

O. ROESEN.
FOLDING MECHANISM.
APPLICATION FILED JULY 10, 1908.

981,882.

Patented Jan. 17, 1911.

2 SHEETS—SHEET 1.

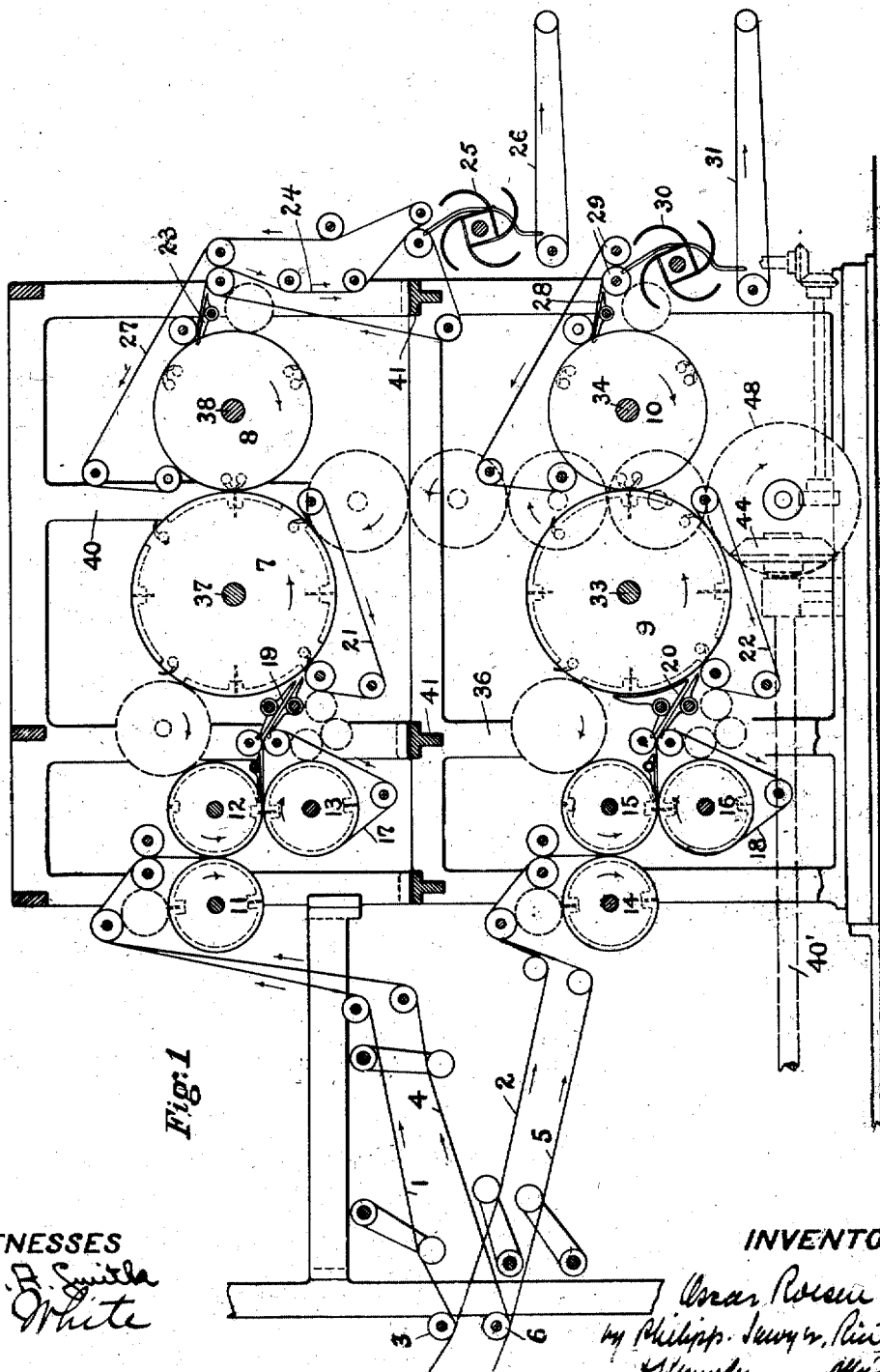


Fig. 1

WITNESSES

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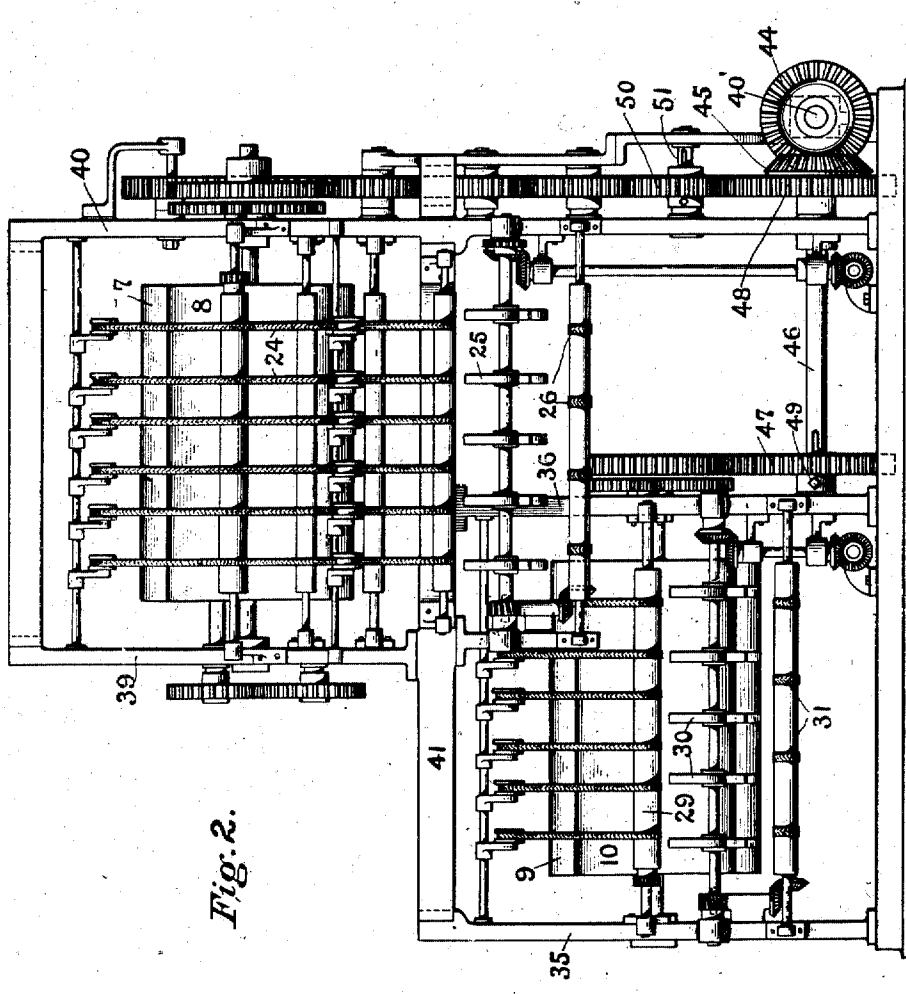


Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

OSCAR ROESEN, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO R. HOE AND CO., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

FOLDING MECHANISM.

981,882.

Specification of Letters Patent.

Patented Jan. 17, 1911.

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To all whom it may concern:

Be it known that I, OSCAR ROESEN, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Folding Mechanisms, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in folding mechanisms for high speed rotary web printing machines.

It is common in the art and in that class of machines known as straight line machines to run a multiple width web after it leaves the printing couples direct, that is, in a straight line and without sidewise deflection, to folding mechanisms of the longitudinal type, these mechanisms operating to produce folds in the webs which are parallel with the run of the webs. As each of these folding mechanisms folds its web longitudinally out of the path in which the web is traveling, no difficulty exists in properly locating the folding mechanisms adjoining each other, because there is plenty of room, owing to the peculiar characteristics of the folders, to dispose the operating mechanisms. When, however, it was desired to give the webs a fold which is transverse to the path in which the webs are running, it has been customary to use turner bars by which the webs were deflected sidewise, this construction affording the necessary space for installing the folding devices and their operating mechanisms. It will be understood that the folding mechanisms for high speed web machines, and particularly those which produce a transverse fold, must be run at very high speeds, and they must be very strongly and substantially built in order to stand the strains set up by the high speeds at which they are run. This necessitates heavy framing and operating parts, requiring considerable space which was afforded by deflecting the webs. Heretofore, therefore, the advantages incident to a straight line or direct run of the webs have not been obtained where transverse folding mechanisms were employed.

This invention has for its object to produce an improved folding mechanism for producing transverse folds in webs which are being run side by side, the folding de-

vice for each web being so located that the webs may be run direct, that is, in a straight line, without sidewise deflection.

With this and other objects in view, the invention consists in certain constructions, and in certain parts, improvements and combinations as will be hereinafter fully described and then specifically pointed out.

Referring to the accompanying drawings—Figure 1 illustrates in diagrammatic side elevation a folding mechanism constructed in accordance with the invention. Fig. 2 is a front elevation of the construction illustrated in Fig. 1.

Referring to the drawings, 1 and 2 indicate two webs which are advanced side by side underneath a guide roll 3.

4 and 5 indicate two similar webs which are advanced side by side underneath a guide roll 6.

Machines constructed in accordance with the invention will employ transverse folding mechanisms, that is, folding mechanisms which are to produce folds which are transverse to the run of the web. While the particular construction of transverse folding mechanism employed may be varied, in the construction illustrated, the folding mechanisms are of the rotary type and there will be one set of such rotary folding mechanisms for each of the webs which are advanced side by side. In the particular construction illustrated, two such rotary folding mechanisms are employed, these folding mechanisms being superposed. One of these folding mechanisms, as illustrated, comprises a tucking cylinder 7 and a jaw cylinder 8, this form of transverse folder being well-known in the art. The other folding mechanism illustrated comprises a tucking cylinder 9 and a jaw cylinder 10, these cylinders being similar in character to those just described. Prior to being operated upon by the cylinders 7, 8 and 9, 10, the webs should be separated into sheets. In the particular construction illustrated, this is effected by rotary cutting cylinders, the cylinders operating in connection with the folding cylinders 7, 8 being marked 11, 12 and 13, and the cylinders operating in connection with the folding cylinders 9, 10 being marked 14, 15 and 16. In this cutting construction, the cylinders 11, 12 and 14, 15 operate to partially sever the webs, the webs being completely severed by the cylinders 13, 16 operating in

connection with the cylinders 12, 15. This double cutting construction enables forwarding tapes 17, 18 to be employed, by which the webs formed may be positively advanced to the folding cylinders. In the particular construction illustrated, the sheets finally cut by the cylinders 12, 13, 15, 16 are advanced through guides 19, 20 to the cylinders 7 and 9 respectively, tapes 21 and 22 being employed in connection with these cylinders to keep the sheets on the cylinders.

After the transverse folds have been effected in the webs 1 and 4, in the particular construction shown, the sheets may be delivered in any suitable manner. In the particular construction shown, the sheets from the transverse folding mechanism 7, 8 are directed by a guide 23 into a tape pathway consisting of two sets of coating tapes 24, and to a rotary fly 25, which fly in turn delivers the sheets to a carrier 26 of ordinary construction. If desired, tapes 27 may be used to cooperate with the cylinder 8 and the guide 23 in forwarding the sheets. The sheets from the cylinder 10 are directed by means of a guide 28 to a pair of rolls 29 which in turn deliver the sheets to a fly 30, this fly depositing them on an ordinary carrier 31. Tapes, as 32, may be employed to cooperate with the cylinder 10 and the guides 28 in forwarding the sheets.

The folding mechanisms may be mounted and driven in any suitable manner. In machines constructed in accordance with the invention, the transverse folding mechanisms whatever be their construction, will be superposed and will be so located that the webs may be led direct, that is, without sidewise deflection, to the mechanisms. In the machine illustrated, the folding cylinders 9, 10 are mounted on shafts 33, 34, these shafts being supported in side frames 35, 36. The cylinders 7, 8 are, in the particular machine illustrated, mounted on shafts 37, 38, these shafts being supported in side frames 39, 40. These side frames 39, 40 are, in the particular machine shown, carried on cross bars 41 which are supported in part on the side frames 35, 36, and in part by a frame 42 which, as shown, may be a continuation of the side frame 40. It will be observed that the side frames 39, 40 are so disposed with relation to the side frames 35, 36 that the folding cylinders 7, 8 and the parts connected therewith are offset with respect to the folding cylinders 9, 10 and the parts connected therewith. By superposing the folding mechanisms and arranging them as described, it is possible to make the two sets of folding mechanisms, their shafts and frames, and the parts connected therewith, as strong as may be necessary and at the same time to lead the webs 1 and 2 directly into the folding mechanisms, that is, without deflecting them sidewise.

When, as in the particular construction illustrated, two sets of webs are advanced in superposed paths, they are conveniently handled and directed to the folding mechanisms in the same manner as if a single set of webs were employed. In that case, the right hand halves of the webs marked 1 and 4 can be led directly through the cutting cylinders into the folding mechanisms, the webs being associated, in the particular construction illustrated before they reach the cutting cylinders. In the same way, the left hand webs 2, 5 are led direct to the cylinder 9, 10, the webs being associated before advanced side by side underneath these cylinders.

The driving mechanism for the folders may be of any suitable character. In the construction shown, the main shaft is illustrated at 40', this shaft carrying a miter gear 44 which meshes with a cylinder 45 on a countershaft 46. This shaft carries a driving gear 47 from which, through suitable gearing, the various devices which constitute the lower folding mechanism may be driven. The shaft 46 also carries another driving gear 48 which, in the machine shown, through a suitable vertically arranged train of gears, drives the upper folding mechanism. The construction illustrated further lends itself readily to the operation of either folding mechanism independently in case it be desired. By forming the gear 47 so that it may be slid on its shaft and connecting its hub to the shaft in any suitable manner, as by a set screw 49, the operations of the lower folding mechanism are interrupted. Similarly, by arranging one of the train of gears which drives the upper folding mechanism, as for instance, the gear marked 50, which is the gear which meshes directly with the gear 45, so as to slide on its support or stud 51, the operation of the upper folding mechanism may be interrupted.

It will be understood that suitable web guides not necessary to describe will be used where necessary in order to properly control the webs.

Changes and variations may be made in the construction by which the invention is carried into effect. The invention is not, therefore, to be limited to the specific constructions hereinbefore described and illustrated in the accompanying drawings.

What is claimed is:—

1. The combination with means for advancing a plurality of unfolded webs side by side, of a plurality of superposed folding mechanisms operating to produce folds transversely to the run of the webs, and guides whereby said webs may be led direct to the folding mechanisms.

2. The combination with means for advancing a plurality of unfolded webs side

by side, of a plurality of superposed rotary folding mechanisms operating to produce folds transversely to the run of the webs, and guides whereby the webs may be
5 led direct to the folding mechanisms.

3. The combination with means for advancing two sets of webs in superposed paths, each set comprising two unfolded webs running side by side, of two super-
10 posed folding mechanisms operating to produce folds transversely to the run of the webs, means for leading the right hand web

of each set direct to one of the folding mechanisms, and means for leading the left hand web of each set direct to the other folding
15 mechanisms.

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

OSCAR ROESEN.

Witnesses:

WILLIAM KOERNER,
F. A. BEYER.

It is hereby certified that in Letters Patent No. 981,882, granted January 17, 1911, upon the application of Oscar Roesen, of New York, N. Y., for an improvement in "Folding Mechanisms," an error appears in the printed specification requiring correction as follows: Page 2, line 80, the words "are advanced side by side underneath a" should be stricken out and the words and syllable *fore they reach the cutting mechanism for* inserted instead; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of August, A. D., 1911.

[SEAL.]

E. B. MOORE,
Commissioner of Patents.