May 8, 1956 J. J. SHIELDS 2,744,616

SIDE OUTLETS FOR BAG ELEVATORS

Filed Feb. 13, 1953 2 Sheets-Sheet 1

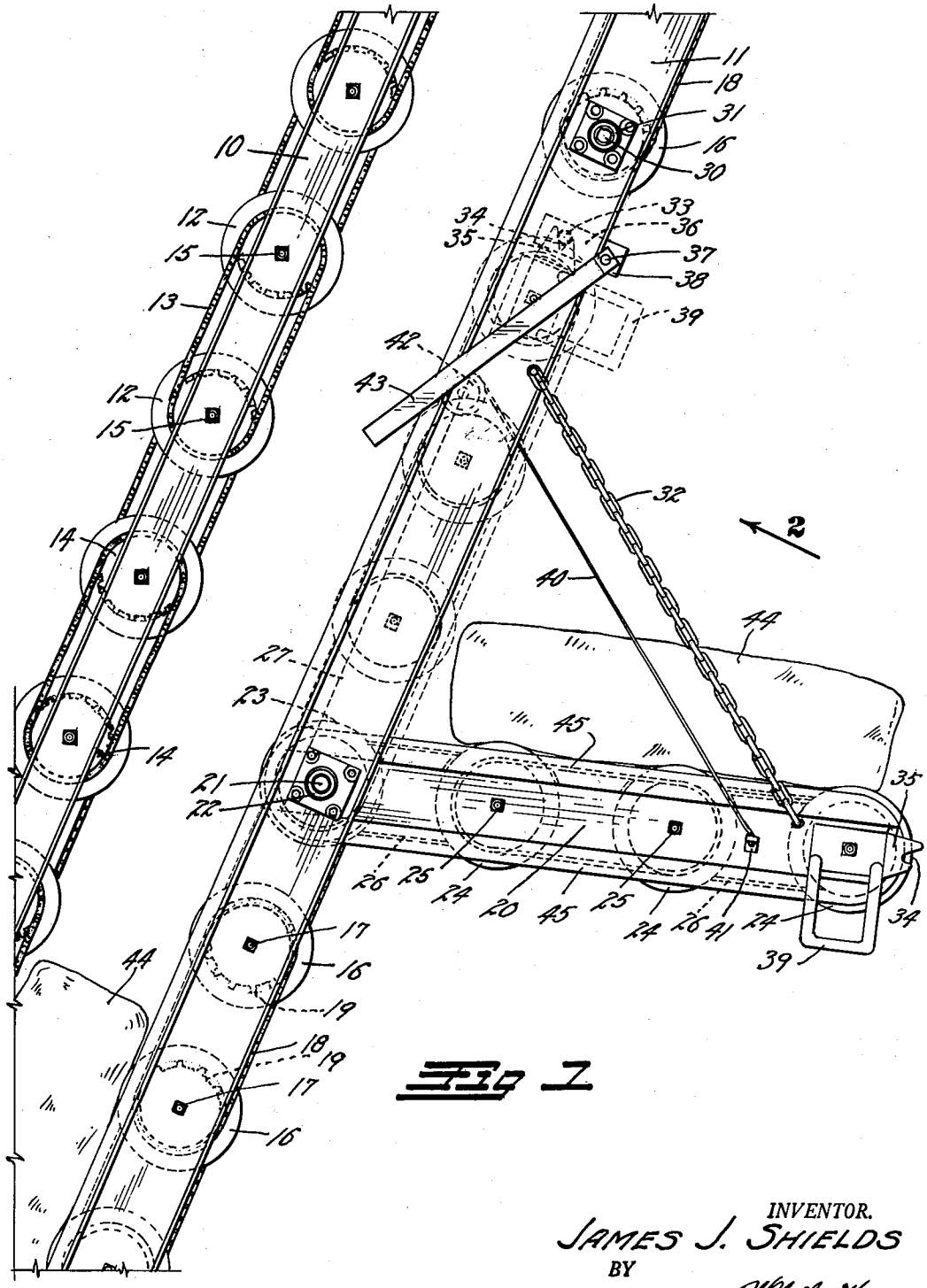


Fig 1

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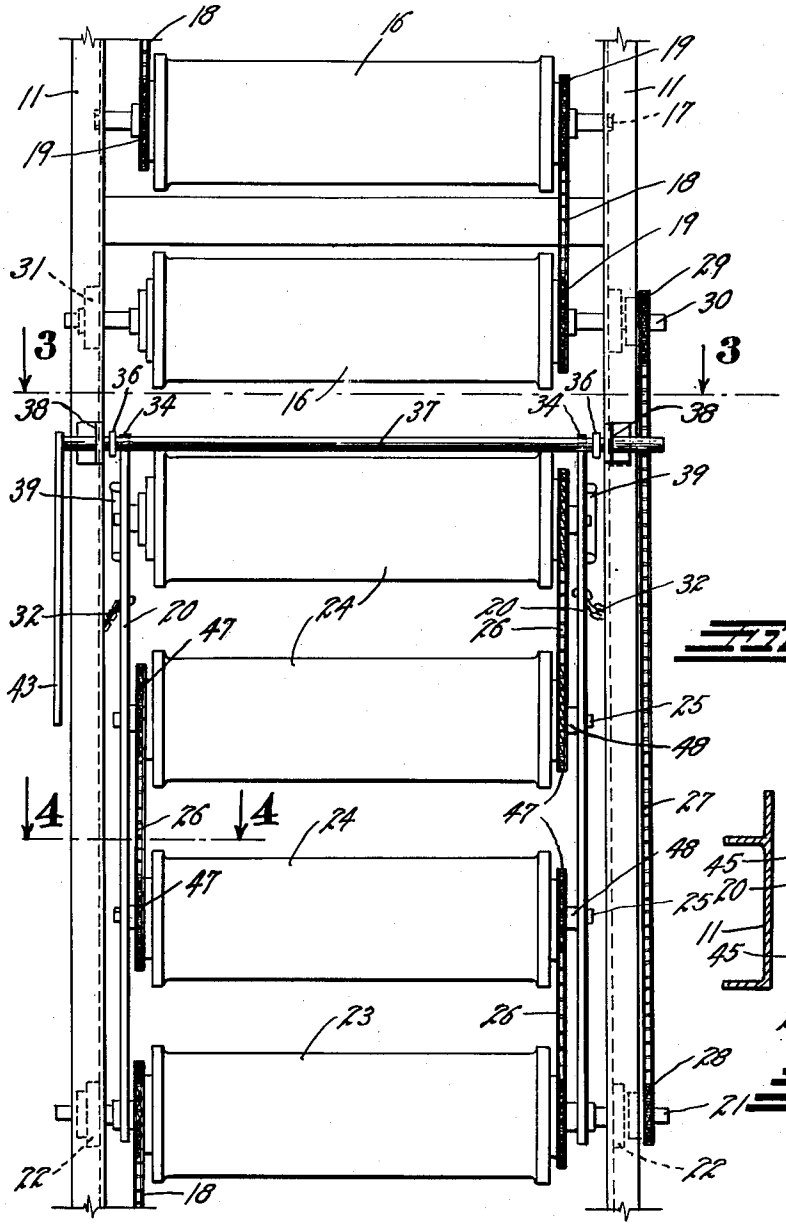


Fig 2

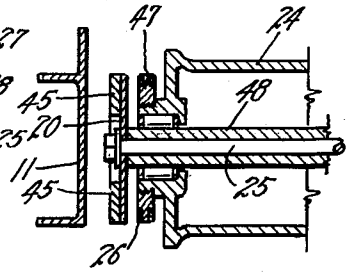


Fig 4

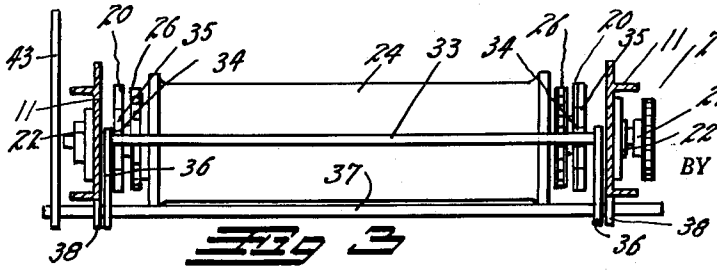


Fig 3

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SIDE OUTLETS FOR BAG ELEVATORS

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5 Claims. (Cl. 198—127)

This invention relates to a bag elevator of the type in which bags are gripped between two series of power-driven rollers on inclined frames, and has for its principal object the provision of a highly efficient device which will enable bags to be discharged from the conveyor at predetermined and selected elevations. The invention might be termed a side outlet for bag elevators.

Another object is to provide a side outlet for bag elevators which will not interfere with the normal operation of the bag elevator, and which will convey the bags from the conveyor to any desired discharge point.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention, reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a fragmentary side view of a portion of a conventional power-driven roller-type bag elevator, illustrating the invention in place thereon;

Fig. 2 is a face view of the lower elevator member, looking in the direction of the arrow 2 in Fig. 1;

Fig. 3 is a horizontal section through the lower elevator member, taken on the line 3—3, Fig. 2; and

Fig. 4 is a detail section through one extremity of a gate roller employed in the invention, taken on the line 4—4, Fig. 2.

Bag elevators of the type to which this invention applies employ an inclined upper roller frame **10** and a similarly inclined lower roller frame **11**. The upper frame **10** is provided with a plurality of spaced pressure rollers **12**, each of which is provided with chain sprockets **14** at its opposite extremities. The rollers **12** are driven in series through the medium of a plurality of endless drive chains **13** which are trained about the sprockets **14** of the successive pairs of adjacent rollers at alternating opposite extremities of the rollers. The rollers and their sprockets are usually rotatably mounted on axle tubes which surround connecting bolts **15** extending between the side members of the rollers frame **10**. The lower roller frame **11** is similarly provided with conveyor rollers **16** similarly mounted on axle tubes **46** carried on connecting bolts **17** extending between the side members of the frame **11**. The conveyor rollers **16** are also connected and driven by means of a plurality of drive chains **18** similar to the chains **13** previously described, and operating over chain sprockets **19** mounted on the rollers **16**, similarly to the sprockets **14** on the rollers **12**.

The improved side outlet is applied to the lower roller frame **11** and employs two hinged side gate frame members **20**, there being one frame member **20** positioned inside of and adjacent each of the side members of the lower roller frame **11**. The side gate frame members **20** are stiffened by means of stiffening bars **45** and are

hingedly mounted on a hinge shaft **21** rotatably supported in suitable bearings **22** on the side members of the lower roller frame **11**.

A hinge roller **23** is fixedly mounted on the hinge shaft **21** and is connected by one of the drive chains **18** to the sprocket **19** of the next lowermost conveyor roller **16**. A plurality of gate rollers **24** are rotatably mounted on spacing tubes **48** which surround tie bolts **25** which extend in parallel relation between the gate frame members **20**. The gate rollers **24** are provided with chain sprockets **47** at their opposite extremities and are driven in succession from each other and from the hinge roller **23** by means of gate drive chains **26** trained about the sprockets **47**.

Power is transmitted from the hinge shaft **21** to the conveyor roller **16** above the side outlet through the medium of an endless by-pass transmission chain **27** extending from a drive sprocket **28** on the hinge shaft **21** to a driven sprocket **29** secured on a roller shaft **30** journalled in suitable anti-friction bearings **31** on the side members of the roller frame **11** and extending across the frame **11** above the uppermost gate roller **24**. The lowermost conveyor roller **16** above the outlet is fixedly mounted on the shaft **30** to rotate therewith and transmit power to the conveyor rollers **16** thereabove through the medium of the drive chains **18**.

The gate frame members **20** can be swung outwardly and downwardly from the roller frame **11**, the outward and downward movement being limited by means of stop chains **32**. The gate frame members **20** can also be swung inwardly and upwardly into alignment with the roller frame **11** and latched in alignment by means of a horizontal, liftable latch bar **33**. The latch bar **33** is positioned to engage latching notches **34** in the extremities of latch members **35** permanently mounted on the extremities of the gate frame members **20**, and is carried between two latch arms **36** which are fixedly secured on a latch shaft **37**. The latch shaft **37** is rotatably mounted in supporting ears **38** on the roller frame **11** and may be rotated by means of a hand lever **43** to lift the latch bar **33** from the latching notches **34**.

The weight of the gate frame members **20** and their associated rollers is counter-balanced by means of counterweights (not shown) positioned at some convenient point throughout the length of the roller frame **11**, and connected to the gate frame members **20** by means of counterweight cables **40** extending from attachment clips **41** on the gate frame members **20** and over guide pulleys **42** on the roller frames **11**. Suitable hand grips **39** are mounted on the gate frame members **20** to facilitate opening and closing the gate.

It can be seen that if the gate frame members **20** are in the closed or broken line position, the bags, indicated at **44**, will be conveyed upwardly on the incline of the conveyor past the gate section, since the gate rollers **24** are rotating in unison with the conveyor rollers **16**.

It can also be seen that if the gate is unlatched and swung to the open, solid line position of Fig. 1, the bags **44** will tilt outwardly as they pass the hinge roller **23** and will drop onto the gate rollers **24** and be conveyed over the free end of the gate. The invention is particularly useful where the bag elevator extends upwardly through several floors of the building. By installing one of the above described side outlets on each floor any desired bags may be discharged on any desired floor.

While a specific form of the improvement has been described and illustrated herein, it is to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. A side outlet device for a bag elevator of the type having an inclined bag-supporting roller frame consisting of two parallel side members with a series of power-driven spaced-apart conveyor rollers extending horizontally and transversely between said side members, comprising: two hinged gate frame members, there being one gate frame member hinged to and positioned parallel to each of said side members; gate rollers mounted on and extending between said gate frame members in parallel relation to and normally in alignment with and forming an intermediate roller section in said series of conveyor rollers; and means for swinging said hinged gate members downwardly from said side members to an open position so as to swing said gate rollers out of alignment with said series of conveyor rollers so that a bag traveling up said series of rollers, when said roller section is in the open position, will be conveyed on said gate rollers out of the line of travel of said series.

2. A side outlet device for a bag elevator as described in claim 1 having power transmission means for rotating said gate rollers from said conveyor rollers; and a second power transmission means for driving the conveyor rollers above said intermediate roller section from the conveyor rollers below said intermediate section.

3. A conveyor system comprising: an upwardly inclined, power-driven roller conveyor; an upper roller frame positioned in parallel relation to the upper face of said roller conveyor and acting to support articles on the upper face of said conveyor, said conveyor having an elongated open section intermediate the extremities of the conveyor; an elongated gate roller conveyor member hingedly mounted adjacent its one extremity to said conveyor below said open section and adapted to close said open section to complete said conveyor, and adapted to swing in a downward direction so as to project horizontally from the lower side of said inclined conveyor to form a conveyor platform; and means for supporting said gate roller conveyor member on said conveyor.

4. A bag elevator comprising: an upper inclined frame; a lower inclined frame, said frames consisting of two parallel, spaced-apart side members; a series of parallel, spaced conveyor rollers mounted between the side members of said lower frame; a similar series of parallel, spaced press rollers in said upper frame adapted to press a bag against the conveyor rollers of said lower frame; a hinge shaft extending between the side members of said lower frame, one of said conveyor rollers being mounted on said hinge shaft; a roller shaft extending between the side members of said lower frame, one of said conveyor rollers being mounted on said roller shaft, said hinge and roller shafts being spaced-apart a greater distance than the remaining conveyor rollers in said series to provide a side outlet space in said series; two side-gate frame members hingedly mounted on said hinge shaft and extending on each side of said outlet space; a plurality of gate rollers mounted between said side gate members; means for locking said side gate frame members in alignment with the side members of said lower frame so that said gate rollers will normally form a continuation of said series of conveyor rollers across said outlet space; and means for supporting said side gate frame members and said gate rollers in a lowered position out of alignment with the side members of said lower frame so that a bag traveling upwardly between said press rollers and said conveyor rollers will be directed outwardly from its normal path onto said gate rollers.

5. A bag elevator as described in claim 4 having power means driving said hinge shaft; a first power transmission means between said hinge shaft and said gate rollers for driving the latter; and a second power transmission device between said hinge shaft and said roller shaft for driving the conveyor rollers above said side outlet space.

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