Nov. 27, 1934. H. FANKBONER 1,981,912

PRINTING PRESS

Filed March 10, 1932 3 Sheets-Sheet 1

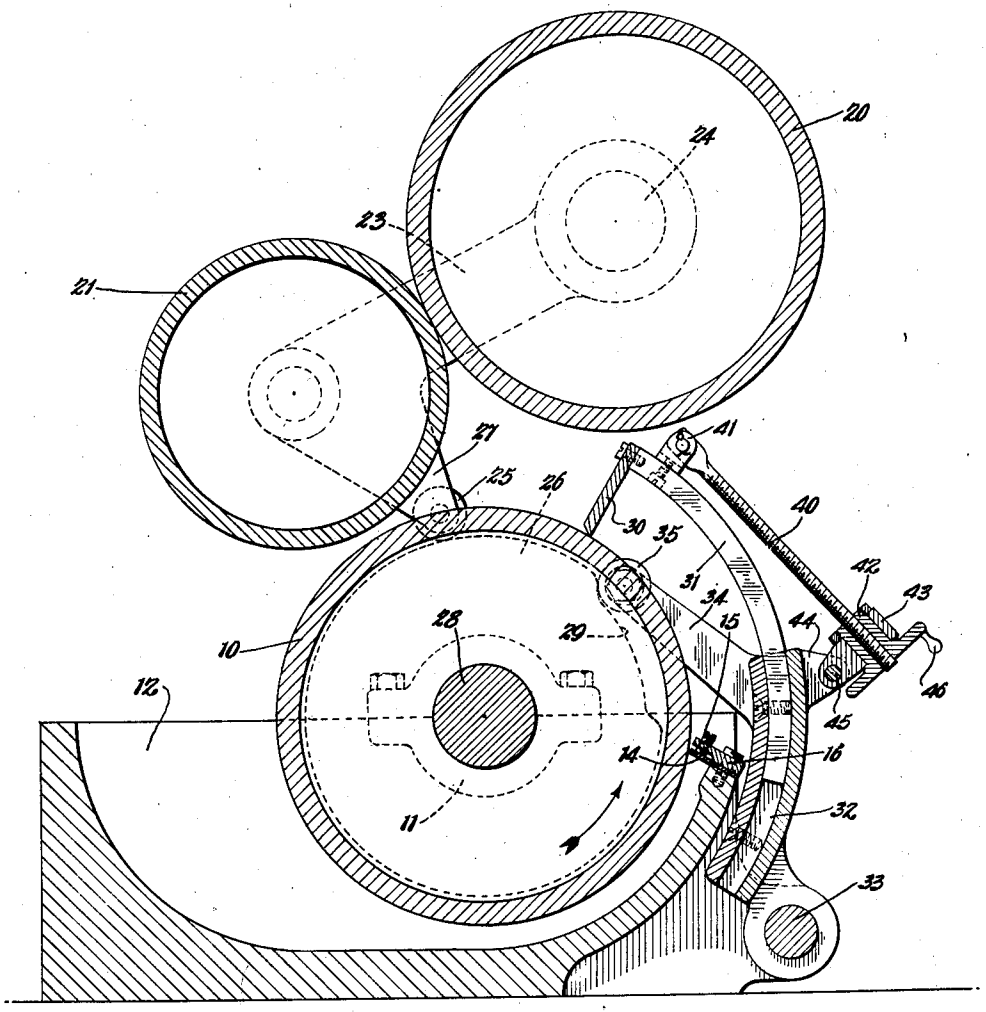


Fig 1

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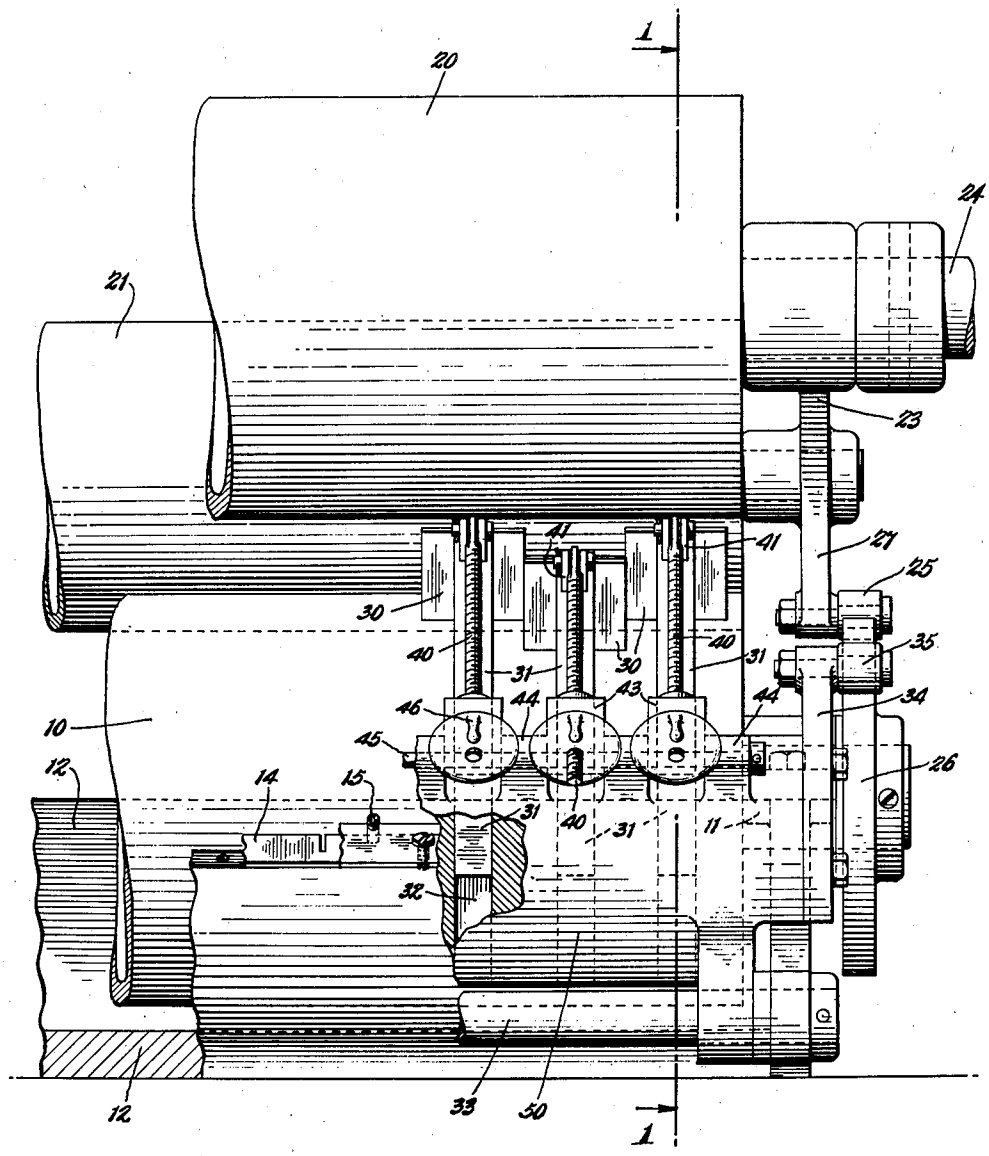


Fig 2

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Fig 3

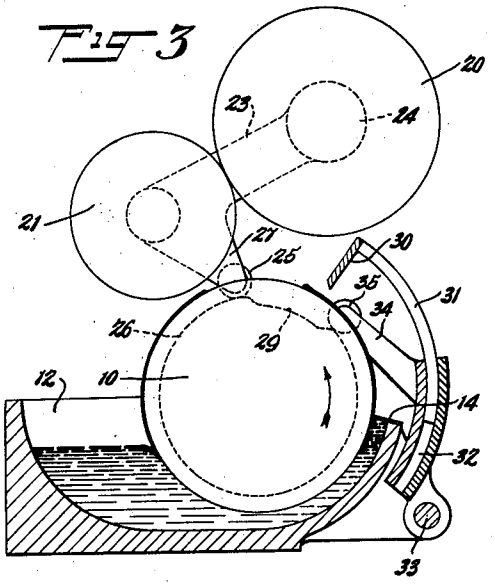


Fig 4

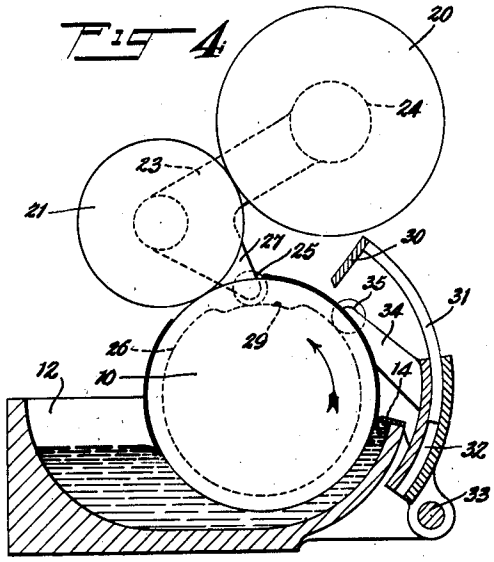


Fig 5

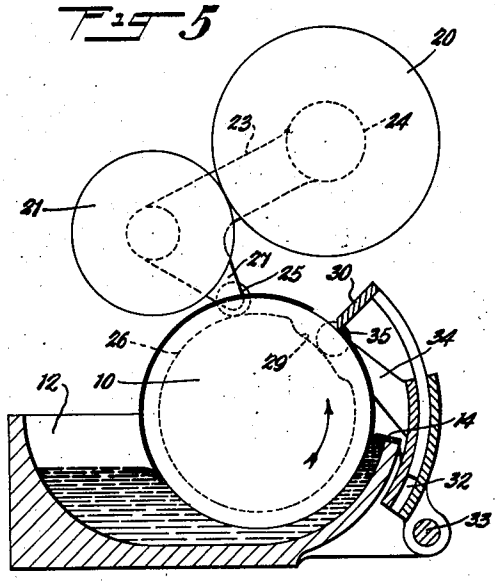
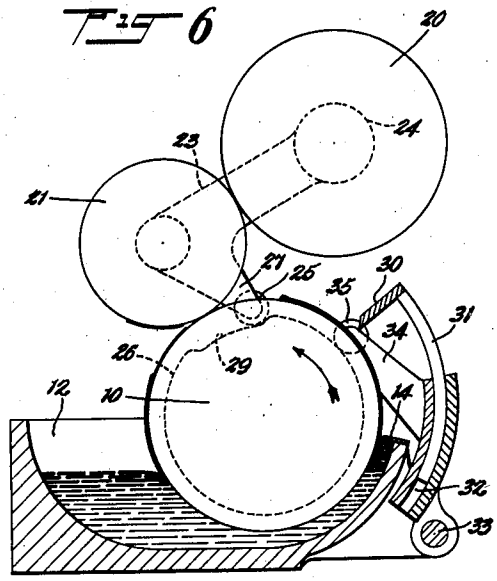


Fig 6



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Patented Nov. 27, 1934 1,981,912

UNITED STATES PATENT OFFICE

1,981,912

PRINTING PRESS

Harland Fankboner, Chicago, Ill., assignor to The Goss Printing Press Company, Chicago, Ill., a corporation of Illinois

Application March 10, 1932, Serial No. 597,975

19 Claims. (Cl. 101—350)

The present invention relates to printing presses and more particularly to a novel and improved inking mechanism and method for use with rotary printing presses.

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.

Of the drawings:

Figure 1 is a vertical section, taken on the line 1—1 of Figure 2 and showing an illustrative embodiment of the present invention;

Figure 2 is a fragmentary side elevation of the mechanism shown in Figure 1; and

Figures 3, 4, 5 and 6 are diagrammatic views illustrating different phases in the operation of the embodiment shown in Figures 1 and 2.

The present invention has for its object the provision of a novel and improved inking mechanism and method by which the ink supplied to a printing cylinder can be minutely regulated with certainty to meet the various operating conditions of the printing press. Another object is the provision of a novel inking mechanism and method in which the amount of ink fed is determined by the width of a longitudinal stripe of ink which is transferred from the fountain roller to the inking drum.

In accordance with the present embodiment of the invention, the inking mechanism comprises a rotatable fountain roller and ink drum, and a transfer roller to remove ink from the fountain roller and transfer it to the ink drum. The transfer roller is preferably in constant contact with the ink drum and is intermittently contacted with the fountain roller throughout a definite angle of rotation of the fountain roller. For determining the amount of ink transferred a stationary scraper is provided which removes ink from the fountain roller to leave a film of substantially uniform thickness thereon, and an intermittently actuated scraper removes substantially all the ink from a predetermined and definitely positionable area on the surface of the fountain roller. For varying the amount of ink fed to the ink drum, the angular relation of the scraped portion of the fountain roller is shifted with respect to the area contacted with the transfer roller.

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 detail to the present illustrative embodiment of the invention as shown in the accompanying drawings, a fountain roller 10 is rotatably journaled in suitable bearings 11 at the ends of the ink fountain trough 12, and extends across the full width of the printing cylinder to be inked. Roller 10 dips in the ink contained in trough 12 as it rotates and the film of ink on the roller surface is rendered uniform by means of a scraper blade 14, mounted on one longitudinal edge of the fountain and projecting into substantial contact with the roller surface. Blade 14 may be pressed against the roller surface with more or less pressure by means of the screws 15, spaced longitudinally of the roller and threaded into a blade securing plate 16 above the blade. Above the fountain roller is rotatably mounted an ink drum 20, to which ink is transferred by transfer roller 21, and from drum 20 the ink is fed to the inking train and printing cylinder (not shown) of conventional construction.

Roller 21 is freely rotatable and is journaled in suitable bearings at the ends of arms 23, freely oscillatable on ink drum shaft 24. Arms 23 hold the roller 21 in frictional contact with ink drum 20 and it is lowered into contact with fountain rollers 10 by gravity under control of cam roller 25 and cam 26. Cam roller 25 is rotatable in a downwardly-projecting portion 27 of arm 23, and rides on the upper surface of cam 26 fixed to the end of fountain roller shaft 28. Cam 26 is provided wtih a depressed portion 29 which extends throughout a substantial arc and determines the period of contact between fountain roller 10 and transfer roller 21 This period of contact is sufficient to transfer ink in excess of the maximum requirements of the press so that an ample supply of ink may be fed to the printing cylinder.

Means are provided for regulating the amount of ink supplied to the transfer roller and to be supplied by it to the ink drum and printing cylinder, and all or a predetermined portion of the ink is removed from a predetermined area of the fountain roller. This area, from which the ink is removed, forms a part of the area later to be

contacted with the transfer roller 21. As embodied, an oscillatable scraper blade 30 is provided between the blade 14 and the point of contact between the transfer roller 21 and fountain roller 10, and scraper blade 30 is adapted to be contacted with the surface of the fountain roller throughout a predetermined portion of each revolution. Scraper 30 extends normal to the surface of fountain roller 10 and is mounted on the outer end of an arcuate support 31. Each support 31 is slidable within an arcuate sleeve 32 pivoted on a shaft 33 extending substantially parallel to the fountain roller shaft 28.

At one end of the inking mechanism, an arm 34 projects from sleeve 32 towards the fountain roller cam 26, and carries a freely-rotatable cam roller 35 at its end. As cam 26 is rotated, the scraper 30 is lifted into and out of contact with the fountain roller surface in definite timed relation with the rotation of the fountain roller. When scraper 30 is lowered into contact with the fountain roller surface, substantially all the ink is removed during this period of contact.

For minutely varying and accurately controlling the amount of ink received by the transfer roller, the area from which the ink is removed or the area of contact between the rollers 21 and 10 might be varied, but in accordance with the illustrative embodiment, the area remains the same but its positional relation to the area of contact between the transfer roller and fountain roller is changed. For this purpose, the scraper and supporting rod 31 may be moved with respect to the scraper operating cam 35, and held in any of its desired positions. A threaded member 40 is pivotally mounted in a bracket 41 fastened to the outer end of arcuate support 31, and has its other end in threaded engagement with a collar 42 which is rotatable, but not axially movable in bushing 43 pivoted to sleeve 32 by means of bracket 44 and pivot pin 45. A suitable handle 46 may be provided for facilitating the turning of collar 42 to move the arcuate support 31 in and out of its sleeve 32 and to vary its angular position with respect to the fountain roller and scraper-operating cam roller 35.

While a single scraper extending across the width of the press may be employed, provision is preferably made for individually and independently varying the amount of ink fed to each column width of the ink drum, to thereby more accurately control the ink feed with respect to the requirements of the particular matter being printed. For this purpose, a plurality of scrapers 30 are provided, each preferably of single column width and mounted upon an individual arcuate support 31, which is received within an individual sleeve 32 formed in a single member 50 extending the width of the press. When the scrapers are set to permit the same amount of ink to be supplied to all columns, they are in alinement with each other and in substantial contact with the adjacent individual scrapers.

Figures 3 and 4 show successive phases in the operation when the mechanism is set to deliver a relatively small amount of ink to the printing cylinder, while Figures 5 and 6 show similar phases with the mechanism set to deliver a relatively large amount of ink.

In Figures 3 and 4, the fountain roller 10 is continuously rotating and blade 14 removes all but a predetermined thickness of ink from the surface of the fountain roller. While scraper 30 is in contact with the surface of the fountain roller, it removes all the ink therefrom, and the scraper is held in ink-removing position by gravity throughout the extent of dwell 27. On further rotation of fountain roller 10, to the position shown in Figure 4, transfer roller 21 is lowered by gravity under control of cam 26 into contact with the fountain roller 10, and picks up ink from the fountain roller. Cam roller 25 is positioned slightly in advance of the point of contact between fountain roller 10 and transfer roller 21, and the transfer roller contacts with the ink on the fountain roller in advance of the scraped area and is lifted from the fountain roller while it is in contact with the scraped area. With the scraper blade 30 moved to its extreme upper position, the scraped area is slightly in excess of the area of contact between the rollers, and no ink is fed to the ink drum, as no ink is picked up by the transfer roller.

The amount of ink fed to the ink drum is determined by the relation of the scraped area to the area of contact, and by moving the position of the scraped area reversely to the rotation of the fountain roller, the scraped area overlaps the area of contact and regulates the amount of ink fed. This regulation may be continued until the area of contact and scraped areas are entirely separate and do not overlap each other at all, under which conditions, the maximum ink feed in excess of the usual press requirements, would be obtained.

Figures 5 and 6 illustrate a normal setting of the mechanism in which a relatively large amount of ink is being fed to the press, and as there shown, transfer roller 21 is lowered into contact with the fountain roller 10 a substantial distance in advance of the leading edge of the scraped area. Figure 6 shows the longitudinal stripe of ink, of predetermined width, being transferred to the transfer roller, and on further rotation it will be transferred to the ink distributing drum 20 and subsequently uniformly distributed before being applied to the printing surface.

The individual scrapers 30 are all simultaneously moved into and out of contact with the ink-coated surface of the fountain roller, but as they may be positionally advanced and retarded with respect to each other, the amount of overlap existing between these individual scraped areas and the constant area of contact, may be changed in accordance with the varying columnar requirements of the printing cylinder.

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. The method of controlling the amount of ink supplied from an ink fountain which includes coating a moving surface with a film of ink, periodically removing all of said film from a portion of said surface, transferring ink to an ink train from a portion of said surface and varying the position of the removed film to vary the amount of ink transferred.

2. The method of controlling the amount of ink supplied from an ink fountain which includes applying ink to a moving surface, periodically removing all ink from a portion of said surface and transferring ink from a portion of said surface, and variably positioning the bare surface with respect to the transfer area to vary the amount of ink transferred.

3. The method of controlling the amount of ink supplied from an ink fountain which includes transferring longitudinal stripes of ink from a fountain roller to an ink drum, and removing different portions of the ink from the fountain roller to vary the amount of ink fed.

4. The method of controlling the amount of ink supplied from an ink fountain which includes transferring longitudinal stripes of ink from a fountain roller to an ink drum and removing different portions of constant area from the fountain roller to vary the amount of ink fed.

5. An inking mechanism for printing presses including in combination a fountain roller, an ink drum and transfer means for transferring ink from the fountain roller to said drum and means for intermittently and completely removing ink from a longitudinal portion of the roller.

6. An inking mechanism for printing presses including in combination a fountain roller, an ink drum and transfer means for transferring ink from the fountain roller to said drum, means for removing ink from a longitudinal portion of the roller and means for interrupting the action of the transfer means.

7. An inking mechanism for printing presses including in combination a fountain roller, an ink drum and transfer means for transferring ink from the fountain roller to said drum, means for removing ink from a longitudinal portion of the roller and means for varying the position of contact between the transfer means and roller with respect to the ink removing means.

8. An inking mechanism for printing presses including in combination a fountain roller, an ink drum and transfer means for transferring ink from the fountain roller to said drum, a scraper to intermittently and completely remove ink from a definite area of the fountain roller and means for advancing and retracting said scraper with respect to the fountain roller.

9. An inking mechanism for printing presses including in combination a rotary fountain member to be partially coated with a film of ink extending longitudinally of said member, an ink drum, a transfer member to contact with the fountain member and ink drum, means for intermittently contacting the transfer member with said fountain member and means for varying the position of contact with respect to the uninked portion of the fountain member whereby the amount of ink transferred may be varied.

10. An inking mechanism for printing presses including in combination a rotary fountain member to be partially coated with a film of ink, an ink drum, an intermittently operating transfer member contacting with the member and drum and means for variably locating the film of ink with respect to the operation of the transfer member.

11. An inking mechanism for printing presses including in combination a moving surface to be coated with a thin film of ink, a moving ink distributing surface, transfer means to transfer ink from one to the other, means for contacting said transfer means with said moving surface throughout a definite area on said moving surface and means for removing ink from a predetermined area of said moving surface, said two areas overlapping to a certain extent.

12. An inking mechanism for printing presses including in combination a moving surface to be coated with a thin film of ink, a moving ink distributing surface, transfer means to transfer ink from one to the other, means for intermittently contacting said transfer means with said moving surface and means for intermittently removing ink from said moving surface, the area of contact and the area from which ink is removed overlapping to a predetermined extent.

13. An inking mechanism for printing presses including in combination a fountain roller, a periodically acting scraper acting on the surface of the fountain roller to remove ink from a constant area, said scraper comprising a plurality of side-by-side members individually movable with respect to each other, and means for transferring ink from a constant area of the roller.

14. An inking mechanism for printing presses including in combination a fountain roller, a periodically acting scraper acting on the surface of the fountain roller to remove ink from a constant area, said scraper comprising a plurality of side-by-side members individually movable with respect to each other, an ink drum, and means for transferring ink from a constant area of the roller to the ink drum.

15. An inking mechanism for printing presses including in combination a fountain roller, a periodically acting scraper acting on the surface of the fountain roller to remove ink from a constant area, means for shifting said area relatively to said roller and means for transferring ink from a constant area of the roller.

16. An inking mechanism for printing presses including in combination a fountain roller, a periodically acting scraper acting on the surface of the fountain roller to remove ink therefrom, means for shifting said area relatively to said roller, and periodically operating means for transferring ink from a definite and constant area of the roller.

17. An inking mechanism for printing presses including in combination an ink drum, a fountain roller, means for removing ink from a constant area of said roller, means for variably positioning the area with respect to the roller and means for transferring ink from a definite area of said roller surface to said drum.

18. An inking mechanism for printing presses including in combination an ink drum, a fountain roller, means for removing ink from a constant area of said roller, means for variably positioning the area with respect to the roller, and a transfer roller to contact with a definite area of said fountain roller and transfer ink to the ink drum.

19. An inking mechanism for printing presses including in combination a fountain roller, a scraper to remove ink therefrom, a transfer roller and an ink drum, means for intermittently operating the scraper and contacting the transfer and fountain rollers and means for varying the time of operation of the scraper and transfer roller with respect to the rotation of the fountain roller.

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