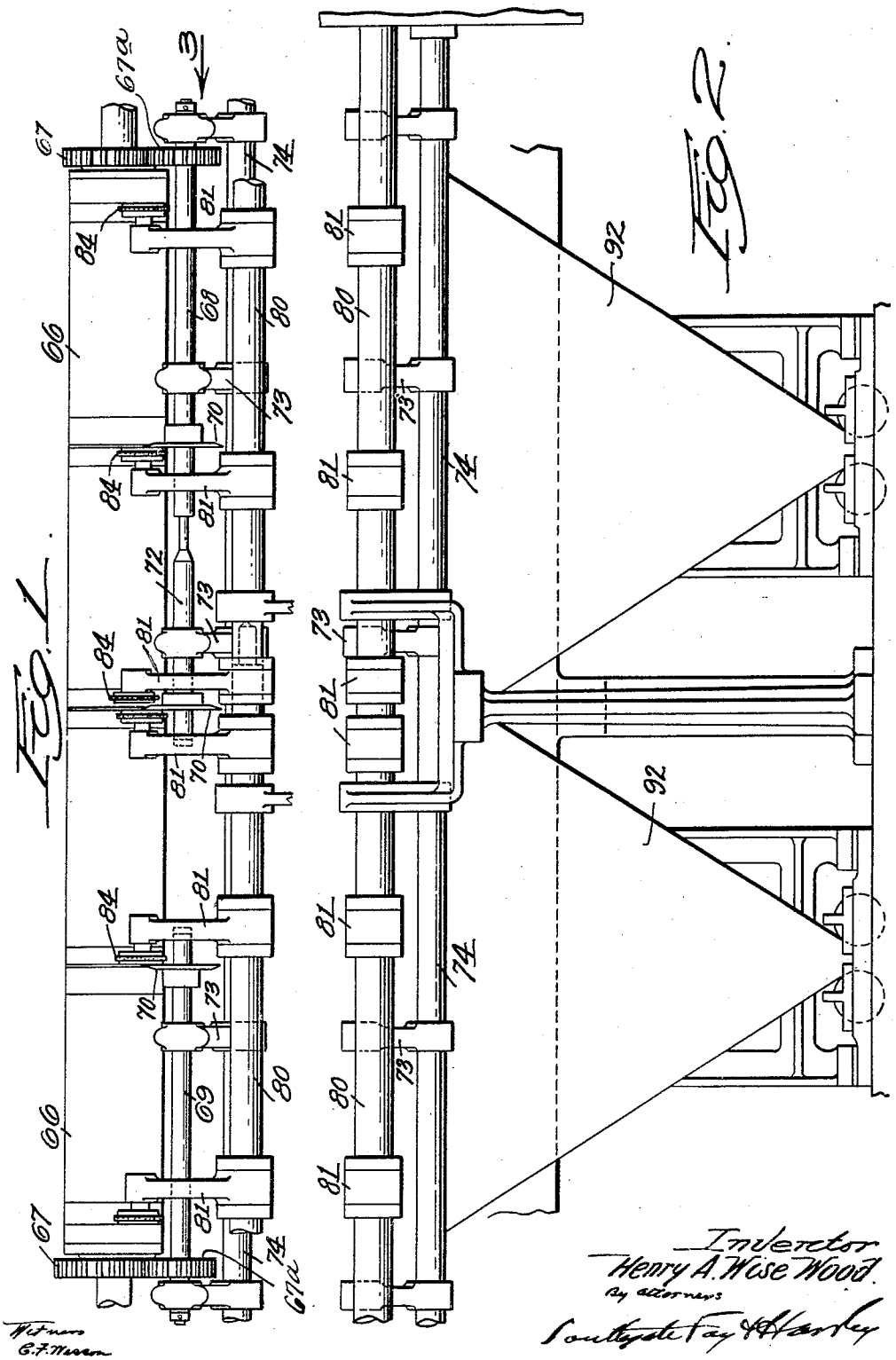
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WEB FEEDING AND SLITTING MECHANISM

Original Filed May 26, 1926 3 Sheets-Sheet 1



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WEB FEEDING AND SLITTING MECHANISM

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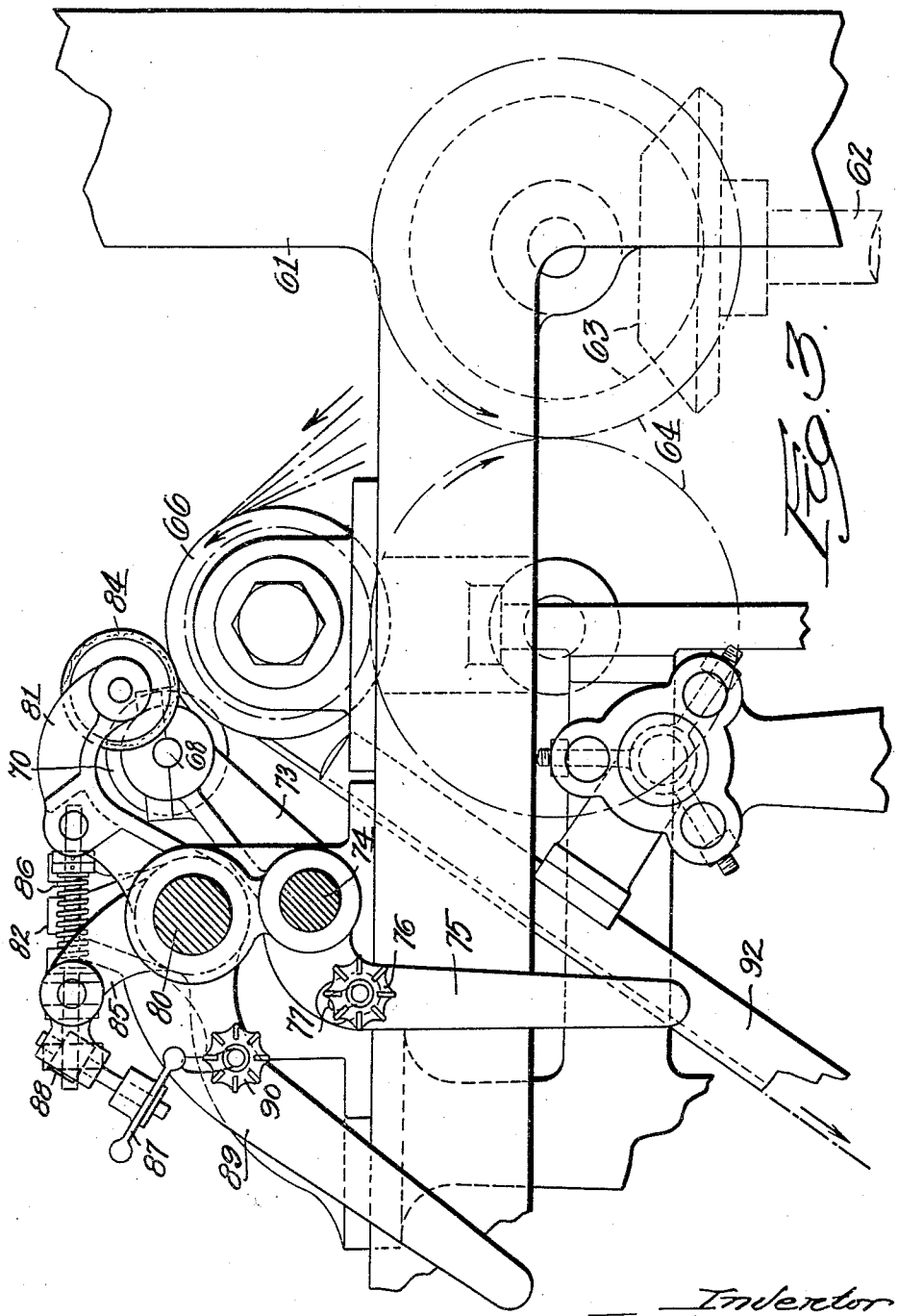


Fig. 3.

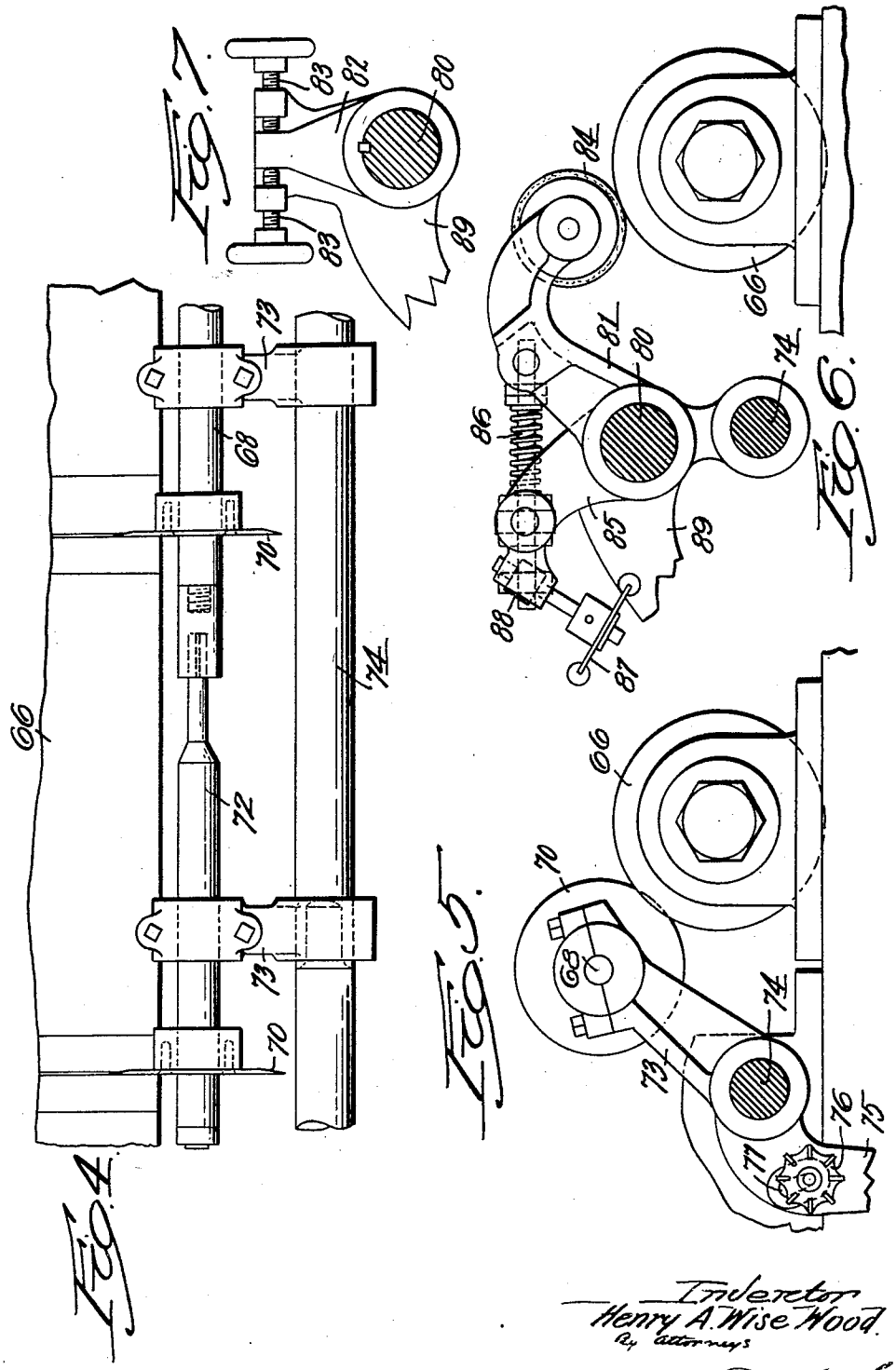
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WEB FEEDING AND SLITTING MECHANISM

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UNITED STATES PATENT OFFICE

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WEB FEEDING AND SLITTING MECHANISM

Original application filed May 26, 1926, Serial No. 111,787. Divided and this application filed April 6, 1929. Serial No. 353,197.

This is a division of my application for patent, Serial No. 111,787, filed May 26, 1926 on a high speed printing press.

The chief objects of this invention are to provide for properly registering the webs for printing before they are passed to the folder and after they are slitted; to provide means that can be made to bear equally on a thick web on one side of the machine and a thin web on the other as the web passes to the drag roll; to provide means whereby the web is adjusted before it enters the folder so that the head and tail margins will be in line with each other and means for equalizing any uneven tension which the web may have at that time, thus removing stresses from the web; to provide improvements in the slitters for the purpose of evening out any inequality in the web due to uneven rolls of paper; to provide independent drives for the propellers and slitters so as to permit their adjustment on one half the machine without disturbing those on the other half, and to provide an improved support for the propellers to permit of these adjustments.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a plan of the drag roller, propellers and slitters with parts omitted, showing a preferred form of this invention;

Fig. 2 is an elevation of the same showing the formers;

Fig. 3 is an end view of the same from the rear side as indicated by the arrow 3 in Fig. 1 and on a larger scale;

Fig. 4 is a detail view of the slitters and propellers on an enlarged scale;

Fig. 5 is an end view as indicated by the arrow 3 in Fig. 1;

Fig. 6 is an end view showing the relation of the propeller and its supporting elements to the drag roll, and

Fig. 7 is a similar view showing the adjusting means for the whole set of propellers.

A vertical shaft 62 on a folder frame 61 is the driving shaft of the folder. Near the top of this shaft are beveled gears 63 driving a train of gears 64 and through that a drag roll 66.

The drag roll 66 itself, as has been stated, is rotated positively with its shaft. By gears 67 on both ends, the drag roll rotates two shafts 68 and 69 through gears 67a each being provided with slitters 70. In this case the drag roll and slitters cooperate, the roll being grooved to provide for these slitters. Independent drives 67 are provided on the opposite ends of the drag roll for the two slitter shafts 68 and 69 for the purpose of permitting the raising and lowering of these shafts as well as the shafts 80, on one part of the machine without disturbing those on the other. This is useful when running a web only two pages wide or when running a greater number of webs on one-half the drag roll than on the other.

It will be noticed that the slitter shaft 68 is provided with a square hole, or at least a non-circular one, and that an extension 72 of this slitter shaft is provided with a corresponding sliding key so that one shaft will operate the other and we have two slitters at this end of the drag roll operated by the same power. These slitter shafts are mounted on arms 73, which are pivoted on a shaft 74 so that the slitters 70 can be moved out and in toward the drag roll 66. For this purpose each arm 73 is provided with an operating arm 75 with a bolt or screw 76 for adjusting it in a slot 77 in the arm. The bolt 76 is supported on the frame of the folder and the arm 75 can be adjusted out and in to regulate the pressure of the slitter or move it entirely out of contact with the drag roll.

In a similar way there is a cross shaft 80 which carries a series of arms 81 individually pivoted thereon. On the end of each of them there is a propeller roll 84 adapted to rest on the drag roll and keep the web against the drag roll to preserve the web speed and keep the paper from wrinkling and for the usual purposes for which these rolls are provided. Fixed on the shaft 80 is an upwardly extending arm 82. Two thumb screws 83 are supported on the frame on opposite sides of the arm 82. These are used to adjust the shaft 80 as a whole.

Each of the arms 81 is independently adjustable on this shaft. The shaft is provided with arms 85 fixed thereon and provided with spring pressed pins 86 which are pivotally connected with the arms 81 individually. These pins are adjusted longitudinally by hand wheels 87 and spiral gears 88 so that each propeller roller 84 can be adjusted to the drag roll with the desired pressure and all of the propeller rolls can be drawn back or pushed forward at once without disturbing their individual adjustment by the hand wheel 87.

At each side of the center slitter is a propeller individually adjustable so that at, or near, the slitting instant the sheet on each side of the slitter may be properly controlled. On one side of the press more webs may be running than on the other side of the press, i. e. there might be six thicknesses of web on the left-hand side and four on the right-hand side. It is obvious that if one propeller were used, it will not bear properly on the thinner side of the web and on the thicker side. This is remedied by using at each side of a slitter an independently adjustable propeller, which has made a great improvement. One can be set for the thick webs and the other for the thin webs.

The propeller rollers can be drawn back entirely out of the way in the same way as the slitters by a handle 89 and held back by an adjusting bolt 90 similar to the adjusting bolt 76. The provision for controlling the slitting of the web at one end of the drag roll independently of that of the other and the corresponding adjustment of the propeller rolls provides important advantages. More webs can be carried on one side of the drag roll than on the other. When the web is only two pages wide the propellers and slitters on one end can be entirely thrown out, leaving the rest of the roll to operate in the usual way. The usual formers 92 are supported in position to receive the webs from the drag roll.

The web is fed in any one of a number of different ways to the formers over the drag roll 66 which cooperates with propeller rolls 84 to contact with the web thereon and keep it going at web speed which is the surface speed of the drag rolls. Slitters 70 are mounted in a similar way, the propellers and slitters being provided with spring pressed or adjustable means for holding them in position. The propeller support shaft 80 is adjustable circumferentially and adapted to be held in adjusted position by the adjusting means itself. The slitter shaft is made up of independent parts so that either one of them can be drawn back when the machine is being used for a web of less than full width. Also one of the slitter shafts is made with a removable extension 72 having a slitter thereon for a similar purpose.

Although I have illustrated and described only a single form of the invention I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited in this respect but what I claim is:—

1. In a web feeding device, the combination with a drag roller, and means for positively driving the drag roller, of a slitting shaft having a slitting knife thereon for cooperating with the drag roller to slit the web longitudinally, positive means for driving the slitting shaft from the drag roller and means whereby the slitting shaft can be swung away from the drag roller and held in fixed position away from it.

2. In a web forwarding device, the combination with a drag roll and means for driving it, of a plurality of slitting shafts, each having a rotary slitter thereon and arranged in axial alignment, means for driving said slitting shafts from the opposite ends of the drag roller, and means whereby either of said slitting shafts can be moved away from the drag roll and held in fixed position away from it.

3. In a slitting device, the combination with a drag roll, of two slitter shafts having a telescoping non-circular connection at their adjacent ends, by which they can be connected or disconnected, a slitter on each shaft adapted to coact with the drag roll to provide two slitting couples, a support for said shafts, and means for positively driving one of said shafts.

4. In a paper web feeding device, the combination with a drag roll, means for positively driving the drag roll, a slitting shaft having a slitting knife thereon for cooperating with the drag roll to slit the web longitudinally, positive means for driving the slitting shaft from the drag roll and means whereby the slitting shaft can be swung away from the drag roll and held in fixed position away from it, of an auxiliary shaft connected with one of said slitter shafts in such a way as to be positively rotated thereby, and means for supporting it to move with the slitter shaft with which it is connected.

5. In a web forwarding device, the combination with a drag roll, means for positively driving it, two slitter shafts adjacent thereto and in alignment with each other, and slitters on each of said shafts to slit the web in different places along the width thereof, of means whereby either of said slitter shafts can be moved independently of the other to an inactive position, and held therein, without affecting the position of the other shaft.

6. The combination with a drag roll for forwarding a web of paper, of a supporting shaft parallel therewith, a series of arms loosely mounted on said shaft, each having

a propeller roll loosely mounted thereon for engaging the drag roll, a corresponding series of arms fixed to said shaft, springs for yieldingly forcing the free arms toward the drag roll, and means for adjusting the tension of said springs independently of each other.

7. The combination of a positively driven drag roll for forwarding a web of paper, a supporting shaft, a series of arms loosely mounted on said shaft, a propeller roll loosely mounted on each arm for engaging the drag roll, a corresponding series of arms fixed to said shaft and projecting upwardly, springs for yieldingly forcing the free arms toward the drag roll, means for adjusting the tension of said springs independently of each other, and means for turning the supporting shaft back to remove all the propellers from contact with the drag roll.

8. The combination of a positively driven drag roll for forwarding a web of paper, a supporting shaft, a slitter engaging the web on the drag roll, a series of arms loosely mounted on said shaft, a propeller roll loosely mounted on each arm for engaging the drag roll on opposite sides of the slitter, and means for turning the supporting shaft back to remove all the propellers from contact with the drag roll and retain them in retracted position.

9. The combination of a drag roll for forwarding a web, a slitter bearing on the drag roll, a propeller roll on each side of the slitter, means for independently adjusting each propeller roll and means for retaining it in adjusted position.

In testimony whereof I have hereunto affixed my signature.

HENRY A. WISE WOOD.