Sept. 10, 1940. F. OSSING 2,213,980

APPARATUS FOR SURFACING INKING ROLLS

Filed July 24, 1937 2 Sheets-Sheet 1

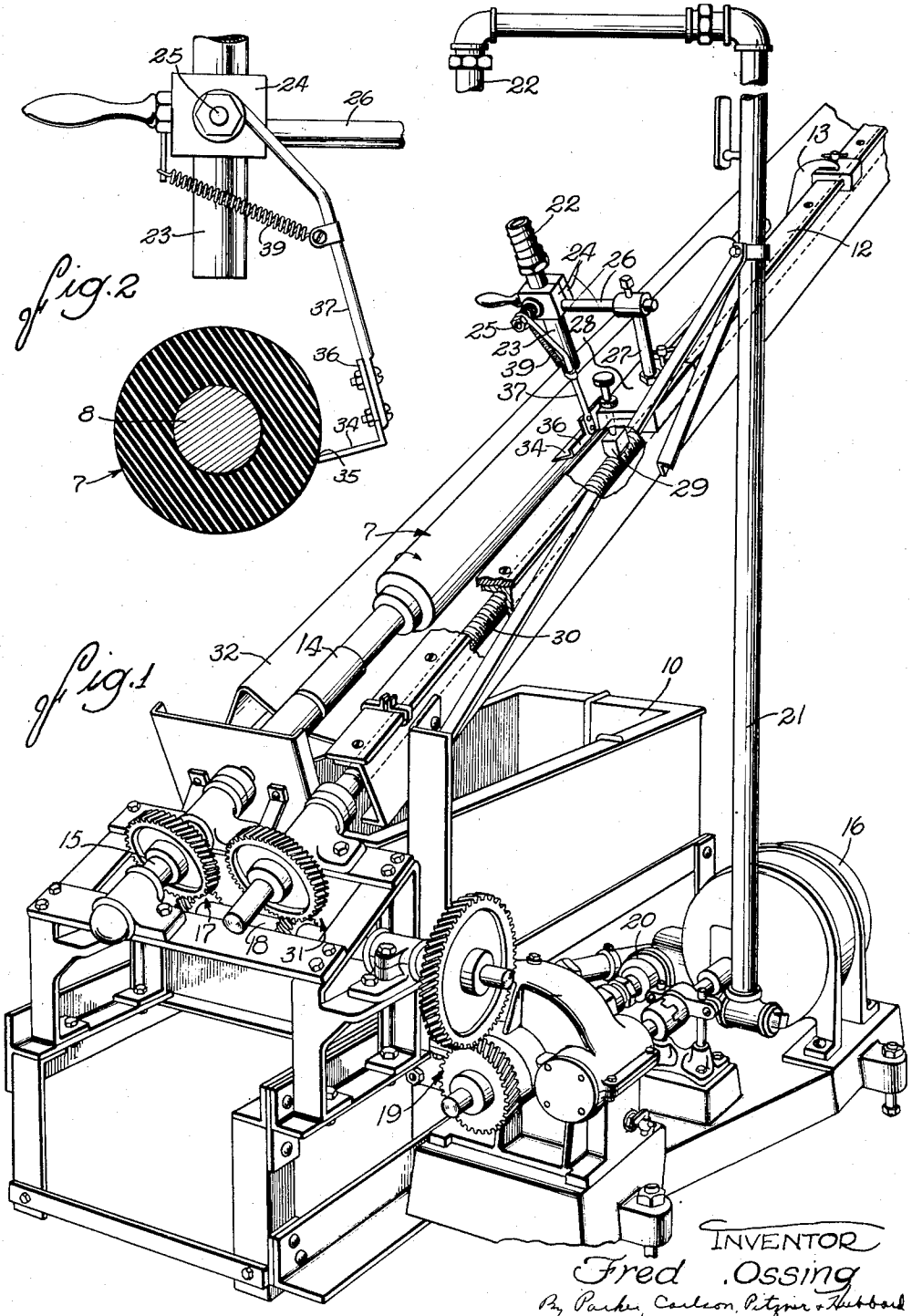


Fig. 2

Fig. 1

INVENTOR
Fred Ossing
By Parker, Carleton, Pitzner & Hubbard
ATTORNEYS

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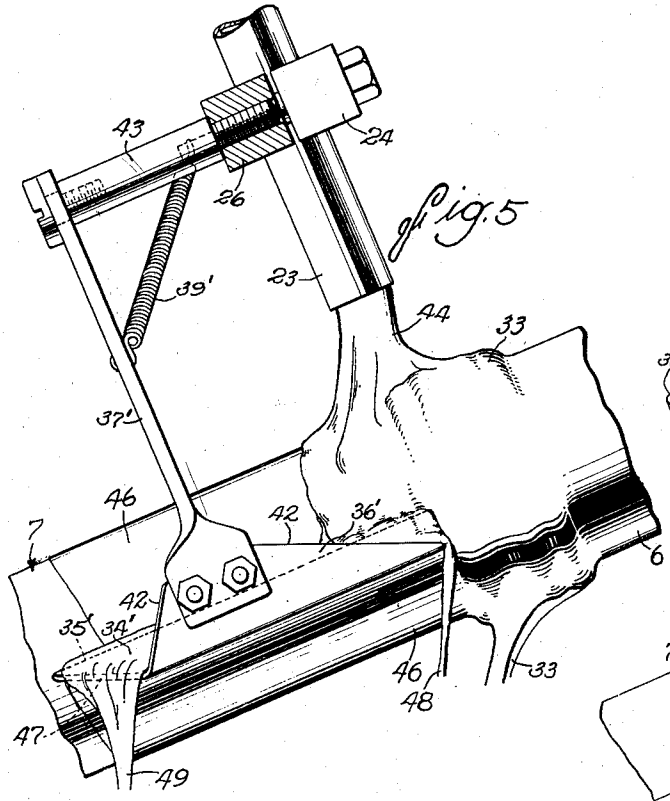


Fig. 5

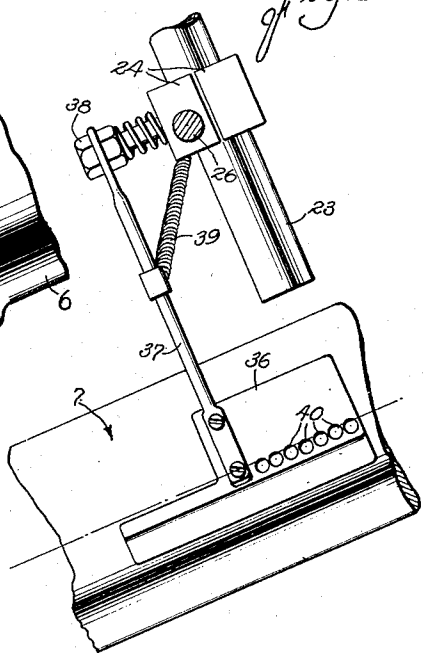


Fig. 3

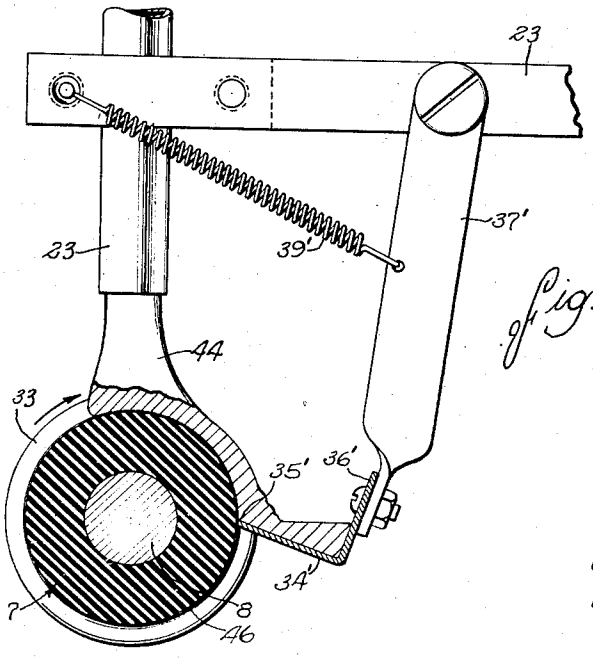


Fig. 4

INVENTOR
Fred Ossing
By Parker, Carlson, Pitzner & Hubbard
ATTORNEYS

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2,213,980

UNITED STATES PATENT OFFICE

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APPARATUS FOR SURFACING INKING ROLLS

Fred Ossing, Cleveland, Ohio

Application July 24, 1937, Serial No. 155,399

2 Claims. (Cl. 91—43)

This invention relates to the surfacing of inking rolls for printing presses with a thin film of so-called printers' composition and has more particular reference to apparatus of the type in which the roller to be coated is rotated with its longitudinal axis inclined and coated by applying molten glue-glycerine and composition substantially in excess of the amount required to form the surface film beginning at the upper end thereof and progressing downwardly throughout the entire length of the roller.

The primary object of the present invention is to provide, in combination with a roller coating machine of the above character, a new and improved mechanism for facilitating the formation of a finished surface film of uniformity in thickness and for minimizing the possibility of air bubbles becoming trapped in the film before congealing thereof and resulting in the formation of air blisters in the final film.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings, in which

Figure 1 is a fragmentary perspective view of apparatus for coating rollers in accordance with the present invention.

Fig. 2 is a fragmentary cross-sectional view.

Fig. 3 is a side elevational view of the mechanism shown in Fig. 2.

Figs. 4 and 5 are views similar to Figs. 2 and 3 illustrating a modified form of the invention.

In the drawings, the invention is shown for purposes of illustration embodied in a machine of well known construction for applying a thin film 6 of molten printers' composition to the surface of a base roll 7 comprising a layer of rubber carried by a shaft 8.

Molten composition in the quantity sufficient to coat several rollers is contained in a tank 10 and heated to a uniform temperature by a water jacket to which heat is supplied in any suitable way. While being coated, the roller is supported above the tank by a suitable framework including a bar 12 carrying an adjustable arm 13 providing a bearing for the upper end of the roller shaft. The other end of the shaft is received in a chuck 14 carried by a shaft 15 which is driven from a constant speed electric motor 16 through a gear train 17, a shaft 18, a gear train 19, and other speed reduction gearing.

Molten composition is withdrawn from the tank by a pump 20 driven from the motor 16 and delivered through a pipe 21 and a flexible hose 22 to a nozzle 23 from which it is discharged at a uniform rate of flow. The nozzle is preferably disposed in vertical position with its lower end located a short distance above the roller preferably near the center thereof. This is accomplished by clamping the nozzle between two blocks 24 urged together by a spring on a stud 25 and carried by an arm 26 which is supported for lateral adjustment on the upper end of a post 27. The latter is supported by a carriage 28 arranged to slide along the rail 12 and carrying a half nut 29 which may be raised and lowered into and out of engagement with a screw 30 driven through a gear train 31 from the shaft 18. The composition draining along and from the roller during coating thereof falls into a trough 32 from which the composition drains back into the tank 10.

While the motor 16 is running, the roller drive shaft 16 and the screw shaft 30 will rotate in synchronism, and molten composition will be withdrawn from the tank and discharged at a uniform rate of flow from the nozzle 23. After the roller to be coated has been placed in the machine and the nozzle carriage 28 slid to a position opposite the upper end of the roller, the operation of coating the roller may be initiated by engaging the half nut with the screw shaft and by moving the nozzle to position its lower end above the roller as shown in Fig. 2. As the nozzle progresses down along the roll at a slow rate, composition many times in excess of the amount required to form the finished film of the desired thickness is applied to the roller surface. Adjacent the point of application, the molten composition accumulates in a thick collar 33 which, by natural drainage due to the inclination of the roll, progresses down along the roll surface. During continued drainage along any section of the roll, the composition cools gradually and congeals leaving the thin film 6 of uniform thickness. The coating operation is complete when the nozzle has traversed the full length of the roll and drainage over the entire surface area has been completed.

The present invention contemplates the provision, in a roller coating machine of the above general character, of means which wipes across the surface of the roll being coated in a position to intercept a portion of the collar 33 and spread a thin layer of molten composition on the base roller below the collar so that by the wiping action, any trapped air bubbles are broken up. This means comprises generally a blade 34 spaced circumferentially around the roller surface from the nozzle 23 in the direction of roller rotation

and having an elongated straight edge **35** urged toward the roller surface and extending parallel to the roller axis and toward the lower end of the roller from a point opposite the nozzle.

In the form shown in Figs. 1 to 3, the blade comprises a flat metal plate bent along one side to form a flange **36** to which is attached one end of a supporting arm **37**. The upper end of the latter is formed with an eye and pivoted on the stud **25** between nuts **38** thereon so as to permit the blade to swing freely. A contractile spring **39** acting between the arm and a pin on the nozzle clamp urges the blade **34** lightly against the roller to maintain the edge **35** in engagement with the roller surface. In order to permit of a flow of molten composition over the remote side edge of the blade, the flange **36** is terminated short of the lower end of the blade as shown in Fig. 3, and the upper portion of the flange is formed with perforations **40**.

With the blade arranged as above described and as shown in Fig. 2, it will be seen that the plane of the blade intersects the roller below the axis thereof and makes an acute angle with a tangent to the roller through the point of engagement with the blade edge **35**. A modified arrangement is shown in Figs. 4 and 5 in which the plane of the blade **34'** makes an obtuse angle with a tangent to the roller and slopes downwardly away from the roller. This is advantageous in that some of the molten composition diverted from the roll is induced, by the inclination of the blade, to flow away from the roller surface. To facilitate such flow, the flanges **36'** by which the blade is supported is tapered from opposite ends as indicated at **42'**, and the lower end of the blade is extended beyond the flange which has an end edge **47** which converges toward the lower end of the edge **35**. In this instance, the blade supporting arm is pivotally suspended from the end of a stud **43** projecting laterally from the rod **23** which is of square cross section.

The action of the blade **34'** during a roller coating operation is illustrated in Figs. 4 and 5. The stream **44** of molten composition discharged downwardly from the end of the nozzle **23** spreads out upon striking the roller surface forming a thick mass which travels with the surface as shown in Fig. 4. The upper end portion of the blade **34'** being disposed in the path of that portion of the composition mass which flows downwardly along the roller from the point of application, will scrape most of such portion off from the roller. The composition thus removed will flow away from the roller surface normally filling the trough formed by the blade **34'** and the flange **36'** as shown in Fig. 4, and some of this may overflow the upper end of the blade to form a stream **48**. Some of the composition flowing downwardly along the trough contacts the roller surface and flows in between the surface and the blade edge **35'**. By its wiping action, the blade edge spreads this composition out into a thin film **46** and effectually breaks up any air bubbles which may be trapped on the roller surface. The thickness of the film **46** will depend upon several factors including the tension of the spring **39'** by which the blade is urged toward the roller. Ordinarily, the thickness of the film will approximate the thickness of the final film to be formed and will extend down the roller substantially the full length of the blade edge **35**. The remainder of the applied composition which passes the upper end of the blade takes the form of the thick collar **33** which encircles the roller immediately above the upper end of the blade **34**. Part of the excess of composition which tends to form the collar may drain from the underside of the collar as indicated at **33a** (Fig. 5). In traveling down the roller, the collar of hot composition drains over the initially applied film **46** thereby applying the desired excess of composition which effects uniform heating of the roller surface and results in natural drainage of the excess down along the roller to form the final film. The composition initially contacting and spread over the roller surface by the blade **34** adheres to the roller thereby eliminating the possibility of air bubbles becoming trapped adjacent the roller surface as the hot collar **33** passes over the initial film. As a result, the possibility of air blisters remaining in the film finally congealing on the roller is substantially eliminated without the necessity of employing an excessive rate of composition flow for this purpose.

Through the action of the blade **34** as above described, the roller surface is preheated by the film **46** with substantial uniformity and the collar **33** of hot composition is maintained of substantially uniform width and is located accurately so as to progress down along the roller in unison with the nozzle. This results in uniform heating of all parts of the roller surface and contributes to the formation of a final film of accurate uniformity in thickness under operating conditions which might otherwise cause non-uniformity.

I claim as my invention:

1. Apparatus for coating printers' rollers with printers' composition comprising, means to rotate a roller to be coated on its longitudinal axis with the latter disposed in inclined position, means for applying a stream of molten composition to the surface of the roller, mechanism for moving said applying means longitudinally of the roller beginning at the upper end thereof, and a blade movable bodily along the roller with said applying means and having an elongated edge extending parallel to the roller axis and spaced circumferentially in the direction of roller rotation from the point of application of the composition by said applying means, said edge being urged toward the roller surface and extending from a point thereon adjacent said applying means to a point substantially below the applying means whereby to scrape from the roller surface most of the molten composition carried by the surface substantially in advance of said applying means.

2. Apparatus for coating printers' rollers with printers' composition comprising, means to rotate a roller to be coated on its longitudinal axis, with the latter disposed in inclined position, means for applying a stream of molten composition to the surface of the roller, mechanism for moving said applying means longitudinally of the roller beginning at the upper end thereof, and a blade movable bodily along the roller with said applying means and having an elongated edge urged toward the roller surface along a line extending downwardly and longitudinally along the roller surface from a point adjacent but spaced circumferentially from said applying means.

FRED OSSING.