(No Model.) 2 Sheets—Sheet 1.

W. SPALCKHAVER.

MEANS FOR SECURING REGISTRY OF ASSOCIATED SHEETS.

No. 597,696. Patented Jan. 18, 1898.

Fig. 1.

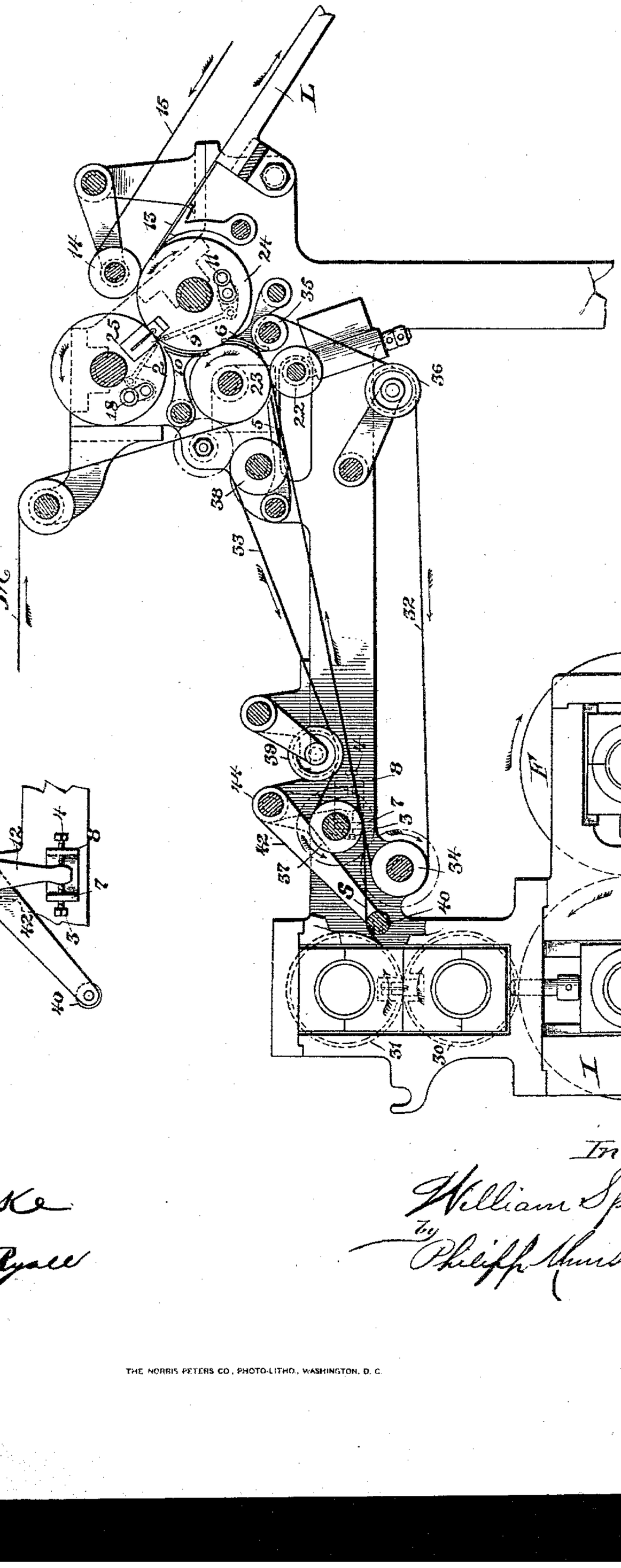

Fig. 2.

Attest
A. D. Bourke
Frank Ryall

Inventor,
William Spalckhaver
by Philipp Munson & Phelps
Attys.

(No Model.) 2 Sheets—Sheet 2.

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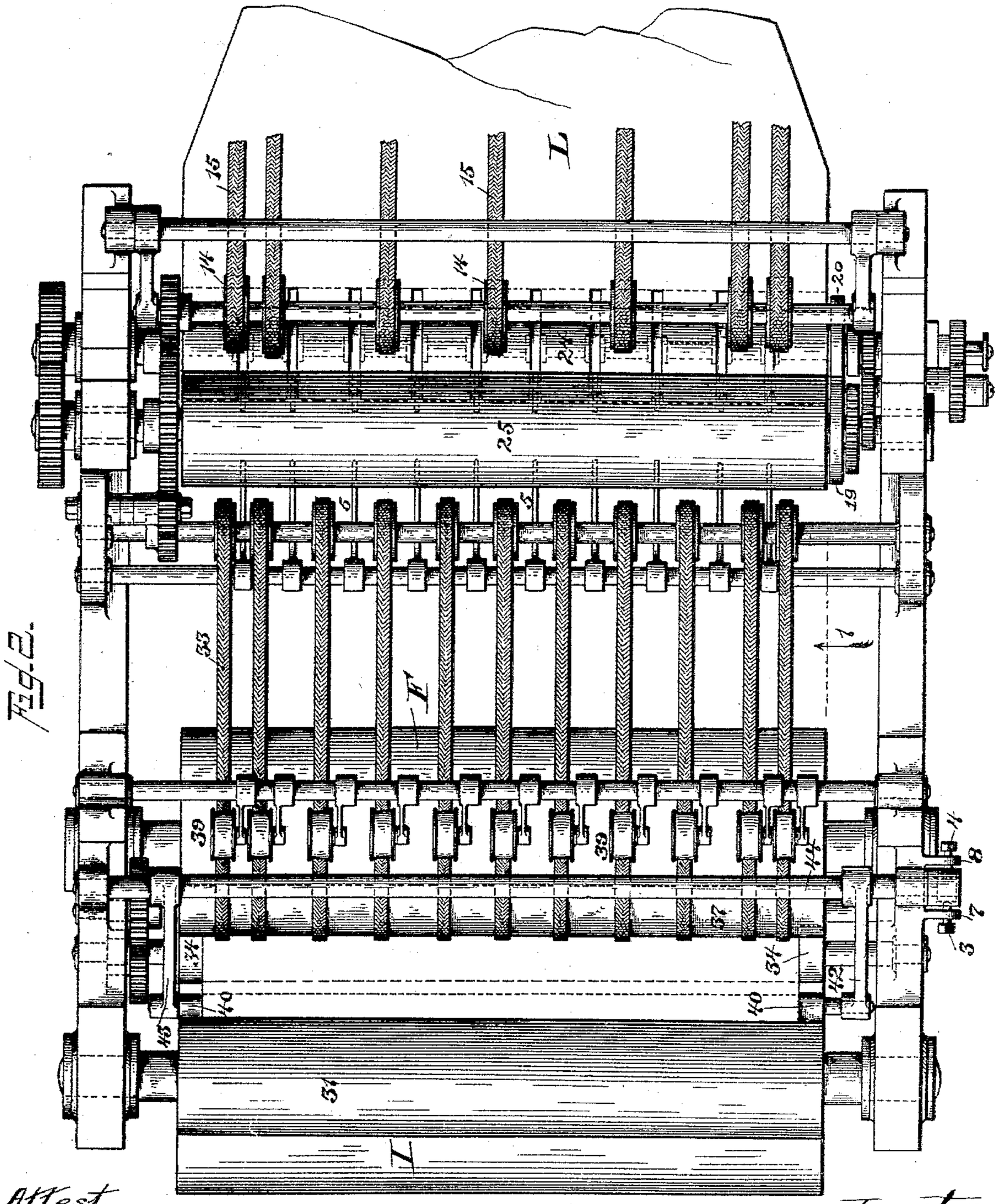

Fig. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM SPALCKHAVER, OF BROOKLYN, NEW YORK, ASSIGNOR TO ROBERT HOE, THEODORE H. MEAD, AND CHARLES W. CARPENTER, OF NEW YORK, N. Y.

MEANS FOR SECURING REGISTRY OF ASSOCIATED SHEETS.

SPECIFICATION forming part of Letters Patent No. 597,696, dated January 18, 1898.

Application filed April 12, 1895. Serial No. 545,453. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SPALCKHAVER, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Means for Securing the Registry of Associated Sheets, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of this invention is to provide in a fast-running printing-machine a means for securing accurate register, with the rapidly-running main web or sheet portion thereof, of a supplement-sheet detached from a supplement-web and associated therewith while running slowly, as at half-speed, whereby the main and supplemental sheet lengths shall be correctly combined to form a perfect product. I attain this object in such printing-machines by providing the slow or half-speed pathway for conducting the supplemental sheet with a compensator, whereby such path is lengthened or shortened between the cutting-cylinders, which may perforate or sever the sheet, and the nipping-rollers, which increase its speed, as will be hereinafter pointed out.

The drawings illustrate so much of the delivery mechanism of a printing-machine as is necessary for an explanation of this invention, and a full description of this construction, embodying all the features of the invention in their preferred form, will now be given in connection with the drawings, and the features forming the invention then specifically pointed out in the claims, Figure 1 being a side elevation thereof, with some parts shown in section; Fig. 2, a plan view of a portion of the devices shown in Fig. 1, and Fig. 3 a detail of some of the parts.

The mechanism shown is a portion of the delivery apparatus of a web-printing machine having mechanisms for printing two webs. Thus the main web M, which has been printed on both sides by any suitable arrangement of form and impression cylinders, is shown as being conducted outward for delivery through guiding-rollers 22 23.

The supplemental web S is shown as being received from the last form and impression cylinders F I, which run at one-half the speed of the mechanisms operating upon the main web, being directed therefrom between cutting-cylinders 30 31, and thence led into a guiding-pathway consisting mainly of tapes 32 33 and extending to said guiding-rollers 22 23. The tapes 32 run from a roller 34 over rollers 22 and 35, being stretched intermediately by pulleys 36, and the tapes 33 run from rollers 37 and over pulleys 38, being stretched intermediately by pulleys 39.

The guiding-rollers 22 and 23 are nipping-rollers, the former being made adjustable to secure this action, and they are situated a distance in advance of the rollers 37 of about a sheet's length, so that when the foremost sheet length is detached from the supplemental web S the leading end of the web may be guided onward by the taped pathway, and although these rollers 22 23 run at the high or double speed of the mechanism operating upon the main web and the tapes 32 33 run at a like speed said tapes are separated sufficiently at the entrance of the pathway they form or are free enough at and beyond the rollers 37 to permit the slow movement of the web in such pathway until it is nipped at the rollers 22 23, as is well understood. This taped or guiding pathway is extended between the pulleys 38 to the roller 23 by guides or conductors 5 and delivers the web sheet length or sheet to a delivery-cylinder 24 and a collecting-cylinder 25, the space between the roller 35 and the delivery-cylinder 24 being bridged in a like manner by curved guides 6 and that between the roller 23 and the collecting-cylinder 25 by curved guides 10, the ends of said guides extending into recesses provided for them, as shown.

The delivery-cylinder 24 is provided with sheet-controlling pins 9, which are automatically moved through a rock-shaft and rock-arm 11 by an outside cam 19, so as to be protruded to engage the leading ends of the severed material to retain it upon the cylinder and be withdrawn to release said ends when the material is to leave said cylinder either to deliver the sheets to the collecting-cylinder 25 or for final delivery at the fixed guides

13, which enter recesses in the delivery-cylinder 24 to guide the material off its surface. The collecting-cylinder is similarly provided with sheet-controlling pins 2, likewise automatically moved through a rock-shaft and rock-arm 18 by an outside cam 20, so as to be protruded to engage the leading end of the sheet or sheets which are to be carried onto said cylinder and be withdrawn to release the same for reëngagement by the pins of cylinder 24 when the latter is to deliver the collected sheets.

The collecting-cylinder 25 is provided with one member of a cutting mechanism, as a cutting-blade, which coöperates with a cutting-slot provided in the delivery-cylinder 24, and this delivery-cylinder 24 has associated with it pulleys 14, around which run tapes 15, that coöperate with fixed guides 13 in conducting the collected sheets onto a longitudinal folder L.

The nipping-rollers 22 23 and the tapes 32 33 run with the speed of the main printing-machine, or at double the speed of the supplement-printing machine and the cutting-cylinders 30 31 connected therewith, and these cutting-cylinders operate to so partially sever the supplemental web S transversely as to divide the same into sheet lengths held together sufficiently to cause them to maintain the web form in moving into and while slowly traveling in the said taped or guiding pathway, yet enable the foremost sheet length thereof to be readily detached from the web proper when the leading end of such foremost sheet length is nipped by the rollers 22 23 and thus caused to take up their higher speed. In connection with this taped pathway leading from the cutting-cylinders 30 31 to the nipping-rollers 22 23, where the main web M and the supplemental web S are brought together and made to travel with like speed, there is arranged a compensator, which consists of a roll 40, over which the supplemental web S is made to travel. This roller 40 is hung in journals formed in the ends of arms 42 43, (see Fig. 2,) which arms project from a rock-shaft 44, provided on one end with a rock-arm 12, (see Fig. 3,) which plays between two two cheek-plates 7 8, through which extend adjusting-screws 3 4, whereby said arm may be moved and the shaft rocked and the roller 40 raised or lowered, so as to extend or diminish the length of the pathway of the web S in such minute degree as to accurately control the run of said web S, so that after the nipping-rollers 22 23 have detached the forward or leading end therefrom the following portion of the partially-severed web S, which in practice will sometimes lag behind or run ahead and thus get out of register with the sheet lengths of the main or full-speed web, may be made to take its proper position, so that sheets therefrom will be associated with sheet lengths of the main web in accurate register therewith, whereby composite products made from the two webs, as ten and twelve page newspapers, will have said pages accurately related to each other.

What I claim is—

1. The combination with a main-web-feeding mechanism, a supplemental-sheet-feeding mechanism and nipping-rollers for associating supplemental sheets with the main web, said supplemental-sheet-feeding mechanism traveling at less speed than the web-feeding mechanism and the nipping-rollers, of an adjustable compensating roller acting on each sheet between the supplemental-sheet-feeding mechanism and the nipping-rollers for varying the length of its travel to the nipping-rollers, substantially as described.

2. The combination with a main-web-feeding mechanism, a supplemental-web-feeding mechanism and nipping-rollers for associating supplemental sheet lengths with the main web, said supplemental-web-feeding mechanism traveling at less speed than the main-web-feeding mechanism and the nipping-rollers, of mechanism for severing the supplemental web into sheet lengths, and a compensating roller acting upon each sheet length between the supplemental-web feeding and severing mechanisms and the nipping-rollers for varying the length of its travel to the nipping-rollers, substantially as described.

3. The combination with a main-web-feeding mechanism, a supplemental-web-feeding mechanism and an associating mechanism for associating supplemental sheet lengths with the main web, said supplemental-web-feeding mechanism traveling at less speed than the main-web feeding and associating mechanisms, of a web-severer for partially severing the supplemental web transversely into sheet lengths, and an adjustable compensating roller acting on each sheet between the supplemental-web feeding and severing mechanisms and the associating mechanism for varying the length of its travel to the associating mechanism, substantially as described.

4. The combination with a main-web-feeding mechanism, a supplemental-web-feeding mechanism and a pair of nipping-rollers for associating supplemental sheet lengths with the main web, said supplemental-web-feeding mechanism traveling at less speed than the main-web-feeding mechanism and the nipping-rollers, of a web-severer for partially severing the supplemental web transversely into sheet lengths, and an adjustable compensating roller acting on each sheet length between the supplemental-web feeding and severing mechanisms and the nipping-rollers for varying the length of its travel to the nipping-rollers, substantially as described.

5. The combination with a main-web-feeding mechanism, a supplemental-web-feeding mechanism and a pair of nipping-rollers for associating supplemental sheet lengths with the main web, said supplemental-web-feeding mechanism traveling at less speed than the main-web-feeding mechanism and the

nipping-rollers, of a web-severer for partially severing the supplemental web transversely into sheet lengths, tapes for receiving the supplemental sheet lengths from said feeding mechanism and conducting them to the nipping-rollers, and an adjustable compensating roller acting on each sheet length between the supplemental-web-feeding mechanism and the entrance to the tapes for varying the length of its travel to the nipping-rollers, substantially as described.

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

WILLIAM SPALCKHAVER.

Witnesses:
F. W. H. CRANE,
E. L. SPEIR.