Dec. 14, 1937. G. H. ROSE 2,102,337

APPARATUS FOR HANDLING COILS

Filed Nov. 24, 1936 3 Sheets-Sheet 1

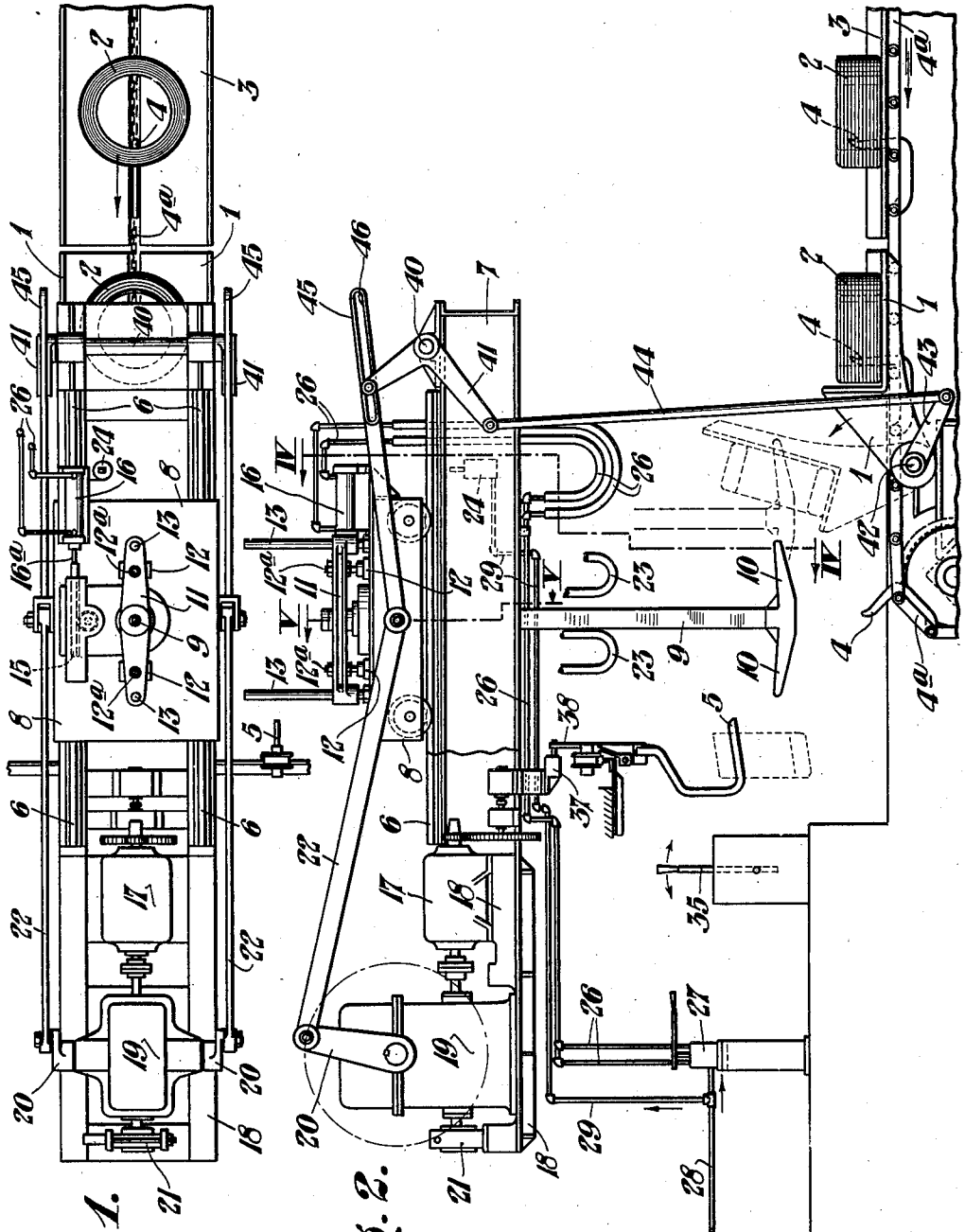


Fig. 1.

Fig. 2.

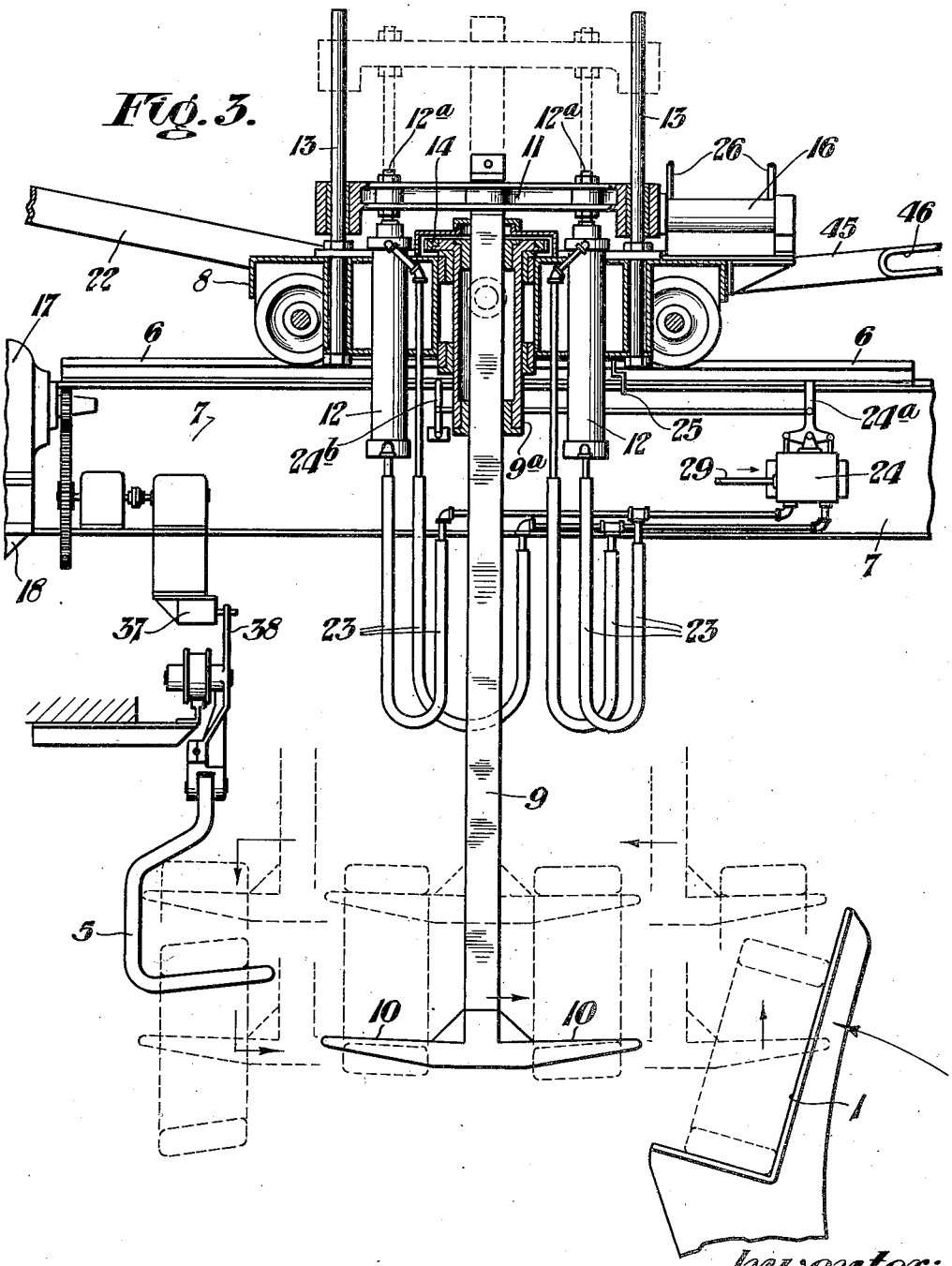
Inventor:
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FIG. 3.



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Fig. 4.

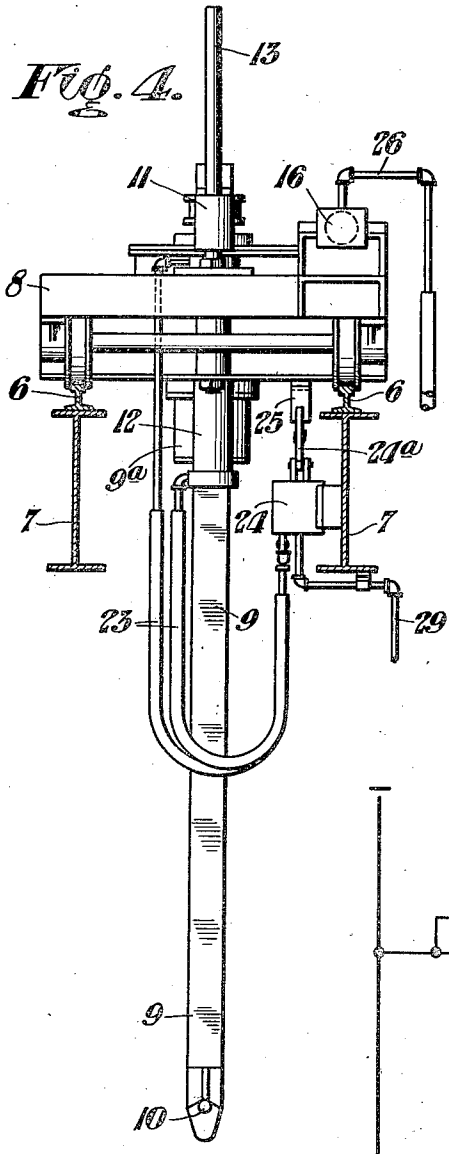


Fig. 5.

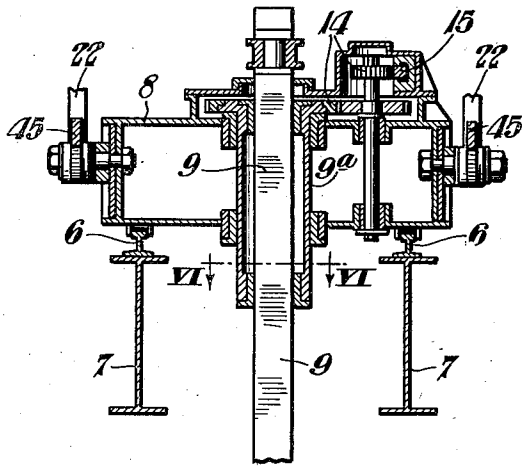


Fig. 7.

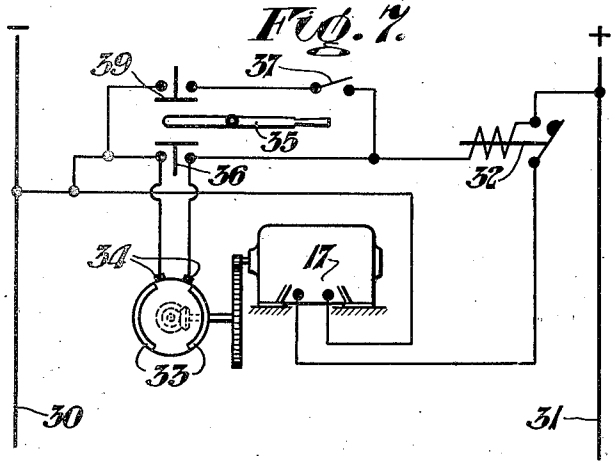
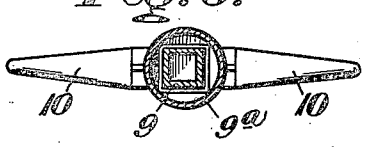


Fig. 6.



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UNITED STATES PATENT OFFICE

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APPARATUS FOR HANDLING COILS

George H. Rose, Cleveland, Ohio

Application November 24, 1936, Serial No. 112,596

4 Claims. (Cl. 214—91)

This invention relates to a coil handling mechanism, and, more particularly, to a device for effecting the transfer of bundles of coils from one type of conveyer to another.

In my co-pending application, Serial No. 41,807, filed September 23, 1935, now Patent No. 2,074,809, dated March 23, 1937, I have illustrated one form of coil handling device for transferring coils from an endless conveyer to a hook conveyer. The transfer of the coils in that application is effected by means of a double-ended hook depending from a carriage which rides on a trackway extending between, and substantially above, the endless conveyer and the hook conveyer. The endless conveyer is arranged to direct coils of rod to a point above that at which the transfer is effected, where, by force of gravity they are caused to slide down an inclined apron to a point of repose in the vertical, substantially adjacent the double-ended hook, for easy engagement by the latter.

It was found that in handling the coils in the above described manner, the sliding of the coils down the inclined apron from the initial conveyer to the point of repose, subjected each bundle to such sudden and violent impact as to cause its convolutions to become disarranged, whereby great inconvenience in subsequent handling and processing of the coil was incurred.

The present invention has for an object, obviating the above difficulty by providing a means associated with the initial conveyer for handling the coils so that their orderly arrangement will be preserved.

Other objects and advantages will become apparent hereinafter by reference to the annexed specification when considered in conjunction with the accompanying drawings, in which:

Figure 1 is a top plan view of the invention.

Figure 2 is a side elevational view thereof.

Figure 3 is an enlarged longitudinal section of the apparatus shown in Figure 2.

Figures 4 and 5 are enlarged cross sectional views taken along lines IV—IV and V—V in Figure 2.

Figure 6 is a cross sectional view taken along lines VI—VI in Figure 3.

Figure 7 is a wiring diagram of the electrical system involved in the operation of the double-ended hook transfer device.

Since the construction and operation of the double-ended hook transfer device is substantially the same as that shown and described in my co-pending application above referred to, a detailed description thereof will not be given here; the reference numerals in the drawings referring thereto being the same as those applied to the drawings and used in the description of my co-pending application, to which reference may be made for a complete understanding of the operation thereof. It will suffice to say that the device serves to transfer the rod bundles 2, reclining upon an endless conveyer comprising an apron 3, intermittently moved dogs 4, and motivating conveyer chain 4*a*, to hook conveyer 5; the latter being driven past the discharge end of the horizontal conveyer to receive the coils therefrom. The coils on the horizontal conveyer are arranged for engagement by the double-ended hook 10 depending from carriage 8, which is adapted to ride on trackway 6. The trackway 6 is arranged to span the distance between the endless and the hook conveyers. The double-ended hook is adapted to be raised, lowered and rotated, by the shaft 9, which, in turn, is controlled from the carriage 8 so that when the carriage is moved to place one of the ends of the double-ended hook within a coil, it may be raised to lift the coil and to position it for engagement by one of the traveling hooks 5 upon a return movement of the carriage 8 to the opposite end of the trackway 6, and by an accompanying rotary movement of the double-ended hook.

The present invention deals with positioning the coils for engagement by the double-ended hook in such manner that the orderly arrangement of each will be preserved. To this end the reclining apron has been eliminated, and the endless conveyer, disposed horizontally, has associated with it, in lieu thereof, a table 1, having a coil receiving portion substantially in the plane of the horizontal apron 3, and a median slot through which the dogs 4 may operate to position a rod bundle thereon. The table 1 is pivoted to the horizontal conveyer by means of a shaft 42 in such manner that, rotary motion, when imparted to the shaft in the proper direction, will cause the table to be raised to a substantially vertical position, as is shown in dotted lines in Figure 2.

It is preferable to coordinate the movement of the table 1 with that of any conveyer with which it is associated so that a coil is delivered thereon only when the table is in the horizontal. Any suitable conveyer control means (not shown) may be employed for this purpose, whereby, after a coil has been delivered upon the table 1, or when the table is in its elevated position, the horizontal conveyer will be de-energized until the

table is once more at rest in the horizontal. Thereafter the operation is repeated.

The raising and lowering of the table is also coordinated with whatever mechanism it is associated for removing coils therefrom, and, in the present instance, the double-ended hook mechanism has been used for purposes of illustration. However, it will be understood that the table of the present invention is equally applicable to any other type of discharge mechanism or conveyer of the same general type with which it associated. It will be seen that the carriage carrying the double-ended hook is positioned at the right hand side of trackway 6 when receiving a bundle of rods from the table 1, as viewed in Figure 2, and that it is positioned on the left hand side of the trackway 6 when the double-ended hook is in position to discharge coils upon the traveling hooks 5. This movement of the carriage has been taken as one means whereby the operation of the table 1 could be properly coordinated with the operation of these other conveyers with which it is associated.

To this end, a shaft 40 is transversely journaled at the right hand extremity of the trackway 6, as viewed in Figure 2, above a position slightly in front of the table 1. This shaft is adjacent the line of travel of the carriage. Rigidly affixed at each end of this shaft is a bell-crank 41, both of which are afforded simultaneous, intermittent actuation by the carriage 8 through the means of pitmans 45, which are pivoted at one of their ends to the carriage 8, and at their other ends are fastened to the bell-cranks 41 by slip joints afforded by slots 46 extending longitudinally of the pitmans 45.

The shaft 42, by which the table 1 is pivoted, is provided at each of its ends with a lever 43, both of which are connected to the bell-cranks 41 by means of connecting rods 44 on their respective sides.

The above arrangement is such that the bell-cranks 41 remain stationary except when the carriage 8 approaches a position above the table 1. When this occurs, the inner limits of the slots 46 are brought into engagement with the bell-cranks 41, whereby the pitmans 45 are caused, through the latter, and by means of connecting rods 44, to turn the levers 43 carried by shaft 42, and thus cause the table 1 to raise and perform its function of lifting a rod bundle to an upstanding position, so that one of the ends of the double-ended hook may enter the same. After the double-ended hook has been operated to remove the bundle from the table in the same manner as is described in my co-pending application, above referred to, the carriage is actuated to lift and transport the hook, while simultaneously turning the same, to such a position where the bundle may be discharged upon one of the moving hooks 5. This recessive action of the carriage 8 permits a retrogressive movement of the bell-cranks 41, the connecting rods 44, the levers 43, and shaft 42, whereby the table 1 is returned to its horizontal position.

It is obvious that this operation is automatic and is responsive to the movement of the carriage 8 to positions toward and away from the tilting table. However, it will also be understood that the table constituting the subject matter of the present invention may be associated with any other type of transfer mechanism, wherein it is necessary to effect the transfer of the bundles from a verticle disposition, by coordinating the operation of the table in any suitable way with the operation of such transfer mechanism.

It will be seen from the foregoing, that I have provided a novel means whereby the orderly arrangement of the coils is preserved throughout the manipulation required to transfer it from one conveyer to another, and it will be observed that the tilting table disclosed herein affords continuous, uniform, and adequate support for the bundle at all times.

I claim:

1. Coil handling apparatus including the combination of a conveyer for transporting rod bundles in the horizontal and a transfer mechanism for engaging said bundles when vertically disposed, a table for intercepting said bundles in the plane of said conveyer, means for elevating said table to a position cooperable with said transfer mechanism, said means being coordinated in operation with that of said transfer mechanism.

2. Coil handling apparatus including the combination of a conveyer for coils lying on their sides, a conveyer providing a series of spaced traveling hooks arranged to travel transversely past the first named conveyer with their ends pointing opposite the travel of coils conveyed thereby, a tilting table associated with the first named conveyer for receiving coils conveyed thereby and lifting them to at least partially upstanding positions, said table being spaced in front of said hooks, a trackway arranged above said hooks and table so as to span the space therebetween, a carriage on said trackway, and a vertically movable hook rotatively depending from said carriage, the last named hook being adapted to enter coils lifted by said table and to deposit them upon the hooks of the second named conveyer upon suitable vertical and rotative movement thereof and travel of said carriage.

3. Coil handling apparatus including the combination of a conveyer for coils lying on their sides, a conveyer providing a series of spaced traveling hooks arranged to travel transversely past the first named conveyer with their ends pointing opposite the travel of coils conveyed thereby, a tilting table associated with the first named conveyer for receiving coils conveyed thereby and lifting them to at least partially upstanding positions, said table being spaced in front of said hooks, a trackway arranged above said hooks and table so as to span the space therebetween, a carriage on said trackway, and a vertically movable hook rotatively depending from said carriage, the last named hook being adapted to enter coils lifted by said table and to deposit them upon the hooks of the second named conveyer upon suitable vertical and rotative movement thereof and travel of said carriage, said combination further including means for reciprocating said carriage between positions where said hook depending therefrom can enter coils lifted by said table and where it can deposit coils on the hooks of the first named conveyer, and means responsive to the approach of said carriage towards the first named position for tilting said table upwardly and responsive to said carriage leaving said first named position for returning said table to its coil-receiving position.

4. Coil handling apparatus including the combination of a conveyer for coils lying on their sides, a conveyer providing a series of spaced traveling hooks arranged to travel transversely past the first named conveyer with their ends

pointing opposite the travel of coils conveyed thereby, a tilting table associated with the first named conveyer for receiving coils conveyed thereby and lifting them to at least partially upstanding positions, said table being spaced in front of said hooks, a trackway arranged above said hooks and table so as to span the space therebetween, a carriage on said trackway, and a vertically movable hook rotatively depending from said carriage, the last named hook being adapted to enter coils lifted by said table and to deposit them upon the hooks of the second named conveyer upon suitable vertical and rotative movement thereof and travel of said carriage, said combination further including means for reciprocating said carriage between positions where said hook depending therefrom can enter coils lifted by said table and where it can deposit coils on the hooks of the first named conveyer, and means responsive to the approach of said carriage towards the first named position for tilting said table upwardly and responsive to said carriage leaving said first named position for returning said table to its coil-receiving position, said means including a bell-crank pivoted adjacent the line of travel of said carriage, a lever fixed to said table, a connecting rod between said lever and one arm of said bell-crank and a connecting rod between said carriage and the other arm of said bell-crank, the last named rod being connected to said arm of said bell-crank by a slip-joint.

GEORGE H. ROSE.