

May 22, 1934.

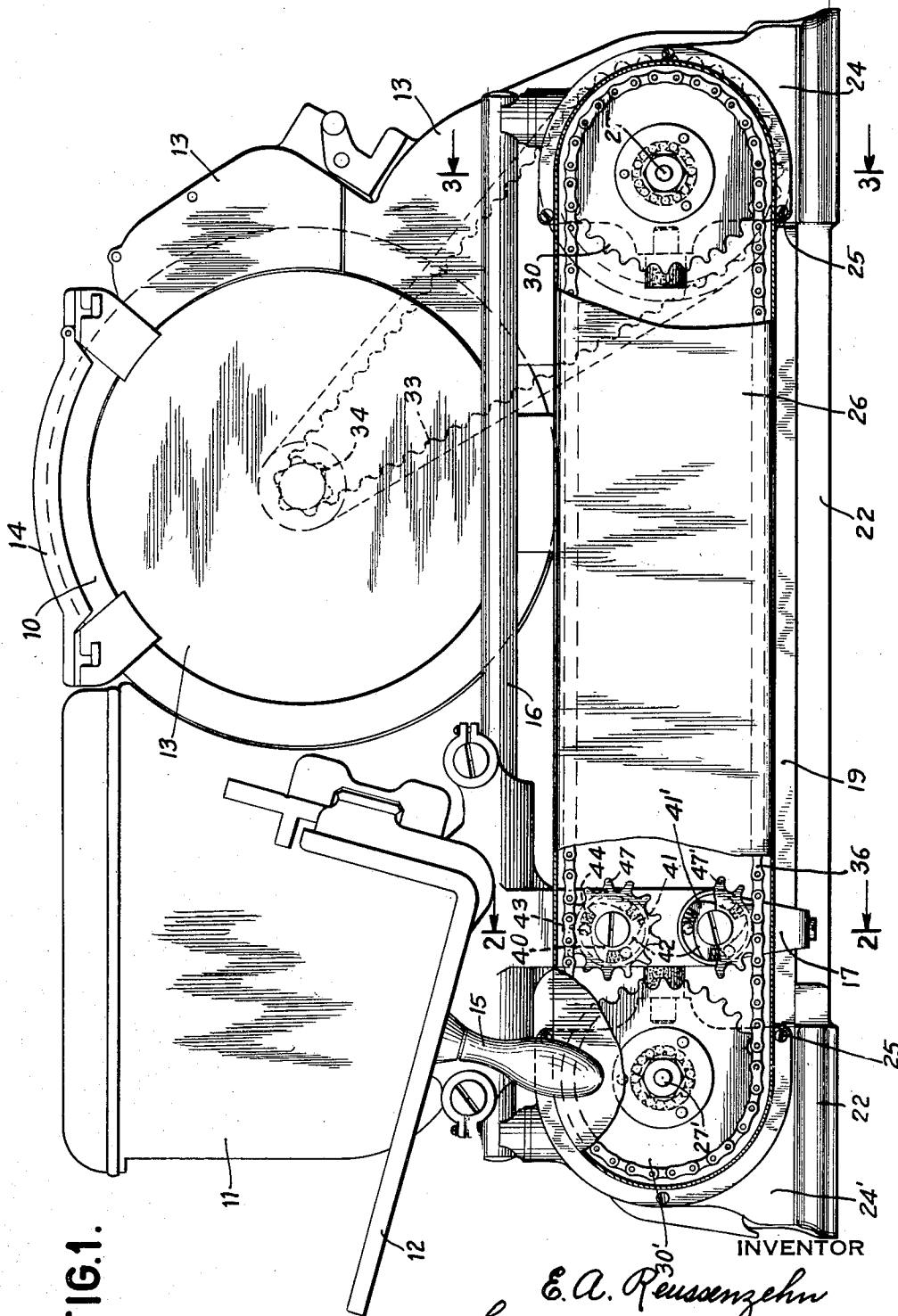
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1,960,026

SLICING MACHINE

Filed March 18, 1931

2 Sheets-Sheet 1



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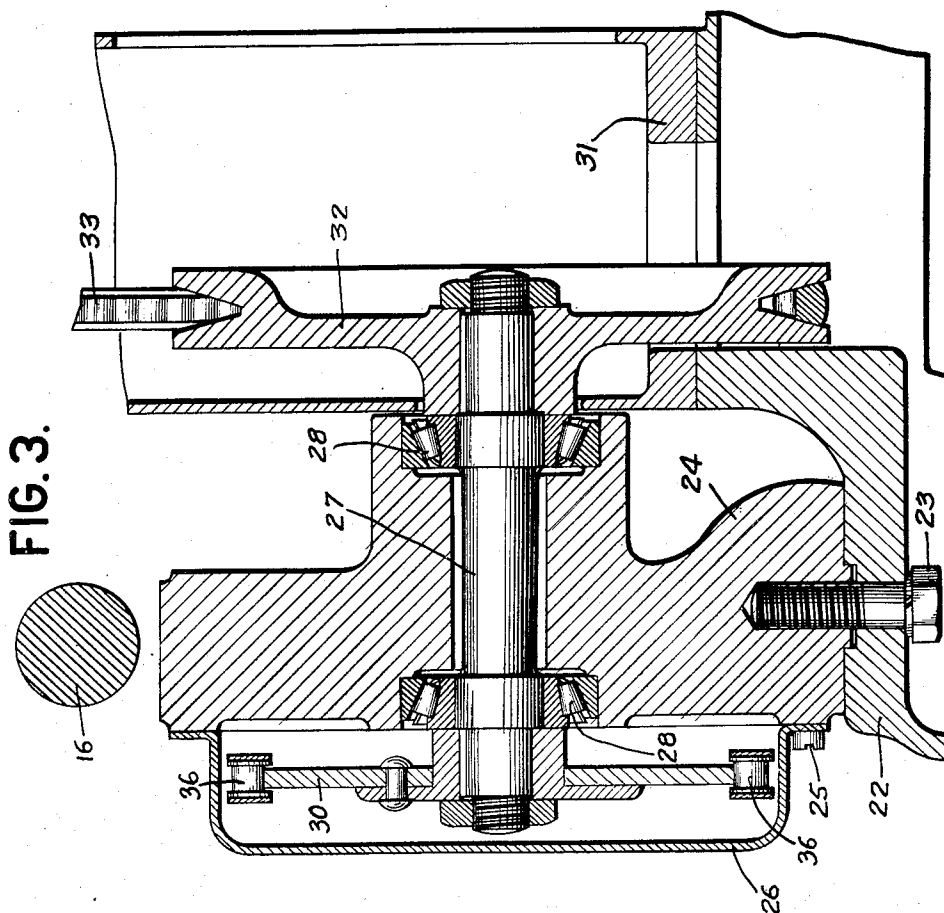
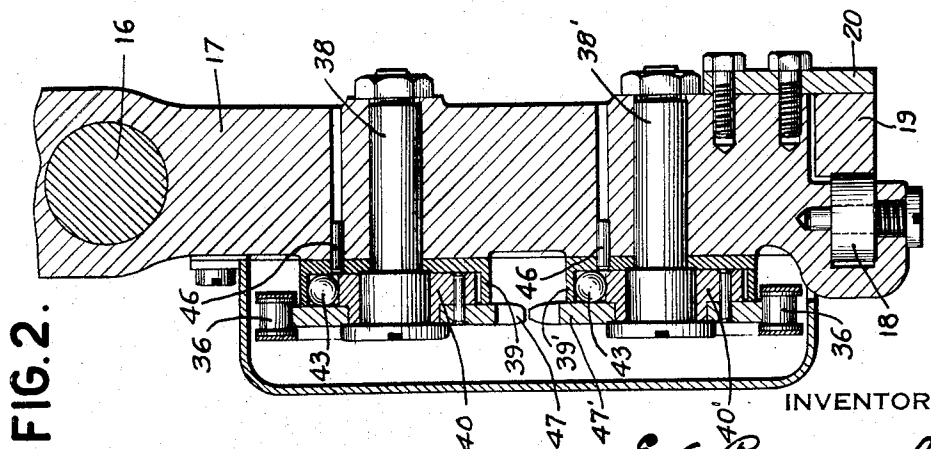
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UNITED STATES PATENT OFFICE

1,960,026

SLICING MACHINE

Ernest Albert Reussenzehn, Dayton, Ohio, assignor, by mesne assignments, to International Business Machines Corporation, New York, N. Y., a corporation of New York

Application March 18, 1931, Serial No. 523,412

6 Claims. (Cl. 146—102)

This case relates to slicing machines and particularly to the type provided with a traversing carriage.

The object of the invention is to provide novel means for actuating a cutting device by means of the traversing carriage.

Another object is to actuate a knife in the same direction upon reciprocation of the carriage.

Further and other objects and advantages will be hereinafter set forth in the accompanying specification and claims, and shown in the drawings, which by way of illustration show what is now considered to be the preferred embodiment of the invention.

In the drawings:

Fig. 1 is a side view of the article feeding side of the slicer.

Fig. 2 is a section on line 2—2 of Fig. 1, and

Fig. 3 is a section on line 3—3 of Fig. 1.

The machine comprises a rotary disk knife 10, a substantially parallel gage plate 11, and a carriage 12 movable parallel to the gage plate and knife. The knife is guarded by plates 13 and rim guard 14 leaving exposed only the front cutting portion of the knife. The carriage may be conveniently moved by a handle 15 thereon although other suitable means may be employed. The carriage frame has a round opening for receiving the guide rail 16 and a depending extension 17 provided with a roller 18 at the lower end for engaging the vertical side of a flat rail 19. A plate 20 provided on the extension limits the movement of the roller away from the rail 19.

The rails 16 and 19 are supported by the base 22 of the machine. At the right hand end of the machine, as viewed in Fig. 1, the base has secured thereto by bolts 23, a frame 24 to the outer side of which is removably attached by screws 25 one end of an elongated housing 26 extending the entire length of the machine. A shaft 27 is journaled at each end in roller bearings 28 mounted in the frame 24. One end of the shaft projects into the housing 26 and carries a sprocket wheel 30. The other end of the shaft projects into the knife housing 31 and carries a heavier and larger sprocket wheel 32. The latter is connected by a chain 33 to a small sprocket wheel 34 mounted on the hub of knife 10. At the left hand end of the machine, as viewed in Fig. 1, the base supports a frame 24' similar to frame 24, in which is similarly journaled a shaft 27' carrying a sprocket wheel 30' of the same size as wheel 30. The left end of housing 26 is secured to the frame 24'.

Sprocket wheels 30 and 30' are connected by an

endless chain 36. The proper rotation of knife 10 is counterclockwise as viewed in Fig. 1. In order to transmit such movement to the knife by chains 33 and 36, the wheels 30 and 30' should rotate counterclockwise. To effect such movement upon reciprocation of carriage 12, the depending extension 17 thereof carries at vertically spaced points stub shafts 38 and 38'. Fixed at the outer ends of shaft 38 and 38' are shells 39 and 39' respectively. Freely rotatably mounted on the ends of shafts 38 and 38' and within the hollow of shells 39 and 39' are the respective ratchet cam elements 40 and 41'. The high points of the teeth 41 of these elements are substantially flush with the inner periphery of their respective shells.

Riding on the cam surfaces 42 of the teeth 41 between successive high points are balls 43 urged by springs 44 towards the increasing slope of the cam surfaces. A ratchet cam element 40 or 40' can only move relative to its surrounding shell in a counterclockwise direction as viewed in Fig. 1. Rotation of the ratchet element clockwise wedges the balls 43 tightly between cam surfaces 42 and the inner periphery of the shell, thus preventing further relative movement between the cam element and its shell. A shell is fixed against rotation relative to extension 17 by a pin 46 and since the shell is also fixed to its shaft 38 or 38', the latter is also non-rotatably mounted on the extension 17.

Secured to ratchet cam elements 40 and 40' are the respective sprocket wheels 47 and 47', the teeth of which mesh with the links of chain 36. Movement of the carriage 12 towards the knife causes the upper sprocket wheel 47 to roll along the chain 36 in a counterclockwise direction. This is freely permitted because the cam elements are free to rotate counterclockwise. At the same time, the lower sprocket wheel 47' tends to roll clockwise along chain 36. This causes the balls 43 to tightly clutch the cam element 40' to its shells 39'. Wheel 47' thus cannot rotate clockwise and therefore moves the lower side of chain 36 along with it towards the knife. This causes counterclockwise rotation of the sprocket wheels and similarly of knife 10.

When the carriage 12 is moved from right to left as viewed in Fig. 1, the lower sprocket wheel 47' rolls counterclockwise on the lower part of the chain while the upper wheel 47 tends to roll clockwise. This movement results in clutching the cam 40 and its wheel 47 to the shaft 38 and as a result wheel 47 moves the upper part of chain 36 from right to left. Again this causes

counterclockwise rotation of sprocket wheels 30 and 34 and knife 10. Thus, the latter is continuously rotated counterclockwise upon both forward and return movement of the carriage 12.

5 In operation, an article is placed on the carriage 12 and held by suitable means in engagement with gage plate 11. Carriage 12 is then reciprocated, a slice being cut off by knife 10 at each forward stroke. The reciprocation of carriage 12 rotates knife 10 constantly in a counterclockwise direction.

10 While I have shown and described and pointed out the fundamental novel features of the invention as applied to a single modification it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. I intend to be limited therefore by the scope of the following claims:

1. A slicing machine comprising a knife, a reciprocatable article feeding device for feeding an article to the knife to be sliced, means drivingly interconnecting the knife and feeding device including a one-way clutch automatically rendered operative when the device moves in one direction, and another one-way clutch automatically rendered effective when the device moves in the opposite direction.

2. A machine comprising a rotary knife, a reciprocatable article feeding device for feeding an article to the knife to be sliced thereby, a pair of sprocket wheels, a chain drivingly connecting the wheels, a pair of operative driving connections between the chain and the feeding device, one of the connections coacting with one rung of the chain and the other connection with

the parallel rung of the chain, and means for driving the knife from one of the wheels, said pair of connections including one-way clutches.

3. A machine comprising a rotary knife, a reciprocatable article feeding device for feeding an article to the knife to be sliced thereby, a pair of sprocket wheels, a chain drivingly connecting the wheels, a pair of operative driving connections between the chain and the feeding device, one of the connections coacting with one rung of the chain and the other connection with the parallel rung of the chain, and means for driving the knife from one of the wheels, said pair of connections including clutches carried by the feeding devices and rotatable relative to the feeding device in only one direction.

4. A slicing machine comprising a rotary disk knife, a carriage reciprocatable substantially parallel to the plane of the knife, and means for rotating the knife from the carriage including a driving device connected to the knife, a one-way driving connection provided on the carriage for actuating said driving device upon one stroke of the carriage, and a separate one-way driving connection mounted on the carriage for movement independently of the other connection for actuating said driving device upon the return stroke of the carriage.

5. A machine such as described in claim 4, said one-way driving connections actuating the driving device in the same direction.

6. A machine such as described in claim 4, said driving device including a chain and pulleys, and one one-way driving connection device being constantly engaged with one rung of the chain and the other one-way driving connection constantly engaged with the other rung of the chain.

ERNEST ALBERT REUSSENZEHN.

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