Dec. 12, 1933. A. B. ROE 1,938,861

MACHINE FOR PUTTING WAX CARBON SPOTS ON PAPER

Filed Aug. 12, 1932

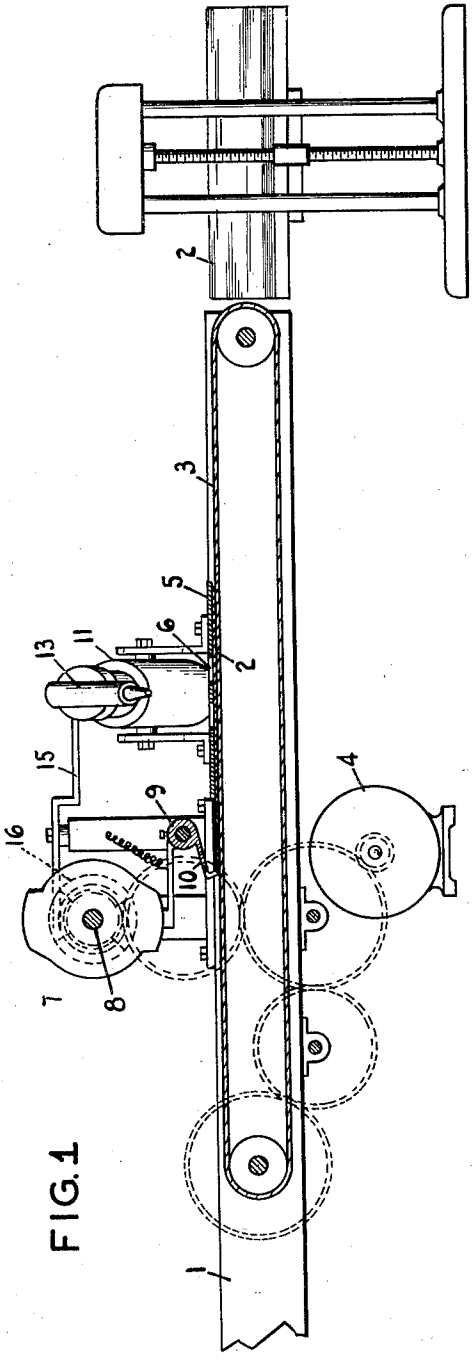


FIG. 1

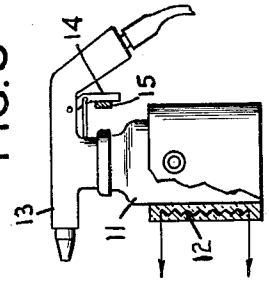


FIG. 3

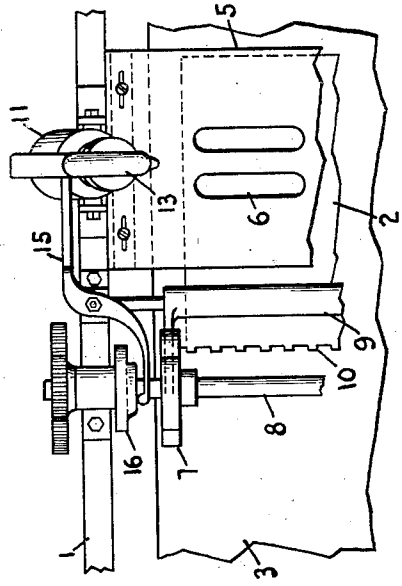


FIG. 2

INVENTOR
Alexander B. Roe
BY
Harry Lea Dodson
ATTORNEY

Patented Dec. 12, 1933 1,938,861

UNITED STATES PATENT OFFICE

1,938,861

MACHINE FOR PUTTING WAX CARBON SPOTS ON PAPER

Alexander B. Roe, Athens, Ohio

Application August 12, 1932. Serial No. 628,507

10 Claims. (Cl. 101—114)

My invention relates to those machines which are used to produce wax carbon spots on sheets of paper such as are described in Patent No. 1,860,957, issued to George A. Rutkoskie, and similar machines. These machines are expensive and require high priced operators and when they are rotary presses the cost of set up is very high so that it is impractical to run a small order.

My invention has for its object to produce a machine which will be inexpensive to construct compared with others used in this art.

A further object is to produce a machine which will be automatic in its operation and therefore will not require such high priced operators. It is well known that great difficulty is had in machines of this type due to the tendency of the wax to crystallize if heated too much above a certain temperature. It also has been found that the wax carbon, when heated, is utterly lacking in "tack" which is present in printers ink, as a consequence, a positive drive must be provided for the rollers and when this is done there is a tendency for the centrifugal force caused by the rotation of the roller to throw the wax carbon off due to its lack of adhesiveness which necessitates the provision of gutters and drip pans, which are expensive to construct and also to maintain. Moreover it has been found that it is essential to maintain a uniform temperature, not only for the ink fountain and rollers, but also for the ink plate. These conditions are due to the extreme sensitiveness of the melted wax carbon for if it is heated above a certain degree, although it will adhere to the paper and seemingly look right, yet in use it is a complete failure as it will not make a copy. While, if it falls below a certain temperature, it would fail, for if one were to just heat the wax carbon and then spray it out, moving the spray about so that it constantly comes in contact with cold air, the result would be the production of soot as the melted wax carbon will "freeze" into tiny globules of carbon. In order to overcome this it is necessary to have the container fixed in a position adjacent the paper so that the air immediately surrounding the spray will be heated to practically the same temperature as the wax carbon.

My invention avoids the necessity of any such expensive apparatus and provides for a construction in which only the container in which the wax carbon is located need be kept at a predetermined temperature. The spray nozzle is preferably rigidly fixed in position upon the container adjacent the spots to be coated so that the travel of the melted wax carbon is not of sufficient length to be cooled until it strikes the sheet of paper upon which it is desired to form the carbon spot.

My means of accomplishing the foregoing objects may be more readily understood by having reference to the accompanying drawing which is hereunto annexed and made a part hereof, in which

Fig. 1 is a side view of a machine equipped with my improved means for producing wax carbon spots;

Fig. 2 is a top plan of the same, a portion being broken away; and

Fig. 3 is a detail view of my carbon spray gun.

Similar reference numerals refer to similar parts throughout the entire description.

As shown in the drawing, I provide a frame 1 equipped with standard suitable automatic pile paper feeder which has a pile of sheets of paper 2, the sheets of which are fed by air suction or by any of the well known means employed for this purpose. When the paper reaches the conveyor belts 3, which may be driven by motor 4 or in any suitable or desired manner, it passes under a shield 5 which is provided with a number of perforations 6 of any desired shape and in any desired location. When the sheet of paper reaches the position when it is in exact register with the shield, cams 7 revolved by a shaft 8 strike an arm on a lift bar 9. This tilts the bar 9 depressing the fingers 10 which engage the front edge of the sheet of paper and its further progress is arrested and it is in position to receive the wax carbon upon those portions of its surface which are exposed by reason of the openings in the shield. The wax carbon is placed in one or more containers 11, shown in Fig. 3, one or more of which may be provided, suitably but adjustably secured to the frame 1 of the machine. The containers should preferably be located adjacent the perforations 6 in the shield 5 so as to shorten the travel of the melted wax carbon as much as is practical, thus preventing it chilling before it impinges upon the sheet of paper. For that reason, I secure the containers adjustably to the frame, thus providing for the location of the spraying container at any particular spot on the machine and operation of it from that point. It may, under some conditions, be found desirable to merely locate the nozzles near the openings 6 and then secure them rigidly in position during the spraying operation. The

containers 11 are electrically heated by means of suitable electric heating elements 12 which may be disposed around the outside of the containers 11, or any other desired type of heater may be used. The elements 12 are preferably connected to an automatic temperature control (not shown). On the containers 11 I mount a spray nozzle 13 of standard construction, which is connected through a flexible tube to a source of fluid pressure supply (not shown) as all printing establishments have an abundance of air under pressure, the trigger 14 of the spray gun or nozzle 13 is connected by suitable linkage 15 to cam 16 carried by the shaft 8. This cam 16 is timed so as to pull the trigger 14 the instant the sheet of paper stops and to release it when the spray has coated the exposed surfaces of the paper. As the paper is cold and none of the parts of the machine are heated the spray of wax carbon will cool the instant it strikes the paper. The continued rotation of shaft 8 causes the cam to rock the bar in the other direction thus tilting the bar sufficiently to prevent the fingers from contacting the edge of the sheet of paper which is then free to be carried on by the conveyor and piled up at the discharge end of the machine. For illustrative purposes, I have described specific structural details but it is not to be understood that I intend to be limited thereto as many different mechanical movements may be used for accomplishing the same result; neither do I wish to be limited to one or a plurality of containers for the wax carbon as their number is governed by the size of the sheets of paper and the number of exposed surfaces and instead of a shield I may wish to use strips of suitable material to bound the exposed portions of the sheet of paper, my purpose being to show and describe a concrete embodiment of my invention but the limitations are only such as appear in the hereinafter appended claims.

Having described my invention what I regard as new and desire to secure by Letters Patent is:

1. In a machine for putting wax carbon spots on paper, means to carry a sheet of paper horizontally, automatically operated means to arrest the movement of said paper for a predetermined period of time, a shield over said paper, there being openings in said shield of any desired shape, a container for wax carbon detachably mounted on said machine adjacent the openings in said shield, means to maintain said container and its contents at a predetermined temperature, fluid pressure means to spray said melted wax carbon on said paper through the openings in the shield and means to hold said spraying means in fixed position during the spraying operation.

2. In a machine for putting wax carbon spots on paper, means to carry a sheet of paper horizontally, automatically operated means to arrest the movement of said paper for a predetermined period of time, a shield over said paper, there being openings in said shield of any desired shape, a container for wax carbon secured adjacent said openings, means to maintain said container and its contents at a predetermined temperature, fluid pressure actuated means to spray said melted wax carbon on said paper through the openings in the shield, and means to hold said spraying means in fixed position during the spraying operation.

3. In a machine for putting wax carbon spots on paper, means to carry a sheet of paper, automatically operated means to arrest the movement of said paper for a predetermined period of time, a shield over said paper, there being openings in said shield of any desired shape, a container for wax carbon detachably secured adjacent said openings, means to maintain said container and its contents at a predetermined temperature, fluid pressure actuated means to spray said melted wax carbon on said paper through the openings in the shield, and means to hold said spraying means in fixed position during the spraying operation.

4. In a machine for putting wax carbon spots on paper, means to carry a sheet of paper horizontally, of automatically operated means to arrest the movement of said paper for a predetermined period of time, a shield over said paper, there being openings in said shield of any desired shape, a container for wax carbon detachably secured in fixed position on said machine, means to maintain said container and its contents at a predetermined temperature, fluid pressure actuated means to spray said melted wax carbon on said paper through the openings in the shield, means actuated by the arresting mechanism to operate said spraying means, and means to hold said spraying means in fixed position during the spraying operation.

5. In a machine for putting wax carbon spots on paper, means to carry a sheet of paper horizontally, automatically operated means to arrest the movement of said paper for a predetermined period of time, a shield over said paper, there being openings in said shield of any desired shape, a rigid container for wax carbon, a nozzle secured to said container, means to maintain said container at a predetermined temperature, fluid pressure automatically operated means to spray the melted wax carbon through said nozzle onto said paper through the opening in the shield, and means to hold said nozzle in fixed position during the spraying operation.

6. In a machine for putting wax spots on paper, means to carry a sheet of paper, automatically operated means to arrest the movement of said paper for a predetermined period of time, a shield over said paper, there being openings in said shield of any desired shape, a container for wax carbon adjustably secured to said machine, means to maintain said carbon at a predetermined temperature, fluid pressure actuated means to spray said melted wax carbon on said paper through the openings in the shield, and means to hold said spraying means in fixed position during the spraying operation.

7. In a machine for putting wax carbon spots on paper, means to carry a horizontal sheet of paper, automatically operated means to arrest the movement of said paper for a predetermined period of time, a shield over said paper, there being openings in said shield of any desired shape, a rigid container for wax carbon, means to maintain said container and its contents at a predetermined temperature, fluid pressure actuated means to spray said melted wax carbon on said paper through the openings in the shield, said means being actuated by the arresting mechanism, and means to hold said spraying means in fixed position during the spraying operation.

8. In a machine for putting wax carbon spots on paper, means to carry a sheet of paper horizontally, automatically operated means to arrest the movement of said paper for a predetermined period of time, a shield over said paper, there being openings in said shield of any desired shape, a container for wax carbon detachably

but rigidly secured to said machine, means to maintain said container and its contents at a predetermined temperature, fluid pressure automatically operated means to spray said melted wax carbon on said paper through the openings in the shield, and means to hold said spraying means in fixed position during the spraying operation.

9. In a machine for putting wax carbon spots on paper, means to carry a sheet of paper horizontally, automatically operated means to arrest the movement of said paper for a predetermined period of time, a shield over said paper, there being openings in said shield of any desired shape, a plurality of containers for wax carbon rigidly mounted on said machine adjacent said openings, means to maintain said containers at a predetermined temperature and fluid pressure automatically operated means for each container to spray said melted wax carbon on said paper through the openings in the shield, and means to hold said spraying means in fixed position during the spraying operation.

10. In a machine for putting wax carbon spots on paper, means to carry a sheet of paper horizontally, automatically operated means to arrest the movement of said paper for a predetermined period of time, a shield which partially covers said paper when its movement is arrested, a rigid container for wax carbon, means to maintain said container and its contents at a predetermined temperature, a plurality of fluid pressure actuated means to spray said melted wax carbon upon the exposed portions of said paper, and means to hold said spraying means in fixed position during the spraying operation.

ALEXANDER B. ROE.