

May 10, 1932.

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1,857,566

SHEET METAL PACK CONVEYER

Original Filed Oct. 14, 1929 3 Sheets-Sheet 1

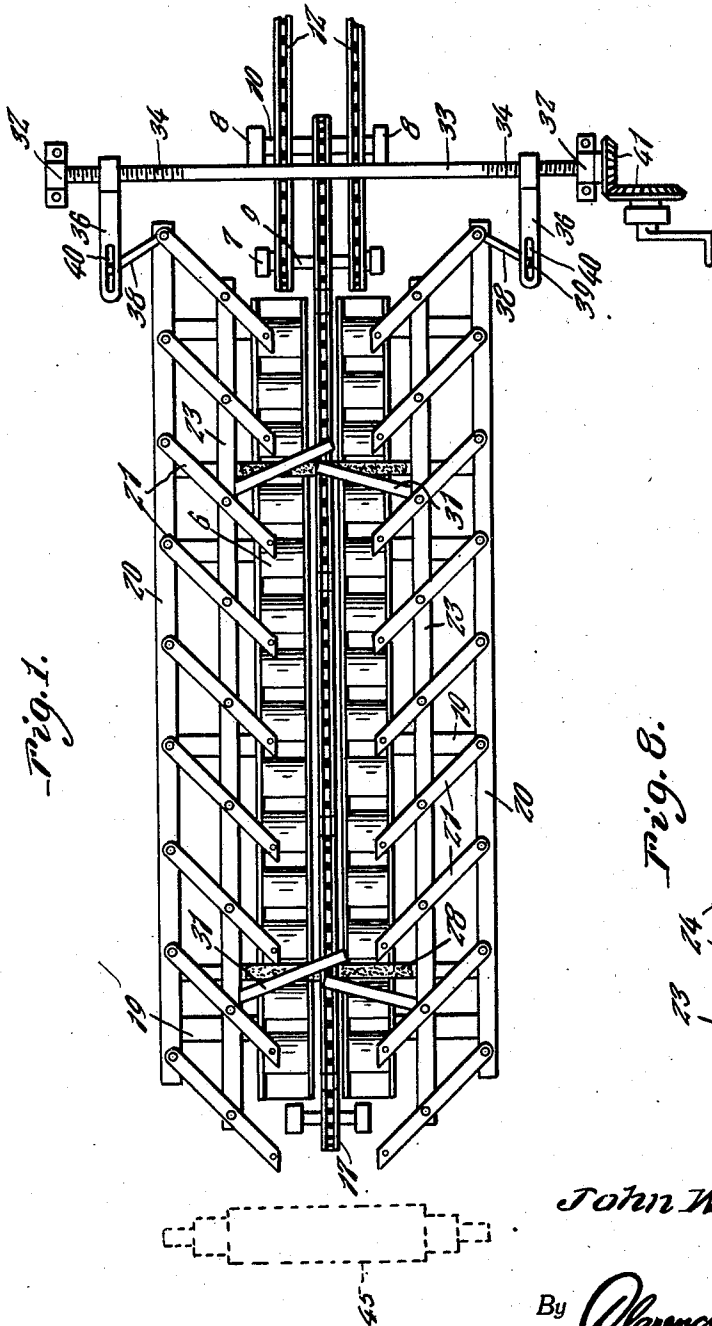


Fig. 1.



Fig. 8.

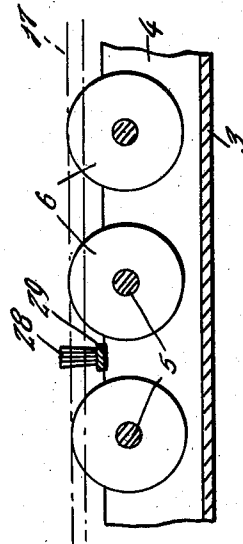


Fig. 9.

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Fig. 2.

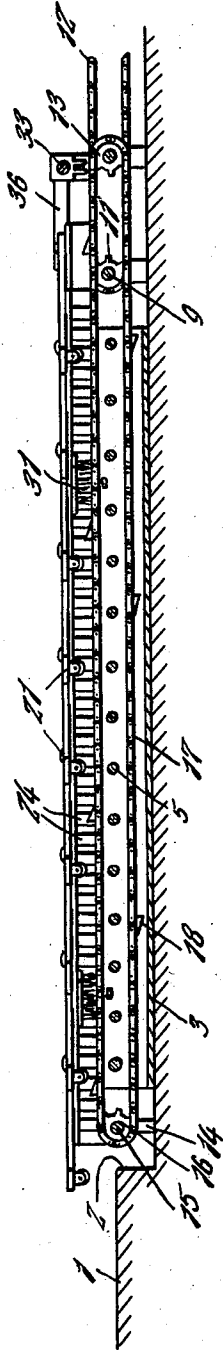
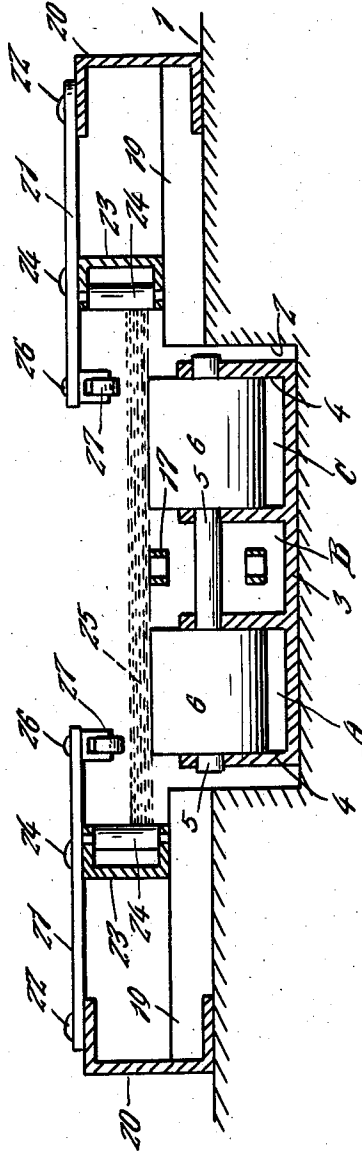


Fig. 3.



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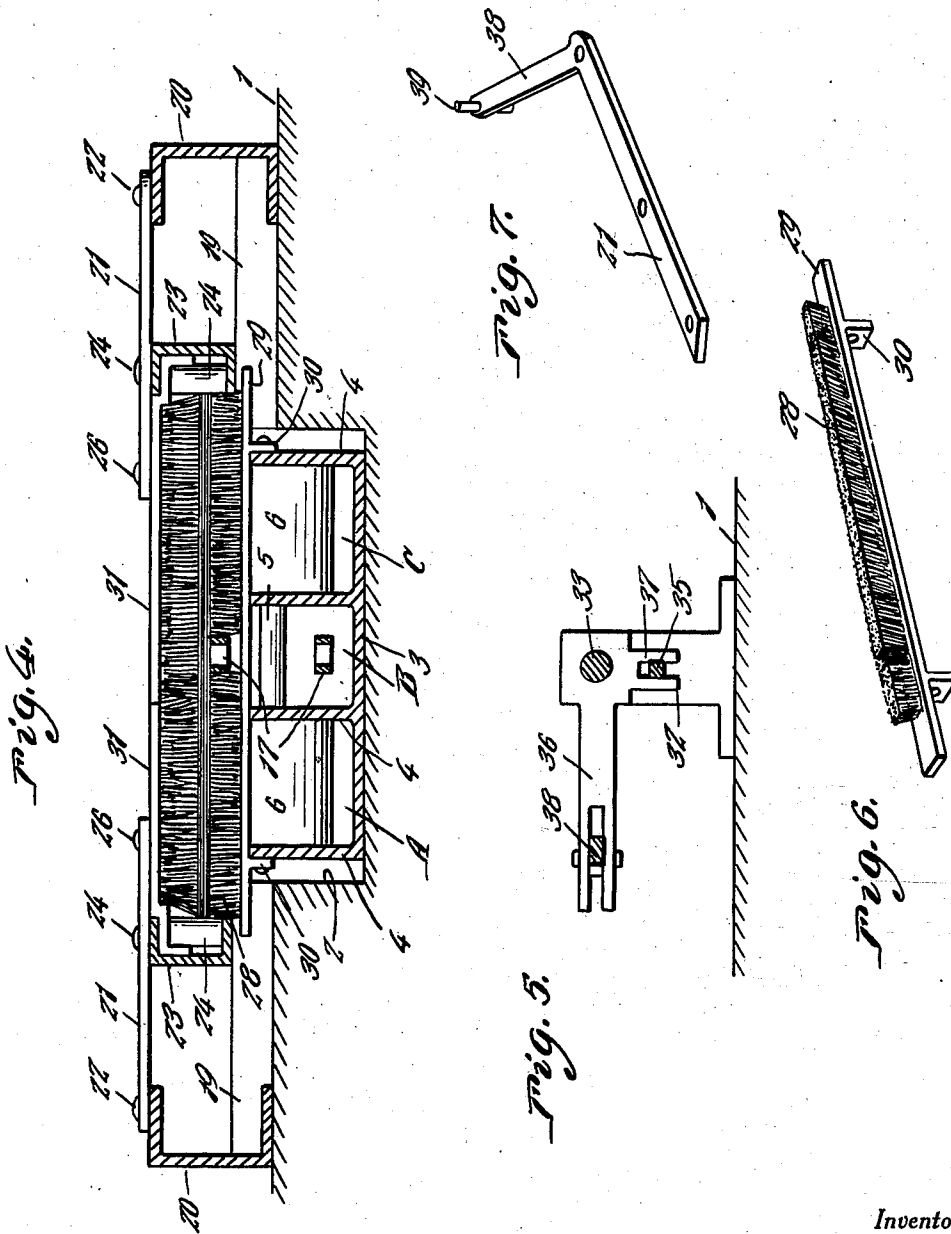
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SHEET METAL PACK CONVEYER

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SHEET METAL PACK CONVEYER

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This invention relates to a sheet metal pack conveyer and more particularly to a device of this character which is adapted for the purpose of conveying packs of sheet metal from a metal working furnace to a rolling mill, but it is to be understood that a conveyer constructed in accordance with this invention may be utilized for any purpose for which it is found adapted.

An important object of the invention is to provide, in a manner as hereinafter set forth, a conveyer of the aforementioned character, which is adapted to be associated with the outlet of a sheet metal working furnace and is provided with simultaneously adjustable guide elements extending longitudinally on opposite sides thereof for guiding the metal packs as same travel over the conveyer from said furnace to the rolling mill.

Another important object of the invention resides in the provision of inwardly projecting guard fingers which extend over the conveyer and are provided with swivelled rollers for maintaining the packs on the conveyer.

Another important feature of the invention resides in the provision of opposed cleaning elements or brushes which are mounted on and shift with the guide members and are for engagement with the packs as it travels over the conveyer for the purpose of cleaning the upper and lower surfaces thereof.

Other objects of the invention are to provide a conveyer of the aforementioned character which will be simple in construction, strong, durable, efficient in its use and which may be manufactured at low cost.

Other objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings, wherein like characters of reference designate corresponding parts throughout the several views, and wherein:—

Figure 1 is a top plan view of a sheet metal pack conveyer constructed in accordance with this invention.

Figure 2 is a longitudinal sectional view taken centrally through the conveyer.

Figure 3 is a cross-sectional view.

Figure 4 is a cross-sectional view showing the cleaning brushes in engagement with the metal packs on the conveyer.

Figure 5 is a detail view taken on the line 5—5 of Figure 1.

Figure 6 is a perspective view of one of the lower brushes.

Figure 7 is a perspective view of one of the bell crank levers.

Figure 8 is a detail view in elevation showing an end portion of one of the longitudinal guide members located on the side of the conveyer.

Figure 9 is a fragmentary longitudinal sectional view showing the position of the lowermost brushes on the conveyer.

Referring to the drawings in detail, the reference character 1 designates the floor or ground in front of the furnace (not shown) and in which is formed a channel 2 of appropriate depth. An elongated metal plate 3 extends longitudinally through the channel 2 and has mounted thereon the integral, upstanding, longitudinal spaced flanges or ribs 4 which provide channels A, B and C. A plurality of longitudinally spaced rotary shafts 5 are journaled through the upstanding flanges 4 and have mounted thereon, intermediate the pairs of said flanges, the cylindrical rollers 6 which project above the flanges 4.

Rearwardly of the channel 2 on the floor 1 are mounted pairs of longitudinally spaced standards 7 and 8 and between each of the pairs of standards a horizontal shaft 9 and 10 extends. A pair of sprockets 11 are mounted for rotation on the shaft 9 and have trained thereover the endless conveyer chains 12 which extend into the metal working furnace and are adapted to convey the metal packs therefrom. The upper and lower strands of the chain 12 pass above and below the shaft 10 respectively. A sprocket 13 is mounted on the intermediate portion of the shaft 10. At the forward end of the conveyer a pair of vertical standards 14 are mounted between which extends a horizontal shaft 15 upon which is mounted for rotation the sprocket 16. An endless chain 17 is

trained over the sprockets 13 and 16 and travel between the innermost of the vertical flanges 4 of the conveyer. The chain 17 is provided with a plurality of longitudinally spaced outwardly extending lugs 18. As will be seen in Figures 2 and 3 of the drawings, the chains 12, 17 and the conveyer roller 6 are all longitudinally aligned and in substantially the same horizontal plane.

A plurality of longitudinally spaced strips 19 are mounted on the floor 1 on opposite sides of the channel 2 and extend outwardly therefrom at right angles.

Longitudinally extending channel irons 20 are connected to the outer ends of the strips 19 with their channelled sides disposed inwardly for the reception of said strips. A plurality of arms 21 are pivotally connected, as at 22 to the upper sides of the channel bars 20 in longitudinally spaced relation thereon and extend diagonally inwardly therefrom. Inwardly of their free ends the arms 21 are pivotally connected to channel bars 23, as at 24 and said bars 23 also have their channelled sides disposed inwardly and are of less height than the bars 20 and are shiftably supported in the strips 19. Vertical guide rollers 24 are journaled in the channel bars 23 and are for engagement by the sheet metal packs 25 for retaining the same in its proper position on the conveyer as it travels thereover.

The inwardly projecting free ends of the arms 21 have swivelled thereon, as at 26, the depending rollers 27 for engagement with any upturned portion of the packs for the purpose of bending the same down into substantially a horizontal plane. The rollers 27 also function in a manner to retain the packs on the conveyer as will be obvious.

For the purpose of sweeping foreign matter from the upper and lower surfaces of the pack as it moves over the conveyer a plurality of opposed brushes are provided and comprise a lower brush including the bristles 28 which extend upwardly on opposite sides of the upper strand of the chain 17 for engagement with the lower surface of the pack and said bristles are mounted on an elongated bar 29 provided with the downwardly extending apertured ears 30 for securing the brush on the upper end of the flanges 4 intermediate the rollers 6 thereon, as seen most clearly in Figures 4 and 9 of the drawings. The upper brushes comprise a pair of overlapping diagonally extending supporting bars 31 having the usual bristles depending therefrom and which are anchored, at one end, in the channel bars 23.

A pair of vertical standards 32 are positioned rearwardly of the conveyer constituting this invention and on opposite sides thereof and have journaled therein the opposite end portions of a rotary shaft 33, the opposite end portions of which are reversely threaded as at 34. A guide rod 35 is also supported at

its opposite ends in the standards 32 beneath the shaft 33 and in parallel spaced relation thereto. A pair of forwardly extending bifurcated arms 36 are threaded on the end portions of the shaft 33 and are maintained against rotation thereon and in a horizontally extending position through the medium of the depending guide fingers 37 which slidably embrace the rod 35. As will be apparent, the arms 36 are shifted longitudinally on the shaft 33 in opposite direction upon rotation of said shaft. The rearmost of the arms 21 have rigidly connected to the pivoted ends thereof the outwardly extending crank levers 38 which extend between the furcations on the arms 36 and have mounted therein cross pins 39 which extend into elongated slots 40 in said furcations. One end of the shaft 33 extends beyond its respective supporting standards 32 and has mounted thereon a beveled gear 41. A standard 42 is mounted adjacent the gear 41 and has journaled therein a crank handle 43 having mounted thereon a beveled gear 44 which is in mesh with the gear 41. The reference numeral 45 designates, in dotted line, one of the rollers of the rolling mill to which the sheet metal packs are to be conducted.

Power may be applied for moving the chain 17 in any suitable manner, as by mounting a belt driven pulley on either of the shafts 10 or 15. It is to be understood that as many pairs of the brushes may be mounted on the device as is desired and it is further understood that the device may be of any desired length and instead of being mounted on a floor or the ground, the same may be mounted on an elevated support.

In the operation of the device, power is applied to the endless chain 17 for driving the same and when the sheet metal packs 25 reach the end of the conveyer chain 12 from the furnace, the same will pass to the rollers 6 journaled in the flanges 4 and the lugs 18 will engage the rear ends of the packs and push the same longitudinally over the rollers. The longitudinal side edges of the packs will engage the guide rollers 24 in the channel bars 23 for maintaining said packs in proper alignment on the conveyer. For the purpose of accommodating packs of greater or less width, the crank handle 43 is actuated for rotating the shaft 33 and the arms 36 move longitudinally on said shaft with the result that the crank lever 38 which is rigidly mounted on the rearmost of the arms 21 is swung in a horizontal plane through the medium of the pin and slot connection with said arms 36. This, of course, causes the arms to which the crank levers 38 are connected to swing in an arc on their pivots 22 and as all of said arms are connected together through the medium of the channel bars 23, the same will swing in unison and the channel bars 23 having the guide rollers 24 journaled

therein will be moved laterally with respect to the conveyer rollers 6, as will be obvious. The overlapping upper brushes 31 are sufficiently long to cover the entire upper surface of the packs when the guides are in their outermost position. Should the ends or corners of the metal sheet constituting the packs being bent upwardly, the swivelled rollers 27 will engage the same and force it down into a substantially horizontal plane. When the packs reach the end of the conveyer, the same are taken therefrom by the mill rollers 45.

It is believed that the many advantages of a conveyer constructed in accordance with this invention will be readily understood, and although the preferred embodiment of the invention is as illustrated and described, it is to be understood that changes in the details of construction may be had which will fall within the scope of the invention as claimed.

What is claimed is:—

1. A sheet metal pack conveyer of the character described comprising spaced series of conveyer rollers, a power chain extending longitudinally therebetween, stationary bars on opposite sides of the rollers in spaced relation thereto, a series of arms pivotally connected at one end to each of the stationary bars in longitudinally spaced relation, shiftable bars pivotally connected to the arms inwardly of the stationary bars, guide rollers mounted on said shiftable bars and means for moving said arms and the shiftable bars in unison toward or from the conveyer rollers.

2. A sheet metal pack conveyer of the character described comprising spaced series of conveyer rollers, a power chain extending longitudinally therebetween, supporting strips extending laterally from the conveyer rollers, stationary bars at the outer ends thereof, horizontally swingable arms pivotally connected, at one end, to the stationary bars and extending inwardly therefrom, shiftable bars pivotally connected to the arms and shiftable supported on the strips, guide rollers on the shiftable bars and means for shifting said arms, stationary bars and guide rollers toward or from the conveyer rollers.

3. A sheet metal pack conveyer of the character described comprising spaced series of conveyer rollers, a power chain extending longitudinally therebetween, supporting strips extending laterally from the conveyer rollers, stationary bars at the outer ends thereof, horizontally swingable arms pivotally connected, at one end, to the stationary bars and extending inwardly over the conveyer rollers, work engaging rollers pivotally depending from the inner end portion of the arms, shiftable bars pivotally connected to the arms intermediate their ends and movably supported on the strips, guide rollers on the shiftable bars and means for shifting said arms, stationary bars and guide

rollers in unison toward or from the conveyer rollers.

4. A sheet metal pack conveyer of the character described comprising spaced series of conveyer rollers, a power chain extending longitudinally therebetween, supporting strips extending laterally from the conveyer rollers, stationary bars at the outer end thereof, horizontally swingable arms pivotally connected at one end to the stationary bars and extending inwardly over the conveyer rollers, work engaging rollers pivotally depending from the inner end portions of the arms, shiftable bars pivotally connected to the arms intermediate their ends and movably supported on the strips, guide rollers on the shiftable bars and means for shifting said arms, stationary bars, guide rollers and work engaging rollers toward or from the conveyer rollers in unison comprising crank levers rigidly connected to certain of the arms, a transverse rotary shaft adjacent said crank levers and having reversely threaded end portions, arms mounted for opposite longitudinal movement on said shaft when the same is rotated, said arms operatively connected to the free end of the crank levers and means at one end of the rotary shaft for operating the same.

In testimony whereof I affix my signature.

JOHN W. PERRY.

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