Oct. 8, 1929. H. L. THOMPSON 1,731,030

STATIC ELIMINATOR

Filed Feb. 8, 1927

Fig. 1

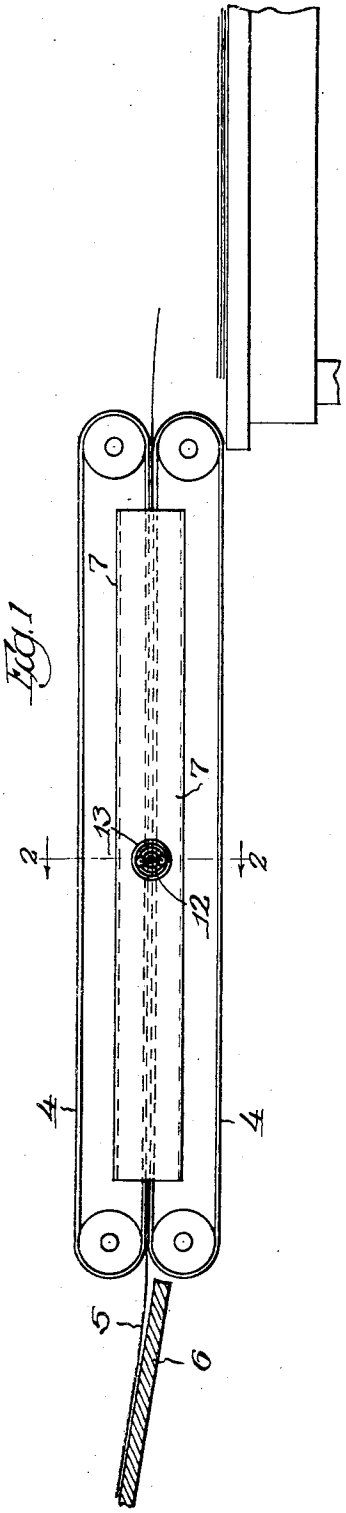


Fig. 2

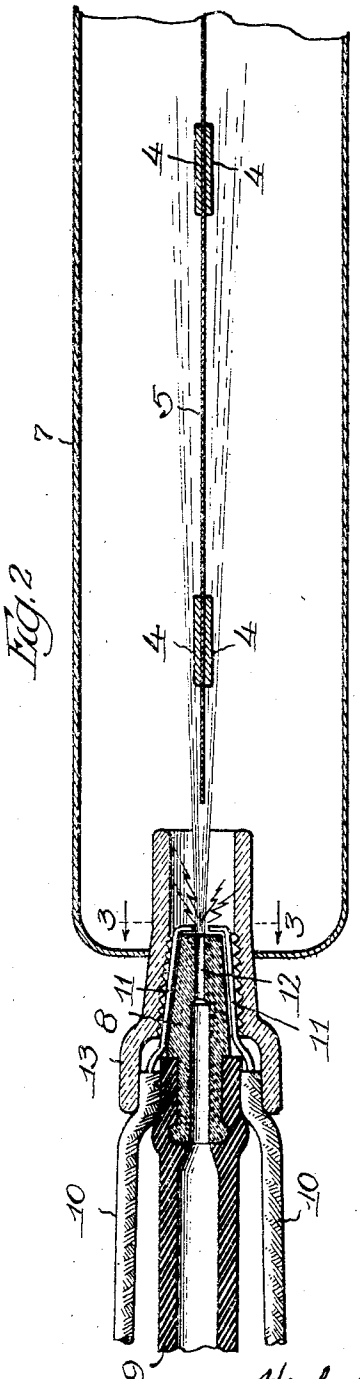
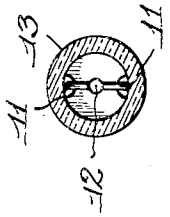


Fig. 3



Inventor
Herbert L. Thompson
By Wm. O. Belt
Atty.

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UNITED STATES PATENT OFFICE

HERBERT L. THOMPSON, OF ELGIN, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ADDRESSOGRAPH COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE

STATIC ELIMINATOR

Application filed February 8, 1927. Serial No. 166,689.

This invention relates to feeding sheets of paper one at a time to a printing or other machine and its object is broadly to overcome the effect of static electricity which often prevents regular proper feeding.

I am aware of various efforts that have been made heretofore to overcome the effect of the presence of static electricity in feeding sheets of paper, but there are objections to these efforts some of which are far from being dependable.

It is the object of my invention to provide a novel and simple means whereby the objectionable effect of the presence of static electricity in feeding sheets of paper is entirely overcome without in any way interfering with the feeding operation.

In the accompanying drawings I have illustrated a selected embodiment of my improved static eliminator, and referring thereto:

Fig. 1 is a side elevation, partly in section, showing a paper feed with my static eliminator applied thereto.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

Referring to the drawings the paper feed comprises a pair of endless belts 4 between which the paper sheet 5 is fed from a support 6. Means are, of course, provided for causing the belts to travel, but such means are familiar in paper feeds and need not be illustrated or described.

The invention comprises a hood 7 which encloses the belts where they engage the paper. A nozzle 8 made of porcelain or some other nonconducting material is connected by a tube 9 with a source of air supply under pressure and is mounted in any suitable manner to project through a side of the hood to discharge the air at one edge of the sheet and upon both sides thereof, as indicated in Fig. 2. Two electrical conductors 10, 10 supply current to electrodes 11, 11 which project alongside of the nozzle and are bent inwardly across the discharge end of the nozzle. The ends of the electrodes are spaced apart at the discharge end of the orifice 12 in the nozzle to produce a jump spark in the jet of air issuing from the nozzle. A tubular protector 13 of insulating material is mounted on and projects beyond the end of the nozzle and encloses the same.

In practice the air jet is directed at one side edge of the sheet as it is carried along by the feed belts and is divided by the sheet so that it will sweep across both surfaces thereof. The jump spark constantly produced through the air jet at the discharge end of the nozzle has the effect of ionizing the air jet, and the ionized air sweeping across the sheet has the effect of throwing the air on the surfaces of the sheet out of electrical balance and absorbs the static electricity from the sheet. The hood 7 encloses the belts and sheet of paper for a portion of their travel and serves to confine the ionized air and thus maintain a zone of ionized air in operative relation to both sides of the paper as it travels. This operation is performed without in any way interfering with the feed of the sheet and it has the effect of eliminating the static electricity which is present to a greater or less extent on the sheet and thereby prevents interference with the proper and regular feed of the sheet which is commonly experienced when static electricity is present.

I have shown and described the invention in a simple form which I have found satisfactory, and I have indicated the use of the invention with a paper feed comprising endless belts, which is a common form of paper feed, but I do not restrict the invention to the particular form illustrated or to its embodiment with any particular paper feed devices, for I am aware that the invention may be applied to paper feeds of other kinds and that it may be modified structurally to adapt it for different installations, and therefore, I reserve the right to make all such changes as come within the scope of the following claims.

I claim:

1. A static eliminator for paper feeds comprising means for discharging a jet of air at one edge of a paper sheet being fed, the jet being divided to sweep across both surfaces of the sheet, and means for ionizing the air.

2. A static eliminator for paper feeds com-

prising means connected to a source of air under pressure and arranged adjacent the edge of the sheet to discharge a condenser jet of air transversely across each of the two surfaces of the paper sheet being fed, and means for ionizing the condensed jet of air as it issues at the discharge end of the nozzle.

3. A static eliminator for paper feeds comprising an air nozzle connected to a source of air under pressure and arranged to discharge a jet of air across the surface of a paper sheet being fed, and a pair of electrodes spaced apart on opposite sides of the condensed jet of air as it issues from the nozzle and close to the nozzle to ionize the air in the jet before it reaches the sheet.

4. A static eliminator for paper feeds comprising an air nozzle connected to a source of air under pressure and arranged to discharge a jet of air across the surface of a paper sheet being fed, a pair of electrodes for producing a spark in the air jet as it issues from the nozzle to ionize the air of the jet, and a protector enclosing the nozzle and projecting outwardly beyond the discharge end thereof.

5. The combination of a paper feeding means propelling a sheet of paper along a given line of travel, an air nozzle adjacent the edge of the moving sheet to direct a jet of air edgewise of the sheet and divided by the sheet whereby the air sweeps both sides of the sheet, means for ionizing the air, and a hood enclosing said sheet for a portion of its travel for confining the ionized air adjacent the sides of the sheet.

HERBERT L. THOMPSON.