

No. 646,273.

Patented Mar. 27, 1900.

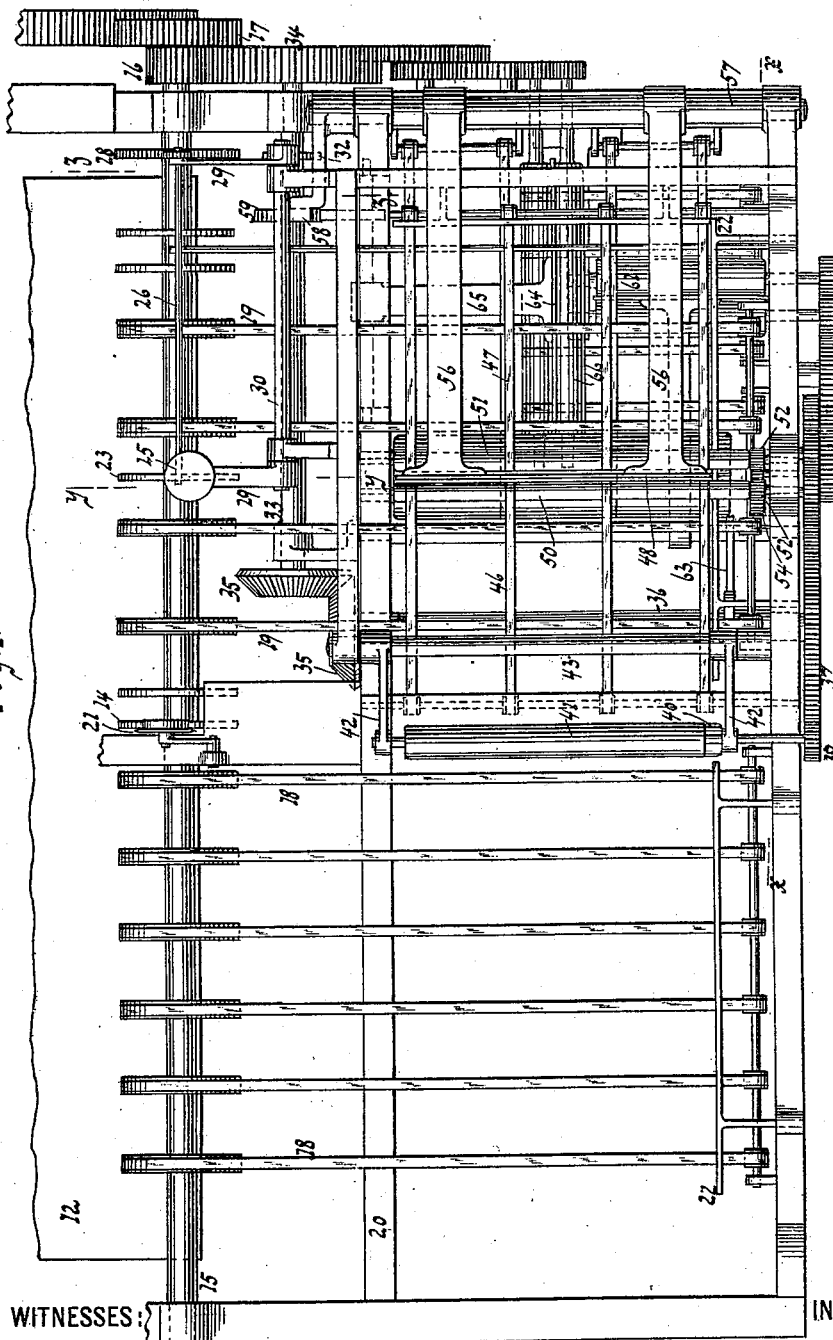
G. P. FENNER.  
FOLDER.

(Application filed June 1, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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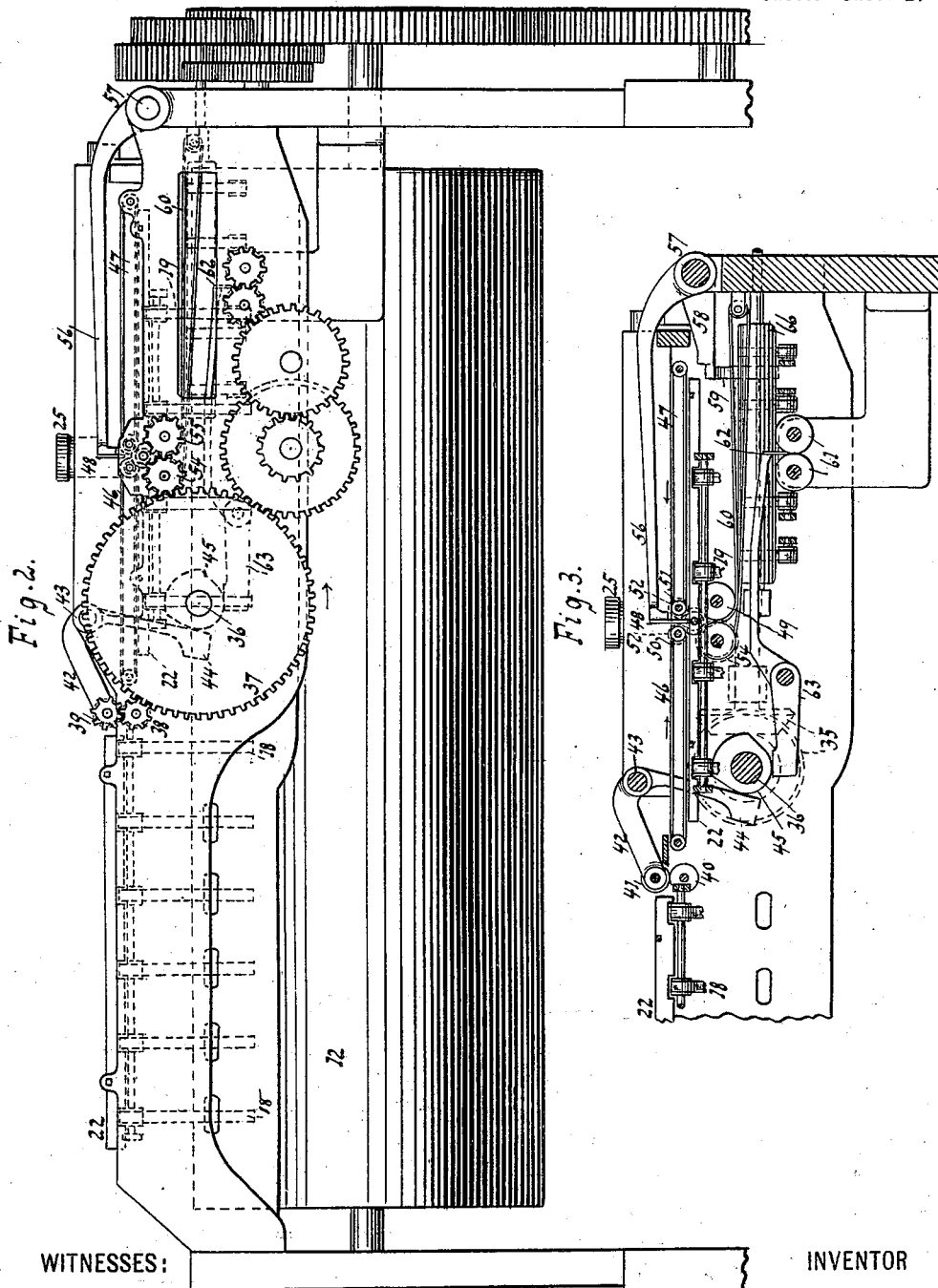
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3 Sheets—Sheet 2.



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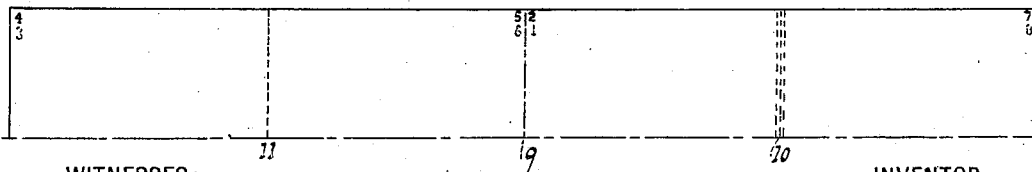
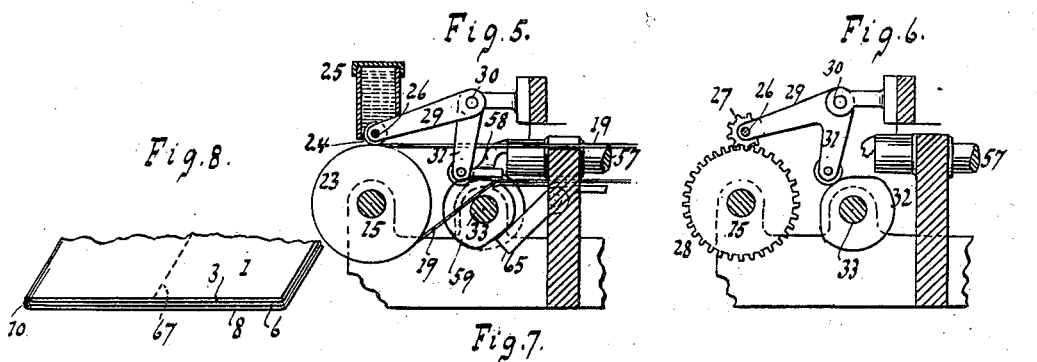
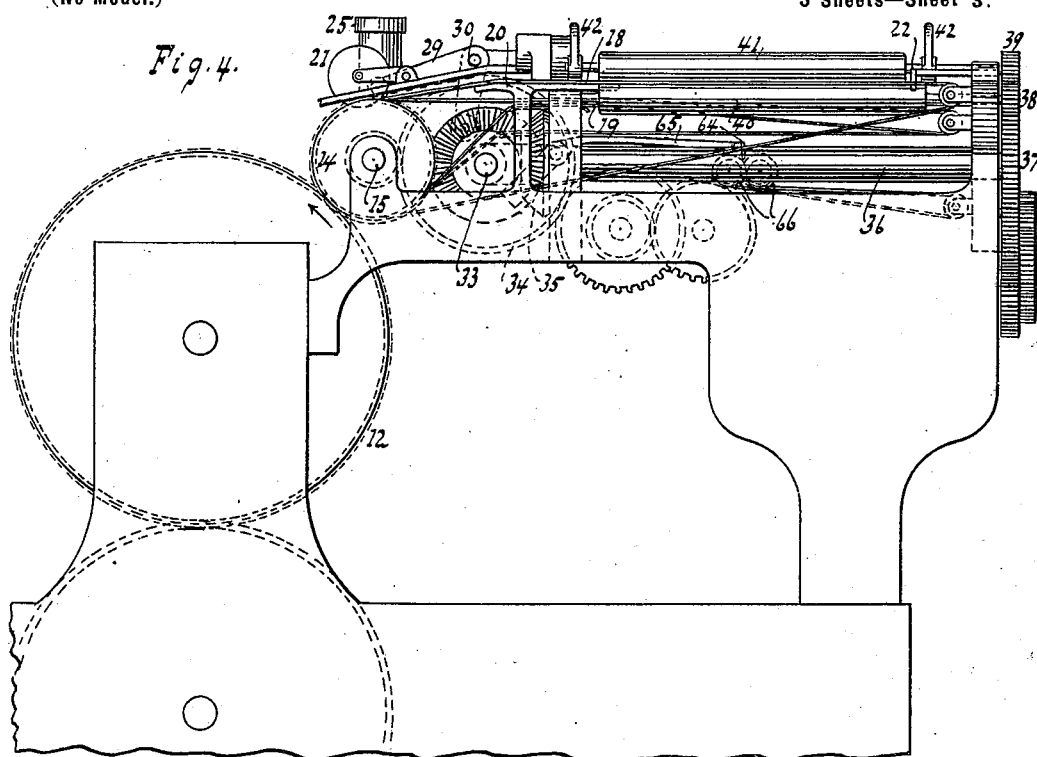
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**3 Sheets—Sheet 3.**



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# UNITED STATES PATENT OFFICE.

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## FOLDER.

SPECIFICATION forming part of Letters Patent No. 646,273, dated March 27, 1900.

Application filed June 1, 1899. Serial No. 718,983. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE P. FENNER, a citizen of the United States, residing at New London, in the county of New London and State of Connecticut, have invented new and useful Improvements in Folders, of which the following is a specification.

By means of this invention a portion or section of a web can be split and folded, as also pasted, to form a newspaper or the like, as set forth in the following specification and claims and illustrated in the annexed drawings, in which—

Figure 1 is a plan view of the folder. Fig. 2 is a side elevation of Fig. 1. Fig. 3 is a section along *x x*, Fig. 1. Fig. 4 is a side elevation of Fig. 1. Fig. 5 is a section along *y y*, Fig. 1. Fig. 6 is a section along *z z*, Fig. 1. Fig. 7 shows a section from a web or endless paper strip. Fig. 8 shows the section or sheet of Fig. 7 folded.

In Fig. 7 is indicated a section or strip of paper which having been detached from an endless web and run through a perfecting-press can be made up into a newspaper or the like. This paper section or sheet is shown paged from "1" to "8" for an eight-page paper, although, as hereinafter seen, this invention applies also to other papers, as six-page. This section or sheet of Fig. 7 can be conveniently designated in the following description by the pages 4 and 7, exposed in Fig. 7. If this section 4 7 is split or separated at 9, the section-half 4 5 superposed on half 2 7, paste having been applied along line 10, and the halves then folded or creased at the corresponding lines 10 and 11, made to superpose or contact, a newspaper is formed. This splitting at 9, pasting at 10, superposing, and folding at 10 and 11 can be effected by the machine or folder forming the subject of this invention. The section 4 7, coming off the type-cylinder 12, Fig. 4, of a perfecting-press, is taken by gripper or delivery disk 14 on shaft 15, driven by gears 16 and 17. This shaft 15 also drives the tape or carrier sets 18 and 19. The tapes 18 are led over guides 20, Fig. 4, so as to be on a higher level than tapes 19. At said cylinder 14 is cutting-disk or slit 21, and as the section 4 7 passes onto the tapes 18 and 19 the cutter 21 splits or separates the section-halves 4 5 and 2 7

along line 9. The half 4 5 passes onto the higher tapes or carrier 18, while half 2 7 passes onto the lower tapes 19, both halves being arrested by stops or rails 22, Fig. 1. On shaft 15 is mounted a disk 23, Figs 1 and 5, and as the section-half 2 7 passes between this disk 23 and the roller 24 of paste-reservoir 25 a streak of paste is applied along line 10. The shaft 26 of disk 24 is provided with gear 27, Fig. 6, engaged by gear 28 on shaft 15 to rotate the paste-wheel 24. This paste-wheel shaft 26 with pot 25 are carried by arms 29 on shaft 30, having arm 31 engaged by cam 32 on shaft 33, driven by gear 34, suitably connected to or driven by gear 16. At suitable intervals the cam lifts or moves wheel 24 and gear 27 out of action, so that pasting is intermittent or only done as a paper-section is interposed between disks 23 and 24. Smearing can thus be avoided. The shaft 33, by bevel-gears 35, drives the shaft 36, with gears 37, Fig. 2, driving gears 38 and 39, with rollers 40 and 41, Fig. 3. The roller 41 is carried by arms 42 on shaft 43, having arm 44, actuated by cam 45. As the half 4 5 is carried toward stop 22 by carriers 18 the cam 45 holds roller 41 raised, and the edge 9 of this half 4 5 comes between rollers 40 and 41. The cam 45, then allowing roller 41 to drop or mesh its gear 39 with gear 38, said rollers 41 and 40 are rotated, and the edge 9 of half 4 5 being caught between these rollers said half is fed transversely to the travel of carriers 18 and 19 to bring half 4 5 over half 2 7. This half 4 5 being fed by rollers 40 and 41 onto tapes or carriers 46 and 47 and having its line 11 bent by blade 48 between tapes 46 and 47 onto the line or paste streak 10 of half 2 7, the two halves adhere. The blade or folder 48 then folds the two halves at the adhering lines 11 and 10 between the creaser-rollers 49, Fig. 3, so that the halves form a newspaper folded and pasted at the lines 10 and 11. The tapes or transverse carriers are driven by rollers 50 and 51, having gears 52, as seen in Fig. 1. The gears 52 or one of them is driven by intermediate pinion or in suitable manner from gear 54, driven by gear 37. The gear 54 engages gear 55, these two gears driving the folder-rollers 49, between which blade 48 inserts the crease 10 11. The blade 48 is carried by arms 56, extended from shaft 57,

rocked at suitable intervals by arm 58 and cam 59 on shaft 33. From rollers 49 the paper or article can be carried by tape or carrier 60, Fig. 3. Other creaser-rollers 61 are shown, between which such paper is further folded by blade 62 on arms 63, actuated by cam 45. Such additional folding, however, can be omitted, the machine being allowed to stop, if seen fit, with the fold 10 11. As shown in the drawings, a folder is shown at 64, Fig. 4, having its arms 65 actuated by cam 59 and made to crease or start the paper between the rollers 66, Fig. 3, after which the paper can be again folded by blade 62, already named. The folded or completed paper can be dropped into or received in a box or suitable receptacle.

The machine operates as follows: The first web-section 4 7 coming from the press or cylinder 12 is split at 9 as it is fed by tapes 18 and 19 to stop 22. The blade 48, hung on shaft 57, then takes the first half 2 and 7 of this first section, carries it between rollers 50 and 51 to be creased by rollers 49, after which this first half passes off to be wasted or thrown away. The second half 4 5 of this first web-section is started by rollers 40 and 41 across the tapes 19 transversely or at a right angle to its previous line of travel to the folder-tapes 46 and 47 across or over the opening, into which strikes the folder-blade 48. This second half 4 5 of the first web-section thus comes over the first half 2 and 7 of the second or next-succeeding web-section, which has meantime been fed by tapes 18 and 19 and split by slitter 21. The first half 2 and 7 of this second web-section, suitably pasted by roller or paster 24, replaces the first half of the first web-section, which, as noted, was wasted, and the second half 4 5 of the first web-section having its line 11 creased by folder 48 onto the crease or paste streak 10 of the first half 2 and 7 of the second web-section the required folding and pasting are effected.

A six-page paper can be obtained by simply shortening, or rather narrowing, the web-section to omit the leaf marked 3 4 in Fig. 7, retaining, however, sufficient of this leaf to form a narrow band or fold at 11 to be pasted to crease 10. The pages marked 5 and 6 in Fig. 7 would in such case become pages 3 and 4, and the pages marked 7 and 8 in such Fig. 7 would now be numbered 5 and 6. This, however, is a detail for the pressman and does not affect the invention.

A completed eight-page paper or the like is indicated in Fig. 8, and the broken lines 67 would indicate the place of a fold made by blade, 62 if used, while the blade 64 would fold at a right angle to or across the line 67.

This device, as seen, avoids the necessity of trimming in the folder and requires only one cut 9, which can be a clean or straight cut. The first portion or half 2 and 7 when pasted and on tapes 19 is not moved until it is covered by the second portion or half 4 5. It may be noted that the paster 24 could be

omitted if it should be desired to merely superpose or fold together the halves 4 and 5 and 2 and 7 without pasting.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of two sets of longitudinal traveling tapes, for carrying two web-sections of paper, two sets of tapes arranged transversely above one set of said longitudinal tapes and traveling at right angles to the line of motion thereof, for superimposing said web-sections, and folding devices for folding the two superimposed web-sections at a point between the said two sets of transverse tapes, substantially as described.

2. The combination of a cutter for dividing a paper web-section into two web-sections, two sets of longitudinal traveling tapes for carrying the two web-sections, tapes arranged transversely above and traveling at right angles to the line of motion of one set of the longitudinal tapes for superimposing the two web-sections, feed-rollers for moving one web-section transversely onto said transverse tapes, and folding devices for folding the two superimposed web-sections at a point between the said two sets of transverse tapes, substantially as described.

3. The combination of two sets of longitudinal traveling tapes for carrying two separate web-sections of paper, two sets of tapes arranged transversely above and traveling at right angles to the line of motion of one set of the longitudinal tapes, two feed-rollers for moving one web-section transversely onto said transverse tapes to superimpose the two web-sections, mechanism for intermittently rotating one of said feed-rollers, and folding devices for folding the two superimposed web-sections at a point between the said two sets of transverse tapes, substantially as described.

4. The combination of two sets of longitudinal traveling tapes for carrying two separate web-sections of paper, two sets of tapes arranged transversely above and traveling at right angles to the line of motion of one of said sets of tapes, two feed-rollers for moving one web-section transversely onto said transverse tapes to superimpose the two web-sections, mechanism for moving one of the feed-rollers toward and from the other, and folding devices for folding the two superimposed web-sections at a point between the said two sets of transverse tapes, substantially as described.

5. The combination of two sets of longitudinal traveling tapes for carrying two web-sections of paper, one set arranged in a plane below the other set, two sets of tapes arranged transversely above and traveling at right angles to the line of motion of the lowest set of longitudinal tapes, devices for moving the web-section transversely from the highest set of longitudinal tapes onto the said transverse tapes, for superimposing the two web-sections, a paster for applying a line of paste

to the web-section carried by the lowest set of longitudinal tapes, and devices for folding the two web-sections at a point between the two sets of transverse tapes, substantially

5 as described.

6. The combination of a shaft, two sets of longitudinal tapes passing around said shaft, a paste-disk mounted on said shaft, an oscillating paste-reservoir having a paste-roller in  
10 its bottom, a cam for alternately moving said reservoir to and from the paste-disk, gears caused to intermesh and rotate the paste-roller when the reservoir is moved to the  
15 paste-disk, and means for superimposing the two web-sections carried by the longitudinal tapes, substantially as described.

7. A shaft having carrier or tape sets, a cutter, a paste-disk and a gear on the shaft, combined with a paste-reservoir having a  
20 disk, a driving-gear for the reservoir-disk, a cam for moving the paste-reservoir toward and from the shaft and for moving the gear of the reservoir-disk into and out of engagement with the gear on the shaft, and a carrier  
25 for transferring a sheet portion from one of the first-named tape-sets to the other substantially as described.

8. A shaft having carrier or tape sets and a shaft 33 driven by the first-named shaft and  
30 provided with a cam, a paste-reservoir actuated by said cam, a shaft 36 placed transversely to and actuated by said shaft 33, rollers 40 and 41 actuated by said shaft 36, and a cam 45 on said last-named shaft for bringing  
35 one of the rollers into and out of action substantially as described.

9. A shaft having carrier or tape sets and a shaft 33 driven by the first-named shaft and

provided with a cam, a paste-reservoir actuated by said cam, a transverse shaft 36 actuated by said shaft 33, rollers 40 and 41 actuated by said shaft 36, a cam 45 on said shaft  
40 36 for causing said rollers to act intermittently, and a folding-blade 62 actuated by said cam 45 substantially as described.

10. A shaft having carrier or tape sets and a shaft 33 driven by the first-named shaft and provided with cams 32 and 59, a paste-reservoir and a folding-blade 48 actuated by said  
45 cams, a transverse shaft 36 and a transverse carrier comprising intermittently-acting rollers 40 and 41 and tapes driven by said transverse shaft substantially as described.

11. A shaft having carrier or tape sets and a shaft 33 driven by the first-named shaft and  
55 provided with cams, a paste-reservoir and folding-blades 48 and 64 actuated by said shaft 33, a transverse shaft 36, and a transverse carrier and a folder 62 actuated by said transverse shaft substantially as described.

12. A shaft having carrier or tape sets, a carrier or tapes placed transversely to the first-named tapes, rollers 40 and 41 for feeding from the first-named tapes to the transverse tapes, a lever 42 44 forming a bearing  
60 for one of the rollers, and a cam for actuating the lever for moving said last-named roller out of and into action, substantially as described.

In testimony whereof I have hereunto set  
70 my hand in the presence of two subscribing witnesses.

GEORGE P. FENNER.

Witnesses:

WILLIAM W. IRISH,  
A. A. SMITH.