Nov. 24, 1931. J. P. ALDRICH ET AL 1,833,011

ADJUSTABLE SHEET FEEDING AND SEVERING MECHANISM FOR WRAPPING MACHINES

Filed Oct. 3, 1929 3 Sheets-Sheet 1

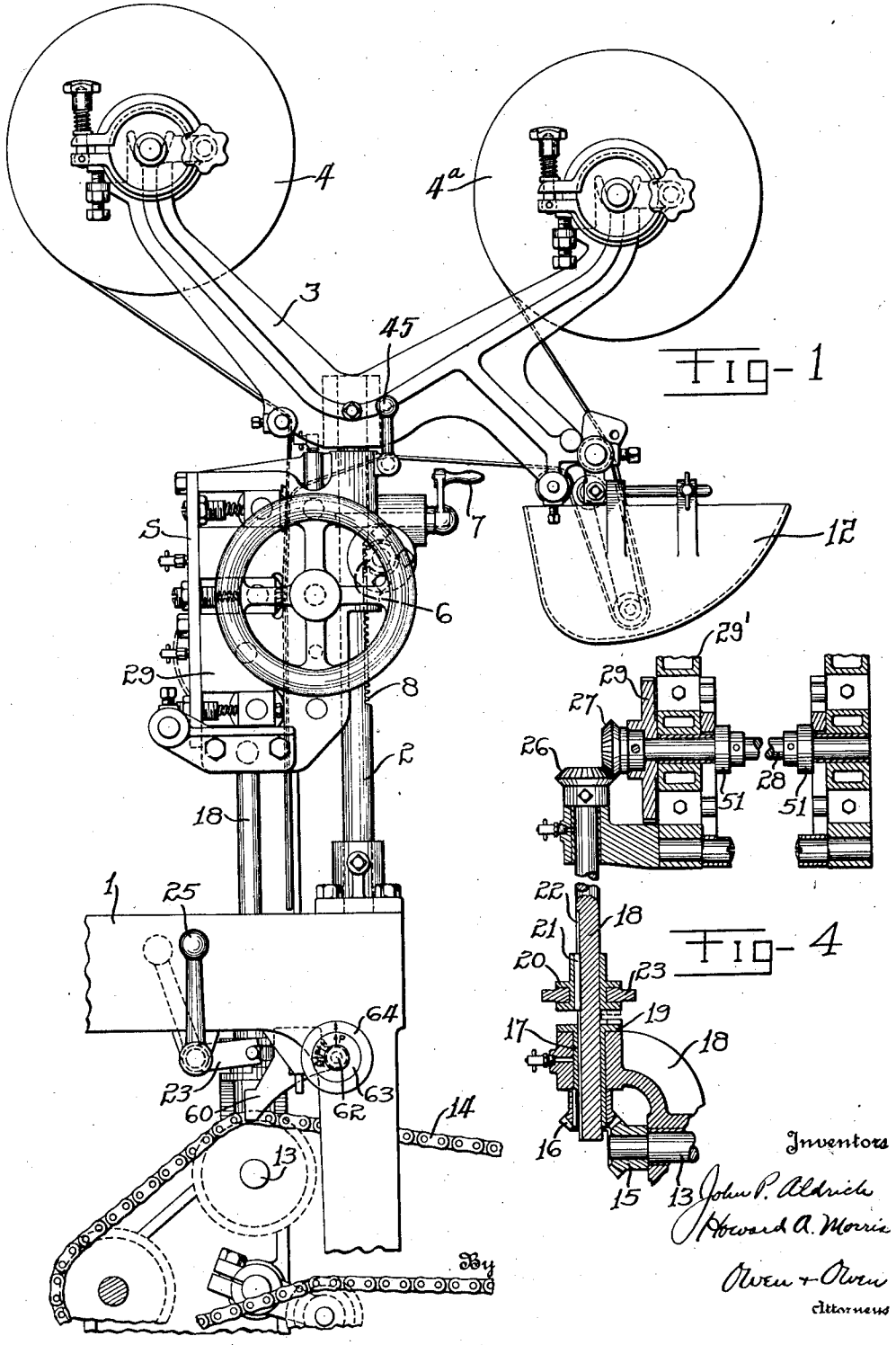


Fig- 1

Fig- 4

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Fig- 2

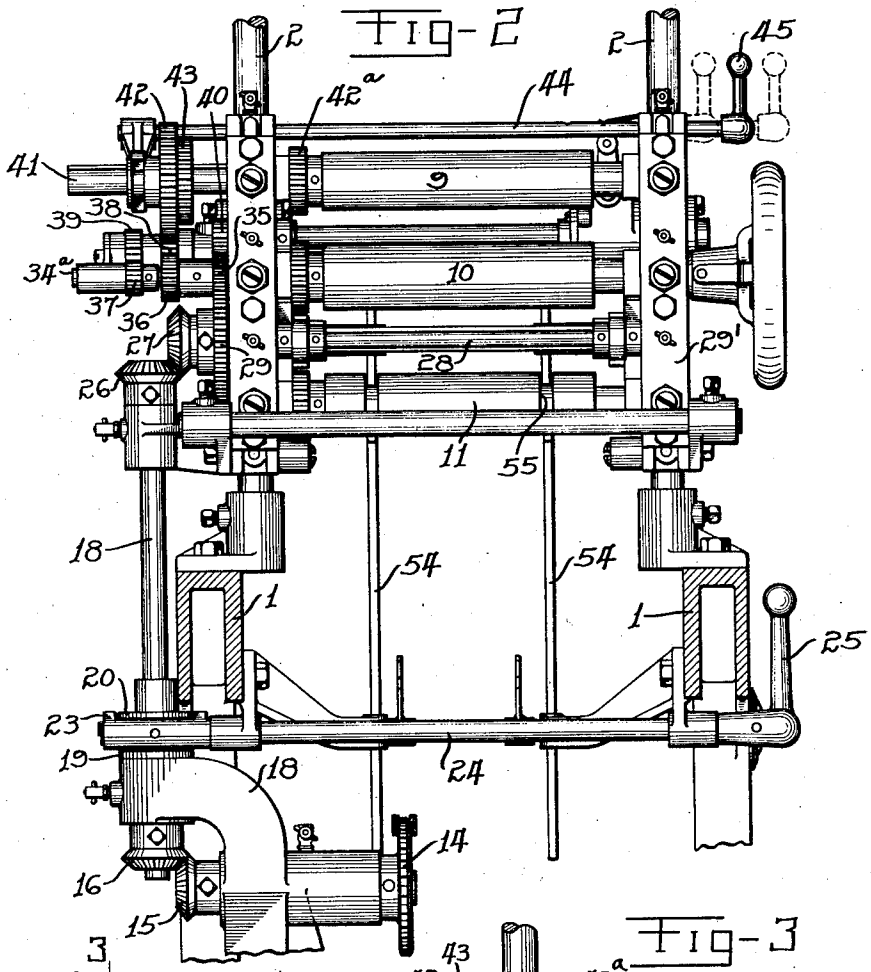


Fig- 3

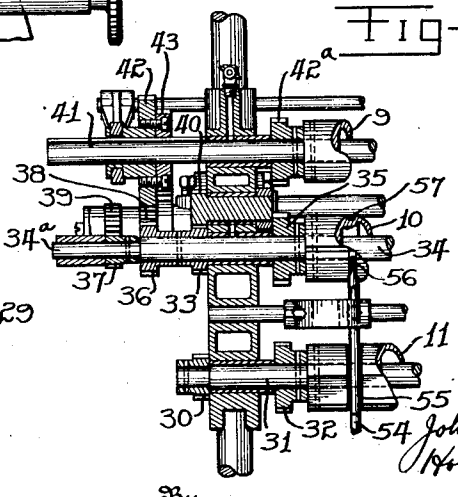
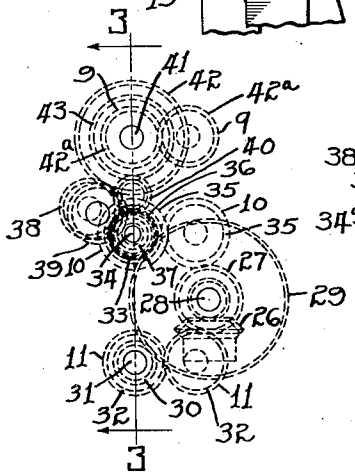


Fig- 5



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Fig- 6

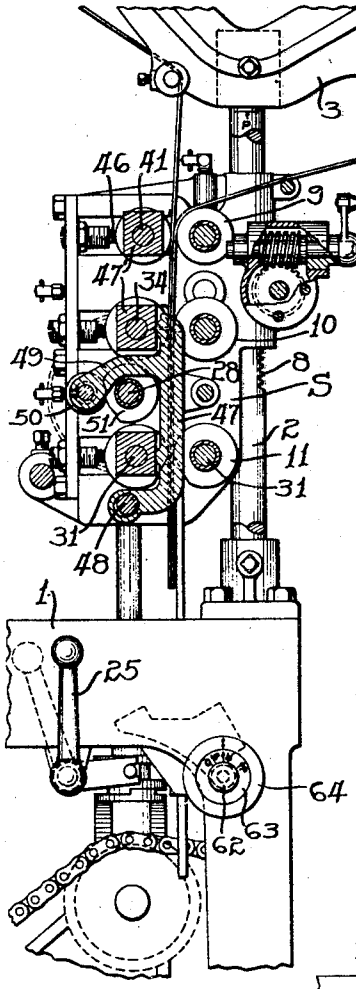


Fig- 7

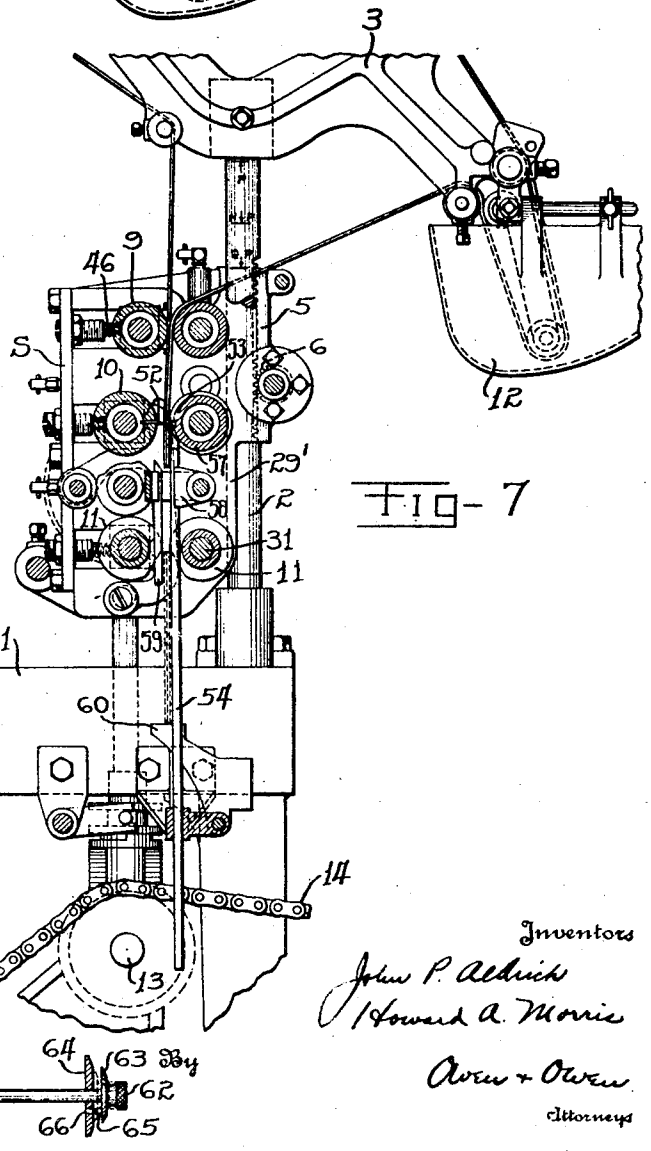
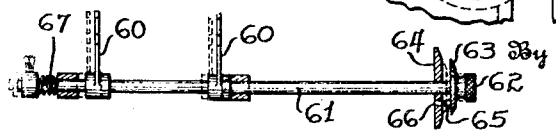


Fig- 8



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1,833,011

UNITED STATES PATENT OFFICE

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ADJUSTABLE SHEET FEEDING AND SEVERING MECHANISM FOR WRAPPING MACHINES

Application filed October 3, 1929 Serial No. 397,011.

This invention relates to sheet feeding and severing mechanism for severing a continuous strip of flexible sheet material at predetermined intervals to provide severed segments of suitable dimensions for wrapping articles such as bars of butter, oleomargerine, or the like.

An object of the invention is to provide a simple and efficient mechanism, which is adjustable for severing a continuous strip of flexible sheet material, such as parchment paper, to provide severed segments suitable for wrapping different sized articles, thereby eliminating the necessity of utilizing separate and distinct mechanisms for accomplishing the purpose.

Another object of the invention is to provide a new and improved sheet feeding and severing mechanism having the features of construction, arrangement and operation hereinafter described.

Other objects and advantages will appear as the description proceeds.

The invention is shown by way of illustration in the accompanying drawings, in which:

Fig. 1 is a side elevation of the sheet feeding and severing mechanism unit, its mounting and associated parts;

Fig. 2 is an end elevation of the sheet feeding and severing mechanism;

Fig. 3 is a vertical sectional elevation of a portion of the driving mechanism for the sheet feeding and severing unit;

Fig. 4 is a vertical sectional elevation showing a portion of the driving mechanism for the sheet feeding and severing unit;

Fig. 5 is a diagrammatic view of the gear arrangement for operating the sheet feeding and severing unit;

Fig. 6 is a vertical sectional elevation of the mechanism showing particularly the control for the knife roll and draw-off rolls;

Fig. 7 is another vertical sectional elevation of the mechanism showing the sheet feeding and severing unit adjusted to a different position, and taken through an intermediate portion of the rolls; and

Fig. 8 is a detail view of the sheet stop and adjusting means therefor.

The illustrated embodiment of the invention comprises a sheet feeding and severing mechanism unit, particularly adapted for use in a machine for wrapping bars of butter, oleomargerine, or the like, in which the bars are advanced along a horizontal guide, and sheets of flexible material, such as parchment paper, are fed in a vertically disposed relation into the path of movement of these bars, these sheets being of sufficient size to be wrapped about each bar.

It is a desideratum that mechanism of this character be adjustable to feed sheets of different sizes in order that bars of different sizes may be wrapped at different times. For example, at one time the machine may be utilized for wrapping quarter pound bars, at which time a relatively small sheet is required for wrapping; at another time one-half pound bars may be wrapped, and this will require a slightly larger sheet; and, still further, one pound bars may be advanced along the guide, and, in that event, a still larger sheet will be required. This invention solves the above difficulties by providing in a single unit a mechanism which, by simple adjustments, may be adapted for wrapping bars of any of the above sizes.

Referring more particularly to the drawings, bars are advanced along a guide provided on the main frame of the machine, which is shown as comprising laterally spaced horizontally extending side bars 1. Rising from the main frame 1 is a pair of upright supports 2, on the upper end of which is mounted a bracket 3 having a pair of arms, each supporting supply rolls 4 and 4^a of flexible sheet material, such as parchment paper.

Adjustably mounted on the uprights 2 is the sheet feeding and severing mechanism unit S, which is operable to draw the paper from the supply rolls 4 and 4^a, sever the same into the desired lengths, and discharge the severed segments into the path of movement of the butter bars along the main frame 1. As shown, the frame of the sheet feeding and severing mechanism is provided with a pair of bosses 5 engaging the uprights 2, and juxtaposed thereto is a pinion 6 operated by a handle 7 engaging rack teeth 8 formed on the

uprights 2. It is apparent that by turning the handle 7 the sheet feeding and severing unit may be moved closer to or farther away from the main frame 1, as desired.

Forming a part of the sheet feeding and severing unit are pairs of rolls 9—10 and 11, the axis of the rolls of each pair being in parallel horizontal planes. The rolls 9 may be termed the "feeding rolls" for continuously feeding the sheet material from the supply rolls 4 and 4^a to the severing rolls 10, which operate to sever the sheet material into the desired lengths, and the rolls 11 may be termed the "draw-off" rolls for discharging the severed sections from the unit and discharging them into the proper position. It will be observed that the length of sheet material from the supply roll 4 is fed directly to the feed rolls 9, but the length of sheet material from the supply roll 4^a passes through a receptacle 12 before encountering the feed rolls, the receptacle 12 containing any suitable fluent coating material.

For driving the sheet feeding and severing mechanism, power is transmitted to a shaft 13 from a sprocket and chain connection 14. Mounted on the shaft 13 is a bevel gear 15 meshing with a bevel gear 16, which is secured for rotation to a vertical sleeve 17 rotatable in a bracket 18. Disposed within the sleeve 17 is a vertical shaft 18, the sleeve being rotatable independently of the shaft 18. Formed on the outer end of the sleeve 17 is a clutch part 19, with which a clutch part 20 is engageable, the clutch part 20 having a rib or key 21 slidable in an elongate keyway 22 extending longitudinally of the shaft 18.

From the above it is apparent that the clutch part 19 is continuously rotatable independently of the shaft 18, but engagement of the clutch part 20 with the part 19 is operative to impart rotation to the shaft 18. The clutch part 20 is controlled by a yoke 23 connected to a shaft 24 provided with an operating handle 25.

Mounted on the opposite end of the shaft 18 is a bevel gear 26 meshing with a gear 27 carried by horizontal shaft 28 carried by the frame 29′ of the sheet feeding and severing unit. Mounted on the shaft 28 adjacent the bevel gear 27 is a relatively large gear 29, which meshes with a pinion 30 fixed to a shaft 31, on which one of the draw-off rolls 11 is mounted. Associated with each draw-off roll 11 is a gear 32 which are in mesh so that these rolls are conjointly driven.

The gear 29 also meshes with a pinion 33 fixed to the shaft 34, on which one of the severing rolls 10 is mounted, these rolls being inter-connected by gears 35. Mounted at the outer end of the shaft 34 is a gear 36, and adjacent to the gear 36 on the shaft extension 34^a is a relatively small gear 37. The gears 36 and 37 mesh respectively with gears 38 and 39, mounted on a shaft projecting from the side of the frame 29′. The gear 33 meshes with a gear 40, which has bearing on the side of the frame 29′.

It will be observed that the gears 40—38 and 39 are of different sizes, the purpose being to vary the peripheral speed of the feed rolls 9 in accordance with the length of sheet material which is desired. A shaft 41 provides a mounting for one of the feed rolls 9, these rolls being connected by gears 42^a. Slidable on one end of the shaft 42 is a gear arrangement consisting of a relatively large gear 42 and a smaller gear 43, which are secured together for rotation. The gear 42 may be moved selectively into engagement with the gear 39 or the gear 38, and, by moving the gear arrangement inwardly toward the frame 29′, the gear 43 may be brought into engagement with the gear 40.

Thus, it will be observed that three different peripheral speeds may be imparted to the feed rolls 9, according to whether it is desired to wrap pound—one-half pound, or quarter pound bars, it being understood that the feed rolls 9 operate at a much greater peripheral speed for producing segments suitable for wrapping one pound bars than for quarter pound bars, inasmuch as more material is needed for the former. It will be understood that the gears 42 and 43 may be conjointly moved to the desired position by a control shaft 44 having a handle 45, which is moved longitudinally to effect the desired adjustments.

As clearly shown in Figs. 6 and 7, one of each pair of rolls 9—10 and 11 is movable toward and away from the other, springs 46 being provided for yieldingly urging the movable roll into engagement with its companion roll. It will also be observed that, provided on the end portions of the axially movable rolls are pillow blocks 47′. Engaging the pillow blocks on the shafts 31 and 34, respectively, is a lever 47 loosely pivoted to the frame 29′ on a pin 48. This lever is formed with an arm 49, on which is mounted a roll 50. The roll 50 engages a cam 51, which is fixed to the shaft 28, a lever 47 being provided on opposite sides of the frame 29′, and a cam 51 being provided for each lever.

The arrangement is such that at predetermined intervals the cams 51 operate simultaneously to move the shafts 31 and 34 away from their companion rolls. As shown, the roll 10 mounted on the shaft 34 is provided with a knife 52, which is adapted to register with a notch 53 formed in the companion roll. It will be apparent that when the lever 47 releases the knife roll 10 the knife will register with a notch 53 and effect severing of the sheet material passing therebetween, the spring 46 serving to urge the knife roll toward the companion roll. It is, therefore, apparent that at predetermined intervals the

sheet material is severed by the knife 52 registering in the notch 53, this action being permitted by the levers 47, which momentarily relieve the pressure against the pillow blocks 47′ to permit the springs to move the rolls substantially into engagement with their companion rolls. Normally, the rolls 10 and 11 are separated from each other to permit the sheet material drawn from the supply rolls 4 and 4ª by the feed rolls 9 to pass freely therebetween.

The severed sections are guided by guide rods 54, which are vertically disposed, and extend into grooves 55 formed in one of the draw-off rolls 11, and terminate in a relatively sharp point 56 extending into an annular groove 57 formed in one of the severing rolls 10. A bracket 58 on the frame 29′ carries a supplementary guide rod 59, which cooperates with the guide rods 54 in guiding the severed sections from the sheet feeding and severing unit.

The severed sections dropping from the unit engage a stop 60, which is disposed beneath the upper surface of the frame 1, so that part of the section extends above and part below the guide along which the unwrapped bars are advanced. The sheet segments are held in this vertically disposed position by the sheet feeding and severing unit and stop plates 60 for engagement by the advancing bar. The stop plates 60 are mounted for adjustment on a rod 61, which has an operating knob 62 and a disc 63. The disc 63 cooperates with a larger disc 64, and suitable indicia, such as "P"—"QP" and "HP" appear on the disc 63 to designate pound—quarter-pound and half-pound, so that by turning the knob 62 the stop plates 60 may be properly adjusted for sheet sections suitable for pound—half-pound and quarter-pound bars, it being understood that for pound bars the stop pate 60 should be positioned so as to permit a greater portion of material beneath the guide than for the quarter-pound bars, and according adjustment being necessary for the half-pound bars. The disc 63 has a pin 65, which is adapted to register in one of the holes 66 formed in the disc 64, three holes being provided in this instance, one for each position of the stop plates. The parts are held in adjusted position by coil spring 67, which urges the rod 61 longitudinally to hold the discs 63 and 64 in proper relation.

In order to enable the sheet-feeding and severing unit to be properly adjusted with respect to the guide for the butter bars, letters are provided on one of the uprights 2. This is clearly shown in Fig. 7 showing the letters "QP"—"HP" and "P" displayed on the upright 2. In adjusting the unit the upper portion thereof registers with one of the indicia, depending upon whether quarter-pound—half-pound or pound bars are to be wrapped. It is to be understood that adjustment of the sheet feeding and severing unit is necessary in order that the upper end portion of the severed sheets may be held in position for engagement by an advancing bar to be wrapped.

From the above description it is apparent that three separate adjustments are necessary in order that the mechanism operate properly for feeding and severing the sheets of the desired length and for positioning them properly for wrapping; one adjustment being the vertical adjustment of the sheet feeding and severing unit on the uprights 2 by turning the handle 7; another adjustment being the change in the position of the sheet stops 60 by manipulation of the knob 62; and a third adjustment being the regulation of a peripheral speed of the feeding rolls 9 by adjustment of the handle 45. These various adjustments may be simply and conveniently effected so that no particular skill is required in the operation of the mechanism.

A particularly important feature of invention resides in the provision of pillow blocks for the knife roll, which enables a stationary knife to be employed instead of a knife which moves relatively to the roll carrying it. The pillow block controlled by the lever 47 is released at the proper time to permit the spring to move the knife roll axialy so that the knife and notch in the companion roll will register to effect an abrupt and positive severance of the sheet material.

While we have shown and described a construction which is the best form known to us at the present time, 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 is claimed is:

1. In a wrapping machine, a main frame having a guide over which unwrapped articles are advanced, a support on said frame, a sheet feeding and severing unit movable on said support, a control for changing the operation of said unit for varying the size of the severed sheet, an adjustable sheet stop on said frame for positioning sheets properly with respect to the guide, and means to adjust said unit closer to or farther away from said frame in accordance with the size of the severed sheet.

2. In a machine for wrapping butter bars of different sizes, a frame provided with a guide over which bars are advanced, a support on said frame, a sheet feeding and severing mechanism unit on said frame, a sheet stop on said frame, a control for said mechanism unit for varying the operation thereof to sever sheets of different sizes according to the size bar advanced over said guide, and

means to move said mechanism unit closer to or farther from said frame according to the size of the severed sheet.

3. In a sheet feeding and severing mechanism, a pair of rolls between which sheet material passes, a knife extending from the periphery of one roll, a notch in the other roll adapted to receive said knife, means yieldingly urging said rolls into engagement, and means normally holding said knife roll away from the other roll operable recurrently to release said knife roll, thereby permitting said knife to register with said notch for severing the sheet material.

4. In a device of the class described, a surface over which articles are advanced for wrapping, a unit spaced vertically therefrom, said unit including a continuous sheet feeding device and a severing device for severing the sheet into sections suitable for wrapping, an adjuster for adjusting the vertical position of said unit with respect to said surface, and means to increase or diminish the speed of operation of said sheet feeding device.

5. In a device of the class described, a surface over which articles are advanced for wrapping, a sheet feeding and severing mechanism above said surface, means to adjust said mechanism toward or away from said surface, means to vary the operative speed of said mechanism for producing sections of larger or smaller sizes, and an adjustable sheet stop beneath said surface to receive the lower edges of the sections discharged from said mechanism.

6. In a device of the class described, a continuous sheet feeding means, a severing means including a revoluble knife, means in advance of said severing means for discharging the severed segment, means to render inoperative said severing means and discharging means except at recurrent intervals, and means to vary the speed of said sheet feeding means independently of said severing and discharging means.

7. In a device of the class described, a continuous sheet feeding means, a sheet severing means in advance of said feeding means, and means to render said severing means inoperative except at predetermined intervals, said last means including non-rotatable sliding bearing blocks for said severing means, means to guide the movements of said blocks and lever means engaging said blocks for sliding same and laterally moving said severing means to inoperative position.

8. In a device of the class described, a continuous sheet feeding means, a sheet severing means in advance of said feeding means including a pair of rolls, one having a knife and the other a recess to receive said knife, a laterally movable mounting for one of said rolls, spring means urging said rolls into operative relation, and means operable recurrently for moving said mounting thereby to separate said rolls and render inoperative said severing mechanism.

9. In a device of the class described, a continuous sheet feeding means, a sheet severing unit comprising cooperating units, one part thereof being laterally movable to separate and render said unit inoperative, segment draw-off means including a laterally movable part, spring means for urging the movable parts of the sheet severing unit and segment draw-off means into operative position, and lever means recurrently operable to move both said laterally movable parts out of operative position.

10. In a device of the class described, a sheet feeding and severing unit, a surface beneath said unit adapted to receive articles, means to adjust the operative speed of said unit for discharging segments of different lengths, means to adjust the vertical position of said unit relative to said surface, and an adjustable sheet stop beneath said surface to receive the lower edges of sheet segments from said unit.

In testimony whereof we have hereunto signed our names to this specification.

JOHN P. ALDRICH.
HOWARD A. MORRIS.