

Feb. 19, 1952

M. RAS  
WATER ATOMIZER FOR DAMPING THE CYLINDERS IN  
OFFSET PRINTING MACHINES  
Filed Oct. 14, 1948

2,586,480

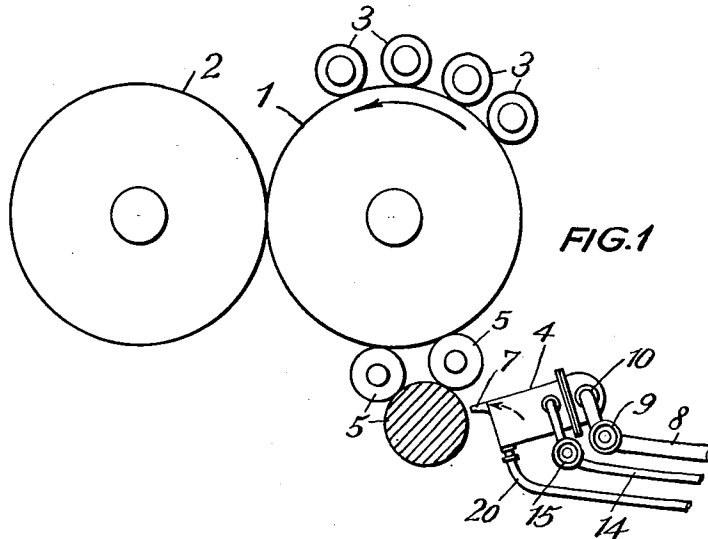


FIG. 1

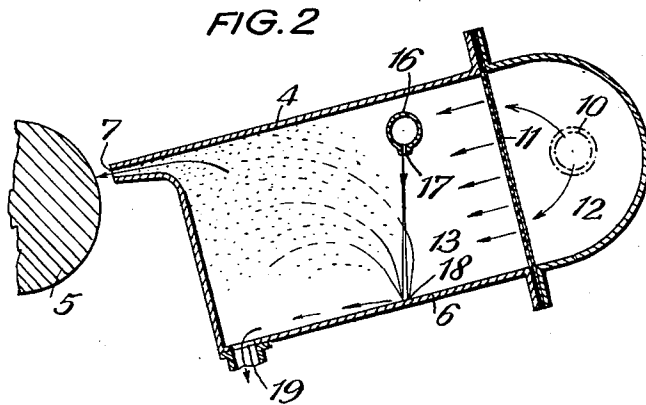


FIG. 2

INVENTOR:  
Max Ras  
by Sommers & Young  
Attorneys

# UNITED STATES PATENT OFFICE

2,586,480

## WATER ATOMIZER FOR DAMPING THE CYLINDERS IN OFFSET PRINTING MACHINES

Max Ras, Zurich, Switzerland

Application October 14, 1948, Serial No. 54,386  
In Switzerland October 17, 1947

1 Claim. (Cl. 101—147)

I

My present invention relates to improvements in damping-apparatus as used in offset printing machines.

The plate cylinder of an offset printing machine generally is damped by apparatus comprising two, three or as a maximum four distributing rolls. In such known damping apparatus, a cloth-clad duct roll dips into a trough filled with water and is intermittently rotated, by an adjustable angular amount, through a pawl-and-ratchet gear. A supply roll, which also is cloth-clad, alternately contacts for a certain length of time the duct roll and then a swanskin roll, and thus transfers a certain quantity of water. The latter roll delivers the water to two brass rolls called brayer or mullers which, aside of rotating perform an axially reciprocating movement yet and deliver the water to the distributing rolls which finally dampen the plate or printing cylinder.

The known construction above described has the following disadvantages. It requires much space and a great number of rolls, and thus is relatively expensive; the provision of expensive actuating mechanism for the duct roll and the supply roll; has practically no possibility of regulating the water supply over the width of the plate cylinder; and involves wear of the cloth covers.

It has been proposed in the art to effect damping by spraying. In one such proposal, the plate cylinder is overcooled, and water vapor blown onto the cylinder where it condenses, thus keeping the cylinder moist.

Spraying the water directly onto the plate has the disadvantage that water also is delivered to the printing positions, whereby the printing ink is spoiled and wasted. Further, the quantity of water to be supplied is so small that it is very difficult to uniformly space atomizing nozzles over the entire cylinder width so as not to exceed the permissible quantity of water. It would not prove practicable to step down the water supply by reducing the water pressure, since the atomizing nozzles would no longer operate appropriately. The atomized water particles, further, must have a certain velocity, in order that they will be carried onto a rotating cylinder.

The water atomizer according to my present invention solves the said problem, and comprises an oblong box having a longitudinal slot, means for producing compressed air uniformly distributed over the entire length of the said slot, and means for atomizing water to deliver same, uniformly distributed throughout the air current,

2

through the said slot onto that part of the offset machine which is to be damped.

Suitably independent means for controlling the water pressure and the compressed air are provided, for determining the contents of the spray jet as to the quantity of atomized water and the speed of the spray jet respectively.

One form of my present invention is shown schematically in the accompanying drawing, in which

Fig. 1 shows a portion of the offset machine, and

Fig. 2 the atomizer in cross-section.

In Fig. 1, the numeral 1 designates the printing cylinder, and 2 the rubber cylinder. The numeral 3 designates the inking rolls, and 4 the atomizer according to my present invention for producing a spray jet to dampen the printing cylinder, damping rolls 5 being arranged intermediate of the atomizer 4 and the printing cylinder 1.

The atomizer 4 comprises an oblong box 6 provided with a longitudinal slot 7. The length of the box 6 is at least equal to the length of the cylinder 1. Further, means for producing compressed air, uniformly distributed over the entire length of the slot 7, are provided, comprising a compressed-air line 8 including a control valve 9 and distributing pipe 10, and a baffle 11 adapted as filter separating the air-supply chamber 12 from the remaining portion 13 of the box space. The air filter 11, which e. g. may be constituted by a wire gauze with or without cloth-cover, not only catches impurities in the air current, but also gives origin to a uniform flow pattern over the entire box and, in particular, over the entire length of the slot 7. In such case, the air flow may also be controlled by regulating the speed of the blower which supplies the compressed air to line 8, in place of the valve 9.

In the space 13 of the box 6, means for atomizing water are provided, comprising a water supply pipe 14 including a control valve 15, and a distributing pipe 16. The latter comprises a plurality of apertures or nozzles 17, uniformly distributed over the entire length of the box, which form fine and smooth jets of water. The latter impinge on a baffle 18 to be partly atomized. The atomized water is entrained by the air current and blown, in form of a jet of mist, through the slot 7, onto a roller (distributing or brayer roller) of the damping apparatus or, perhaps, also directly onto the printing cylinder. The nonatomized excess water suitably is returned to the pump through the drain 19 and the line 20.

3

By regulating the water pressure with the aid of the valve 15, the percentage of the jet of mist in atomized water particles may be controlled.

Atomizing the water by means of impinging fine jets has the advantage, over jet atomizing through nozzles, of permitting to regulate the atomized quantity of water down to zero by lowering the water pressure. By regulating with the aid of the valve 9, the velocity of the air current may be controlled, independently of the regulation of the water contents.

By providing baffles in the slot 7, the jet of mist may be retarded or localized.

What I claim and desire to secure by Letters Patent is:

In an offset printing machine, a plate cylinder, a water atomizer for dampening said cylinder, said atomizer comprising in combination an elongated box having a longitudinal slot in front of said cylinder with its longitudinal axis at right angles to the longitudinal axis of the box and parallel to the axis of said cylinder, air current producing means including a distributing pipe leading into said box and control means for regulating the pressure of the air current and thereby its speed leaving the slot, a perforated screen disposed in said box between said distributing pipe and said slot in a plan parallel to the longitudinal axis of said slot and of the same length as the latter, for uniformly distributing the air current entering the box across the entire

4

length of the slot, a baffle located within said box down-stream of said screen for atomizing water, pipe means having nozzles located in said box downstream of said screen to discharge said water against the surface of said baffle and including further control means for regulating the water pressure and thereby the moisture of the jet of mist produced.

MAX RAS.

## REFERENCES CITED

The following references are of record in the file of this patent:

## UNITED STATES PATENTS

Number	Name	Date
96,039	Seeley -----	Oct. 19, 1869
525,679	Dillon -----	Sept. 4, 1894
1,085,313	Wickel -----	Jan. 27, 1914
1,165,268	Matheson -----	Dec. 21, 1915
1,384,760	Hurst -----	July 19, 1921
1,675,002	Steiner -----	June 26, 1928
1,798,850	Moe et al. -----	Mar. 31, 1931
1,825,230	Haskin -----	Sept. 29, 1931
1,839,193	Blanchard -----	Jan. 5, 1932
2,115,442	Emery -----	Apr. 26, 1938
2,178,583	Grembecki -----	Nov. 7, 1939
2,196,412	Grembecki -----	Apr. 9, 1940
2,321,792	Bowie -----	June 15, 1943
2,389,730	Iler -----	Nov. 27, 1945
2,447,123	Jones -----	Aug. 17, 1948