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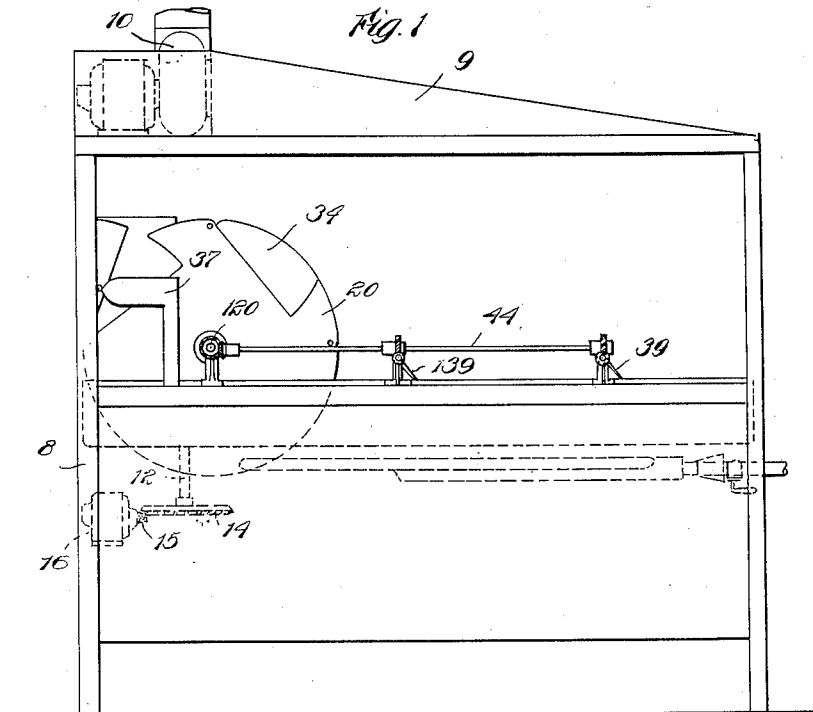
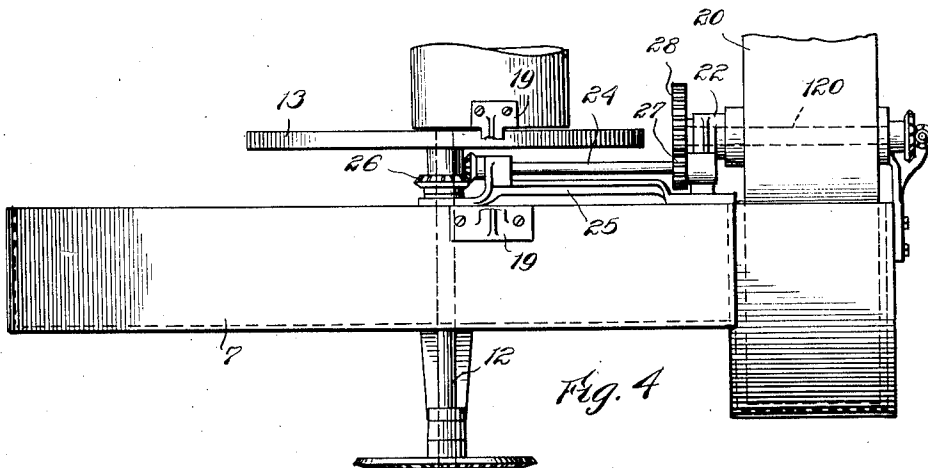
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FRYING MACHINE

Filed March 2, 1927

3 Sheets-Sheet 1



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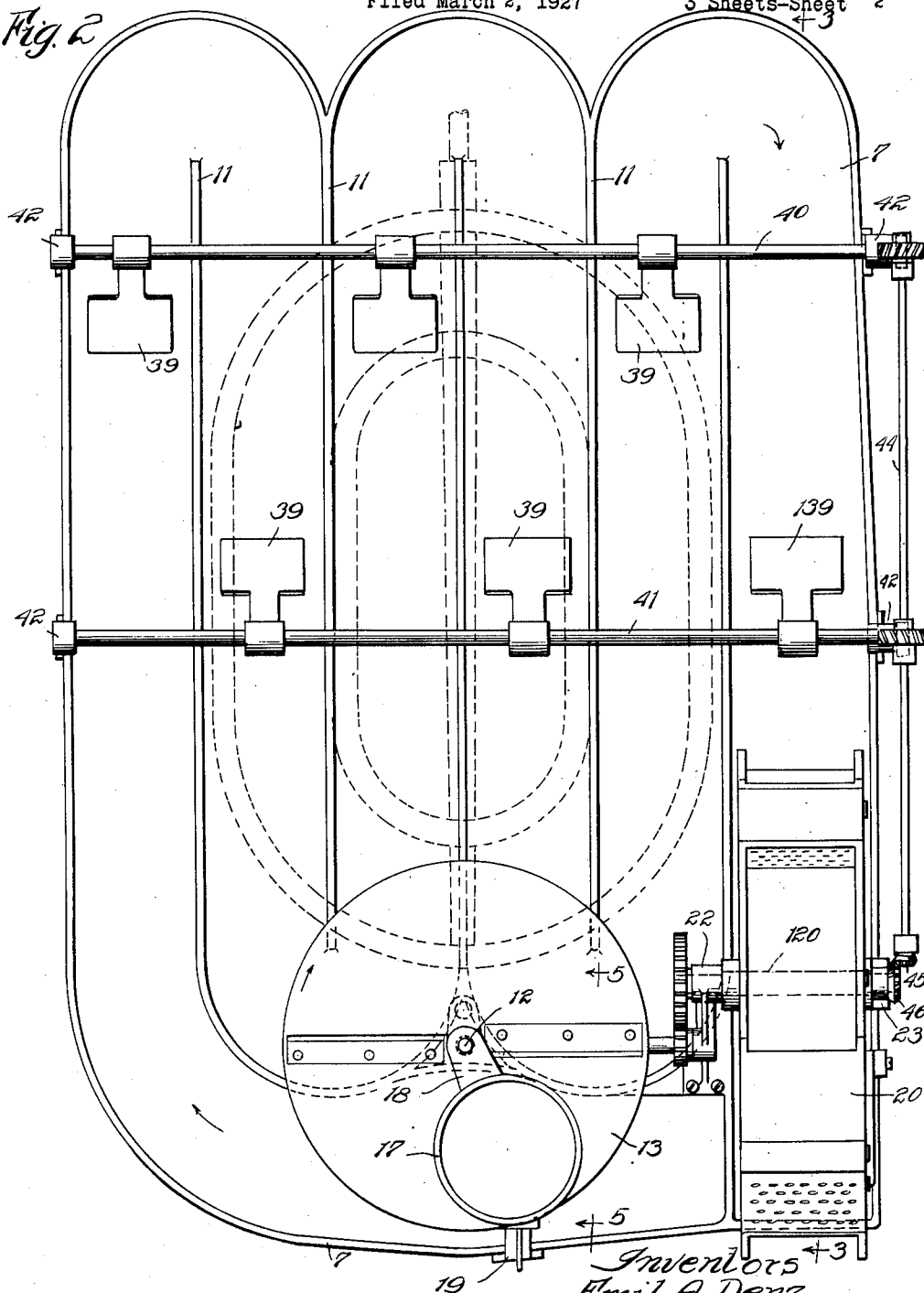
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Fig. 2



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Fig. 3

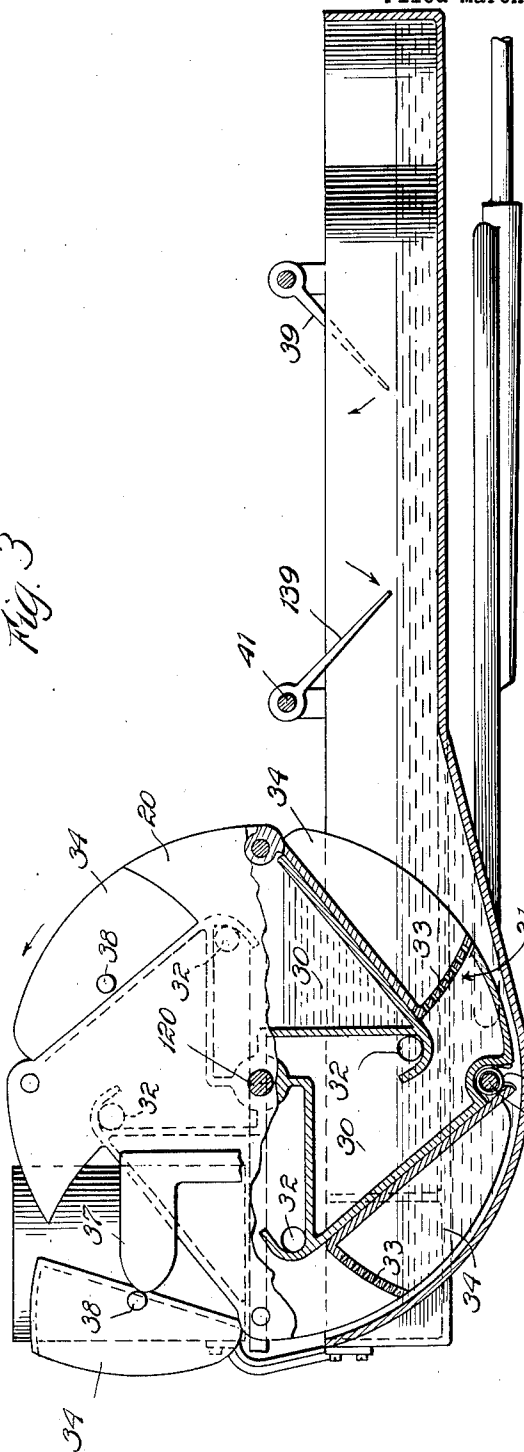


Fig. 6

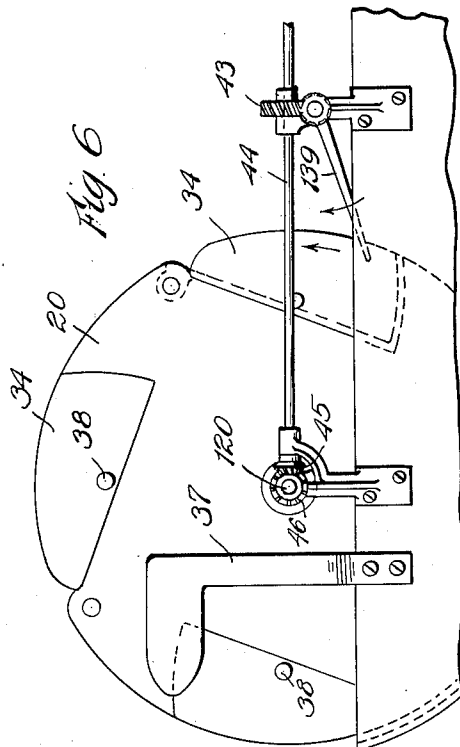
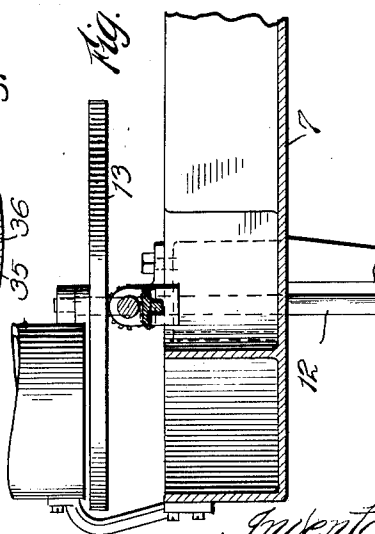


Fig. 5



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UNITED STATES PATENT OFFICE.

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FRYING MACHINE.

Application filed March 2, 1927. Serial No. 172,051.

This invention relates to improvements in frying or cooking machines or the like and more especially to a machine for cooking potato chips.

5 In this invention a machine is provided having a pan in which the channel starts at one end, runs up along one side, doubles back and forth across the width of the pan, and returns along the opposite side to end or terminate adjacent to the starting end. A hopper having a slicer is mounted over the starting end to drop chips into the cooking liquid in the channel. At the opposite end is mounted a wheel which dips the oil out of the channel, and pours the oil in surges into the first end of the channel underneath the slicer. The wheel is also adapted to catch and separate the potato chips from the oil, and dump them over the side of the pan. Then, in order to prevent the chips from sticking in the channel a plurality of paddles or boosters are spaced along the length of the channel, and the last booster is positioned close to the wheel so as to push the potato chips against the same.

One of the main objects of this invention is to provide a machine in which the timing can be closely and evenly controlled. This is accomplished mainly by providing a non-endless channel, in which the cooking oil can be dipped out of one end in measured quantities and poured into the starting end, so that the amount of oil flowing through the channel is positively controlled.

Another object is to provide a pan in which the channels are so arranged that a considerable length of travel may be obtained without requiring an especially large size machine.

Another object is to provide paddles or boosters along the length of the channel, especially near the bends so that the chips will not jam in the channel. Another object is to provide a booster for moving the chips into the wheel. Other objects and advantages will become apparent from the following description, taken together with the accompanying drawings, in which:

Fig. 1 is a side elevation of the frying machine.

Fig. 2 is a plan view of the cooking pan, and the food handling mechanism.

Fig. 3 is a section taken on the line 3—3 of Fig. 2.

Fig. 4 is an end elevation of the pan and

parts shown in Fig. 2 with portions broken away.

Fig. 5 is a section taken substantially on the line 5—5 of Fig. 2.

Fig. 6 is an elevation of the parts shown at the left side of Fig. 3.

Preferably the pan 7 is mounted in a sheet metal cabinet 8, which is provided with a hood over the top, and a motor driven blower for drawing off the fumes.

The pan 7 may be cast solid in aluminum, or may be built up of sheet metal with the partition walls 11 welded in place. The walls 11 may or may not be spaced from the bottom of the pan, but it is considered that a better control of the flow may be obtained by joining the walls solidly to the bottom. The walls are so arranged that the channel starts at the front of the machine, which is at the lower end of Fig. 2. The channel runs up along the left hand side in Fig. 2 to the opposite end of the pan, then doubles back and forth across the width of the pan, and back to the front along the right hand side to terminate adjacent to the starting end.

The slicer shaft 12 is rotatably mounted in suitable brackets to extend up through the pan, and carries the slicer-knife disk 13 at the upper end. At the lower end of the shaft 12 is secured a large bevel gear 14, which is meshed by a small bevel pinion 15 on the shaft of the driving motor 16. The motor may be mounted in the frame 8 in any suitable manner, or may be mounted on brackets which are attached to the pan 7.

The whole potatoes are dumped into the hopper 17, which is carried above the slicer by means of a lug 18, which rests on the upper end of the shaft 12, and a side bracket 19, which is secured to the side of the pan 7. The hopper 17 is so positioned that the slices fall directly into the starting end of the channel, which is slightly enlarged to prevent the oil from boiling over.

The wheel 20 is positioned in the outer terminus of the channel and is mounted on the shaft 120, which is rotatably mounted in suitable brackets 22 and 23, which are secured to the top and to the side, respectively, of the pan 7. The wheel 20 is driven from the slicer shaft 12 through a jack shaft 24, which is rotatably mounted in the bearing member 25, which is secured to the top of the pan. The jack shaft is driven from the bevel gear 26, keyed to the shaft 12, and connected to

the wheel 20 through the reduction gears 27 and 28.

The interior of the wheel 20 is partitioned off to provide four compartments 30, each having an inlet 31 at the periphery, and an outlet 32 on the inside of the wheel. The inlets 31 are covered by perforated ends 33 of the scoops 34, which are pivotally mounted on pins 35, secured in the side walls of the wheel. Suitable coil springs 36 are wound around the pins 35 to press the scoops inwardly against the wheel. The wheel rotates counter clock-wise as viewed in Fig. 3, so that the chips are caught in the pockets at the ends of the scoops as the oil flows into the compartments of the wheel. As the wheel rotates the oil caught in a compartment flows into the center of the wheel, and out through the side outlet hole 32, when the compartment is inverted. In the inverted position of the compartment the outlet is directly over the starting end of the channel, and the oil is flushed underneath the slicer disk and carries the chips out as fast as they are dropped, around the first bend of the channel.

As the scoops reach the upper left hand side of the wheel, as shown in Fig. 3, the scoops are raised by means of a stationary cam 7, which is bolted to the side of the pan, and engages with projecting rollers or lugs 38, which are secured to the outer sides of the scoops 34. This provision is made so that if there is any tendency for the chips to stick on the scoops, they are dislodged when the roller 38 strikes against the cam 37, and the scoop is also swung outwardly until the bottom is nearly vertical.

At times there is a tendency for the chips to collect and jam between the side walls of the channel, as the oil continues to flow underneath the chips. This stoppage is obviated by means of the boosters or paddles 39, which are distributed along the length of the channel, preferably near the bends, and serve to interrupt the flow at the bottom of the channel, as well as to propel the chips along the surface. For the sake of practical design in the machine shown the paddles 39 are mounted on two shafts 40 and 41, which turn in opposite directions, so that the three paddles mounted on the shaft 40 drive the chips towards the back of the machine and the three paddles mounted on the shaft 41 drive the chips towards the front of the machine, the two sets of paddles being of course positioned so that the oil is driven continuously from one end of the channel to the other. The two shafts 40 and 41 are rotatably mounted in suitable brackets 42, which are mounted on the sides of the pan 7, and are driven by means of spiral gears 43 on the shaft 44, which shaft is connected by the bevel pinion 45 to a bevel gear 46, which is secured to the outer side of the wheel shaft 120.

The last paddle 139, mounted on the shaft

41, is positioned to co-operate with the wheel 20 in such manner that the end of the paddle dips into the oil and drives the chips into the scoops 34 as the scoops are moving up out of the oil. The shaft 41 is driven at four revolutions to one revolution of the wheel 20, and accordingly the paddle 139 registers with each of the scoops 34, in substantially the relation shown in Fig. 3 and Fig. 6. By this arrangement the chips are moved positively into each scoop in the same processional order in which they come in the channel, so that some of the chips cannot remain in the oil longer than others. This enables cooking at a high rate without danger of having a few of the chips burnt.

By providing a sufficient number of paddles, and making the channel continuous, the flow could be regulated entirely by the paddles; but it is considered preferable to divide the channel or make it non-endless, and to dip the oil from one end of the channel to the other in measured quantities to secure good control. The wheel 20 serves to regulate the flow in a very positive manner, especially in the non-endless channel, and also is effective for drying the chips, which is necessary to keep the chips from spoiling. The chips ride on the wheel for an appreciable length of time, and, since the wheel is at a high temperature, the oil drains off before it hardens.

It is believed from the foregoing that the operation and advantages of this machine will be well understood. The slicer is driven continuously by the motor 16, and the wheel and the paddles are positively geared to the slicer. The oil flows continuously through the channel, and the surface of the oil is kept evenly covered with cooking chips. The chips are prevented from sticking at any point in the channel, and are removed from the oil and discharged as fast as they reach the wheel 20.

Having thus described our invention our claims are:

1. A cooking machine comprising a vessel having a non-endless meandering channel having the ends adjacently disposed, means for depositing loose particles of food into one end of the channel, and dipping means for dipping cooking-fluid out of the other end and pouring the fluid in surges into the one end to start the food to move through the channel and to regulate the flow of the fluid.

2. A cooking machine comprising a pan having a non-endless meandering channel having the ends adjacent, a wheel mounted in one end of the channel adapted to dip out cooking-oil and pour the oil out through the side into the other end of the channel, and adapted to catch and remove the cooked material from the oil.

3. A cooking machine comprising a pan

having a non-endless channel with the ends
adjacently disposed, means for depositing
loose particles of food into one end of the
channel, a wheel mounted to operate in the
5 other end of the channel, said wheel having
compartments for dipping out cooking-fluid
and pouring the fluid out through the side
into the one end of the channel and adapted to
catch and remove the particles of food from
the fluid, and a plurality of paddles mounted 10
along the channel to dip into the fluid to
control the flow of the fluid and prevent the
chips from jamming between the walls of
the channel.

Signed this 26th day of Feb., 1927.

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