Feb. 20, 1934. W. J. CAMPBELL 1,947,896

POWER CLEAVER

Filed June 10, 1931 3 Sheets-Sheet 1

Fig. 1

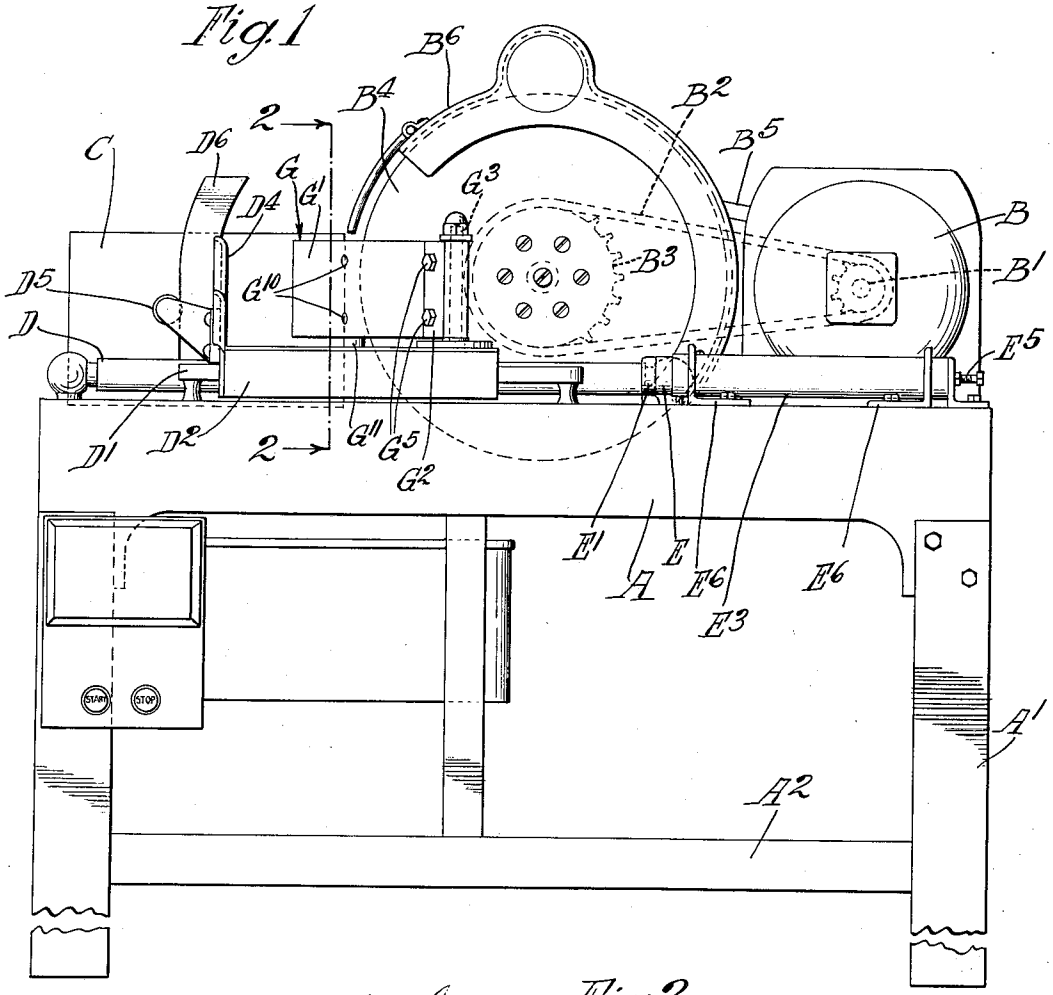
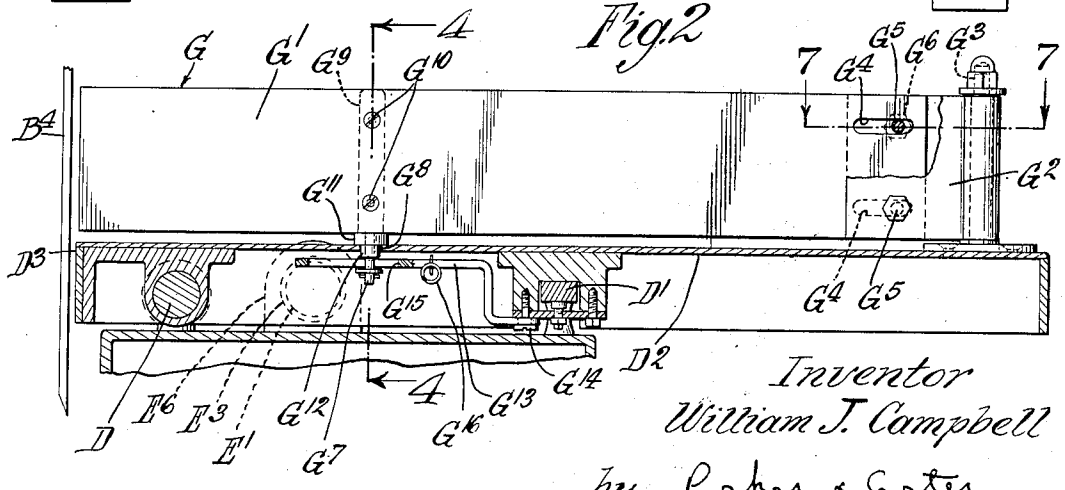


Fig. 2



Inventor
William J. Campbell
by Parker & Carter
Attorneys

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Fig. 3

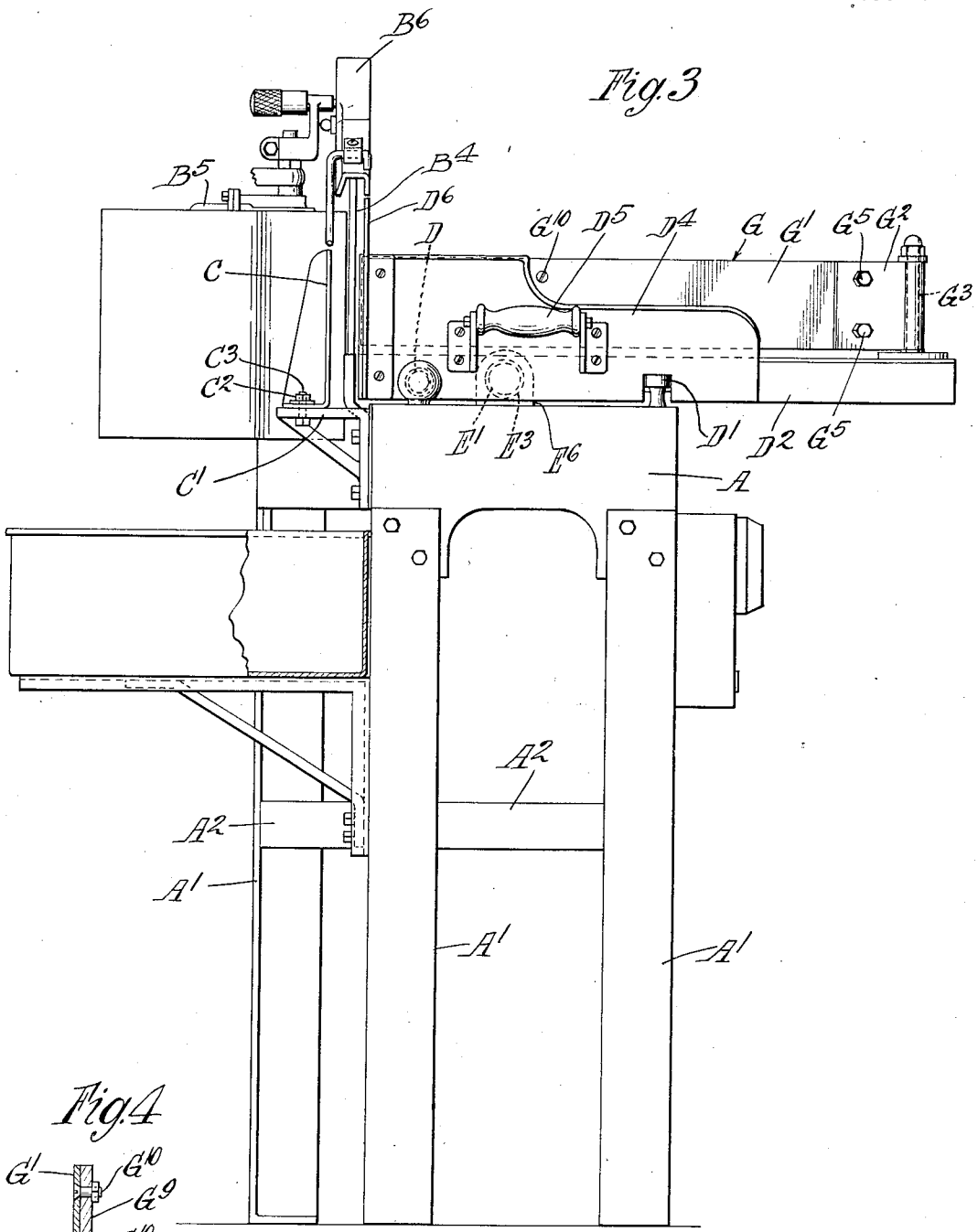
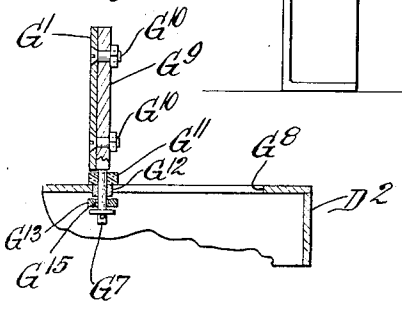


Fig. 4



Inventor
William J. Campbell
by Parker & Carter
Attorneys

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Fig. 5

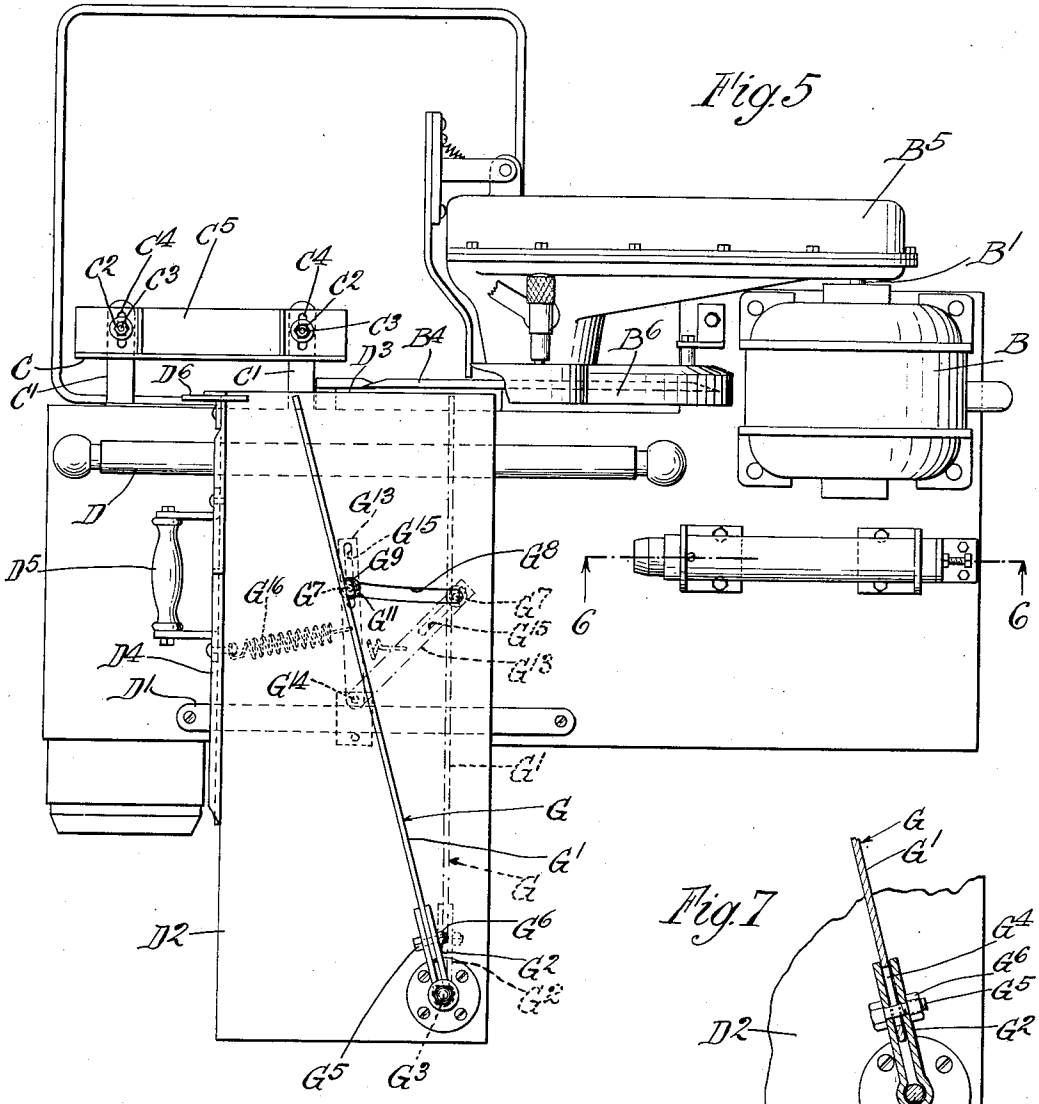
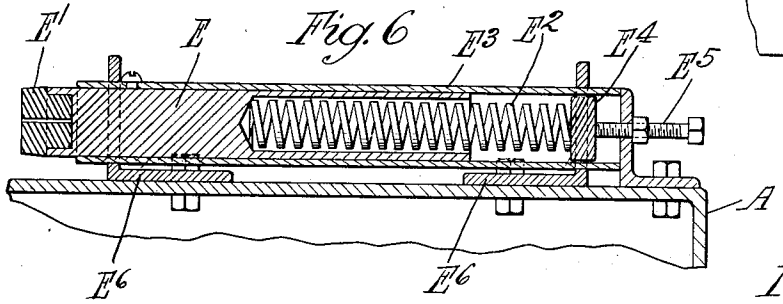


Fig. 7

Fig. 6



Inventor
William J. Campbell
by Parker & Carter
Attorneys.

Patented Feb. 20, 1934 1,947,896

UNITED STATES PATENT OFFICE

1,947,896

POWER CLEAVER

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

Application June 10, 1931. Serial No. 543,313

6 Claims. (Cl. 146—102)

My invention relates to a power cleaver and has for one object to provide a machine for cleaving or cutting lamb chops, pork chops or the like. One object is the provision of a machine of the class above described, which shall be effective for the rapid and efficient severing or cleaving of pieces of meat, chops or the like from a larger piece. Another object is the provision of means for holding the meat or work steady during and after the cleaving impact. Another object is the provision of means for permitting rapid manual actuation of the cleaver. 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;

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 is an end elevation;

Figure 4 is a section on the line 4—4 of Figure 2;

Figure 5 is a plan view;

Figure 6 is a section on the line 6—6 of Figure 5; and

Figure 7 is a section on the line 7—7 of Figure 2.

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

Referring to the drawings, I employ any suitable supporting surface or table A which may for example be supported upon legs A^1 with any suitable cross bracing A^2.

Mounted on the table A is any suitable motor B with its motor shaft B^1 whereby by a belt or chain B^2 the motor may drive a gear or pulley B^3 and thus rotate a circular knife B^4. B^5 indicates any suitable housing means for the transmission and B^6 a guard for the edge of the knife.

C indicates any suitable gauge plate positioned for example upon a bracket C^1 on the table A. The gauge plate is indicated as adjustable as by the nuts C^2 on bolts C^3 passing through slots C^4 in a lower flange C^5 of the gauge plate C. Any other suitable means may be employed for effecting adjustment, it being understood that the gauge plate is positioned a distance to the rear of the cutting plane equal to the desired thickness of the chops or pieces of meat. Preferably the gauge plate lies in a plane parallel with the cutting plane of the knife.

D D^1 indicate tracks positioned upon the table A and adapted to receive and guide any suitable carriage generally indicated as D^2. The inner edge D^3 of the carriage terminates just short of the cutting plane. Positioned along the edge of the carriage remote from the cutting edge of the knife when the carriage is at the initiation of its cutting stroke is an upstanding flange D^4 adapted to receive the work. A manual handle D^5 is positioned adjacent the flange D^4 for the ready manual reciprocation of the carriage D^2. D^6 indicates a guard adapted to shield the cutting edge of the knife when the carriage is at the end of its cutting stroke.

E generally indicates a buffer or plunger having a yielding stud E^1 at one end, which is adapted to receive the carriage D^2 at the end of its cutting excursion and to cushion it. E^2 is a coil spring, the spring and the plunger E being positioned within a casing E^3. E^4 is an abutment block for the spring E^2 which may be adjusted as by rotation of the set screw E^5. It will be understood that the sleeve E conforms so closely to the cylinder or casing E^3 that a pneumatic cushioning effect is obtained which supplements or is supplemented by the action of the spring proper E^2. It will also be understood that when the operator thrusts the carriage D^2 across the face of the knife it may engage the padded end E^1 of the plunger E. The result will be a compression of the spring E^2 which cushions the end of the cutting reciprocation of the carriage. When the operator releases his forward thrust on the carriage the spring tends to throw the carriage back to its initial point. Thus the cushioning of the cutting stroke is employed to start or even complete the return stroke of the carriage to its initial position. The guide E^3 may be mounted in any suitable brackets E^6 upon the table A.

G indicates a yieldingly mounted side guide for the work. It includes a guide member proper G^1 which is adjustably mounted upon a hinge member G^2 pivoted to the pivot pin G^3 of the carriage D^2. Any suitable adjusting means may be employed, for example the slots G^4 and the bolts G^5 with the nuts G^6. The member G^1 is provided intermediate its ends with the pin G^7 downwardly extending through a slot G^8. The pin G^7 has associated with it an abutment portion G^9 adapted to be secured as by the bolts G^{10} to the member G^1. G^{11} indicates a washer of fiber or the like adapted to span the slot G^8 and support the member G^1. G^{12} is a roller penetrating the slot G^8 and conforming generally to its width. G^{13} is a lever pivoted as at G^{14}, beneath or within the carriage D^2. It is slotted as at G^{15} to receive the pin G^7. The spring G^{16} tends to rotate the lever G^{13} and thus the member G^1 in counter clockwise position, referring to the parts as they are shown in Figure 5. It is important that the inner edge of the member G^1 maintain a constant spacing in relation to the cutting plane. Hence the slot G^8 is so proportioned as to cause the member automatically to adjust itself in relation to the hinge member G^2. In effect a telescopic member is provided, the member G^1 sliding in and out, being guided and supported by the bolts G^5 which penetrate the slots G^4. In the extreme or dotted line position,

as shown in Figure 5, the member G^1 is parallel with the flange D^4 and generally perpendicular to the cutting plane.

The result of the employment of the yielding means for moving the member G^1 is to obtain a yielding lateral thrust of the member G^1 toward the flange D^4.

When the operator wishes to cut chops or the like he puts the block of meat on the carriage D^2, the carriage being in initial position. He moves it forwardly far enough to engage the gauge plate C. His manual movement of the meat is not effectively resisted by the yielding lateral thrust of the member G but once he has positioned the work the member G holds it tightly against the upstanding flange D^4. The operator then advances the carriage with the meat on it towards the cutting edge of the knife. In cutting, with this type of knife, through meat having bones in it, the operator obtains a cleaving effect by advancing the carriage very sharply. This sharp thrust brings the carriage into rather sharp engagement with the member E^1 of the plunger E, whereby the end of the stroke is cushioned and the carriage is yieldingly thrust rearwardly towards its initial position. This yielding thrust may be sufficient to throw it all the way back but in practice the operator may generally assist manually in the withdrawal. When the carriage is withdrawn to initial position the operator again advances the meat towards the gauge plate and is ready for his ensuing cleaving stroke. In addition to holding the work against the flange D^4 the member G^1 also serves to cushion the end of the cutting stroke for that part of the work which has not been severed. The inertia of the meat tends to carry it forwardly after the carriage has been stopped. This tendency is largely resisted by the spring G^{16} which permits a slight forward movement of the work and then thrusts it back against the member D^4 and clamps it in position, ready for the forward manual thrust of the work against the gauge plate C for the ensuing stroke.

It is characteristic of my invention that a cleaving or impact cutting effect is obtained. Instead of using the knife as a cleaving member, like a heavy cleaver which is itself moved against the work, I reverse the relationship and thrust the work sharply against the rotating knife. In practice my cleaver works well for example with frozen meat and meat with bones in it, chops and the like. It is well adapted for packing house use and is in practice so used. It is necessary to move the material quickly or sharply toward the knife. Owing to the great weight of the carriage and the weight of the material, since large blocks of meat may be handled, unless some means are employed to overcome the momentum of the jabbing stroke of the heavy carriage and material, there would be either a great strain on the arm of the operator or a heavy shock to the machine. Hence the bumper E^1 is an important feature. It receives and cushions the impact of the jabbing stroke of the material, and tends to cause the carriage to rebound toward the operator, preparatory to another stroke.

At the same time the yielding member G rebounds the material firmly against the upstanding flange D^4, so that both the material and the carriage are provided with distinct although cooperating yielding means for causing the carriage as a whole to return toward the user and for separately causing the work to return toward the user and toward a predetermined position upon the carriage.

It will be realized that whereas I have described and shown a practical and operative device, nevertheless many changes might be made in 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.

I claim:

1. In a cleaving machine, a knife and means for rotating it, a carriage and means for guiding the carriage across the face and past the cutting edge of the knife, the carriage including an upstanding abutment along its edge opposite to the cutting edge of the knife when the carriage is at the beginning of its cutting stroke, and means for yieldingly holding the work against said abutment, including a guide pivoted to the carriage at a point remote from the cutting plane, and yielding means for rotating said guide about its pivot and toward said upstanding abutment, and means for maintaining the inner end of the guide in substantially constant spaced relation to the cutting plane, including means for varying the effective length of the guide.

2. In a cleaving machine, a knife and means for rotating it, a carriage and means for guiding the carriage across the face and past the cutting edge of the knife, the carriage including an upstanding abutment along its edge opposite to the cutting edge of the knife when the carriage is at the beginning of its cutting stroke, and means for yieldingly holding the work against said abutment, including a guide pivoted to the carriage at a point remote from the cutting plane, and yielding means for rotating said guide about its pivot and toward said upstanding abutment, and means for maintaining the inner end of the guide in substantially constant spaced relation to the cutting plane, including a supporting member for said guide, pivoted for rotation about a fixed axis, and an extensible connection between said supporting member and guide.

3. In a cleaving machine, a knife and means for rotating it, a carriage and means for guiding the carriage across the face and past the cutting edge of the knife, the carriage including an upstanding abutment along its edge opposite to the cutting edge of the knife when the carriage is at the beginning of its cutting stroke, and means for yieldingly holding the work against said abutment, including a guide pivoted to the carriage at a point remote from the cutting plane, and yielding means for rotating said guide about its pivot and toward said upstanding abutment, and means for maintaining the inner end of the guide in substantially constant spaced relation to the cutting plane, including a supporting member for said guide, pivoted for rotation about a fixed axis, and an extensible connection between said supporting member and guide, including a slot connection between said members.

4. In a cleaving machine, a knife and means for rotating it, a carriage and means for guiding the carriage across the face and past the cutting edge of the knife, the carriage including an upstanding abutment along its edge opposite to the cuting edge of the knife when the carriage is at the beginning of its cutting stroke, and means for yieldingly holding the work against said abutment, including a guide pivoted to the carriage at a point remote from

the cutting plane, and yielding means for rotating said guide about its pivot and toward said upstanding abutment, and means for maintaining the inner end of said guide at a substantially constant distance from the cutting plane, throughout the normal arc of rotation of the guide, said means including a cam connection between guide and carriage.

5. In a cleaving machine, a knife and means for rotating it, a carriage and means for guiding the carriage across the face and past the cutting edge of the knife, the carriage including an upstanding abutment along its edge opposite to the cutting edge of the knife when the carriage is at the beginning of its cutting stroke, and means for yieldingly holding the work against said abutment, including a guide pivoted to the carriage at a point remote from the cutting plane, and yielding means for rotating said guide about its pivot and toward said upstanding abutment, and means for maintaining the inner end of said guide at a substantially constant distance from the cutting plane, throughout the normal arc of rotation of the guide, said means including a guide slot in the carriage and a member, depending from the guide, penetrating said slot.

6. In a cleaving machine, a knife and means for rotating it, a carriage and means for guiding the carriage across the face and past the cutting edge of the knife, the carriage including an upstanding abutment along its edge opposite to the cutting edge of the knife when the carriage is at the beginning of its cutting stroke, and means for yieldingly holding the work against said abutment, including a guide pivoted to the carriage at a point remote from the cutting plane, and yielding means for rotating said guide about its pivot and toward said upstanding abutment, and means for maintaining the inner end of said guide at a substantially constant distance from the cutting plane, throughout the normal arc of rotation of the guide, said means including a guide slot in the carriage and a member, depending from the guide, penetrating said slot, and a yielding connection, positioned beneath the upper surface of said carriage, tending normally to urge said guide in the direction of said upstanding abutment.

WILLIAM J. CAMPBELL.