Dec. 3, 1935. F. J. GUTMAN 2,023,321

STATIC REMOVING APPARATUS

Filed Jan. 15, 1934

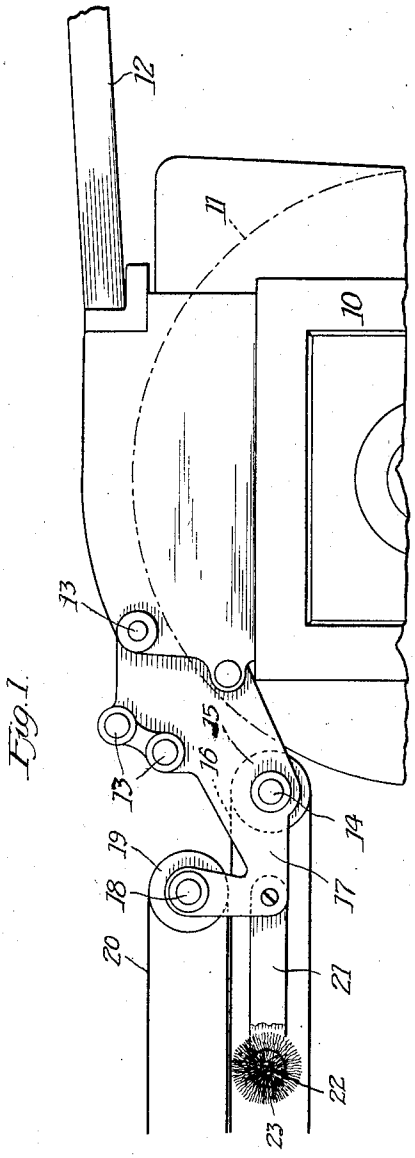


Fig. 1.

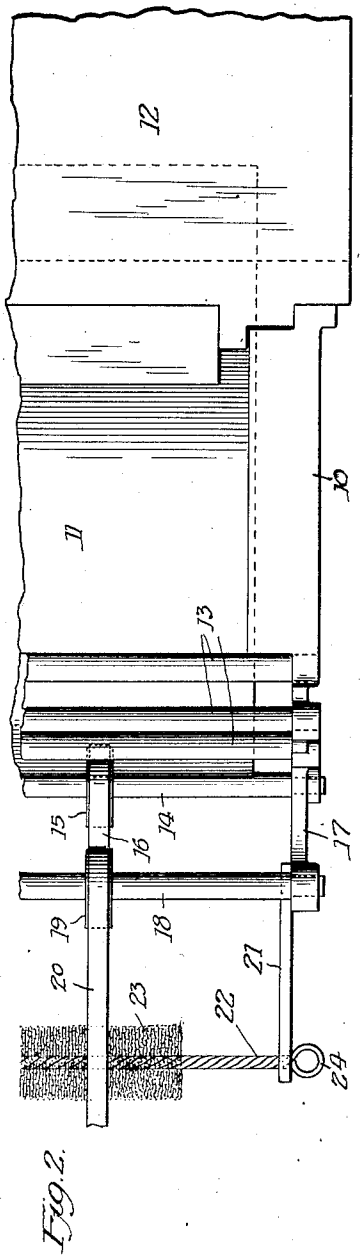


Fig. 2.

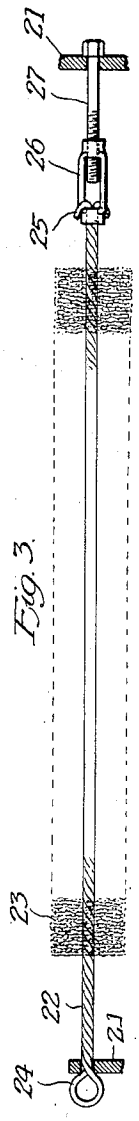


Fig. 3.

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Patented Dec. 3, 1935 2,023,321

UNITED STATES PATENT OFFICE

2,023,321

STATIC REMOVING APPARATUS

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Application January 15, 1934, Serial No. 706,672

2 Claims. (Cl. 175—264)

My invention relates to apparatus for removing static from paper as it is passing through a printing press and being printed therein, or being handled in any of the operations such as printing, trimming, cutting and the like, while the paper passes through the press and also in many other places where a flexible member passes over a roller, pulley, or the like, such as belts, artificial leather making machinery, adhesive tape machinery, and the like.

Another and further object of my invention is the provision of a device which is so placed with respect to the paper as it passes through the printing press that the static passes from the paper into the static removing device, an electrical conductor of exceedingly low resistance, and which has a plurality of exceedingly fine wire members extending toward the paper but spaced therefrom, and through the device the current passes to the frame of the press which, of course, is grounded, carrying the current away from the paper and the printing press.

Another and further object of my invention is the provision of a device adapted for the removal of static from paper while it is passing through a printing press, and which can be adjustably positioned with respect to the paper so as to insure the device being able to pick up the static from the paper, and which simply and easily accomplishes the removal of static from the paper.

Another and further object of my invention is the provision of a device which is so arranged that it can be easily removed from the printing press and easily cleaned. When placed adjacent the press the static electricity passing from the paper into the device carries with it a small quantity of ink so that after the device has been in use for some time it becomes badly smeared with ink and it is necessary to remove it from the press for the purpose of cleaning it, after which it can be replaced for further service in the press.

Another and further object of my invention is the provision of a device for the removal of static which is simple and effective in operation, exceedingly simple and easy to install, cheap to manufacture, and effectively accomplishes the result desired.

I am aware that many devices have been produced for the removal of static from paper during its passage through a printing press and that a great many of them, while partially performing this function, are not wholly effective. There is always danger of a spark from the paper passing to some part of the press which ignites the ink or other inflammable materials such as oil used for lubrication of the press, naphtha, benzine and the like, used for washing the ink rollers and miscellaneous parts of the press for removal of ink therefrom, so that the fire hazard in the operation of the press is exceedingly high and in many presses, particularly with respect to photogravure work and the like, the fire hazard is always a source of danger to be reckoned with. In my improved device this danger is entirely eliminated. The static passes from the paper into the device, and fire hazard from static originating in the paper is entirely eliminated.

These and other objects of my invention will be more fully and better understood by reference to the accompanying sheet of drawing, in which—

Figure 1 is a view of a portion of a printing press showing my invention applied thereto;

Figure 2 is a fragmentary plan view of the press shown in Figure 1; and

Figure 3 is an elevational view of the complete device as I employ it before installation in a printing press.

Referring now specifically to the drawing and in which like reference characters refer to like parts throughout, a printing press frame 10 is shown, having an impression cylinder 11 mounted thereon, with a feed table 12 provided over which the paper passes from the impression cylinder, with a plurality of rolls 13, 13 forming guideways through which the paper passes from the impression cylinder. A fragment of a delivery table mechanism is shown, which comprises a shaft 14 extending transversely across the delivery mechanism mounted upon brackets 17 secured to the main frame of the press and upon which pulleys 15 are mounted over which lower tapes 16 pass. The outer ends of the brackets 17 are upturned and have a shaft 18 mounted therein which extends transversely across the delivery mechanism and upon which pulleys 19 are mounted, which have tapes 20 passing thereover. A similar operating mechanism is provided at the opposite end of the delivery table for carrying these tapes. All of these portions heretofore described form parts of the conventional printing press and form no part of the present invention.

As the paper passes from the impression roll and onto the delivery mechanism, it is passed between the tapes 16 and the upper tape 20, these tapes being power driven in any desired manner, and conveying the paper away from the cylinder to the cutter, folder mechanism

or the like or to any other machine performing a step in the process of printing the sheet.

As illustrating one embodiment of my improved invention a bracket 21 is secured to the bracket 17 at one side of the delivery mechanism in any approved manner, this bracket being pivotally mounted, with a similar mechanism mounted at the opposite end. The bracket 21 has an opening therein within which is mounted the stem portion 22 of a wire brush 23. This brush 23 is preferably composed of fine brass strands of wire twisted into the stem 22, the stem 22 being formed of a pair of copper wires twisted upon themselves, with the wire bristles forming the brush being positioned between the strands making up the stem portion. The stem 22 has a ring 24 at one of its ends and hooks 25 formed of the stem strands at its opposite end which are mounted in a turnbuckle 26 in turn mounted upon a bolt 27 which passes through the bracket 21 of the opposite side of the delivery table. The turnbuckle mechanism is provided for the purpose of keeping the brush drawn taut, particularly for use in a printing press having a wide delivery bed and to prevent the brush, when placed in position, from sagging away from the paper as it passes through the press.

The wire brush 23 is preferably positioned adjacent the paper after it leaves the cylinder or after the printing on the sheet is performed, whether by an impression cylinder, offset process or the like, and extends transversely across the sheet of paper and in adjusted position with respect thereto so that the points of the brass bristles are spaced fairly close to the paper and yet not in contact therewith. The brush remains stationary and as the paper passes over the brush the very finely divided points of the wires projecting upward toward the surface of the paper form contact points to which the static passes from the paper, through the finely divided brass bristle portions to the copper stem and through the metal frame work of the press to the ground connection provided in all printing presses for the purpose of removing the static from the frame and metallic parts of the press.

In practice I have found that a considerable quantity of ink is carried from the paper onto the brush and therefore as one section of the brush becomes clogged or smeared with ink, the operator of the press turns the brush slightly, bringing a clean portion of the brush opposite a section of the paper, and this is repeated until the brush is filled up with ink. It is then removed from the press and washed out with benzine, naphtha or the like, the same mixture which is used for the wash up of the press itself.

In the manufacture of the brush itself, the brass bristles are held in the stem portion in the same manner as making brushes of bristle, and the ends of the wires trimmed off or the brush itself trimmed so that it forms a cylindrical brush with the ends of the brass bristles cut off evenly so that once the brush is properly adjusted with respect to the paper it is in proper position no matter how it may be rotated when in position on the press.

The device may, of course, be mounted in any particular location on the press as long as it can be placed adjacent the paper and in fairly close proximity thereto so the current will travel from the paper into the ends of the brass bristles making up the brush, and be conducted away from the paper and printing press. Because of the fact that the very fine points of the brass bristles extend into close proximity to the paper the effect is substantially the same as covering the entire surface of the paper with a brush so that the static is picked up and removed from the paper.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form and the proportion of parts and the substitution of equivalents as circumstances may suggest or render expedient without departing from the spirit or scope of my invention.

I claim:

1. A static remover comprising in combination an elongated conductor body member, mounting means on said body member, and bristle-like static conductor means on said body member in mass form extending radially therefrom, whereby substantially the entire surface of the material from which the static is removed is covered by said bristles.

2. A static remover comprising in combination an elongated conductor body member composed of a plurality of members twisted upon themselves, and bristle-like conductor members having their middle portions gripped between said body members and their outer portions extending radially therefrom in mass form, whereby substantially the entire surface of the material from which the static is removed is covered by the said bristles.

FRED J. GUTMAN.