Sept. 8, 1959 R. FRITSCHE 2,903,550

METHOD AND APPARATUS FOR PROCESSING PRINTING PLATES

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Fig. 1

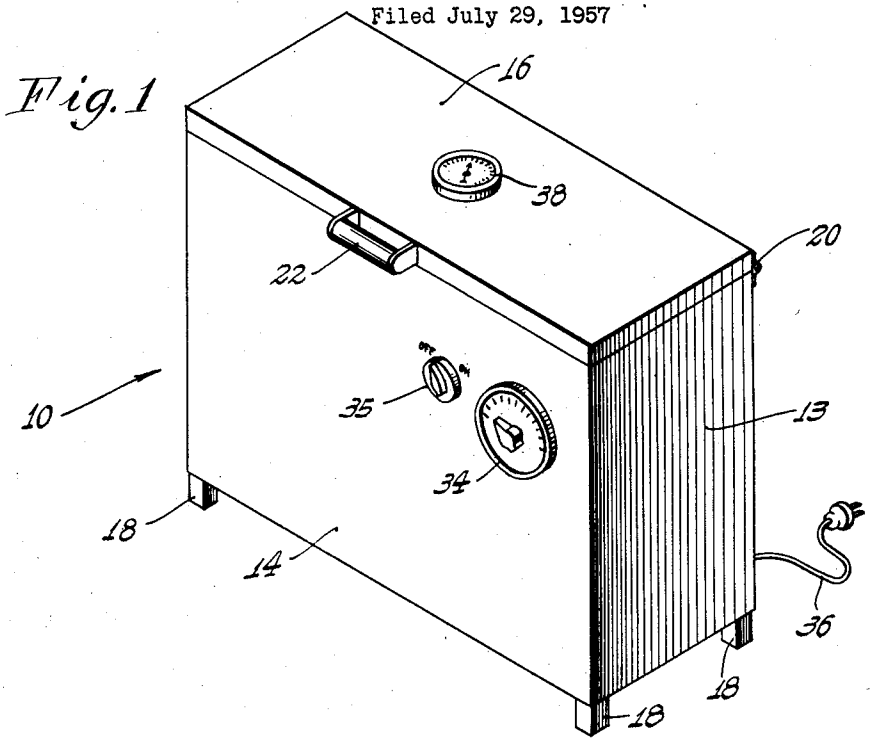


Fig. 2

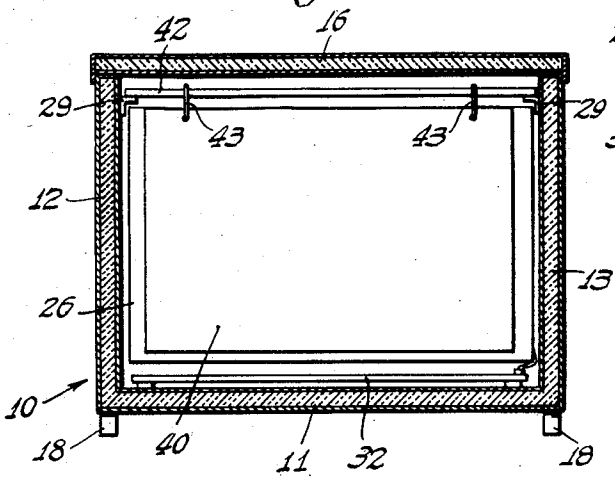
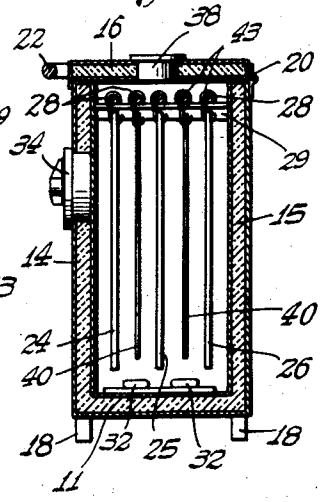


Fig. 3



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METHOD AND APPARATUS FOR PROCESSING PRINTING PLATES

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6 Claims. (Cl. 219—35)

This invention relates to printing plates, and more particularly to a method and apparatus for treating said plates to effect a lengthened image life thereof.

Heretofore it has often been found in the use of printing plates that the image life is not sufficient for the desired run. This is particularly true of presensitized plates, which have become increasingly of late and have been adopted by many plants for short run work. Such presensitized plates have the advantages of quality reproduction, simplicity, and the achieving of an appreciable saving in time. However, their image life is definitely of limited duration. The short image life of such plates is believed to be due to the thinness of the coating in conjunction with the relatively smooth aluminum plate surface. It has been found, moreover, that any abrasive condition in the printing process will cause an accelerated wear of the image, thereby further greatly reducing its useful life.

The present invention obviates or minimizes the above disadvantage of short run life in a presensitized lithographic or printing plate, and one object of the invention is to provide a novel and improved method for processing such plates, so as to appreciably increase the image life thereof over the present.

Another object of the invention is to provide an improved apparatus for treating presensitized lithographic or printing plates, to appreciably increase the image life thereof.

A further object of the invention is to provide an improved method and apparatus having the advantage above set forth, which is nevertheless simple and economical to practice and produce.

In accomplishing the above objectives, I provide a novel method and apparatus for heating or baking the printing plates, such method and apparatus being characterized by a quick and uniform raising of the plate temperature throughout its entire area, even though the plate be of relatively large size. In effecting this, I provide a plurality of heat-retaining radiator plates, disposed in spaced, parallel relation, and bring the temperature of such plates to a predetermined specified value. I thereafter interpose between such radiator plates the printing plate which is to be treated, and maintain said plate in such position until its temperature has been brought to the desired point by radiant heat emitted from the radiator plates.

In the improved apparatus of this invention I set forth a housing enclosing the radiator plates, and provide thermostatically controlled heating means for raising the temperature of the radiator plates. I further provide novel, convenient supporting means for holding one or several printing plates interposed between the radiator plates, and effect the heating of the former plates mainly by radiation, the primary heating source being preferably inactivated after having accomplished the initial heating of the radiator plates.

The heat processing of the printing plates is thus quickly

effected, yet with great uniformity and safety, and this constitutes an important feature of my invention.

Other features and advantages will hereinafter appear.

In the drawings accompanying this specification, similar characters of reference indicate corresponding parts wherever possible in the several views, in which:

Figure 1 is a perspective view of an improved plate-processing apparatus as made in accordance with the invention.

Fig. 2 is a vertical sectional view of the apparatus of Fig. 1, taken between the front and rear walls thereof.

Fig. 3 is a vertical sectional view of the apparatus of Fig. 1, taken between the side walls thereof.

As shown, the improved apparatus of this invention comprises a housing designated generally by the numeral **10**, said housing having a box-like construction with a bottom wall **11**, side walls **12** and **13**, front and rear walls **14** and **15** respectively, and a top wall **16**.

All of the walls of the housing are so constructed as to provide effective heat insulation, as by making the walls of double thickness with efficient heat-insulation material interposed, or in any other suitable manner.

The housing **10** may have supporting feet **18**, and is preferably constructed so that its top **16** may be opened along a hinge **20**, thereby to constitute a door for providing access to the housing interior. A handle **22** may be advantageously provided at the front edge of the housing top **16**, as shown.

In accordance with the present invention, within the housing **10** I provide a plurality of heat-storing and retaining radiating plates **24**, **25** and **26**, disposed in spaced, parallel relation. As seen in Figs. 2 and 3, the plates **24–26** are disposed vertically in the housing **10**, and may be advantageously hung from top supporting bars **28** set on inner brackets **29**, the latter being secured to the side housing walls **12** and **13**.

By the present invention I provide electrical means for raising the temperature of the radiating plates **24**, **25**, and **26** to a predetermined specified value, and effect this by a plurality of electric strip heaters **32** disposed on the bottom **11** of the housing. The heaters **32** are preferably thermostatically controlled, as by means of a settable thermostat **34** in the usual well known manner, and the circuit through the heaters **32** is further controlled by an "on-off" switch **35**, all as shown in Fig. 1. Energy is supplied to the heaters **32** through a suitable line cord **36**, as will be understood.

The cover **16** of the housing **10** is also provided with a thermometer **38** by which the interior temperature of the housing, and of the radiator plates **24–26** may be readily ascertained at any time.

In accordance with the present invention I provide supporting means within the housing **10**, by which image-carrying printing plates **40** may be placed and held between the radiator plates **24–26** in spaced relation thereto so as to receive radiant heat therefrom and be quickly and uniformly brought to a desired baking temperature, being held substantially at such temperature for a predetermined length of time. By this method of the invention I have found that the toughness of the image coating and its resistance to abrasion and wear is materially increased, thereby greatly lengthening the life of such coating and providing for longer runs of the printing plates so treated.

As shown in Figs. 2 and 3, the hanger means may be in the form of elongate bars **42** supported on the brackets **29**, such bars carrying hooks **43** by which the printing plate **40** may be readily supported in spaced relation to the plates **24–26**. It will now be evident that the printing plate **40** may be easily and conveniently placed in and removed from the housing **10**, by virtue of the relatively large cover or door **16** thereof, together with the con-

veniently operable hanger bars 42 and hooks 43. Moreover, it will be seen that the housing 10 and radiator plates 24–26 may be made large enough to accommodate the largest desired printing plate 40, and that irrespective of the size of the plate a rapid and uniform transfer of heat will be effected thereto, thereby to quickly and evenly process the image thereon.

Preferably, in carrying out the method of the invention the strip heaters 32 are not energized during such processing of the printing plate 40, although this procedure is not necessary, since a reduced or intermittent energization may sometimes be found advantageous.

Thus, in the operation of the apparatus, the radiator plates 24–26 are first brought up to a desired heat prior to insertion of the printing plates 40, and the circuit through the heaters is then broken by the switch 35. Thereafter, the printing plates 40 are placed in the housing or cabinet 10 and processed for the desired length of time, whereupon they are removed for cooling and use. The radiator plates 24–26 may now be again heated, for processing the next set of printing plates, and so on.

In place of the strip heaters 32 other heating means may be employed, as for example infra-red bulbs or the like.

It will be understood that, by this invention I have provided a novel and improved, extremely effective and simple means for treating and toughening presensitized aluminum or presensitized zinc plates by baking the images thereon, so as to greatly strengthen the same and extend the life thereof. Plates having suitable lacquers, such as Thiokol, neoprene, nitrile, vinyl and other resin coatings, on grained or non-grained surfaces may be processed with the above method and apparatus, to produce lasting images thereon. The method and apparatus enables presensitized plates, even for the largest sizes, to be utilized for long runs, and the equipment is useful also in the art of photo-engraving, and for the drying of plates of zinc, copper, magnesium, and the like. It may be utilized to toughen enamel coatings, as well. The non-printing portions of the plates may be advantageously coated with a special non-baking gum so as to prevent any deposit of vapors thereon.

Variation and modifications of the invention may be made within the scope of the claims, and portions of the improvements may be used without others.

I claim:

1. Apparatus for baking a plurality of image-carrying printing plates to render more durable the images thereof, comprising a closed housing having a door to provide access to the interior thereof, the walls of said housing having means providing heat insulation; a plurality of heat-radiator plates in excess of two, adapted to hang vertically in said housing; hanging-type support means in said housing, for hanging said plates in spaced relation and broadside to each other, said plates being adapted to store appreciable amounts of heat imparted to them; means in said housing, juxtaposed to the heat-radiator plates, for heating the same; and hanging-type support means disposed in the housing, for removably supporting printing plates in hanging positions between adjoining pairs of said heat-radiator plates and in juxtaposition thereto, there being only space between the said adjoining pairs of heat-radiator plates, in which space the printing plates may be hung in spaced relation to the heat-radiator plates, thereby to subject the printing plates to radiant heat from the said pairs of heat-radiator plates so as to controllably and uniformly raise the temperature of the said printing plates.

2. The invention as defined in claim 1 in which there are heat-responsive means controlling the said heating means, to bring the temperature of the heat-radiator plates to a predetermined value.

3. The invention as defined in claim 2 in which there is a thermometer carried by the housing, for indicating the interior temperature thereof.

4. The invention as defined in claim 1 in which the housing is box-like, in which the heat-radiator plates hang vertically in the housing, and in which the housing door constitutes the top of the housing.

5. The invention as defined in claim 4 in which the support means comprises bars extending horizontally in the housing below the top thereof, said bars having hanger means for releasably holding printing plates.

6. The invention as defined in claim 4 in which the heating means comprises elongate strip heaters disposed along the bottom of the housing, said heaters being coextensive with the said heat-radiator plates.

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