

July 23, 1929.

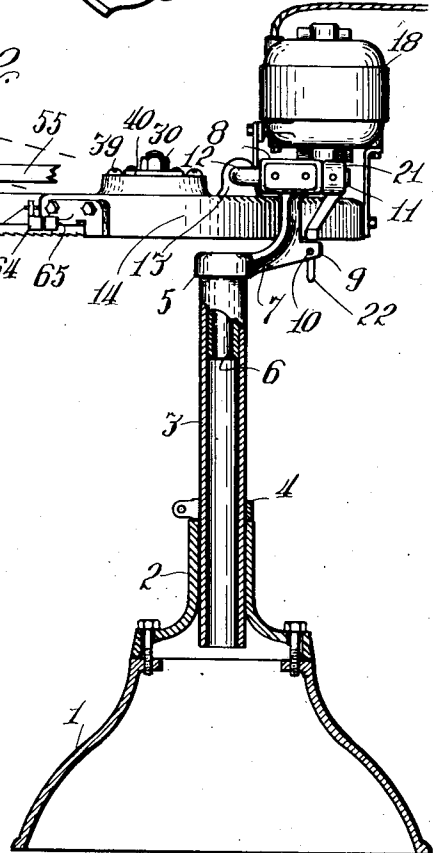
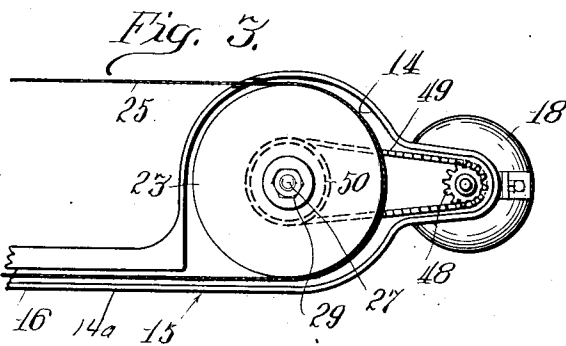
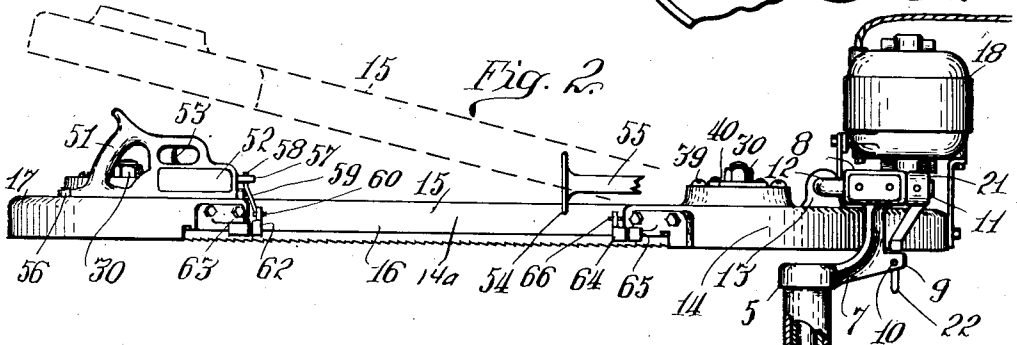
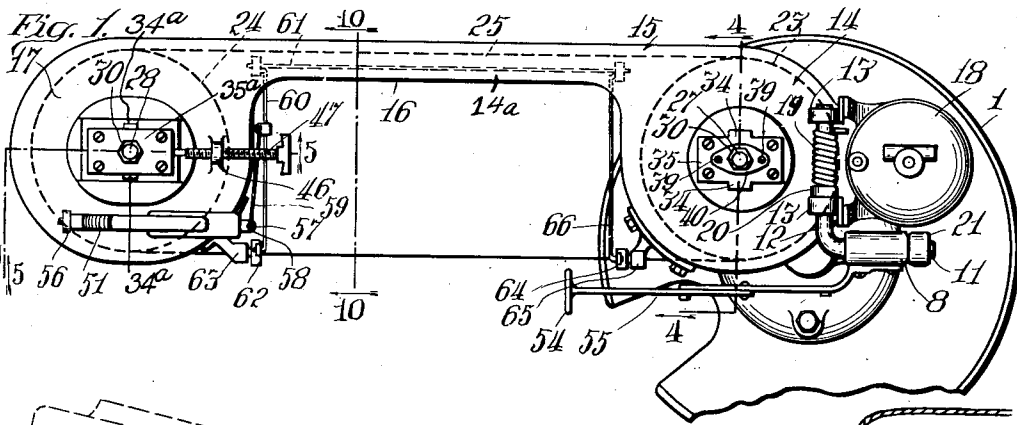
W. F. WELLS

1,721,722

BONE SAWING MACHINE

Filed May 23, 1927

2 Sheets-Sheet 1



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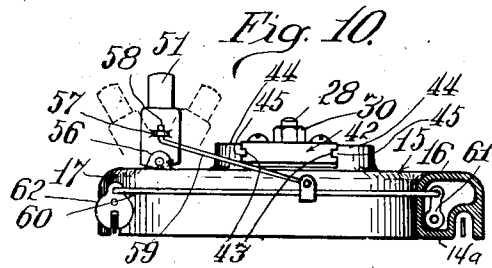
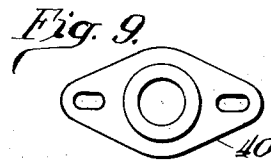
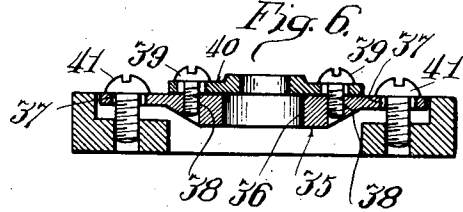
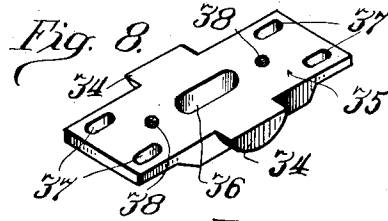
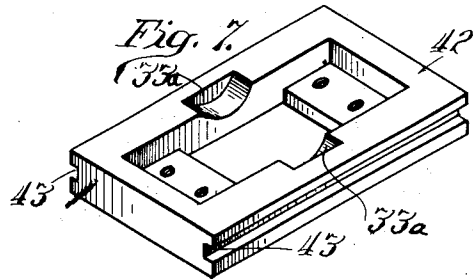
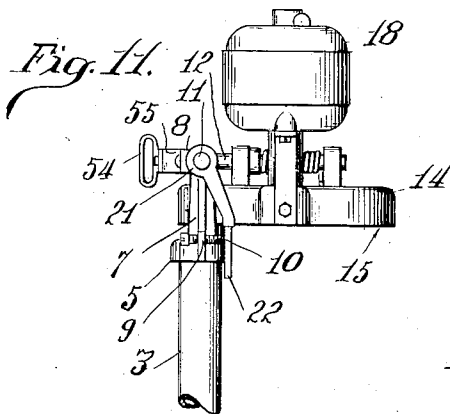
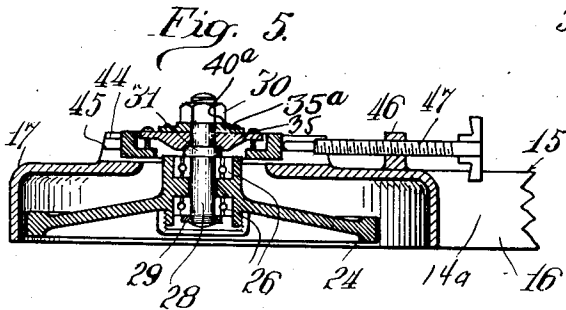
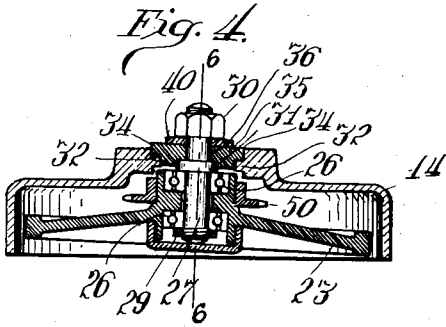
W. F. WELLS

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BONE SAWING MACHINE

Filed May 23, 1927

2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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BONE-SAWING MACHINE.

Application filed May 23, 1927. Serial No. 193,392.

This invention relates to improvements in power saws for use in meat markets and the like for cutting bone and has for its general object to provide a machine of this character which is thoroughly adapted to perform all of the functions required to be performed thereby including cutting in a vertical plane or at an angle thereto.

The preferred embodiment of the invention is illustrated in the accompanying drawings wherein:

Figure 1 is a top plan view of a power saw constructed in accordance with the invention.

Figure 2 is a side elevation of the same partly in section.

Figure 3 is a fragmentary bottom plan view of one end of the saw carriage of the machine.

Figures 4 and 5 are, respectively, fragmentary vertical sections on the lines 4-4 and 5-5 of Figure 1.

Figure 6 is a detail vertical section on the line 6-6 of Figure 4.

Figures 7 and 8 are perspective views and Figure 9 a top plan view, respectively, of individual parts of the structure shown in Figure 6.

Figure 10 is a detail section on the line 10-10 of Figure 1.

Figure 11 is a fragmentary end elevation of the machine showing means for adjusting the saw carriage pivotally.

The machine comprises a supporting base 1 having a tubular neck portion 2 in which the hollow standard 3 is telescopically received for rotation relatively to the base 1. A removable and adjustable collar 4 on said standard serves to support the latter at any desired elevation relatively to the base. A head 5 having a stem 6 which fits the upper end portion of the standard 3 is equipped with a supporting bracket 7 carrying a horizontally disposed sleeve 8 at its upper end, and is provided at its elbow with a projection 9 equipped with a set-screw 10.

The sleeve 8 constitutes a bearing for the arm 11 of a shaft 12 which passes through a pair of lugs 13 on the dished end member 14 of the saw-carriage 15. The latter is integral with an inverted U-shaped connecting member 16 which, in turn, is integral with the dished member 14 of the saw carriage. The member 17 carries the electric motor 18 which is so disposed relatively to the shaft 12 and the major portion of the saw carriage as to effect counterbalancing of the weights

on opposite sides of the vertical plane of the axis of the shaft 12 and supported by the latter. The difference in these respective weights is effectively balanced by the spring 19 on the shaft 12 which engages at one end with the collar 20 rigid with said shaft and at its other end bearing upon the saw-carriage.

Fixed to the arm 11 of the shaft 12 is the hub 21 of a depending arm or lever 22 whose lower end portion opposes the extreme end of the shank of the set-screw 10, being held in contact with the latter by gravity in an obvious manner.

The dished end-portions 14 and 17 of the saw-carriage, shown in detail in Figures 4 to 9 inclusive, are substantially circular and are equipped with arcuate downwardly projecting peripheral flanges which almost completely surround the pulleys 23 and 24 over which the band-saw 25 is trained. The heads 14 and 17 are coupled by means of an inverted channel-member 14^a integral with said flanges and said heads and which is open at its ends through said flanges to permit passage of an outer or straight run of the saw band through said channel, the opposite straight portion of said band passing through slots or recesses in said flanges. Each of said pulleys has a hollow hub equipped with anti-friction bearing elements 26 for cooperation with similar elements carried by the stud-shafts 27 and 28, respectively. Each of the latter is threaded at its ends to receive the nut 29 at the lower and the nut 30 at the upper end thereof. Both said nuts are associated with the annular flange 31 between the ends of the shaft for confining the bearing elements of the latter and for rigidly associating the stud-shaft with adjusting devices.

In order to prevent the saw 25 from leaving the pulleys 23 and 24, it is usually necessary to position the latter so that the axes of rotation thereof are not exactly perpendicular to the plane in which the saw-teeth move. It is, however, essential that the axes of both stud-shafts shall be disposed in a plane which is perpendicular to the plane of the saw-teeth.

To this end each of the members 14 and 17 is provided with a relatively large substantially rectangular central opening. In the member 14 the side walls of this opening are provided with inwardly extending flanges 32 in the upper faces and midway

between the ends of which there are semi-cylindrical recesses 33 to receive the semi-cylindrical trunnions 34 of a plate 35 shown in detail in Figure 8. This plate is provided
 5 with a central longitudinal slot 36 and with corner slots 37. Beyond the ends of the slot 36 there are two threaded openings 38 to receive the set-screws 39 which secure the plate 40 to said plate 35. The set-screws 39
 10 pass through longitudinal slots in said plate 40 to thereby permit limited adjustment of the latter longitudinally of the plate 35. The plates 35 and 40 are further secured against relative movement by being clamped be-
 15 tween the flange 31 of the stud-shaft 27 and nut 30, the shaft 27 being thus held rigid with said plates. Set-screws 41 pass through the corner slots 37 and engage in threaded openings in the flanges 32 and serve to hold
 20 the plate 35 in any position to which it may be adjusted with respect to the axis of the trunnions 34 to set the stud-shaft 27 at any desired angle relatively to the plane of travel of the saw-teeth.

25 As shown in Figure 5, the carrier plates 35^a and 40^a for the stud-shaft 28, corresponding to the shaft 27 of Fig. 4, are mounted in a carrier plate 42 having guide grooves 43 in its side edges. This plate is slidably
 30 mounted between flanges 44 bordering the central opening in the member 17, said flanges having guide-ribs 45 engaging in the grooves 43. On the member 17 is a projection 46 having a threaded opening in which
 35 the hand-screw 47 engages, the latter bearing at one end against the plate 42 for adjusting the tension of the saw 25 in the usual manner.

The vertical shaft of the motor 18 is provided at its lower end with a sprocket wheel
 40 48 over which the sprocket chain 49 is trained, the latter being also trained over a sprocket wheel 50 keyed to the hub of the pulley 23.

45 On the member 17 there is mounted a handle 51 carrying an electric switch 52 controlling the circuit through the motor 18. This switch is of the type which is normally maintained open by a spring and is closed
 50 against the action of said spring by the lever 53 which is herein illustrated as trigger-shaped. Switches of the aforesaid type are common in the art and the switch 52 is, therefore, not illustrated in detail.

55 A stop or gauge 54 having a stem 55 adjustable in length is provided, the stem being secured at one end to the bearing 8 as shown in Figure 1.

60 It is sometimes desirable to direct the saw to cut at a slightly different angle than that to which it is adjusted as by the tilting of the saw-frame relatively to the standard by adjustment of set-screw 10 as above described, and to this end, I provide simple
 65 means for effecting such variation without

affecting the position of the saw frame relatively to the standard.

The handle 51 is pivotally mounted on the member 17 for limited pivotal movement on an axis parallel with the portion of the saw
 70 25 which spans the open space between the members 14 and 17 opposite the portion 16. To this end the member 17 is provided with a pair of lugs 56 and the handle 51 with trunnions at its ends fitting openings in the
 75 said lugs. The inner end portion of the handle 51 is equipped with a lug 57 having an opening into which projects the arm 58 of a rod 59 which is secured at its other end to a rod 60 between the ends of the latter.
 80 The rod 60 is pivotally connected at one end with an arm of a shaft 61 mounted in the portion 16 of the saw frame and at its other end with a lever 62 pivotally mounted be-
 85 tween its ends on a projection 63 of the member 17. The lower end of this lever is bifurcated to receive the saw 25 which sufficiently snugly fits the slot in said lever 62 to cause the saw to be flexed to extend and
 90 cut at an angle to its normal position. A similar lever 64 is mounted on a projection 65 of a member 14 and is connected by means
 95 of the rod 66 with an arm of the shaft 61 similar to the arm with which the rod 60 connects so that upon tilting the handle 51, the saw 25 will be flexed through the cutting
 zone thereof to correspond, substantially, with the inclination of the handle 51 from its normal position.

100 It will be readily seen that the counterbalancing of the parts of the saw frame at opposite sides of its pivotal connection with the shaft 12 as above described, renders easy the swinging of the said frame to effect saw-
 105 ing, the operator maintaining the switch 52 closed during this operation, the motor being started and stopped in an obvious manner. During the sawing operation the operator may tilt the handle 51 as last above described
 110 to cause the saw to cut at an angle to its normal direction, this being more or less frequently necessary to obviate blocking up or otherwise adjusting the position of the body of meat to be severed or adjusting the set-
 115 screw 10, and thus effecting a saving of time and labor.

I claim as my invention:

1. A machine of the kind specified including a saw frame, a support therefor, an L-shaped shaft journaled at one end portion in a bearing on said support and having its
 120 other end portion engaged with said saw frame for pivotal movement of the latter thereon, and means associated with the first-named end portion of said shaft and said support for varying the position of the last-named end portion of said shaft relatively to
 125 said support.

2. A machine of the kind specified including a saw frame, a support therefor, bear- 130

ings on said saw frame and said support having their axes disposed perpendicularly to each other, a shaft journalled in said respective bearings for pivotally supporting the saw frame, an arm on the portion of said shaft journalled in the bearing of said support, and a set-screw associated with the latter and said arm to permit adjustment of the portion of the shaft pivotally associated with the saw frame.

3. A machine of the kind specified comprising a support, a saw frame pivotally associated between its ends with the latter for movement in a plurality of directions, a motor carried by the saw frame, a saw on the frame geared to said motor, the said motor disposed upon one end of said frame to partially counterbalance the weight of the main portion of the saw frame with respect to its pivotal support on said support, and a spring operatively associated with the pivotal support for cooperation with the weight of said motor to counterbalance said frame to cause the latter to remain in any position to which it is moved.

4. A machine of the kind specified comprising a support, a saw frame pivotally associated with the latter for movement in a plurality of directions, a motor carried by the saw frame, stud-shafts associated with opposite end portions of said saw frame, carriers therefor pivotally movable on axes parallel with each other and perpendicular to the axes of said stud-shafts, means for adjusting the position of each of said carriers to thereby vary the positions of said stud-shafts relatively to each other, a slidable member for one of said carriers, a set-screw on the saw frame for adjusting the said slidable member to vary the spacing of the stud-shafts from each other, pulleys rotatably mounted on said stud-shafts, one of said pulleys being geared to said motor, and a band-saw trained over said pulleys.

5. In a machine of the kind specified, a band-saw frame having openings in its opposite end portions, a pair of stud-shafts, a carrier block for each thereof pivotally mounted in the respective openings for swinging on axes perpendicular to the axes of said stud-shafts for throwing the latter into and out of parallelism while maintaining them in a plane common to the axes of both thereof, set-screws engaged with the frame and one of said blocks for adjusting the position of the latter, a carriage for the other of said blocks mounted in guide grooves bordering one of the open-

ings in the frame, and a hand-screw engaged with said carriage and said frame for varying the spacing of the stud-shafts from each other, and band-saw pulleys carried by said stud-shafts.

6. In a machine of the kind specified, a band-saw frame having openings in its opposite end portions, a carriage movable longitudinally of said frame at one of said openings, a pair of stud-shafts, carrier blocks therefor having trunnions pivotally engaged respectively with said frame and said carriage at the openings in the said frame, set-screws associated with said carrier blocks and their mountings for adjusting the same on said trunnions to thereby vary the position of the stud-shafts relatively to each other, a hand-screw associated with the frame and said carriage to vary the spacing of the stud-shafts from each other, pulleys rotatable on said stud-shafts, and a band-saw trained over said pulleys.

7. In a machine of the kind specified, a support, a band-saw frame pivotally associated therewith, a band-saw carried in said frame, a handle on the latter for manipulating the same, means engaged with a portion of the band-saw for flexing the same out of the normal plane of its travel, and connection between said means and said handle for operating the former simultaneously with manipulation of the frame.

8. In a machine of the kind specified, a support, a band-saw frame pivotally associated therewith, a band-saw carried in said frame, a handle pivotally mounted on the frame for manual manipulation of the latter, means engaged with a portion of the band-saw for flexing the same out of the normal plane of its travel, and connection between said means and said handle for operating the former simultaneously with manipulation of the frame.

9. In a machine of the kind specified, a support, a band-saw frame pivotally associated therewith, a band-saw carried in said frame, a handle pivotally mounted on the frame for manual manipulation of the latter, a pair of levers pivotally associated with the frame at opposite ends of the zone of action of the saw and engaging the latter for flexing the active portion thereof out of normal position, and devices operatively associating said levers with said handle for actuating said levers responsively to pivotal movements of the handle relatively to the saw frame.

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