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2,520,768

COATING ROLLER ADJUSTING MECHANISM

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2 Sheets-Sheet 1

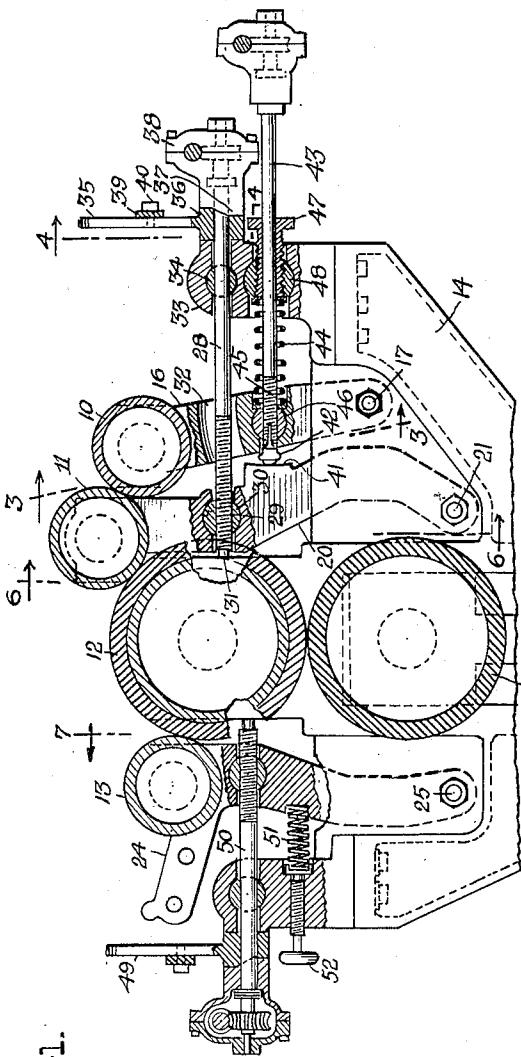


Fig. 1.

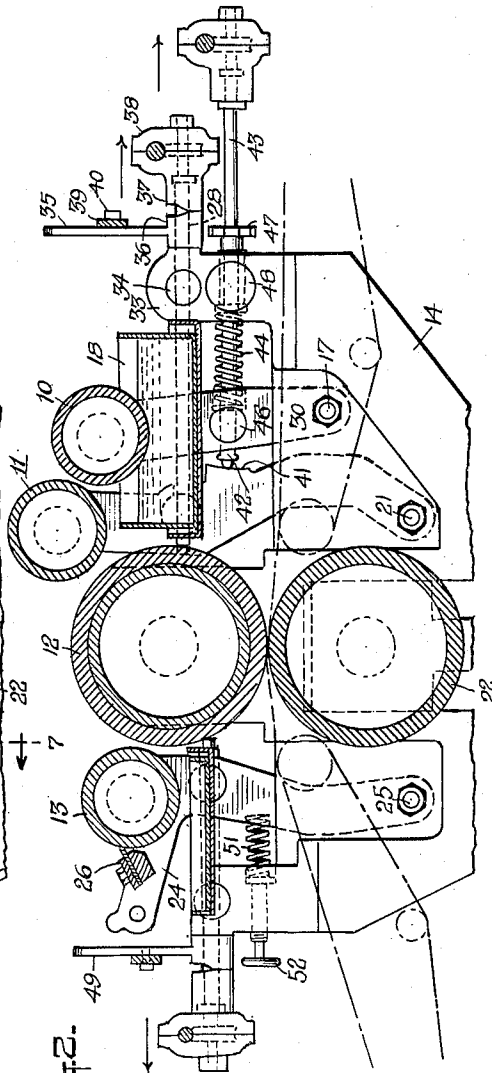


Fig. 2.

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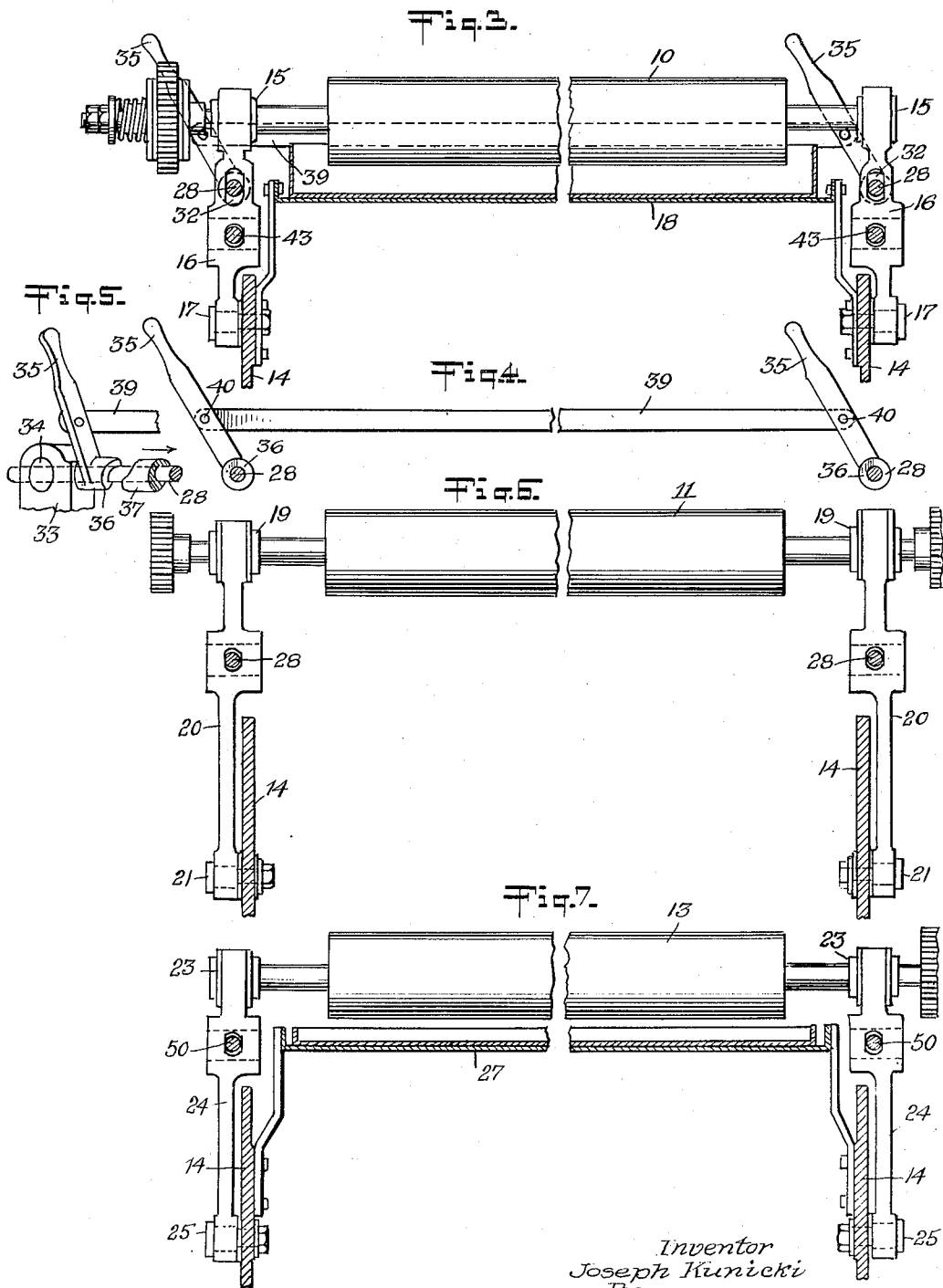
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COATING ROLLER ADJUSTING MECHANISM

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6 Claims. (Cl. 91—50)

1

This invention relates to coating and printing machines, and has especial reference to the means for supporting, moving and adjusting certain rolls of such machines.

An object of the present invention is the provision of improvements in a machine of the indicated character for bringing certain rolls of the machine into normal cooperative relation to each other, or for breaking the contactual relation of said rolls so that they may be easily cleaned or washed.

A further object of the invention is the provision of improvements of the character set forth above whereby the aforesaid relation of the rolls may be effected from either side of the machine by a simple operation.

A still further object of the invention is the provision of practical means for making the desired adjustment of the rolls in combination with the means for moving the rolls into and out of their normal cooperative relation.

With the foregoing, other objects of the invention will appear when the following specification is read in conjunction with the accompanying drawings, in which—

Fig. 1 is a vertical sectional view of a portion of a coating or printing machine showing certain features of the present invention, the rolls being shown in their normal cooperative relation.

Fig. 2 is a vertical sectional view showing other features of the invention, the rolls being shown disposed so as to break the contactual relation thereof.

Figs. 3 and 4 are sectional views taken on the respective lines 3—3 and 4—4 of Fig. 1, portions in each view being broken away.

Fig. 5 is a fragmentary detail perspective view.

Figs. 6 and 7 are sectional views taken on the respective lines 6—6 and 7—7 of Fig. 1, portions in each view being broken away.

It is to be understood that the present invention is applicable to a coating or printing machine in which the coating material, such as a size or the printing ink, is applied to sheets or web material fed through the machine. In the drawings only so much of the machine is shown as to illustrate the combination of parts within the invention.

Referring now more particularly to Figs. 1 and 2, it will be apparent that the invention involves a fountain roll 10, a transfer roll 11, a composition or applying roll 12, and a surplus material removing roll 13. Portions of the supporting frame structure of the machine are designated 14.

The fountain roll 10 is supported for rotation

2

by suitable bearings 15 carried by arms 16 connected with the structure 14 for rocking or pivotal movement by bolts 17 and their nuts and washers. The roll 10 picks up the coating material or ink which is contained in a fount 18 secured to the structure 14.

The transfer roll 11 is supported for rotation by bearings 19 carried by arms 20 connected with the structure 14 for rocking or pivotal movement by bolts 21 and their nuts and washers. The arms 20 are longer than the arms 17, the pivotal connection of the arms 20 is below the pivotal connection of the arms 17, and the roll 11 mounted on the arms 20 is disposed higher than the roll 10.

The composition or applying roll 12 is supported for rotation by stationary means on the structure 14 which means enables adjustment of the roll 12. This roll 12 serves for applying the coating or printing material to the sheets or web fed through the machine between the roll 12 and a companion roll 22.

The roll 11 is arranged between the rolls 10 and 12. The arms 16 and 20 support the respective rolls 10 and 11 for normal cooperation or for breaking the normal contactual relation of the rolls 10, 11 and 12. In the normal contactual relation of these rolls, the coating or printing material is picked up by the roll 10 from the fount 18, and is transferred by the roll 11 from the roll 10 to the roll 12, as indicated in Fig. 1. The arms 16 and 20 may be moved to dispose the rolls 10 and 11 for cooperation or said arms may be moved for breaking the contactual relation of the rolls so that the roll 10 is spaced from the roll 11 and the roll 11 is spaced from the roll 12, as shown in Fig. 2. This enables the rolls to be easily cleaned or washed at the end of a run or whenever desired to remove the coating or printing material and thus prevent any unintentional offset of the material.

The roll 13 is supported for rotation by suitable bearings 23 carried by arms 24 connected with the structure 14 for rocking or pivotal movement by bolts 25 and their nuts and washers. The roll 13 cooperates with a scraper 26 mounted on the arms 24, and serves for the purpose of removing surplus size or ink from the roll 12 and for depositing the surplus into a suitable receptacle 27 supported on the structure 14 below the roll 13.

In order to break the contactual relation of the rolls 10, 11 and 12, there is provided means which is manually operable from either side of the machine, as follows. A rod 28 for each arm 20 has one end thereof in threaded engagement,

as at 29, with a pivot 30 carried by the arm 20. The arm 20 is formed to receive the pivot 30 and to allow the rod to project through the arm with the terminal 31 contacting the structure 14. The rods 28 extend through the arms 16 respectively, which have arcuate clearance openings 32 therein for that purpose. The rods 28 extend through fixed abutments 33, respectively, on the structure 14. Each abutment 33 has a pivot 34 through which the related rod 28 loosely extends. The pivots 30 and 34 enable the rods 28 to remain horizontally disposed while the rods move axially and the arms 16 and 20 rock or pivot on their connections with the structure 14. Hand levers 35 are fulcrumed on the rods 28 respectively in contact with the related abutments 33. Each lever 35 has a cam member 36 which coacts with a cam member 37 forming a part of one section of a casing 38 fixed to the rod 28. The levers 35 are connected to each other by a link 39 whose opposite ends are pivoted to said levers as at 40. Upon manipulation of either one of said levers 35 the arms 20 will be rocked to the right from the position shown in Fig. 1. When either one of the levers 35 is moved in one direction, the cam members 36 act on the cam members 37 causing the rods 28 to move axially through the intervention of the casings 38. This axial movement of the rods 28 causes the arms 20 to rock or pivot to the right. Each arm 20 has a cam portion 41 which acts on a knob 42 on one end of a rod 43 connected with each arm 16. Consequently, cam action of the portions 41 on the knobs 42 causes movement of the arms 16 in response to the movement of the arms 20. Due to the offset relation of the pivots 17 with respect to the pivots 21, the roll 10 moves relatively to the roll 11 in breaking the contactual relation aforesaid.

When a lever 35 has been operated to break the contactual relation of the rolls, the cam members 36 and 37 are disposed as a result of this operation to retain the roll 10 separated from the roll 11, and the roll 11 separated from the roll 12. By operating a lever 35 in the reverse direction, springs 44 cause the return movement of the arms 16 and 20 to bring the rolls into the normal cooperative relation for conveying the coating or printing material. The springs 44 surround the rods 43 respectively, and the springs 44 are interposed between washers on the rods 43. Each rod 43 is in threaded engagement, as at 45, with a pivot 46 carried by its arm 16. The rod 43 is slidable in a threaded bushing 47 screwed into a pivot 48 carried by the related abutment 33. Thus the rods 43 are always held horizontally while the arms 16 rock or pivot by reason of the pivots 46 and 48. The washers at the ends of the springs 44 are disposed in recesses in the arms 16 and abutments 33, and respectively bear against the arms 16 and the bushings 47. The recesses in the arms 16 afford clearance for the angular movement of the arms 16.

The bushings 47 serve for keeping the springs 44 at the proper tension not only for causing the return movement of the movable parts, but also for maintaining the proper action of the rolls 10 and 11.

By reason of the threaded engagement of the rods 28 and 43 with their respective pivots 30 and 46, the arms 16 and 20 may be adjusted to bring about a corresponding adjustment of the rolls 10 and 11, according to the characteristics of the coating or printing material used. The rods 28 are rotated equally and in unison by any suitable means such as worm wheels and worms within

the casings 38. The worm wheels are secured to the rods 28 while the worms are secured to a shaft turned by a crank on each end at either side of the machine. The rods 43 are rotated equally and in unison by means similar to that described above in connection with the rods 28. No claim is made to the specific means for rotating the rods 28 and 43, since it is obvious that said rods may be rotated for the purposes stated above and also for maintaining the rolls 10 and 11 parallel to each other and to the roll 12.

Levers 49 are used for moving the arms 24 on their pivots 25 to separate the roll 13 from the roll 12. Substantially similar means to that employed in conjunction with the levers 35 for moving the arms 20 is used with the levers 49 for moving the arms 24. Therefore, such means used with the levers 49 generally is designated 50 in order to avoid needless repetition. Return movement of the arms 24 to dispose the roll 13 in normal contactual relation with the roll 12 is caused by springs 51 interposed between the structure 14 and the arms 24. Screws 52 serve for adjusting the tension of the springs 51. Also, adjustment of the arms 24 for a corresponding adjustment of the roll 13 is attained through and by virtue of rods included in the means 50.

It is to be understood that the invention is not restricted to the details above described, but includes all constructions and modifications coming within the scope of the appended claims.

I claim:

1. In a machine of the character described, three rolls adapted for conveying coating or printing material, one of said rolls being supported by stationary means, first and second pairs of pivoted members and each pair supporting one of the two other rolls, the first pair of pivoted members being longer than the second pair of pivoted members and the pivots of said pairs being offset with respect to each other, rods pivotally connected at one end with the pivoted members respectively of the first pair, cam means forming contact of one pair of pivoted members with the other pair so that both pairs pivot in unison in one direction in response to a pulling force exerted on said rods, manipulatable means for exerting a pulling force on said rods causing the pivotal movement of both pairs of pivoted members as aforesaid, thereby breaking the contactual relation of the three rolls, and resilient means acting on the second pair of pivoted members causing the return pivotal movement of both pairs of pivoted members wherein the pivotal movement of the second pair causes a corresponding movement of the first pair through the intervention of said cam means, thereby effecting the normal cooperative relation of the three rolls, upon operation of the manipulatable means withdrawing the pulling force on said rods.

2. In a machine as set forth in claim 1, and adjustable means for keeping the resilient means under the proper tension and so maintaining the proper action of the rolls.

3. In a machine as set forth in claim 1, and adjustable bushings through which the rods slidably extend, said bushings abutting said resilient means for keeping the latter under the proper tension and so maintaining the proper action of the rolls.

4. In a machine as set forth in claim 1, wherein said manipulatable means comprises cam levers fulcrumed on said rods respectively, a link connecting the levers so they move in unison, and cams fixed with respect to the rods which coact

5

with said levers in response to the manipulation of either one of the levers.

5 In a machine of the character described, three rolls adapted for conveying coating or printing material, one of said rolls being supported by stationary means, first and second pairs of pivoted members and each pair supporting one of the two other rolls, the first pair of pivoted members being longer than the second pair of pivoted members and the pivots of said pairs being offset with respect to each other, other pivots carried by the pivoted members respectively of the first pair, rods having one end extending through said last mentioned pivots respectively in threaded engagement therewith, cam means forming contact of one pair of said pivoted members with the other pair so that both pairs pivot in unison in one direction in response to a pulling force exerted on said rods, manipulatable means for exerting a pulling force on said rods causing the pivotal movement of both pairs of pivoted members as aforesaid, thereby breaking the contactual relation of the three rolls, and resilient means acting on the second pair of pivoted members causing the return pivotal movement of both pairs of pivoted members wherein the pivotal movement of the second pair causes a corresponding movement of the first pair through the intervention of said cam means, thereby effecting the normal cooperative relation of the three rolls, upon operation of

6

the manipulatable means withdrawing the pulling force on said rods.

6 In a machine of the character described, rolls adapted for conveying coating or printing material, one of said rolls supported by stationary means, a pair of pivoted members supporting the second roll, pivots carried by said pivoted members respectively, rods having one end extending through the pivots respectively in threaded engagement therewith, means connected with said rods for causing the pivotal movement of said pivoted members, and means for turning said rods causing the adjustment of the rods with respect to the pivoted members by reason of said threaded engagement for the purpose of adjusting the clearance between the rolls.

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