

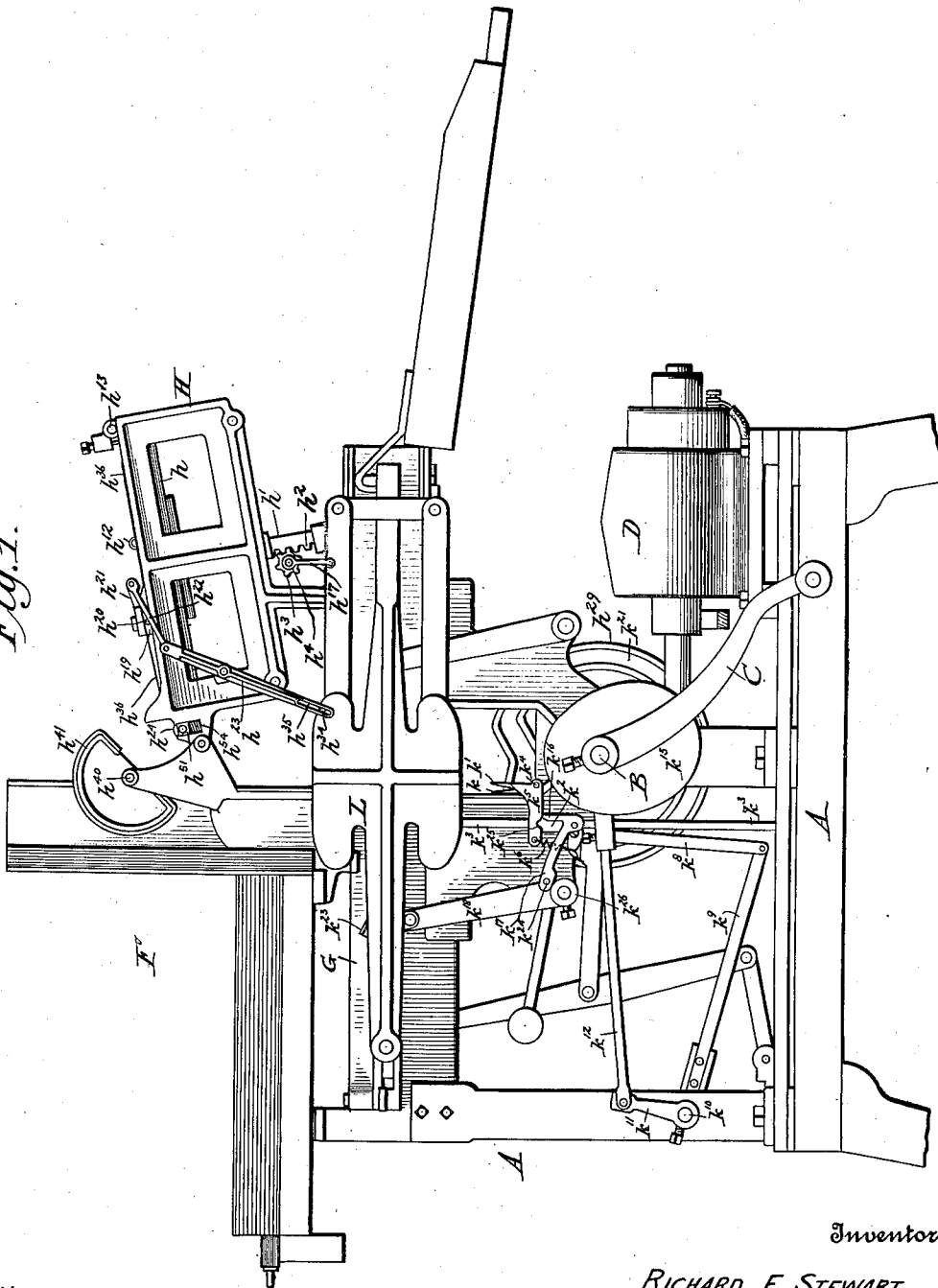
R. F. STEWART.
WRAPPER FEEDING MECHANISM.
APPLICATION FILED FEB. 10, 1913.

1,066,058.

Patented July 1, 1913.

4 SHEETS—SHEET 1.

Fig. 1.



Inventor

RICHARD F. STEWART

Witnesses

A. P. Hollingworth
J. T. Mawhinney

By

Hughes, Gustman & Co.

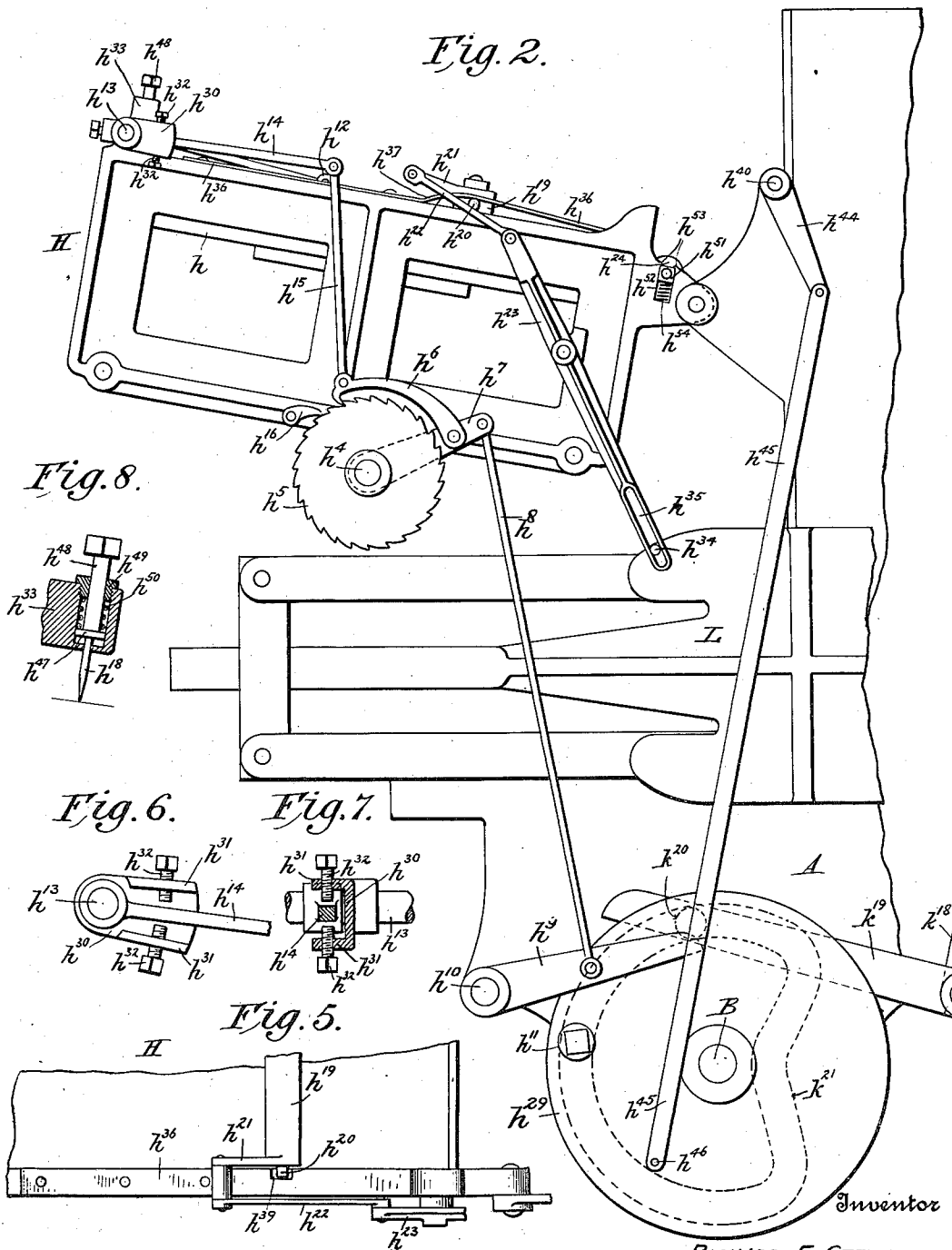
Attorneys

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Witnesses
A. Hollingworth
T. Manhinney

Inventor
RICHARD F. STEWART

By *Supina, Cushman & Co.*
Attorneys.

1,066,058.

4 SHEETS—SHEET 3.

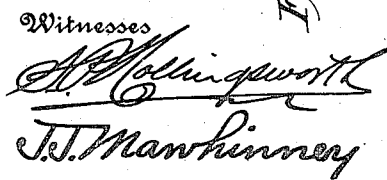
Witnesses
A. P. Hallingworth
J. T. Marwhinner

RICHARD F. STEWART

By *Jugus. Cleveland & Co*
Attorneys.

1,066,058.

4 SHEETS--SHEET 4.



By *Lynne Leuchman Rea*
Attorneys.

UNITED STATES PATENT OFFICE.

RICHARD F. STEWART, OF NEW YORK, N. Y.

WRAPPER-FEEDING MECHANISM.

1,066,058.

Specification of Letters Patent.

Patented July 1, 1913.

Application filed February 10, 1913. Serial No. 747,371.

To all whom it may concern:

Be it known that I, RICHARD F. STEWART, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Wrapper-Feeding Mechanism, of which the following is a specification.

The present invention relates to wrapper feeding mechanism, and has for its object to provide mechanism for delivering wrappers singly from a stack into such position that the wrappers may be operated upon to envelop commodities to be wrapped, as by the machine set forth in co-pending application, Serial Number 669,606, filed January 5, 1912.

The present embodiment of the invention is shown and shall be described in connection with butter handling machines, such as disclosed in the above noted application, but it will be understood that it is not confined to this particular type of machine, but may be used to feed wrappers or sheets for any purpose for which this mechanism is found desirable, and all such mechanical variations as are obvious expedients or substantial equivalents of the devices shown and described are, of course, within the range of this invention.

In order that the invention may be further understood by those skilled in the art there is illustrated in the accompanying drawings the preferred embodiment of the invention, in which drawings—

Figure 1 is an obverse side elevation of a butter handling machine, showing the mechanism of this invention applied thereto. Fig. 2 is a detail enlarged reverse side elevation of the mechanism for advancing the stack of wrappers singly from the stack. Fig. 3 is a similar view showing the obverse side of the device. Fig. 4 is a central sectional view taken through the same. Fig. 5 is a detail top plan view of one side of the hopper and mechanism mounted thereon. Fig. 6 is a detail enlarged inside elevational view of the feeler arm and its adjusting device. Fig. 7 is a transverse sectional view of the same. Fig. 8 is a detail enlarged view of one of the sheet holding points, showing in section the mounting thereof. Fig. 9 is a detail enlarged obverse side elevational view of the sheet gripper and its operating mechanism. Fig. 10 is a detail

sectional view of said gripper. Fig. 11 is a detail elevational view of the same.

Referring to the drawings by letters, like letters indicating like parts in the several views, and wherein the present invention is disclosed as applied to a butter print wrapping machine, and particularly to Fig. 1, A denotes the frame of the machine. Mounted in the frame A is the main shaft B suitably connected to the several mechanisms of the machine for driving the same, which shaft B may be conveniently driven by any suitable means, as manually by the handle C, or mechanically by the motor D. The frame A is also provided with a print supporting and feeding hopper F located at the forward end of the machine.

A stack holding box or frame H is suitably supported on the frame A at the rear of the hopper F, the box H having within it a movable bottom h supported by two legs h' , one on either side. One of these legs, shown in Fig. 3, has a rack h^2 which is engaged by a gear h^3 on a shaft h^4 , said shaft having at its opposite end a ratchet wheel h^5 , as best seen from Fig. 2. The said ratchet wheel h^5 is operated by means of a pawl h^6 mounted on a swinging arm h^7 pivoted concentrically with the center of the ratchet wheel and connected by a rod h^8 with a swinging arm h^9 carried by a shaft h^{10} journaled in the machine frame. The said swinging arm h^9 is so placed as to be engaged by a cam roll h^{11} on the cam h^{12} mounted upon said main shaft B so that through these connections the ratchet wheel h^5 will be operated once every revolution of the main shaft, and under normal conditions will step up the ratchet wheel h^5 , rotate the shaft h^4 and gear wheel h^3 , and lift the table or bottom h through the rack h^2 and table supporting arms h' . It will thus be seen that an intermittent lift is given to the table but it is observed that this lift must be varied to meet the needs of the stack, neither advancing it too fast or lagging behind so that the feed will not be uniform, and it is necessary to provide automatic controlling means for this ratchet feature of the table. This means comprises a pivoted feeler roll h^{12} mounted in a suitable bracket carried upon a rocking shaft h^{13} journaled in the stack frame or box and having at one end an arm h^{14} mounted to swing independently thereof and connected by a link h^{15}

with the ratchet arm h^9 . With this arrangement it will be seen that as soon as the stack has been lifted through the ratchet, pawl, and gear mechanism, the feeler roll h^{12} and shaft h^{13} will be rocked and through the arm h^{14} and link h^{15} the pawl h^9 will be lifted out of engagement with the ratchet h^5 and will so continue until the feed from the stack permits the feeler roll h^{12} to fall sufficiently to permit engagement of the pawl and ratchet. Preferably a pawl h^{10} will be provided to prevent any accidental reverse movement of the ratchet h^5 and lowering of the stack, and it is contemplated to also provide the shaft h^4 with a crank arm h^{17} , shown in Fig. 1, by means of which the stack supporting bottom or board h may be run up and down manually when desired. Fixed upon the end of the rocking shaft h^{13} is an adjusting segment h^{30} for the feeler arm h^{14} . This segment extends in the direction of the arm h^{14} from the shaft h^{13} , is of substantial width, as disclosed particularly in Figs. 6 and 7, and is provided with opposed and inwardly extending flanges h^{31} . These flanges h^{31} extend over the upper and lower sides of the feeler arm h^{14} and are provided with adjustable stops h^{32} , disclosed in the form of set-screws, which are adapted to engage at their inner ends the respective upper and lower sides of the feeler arm h^{14} . Thus the feeler roll h^{12} and the rocking shaft h^{13} have a free movement independently of the feeler arm h^{14} , the extent of the movement being limited by the adjustable stops h^{32} so that the feeler roll h^{12} may rise and fall to a distance equal to several thicknesses of the wrappers or sheets placed upon the table h . This adjusting segment h^{30} thus prevents the continuous operation of the pawl lifting mechanism so that the table h may be advanced materially each time the pawl h^9 is released and allowed to engage the teeth of the ratchet h^5 and a more positive and even operation of the bottom advancing mechanism is had.

As best shown in Fig. 4 the stack of wrappers will normally lie in the position shown, and the upper sheets at least of the stack will be pierced and held by means of suitable points h^{18} yieldingly mounted in lugs h^{33} on the wrapper box H, as disclosed in detail in Fig. 8 of the drawings. Each lug or support h^{33} is provided with a recess extending nearly through the lug and merging into a relatively small opening through the lower side of the lug. The points h^{18} extend down through this reduced opening and has an enlarged head h^{47} from which recess a stud h^{48} passes through a retaining nut h^{49} threaded into the upper end of the recess. A spring h^{50} is arranged in the recess about the stud h^{48} and bears at its upper end against the nut h^{49} , the spring

yieldingly holding the head in the lower end of the recess. These points serve to hold the sheets from accidentally slipping from the top of the stack because of the inclination of the stack, and yet offering no material resistance to the pulling off of the top wrapper as it is mechanically fed. This mechanical feeding of the wrapper is accomplished by the pull of a transversely extending weighted bar h^{19} preferably provided on its underside with a suitable friction material as sponge rubber, so as to insure a sufficient frictionless grip to move the uppermost wrapper. The bar h^{19} rests directly on the uppermost wrapper, is provided with relatively short studs h^{20} at its opposite ends, as shown to advantage in Fig. 5, and is provided at each end with a rearwardly extending lug h^{21} having connection by links h^{22} with the upper ends of rocking arms h^{23} pivoted at either side of the box H. The lower ends of the rocking arms h^{23} are suitably connected as by pins h^{24} and slots h^{25} with any longitudinally reciprocating part of the machine, disclosed in the present instance as the wrapping devices L.

The rocking of the arm h^{23} reciprocates the cross-bar h^{19} at the upper end of the box H, the cross-bar h^{19} engaging frictionally with the top wrapper or sheet and forcing the same forward from the front end of the box H.

Referring particularly to Figs. 3 and 5 of the drawings it will be noted that a pair of guiding strips h^{36} is secured one at each side, to the upper edges of the box H, the strips h^{36} being arched upwardly from the edges of the box at points intermediate their length, as at h^{37} , whereby to accommodate the studs h^{20} beneath the strips and admit of the free play of the cross-bar h^{19} within the box. The upper edges of the sides of the box H are provided with inclines h^{38} over which the studs h^{20} are adapted to travel when the bar h^{19} reaches the forward end of its stroke to raise the bar upwardly from engagement with the uppermost wrapper. The strips h^{36} extend forwardly in such raised or arched position to the bottoms of the inclines against which they yieldingly rest. When the studs h^{20} move up the inclines h^{38} , these studs press up against the ends of the strips h^{36} and raise the latter, the studs finally snapping past the ends of the strips and riding over the upper faces of the same upon the return stroke of the bar h^{19} . The strips h^{36} thus hold the bar h^{19} from engagement with the wrappers upon the return stroke of the bar h^{19} so that the wrappers or sheets in the box H will not be crumpled or otherwise displaced in the box. The strips h^{36} are provided with registering notches h^{39} located at the commencement of the arched portions h^{37} whereby to admit of the drop-

ping of the studs h^{20} through the strips at the extreme limit of the backward stroke of the bar h^{19} . In Fig. 3 there is shown in dotted lines the position of the bar h^{19} when moved forward and ready to start on its backward stroke. The dotted lines also show the opposite position of the rocking lever h^{23} . When the bar h^{19} moves forwardly it pushes the uppermost wrapper or sheet forwardly from the box and over a supporting roll h^{24} extending across the forward end of the box. The roll h^{24} is journaled at its ends in blocks h^{51} slidable in vertical guideways h^{52} and being normally and yieldingly held up against stops h^{53} located at the upper ends of the guideways h^{52} by springs to retain the roller h^{24} from displacement with respect to the guide-ways. With this construction or arrangement it is seen that unevenness in the thickness of the wrappers or sheets fed from the box H will be accommodated for since the roller h^{24} will yield under any excess pressure. The frame A is provided with a transverse shaft h^{40} upon which are mounted a pair of feeding segments h^{41} adapted to be turned down into engagement with the wrapper end extending over the roll h^{24} . The turning of the segments h^{41} against the wrapper forces the forward end of the wrapper downward over an apron h^{26} , a sheet directing guard or plate h^{27} being provided in front of the apron to direct the forward edge of the wrapper upon the feed downwardly in order to yieldingly hold the sheet or wrapper in the vertical position into which the segments h^{41} move the wrapper, the apron h^{26} is provided with an adjusting screw h^{42} threaded through a bracket h^{43} fixed upon the forward end of the box. A crank arm h^{44} is mounted on one end of the shaft h^{40} and is connected by a suitable link h^{45} to a wrist pin h^{46} mounted in the outer face of the cam h^{20} . Thus the cam h^{20} transmits its rotary movement to the friction segments h^{41} by means of the link h^{45} . By this arrangement the friction segments h^{41} are also properly timed to engage the forwardly extending end of the wrapper which is thrust from the front of the box H. Movement of the screw h^{42} in opposite directions moves the lower end of the apron h^{26} toward or from the lower end of the guard or plate h^{27} . It will be noted that the guard plate h^{27} is inclined toward the box H at its upper end so as to present an inclined directing face to the edge of the sheet or wrapper as it is forced out of the box, and to insure the deflecting of the forward end of the sheet downwardly into the space between the apron h^{26} and the guard plate h^{27} constituting the upper end of the throat of the machine. The throat of the machine extends below the apron and the guard plate and constitutes the path of travel of the

grippers hereinafter described. The wrapper will be thrust down by the bite h^{28} of the guard h^{27} and the apron h^{26} , as best shown in Fig. 4, and will be there lightly gripped and suspended in the throat ready to be seized by the gripper which will now be described.

Referring particularly to Figs 9, 10 and 11, wherein is shown in detail the sheet gripping mechanism, k, k' denotes two jaws one of which jaws k is carried by a sleeve k^2 sliding on a supporting rod k^3 , while the jaw k' is pivoted at k^4 to the first named jaw, and has a projecting arm k^5 connected by a spring k^6 to a fixed lug on the sleeve k^2 so as to be normally under tension with the jaws in closed or gripping position. Movement of the jaw k' may be regulated by means of a screw k^7 which is adjustable to and from a notched wall in the movable jaw k' so as to limit the swinging of the jaw k' and regulate its grip relative to the fixed jaw k . The sleeve k^2 is raised and lowered on its rod k^3 by means of a link k^8 and lever k^9 , said lever k^9 being carried by a rock shaft k^{10} , which through the arm k^{11} and cam rod k^{12} is oscillated at regular intervals from the cam roll k^{13} which engages the cam groove k^{14} in the cam k^{15} mounted on the main shaft B of the machine, and preferably the cam rod k^{12} will be forked or looped on the main shaft B for support. The timing is such that the wrapper feeding mechanism above described and the sheet gripping mechanism just set forth will so cooperate as to bring the sheet gripper to its upper dotted line position, shown in Fig. 9, just as the wrapper sheet delivers a sheet from the stack down the throat of the machine. The grippers k, k' are normally held open by means of a dog k^{16} , the nose of which engages the underside of the arm k^5 of the movable jaw of the gripper and holds it away from the other jaw against the stress of the spring k^6 . The dog k^{16} is pivoted on the sleeve k^2 and has an operating arm k^{17} . As the gripper is thrust upwardly by the mechanism just described the jaws will be opened and will so remain until the lower edge of a wrapper is dropped between them. At this point and before the gripper starts downwardly the arm k^{18} , which is pivoted in the machine frame and operated through the arm k^{19} and the cam roll k^{20} engaging a groove k^{21} in the cam k^{20} mounted on the main shaft B, swings forward to the dotted line position shown in Fig. 9, and then swings back to its full line position. The arm k^{18} carries at its upper end a shoe k^{23} so positioned as to engage a pin k^{24} on the arm k^{17} as the arm k^{18} swings back, displacing the arm k^{17} and throwing the nose of the dog k^{16} into line with the notch k^{25} , whereupon the spring k^9 will pull the arm k^5 down and bring the

jaws of the gripper together and grip the depending end of the wrapper. The gripper then descends to the full line position, shown in Fig. 9, whereupon the arm h^{17} strikes the hub h^{26} of the arm h^{18} throwing the nose out of the notch and separating the jaws as shown. It will thus be seen that the improved mechanism of this invention removes the wrappers one by one from the stack in the box H, forces the wrappers singly down into the throat of the machine and into the bite h^{28} , where the wrappers are yieldingly held by the pressure of the adjustable apron h^{26} against the wrapper and in position to be gripped by the grippers h h' , engage the lower edge of the sheet or wrapper and draw it into position to be operated upon by the wrapping mechanism. In the machine disclosed in the drawings and in connection with which the improved feeding mechanism is shown, the prints are fed from the bottom of the hopper F by a plunger G, suitably connected to the operating shaft B to be reciprocated by the latter across the throat of the machine into the wrapping mechanism. As above explained the wrapper or sheet is drawn down into the throat of the machine so that the print moves against the wrapper and forces the same into the wrapping mechanism.

From the foregoing it will be seen that by use of this device the wrappers will be automatically fed to the machine and the wrappers will be placed in such position that they may be readily operated upon by the print feeding and wrapping mechanism disclosed in the accompanying drawings. It is unnecessary for the operator to handle the paper in any way since the wrappers are taken automatically from the stack and fed into the proper position.

What is claimed is—

1. In a machine of the class described, the combination of the following instrumentalities; a wrapper stack support, means for feeding a single wrapper from the top of said stack, a gripper to seize the end of said wrapper and draw it into the throat of the machine, and means for suspending said wrapper by its upper end in said throat.

2. In a machine of the class described the combination of the following instrumentalities; a wrapper stack support, means for feeding a single wrapper from the top of said stack, a rising and falling gripper to seize the projected end of said wrapper draw it into the throat of the machine and then release it, and means for suspending said wrapper by its opposite end in said throat.

3. In a machine of the class described the combination of the following instrumentalities; a wrapper stack support, means for feeding a single wrapper from the top of said stack, spring jaws slidingly mounted in the throat of the machine to seize and

draw a wrapper from the stack into the throat, means for adjusting the bite of said jaws, a jaw opening dog, and means to release said dog and permit the jaws to be closed at the extreme point of the upward movement of said jaws.

4. In a machine of the class described, the combination of the following instrumentalities; a wrapper stack support, means for feeding a single wrapper from the top of said stack, means for drawing said wrapper into the throat of the machine, and elastic gripping means between which the wrapper is suspended when the action of the wrapper drawing means ceases.

5. In a machine of the class described the combination of the following instrumentalities; a wrapper stack support, means for feeding a single wrapper from the top of said stack, means for drawing said wrapper into the throat of the machine, an apron to direct the wrapper from the stack into the throat of the machine, and a guard plate cooperating with said apron to grip and suspend a wrapper when the action of said wrapper drawing means ceases.

6. In a wrapper feeding machine, the combination of the following instrumentalities; a table adapted to receive a stack of wrappers, lifting means engaging the table to raise the same, a pivoted feeler arm carried by the machine and resting at its free end on top of said stack of wrappers, and having connection with said lifting means whereby to disconnect the same from the table when the stack reaches a predetermined height, and an adjustable support for said feeler arm adapted to limit the swinging of said arm as desired to regulate the movement of the feeler arm with respect to said lifting means.

7. In a device of the character described, the combination of the following instrumentalities: a box adapted to contain a stack of wrappers, a roller arranged across the forward end of the box, selecting means engaging the uppermost wrapper and moving the same forwardly from the box over said roller, a guard plate arranged vertically in front of the box and adapted to receive thereagainst the forward edge of the wrapper and deflect the latter downward, a feeding device movable against the forward end of the wrapper projecting over said roller and adapted to thrust the wrapper downwardly against said guard plate, an apron opposed to said guard plate and extending from beneath said roller to the lower end of the guard plate whereby to provide a bite between the apron and the guard plate, and means connected to said apron adapted to move the lower end of the same toward and from said guard plate to enlarge and contract said bite.

8. A device of the character described

comprising a table adapted to support a stack of wrappers, means for feeding said wrappers one at a time from said table, a guard plate arranged adjacent said table 5 whereby to deflect said wrappers downward as they pass from the table, and an adjustable apron opposed to said guard plate and adapted for adjustment toward and from the same whereby to frictionally hold said 10 wrappers from falling after the same have left the table.

9. In a wrapper feeding mechanism and in combination, a wrapper stack support, a weighted bar extending transversely of the 15 upper end of the support and adapted for engagement with the uppermost wrapper on the support, said bar having longitudinally extending studs at its end, guide strips carried at the sides of the support and engaging 20 said studs whereby to force the bar

against the uppermost wrapper, means for reciprocating said transverse bar over the stack support, guides at the forward end of the stack support for said studs whereby to 25 raise said bar from the stack when the bar reaches the limit of its forward movement, said guides being adapted to direct said studs on top of said strips upon the return 30 movement of the bar whereby to hold said bar from the wrappers and means at the opposite ends of the strips for directing said studs beneath the same when said bar reaches the limit of its inward movement.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 35

RICHARD F. STEWART.

Witnesses:

IRVING GAMBET,

KATHERINE C. GLANVILLE.