

May 31, 1955

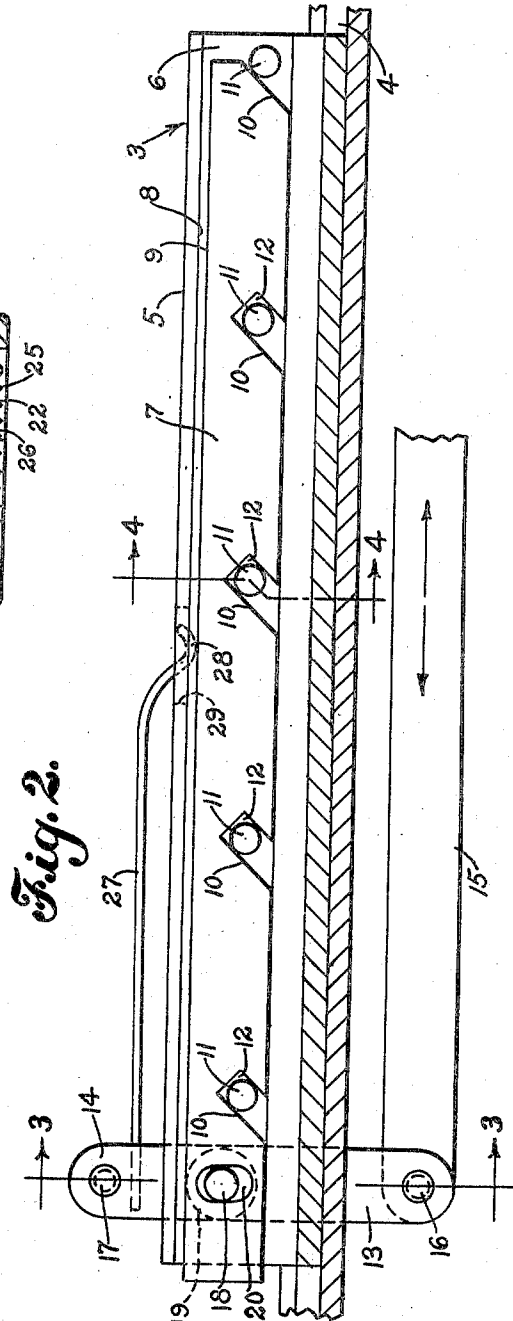
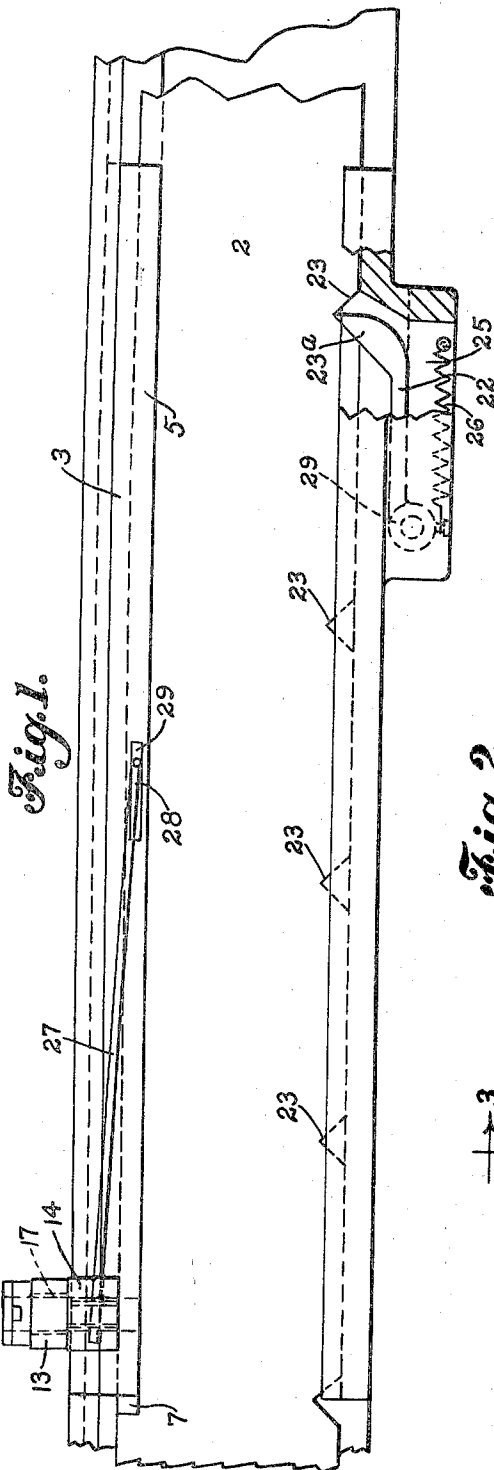
O. B. MEYERS

2,709,587

MEANS FOR INTERMITTENTLY FEEDING STRIP MATERIAL

Filed April 29, 1952

2 Sheets-Sheet 1



INVENTOR.
Otto B. Meyers.
BY *Louis C. Smith*
Attorney.

May 31, 1955

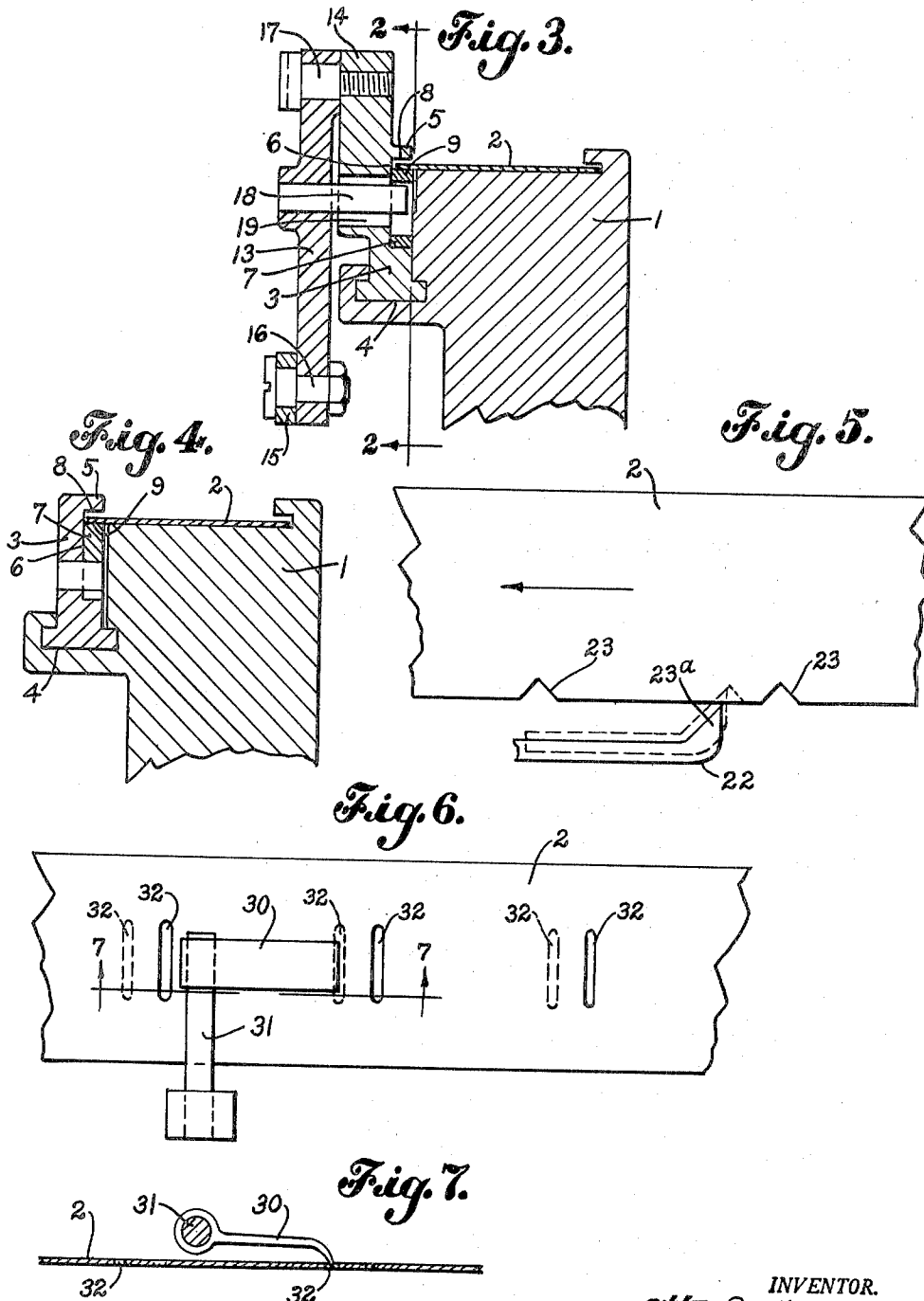
O. B. MEYERS

2,709,587

MEANS FOR INTERMITTENTLY FEEDING STRIP MATERIAL

Filed April 29, 1952

2 Sheets-Sheet 2



INVENTOR.
Otto B. Meyers.
BY *Louis C. Smith*
Attorney.

1

2,709,587

MEANS FOR INTERMITTENTLY FEEDING STRIP MATERIAL

Otto B. Meyers, Quakertown, Pa., assignor to Markem Machine Company, Keene, N. H., a corporation of New Hampshire

Application April 29, 1952, Serial No. 284,954

2 Claims. (Cl. 271—2.5)

This invention relates to means for intermittently feeding strip material with a step by step motion and a period of rest between each forward step.

Feeding devices of this type are commonly used for feeding strip or web material to a machine which performs some operation on the strip during each period of rest. A printing machine or marking machine for making successive imprints on a strip of material is an example of such a machine.

One object of the invention is to provide a strip feeding device of this type which has gripping engagement with the strip during the feeding movement throughout an extended portion of the edge of the strip, whereby the movement of the strip to and from the machine which operates thereon is accurately controlled.

In the drawings wherein I have illustrated some embodiments of the invention:

Fig. 1 is a plan view showing a feeding device embodying the invention.

Fig. 2 is a section on the line 2—2, Fig. 3.

Fig. 3 is a section on the line 3—3, Fig. 2.

Fig. 4 is a section on the line 4—4, Fig. 2.

Fig. 5 is a view illustrating the manner in which the strip can be correctly indexed after each forward step.

Fig. 6 is a fragmentary view illustrating a different form of indexing means.

Fig. 7 is a section on the line 7—7, Fig. 6.

In the drawings, 1 indicates an elongated table or other support on which the strip 2 of material to be fed rests and on which said strip is supported for forward feeding movement.

The feeding means includes an elongated slide 3 situated at one side of the table and extending longitudinally thereof, which slide is adapted to be reciprocated in ways 4 with which the table 1 is provided and which are located below the level of the table top, said ways extending longitudinally of the table. The width or vertical dimension of the slide 3 is such that its upper edge extends slightly above the table top and said upper edge is formed with an inwardly extending lip 5 which overlies the edge of the strip 2 when resting on the table top, the lower face 8 of the lip 5 constituting a strip-gripping face for feeding the strip forward, as will be presently described. The lip 5 and the strip-gripping face 8 extend the full length of the slide 3.

The slide 3 is formed on its inner face, that is, the face adjacent the side of the table 1, with a groove 6 which extends the length thereof, and in which is situated an elongated strip-gripping member 7 which is located beneath the lip 5 and beneath the edge of a strip 2 resting on the table top. The gripping member 7 has a width somewhat less than the width of the groove 6 and is mounted in said groove for slight movement relative to the slide 3 both in a longitudinal and a vertical direction. The upper face 9 of the gripping member 7 constitutes an elongated strip-gripping face which cooperates with the elongated gripping face 8 of the lips 5 to grip the edge of the strip throughout an extended

2

portion of its length for the purpose of feeding the strip forward, as will be presently described.

The gripping member 7 is retained in the groove 6 by the side wall of the table 1. Said gripping member is provided with a plurality of inclined surfaces 10 which cooperate with pins 11 carried by the slide 3 to give the gripping member 7 its strip-gripping movement. Each inclined face 10 may be constituted by one wall of a slot 12 formed in the lower edge of the gripping member 7 and in which the corresponding pin is received.

The strip-gripping operation results from moving the gripping member 7 in the direction of its length relative to the slide 3 thereby to raise the gripping member and cause it to engage the under face of the edge of the strip 2 and clamp said edge against the face 8 of the lip 5, and the strip-feeding operation results from moving the slide 3 and the gripping member 7 as a unit lengthwise of the ways 4 while the edge of the strip material is firmly gripping or clamped between the surfaces 8 and 9.

It will be noted that the underface 8 of the lip 5 also constitutes the upper face of the slot 6 in the slide 3, and as this face 8 grips the upper side of the strip 2 it may be referred to as the upper strip-gripping face. The face 9 which forms the top edge of the strip gripping member 7 and which grips the underface of the strip 2 may be referred to as the lower strip-gripping face, the gripping of the strip for feeding it forward being accomplished by the cooperation of the upper and lower strip-gripping faces.

For giving the strip gripping member 7 its operative movement there is provided a vertically disposed lever 13 pivoted at its upper end to a boss 14 rising from the slide 3, and pivotally connected at its lower end to a reciprocating actuating member 15, as shown at 16, said gripping member being given a forward and backward movement by any suitable means, not shown. The lever 13 has a pin 18 which extends through an enlarged opening 19 formed in the end of the slide 3, the inner end of such pin entering a vertical slot 20 formed in the gripping member 7. The pin 19 has a diameter corresponding to the width of the slot 20.

During the initial forward movement of the gripping member 15 the lever 13 will be swung forwardly or toward the right in Fig. 2 about its pivot 17, and during such initial movement the gripping member 7 will be moved to the right, Fig. 2, relative to the slide 3, and thus said gripping member will be raised into gripping engagement with the upper strip gripping face 8, and the edge of the material 2 will be firmly gripped between said upper strip gripping face 8 and the lower strip gripping face 9 throughout the full length of the slide. As the actuating member continues its movement to the right, the slide and the gripping member 7 will be moved forwardly as a unit, thereby carrying the strip 2 forward. When the actuating member 15 reaches the limit of its movement to the right and begins its return movement to the left, the lever 13 will be swung slightly toward the left and the pin 18 will move the gripping member 7 to the left slightly, thereby returning it to its low position in which it rests on the bottom of the slot 6, as shown in Fig. 2, thereby releasing the gripping engagement of the feeding means with the edge of the strip. During the further and continued return movement of the actuator 15 the gripping member 7 and the slide 3 will move as a unit to their initial position ready for another forward feeding movement. During such return movement the strip 2 will remain stationary on the table and the required operation thereon may be performed.

With the mechanism herein shown an extended portion of the edge of the strip will be held firmly between

3

the gripping surfaces 8 and 9 during the forward feeding movement, and thereby the movement of the strip will be accurately controlled. The operation may be performed on that portion of the strip which is resting on the table during the return movement of the feeding mechanism, and with the device herein shown the movement of the strip will be accurately controlled both while it is being fed to the machine that performs the operation and while it is being delivered therefrom.

There is also shown in the drawings means for accurately indexing the strip at the end of each forward feeding movement. One such means is illustrated in Fig. 1 and another in Figs. 6 and 7. In Fig. 1 the edge of the strip opposite to that which is gripped by the feeding mechanism is provided with indexing notches 23, and a spring-pressed click 22 is provided for cooperating with said notches to properly index the strip. The click 22 is formed with a pointed nose portion 23^a and is pivotally mounted at 24. This click is situated in a groove 25 with which the support 1 is provided, and is positioned to engage the edge of the strip as it is fed forward. Said click is acted on by a spring 26 which yieldingly holds the nose against the edge of the strip. The amplitude of the reciprocating movement of the slide 3 is such that at the end of each forward movement the strip has been carried slightly beyond its properly indexed position and one of the indexing notches 23 has thus been carried beyond the click, as shown in Fig. 5. Means are provided whereby during the initial return movement of the slide 3 the strip will be moved backwardly slightly until the click drops into the notches 23, as shown in dotted line Fig. 5. When this occurs the strip will be held against backward movement by the click, and the slide 3 will return to its initial position ready for the next forward feeding movement.

To give the strip 2 a slight return movement sufficient to bring the notches 23 into registry with the click, there is provided a spring arm 27 which extends from the boss 14 and which has a curved foot 28 that extends through the opening 29 formed in the lip 5 and rests on the edge of the strip 2. The pressure of the foot 28 against the edge of the strip is sufficient so that as the slide begins its return movement the strip will be moved backwardly with the slide, thereby to bring the indexing notch 23 into registry with the click 22. As soon as the click enters the notch, thereby properly indexing the strip, the strip will be held from further retrograde movement and the foot 28 will simply slide over the surface of the then stationary strip during the remainder of the return movement of the feeding mechanism.

A different form of indexing means is shown in Figs. 6 and 7. In said figures the indexing means is in the form of a spring arm 30 carried by a support 31, and the end of which rests yieldingly on the strip 2. In this embodiment the strip is provided with slots 32 at the appropriate intervals, and during each forward feeding movement of the strip a slot 32 will be carried just beyond the end of the arm 30. When the slide 3 begins its return movement, the strip will be moved backwardly by the frictional engagement of the foot 28 therewith until the end of the arm 30 drops into the slot 32, and thereafter said strip will be held from retrograde movement while the feeding mechanism returns to its initial position.

I claim:

1. Means for intermittently feeding strip material comprising an elongated table on which the strip material to be fed rests, said table having elongated ways on one side thereof located below the level of the table top and extending lengthwise of the table, an elongated slide mounted in said ways for reciprocating motion lengthwise of the table, said slide having a longitudinal groove in the side thereof which faces the table, the upper wall of said groove constituting an elongated upper strip-grip-

4

ping face, an elongated strip-gripping member occupying said groove and retained therein by the side of the table, said strip-gripping member being movable both lengthwise and transversely of the groove, the upper edge of said strip-gripping member constituting a lower strip-gripping face opposing the upper strip-gripping face, a reciprocating actuating member having a forward and backward movement, means operative during the initial forward movement of the actuating member to move the strip-gripping member relative to the slide to bring the lower strip-gripping face into strip-gripping relation to the upper strip-gripping face, said slide and strip-gripping member moving together as a unit during the remainder of the forward movement thereby to move the strip forward, said last named means being operative during the initial backward movement of the actuating member to move the strip-gripping member relative to the slide to release the strip, whereby the slide and strip-gripping member complete their backward movement while leaving the strip in its forward position.

2. Means for intermittently feeding strip material comprising an elongated table on which the strip material to be fed rests, said table having elongated ways on one side thereof located below the level of the table top and extending lengthwise of the table, an elongated slide mounted in said ways for reciprocating motion lengthwise of the table, said slide having a longitudinal groove in the side thereof which faces the table, the upper wall of said groove constituting an elongated upper strip-gripping face, an elongated strip-gripping member occupying said groove and retained therein by the side of the table, said strip-gripping member being movable both lengthwise and transversely of the groove, the upper edge of said strip-gripping member constituting a lower strip-gripping face opposing the upper strip-gripping face, a vertically disposed lever pivoted to the slide above the groove thereon, a reciprocating actuating member connected to the lower end of the lever and having a forward and backward movement, means connecting the lever to the strip-gripping member by which during the initial forward movement of the actuating member and the corresponding movement of the lever said strip-gripping member is moved longitudinally of the slide, cooperating means between the slide and the strip-gripping member by which such longitudinal movement of the strip-gripping member moves it transversely of the slide to bring the lower strip-gripping face into strip-gripping relation to the upper strip-gripping face, said strip-gripping member and slide moving as a unit during the remainder of the forward movement of the actuating member to feed the strip forward, said cooperating means moving the strip-gripping member to release the strip during the initial backward movement of the actuating member and the corresponding backward movement of the lever, whereby the slide and the strip-gripping member are freed from the strip during the remainder of their backward movement.

References Cited in the file of this patent

UNITED STATES PATENTS

1,061,753	Kirchhoff	May 13, 1913
1,088,015	Englert	Feb. 24, 1914
1,110,810	McDonald	Sept. 15, 1914
1,263,535	De Smith	Apr. 23, 1918
1,375,889	Baltzley	Apr. 26, 1921
1,472,466	Gammeter	Oct. 30, 1923
1,513,106	Gruman	Oct. 28, 1924
1,859,962	Ferenci	May 24, 1932
1,880,111	Shmyroff	Sept. 27, 1932
2,211,862	Rosenthal	Aug. 20, 1940

FOREIGN PATENTS

584,641	Great Britain	Jan. 20, 1947
---------	---------------	---------------