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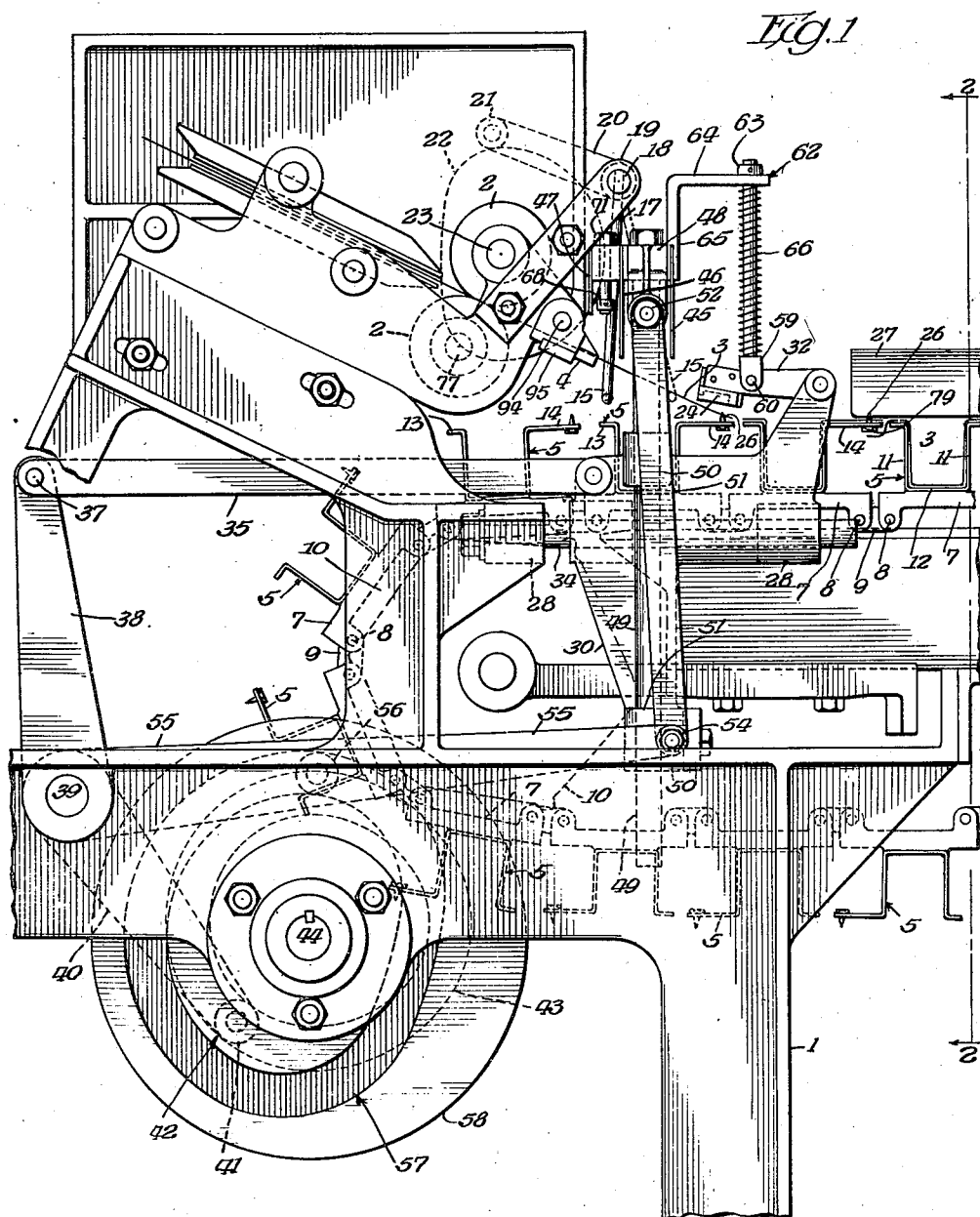
C. J. MALHIOT

2,277,877

WRAPPING MACHINE

Filed July 22, 1940

4 Sheets-Sheet 1



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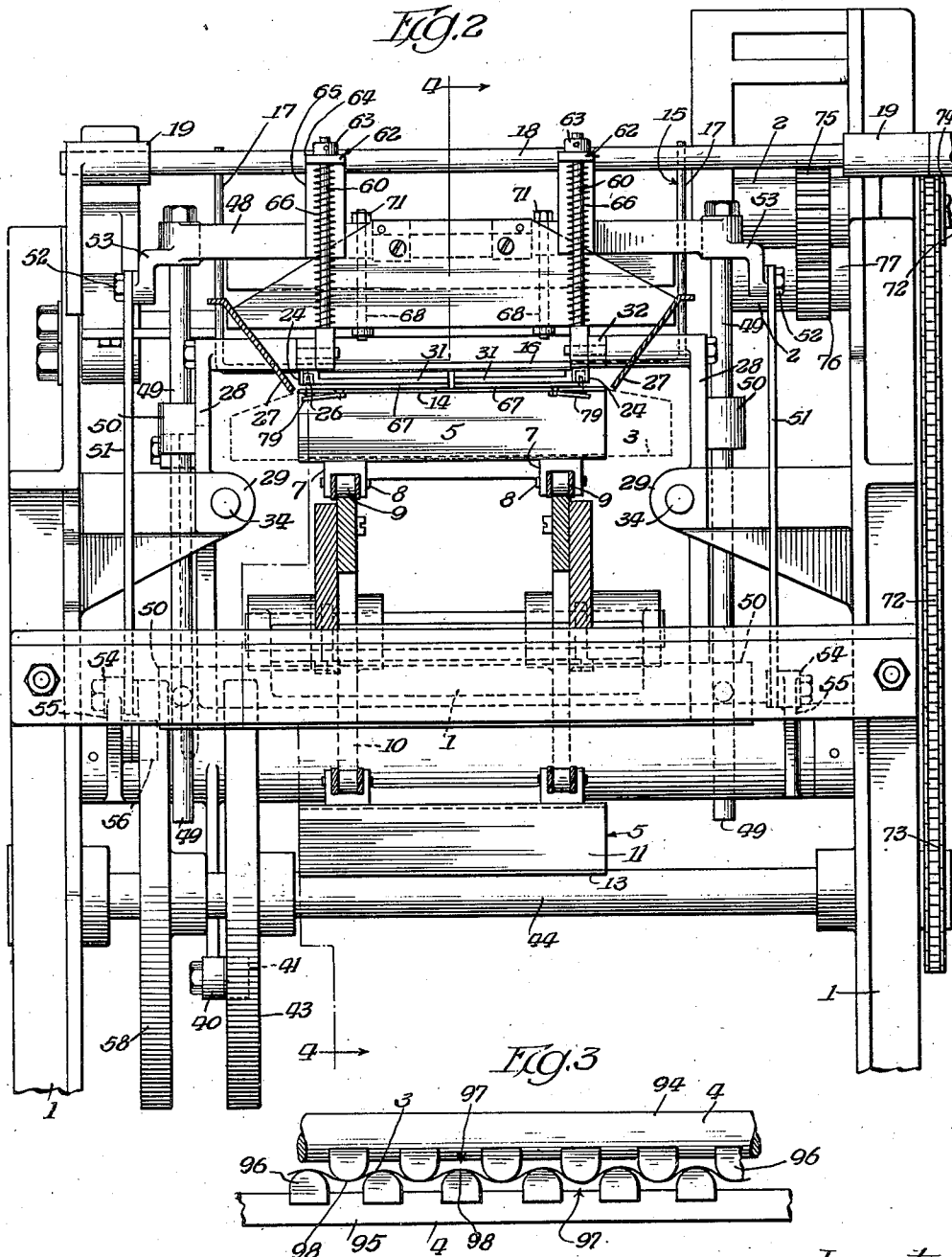
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WRAPPING MACHINE

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4 Sheets-Sheet 2



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WRAPPING MACHINE

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4 Sheets-Sheet 3

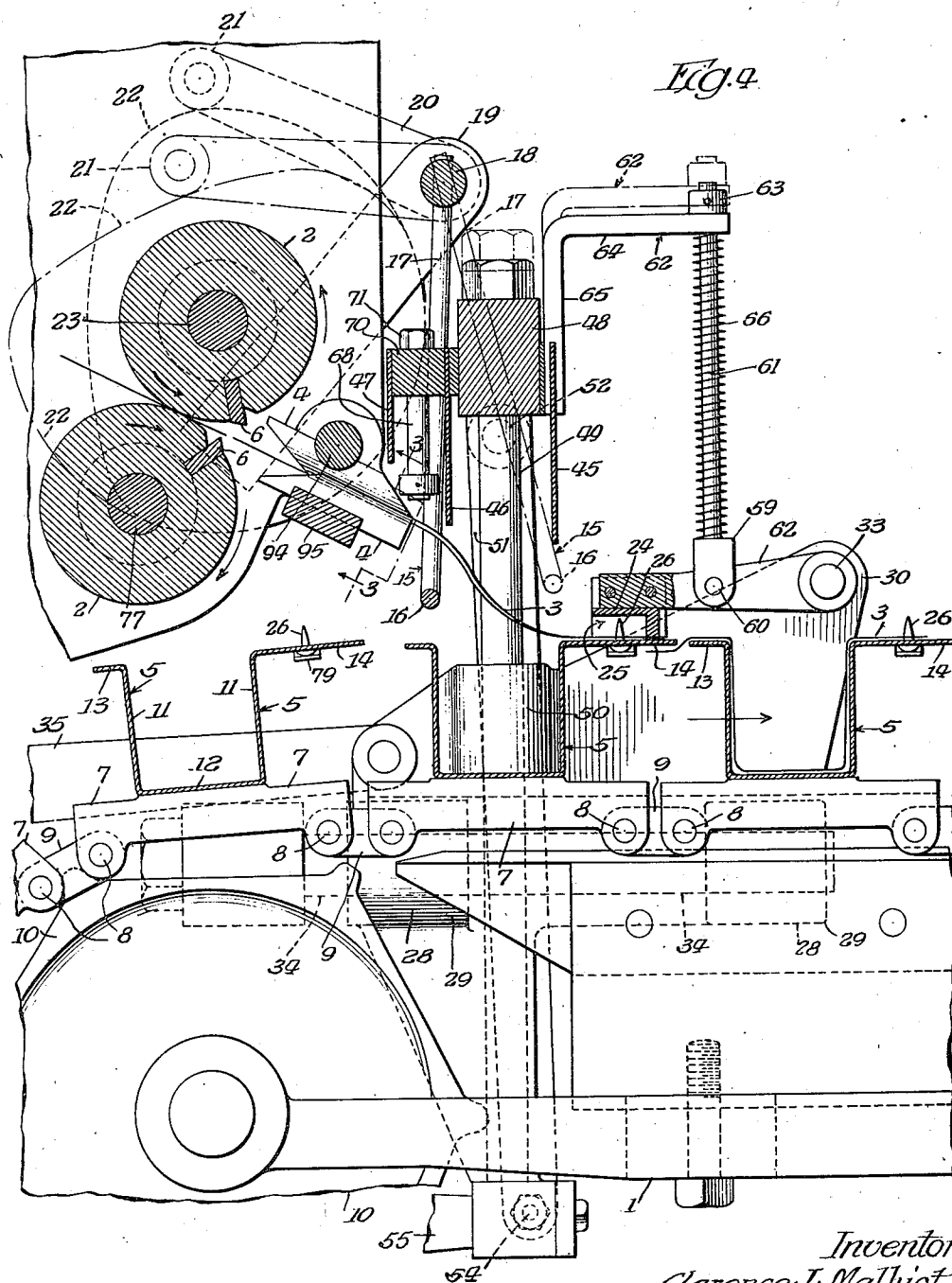


Fig. 4

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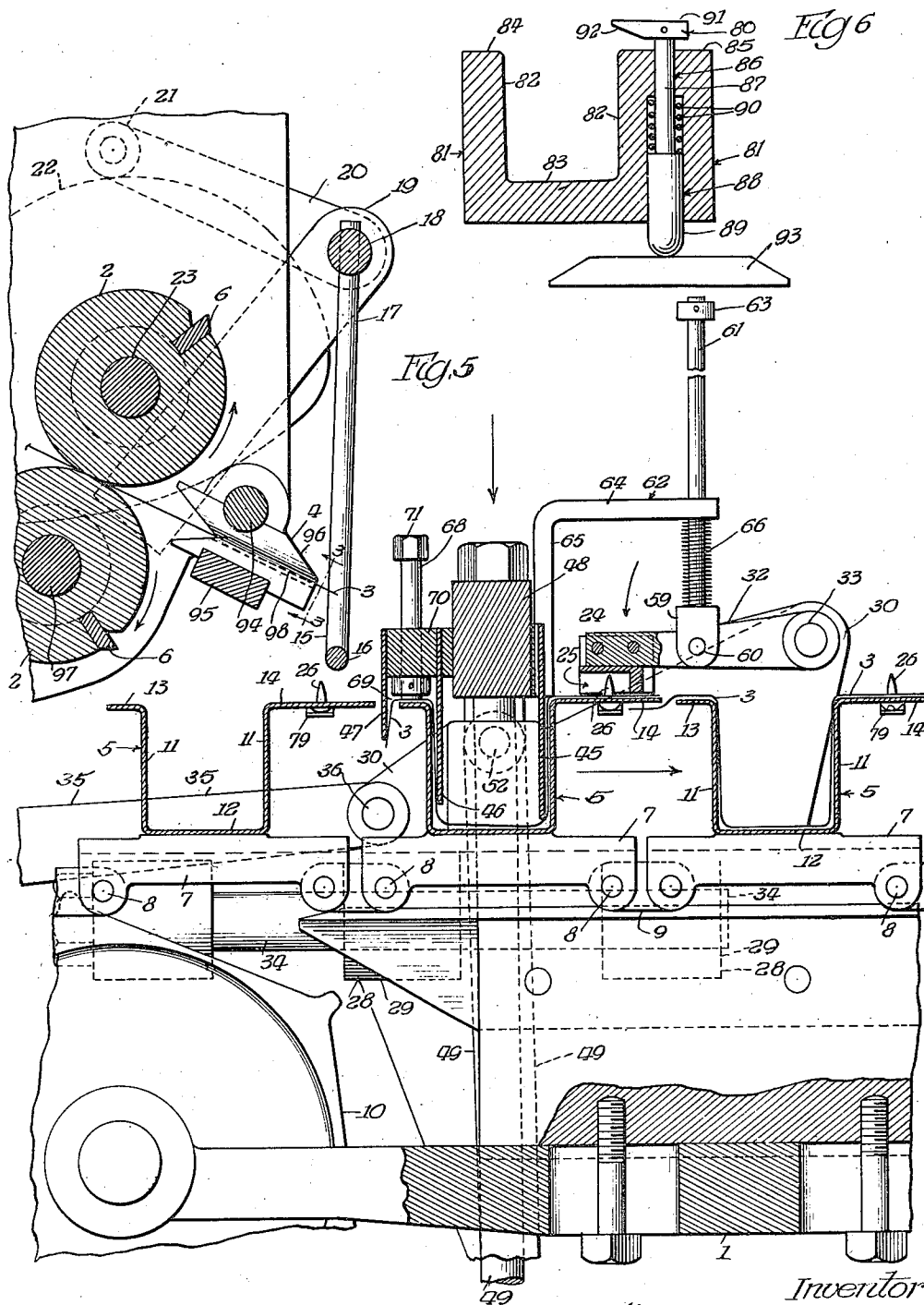
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WRAPPING MACHINE

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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,277,877

WRAPPING MACHINE

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Application July 22, 1940, Serial No. 346,686

24 Claims. (Cl. 93—2)

This invention relates to wrapping machines in general and particularly to mechanism for arranging sheets of wrapping material in a certain predetermined position to receive articles to be wrapped.

The primary object of the present invention is the provision of new and improved mechanism, operating in a certain predetermined time relationship, to place sheets of wrapping or other material in a certain predetermined arrangement with respect to successively located carriers or pockets mounted on a continuously moving conveyor.

A further important object of the invention is to provide new and improved mechanism to line certain continuously moving carriers or buckets with a sheet of material successively, the mechanism being properly timed and synchronized with respect to the movement of the carriers whereby the sheet is properly positioned according to a predetermined arrangement.

Another important object of the invention resides in the provision of new and novel mechanism movable along a predetermined path along with a continuously moving conveyor and at the same speed thereof so as to position a sheet or wrapper on a carrier on the conveyor and later cause the sheet to be positioned about the side walls and bottom of each successive carrier arriving at a predetermined position.

Still another object of the invention is the provision of new and novel mechanism, movable in one direction along with a continuously moving conveyor so as to position or mount a sheet on a carrier of the conveyor and then cause it to be moved in an angular position to effect a certain predetermined arrangement or formation of the sheet or wrapper, means being provided to effect return movement of the parts to original position so as to repeat the operation for each succeeding carrier or bucket.

A still further object consists in the provision of new and improved mechanism arranged and positioned in a novel manner, and properly correlated and synchronized with other movable parts of the machine, so as to feed and mount or otherwise position and arrange sheets in a particular style and formation with respect to carriers or buckets continuously fed to position by a continuously moving conveyor.

Numerous other objects and advantages will be apparent throughout the progress of the following specification.

The accompanying drawings illustrate a se-

lected embodiment of the present invention and the views therein are as follows:

Fig. 1 is a detail front elevational view of the left hand end of a machine and embodying the invention;

Fig. 2 is a detail transverse sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a detail elevational view looking in the direction of the lines 3—3 of Figs. 4 and 5;

Fig. 4 is a detail longitudinal sectional view on the line 4—4 of Fig. 2;

Fig. 5 is a view similar to Fig. 4 but showing some of the parts in advanced position; and

Fig. 6 is a modified form of sheet holding or clamping means which may be used instead of the sheet holding pins.

The particular machine herein disclosed for the purpose of illustrating the invention comprises a suitable supporting frame or structure upon which there is mounted a suitable unit to feed sheets of material to a predetermined position. This feeding unit may comprise a pair of contacting feed rolls 2, Fig. 4, the lower one of which may be spring mounted (not shown) to insure proper feeding contact between said rollers to deliver a sheet of material 3 to position between sheet guiding and supporting members 4. The sheet 3 is adapted to be fed to operative position to consecutively spaced carriers 5 which are in the form of buckets or pockets, as shown. The sheet 3 may be pre-cut sheets of proper length, or may be cut to proper length from a continuous web of material. In the latter case, the rollers 2 may be made smaller in diameter and provided with co-operative cutting blades 6 for cutting the web to the proper size, and additional feed rollers, not shown, may be arranged adjacent the rolls 2 to feed the web of material to the cutters 6. The feed rollers 2 are correlated, and operate at the proper speed to feed a sheet at proper time intervals, as required.

The carriers 5 may comprise sheet metal buckets or pockets which are secured to link members 7 pivotally connected at 8 to chain links 9. The members 7 and their connecting links 9 form endless chains to which the carriers 5 are connected. The two chain members are trained over idler sprockets 10, at the left hand end of the machine, Fig. 4, and over other driving sprockets (not shown) provided at the right hand end of the machine. The latter sprockets are continuously rotated to drive the conveyor continuously.

The carriers, buckets or pockets 5 are elongated, relatively rectangular-shaped members and

include vertical side walls 11 connected by an integral bottom 12. Side flanges 13 and 14 are turned over from the side walls 11 and extend outwardly a suitable distance, as shown more particularly in Figs. 4 and 5. The entire inner surfaces and the top of the flanges 13 and 14 of the carriers 5 are adapted to be covered by a sheet 3 so that each carrier will be properly lined with the material.

The sheet 3 is fed through the guides 4, and as it travels to position to be applied to a carrier 5, it will pass over a downwardly extending bail 15. This bail comprises a horizontal section 16 which extends transversely across the conveyor, and two upwardly extending end sections 17, the upper ends of the sections being rigidly secured to a cross shaft 18, Fig. 4. The shaft 18 is mounted for oscillatory movement in spaced bearings 19, and is operated by a cam lever 20 which is rigidly secured to the shaft 18. The lever 20 carries a cam roller 21 which co-operates with a cam 22 mounted on a rotary shaft 23. The shaft 18 is caused to oscillate during the rotation of the shaft 23 because of the co-operation of the cam roller 21 with the cam 22. The oscillatory movement of the shaft 18 is transmitted to the bail 15 which is adapted to move from the full line position to the dotted line position shown in Fig. 4. The horizontal part 16 of the bail 15 is adapted to support the overhanging or extending portion of a sheet 3 as it is fed from the guides 4 to position to line a carrier 5.

The free end of the sheet 3, just prior to the time it leaves the feed rollers 2, will extend substantially to the outer edge of the flange 14, as shown in Fig. 1. In this latter position the free end of the sheet will lie immediately above the flange 14 and underneath a pair of clamps 24. The clamps 24 are caused to descend practically simultaneously with the arrival of the free end of the sheet at a flange 14 to hold it against the upper surface of the flange. The ends of the clamps 24 are relatively angle-shaped, as shown in Fig. 4, having spaces or openings 25 formed therein for the reception of holding pins 26 or other fastening members. The pins 26 are adapted to pierce the forward edge of the sheet 3 and secure it in position to a flange 14 of a particular bucket or carrier member 5 which has arrived at a predetermined position.

Each carrier, bucket or pocket 5, being secured to the continuously moving conveyor and forming a part thereof, carries a sheet 3 during its movement because of the attachment of the sheet with the pins 26, and inasmuch as the clamp members 24 are adapted to remain in engagement with the sheet on a flange 14, the clamp members 24 are adapted to move a predetermined distance along with the moving conveyor and at the same speed thereof. The clamps 24 hold the sheet in proper position against a flange 14 until the sheet passes under a pair of oppositely disposed sheet guiding and holding members 27. The clamp members 24 translate along with the conveyor because of their attachment to a pair of slide bearings 28, Fig. 5.

These bearings 28 each include spaced bosses 29 which are rigidly connected together by web sections 30. The web sections 30 have attached thereto the clamping members 24 which are in the form of angular sections, as shown in Fig. 2. The clamping members, which include inwardly extending parts 31, Fig. 2, are connected to side arms 32 pivotally mounted at 33 to the web sections 30, Fig. 5.

The slide bearings 28 are mounted for longitudinal reciprocation on rods 34 which are securely fastened to a part of the machine frame, Fig. 1. Links 35 have one of their ends pivoted at 36 to the ends of the web sections 30, and their other ends pivoted at 37 to spaced arms 38. The spaced arms 38 are rigidly connected together by an integral hollow member, through which a transverse shaft 39 passes, whereby there is provided a rigid U-shaped member which is loosely mounted on the shaft 39. A cam arm 40, rigidly secured to one end of the hollow member below and preferably made integral therewith, is arranged immediately below one of the arms 38. The arm 40 carries a cam roller 41 at its lower end which operates in the race 42 of a cam 43, Fig. 1.

The cam 43 is mounted on a rotating shaft 44, whereby the links 35 are caused to reciprocate by the co-operation of the cam roller and the U-shaped member. Reciprocation of the links is transmitted to the clamps 24 whereby the clamps 24 are given their proper movement. The reciprocation of the clamping members 24 is such as to cause them to remain in contact with a sheet on the flange 14 for a predetermined length of time. The clamps 24, therefore, move along with the moving conveyor and at the same speed thereof for a predetermined length of time until the sheet passes under the guides 27. After the clamps 24 reach the end of their travel they become disengaged from the sheet and travel in a reverse direction to original position when the operation is repeated with respect to the next successive carrier or bucket.

The sheet 3, which is fastened to the flange 14 of a carrier or pocket 5 by the clamps 24 and pins 26, and moving with the pocket, is adapted to be folded down into the pocket with its ends extending over the flanges 13 and 14. The forming of the sheet or wrapper 3 is accomplished by means of tucking blades 45, 46, and 47 which extend in a downwardly direction. The blades 45 and 46 are adapted to be received inside each carrier successively adjacent the inner side walls 11 thereof so as to cause the wrapper to engage substantially the side walls 11 and the bottom 12 thereof. The tucking blade 47 is adapted to extend down between adjacent carriers or buckets to lace the free end of the sheet between the end of a flange 13 on one bucket and the end of a flange 14 on an adjacent bucket, Fig. 5.

The blades 45, 46, and 47 are mounted on a crosshead 48 which extends transversely across the machine and is secured rigidly to vertical rods 49, Figs. 2 and 4. The rods 49 are slidably mounted in bearings 50 rigidly secured to the web sections 30, which, in turn, are rigid with the slide blocks 28. The blades 45, 46, and 47, therefore, move with the clamps 24 along with the carrier members 5 on the conveyor and at the same speed as the conveyor.

The blades 45, 46, and 47 reciprocate vertically for engagement with the sheet of wrapper so as to cause certain surfaces of successive carriers 5 to be lined with a sheet 3 of material. Slide rods 49, which reciprocate vertically through slide bearings 50, are fastened to the crosshead 48 and slide rods 49 is accomplished by means of links 51 which have their upper ends pivotally connected at 52 to extension arms 53 on the crosshead 48, and their lower ends pivotally

connected at 54 to arms 55 rigidly secured to the shaft 39, Fig. 2. One of the arms 55 is provided with a cam roller 56, which is received in a race 57 formed in a cam 58. The cam 58, Fig. 1, is mounted on the shaft 44 immediately in front of the cam 43, Fig. 2. This construction causes the blades 45, 46, and 47 to translate along with the forward movement of the conveyor and at the same speed thereof, and at the same time operate downwardly to line completely a carrier 5 with a sheet 3, after which time they return upwardly. After the carrier has been lined and moves toward position, where the forward edge of the sheet will be received under a guide 27, and the blades have moved upwardly out of the bucket, the mechanism will move in a reverse longitudinal direction to proper position with respect to the next succeeding bucket.

The vertical movement of the crosshead 48 also controls the vertical pivotal movement of the clamps 24 by means of links 59. These links are pivotally secured at 60 to the arms 32 of the clamps 24 and have a rigid attachment to vertical rods 61, Fig. 4. The upper ends of the rods 61 pass through openings in a pair of operator arms 62, there being a collar 63 secured to the upper ends of the rods 61, as shown in Fig. 5. The operator arms 62 comprise outwardly extending parts 64 and downwardly extending parts 65 which are rigidly secured to the crosshead 48. The rods 61 are surrounded by coil springs 66 which are confined between the upper surfaces of the links 59 and the bottom surfaces of the parts 64 of the members 62.

The clamps 24 are in their normal position, as shown in Fig. 1, but as soon as a sheet 3 arrives at the position shown in Fig. 1, the crosshead 48, which moves downwardly as well as translating longitudinally, causes the parts 64 to move downwardly initially to engage the sheet 3. Continued downward movement of the parts 64, through the action of the springs 66, causes the clamps 24 to have tighter sheet clamping engagement. The initial downward movement of the clamps 24 begins and ends substantially between the positions shown in Figs. 1 and 4, respectively.

This initial movement of the clamps 24 causes relatively light engagement of the clamping members with the sheet, but the continued downward movement of the crosshead compressing the springs 66 causes a relatively tight engagement. The sheet 3, therefore, will be clamped tightly between the clamping members 24 and the top of a flange 14, and securely held in position and be prevented from being torn by the pins 26. The forward edge of the sheet, therefore, is maintained in proper position during the folding operation of the descending tucker blades 45, 46, and 47. Rubber faces 67 may be applied to the under surfaces of the extensions 31 of the clamps 24 for holding engagement with the upper surface of the sheet, Fig. 2.

After the crosshead 48 has moved to its lowest position, the sheet will be covering practically the entire surface of the carrier 5, as shown in Fig. 5, with its trailing edge tucked in the space between the ends of the flange 13 of one carrier and the flange 14 of the next succeeding or adjacent carrier. When the sheet has completely lined a carrier or bucket, the crosshead will rise upwardly to normal position and raise the blades out of the carrier. As soon as the blades are free from the bucket the forward

movement of the slide bearings 28 will have reached the limit of their forward travel and then be caused to return in a reverse direction to normal position. However, before the descent of the crosshead 48, the bail 15 will have completed one complete cycle of travel, having moved from the position shown in dotted lines to the full line position shown in Fig. 4, and then back to its original position.

Slidably mounted pins 68 are provided to maintain the free trailing edge 69 of the sheet 3 in position. These pins are mounted in suitable spacer blocks 70 fixed to the crosshead 48. When the crosshead 48 is in its normal upward position, as shown in Fig. 1, the pins will extend downwardly in the position shown in Fig. 1, but as the crosshead 48 descends, the lower ends of the pins 68 will contact the paper and the weight of these pins will hold the sheet down against the flange 13 in position to be contacted by the blade 47. These pins will remain in constant contacting position until the crosshead 48 has reached a predetermined position during its upward travel, at which time the underside of the pin heads 71, Fig. 4, will become engaged by the upper surface of the spacer block 70, lifting the pins upwardly and returning them to their original position, as shown in Fig. 1.

The feed rollers may be driven in any suitable manner desired, such as by a drive chain 72, Fig. 2, passing over a driving sprocket 73 on the shaft 44 and a driven sprocket 74 on the shaft 23. The sprocket 74, therefore, may drive one of the rollers 2 while the other roller 2 may be driven by a gear 75 rigid on the shaft 23 and engaging a gear 76 mounted on the shaft 77 upon which the other roller 2 is mounted.

The pins 26 may project through apertures 78 formed in the flange 14 of each carrier or bucket 5. These pins are held in position by a strip or ledge 79 which is secured in place on the underside of the flange.

Sheet clamps 80, Fig. 6, may be used instead of the pins 26 for holding the leading free edge of a sheet 3 in place on a flange 14. However, where clamps 80 are employed it is desirable that carriers 81, Fig. 6, be substituted for the sheet metal carriers 5. The carriers 81 are preferably made of relatively heavy sections, such as cast iron or the like, but their surfaces to be covered by a sheet 3 are substantially the same in size. The carriers 81 each comprise two side walls 82, a bottom 83, and top surfaces 84 and 85 which are substantially equal in size to the flanges 13 and 14, respectively, of the carriers 5. While the side and bottom walls are substantially thick, the upper area to be covered by a sheet is the same or substantially so. One side 82 is provided with a bore 86 through which the stem 37 of the clamp 80 extends. The bore 86 increases in size at its lower end as indicated at 88 to receive the plunger end 89. A coil spring 90 is arranged about the stem 87 in the larger bore 88 and tends to urge the stem and plunger downwardly so that the sheet engaging shoe 91 will engage the sheet and clamp it tightly between the top 85 and the under surface of the shoe. One edge of the shoe may be beveled as at 92, so as to permit the sheet to be inserted readily in place. The sheet clamps 80 are opened to receive a sheet and then closed to hold the sheet at the correct time interval so as to assure proper operation with respect to other operable parts of the mechanism. The means for effecting movement of the shoe toward and away from clamp-

ing engagement may comprise cams 93 rigidly secured to parts of the supporting frame 1. These cams are positioned at proper intervals and are of a size and proportion sufficient to effect the clamping and unclamping operations at the precise time required.

The sheet guide members 4 may comprise upper and lower members 94 and 95, Fig. 3, each comprising spaced fingers 96. The fingers 96 on one member are positioned so as to register with the spaces 97 of its co-operating adjacent member, so that the ends 98 of the fingers on each member may overlap the sheet 3 on both sides, thereby tending to cause the sheet to become somewhat corrugated. This operation on the sheet tends to render the sheet less flexible and permits better positioning thereof. The opposed fingers 96 may extend a greater or lesser distance into the spaces 97 whereby the amount of pressure on the sheet will be increased or decreased.

The invention provides mechanism for wrapping, packaging or cartoning machines wherein a sheet of wrapping material is applied over and into constantly moving carries or buckets and then folded or arranged in a particular manner. The means for lining the carriers or buckets as they arrive successively in position comprises mechanism properly and completely synchronized with other operating parts of the machine so that certain operations are effected in a certain sequence and in proper timed relationship. The present mechanism which is also adaptable for use on existing machines and applied thereto as a part thereof, includes reciprocating means movable along with the constantly moving conveyor and at the same speed thereof for a predetermined length of time and then reversing itself so as to repeat the operation with respect to the next successive carrier. Moreover, the invention includes means vertically reciprocal during horizontal reciprocation of co-operative mechanism. The parts comprising the particular phase of the present invention are positive and efficient in operation, strong and durable in construction, and readily and economically made and assembled.

Changes may be made in the form, construction and arrangement of the parts without departing from the spirit of the invention or sacrificing any of its advantages, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims.

The invention is hereby claimed as follows:

1. A machine of the class described comprising a frame, a continuously moving conveyor, means for feeding a sheet of material to said conveyor, shaping means for said sheet slidably mounted on said frame independently of said conveyor, and means separate from said conveyor for moving said shaping means along with the conveyor and at the same speed thereof for a predetermined distance.
2. A machine of the class described comprising a continuously moving conveyor, means for feeding a sheet of material to said conveyor, means for shaping said sheet while on the conveyor, means for moving said shaping means along with the conveyor and at the same speed thereof, and means to return said shaping means to initial position in a direction opposite to the conveyor travel.
3. A machine of the class described comprising a frame, a continuously moving conveyor, means for feeding a sheet of material to said conveyor, clamping and shaping means for said

sheet mounted on said frame, means for moving said clamping and shaping means along with the conveyor and at the same speed thereof, and means to return said clamping and shaping means in a direction opposite to the conveyor travel.

4. In a machine of the class described comprising a plurality of continuously moving successive carriers, clamping means to position a sheet of material with respect to a carrier, means to move said clamping means along a predetermined path and at the same speed as the carriers, and means to reverse the path of travel of said clamping means after said means has traveled a predetermined distance.

5. In a machine of the class described comprising a plurality of continuously moving successive carriers, clamping means to position a sheet of material with respect to the leading end of a carrier, means to move said clamping means along a predetermined path and at the same speed as the carriers, and means for releasing said clamping means and returning the same in reverse direction for positioning a sheet with respect to the leading end of the next successive carrier.

6. In a machine of the class described comprising a plurality of continuously moving successive carriers, means to clamp a sheet of material to a carrier, means for shaping said sheet with respect to the carrier, means to move said clamping and shaping means along a predetermined path and at the same speed as the carriers, means to reverse the path of travel of said clamping and shaping means after said means has traveled a predetermined distance, and means to shift a part of said clamping and shaping means vertically.

7. Feed mechanism for feeding and positioning a sheet of material to successively spaced continuously moving recessed carriers comprising means for feeding a sheet to discharge position, means for fastening the leading edge of a sheet to a carrier, and means separate and independent of the carriers for shaping the sheet to the recessed body of the carrier during continuous movement of the carrier.

8. Feed mechanism for feeding and positioning a sheet of material to successively spaced continuously moving carriers comprising means for feeding a sheet to discharge position, pivotal clamping means for fastening the leading edge of a sheet to a carrier, reciprocating means for shaping the sheet in the body of the carrier, means moving the clamping and shaping means along with the carrier a predetermined distance, and means cooperating between said shaping means and said clamping means for effecting operation of said clamping means by the shaping means.

9. Feed mechanism for feeding and positioning a sheet of material to successively spaced continuously moving carriers comprising means for feeding a sheet to discharge position, pivotal clamping means for fastening the leading edge of a sheet to a carrier, reciprocating means for shaping the sheet in the body of the carrier, and means including a resilient connection between said shaping means and said clamping means for effecting operation of said clamping means in response to operation of the shaping means.

10. Feed mechanism for feeding and positioning a sheet of material to successively spaced continuously moving carriers comprising means for feeding a sheet to discharge position, means

for fastening the leading edge of a sheet to a carrier, means to position the sheet in the body of the carrier, means moving the last named means along with the carrier a predetermined distance, and means to return said means in a direction reverse to the movement of the carrier.

11. Feed mechanism for feeding and positioning a sheet of material to successively spaced continuously moving carriers comprising means for feeding a sheet to discharge position, means for fastening the leading edge of a sheet to a carrier, means to position the sheet in the body of the carrier, and means to reciprocate said last named means horizontally and vertically.

12. Feed mechanism for feeding and positioning a sheet of material to successively spaced continuously moving carriers comprising means for feeding a sheet to discharge position, means for fastening the leading edge of a sheet to a carrier, means to position the sheet in the body of the carrier, means to reciprocate said last named means vertically, and means to reciprocate said last named means horizontally during vertical reciprocation thereof.

13. Feed mechanism for feeding and positioning a sheet of material to successively spaced continuously moving carriers comprising a frame, means for feeding a sheet to discharge position, means for fastening the leading edge of a sheet to a carrier, means to position the sheet in the body of the carrier, means to reciprocate said last named means horizontally with respect to said frame, and means connected to a fixed portion of said frame for reciprocating said last named means vertically during horizontal movement thereof.

14. Feed mechanism for feeding and positioning a sheet of material to successively spaced continuously moving carriers comprising means for feeding a sheet to discharge position, means for fastening the leading edge of a sheet to a carrier, and means alternately movable in the direction of and in reverse to movement of a carrier to fold the sheet into the body of a moving carrier.

15. Feed mechanism for feeding and positioning a sheet of material to successively spaced continuously moving carriers comprising a frame, means for feeding a sheet to discharge position, a carriage slidably mounted on said frame, means mounted on said carriage for fastening the leading edge of a sheet to a carrier, means movable in said carriage to fold the sheet into a moving carrier, means to release the sheet when folded, and means for reciprocating said carriage on said frame.

16. In a machine of the class described comprising a plurality of successive carriers, means for moving the carriers continuously, means to feed a sheet of material to each carrier successively as it arrives at a predetermined position, means for attaching the sheet to the carrier, and pivoted bail means swingable in a fore-and-aft direction to support the leading end of the sheet between feeding position and attaching position.

17. In a machine of the class described comprising a plurality of successive carriers, means for moving the carriers continuously, means to feed a sheet of material to each carrier successively as it arrives at a predetermined position, means for attaching the sheet to the carrier whereby the sheet will move with its co-operative carrier, pivoted bail means swingable in a fore-and-aft direction to support the leading end

of the sheet between feeding position and attaching position, and vertically movable means for engaging and holding the trailing portion of said sheet against the carrier.

18. In a machine of the class described comprising a plurality of successive carriers, means for moving the carriers continuously, means to feed a sheet of material to each carrier successively as it arrives at a predetermined position, means for attaching the sheet to the carrier whereby the sheet will move with its co-operative carrier, and vertically movable tucker elements movable with the carrier over a portion of its travel and at the same speed thereof to fold the sheet into a carrier and to fold the trailing end of the sheet downwardly between successive carriers.

19. In a machine of the class described comprising a plurality of successive carriers, means for moving the carriers continuously, means to feed a sheet of material to each carrier successively as it arrives at a predetermined position, means for attaching the sheet to the carrier, a plurality of vertically movable tucker blades to position the sheet in its carrier, means to release the sheet from its attachment to a carrier, means moving the tucker blades along with the carrier, and means to reverse the movement in a direction opposite to the movement of the carrier to initial position for repeating the operation on a next succeeding carrier.

20. In a machine of the class described comprising a plurality of successive carriers, means for moving the carriers continuously, means to feed a sheet of material to each carrier successively as it arrives at a predetermined position, slidable means movable in the directional movement of the carriers for a predetermined distance, means to operate the slidable means, means to reverse the movement of the slidable means and return the same to initial position, sheet holding means mounted on the slidable means, means for operating the sheet holding means, sheet engaging means mounted on the slidable means for positioning a sheet with respect to a carrier in a predetermined manner, and means to reciprocate the last named means.

21. In a machine of the class described comprising a plurality of successive carriers, means for moving the carriers continuously, means to feed a sheet of material to each carrier successively as it arrives at a predetermined position, means for attaching the sheet to the carrier whereby the sheet will move with its co-operative carrier, vertically movable tucker elements movable with the carrier over a portion of its travel and at the same speed thereof to fold the sheet into a carrier and to fold the trailing end of the sheet downwardly between successive carriers, and a vertically movable holding element for engaging and holding the trailing end portion of said sheet against the carrier.

22. In a machine of the class described comprising a plurality of successive carriers, means for moving the carriers continuously, means to feed a sheet of material to each carrier successively as it arrives at a predetermined position, means for attaching the sheet to the carrier whereby the sheet will move with its co-operative carrier, a vertically movable cross-head, tucker means carried by said cross-head for folding the sheet into a carrier, a holding element carried by said cross-head for engaging and holding the trailing end portion of said sheet against the carrier, and means for reciprocating said cross-

head in the direction of and in reverse to the travel of said carriers.

23. In a machine of the class described comprising a plurality of successive carriers, means for moving the carriers continuously, means to feed a sheet of material to each carrier successively as it arrives at a predetermined position, means for attaching the sheet to the carrier whereby the sheet will move with its co-operative carrier, a vertically movable cross-head, tucker means carried by said cross-head for folding the sheet into a carrier, and a plurality of holding elements slidably mounted on said cross-head for engaging and holding the trailing end portion of said sheet against the carrier.

24. In a machine of the class described comprising a plurality of successive carriers, means

for moving the carriers continuously, means to feed a sheet of material to each carrier successively as it arrives at a predetermined position, means for attaching the sheet to the carrier, piv- 5
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into a carrier, a holding element slidably carried by said cross-head for engaging and holding the trailing end portion of said sheet against the carrier, and means for reciprocating said cross-head in the direction of and in reverse to the travel of 15
said carrier.

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