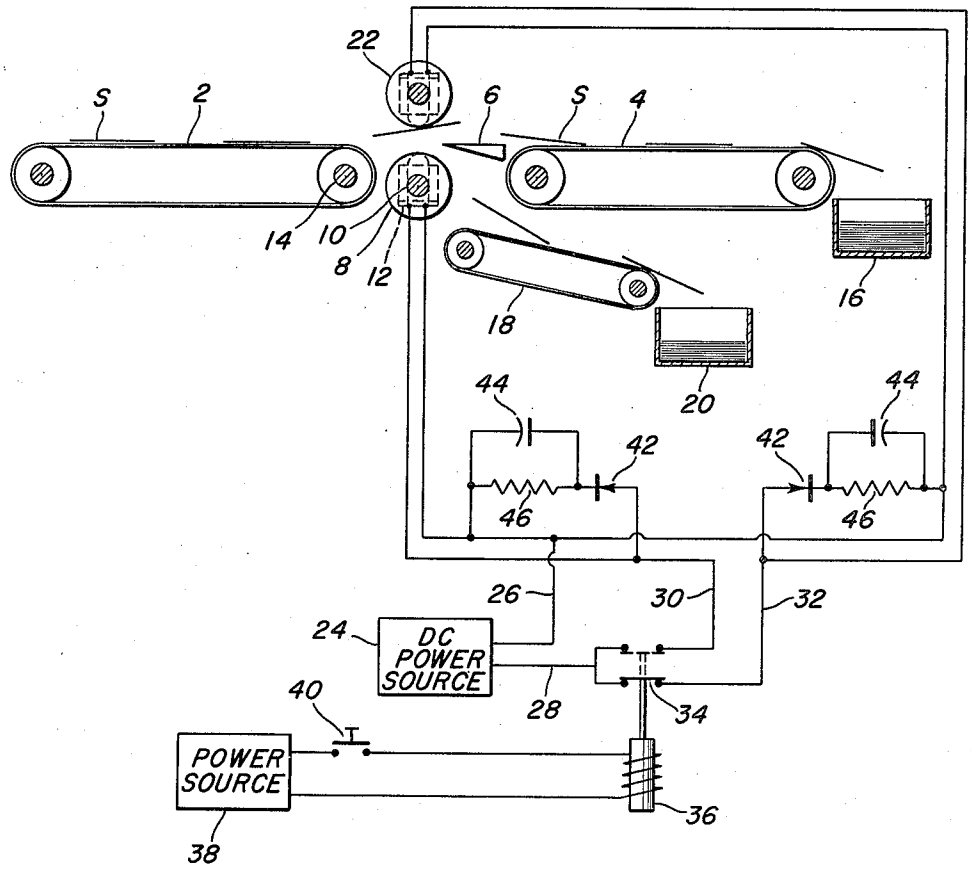
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APPARATUS FOR CONVEYING MAGNETIZABLE SHEETS

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APPARATUS FOR CONVEYING MAGNETIZABLE SHEETS

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This invention relates to apparatus for conveying magnetizable sheets, particularly steel sheets. In the manufacture of tin plate it is necessary to inspect the sheets either visually by an inspector, or in the case of inspecting for pin holes, automatically by means of an electric eye. In either case the sheets are inspected as they pass along a conveyor line and the defective sheets are later deflected from the conveyor line into a reject pile or piles. Depending upon the type of inspection and the size and gage of the sheets the speed of travel of the sheets may vary within wide ranges. One way in which sheets have been conveyed and classified is shown in the patent to Watson No. 2,660,318, dated November 24, 1953, in which a magnetizable roll is located between two conveyors below the path of travel of the sheets between the conveyors. This apparatus is suitable when conveying certain size sheets at high speeds but is not suitable when conveying sheets at low speeds. It has also been proposed to locate a magnetizable roll above the path of travel of the sheets which is magnetized at all times except when a sheet is to be deflected in which case the sheet falls by gravity into a reject pile. While suitable for handling certain size sheets at low speeds it is not suitable for handling all size sheets at various speeds.

It is therefore an object of our invention to provide apparatus for conveying magnetizable sheets of various sizes at both low and high speeds, such as speeds in excess of 600 feet per minute.

This and other objects will be more apparent after referring to the following specification and attached drawings, in which the single figure is a schematic view of the conveying apparatus embodying our invention.

Referring more particularly to the drawing, the reference numeral 2 indicates a belt conveyor over which sheets S are passing. Spaced from conveyor 2 is a second conveyor 4 which normally receives sheet S from conveyor 2. A stationary deflector 6 is arranged between the conveyors 2 and 4. A magnetizable roll 8 is arranged between the delivery end of the conveyor 2 and the deflector 6. The roll 8 is provided with a shaft 10 to which is rigidly attached an electro-magnet 12. The roll 8 is mounted for rotation about the shaft 10 and may be driven independently or from the conveyor roll 14. The prime sheets from the end of the conveyor 4 are delivered to the prime piler 16. A belt conveyor 18 is located beneath the conveyor 4 for receiving reject sheets and delivering them to a reject piler 20. A second magnetizable roll 22 of substantially the same construction as roll 8 is located between the conveyors 2 and 4 above the path of travel of the sheets between these conveyors. Power for magnetizing the rolls 8 and 22 is provided from a D. C. power source 24. One lead 26 from power source 24 is connected to each of the rolls 8 and 22. The other lead 28 is separated into two parallel leads 30 and 32 leading to rolls 8 and 22, respectively. A switch is located in each of the leads 30 and 32. As shown, the switch consists of contacts 34 which are operated by a relay coil 36. Current is supplied to the relay coil 36 from a power supply 38 and the control of the current to the coil 36 as shown is by means of a push button switch 40. It will be understood that the switch 40 may

be operated automatically from an inspection device. For best operation magnet discharge means are provided in the circuits to the rolls 8 and 22. As shown, each of these means consist of a rectifier 42, a capacitor 44 and resistor 46 connected in parallel across the leads to the rolls 8 and 22.

The operation of the device is as follows: Normally the parts will be in the position shown with the circuit through lead 32 being closed. In this position the roll 22 will be magnetized and will carry the sheets from conveyor 2 to conveyor 4. When a defective sheet is detected the switch 40 will be closed, either manually or automatically as explained above, thus energizing coil 36 and moving the contacts 34 from the position shown in full lines to the position shown in dotted lines. This interrupts the flow of current to the roll 22 and completes the circuit to the roll 8 thus demagnetizing roll 22 and magnetizing roll 8. By virtue of the magnet discharge means 42, 44 and 46, the magnet of roll 22 is quickly demagnetized so that it will not have any tendency to carry the defective sheet S to the conveyor 4. Magnetizing roll 8 will cause the defective sheet S to be deflected downwardly to the conveyor 18 which delivers it to the reject pile 20. As soon as the defective sheet is directed downwardly switch 40 is opened thus deenergizing coil 36 with the contacts 34 returning to the full line position shown, thus demagnetizing roll 8 and magnetizing roll 22. The magnet discharge means 42, 44 and 46 will cause rapid demagnetization of roll 8.

While one embodiment of my invention has been shown and described it will be apparent that other adaptations and modifications may be made without departing from the scope of the following claims.

We claim:

1. Apparatus for conveying magnetizable sheets comprising two conveyors spaced apart in tandem over which the sheets travel, a stationary deflector between the conveyors over which the sheets pass in traveling from one conveyor to the other, a rotatable magnetizable roll between the first conveyor and the stationary deflector below the path of travel of the sheets between the conveyors, a second rotatable magnetizable roll between the two conveyors above the path of travel of the sheets between the conveyors, an electrical circuit for supplying magnetizing current to each of said rolls, a switch in said circuit for controlling flow of current to said first roll, a switch in said circuit for controlling flow of current to said second roll, and means for closing one of said switches while opening the other switch, and magnet discharge means in said circuit operable to quickly demagnetize said rolls when the magnetizing current is removed therefrom.

2. Apparatus for conveying magnetizable sheets comprising two conveyors spaced apart in tandem over which the sheets travel, a rotatable magnetizable roll between the conveyors below the path of travel of the sheets between the conveyors, a second rotatable magnetizable roll between the two conveyors above the path of travel of the sheets between the conveyors, an electrical circuit for supplying magnetizing current to each of said rolls, means for causing current flow to either of said rolls and cutting off flow to the other roll, and magnet discharge means in said circuit operable to quickly demagnetize said rolls when the magnetizing current is removed therefrom.

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