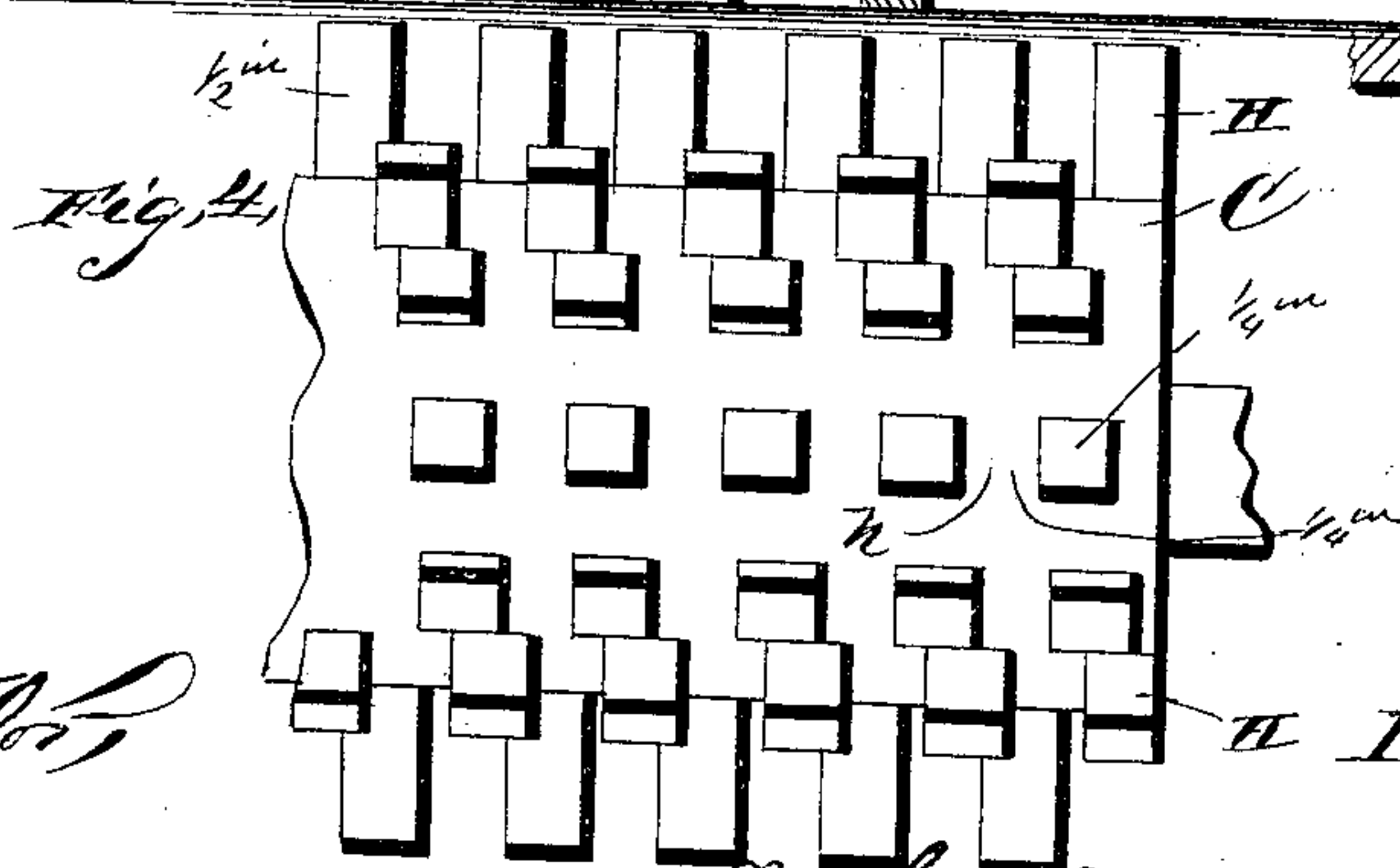
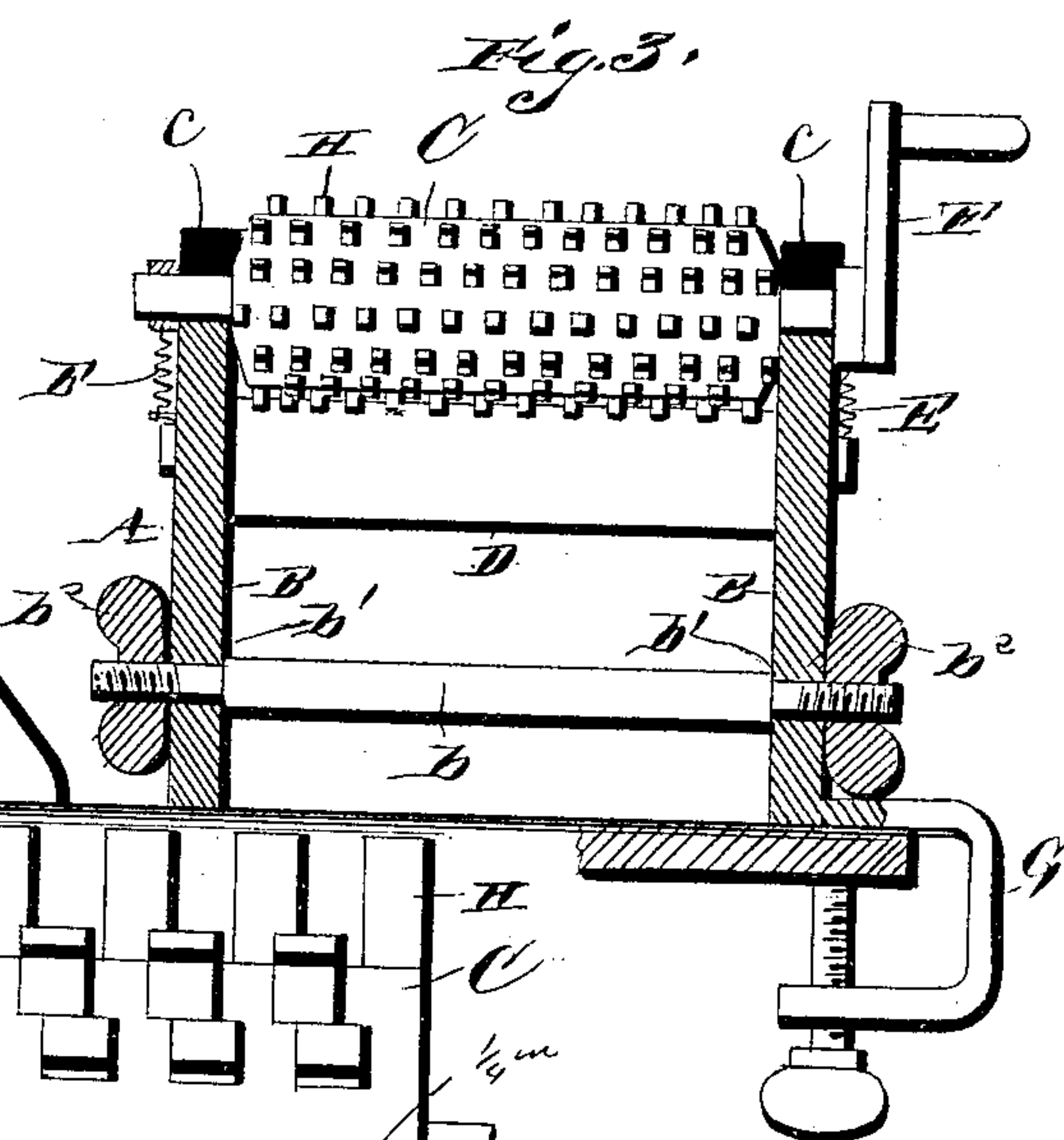
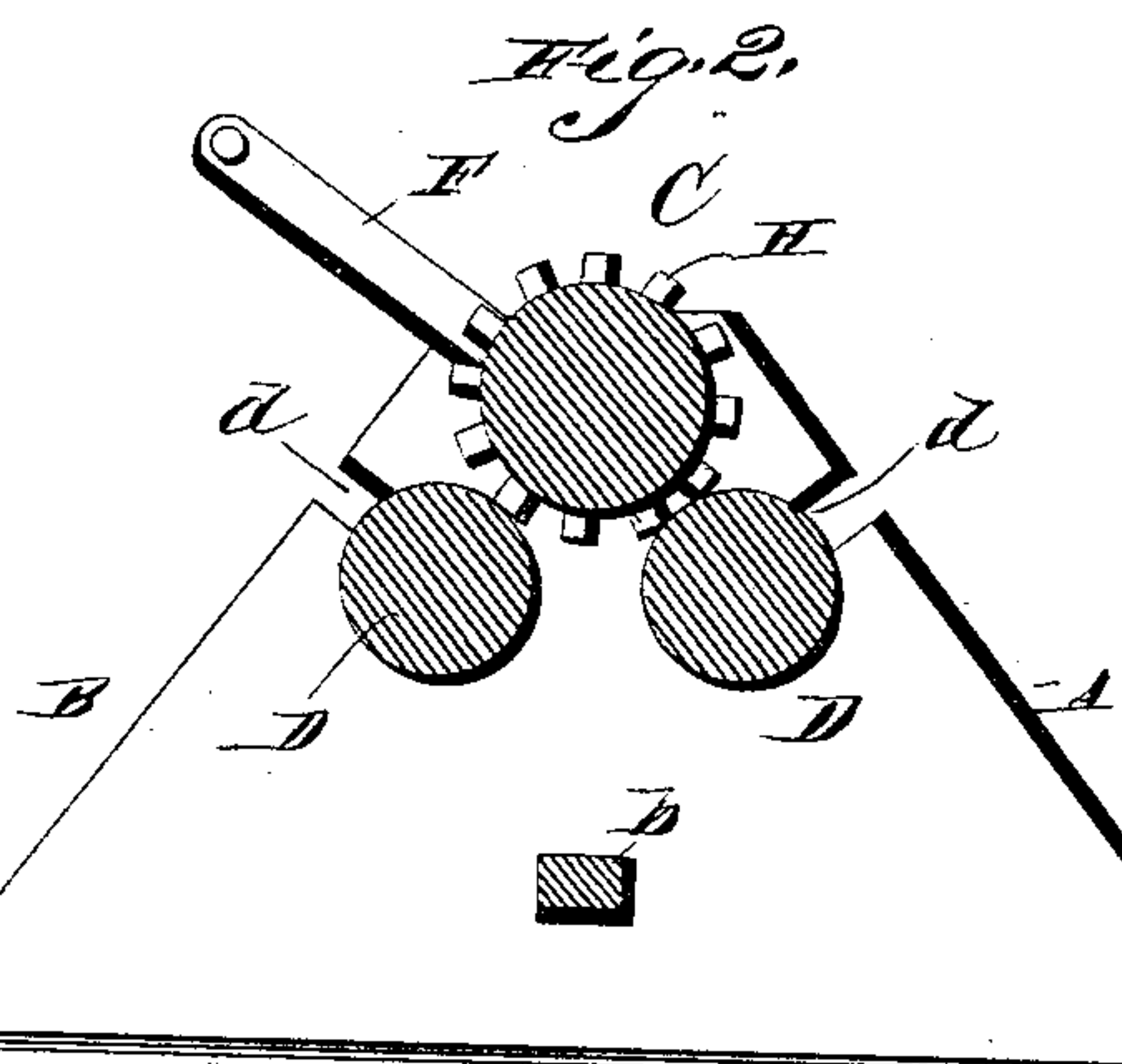
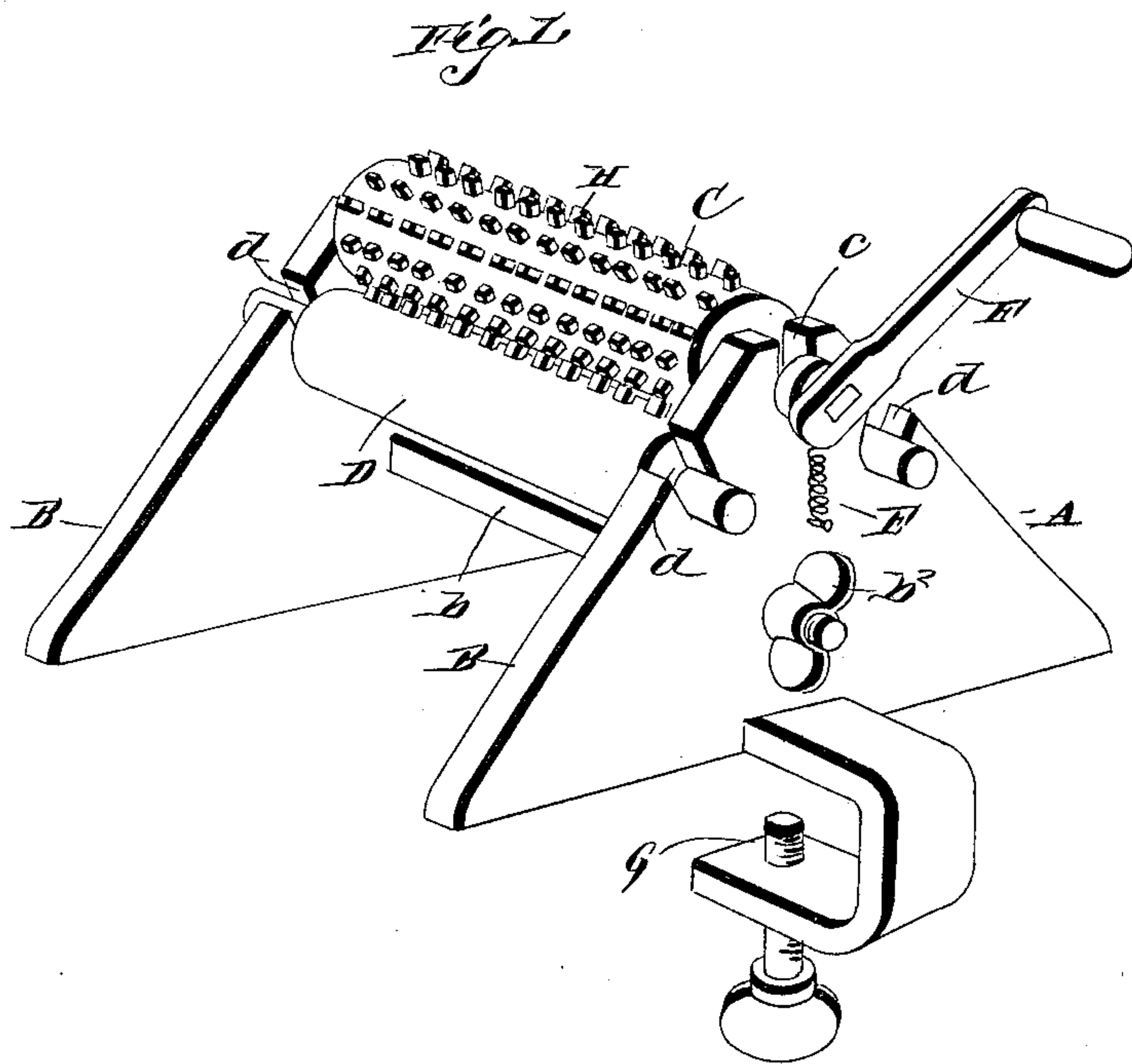


(No Model.)

L. L. WELCH.
BEEF TENDERER.

No. 386,226.

Patented July 17, 1888.



Witnesses,

O. L. Taylor,
J. H. Siggers?

Inventor,
L. Welch.

By his Attorneys,

C. A. Howells.

UNITED STATES PATENT OFFICE.

LEE L. WELCH, OF LEGGETT, TEXAS.

BEEF-TENDERER.

SPECIFICATION forming part of Letters Patent No. 386,226, dated July 17, 1888.

Application filed January 25, 1888. Serial No. 261,833. (No model.)

To all whom it may concern:

Be it known that I, LEE L. WELCH, a citizen of the United States, residing at Leggett, in the county of Polk and State of Texas, have
5 invented new and useful Improvements in Beef-Tenderers, of which the following is a specification.

The invention relates to improvements in steak-tenderers; and it consists in the construction and novel combination of parts hereinafter described, illustrated in the drawings, and pointed out in the appended claim.

In the accompanying drawings, Figure 1 represents a perspective view of the machine.
15 Fig. 2 represents a vertical transverse section. Fig. 3 represents a longitudinal section of the same. Fig. 4 represents a face view of a portion of the toothed roller, drawn to size with the teeth and intervening spaces in proper
20 proportion.

Referring to the drawings by letter, A designates the frame of the device, composed of the triangular end plates, B B, and the connecting-bar *b*, which holds them together. The said
25 bar has its ends reduced, forming shoulders *b'*, and the reduced ends are screw-threaded, as shown. The said ends pass through openings in the end plates and are engaged by thumb-nuts *b² b²*, so that the frame can be easily taken
30 apart to clean the rollers or for other desired purpose. Each end plate is provided with three bearing-notches, one of which, *c*, extends vertically downward from its apex, while the others, *d d*, are equally distant on each side
35 thereof and incline equally downward and inward from the corresponding edge of the end plate.

C is the central top roller, with its journals resting in the bearing-notches *c c*, and which
40 is hereinafter more fully described, and D D are the lower smooth rollers, with their journals in the bearings *d d*. The top roller, C, has its journals extended and turning in washers or blocks, having secured to them the upper ends of the coiled spring E, the lower ends of which are secured to the outer surfaces of the respective end plates.

F is a crank-handle on the squared end of one of said extended journals.

50 The machine when in use is attached to the edge of the table or stand by the clamp G or equivalent securing devices.

The roller C is provided with the teeth H, one-half inch long and having one-quarter of an inch face-surface, the said surface being flat
55 and interspaced one-quarter of an inch apart, the interspaces being represented by *h h*. The said teeth have flat faces and flat sides at right angles thereto, and the said faces are one-quarter of an inch long on each edge, the area of
60 each being one-fourth of a square inch. The area between each aligned tooth and also between any two facing teeth in adjacent lines or series must also be one-fourth of a square
65 inch. The object of this is that the spaces struck by any series of longitudinally-aligned teeth shall be equal to that between any two series of teeth, so that as the beefsteak is drawn between the rollers and itself moves
70 the spaces struck by each succeeding series of teeth will overlap, and as the teeth in the series are not aligned circumferentially the struck spaces will also overlap laterally. This insures a thorough and uniform tendering of the
75 meat. The struck space having an area of one-quarter of a square inch has been found in practice the best size to insure the tendering of the meat without breaking the fiber of the same enough to render it unpalatable
80 when cooked. The reasons why these proportions are observed are because steak to cook properly should be about one-half inch thick, and in tendering the space struck by the tooth should neither be too small nor too large. If,
85 therefore, the tooth has less than about one-quarter of an inch surface, it penetrates more or less into the meat by separating the fibers and does not compress and break the fibers. If the face-surface is larger than about one-
90 quarter of an inch, the tooth merely compresses the meat without breaking the fibers, which will sometimes make it slightly tougher. The teeth are arranged around the roller in series of spirals, of which the members break joints with those adjoining on each side, as shown in
95 Fig. 4.

In operation the teeth H are intended to run in close proximity to the rollers D. The teeth on the upper roller, being arranged in spiral lines, serve to draw or feed the steak in between
100 the rollers. The smooth rollers, one or both, support the steak while the toothed roller is pressing and bruising the same. When it is desired to make the steak very tender, it is

drawn between the toothed roller and both smooth rollers; but steak that is not very tough may be passed between the toothed roller and one smooth roller only and drawn
5 down between the smooth rollers.

Having described my invention, I claim—

In a steak-tenderer, the combination, with the triangular end plates, B, having the bearing-notches *c d d*, the detachable connecting-
10 bar *b*, provided with the threaded ends and shoulders *b'*, the thumb-nuts *b²*, the smooth rollers D, and the coiled springs E, of the crank-handle F and the roller C, provided with the teeth H, having square flat faces and

flat sides at right angles to said faces and 15 arranged in aligned longitudinal series and spirally arranged circumferentially, the areas of the teeth being one-fourth of an inch and the distance between the series of teeth and the teeth in each series being one fourth of an 20 inch, substantially as specified.

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

LEE L. WELCH.

Witnesses:

E. J. GODSEY,

JOHN HARRISON.