

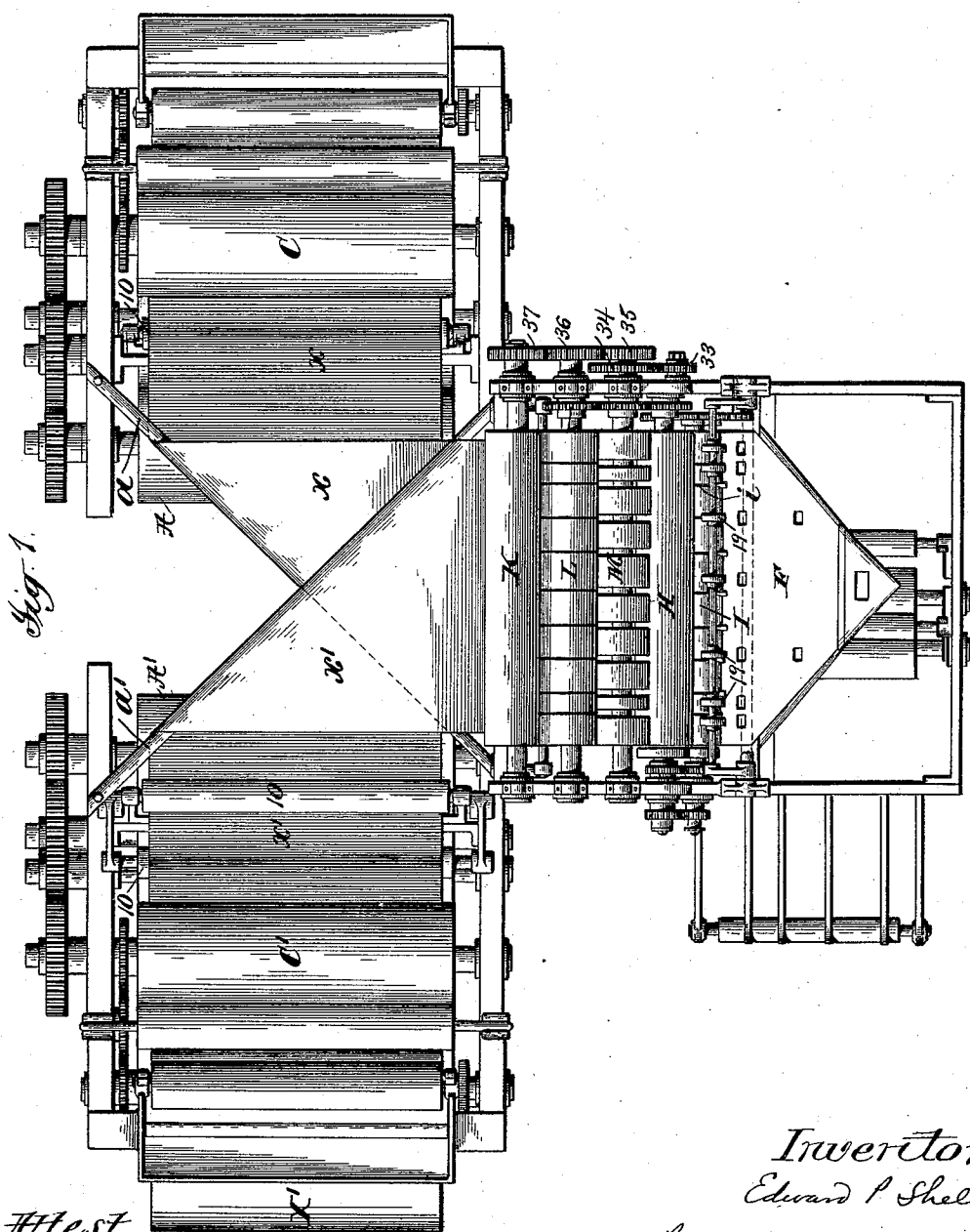
(No Model.)

6 Sheets—Sheet 1.

E. P. SHELDON.
PRINTING MACHINE.

No. 572,225.

Patented Dec. 1, 1896.



Attest
Jm. B. Borch
A. V. Borch

Inventor:
Edward P. Sheldon
By Philipp Munster Phelps
Atty's

(No Model.)

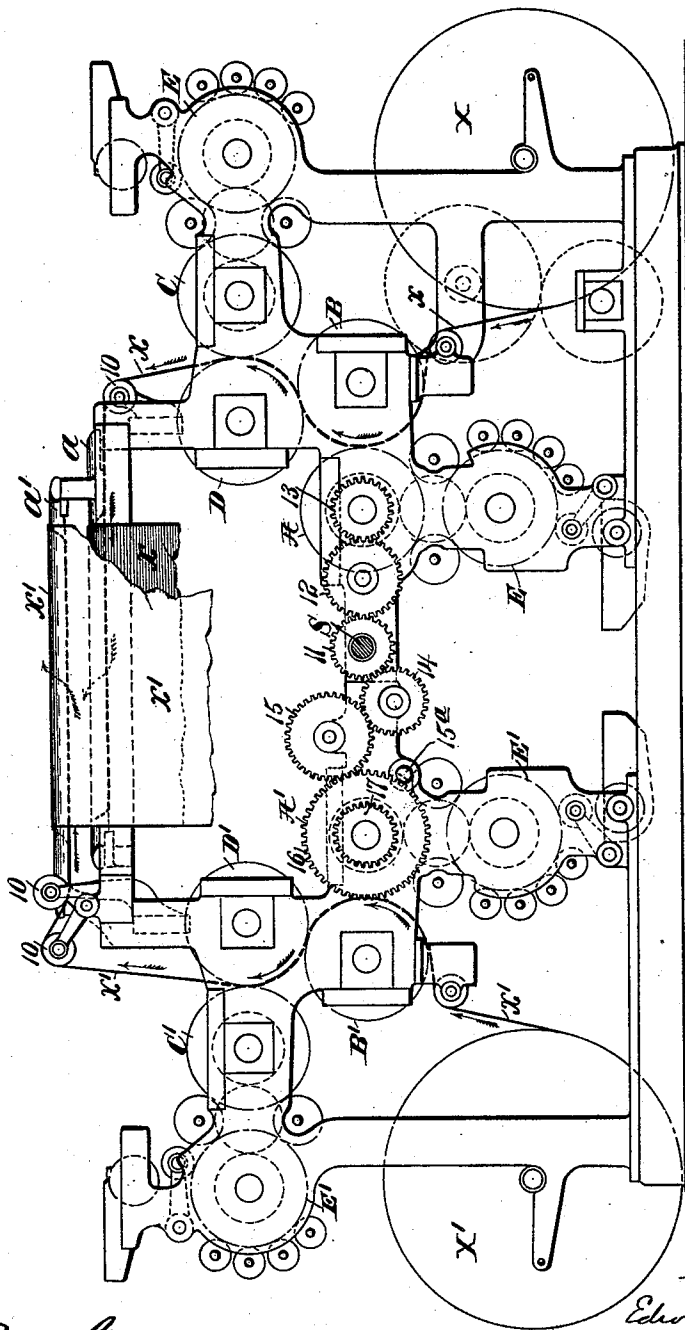
6 Sheets—Sheet 2.

E. P. SHELDON.
PRINTING MACHINE.

No. 572.225.

Patented Dec. 1, 1896.

Fig. 2.



Attest:
Wm. B. Dorr
J. W. Bunker

Inventor
Edward P. Sheldon
By *Philip M. Munroe*
Atty

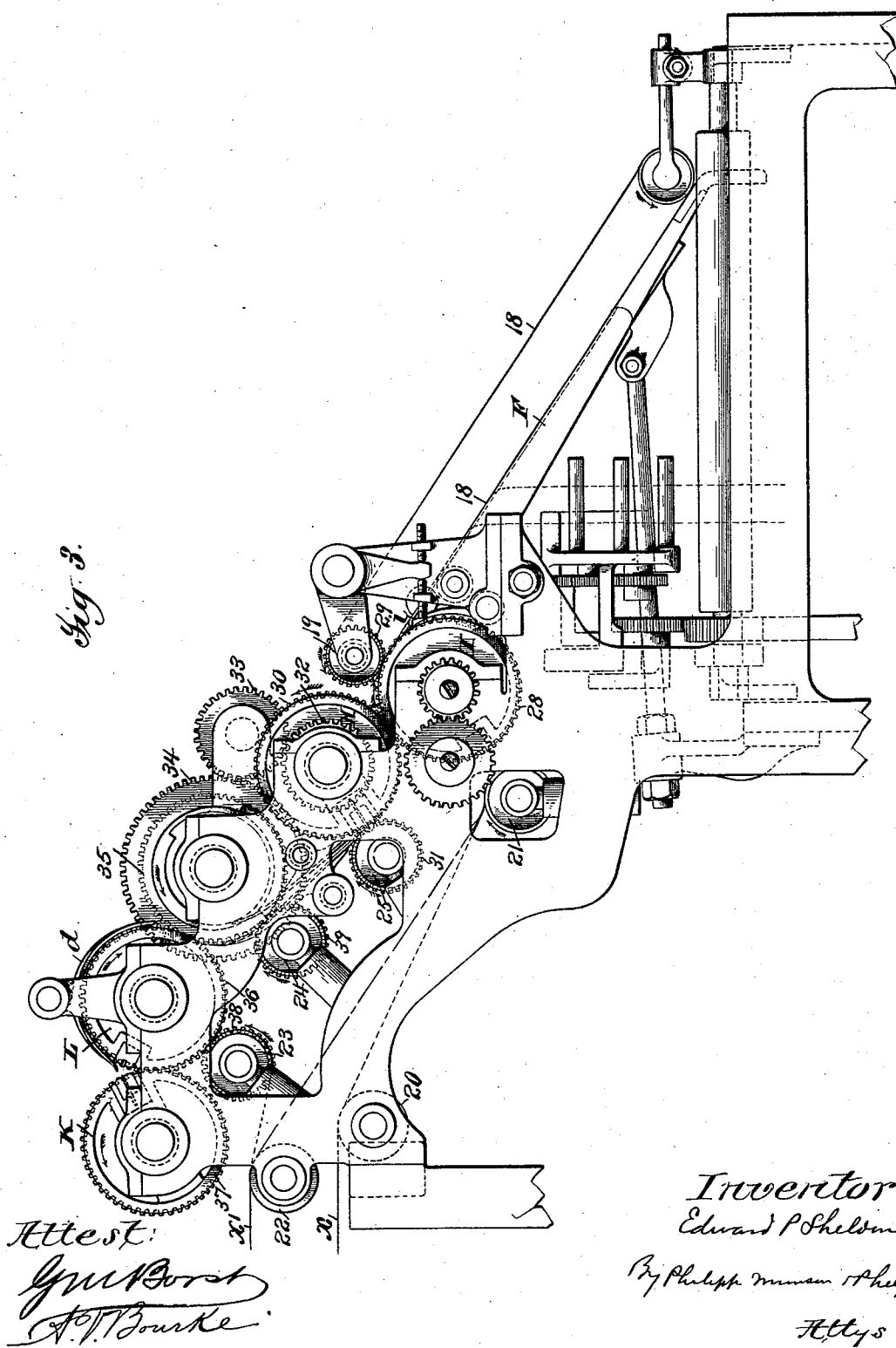
(No Model.)

6 Sheets—Sheet 3.

E. P. SHELDON.
PRINTING MACHINE.

No. 572,225.

Patented Dec. 1, 1896.



(No Model.)

6 Sheets—Sheet 4.

E. P. SHELDON.
PRINTING MACHINE.

No. 572,225.

Patented Dec. 1, 1896.

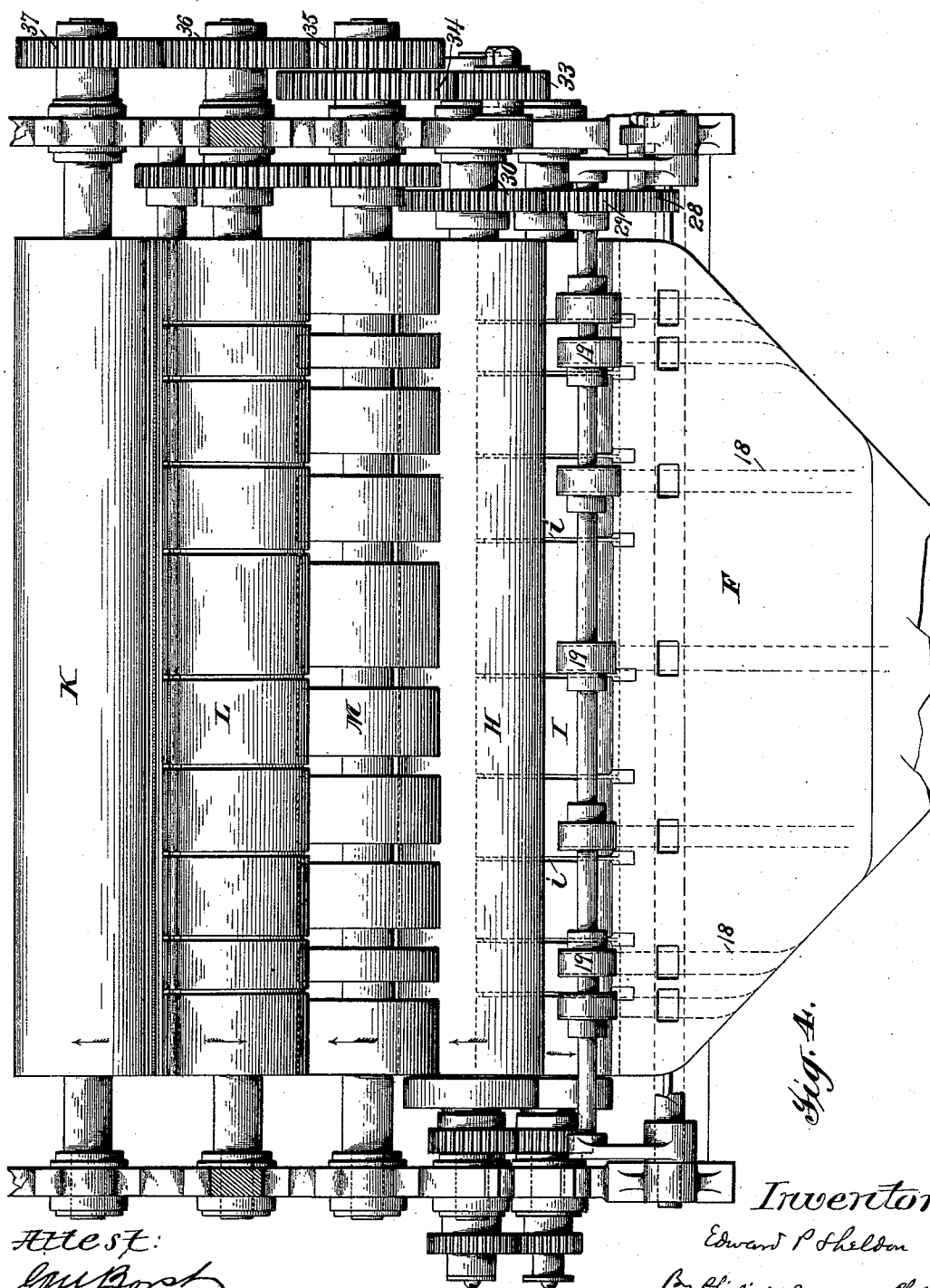


Fig. 4.

Inventor

Edward P. Sheldon

By Philipp Munson Phelps

Attys

Attest:

J. M. Borch
A. V. T. Bourke

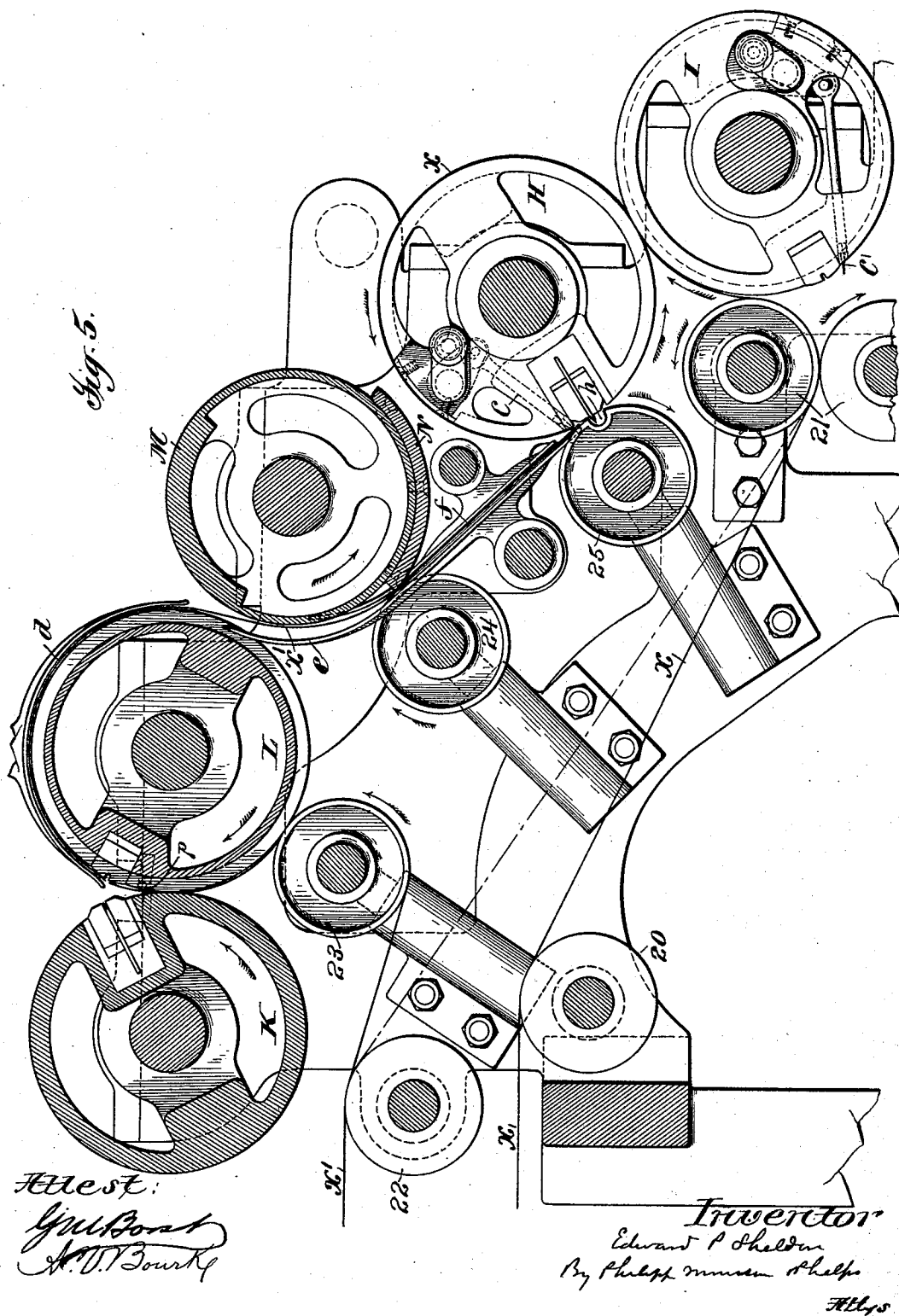
(No Model.)

6 Sheets—Sheet 5.

E. P. SHELDON.
PRINTING MACHINE.

No. 572,225.

Patented Dec. 1, 1896.



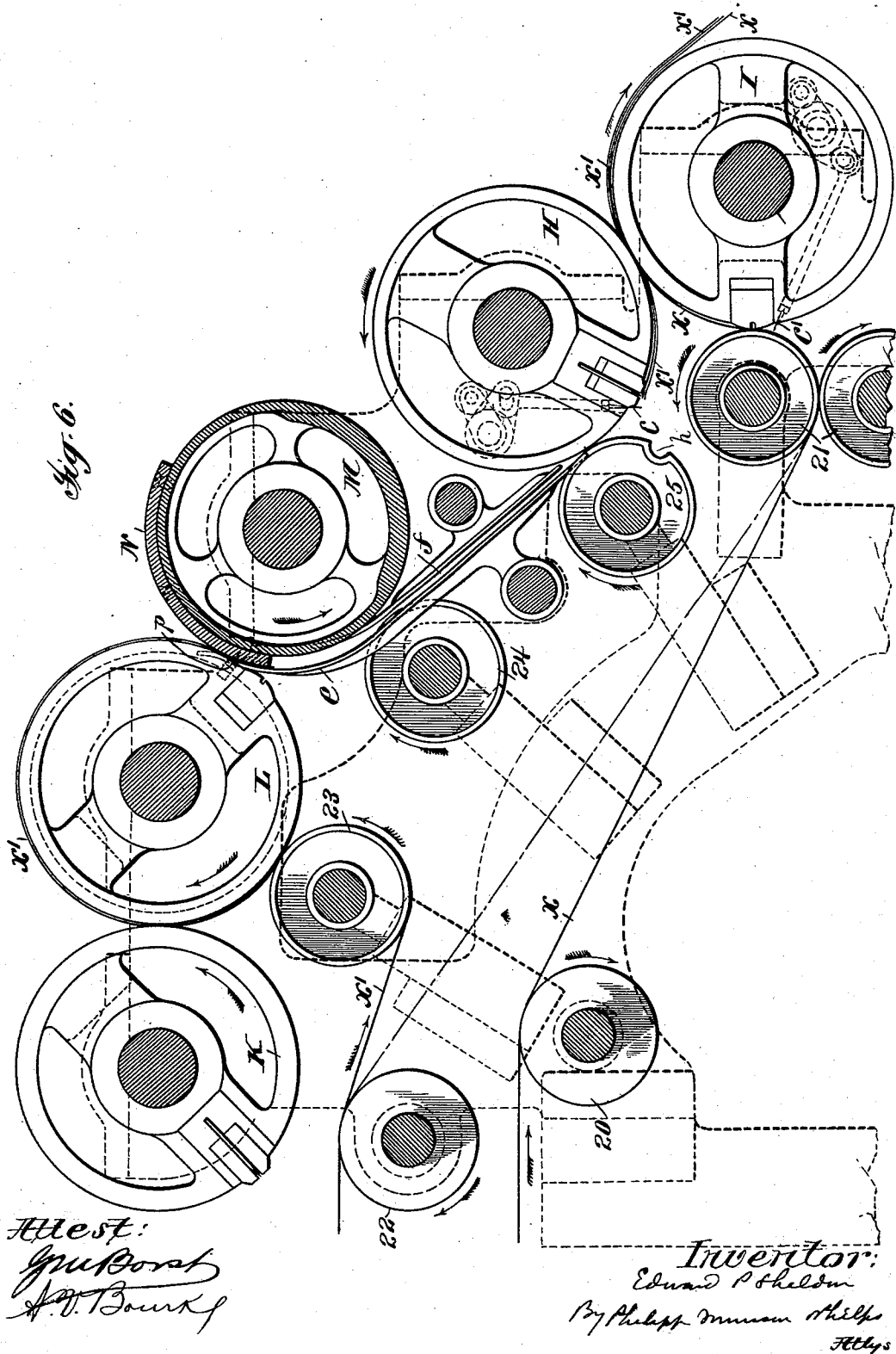
(No Model.)

6 Sheets—Sheet 6.

E. P. SHELDON.
PRINTING MACHINE.

No. 572,225.

Patented Dec. 1, 1896.



UNITED STATES PATENT OFFICE.

EDWARD P. SHELDON, OF BROOKLYN, NEW YORK, ASSIGNOR TO ROBERT HOE, THEODORE H. MEAD, AND CHARLES W. CARPENTER, OF NEW YORK, N. Y.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 572,225, dated December 1, 1896.

Application filed February 10, 1896. Serial No. 578,688. (No model.)

To all whom it may concern:

Be it known that I, EDWARD P. SHELDON, 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 Delivery Mechanism for Printing-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates especially to an improved delivery mechanism for use in that class of web-printing machines in which two or more webs are printed and sheets from one web associated with the other web or with one or more sheets cut from the latter to make a single product, the general object of the invention being to provide a web-printing machine of this class in which the proper registry of the sheets from the two webs shall be assured. Further objects are to provide such a construction of simple and compact form, by which the supplement-sheet may be inset between the main sheets, and to provide an improved delivery mechanism by which a large variety of products may conveniently be secured from two or more webs.

While, however, the invention relates especially to machines in which associating mechanism is employed, certain features of the mechanism described herein for severing sheets from a web and advancing them may be used in constructions in which such sheets are not associated with another web or sheets, but severed and advanced to feeding or delivery mechanism of other forms, and these features in themselves form a part of the invention.

For a full understanding of the invention a detailed description of the same will now be given, reference being had to the accompanying drawings, forming a part of this specification and showing a construction of the preferred form embodying all the features of the invention, and the features forming the invention will then be specifically pointed out in the claims.

In said drawings, Figure 1 is a plan view of a complete two-web-printing machine embodying all the features of the invention. Fig. 2 is an end elevation of the printing

mechanism, looking from the delivery mechanism. Fig. 3 is an elevation of one side of the associating mechanism. Fig. 4 is a plan view of the same. Figs. 5 and 6 are vertical longitudinal sections of the associating mechanism, on an enlarged scale, showing the mechanism in different positions.

Referring to said drawings, it will be understood that the printing mechanism used in combination with the associating mechanism may be of any suitable form other than that shown, but the construction illustrated forms a compact and convenient construction, securing by simple means the leading of the two webs from the different printing mechanisms to the associating mechanism in line with each other.

As shown, the two printing mechanisms are arranged side by side at one end of the machine with the webs led transversely to the latter, the printing mechanisms in the form shown being of a common construction, the main mechanism having the two pairs of type and impression cylinders A B and C D, and the supplement mechanism the two similar pairs A' B' and C' D', the type-cylinders of the respective printing mechanisms being provided with inking mechanisms E E', which may be of any suitable form. The webs x x' pass upward from the respective web-rolls X X' to and through their respective printing mechanisms, and thence upward over guide-rolls 10 to the respective turning-bars a a' , which are set at different elevations, so that from these turning-bars the two webs are led in line one above the other, with the web x below the web x' , to the associating and delivery mechanism.

The main printing mechanism, that is, the mechanism printing the web x , is driven at full speed from the shaft S by gear 11 on said shaft and intermediate 12, meshing with gear 13 on the shaft of the first type-cylinder A, while the supplement-printing mechanism is driven from gear 11 through intermediates 14 15, engaging gear 16 on the shaft of the first type-cylinder A' of this mechanism, the supplement mechanism being shown in the drawings as driven at one-half the speed of the main mechanism. The type-cylinder A'

carries also a second gear 17, and a stud 15^a is provided on which the intermediate 15 may be placed when desired, thus driving the supplement mechanism through gear 17 and at full speed.

From the printing mechanisms the webs x x' are led to the associating mechanism, presently to be described in detail, and thence to the folding mechanism, which may be of any suitable form, but is shown as having the longitudinal folder F, provided with the carrying-tapes 18, carried by adjustable pulleys 19 at their upper ends, and any suitable delivery devices.

Referring now especially to Figs. 3 to 6, the associating mechanism will be described. The main web x is led from the printing mechanism over a guide-roll 20 and between feeding-rolls 21 to a pair of sheet cutting and collecting cylinders H I, provided, respectively, with the usual cutting-blade and groove and with the sheet-holding pins c c' , which may be of any suitable construction and operated in any suitable manner, a common form being shown and the action of these cutting and collecting cylinders H I on the web x being as usual in such constructions and as presently to be described, the sheets being delivered from the cylinder I to the folder F, fed by the pulleys 19, coacting with cylinder I, and by the tapes 18. The web x' passes over a guide-roll 22 to a spring-pressed feeding-roll 23 and between a pair of cutting and feeding cylinders K L, arranged in line with the cutting and collecting cylinders H I and in the same vertical plane, these cylinders K L being arranged to fully sever the web, and with the latter of which the roll 23 coacts, the cylinder L preferably carrying fixed pins p and having fixed guides d , extending about it from the point where the web is severed to the point where the leading end of the web leaves the cylinder. Next to the cylinder L is a cylinder M, having a feeding-segment N, which engages the surface of the cylinder L, so as to feed the web by pressure against said cylinder through the length of the segment, and thus advance the leading end of the web over the guides e to another spring-pressed feeding-roll 24, with which the segment N coacts, and thus feeds the web onward between the bottom guides e and top guides f to the collecting-cylinder H before referred to.

The feeding-segment N is of such length as to feed the web x' by pressure against said cylinder L and roll 24 until the leading end of the web reaches a point near the cylinder H and roll 25, when the sheet is severed from the web x' by the blade of cylinder K coacting with the groove of cylinder L, and the segment N, which is still in contact with the roll 24, then advances the severed sheet until its leading end is seized by the cylinder H and spring-pressed feeding-roll 25, and the segment N passes out of contact with the sheet just as the leading end of the sheet is gripped by the cylinder H and roll 25, so that

the severed sheet is positively fed by feed-roll pressure into the grip of the cylinder H and roll 25 and then released by the segment, so as to permit the sheet to be advanced at the higher speed at which the cylinder H and roll 25 are moving. It will be seen from Figs. 5 and 6 that the size of the cylinder M and the length of the segment N are such that the segment N does not come in contact with this sheet on the next rotation of the cylinder M, but permits the sheet to be freely advanced through its entire length at the higher rate of speed, and the leading end of the segment N returns to contact with the cylinder L in time to act on the leading end of the next sheet from web x' , as shown in Fig. 6. The segment N is preferably provided with a yielding surface, of rubber or other similar material, to avoid danger of mutilating the sheet; but when, as shown, the rolls 23 24 are spring-seated, a metal surface may be used.

The pins c of cylinder H operate to seize the leading end of the sheet and associate it with a sheet from web x upon the cylinder H, holding the leading end of the sheet from web x' to the cylinder H, so as to secure its being carried on with the cylinder H as it is advanced by the cylinder and roll 25 until the leading ends of the two sheets on the cylinder H are carried between the cylinders H I and associated with the leading end of the web x , when the pins c are withdrawn and the three sheets then advanced by the cylinders H I, their leading ends being taken on the pins c' to the pulleys 19 over guides i , entering grooves in cylinder I, when the pins c' are withdrawn and the three sheets are carried over the folder. The feeding-roll 25 is provided with a longitudinal groove h to accommodate the blade of cylinder H.

The driving mechanism shown is as follows: Starting from the cylinder I, the feeding-rolls 21 are driven from gear 28 on said cylinder, engaging a gear on the shaft of one of the feeding-rolls, and the shaft of the pulleys 19 is driven from the large gear 28 on the cylinder I, which engages also with a gear 29 on the shaft of the pulleys. The gear 28 drives also cylinder H through gear 30 on the shaft of the latter, which meshes also with gear 31 on feed-roll 25. All the parts thus far described are driven at the same rate of speed. The shaft of cylinder H carries also a small gear 32, which, through an intermediate 33, drives a large gear 34 on the shaft of cylinder M, and the latter drives cylinders L K through gears 35 36 37, the feeding-rolls 23 24 being driven by the gears 38 39 thereon, meshing, respectively, with gears 36 35. The intermediate 33 is made removable, so that the mechanism may be thrown out of operation when desired, as explained herein-after.

The operation of the mechanism will be readily understood from a brief description, in connection with the drawings. The construction is illustrated as producing a twelve-

page paper, both the main and supplement mechanisms being run on full-width webs, the supplement-web being led to the half-speed associating mechanism, and the cylinders H I being adjusted for collecting two sheets from web *x* with a sheet from web *x'* inset between them. The full-width main web *x* is led over the guide-roll 20 between the feeding-rolls 21 to the cylinder I, the leading end of the sheet being taken by the pins *c* against the surface of cylinder I and carried about the cylinder H until it reaches the roll 25, when a sheet from the half-speed supplement-web *x'* is associated therewith, and the three sheets, with the supplement-sheet from web *x'* inset between two sheets from web *x*, pass to the folder F, as already fully described, thus forming three fours, or a twelve-page product. In Fig. 6 the three associated sheets are shown as passing from the cylinders H I to the folder and the next sheet from the supplement-web *x'* is just being taken by the segment N, coacting with the cylinder L, the cylinders H I having made one revolution from the position shown in Fig. 5 to that shown in Fig. 6, another revolution returning the parts to the position of Fig. 5, with the next sheet from main web *x* on the cylinder H just being associated with the next sheet from supplement-web *x'*.

Other products may readily be secured, as follows:

For a ten-page paper the operation is the same as above described, but the supplement-web *x'* is a half-width web, so that only two pages from the supplement-web are inset between two fours from the main web, making the product of ten pages.

An eight-page paper may be produced by leading full-width webs from both printing mechanisms to the feeding-rolls 21 and cylinders H I, the course of the web *x'* being that shown in dotted lines in Figs. 5 and 6, both printing mechanisms being run at full speed, the half-speed associating mechanism being thrown out of operation and the cylinders H I run without collecting, or an eight-page paper may be secured by printing a single full-width web on either of the printing mechanisms run at full speed and collecting by the cylinder H, as first-above described.

For a sixteen-page paper the operation is the same as first-above described for eight pages, running both printing mechanisms at full speed and on full-width webs, but collecting by the cylinder H, so as to get two eights, or sixteen pages.

For a four-page paper a full-width web is run on either of the printing mechanisms and led to the rolls 21 and cylinders H I, which are run without collecting, and for a six-page paper both printing mechanisms are run at full speed, one on a full-width web and the other on a half-width web, the two webs being led to rolls 21 and cylinders H I with the

full-width web above the half-width web, the cylinders H I being run without collecting.

It will be seen that my invention provides an associating mechanism in which the feed of the sheets is positive throughout, so that accuracy of registry is secured with the sheets of the supplement-web completely severed by the cutting-cylinders K L instead of being perforated by these cylinders and broken when seized by the higher-speed feeding mechanism. This complete severing of the sheets, instead of perforating and breaking, is important in associating or elsewhere where accuracy of position of the leading end of a sheet is desired, as the registry is liable to be interfered with by the backward pull upon the sheet resulting from the strain of breaking a perforated sheet from the web, and one of the specific valuable results attained by the invention in its preferred form is the provision of a construction by which the complete severing of the sheet by the cutting-cylinders in such cases is made practicable. It will be understood, however, that my improved mechanism for advancing a sheet from the cylinders K L to the higher-speed feeding mechanism may be used and will be of value with the cutting-cylinders K L arranged to perforate or partially sever the sheet, so that the sheet is broken by the higher-speed feeding mechanism, as accuracy of position of the leading end of the sheet as it reaches the higher-speed feeding mechanism is thus secured by the positive feeding of the sheet by segment N, but such a construction does not avoid the difficulty above stated, that the sheet is liable to be drawn backward and registry lost by the breaking strain, and therefore, as above stated, the cylinders K L preferably sever the web completely.

The attainment of the result of accurate registry is aided also by the short distance which it is necessary to feed the supplement-sheet after it is seized between cylinder H and feed-roll 25 to the point of contact between cylinders H I, which feed, moreover, is by positive grip between the cylinder H and the roll 25, the pins *c* having no feeding action but acting only to hold the leading edge of the sheet in the proper position, this being the action of these pins on the sheet from the main web also.

By the use of this associating and collecting mechanism between the press and longitudinal folding mechanism the supplement-sheets are inset between the main sheets and a very simple and efficient construction securing this result provided. It will be seen also that the press shown forms a very compact and convenient construction of two web mechanisms with an associating mechanism receiving the two webs in line with each other but at different elevations.

It will be understood that the mechanism shown may be used in various other construc-

tions than that illustrated, and that modifications may be made in the construction and arrangement of this mechanism without departing from the invention, and I am not to be limited to the specific construction shown.

What I claim is—

1. The combination with a pair of sheet cutting and carrying cylinders arranged to act upon a web, of a sheet-feeding segment running at a lower speed than said cylinders and arranged to advance a sheet from another source to said cylinders in position to be associated with the other sheet or sheets received by said cylinders and then pass out of engagement with the sheet, substantially as described.

2. The combination with a pair of sheet cutting and carrying cylinders arranged to act upon a web and having sheet-holding pins, of a sheet-feeding segment running at a lower speed than said cylinders and arranged to advance a sheet from another source to said cylinders in position to be taken by the pins with the other sheet or sheets received by said cylinders and then pass out of engagement with the sheet, and a feeding-roll coacting with one of said cylinders to advance the sheet held by the pins, substantially as described.

3. The combination with a pair of sheet cutting and carrying cylinders arranged to act upon one web, of a pair of cutting-cylinders, and a sheet-feeding segment running at a lower speed and arranged to advance a sheet from another web to the cutting and carrying cylinders in position to be associated with the sheet or sheets received by said cylinders from the first-mentioned web and then pass out of engagement with the sheet, substantially as described.

4. The combination with a pair of sheet cutting and carrying cylinders arranged to act upon one web, of a pair of cutting-cylinders running at a lower speed and acting to completely sever a sheet from another web, and a sheet-feeding segment running at said lower speed and acting to advance the severed sheet to the cutting and carrying cylinders in position to be associated with the sheet or sheets received by said cylinders from the first-mentioned web and then pass out of engagement with the sheet, substantially as described.

5. The combination with a sheet-collecting mechanism arranged to collect sheets from one source, of a feeding-segment running at a lower speed and arranged to advance a sheet from another source to the collecting mechanism in position to be associated with the other collected sheets and then pass out of engagement with the sheet, substantially as described.

6. The combination with a sheet-collecting mechanism arranged to collect sheets from one source, of a feeding-segment running at a lower rate of speed and arranged to advance a sheet from another source to the collecting

mechanism and then pass out of engagement with the sheet, a feeding-roll coacting with said segment, and guides for the sheet between the segment and collecting mechanism, substantially as described.

7. The combination with a pair of sheet cutting and collecting cylinders arranged to act upon a main web, of a sheet-feeding segment running at a lower speed and arranged to advance a sheet from another source to the collecting-cylinder in position to be associated with the sheets from the main web and then to pass out of engagement with the sheet, substantially as described.

8. The combination with a pair of sheet cutting and collecting cylinders arranged to act upon a main web, of a pair of sheet-cutting cylinders running at a lower speed and arranged to completely sever a sheet from another web, and a feeding-segment running at said lower speed and acting to feed the severed sheet from the second web to the collecting-cylinder in position to be associated with the sheets from the main web and then pass out of engagement with the sheet, substantially as described.

9. The combination with a pair of sheet cutting and collecting cylinders arranged to act upon a main web, of a pair of sheet-cutting cylinders running at a lower speed and arranged to act upon another web, a feeding-segment running at said lower speed and arranged to feed a sheet from the second web to the collecting-cylinder in position to be associated with the sheets received from the main web and then pass out of engagement with the sheet, and a feeding-roll coacting with the collecting-cylinder to advance the sheets thereon, substantially as described.

10. The combination with a pair of sheet cutting and collecting cylinders arranged to act upon a main web, of a pair of sheet-cutting cylinders running at a lower speed and arranged to act upon another web, a feeding-roll between the sheet-cutting cylinders and the collecting-cylinder, and a feeding-segment running at said lower speed and coacting with the feeding-roll to feed the sheet from the second web to the collecting-cylinder and then pass out of engagement with the sheet, substantially as described.

11. The combination with a pair of sheet cutting and collecting cylinders arranged to act upon a main web, of a pair of sheet-cutting cylinders running at a lower speed and arranged to act upon another web, a feeding-roll between the sheet-cutting cylinders and the collecting-cylinder, and a feeding-segment running at the lower speed and coacting with one of the cutting-cylinders and the feeding-roll to feed the sheet from the second web to the collecting-cylinder and then pass out of engagement with the sheet, substantially as described.

12. The combination with a pair of sheet cutting and collecting cylinders arranged to act upon a main web, of a pair of sheet-cut-

ting cylinders running at a lower speed and arranged to act upon another web, a feeding-roll between the sheet-cutting cylinders and the collecting-cylinder, a feeding-segment running at the lower speed and coacting with one of the cutting-cylinders and the feeding-roll to feed the sheet from the second web to the collecting-cylinder and then pass out of engagement with the sheet, and a feeding-roll coacting with the collecting-cylinder to advance the sheets thereon, substantially as described.

13. The combination with printing mechanism arranged to deliver a plurality of printed webs running in line with each other and at different speeds, of a sheet cutting and collecting mechanism adapted to receive one of the webs, a sheet-cutting mechanism arranged in line with the first-mentioned mechanism and running at a lower speed, and feeding mechanism for advancing a sheet from said sheet-cutting mechanism to the cutting and collecting mechanism in position to be associated by the cutting and collecting mechanism with sheets received by said cutting and collecting mechanism from the other web, substantially as described.

14. The combination with two printing mechanisms capacitated to print a plurality of webs and deliver said webs in line with each other, and arranged to be run at the same speed or different speeds, of a sheet cutting and collecting mechanism arranged to act on one web, or on both webs when run at the same speed, a sheet-cutting mechanism for one of the webs arranged in line with the cutting and collecting mechanism and running at a lower speed than said cutting and collecting mechanism, and feeding mechanism for advancing a sheet from said sheet-cutting mechanism to the cutting and collecting mechanism in position to be associated by the cutting and collecting mechanism with sheets received by said cutting and collecting mechanism from the other web, substantially as described.

15. The combination with printing mechanism arranged to deliver a plurality of printed webs running at different speeds, of sheet cutting and collecting cylinders for the higher-speed web, sheet-cutting cylinders running at a lower speed for the second web, and a feeding-segment running at said lower speed and arranged to feed a sheet from the second web to the cutting and collecting cylinders and in position to be associated with sheets received from the higher-speed web, and then pass out of engagement with the sheet, substantially as described.

16. The combination with printing mechanism arranged to deliver a plurality of printed webs running one above the other and at the same or different speeds, of cutting and collecting cylinders arranged to act on one web, or both webs when run at the same speed, sheet-cutting cylinders in the same vertical plane with the cutting and collecting cylinders

running at a lower speed for one of the webs, and a feeding-segment running at said lower speed and arranged to feed a sheet from the lower-speed web to the cutting and collecting cylinders and in position to be associated with sheets received from the higher-speed web, and then pass out of engagement with the sheet, substantially as described.

17. The combination with printing mechanism arranged to deliver a plurality of printed webs running at different speeds, of sheet cutting and collecting cylinders for the higher-speed web, sheet-cutting cylinders running at a lower speed for the second web, a feeding-roll between the cutting-cylinders and collecting-cylinder, and a feeding-segment coacting with one of the cutting-cylinders and with the feeding-roll to feed a sheet from the cutting-cylinders to the collecting-cylinder and then pass out of engagement with the sheet, substantially as described.

18. The combination with printing mechanism arranged to deliver a plurality of printed webs running at different speeds, of sheet cutting and collecting cylinders for the higher-speed web, sheet-cutting cylinders for the second web acting to completely sever a sheet and running at a lower speed, a feeding-roll between the cutting-cylinders and collecting-cylinder, and a feeding-segment coacting with one of the cutting-cylinders and with the feeding-roll to feed the severed sheet from the cutting-cylinders to the collecting-cylinder and then pass out of engagement with the sheet, substantially as described.

19. The combination with printing mechanism arranged to deliver a plurality of printed webs running at different speeds, of a sheet cutting and collecting mechanism adapted to receive one of the webs, a sheet-cutting mechanism running at a lower speed, and feeding devices for advancing a sheet from said sheet-cutting mechanism to the collecting mechanism in position to be associated by the collecting mechanism with sheets collected thereby from the first-mentioned web, substantially as described.

20. The combination with printing mechanism capacitated to print and deliver a plurality of webs, and arranged to be run at the same speed or different speeds, of a sheet cutting and collecting mechanism arranged to act on one web, or on both webs when run at the same speed, a sheet-cutting mechanism for one of the webs running at a lower speed than said cutting and collecting mechanism, and feeding devices for advancing a sheet from said sheet-cutting mechanism to the collecting mechanism in position to be associated by the collecting mechanism with sheets collected thereby from the first-mentioned web, substantially as described.

21. The combination with a collecting-cylinder arranged to collect sheets from one source, of feeding devices for advancing a sheet from another source to the collecting-

cylinder in position to be associated on the collecting-cylinder between sheets collected thereby, substantially as described.

22. The combination with sheet cutting
5 and collecting cylinders arranged to act on a main web, of feeding devices for advancing a sheet from another source to said cylinders in position to be associated on the collecting-cylinder with and between the sheets collected
10 thereby, substantially as described.

23. The combination with feeding mechanism, of sheet-cutting cylinders running at a lower speed than the feeding mechanism, and a feeding-segment running at said lower speed
15 and arranged to advance a sheet to the feeding mechanism and then pass out of engagement with the sheet, substantially as described.

24. The combination with feeding mechanism, of sheet-cutting cylinders running at a
20 lower speed than the feeding mechanism and acting to completely sever the sheet, and a feeding-segment running at said lower speed and arranged to advance the severed sheet to the feeding mechanism and then pass out of
25 engagement with the sheet, substantially as described.

25. The combination with feeding mechanism, of sheet-cutting cylinders running at a lower speed than the feeding mechanism, a
30 feeding-roll between the cutting-cylinders and feeding mechanism, and a feeding-segment running at said lower speed and coacting with said roll to advance a sheet to the feeding mechanism and then pass out of
35 engagement with the sheet, substantially as described.

26. The combination with feeding mechanism, of sheet-cutting cylinders running at a lower speed than the feeding mechanism, a
40 feeding-roll between the cutting-cylinders and feeding mechanism, and a feeding-segment running at said lower speed and coacting with one of the cutting-cylinders and with said feeding-roll to advance a sheet to the
45 feeding mechanism and then pass out of engagement with the sheet, substantially as described.

27. The combination with feeding mechanism, of sheet-cutting cylinders running at a
50 lower speed than the feeding mechanism, and a feeding-segment running at said lower speed and coacting with one of the cylinders in advancing a sheet to the feeding mechanism and arranged to pass out of engagement with the
55 sheet to release the latter for its advance by the feeding mechanism substantially as described.

28. The combination with a sheet-carrying cylinder having sheet-holding pins, of sheet-
60 cutting cylinders running at a lower speed than the carrying-cylinder, and a feeding-segment running at said lower speed and arranged to advance a sheet into position to be taken by the pins on the carrying-cylinder
65 and then pass out of engagement with the sheet, and a feeding-roll coacting with said

carrying-cylinder to advance the sheet held by the pins, substantially as described.

29. The combination with a sheet-carrying cylinder having sheet-holding pins, and a sec-
70 ond cylinder to which sheets are transferred from said carrying-cylinder, of sheet-cutting cylinders running at a lower speed than the carrying-cylinder, and a feeding-segment running at said lower speed and arranged to
75 advance a sheet into position to be taken by the pins on the carrying-cylinder and then pass out of engagement with the sheet, and a feeding-roll coacting with said carrying-cylinder to advance the sheet held by the pins
80 to the cylinder to which the sheet is transferred, substantially as described.

30. The combination with sheet-feeding mechanism, of cutting-cylinders K, L running at a lower speed than the sheet-feeding mechanism, feeding-roll 24 between cylinder L and
85 the feeding mechanism, and feeding-segment N coacting with cylinder L and roll 24, substantially as described.

31. The combination with sheet-feeding
90 mechanism, of cutting-cylinders K, L running at a lower speed than the sheet-feeding mechanism, feeding-roll 24 between cylinder L and the feeding mechanism, guides *e* for directing the leading end of the sheet from cylinder L,
95 and feeding-segment N coacting with cylinder L and roll 24, substantially as described.

32. The combination with cutting and collecting cylinders H, I having pins *c*, *c'*, and feeding-rolls 25, 21 coacting with said cylinders,
100 of cutting-cylinders K, L and feeding-segment N running at a lower speed than cylinders H, I, and feeding-roll 24 coacting with segment N, substantially as described.

33. The combination with cutting and collecting cylinders H, I having pins *c*, *c'*, and
105 feeding-rolls 25, 21 coacting with said cylinders, of cutting-cylinders K, L and feeding-segment N running at a lower speed than cylinders H, I, feeding-roll 24 coacting with segment N, and guides *e*, *f* between roll 24 and
110 cylinder H, substantially as described.

34. The combination with cutting and collecting cylinders H, I having pins *c*, *c'*, and
115 feeding-rolls 25, 21 coacting with said cylinders, of cutting-cylinders K, L and feeding-segment N running at a lower speed than cylinders H, I, feeding-roll 24 coacting with segment N, and guides for directing the leading end of the sheet from cylinder L to the segment
120 and roll 24, substantially as described.

35. The combination with cutting and collecting cylinders H, I having pins *c*, *c'*, and
125 feeding-rolls 25, 21 coacting with said cylinders, of cutting-cylinders K, L running at a lower speed than cylinders H, I, sheet-holding pins *p* on cylinder L, and feeding-segment N coacting with cylinder L, substantially as described.

36. The combination with cutting and collecting cylinders H, I having pins *c*, *c'*, and
130 feeding-rolls 25, 21 coacting with said cylinder

ders, of cutting-cylinders K, L running at a lower speed than cylinders H, I, sheet-holding pins *p* on cylinder L, feeding-roll 24 and guides *e*, *f*, and feeding-segment N coacting with cylinder L and roll 24, substantially as described.

37. The combination with cutting-cylinders K, L, of guides *e* for directing the leading end of the sheet from the cylinder L, roll 24, and feeding-segment N coacting with cylinder L and roll 24, substantially as described.

38. The combination with cutting-cylinders K, L, of guides *e* for directing the leading end of the sheet from cylinder L, and seg-

ment N coacting with cylinder L substantially as described. 15

39. The combination with cutting-cylinders K, L, and pins *p* on said cylinder L, of guides *e* for directing the leading end of the sheet from the pins, and segment N coacting with cylinder L, substantially as described. 20

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

EDWARD P. SHELDON.

Witnesses:

C. J. SAWYER,
A. L. KENT.