

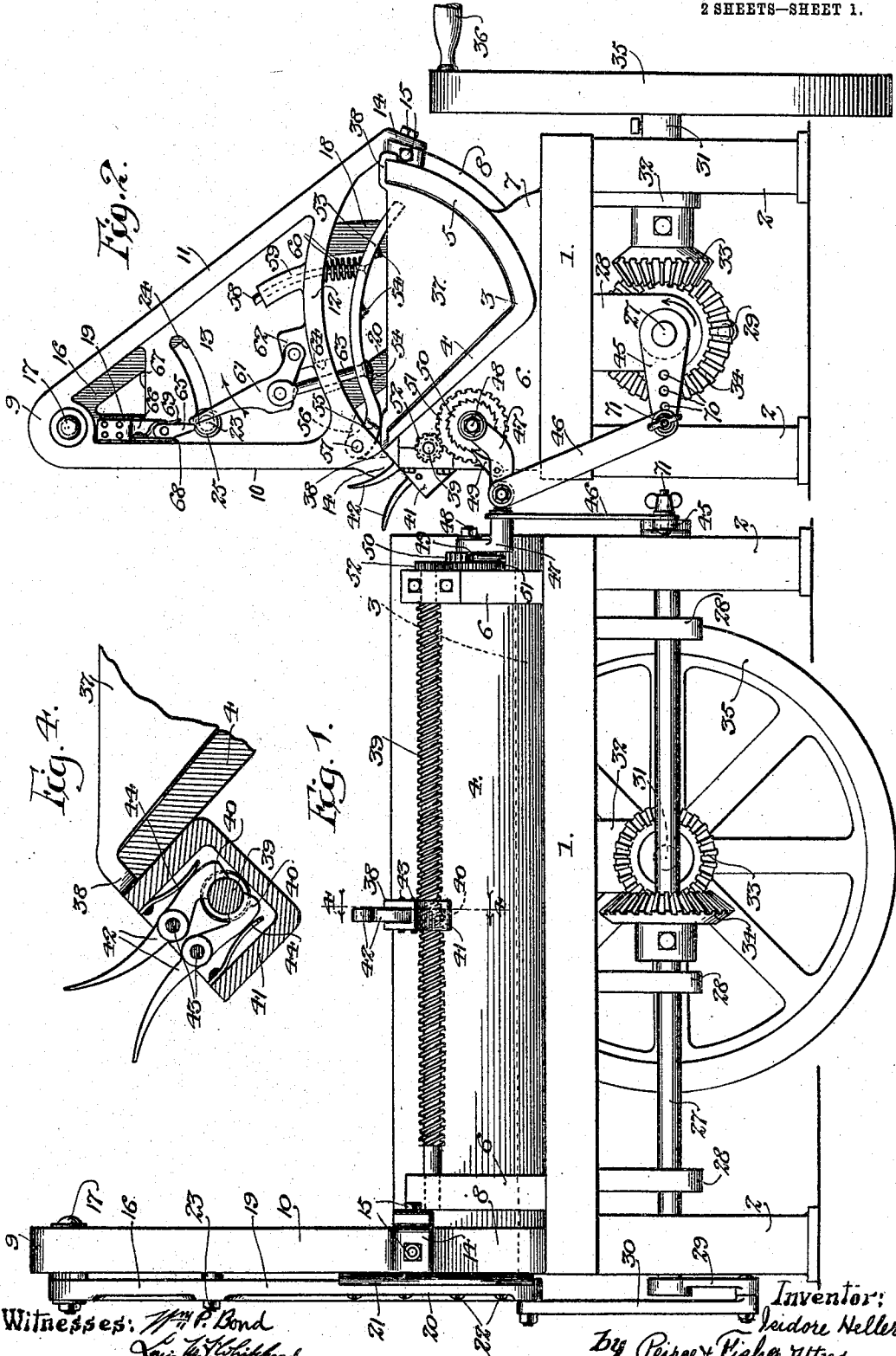
I. HELLER.  
MEAT SLICING MACHINE.

APPLICATION FILED AUG. 31, 1909

939,417.

Patented Nov. 9, 1909.

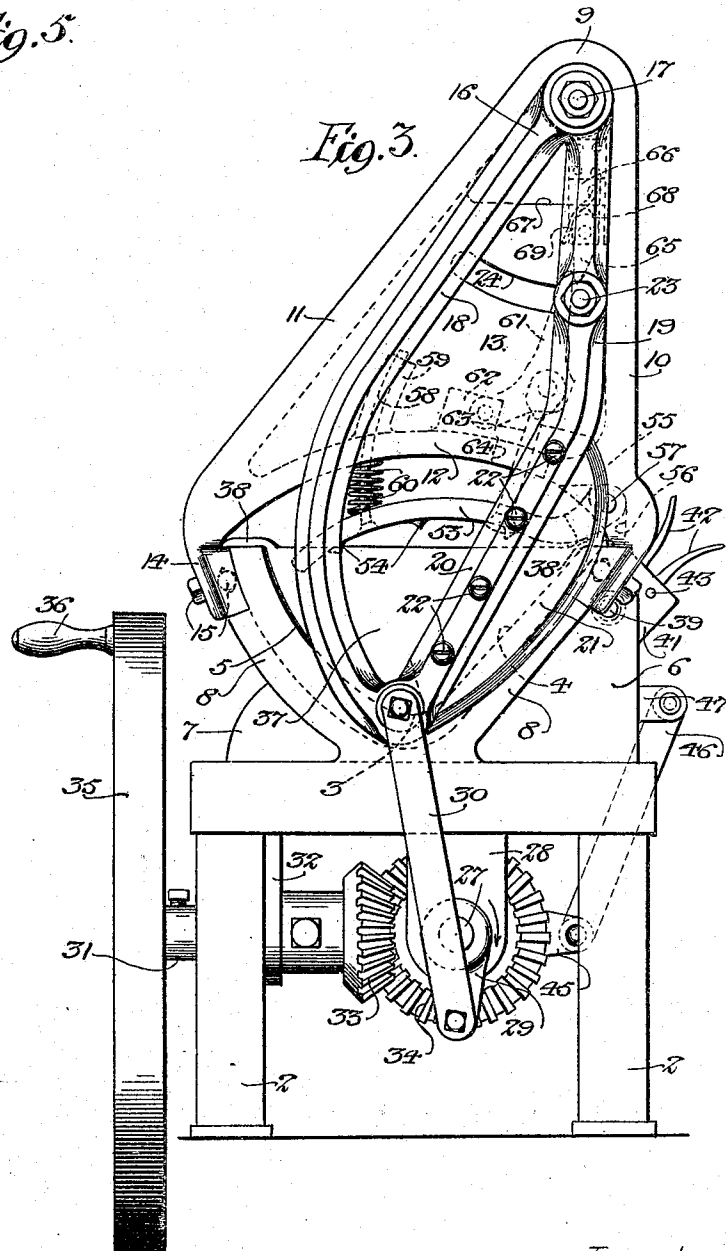
2 SHEETS—SHEET 1.



Witnesses: *Wm. P. Bond*  
*John H. Whitehead*

Inventor: *I. Heller*  
By *Percy Fischer, Attys.*

939,417.



Witnesses:  
J. P. Bond  
Carrie L. Whitelaw

Inventor:  
Isidore Heller  
by Pierce & Fisher  
Atty's.

# UNITED STATES PATENT OFFICE.

ISIDORE HELLER, OF CHICAGO, ILLINOIS, ASSIGNOR TO WOLF, SAYER & HELLER, OF CHICAGO, ILLINOIS, A CORPORATION.

## MEAT-SLICING MACHINE.

939,417.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed August 31, 1908. Serial No. 450,968.

*To all whom it may concern:*

Be it known that I, ISIDORE HELLER, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Meat-Slicing Machines, of which the following is a specification.

The invention relates to meat slicing machines and seeks to provide a simple and effective construction that is particularly designed for slicing loins of mutton and pork.

The invention consists in the features of improvement, combinations and arrangements of parts hereinafter set forth, illustrated in the accompanying drawings and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of the improved machine. Fig. 2 is an end view. Fig. 3 is a view of the opposite end of the machine with the parts shown on an enlarged scale. Fig. 4 is a detail section on an enlarged scale on the line 4-4 of Fig. 1. Fig. 5 is a detail section of the knife and knife-frame and supporting standard.

The improved machine comprises a bed-plate 1 that is mounted upon corner supports or legs 2. A longitudinal trough 3 is arranged upon the upper face of the bed-plate. The trough is substantially triangular in section, having one flat side 4 arranged at an angle of about forty-five degrees to the horizontal bed-plate 1 and a curved side-wall 5. Triangular strengthening flanges 6 are arranged adjacent the ends of the trough and between the flat side 4 thereof and the bed-plate. Smaller strengthening flanges 7 are arranged opposite the strengthening flanges 6 between the curved wall 5 of the trough and the bed-plate. The trough is opened at its ends and the walls 4 and 5 at one end are provided with projecting flanges 8 (see Figs. 2 and 3). The trough 3, bed-plate 1 and the flanges 6, 7 and 8 are preferably cast in one piece. An upright standard 9 is mounted at one end of the trough. This standard is of triangular form and comprises vertical and inclined side-members 10 and 11, a horizontal, upwardly curved lower member 12 and a web portion 13. At its lower end, the standard is provided with lugs 14 which

fit upon the upper ends of the flanges 8 and are secured thereto by bolts 15. A knife-frame 16 is connected at its upper end to the upper end of the standard 9 by a pivot bolt 17. It should be noted that the vertical side-member 10 of the standard rises from the upper edge of the flat, inclined side-wall 4 of the trough so that the pivot bolt 17 upon which the knife-frame swings is arranged substantially in a vertical line above this edge of the trough. The knife-frame comprises two side-members 18 and 19 that are spaced apart intermediate their ends. The side-member 19 adjacent the vertical side-member 10 of the standard, is provided with an inclined portion 20 at its lower end that has a seat for receiving a knife or cleaver 21. This knife or cleaver is secured to the knife-frame by screws 22 and is provided with a curved cutting edge as shown.

The knife 21 is arranged closely adjacent or in contact with the flange 8 at the end of the trough and is reciprocated to cut off the portion of the meat which projects beyond the end of the trough. The knife and knife-frame are securely held in position as they are reciprocated by a bolt 23 which extends through the upper portion of the side-arm 19 of the knife-frame and through a segmental slot 24 formed in the web 13 of the standard. A washer 25 on the inner end of the bolt engages the inner face of the web 13 and an anti-friction roller 26 on the pin is arranged within the slot 24. The slot is, of course, concentric with the pivot 17 about which the knife-frame swings.

A longitudinal shaft 27 extends beneath the bed-plate 1 and is journaled in suitable bearing brackets or lugs 28 that depend from the bed-plate. At the end adjacent the knife, the shaft 27 is provided with a crank-arm 29 which is connected by a link 30 to the lower end of the knife-frame 16 so that, as the shaft 27 is rotated the knife-frame and knife will be reciprocated. A short shaft 31 arranged at right angles to the shaft 27 is journaled in a bearing bracket 32 that extends downwardly from the bed-plate 1 adjacent one side thereof. A beveled gear 33 at the inner end of this shaft engages a beveled gear 34 upon the shaft 27. At its outer end, the shaft 31 is provided with a fly-wheel 35 and an operating handle

36. If desired, a pulley may be provided upon the outer end of the shaft 31 so that the machine may be power-driven.

A follower-plate 37 is arranged within the trough 3 and is shaped to conform to the outline thereof. At its upper portion it is provided with guide lugs or hooks 38 which overlap the upper edges of the side-walls 4 and 5 of the trough. A feed-screw 39 arranged outside of the trough and adjacent the upper edge of the side-wall 4 is journaled at its ends in the upper portions of the flanges 6 and is arranged to engage a suitable nut to shift the follower-plate 37 longitudinally within the trough. In the form shown, two part nuts 40 are arranged to engage the screw 39. These part-nuts are arranged within a small box or casing 41 secured to or formed upon the end of the guide lug or hook 38 that overlaps the upper edge of the side-wall 4 of the trough. The nuts are mounted upon the inner ends of a pair of short pivoted levers 42 which are mounted upon the pivot pins 43 extending between the sides of the casing 41. Flat springs 44 fixed to the ends of the box or casing 41 engage the inner ends of the levers 42 and normally hold the part-nuts 40 thereon into engagement with the screw 39. The outer ends of the levers 42 project from the box or casing 41 and form handles which, when pressed together by the operator, will move the part-nuts against the tension of the springs 44 out of engagement with the screw 39, so that the follower-plate may be quickly shifted to any desired position within the trough. Upon releasing the levers 42, the springs 44 will return the part-nuts again into engagement with the screw 39. At the end of the machine opposite the reciprocating knife, the shaft 27 is provided with a crank-arm 45 that is connected by a link 46 to a crank-arm 47. The crank-arm 47 is arranged to oscillate upon a pivot bolt 48 that projects from the outer face of the adjacent strengthening flange 6. A spring-held pawl 49 on the arm 47 is arranged to engage and intermittently rotate a ratchet 50 on the pivot bolt 48. A gear 51 fixed to the ratchet 50, is arranged to engage a pinion 52 that is fixed to the end of the feed-screw 39. Shaft 27 is rotated in the direction of the arrows indicated in Figs. 2 and 3. The crank-arms 29 and 45 thereon are so relatively arranged that, as the knife makes its forward stroke toward the flat side-wall 4 of the trough to cut off the slice of meat, the pawl 49 slips idly in backward direction over the teeth of the ratchet 50, but, when the knife makes its back stroke, the arm 47 and pawl 49 move in forward direction to rotate the ratchet 50 and advance the feed-screw 39 through the medium of the gears 51 and 52. In this way the follower-plate 37 is intermittently advanced during the

backward movements of the knife to advance the meat in the trough beyond the outer end thereof so that successive slices may be cut from the meat.

A clamping device is provided for securely holding the meat during the forward or cutting stroke of the knife. This device comprises a curved clamp-bar 53 which is provided with gripping projections 54. This bar is upwardly curved as shown and is arranged beneath the curved bottom member 12 of the standard 9. At one end the clamp-bar 53 is provided with a lug 55 which projects within a socket 56 formed in the standard 9 adjacent the lower end of the vertical member 10 thereof. A pivot pin 57 extending through the side-walls of the socket 56 and through the lug 55 pivotally sustains the clamp-bar 53. A segmental guide-rod 58 is fixed at its lower end to the clamp-bar 53 and extends upwardly therefrom through an opening in the horizontal member 12 of the standard and through a segmental guide-lug 59 formed thereon. The guide-rod 58 and lug 59 are concentric with the pivot pin 57. A heavy spring 60 coiled about the rod 58 extends between the lower curved member 12 of the standard 9 and the upper face of the clamp-bar 53 and presses the clamp-bar downwardly into firm engagement with the meat in the trough.

A lever 61 (see Figs. 2, 3 and 5) is pivotally mounted at its lower end upon a lug 62 on the inner face of the web 13 of the standard and a link 63 is pivoted at its upper end to the lever 61 at a point intermediate the ends thereof. The link 63 extends downwardly through a slot 64 in the horizontal member 12 of the standard and also passes through an opening in the clamp-bar 53. It is headed at its lower end so that by shifting the lever 61 the clamp-bar may be raised through the medium of the link 63. The lever 61 is shifted by a dog 65 that is pivotally mounted upon a bracket 66. This bracket is fixed to the upper portion of the side-arm 19 of the knife-frame and extends through an opening 67 in the upper part of the standard 9.

The bracket 66 is provided with a projecting lug 68 and a spring 69 secured to the lug, engages the dog 65 and normally holds the latter against the lug 68 so that the dog can only turn in one direction from its normal position. The dog normally engages the upper end of the lever 61 and thereby limits the downward movement of the clamp-bar 53. During the back stroke of the knife, the dog 65 will shift the lever 61 in the direction indicated by the arrow in Fig. 2, so that the clamp-bar 53 is raised and the meat in the trough is free to be advanced by the feed mechanism described, which also operates during the backward movement of the knife. The centers about which the lever

61 and the dog 65 swing during the backward movement of the knife, are so arranged that the dog will be disengaged from the lever just before the knife and knife frame reach the end of their backward movement and just after the feed mechanism has completed the forward movement of the follower-plate 37. The spring 60 then acts to force the clamp-bar 53 into engagement with the meat and securely hold the same during the forward or cutting stroke of the knife frame and knife. It should be noted that the clamp-bar 53 is arranged closely adjacent the knife 21 and in such position as to securely clamp the meat upon the inclined guide 4 of the trough. The knife-frame swings about a pivot arranged vertically above the upper edge of the inclined side-wall 4 and the shaft 27 is arranged vertically below the lower edge of this inclined side-wall. This arrangement of parts gives a cleaver-like action, as well as a shearing cut, to the knife so that both meat and bone will be severed during the operating stroke and the machine as a whole is well adapted for slicing or cutting up loins of pork and mutton.

During the forward movement of the knife, the dog 65 snaps idly over the end of the lever 61 into position to again shift the lever and lift the clamp-bar 53 at the next back stroke of the knife. To vary the feed and the thickness of the slices cut, the connection between the crank-arm 45 and link 46 is adjustable and consists of a pin 71 which is arranged to engage any one of a series of holes 70 in the crank 45. In this way the throw of the arm 47 and pawl 49 and the movement of the feed-screw 39 may be varied as desired.

It is obvious that numerous changes may be made without departure from the essentials of the invention.

I claim:—

1. In a meat-slicing machine, the combination with the bed-plate and trough, of a standard at one end of the trough, a knife-frame pivoted at its upper end to the upper end of said standard, a knife secured to the lower side edge of said frame, a shaft journaled beneath said bed-plate, a crank-arm on one end of said shaft, a link connecting said arm and the lower end of said knife-frame, and means for rotating said shaft, substantially as described.

2. In a meat-slicing machine, the combination with the bed-plate and trough, of an upright standard at one end of the trough, a knife frame pivoted at its upper end to the upper end of said standard, a knife secured to one edge of said frame, a follower-plate in said trough, a feed-screw journaled on the machine, a releasable part-nut connected to said follower-plate and arranged to engage said screw, a drive shaft journaled

on the machine, connections between said shaft and the lower end of said knife-frame, pawl-and-ratchet connections between said shaft and said feed-screw arranged to intermittently advance said follower-plate during the back stroke of said knife-frame and means for rotating said drive-shaft, substantially as described.

3. In a meat slicing machine, the combination with the bed-plate and trough, of an upright standard at one end of the trough, a knife-frame pivoted at its upper end to the upper end of said standard, a knife secured to the lower side edge of said frame, a follower-plate in said trough, a feed-screw journaled outside and adjacent one edge of said trough, a releasable part-nut connected to said follower-plate and arranged to engage said screw, a longitudinally extending shaft journaled below said bed-plate, crank-arms fixed to the opposite ends of said shaft, a link connecting one of said arms and the lower end of said knife-frame, a pawl-and-ratchet device for intermittently rotating said feed-screw, a link connecting the other of said arms to said pawl-and-ratchet device, said arms being so arranged that said feed-screw will be operated to intermittently advance said follower-plate during the backward movements of said knife, and means for rotating said drive shaft.

4. In a meat slicing machine, the combination with a bed-plate and trough, of a standard at one end of the trough, a knife-frame pivoted at its upper end to the upper end of said standard, a knife secured to one edge of said frame, a follower-plate in said trough, a feed-screw journaled on the machine, a releasable part-nut connected to said follower-plate and arranged to engage said screw, a pawl-and-ratchet for rotating said screw, a longitudinal shaft journaled below said bed-plate, crank-arms fixed to the opposite ends of said shaft, a link connecting one of said crank-arms to the lower end of said knife-frame, a link connecting the other crank-arm and said pawl-and-ratchet, a short transverse shaft journaled beneath said bed-plate, beveled gears connecting said transverse shaft and said longitudinal shaft, and means for rotating said transverse shaft, substantially as described.

5. In a meat slicing machine, the combination with a trough, of a reciprocating knife at one end of the trough, a feeder for advancing the meat in said trough, operating mechanism for reciprocating said knife and for intermittently advancing said feeder during the backward movements of said knife, a pivoted, spring-held clamp-arm at one end of said trough adjacent said knife and a one-way acting trip dog for releasing said clamp-arm during the backward movement of said knife, substantially as described.

6. In a meat slicing machine, the combination with the trough, of a reciprocating knife at one end of the trough, a follower-plate in said trough, operating mechanism  
5 for reciprocating said knife and for intermittently advancing said follower-plate during the backward movements of said knife, a pivoted, spring-pressed clamp-arm arranged above one end of said trough and  
10 adjacent said knife, a one-way acting trip dog connected to said knife and arranged to lift said clamp-bar during the backward movement of the knife and to release the same before the knife reaches the end of its  
15 backward movement, substantially as described.

7. In a meat slicing machine, the combination with the bed-plate and trough, of a standard at one end of said trough, a knife-frame pivoted at its upper end to the upper  
20 end of said standard, a knife secured to the lower side edge of said frame, a follower-plate in said trough, operating mechanism for reciprocating said knife and for intermittently advancing said follower plate during  
25 the backward movement of said knife, a pivoted, spring-pressed clamp-arm arranged at the lower end of said standard above the open end of said trough, a pivoted lever connected to said clamp-arm and a one-way  
30 acting trip dog connected to said knife-frame and arranged to engage said lever to lift said clamp-arm during the backward movement of the knife and to release the same before the knife reaches the end of its  
35 backward movement, substantially as described.

8. In a meat slicing machine, the combination with the bed-plate and trough, of an  
40 upright standard at one end of the trough, a knife-frame pivoted at its upper end to the upper end of said standard, a knife secured to the lower side edge of said frame, a follower-plate in said trough, a feed-screw for  
45 advancing said follower-plate, a pawl-and-ratchet for advancing said feed-screw, a

common drive shaft connected to said knife frame and to said pawl-and-ratchet, a pivoted, spring-pressed clamp-arm arranged adjacent the foot of said standard and above  
50 the open end of said trough, a pivoted lever connected to said clamp-arm, a one-way acting, pivoted dog connected to said knife-frame and arranged to be shifted thereby, said dog being arranged to engage said lever  
55 and lift said clamp-arm during the backward movement of said knife-frame and to release the same before the backward movement of the knife-frame is completed, substantially as described.

9. In a meat slicing machine, the combination with the bed-plate and trough, of an upright standard at one end of the trough, a knife-frame pivoted at its upper end to the  
60 upper end of said standard, a knife secured to the lower side edge of said frame, a follower-plate in said trough, a feed-screw journaled on the machine, a releasable part-nut connected to said plate and arranged to engage said screw, a pawl-and-ratchet device  
70 for intermittently advancing said feed-screw, a longitudinal shaft journaled beneath said bed-plate, crank-arms on opposite ends of said shaft, a link connecting one of said crank-arms to the lower end of said  
75 knife-frame, a link connecting the other crank-arm to said pawl-and-ratchet device, said arms being so arranged as to operate said pawl-and-ratchet device to advance said follower-plate during the backward movement  
80 of the knife-frame and knife, a pivoted, spring-pressed clamp-arm arranged above the open end of said trough adjacent said knife, and a one-way acting trip dog carried by said knife-frame and arranged to  
85 lift and release said clamp-arm during the backward movement of said knife-frame and knife, substantially as described.

ISIDORE HELLER.

Witnesses:

HARRY L. CLAPP,  
CLARA A. NORTON.