Jan. 3, 1950 W. G. MUELLER ET AL 2,493,590

APPARATUS FOR POSITIONING CORES

Filed Oct. 22, 1947 4 Sheets-Sheet 1

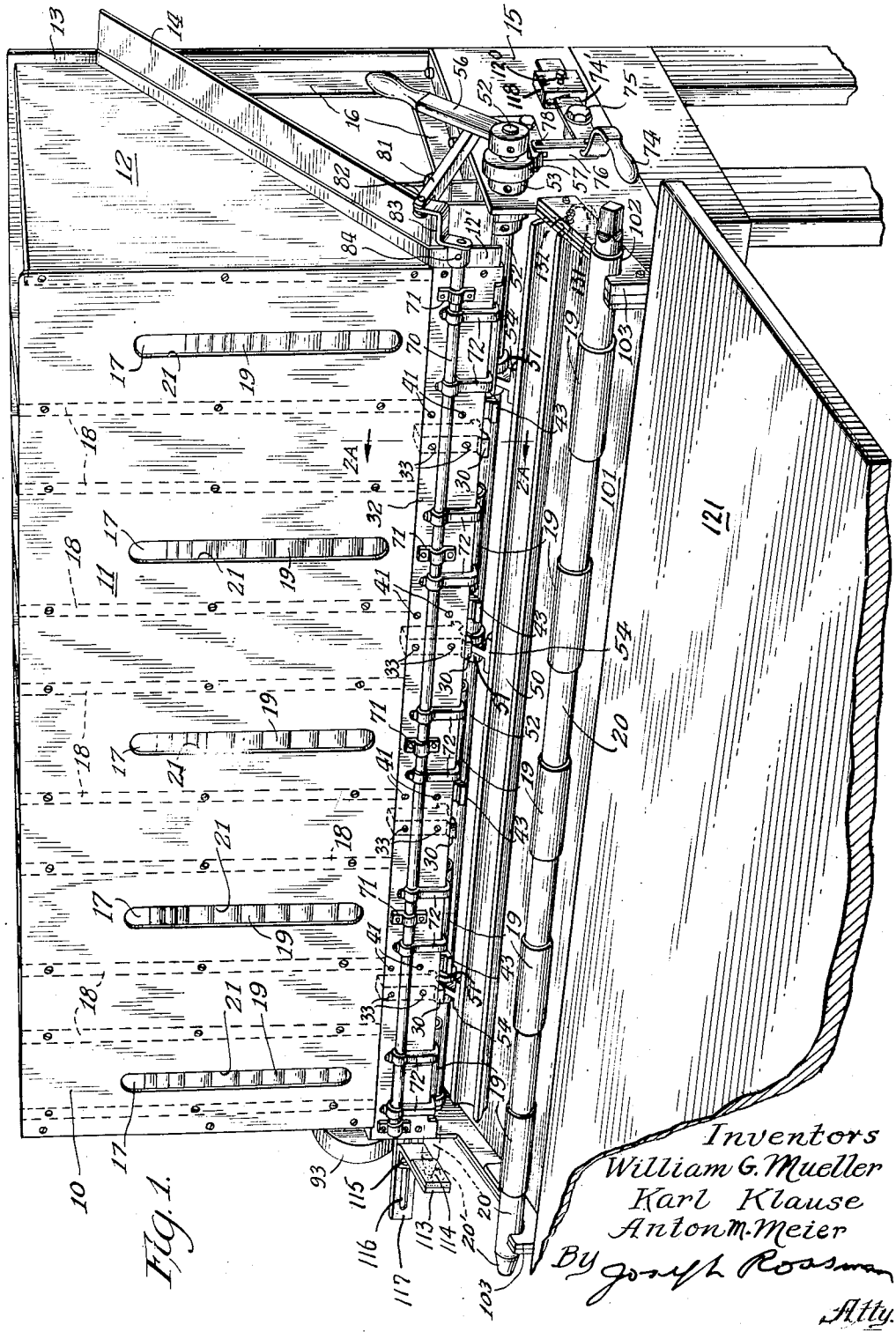

Fig. 1.

Inventors
William G. Mueller
Karl Klause
Anton M. Meier
By Joseph L. Roosma
Atty.

Jan. 3, 1950 W. G. MUELLER ET AL 2,493,590

APPARATUS FOR POSITIONING CORES

Filed Oct. 22, 1947 4 Sheets-Sheet 2

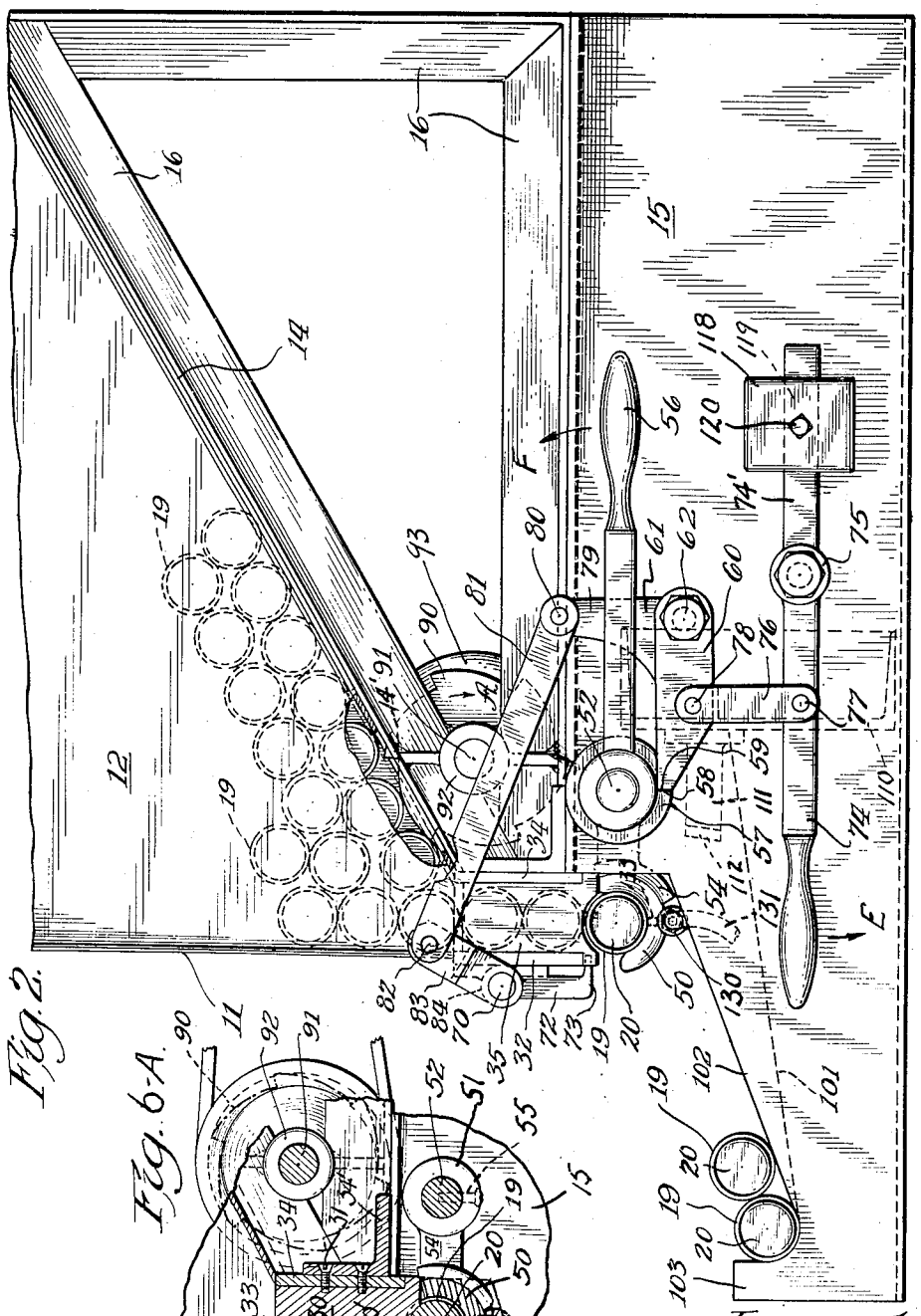

Fig. 2.

Fig. 6-A.

Inventors
William G. Mueller
Karl K. Klause
Anton M. Meier
By Joseph Rossman
Atty.

Jan. 3, 1950 W. G. MUELLER ET AL 2,493,590

APPARATUS FOR POSITIONING CORES

Filed Oct. 22, 1947 4 Sheets-Sheet 3

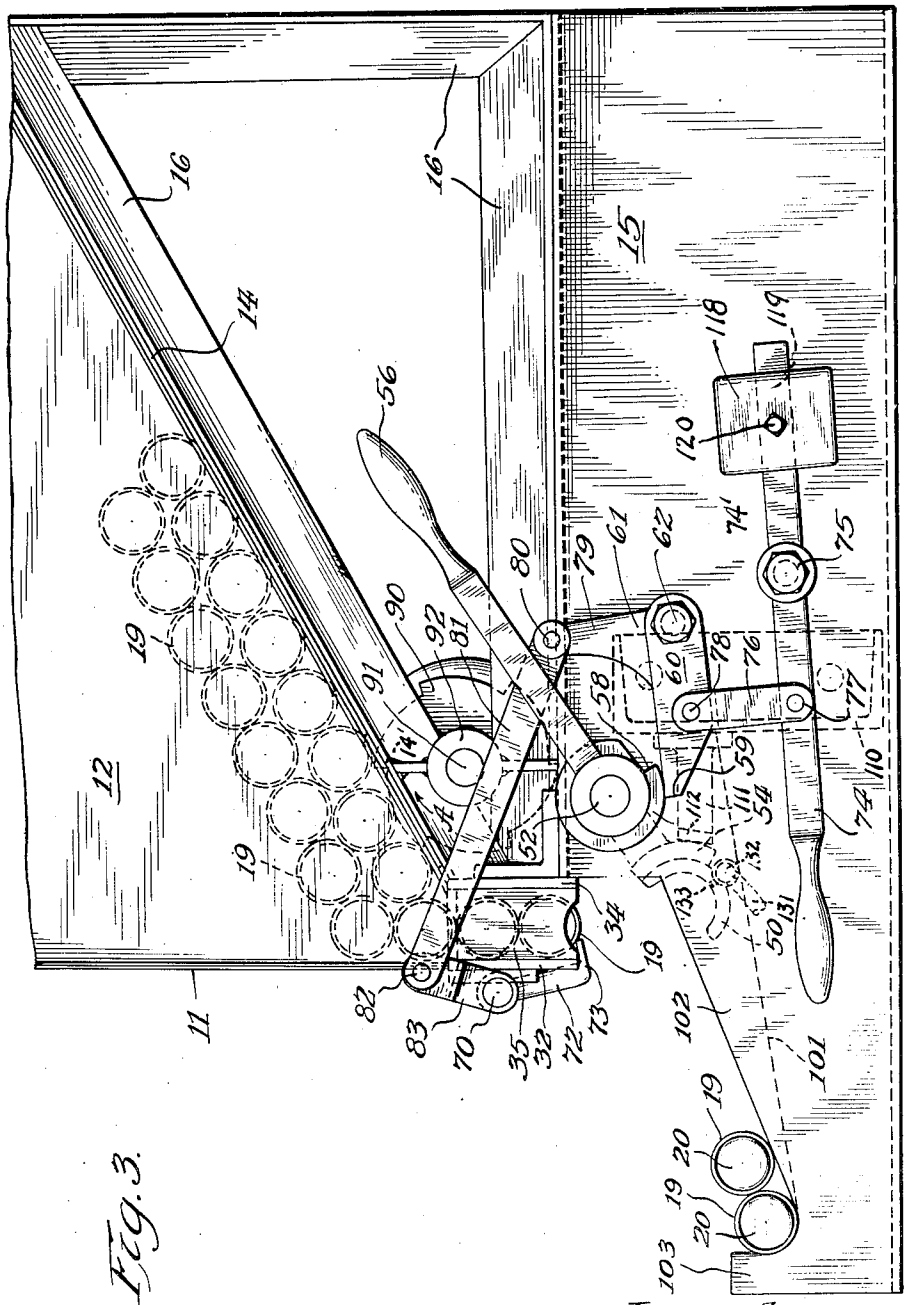

Fig. 3.

Inventors
William G. Mueller
Karl Klause
Anton M. Meier
By Joseph Rossman
Atty.

Jan. 3, 1950 W. G. MUELLER ET AL 2,493,590

APPARATUS FOR POSITIONING CORES

Filed Oct. 22, 1947 4 Sheets-Sheet 4

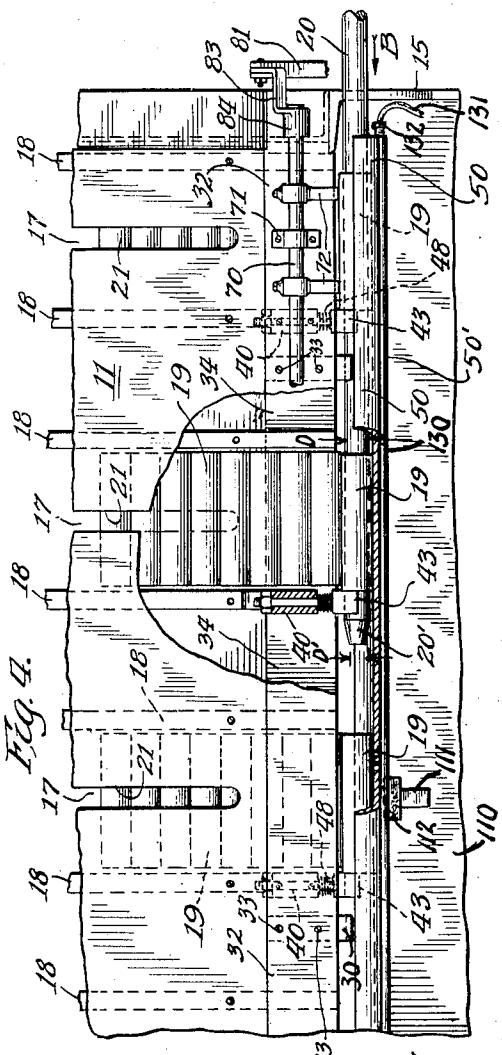

Fig. 4.

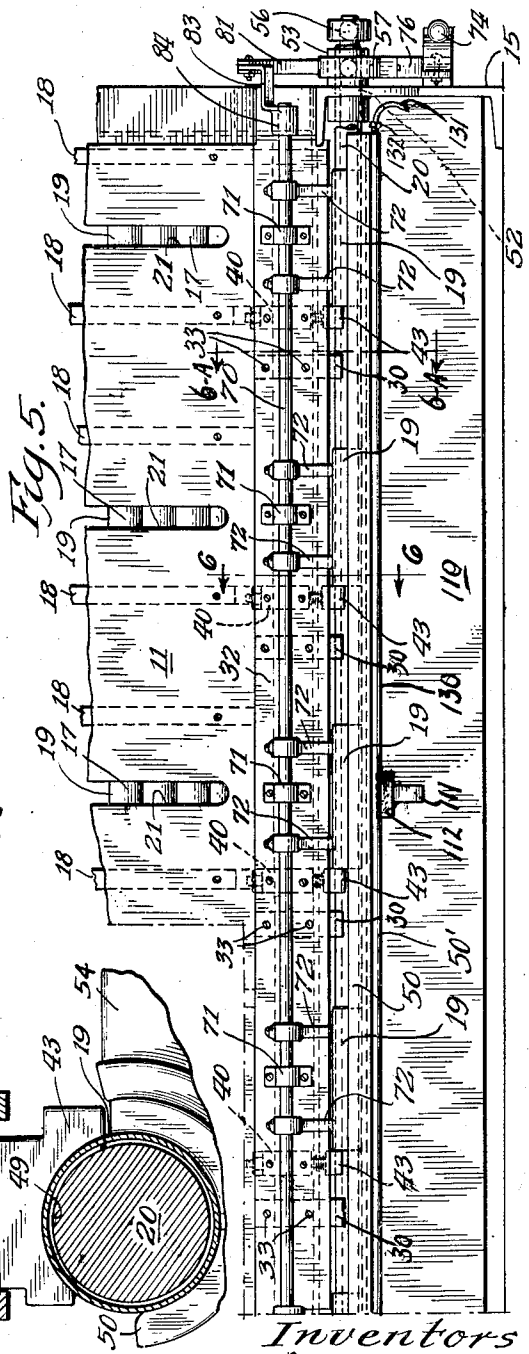

Fig. 5.

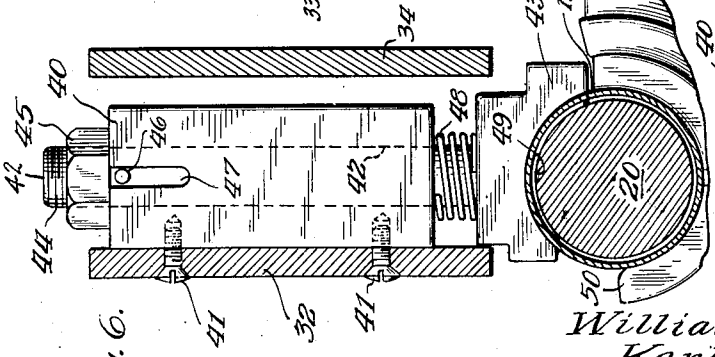

Fig. 6.

Inventors
William G. Mueller
Karl Klause
Anton M. Meier
By Joseph Rosamon
Atty.

Patented Jan. 3, 1950

2,493,590

UNITED STATES PATENT OFFICE

2,493,590

APPARATUS FOR POSITIONING CORES

William G. Mueller, Neenah, Karl Klause, Appleton, and Anton M. Meier, Menasha, Wis., assignors to Marathon Corporation, Rothschild, Wis., a corporation of Wisconsin

Application October 22, 1947, Serial No. 781,330

15 Claims. (Cl. 214—17)

1

The invention relates to improved means for loading and positioning a plurality of cores on a winder shaft.

It has been customary to rewind a web of a given width into a plurality of rolls each of lesser width by slitting the web as it is unwound from the parent roll and rewinding the plurality of strips onto a series of tubular, hollow cores which are disposed upon a rewinder shaft. If it is desired to form a plurality of rolls each having a width of twelve (12) inches from a web sixty (60) inches wide, the web is slit into five strips and wound onto five tubular cores disposed on the rewinder shaft. Heretofore, the tubular cores have been placed in edge to edge abutting relationship on the rewinder shaft by hand with the consequent loss of time and high labor costs.

It has been found desirable to use tubular cores having a length less than the widths of the strips being wound thereon. For example, a strip twelve (12) inches wide may satisfactorily be wound upon a tubular core only six (6) inches long, resulting in a saving of half the core material costs. The use of such shortened cores, however, has been prohibitive commercially because of the amount of time consumed in manually placing and accurately spacing the cores upon the rewinder shaft. The shortened core should be located centrally, widthwise, of the wound strip.

By means of our invention the tubular cores are quickly and easily positioned on the rewinder shaft in accurate spaced relationship with a minimum of time and effort.

Various objects and advantages of the invention will be evident from the following description and drawings, wherein:

Figure 1 is a front perspective view of the apparatus for loading a plurality of tubular cores upon a rewinder shaft in accurate spaced relation;

Figure 2 is an end view of the apparatus, partly in section, illustrating the core-supporting means or trough in its core-supporting position as the cores are being positioned on the rewinder shaft;

Figure 3 is a view similar to Figure 2 but showing the core-supporting means in retracted position and a trigger mechanism in operative position for holding the cores to be subsequently positioned on the rewinder shaft;

Figure 4 is a partial front view of the apparatus, partly in section, and broken away in parts, to illustrate the manner in which the rewinder shaft is being passed through the spaced supported tubular cores;

2

Figure 5 is also a partial front view of the apparatus after the rewinder shaft has been completely passed through the spaced tubular cores;

Figure 6 is a vertical section, on an enlarged scale, taken along the line 6—6 of Figure 5; and

Figure 6—A is a vertical section on an enlarged scale taken along the line 6A—6A of Figure 5.

Referring to the drawings, the apparatus includes a hopper 10 comprising a front wall 11, side walls 12, a rear wall 13 and a sloping bottom plate 14, all preferably of sheet metal and suitably bolted or welded together. The sloping bottom plate 14 extends from the rear wall 13 downwardly at an angle of approximately 35°. Within the hopper 10 the bottom plate 14 is cut out or formed so that its lowest extremity ity is spaced from the front plate 11 a distance slightly greater than the diameter of a core. The hopper 10 rests and is fastened on spaced channel supports 15 including angle members 16 supporting the bottom plate 14. The hopper 10 is separated into a plurality of spaced core storage compartments or magazines 17 by a series of spaced, vertically disposed plates 18, preferably of sheet metal, bolted to the front and rear walls 11 and 13. The core storage compartments 17 are slightly wider than the length of the tubular cores 19, which preferably are of spirally wound carboard. The core storage magazines or compartments 17 are spaced from each other a distance substantially equal to the distance it is desired to space the cores 19 from each other on a rewinder shaft 20. As shown in Figure 4, the rewinder shaft 20 having a diameter D is formed with a tapered end 20' having a smaller diameter D' at its end. The hopper 10 is open at the top to permit the core storage compartments 17 to be replenished. The front wall 11 of the hopper 10 has elongated, vertically disposed slots 21 opening onto the core storage compartments 17 in order that the operator may visually determine whether or not the core storage compartments 17 require refilling.

Preferably, a plurality of rewinder shaft guides 30 are fastened by bolts 31 to a vertically disposed plate 34 extending the width of the hopper 10. As shown in Figure 6A, the plate 34 is supported in fixed position by an L-shaped bar 34', which is supported at its ends by the channel supports 15. The bolts 31 secure together the guides 30, the plate 34 and the bar 34'. The rewinder shaft guides 30 are located in the areas of the hopper 10 intermediate the core storage

compartments 17 and extend below the lower extremity of the front plate 11. A plate 32, preferably of sheet metal and of substantially the same height as the plate 34, is secured to the opposite faces of the guide bars 30 by the bolts 33. The plate 32 is disposed in abutting relation with the lower horizontal edge of the front plate 11 and extends across the width of the hopper 10. The ends of the plate 32 are also suitably fastened to extensions 12' of the side walls 12. The bottom face of each guide 30 has formed therein a concave portion 30' having substantially the same radius of curvature as the rewinder shaft 20. The plates 32 and 34 are spaced apart a distance slightly greater than the diameter of a core 19. It is understood that the plate 32 may be formed integral with the front wall plate 11 instead of being separately formed. The plates 32 and 34 form vertically disposed passageways 35, which lead from each of the core storage compartments 17. Due to the incline of the bottom plate 14, the cores 19 will tend to fall into the passageways 35.

A plurality of core stop mechanisms comprising holders 40 are bolted at 41 to the inside surface of the plate 32. As shown in Figure 6, a guide member 42 having secured to its lower end a core stop 43 is guided for vertical movement in an opening in the core stop holder 40. The upper end only of the guide member 42 is threaded at 44 for engagement with an adjusting nut 45. The guide member 42 has a pin 46 fixed thereto which in conjunction with a slot 47 formed in the core stop holder 40 will prevent rotation of the guide member 42, and the core stop 43, when the vertical position of the core stop 43 is adjusted by means of the adjusting nut 45. A compression spring 48 encircles the guide member 42 intermediate the bottom of the core stop holder 40 and the top surface of the core stop 43. The lower face of the core stop 43 is adjusted by means of the adjusting nut 45. The lower face of the core stop 43 is concavely formed at 49 on a radius equal to the radius of the rewinder shaft 20.

The core stop 43 may be adjusted to the desired lowermost position by means of the adjustable nut 45. The core stop 43 in its adjusted position, however, may be moved vertically upward against the force exerted by the spring 48 when pressure is applied upward against the curved face 49 by the shaft 20. The guide member 42 will slide upwardly in the opening in the core stop holder 40 causing the nut 45 to be raised above the upper surface of the core stop holder 40. When the upward pressure upon the curved face 49 is relieved, the spring 48 will cause the core stop 43 to come down to the position limited by the location of nut 45 on the threaded portion 44 of the guide member 42.

As shown in Figures 1, 4 and 5, the core stop mechanisms are located immediately adjacent and to the left of each passageway 35 leading from each of the core storage compartments 17. The action of the core stops 43 upon the cores 19 to position them upon the rewinder shaft 20 will be subsequently described.

A trough 50, having a concave face or the same radius of curvature as the outer circumference of a core 19, has secured to its rear face, as by welding, a plurality of spaced trough holder brackets 54. The other end of each trough holder bracket 54 comprises a collar 51 which encircles and is fixedly secured by a pin 55 (see Figure 6A) to a trough shaft 52 journaled in bearings 53 which

are fixed in the supporting channels 15 at each end of the hopper 10. A channel member 110 is mounted between the supporting channels 15 and extends the width of the hopper. The channel member 110 is disposed below and to the rear of trough shaft 52. A trough stop bracket 111 is secured to the channel member 110 intermediate its ends, as by welding. The face of the trough stop bracket 111 has secured thereto a pad 112 of resilient material such as rubber. The resilient material faced bracket 111 serves to limit the movement of the trough 50 when it is articulated to its downward or inoperative position where a trough holder bracket 54 contacts the resilient pad 112 (see Figure 3).

In order to assure that the cores 19 are each located on the exact desired segment of the rewinder shaft 20, it is preferred to provide a rewinder shaft stop 113 at one end of the trough 50. As shown in Figure 1, the rewinder shaft stop 113 comprises an L-shaped bracket provided with a pad 114 of resilient material such as rubber secured to the vertical face of one portion of the bracket. The portion at right angles to the resilient covered portion has an opening therein through which a bolt 115 is passed. The bolt 115 also passes through a horizontally disposed slot 116 in a bar 117 which is suitably secured to the hopper supporting member 15. The position of the rewinder shaft stop 113 may be adjusted by sliding the stop in the slot 116 to the desired position and then tightening the stop in fixed position by means of a nut cooperable with the bolt 115 on the rear face of the slotted bar 117. When the tapered end 20' of the rewinder shaft 20 hits the resilient material covered face of the stop 113, the precise positioning of the cores 19 on the rewinder shaft 20 is assured.

One end of the shaft 52 has fixedly secured thereto a hand lever 56. By pressing downwardly upon the lever 56, in the position shown in Figures 1 and 3, the shaft 52 is rotated causing the trough 50, through the holder brackets 54, to be swung upwardly to the position shown in Figures 2, 4 and 5. The trough 50 is locked in this upward, hopper engaging position by means of a locking member 57 fixed for rotation with the shaft 52. The locking member 57 has a notch 58 which cooperates with the nose 59 of a lever arm 60, part of a bell crank 61 fulcrumed on a pin 62 mounted on the support 15, and is part of a linkage to be subsequently described.

To prevent the cores 19 from falling out of the passageways 35 when the trough 50 is retracted to the position shown in Figures 1 and 3, a trigger mechanism is provided. A trigger shaft 70 is journalled in a plurality of brackets 71 which are suitably fastened to the outer face of the plate 32. A series of triggers 72, each having a core holding portion 73 substantially at a right angle to the trigger, are fixedly mounted for rotation with the trigger shaft 70. Preferably, the triggers 72 are located on the trigger shaft 70 so that a pair will engage a core 19 in each passageway 35.

To rotate the trigger shaft 70 and bring the triggers 72 into or out of engagement with the cores 19, a trigger actuating linkage is provided. This linkage includes a hand lever 74 pivotally mounted on the support 15 at 75. The lever 74 is connected to the lever arm 60 of the bell crank 61 by a connecting bar 76 by pins 77 and 78. The lever 74 is provided with an extension 74' upon which a counterweight 118 is mounted. The counterweight 118 possesses an opening 119

therethrough through which the extension 74' passes. The counterweight may be moved to any desired position on the extension 74' and fixed in such position by means of a set screw 120. The other arm 79 of the bell crank 61 is connected at 80 to one end of a bar 81. The bar 81 is slotted at its other end where one end of an L-shaped lever arm 83 is received and engaged by a pin 82. The lever arm 83 is fixed at its other end to the trigger shaft 70 by a suitable collar 84.

To assure that the cores 19 are properly fed from the core storage compartments 17 into the passageways 35, a pair of spaced agitators 90 are disposed in the lower portion of each core storage compartment 17 through openings 14' formed in the sloping bottom plate 14. The agitators 90 comprise notched wheels mounted on a shaft 91 for rotation in the direction of the arrow A. The shaft 91 is journalled in bearings 92 suitably supported in the frame comprising the channel members 16. One end of the shaft 91 is connected for rotation to a pulley and drive belt connected to a suitable source of power (not shown). The pulley and belt are enclosed in a housing 93.

A receiving stand is provided beneath the trough 50 and extends forward of the hopper 10. The receiving stand comprises a downwardly sloping support 101 disposed in a plane to permit the trough 50 to be swung down until a trough holder bracket 54 stops against the resilient faced trough holder stop bracket 111. A guide runner 102, formed with an upraised portion 103 at the end remote from the hopper 10, is secured to each side of the sloping support 101. The guide runners 102 also slope downwardly. As shown in Figure 1, a table 121 may be placed adjacent the receiving stand to facilitate storing a plurality of rewinder shafts.

The apparatus hereinbefore described is operated as follows. As shown in Figures 2, 4 and 5 the trough 50 is in its upward core-supporting position and releasably locked in such position by the notch 58 of the locking member 57 and the nose 59 of the lever arm 60. In this position the trough 50 supports a series of evenly spaced cores 19 which have fallen from the passageways 35 leading from each of the spaced core storage compartments 17, the rotating agitators 90 aiding the feeding of the cores. The lowermost position of the core stop 43 has been adjusted by the adjustable nut 45 so that its concave face 49 will be intermediate the diameter D of the rewinder shaft 20 and the smaller diameter D' of the shaft at the extremity of its tapered portion 20 when the rewinder shaft is inserted in the trough 50. In this initial position the core retaining triggers 72 are retracted so that their core holding portions 73 are outside of the passageways 35. The rewinder shaft stop 113 and the counterweight 118 are adjusted and fixed in their desired positions.

A rewinder shaft 20, with the tapered portion 20' foremost, is inserted in the opening formed by the trough 50 and the hopper 10 and thrust in the direction of the arrow B (Figure 4) through the openings in the aligned hollow, tubular cores 19. The concave faces 30' of the guide bars 30 assure that the rewinder shaft 20 will be properly guided through the aligned, hollow, tubular cores 19. When the nose of the rewinder shaft 20 hits the stop 113, accurate positioning of the cores 19 upon the rewinder shaft is attained. The effect of thus thrusting the rewinder shaft

20 is to cause the core stops 43 to rise up on the tapered portion 20' of the rewinder shaft 20 onto the outer circumference of the shaft. The compression spring 48 will cause the concave face 49 of each core stop 43 to firmly press against the shaft 20. The edge of each core 19 bears against its respective core stop 43. The movement of the cores 19 beyond the core stops 43 is prevented while permitting the shaft 20 to slide through the central opening of each core. This action is best illustrated in Figures 4 and 6. In this manner, the desired number of tubular cores are accurately positioned in spaced relationship on the shaft with but a single thrust of the shaft 20.

The operator then presses down on the hand lever 74 in the direction of the arrow E (Figure 2), which will cause the notch 58 of the locking member 57 to disengage from the nose 59 of the lever arm 60 and the lever arm 56 to move upwardly in the direction of the arrow F. The weight of the rewinder shaft 20 will cause the trough 50 to swing down against the resilient material faces through stop bracket 111 and discharge the core loaded shaft 20 onto the inclined runners 102 where it rolls down to stop at the raised portions 103. As the locking member 57 is disengaged from lever arm 60, the trigger linkage is actuated to cause the core holding portions 73 of the triggers 72 to move into each passageway 35 and thereby prevent the stored cores 19 from falling out while the trough 50 is down. The core loaded shaft 20 may then be placed on the table 121 for subsequent use in the rewinder. This stage of the operation is shown in Figures 1 and 3.

To ready the apparatus for another core loading and positioning operation it is simply necessary to press downwardly on the hand lever 56 from the position shown in Figure 3 to the position shown in Figure 2. This downward pressure will rotate the shaft 52 and locking member 57 clockwise. The counterweight 118 will cause the hand lever 74 to move upwardly thereby causing the nose 59 of the lever arm 60 to engage the notch 59 through the motion imparted to the connecting bar 76 by the hand lever 74. The mechanism has now assumed the position shown in Figure 2 with the trough 50 locked in its upward core loading position and the core holding triggers 72 retracted out of the passageways 35. Another series of cores 19 which have been fed by the sloping bottom 14 and the agitators 90 into their proper positions in the passageways 35 are ready to be loaded and positioned upon another rewinder shaft 20.

In lieu of the mechanical core stop mechanisms for loading the hollow, tubular cores upon a rewinder shaft in predetermined spaced relation, vacuum means may be utilized. As shown in Figures 1, 2, 3, 4, 5, and 6—A, a pipe line 130 is set in and secured to the rear face of the trough 50 and extends the entire length thereof. The pipe line 130 is closed at one end thereof. The other end of the pipe line 130 is connected to vacuum tank and pump (not shown) by a flexible hose 131 by means of a connection 132 between the pipe line and flexible hose. A plurality of spaced ports 133 extend through the trough 50 and connect the pipe line 130 with the inner concave face of the trough 50. The ports 133 are located in the trough 50 where they will be covered by the cores 19 which are fed from the core store compartments 17. Preferably, at least two spaced ports are used opposite each storage com-

partment. But for the elimination of the core stop mechanisms, and the addition of a suitable resilient lining in trough 50 to form a proper seal for the vacuum, the apparatus described is otherwise the same.

With the trough 50 in its upward position and the mechanism as shown in Figures 2, 4 and 5, a vacuum is applied to the pipe line 130. The cores 19 are pulled against a trough 50 by the reduction in air pressure through the ports 133. The application of the vacuum maintains the cores 19 in predetermined spaced relation and maintains the cores in such position, resisting lateral displacement, as a rewinder shaft is thrust through the aligned cores. After a rewinder shaft 20 is loaded, the vacuum is released. The trough 50 is retracted and the trigger mechanism actuated in the same manner as heretofore described.

The apparatus described is suitable for preparing for winding continuous sheet materials of waxed paper, toilet tissue, textiles, regenerated cellulose, metal foil, or any other flexible material. If it is desired to wind the continuous sheet material upon cores having a square, hexagonal or other contour, the trough, core stop face, and rewinder shaft are given corresponding contours.

It is within the scope of the invention to omit or retract the core stop mechanisms and dispose the cores on a rewinder shaft in abutting, edge-to-edge, rather than spaced relation. The core storage compartments will then be immediately adjacent each other rather than spaced as described. Also the guide bars 30 will be removed. In this manner the cores may be positioned on the rewinder shaft in edge-to-edge relationship with but a single movement of the rewinder shaft through the aligned cores. If desired, a single core stop mechanism may be positioned on the side of the apparatus remote from the side in which the rewinder shaft enters the aligned cores. This modification insures that all of the cores will remain on the shaft. This manner of positioning the cores upon a rewinder shaft in edge-to-edge abutting relationship results in a substantial saving of time and labor as compared with the present manual operation of slipping the cores individually onto the shaft.

Loading the cores onto the rewinder shaft in edge-to-edge, abutting relationship may also be accomplished by suitable disposition of the ports 133 where they will be covered by the abutting cores. The vacuum when applied will hold the cores against lateral displacement in the trough as a rewinder shaft is thrust through the aligned cores.

The present invention may be embodied in other specific forms without departing from the essential attributes thereof. It is desired that the present specific embodiment be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the aforegoing description to indicate the scope of the invention.

We claim:

1. Apparatus for positioning a plurality of tubular, hollow cores upon a shaft in predetermined spaced relation comprising a plurality of spaced, core-storage compartments, a passageway leading from each compartment dimensioned to allow the passage of cores individually therethrough, a trough, means for moving said trough to a position beneath said passageways to support in alignment a core from each of said passageways, spaced core stops adjacent each of said passageways adapted to retain said cores laterally in predetermined spaced relation while permitting said shaft to be thrust through said cores, means intermediate said passageways for guiding said shaft, means for stopping the end of said shaft and means for engaging said cores in said passageways when said trough is moved out of core supporting position.

2. Apparatus for positioning a plurality of tubular, hollow cores upon a shaft having a tapered end in predetermined spaced relation comprising a plurality of spaced, core-storage compartments, a passageway leading from each compartment dimensioned to allow the passage of cores individually therethrough, a trough cooperable with all of said passageways adapted to support in alignment a core from each of said passageways and a resiliently and adjustably mounted core stop adjacent each of said passageways adapted to retain said cores laterally in predetermined spaced relation while permitting said shaft to be thrust through said cores, said core stops each having a contour substantially the same as the contour of the non-tapered portion of said shaft.

3. Apparatus for positioning a plurality of tubular, hollow cores upon a shaft having a tapered end in predetermined spaced relation comprising a plurality of spaced, core-storage compartments, a passageway leading from each compartment dimensioned to allow the passage of cores individually therethrough, said passageways being formed by two spaced vertically disposed plates, a trough having a surface of substantially the same contour as the outer surface of said cores, means for moving said trough to a position beneath said passageways to receive and support in alignment a core from each of said passageways, spaced core stops, said core stops being spring mounted for vertical movement intermediate said plates and said core stops each having a contour substantially the same as the contour of the non-tapered portion of said shaft whereby said cores are retained laterally in predetermined spaced relation while permitting said shaft, tapered end foremost, to be thrust through said aligned cores.

4. Apparatus for positioning a plurality of tubular, hollow cores upon a shaft having a tapered end in predetermined spaced relation comprising a plurality of spaced, core-storage compartments, a passageway leading from each compartment dimensioned to allow the passage of cores individually therethrough, said passageways being formed by two spaced vertically disposed plates, a trough having a surface of substantially the same contour as the outer surface of said core adapted to support said cores in alignment, means for moving said trough into and out of core supporting position, a core stop adjacent each of said passageways, said core stops being positioned intermediate said plates and spring mounted for vertical movement, said core stops each having a face of substantially the same contour as the non-tapered portion of said shaft whereby said cores are retained laterally in predetermined spaced relation while permitting said shaft, tapered end foremost, to be thrust through said aligned cores and means for engaging said cores in said passageways when said trough is moved out of core supporting position, said means being actuated by the movement of said trough.

5. Apparatus for positioning a plurality of tubular, hollow cores upon a shaft having a tapered end in predetermined spaced relation compris-

ing a plurality of spaced, core-storage compartments, a passageway leading from each compartment dimensioned to allow the passage of cores individually therethrough, said passageways being formed by two spaced vertically disposed plates, a trough having a surface of substantially the same contour as the outer surface of said core adapted to support said cores in alignment, means for moving said trough into and out of core supporting position, a core stop adjacent each of said passageways, said core stops being positioned intermediate said plates and spring mounted for vertical movement, said core stops each having a face of substantially the same contour as the non-tapered portion of said shaft whereby said cores are retained laterally in predetermined spaced relation while permitting said shaft, tapered end foremost, to be thrust through said aligned cores, means intermediate said passageways for guiding said shaft, means for stopping the end of said shaft and means for engaging said cores in said passageways when said trough is moved out of core supporting position, said means being actuated by the movement of said trough.

6. Apparatus for positioning a plurality of tubular, hollow cores upon a shaft in predetermined spaced relation comprising a plurality of spaced, core-storage compartments having a downwardly inclined bottom, a passageway leading from each compartment dimensioned to allow the passage of cores individually therethrough, a pair of spaced rotating agitators in each of said compartments for feeding said cores to said passageways, a trough, means for moving said trough beneath said passageways to receive and support in alignment a core from each of said passageways and a core stop adjacent each of said passageways adapted to retain said cores laterally in predetermined spaced relation while permitting said shaft to be thrust through said cores.

7. Apparatus for positioning a plurality of tubular, hollow cores upon a shaft in predetermined spaced relation comprising a plurality of spaced, core-storage compartments, a passageway leading from each compartment dimensioned to allow the passage of cores individually therethrough, a trough shaft, a trough fixedly secured to said shaft by extensions, a trigger shaft, triggers fixed to said trigger shaft, means for rotating said trough shaft to cause said trough to support in alignment a series of cores, means for rotating said trigger shaft to cause said triggers to engage said cores in said passageways when said trough is out of core supporting position and to retract said triggers when said trough is in core supporting position and a core stop adjacent each of said passageways adapted to retain said cores laterally in predetermined spaced relation while permitting said shaft to be thrust through said cores.

8. Apparatus for positioning a plurality of tubular, hollow cores upon a shaft in predetermined spaced relation comprising a plurality of spaced, core-storage compartments, a passageway leading from each compartment dimensioned to allow the passage of cores individually therethrough, said passageways being formed by two spaced, vertically disposed plates, a trough cooperable with all of said passageways adapted to support in alignment a core from each of said passageways, spaced core stop holders located intermediate said plates and adjacent each of said passageways, said core stop holders being secured to one of said plates, a guide member adjustably disposed for vertical movement within each of said core stop holders, a spring mounted core stop secured to each guide member and said core stops each having a surface of substantially the same contour as said shaft.

9. Apparatus for positioning a plurality of tubular, hollow cores upon a shaft in predetermined spaced relation comprising a plurality of spaced core storage compartments, a passageway leading from each compartment dimensioned to allow the passage of cores individually therethrough, a trough shaft, a trough fixedly secured to said shaft by extensions, trough locking means fixed to said trough shaft, a trigger shaft, triggers fixed to said trigger shaft, a hand lever for rotating said trough shaft to cause said trough to move beneath said passageways to support a series of cores in spaced alignment, a trigger linkage including a locking member engageable with said trough locking means connected to said trigger shaft whereby the disengagement of the trough locking means and the locking member will cause the triggers to enter said passageways and hold said cores therein.

10. Apparatus for positioning a plurality of tubular, hollow cores upon a rewinder shaft having a tapered end in predetermined spaced relation comprising a plurality of spaced core-storage compartments, said compartments having a downwardly inclined bottom plate, a passageway leading from each compartment at its lowest level dimensioned to allow the passage of cores individually therethrough, said passageways being formed by two spaced, vertically disposed plates, a pair of spaced rotating agitators in each of said compartments, for feeding said cores to said passageways, means intermediate said passageways for guiding said shaft, a trough shaft, a trough fixedly secured to said shaft by extensions, trough locking means fixed to said trough shaft, a trigger shaft, triggers fixed to said trigger shaft, a hand lever for rotating said trough shaft to cause said trough to move beneath said passageways to support a series of cores in spaced alignment, a trigger linkage including a locking member engageable with said trough locking means connected to said trigger shaft whereby the disengagement of the trough locking means and the locking member will cause the triggers to enter said passageways and hold said cores therein, spaced core stop holders located intermediate said plates and adjacent each of said passageways, said core stop holders being secured to one of said plates, a guide member adjustably disposed for vertical movement within each of said core stop holders, a spring mounted core stop secured to each guide member, said core stops each having a surface of substantially the same contour as said rewinder shaft and an adjustable bracket for stopping the end of said rewinder shaft.

11. Apparatus for positioning a plurality of tubular, hollow cores upon a shaft in predetermined spaced relation comprising a plurality of spaced, core-storage compartments, a passageway leading from each compartment dimensioned to allow the passage of cores individually therethrough, a trough cooperable with all of said passageways adapted to support in alignment a core from each of said passageways, a vacuum pipe line secured to the rear face of said trough, a plurality of ports extending from said pipe line to the inner face of said trough, said ports being positioned so that said ports are covered by said cores whereby said

cores will be retained laterally in predetermined spaced relation while permitting said shaft to be thrust through said cores.

12. Apparatus for positioning a plurality of tubular, hollow cores upon a shaft in predetermined spaced relation comprising a plurality of spaced, core-storage compartments, a passageway leading from each compartment dimensioned to allow the passage of cores individually therethrough, a trough, means for moving said trough into and out of core supporting position, a vacuum pipe line secured to the rear face of said trough, a plurality of ports extending from said pipe line to the inner face of said trough, said ports being positioned so that said ports are covered by said cores, whereby said cores will be retained laterally in predetermined spaced relation while permitting said shaft to be thrust through said cores and means for engaging the cores in said passageways when said trough is moved out of core supporting position, said means being actuated by the movement of said trough.

13. Apparatus for positioning a plurality of tubular, hollow cores upon a rewinder shaft having a tapered end in predetermined spaced relation comprising a plurality of spaced core-storage compartments, said compartments having a downwardly inclined bottom plate, a passageway leading from each compartment at its lowest level dimensioned to allow the passage of cores individually therethrough, said passageways being formed by two spaced, vertically disposed plates, a pair of spaced rotating agitators in each of said compartments, for feeding said cores to said passageways, means intermediate said passageways for guiding said shaft, a trough shaft, a trough fixedly secured to said shaft by extensions, trough locking means fixed to said trough shaft, a trigger shaft, triggers fixed to said trigger shaft, a hand lever for rotating said trough shaft to cause said trough to move beneath said passageways to support a series of cores in spaced alignment, a trigger linkage including a locking member engageable with said trough locking means connected to said trigger shaft whereby the disengagement of the trough locking means and the locking member will cause the triggers to enter said passageways and hold said cores therein, a vacuum pipe line secured to the rear face of said trough, a plurality of ports extending from said pipe line to the inner face of said trough, said ports being positioned so that said ports are covered by said cores, whereby said cores will be retained laterally in predetermined spaced relation while permitting said rewinder shaft to be thrust through said cores and an adjustable bracket for stopping the end of said rewinder shaft.

14. In apparatus for positioning a tubular, hollow core upon a shaft, means for retaining said core against lateral movement comprising a core stop holder, a guide member adjustably mounted for sliding engagement within said core holder and a resiliently mounted core stop secured to said guide member, said core stop having a surface of substantially the same contour as said shaft.

15. In apparatus for positioning a tubular hollow core upon a shaft, means for retaining said core against lateral movement comprising a core stop holder, a vertically disposed opening therein, a guide member disposed in said opening, a core stop secured to the lower end of said guide member, said core stop having a surface of substantially the same contour as said shaft, a spring intermediate said core stop and said core stop holder, means for adjusting said core stop in a vertical plane and means for preventing rotation of said core stop.

WILLIAM G. MUELLER.
KARL KLAUSE.
ANTON M. MEIER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,229,075	Harwood	June 5, 1917
1,302,280	Batchelder	Apr. 29, 1919