

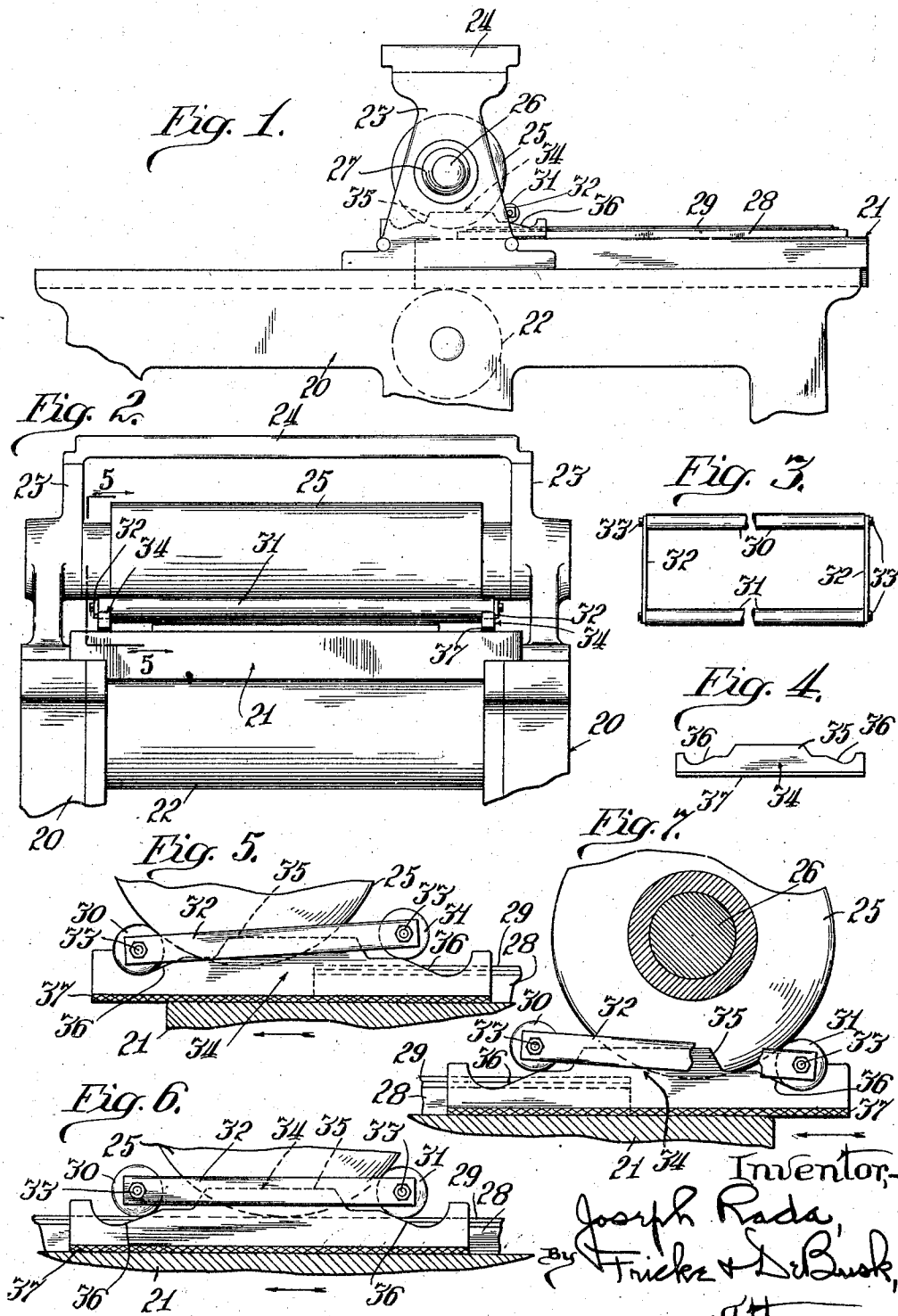
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MATRIX ROLLING MACHINE

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MATRIX-ROLLING MACHINE

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My invention relates to matrix rolling machines of the type in which a flong is carried in contact with the face of a form underneath a heavy pressure roller by which the form is forced into the face of the flong for cutting an impression therein to adapt it for use as a matrix in a casting box for the production of a stereotype plate corresponding to the form. In machines of this type heretofore, an auxiliary roller comparatively much smaller than the pressure roller has been provided adjacent to the pressure roller and in rear thereof with respect to the direction of movement of the form and mat under the pressure roller, such auxiliary roller being adapted by engagement with the blanket and by downward pressure on the blanket and mat to smooth out and stretch the portion of the mat and the blanket between the pressure roller and the auxiliary roller whereby the pressure roller has been enabled to effect the desired cutting of the mat by the form without the formation of creases or wrinkles in the matrix and without distorting the matrix.

It is one of the objects of my invention to improve devices of this type by providing improved means adapted automatically in the normal operation of the machine to raise the auxiliary roller before the start of the operative stroke of the bed so as to permit the form with the flong and blanket in position thereon to be slid freely into position underneath the auxiliary roller without danger of disarranging the blanket and without the necessity for forcing the form into position. It is one of the objects of my invention to provide an improved construction of this type in which the roller is moved to its raised position by the action of friction and is again lowered into operative position upon the blanket so as to press downwardly on the matrix also by friction at the beginning of the operative stroke of the form underneath the pressure roller.

In machines of this type, it has been customary to arrange the bed for movement alternately in opposite directions so that the form may be run underneath the pressure roller the desired number of times without being disturbed in its position on the traveling bed

of the machine. In machines of this type, it has been usual to provide two auxiliary rollers, one on each side of the pressure roller so that one of the rollers shall be effective for the operation in one direction and the other roller shall be effective for the operation in the other direction. It is one of the objects of my invention to provide an improved construction of this type comprising operative connections between the rollers so arranged that the forward movement of the roller which is effective for one stroke causes the other roller to be moved to its raised position ready for the reception of the form and blanket for the next stroke. It is one of the objects of my invention to provide a cam construction for controlling the positions of the auxiliary roller or rollers, such cam device being preferably actuated by friction for attaining the desired results.

It is another object of my invention to provide a construction which can be utilized to advantage in connection with the old form of matrix rolling machines without any change therein other than the removal of the auxiliary roller or rollers from such old machine together with the mounting means therefor, whereby the application of my improvements to old machines may be easily and quickly effected. It is another object of my invention to improve devices of this type in sundry details hereinafter pointed out. The preferred means by which I have accomplished my several objects are illustrated in the drawing and are hereinafter specifically described. That which I believe to be new and desire to cover by Letters Patent is set forth in the claims.

In the drawing,—

Fig. 1 is a side view of my improved machine, shown more or less diagrammatically, and broken away at its bottom portion.

Fig. 2 is an end view of the machine of Fig. 1 as seen from the right in said figure.

Fig. 3 is a detailed view, showing the auxiliary rollers of the machine of Fig. 1, together with the bars connecting such rollers, the parts being partly broken away for clearness of illustration.

Fig. 4 is a side view of one of the

slide blocks employed in my improved device.

Fig. 5 is an enlarged detailed view, partly broken away, showing the positions of the parts as illustrated in Fig. 1, being partly in section and taken substantially at line 5—5 of Fig. 2.

Fig. 6 is a view similar to Fig. 5 but showing a changed position of the parts; and

Fig. 7 is a view similar to Figs. 5 and 6 but showing still another changed position of the parts.

Referring now to the several figures in which corresponding parts are indicated by the same reference characters,—20 indicates a frame-work of any approved type upon which a bed or platen 21 is movable back and forth by power from any suitable source applied in any suitable manner. At the middle of the machine longitudinally thereof, I have provided a cylinder 22 which underlies the bed 21 as the bed is moved back and forth longitudinally of the machine, the cylinder 22 being journaled in position and being adapted to take the greater portion of the downward pressure upon the bed 21 as hereinafter described.

At opposite sides of the frame 20 I have provided standards 23 rigidly mounted in position and connected at their upper ends by a scross plate 24. Between the standards 23, there is mounted a heavy pressure roller 25, mounted revolubly in position by means of a shaft 26. As is shown in Fig. 1, the shaft 26 is preferably mounted in eccentrics 27 by the use of which the vertical position of the cylinder or roller 25 can be regulated, the eccentrics 27 being adapted to be rotated by any suitable mechanism for adjusting the vertical position of the roller 25. As is clearly shown in Fig. 1, the pressure roller 25 is mounted directly above the supporting roller or cylinder 22. The pressure roller 25 is driven at the same surface speed as that of the bed 21 and in a corresponding direction. That is to say, when the bed 21 moves toward the left in Fig. 1 the pressure roller 25 is rotated in clockwise direction in said figure.

With the machine standing in the condition as shown in Fig. 1, a chase 28 containing therein a form of type is placed in position upon the bed 21 with one edge thereof extending underneath the pressure roller 25. On top of the form, a flong and blanket are placed in position, such parts being indicated in the drawings by the numeral 29. The blanket is to be of appropriate thickness in accordance with requirements as is well understood in the art. The arrangement is such that when the bed 21 is moved toward the left in Fig. 1, the form with the flong and blanket in position thereon is carried underneath the pressure roller 25, the roller 25 being set in such position vertically as to force the flong into the form for cutting an impression in the flong, all as is well under-

stood practice. The machine is preferably to be provided with means for automatically stopping the operation at the end of the first operative stroke, the driving means being arranged so that upon a proper setting of the parts the bed will be given a second operative stroke toward the right and stopped again in the position as shown in Fig. 1, whereupon the bed can be given an additional stroke or strokes as may be desired. Inasmuch as the operation of the machine so far as the features above referred to are concerned is old, it is believed to be unnecessary to describe the parts or the operation in further detail herein.

I will now describe the means for smoothing the blanket and for pressing the blanket and the matrix down upon the form at the side of the pressure roller which is in the rear with respect to the movement of the platen or bed 21. This means comprises auxiliary rollers 30 and 31 revolubly mounted in position in end bars 32 by means of shafts 33. As is clearly shown in Fig. 5, the rollers 30, 31 are mounted in position upon opposite sides of the pressure roller 25, with the bars 32 opposite the ends of the pressure roller 25 and spaced a short distance therefrom. Between the bars 32 and the ends of the roller 25, I have provided slide blocks 34 which are inserted underneath the rollers 30, 31 for holding them in adjusted position vertically. As is clearly shown in Figs. 5, 6 and 7, each of the slide blocks 34 comprises a central part 35 which is adapted to engage the end face of the roller 25 at one face of the block and to engage the bar 32 at the opposite face, the arrangement being such that the blocks 34 and the rollers 30, 31 with their connecting bars 32 are adapted to shift freely longitudinally of the machine with respect to the roller 25. The upper face of each of the slide blocks 35 is provided with reversely positioned diagonally disposed cams 36 which extend downwardly toward the ends of the block, the arrangement of the parts being such that when one of the rollers is in its lowermost position the other roller is in a comparatively higher position.

With the parts assembled as above described, and with the slide blocks 34 moved to the limit of their motion toward the right in Fig. 5, the roller 30 will be held in its lowermost position, while the roller 31 is held in an elevated position well above the top face of the blanket carried by the form. With the parts in this position as shown in Fig. 5, power is to be applied to the machine for moving the bed 21 toward the left for pressing the flong into the form. Upon the initial movement of the bed 21 toward the left, the slide blocks 34 are moved also toward the left. When the roller 31 in its movement toward the left is brought into contact with the pressure roller 25, the roll-

ers are prevented from advancing further and the slide blocks 34 continue their movement toward the left, serving to cause the roller 30 to ride up the cam 36 at one side of the pressure roller 25 and the auxiliary roller 31 to ride down the cam 36 at the other side of the pressure roller, such movement of the rollers continuing until the roller 31 is brought into engagement with the blanket 29, such engagement being effected prior to the engagement of the form with the pressure roller 25. Each of the slide blocks 34 is preferably provided upon its bottom face with a friction facing 37 of any suitable type for causing it normally to move with the bed 21. The arrangement is such that, under normal conditions when the roller 31 is brought into engagement with the blanket on the form in the position as shown in Fig. 6 and is thus stopped from moving further downwardly, the slide blocks 34 are also prevented from moving farther toward the left by the engagement of the roller 30 with the cams 36. As the movement of the bed 21 toward the left in Fig. 6 continues, the parts are normally maintained in the position as shown in that figure until the rear edge of the form passes out of engagement with the roller 31, whereupon the roller is permitted to move an additional distance downwardly and the slide blocks 34 are permitted to move an additional distance toward the left with the bed 21, the parts then assuming the position as shown in Fig. 7, with the roller 31 in its lowermost position and with the roller 30 raised to its topmost position well above the surface of the blanket carried by the form. With the parts in the position at the end of a stroke as shown in Fig. 7, the form with the blanket thereon may be removed from the machine and another form with a flong and blanket in position thereon may be substituted, the form being readily insertable underneath the auxiliary roller 30 by reason of its elevated position. Upon the subsequent operative stroke of the bed 21 toward the right from the position as shown in Fig. 7, the operation is just the reverse of that above described, so that it need not be referred to further. As will be readily understood, if at the end of the first operative stroke it is desired that the flong be given a second pressing operation underneath the roller 25, this can be brought about by a proper manipulation of the driving means without any rearrangement of the form or the parts carried thereby. At the end of such operative stroke, the parts will have attained the positions as shown in Fig. 5. Inasmuch as the parts are thus brought alternately into the positions as shown in Figs. 5 and 7, in either of which positions the old form can readily be removed and a new form substituted, it will be appreciated that the form can be given as many operative pressure strokes as may be desired

without in any way affecting the ease of substitution of the form and flong next to be operated upon.

By reason of the fact that the rollers are operated by the slide blocks as actuated by their frictional engagement with the traveling bed, it will be understood that the application of my improved mechanism to an old machine may be effected very readily, since it is not necessary to change the parts in any way.

By the use of my improved construction, the rollers 30 and 31 are adapted to operate upon alternate strokes of the bed for smoothing down the blanket and the matrix adjacent to the pressure roller whereby the matrix is held in the desired operative position with respect to the form and is prevented from becoming wrinkled or creased or in any other way distorted, whereby a sharp impression is made suitable for a very accurate reproduction of the form in the stereotype plate prepared by the use of the matrix. By the provision of my improvements, the insertion of the form with the flong and blanket in position thereon is rendered very easy and a very considerable saving of time is effected as compared with the operation of devices of the prior art in connection with which it has been necessary for the operator to lift the auxiliary roller by hand.

While I prefer to employ the construction as illustrated in the drawing and as above described, I wish to have it understood that the invention is not limited to the form shown, except so far as certain of the claims are specifically so limited, since it will be evident that changes might well be made without departing from the spirit of my invention.

I claim:—

1. A matrix rolling machine, comprising in combination a frame, a pressure roller revolvably mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, an auxiliary roller revolvably mounted in position adjacent to said pressure roller and movable up and down, and means actuated by the movement of the bed on said frame for moving said auxiliary roller upwardly out of operative position upon the stroke of the bed in one direction and adapted by a change in position at the start of the stroke in the opposite direction to permit said auxiliary roller to move downwardly again into operative position.

2. A matrix rolling machine, comprising in combination a frame, a pressure roller revolvably mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, an auxiliary roller revolvably

- mounted in position adjacent to said pressure roller and movable up and down, and means actuated by frictional engagement with said bed upon movement of the bed in one direction for moving said auxiliary roller upwardly out of operative position and adapted by a change in position at the start of the stroke in the opposite direction to permit said auxiliary roller to move downwardly again into operative position.
3. A matrix rolling machine, comprising in combination a frame, a pressure roller revolvably mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, auxiliary rollers revolvably mounted on opposite sides thereof and movable up and down, and means actuated by a movement of the bed on said frame for moving one of said rollers upwardly out of operative position when the other roller is moved to its lowered position with respect to the form.
4. A matrix rolling machine, comprising in combination a frame, a pressure roller revolvably mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, auxiliary rollers revolvably mounted in position adjacent to said pressure roller on opposite sides thereof and movable up and down, and means actuated by frictional engagement with said bed upon movement of the bed in one direction for moving one of said rollers upwardly out of operative position when the other roller is moved to its lowered position with respect to the form.
5. A matrix rolling machine, comprising in combination a frame, a pressure roller revolvably mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, an auxiliary roller revolvably mounted in position adjacent to said pressure roller and movable up and down, and cam means adapted by movement longitudinally of the frame to move said auxiliary roller vertically into and out of operative position with respect to the form.
6. A matrix rolling machine, comprising in combination a frame, a pressure roller revolvably mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, an auxiliary roller revolvably mounted in position adjacent to said pressure roller and movable up and down, and cam means moved by frictional engagement with said bed adapted to move said auxiliary roller vertically into and out of operative position with respect to the form.
7. A matrix rolling machine, comprising in combination a frame, a pressure roller revolvably mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, an auxiliary roller revolvably mounted in position adjacent to said pressure roller and movable up and down, and a slide block frictionally mounted on said bed at each side thereof adapted by limited movements to move said auxiliary roller vertically into and out of operative position with respect to the form.
8. A matrix rolling machine, comprising in combination a frame, a pressure roller revolvably mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, an auxiliary roller revolvably mounted in position adjacent to said pressure roller and movable up and down, and a slide block frictionally mounted on said bed at each side thereof and provided with cam means adapted by limited movements longitudinally of the frame to move said auxiliary roller vertically into and out of operative position with respect to the form.
9. A matrix rolling machine, comprising in combination a frame, a pressure roller revolvably mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, a slide block frictionally mounted on said bed at each side thereof and having a cam face at each end, and an auxiliary roller revolvably mounted on the cam faces of said slide blocks adapted upon movement of the slide blocks in one direction with the bed to move upwardly on said cam faces out of operative position and adapted upon movement of the slide blocks in the opposite direction to move again downwardly into operative position.
10. A matrix rolling machine, comprising in combination a frame, a pressure roller revolvably mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, a slide block frictionally mounted on said bed at each side thereof and having cam faces at its opposite end portions, and auxiliary rollers revolvably mounted on said cam faces at opposite sides of the pressure roller adapted to be moved vertically into and out of operative position with respect to the form as said slide blocks are given limited movements with the bed.
11. A matrix rolling machine, comprising in combination a frame, a pressure roller revolvably mounted on said frame, a bed movable back and forth underneath said pres-

sure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, a slide block frictionally mounted on said bed at each side thereof and having cam faces at its opposite end portions, auxiliary rollers revolubly mounted on said cam faces at opposite sides of the pressure roller, and means connecting said rollers for holding them in constant spaced relation, said rollers being moved vertically into and out of operative position with respect to the form as said slide blocks are given limited movements with the bed.

12. A matrix rolling machine, comprising in combination a frame, a pressure roller revolubly mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, a slide block frictionally mounted on said bed at each side thereof and having cam faces at its opposite end portions, auxiliary rollers revolubly mounted on said faces at opposite sides of the pressure roller, and means connecting said rollers for holding them in constant spaced relation, said cams being adapted to move one of said rollers upwardly out of operative position with respect to the form as the other roller moves downwardly into operative position.

13. A matrix rolling machine, comprising in combination a frame, a pressure roller revolubly mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, a slide block frictionally mounted on said bed at each side thereof and having reversely slanted diagonally disposed cam faces at its opposite end portions, and auxiliary rollers revolubly mounted on said cam faces at opposite sides of the pressure rollers adapted to be moved vertically into and out of operative position with respect to the form as said slide blocks are given limited movements with the bed.

14. A matrix rolling machine comprising in combination a frame, a pressure roller revolubly mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, an auxiliary roller revolubly mounted in position adjacent to said pressure roller and movable up and down, and movable means actuated by contact with the bed adapted upon movement of the bed in one direction to move said auxiliary roller upwardly out of operative position and adapted upon movement of the bed in the other direction to permit said auxiliary roller to move downwardly again into operative position.

15. A matrix rolling machine comprising in combination a frame, a pressure roller revolubly mounted on said frame, a bed mov-

able back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, an auxiliary roller revolubly mounted in position adjacent to said pressure roller and movable up and down, and means resting upon the bed and movable therewith adapted upon a stroke of the bed in one direction to move said auxiliary roller upwardly out of operative position and adapted upon a stroke of the bed in the opposite direction to permit said auxiliary roller to move downwardly again into operative position.

16. A matrix rolling machine, comprising in combination a frame, a pressure roller revolubly mounted on said frame, a bed movable back and forth underneath said pressure roller in spaced relation thereto for pressing a flong into the face of a form carried by said bed, an auxiliary roller revolubly mounted and movable up and down, and cam means moved by frictional engagement with a driven part of the machine adapted upon a stroke of the bed in one direction to move said auxiliary roller upwardly out of operative position and adapted upon a stroke of the bed in the opposite direction to permit said auxiliary roller to move downwardly again into operative position.

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