

Aug 5, 1941.

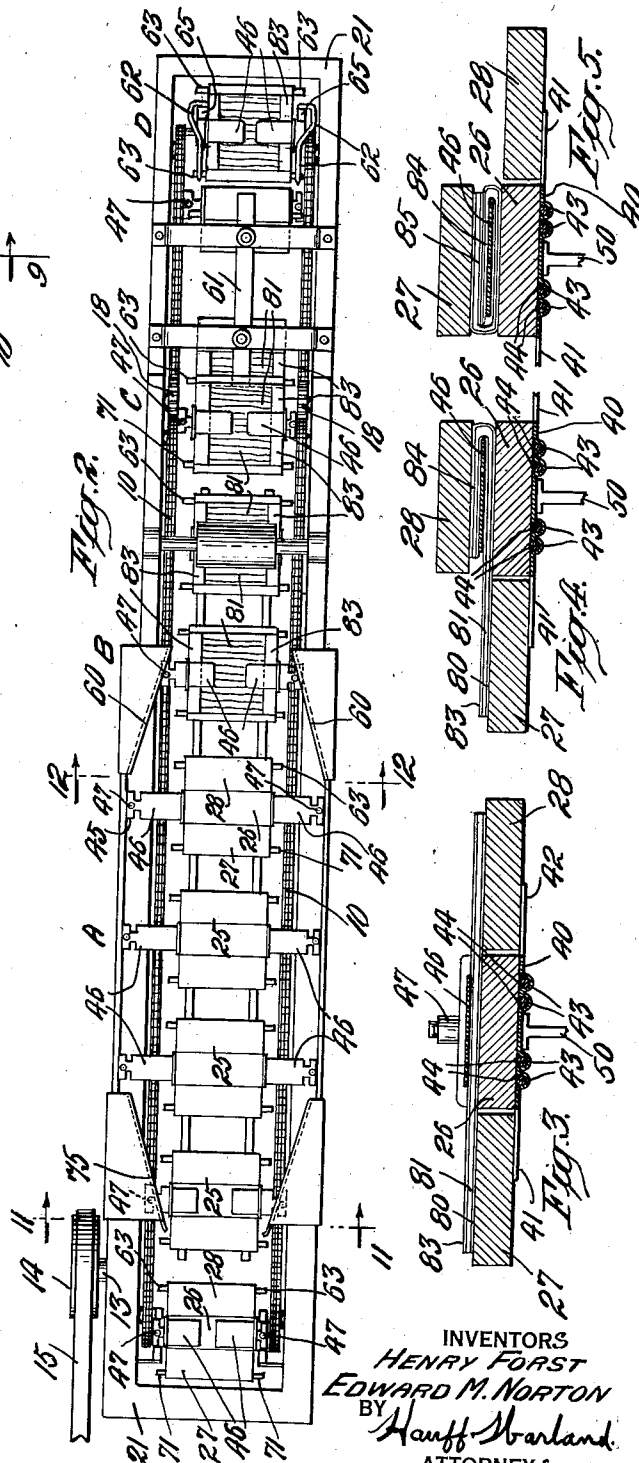
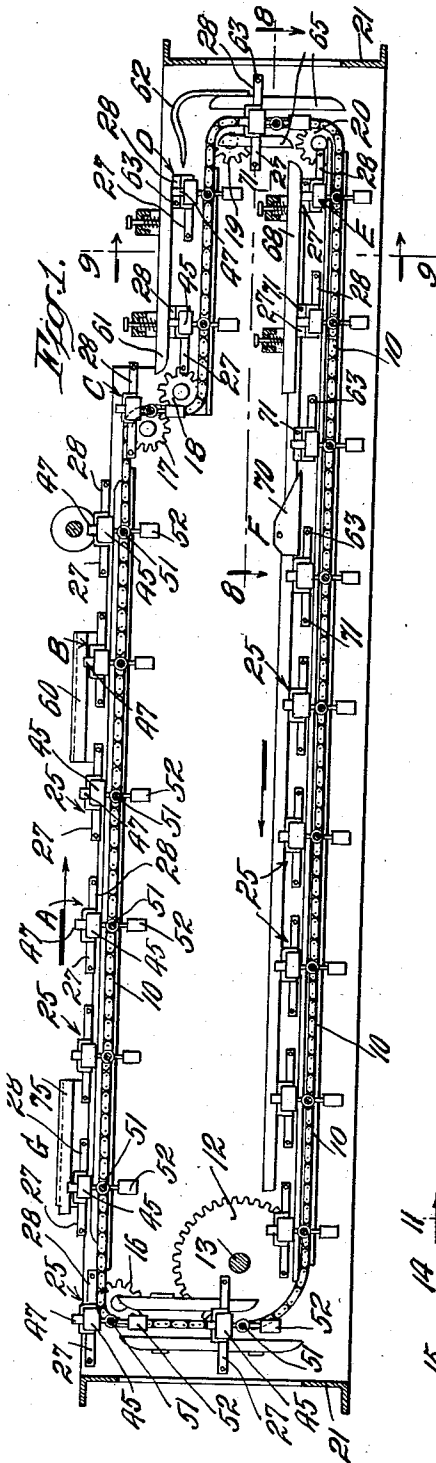
H. FORST ET AL

2,251,671

FOLDING MACHINE

Filed June 18, 1940

3 Sheets-Sheet 1



INVENTORS
HENRY FORST
EDWARD M. NORTON
BY
Hauff Marland
ATTORNEYS.

Aug. 5, 1941.

H. FORST ET AL

2,251,671

FOLDING MACHINE

Filed June 18, 1940

3 Sheets-Sheet 2

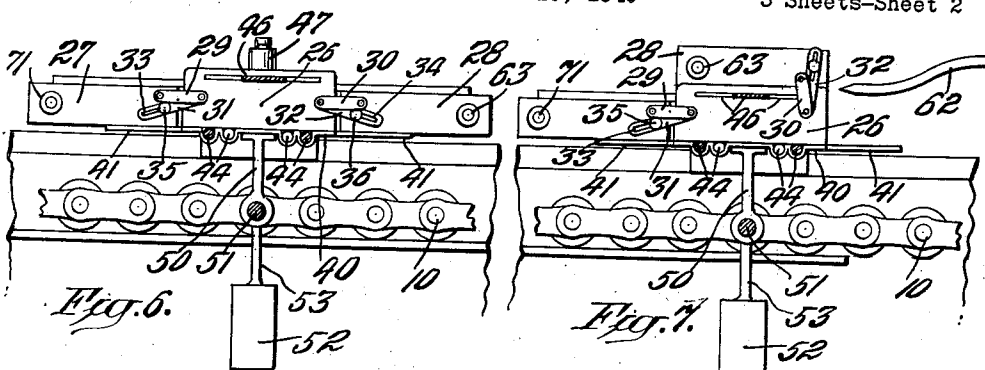


Fig. 6.

Fig. 7

Fig. 8.

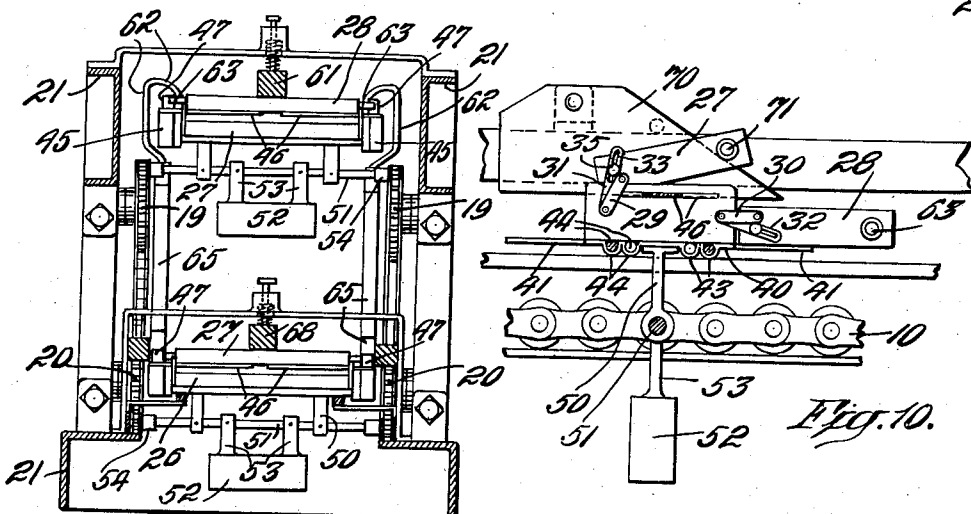
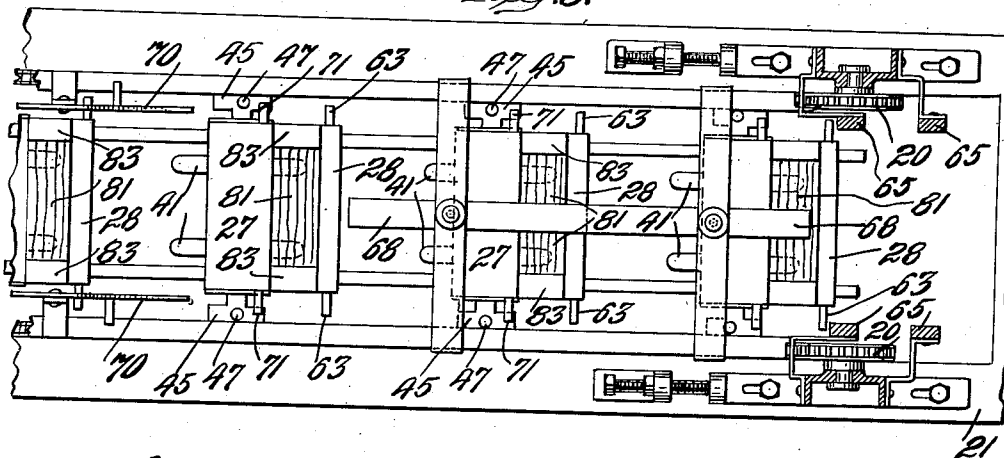


Fig. 9.

INVENTORS
HENRY FORST
EDWARD M. NORTON
BY *Hauff Barland*
ATTORNEYS.

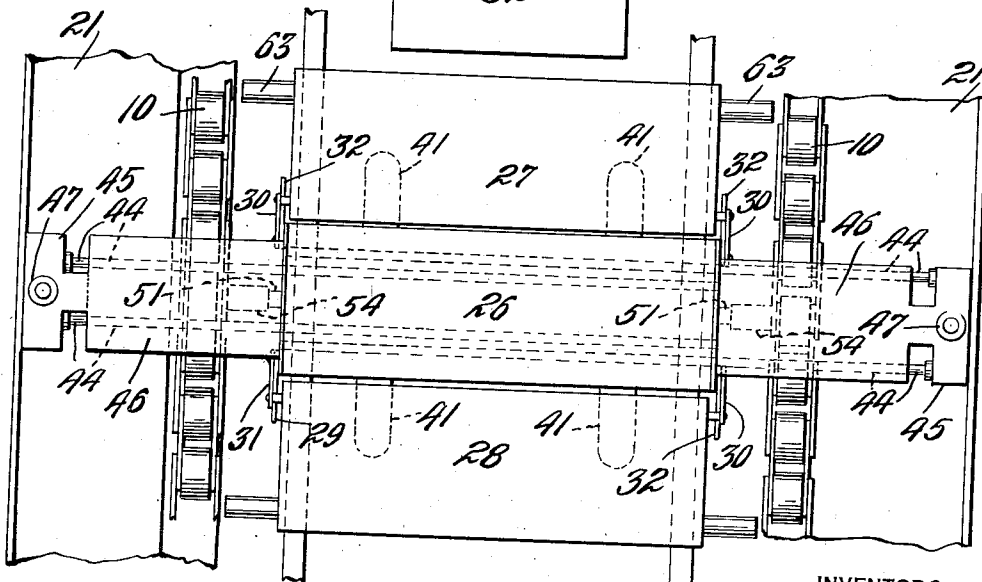
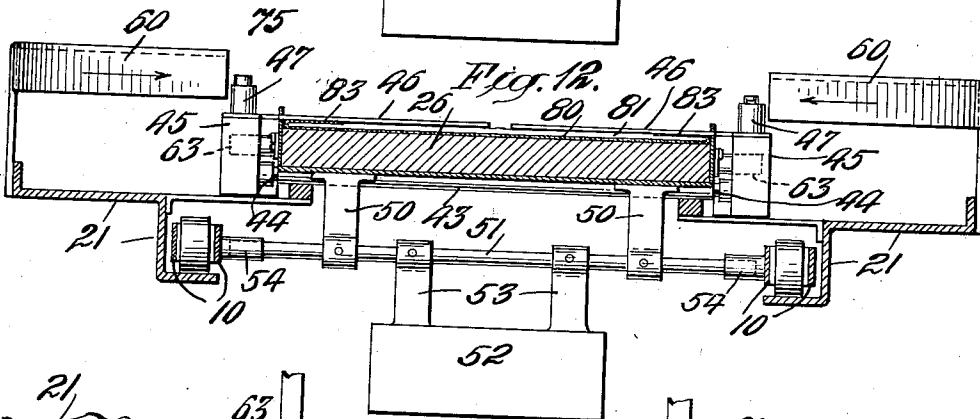
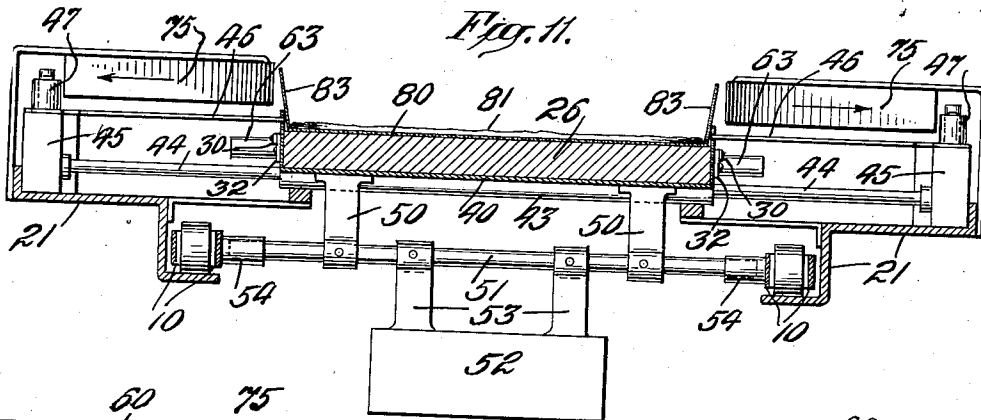
Aug. 5, 1941.

H. FORST ET AL
FOLDING MACHINE

2,251,671

Filed June 18, 1940

3 Sheets-Sheet 3



INVENTORS
HENRY FORST
EDWARD M. NORTON
BY *Hauff Warland*
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,251,671

FOLDING MACHINE

Henry Forst and Edward M. Norton, Kingston, N. Y., assignors to Forst Packing Company, Inc., Kingston, N. Y., a corporation of New York

Application June 18, 1940, Serial No. 341,125

6 Claims. (Cl. 93—2)

This invention relates to folding machines and more particularly to a mechanism for folding and packaging commodities such as strip bacon or the like, which are normally placed upon a flexible wrapping material such as a sheet of paper of appropriate size and are then folded over with the paper to form the desired package.

An object of the invention is to provide a novel and improved machine for folding a package of the above type.

Another object is to provide a machine for receiving a quantity of bacon to be packaged, in the form of a flat sheet of paper or the like on which the strips of bacon are spread out, and for automatically folding the same to form the finished package.

Another object is to provide a machine of the above type having novel and improved details of construction and features of operation.

Various other objects and advantages will be apparent as the nature of the invention is more fully disclosed.

Although the novel features which are believed to be characteristic of this invention are pointed out more particularly in the claims appended hereto, the invention itself may be better understood by referring to the following description, taken in connection with the accompanying drawings forming a part thereof, in which a specific embodiment of the invention has been set forth for purposes of illustration.

In the drawings,

Fig. 1 is a side elevation of a packaging machine embodying the present invention,

Fig. 2 is a top plan view thereof,

Fig. 3 is a detail view of the folding platform, at the beginning of the folding operation,

Fig. 4 is a detail view, similar to Fig. 3, showing the first folding step,

Fig. 5 is a detail view, similar to Fig. 3, showing the second folding step,

Fig. 6 is a detail view showing the folding platform and a corresponding portion of the conveyor chain,

Fig. 7 is a view similar to Fig. 6 showing the position of the parts during the first step of the folding operation,

Fig. 8 is a section taken along the line 8—8 of Fig. 1,

Fig. 9 is a section taken along the line 9—9 of Fig. 1,

Fig. 10 is a detail view similar to Fig. 6, showing the final stage in the folding operation,

Fig. 11 is a transverse section taken along the line 11—11 of Fig. 2,

Fig. 12 is a transverse section taken along the line 12—12 of Fig. 2,

Fig. 13 is an enlarged detail view of the folding platform and associated mechanism.

In the following description and in the claims certain specific terms are used for convenience in referring to various details of the invention. These terms, however, are to be given as broad an interpretation as the state of the art will permit.

Referring to the drawings more in detail, the folding machine comprises a continuous conveyor chain 10 which is driven by a sprocket 12 attached to a shaft 13 carrying a pulley 14 which is driven by a belt 15. The belt may be driven by suitable means such as an electric motor, not shown. A plurality of idler sprockets 16 to 20 are provided for positioning the conveyor belt in the manner to be described. The various sprockets and associated mechanism are supported on a suitable frame 21.

The conveyor chain 10 carries a plurality of platforms 25. Each of these platforms comprises a base 26, Fig. 13, having a pair of wings 27 and 28 hinged thereto by suitable hinge means such as links 29 and 30 respectively, (Fig. 6). Guide links 31 and 32 are also secured to the base 26 and are provided with elongated slots 33 and 34 respectively in which pins 35 and 36 slide. These pins are mounted in the wings 27 and 28 respectively, and serve to strengthen the assembly and guide the wings 27 and 28 as they pivot about the base 26.

To the bottom of the base 26 is secured a plate 40 having a pair of stationary side wings 41 and 42 (Figs. 3, 4, 6 and 7) which are adapted to support and form a stop for the wings 27 and 28 when they are extended to form a flat platform. The plate 40 is also bent to provide a set of sleeves 43 in which rods 44 are slidably positioned. These rods 44, as shown in Figs. 11, 12 and 13, are attached at their outer ends to blocks 45 which carry slide plates 46. The slide plates 46 are adapted to slide over the base 26 from opposite ends so as to fold over the ends of the package material in the manner to be described. The blocks 45 carry rollers 47 which engage suitable track members on the machine for slidably actuating the slide plates 46 and the rods 44.

Brackets 50 are attached to the bottom of the base 26 and are rigidly secured to a rod 51. A counterweight 52 is also secured to the rod 51 by means of brackets 53. The counter-weight

52 is adapted to hold the base 26 and the associated members in a horizontal position. The rod 51, associated with each of the platforms 25, is journaled in brackets 54 carried by the conveyor chain 10, so that the platforms are progressively advanced by the conveyor chain and are maintained by the weights 52 in a horizontal position.

At the start of the wrapping operation the platform is in the position A, Figs. 1 and 2. In this position the side wings 27 and 28 are extended to form a flat platform and the slide plates 46 are withdrawn from the base 26 as shown in Figs. 11 and 13. When the platform reaches the position B the rollers 47 engage tracks 60, Figs. 1, 2 and 11, which cam the same inwardly, thereby causing the slide plates 46 to be extended inwardly from the base 26 as shown in Fig. 12.

At the station C the platform is carried downwardly by the vertical portion of the conveyor chain extending between the sprockets 17 and 18. At this point a stationary rail 61 is provided which is adapted to be engaged by the extended forward wing 28 of the platform and to fold the wing over as shown in Figs. 4 and 7. As the platform advances beneath the rail 61 the latter holds the folded wing 28 in position over the base 26.

At the station D cam tracks 62 are provided which are adapted to engage beneath rollers 63 which are carried on the sides of the wing 28. As the platform advances past the tracks 62, the tracks disengage the rollers 63 and lift the wing 28 until the wing has been returned to its original position. The rollers 63 then pass downwardly in channels 65 which are formed in the tracks 62. The wings 27 and 28 are now both extended outwardly as in their original position while the platform is fed downwardly by the vertical portion of the conveyor chain between the sprockets 19 and 20.

At the station E a second rail 68 is provided which is adapted to engage beneath the wing 27 as the platform passes downwardly and to thereby fold this wing over the base 26, as shown in Fig. 5. The rail 68 holds the wing in position as the platform passes thereunder.

At the station F a cam rail 70 is provided, which is adapted to engage beneath rollers 71 carried on the sides of the wing 27, lifting the wing about the hinge links 29 and thereby flipping the wing 27 back to its original extended position.

The platform is now fed by the conveyor chain 10 around the sprockets 12 and 16 and at the station G tracks 75 are provided which engage the rollers 47 and retract the slide plates 46 to their original position.

In the operation of this machine, the package to be wrapped, such as a sheet of paper or the like 80, carrying the commodity such as a plurality of strips of bacon 81, is placed on the platform 25 at the station A with the sides of the paper extending beyond the platform to form wings 83, Fig. 11. As the platform now advances to the station B, the slide plates 46 are moved inwardly and thereby fold the wings 83 over, as shown in Fig. 12. When the platform reaches the station C, the forward wing 28 is folded over as shown in Fig. 4, thereby folding over the forward portion 84 of the paper 81 together with the bacon or the like contained thereon. When the platform reaches the station D the wing 28 is unfolded. However, the folded portion of the paper and bacon remains in place. When the platform reaches the station E the wing 27 is folded over

as shown in Fig. 5, thereby folding the remaining portion 85 of the paper, together with the bacon thereon, over the portion 84. The package is now completely folded and in the form in which it is to be distributed. The rail 68 at the station E presses the wing 27 downwardly so as to compact the package. At the station F the wing 27 is restored to its original position, but the package remains folded on the platform, being held by the slide plates 46. At the station G the slide plates are retracted, thereby releasing the completed package for removal from the platform.

This machine is particularly suited for packaging bacon and has been so described. It is to be understood, however, that it may be applied to various other uses. In the usual operation as applied to bacon, the bacon is placed upon sheets of paper and weighed manually. It has heretofore been the practice to manually fold the packages as they are taken from the weighing machine. In accordance with the present invention, however, the weighed bacon will be placed upon the platform 25 at the station A and will be automatically folded in the manner above described. It is obvious that the packages may be applied to the machine either manually or by suitable automatic feed mechanism, not shown, and which forms no part of the present invention.

Although a specific embodiment of the invention has been shown for purposes of illustration, it is to be understood that various changes and modifications may be made therein as will be readily apparent to a person skilled in the art.

What is claimed is:

1. A folding machine comprising a platform having a base and a pair of side wings extended outwardly therefrom and adapted to receive a sheet material carrying a commodity, a continuous conveyor carrying said platform, said conveyor being adapted to feed said platform past a plurality of folding stations, means at one of said stations for folding one of said wings over said base, means at a second station for retracting said wing to its original position, means at a third station to fold the second wing over said base, and means at a fourth station for retracting said second wing, thereby leaving the material folded in package form on said base.

2. A folding machine comprising a platform having a base, a pair of hinged side wings normally extended outwardly therefrom and adapted to be folded over said base for packaging purposes and a pair of slide plates carried by said base to slide longitudinally thereover, said base being adapted to receive a sheet material carrying a commodity, said sheet material forming end wings which are held upwardly against said slides, a continuous conveyor carrying said platform and adapted to feed the same past a plurality of stations, means at a first station to move said slides inwardly over said base to thereby fold said upwardly extending wings of said sheet material inwardly over said commodity, means at a second station to fold one of said wings over said base thereby folding the corresponding portion of said material, means at a third station to retract said first wing while leaving said sheet material folded on said base, means at a fourth station to fold the other of said wings over said base for thereby forming a three ply package, means at a fifth station to retract said second wing while leaving the folded package on said base, and means at a sixth station to retract said slides to thereby release said package.

3. A packaging machine comprising a platform

adapted to receive a sheet material containing a commodity to be packaged, said platform comprising a base section and a pair of wing sections hinged thereto, a continuous conveyor means, means mounting said platform on said conveyor means, a counter-weight associated with said platform to maintain the same in horizontal position as it is advanced by said conveyor, a pair of slide plates adapted to slide over said base, rods extending longitudinally of said base and carrying said plates, means mounting said rods for sliding movement, said conveyor being adapted to feed said platform past a plurality of stations, a pair of rails at one station adapted to engage said plates to slide the same inwardly over said base for folding the side edges of said material and holding the material in place on said platform, means feeding the platform downwardly at a second station, means at said second station engaging the forward wing and folding the same over said base, means again feeding said platform horizontally with said wing in folded position, a cam rail at a third station adapted to engage and unfold said wing, means feeding said platform downwardly to a fourth station, means at said fourth station to engage and fold over the other of said wings, means at a fifth station to unfold said other wing thereby leaving the package folded on said base and held in position by said slides, and means at a sixth station to retract said slides for thereby releasing said package.

4. A folding platform for a commodity comprising a base adapted to receive a sheet material carrying said commodity, and a pair of side

wings hinged thereto and adapted to fold over the corresponding portions of said material to form a three ply package, a pair of slide plates carried by said base to slide inwardly thereover for thereby folding the side edges of said material and holding the material in place on said base, said slide plates being slidable outwardly to release the folded package.

5. A folding platform for a commodity comprising a base adapted to receive a sheet material carrying said commodity, a pair of side wings hinged thereto and normally extending outwardly therefrom, and adapted to be folded over said base for packaging purposes and a pair of end slide plates carried by said base to slide longitudinally thereover for thereby folding the ends of said material and holding the material in place on said base and means for slidably mounting said plates, comprising rods extending longitudinally beneath said base, means mounting said rods for sliding movement and supporting means for said plates carried by said rods.

6. A packaging machine comprising a platform adapted to receive a sheet material containing a commodity to be packaged, said platform comprising a base section and wing sections associated therewith, a continuous conveyor means, means pivotally mounting said platform on said conveyor means and a counterweight associated in said platform to maintain the same in horizontal position as it is advanced by said conveyor.

HENRY FORST.

EDWARD M. NORTON.