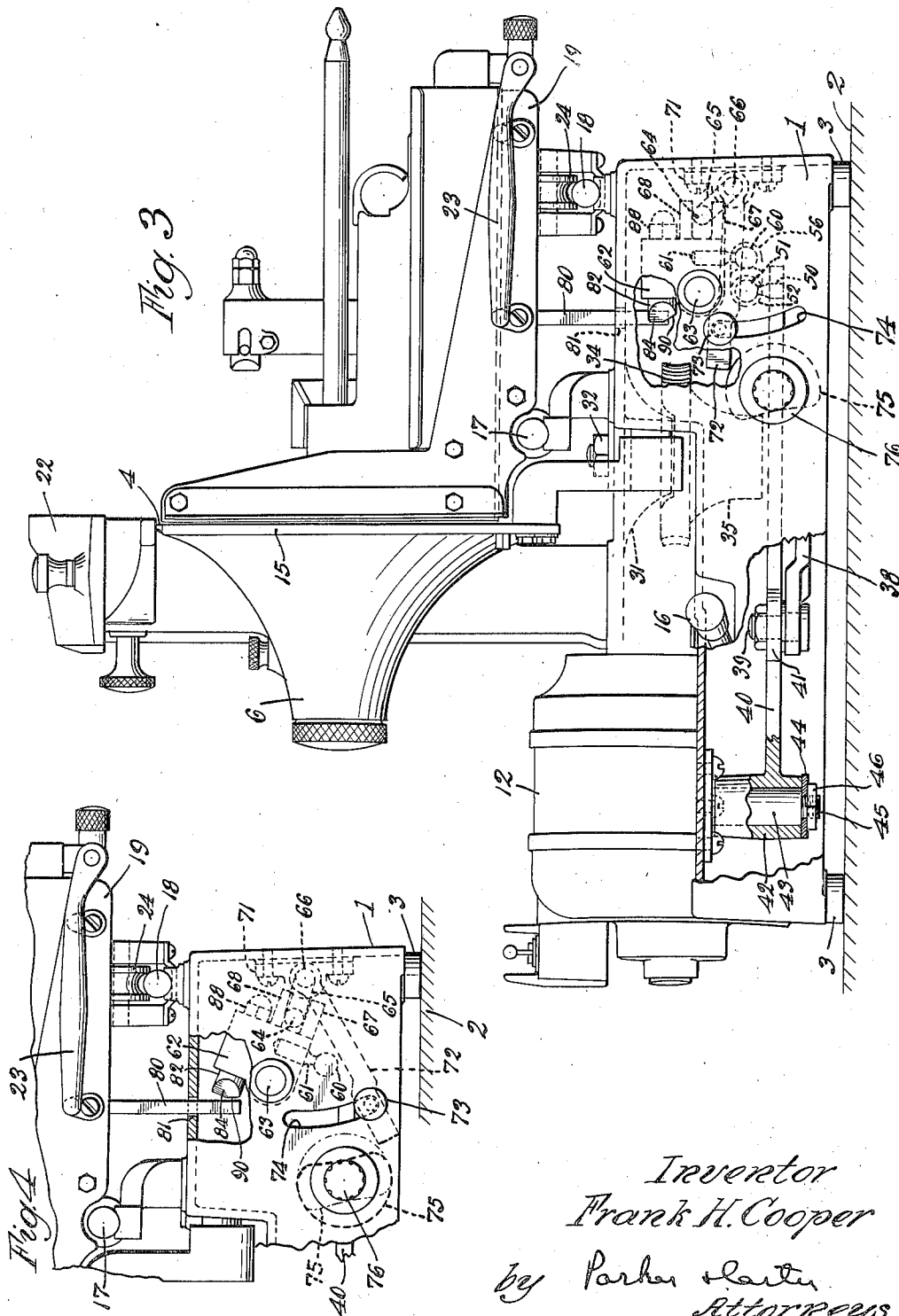
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SLICING MACHINE

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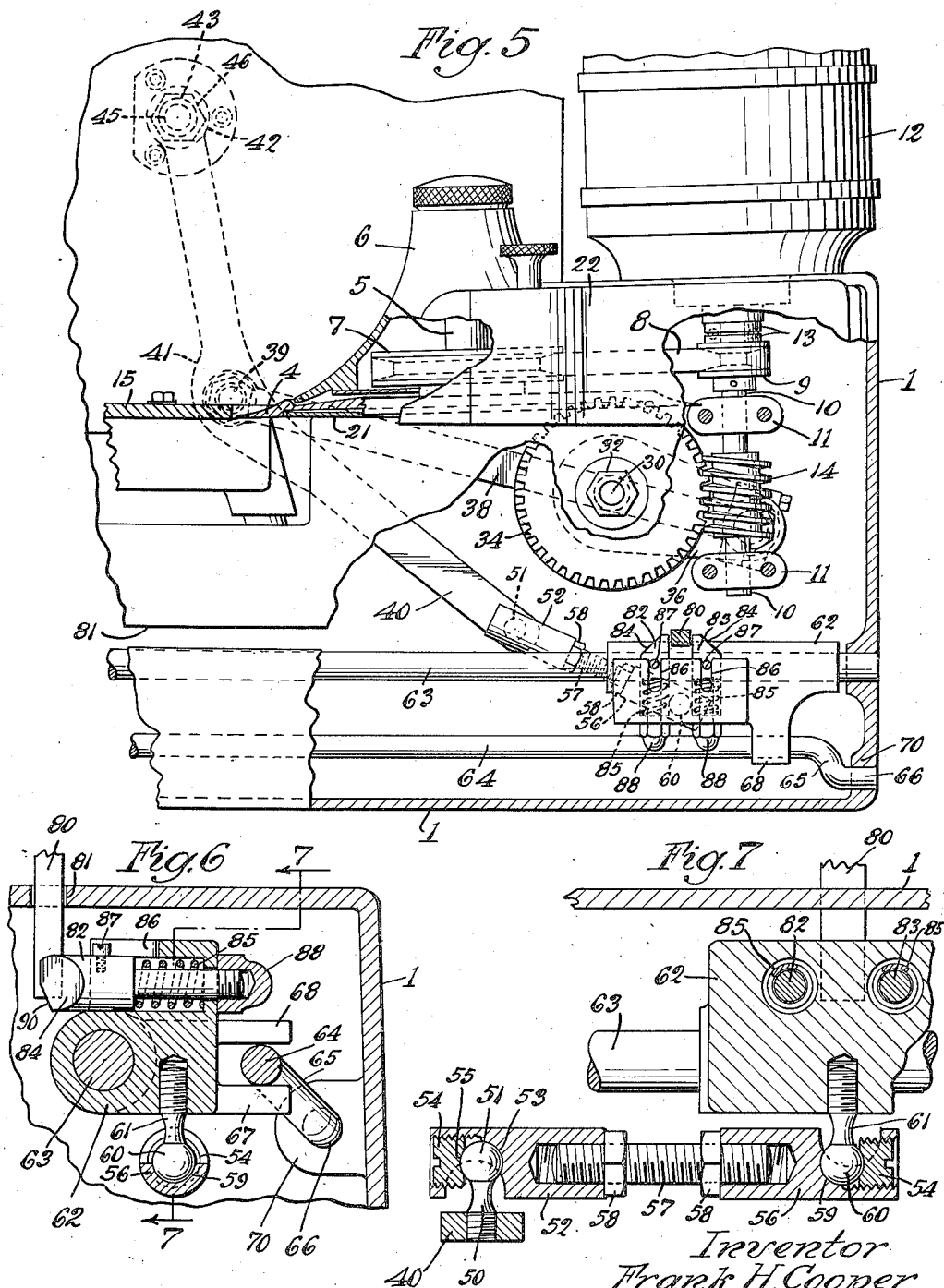
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SLICING MACHINE

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## UNITED STATES PATENT OFFICE

2,108,306

## SLICING MACHINE

Frank H. Cooper, Chicago, Ill., assignor to  
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Application September 24, 1936, Serial No. 102,287

5 Claims. (Cl. 146—102)

My invention relates to an improvement in slicing machines and has for one purpose the provision of a slicing machine wherein a motor may be employed to drive both the cutting knife and the reciprocating carriage.

Another purpose is the provision of means for permitting the operator to break or interrupt the driving connection for the carriage, whereby the carriage may be manually moved or reciprocated.

Another purpose is the provision of an improved clutch connection whereby the motor drive for the carriage may be made or broken at the desire of the operator.

Another purpose is the provision of an improved connection or means whereby the opening of the switch of the motor is necessitated prior to clutching or declutching the driving connection for the carriage.

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 front elevation with parts broken away;

Figure 2 is a plan view with parts broken away;

Figure 3 is an end elevation with parts in section and with parts broken away;

Figure 4 is a fragmentary view of a portion of the structure shown in Figure 3, showing the parts in a different position;

Figure 5 is a partial plan view with parts broken away and parts in section, illustrating the parts in a different position;

Figure 6 is a section on the line 6—6 of Figure 1; and

Figure 7 is a section on the line 7—7 of Figure 6.

Like parts are indicated by like symbols throughout the specification and drawings.

Referring to the figures, 1 generally indicates any suitable base housing mounted, in any suitable manner, on a supporting surface 2, for example by means of yielding or frictional studs 3. 4 is a cutting knife mounted upon a shaft 5 rotatable in any suitable bearing sleeve generally indicated as 6, provided with a pulley 7 about which passes a belt 8 over the pulley 9. This pulley is mounted on and rotates with a shaft 10 mounted in the bearings 11 and may be driven in any suitable manner by the motor 12, for example through any suitable coupling or thrust bearings 13. The shaft 10 is also provided with a worm 14, the purpose of which will later appear.

15 is any suitable gauge plate which may be

provided with a controlling handle or lever 16, the details of which do not of themselves form part of the present invention. It will be understood that the gauge may be moved toward or away from the cutting plane of the knife. 17, 18 are tracks along which reciprocates a carriage structure generally indicated as 19 and including the work supporting surface 20. 21 indicates a guard plate positioned in front of the knife 4, and 22 any suitable cover plate overlying the knife.

It will be clear from the drawings that the motor 12, through the pulley 9 and the shaft 10 and the belt 8, rotates the knife. The carriage 19 may be manually moved along the tracks 17, 18 as by the manual handle 23. Friction may be reduced by any suitable means, for example the roller 24. As selective means for reciprocating the carriage 19 by power from the motor 12, I provide the following structure: A stationary pin or stub shaft 30 is mounted in a boss 31 of the base or frame housing 1. It may be locked in position for example by the nut 32 shown for example in Figures 1 and 3. Rotatably mounted on the shaft or pin 30 is the worm gear 34 in mesh with the worm 14 of the shaft 10. The worm gear 34 is provided with a downward extension or hub 35 to provide sufficient bearing area or length in relation to the shaft 30. It also serves to support or space the arm 36 which is bolted thereon, as by the bolts 37, and is therefore held against rotation in relation to the worm gear 34.

Pivoted to the arm 36 is a link or connecting rod 38, the opposite end of which is pivoted as at 39 to an intermediate portion 41 of the arm or lever 40. This lever is provided with a hub 42 pivoted upon a fixed pin or stub shaft 43 secured to the base or frame 1. I may employ for example the steel washer 44, the reduced screw threaded portion 45, and the nut 46 for mounting the hub 42 upon the pin 43.

At the opposite end of the lever 40 is a pin 50, terminating at its upper end in a ball member 51 which is seated in a ball socket 53 of the member 52, and is locked in the socket as by the screw 54 with its spherical concave end portion 55. A similar member 56 is connected to the member 52 as by the screw 57 and its nuts 58, whereby the effective length of the combined member so formed may be adjusted. The socket 59 of the member 56 receives the ball 60 of the pin 61 which is screw threaded into a sliding block 62, which is reciprocable along a shaft 63 mounted in suitable bearings in the base member 1. The block

62 is not merely slidably reciprocable along the shaft 63 but is rotatable thereabout. Its position of rotation is determined by the guide and adjusting rod 64 which has crank ends 65 and terminal bearing portions 66, whereby the rod 64, taken as a whole, may serve as a crank for rotating the block 62 about the shaft 63. It is held for example in a species of fork formed by the lugs 67, 68 projecting from the block 62.

One end 66 of the rod 64 may be rotatably positioned in a fixed bearing 70, shown in Figure 2 as forming part of the base 1. The other end is mounted in a removable bearing generally indicated as 71 which may be screwed or otherwise secured to the inside of the base 1. At the left hand end of the rod 64, referring to the position in which it is shown in Figure 2, is a lever arm 72 having an external handle 73 passing through an arcuate slot 74 in the base member 1. The lever 72 may be locked in position by the cam 75 which is associated with a rotary switch control button 76 which controls the circuit for energizing the motor 12. It will be understood that the lever 72, and thus the rod 64, cannot be moved unless and until the switch button 76 is moved into position to break the circuit for the motor.

Referring to the position of the parts in Figure 3, the cam 75 is shown in dot and dash and the unlocked position is shown in dotted lines. Thus when the switch button 76 is turned to break the motor circuit, the operator can freely manually actuate the rod 64, through the handle 73, and rotate the block 62 about the shaft 63, along which it reciprocates. When the motor circuit is closed, the block 62 cannot be rotated about the axis of the shaft 63.

When the carriage 19 is to be reciprocated in response to rotation of the motor, the connection is as follows: A downward extension 80 depends from the carriage 19 and slides along and through the slot 81 in the top of the base member 1. When the block 62 is in the electric drive position in which it is shown for example in Figures 2 and 6, the member 80 is grasped between the twin latch plungers 82, 83, which are oppositely beveled as at 84 and which are spring thrust, as by springs 85, into their latching position. In order to prevent their turning, I may provide grooves 86 and pins or screws 87 sliding therealong. Their extended position may be limited, for example, by the nuts 88.

It will be understood that with the member 62 in the position shown in Figures 2, 3 and 6, the rotation of the motor causes the member 62 to pick up the extension 80. If, when the member 62 is rotated in the carriage driving position, the members 82, 83 are not alined on either side of the extension 80, they will pick it up as soon as they reach it and thereafter ride the beveled face of whichever of the members 82 or 83 strikes it and will then be caught and locked in the space therebetween, in the position shown in Figure 2. The member 62 is constantly reciprocated along the shaft 63, through the above described driving connection, but it is only when it is rotated about the shaft 63 into the position of Figures 3 and 6 that it can pick up the member 80 and maintain a driving connection between the motor and the carriage.

The use and operation of my invention are as follows:

The motor 12 constantly drives the knife through the above described driving connection. It also constantly reciprocates the member 62

along the shaft 63. The structure shown for example in Figure 7, and including the balls 51 and 60, constitutes a universal connection which permits the block 62 to be rotated about the axis of the rod 63 in response to manual actuation of the lever handle 73. When the lever 72 is in one position, as shown in Figure 4, the block 62 is tilted into unlocked position with the members 82, 83 out of contact with the depending portion 80 of the carriage 19. They may be slightly beveled, if necessary, as at 90 in Figure 4, to reduce the necessary movement or arc of rotation. When the lever 72 is moved into connecting position, the result is to rotate the block 62 about the axis of the rod 63, thereby causing the member 82, 83 to pick up the extension 80 and complete the driving connection between the carriage and the motor.

As earlier pointed out, since the lever 72 and the handle 73 can only be actuated when the switch 76 is in position to break the circuit for the motor, there is no chance of shock, strain or breakage resulting from rotating the member 62 while the motor is reciprocating.

It will be realized that whereas I have described and illustrated a practical and operative device, nevertheless many changes may 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 or diagrammatic, rather than as limiting me to the precise showing.

I claim:

1. In a slicing machine, a base, a motor, a knife, a driving connection between the motor and the knife, a reciprocating carriage, a driving connection between said carriage and said motor, including a rod, a member reciprocable along and rotatable about said rod, a driving connection between said member and the motor, effective when the member is at one position in its rotation about said rod, and ineffective at another position, adapted to reciprocate said member along said rod, and a connection between said member and said carriage effective when the member is at one position in its rotation about said rod, and ineffective at another position, and manually operable means for rotating said member about said rod, into and out of said effective position, whereby the driving connection is made and broken in response to such rotation.

2. In a slicing machine, a base, a motor, a knife, a driving connection between the motor and the knife, a reciprocating carriage, a driving connection between said carriage and said motor, including a lever pivoted at one end to the slicing machine base, a driving connection between said lever and said motor, adapted to oscillate said lever, including a link pivoted to said lever intermediate the ends of the lever, a connection between the outer end of the lever and the reciprocating carriage, including a block, a rod upon which said block is slidably mounted, manually operable means for rotating said block about said rod, and a connection between the reciprocable carriage and the block effective when the block is at one limit of its arc of rotation, whereby when the block is at one limit of its arc of rotation an operating connection is maintained between the carriage and the motor and when it is at the other limit of its arc of rotation said connection is broken.

3. In a slicing machine, a motor, a knife, a driving connection between the motor and the

knife, a reciprocating carriage, a driving connection between said carriage and said motor, including a track, a member slidable along said track, manual means for rotating said member about an axis parallel with its path of movement along said track, a driving connection effective to reciprocate said member along said track, and a connection between said member and said reciprocating carriage, including yieldable latch means.

4. In a slicing machine, a motor, a knife, a driving connection between the motor and the knife, a reciprocating carriage, a driving connection between said carriage and said motor, including a track, a member slidable along said track, manual means for rotating said member about an axis parallel with its path of movement along said track, a driving connection effective to reciprocate said member along said track, a connection between said member and said reciprocating carriage, including a plurality of adjacent yieldably mounted bevel ended latch members, and a member associated with the reciprocating carriage adapted to penetrate therebetween.

5. In a slicing machine, a base, a motor, a knife, a driving connection between the motor and the knife, a reciprocating carriage, a driving connection between said carriage and said motor including a rod, a member reciprocable along and rotatable about said rod, a driving connection between said member and the motor, effective when the member is at one position in its rotation about said rod, and ineffective at another position, adapted to reciprocate said member along said rod, and manually operable means for rotating said member about said rod into and out of said effective position, whereby the driving connection is made and broken in response to said rotation, including a crank member and manual means for rotating it, said crank member including a portion along which said reciprocable member is slidable, and a connection between said member and said carriage effective at one limit of the arc of rotation of said member about said rod.

FRANK H. COOPER.