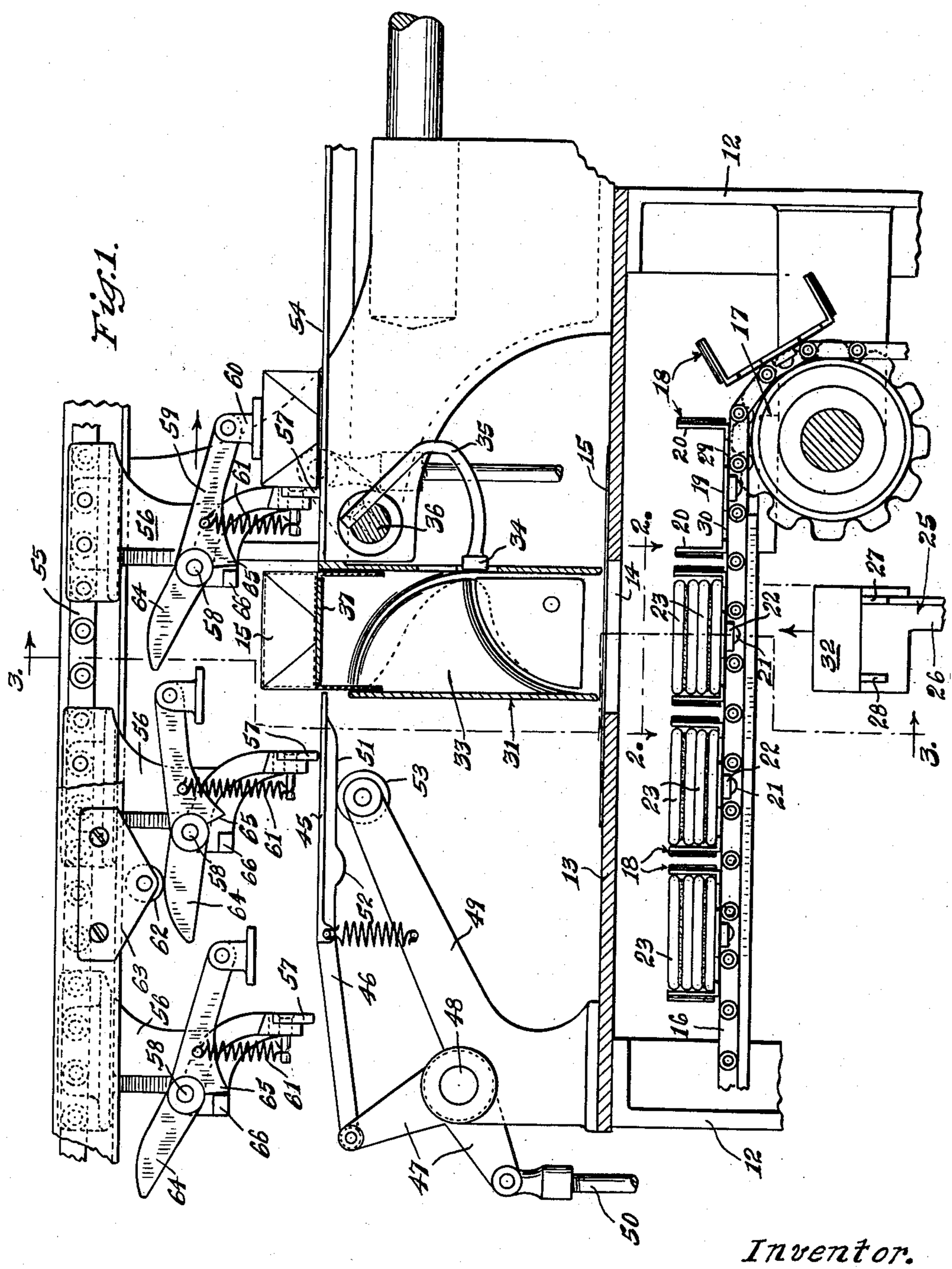
Sept. 29, 1953 O. SANDBERG 2,653,433

ARTICLE HANDLING MECHANISM

Filed Sept. 5, 1950 3 Sheets-Sheet 1

Fig. 1.



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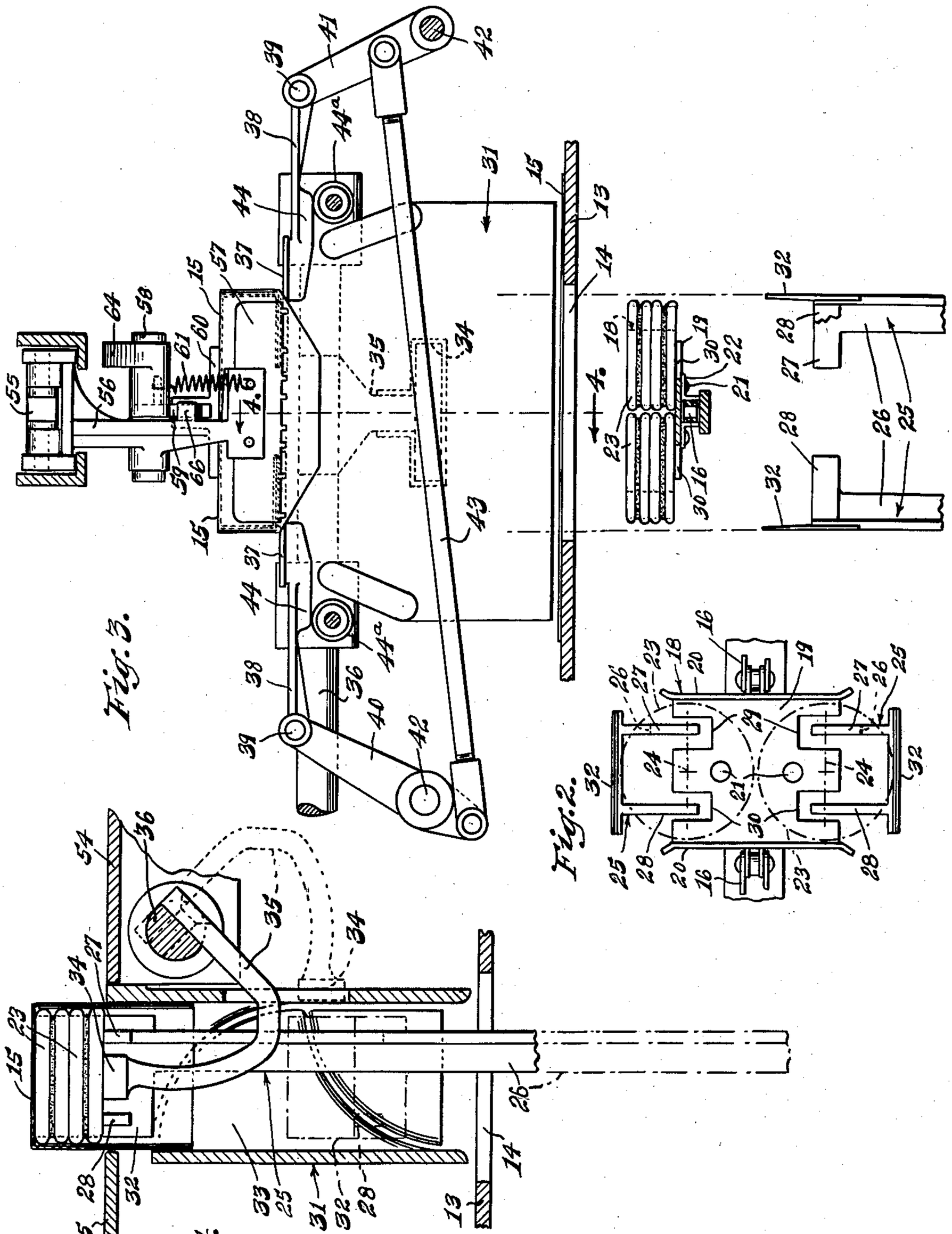

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Filed Sept. 5, 1950 3 Sheets-Sheet 3

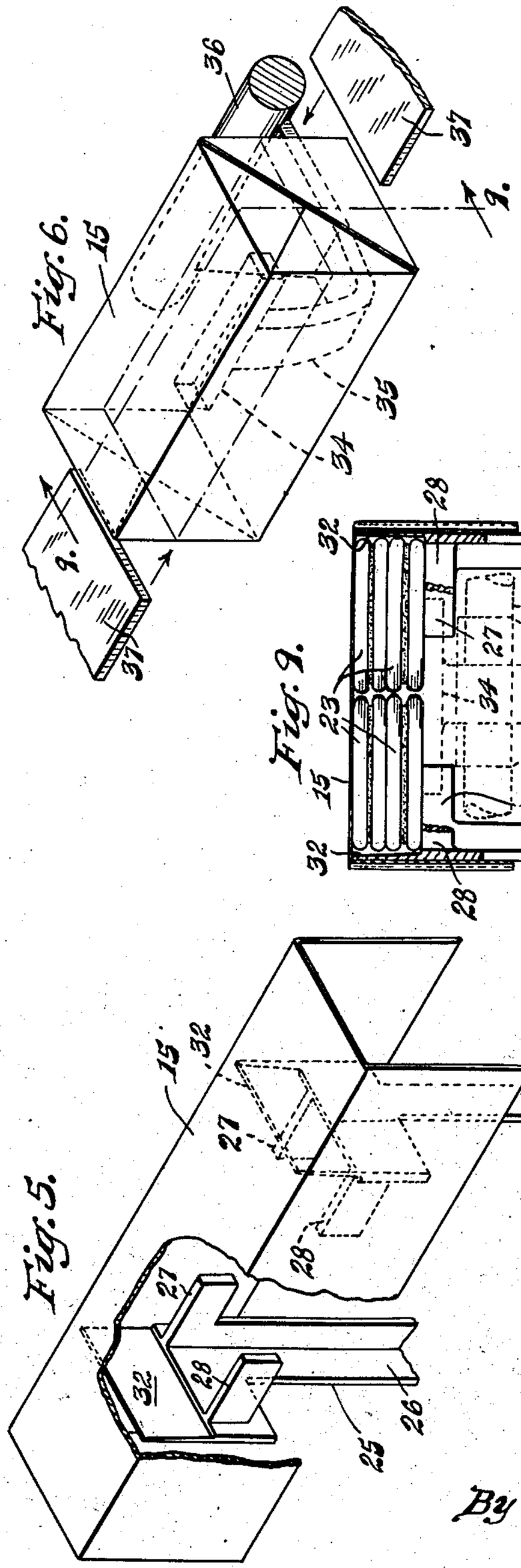

Fig. 6.

Fig. 9.

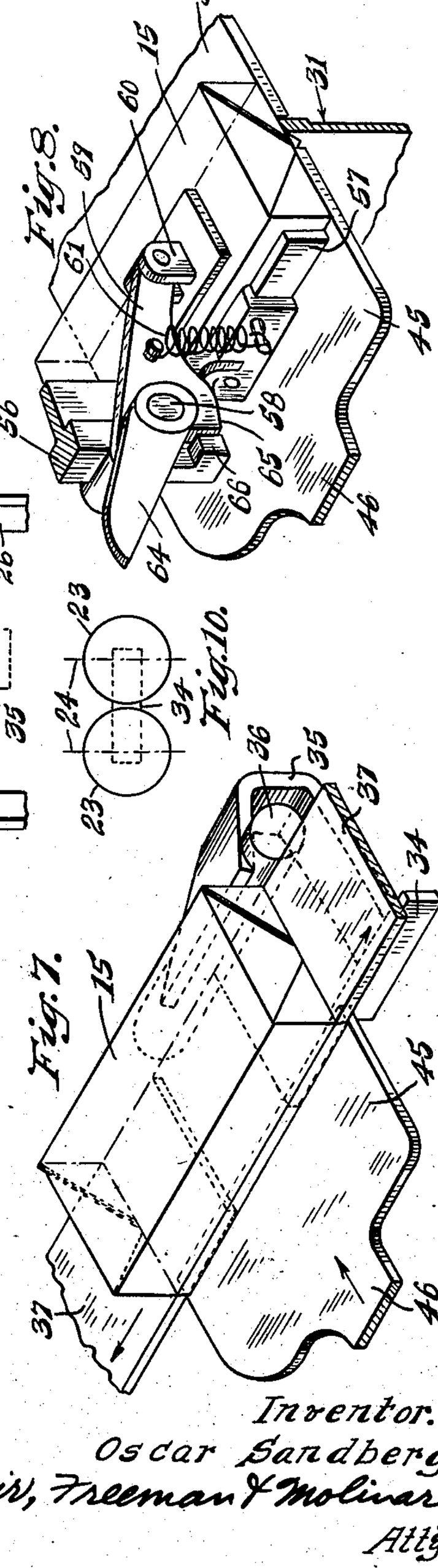

Fig. 8.

Fig. 10.

Fig. 5.

Fig. 7.

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UNITED STATES PATENT OFFICE

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ARTICLE HANDLING MECHANISM

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Application September 5, 1950, Serial No. 183,189

3 Claims. (Cl. 53—66)

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This invention relates to mechanism for handling articles and particularly cookies or so-called "sandwiches" consisting of two crackers with a filling of peanut butter or the like, the mechanism moving the articles against a sheet of wrapping paper and upwardly through a folding way, and handling the articles in such manner that folder blades may thereafter complete the wrapping of the wrapper around the articles without the necessity of providing for the articles a support such as a flat or channel-shaped cardboard.

One object of the invention is to modify the construction of the pockets of a pocket conveyor, the elevating ram for the articles, and a supporting means for the articles after they have been moved through a folding way of the type shown for example in my Patents No. 2,208,776 of July 23, 1940, and No. 2,283,097 of May 12, 1942.

Another object is to modify particular elements of the wrapping machine of the latter patent, specifically the pockets of a pocket conveyor, the head of an elevating ram, and a supporting means for the articles so that two stacks of cookies or sandwiches may be wrapped side-by-side the pocket of the pocket conveyor and the article-engaging means of the ram being arranged to overlap each other beyond the center lines or centers of gravity of the two stacks to prevent them from toppling out of the ends of the pocket and/or toppling toward each other when supported on the ram when no cardboard or similar support for the articles is wrapped in each package thereof.

A further object is to provide a supporting bar for the articles after the wrapping thereof has been completed with the exception of the bottom surfaces of the articles, which supporting means is also designed to prevent toppling of the articles in the partially wrapped wrapper.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my article handling mechanism, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of approximately the upper central portion of Figure 2 of my Patent No. 2,283,097, and showing a wrapping machine having parts which are modified when compared with the previous patent for the purpose of handling cookies or sandwiches instead of candy bars as disclosed therein.

Figure 2 is a plan view of one of the pockets

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of the pocket conveyor of the wrapping machine on the indicated line 2—2 of Figure 1, two stacks of cookies or sandwiches being shown dotted therein.

Figure 3 is a vertical sectional view on the line 3—3 of Figure 1, showing the articles supported in a pocket of the pocket conveyor prior to the elevation of a ram to lift them through a folding way of the machine.

Figure 4 is a vertical sectional view on the line 4—4 of Figure 3 showing the parts in a different position, to-wit, with the articles partially wrapped.

Figures 5, 6, 7 and 8 are perspective views showing the wrapping steps specifically as follows:

Figure 5—the front and back flaps folded channel-shaped due to elevation of the ram,

Figure 6—the package wrapped with the exception of the bottom flaps due to the ram raising the wrapper and its contents through a folding way,

Figure 7—the bottom end flaps completed and the beginning of the rear bottom flap,

Figure 8—the front bottom flap being wrapped by reason of the package being pushed on to a platform.

Figure 9 is a sectional view on the line 9—9 of Figure 6 and;

Figure 10 is a diagrammatic plan view of the articles and a supporting bar of Figure 9.

On the accompanying drawings I have used the reference numeral 12 to indicate a supporting frame and 13 a table top thereon. The table top 13 has an opening 14 therein through which the contents for a package are adapted to be elevated by a ram as will hereinafter appear. The wrapper for the articles is indicated at 15.

A pocket conveyor chain is illustrated at 16 and passes over a sprocket 17. The chain 16 is driven intermittently as disclosed in my prior patents and since the mechanism for accomplishing the intermittent drive forms no part of my present invention, it has not been here illustrated.

Supported on the chain 16 is a plurality of pockets 18. Each pocket 18 is channel-shaped, the web being shown at 19 and the flanges at 20. The pockets 18 are secured to the chain 16 as by rivets 21 through perforated ears 22 of the chain.

In Figure 2 I have shown two stacks of articles at 23. These are illustrated as round cookies or sandwiches having center lines indicated at 24. The center lines indicate the centers of gravity of the stacks of articles, which articles may of course be any shape such as

square, octagonal, round with fluted peripheries, etc. I have also illustrated a ram **25** in which vertical bars **26** are reciprocated vertically as disclosed in my previous patents and I provide them adjacent their upper ends with supporting flanges **27** and **28**.

It will be noted in Figure 2 that the web **19** of the pocket **18** is notched at **29** and **30**. It will also be noted that ends of the web extend outwardly beyond the center lines **24** and that the flanges **27** and **28** extend inwardly beyond these center lines. It is therefore obvious that due to this peculiar construction, the articles **23** may be supported either in the pocket **18** or on the ram flanges **27** and **28** without toppling outwardly in the one case or toward each other in the other case. This eliminates the necessity of providing a cardboard or other support for the articles as when the inner limit of the ram elements **27** and **28** are short enough to clear the outer end limits of the web **19** if it were unnotched and made short enough to clear the ram elements as would otherwise be necessary. Accordingly it is possible to wrap the articles more economically as it is unnecessary to provide supporting cards, either flat or channel-shaped, for the articles when there are two stacks of them side-by-side as illustrated.

In Figures 1 and 3, the ram **25** is illustrated in lowered position and one of the pockets is illustrated in position for the ram to engage the articles therein and lift them through the opening **14** against the wrapper **15** and thereafter lift the articles and wrapper through a folding way **31**. The first action in the folding way is to bend the wrapper **15** into channel shape as shown in Figure 5 and to aid in this respect the ram **25** has creasing plates **32** projecting above the flanges **27** and **28** to support the wrapper without the necessity of the articles having to do so, which would tend to crush the articles. This arrangement provides a wrapper package that is neatly squared off at the ends as disclosed in my prior patents.

In Figure 4 I have shown by dot-and-dash lines the position of the wrapped articles and wrapper corresponding to Figure 5. As the package being wrapped is elevated through the folding way **31**, folder blades **33** at the ends of the folding way cause the ends of the wrapper to be folded down as illustrated in Figures 6 and 9. The wrapper and its contents will then be in the position illustrated in Figure 4.

It is now necessary to provide means to support the articles while the ram is being retracted. This means consists of a supporting bar **34** formed on an arm **35** secured to a rock shaft **36**. The normal position of the supporting bar and arm are shown by dotted lines in Figure 4.

After the ram has elevated the articles and wrapper to the solid line position of Figure 4, the supporting bar **34** rocks into the solid line position, the vertical height of the flanges **27** and **28** being such that the bar **34** clears under them during its swinging action and the bar being narrower than the distance between the flanges so that it does not interfere with the retraction of the flanges. It will also be noted that the arm **35** is considerably narrower than the length of the supporting bar **34** so that the inner ends of the flanges **27** and **28** will not catch on it. As to the length of the bar, it is somewhat longer than the distance between the center lines **24** as shown diagrammatically in Figure 10. Therefore the supporting bar can support the articles without them toppling away from each other within their

wrapper as the ram and its creasing plates **32** are withdrawn downwardly.

After the wrapper and its contents are in the position illustrated in Figures 4 and 9, the ram **25** is retracted downwardly to leave the articles **23** supported on the supporting bar **34**. This leaves the articles and the wrapper supported as in Figure 6.

Bottom end flap folder blades **37** are provided and these are mounted on arms **38** which are pivoted at **39** to levers **40** and **41**. The levers **40** and **41** in turn pivot at **42** and are connected for simultaneous movement in opposite directions by a link **43**. The arms **38** are provided with cams **44** supported on rollers **45**, all as disclosed in my former Patent No. 2,283,097.

The blades **37** are moved from the position of Figure 6 to the position of Figure 7 in timed relation with the wrapping machine as disclosed in said patent for folding the bottom end flaps of the package as illustrated in this figure. During the reciprocating motion of the blades, they are controlled as to elevation by the cams **44** and the rollers **44***a* to properly tuck the end flaps of the wrapper beneath the articles **23**.

Just before the ends of the blades **37** reach the ends of the supporting bar **34**, the bar is retracted by the wrapping machine mechanism to the dot and dash line position of Figure 4 so that the blades **37** do not strike it. The blades having moved part way now support the package and it is unnecessary for the bar **34** to do so any longer so it is swung out of the way (dotted position in Figure 4).

A rear bottom flap folder blade **45** is provided supported on an arm **46** as shown in Figure 1 which is operated by a bell crank **47** pivoted at **48** on a bracket **49**. The bell crank is operated by a link **50** as disclosed in said patent and the arm **46** is provided with a cam **51** having a lobe **52** which cooperate with a roller **53** on the bracket **49** for properly tucking the back bottom flap under the blades **37** and the package as disclosed in Figure 7.

The blade **45** starts to advance after which the blades **37** are retracted and the package and its contents are then supported on the blade **45** as in Figure 8 with only the front bottom flaps still unfolding. The package is then pushed on to a platform **54** by mechanism which will now be described.

Above the platform **54**, a take-away conveyor chain **55** is provided which travels toward the right in Figure 1 and which is a modification of a similar arrangement shown in my Patent No. 2,283,097. Spaced brackets **56** are mounted on the chain **55** and support pusher plate **57** for the package that is now wrapped as in Figure 8 with the exception of the front bottom flap.

Pivoted at **58** on each bracket is a finger **59** on which is pivotally mounted a pressure shoe **60**. The shoe **60** is normally constrained to engage the top of the package by a light spring **61**, and a roller **62** mounted on a stationary bracket **63** is adapted to coact with a cam-shaped extension **64** on each finger **59** as shown for the middle one of the three fingers in Figure 1.

Referring to the left hand finger, it will be noted that it has a stop lug **65** coacting with a stop lug **66** of the bracket **56**. The arrangement is such that after the cam extension **64** leaves the roller **62**, the spring **61** will cause the pressure shoe **65** to resiliently engage the package with the stop lugs spaced from each other as shown for the right hand one of the three fingers **59** in Figure 1. This is also shown in Fig-

ure 8, the purpose being to hold the package with at least light pressure against the platform 54 to properly fold the front bottom flap under the end bottom flaps and the back bottom flap in an obvious manner. The wrapper 15 may be of heat sealable material and beyond the platform 54 in that case, it is usual to provide a heating means to seal the package.

From the foregoing specification it will be obvious that I have modified the construction of certain parts of the wrapping machine disclosed in my Patent No. 2,283,097, making it adaptable for wrapping stacks of cookies and the like side-by-side without the necessity of providing a supporting card for them. The flanges 27 and 28 of the elevating ram 25 and the web 19 of the pocket 18 so overlap each other by reason of the provision of notches 29 and 30 shown in Figure 2 that both the pocket and the ram provide adequate support for the articles against any possibility of them tipping either toward or away from each other. Then after the ram elevates the articles, the supporting bar 34 likewise so engages the articles that there is no tendency for them to tilt away from each other before the bottom flaps of the package are folded into position, the various supporting elements for the articles being wrapped all extending properly beyond their centers of gravity in order to prevent undesirable tipping of the articles when supported on any of the elements. The resulting structure is one that accomplishes the objects contemplated and effects an economy in the wrapping of articles in that it eliminates the necessity of providing a cardboard support for the articles in each package that is wrapped.

Some changes may be made in the construction and arrangement of the parts of my article handling mechanism without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:

1. In an article handling mechanism for a wrapping machine having a folding way, a pocket conveyor for conveying the articles to a wrapping position therebelow, a ram for engaging the articles and elevating them through the folding way, a supporting bar for the articles after they have been moved through the folding way and while the ram is being retracted, and means for supporting the articles in the pocket conveyor, on the ram, and on the supporting bar so that two stacks thereof may be wrapped side-by-side comprising pockets for the pocket conveyor, said pockets extending outwardly from between said two stacks beyond the vertical center lines of said stacks, said ram having vertical supporting flanges for the articles which flanges extend from the outer edges of said stacks toward each other beyond said vertical center lines, the ends of said pockets being notched to permit clearance for said flanges, said flanges being arranged in pairs spaced from each other in the fore and aft direction in the machine, said supporting bar being narrower than the distance between said flanges so that it may pass upwardly between the flanges to engage the articles, and said supporting bar being longer than the distance between said vertical center lines.

2. In an article handling mechanism, a pocket conveyor for conveying articles to a wrapping position in a wrapping machine having a folding way, said position being below said folding way, a ram for engaging the articles and moving them upwardly through the folding way, a support for the articles after they have passed through the folding way and while the ram is being retracted, and means for supporting the articles while being handled by said mechanism so that two stacks thereof may be wrapped side-by-side comprising pockets for the conveyor, said pockets extending outwardly beyond the vertical center lines of the two stacks of articles, said ram having supporting means for the articles which extend from opposite sides thereof toward each other and beyond said vertical center lines, the ends of said pockets being notched to permit clearance for said supporting means of said ram, and said supporting bar being longer than the distance between said vertical center lines.

3. An article handling mechanism of the character described comprising a pocket conveyor having pockets to receive stacks of articles side-by-side, said pockets being long enough to extend from their centers outwardly beyond the centers of gravity of the two stacks of articles, and a ram aligned with a pocket of said pocket conveyor for elevating said articles out of said pocket, said ram having supports for the articles which extend from opposite ends of the stack thereof toward each other beyond said centers of gravity, said pockets being notched to clear said ram, said supports on said ram being made in pairs spaced from each other, and a supporting bar for receiving the articles from said ram, said supporting bar being substantially centered end-to-end of the package and narrower than the distance between said ram supports and longer than the distance between said centers of gravity.

OSCAR SANDBERG.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,290,888	Bracy	Jan. 14, 1919
1,609,802	Ekstrom et al.	Dec. 7, 1926
1,615,237	Schwartz	Jan. 25, 1927
2,208,776	Sandberg	July 23, 1940
2,451,226	Kemp, Jr.	Oct. 12, 1948