Sept. 27, 1960 L. IVERSEN 2,954,135

COIL TRANSFER MECHANISM

Filed June 12, 1957 5 Sheets-Sheet 1

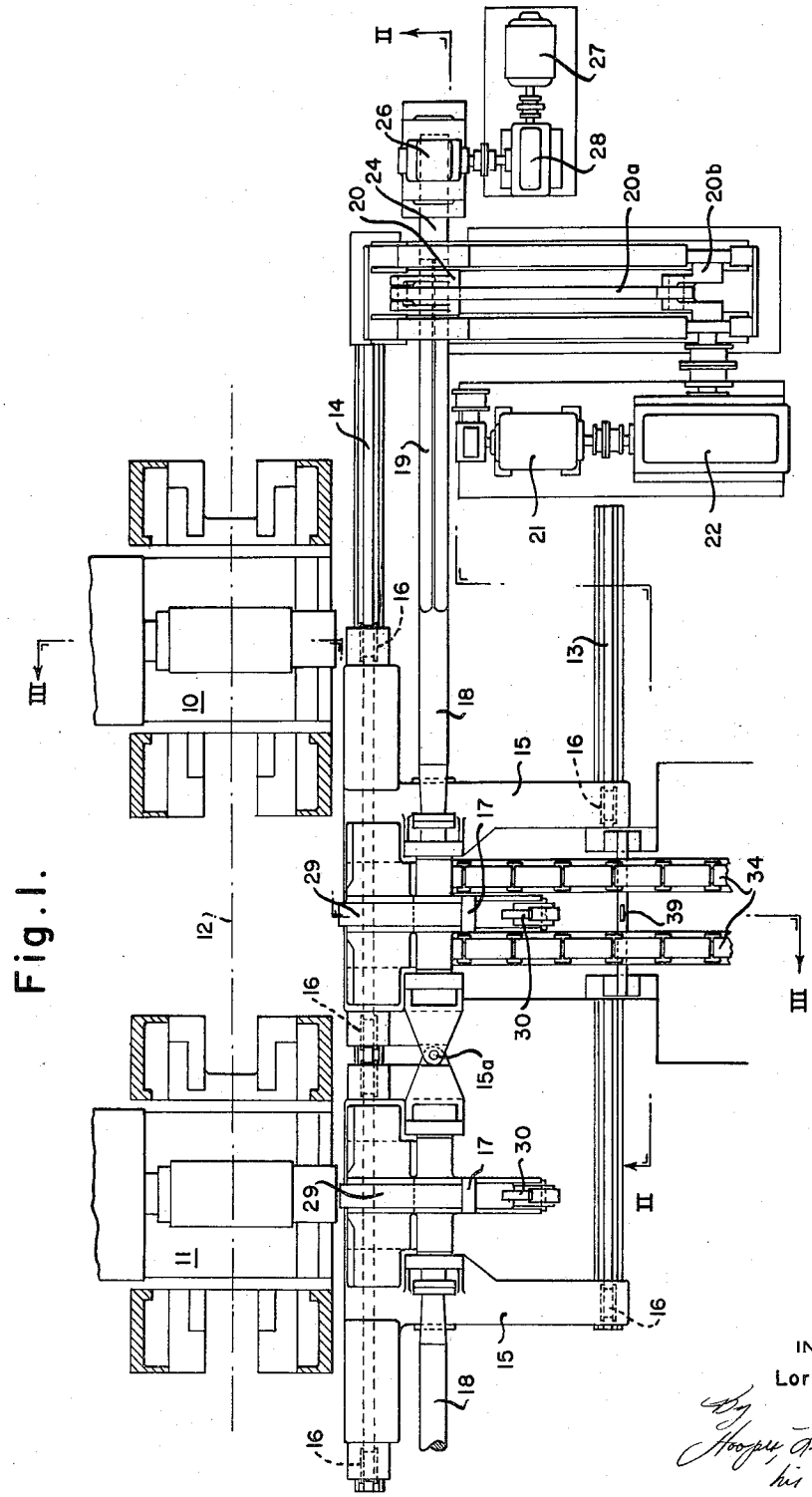


Fig. 1.

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By Hoopes, Leonard & Buell
his attorneys

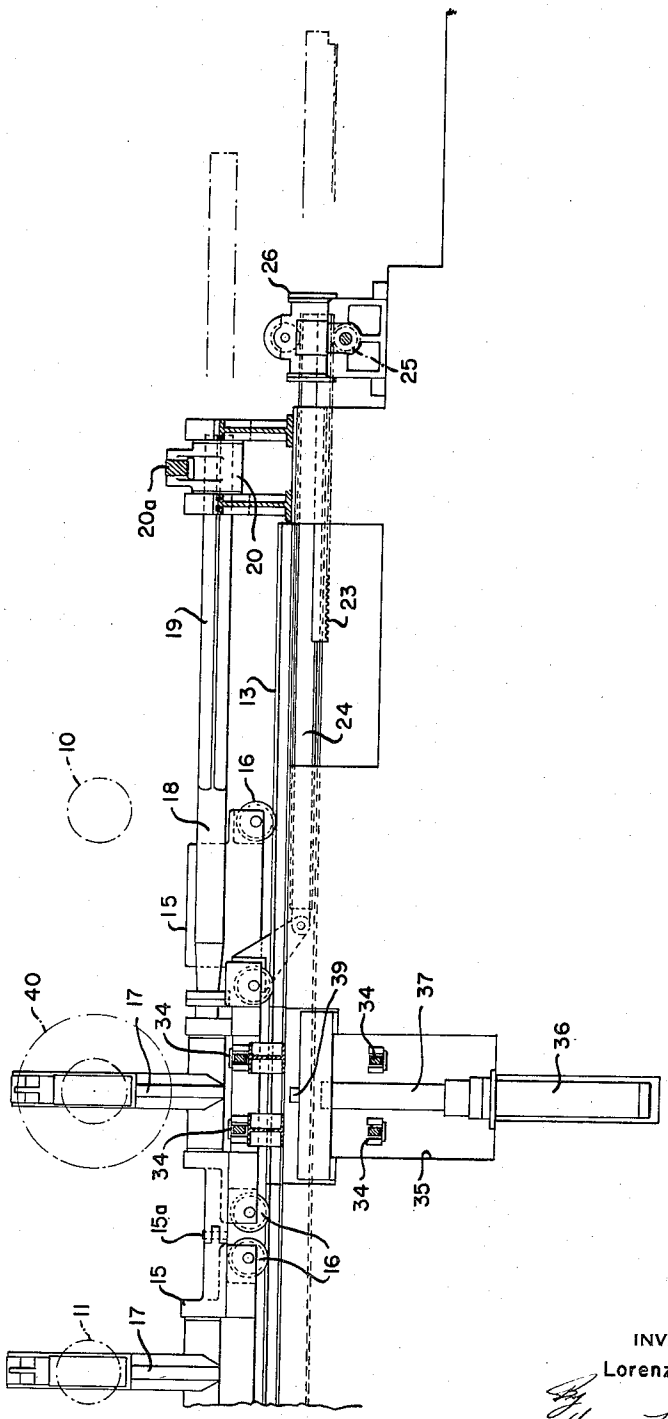
Sept. 27, 1960 L. IVERSEN 2,954,135

COIL TRANSFER MECHANISM

Filed June 12, 1957

5 Sheets-Sheet 2

Fig. 2.



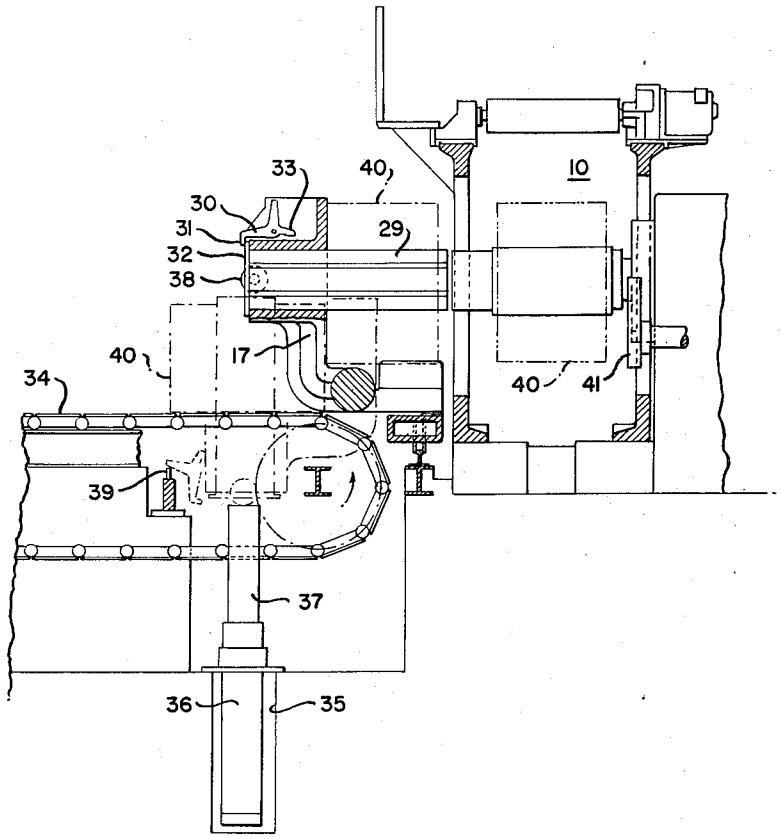
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Sept. 27, 1960 L. IVERSEN 2,954,135

COIL TRANSFER MECHANISM

Filed June 12, 1957 5 Sheets-Sheet 3

Fig. 3.



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Sept. 27, 1960 L. IVERSEN 2,954,135

COIL TRANSFER MECHANISM

Filed June 12, 1957 5 Sheets-Sheet 4

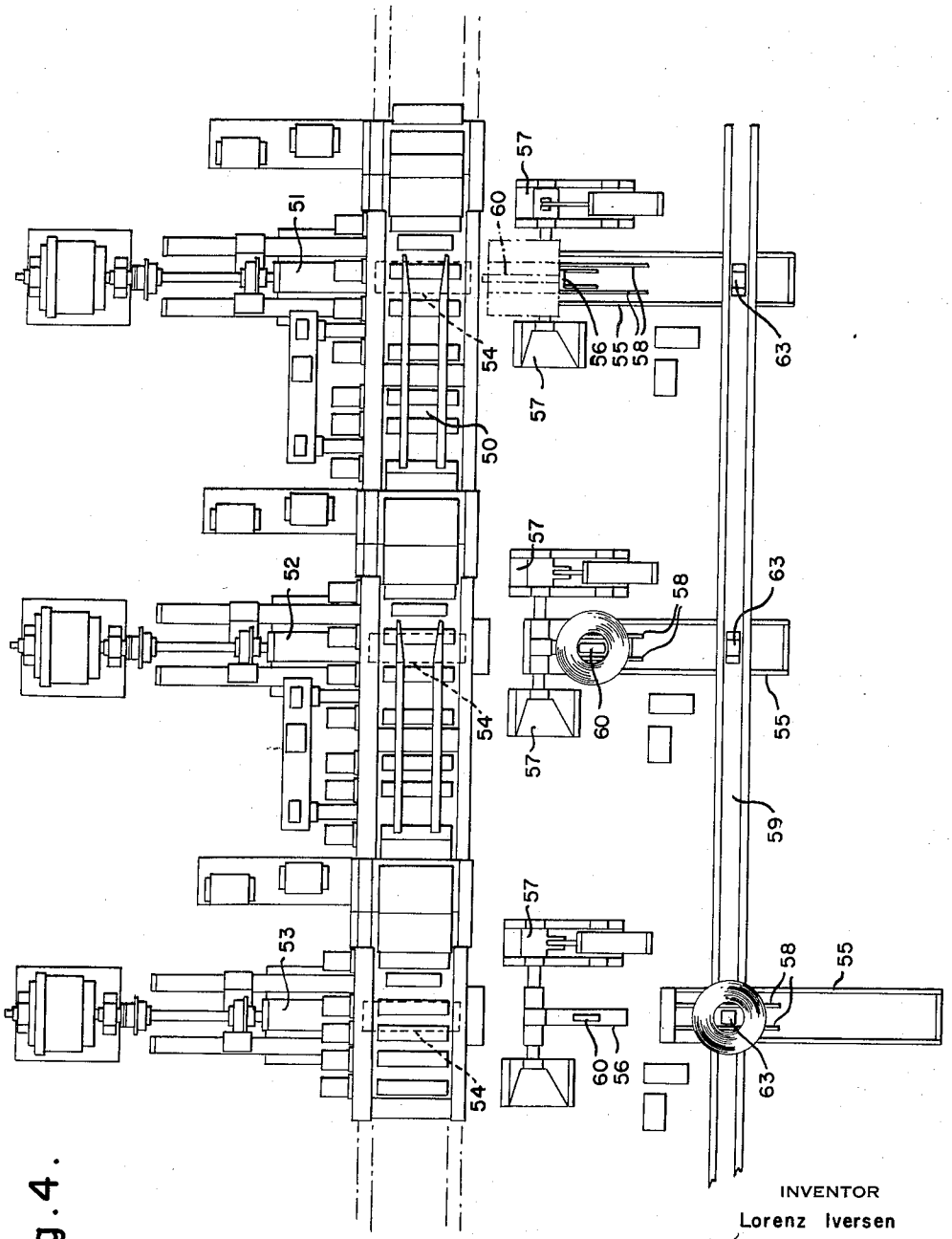


Fig. 4.

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COIL TRANSFER MECHANISM

Filed June 12, 1957 5 Sheets-Sheet 5

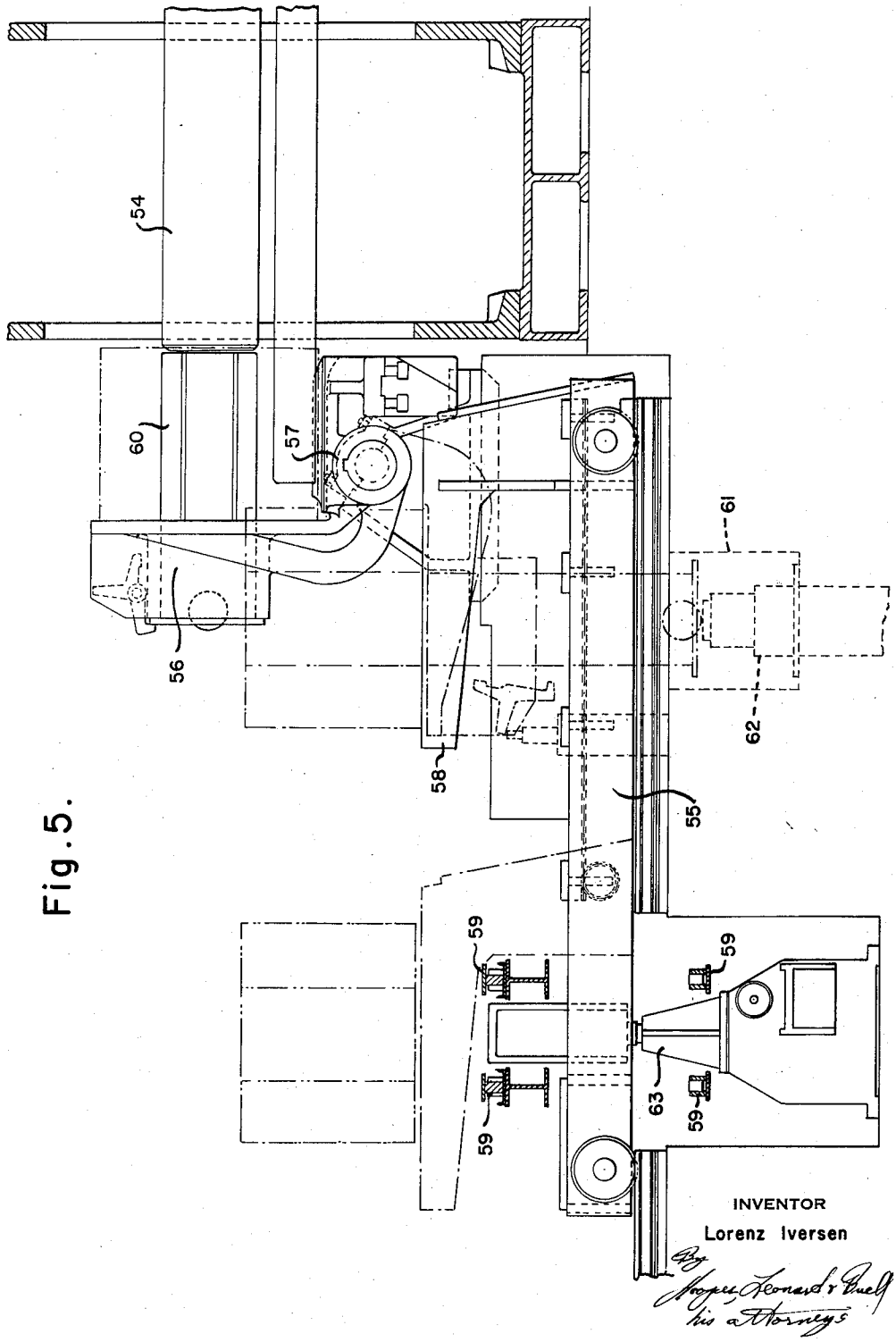


Fig. 5.

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United States Patent Office 2,954,135
Patented Sept. 27, 1960

2,954,135

COIL TRANSFER MECHANISM

Lorenz Iversen, Pittsburgh, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa., a corporation of Pennsylvania

Filed June 12, 1957, Ser. No. 665,146

16 Claims. (Cl. 214—130)

This invention relates to coil handling mechanism and particularly to a structure for transferring a coil of steel strip, or the like, e.g., aluminum strip, bronze or copper strip, etc., from a coiling mandrel to a coil conveyor. Coils of steel strip and the like are usually formed on a mandrel rotated on a horizontal axis. These coils must be removed from the mandrel and transferred to a coil conveyor usually with the axis of the coil on a vertical line. These coils are heavy and may be readily damaged if improperly handled. Conventional coil handlers support the coil on its outside periphery. As a result, coils of varying diameters are not properly supported during the stripping operation. Narrow coils tend to fall over when pushed onto the supporting cradle. As a result, coils tend to become out of round and damaged, both on the edges and within the body of the coil. As a result, there has long been a need for a mechanism capable of removing the completed coils from a mandrel and transferring them to a coil conveyor in such a way that injuries to the coil edges could be avoided. Although various structures have been heretofore proposed, no completely satisfactory flexible coil transfer mechanism has been made available.

The present invention provides an arbor slidably mounted in a lifting arm for reciprocation transverse to the plane of the arm, means for rotating the lifting arm between a horizontal position and a vertical position, means removably holding the arbor in the lifting arm, means for releasing the arbor holding means whereby the arbor is slidable through the litfing arm to provide a smooth bearing face, means for engaging the end of the arbor for controlled reciprocation of the arbor into and out of the lifting arm, and coil conveyor means on opposite sides of the lifting arm synchronized with the withdrawal movement of the arbor from the lifting arm to carry a formed coil from the lifting arm when the arbor is withdrawn. Preferably, the lifting arm is actuated by a shaft slidable through an eccentric crank arm driven from a crankshaft by an electric motor and gear train. Preferably, the means removably holding the arbor is released by a stop member positioned beneath the lifting arm. The plunger means is preferably a hydraulic piston fixed in a pit beneath the coil conveyor means and adapted to receive the arbor. When serving a plurality of coilers, means may be provided for moving the lifting arm parallel to the path of strip travel so that the coils may be deposited on a single transverse conveyor; or means may be provided to rotate the coil with a fixed tilter setting the coil on a car movable transversely to the path of strip travel, with means to deposit the coil on a conveyor parallel with the strip travel.

The coil handling mechanism of the present invention supports the coil within its eye thus providing a practical means for handling coils of varying diameters, widths and weights without damage.

While certain purposes, objects and advantages of the present invention have been generally outlined hereinabove, other objects, purposes and advantages will be apparent from a consideration of the following description and accompanying drawings in which,

Figure 1 is a top plan view of a coil handling mechanism according to the invention;

Figure 2 is a side elevation partly in section on the line II—II of Figure 1;

Figure 3 is a vertical section on the line III—III of Figure 2;

Figure 4 is a second embodiment of this invention; and

Figure 5 is a side elevation of the carriage and elevator means of Figure 4.

Referring to the drawings, there is illustrated a pair of coiling mandrels **10** and **11** on a strip pass line **12**, receiving strip to be coiled and coiling the strip on a horizontal axis. Spaced rails **13** and **14** are provided parallel to the strip pass line **12** on one side thereof. A pair of carriage frames **15** mounted on wheels **16**, capable of traveling on the rails **13** and **14**, are provided alongside the coiling mandrels **10** and **11** for movement from the coil mandrel **10** or **11** to a coil conveyor **34**. As shown in Figure 1, the carriages are preferably spaced apart about half the distance between mandrels **10** and **11**. The two frames **15** are connected by a link **15***a* so as to move together as a unit. A lifting arm **17** is mounted on each frame **15** on a shaft **18** pivoted on the frame **15** intermediate its extremities so as to pivot on an axis paralleling the pass line **12**. The shaft **18** is provided at one end with a spline **19** movable in an eccentric drive collar **20** driven by a crank arm **20***a* and crankshaft **20***b* from an electric motor **21** through a gear train **22**. The carriage frame **15** is moved parallel to the pass line **12** by means of a rack **23** on a drive rod **24** parallel to and beneath the drive shaft **18** and a cooperating pinion **25** mounted in a housing **26** alongside the pass line **12**. The pinion **25** is driven by a motor **27** acting through a gear train **28**. An arbor **29** is mounted for movement in the lifting arm **17** transverse to the plane of the lifting arm. The arbor **29** is held in the lifting arm **17** by a latch **30** in the form of a bell crank having a latching dog **31** which extends from one arm of the bell crank beneath a shoe **32** on one end of the arbor **29**. A stop member **33** is provided on the latch **30** to limit the movement of the latch. A coil conveyor **34** of conventional type such as parallel chains, is mounted transversely to the pass line between the two coiling mandrels **10** and **11** and is adapted to receive a coil and convey it away from the area of the pass line. A pit **35** is provided beneath the coil conveyor adjacent the pass line. A hydraulic cylinder **36** carrying a piston **37** is provided in the pit **35** and is positioned so as to be directly beneath the end of the arbor **29** when the lifting arm **17** is rotated to the horizontal position. The shoe **32** on the arbor **29** is provided with a roller **38** which projects from the end thereof to engage the end of the piston **37**. A stop member **39** is provided in the pit **35** in line with the arm of the bell crank latch **30** opposite the dog **31**, so that when the lifting arm **17** is pivoted about its axis by the shaft **18** into the pit **35** the latch engages the stop member **39** which withdraws the dog **31** from beneath the arbor **29**. The arbor **29** then rests on the piston **37** which is withdrawn into the cylinder **36**, withdrawing the arbor **29** through the lifting arm **17**.

The operation of the coil transfer mechanism of Figures 1–3 is as follows: Strip passing on the strip line **12** is coiled on one of the mandrels **10** and **11**. The carriage frame **15** is moved along the rails **13** and **14** by the motor **27** acting on the rack **23** through the pinion **25** and gear train **28** to position one lifting arm **17** in line with the mandrel on which the strip is being coiled. When the coil of strip **40** is completed on the mandrel,

it is moved from the mandrel onto the arbor 29 by a pusher 41 of known construction. The stroke of the pusher 41 is sufficient to push coils of all widths against the lifting arm 17. The frame 15 is then moved on the rails 13 and 14 until the lifting arm 17 is between the coil conveyor 34 and above the pit 35. At this point the other arm 17 is positioned beside the other of the coiling mandrels to receive a coil from it. The shaft 18 is rotated to carry lifting arm 17 from the vertical to the horizontal position by the eccentric drive collar 20, driven by the electric motor 21 with the arbor 29 standing vertically above the pit 35. Meanwhile the hydraulic cylinder 36 is actuated to move the piston 37 to its extended position (see Figure 2) to receive the shoe 32 and the roller 38 on the end of the arbor 29. The lifting arm 17 is lowered until the stop member 39 engages the bell crank latch 30 releasing the dog 31 from beneath the shoe 32 of the arbor 29. The piston 37 is then withdrawn into the hydraulic cylinder 36 carrying the arbor 29 out of the eye of the coil 40. The coil conveyor 34 is then actuated to carry the coil 40 away from the lifting arm 17. When the coil 40 is clear of the arm 17, the cylinder 36 is actuated to carry the piston 37 and the arbor 29 back into the lifting arm. The motor 21 is actuated and the arm 17 and arbor 29 are raised by both the motor 21 and the piston 37 to permit the dog 31 to engage the shoe 32. At this point the piston 37 has completed its stroke and the motor 21 continues to rotate shaft 18 to raise the arm 17 to the vertical position. The carriage 15 is thereafter returned to its original position, in line with the coiler mandrel.

Referring to Figure 4, I have shown in a second embodiment of my invention, a strip conveyor 50 with three coiling stands 51, 52 and 53 in line thereon adapted alternately to receive and coil strip from the conveyor 50. Each stand is provided with a coiling mandrel 54 receiving strip from conveyor 50 and adapted to form a coil thereon. Adjacent each coiling stand 51, 52 and 53 is provided a movable carriage 55. A lifting arm 56 identical with arm 17 of Figures 1–3 is pivoted on trunnions 57 to pass between arm 58 on the carriage. The carriage 55 is adapted to move transverse to the strip conveyor 50 to a coil conveyor line 59 parallel to the strip conveyor 50. The arm 56 is adapted to move from a vertical position (see stand 51 of Figure 4) to a horizontal position adjacent the coiling stand (see stand 52 of Figure 4) to place a coil thereon on the arms 58 of the carriage. The arm 56 is mounted on a trunnion 57 identical with shaft 18 of Figures 1–3. An arbor 60 identical with arbor 29 of Figures 1–3 is mounted for movement in arm 56 and is held in position by a latch (not shown) identical with latch 30 of Figures 1–3. A pit 61 is provided beneath the carriage 55 and between the trunnions 57. A hydraulic cylinder and piston 62 identical with the cylinder 36 and piston 37 of Figures 1–3 is provided in the pit 61. The mechanism shown in Figure 4 operates as follows: A coil formed on one of the mandrels 54 is pushed by a pusher mechanism of conventional design and therefore not specifically illustrated onto the arbor 60 (see stand 51). The arm 56 is then pivoted on its trunnions 57 to a horizontal position with the coil on the arms 58 of the carriage 55 (see stand 52). The latch holding arbor 60 is then released as in the case of latch 30 (Figures 1–3) by a stop member identical with stop member 39 of Figures 1–3 thus releasing the arbor 60 to the piston 62 which thereupon withdraws the arbor from the coil. The carriage 55 is then moved from its position alongside the strip conveyor 50 to a position where the arms 58 of the carriage overlie the coil conveyor 59. The coil is then removed to the conveyor 59 by elevator means 63 of known construction. Meanwhile the arbor 60 is repositioned in arm 56 by raising piston 62 and the carriage is returned to its original position alongside the coil

conveyor line 50. The lifting arm 56 is raised to its vertical position and is ready to receive another coil.

While I have illustrated and described a presently preferred embodiment of my invention, it will be understood that the invention may be otherwise embodied within the scope of the following claims.

I claim:

1. A coil handling mechanism for carrying a coil of strip steel or the like from a coiling mandrel to a coil conveyor comprising a rotatable lifting arm, an arbor slidably mounted transversely in said rotatable lifting arm, means for rotating the lifting arm between coil receiving and coil discharge positions substantially ninety degrees apart in the same vertical plane, means removably holding the arbor in the lifting arm, means for releasing the arbor holding means when the lifting arm reaches the coil discharge position whereby the arbor is slidable through the lifting arm to provide a plane bearing face, means independent of the lifting arm positioned at a discharge point engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm and coil conveyor means adjacent the discharge point receiving and carrying a formed coil from the lifting arm.

2. A coil handling mechanism for carrying a coil of strip steel or the like from a coiling mandrel to a coil conveyor comprising a rotatable lifting arm, an arbor slidably mounted transversely in said rotatable lifting arm, means for rotating the lifting arm between coil receiving and coil discharge positions substantially ninety degrees apart in the same vertical plane, means for moving the lifting arm parallel to the path of strip travel, means removably holding the arbor in the lifting arm, means for releasing the arbor holding means when the lifting arm reaches the coil discharge position whereby the arbor is slidable through the lifting arm to provide a plane bearing face, means independent of the lifting arm positioned at a discharge point engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm and coil conveyor means adjacent the discharge point receiving and carrying a formed coil from the lifting arm.

3. A coil handling mechanism for carrying a coil of strip steel or the like from a coiling mandrel to a coil conveyor comprising a rotatable lifting arm, an arbor slidably mounted transversely in said rotatable lifting arm, means for rotating the lifting arm between a vertical coil receiving position and a horizontal coil discharge position in the same vertical plane, means removably holding the arbor in the lifting arm, means for releasing the arbor holding means when the lifting arm reaches the horizontal coil discharge position whereby the arbor is slidable through the litfing arm to provide a plane bearing face, means independent of the lifting arm positioned at a discharge point engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the discharge point and coil conveyor means adjacent the lifting arm receiving and carrying a formed coil from the lifting arm.

4. A coil handling mechanism for carrying a coil of strip steel or the like from a coiling mandrel to a coil conveyor comprising a rotatable lifting arm, an arbor slidably mounted transversely in said rotatable lifting arm, means for rotating the lifting arm between a vertical coil receiving position in the same vertical plane and a horizontal coil discharge position, means for moving the lifting arm parallel to the path of strip travel, means removably holding the arbor in the lifting arm, means for releasing the arbor holding means when the lifting arm reaches the horizontal coil discharge position whereby the arbor is slidable through the lifting arm to provide a plane bearing face, means independent of the lifting arm positioned at a discharge point engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm and coil con-

veyor means adjacent the discharge point receiving and carrying a formed coil from the lifting arm.

5. A coil handling mechanism for steel strip and the like comprising a coiling mandrel rotatable on an axis receiving strip from a pass line to form a coil, a rotatable lifting arm adjacent the coiling mandrel and rotatable in the plane of the mandrel axis, an arbor slidably mounted in said rotatable lifting arm transverse to the arm, said arm being rotatable from a position wherein the arbor and mandrel are in axial alignment to a position wherein the axis of the arbor is transverse to the axis of the mandrel in the same vertical plane, transfer means for moving a completed coil from the coiling mandrel to the arbor, means removably holding the arbor in the lifting arm, means for releasing the arbor holding means when the lifting arm is transverse to the axis of the coiling mandrel whereby the arbor is slidable through the lifting arm to provide a plane bearing face, means independent of the lifting arm positioned at a discharge point engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm and coil conveyor means adjacent the discharge point receiving and carrying a formed coil from the lifting arm.

6. A coil handling mechanism for steel strip and the like comprising a pair of spaced coiling mandrels on a strip pass line alternately receiving strip from a pass line to form coils therefrom, carriage means movable parallel to the pass line from a position alongside one mandrel to a position alongside the other mandrel, a rotatable lifting arm on the carriage adapted to be positioned adjacent the coiling mandrel and rotatable in the plane of the mandrel axis, an arbor slidably mounted in said rotatable lifting arm transverse to said arm, said arm being rotatable on the carriage from a position wherein the arbor and one of said mandrels are in axial alignment to a position wherein the axis of the arbor is transverse to the axis of said one mandrel, transfer means adjacent each mandrel for moving a completed coil from the mandrel to the arbor, means for selectively moving the carriage and lifting arm from one mandrel to the other, means removably holding the arbor in the lifting arm, coil conveyor means intermediate the coiling mandrels and transverse to the pass line adapted to receive a coil from the lifting arm when the arm is in a position transverse to the mandrel axis, means at the coil conveyor independent of the lifting arm releasing the arbor holding means whereby the arbor is slidably through the lifting arm to provide a plane bearing face and means engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm.

7. A coil handling mechanism for carrying a coil of strip steel or the like from a coiling mandrel to a coil conveyor comprising a rotatable lifting arm, an arbor slidably mounted transversely in said rotatable lifting arm, means for rotating the lifting arm between coil receiving and coil discharge positions substantially ninety degrees apart in the same vertical plane, latch means pivoted on the lifting arm removably holding the arbor in the lifting arm, stop means adjacent the coil discharge position for releasing the latch means when the lifting arm reaches the coil discharge position whereby the arbor is slidable through the lifting arm to provide a plane bearing face, means engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm and coil conveyor means adjacent the means engaging the arbor and passing in the plane of the bearing face of the lifting arm in the discharge position, said conveyor means receiving and carrying a formed coil from the lifting arm.

8. A coil handling mechanism for carrying a coil of strip steel or the like from a coiling mandrel to a coil conveyor comprising a rotatable lifting arm, an arbor slidably mounted transversely in said rotatable lifting arm, means for rotating the lifting arm between coil

receiving and coil discharge positions substantially ninety degrees apart in the same vertical plane, latch means pivoted on the lifting arm removably holding the arbor in the lifting arm, stop means adjacent the coil discharge position for releasing the latch means when the lifting arm reaches the coil discharge position whereby the arbor is slidable through the lifting arm to provide a plane bearing face, a hydraulic piston engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm and coil conveyor means adjacent the means engaging the arbor and passing in the plane of the bearing face of the lifting arm in the discharge position, said conveyor means receiving and carrying a formed coil from the lifting arm.

9. A coil handling mechanism for carrying a coil of strip steel or the like from a coiling mandrel to a coil conveyor comprising a rotatable lifting arm, an arbor slidably mounted transversely in said rotatable lifting arm, means for rotating the lifting arm between coil receiving and coil discharge positions substantially ninety degrees apart in the same vertical plane, a bell crank pivoted on the lifting arm, a latching dog on one arm of the bell crank extending beneath the arbor removably holding the arbor in the lifting arm, stop means adjacent the coil discharge position receiving the other arm of the bell crank when the lifting arm is lowered to the coil discharge position for releasing the latching dog when the lifting arm reaches the coil discharge position whereby the arbor is slidable through the lifting arm to provide a plane bearing face, means engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm and coil conveyor means adjacent the means engaging the arbor and passing in the plane of the bearing face of the lifting arm in the discharge position, said conveyor means receiving and carrying a formed coil from the lifting arm.

10. A coil handling mechanism for steel strip and the like comprising a coiling mandrel rotatable on an axis receiving strip from a pass line to form a coil, a rotatable lifting arm adjacent the coiling mandrel and rotatable in the plane of the mandrel axis, an arbor slidably mounted in said rotatable lifting arm transverse to the arm, said arm being rotatable from a position wherein the arbor and mandrel are in axial alignment to a position wherein the axis of the arbor is transverse to the axis of the mandrel in the same vertical plane, transfer means for moving a completed coil from the coiling mandrel to the arbor, latch means pivoted on the lifting arm removably holding the arbor in the lifting arm, stop means adjacent the coil discharge position for releasing the latch means when the lifting arm is transverse to the axis of the coiling mandrel whereby the arbor is slidable through the lifting arm to provide a plane bearing face, means engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm and coil conveyor means adjacent the means engaging the arbor and passing in the plane of the bearing face of the lifting arm in the discharge position, said conveyor means receiving and carrying a formed coil from the lifting arm.

11. A coil handling mechanism for steel strip and the like comprising a coiling mandrel rotatable on an axis receiving strip from a pass line to form a coil, a rotatable lifting arm adjacent the coiling mandrel and rotatable in the plane of the mandrel axis, an arbor slidably mounted in said rotatable lifting arm transverse to the arm, said arm being rotatable from a position wherein the arbor and mandrel are in axial alignment to a position wherein the axis of the arbor is transverse to the axis of the mandrel in the same vertical plane, transfer means for moving a completed coil from the coiling mandrel to the arbor, latch means pivoted on the lifting arm removably holding the arbor in the lifting arm, stop means adjacent the coil discharge position for releasing the latch means when the lifting arm is transverse to the

axis of the coiling mandrel whereby the arbor is slidable through the lifting arm to provide a plane bearing face, a hydraulic piston engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm and coil conveyor means adjacent the means engaging the arbor and passing in the plane of the bearing face of the lifting arm in the discharge position, said conveyor means receiving and carrying a formed coil from the lifting arm.

12. A coil handling mechanism for steel strip and the like comprising a coiling mandrel rotatable on an axis receiving strip from a pass line to form a coil, a rotatable lifting arm adjacent the coiling mandrel and rotatable in the plane of the mandrel axis, an arbor slidably mounted in said rotatable lifting arm transverse to the arm, said arm being rotatable from a position wherein the arbor and mandrel are in axial alignment to a position wherein the axis of the arbor is transverse to the axis of the mandrel in the same vertical plane, transfer means for moving a completed coil from the coiling mandrel to the arbor, a bell crank pivoted on the lifting arm, a latching dog on one arm of the bell crank extending beneath the arbor removably holding the arbor in the lifting arm, stop means adjacent the coil discharge position receiving the other arm of the bell crank when the lifting arm is lowered to the coil discharge position for releasing the arbor holding means when the lifting arm is transverse to the axis of the coiling mandrel whereby the arbor is slidable through the lifting arm to provide a plane bearing face, means engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm and coil conveyor means adjacent the means engaging the arbor and passing in the plane of the bearing face of the lifting arm in the discharge position, said conveyor means receiving and carrying a formed coil from the lifting arm.

13. A coil handling mechanism for steel strip and the like comprising a pair of spaced coiling mandrels on a strip pass line alternately receiving strip from a pass line to form coils therefrom, carriage means movable parallel to the pass line from a position alongside one mandrel to a position alongside the other mandrel, a rotatable lifting arm on the carriage means adapted to be positioned adjacent the coiling mandrel and rotatable in the plane of the mandrel axis, an arbor slidably mounted in said rotatable lifting arm transverse to said arm, said arm being rotatable on the carriage from a position wherein the arbor and one of said mandrels are in axial alignment to a position wherein the axis of the arbor is transverse to the axis of said one mandrel, transfer means adjacent each mandrel for moving a completed coil from the mandrel to the arbor, means for selectively moving the carriage and lifting arm from one mandrel to the other, a bell crank pivoted on the lifting arm, a latching dog on one arm of the bell crank extending beneath the arbor removably holding the arbor in the lifting arm, coil conveyor means intermediate the coiling mandrels and transverse to the pass line adapted to receive a coil from the lifting arm when the arm is in a position transverse to the mandrel axis, stop means adjacent the coil conveyor receiving the other arm of the bell crank when the lifting arm is lowered to the coil discharge position releasing the arbor holding means whereby the arbor is slidable through the lifting arm to provide a plane bearing face and means engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm.

14. A coil handling mechanism for steel strip and the like comprising a pair of spaced coiling mandrels on a strip pass line alternately receiving strip from a pass line to form coils therefrom, a carriage movable parallel to the pass line from a position alongside one mandrel to a position alongside the other mandrel, a rotatable lifting arm on the carriage adapted to be positioned adjacent the coiling mandrel and rotatable in the plane of the mandrel axis, an arbor slidably mounted in said rotatable lifting arm transverse to said arm, said arm being rotatable on the carriage from a position wherein the arbor and one of said mandrels are in axial alignment to a position wherein the axis of the arbor is transverse to the axis of said one mandrel, pusher means alongside the mandrel adapted to push completed coils from the mandrel onto the arbor and into contact with the lifting arm, means for selectively moving the carriage and lifting arm from one mandrel to the other, means removably holding the arbor in the lifting arm, coil conveyor means intermediate the coiling mandrels and transverse to the pass line adapted to receive a coil from the lifting arm when the arm is in a position transverse to the mandrel axis, means at the coil conveyor releasing the arbor holding means whereby the arbor is slidable through the lifting arm to provide a plane bearing face and means engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm.

15. A coil handling mechanism for steel strip and the like comprising a pair of spaced coiling mandrels on a strip pass line alternately receiving strip from a pass line to form coils therefrom, a carriage movable parallel to the pass line, a pair of spaced rotatable lifting arms on the carriage, said arms being spaced apart a distance substantially equal to half the distance between the mandrels and rotatable in a plane transverse to the pass line, an arbor slidably mounted in each rotatable lifting arm transverse to said arm, said arms being rotatable from a position wherein one of said arbors and one of said mandrels are in axial alignment to a position wherein the arbor axis is transverse to the axis of said one mandrel, pusher means alongside each mandrel adapted to push completed coils from the mandrel onto the arbor and into contact with the lifting arm, means for selectively moving the carriage to bring the other arbor in axial alignment with the other mandrel after the first arbor has received a coil and been rotated to the vertical position, means removably holding the arbor in the lifting arm, coil conveyor means intermediate the two mandrels and transverse to the pass line adapted to receive a coil from one lifting arm while the other is in coil receiving position alongside a mandrel, means at the coil conveyor releasing the arbor holding means whereby the arbor is slidable through the lifting arm to provide a plane bearing face and means engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm.

16. A coil handling mechanism for steel strip and the like comprising spaced coiling mandrels on a strip pass line selectively receiving strip from a pass line to form coils therefrom, a coil conveyor spaced from and parallel to the pass line, carriage means having spaced side frames at each mandrel movable from the mandrel to the coil conveyor, a lifting arm pivoted adjacent the pass line at each mandrel and rotatable in the plane of the mandrel axis, an arbor slidably mounted in said rotatable lifting arm transverse to said arm, said arm being rotatable from a position wherein the arbor and mandrel are in axial alignment to a discharge position wherein the arbor is transverse to the axis of the mandrel and between the side frames of said carriage means, pusher means on the side of each mandrel opposite the lifting arm adapted to push completed coils from the mandrel onto the arbor and into contact with the lifting arm, means removably holding the arbor in the lifting arm, means in the path of the lifting arm releasing the arbor holding means when the lifting arm approaches the discharge position, means engaging the end of the arbor while released for controlled reciprocation of the arbor into and out of the lifting arm to release a coil onto the side frames of the carriage means, drive means carrying the carriage means from the mandrel to the coil conveyor with the coil above the conveyor means and

elevator means beneath the coil conveyor carrying the coil from the carriage means to the coil conveyor.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,954,135 September 27, 1960

Lorenz Iversen

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 57, for "discharge point" read -- lifting arm --; line 58, for "lifting arm" read -- discharge point --; line 65, after "position" strike out "in the same vertical plane"; line 66, after "position", insert -- in the same vertical plane --; column 5, line 48, for "slidably" read -- slidable --.

Signed and sealed this 11th day of April 1961.

(SEAL)
Attest:
ERNEST W. SWIDER
Attesting Officer

ARTHUR W. CROCKER
Acting Commissioner of Patents