Oct. 22, 1940. F. J. WOOD 2,218,499

DEVICE FOR UNCOILING COILS OF SHEET METAL

Filed Nov. 26, 1937 3 Sheets-Sheet 1

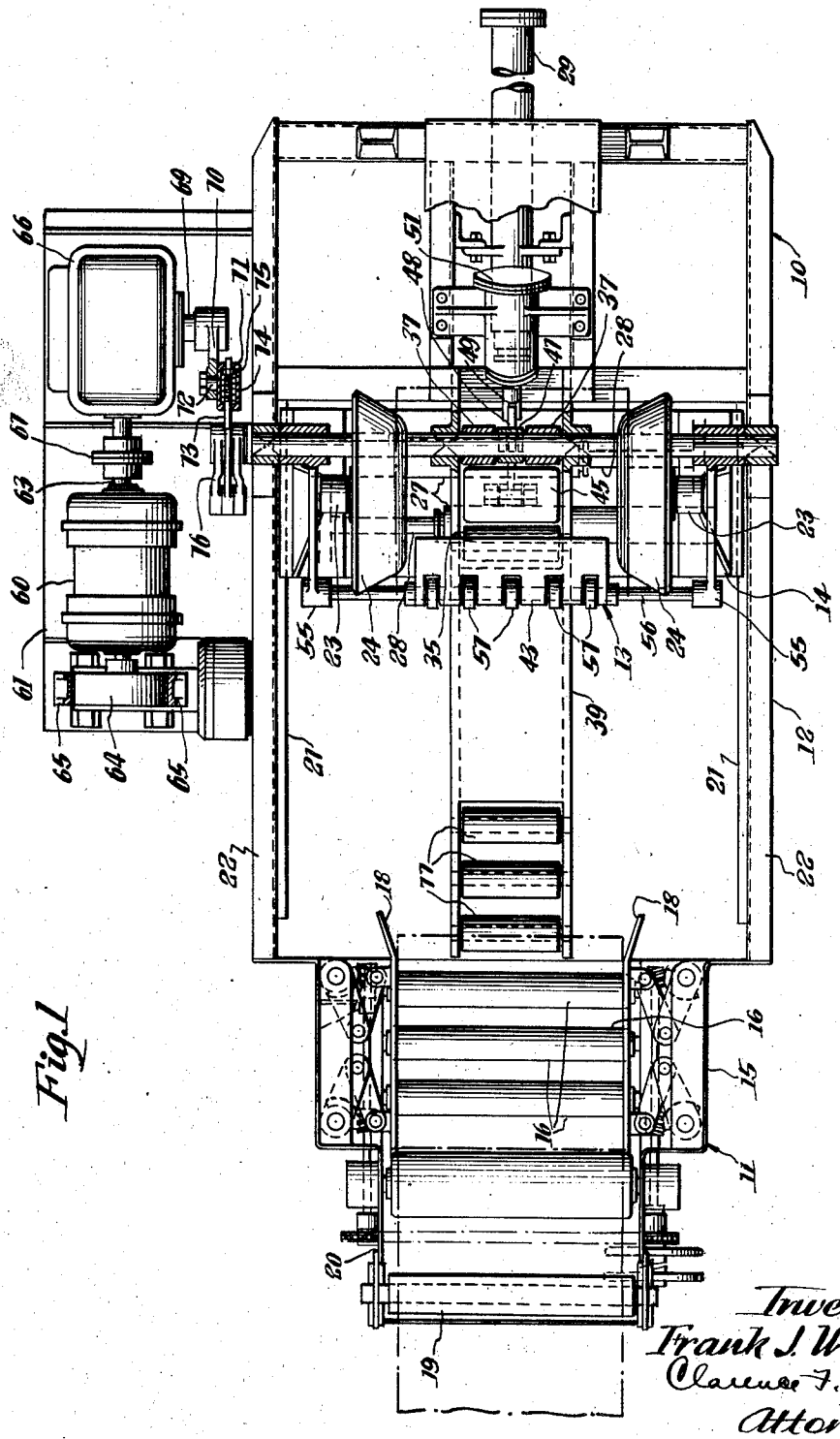


Fig. 1

Inventor
Frank J. Wood
Clarence F. Poole
Attorney

Oct. 22, 1940. F. J. WOOD 2,218,499

DEVICE FOR UNCOILING COILS OF SHEET METAL

Filed Nov. 26, 1937 3 Sheets-Sheet 2

Fig. 2

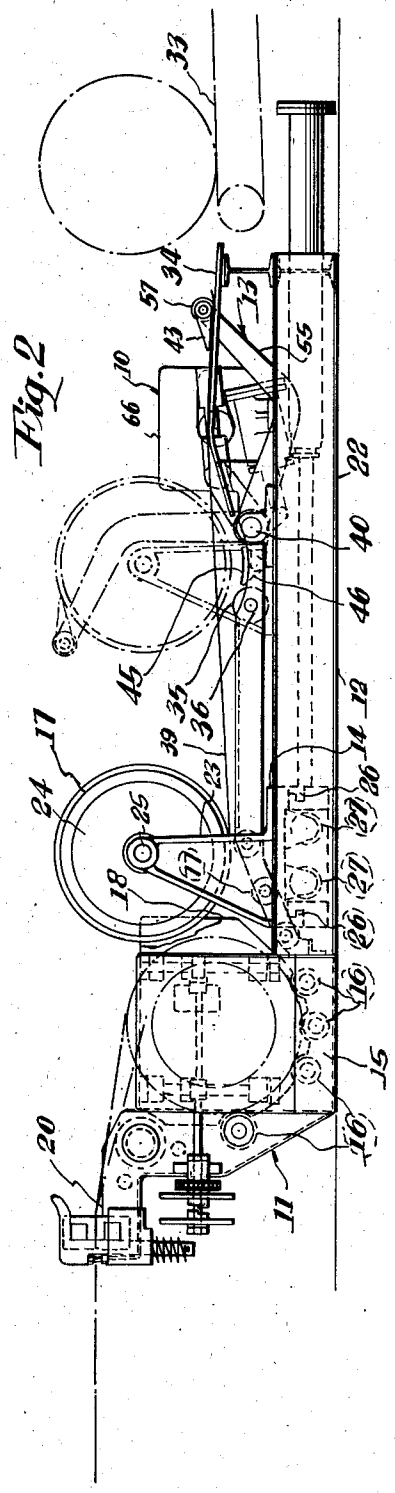
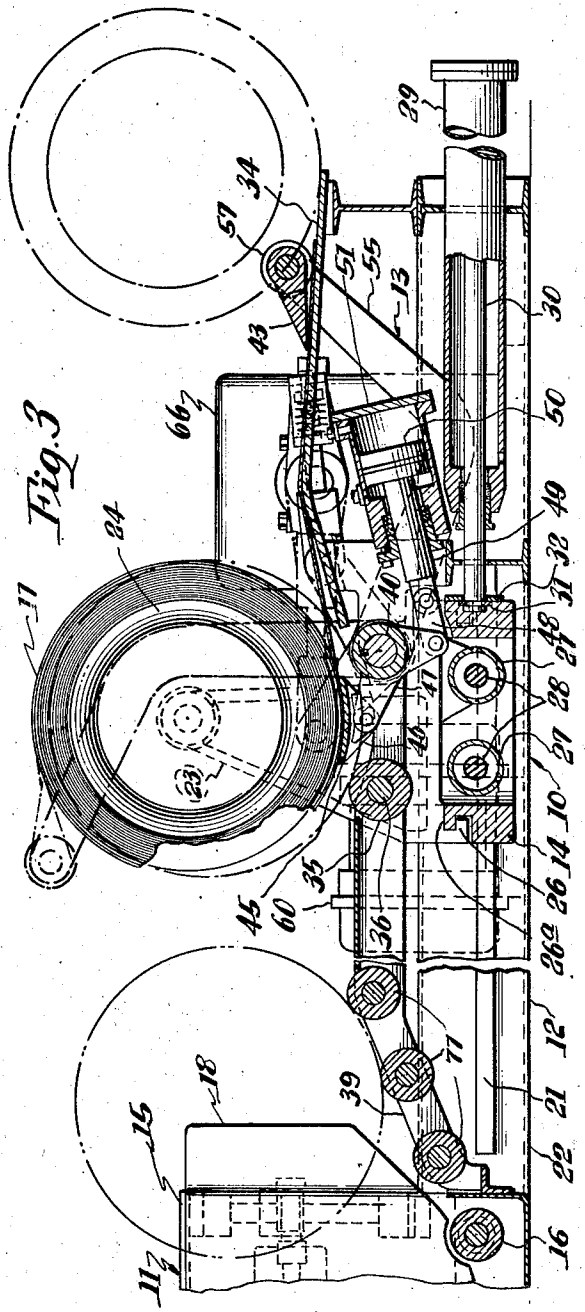


Fig. 3



Inventor
Frank J. Wood
Clarence A. Poole
Attorney

Oct. 22, 1940. F. J. WOOD 2,218,499

DEVICE FOR UNCOILING COILS OF SHEET METAL

Filed Nov. 26, 1937 3 Sheets-Sheet 3

Fig. 4

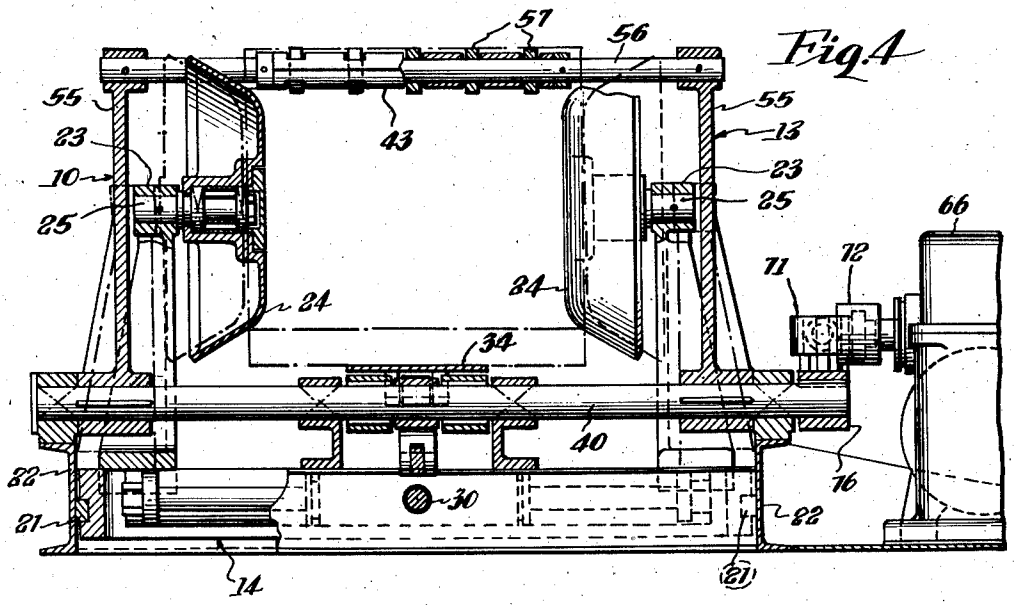


Fig. 5

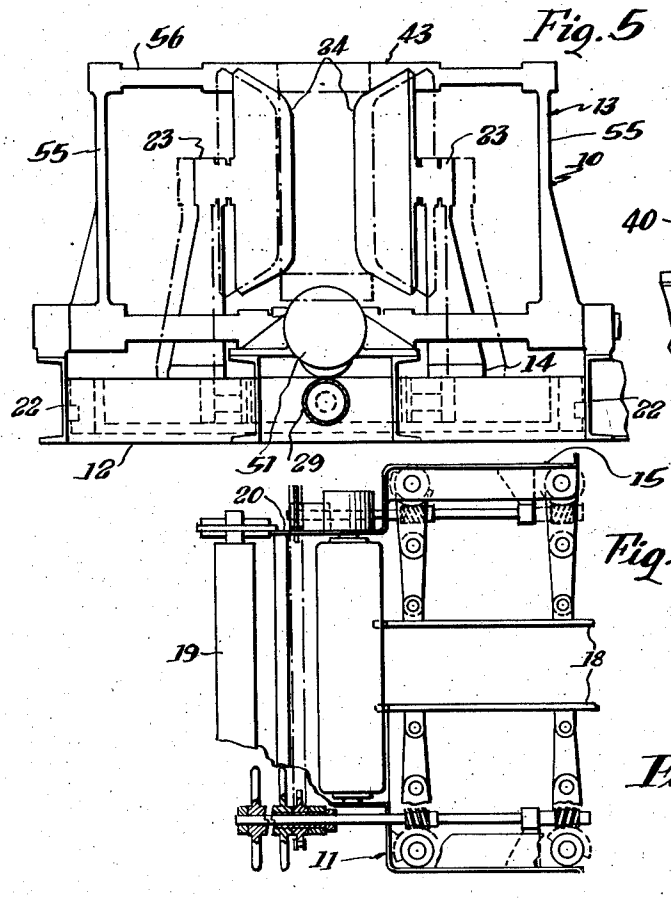


Fig. 6

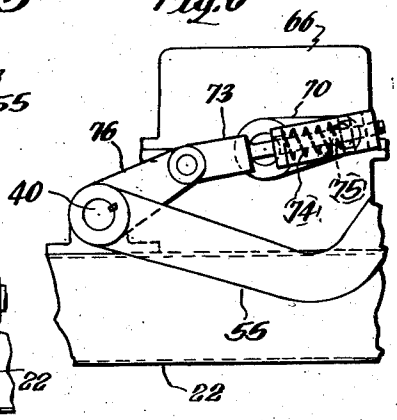


Fig. 7

Inventor
Frank J. Wood
Clarence F. Poole
Attorney

Patented Oct. 22, 1940 2,218,499

UNITED STATES PATENT OFFICE

2,218,499

DEVICE FOR UNCOILING COILS OF SHEET METAL

Frank J. Wood, Riverside, Ill., assignor to Goodman Manufacturing Company, Chicago, Ill., a corporation of Illinois

Application November 26, 1937, Serial No. 176,428

13 Claims. (Cl. 242—78)

This invention relates to improvements in devices for uncoiling coils of sheet metal and more particularly to an uncoiling device of a simplified and novel construction which is adapted to be a part of the processing apparatus through which the metal passes.

Heretofore, uncoiling and straightening of the leading end of a coil of metal, preparatory to starting the metal through a rolling or cleaning operation has frequently been done manually with the use of hooks and bars. This operation has been quite laborious especially where the metal reaches a thickness of a quarter inch and over. Uncoiling has also been done by mechanical uncoilers of various types which usually employ a system of rollers for performing this operation. The hand operation, however, has had certain advantages over the power operation in that mechanical uncoilers have been so arranged that they have had to be separate from the rolling or cleaning mill, and uncoiling of the metal has been a separate operation which makes it necessary to convey the coil of metal from the uncoiler to the mill and then insert it in the sticking box at the head end of the mill.

The principal objects of my invention are to provide an uncoiler which is a part of the mill for rolling or cleaning the metal and which both uncoils and flattens the leading end of the metal and also inserts the coil in a sticking box at the head end of the mill or cleaning machine in such a manner that uncoiling of the leading end of the metal and placing the coil in the sticking box may be a part of a continuous rolling or cleaning operation.

Another object of my invention is to provide a novel form of power driven uncoiling mechanism constructed with a view towards efficiency and simplicity in operation and so arranged as to uncoil and flatten the leading end of a coil of metal and put a reverse bend therein in a single operation.

Other objects of my invention will appear from time to time as the accompanying specification proceeds.

My invention may be more readily understood with reference to the accompanying drawings wherein:

Figure 1 is a top plan view of an uncoiling device and sticking box constructed in accordance with my invention with certain parts of the uncoiling device broken away and shown in section in order to more clearly show the details thereof;

Figure 2 is a side elevation of the device shown in Figure 1 shown supporting a coil of metal at the discharge end of the uncoiling device in position to be inserted into the sticking box;

Figure 3 is an enlarged fragmentary detail view of the device shown in Figure 1 with a coil of metal supported therein and with parts thereof shown in substantially longitudinal section;

Figure 4 is an enlarged transverse sectional view of the device shown in Figure 1 taken through the supporting means for the metal coil;

Figure 5 is a rear end view of the device shown in Figure 1 drawn to a reduced scale showing the coil supporting means in a different position of adjustment than in Figure 1;

Figure 6 is an enlarged detail view showing certain details of the power drive to the uncoiling mechanism; and

Figure 7 is a fragmentary detail plan view of the sticking box with certain parts thereof broken away and shown in section.

In the drawings, the embodiment of my invention illustrated includes an uncoiler generally indicated by reference character 10 which is adapted to deliver coiled metal to a sticking box 11 at the head end of a rolling mill or cleaning machine. Said uncoiler includes a main frame 12 adapted to rest on the floor or ground and form a support for uncoiling mechanism which is generally indicated by reference character 13 and which includes a coil supporting carriage 14 mounted on said frame for longitudinal movement therealong.

The sticking box 11, as herein shown, is of a construction well known to those skilled in the art so will not herein be described in detail. Said sticking box includes a frame 15 open towards the uncoiler 10 and having a plurality of transversely extending rollers 16, 16 mounted on the bottom and closed side thereof which are adapted to form a rolling support for a coil of metal 17. Said sticking box is likewise provided with a pair of adjustable guides 18, 18 engaging the ends of the coil and forming a means for guiding the coil of metal onto the rollers 16, 16 and for guiding the metal to squeegee rollers 19, 19 mounted in a forwardly extending projection 20 of said frame (see Figures 1, 2, and 7).

The coil supporting carriage 14, slidably mounted on the frame 12, is provided with a pair of guide grooves which extend along opposite ends thereof and which are adapted to be slidably engaged by parallel spaced gibs or guides 21, 21 secured to the inner side of parallel spaced channels 22, 22 which form side frame members for the frame 12.

A pair of upright standards 23, 23 form a sup-

port for coil supporting drums 24, 24 and are mounted on said carriage for adjustable movement towards and from each other. Said drums, as herein shown, are of a frusto-conical formation, the conical surfaces of which are adapted to engage the ends of the open center of the coil. Each of said drums is journaled on a shaft 25 secured to the respective standard at one of its ends and extending inwardly therefrom (see Figure 4). Said standards are each provided with depending gibbed guides 26, 26 engageable with corresponding gibbed guides 26a. 26a extending along the outer sides of the carriage 14. Said guides form a means to hold said standards in an upright position with respect to said sub-frame and permit said standards to be slidably moved therealong (see Figure 3).

The means for adjustably moving the standards 23, 23 and coil supporting drums 24, 24 towards or from each other and for positively engaging said drums with the coil of metal 17 includes a pair of transversely extending cylinders 27, 27 having piston rods 28, 28 extending from suitable pistons (not shown), which are movable within said cylinders. One cylinder is mounted in one end of the carriage 14 and the other cylinder is mounted on the opposite end of said carriage, and the respective piston rods 28, 28 are connected at their ends to the standards 23, 23 (see Figure 1). Fluid under pressure may be admitted to either end of said cylinders to move the associated standard 23 along said sub-frame. This forms a means for adjusting the drums 24, 24 for various widths of coils and for engaging said drums with the open center of the coil (see Figures 4 and 5).

A cylinder 29 having a piston rod 30 extensible therefrom is provided to move the carriage 14 along the guides 21, 21 of the frame 12, after the uncoiling and flattening operation, to transport the coil of metal to the discharge end of said frame. Said cylinder is mounted in the head end of the frame 12 and extends longitudinally therealong, and the forward end of said piston rod has a collar 31 secured thereto by means of a suitable nut. Said collar and nut are recessed within the rear side of the carriage 14 and the outer side of said collar is engaged by an annular ring 32 secured to said carriage (see Figure 3). Said cylinder is of the double acting type so that movement of said piston rod in one direction or the other actuated by the admission of fluid under pressure to one end or the other of said cylinder will correspondingly move said carriage.

The coil of metal is transported to the uncoiling device by means of a conveyer herein diagrammatically illustrated by dot and dash lines and indicated generally by reference character 33. Said conveyer is adapted to discharge the coil of metal on a platform or shoe 34, which shoe besides serving as a platform over which the coil may roll also serves as a bending shoe for the leading end of the coil in a manner which will more clearly appear as this specification proceeds. The coil of metal, after being discharged onto said platform by the conveyer is rolled along said shoe onto a roller 35 on a transverse shaft 36 and a pair of rollers 37, 37 on a transverse shaft 40 spaced therefrom in such a manner that said rollers may form a rolling support for said coil. The shaft 36 is mounted at its ends in an upwardly disposed longitudinally extending frame 39 disposed above and extending along the central portion of the frame 12. The shaft 40 is journaled in said frame and extends therebeyond and is journaled at its ends in suitable bearing supports mounted in the top side of the channels 22, 22. After the coil has been placed on said rollers it may be rotatably turned thereon until its leading end is in such a position that it may readily be engaged by an engaging member 43 of the uncoiling mechanism 13.

A means is provided for lifting the coil 17 from the rollers 35 and 37, 37, and positioning it so it may be engaged by the coil supporting drums 24, 24 which, as herein shown, comprises a lifting shoe 45. Said shoe is provided with a depending flanged portion 46 which is pivotally mounted on the end of one lever arm of a bell crank member 47 and is adapted to be engaged by suitable projections extending forwardly and rearwardly of the point of connection of said shoe to said lever arm to prevent tilting movement of said shoe beyond a certain predetermined point. Said bell crank member, as herein shown, is freely mounted on the shaft 40 between the rollers 37, 37. The other lever arm of said bell crank member depends from said shaft and has a link 48 pivotally connected thereto. The opposite end of said link is pivotally connected to the end of a piston rod 49. Said piston rod extends from a piston 50 mounted in a cylinder 51, which is mounted in the frame 12 beneath the shoe 34 and, as herein shown, extends forwardly therealong at an acute angle with respect to the ground.

The admission of fluid under pressure to one end of the cylinder 51 will pivot the bell crank member 47 and engage the lifting shoe 45 with the coil 17 and lift said coil to a position in alignment with the coil supporting drums 24, 24 so it may readily be engaged and supported thereby. The release of fluid pressure from said cylinder will permit said coil of metal to rotate with said supporting drums when engaged thereby. When said coil is engaged at its ends by said supporting drums and is also engaged by said lifting shoe, said shoe acts as a braking means to hold it from rotation.

With reference now in particular to the details of construction of the uncoiling mechanism 13 and several other of the novel features of my invention, a pair of pivotally movable arms 55, 55 are secured to the shaft 40 adjacent opposite ends thereof on the outer sides of the coil supporting drums 24, 24 (see Figures 1, 3, and 4). The pivotal axis of said arms is beneath the coil and to one side of the center thereof, and the radius of the arc of swinging movement of the outer ends of said arms is greater than the diameter of said coil to permit said arms to move the engaging member 43 in a path which will cause it to unwind and flatten the leading end of the coil. When said arms are in position to permit the engaging member 43 to engage the leading end of the coil as shown by dot and dash lines in Figure 3, they extend upwardly from the shaft 40 in a vertical direction to a position which is herein shown as being just beyond the center of the coil, and extend angularly upwardly and forwardly with respect to the frame 12 across the open ends of the coil so as to extend beyond one side thereof and adjacent the upper end thereof. A shaft 56 is mounted between the ends of said arms and forms a pivotal support for the engaging member 43.

The engaging member 43 is best shown in Figures 1 and 3 and has a relatively sharp wedge shaped free engaging end which may engage and be moved along the periphery of the coil and be

wedged under the underside of the leading end thereof, to lift said end from the coil upon pivotal movement of the arms 55, 55 in an uncoiling direction, which as herein shown is a counter-clockwise direction. A plurality of spaced apart rollers 57, 57 are likewise mounted on the shaft 56 and fit in suitable slots provided along said engaging member, which rollers are adapted to engage the underside of the leading end of the coil after it has been wedged therefrom by the wedge shaped end of said engaging member.

It may be seen from the foregoing that pivotal movement of the shaft 40 and the arms 55, 55 in an uncoiling direction will engage the end of the engaging member 43 with the underside of the leading end of the coil and wedge and lift said end from the coil proper so it may be engaged by the rollers 57, 57, which will uncoil the leading end of the coil upon further movement of said arms and engage it with the bending shoe 34.

The bending shoe 34 is inclined upwardly at a slight angle towards the forward end of the frame 12 for a substantial portion of its length and is then inclined downwardly towards the rollers 37, 37 at a sharper angle. This change in inclination of said shoe places a bend therein which when engaged with the leading end of the coil of metal places a reverse bend therein.

A motor 60, herein shown as being of an ordinary electrical type is provided to swing the arms 55, 55 about the axis of the shaft 40. Said motor is mounted on a bed plate 61 projecting outwardly from one side of the frame and is provided with a motor shaft 63.

One end of the motor shaft 63 has a brake drum 64 mounted thereon which is adapted to be engaged by suitable brake shoes 65, 65 for stopping rotation thereof when desired. Said brake shoes are adapted to be automatically engaged with said brake drum whenever power is turned off of said motor, by means of suitable magnetic brake actuating means, the construction and operation of which is not herein shown or described in detail since it is no portion of my present invention.

The opposite end of the motor shaft 63 is operatively connected with a speed reducer generally indicated by reference character 66 by means of a flexible coupling 67. Said speed reducer may be of any construction well known to those skilled in the art and is provided with a shaft 69 extending transversely of the frame 12 to which is secured a crank arm 70.

A yieldable drive is provided from the crank arm 70 to the shaft 40 for rocking said shaft, which includes a hollow drive and guiding member 71 pivotally mounted on said crank arm on an integrally formed stub shaft 72 projecting from said driving member. A driving link 73 is slidably mounted in said driving member and is encircled by a compression spring 74. Said compression spring is disposed within said member and abuts the inside of one end of said driving member at one of its ends and a nut 75 threaded on said driving link at its opposite end. Said link may thus yieldably move with respect to said crank in one direction. The opposite end of said driving link is pivotally connected between the forked ends of a bifurcated lever 76 which is secured to an outer end of the shaft 40. This yieldable drive connection thus provides a cushioning effect for the drive, operating when the rollers 57, 57 engage the shoe 34.

Rotation of the motor will, accordingly, rock the shaft 40 and arms 55, and when said arms are rocked in a clockwise direction, the engaging member 43 moving along the periphery of the coil will wedge the leading end of the metal away from the coil so it may be engaged by the rollers 57, 57. Continued rocking movement of said arms will cause said engaging member to uncoil the leading end of the metal and flatten it against the bending shoe 34, the drive to said arms yielding to prevent damage to the drive parts in cases where the motor is not turned off at the proper time. At the same time power is turned off of said motor, the brake shoes 65, 65 are engaged with the brake drum 64 to hold said motor from rotation and permit the engaging member 43 to positively engage the leading end of the coil of metal with said bending shoe. Said arms are returned to the initial uncoiling position shown by dot and dash lines in Figure 3 by reversal of the direction of rotation of said motor.

When the engaging member 43 and arms 55, 55 are in the position shown in Figure 3 and the leading end of the coil has been flattened and given a reverse bend against the bending shoe 34, the lifting shoe 45 is released from the coil of metal in the hereinbefore described manner to permit said carriage to move said coil to the discharge end of the frame 12 and to permit said coil to turn with the coil supporting drums 24, 24. Fluid under pressure is then admitted to the head end of the cylinder 27 for moving said carriage along said frame to the discharge end thereof, it being noted that since the end of said coil is held from movement by the engaging member 43, it will unwind a predetermined amount as it is being moved along said frame.

The frame member 39 at the discharge end of the frame 12 is downwardly inclined and has a plurality of transversely extending rollers 77, 77 mounted thereon which form a roller chute to guide the coil into the sticking box 11. When the carriage 14 reaches the discharge end of the frame 12 the coil supporting drums 24, 24 are disengaged from the open ends of the coil 17 to release said coil and permit it to roll downwardly over said transverse rollers into position on the rollers 16, 16 in said sticking box.

It may now be seen that a new and improved uncoiling device has been provided for coils of metal which uncoils and flattens the leading end of the metal, giving it a reverse bend and thus permitting its ready insertion in the rollers for the mill or cleaning device; and which also is a part of the rolling mill or cleaning device with which it is associated so that it may form a means for inserting the metal into a sticking box at the head end of the rolling mill or cleaning device and thus enabling the uncoiling and cleaning or rolling operation to be a part of one continuous operation. It may also be seen that the straightening and conveying operations are effected in an efficient and simplified manner in a few simple operations so that the leading end of the coil of metal may be straightened and inserted in the mill in a continuous operation.

While I have herein shown and described one form in which my invention may be embodied, it will be understood that the construction thereof and the arrangement of the various parts may be altered without departing from the spirit and scope thereof. Furthermore, I do not wish to be construed as limiting myself to the specific embodiment illustrated, excepting as it may be limited in the appended claims.

I claim as my invention:

1. In a device for uncoiling metal coils, means

for supporting a coil of metal, and means for engaging the leading end of the metal and bending it to an uncoiled condition with a reverse bend therein while the coil is stationary including a bending shoe, and a pivotally movable arm extending over the coil, said arm being of a fixed length and having an engaging member pivotally mounted thereon for movement about an axis fixed with respect to said arm, said engaging member being adapted to initially rest on the outer periphery of the coil and engage the underside of the leading end of the coil on the side thereof opposite from said bending shoe and uncoil and flatten said leading end over said shoe upon pivotal movement of said arm in an uncoiling direction.

2. In a device for uncoiling metal coils, means for supporting a coil of metal, and means for engaging the leading end of the metal and bending it to a flattened uncoiled condition with a reverse bend therein while the coil is held stationary including a bending shoe, a pair of arms extending over said coil and pivoted on opposite sides of said coil for movement about a transverse axis, said arms being of a fixed length and having an engaging member pivotally mounted between said arms for movement about an axis fixed with respect to said arms, said engaging member having an end adapted to initially rest on the outer periphery of the coil and engage the underside of the leading end of the coil on the side thereof opposite from said bending shoe upon pivotal movement of said arms, and power driven means for simultaneously moving said arms in a direction towards said bending shoe to unwind said coil over the top thereof, whereby said engaging member may unwind and flatten the leading end of the metal over said shoe.

3. In a device for uncoiling metal coils, a carriage having rotatable engaging members on opposite sides thereof adapted to positively engage the ends of the coil and support it for rotational movement, a supporting shoe for elevating the coil to a position whereby its ends may be engaged by said engaging members, said shoe also forming a means for holding said coil from rotation when engaged therewith, a bending shoe, means for engaging the leading end of the metal when held from rotation by said supporting shoe and bending it to a flattened condition over said bending shoe including a pivotally movable arm having an engaging member pivoted thereon adapted to engage and uncoil the leading end of the metal and flatten it along said bending shoe when said arm is pivotally moved in an uncoiling direction, means for disengaging said supporting shoe from said coil to permit rotation thereof, and means for moving said carriage with respect to said engaging member, while said engaging member has clamping engagement with the leading end of said coil, for unwinding said coil a further distance and moving said coil to a position for insertion of its leading end into the processing apparatus through which the metal is adapted to pass.

4. In a device for uncoiling metal coils, an elongated frame having an entering and discharge end, a carriage mounted on said frame for movement therealong and having a pair of rotatable engaging members adapted to be positively engaged with the ends of the coil and form a rotatable supporting means therefor, a supporting shoe for elevating the coil to a position whereby its ends may be engaged by said engaging members, said shoe also forming a means for holding said coil from rotation when engaged therewith, a sticking box at the discharge end of said frame for supporting the coil so it may pass through a processing apparatus, a bending shoe at the entering end of said frame having a reverse bend therein, means for engaging the leading end of the coil when held from rotation by said supporting shoe and bending it to an uncoiled condition over said bending shoe including an arm pivoted for movement about a fixed pivotal axis having an engaging member thereon adapted to engage and uncoil the leading end of said coil and flatten it along said bending shoe when said arm is pivotally moved in an uncoiling direction, means for disengaging said supporting shoe from said coil to permit rotation thereof, and means for moving said carriage along said frame to the discharge end thereof while said engaging member has clamping engagement with the end of said coil for unwinding said coil a further distance and positioning said coil so that it may roll into said sticking box upon release of said rotatable engaging members from the ends thereof and permit the leading end thereof to be inserted in a processing apparatus.

5. In an apparatus for processing coils of sheet metal, an uncoiler including a frame having a coil supporting carriage movable therealong, said coil supporting carriage having a pair of rotatable drums adapted to selectively engage the open ends of said coil, means for selectively holding said coil from rotation, a bending shoe on said frame, means on said frame for engaging the leading end of the metal while held from rotation and uncoiling and flattening this end over said shoe including a pivotally movable arm having an engaging member thereon adapted to engage the free end of said coil, a sticking box at one end of said frame adapted to form a support for the coil of metal while passing through the processing apparatus, and means for moving said carriage along said frame away from said bending shoe to a position for discharge into said sticking box.

6. In an apparatus for processing coils of sheet metal, an uncoiler including a frame having a coil supporting carriage movable therealong, said coil supporting carriage having a pair of rotatable drums adapted to selectively engage the open ends of said coil, means for selectively holding said coil from rotation while supported by said drums, a bending shoe on said frame, means on said frame for engaging the leading end of the metal while held from rotation and uncoiling and flattening this end over said shoe including a pivotally movable arm having an engaging member thereon adapted to engage the free end of the coil, a sticking box at one end of said frame adapted to form a support for the coil of metal while passing through the processing apparatus, means for moving said carriage along said frame away from said bending shoe to a position for discharge into said sticking box, means for releasing said drums from the ends of said coil, and means for guiding said coil into said sticking box upon release of said drums whereby said coil may be inserted into said sticking box by gravity.

7. In an apparatus for processing coils of sheet metal, an uncoiler including a frame having a coil supporting carriage movable therealong, said coil supporting carriage having a pair or rotatable drums adapted to engage the open ends of said coil, means on said frame for positioning said coil so that its open ends may be engaged

and supported by said drums, said means also forming a means for selectively holding said coil from rotation, a bending shoe extending along said frame for a portion of its length, an arm pivotally mounted on said frame and having an engaging member thereon adapted to engage the periphery of said coil for a portion of the path of travel of said arm and wedge the underside of the end of said coil from said coil and uncoil it and engage and flatten it against said bending shoe upon pivotal movement of said arm, a sticking box at one end of said frame adapted to form a support for the coil of metal while passing through the processing apparatus, means for moving said carriage along said frame while the leading end of said coil is engaged with said bending shoe, and guide means for guiding said coil into said sticking box upon release of said coil supporting drums therefrom whereby said coil may be inserted into said sticking box by gravity.

8. In a device for uncoiling coils of sheet metal, a frame, a carriage mounted for movement along said frame and adapted to rotatably support a coil of metal, means for holding the coil from rotation, a stationary shoe on said frame disconnected from said carriage, means for engaging the leading end of the metal on one side of the coil and bending it over the top of the coil to an uncoiled condition over said shoe on the opposite side of the coil while held from rotation including an arm extending over the coil and mounted for pivotal movement about an axis parallel to the axis of the coil, and means for moving said carriage and coil along said frame away from said shoe and arm to unwind said coil a predetermined distance while the leading end thereof is held in engagement with said bending shoe by means of said arm.

9. In a device for uncoiling coils of sheet metal, a frame, a carriage mounted for movement along said frame and adapted to rotatably support a coil of metal, means for holding the coil from rotation, a stationary shoe on said frame, means for engaging the leading end of the metal and bending it to an uncoiled condition over said shoe while held from rotation including an arm extending over the coil and mounted for pivotal movement about an axis parallel to the axis of the coil and having an engaging member pivotally mounted on the end thereof, said engaging member being adapted to rest on the outer periphery of the coil and engage the underside of the leading end of the metal and uncoil said leading end over the top of the coil, upon pivotal movement of said arm, and bend the leading end of the metal over said shoe and hold it in engagement therewith, and means for moving said carriage and coil along said frame in a direction away from said shoe to unwind said coil a predetermined distance while the leading end thereof is held in engagement with said shoe by means of said engaging member.

10. In a device for uncoiling coils of sheet metal, means for supporting a coil of metal, an arm movable about an axis disposed beneath and to one side of the coil and parallel to the axis about which the coil is wound, said arm extending upwardly and over the coil to the opposite side of the center of the coil from the pivotal axis of said arm, an engaging member on the outer end of said arm having an engaging end adapted to initially rest on the outer periphery of the coil and engage the underside of the leading end thereof upon pivotal movement of said arm, a bending shoe on the side of said coil opposite from said engaging member when positioned to initially rest on the outer periphery of said coil, said engaging member being adapted to uncoil said leading end of the coil over the top of the coil upon pivotal movement of said arm towards said bending shoe and engage said end with and clamp it to said bending shoe.

11. In a device for uncoiling metal coils, means for supporting a coil of metal at its ends, a lifting shoe for lifting said coil to a position for engagement by said coil supporting means, said lifting shoe also serving to hold said coil from rotation when engaged by said supporting means, a bending shoe spaced from said lifting shoe, an arm movable about an axis parallel to the axis about which the coil is coiled, said arm having an engaging member pivotally mounted on the outer end thereof, and adapted to initially rest on the outer periphery of the coil on the side thereof opposite from said bending shoe, means for engaging said lifting shoe with said coil to hold it from rotation, and means for pivotally moving said arm to move said engaging member tangentially of the coil and thence downwardly and away from the coil in an arcuate path to said bending shoe, while said coil is held from rotation by said lifting shoe, to cause said engaging member to engage the underside of the leading end of the coil and uncoil this end over the top of the coil and engage it with and hold it in engagement with said bending shoe, to place a reverse bend in the leading end of the coil and clamp said end in a fixed position on said shoe.

12. In a device for uncoiling metal coils, means for supporting a coil of metal at its ends, a lifting shoe for lifting said coil to a position for engagement by said coil supporting means, said lifting shoe also serving to hold said coil from rotation when engaged by said supporting means, a bending shoe spaced from said lifting shoe, an arm movable about an axis parallel to the axis about which the coil is coiled, said arm having an engaging member pivotally mounted on the outer end thereof, and adapted to initially rest on the outer periphery of the coil on the side thereof opposite from said bending shoe, means for engaging said lifting shoe with said coil to hold it from rotation, and means for pivotally moving said arm to move said engaging member tangentially of the coil and thence downwardly and away from the coil in an arcuate path to said bending shoe while said coil is held from rotation by said lifting shoe, to cause said engaging member to engage the underside of the leading end of the coil and uncoil this end over the top of the coil and engage it with and hold it in engagement with said bending shoe, to place a reverse bend in the leading end of the coil and clamp said end in a fixed position on said shoe, and other means for unwinding said coil a further distance while the leading end thereof is clamped in engagement with said bending shoe comprising means for moving said supporting means away from said bending shoe.

13. In an uncoiling apparatus for coils of strip metal, a frame, a carriage mounted on said frame for movement therealong, means on said carriage for selectively engaging the open ends of said coil for supporting said coil for rotatable movement, a bending shoe, an arm mounted on said frame and having an engaging member thereon adapted to engage the free end of said coil to uncoil this free end and hold it in engagement

with said bending shoe, a plurality of transversely extending coil supporting rollers at one end of said frame for supporting the coil for unwinding while passing through a processing apparatus, means for moving said carriage along said frame to a position adjacent said rollers, to further unwind said coil, and guide means along each side of said rollers for guiding said coil, to permit it to be deposited on said rollers by gravity upon movement of said carriage towards the end of said frame adjacent said rollers and upon the release of said supporting means from the ends of said coil.

FRANK J. WOOD.