

(No Model.)

2 Sheets—Sheet 1.

J. POULSON.
BONE CUTTING MACHINE.

No. 535,994.

Patented Mar. 19, 1895.

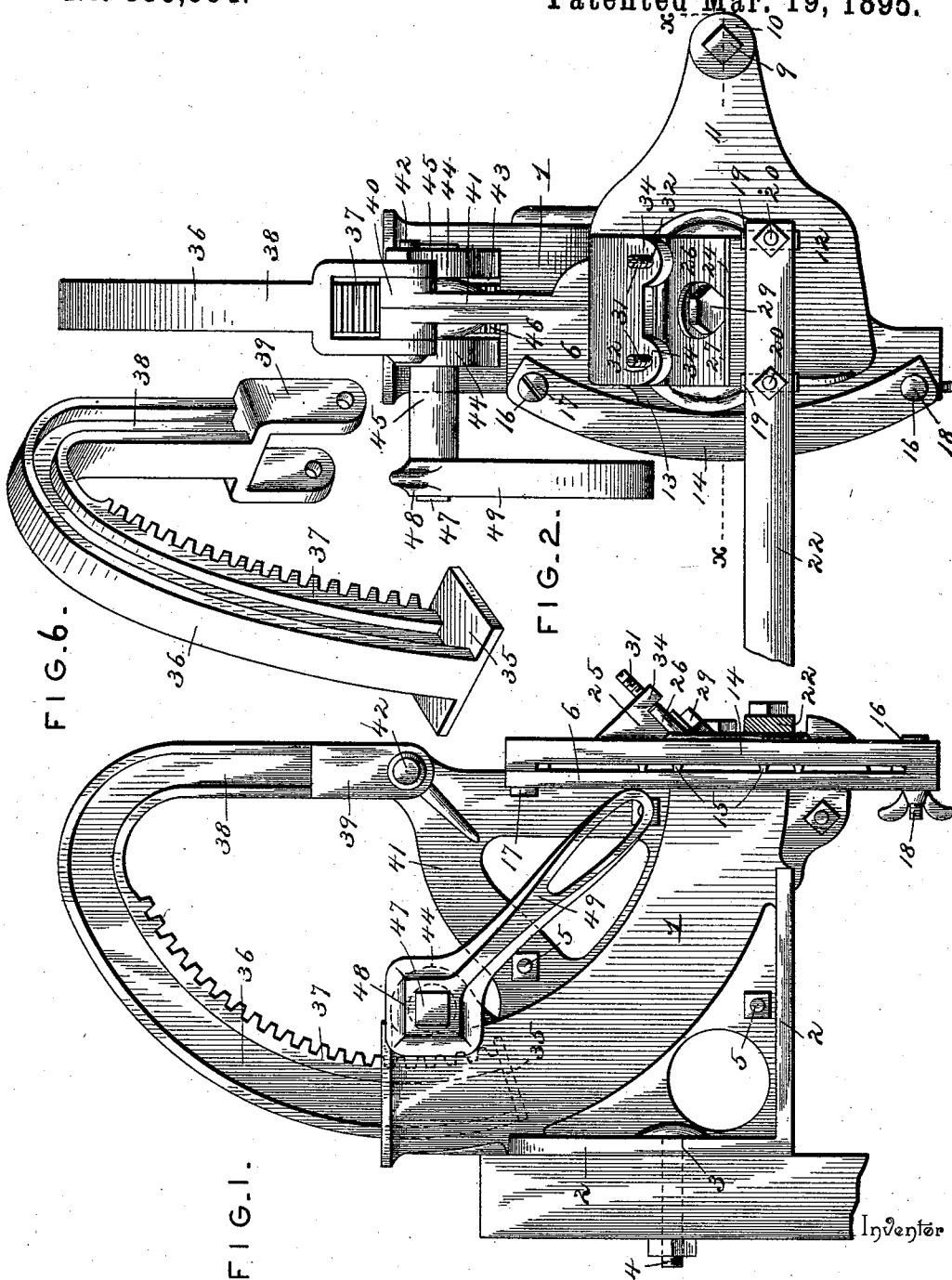


FIG. 1.

FIG. 2.

FIG. 1.

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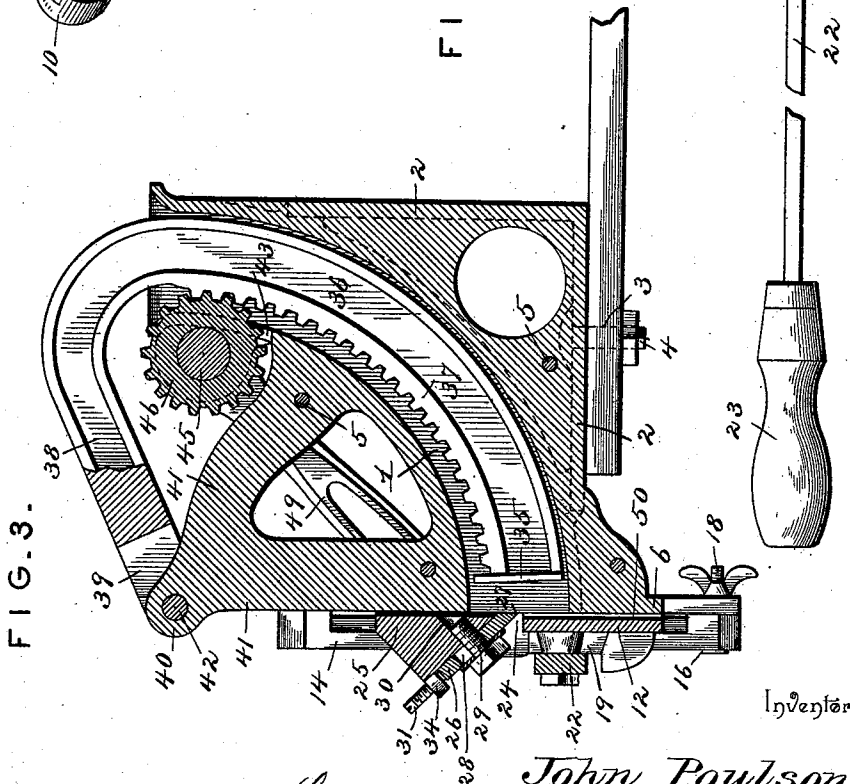
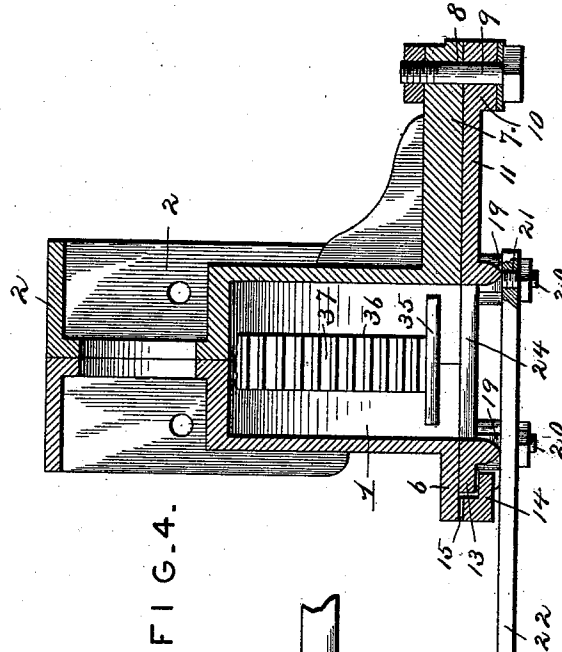
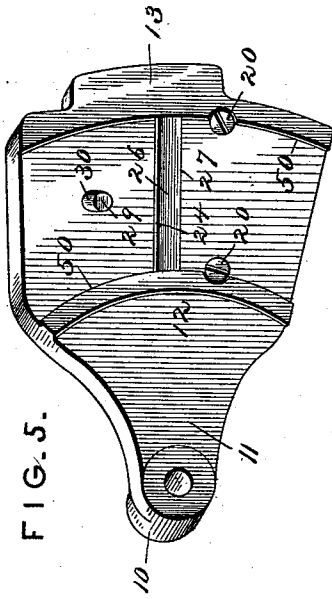
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2 Sheets—Sheet 2.

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Witnesses

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UNITED STATES PATENT OFFICE.

JOHN POULSON, OF PHILLIPSBURG, NEW JERSEY.

BONE-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 535,994, dated March 19, 1895.

Application filed May 24, 1894. Serial No. 512,356. (No model.)

To all whom it may concern:

Be it known that I, JOHN POULSON, a citizen of the United States, residing at Phillipsburg, in the county of Warren and State of New Jersey, have invented a new and useful Bone-Cutting Machine, of which the following is a specification.

This invention relates to bone cutting machines; and it has for its object to provide a new and useful machine of this character that shall provide simple and efficient means for cutting or reducing green bones to a finely comminuted condition for the use of poultrymen and farmers as feed for poultry and the like.

The invention therefore contemplates certain improvements in machines or mills for cutting bones, whereby the operation of such mills or machines shall be rendered more effective to secure the results desired.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings:—Figure 1 is a side elevation of a bone cutting machine constructed in accordance with this invention. Fig. 2 is a front view of the same. Fig. 3 is a central vertical sectional view thereof. Fig. 4 is a transverse sectional view on the line $x-x$ of Fig. 2. Fig. 5 is a detail in perspective of the pivoted knife plate. Fig. 6 is a similar view of the follower.

Referring to the accompanying drawings, 1 designates a segmental or elongated curved hopper that is adapted to be supported in an upright position for receiving and holding the bone to be fed to the cutting part of the machine, and integrally cast with the outer side of the segmental or curved hopper 1, are the right angularly disposed attaching flanges 2, provided with two or more bolt openings 3, to receive suitable securing bolts 4, for fastening the hopper in an upright position, either on a bench or stand or against a suitable supporting post as is illustrated in Figs. 1 and 2, of the drawings, and said flanges while being disposed at right angles to each other are arranged tangentially to the outer curved sides of the hopper 1, whereby one of said flanges

will be horizontal for attachment on a bench or stand, while the other flange is vertically disposed for the attachment at one side of a suitable supporting post which is partly shown in full lines in Fig. 1, of the drawings.

The elongated segmental or curved hopper 1, is necessarily cast in two pieces, as illustrated, as is also the integral attaching flange of the hopper, the separate parts or sections being perfect duplicates and secured together at proper points by the connecting bolts 5. This is the essential and practical manner of constructing the main body of the machine, and at its front lower end the hopper 1, which is open throughout its entire length and at both ends, is provided with a vertically disposed front plate or flange 6, the outer face or side of which lies flush with the lower front open end of the hopper, and said front plate or flange 6, extends to all sides of the hopper and at one side is extended into an off-standing supporting arm 7, that is provided at its outer extremity with the bolt opening 8, which receives the pivot bolt 9, passed therethrough and through the pivot collar 10, at one extremity of the plate arm 11, that is projected from one side of the swinging knife plate 12, which is designed to work flat against the outer face or side of the front plate or flange 6, and directly over the lower front end of the segmental or curved hopper 1. Said swinging knife plate 12, is arranged to have a side edge portion 13, thereof work snugly under a curved guide bar 14, that is flanged to overlap the edge portion 13, of the swinging knife plate 12.

The curved flanged guard bar 14, is arranged on the same circle with the pivot bolt 9, as the center, as the circle of movement of the moving edge of the knife plate 12, so as to provide means for firmly retaining the swinging knife plate in position against the front plate or flange 6, as the same is worked up and down. The guard bar 14, is provided with the attaching feet 15, that rest flat against the front plate or flange 6, at one side of the lower open end of the hopper 1, and is provided at its upper and lower ends with the bolt openings 16, that receive the bolts 17 and 18 respectively, the upper bolt 17, acting in the capacity of a pivot bolt and the lower bolt 18, being a removable thumb nut bolt, so that by removing the latter the curved guard bar 14,

may be swung to one side on the pivot bolt 17, thereby allowing the swinging knife plate 12, to be dropped below the plate or flange 6, whereby the lower end of the hopper will be uncovered and the working parts of the machine may be quickly and easily cleaned or repaired, and by swinging the knife plate up again over the lower end of the hopper and against the front plate or flange 6, and readjusting the guard bar 14, in its proper position the machine will again be ready for operation.

The swinging knife plate 12, is provided upon the outer side thereof with the flat attaching lugs 19, through which are passed the lever bolts 20, which are also passed through openings 21, in one end of the lever bar 22, which extends to one side of the hopper and is provided at its outer end with the handle 23, that is grasped by the operator to provide means for working the knife plate 12, up and down over the lower end of the hopper 1, whereby the bone or other similar material that is fed downward in the hopper against the knife plate 12, will be finely cut up or comminuted by the cutter now to be described.

The knife plate 12, is provided at a point slightly above the attachment of the lever bar 22, thereto, with a rectangular knife opening or slot 24, that is of a length equal to the width of the segmental or curved hopper 1, at its front lower open end, and as the knife plate is moved up and down the said knife opening or slot is carried directly over the lower end of said hopper. At the upper side of the knife opening or slot 24, and upon its outer face, the knife plate 12, is provided with the inclined boss 25, that is disposed upwardly at an angle of forty-five degrees and is adapted to form a seat or shoulder for the adjustable knife blade 26, that is provided with an inner beveled cutting edge 27, which is projected to the desired degree through the knife opening or slot 24, so as to project slightly beyond the inner side or face of the plate 12, in order to cut the bone as the said knife blade is carried down and over the lower end of the said hopper. The knife blade 26, is provided with a central transversely disposed slot 28, through which passes the cap bolt 29, that also engages the threaded socket or opening 30, formed centrally in the inclined boss 25, to provide means for holding the knife blade firmly clamped onto the inclined boss in its properly adjusted position. The knife blade 26 is adjusted in the knife opening or slot 24, by means of the set screws 31, mounted in the threaded openings 32, formed in the lugs 34, projected integrally from the inclined boss 25, at the upper end thereof.

The bone or other similar material is introduced into the upper open end of the hopper 1, and is fed downwardly therethrough and held pressed against the swinging knife plate 12, by means of the rectangular follower plate 35, which is arranged to work loosely within the hopper throughout the entire length thereof. Said follower plate 35, is arranged

at one end of the segmentally curved follower rack bar 36, the cogs or teeth 37, of which are formed upon the inner curved edge of the bar, and said follower rack bar 36, is provided at the end opposite the follower plate 35, with the radius arm 38, having a bifurcated extremity 39, loosely embracing a pivot collar 40, formed at the upper end of a bracket web 41, projected centrally and integrally from the curved inner and upper side of the hopper 1, and a pivot bolt 42 is arranged to pass through aligned openings in the bifurcated extremity 39, of the arm 38, and the pivot collar 40, at the upper end of the bracket web 41. The pivotal point of the radius arm 38, of the follower bar is the center of the radius on which the bar 36, is struck, and is also the center of the circular line of the hopper 1, so that as the follower bar is adjusted up and down the same will work freely in the hopper to carry the follower plate 35, to and away from the front lower open end of the hopper.

The hopper 1, is provided at its front side and upper end with the notch 43, at opposite sides of which are formed the opposite bearing lugs 44, in which are journaled the spindle extremities 45, of the operating pinion 46, that is arranged to work within the notch 43, to mesh with the teeth of the follower rack bar 36, and one spindle extremity 45, is extended beyond one side of the hopper and is squared as at 47, to receive the socket end 48, of the handle lever 49, that provides means for rotating the operating pinion, and therefore for raising and lowering the follower plate within the segmental hopper. By adjusting the segmental follower plate downward, the bone or other material will be forced against the swinging knife plate 12, and in order to permit the bone or other material to be forced slightly out of the lower open end of the hopper the rear side of the swinging knife plate 12, is recessed as at 50. The recess 50, extends on the arc of a circle from the upper to the lower edge of the plate and permits the projection of the bone out of the hopper and allows the bone to be cut without a hard friction upon the knife plate as it is moved up and down.

In operating the machine, the operator usually grasps the handle of the lever bar 22, with the right hand, and grasps the lever handle 49, with the left hand, and by manipulating the said lever 49, in the proper direction after the hopper has been filled with bone, the latter will be forced down against the knife plate so that it is simply necessary to manipulate the knife plate up and down to cut up or comminute the bone.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a bone cutting machine, a hopper provided with a front lower open end and with a vertically disposed front plate or flange at such end, a swinging knife carrying plate
 5 having an arm pivoted at its extremity to said front plate or flange at one side of the front lower open end of the hopper, an adjustable swinging curved flanged guide bar disposed at one side of the lower open end of
 10 the hopper and arranged to overlap the free moving edge of said knife carrying plate, a pivot bolt pivotally securing the upper end of said guide bar to said front plate or flange, a removable thumb nut bolt detachably secur-
 15 ing the lower end of said bar to said front plate or flange, a lever bar removably bolted at its inner end to the front side of said knife carrying plate, and a follower arranged to work within said hopper, substantially as set
 20 forth.

2. In a bone cutting machine, the combination of a hopper and a swinging knife carrying plate pivoted to the hopper and having in its rear side a segmental recess extending
 25 from the upper to the lower edge thereof to admit of the projection of the material out of one end of the hopper, said knife carrying plate being further provided with a knife slot disposed transversely of said segmental re-
 30 cess, substantially as set forth.

3. In a bone cutting machine, the combination of an elongated segmental hopper having an integral bracket web between its upper and lower ends, a cutting device arranged to
 35 work over the lower front end of the hopper, a segmental follower rack bar working within the hopper and provided at one end with a follower plate and pivotally connected at its other end to said bracket web, and a suitably
 40 operated pinion supported partly within the upper end of the hopper to mesh with the teeth of the follower rack bar, substantially as set forth.

4. In a bone cutting machine, the combination of an elongated segmental hopper provided at its upper front side with a notch, in-
 45 tegral bearing lugs located at opposite sides of said notch, and an integral bracket web projected from the front curved side thereof and
 50 provided at its upper end with a pivot collar,

a segmental follower rack bar working within the hopper and provided at one end with a follower plate and at its other end with a radius arm pivotally connected to the pivot collar of said bracket web, an operating pinion
 55 arranged within the notch at the upper end of the hopper and having its spindle extremities journaled in said bearing lugs, a lever attached to one of the spindle extremities of the pinion, and a cutting device working over the
 60 lower open end of the hopper, substantially as set forth.

5. In a bone cutting machine, the combination of the segmental hopper provided with right-angularly disposed attaching flanges
 65 projected tangentially from the outer curved side thereof, the follower, and the cutting device, substantially as set forth.

6. In a bone cutting machine, the combination of a segmental hopper, a cutting device
 70 arranged to work over the lower end of the hopper, a pivotally supported segmental follower rack bar working within the hopper, an operating pinion mounted at the upper end of the hopper and meshing with the teeth of
 75 the rack bar, one of the spindle extremities of said pinion being angular, and a hand lever provided at one end with an angular opening fitting the angular spindle extremity, substantially as set forth.
 80

7. In a bone cutting machine, the combination of a sectional segmental hopper consisting of duplicate registering sections and provided with an integral sectional web, the cut-
 85 ting device arranged at one end of the hopper, the segmental follower rack bar provided with a radius arm pivotally connected to said sectional web, the pivotal connection for said radius arm assisting to secure the sections of the hopper and its web together, and a hand
 90 operated pinion mounted at the upper end of the hopper and meshing with the teeth of said rack bar, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
 95 the presence of two witnesses.

JOHN POULSON.

Witnesses:

JAMES L. LOMERSON,
 FRANK KNEEDLER.