

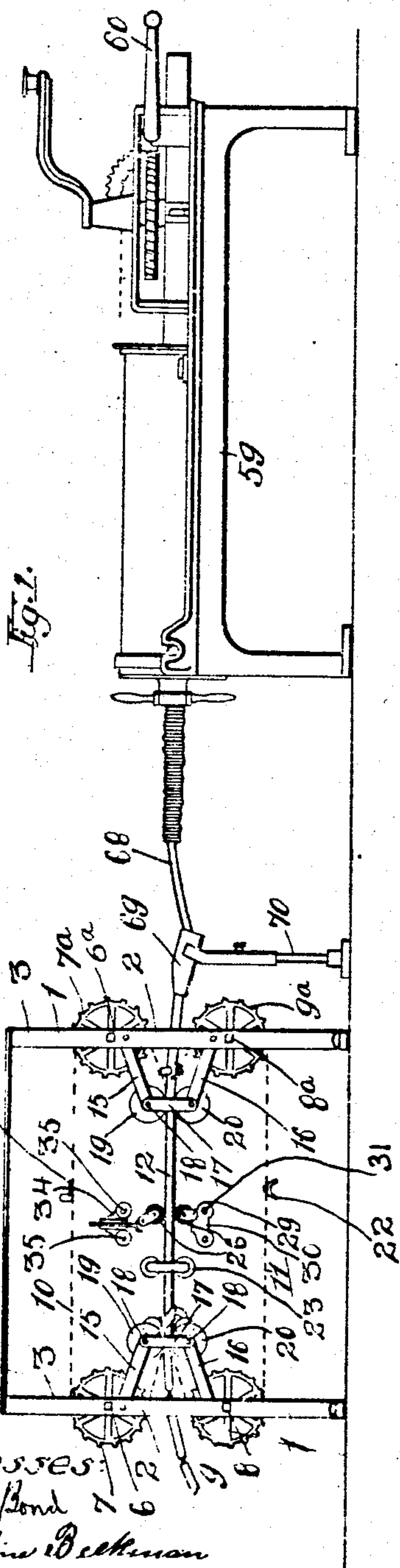
No. 854,044.

PATENTED MAY 21, 1907.

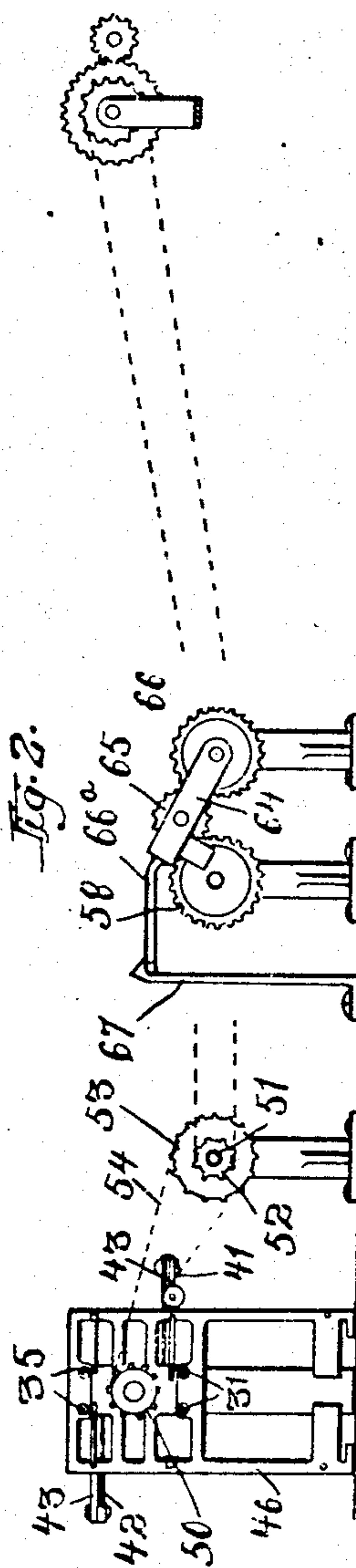
H. R. KUERSTEN.  
SAUSAGE LINKING MACHINE.

APPLICATION FILED FEB. 23, 1906.

4 SHEETS—SHEET 1.



Witnesses:  
Wm. P. Bond  
Charles Beckman



Inventor:  
Hugo R. Kuerten  
By Ranning Ranning  
Attys.

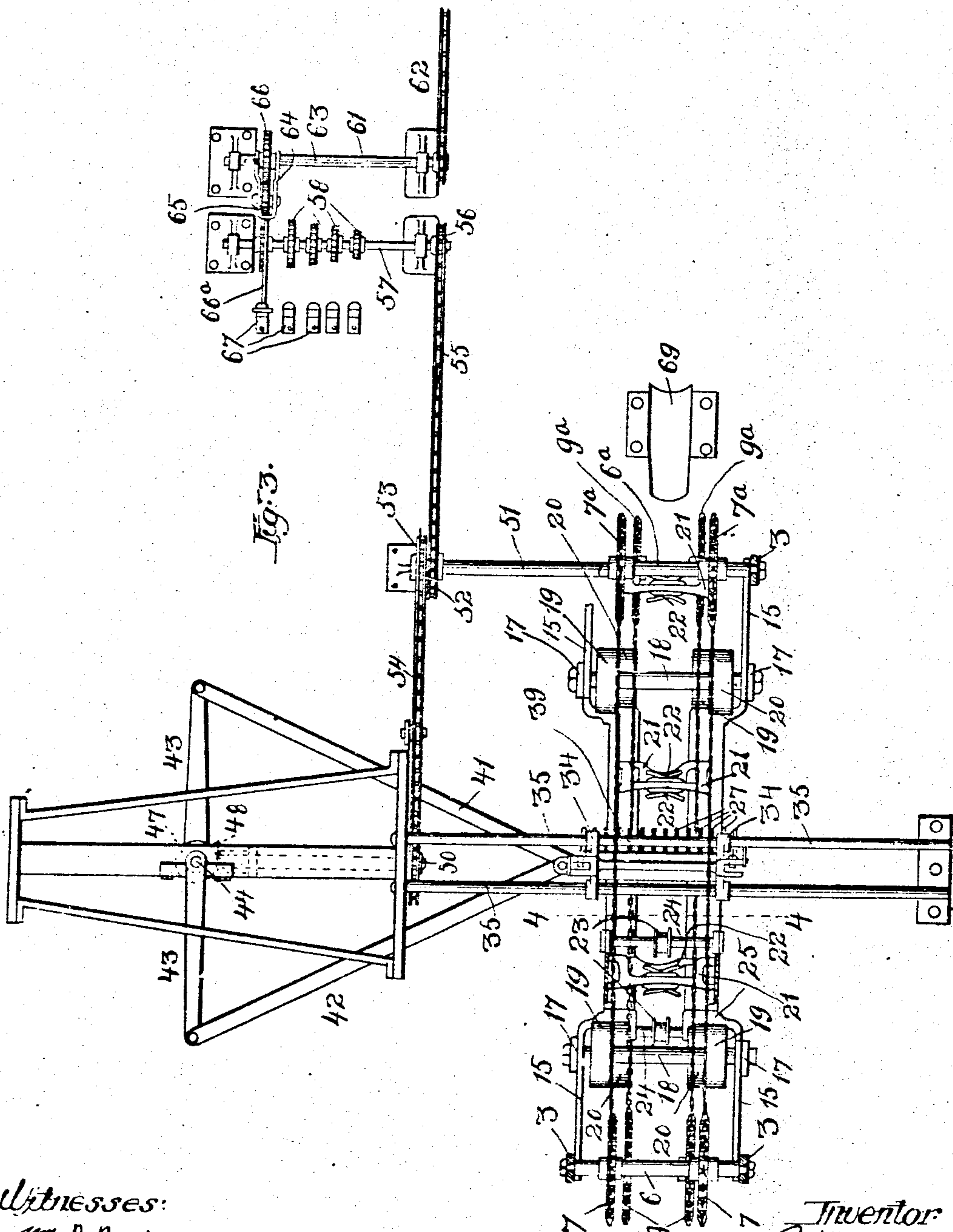
No. 854,044.

PATENTED MAY 21, 1907

H. R. KUERSTEN.  
SAUSAGE LINKING MACHINE.

APPLICATION FILED FEB. 23, 1906.

4 SHEETS—SHEET 2.



Witnesses:

Wm. P. Bond  
Charles Beckman

Inventor:  
Hugo R. Kuerten  
By Banning & Banning  
Atty's.

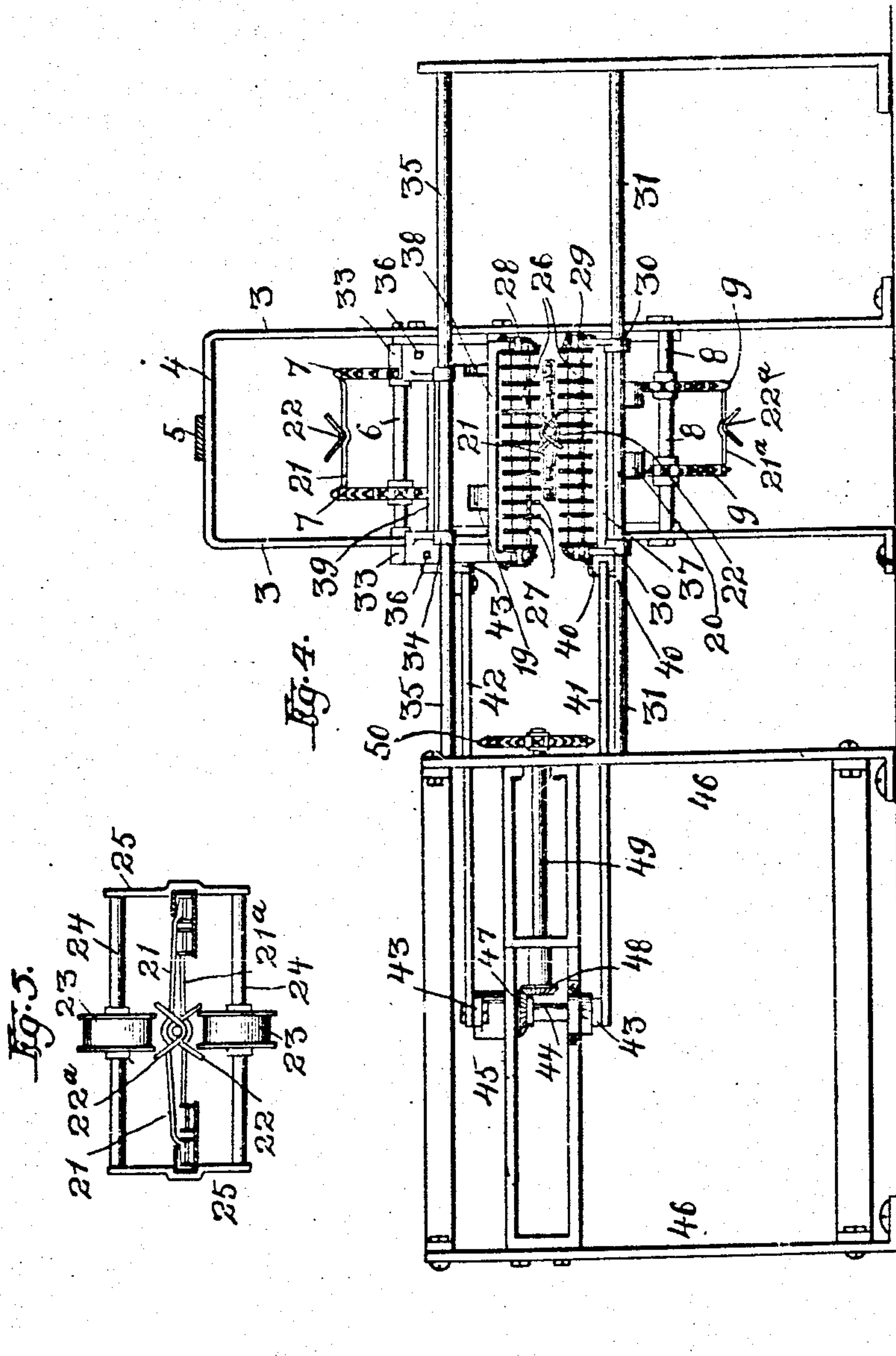
No. 854,044.

PATENTED MAY 21, 1907.

H. R. KUERSTEN.  
SAUSAGE LINKING MACHINE.

APPLICATION FILED FEB. 23, 1906.

4 SHEETS—SHEET 3.



Witnesses:  
Wm. P. Bond  
Pauline Beckman

Inventor  
H. R. Kuerten  
By *Banning Banning*  
Attys.

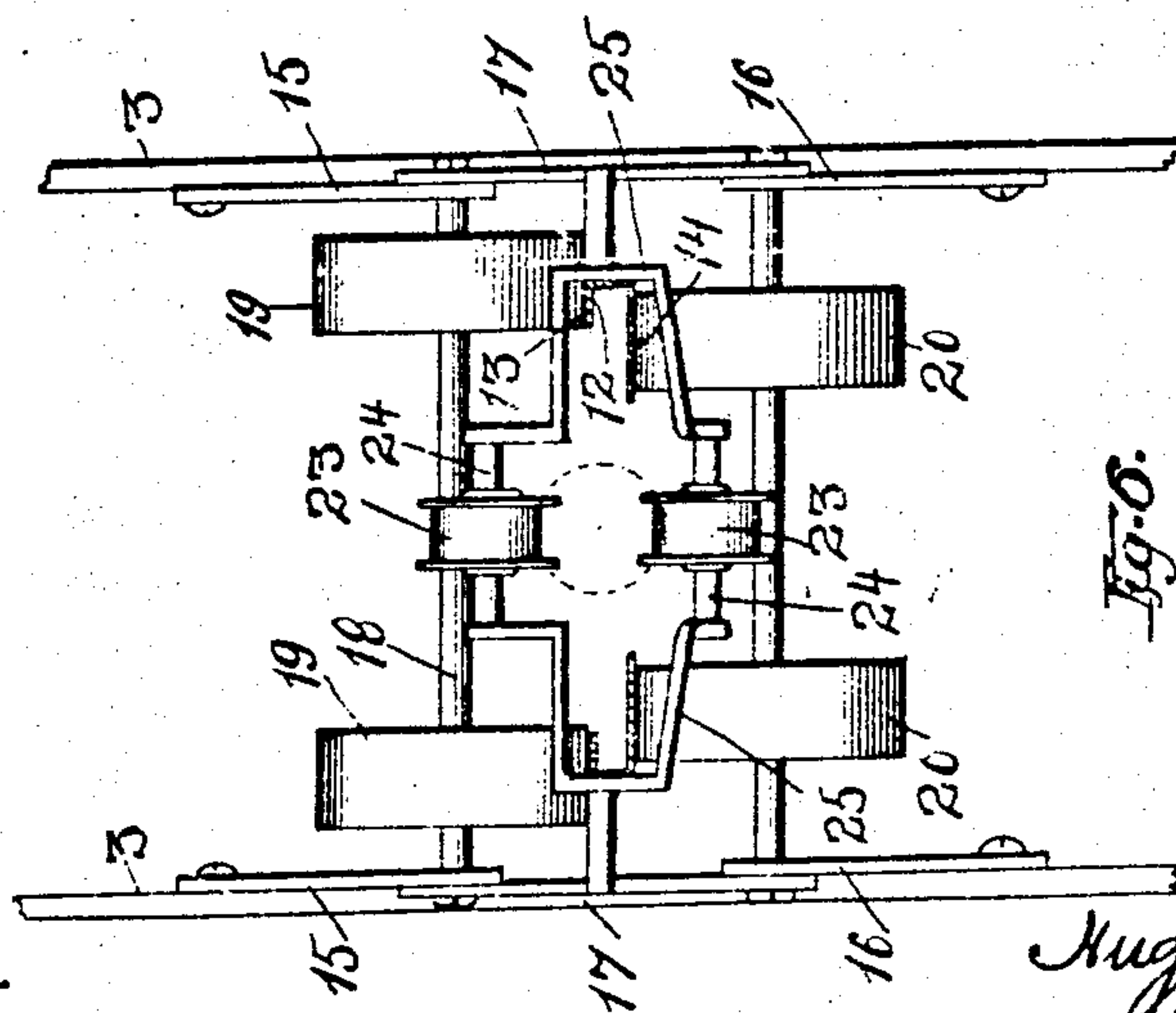
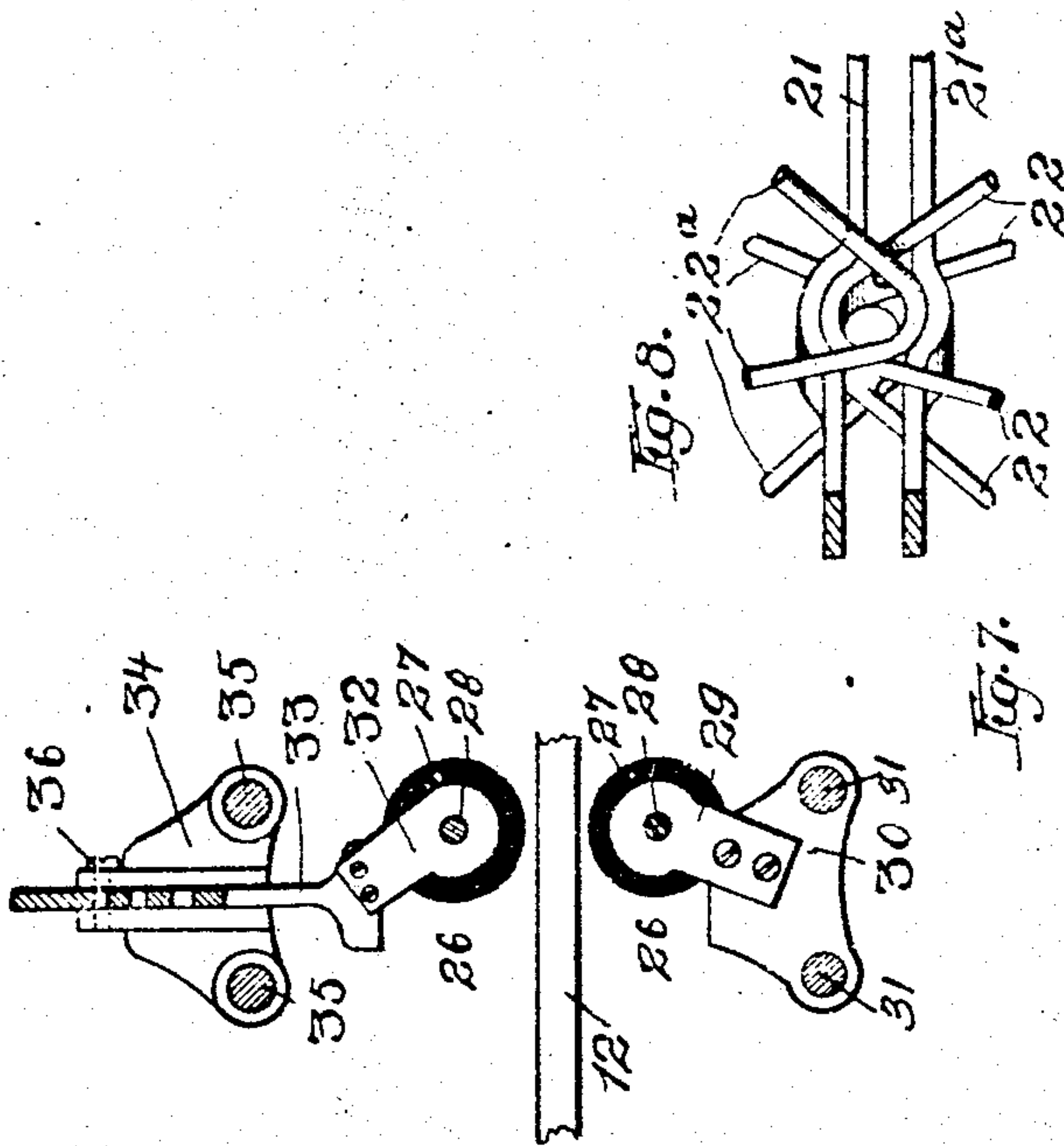


No. 854,044.

PATENTED MAY 21, 1907.

H. R. KUERSTEN.  
SAUSAGE LINKING MACHINE.  
APPLICATION FILED FEB. 23, 1906.

4 SHEETS-SHEET 4



Witnesses:  
Wm. P. Bond  
Pauline Beckman

Inventor:  
Hugo R. Kuerten  
By Benjamin B. Bann  
Attys.



# UNITED STATES PATENT OFFICE.

HUGO R. KUERSTEN, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-THIRD TO  
GEORGE M. HECHT AND ONE-THIRD TO CARL F. BROD, OF CHICAGO,  
ILLINOIS.

## SAUSAGE-LINKING MACHINE.

No. 854,044.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed February 23, 1906. Serial No. 302,549.

*To all whom it may concern:*

Be it known that I, HUGO R. KUERSTEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sausage-Linking Machines, of which the following is a specification.

This invention is intended to be used in connection with a sausage stuffer of the usual character and is adapted to be operated simultaneously and uniformly therewith to divide the stuffed casing into uniform links, twisting the alternate links in opposite directions to make a string of sausages of the usual character.

The object of the invention is to provide mechanism for uniformly feeding forward the stuffed casing in combination with reciprocating twisters working back and forth for giving a double twist to each section or link of sausage, twisting the links so tightly that they will not untwist when the complete string of sausages is delivered from the machine.

Another object of the invention is to provide mechanism for regulating the speed of operation of the machine in conformity with the capacity of the stuffer and in view of the size of the links intended to be made.

Another object of the invention is to provide adjusting mechanism for the twisters for enabling them to operate upon links of different diameters.

The invention relates to the construction and arrangement of the device as a whole which is intended to be easy, efficient and rapid in its operation, and is adapted to be operated by the same power that feeds the sausage meat from the stuffer.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of the machine and stuffer showing the twister guide rolls removed from the front and back of the machine; Fig. 2 a view showing the mechanism for operating the twisters; Fig. 3 a top or plan view of the entire machine; Fig. 4 a cross sectional view taken on line 4—4 of Fig. 3; Fig. 5 a detail view of the link guide rollers and clamping mechanism; Fig. 6 a detail showing the chain guide rollers and adjacent mechanism; Fig. 7 an enlarged

detail showing the method of adjusting the twist- 55  
ers; and Fig. 8 a perspective detail of the link clamping mechanism.

The linker consists of a frame work 1 comprising end yokes or frames 2 having side bars 3 and a cross head 4. The yokes are 50  
connected together at their tops by a longitudinally extending bar 5. Each of the yokes has journaled between its side uprights, upper shafts 6 and 6<sup>a</sup> carrying sprocket wheels 7 and 7<sup>a</sup>. Immediately beneath the 65  
upper shafts are similar lower shafts 8 and 8<sup>a</sup> on each of which are mounted a pair of sprocket wheels 9 and 9<sup>a</sup> respectively. The lower sprocket wheels are closer together than the upper sprocket wheels, lying nearer 70  
to the center of the machine. The upper sprocket wheels carry companion endless chains 10 and the lower sprocket wheels carry similar chains 11, there being in all four  
endless chains mounted on eight sprocket 75  
wheels.

The upper and lower sprocket chains travel within guideways formed by longitudinally extending rails 12 of channel formation having upper flanges 13 and lower flanges 14 be- 80  
tween which flanges the chains travel. The longitudinally extending rails are connected at their ends to brackets 15 having diverging arms 16 connected with the side bars 3 of the yokes or frames 2 and a cross head or link 17 85  
connecting the diverging arms. The cross head or link 17 serves as a journal mounting for upper and lower guide roller shafts 18 upon which are mounted upper guide rollers 19 and lower guide rollers 20 over which the 90  
endless chains pass, the peripheries of the upper and lower guide rollers being closer together than the peripheries of the upper and lower sprocket wheels, so that the chains diverge from one another after passing over 95  
the guide rollers, allowing convenient ingress of the stuffed sausage casing and egress of the completed string of sausages.

The companion upper chains and the companion lower chains have mounted thereon 100  
at suitable intervals cross brackets 21 and 21<sup>a</sup> respectively, each having in its center a clamp 22, the two clamps being oppositely disposed with respect to one another. Each clamp comprises two pairs of divergent fin- 105  
gers 22<sup>a</sup>, and the fingers of each pair are adapted, when the clamps are interlocked, to straddle the companion cross bracket, as



shown in Fig. 8, leaving an opening in the center for the reception of the sausage casing, which, when the clamps are brought together, is clamped and held by the interlocked fingers. As best shown in Figs. 5 and 8 this interlocking of the clamping fingers is intended to clamp the forwardly traveling casing stuffed with sausage meat, at suitable intervals to measure off the individual links of sausage. The completed links travel between two pairs of link rollers 23 which are secured to shafts 24 journaled between brackets 25 secured to the frame of the machine.

The twisting is performed by means of upper and lower twisters 26, each of which consists of a plurality of rubber disks 27 mounted on a rod 28. The lower twister is carried between arms 29 fixedly secured to plates 30 which are slidably mounted upon a pair of lower guide rods 31 extending transversely of the sprocket chains and in suitable proximity to the inner or clamping sections of the chains. The upper twisters are mounted between arms 32 secured to vertical adjustable stems 33 which latter are carried by upper plates 34 similar in function and arrangement to the plates 30 and slidably mounted upon upper cross guide rods 35 in parallel relation and suitable proximity to the lower guide rods with which they co-operate. The stems 33 are held in adjusted position by means of set screws 36 which permit the distance between the twisters to be varied to accommodate the machine for use in twisting sausages of different diameters.

The lower slidable plates 30 at opposite ends of the lower twister are connected by means of a cross brace 37, and the adjustable stems 33 are likewise connected by a cross bar 38 which permits the uniform raising and lowering of both ends of the upper twister. The slidably mounted plates 34 are connected by means of a cross brace 39 which arrangement of braces permits the reciprocation of the upper and lower twisters without binding or biting due to lateral play or movement of the parts.

One of the plates 30 has on its outer face ears 40 between which is pivoted the end of an operating arm 41 which operates the lower twister; a similar rod 42 pivoted to a bracket 43 on one of the upper plates 34 operates the upper twister. As shown in Fig. 3, the arms 41 and 42 are pivoted to the free ends of oppositely extending revolving arms 43 secured to a vertical shaft 44 which is pivotally mounted within a frame 45 secured to uprights 46 which latter are positioned in suitable proximity to the frame of the remaining portion of the machine. The shaft 44 has thereon a bevel pinion 47 which meshes with a bevel pinion 48 on a shaft 49, which latter has on its end an operating sprocket wheel 50.

One of the lower shafts carrying the end-

less chain sprocket wheels is provided with an extended section 51 having thereon sprocket wheels 52 and 53, the latter of which is connected with the sprocket wheel 50 by means of a sprocket chain 54. The sprocket wheel 52 has mounted thereon a sprocket chain 55 which passes around the sprocket wheel 56 mounted on a shaft 57, which shaft has mounted thereon a plurality of gear wheels 58 of varying size. The linking machine is used in connection with a stuffer 59 of any well known character, which stuffer is operated by means of a handle 60 which, in addition to operating the stuffer, is adapted to impart rotation to a power shaft 61 through the medium of a sprocket chain 62. The power shaft 61 has therein a groove 63 which permits the adjustment of a yoke bracket 64 which carries an intermediate gear wheel 65 meshing with a gear wheel 66 on the grooved power shaft. The yoke is provided with a forwardly extending arm 66<sup>a</sup> which is intended to be hooked under any one of a plurality of retaining fingers 67 which are adapted to hold the pinion 65 into mesh with any one of the plurality of different sized gear wheels on the shaft 57. This arrangement enables the operation of the linker in conformity with the size of the sausage intended to be stuffed. The stuffed casing 68 is fed from the stuffer through a guide trough 69 adjustably mounted on an upright rod 70 in suitable proximity to the clamping chains adapted to form the links.

In operation the casing stuffed with sausage meat is placed in suitable position to be caught and clamped between the interlocking fingers carried by the upper and lower endless sprocket chains, which fingers are so positioned on the chains that during the revolution of the chains they will remain interlocked during the inner circuit of the chains, and when caught by the interlocking fingers the stuffed sausage casing is carried forward between the twisters which are moved in opposite directions by means of the revolving arms 43 which revolve simultaneously with the forward movement of the stuffed sausage casing. The rubber disks engaging the upper and lower sides of a clamped section of sausage casing revolve the section, clamped at each end, a suitable number of times, thereby twisting the section into a link of sausage, and said twisting operation will continue until the upper and lower twisters have moved in opposite directions out of proximity with one another. The disks of the twisters, being arranged longitudinally with respect to the travel of the sausage casing, permit longitudinal movement thereof, but at the same time compel the rotation of the clamped section by reason of the resilient or elastic nature of the rubber of which the disks are composed. After the first link has been twisted it will pass beyond the line of travel of the twisters



and the next succeeding clamped section of the sausage casing, will pass into position to be engaged by the upper and lower twisters on their return movement, which will, of course, twist the clamped section in a direction opposite to that of the preceding section, so that the number of twists given to the casing between individual links of sausage will be doubled by the forward and return movements of the twisters which always travel in opposite directions with respect to one another. After a link has been formed as above specified it passes between the link rollers 23 which prevent any untwisting or rotary movement of the sausage link during the operation of twisting the next succeeding link of sausage, and when the entire twisting movement has been completed the sausage casing between the links will be so firmly and tightly twisted that it will be permanently held against untwisting by the pressure of the sausage meat contained within the links which is compressed more or less by the twisting operation so that the twist will be very tight and permanent.

When it is desirable to change the diameter of the links the upper twister can be adjusted with respect to the lower twister by regulating the vertical position of the stems 33 so that sausages of different diameters can be linked. As the size or diameter of the sausages is increased or diminished it will be necessary to throw the driving pinion 65 into mesh with different sized gears of the series 58 so that the speed of operation of the linker with respect to the operation of the stuffer will be increased or diminished as may be desired. The guide wheels over which the clamping, sprocket chains pass cause the chains to converge from one another at their discharge ends, which allows the sausage casing to be fed into and out of the machine without difficulty and without any danger of breaking or tearing the completed string of sausages.

The operation of the machine is extremely easy, the entire machine being operated with the expenditure of but little more power than is ordinarily necessary in operating the stuffer, and the adjustment or co-operation between the stuffer and linker can be so regulated that each of the links will be uniformly filled, measured off and twisted by a continuous and uninterrupted operation which greatly facilitates and expedites the operation of making strings of sausages. The twisting operation gives an extremely tight and durable twist to the sausage links which are delivered from the machine in a continuous string in proper condition for the market.

Although the invention has been described with considerable particularity as to detail, it will be understood that the method of mounting the chains and twisters and the method of operating the same can be changed

or varied to a considerable extent without departing from the spirit of the invention.

What I regard as new and desire to secure by Letters Patent is:

1. In a sausage linking machine, the combination of co-operating clamping devices for clamping the sausage casing at suitable intervals to form links, continuously movable linking mechanism on which the clamping devices are mounted, and reciprocating twisters movable back and forth in a straight line and in transverse relation to the path of travel of the carriers and adapted to twist the links without impeding their forward travel, substantially as described.

2. In a sausage linking machine, the combination of clamping devices adapted to clamp and hold the stuffed sausage casing at predetermined intervals to form links, and twisters oppositely and simultaneously movable with respect to one another and movable back and forth in a transverse line with respect to the stuffed sausage casing, substantially as described.

3. In a sausage linking machine, the combination of upper and lower endless chains, co-operating interlocking clamping fingers secured to the chains at suitable intervals, sprocket wheels on which the chains are mounted, reciprocating upper and lower twisters, guides on which the twisters are slidably mounted, extending transversely with respect to the endless chains, and mechanism for moving the twisters transversely of the chains and in opposite directions simultaneously with the forward travel of the chains, substantially as described.

4. In a sausage linking machine, the combination of upper and lower endless chains, co-operating interlocking clamping fingers secured to the chains at suitable intervals, sprocket wheels on which the chains are mounted, upper and lower twisters, guides on which the twisters are slidably mounted, extending transversely with respect to the endless chains, arms pivoted to the upper and lower twisters respectively, a revolving arm to which the ends of the first mentioned arms are secured, and mechanism for simultaneously actuating the revolving arm and revolving the chain carrying sprocket wheels, substantially as described.

5. In a sausage linking machine, the combination of forwardly moving clamping mechanism adapted to clamp a stuffed sausage casing at suitable intervals to form links, and co-operating twisters adapted to be simultaneously moved in opposite directions in transverse relation to the path of travel of the clamping mechanism, each of the twisters being composed of flexible disks adapted to compel the rotation of the clamped sections of stuffed casing and permit the forward movement thereof between the flexible disks, substantially as described.



6. In a sausage linking machine, the combination of clamping mechanism adapted to clamp a stuffed sausage casing at predetermined intervals, and reciprocating companion twisters movable in opposite directions with respect to one another and in a transverse line with respect to the stuffed casing, each of the twisters being composed of flexible disks arranged in parallel relation with respect to the line of travel of the stuffed casing for permitting forward movement of the casing and compelling a rotary movement thereof, one of the twisters being adjustable toward and from the other to permit the machine to operate upon stuffed casings of different diameter, substantially as described.

7. In a sausage linking machine, the combination of clamping mechanism adapted to clamp a stuffed sausage casing at predetermined intervals to form links, and a twister adapted to move in transverse relation to the path of travel of the stuffed sausage casing, said twister being composed of flexible disks adapted to impart rotation to the clamped section of stuffed casing, and adapted to permit a forward movement of the casing between the flexible disks, substantially as described.

8. In a sausage linking machine, the combination of a frame, upper and lower carrier wheels journaled thereon, upper and lower endless carriers mounted on the wheels, cooperating clamping devices mounted at suitable intervals on the carriers and adapted to interlock when brought into adjacent position to clamp a section of stuffed sausage casing,

ing, companion twisters slidably mounted in transverse relation to the movement of the carriers, means adapted to move the twisters in opposite directions to twist the clamped section into a link of sausage and adapted to reverse the movement of the twisters to twist the next succeeding section in the opposite direction, substantially as described.

9. In a sausage linking machine, the combination of two pairs of upper sprocket wheels, two pairs of lower sprocket wheels, two endless upper sprocket chains, two endless lower sprocket chains, cross-brackets connecting the upper and lower sprocket chains at predetermined intervals, clamping fingers carried by the brackets and adapted to interlock when brought into proximity with one another for measuring off and clamping a stuffed sausage casing, transversely extending upper and lower guide rods, upper and lower twisters slidably mounted thereon and adapted to permit longitudinal travel of the sausage casing simultaneously with the twisting of the clamped sections thereof, mechanism for reciprocating the twisters in opposite directions with respect to one another for twisting one clamped section of a sausage casing in one direction and the next succeeding clamped section in the opposite direction, and mechanism for rotating a sprocket wheel substantially as described.

HUGO R. KUERSTEN.

Witnesses:

GEO. M. HECHT,  
CARL F. BROD.