

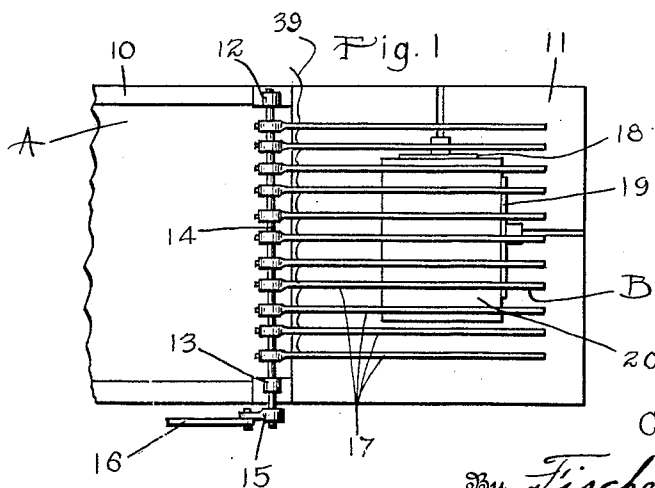
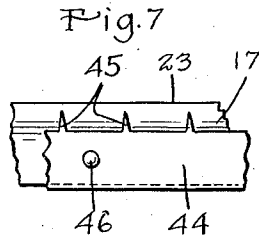
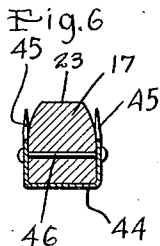
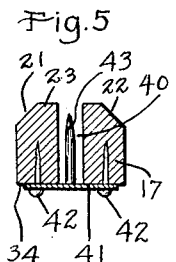
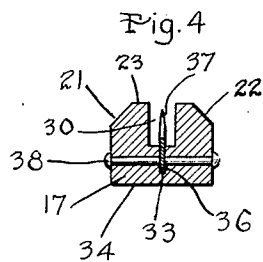
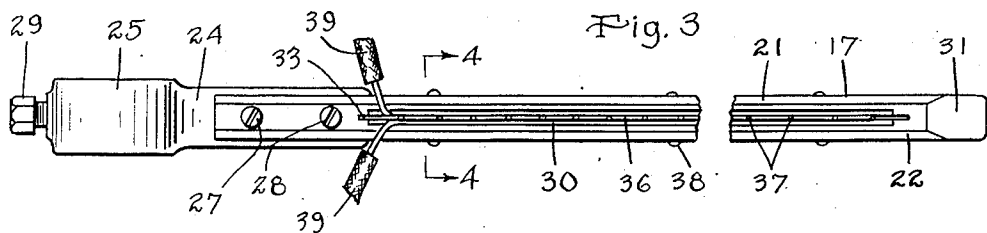
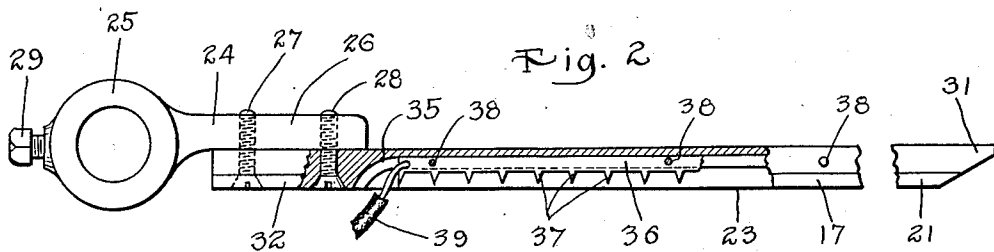
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C. WEHRLE

STATIC COLLECTOR FOR PRINTING PRESSES

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UNITED STATES PATENT OFFICE.

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STATIC COLLECTOR FOR PRINTING PRESSES.

Application filed March 29, 1924. Serial No. 702,991.

My invention relates to static collectors for printing presses and has for its object to provide a simple and efficient device for collecting static charges accumulating upon sheets of paper handled in printing presses, folders, binders and similar material to prevent the adhering of the same to each other or to the fly or the tapes of such machines and the clogging of such machines caused thereby.

Another object of the invention resides in providing a field of metallic points situated in substantially a single plane and positioned a short distance away from the sheets from which the static charges are to be removed, which points are electrically connected together by suitable conductors and grounded.

In carrying out my objects in conjunction with a printing press of the cylinder type employing a fly, I construct the fly in the ordinary manner, arranging, however, each individual arm thereof with a series of metallic points connected together, which points protrude to within a short distance of the engaging surface of said fly arms and which are all connected together at the support of said fly arm by means of wires or cables properly grounded.

The full objects and advantages of my invention will be found in the detailed description thereof and are particularly pointed out in the claims.

In the drawings illustrating my invention in one form,

Figure 1 is a plan view of the delivery end of a printing press showing a fly constructed in accordance with my invention.

Figure 2 is a side elevational view of one of the fly arms illustrated in Figure 1 drawn to an enlarged scale and showing a portion of the same in section.

Figure 3 is a plan view of the structure shown in Figure 2.

Figure 4 is a sectional view taken on line 4-4 of Figure 3 drawn to an enlarged scale.

Figure 5 is a sectional view similar to Figure 4 showing a modification of the invention.

Figure 6 is a view similar to Figure 4 showing a still further modification of the invention.

Figure 7 is a fragmentary, elevational view of the structure shown in Figure 6.

In the use of printing presses, folding

machines and other machinery handling sheets of paper for various purposes, considerable difficulty has been encountered, particularly in cold, dry weather, due to static charges collected upon the sheets which cause the same to adhere to one another and to the flies and tapes or to the handling mechanisms of the various machines, causing the same to become clogged and to function improperly. Such difficulties have been attempted to be overcome by the utilization of steam and other expedients in causing the electrical charges to be removed from the sheets. My invention produces the desired results in a simple and effective manner by collecting the charges from the sheets in a multiplicity of points closely positioned thereto through which the charges readily pass and from which the same are conducted to a suitable ground.

Although it can readily be comprehended that my invention may be applied to any type of machine used for handling sheets of paper and the like, I have for the sake of simplicity only illustrated my invention as applied to an ordinary printing press which is illustrated more or less diagrammatically in Figure 1. In this figure I have shown a press A consisting of a framework which has attached to it a delivery table 11 and a fly B. This frame has attached to it bearings 12 and 13 which journal a fly shaft 14. This shaft may be operated by means of a crank arm 15 actuated through a lever 16 from the mechanism of the press in the ordinary manner which, however, has not been illustrated in detail. To the shaft 14 are attached a number of fly arms 17 which are arranged with their surfaces lying in a single plane to form the fly B and which are adapted to be simultaneously moved upon the oscillation of shaft 14 to receive the sheets of paper as the same are delivered from the press proper and to deposit them upon the table 11 within suitable guides 18 and 19 provided for that purpose. The fly B is shown in Figure 1 as having just delivered a sheet of paper shown at 20 upon the table 11 within the guides 18 and 19.

My invention lies in the particular construction of the fly arms 17, one form of which is clearly illustrated at Figures 2 and 3. The arms 17 are preferably constructed of wooden sticks or similar insulating substances which may be of the shape generally used for this purpose, such as shown in cross

section in Figure 4, having bevelled corners 21 and 22 and a surface 23 adapted to engage the sheets of paper as the same are delivered from the cylinders of the press.

5 The various arms 17 are attached to castings 24 having bosses 25 formed thereon through which the shaft 14 may extend, which castings are further provided with lugs 26 protruding outwardly therefrom to which the

10 arms 17 may be attached by means of machine screws 27 and 28. Upon the rear of castings 24 the same are provided with set screws 29 serving to hold arms 17 securely to shaft 14 with the surfaces 23 thereof confined to a single plane.

In the type of the invention shown in Figures 2, 3 and 4 a groove 30 is cut along the surface 23 of each of the arms 17 extending from the toe 31 of said arm to the heel 32 thereof.

20 This groove projects down inwardly into the arm 17 for a considerable distance and is of a width comparable with the width of the surface 23. Directly connected with groove 30 is formed a narrow slot 33 extending along the center of the same and projecting inwardly into the said arm to within a short distance of the back 34 thereof. Both the groove 30 and the slot 33 may be

25 simultaneously cut by means of a suitable molding cutter or dado cutter leaving the curved ends 35 illustrated in Fig. 2, which cause the said grooves to gradually terminate so as to not weaken the arm by an abrupt break. The metallic member providing the

30 field of points consists of a metal strip 36 which has formed integrally with it a number of points 37 preferably made by shearing away a portion of the metal of said strip to form said points which are arranged in

35 spaced relation to one another. The slot 33 is of such a width that the strip 36 may be snugly lodged within the same and is of such a depth that the points 37 project within a short distance of the surface 23 of the arm

40 17. The metallic strip 36 is attached within the slot 33 by means of pins or rivets 38 which pass through the said strip and through the body of the arm 17 and which are riveted in place upon the ends thereof

45 to clamp the parts together and to firmly and securely hold the strip 36 with the points 37 formed thereon in place.

As before stated, all of the arms 17 are formed with points 37 which are arranged

50 along the surfaces 23 of said arms being within a short distance of the surface of the sheet delivered upon the fly when the press is in operation, yet not quite touching or coming in direct contact with the same. At

55 the heel end 32 of each of the arms 17 an electrical conductor 39 is soldered to the ends of the strips 36 thereby electrically connecting all of the points 37 together, permitting the charge collected from the sheet received by the fly B to be collected through

the various points 37 and to be conducted through the conductor 39. At either or both ends of conductor 39 the same may be grounded to any grounded portion of the machine proper where a large machine is employed having sufficient ground capacity, or may be connected to any other suitable ground.

In Figure 5 I have shown another form of the invention. In this case a single slot 40

75 is employed similar to the slot 30 which extends completely through the arm 17. A metal plate 41 is secured to the back side 34 of arm 17 by means of nails or other fastening devices 42. To this plate is soldered or

80 otherwise secured needles 43 which extend upwardly through the groove 40 and serve the same purpose as the points 37. If desired, the invention can be applied to existing forms of fly arms without involving alteration thereof. Such construction is

85 brought out in Figures 6 and 7. In such cases I employ a U-shaped metal member 44 which is formed with points 45 along the edges thereof. Member 44 is placed surrounding the arm 17 and is so arranged that the points 45 occupy the same relative position to the surface 23 as either the points 37 or the needles 43. The member 44 may

90 be attached to the arm 17 by rivets 46 similar to the rivets 38 in the other form of the invention.

If desired my invention may be employed with folding machines and other machines and printing presses. In such instances a

100 field or multiplicity of points is used such as described as attached to the fly of the press. This field is positioned so that the paper in traveling over the same passes down said points at a short distance from the same. In

105 this manner the electrical charge is removed from the paper the same as when the paper is deposited upon the fly in the ordinary rotary printing press.

Though the theory of operation of my

110 invention may not readily be comprehended, yet the multiplicity of points collect the charge from the sheets of paper and conduct the same to the ground so that when the sheets are deposited upon the delivery table

115 11 the charges thereon have been discharged, and the sheets leave the fly freely and remain where deposited. I have found by providing a short spark gap in the conductor 39 that a spark passes across the same every

120 time a sheet is delivered by the press, indicating a flow of current and the consequent discharge of the charge upon the sheet through said conductor. I have also noted that unless a multiplicity of points are used

125 that the device does not function as efficiently as when the proper number of points are used and sometimes does not even function at all. This seems to be due to the fact that a certain length of time is taken for the charge

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to leave the paper and travel to the conductor, which when greater than the interval through which the paper remains upon the fly, does not permit the charge from being wholly discharged. It further seems that the time is considerably reduced when a great number of points are employed due to the fact that the charge in traveling along the surface of the paper has a shorter distance to travel than when the points are greatly spaced.

The advantages of my invention are evident. A structure is provided wherein the static charges may be effectively removed from the sheets of paper being handled by printing presses and folding machines. The device after having once been installed does not need attention, being fool proof in operation and being practically incapable of going out of order or being rendered inoperative. No operating cost other than the first cost is necessary in the use of my invention whereas the added expense in installing fly arms with my invention is so small as to be practically negligible in comparison with the cost of printing machines.

In accordance with the patent statutes I have described my invention, illustrating

the best embodiment thereof, but I desire to have it understood that the invention can be carried out by other means and applied to uses other than those above set forth within the scope of the following claims:

I claim:

1. In combination with a grooved member for manipulating sheets of paper having engaging surfaces adapted to come in contact with said sheets, charge collectors mounted upon said member in said groove having a multiplicity of points formed thereon adapted to extend outwardly in spaced relation to said member and to within a short distance of the engaging surfaces thereof and means for connecting all of said points together and for grounding the same.

2. In combination with the arms of a printing press fly having longitudinal grooves formed therein, metallic strip positioned within said grooves, points formed on said metallic strips being spaced from the walls of said grooves and projecting outwardly to within a short distance of the engaging surface of said arms.

CHARLES WEHRLE.