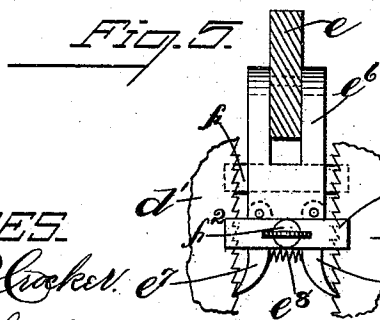
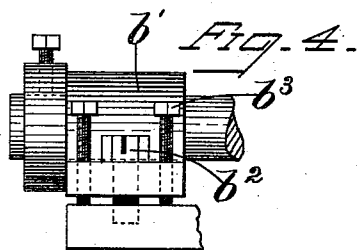
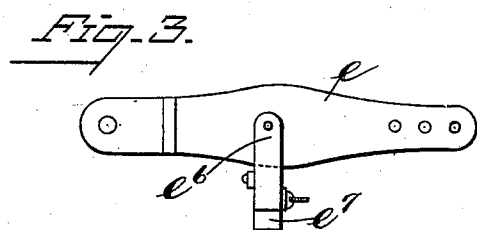
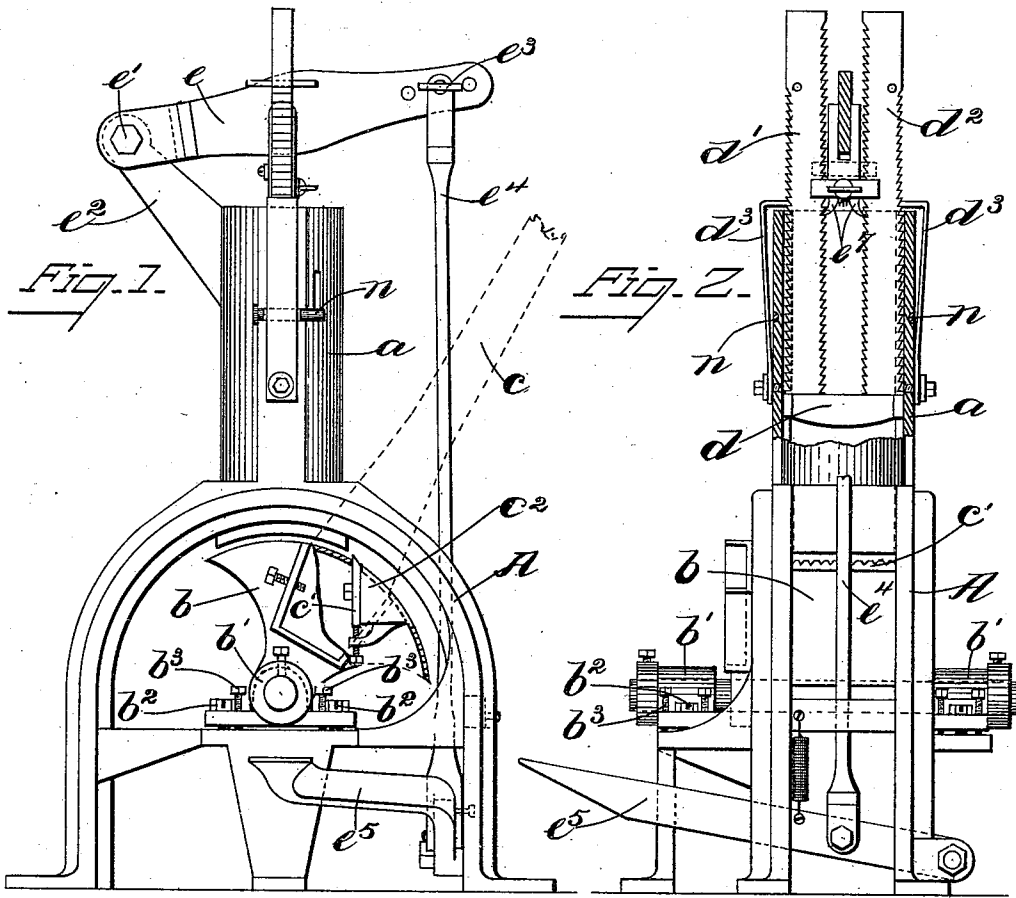


(No Model.)

H. H. V. LILLEY.
BONE CUTTING MACHINE.

No. 543,033.

Patented July 23, 1895.



WITNESSES.

Charles B. Crocker. &
Florence H. Davis

INVENTOR

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UNITED STATES PATENT OFFICE.

HUGH H. V. LILLEY, OF MILFORD, MASSACHUSETTS.

BONE-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 543,033, dated July 23, 1895.

Application filed November 24, 1894. Serial No. 529,830. (No model.)

To all whom it may concern:

Be it known that I, HUGH H. V. LILLEY, of Milford, county of Worcester, and State of Massachusetts, have invented an Improvement in Bone-Cutting Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to improve, simplify, and cheapen the construction of bone-cutting machines adapted to cut or grind green bone for poultry feed; and the invention consists in details of construction to be hereinafter pointed out and claimed.

Figure 1 shows in side elevation a bone-cutting machine embodying this invention; Fig. 2, a front elevation and partial section of the machine shown in Fig. 1; Figs. 3, 4, and 5, details to be referred to.

The main framework consists essentially of an arched base A, having formed integral with or secured to its upper end a hollow cylinder *a*, the opening through said cylinder extending down through to the upper end of the arched frame. A sector *b* is located beneath the arched frame A, being journaled in boxes *b'* secured to the framework by screws or bolts *b²*, yet adjustable vertically by the adjusting-screws *b³*.

The arc of the sector is substantially concentric to the interior surface of the arch and its journals coincident with the center of said arch, so that said sector may be reciprocated within and adjacent to the arch. This sector has secured to it at one side a long lever *c*, by means of which it may be rocked to and fro.

At or about midway the length of the arc of the sector a slit or opening is formed from side to side, through which projects the cutting-edge of a knife *c'*, said knife being adjustably secured to a boss or projection *c²*, formed upon the interior of and preferably integral with the sector. The arc of the sector is made twice as long as the internal diameter of the cylinder *a*, so that being located beneath and moving across the lower end of said cylinder serves as a bottom plate therefor to support the bone and other material contained in the cylinder, when the knife is at either

side of the cylinder—i. e., before or after it has moved across the lower end to cut the bone.

A plunger *d* is contained in the cylinder *a*, it being secured to the lower end of two vertical ratchet-toothed bars *d' d²*, arranged in parallelism with each other at opposite sides of the cylinder, the ratchet-teeth being formed upon both sides of each bar.

Pawls or dogs *d³* are secured to the exterior of the cylinder *a*, which engage or co-operate with the outer series of ratchet teeth upon said bars *d' d²*, serving to hold the plunger down firmly upon the material that it may resist upward or backward pressure.

A lever *e* is pivoted at *e'* to a bracket or arm *e²* projecting from the rear side of the upper end of the cylinder *a*, said lever occupying a position and moving between the vertical ratchet-tooth bars *d' d²*, and the forward end of said lever *e* is detachably connected by a pin *e³* with a treadle-rod *e⁴*, which is connected at its lower end with a pivotal treadle *e⁵*.

Depending from the lever *e*, at a point between the bars *d' d²*, is a block or hanger *e⁶*, bearing at its lower end two oppositely-extended pawls *e⁷ e⁷*, with a spring *e⁸* interposed between them, tending to separate them, or they may be otherwise spring-pressed. These pawls are adapted to engage or co-operate with the inner series of ratchet-teeth on the bars *d' d²*.

In order that the block *e⁶* may work between the ratchet-tooth bars *d' d²* and retain its vertical position, a cross-piece *f* is secured to the rear side of the block *e⁶*, the ends of which overlap and bear upon or against the rear side of the ratchet-tooth bars *d' d²*, and another cross-piece *f'* is secured in an adjustable manner to the front side of the block *e⁶*, as by a thumb-screw *f²*, the ends of said cross-piece *f'* overlapping and bearing against the front side of the ratchet-tooth bars *d' d²*, so that the cross-pieces *f f'* serve as guide-pieces for the block *e⁶*. Each time the treadle-lever *e⁵* is depressed the block *e⁶* and pawls carried by it will advance the plunger a short distance, and when the pressure on the treadle is relieved the lever *e* rises and the pawls *e⁷ e⁷* slip over the ratchet-teeth, the plunger meanwhile being held by the pawls *d³*. This par-

ticular form of feeding mechanism operated by a treadle has advantages, as the amount of pressure may easily be regulated.

To disengage the pawls $d^3 d^3$ for the purpose of removing the plunger, I have provided for each pawl a cam-rod n , held in suitable bearings between the shanks of the pawl and the cylinder, which may be reciprocated to throw out or in the pawls.

To fill the cylinder the pin e^3 is removed, disconnecting the treadle mechanism, the cross-piece f' turned into vertical position, as represented by dotted lines, Fig. 5, the lever e then swung or turned over backward, the cam-rods n operated to disengage the pawls $d^3 d^3$, and the plunger removed.

In operation the green bone or other material is placed in the cylinder, the hand-lever c being, for instance, in the position shown in dotted lines, Fig. 1, and at such time the rear portion of the sector b serves as the bottom of the cylinder. The plunger is then introduced, the lever e connected with the treadle-rod by the pin e^3 , and the pawls thrown into engagement with the toothed surfaces of the rack-bars when the treadle e^5 may be depressed and the material crowded down. The lever c is then thrown rearward, and the knife c' cuts or planes off the bone and other material, as it travels across the lower open end of the cylinder.

The knife c' may be adjusted with relation to the sector, and also the sector carrying the knife may be adjusted toward and from the bone receiver or cylinder by the adjusting-screws b^3 .

It will be observed that the knife-carrying sector is arranged close to the floor, the arched frame being bolted to the floor, so that a person standing and operating the machine may use a long lever c , and thereby apply great power.

I claim—

1. In a bone cutting machine, the combination of the arched frame having at its upper

end the vertical cylinder a , the sector b journaled below said cylinder carrying the knife c' and reciprocating on an axis coincident with the center of the arched frame, a hand lever c secured to said sector by means of which it is moved, and adjustable journal boxes for the journals of said sector, whereby the position of the knife with relation to the lower open end of the cylinder may be adjusted, substantially as described.

2. In a bone cutting machine, the combination of the arched frame A , vertical cylinder a thereon, knife-carrying sector b , journaled beneath it turning on an axis coincident with the center of the arched frame, hand lever c for rocking said sector, plunger d , having feeding mechanism connected therewith for advancing it, and a treadle connected with the feeding devices, substantially as described.

3. In a bone cutting machine, the combination of the arched frame, and knife-carrying sector, and treadle operated feeding devices for the plunger of the cylinder, consisting of the lever e , pawl bearing block e^6 depending therefrom, guide pieces on said block, pawls d^3 for preventing backward movement of the plunger, and means for disengaging said pawls d^3 , substantially as described.

4. The combination of the arched frame adapted to be secured to the floor, a vertical cylinder a thereon, a knife-carrying sector journaled beneath it, turning on an axis coincident with the center of the arched frame, a hand lever secured to said sector, a plunger d , and feeding mechanism therefor, and a treadle detachably connected with the feeding mechanism, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HUGH H. V. LILLEY.

Witnesses:

HORACE A. BROWN,
THOMAS J. RILEY.