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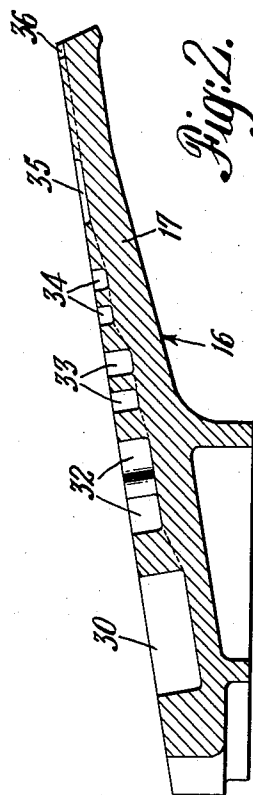
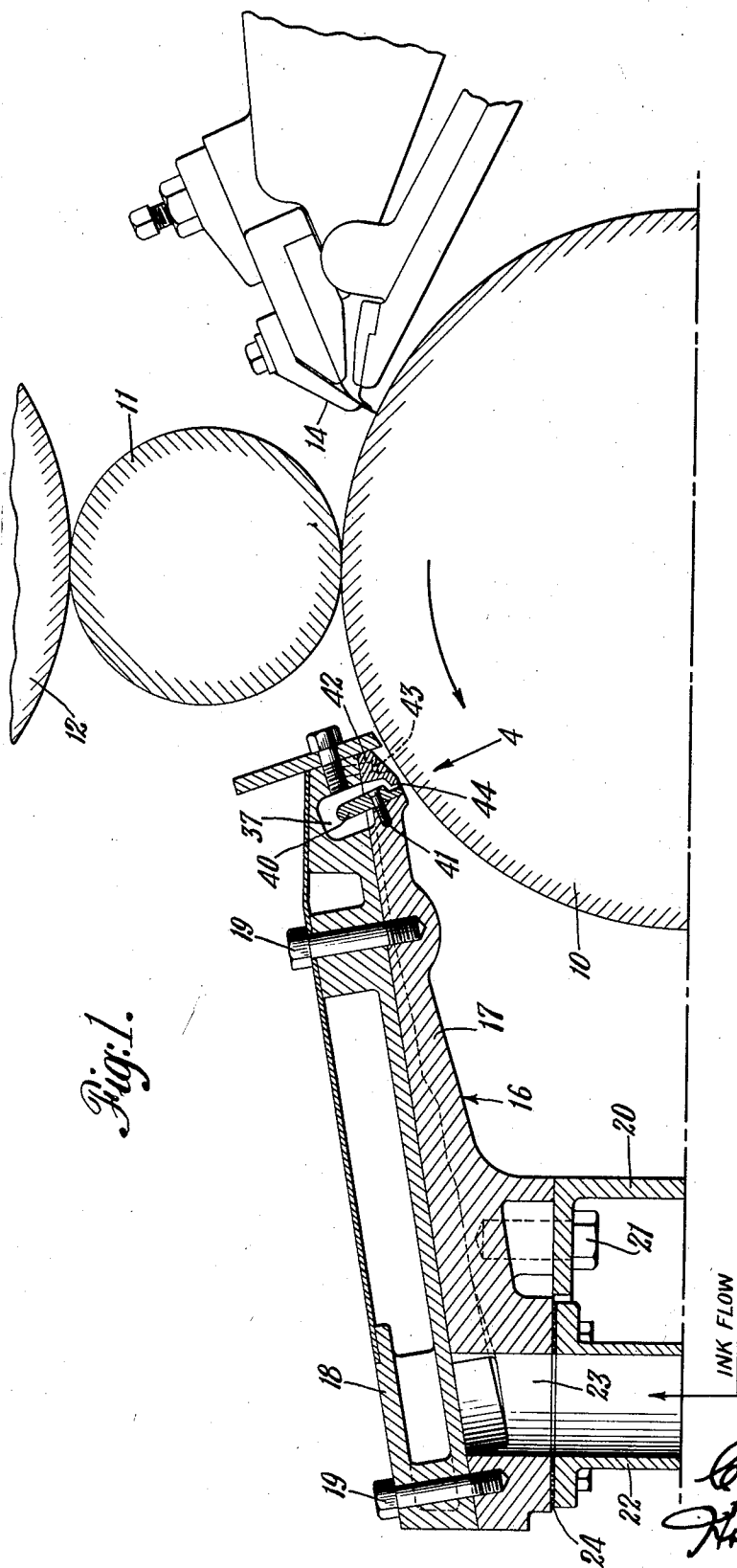
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2,377,482

INK APPLYING MEANS FOR PRINTING PRESSES

Filed Oct. 14, 1942

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

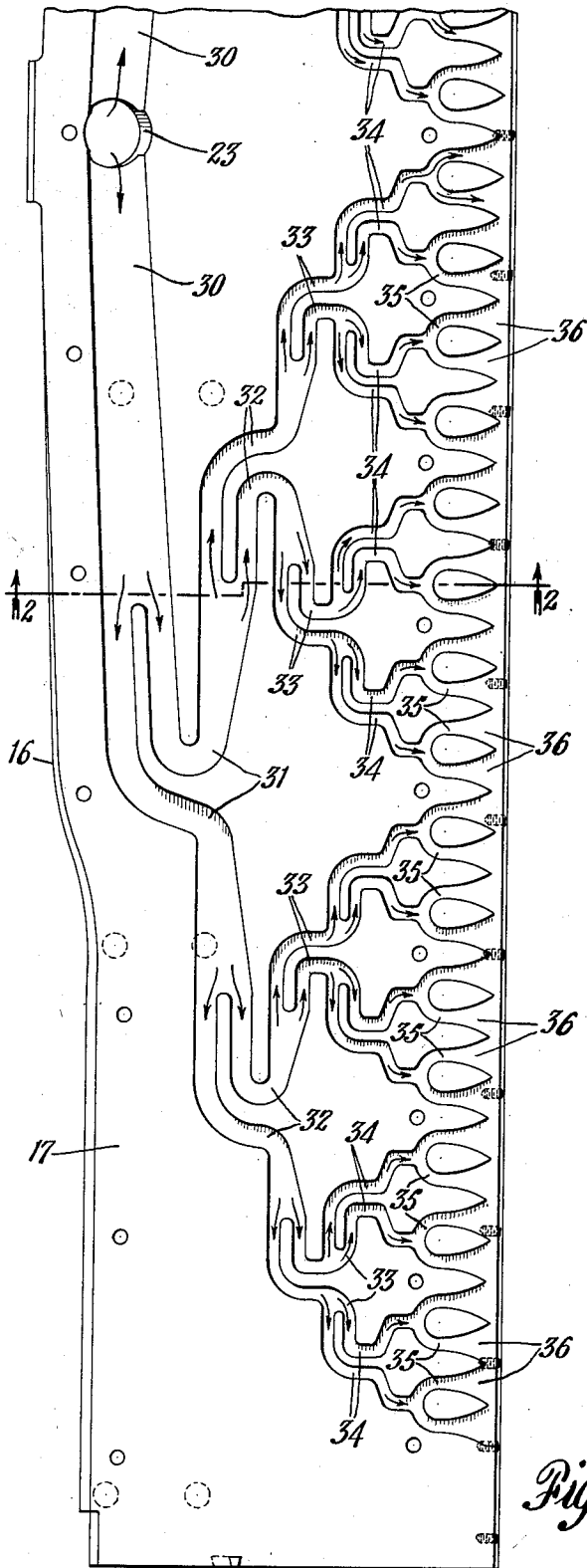


Fig. 3.

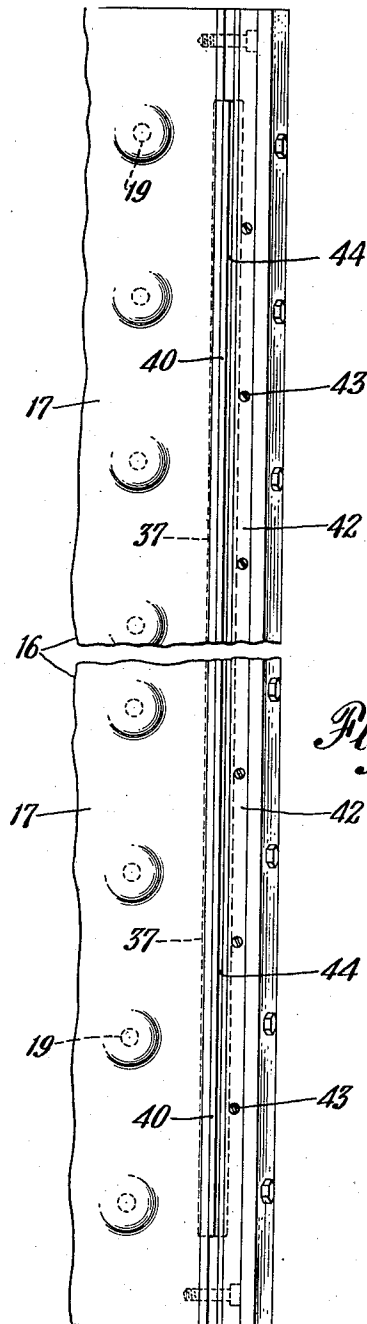


Fig. 4.

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INK APPLYING MEANS FOR PRINTING PRESSES

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4 Claims. (Cl. 101—157)

The present invention relates to ink applying means for printing presses and more particularly to the inking means of a rotogravure press for applying ink to the design cylinder thereof.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations, and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

It is an object of the present invention to provide in a rotary intaglio printing press an inking means for projecting a thin and uniform sheet of ink against the design cylinder of the press. A further object is the provision of an inking means which will deliver a reliably uniform supply of ink to all parts of the design cylinder and thereby insure uniformity in the printed product of the press. Still another object is the provision of an inking head for the inking means of the press which will properly ink the design cylinder under varying expectable circumstances.

Of the drawings:

Fig. 1 is a vertical cross sectional view of a rotary intaglio press embodying the present invention;

Fig. 2 is a vertical cross sectional view of the manifold member taken along line 2—2 of Fig. 3;

Fig. 3 is a plan view of the manifold member of the inking head; and

Fig. 4 is an elevation taken in the direction of arrow 4 of Fig. 1.

With the stated and other objects in view, an embodiment of the invention is provided wherein an inking head is provided closely adjacent the design cylinder of a rotary intaglio printing press as the proximate source of ink therefor. The inking head comprises a manifold member having an ink duct through which ink may be pumped to the manifold in the customary manner. From the ink duct in the manifold there extend a pair of ink passages toward opposite ends of the manifold, and these passages are each divided into two ink passages, the divisions each sub-divided into two passages, and so on until a large number of ink passages are provided leading from the duct and toward the edge of

the manifold positioned along the length of the design cylinder. At this edge of the manifold there is provided a long chamber, and the passages in the manifold terminate in a large number of openings equally spaced along the length of this chamber. The chamber in the manifold empties through a slot along its length, and this slot is positioned closely adjacent the length of the design cylinder against which the ink is to flow.

The passages in the ink manifold become progressively smaller both in depth and width as each one is sub-divided and the numbers of passages increased, and preferably the total volume of the system is retained the same as the subdivision of passages progresses. The distance through each passage from the duct to the exit at the chamber is preferably the same for all of the passages, and thus the ink flows under a constant pressure from the duct to the chamber and is delivered into the chamber through the openings in equal amounts and pressures. The dividing walls between the openings at the chamber are "tear" shaped to provide as nearly perfect streamlining as possible so that the flow of ink into the chamber takes place as a constant wall of ink rather than as individual streams.

A baffle is positioned along the length of the chamber in front of the openings from the passages, and ink flowing through the chamber and out the slot against the design cylinder must pass over the baffle, thus further providing for discharge of the ink against the cylinder in a stream which is uniform at all points of its extended length.

It will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

Referring now in more detail to the illustrative embodiment of the invention as shown by way of example in the accompanying drawings, the invention is shown as applied to a rotary intaglio printing press the general construction of which is well understood. The present invention provides an improvement upon the inking means shown and described in prior Patent No. 2,096,322 to which reference should be had for details of an inking means to which the present invention may be applied.

Referring now to the accompanying drawings there is provided in a rotary intaglio printing press a design cylinder 10, an impression cylinder 11, and a backing cylinder 12, the cylinders being journaled in the press frame (not shown).

The design cylinder 10 rotates in the direction of the arrow thereon in Fig. 1, and a doctor blade mechanism indicated generally by the numeral 14 is provided adjacent the point of impression to clean ink surpluses from the design cylinder immediately before the impression is taken.

The inking head of the present invention is positioned adjacent the point of impression opposite the doctor blade mechanism and is adapted to project a sheet of ink against the design cylinder immediately after the impression is taken in considerable quantities, the ink being carried forward on the surface of the cylinder, parts of it leaving the cylinder during its rotation by gravital and centrifugal action and the final surplus being removed by the doctor blade just before the impression is taken. The ink is continuously flowing, being pumped from a place of storage or the fountain under the design cylinder through the inking head and against the design cylinder, and there is a kinetic impact of the ink against the design acting to keep the design clean and freshly inked.

As illustratively embodied the inking head comprises a manifold indicated generally with the numeral 16, and this manifold includes the manifold base member 17 and manifold cover plate 18, the two being secured together in assembled position by means of bolts 19. The base member 17 of the manifold is mounted on vertically extending plate 20 of the inking mechanism of the press and is removably secured thereto by means of bolts 21.

The printing ink for the inking head is supplied through a pipe 22 of the inking mechanism, and a duct 23 in the manifold base plate 17 is provided to register with the pipe, a gasket 24 being positioned between the pipe and the base plate to provide an ink tight seal therebetween.

The upper surface of the manifold base member 17 is formed in a large number of grooved troughs (Fig. 3) and the top of this member and the bottom surface of the cover plate 18 are finished to lie in ink sealing engagement when the manifold is assembled. The grooved troughs in the base member thus form an ink conveying system from the ink duct 23 through the manifold 16.

As may be seen in Fig. 3, the conveying system through the manifold comprises a pair of initial passages 30 leading from the ink duct 23 toward opposite ends of the manifold 16. Each passage 30 is divided to form a pair of passages 31, each of which is in turn divided into pairs of passages 32 and these passages are in turn divided into pairs of passages 33. This subdivision of each passage into two passages is continued throughout the system until the final passages 35 communicate through a line of openings 36 with a longitudinal chamber 37. This chamber is formed by corresponding depressions in the surfaces of the members 17, 18 of the manifold 16, and extends lengthwise along the edge of the manifold adjacent the design cylinder 10.

The shape and path of the various passages of the ink conveying system of the manifold are preferably so designed that the pressure in all parts of the system is the same, and the amounts of ink delivered to the chamber 37 is the same through every opening 36, regardless of the distance of the individual openings from the duct 23. Thus the paths of the passages are so traced in the manifold that the distance traveled by ink in going from the duct 23 through the system and out an opening 36 is the same regardless

of what particular path is followed and what opening 36 is used as the exit. That is, the ink traveling distance from the ink duct 23 to all of the openings 36 is the same. Furthermore, the sizes of the progressively increasing numbers of passages from the duct to the chamber are so proportioned that the capacity of the passages does not change when the number is increased. Thus, when one passage is divided into a pair of passages, the resulting passages are narrower than was the parent passage, and the passages likewise become shallower as their numbers increase. Thus, if corresponding cross sections were taken of all the passages of the manifold, the total of the areas of all these cross sections would be substantially equal to the total of any other corresponding cross sectional areas of the passages.

Ink flowing from the openings 36 into chamber 37 is thus supplied at a constant pressure and volume all along the chamber, and in order to further equalize the supply of ink at all points along the length of the chamber, the partitions between openings 36 are of a "tear drop" configuration. This streamlining of the partitions provides the least possible resistance to the flow of ink and tends to reduce turbulence to a minimum, so that ink supplied to the chamber arrives in the form of a constant front wave rather than in individual streams.

A baffle plate 40 is provided along the length of chamber 37, and is affixed to the inner end of the base member 17 by means of screws 41. Ink arriving in chamber 37 through the openings 36 must therefore pass over baffle 40 before exit from the chamber, and this serves still further to iron out any surges or waves which may be found in the ink supply at this point and to supply it to the design cylinder in a long sheet of constant volume and pressure.

A nose member 42 is provided at the forward edge of the cap plate 18, and is secured thereto by means of screws 43. The nose member, together with the lower portion of the baffle 40 fixed to base member 17 forms a nozzle for egress of ink from chamber 37 through a longitudinal slot 44.

Thus the ink is directed downwardly from chamber 37 out of the slot 44 and against the surface of design cylinder 10. By reason of the various features of the inking head which have been shown and described, the ink will be supplied against the surface of cylinder 10 in a longitudinal sheet which is the same in pressure and volume throughout its length. The design cylinder will therefore be equally inked throughout its length, and a uniform printed product free from streaks will be the result.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

1. An ink applying means for a printing press having a nozzle to be positioned closely adjacent to the cylinder to be inked, said nozzle having a narrow slot longitudinally thereof opening toward said cylinder, a supply duct, and a manifold member connecting the slot and duct, said manifold branching from the duct to the slot in a large number of passages all of said passages being substantially of the same length, said pas-

sages terminating adjacent the slot in a large number of equally spaced openings divided by streamlined walls.

2. An ink applying means for a printing press having a nozzle to be positioned closely adjacent to the cylinder to be inked, said nozzle having a narrow slot longitudinally thereof opening toward said cylinder, a longitudinal chamber adjacent the slot and communicating therewith, ink conveying means communicating with the chamber, and a baffle in the chamber between the ink conveying means and the slot whereby ink passing through the chamber passes over the baffle.

3. An ink applying means for a printing press having a nozzle to be positioned closely adjacent to the cylinder to be inked, said nozzle having a narrow slot longitudinally thereof opening toward said cylinder, a longitudinal chamber adjacent the slot and communicating therewith, a supply duct, a manifold member connecting the duct and chamber, said manifold member

branching from the duct to the chamber in a large number of passages all of said passages being substantially of the same length, and a baffle in the chamber between the manifold member and the slot.

4. An ink applying means for a printing press having a nozzle to be positioned closely adjacent to the cylinder to be inked, said nozzle having a narrow slot longitudinally thereof opening toward said cylinder, a longitudinal chamber above the slot said chamber and said slot being of substantially the same length and the chamber communicating with the slot along the length of the chamber, a supply duct, a manifold member connecting the duct and chamber, said manifold member branching from the duct to the chamber in a large number of passages all of said passages being substantially of the same length, and a baffle in the chamber between the manifold member and the slot.

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