

June 13, 1939.

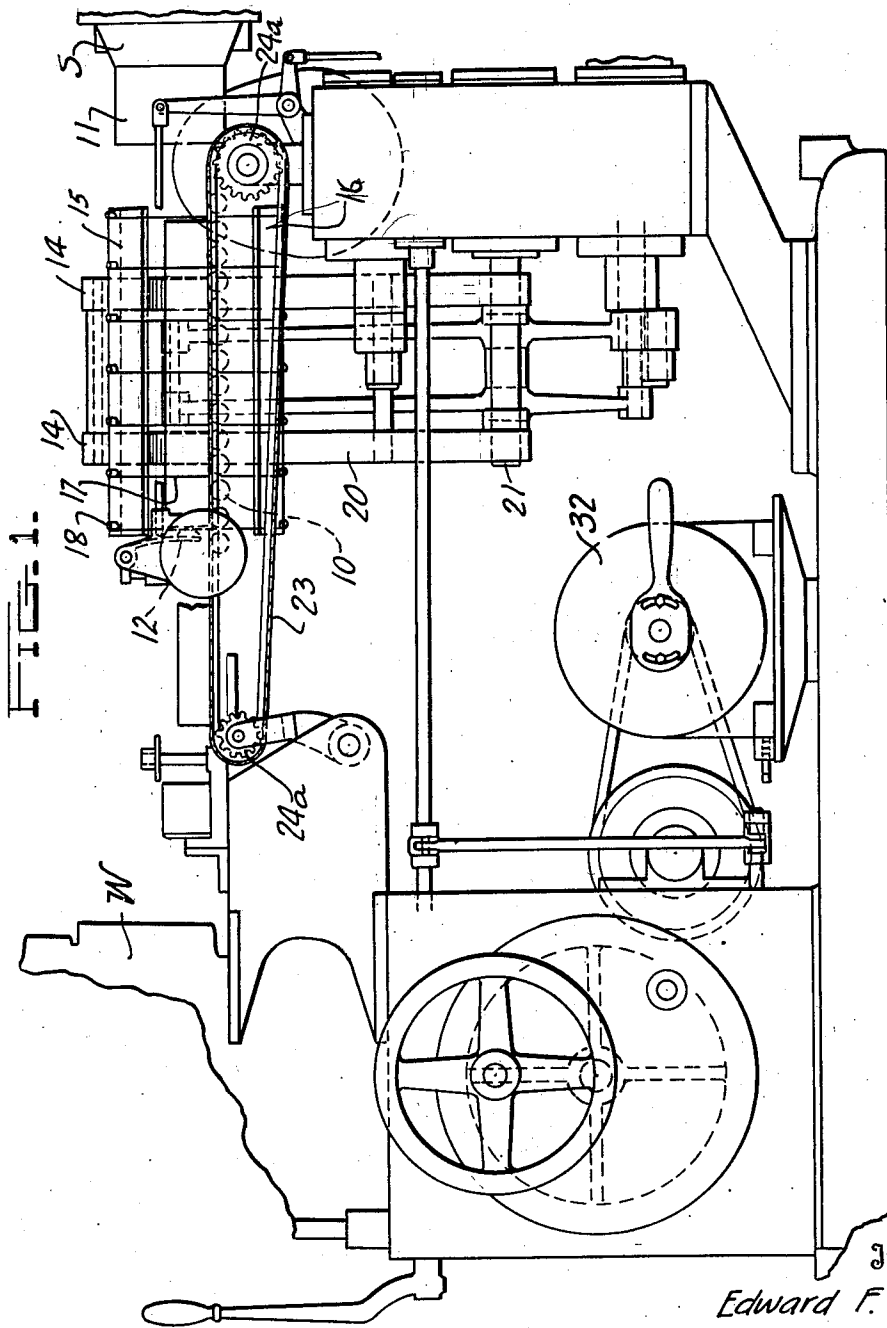
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2,162,106

PRINT FORMING AND WRAPPING MECHANISM

Filed April 1, 1937

6 Sheets-Sheet 1



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June 13, 1939.

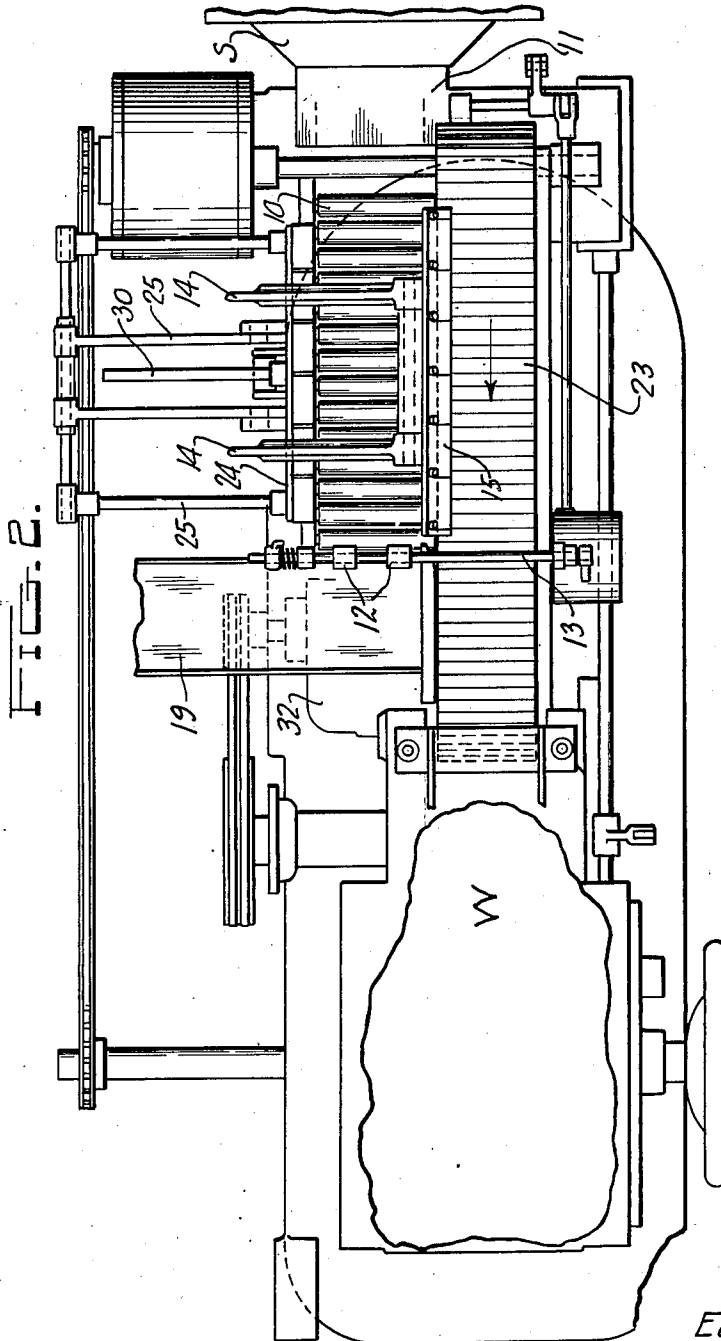
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PRINT FORMING AND WRAPPING MECHANISM

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6 Sheets-Sheet 2



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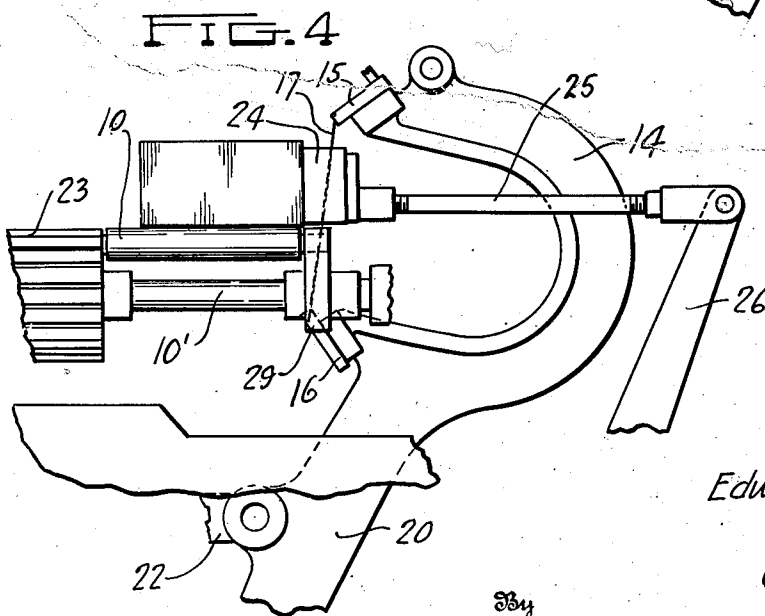
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PRINT FORMING AND WRAPPING MECHANISM

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6 Sheets-Sheet 3



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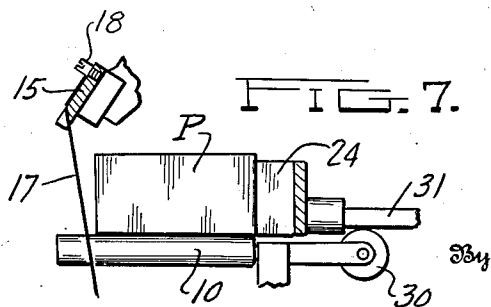
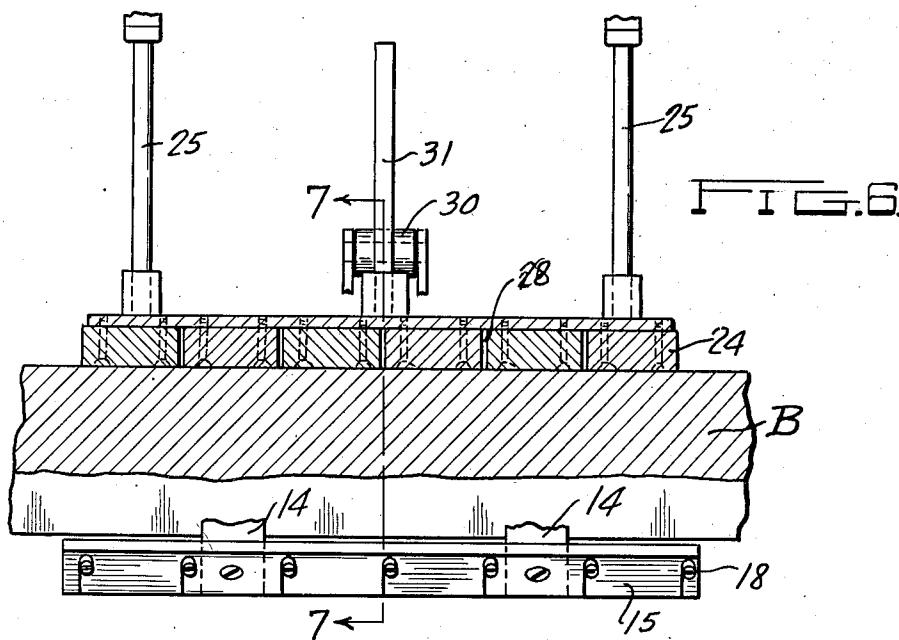
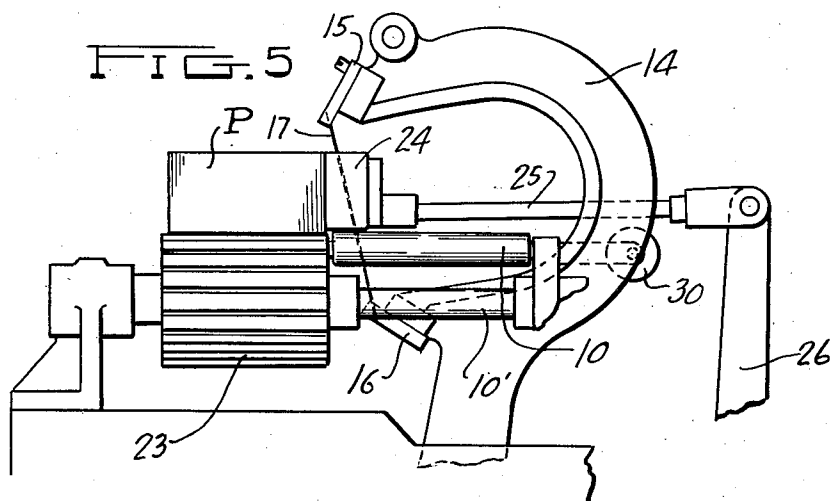
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PRINT FORMING AND WRAPPING MECHANISM

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6 Sheets-Sheet 4



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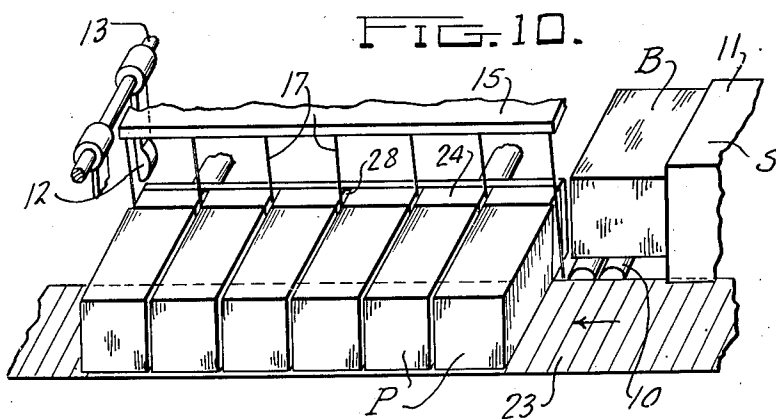
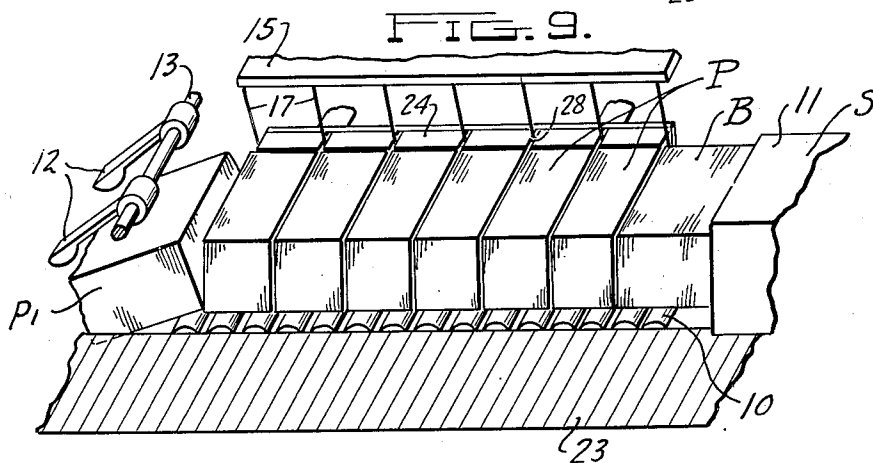
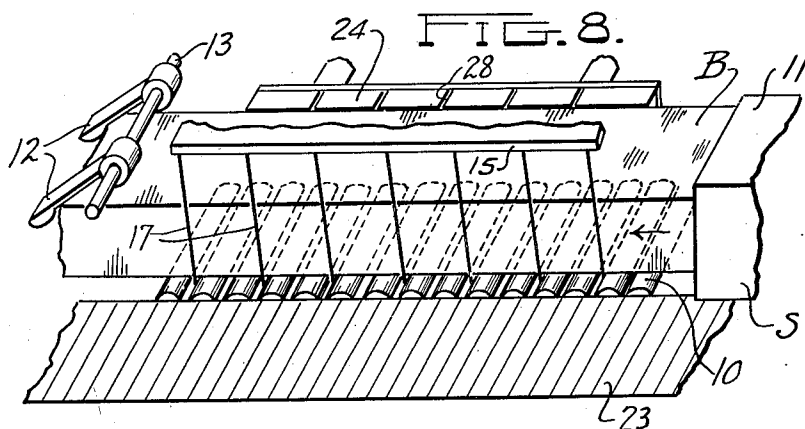
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PRINT FORMING AND WRAPPING MECHANISM

Filed April 1, 1937

6 Sheets-Sheet 5



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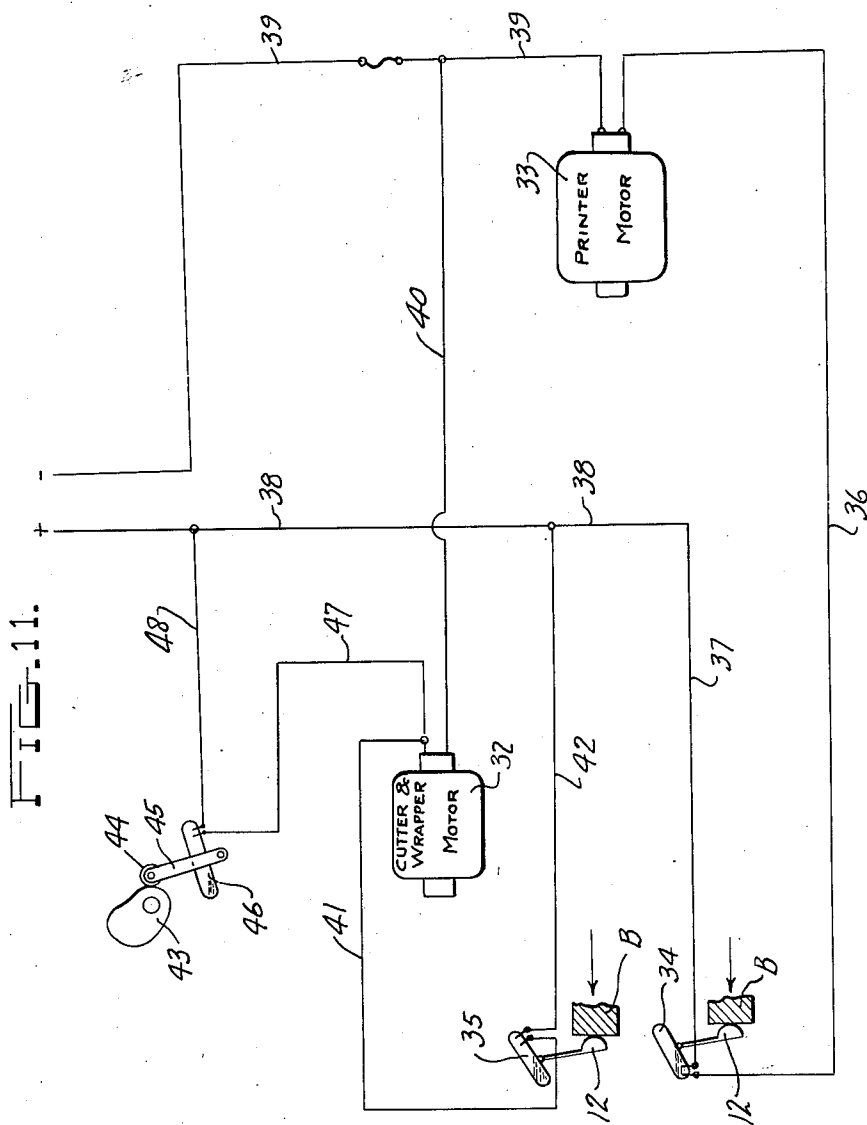
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PRINT FORMING AND WRAPPING MECHANISM

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6 Sheets-Sheet 6



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UNITED STATES PATENT OFFICE

2,162,106

PRINT FORMING AND WRAPPING
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Application April 1, 1937, Serial No. 134,354

9 Claims. (Cl. 93-2)

This invention relates to machines for handling plastic or semi-plastic materials such as butter, oleomargarine, lard and the like, but more particularly to a machine into which the material is introduced at one end in bulk form and is discharged from the opposite end in bars of uniform size individually wrapped with flexible sheet material, such as parchment paper, and, if desired, a predetermined number of bars may be packaged in a carton.

An object of the invention is to produce a simple and efficient machine automatic in its operation for receiving bulk material such as butter, oleomargarine, lard and the like, forming the material into bars of equal size, wrapping individual bars with relatively flexible sheet material, and packaging the bars in cartons.

Another object is to produce a new and improved machine for severing from an elongate bar or slab of butter or similar materials a plurality of bars of substantially the same size.

A further object of the invention is to produce a machine which is adapted to form an elongate rectangular slab of material and after the slab is of predetermined size to sever the same into a plurality of bars of substantially the same size and thereafter automatically advance the individual bars away from the severing mechanism.

A still further object of the invention is to produce a machine for forming individual bars of material, such as butter, and thereafter wrapping the individual bars in flexible sheet material, the wrapping mechanism being started substantially upon the completion of the bar-forming step.

A still further object of the invention is to produce a machine of this character in which the operation of the wrapping mechanism is controlled by and is dependent upon the operation of the slab-forming mechanism, whereby the wrapping mechanism operates intermittently to wrap the bars severed from the slab and thereupon operation thereof is discontinued until other bars are ready to be wrapped.

Other objects of the invention will hereinafter appear and for purposes of illustration but not of limitation, an embodiment of the invention is shown on the accompanying drawings in which

Figure 1 is a side elevation of a machine for handling butter or similar materials into one end of which the material in bulk is introduced and from the opposite end individual bars of substantially the same size, wrapped in relatively flexible sheet material and packaged, are discharged, only a portion of the slab-forming and wrapping machine being shown since the details

of construction and operation thereof form no part of the present invention;

Fig. 2 is a top plan view of the machine shown in Figure 1;

Fig. 3 is an enlarged fragmentary end elevation of the slab-cutting mechanism, the parts being in the initial position before cutting;

Fig. 4 is a view similar to Fig. 3 with the parts in the position they assume after the slab has been cut;

Fig. 5 is a view similar to that shown in Fig. 3 with the ram advanced to discharge the cut bars from the cutting mechanism;

Fig. 6 is a transverse sectional view substantially on the line 6-6 of Fig. 3;

Fig. 7 is an enlarged fragmentary sectional elevation of a portion of the cutting mechanism showing the means whereby the ram which discharges the severed bars is guided in its advancing movement;

Figs. 8, 9 and 10 are fragmentary perspective views of the cutting mechanism corresponding respectively to Figs. 3, 4 and 5 showing the position of the parts in their initial or normal position, the position the parts assume after the bars have been severed, and the position of the parts after the bars have been advanced or discharged from the cutting mechanism; and

Fig. 11 is a view of the wiring diagram showing the manner in which the motors for the printer and the wrapping and packaging mechanism are controlled.

Referring to the drawings, the machine comprises a slab former S into which the material, such as butter, oleomargarine, lard and the like, is delivered in bulk and which forms or shapes such material into an elongate slab B which is delivered onto a table formed of a series of relatively small rollers 10 which are spaced a short distance from each other and are preferably of wood. Any suitable slab-forming mechanism S may be employed for this purpose and since the details of construction and operation form no part of this invention, further description is deemed unnecessary. Suffice it to say that the material is introduced in bulk from tubs or other receptacles and by means of screws or rams, the material is forced out of a restricted throat 11 of the desired dimensions to produce an elongate slab B which is rectangular in cross section.

The slab B moves over the rollers 10 until it engages fingers 12 which are fixed to a horizontal shaft 13. Continued movement of the slab B thereafter operates to stop further oper-

ation of the slab former S, as will hereinafter be described.

The slab B is then cut into a plurality of individual bars P of substantially the same size, six bars P being in this instance severed from the slab B at the same time. For that purpose, a cutter is provided having a pair of horizontally spaced frame parts 14 substantially C-shaped to receive the rollers 10 therebetween, a part of each frame part 14 extending above and a part below the rollers. The upper ends of the frame parts 14 are connected by a bar 15 and the lower portion of the frame parts 14 below the rollers 10 are connected by a bar 16. Secured respectively to the bars 15 and 16 are cutting wires 17 which are secured at their ends to screws 18. The cutting wires 17 are equi-distantly spaced from each other and extend between adjacent rollers 10.

In operation, after the slab B has tripped the fingers 12, the cutter mechanism moves from the position shown in Figure 3 to the position shown in Figure 4, thereby severing the individual bars P from the slab B. At the same time, a block P' in advance of the foremost bar P and which overhangs the foremost roller 10 is adapted to drop therefrom over the roller 10 to a chute 19 leading to a suitable receptacle. The lower end of each of the cutter frame parts 14 is integral with an arm, the lower end of which is mounted on a transverse shaft 21, a link 22 being pivoted to an intermediate portion of the arm 20 for actuating the same.

After the slab B has been cut into the prints or bars P, a ram engages the several prints and moves them together from the rollers 10 onto an endless belt or conveyor 23 which is made up of a plurality of closely spaced wooden strips. As shown in Figure 1, the conveyor 23 is trained about sprocket wheels 24 suitably mounted on the machine frame. Such movement of the bars P is accomplished by a ram or pusher 24, the rear face of which is connected by rods 25 to the upper end of an actuating arm 26 which is pivoted intermediate its ends at 27, any suitable means being provided for imparting movement thereto. The bar-engaging portion of the head or ram 24 is formed with a plurality of notches 28, one being provided for each of the cutting wires 17 thereby to enable the wires 17, after the cutting operation has been performed, to pass into the respective notches 28 so as to be free from the prints or bars and enable the ram to perform its function. The lower portions of the wires 17, as shown in Figure 4, pass into recesses formed in a horizontally disposed bar 29.

It will be understood that the cutter head and ram move together during the discharging movement of the prints P and after the prints have been moved upon the conveyor 23, the ram 24 retracts to its normal position while the cutter head remains in its normal position with the wires adjacent the conveyor 23 preparatory to the next succeeding cutting operation. As will hereinafter appear, the parts operate in timed relation to each other, the conveyor 23 being idle during the cutting operation but substantially when the conveyor has received the prints, it starts its advancing movement to move the prints to the wrapping and packaging mechanism generally indicated at W.

The details of the wrapping and packaging mechanism W form no part of the present invention so that detailed description thereof is considered unnecessary. Suffice it to say that such mechanism may be in accordance with my

co-pending application, Serial No. 31,630, filed July 16, 1935, entitled "Wrapping and packaging machine". That mechanism receives individual bars or prints P and in a progressive manner wraps them with relatively flexible sheet material, such as parchment paper, and then packages them in a carton, so that as discharged from that mechanism, the individual bars are wrapped and are packaged in a carton.

To insure that the ram 24 will not be blocked during its advancing movement by the rollers 10 or other parts of the machine, a cam roller 30 is provided in its path of movement and a rod 31 extending rearwardly from the ram head 24 to which it is fixed, rides over the roller. The roller 30 is so disposed that it causes the rod 31 and ram parts to move upward slightly, thereby guiding it during its initial movement in proper relation to the prints P.

The wrapping and cartoning mechanism W and the cutting and discharge mechanism are driven from a single electric motor 32 and the slab forming mechanism S is driven from another electric motor 33, referred to on Fig. 11, as the printer motor. In operation, the switch (not shown), controlling the printer motor 33, is first actuated to form the slab B, which as above described advances until it engages the fingers 12 and swings them outwardly. As shown in Fig. 11, a mercury switch 34 is connected to one of the fingers 12 and a mercury switch 35 is connected to the other finger 12. The mercury switch 34 controls the motor 33 and is connected thereto through a lead 36, another lead 37 joining a power lead 38. A power lead 39 is also connected to the printer motor 33. Normally the switch 34 is in position to energize the printer motor 33 but upon being swung outwardly by the slab B, it opens the circuit thereby de-energizing the motor 33 to stop further feed of material from the slab former S.

It will be noted that normally the mercury switch 35 is open but upon being tilted by engagement of the slab B with the respective finger 12, it closes the circuit to energize the motor 32, the current flowing from the power lead 39 to lead 40 through the motor 32, thence through the lead 41, the switch 35, lead 42 to the power lead 38. As soon as the block P' has been severed from the front end of the slab B, it drops from the rollers 10, as above described, allowing the fingers 12 to swing downwardly or to return to their normal position, whereupon the printer motor is again energized but even after the switch 35 opens the circuit for the motor 32, the latter continues in operation for a sufficient period of time to enable the wrapping and packaging mechanism W to wrap and package the six bars or prints P which have been severed and delivered to the conveyor 23.

This continued operation is effected by means of a cam 43 operating against a roller 44 mounted on an arm 45 to which is connected a mercury switch 46. As soon as the motor 32 is energized by means of the switch 35, the cam 43 commences its rotation thereby closing the circuit through the switch 46 which has been properly tilted so that current then flows through the power lead 39, lead 40 through the motor 32, through a lead 47 and switch 46, and then through a lead 48 to the power line 38. After the cam 43 has completed its rotation, the switch 46 is again tilted to the position to open the circuit and de-energize the motor 32.

It is not considered necessary to enter into a

detailed description of the various cams, gears, levers, etc., which provide the operative connections between the motors 32 and 33 and the mechanism above described, because the same will be readily apparent to those skilled in this art.

In the operation of the above described machine, the slab of material B is formed by the slab former S which is operated by the motor 33. After a predetermined length of slab has been produced, the switches 34 and 35 are tilted to de-energize the motor 33 and stop further feeding of the slab B. At the same time the motor 32 which is operatively connected to the cutter mechanism is energized, whereupon the cutter head 14 swings to the right (Fig. 3) to cut the slab into individual prints or bars P and also to cut off the front end of the slab or block P', which drops from the rollers 10. In the next operation, the ram 24 moves to the left, as shown in Figure 5, pushing the severed prints P onto the conveyor 23, the cutter head also moving to the left. The ram 24 then retracts to its normal position and the prints P are advanced by the conveyor 23 to the wrapping and cartoning mechanism W which operates for a sufficient period of time to wrap and package all of the bars that have been delivered to the conveyor 23. As soon as the wrapping and cartoning have been completed, the motor 32 is de-energized as above explained.

It is to be understood that numerous changes in details of construction, arrangement and operation may be effected without departing from the spirit of the invention especially as defined in the appended claims.

What I claim is:

1. In a machine of the character described having a slab former, a cutter and wrapping mechanism, said machine comprising automatic means for rendering said former inoperative after a predetermined length of slab has been formed, means for rendering the cutter operable automatically substantially when said former is rendered inoperative for cutting the slab into a predetermined number of sections, and means for rendering said wrapping mechanism operative substantially when said sections are formed for a period only sufficient to wrap said sections respectively and thereupon for rendering said wrapping mechanism inoperative.

2. In a machine of the character described having means for forming a continuous slab of material such as butter, oleomargarine and the like, a cutter, and wrapping means, said machine comprising means operable after a predetermined length of slab has been formed for rendering said forming means inoperative, means for rendering said cutter operative substantially when said forming means is rendered inoperative for cutting the slab into a predetermined number of sections, means operable substantially upon the cutting of said slab for rendering said wrapping means operative for wrapping individual sections, said wrapping means continuing in operation only for a period sufficient to wrap said sections.

3. In a machine of the character described having means for severing the slab of butter or the like into a predetermined number of sections, a conveyor to receive the severed sections, and wrapping means, said machine comprising means for advancing the severed sections to the conveyor, said wrapping mechanism being adapted to receive the severed sections from the con-

veyor, and automatic means rendering said wrapping means operative only for a period of time sufficient to wrap said sections.

4. In a machine of the character described having means for forming a predetermined number of bars of butter or the like, and a normally inoperative wrapping mechanism for wrapping individual bars, means for rendering said wrapping mechanism operative only for a sufficient period to wrap said bars.

5. In a machine of the character described having means forming an elongate slab of butter or the like and advancing same, a cutter, and wrapping mechanism, said machine comprising means responsive to the movement of the slab for rendering said slab forming means inoperative, means responsive to the movement of the slab for rendering said cutter operative, and means for operating said wrapping mechanism only for a period sufficient to wrap said bars.

6. In a machine of the character described having means for severing a predetermined number of sections from a slab of butter or the like, and wrapping mechanism, said machine comprising a conveyor for receiving the severed sections, means for advancing the severed sections to said conveyor, said wrapping mechanism being adapted to work individual sections from the conveyor with sheet material, and means for rendering said wrapping mechanism inoperative after a predetermined period of time.

7. In a machine of the character described having means for feeding a slab of butter or the like, a cutter, and wrapping and cartoning mechanism, said machine comprising means responsive to the movement of the slab for rendering said feeding means inoperative, means to render said cutter operative in response to the movement of the slab, means for rendering the wrapping and cartoning mechanism operative by movement of the slab, and means for rendering said wrapping and cartoning mechanism inoperative after said severed sections have been individually wrapped and packaged.

8. In a machine of the character described having a cutter and wrapping and cartoning mechanism, said machine comprising a table along which a slab of butter or the like is advanced, means for moving said cutter transversely of said table for severing the slab into a predetermined number of sections, means movable with the cutter after completion of the cutting operation for discharging the severed sections from said table, and a conveyor having a step by step movement for receiving the severed sections and delivering same to said wrapping and cartoning mechanism.

9. In a machine of the character described having a slab forming mechanism, a cutter, and wrapping mechanism, said machine comprising a table for receiving the slab, means rendered operative by the movement of the slab for actuating said cutter to sever the slab into a predetermined number of sections, means for discharging the severed sections, a conveyor for receiving the severed sections and delivering same to the wrapping mechanism for wrapping the same in sheet material, and means for automatically rendering said wrapping mechanism inoperative after a predetermined period of time.

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