Dec. 14, 1937. C. E. MOORE 2,102,374

CONVEYER

Original Filed Jan. 23, 1934 3 Sheets-Sheet 1

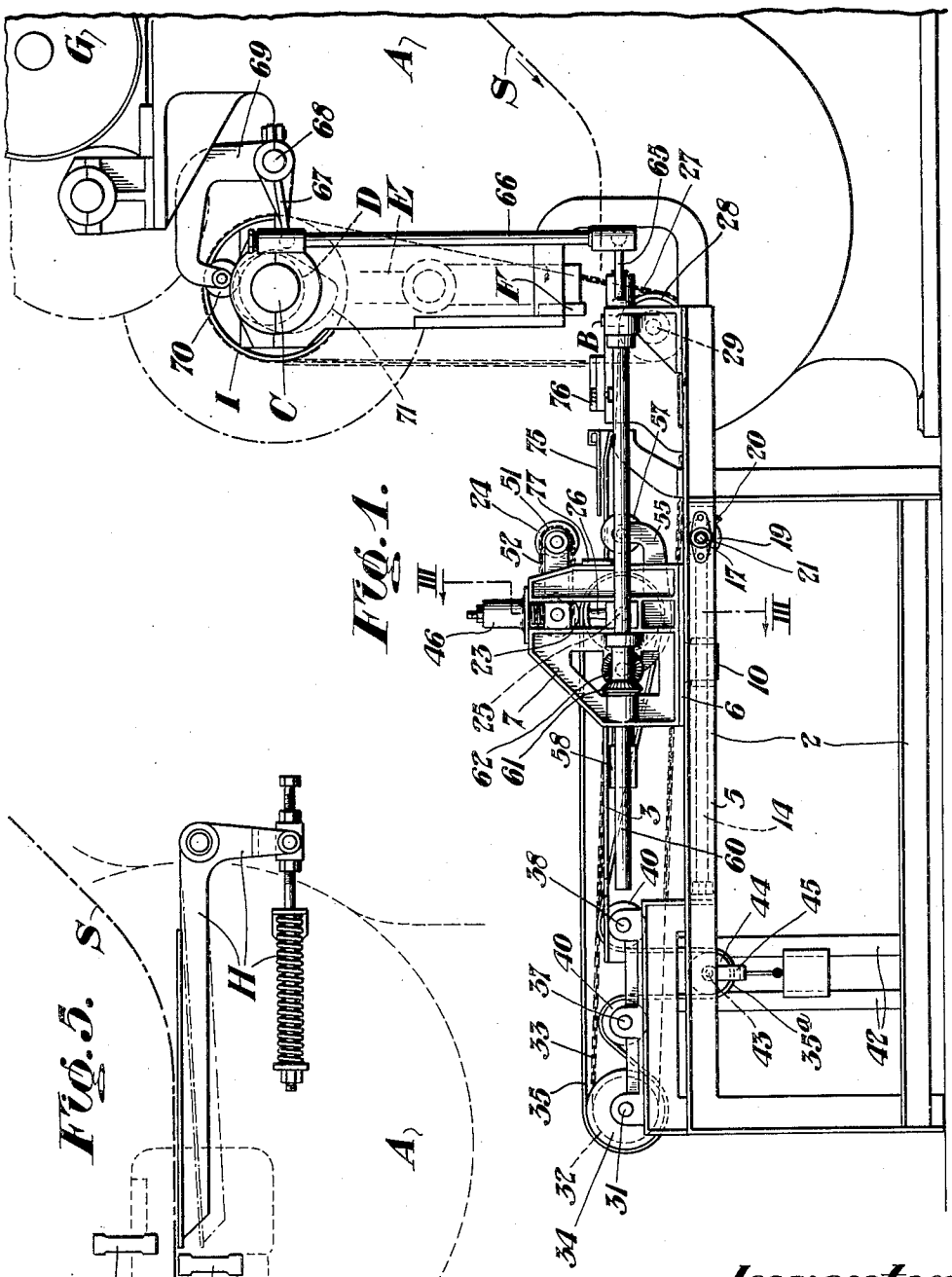


Fig. 1.

Fig. 5.

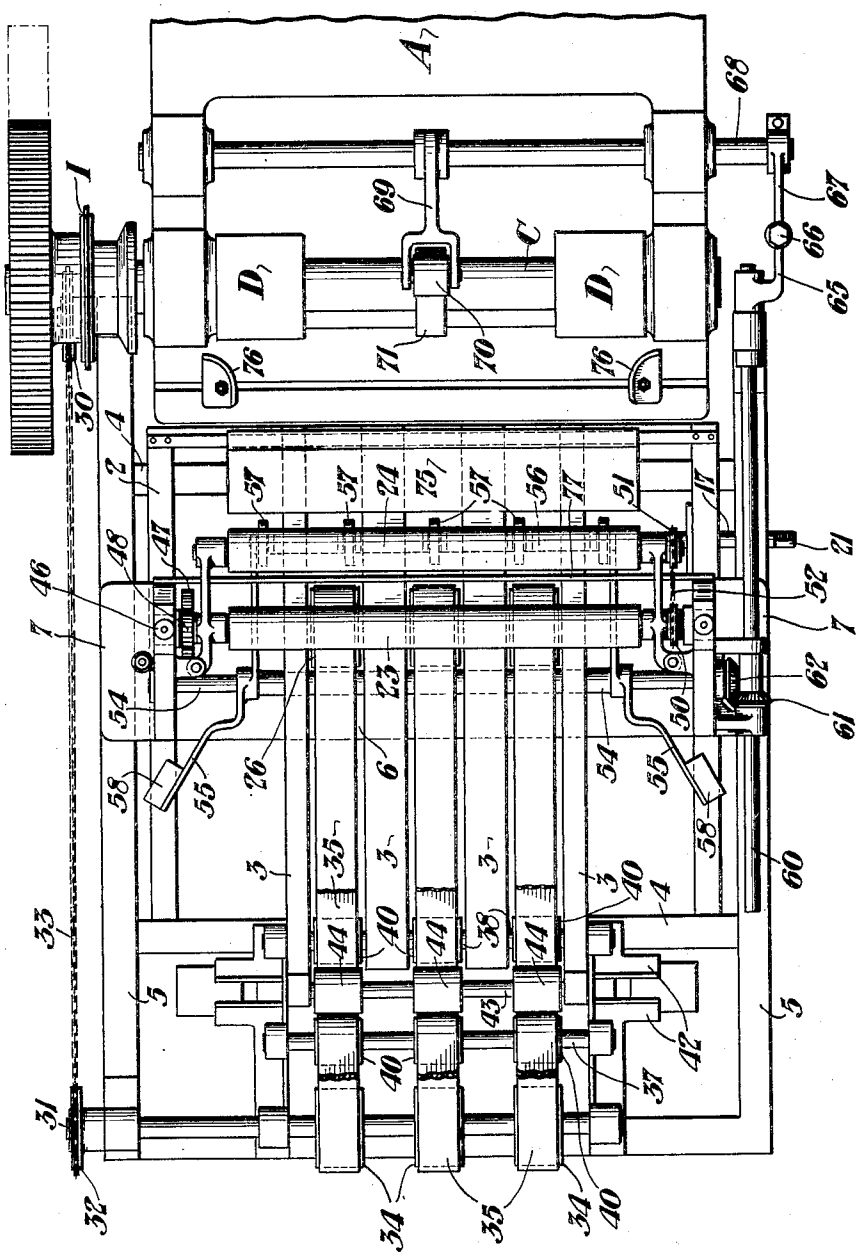
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Original Filed Jan. 23, 1934 3 Sheets-Sheet 2

Fig. 2.



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Original Filed Jan. 23, 1934 3 Sheets-Sheet 3

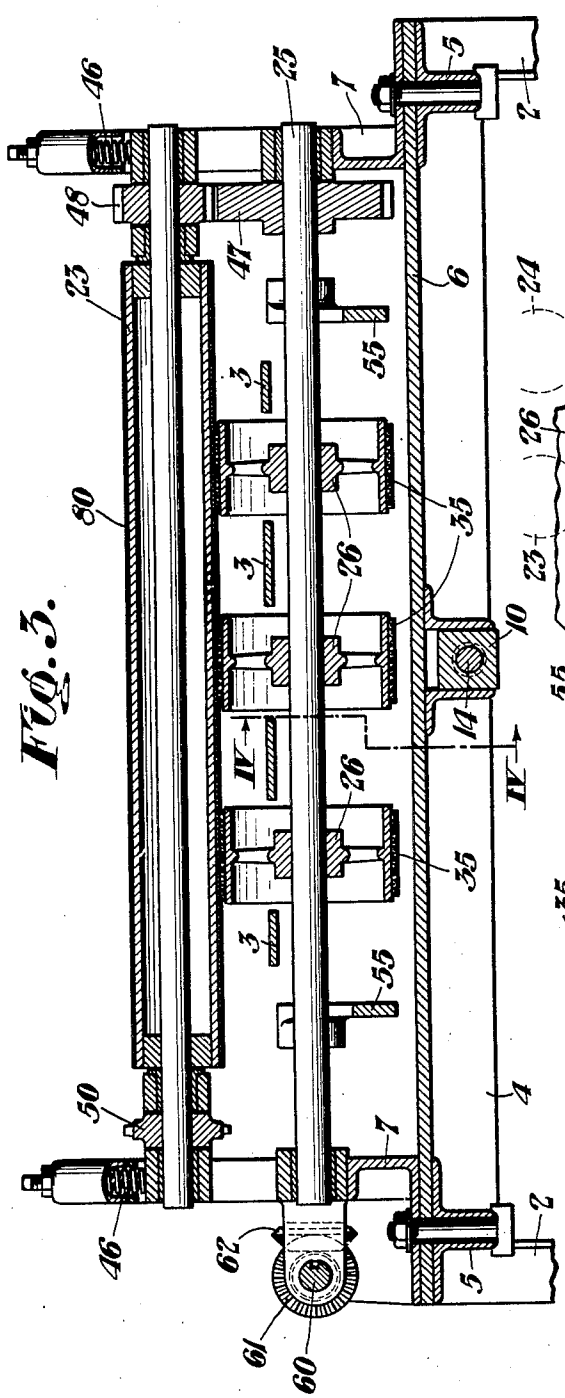


Fig. 3.

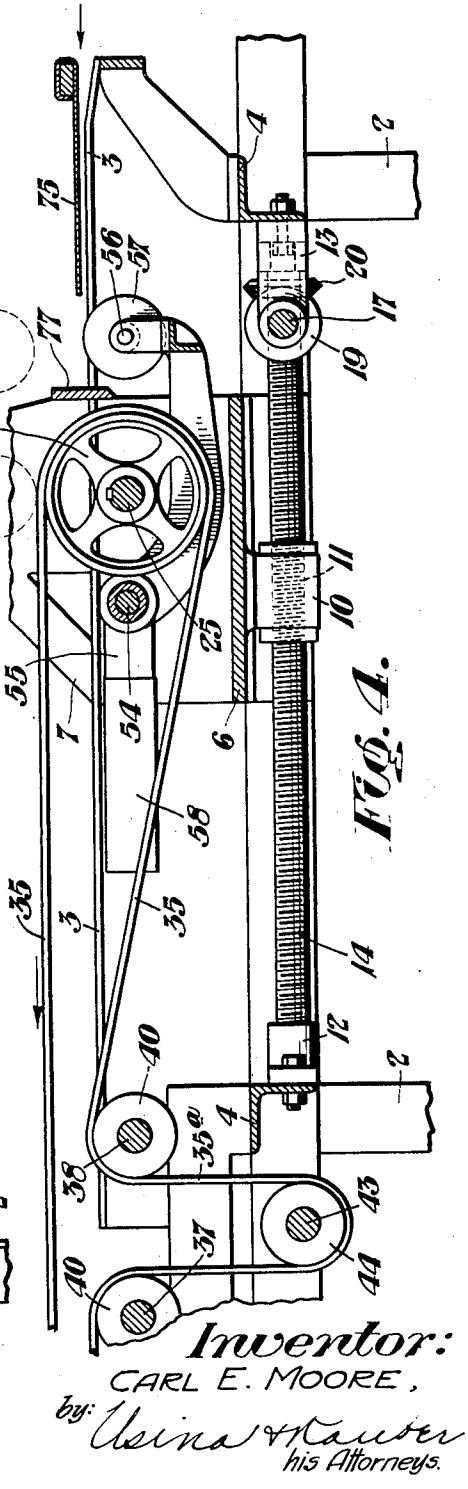


Fig. 4.

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Patented Dec. 14, 1937

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UNITED STATES PATENT OFFICE

2,102,374

CONVEYER

Carl E. Moore, Gary, Ind., assignor to American Sheet & Tin Plate Company, a corporation of New Jersey

Original application January 23, 1934, Serial No. 707,979. Patent 2,025,418, dated December 24, 1935. Divided and this application November 27, 1935, Serial No. 51,908

3 Claims. (Cl. 271—80)

This invention relates to conveyers, and more particularly to feed-out conveyers for machines for processing metallic strip, such as shearing devices and the like, although not limited thereto, the present application being a division of my co-pending application, Serial No. 707,979, filed January 23, 1934, now Patent No. 2,025,418 of December 24, 1935, and bearing the title of "Shear".

In my co-pending application referred to, a novel device is disclosed for shearing relatively long lengths of thin metallic strip and has among its objects the provision of an automatic apparatus which operates at a rate of speed which is materially higher than those of the prior art.

It is another object of the present invention to provide a novel conveyer which functions to remove metallic sheets from a metal-processing machine of any type in a manner which is both rapid and automatic.

The device of the present application is disclosed in the co-pending application referred to, but its utility is not limited to the art of cutting and shearing. It is, on the other hand, readily adaptable for feeding material from surfacing machines such as pickling or sand-blasting apparatus, tin or terne pots, metal-reducing apparatus such as cold mills, and various other installations too numerous to mention.

The foregoing and further objects will be apparent after referring to the drawings, in which:

Figure 1 is a side elevation of the device of the invention as it is used in combination with the shear of my co-pending application.

Figure 2 is a plan of the apparatus of Figure 1.

Figure 3 is a sectional view on the line III—III of Figure 1.

Figure 4 is an enlarged fragmentary sectional elevation.

Figure 5 is a detail.

Referring more particularly to the drawings, the letter A generally designates the metal-processing machine from which the device of the invention is adapted to remove the metallic sheets. In the present instance the metal-processing machine A comprises a housing in which there is mounted a stationary shear-blade B. A rotatable shaft C is journaled in the housing A above the stationary shear-blade B and carries an eccentric D to which there is connected a connecting-rod E. This shaft C continuously rotates as long as the machine A is being operated, a shear-knife F being connected to the free end of the connecting-rod E for cooperation with the stationary shear-knife B. An electric motor G is disposed on the upper part of the housing A and arranged to drive the rotatable shaft C in any suitable manner. A conventional spring-actuated lifting device is employed to raise the sheared sheets over the stationary shear-knife B, as shown at H in Figure 5.

According to the teaching of the present invention, a frame 2 is disposed immediately adjacent the exit end of the metal-processing machine A and provided with suitable guide devices 3 extending from immediately adjacent but somewhat below the upper level of the fixed shear-blade B. A plurality of spaced-apart transverse members 4 are carried by the frame 2 for rigidly holding a pair of spaced-apart longitudinal brace members 5 on which a cross-head 6 may be moved longitudinally of the frame 2 toward or away from the metal-processing machine A and in perfect alinement therewith. The adjustable cross-head 6 is made up in part of a pair of rigid end supports 7 which are constructed and arranged for sliding engagement with the longitudinal brace members 5. The lower portion of the cross-head 6 is provided with a sleeve 10 which is screw-threaded at 11. A pair of bearings 12 and 13 are connected to two of the spaced-apart transverse members 4 of the frame 2 in such manner as to rotatably support a shaft 14 which is screw-threaded over the major portion of its length. The screw-threaded shaft 14 is adapted to engage the screw-threads 11 of the sleeve 10 in such manner that upon rotation of the former the cross-head 6 will be adjusted upon the longitudinal brace members 5 of the frame 2. A rotatable shaft 17 is rotatably supported in suitable bearings carried by the right-hand transverse member 4 and carries on its end most adjacent the shaft 14 a pinion 19. The pinion 19 engages a similar pinion 20 which is secured to the adjacent end of the shaft 14. The shaft 17 extends at right angles to the shaft 14 and is provided on the extremity of its adjacent end with a squared portion 21 to which there may be attached a suitable handle or crank (not shown).

The cross-head 6 carries a pair of elongated rotatable rolls 23 and 24 and a shaft 25 which carries a plurality of pulleys 26.

A sprocket I is carried by the shaft C on the metal-processing machine A. This sprocket I drives a sprocket 28 which is secured to a shaft 29 that is suitably journaled on the metal-processing machine A through the medium of a chain 27.

The shaft 29 also carries a sprocket 30. A shaft 31 is journaled on the end of the frame 2 which is remote from the metal-processing machine A and carries a sprocket 32 which is connected to the sprocket 30 on the shaft 29 by a chain 33. The shaft 31 also carries a plurality of pulleys 34 which are equal in number to the pulleys 26 on the shaft 25. An endless belt 35 is disposed around and between each pair of the pulleys 26—34 on the shafts 25 and 31, respectively. These endless belts 35 are disposed inter-

mediate the guide devices 3, which extend to the metal-processing machine A.

The frame 2 supports a pair of spaced-apart transverse shafts 37 and 38, each of which carries an idler pulley 40 for each of the endless belts 35.

A pair of vertical frames 42 are secured to the frame 2 between the shafts 37 and 38 for guiding a vertically movable shaft 43 which carries an idler pulley 44 for each of the endless belts 35. The vertically movable shaft 43 is biased downwardly by means of a weighted yoke 45. The endless belts 35 are of sufficient length to maintain a downwardly extending loop 35a which is maintained taut by means of the vertically movable and weighted shaft 43 carrying the idler pulleys 44. This arrangement permits tautness of the endless belts 35 despite the movement of the cross-head 6 toward and away from the metal-processing machine A.

The elongated rotatable roll 23 on the cross-head 6 is spring-pressed downwardly, as shown at 46, against those portions of the endless belts 35 which are in contact with the upper portions of the pulleys 26.

A gear 47 is secured to one end of the shaft 25 and drives a gear 48 which is secured to the adjacent end of the elongated rotatable roll 23. A sprocket 50 is secured to the other end of the roll 23 and drives a similar sprocket 51 which is secured to the adjacent end of the elongated rotatable roll 24 through the medium of a chain 52.

A shaft 54 is journaled on the cross-head 6 and carries a pair of spaced apart and intermediately journaled levers 55 which extend transversely with respect thereto. One end of each of the levers 55 extends to terminate immediately below the elongated rotatable roll 24 and between these ends there is secured a shaft 56. A suitable plurality of freely-rotating rollers 57 is carried by this shaft 56. The opposite ends of the levers 55 are weighted, as shown at 58.

A shaft 60 is journaled on the frame 2 above but in parallelism with the shaft 14. This shaft 60 has secured thereto a pinion 61 which engages a similar pinion 62 on the adjacent end of the shaft 54. Thus, it will be seen that upon oscillation of the shaft 60 the shaft 56 will be caused to raise and lower the freely-rotating rollers 57 which are carried by the latter.

The end of the shaft 60 which is adjacent the metal-processing machine A is provided with a lever 65 which is connected by a link 66 to a similar lever 67 on an overhead shaft 68.

Suitable sheet-flattening guides and side-guides 75 and 76, respectively, are disposed between the metal-processing machine A and the freely-rotating rollers 57 on the shaft 56. The metallic sheets being operated upon by the metal-processing machine A are guided therefrom by the sheet-flattening guide 75 and moved along the guide devices 3 on the frame 2.

Any suitable means may be employed for moving the metallic sheets S through the metal-processing machine A, such as a gravity conveyer or the like, until they come into contact with a stationary stop 77 which is mounted on the cross-head 6. As the machine A continues its operation (whatever it may be), the shaft 60 is oscillated to raise the freely rotating rollers 57 into contact with each successive sheet and pinch it against the constantly rotating elongated roll 24.

In this manner the sheet is raised and directed between the constantly rotating elongated roll 23 and the constantly driven endless belts 35. The belts 35 feed the sheets onto a suitable rack (not shown).

In Figure 3 of the drawings the elongated roller 23 is shown as being covered with non-abrasive material 80 to prevent scratching or marring of the metallic sheets S. This is also preferably the case with the elongated roller 24, and the freely-rotating rollers 57 on the shaft 56.

According to the foregoing description it is readily seen how the operation of the metal-processing machine A raises the sheet in contact with the stationary stop 77 on the cross-head 6 and conveys it along the relatively elevated endless belts 35.

The cross-head 6 may be easily adjusted with respect to the machine A by the application of a suitable handle or crank to the squared portion 21 of the shaft 17. In this manner, various lengths of metallic sheet may be handled by the device of the invention.

While I have shown and described one specific embodiment of my invention, it will be understood that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of my invention, as defined by the following claims.

I claim:

1. A feed-out conveyer comprising longitudinally extending guide means, a cross-head mounted for sliding movement longitudinally relative to said guide means, means for moving said cross-head, a roller journaled on said cross-head, a second roller journaled on a fixed portion of said conveyer remote from said cross-head, an endless belt conveying element trained around said rollers and provided with a take-up loop, and a counterweighted roller mounted in said take-up loop.

2. A feed-out conveyer comprising longitudinally extending guide means, a cross-head mounted for sliding movement longitudinally relative to said guide means, means for moving said cross-head, a roller journaled on said cross-head, a second roller journaled on a fixed portion of said conveyer remote from said cross-head, an endless belt conveying element trained around said rollers and provided with a take-up loop, a counterweighted roller mounted in said take-up loop, and a pair of pinch rolls for feeding work-pieces onto said endless belt conveying element, at least one of said pinch rolls being movable vertically to lift the work-piece and guide it into alinement with said endless belt.

3. A feed-out conveyer comprising longitudinally extending guide means, a cross-head mounted for sliding movement longitudinally relative to said guide means, means for moving said cross-head, a roller journaled on said cross-head, a second roller journaled on a fixed portion of said conveyer remote from said cross-head, an endless belt conveying element trained around said rollers and provided with a take-up loop, a counterweighted roller mounted in said take-up loop, a pair of pinch rolls for feeding work-pieces onto said endless belt conveying element, at least one of said pinch rolls being movable vertically to lift the work-piece and guide it into alinement with said endless belt, and automatically operating means for moving said vertically movable roll.

CARL E. MOORE.