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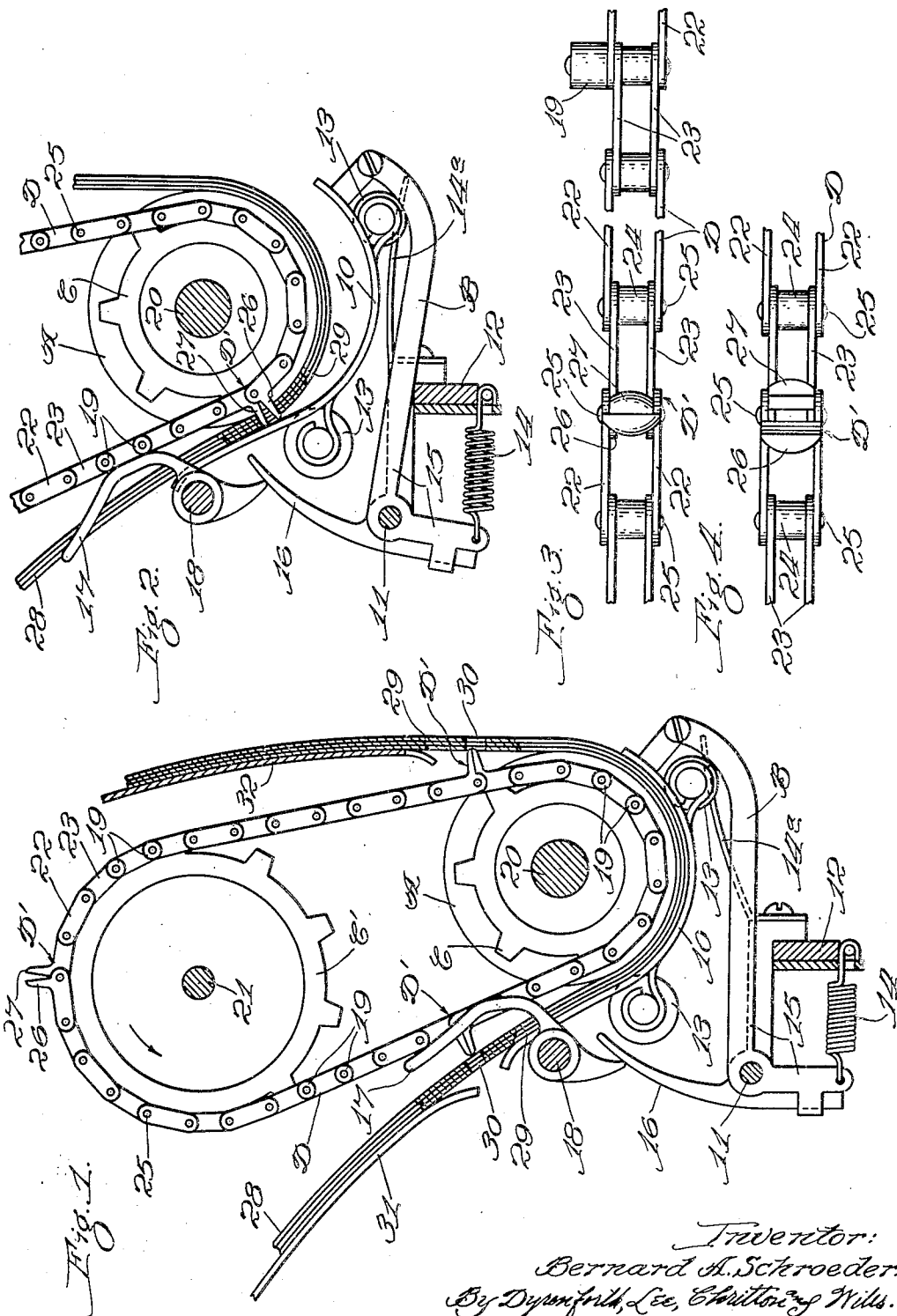
B. A. SCHROEDER

2,053,010

ALIGNING DEVICE

Filed April 1, 1935

2 Sheets-Sheet 1



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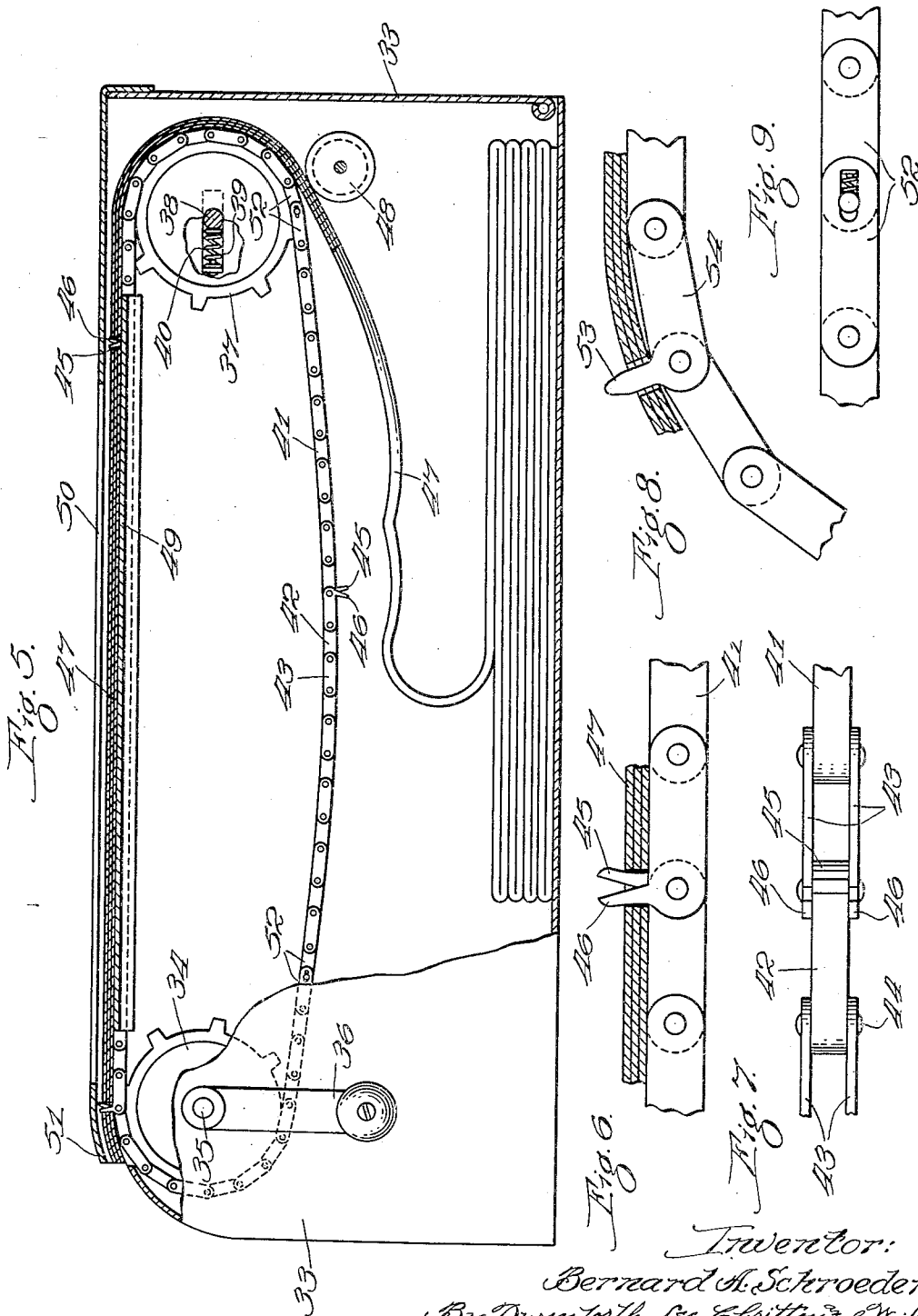
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,053,010

ALIGNING DEVICE

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14 Claims. (Cl. 271—2.6)

This invention relates particularly to an aligning device for a duplicating machine which may also serve as a feeding or tensioning device.

The primary object of the invention is to provide an extremely simple mechanism which will automatically align strips of stationery provided with register perforations, while the same are being advanced through a duplicating machine such as a typewriter, autographic register, Elliott-Fischer machine, or the like. A further object of the invention is to provide a mechanism which may operate with the ordinary feed mechanism found on duplicating machines to relieve the pressure on the strips while the same are being aligned at their register perforations.

A further object of the invention is to provide a mechanism which will automatically tension the stationery while the same is in writing position on a flat platen.

Heretofore the principle of employing an expansible pin to effect alignment of stationery strips has been disclosed in patents such as Euth Patent No. 1,988,195. It has also been proposed to mount expansible pins on the feed wheel of an autographic register. In the present invention the register pins are mounted on a conveyor belt or chain.

The invention is illustrated in a preferred embodiment in the accompanying drawings, in which—

Fig. 1 is a broken side elevational view of a typewriter mechanism embodying the invention; Fig. 2, a similar view showing the pin expanded and the presser device released; Fig. 3, a broken plan view of a conveyor chain with the register pins collapsed; Fig. 4, a view similar to Fig. 3 showing the pin expanded; Fig. 5, a broken longitudinal sectional view of an autographic register by embodying a modified form of the invention; Fig. 6, a broken enlarged elevational view of a portion of the chain and pins shown in Fig. 5; Fig. 7, a broken plan view of the chain shown in Figs. 5 and 6; Fig. 8, a broken elevational view of a chain having a non-expansible register pin; and Fig. 9, a broken elevational view of an expansible link connection which may be used in a machine of the character shown in Fig. 5, if desired.

In the embodiment illustrated in Figs. 1-4, A designates a feed roll or platen roll of the typewriting machine; B, presser mechanism adapted to cooperate with the roll A to advance the stationery into writing position; C, a sprocket wheel mounted on the roll A, C' an idle sprocket wheel journaled above and in alignment with the driv-

ing sprocket wheel C; and D, a conveyor belt or chain equipped with expansible register pins D'.

The platen roll A and presser mechanism B may be of any suitable construction such as is commonly found in standard typewriter machines. The presser mechanism usually comprises a guide plate 10 which is pivotally supported at 11 on the platen carriage 12 and is equipped with presser rolls 13 which are urged against the platen roll by means of springs 14 and 14^a acting on a bell crank lever 15 having an operating arm 16. In the present construction a cam lever 17 is journaled on a rock shaft 18 of the platen carriage so as to actuate the arm 16 and release the presser mechanism when the cam lever is engaged by rollers 19 projecting outwardly from the chain D.

The driving sprocket wheel C may be fixed to the platen roll A so that it will turn with the shaft 20 when the latter is rotated by any suitable means. The sprocket wheel C' is journaled on the shaft 21 provided on the platen carriage of the machine as will be readily understood.

The sprocket chain D as shown in Figs. 3 and 4 may be similar to that used on bicycles, and is shown with outer side links 22, inner links 23, and roller members 24 mounted on pivot pins 25. The expansible pins D' are shown in two elements, the element 26 being carried by side links 22 and the element 27 carried by inner links 23. Thus it will be understood that when the links are bent by travelling around the sprocket wheels C or C' the pins will be expanded as shown in Fig. 2 and when the chain is straightened out the pins will be collapsed, as shown at the left of Fig. 1.

Suitable strips of stationery 28 may be divided into form lengths by lines of weakening 29 and each form length is provided with register perforations 30. The strips may be interleaved with transfer strips (not shown) in the well known manner. The stationery is advanced toward the platen over a rear guide plate 31 where the perforations 30 are engaged by the pins D' and after passing around the platen are stripped from the again collapsed pins by means of a guide plate 32. As indicated above, the rollers 19 and chain D will cause the presser mechanism to be released while the pins are expanding to align the perforations as shown in Fig. 2. The stationery will travel around the platen while impaled by the expanded pins and will be held in alignment in the typing position at the front of the platen.

In the embodiment shown in Fig. 5, an autographic register casing 33 is equipped with a

front sprocket wheel 34 on a shaft 35 which may be operated by means of a crank 36, and a rear sprocket wheel 37 on a shaft 38 journaled in slots 39 provided in the side walls of the register.

5 A compression spring 40 urges the shaft 38 rearwardly to keep the sprocket chain 41 taut. As shown in Figs. 6 and 7, the sprocket chain comprises blocks 42 and side links 43 pivotally connected by pins 44. In this machine the rear element 45 of the expansible pin extends back of the front elements 46 mounted on side links 43 so that the pins will expand when the links are straightened out and collapse when turning about the sprocket wheel. The strips of continuous form stationery 47 are urged into engagement with the expansible pins by means of a grooved presser roll 48 as the pins are collapsed on the rear sprocket wheel 37. The stationery is then advanced over a platen 49 and is accessible for writing by means of a skeleton cover 50 provided with a tear-off edge 51. With this arrangement both the feeding and aligning operations are accomplished by the chain 41.

If desired, the chain 41 may be equipped with 25 expansible links 52 which will cause the sets of forms to be stretched between successive sets of pins. This enables the forms to be held in flat and aligned position, while passing over the platen 49. The links 52 will be in expanded position 30 when straightened out but will be drawn together by the teeth of the sprocket wheels at each end of the platen so that the pins will easily and automatically engage the perforations in the stationery.

35 When the expansible links 52 shown in Figs. 5 and 9 are used, it is not essential that the pins themselves be of the expanding type. As shown in Fig. 8, pins 53 may be mounted entirely on links 54 and when the expansible links 52 are 40 stretched in passing over the platen of the machine, alignment and tensioning will be accomplished through cooperation of successive pins rather than by expansion in a single perforation.

The foregoing detailed description has been 45 given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

50 What I regard as new, and desire to secure by Letters Patent, is:

1. An alignment device for strips having register perforations, comprising: a chain provided with an expansible pin having two elements 55 mounted on adjacent links pivotally connected to each other, said pin being adapted to engage perforations in the strips; and means for rocking one element relative to the other to align said strips.

60 2. An alignment device for strips having register perforations, comprising: a conveyor-belt; an expansible pin having two elements mounted on said belt and adapted to engage said perforations; and means for flexing said belt to move 65 one of the elements relative to the other to align the strips.

3. In a duplicating machine, an aligning and tensioning device for strips having register perforations at spaced intervals, comprising: a conveyor-belt equipped with longitudinal sets of register pins in spaced relation and adapted to engage register perforations in the strips; and means for increasing the distance between sets of the pins while in engagement with the strips 70 to align and tension the same.

4. A device as specified in claim 3, in which the belt is endless and the means for aligning and tensioning the strips comprises expansible sections in said belt.

5. A device as specified in claim 3, in which the belt is in the form of a chain and the aligning and tensioning means comprises expansible connections between the links of said chain.

6. In a duplicating machine, aligning means for stationery strips having register perforations comprising: a pair of sprocket wheels in alignment; an endless sprocket chain mounted on said wheels; and an expansible register pin adapted to engage perforations in the strips comprising two elements mounted separately on adjacent portions of a pair of links in said chain so as to collapse when the links are straightened and to expand when the links are turned about said wheels.

7. In a duplicating machine: a feed roll and presser-means by which stationery strips having register perforations may be advanced into writing position; and aligning means comprising a sprocket wheel mounted on said feed roll, a second sprocket wheel mounted adjacent to the first mentioned sprocket wheel, an endless sprocket chain mounted on said wheels; and an expansible register pin adapted to engage perforations in the strips comprising two elements mounted separately on adjacent portions of a pair of links in said chain so as to collapse when the links are straightened and to expand when the links are turned about said wheels.

8. In a duplicating machine: a feed roll and presser-means by which stationery strips having register perforations may be advanced into writing position; aligning means comprising a sprocket wheel mounted on said feed roll, a second sprocket wheel mounted adjacent to the first mentioned sprocket wheel, an endless sprocket chain mounted on said wheels; and an expansible register pin adapted to engage perforations in the strips comprising two elements mounted separately on adjacent portions of a pair of links in said chain so as to collapse when the links are straightened and to expand when the links are turned about said wheels; and means for releasing said presser-means while the register pin is expanding.

9. A device as specified in claim 8, in which the means for releasing the presser-means comprises a lever-mechanism pivotally supporting the presser-means, and means on the sprocket chain for actuating said lever-mechanism.

10. In a duplicating machine having a flat platen, feeding an aligning means comprising: a driving sprocket wheel mounted at the front of the platen; a second sprocket wheel mounted near the rear of the platen; an endless sprocket chain mounted on said wheels; register pins 6 mounted on said chain so as to engage perforations in continuous-form stationery led over said platen; and means for expanding said pins over the platen to align the stationery thereon.

11. A device as specified in claim 10, in which the second sprocket wheel is yieldingly urged away from the driving sprocket wheel to keep the sprocket chain taut.

12. A device as specified in claim 10, in which the second sprocket wheel is yieldingly urged 7 away from the driving sprocket wheel to tension the chain, and the chain has expansible links adapted to be expanded by the tension in said chain and retracted by the teeth of said sprocket wheels.

13. An alignment device for strips having register perforations, comprising: a belt; and an expansible pin adapted to engage said register perforations, said pin having elements mounted on said belt so that the pin may be collapsed by bending the belt and expanded by straightening the same.

14. A device as specified in claim 13, in which the belt is in the form of an endless chain with the pin elements mounted on adjacent connected links of the chain with the pin element carried by one link extending beyond the pin element carried by the adjacent link.

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