

June 16, 1936.

H. M. BARBER

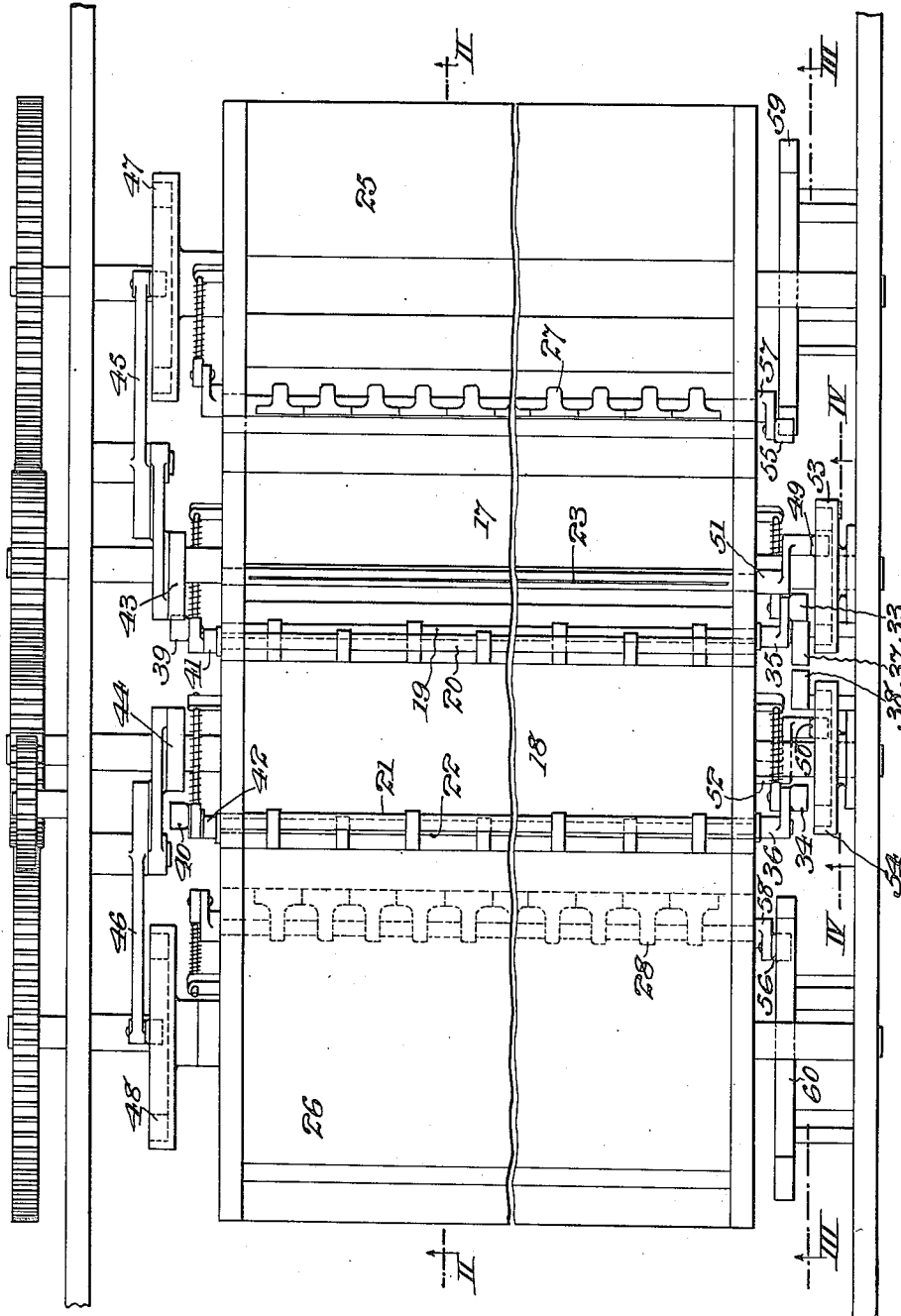
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SHEET COLLECTING AND FOLDING MECHANISM FOR PRINTING PRESSES

Filed May 15, 1935

3 Sheets-Sheet 1

Fig. 1.



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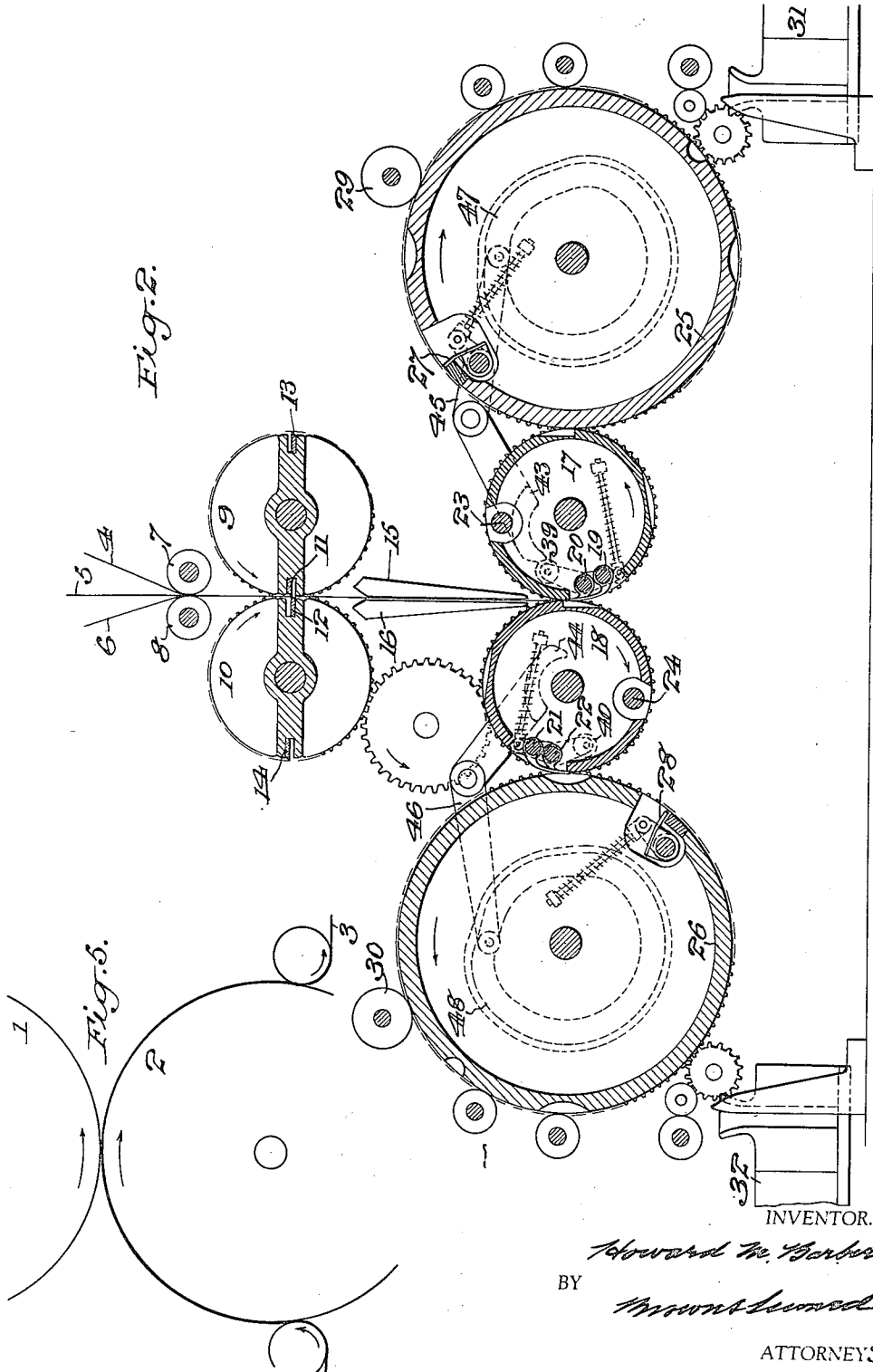
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3 Sheets-Sheet 3

Fig. 3.

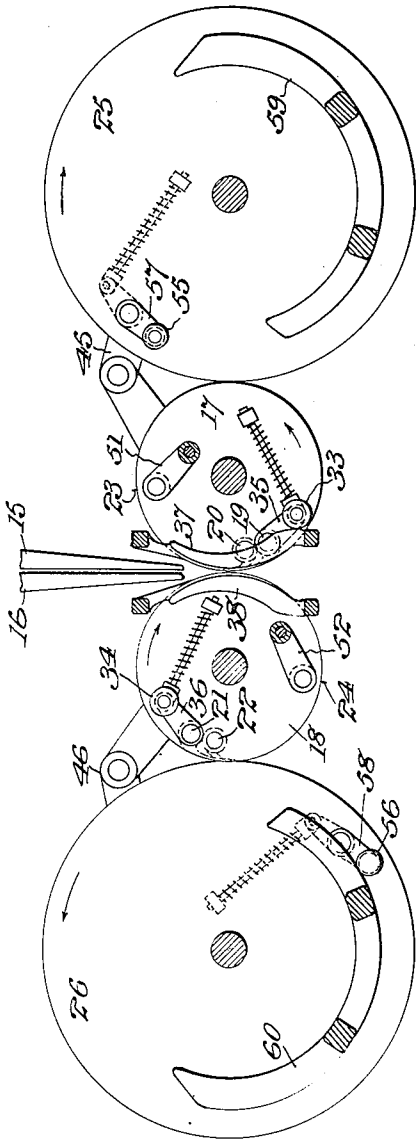
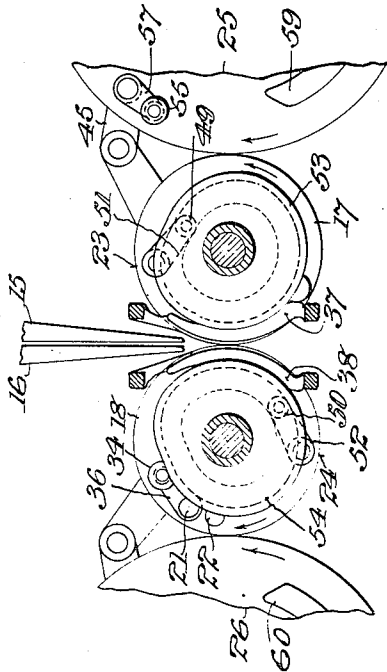


Fig. 4.



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SHEET COLLECTING AND FOLDING MECHANISM FOR PRINTING PRESSES

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19 Claims. (Cl. 270—10)

In general practice where the product of each cycle of a rotary web printing press has been cut into an even number of sheets or groups of sheets it has been usual to collect the so-cut sheets or groups of sheets successively on collecting cylinders having two or three collecting surfaces. This arrangement requires the use of a number of transfer cylinders where the product has been delivered to two separate points. These transfer cylinders tend to smut and smear the printed product as it is being folded and delivered.

The object of this invention is to eliminate such smutting and smearing of the printed product and to materially simplify the collecting and folding mechanism.

This invention generally comprises a sheet collecting and folding mechanism in which the web product of the press is passed between coacting rotary cutters to sheet collecting and folding cylinders; said cutters being arranged to cut the product of each cycle of the press into an even number of sheets or groups of sheets, and the said collecting and folding cylinders being arranged to collect an even number of sheets or groups of sheets on single collecting surfaces and fold them off to predetermined points, as, for instance, folding and delivery cylinders; the collecting and folding cylinders having single folding blades and being approximately one-half the diameter of the printing cylinders and of the folding and delivery cylinders.

A practical embodiment of the invention is represented in the accompanying drawings, in which Fig. 1 represents in top plan the improved sheet collecting and folding mechanism with the rotary web cutters removed;

Fig. 2 represents a vertical longitudinal detail section taken in the plane of the line II—II of Fig. 1, looking in the direction of the arrows and including the rotary cutters;

Fig. 3 represents a vertical longitudinal detail section taken in the plane of the line III—III of Fig. 1, looking in the direction of the arrows;

Fig. 4 represents a vertical longitudinal detail section taken in the plane of the line IV—IV of Fig. 1; and

Fig. 5 represents a diagrammatic side elevation showing one of the couples of a rotary web perfecting printing press in connection with which my improved sheet collecting and folding mechanism is used.

The printing cylinder is denoted by 1 and its impression cylinder by 2. The main web 3 is herein shown as slit longitudinally into three

narrow webs 4, 5 and 6, which narrow webs may be superimposed at the pair of coacting rolls 7 and 8. From thence the superimposed narrow webs are passed through two coacting rotary cutters 9 and 10, the rotary cutter 9 having two diametrically opposed blades 11 and 12 and the rotary cutter 10 having two diametrically opposed blades 13 and 14. These coacting rotary cutters are arranged in the present instance to cut the product of each cycle of the printing cylinders of the press into four groups of sheets.

Guides 15, 16 are arranged to lead the superimposed narrow webs to the two coacting rotary collecting and folding cylinders 17 and 18, said collecting and folding cylinders being approximately one-half the diameter of the printing cylinders and each having a single collecting surface and a single folding blade.

The collecting and folding cylinder 17 is provided with a single set of alined main and auxiliary grippers 19 and 20, and the collecting and folding cylinder 18 is similarly provided with a single set of alined main and auxiliary grippers 21 and 22. The collecting and folding cylinder 17 is also provided with a single floating folding blade 23 and the collecting and folding cylinder 18 is also provided with a single floating folding blade 24.

The folding and delivery cylinders are denoted by 25 and 26, which cylinders are substantially twice the diameter of the collecting and folding cylinders 17 and 18 and therefore the same diameter as the printing cylinders of the press. The folding and delivery cylinder 25 is provided with a single set of folding jaws 27 arranged to coact with the floating folding blade 23 of the collecting and folding cylinder 17, and the cylinder 26 is similarly provided with a single set of folding jaws 28 arranged to coact with the floating folding blade 24 of the collecting and folding cylinder 18. Slitters 29 and 30 coact with their respective folding and delivery cylinders 25 and 26 to slit the folded signatures before they are delivered. Any suitable means, such as packer boxes 31 and 32 may be provided for receiving the folded and slitted signatures from the folding and delivery cylinders 25 and 26 respectively. The several grippers and folding devices are operated as follows:

The studs or rollers 33 and 34 on the rock shafts 35 and 36 which carry the main grippers 19 and 21 of the collecting and folding cylinders 17 and 18 are operated by the fixed cams 37 and 38 respectively. The studs or rollers 39 and 40 on the rock shafts 41 and 42 which carry the

auxiliary grippers 20 and 22 of the collecting and folding cylinders 17 and 18 are operated by the movable cams 43 and 44 through the rock levers 45 and 46 and the rotary cams 47 and 48 which are carried by the shafts of the folding and delivery cylinders 25 and 26. The studs or rollers 49 and 50 on the rock shafts 51 and 52 which carry the floating folding blades 23 and 24 on the collecting and folding cylinders 17 and 18 are operated by fixed cams 53 and 54; and the studs or rollers 55 and 56 on the rock shafts 57 and 58 which carry the movable members of the coacting folding jaws 27 and 28 on the folding and delivery cylinders 25 and 26 are operated by fixed cams 59 and 60.

In operation: The main web 3 may be slit into a plurality, for instance, three narrow webs 4, 5 and 6, which narrow webs may be superimposed by the rolls 7 and 8. They are then passed between the rotary cutters 9 and 10 to the two collecting and folding cylinders 17 and 18. In the present instance the product of each cycle of the press is cut into four groups of sheets, the first group being taken by the main and auxiliary grippers 19 and 20 of the sheet collecting and folding cylinder 17; the second group by the main and auxiliary grippers 21 and 22 of the sheet collecting and folding cylinder 18; the third group by the auxiliary grippers 20 of the cylinder 17; and the fourth group by the auxiliary grippers 22 of the cylinder 18. After two groups of sheets have been collected on each of the collecting and folding cylinders they are folded off by the folding blade 23 or 24, as the case may be, to the jaws 27 or 28 on the folding and delivery cylinder 25 or 26. These folded groups of sheets or signatures may be slit on the cylinders 27 and 28 by the slitters 29 and 30 and then delivered to the packer boxes 31 and 32.

From the above description it will be seen that the product of each cycle of the press is cut into an even number of sheets or groups of sheets. These sheets or groups of sheets are alternately collected on the single collecting surfaces of the collecting and folding cylinders and the even number of sheets or groups of sheets folded off therefrom to the folding and delivery cylinders from which the so-folded signatures may be slit, if so desired, and delivered to predetermined points.

By making the collecting and folding cylinders approximately one-half the diameter of the printing cylinders and the folding and delivery cylinders twice the diameter of the collecting and folding cylinders and by providing the collecting and folding cylinders with single collecting surfaces and single folding blades and by providing the folding and delivery cylinders with single sets of folding jaws, I am enabled, in a very simple mechanism, to produce the product without requiring it to be passed around transfer cylinders which tend to smut and smear the product.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the particular embodiment herein shown and described.

What I claim is:

1. Means for cutting the web product of each cycle of a rotary web printing press into an even number of sheets or groups of sheets, and two collecting and folding cylinders having single collecting surfaces, each collecting and folding cylinder being arranged to collect an even number

of the sheets or groups of sheets and fold them off to a predetermined point.

2. Means for cutting the web product of each cycle of a rotary web printing press into four sheets or groups of sheets, and two collecting and folding cylinders having single collecting surfaces, each collecting and folding cylinder being arranged to collect two of the sheets or groups of sheets and fold them off to a predetermined point.

3. Means for cutting the web product of each cycle of the printing cylinders of a rotary web printing press into an even number of sheets or groups of sheets, and two collecting and folding cylinders having single collecting surfaces and arranged to collect an even number of the sheets or groups of sheets and fold them off to predetermined points, the collecting and folding cylinders being approximately one-half the diameter of the printing cylinders.

4. Means for cutting the web product of each cycle of the printing cylinders of a rotary web printing press into four sheets or groups of sheets, and two collecting and folding cylinders having single collecting surfaces, each collecting and folding cylinder being arranged to collect two of the sheets or groups of sheets and fold them off to a predetermined point, the collecting and folding cylinders being approximately one-half the diameter of the printing cylinders.

5. Means for cutting the web product of each cycle of the printing cylinders of a rotary web printing press into an even number of sheets or groups of sheets, and two collecting and folding cylinders approximately one-half the diameter of the printing cylinders arranged to collect an even number of the sheets or groups of sheets and fold them off to predetermined points.

6. Means for cutting the web product of each cycle of the printing cylinders of a rotary web printing press into an even number of sheets or groups of sheets, and two collecting and folding cylinders approximately one-half the diameter of the printing cylinders arranged to collect an even number of the sheets or groups of sheets and fold them off to predetermined points, said collecting and folding cylinders having single collecting surfaces.

7. Means for cutting the web product of each cycle of a rotary web printing press into an even number of sheets or groups of sheets, and two collecting and folding cylinders, each having a single collecting surface and arranged to collect an even number of alternate sheets or groups of sheets and fold them off to a predetermined point.

8. Means for cutting the web product of each cycle of the printing cylinders of a rotary web printing press into an even number of sheets or groups of sheets, and two collecting and folding cylinders, each having a single collecting surface and arranged to collect an even number of alternate sheets or groups of sheets and fold them off to a predetermined point, the said collecting and folding cylinders being approximately one-half the diameter of the printing cylinders.

9. Means for cutting the web product of each cycle of a rotary web printing press into an even number of sheets or groups of sheets, and two collecting and folding cylinders, each having a single set of aligned main and auxiliary grippers coacting to collect an even number of alternate sheets or groups of sheets and fold them off to a predetermined point.

10. Means for cutting the web product of each cycle of the printing cylinders of a rotary web printing press into an even number of sheets or groups of sheets, and two collecting and folding cylinders, each having a single set of aligned main and auxiliary grippers coacting to collect an even number of alternate sheets or groups of sheets and fold them off to a predetermined point, the said collecting and folding cylinders being approximately one-half the diameter of the printing cylinders.

11. Means for cutting the web product of each cycle of a rotary web printing press into an even number of sheets or groups of sheets, two folding and delivery cylinders, and two collecting and folding cylinders arranged to alternately receive said sheets or groups of sheets from the web cutting means, collect an even number of said sheets or groups of sheets and fold them off to their respective folding and delivery cylinders.

12. Means for cutting the web product of each cycle of a rotary web printing press into an even number of sheets or groups of sheets, two folding and delivery cylinders, and two collecting and folding cylinders arranged to alternately receive said sheets or groups of sheets from the web cutting means, collect an even number of said sheets or groups of sheets and fold them off to their respective folding and delivery cylinders, each of the said collecting and folding cylinders having a single collecting surface.

13. Means for cutting the web product of each cycle of a rotary web printing press into an even number of sheets or groups of sheets, two folding and delivery cylinders, and two collecting and folding cylinders arranged to alternately receive said sheets or groups of sheets from the web cutting means, collect an even number of said sheets or groups of sheets and fold them off to their respective folding and delivery cylinders, each of the said collecting and folding cylinders having a single collecting surface and a single folding blade, and each of the said folding and delivery cylinders having a single set of folding jaws.

14. Means for cutting the web product of each cycle of the printing cylinders of a rotary web printing press into an even number of sheets or groups of sheets, two folding and delivery cylinders, and two collecting and folding cylinders arranged to alternately receive said sheets or groups of sheets from the web cutting means, collect an even number of said sheets or groups of sheets and fold them off to their respective folding and delivery cylinders, the collecting and

folding cylinders being approximately one-half the diameter of the printing cylinders.

15. Means for cutting the web product of each cycle of the printing cylinders of a rotary web printing press into an even number of sheets or groups of sheets, two folding and delivery cylinders, and two collecting and folding cylinders arranged to alternately receive said sheets or groups of sheets from the web cutting means, collect an even number of said sheets or groups of sheets and fold them off to their respective folding and delivery cylinders, the collecting and folding cylinders being approximately one-half the diameter of the printing cylinders and the folding and delivery cylinders being twice the diameter of the collecting and folding cylinders.

16. Coacting rotary cutters arranged to cut the product of each cycle of a rotary web printing press into an even number of sheets or groups of sheets, and two collecting and folding cylinders, each having a single collecting surface arranged to receive and collect alternate sheets from the rotary cutters and fold off an even number of collected sheets or groups of sheets to a predetermined point.

17. Coacting rotary cutters arranged to cut the product of each cycle of the printing cylinders of a rotary web printing press into an even number of sheets or groups of sheets, and two collecting and folding cylinders, each having a single collecting surface arranged to receive and collect alternate sheets from the rotary cutters and fold off an even number of collected sheets or groups of sheets to a predetermined point, the collecting and folding cylinders being approximately one-half the diameter of the printing cylinders.

18. Means for cutting the product of each cycle of a rotary web printing press into an even number of sheets or groups of sheets, two collecting and folding cylinders, each having a single folding blade and a single set of main and auxiliary grippers, coacting to take alternate sheets or groups of sheets from the cutting means, collect an even number of the said sheets or groups of sheets and fold them off to a predetermined point.

19. Means for cutting the product of each cycle of a rotary web printing press into four sheets or groups of sheets, two collecting and folding cylinders, each having a single folding blade and a single set of main and auxiliary grippers, coacting to take alternate sheets or groups of sheets from the cutting means, collect alternately two of the said sheets or groups of sheets and fold them off to a predetermined point.

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