

No. 787,730.

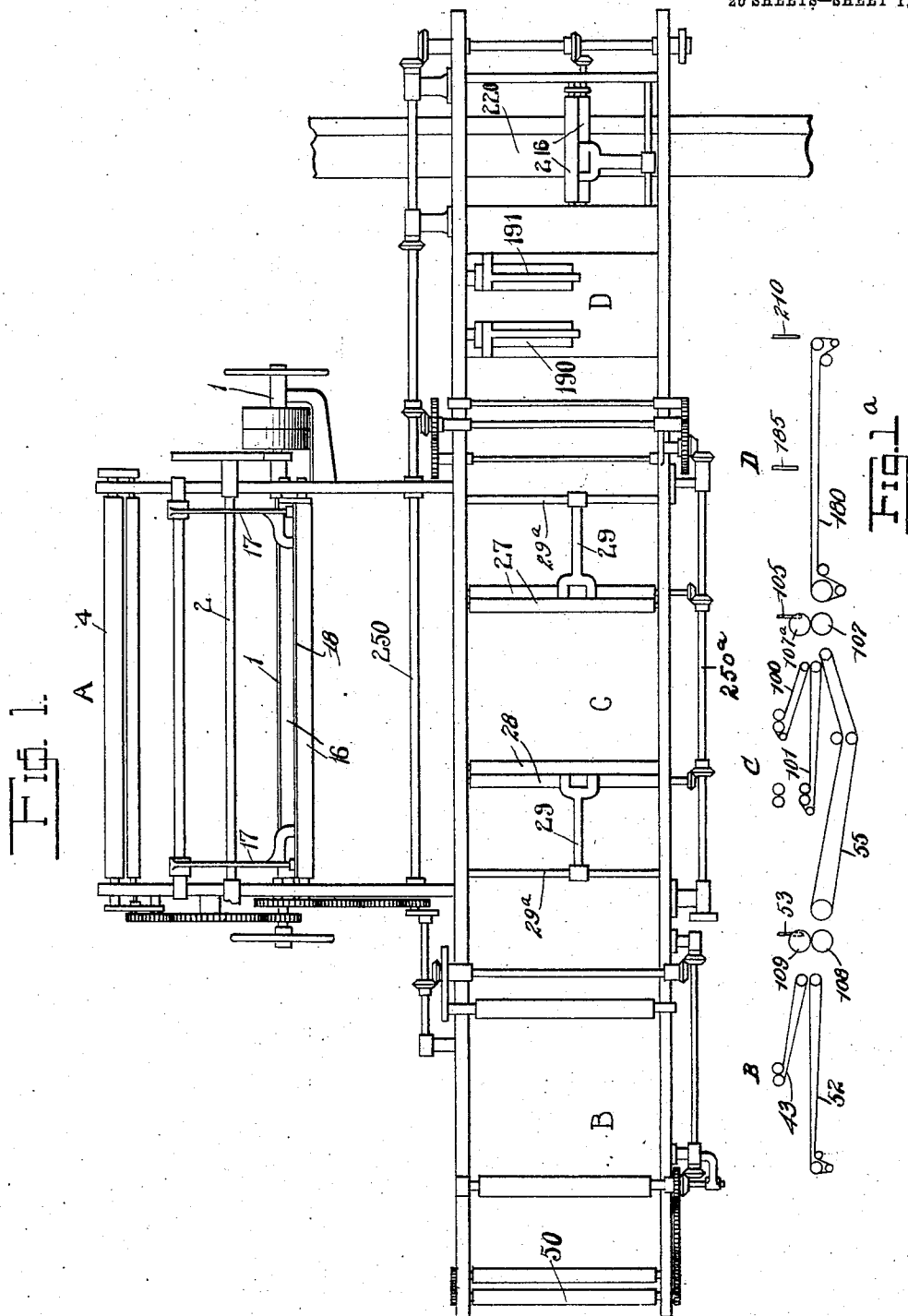
PATENTED APR. 18, 1905.

T. G. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

26 SHEETS—SHEET 1.



Witnesses
W. A. Courtland
Samuel J. Hoexter

Inventor
Talbot C. Dexter
By his Attorneys
S. H. Brown

No. 787,730.

PATENTED APR. 18, 1905.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 2.

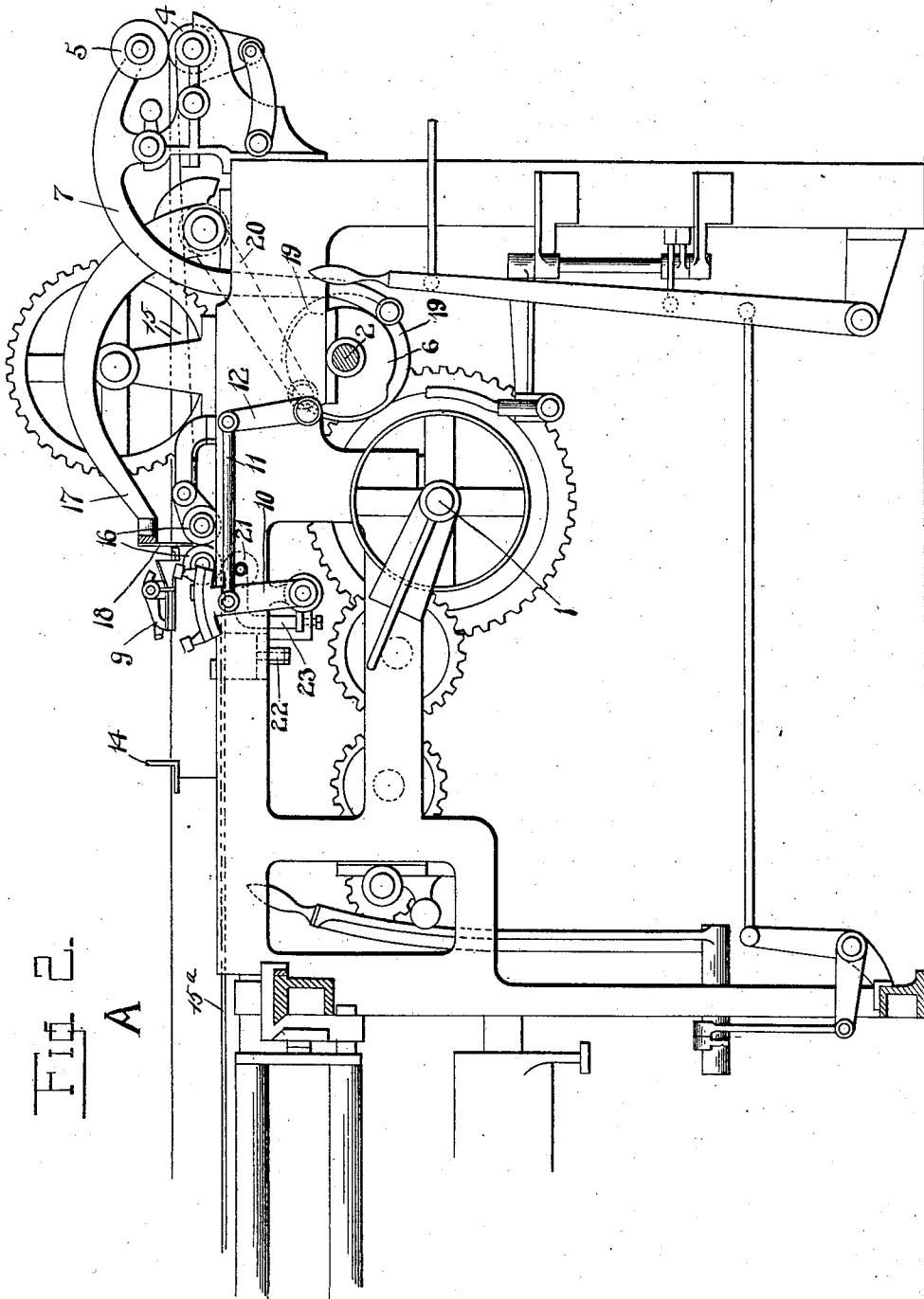


FIG. 2.

A

Witnesses
W. A. Covittland
Samuel J. Hoexter

Inventor
T. C. Dexter
By his Attorneys
Knight Bros

No. 787,730.

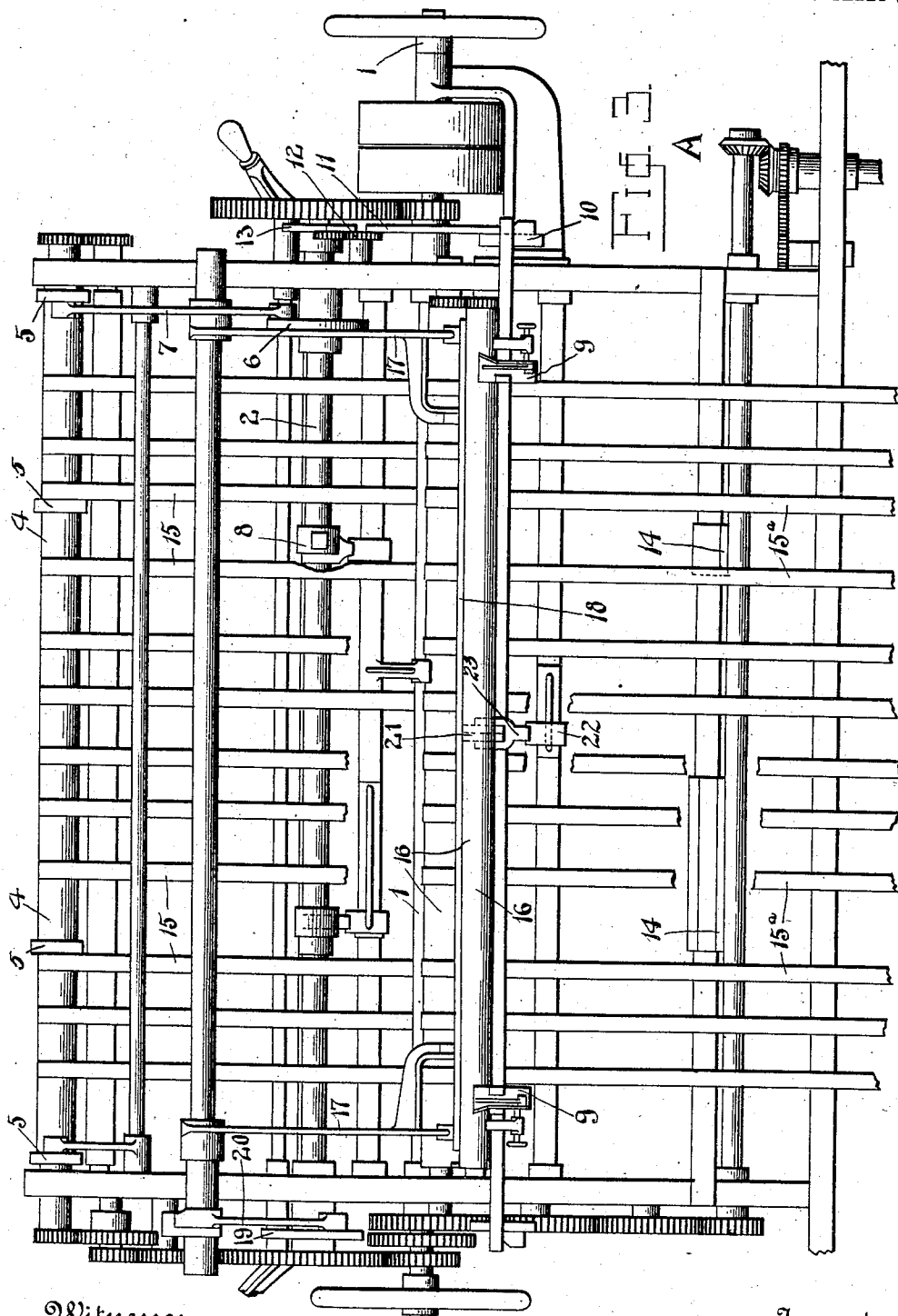
PATENTED APR. 18, 1905.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 3.



Witnesses
W. A. Courtland
Samuel J. Hoexter

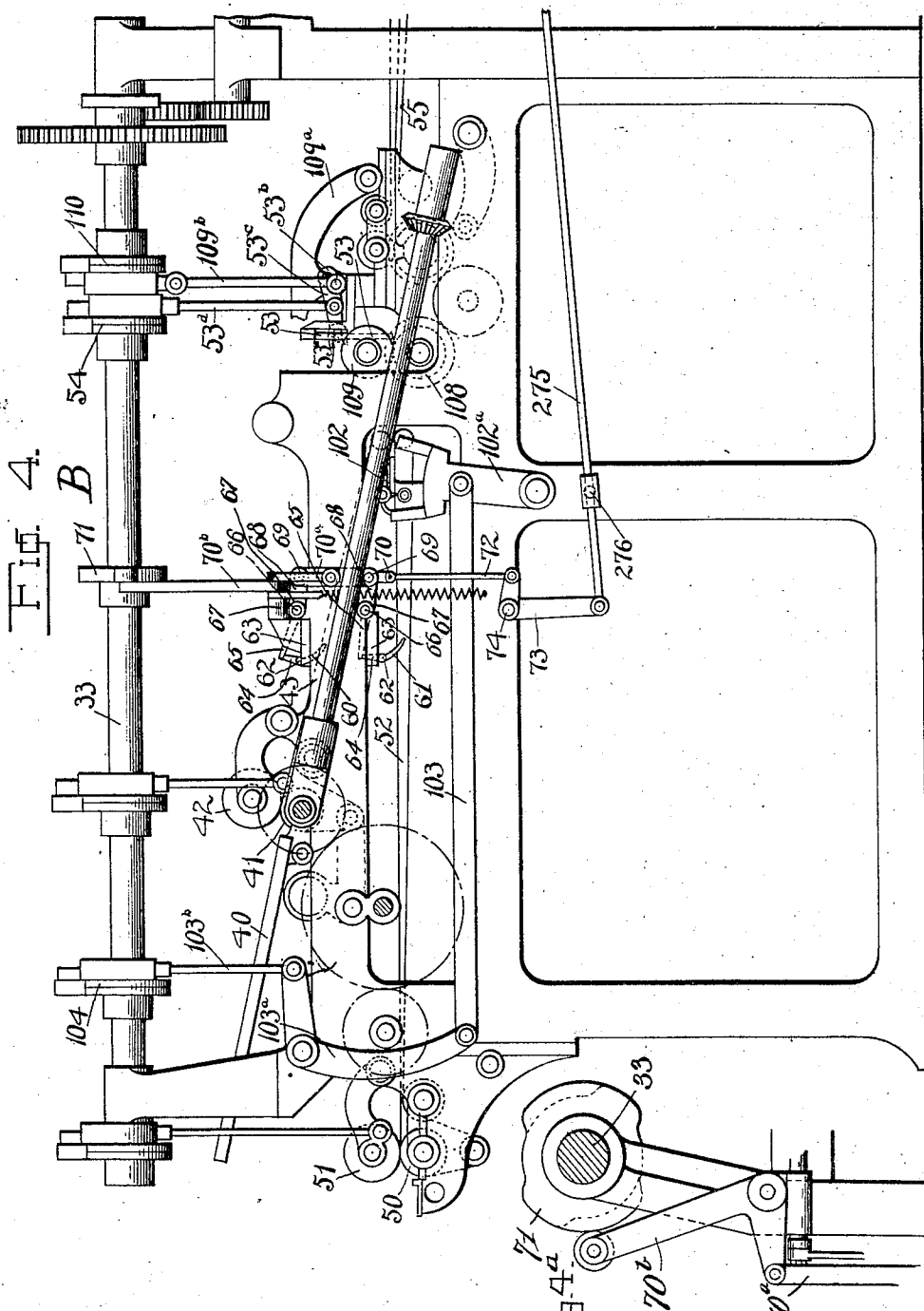
Inventor
T. C. Dexter
By his Attorneys
Knight & Bates

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 4.



Witnesses
W. A. Courtland
Samuel J. Hoexter

FIG. 4a
By his Attorneys
Inventor
T. C. Dexter
Knight Bros

No. 787,730.

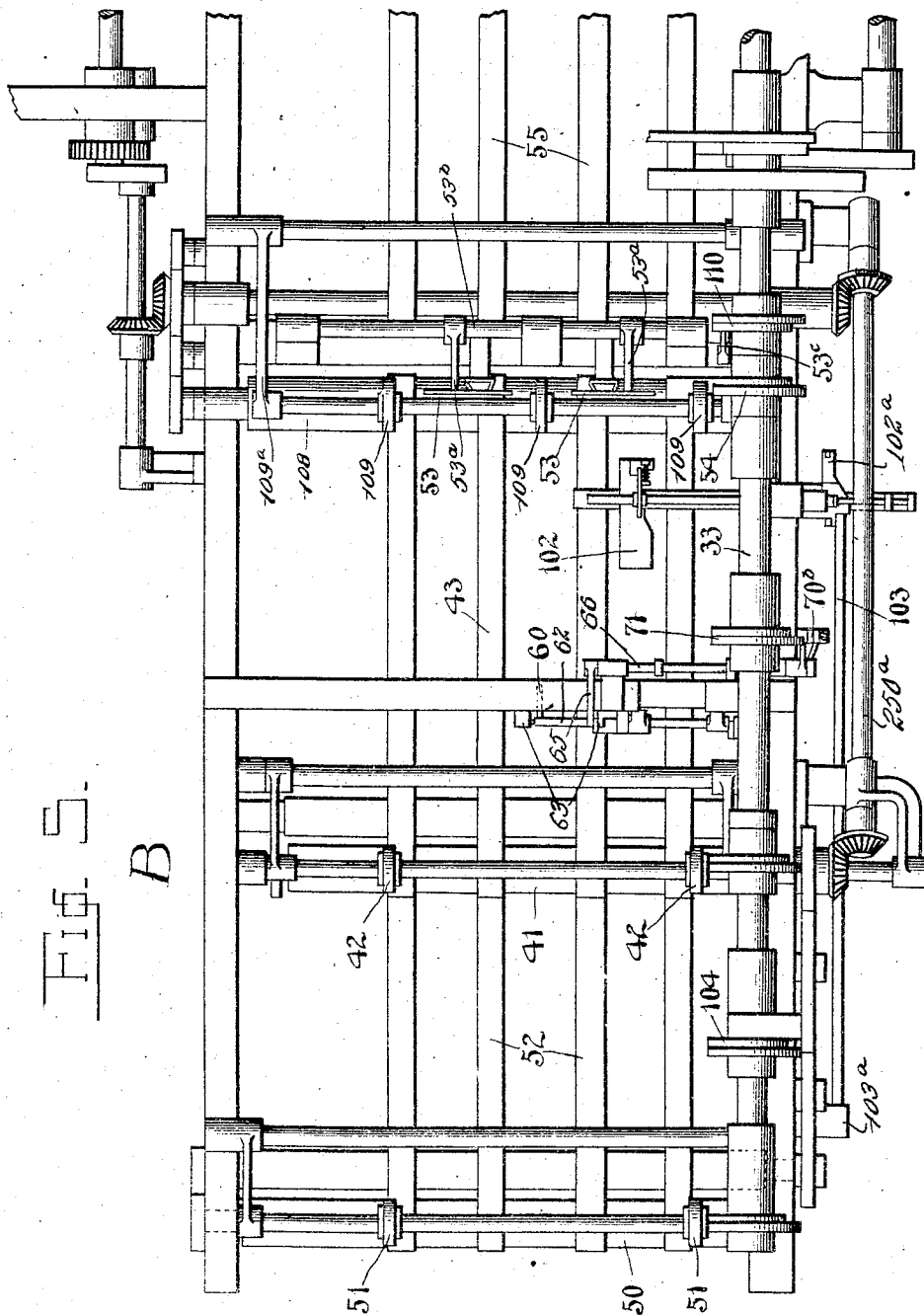
PATENTED APR. 18, 1905.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 5.



Witnesses
W. A. Courtland
Samuel J. Hexter

Inventor
T. C. Dexter
By his Attorneys
Smith & Bates

No. 787,730.

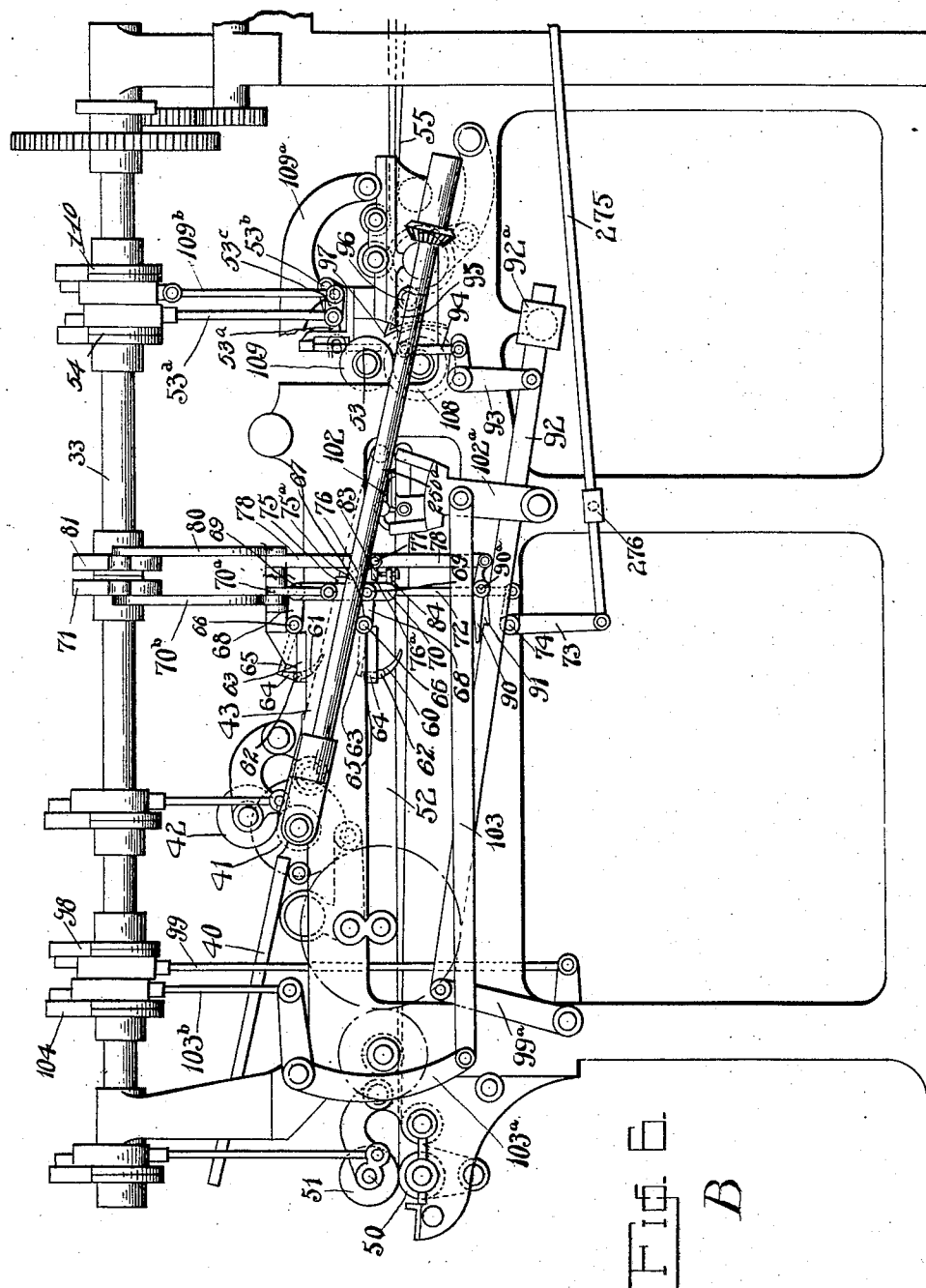
PATENTED APR. 18, 1905.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 6.



Witnesses
H. A. Courtland
Samuel J. Hooper

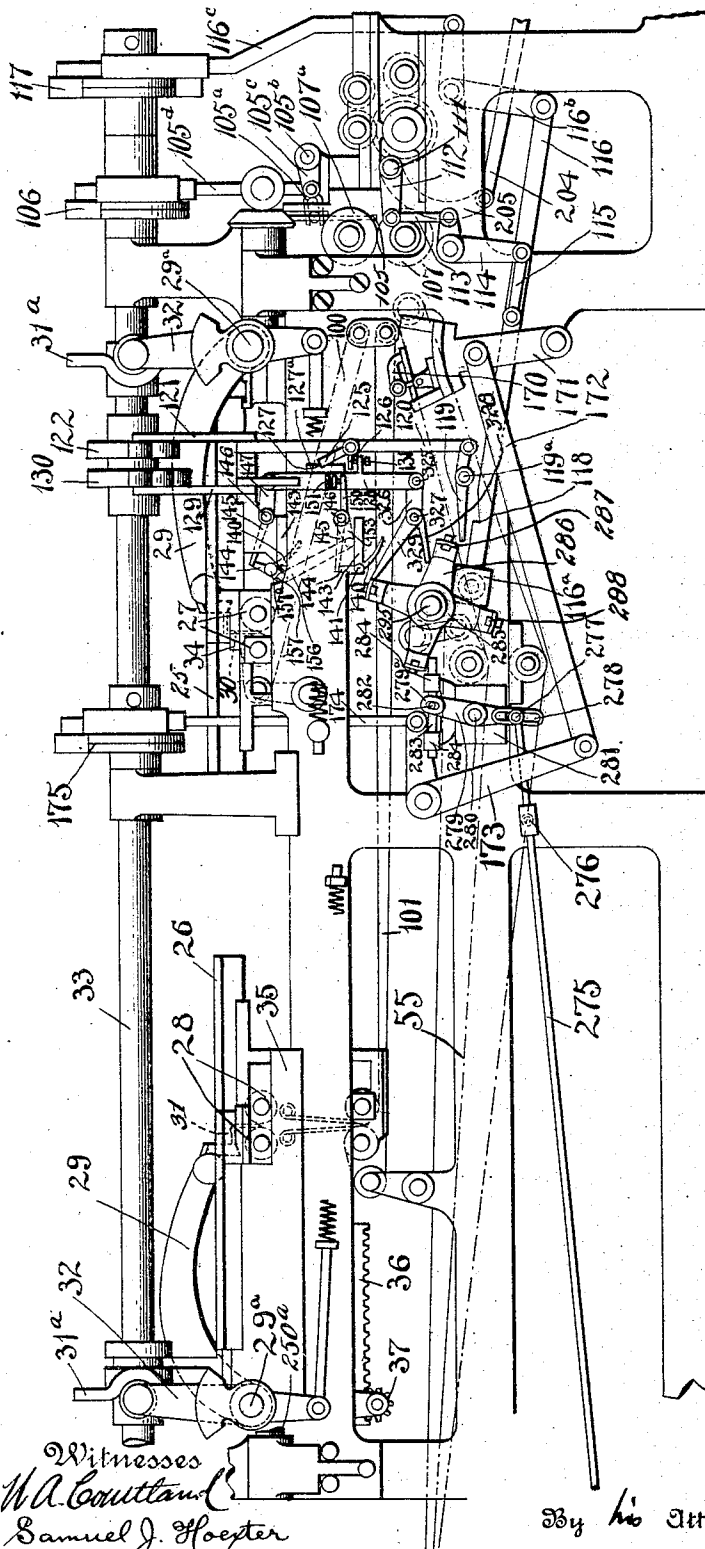
Inventor
Talbot C. Dexter
By his Attorneys Knight & Berg

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 7.



Witnesses
W. A. Conittam
Samuel J. Hoefer

Inventor
T. C. Dexter
By his Attorneys
Knight & Co.

FIG. 7
C

No. 787,730.

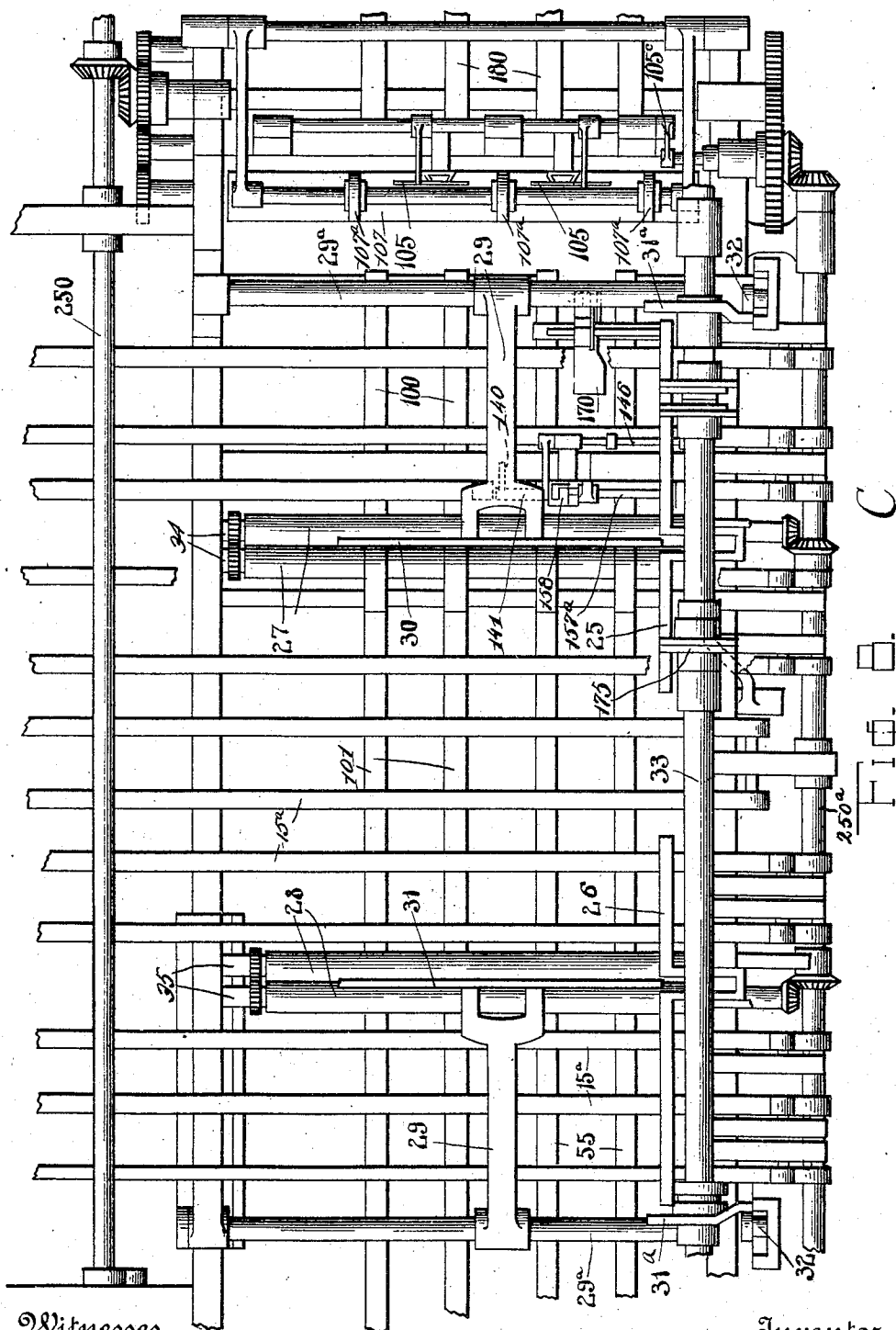
PATENTED APR. 18, 1905.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 8.



Witnesses
H. A. Courtland
Samuel J. Hoexter

Inventor
Talbot C. Dyke
By his Attorneys Knight & Bond

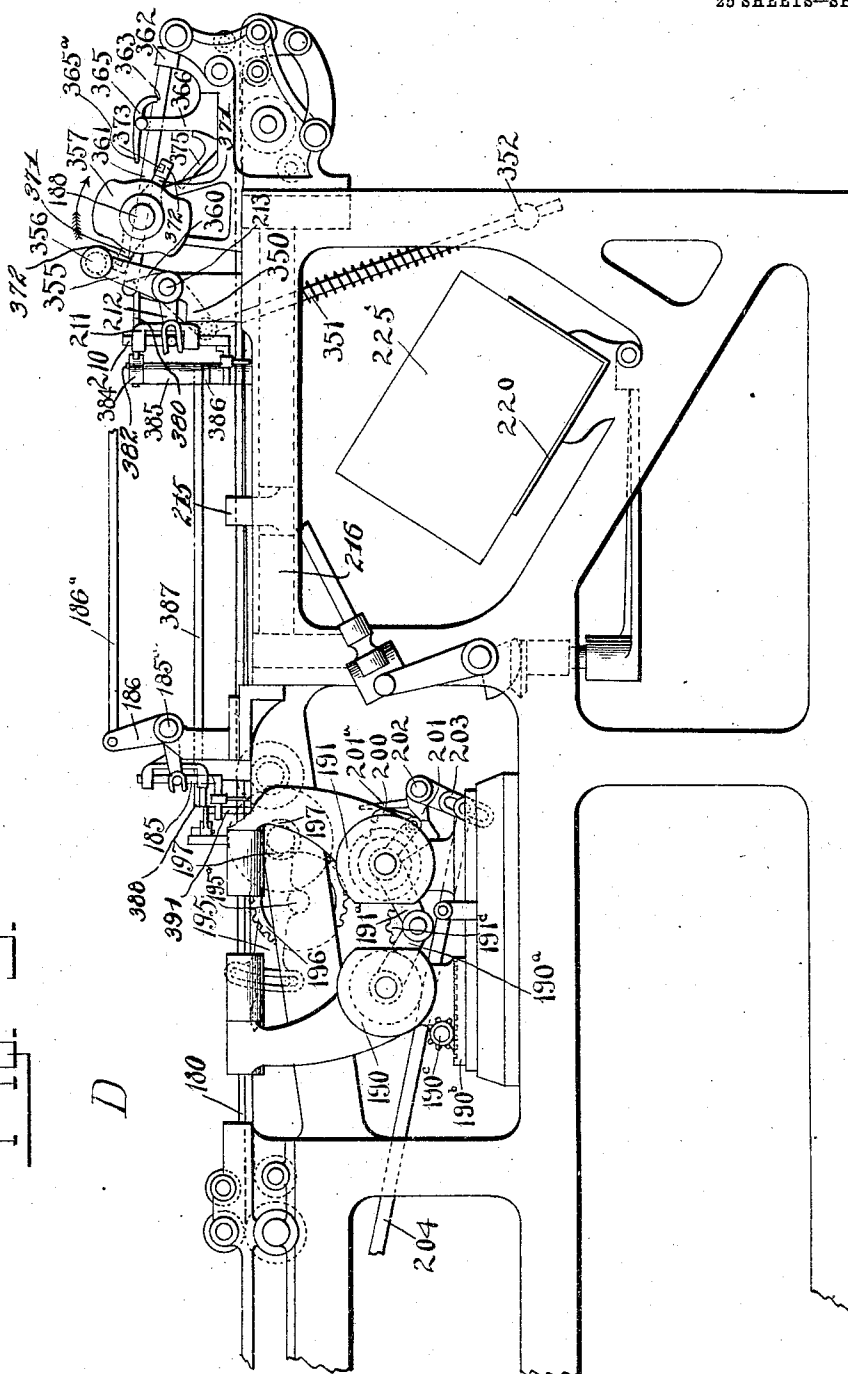
T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 9.

Fig. 9.



Witnesses
W. A. Courtland
Samuel J. Dexter

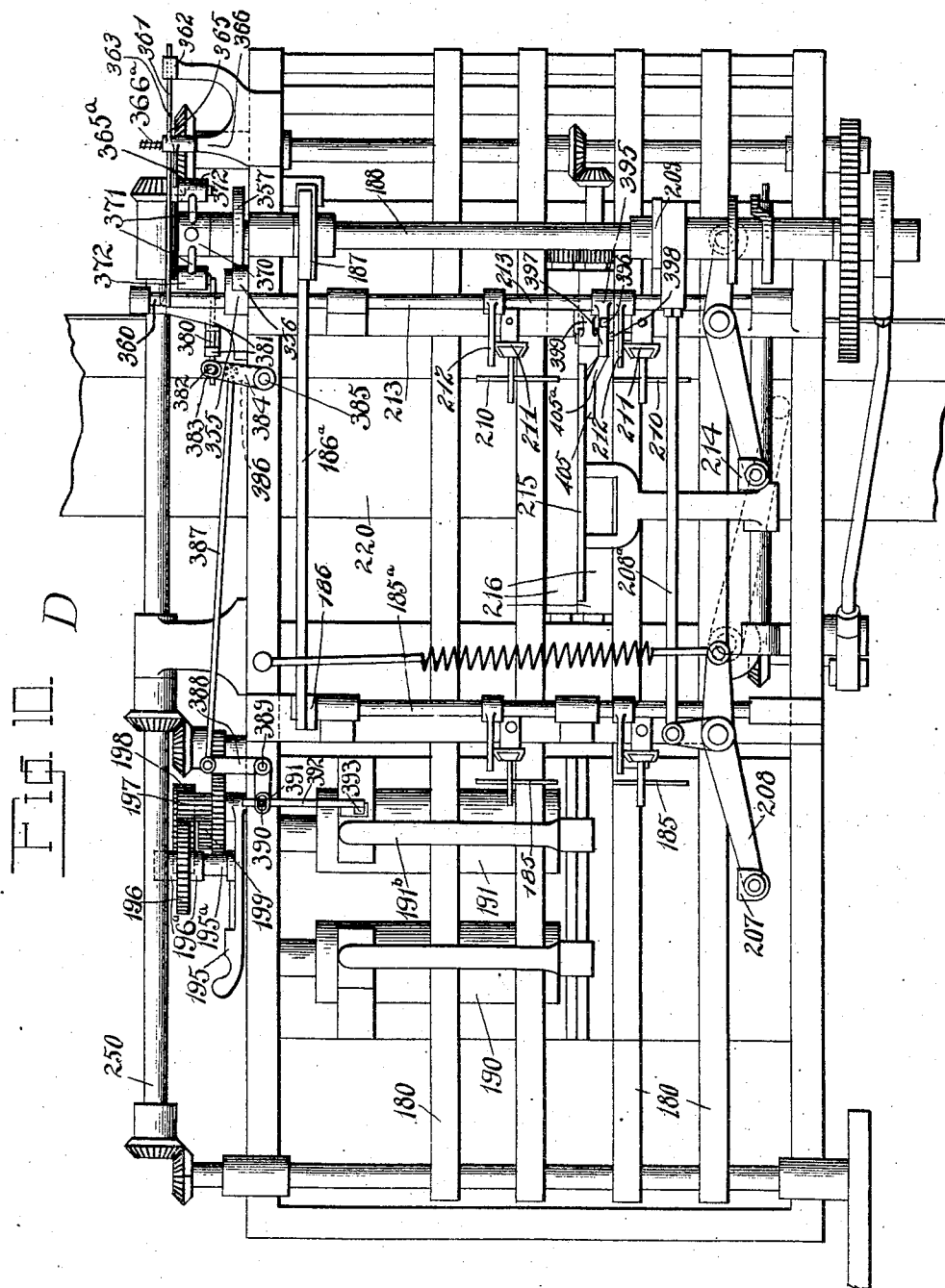
Inventor
T. C. Dexter
 By *his* Attorneys *Knight & Rogers*

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 10.



Witnesses
W. A. Courtland
Samuel J. Hoexter

Inventor
T. C. Dexter
By his Attorneys
Knight Bros.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 11.

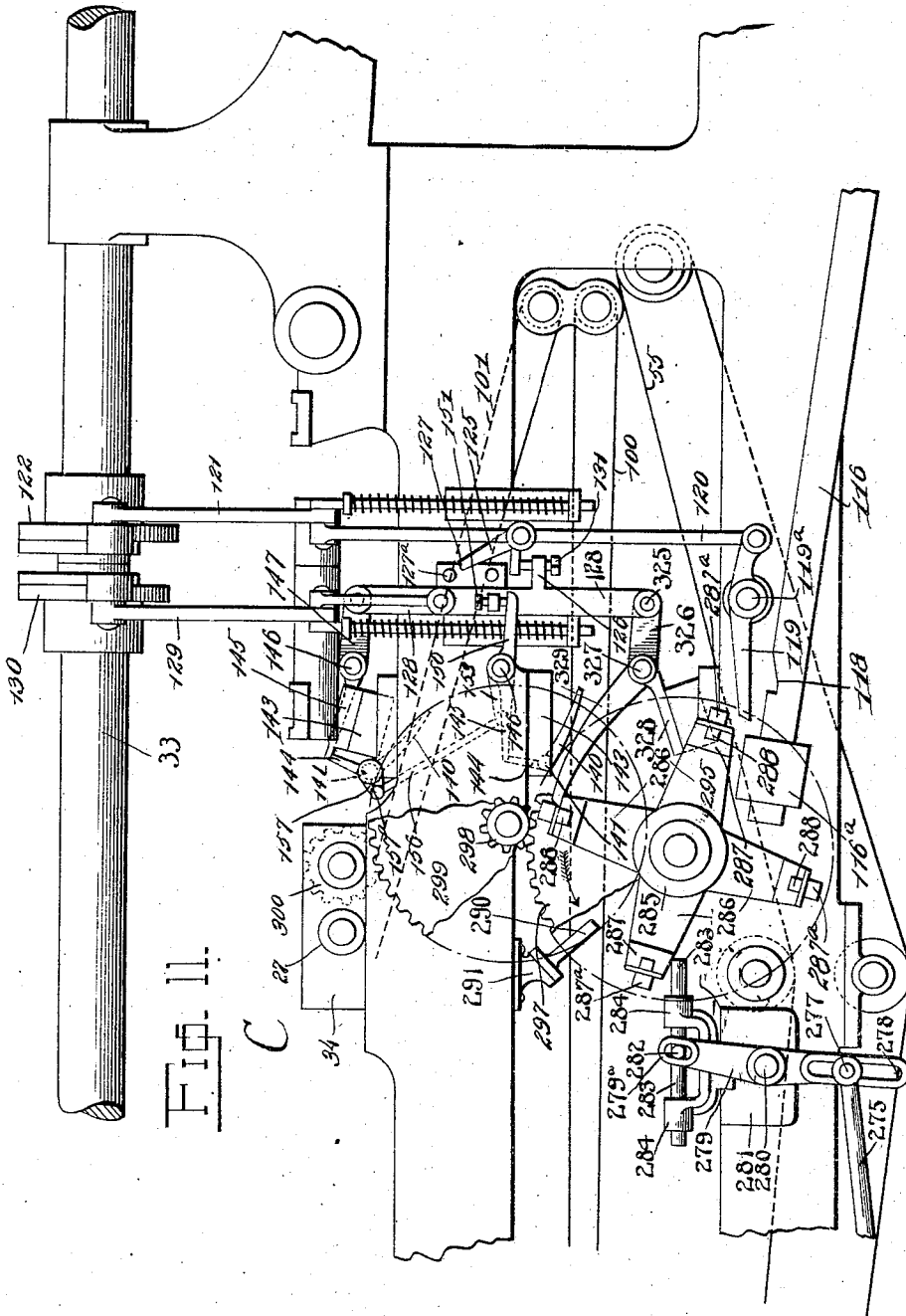


Fig. 11.

Witnesses
W. A. Courtland
Samuel J. Dexter

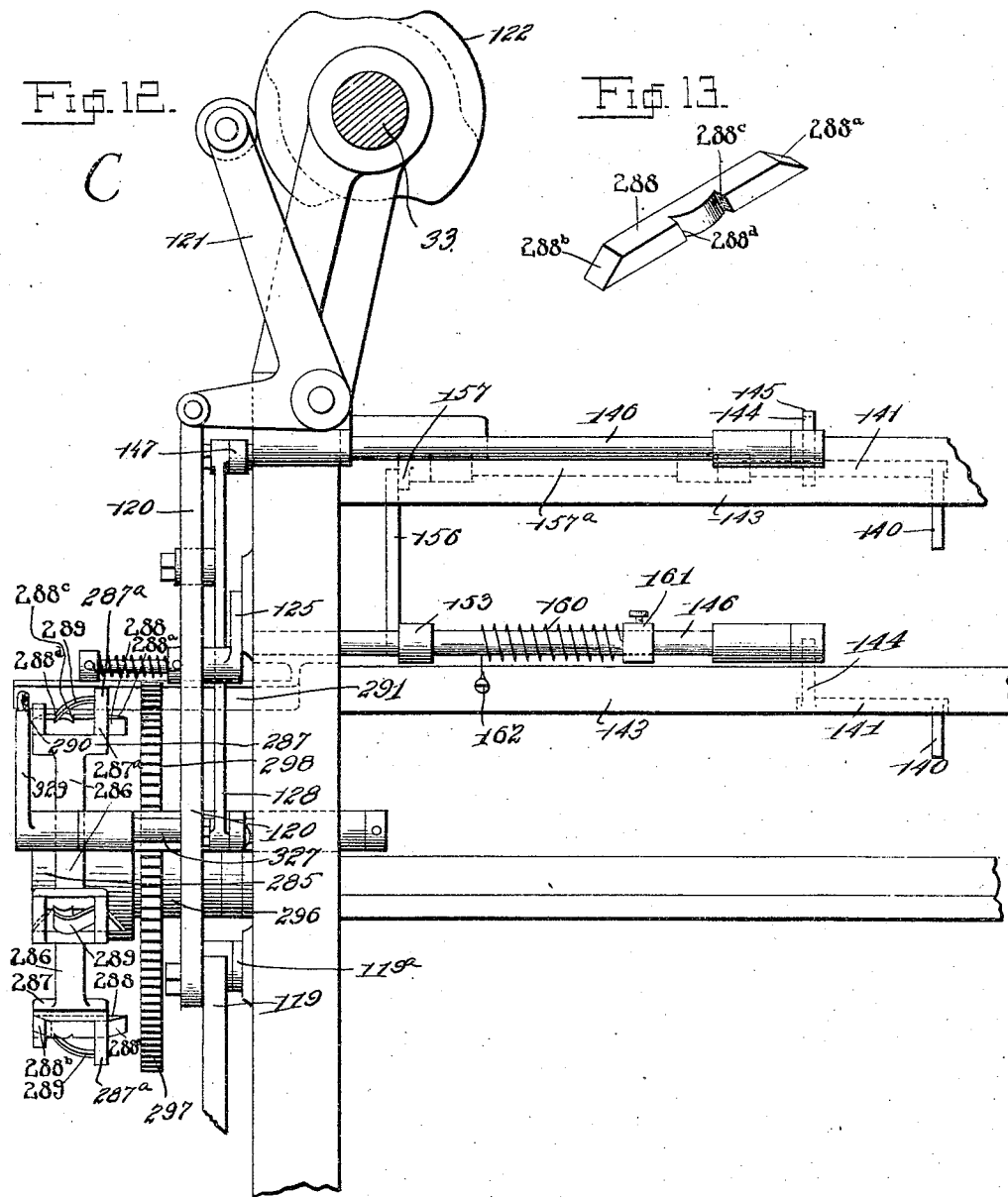
Inventor
T. C. Dexter
By his Attorneys
Knight & Co.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 12.



Witnesses
W. A. Countmond
Samuel J. Hoexter

Inventor
T. C. Dexter
 By his Attorneys *Knights Bros.*

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 13.

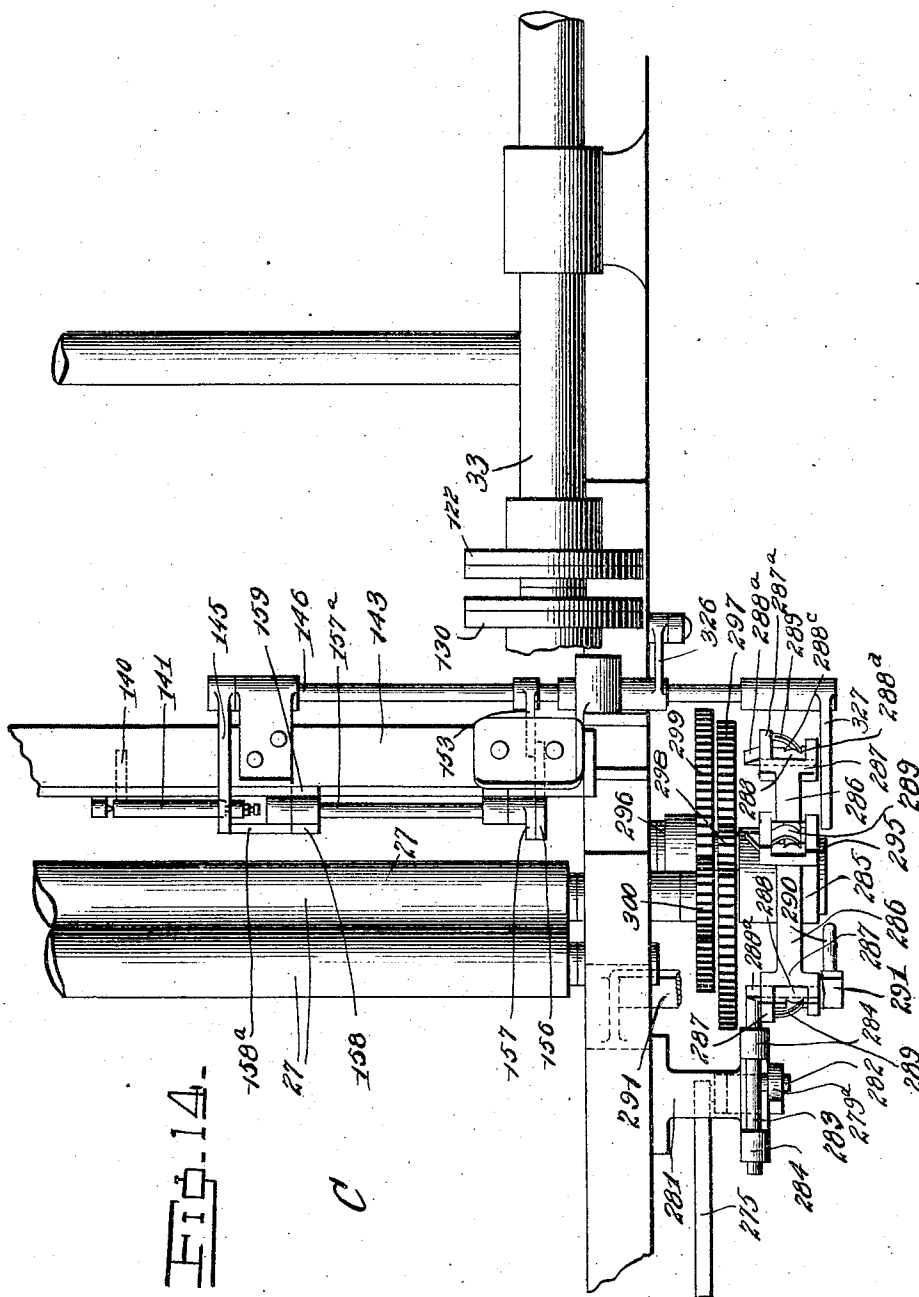


FIG. 14.

C

Witnesses
W. A. Courtland
Samuel J. Hoexter

Inventor
T. C. Dexter
By his Attorneys
Knight & Co.

No. 787,730.

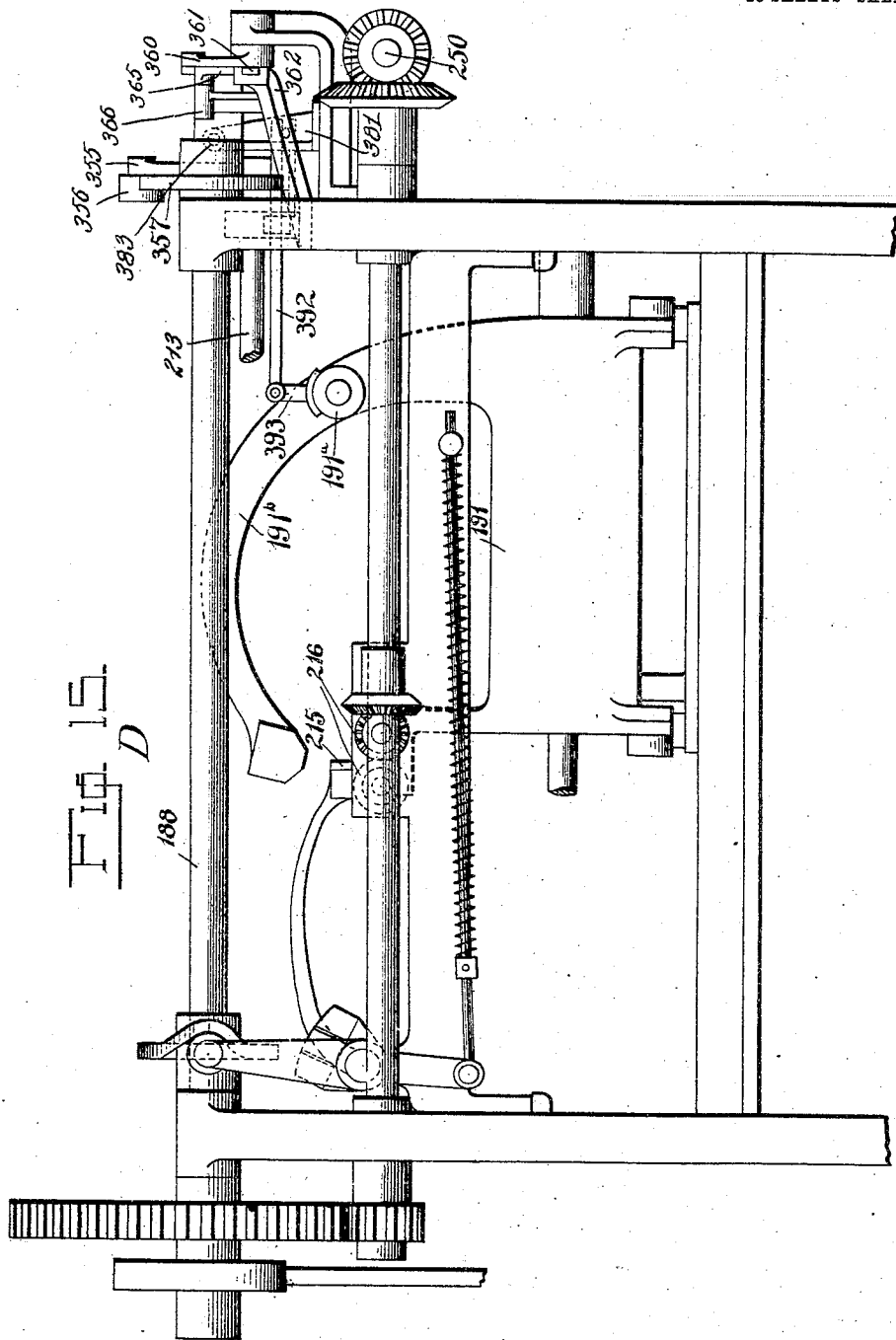
PATENTED APR. 18, 1905.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 14.



Witnesses
W. A. Courtland
Samuel J. Hoexter

Inventor
Talbot C. Dexter
By his Attorneys *Knight & Boy*

No. 787,730.

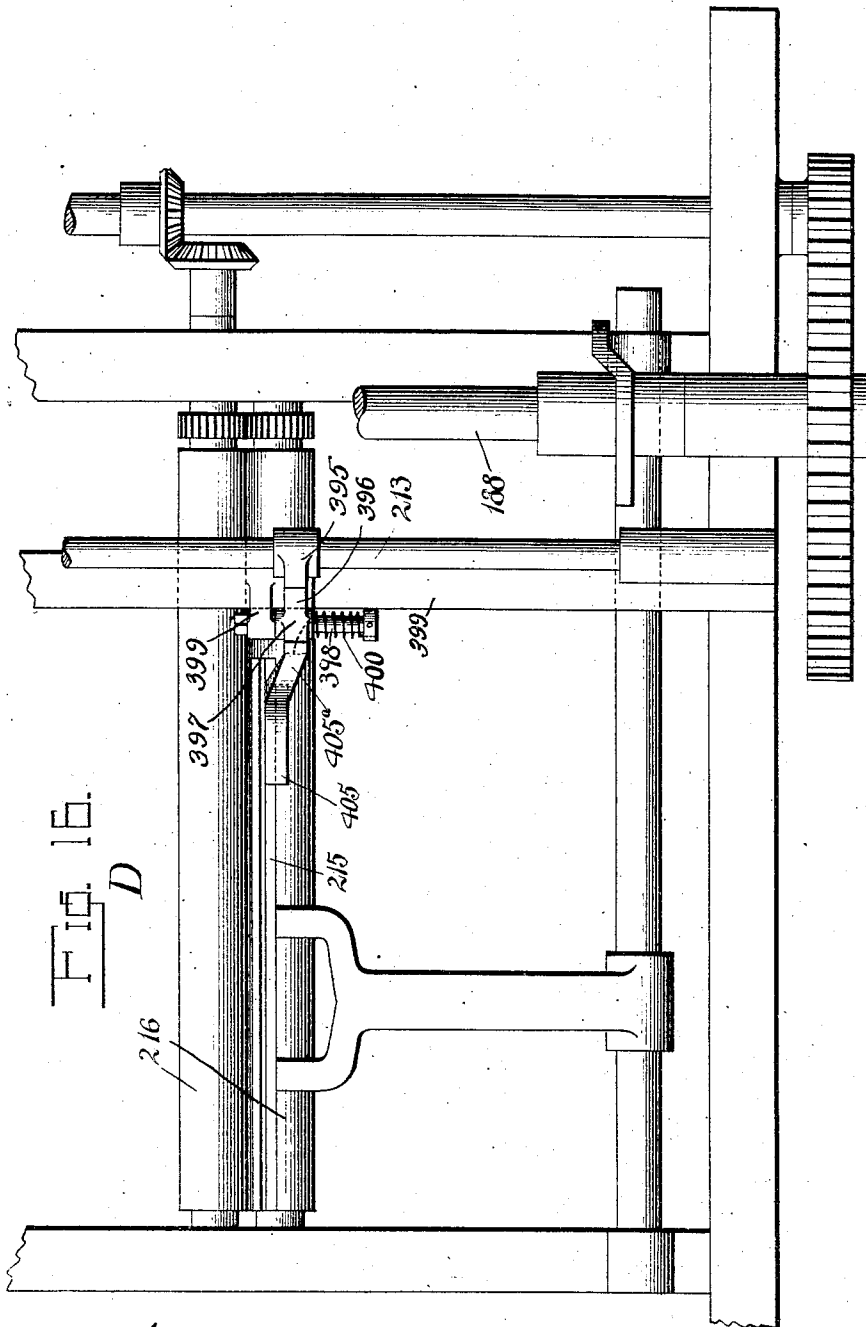
PATENTED APR. 18, 1905.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 15.



Witnesses
W. A. Courtland
Samuel J. Hoexter

Inventor
T. C. Dexter
By his Attorneys
Knight Bros.

No. 787,730.

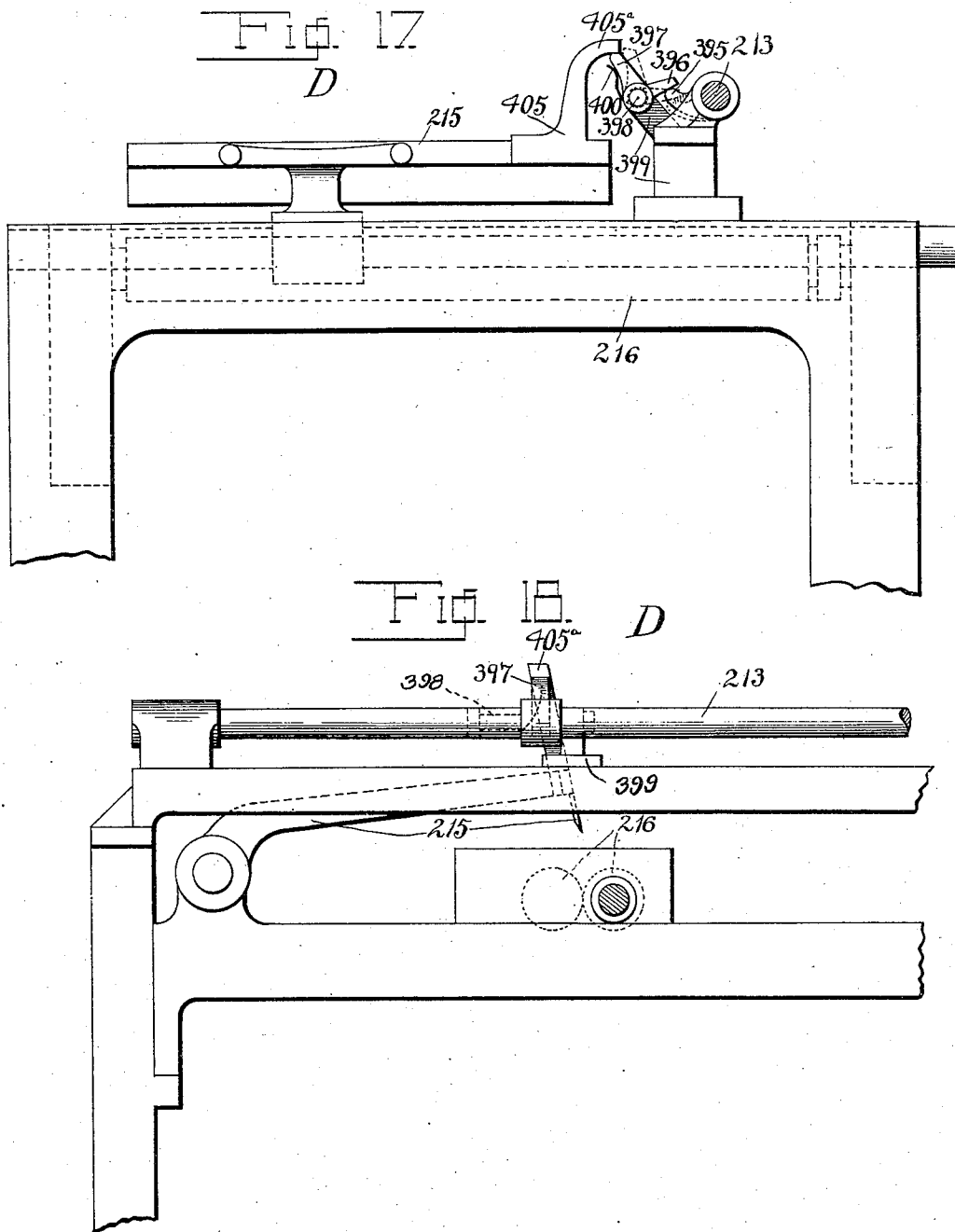
PATENTED APR. 18, 1905.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 16.



Witnesses
W. A. Courtland
Samuel J. Hoexter

Inventor
T. C. Dexter
By his Attorneys *Knight & Bond*

No. 787,730.

PATENTED APR. 18, 1905.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 17.

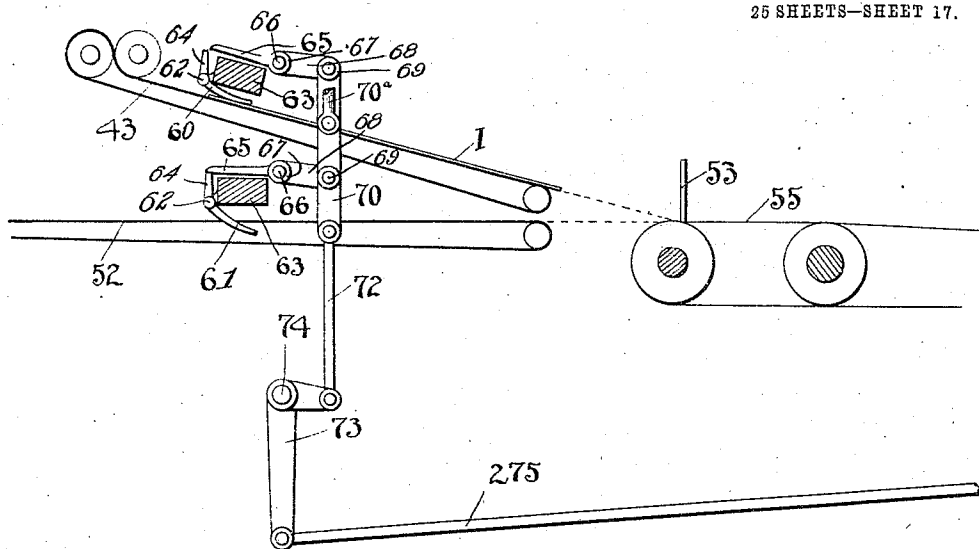


Fig. 19.
B

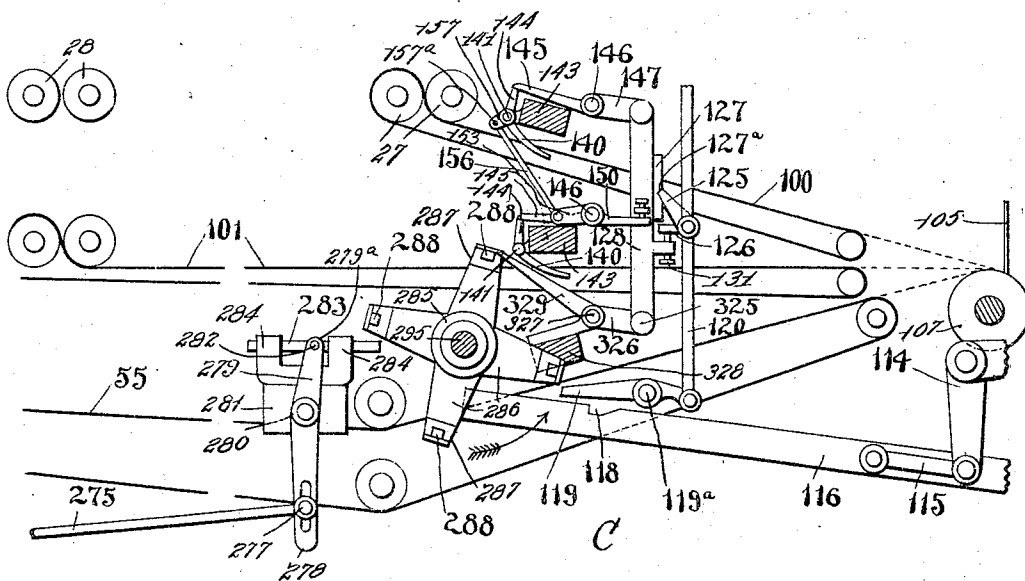


Fig. 19. a

Witnesses
W. A. Courtland
Samuel J. Hooper

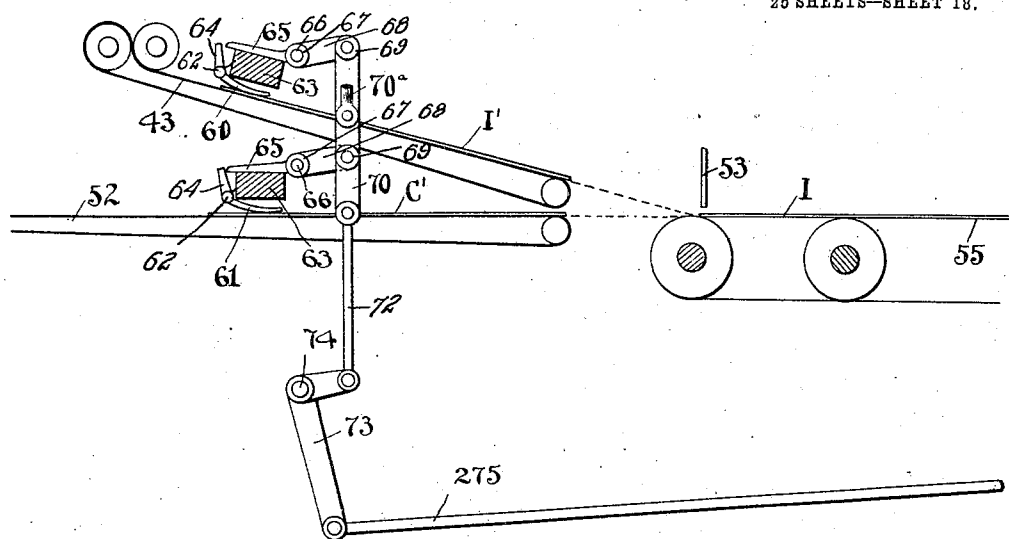
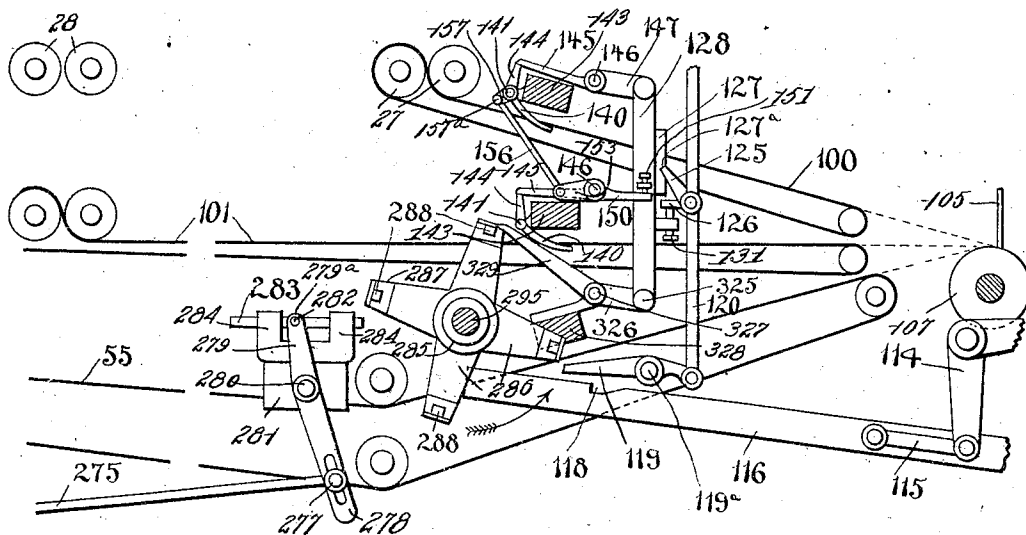
Inventor
T. C. Dexter
By his Attorneys
Knight Bros

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 18.

Fig. 20.
BFig. 20a.
C

Witnesses
W. A. Courtland
Samuel J. Hoexter

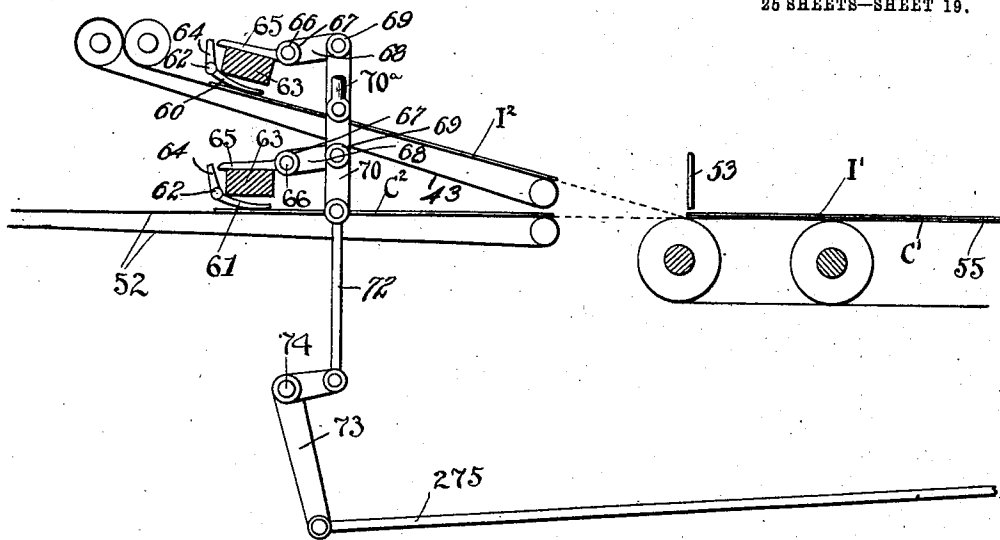
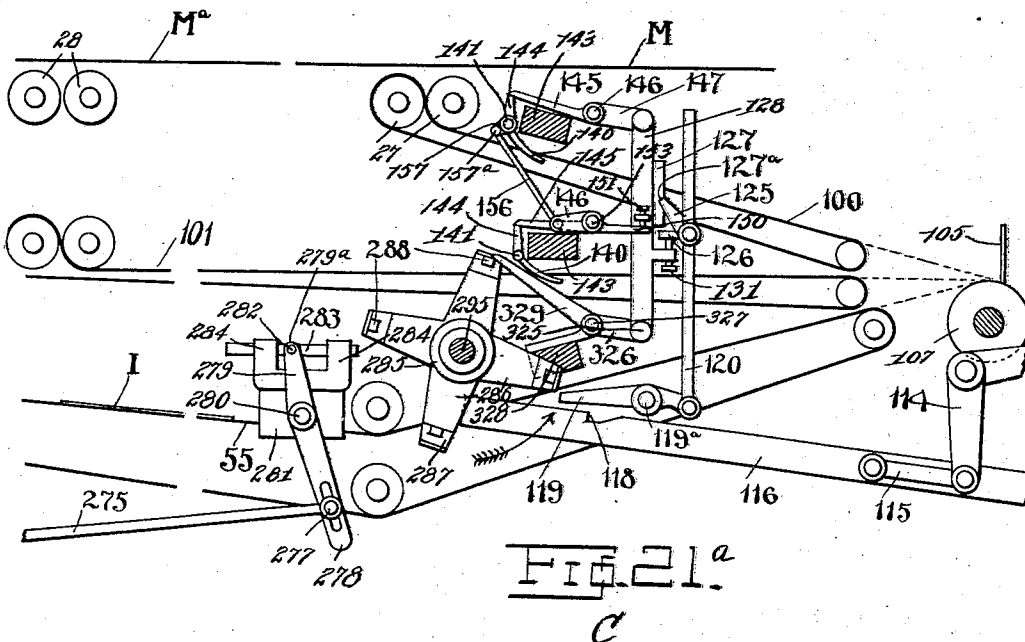
Inventor
T. C. Dexter
 By his Attorneys
Knight & Sons

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 19.

Fig. 21.
BFig. 21a.
C

Witnesses
W. A. Courtland
Samuel J. Hoexter

Inventor
T. C. Dexter
 By his Attorneys *Knight & Co.*

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 20.

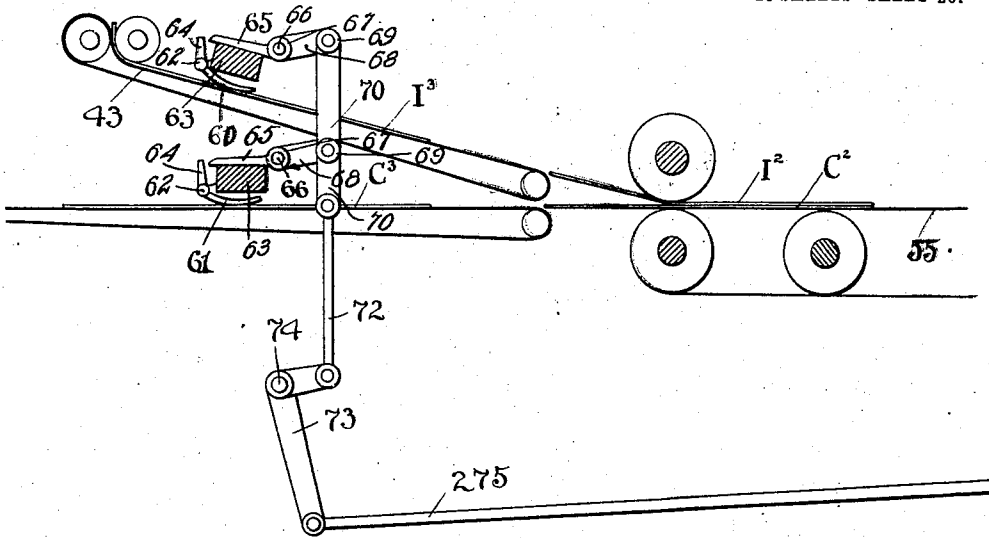


Fig. 22
B

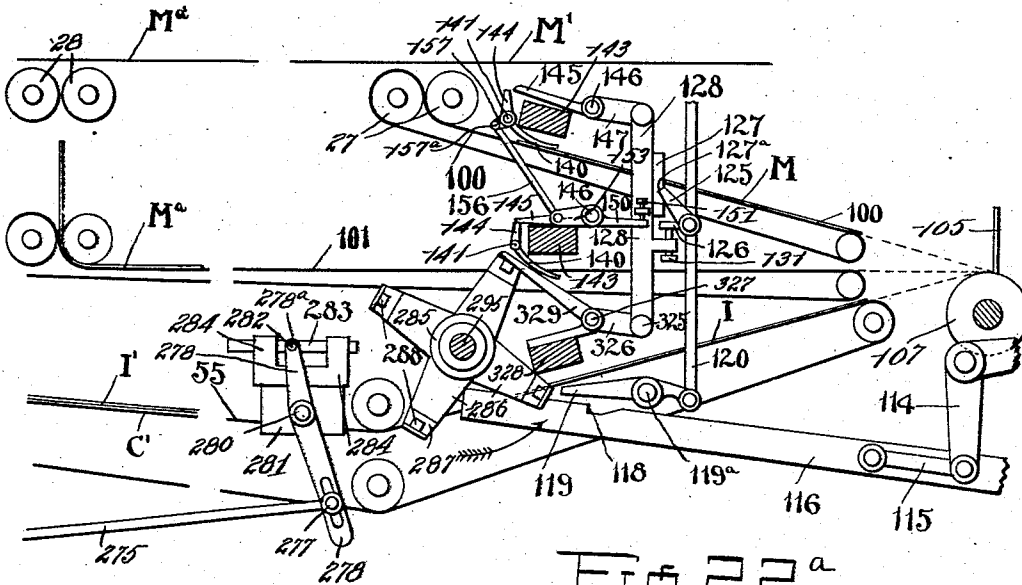


Fig. 22^a
C

Witnesses
W. A. Courtland
Samuel J. Hoexter

Inventor
T. C. Dexter
By his Attorneys
Straight Brothers

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 22.

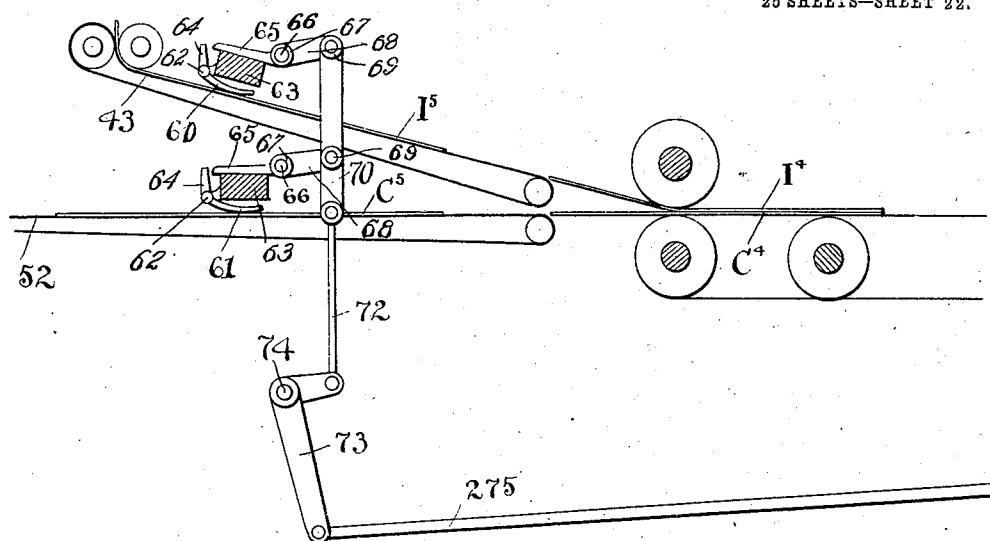


Fig. 24.

B

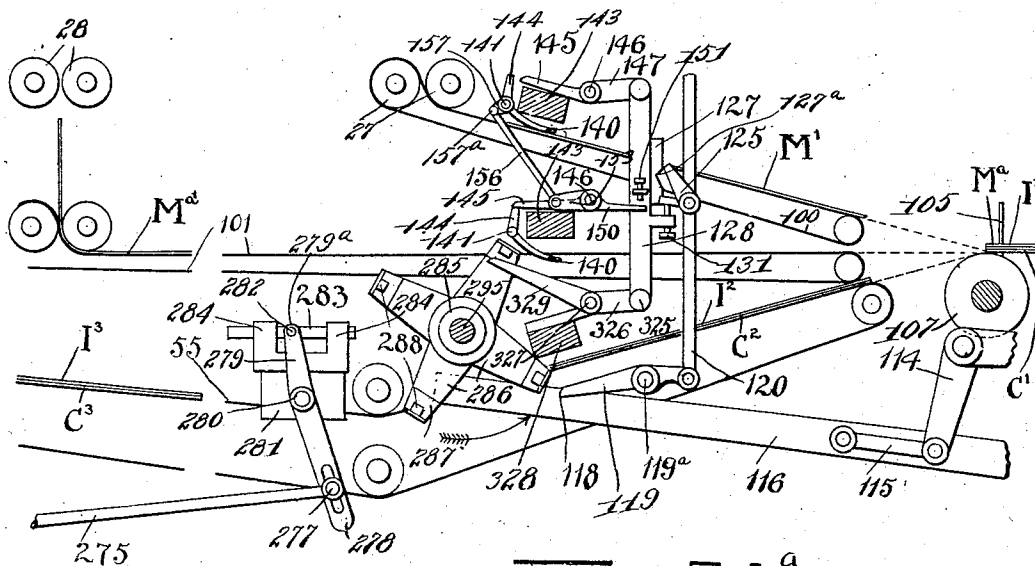


Fig. 24.^a

C

Witnesses
W. A. Cowland
Samuel J. Hayter

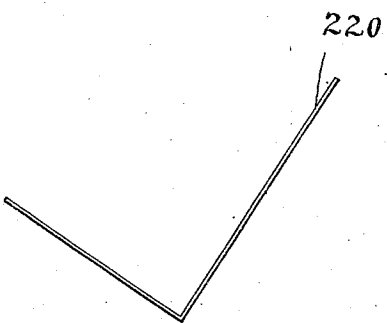
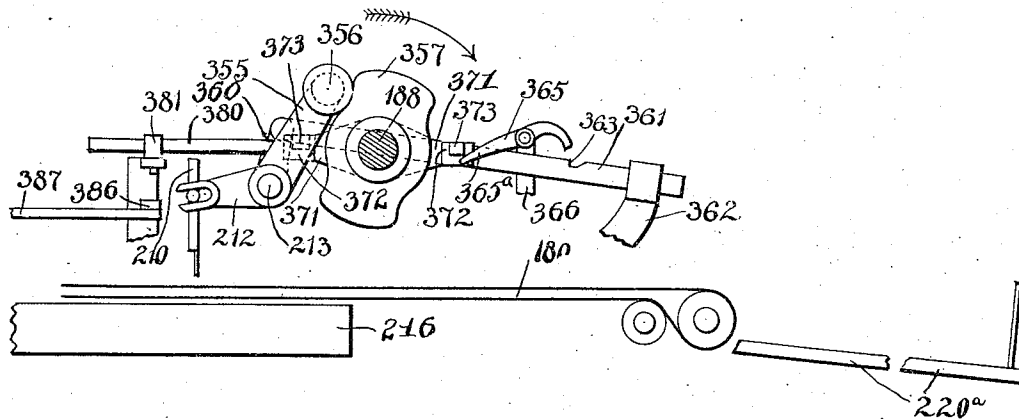
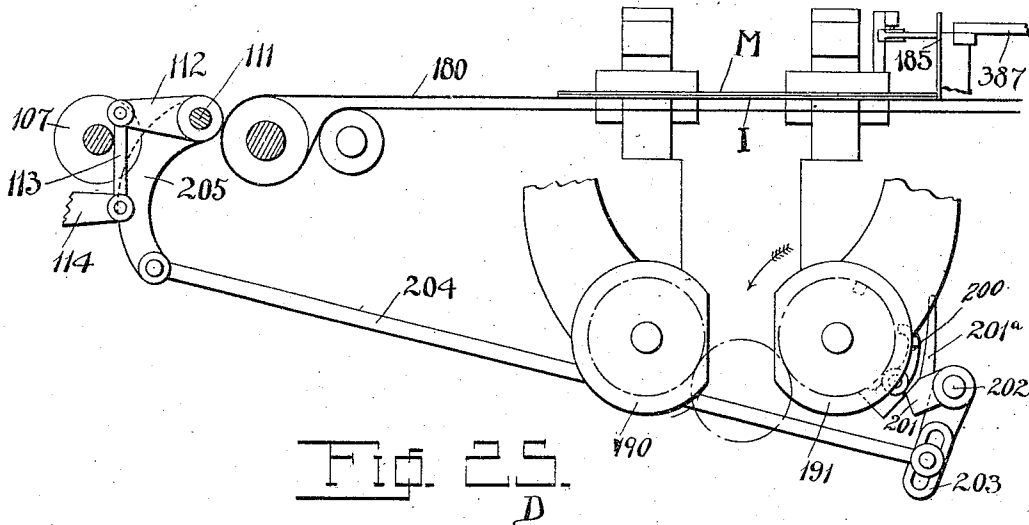
Inventor
T. C. Dexter
By his Attorneys
Knight & Co.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 23.



Witnesses
W. A. Crutland
Samuel J. Hoexter

Inventor
T. C. Dexter
 By his Attorneys
Knight Bros.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 24.

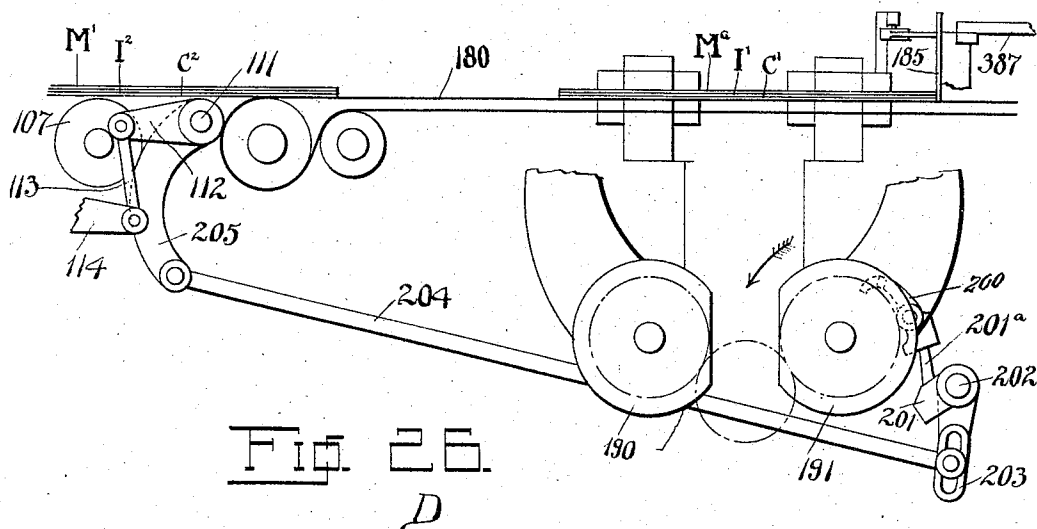


Fig. 26
D

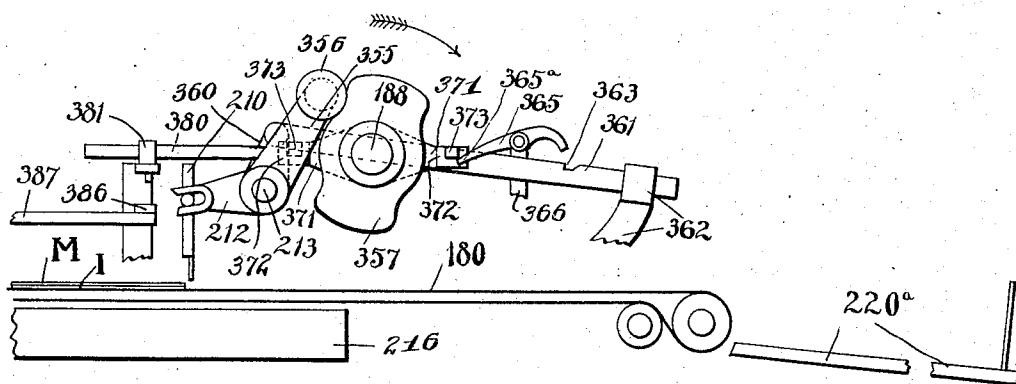
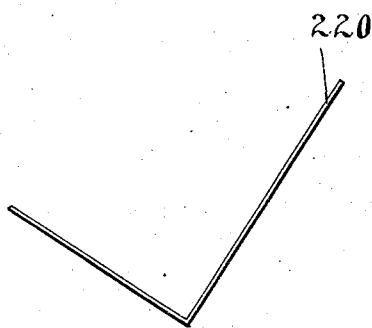


Fig. 26^a
D



Witnesses
W. A. Courtland
Samuel J. Hoexter

Inventor
T. C. Dexter
By his Attorneys
Smith Bros.

T. C. DEXTER.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

APPLICATION FILED FEB. 29, 1904.

25 SHEETS—SHEET 25.

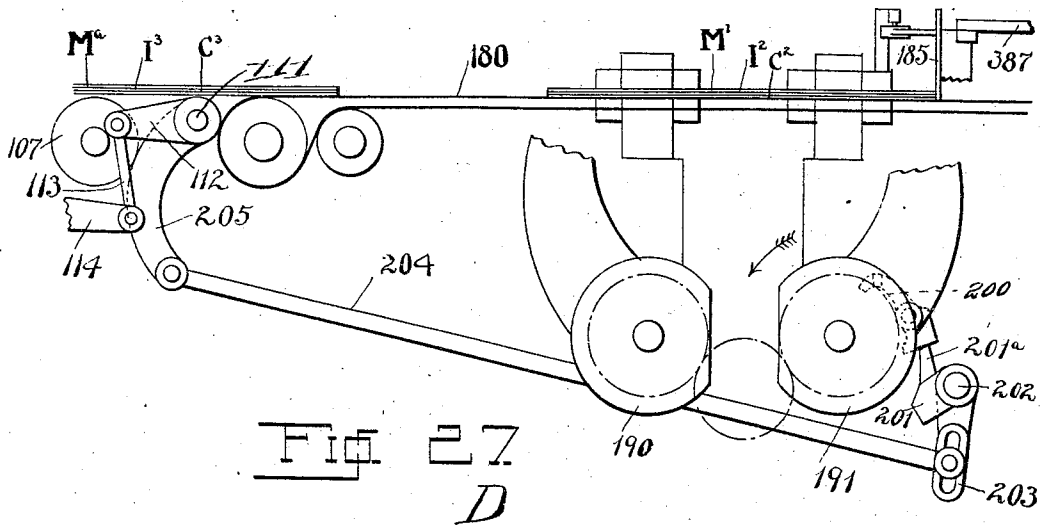


FIG 27
D

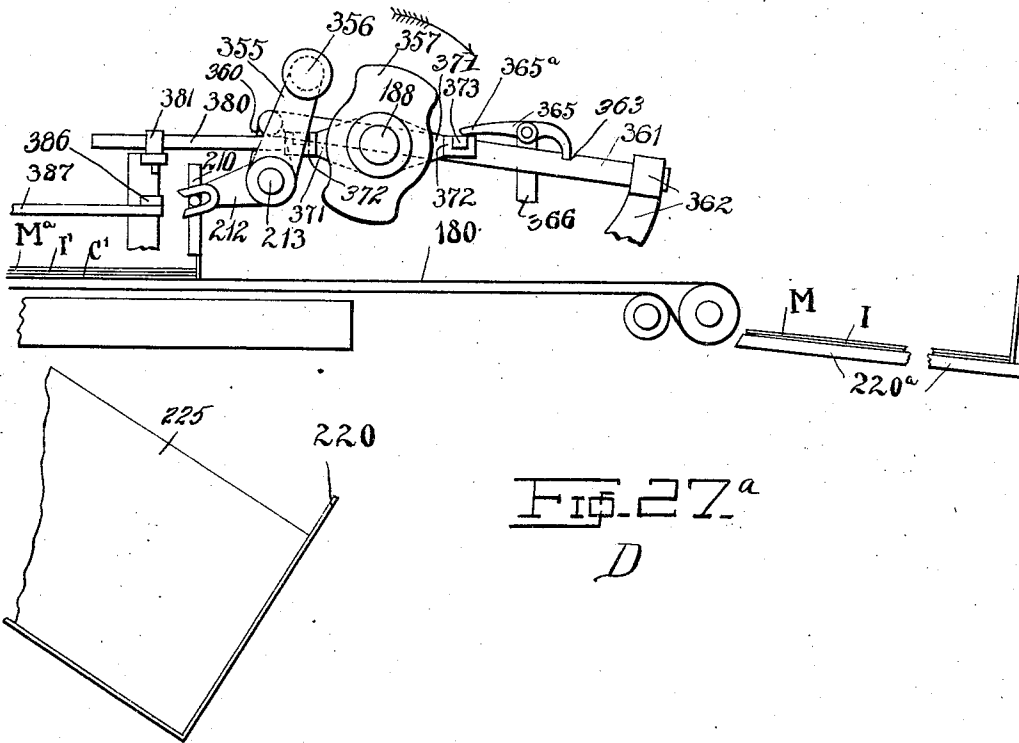


FIG 27^a
D

Witnesses
W. A. Courtland
Samuel J. Hoexter

Inventor
T. C. Dexter
By his Attorneys
Knight & Sons

UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK, ASSIGNOR TO DEXTER FOLDER COMPANY, OF PEARL RIVER, NEW YORK, A CORPORATION OF NEW YORK.

PAPER ASSEMBLING, STITCHING, AND FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 787,730, dated April 18, 1905.

Application filed February 29, 1904. Serial No. 195,835.

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, a citizen of the United States, residing at Pearl River, in the county of Rockland and State of New York, have invented certain new and useful Improvements in Paper Assembling, Stitching, and Folding Machines, of which the following is a specification.

The present invention relates generally to improvements in the class of machines designed to assemble, secure together, and fold a plurality of sheets, signatures, or parts constituting a periodical or pamphlet, this style of machine being the subject of previous patents granted to me, Nos. 588,635, 595,941, 599,319, 602,816, 618,648, 632,448, 653,196, and 669,724. In this type of machine as heretofore constructed and as disclosed in the patents mentioned the sheets or signatures and cover which are to be assembled, bound, and folded into a book or pamphlet are fed along different paths into the machine at a plurality of points and gathered or assembled at a single point of assemblage, and the sheet-actuated controlling devices are arranged in the paths of the individual sheets or signatures and cover to control the disposition of the assembled sheets or signatures and cover at the point of assemblage, so that the absence of any one of the parts of the book or pamphlet will permit the operation of the controlling devices for throwing out of the machine the remaining incomplete parts of the book or pamphlet which have been fed into position, to thereby avoid the binding, folding, and delivering of an incomplete book. The capacity of this old type of machine is limited, because of the necessity of feeding each sheet or signature independently to the point of assemblage, three signatures or parts being about the largest number that could be handled practically.

To increase the capacity and improve the general operation of machines of the type covered by my above-named patents, I produced the improved assembling, stitching, and folding machine set forth in my application, Serial No. 118,446, filed August 5, 1902. In the ma-

chine of this application I employ (the same as in the machines of my above-named patents) a series of auxiliary sheet-conveyers leading a plurality of sheets to a common point of assemblage on a main or assemblage conveyer, together with a series of sheet-actuated controlling devices arranged in the paths of the auxiliary conveyers and adapted to control the disposition of the assembled sheets or signatures at the point of assemblage, and to increase the capacity of the machine and adapt it to handle an unlimited number of sheets or signatures I provided the machine of said application with additional or subauxiliary conveyers, arranged in groups of twos or threes in proper relation to one or more of the auxiliary conveyers to supply individual or groups of sheets or signatures to the auxiliary conveyers, and sheet-actuated controlling devices for said subauxiliary conveyers, which control the disposition of the individual or assembled sheets or signatures in the same manner as the controlling devices of the auxiliary sheet-conveyers. In the machine of said application, Serial No. 118,446, the means for controlling the disposition of the sheets or signatures includes automatic sheet-actuated tripping devices; one or more sheet-deflecting switches arranged in the plane of feed of some of the conveyers and actuated by said tripping devices, and a throw-out mechanism for the stitching-machines, also adapted to be actuated by said tripping devices. The machine covered by said application, Serial No. 118,446, has proven entirely successful for many classes of work, but has been found defective in one particular when operating upon extra-heavy sheets or in producing books or pamphlets of a very large number of sheets or signatures. In either of these cases I have found that the use of the sheet-deflecting switches for throwing out of the machine the incomplete parts of a book or pamphlet is unsatisfactory, because of the stiffness or bulk of the sheets or signatures or series of sheets or signatures. This lack of flexibility in the sheets or signatures or series of sheets or signatures renders it very difficult for the sheet-deflecting

switches to properly deflect the incomplete parts of the book or pamphlet, and I found in some cases that said incomplete parts would choke up the machine at one or more of the switches, and thereby disarrange the entire operation and endanger the machine, as well as destroy a number of printed sheets or signatures which are being bound. In view of this serious defect in the machine of my above-named application when operating upon the class of work referred to I have improved the machines of this type as set forth in my present application for patent, and the present case may therefore be considered as an improvement on the machine covered by my above-named application, Serial No. 118,446.

The main feature of novelty in the machine of my present application consists in the arrangement of mechanism controlled by the individual sheets, signatures, or parts of a book or pamphlet to be formed for permitting the incomplete sheets, signatures, or parts (in cases where one or more of said sheets, signatures, or parts is missing for any cause) to be carried entirely through the machine past the stitching, final-fold gage, and final-fold mechanisms without being bound or folded together and thrown out at the rear end of the machine into a receptacle separate from the packing-boxes which receive the completely bound and folded books. This novel mechanism includes a controlling mechanism or mechanisms operating constantly under the influence of the individual sheet-actuated tripping devices arranged in the paths of the several auxiliary and subauxiliary conveyers, so that the absence of any sheet, signature, or part of the book or pamphlet being formed will immediately be detected and the controlling mechanism set into operation, so that when the incomplete sheets, signatures, or parts of the particular book from which the sheet, signature, or part is missing reach the stitching, final-fold gage, and final-fold mechanisms said mechanisms will be held out of operation and the incomplete parts of the book will be allowed to pass directly out through the delivery end of the machine and be kept separated from the completely bound and folded books. It will of course be clear that such sheet-actuated tripping devices must also include means for automatically resetting the controlling, stitching, final-fold gage, and final-fold mechanisms after the passage of the incomplete parts of a particular book, so that the stitching, final-fold gage, and final-fold mechanisms will be in proper condition to bind, arrest, and fold, respectively, the next succeeding complete set of sheets, signatures, or parts which are conveyed to them.

The controlling mechanism for accomplishing the above-stated purpose in my improved machine is preferably arranged in two parts, one under the influence of the several sheet-

actuated tripping devices of the conveyers for controlling the operation of the stitching-machines and the other actuated by the stitching-machines for controlling the operation of the final fold and delivery mechanisms. Each part of such controlling mechanism is preferably constructed upon the same general principle.

The main or first part of the controlling mechanism includes an intermittently-operated bar arranged to actuate the throw-out mechanism of the stitching-machines, a controlling-dog intermittently moved into engagement with said throw-out bar to prevent its operation, and sheet-actuated tripping devices supported in the paths of the several sheet-conveyers and operating upon intermediate devices which directly control said dog, so that when the several sheets, signatures, or parts forming a book or pamphlet are moving in proper relation through the machine said dog will be intermittently moved into engagement with said bar to prevent its operation and insure the proper operation of the stitching, final-fold gage, and final-fold mechanisms. Some of the sheet-actuated tripping devices of the auxiliary conveyers operate to control said stitcher throw-out bar in the same manner as set forth in my above-named application, Serial No. 118,446, while other sheet-actuated tripping devices of the subauxiliary conveyers operate upon a novel form of mechanism including a rotating wheel or spider supporting a plurality of laterally-shiftable pins or tappets, which when in normal inoperative position do not interfere with the operation of the controlling-dog, which prevents the throwing out of the stitching and final-fold mechanisms, but one of which pins or tappets when actuated by an auxiliary controlling-bar under the control of the tripping devices of the subauxiliary conveyers is caused to be shifted into operative position in its supporting wheel or spider, in which position it engages a part connected with said controlling-dog to hold the dog away from the stitcher-throw-out bar to allow said bar to operate and throw out of operation the stitching mechanisms, which in turn arrest the operation of the final-fold gage and final-fold mechanism.

The second part of the controlling mechanism, which controls the final-fold mechanism from the stitching-machines, includes an intermittently-operating bar connected with the final-fold gage and controlling the final-fold mechanism, a dog adapted to prevent the operation of said bar, a rotating wheel or spider supporting a plurality of shiftable pins or tappets, which when in operative position are adapted to disengage said dog from the controlling-bar of the final-fold mechanism, and a movable pin supported normally in the path of said shiftable pins or tappets to move them into operative relation with said dog and connected through suitable mechanism with the

hammer-arm of one of the stitching-machines, so that when the stitching-machines operate said movable pin will be withdrawn from the path of said tappets, so as to allow the final-fold mechanism to operate properly, and, on the other hand, when the stitching-machines are thrown out of operation said movable pin will remain in the path of said tappets and engage and shift one of them upon its supporting wheel or spider, placing it in position to disengage the dog from the controlling-bar, so that the final-fold gage and final-fold mechanism will be held out of operation to allow the sheets, signatures, or parts of the incomplete book or pamphlet to pass on beyond the final-fold mechanism and out of the machine.

It will be clear from the above general description of the preferred form of my improved machine that it is contemplated to omit the sheet-deflecting switches of the machine set forth in my above-named application, Serial No. 118,446. As a modification of this preferred form of the machine, however, I may employ one or more sheet-deflecting switches to deflect from the machine one or more incomplete sheets, signatures, or parts supplied by one or more of the subauxiliary conveyers in combination with the other essential parts of the mechanism for carrying through the machine the main bulk of parts or signatures of incomplete books or pamphlets. It will be clear that such a modification of the machine will be practicable only when the parts or signatures to be acted upon by deflecting-switches are sufficiently flexible to insure the successful operation of such switches.

My present invention includes many other features of novelty over the old forms of this type of machine, and in order that the invention may be fully understood I will first describe the same with reference to the accompanying drawings and afterward point out the novelty with more particularity in the annexed claims.

The drawings represent a machine having only two points of assemblage of sheets or signatures, one being the point of common assemblage on the main or assemblage conveyor and the other being an auxiliary point of assemblage on one of the auxiliary conveyers which receives individual parts or signatures from the two subauxiliary conveyers. It will be clear, however, that a machine can be constructed within the scope of my present invention with a larger number of points of assemblage, and each point of assemblage can collect two or three signatures or parts. For instance, I can arrange two or three subauxiliary conveyers leading to a point of assemblage on each of the auxiliary conveyers which convey the several collections of sheets or signatures to the main conveyor, and in cases where a larger number of parts or signatures are to be bound than can be taken care of by

this suggested arrangement the plan of my invention can be still further expanded by arranging to assemble a plurality of signatures or parts on one or more of the subauxiliary conveyers to be carried thereby as single parts to the auxiliary conveyers. In any of the suggested embodiments of my invention it will of course be understood that the sheet-controlling devices will be so arranged on the principle above suggested and hereinafter explained in detail that the absence of any individual signature or part of the book or pamphlet at any point in the machine will cause the operation of the stitcher-throw-out and final-fold-controlling devices at the proper time to prevent the operation of the stitching-machines, final-fold gage, and final-fold mechanism when the incomplete book or pamphlet arrives in position to be stitched and finally folded, so that said incomplete book or pamphlet will escape the binding and final fold and will pass out at the rear end of the machine.

In said drawings, Figure 1 is a diagrammatic plan view of my improved assembling, stitching, and folding machine, illustrating its general arrangement and construction. Fig. 1^a is a diagrammatic view of the conveyers and stops. Fig. 2 is a side elevation of section A of the machine shown in Fig. 1, which is essentially a folding-machine, into which the main sheets or parts of a book are fed by hand or by an automatic feeding-machine. Fig. 3 is a plan view of the same. Fig. 4 is a side elevation of section B of the machine which includes two subauxiliary sheet-conveyers, to which the insert and cover sheets are fed. Fig. 4^a is a detail side elevation of a bell-crank lever and adjacent parts. Fig. 5 is a plan view of the same. Fig. 6 is a side elevation of a modified form of section B of the machine which may be used in combination with the rest of the machine in place of the form of this part of the mechanism shown in Fig. 4. Fig. 7 is a side elevation of the central section C of the machine including the second-fold mechanisms, the three auxiliary sheet-conveyers, and the main automatically-operated sheet-controlling devices. Fig. 8 is a plan view of the same. Fig. 9 is a side elevation of section D of the machine, illustrating the main or assemblage conveyor, the stitching or stapling machines, and the final-fold and delivery mechanisms. Fig. 10 is a plan view of the same. Fig. 11 is an enlarged detail side elevation of the main sheet-actuated tripping devices of section C of the machine for controlling the operation of the stapling-machines and the final disposition of the sheets or signatures. Fig. 12 is an elevation of a portion of the same looking toward the feed-in end of the machine. Fig. 13 is a detail perspective view of one of the shiftable pins or tappets. Fig. 14 is a detail plan view of the mechanism shown in Figs. 11 and 12. Fig. 15 is a rear end elevation

of the machine, parts being omitted and showing particularly the stitching and final-fold mechanisms and the means for controlling the latter by the former. Fig. 16 is a detail plan view of the final-fold mechanism. Figs. 17 and 18 are a detail side elevation and a detail end elevation, respectively, of the final-fold mechanism. Figs. 19 and 19^a, 20 and 20^a, 21 and 21^a, 22 and 22^a, 23 and 23^a, and 24 and 24^a are diagrammatic side elevations showing the auxiliary and subauxiliary conveyers, the sheet-actuated tripping devices for said conveyers, the main controlling mechanism actuated by said sheet-actuated tripping devices, and several of the distinctive operative positions of the sheets or signatures passing through the machine. Figs. 25 and 25^a, 26 and 26^a, and 27 and 27^a are diagrammatic side elevations of the main or assemblage conveyor, the stitching-machines, and final-fold and controlling mechanisms, representing the operation of section D of the machine.

My improved machine, like the machines of my prior patents and application hereinbefore referred to, comprises a main or assemblage conveyor for carrying assembled sheets or signatures to the stapling or stitching machines and final-fold and delivery mechanisms, auxiliary sheet-conveyers, preferably three in number, for conveying individual sheets or signatures to the point of common assemblage on the main or assemblage conveyor, sheet-actuated controlling means, and means for feeding into the machine at convenient points the several parts or signatures which are to be bound into the book or pamphlet. In addition to these features in common with the old form of machine my present invention includes, in common with the machine of my above-named application, subauxiliary conveyers leading to the auxiliary conveyers and auxiliary points of assemblage on the auxiliary conveyers for collecting two or more parts that are to be forwarded to the main point of assemblage. In this machine of my above-named application the sheets which are collected at the auxiliary point of assemblage are automatically controlled by sheet-actuated tripping devices, so that an incomplete number of parts will be detected and switched out of the machine at the auxiliary point of assemblage. The sheet-deflecting switches of my above-named application are omitted in the machine of the present case, (excepting in the suggested modification, in which one or more of the switches adjacent to the auxiliary points of assemblage on the auxiliary conveyers are used to switch out one or two flexible sheets, signatures, or parts,) and the controlling mechanism hereinafter described is so arranged that the incomplete books or pamphlets will pass through the machine without interruption (with the exception that the stitching-machines and final-fold mechanism will not operate upon the incomplete books which are

moved past these mechanisms) without being bound and final-folded and ejected from the rear end of the machine into the receptacle for incomplete parts.

For convenience of description I will refer to the machine in four sections A, B, C, and D, as illustrated in Fig. 1 of the drawings, the same as was done in application Serial No. 118,146, and similar reference characters are used for corresponding parts up to about reference-number 250.

Section A of the machine, Figs. 1, 2, and 3, consists of an automatic folder adapted to receive large sheets of paper from an automatic feeding-machine or from a feed-board fed by hand and fold the sheets once longitudinally and then cut them into two folded sections, which are passed by suitable conveying-tapes into one side of the central section C of the machine to the duplicate second-fold mechanisms, as hereinafter explained. 1 is the main driving-shaft; 2, the cam-shaft; 4, the main feed-roller, and 5 the usual drop-rollers operating above and in conjunction with the feed-roller 4. Drop-rollers 5 are operated by cam 6 and arm 7, as usual. 8 is a rotary slow-down device for preventing the rebound of the sheet from the gage. 9 is the side-registering gripper of usual construction operated through connections 10, 11, and 12 and cam 13. 14 is the receding first-fold gage, operated in the usual manner. 16 represents the first-fold rollers, and 18 is the folding blade or knife, mounted on arms 17 and operated by cam 19 and cam-arm 20. 21 is the rotary cutter for separating the sheet into two equal parts as it passes through the first-fold rollers 16, and 22 and 23 are brackets supporting the cutter, so that it may be adjusted vertically as well as horizontally. The rotary cutter 21 is adjustable parallel with the first-fold rollers 16 to cut the once-folded sheet of any size into halves. 15 represents the feeding-in tapes, and 15^a the tapes which transfer the two sections of the once-folded sheet from the first-fold mechanism to the second-fold mechanisms in the central section C of the main machine, Figs. 1, 7, and 8. The two sections M and M^a of the main sheet, Fig. 21^a, are carried by the tapes 15^a over the second-fold rollers 27 and 28 of section C until said sheets are arrested by the second-fold gages 25 26. The second-fold rollers 27 and 28 of section C are mounted in frames 34 and 35, Figs. 7 and 8, the frame 34 being stationary, while the frame 35 is adjustable, the latter having a rack-bar 36, Fig. 7, engaged by a pinion 37, by which the folding-rollers 28 may be adjusted toward and away from the folding-rollers 27. The adjustments of the rotary cutter 21 and the frame 35 are for the purpose of accommodating sheets of different sizes. 30 and 31, Figs. 7 and 8, are the second-fold blades or knives, mounted upon rock-arms 29 extending from rock-shafts 29^a, Figs. 1, 7, and 8, and operated through

arms 32 by cams 31^a, mounted upon cam-shaft 33. The sections of the main sheet are passed through the second-fold mechanisms just referred to and are conveyed by the sets of tapes forming the first and second auxiliary sheet-conveyers 100 and 101, which lead to the point of common assemblage or gage 105 on the main conveyer 180 of section D, hereinafter referred to.

Referring now to section B of the machine, Figs. 4, 5, and 6, 40 is a feed-board, 41 a lower feed-roller, 42 drop-rollers, and 43 a set of tapes, constituting the upper one of the two subauxiliary sheet-conveyers. It is intended that insert-sheets be fed by hand from feed-board 40 to feed-rollers 41 and 42. 50 is another lower feed-roller, 51 drop-rollers, and 52 a second set of tapes constituting the second or lower subauxiliary sheet-conveyer. It is intended that cover-sheets be fed from an automatic feeding-machine to the feed-rollers 50 and 51. These subauxiliary conveyers 43 and 52 lead to a common point or gage 53 on the third and lowest auxiliary conveyer 55 for the purpose of assembling an insert-sheet with a cover-sheet at this point. Supported in the path of the subauxiliary conveyers 43 and 52 are the sheet-actuated tripping-fingers 60 and 61, Figs. 4, 5, 6, 19, 20, 21, 22, 23, and 24, each of which is mounted upon a rock-shaft 62, freely journaled in the brackets 63 and formed with an upwardly-projecting heel 64, supported in the plane of a rock-arm 65, mounted upon a rock-shaft 66, which is journaled in brackets 67 and carries a forwardly-extending arm 68, connected at 69 with a vertically-movable controlling-bar 70. This bar 70 is operated vertically through link 70^a and bell-crank lever 70^b, Figs. 4, 4^a, and 6, by a cam 71, keyed to the cam-shaft 33. The bar 70, Figs. 4, 6, 19, 20, 21, 22, 23, and 24, is connected, through the depending rod 72, with a bell-crank lever 73, journaled to the machine-frame at 74 and connected with a reciprocating rod or bar 275, supported to slide in bearings 276, swiveled upon the machine-frame. The rod or bar 275 extends longitudinally of the machine to a point about central of section C of the machine, Figs. 7, 11, 19^a, 20^a, 21^a, 22^a, 23^a, and 24^a, where its end is pivotally connected at 277 to a bolt which is adjustably mounted in the slotted end 278 of the lever 279, journaled at 280 upon a bracket 281. The lever 279 has a slotted upper end 279^a, in the slot of which engages a lug 282, projecting laterally from a longitudinally-movable pin or rod 283, which is mounted to slide in bracket-bearings 284, projecting upwardly from the bracket 281. This rod or pin 283 is adapted to be projected into the path of a rotating circumferential series of shiftable tappets constituting part of the main controlling mechanism for the purpose presently to be explained.

Before proceeding with the description of the rotating series of tappets actuated by the pin or rod 283 under the control of the subauxiliary sheet-actuated tripping devices of section B of the machine I will describe the hereinbefore-suggested modification of section B of the machine, shown in Fig. 6 of the drawings, in which a sheet-deflecting switch is employed at the receiving end of auxiliary conveyer 55 for throwing out of the machine either the cover or insert sheet when one of said sheets is missing. This modification of section B of the machine is, in effect, the combining of my improved controlling mechanism with the construction of section B of the machine, as shown in my above-named application, Serial No. 118,446.

Referring now to Fig. 6 of the drawings, it will be observed that the above description of the preferred construction of section B of the machine as shown in Fig. 4 applies equally as well to section C as shown in Fig. 7, the only difference between the preferred and modified structure being the addition in the modified structure of the sheet-deflecting switch and its operating means. This added part of the structure will now be described.

Mounted on the machine-frame adjacent to the auxiliary controller-bar 70 is a bracket block or plate 75, formed with a notch 75^a, in which is adapted to engage a dog 76, journaled at 77 to a vertically-movable bar 78, operated through bell-crank 80 by a cam 81 on shaft 33. The dog 76 is formed with a heel 76^a, which projects over into the path of an adjustable screw-tappet 83, mounted in bracket 84 on the bar 70. Pivotaly connected to the lower end of the bar 78 is a dog or pawl 90, which is journaled at 90^a and adapted to engage a notch 91, formed in the reciprocating operating-bar 92, sliding in swiveled guide 92^a and connected, through bell-crank lever 93, link 94, and rock-arm 95, with rock-shaft 96, carrying a series of sheet-deflecting fingers constituting the auxiliary switch 97. The switch 97 is located adjacent to the point of assemblage on the auxiliary conveyer 55. The reciprocating bar 92 is operated by cam 98 on shaft 33, link 99, and bell-crank 99^a. The result of this modified construction is the same as in my previous application, Serial No. 118,446, above referred to—namely, that in case either the insert or cover sheet fails to raise the tripping-finger 60 or 61, supported in its path, bar 70 will be held against movement by arms 65, which are engaged by heels 64, and as bar 70 does not move the dog 76 will remain in engagement with notch 75^a of bracket 75 and prevent the bar 78 from moving upwardly, so that the pawl 90 will be held out of engagement with the operating-bar 92 and said bar 92 will be free to move forwardly to push the switch 97 into its operative position to cause the switching out of

the part or section which has passed forward to the point of assemblage on the auxiliary conveyer 55.

Referring now to Figs. 4, 5, and 6 of the drawings, I will proceed to describe the remaining parts of section B of the machine which are common to both the preferred and modified forms of this section of the machine. 102 is a side-registering gripper mounted upon the machine-frame in position to grip the cover-sheet on subauxiliary conveyer 52 just as it reaches auxiliary point of assemblage at gage 53 and registers it laterally in the machine. This side-registering gripper is operated by a rock-arm 102^a, link 103, bell-crank lever 103^a, link 103^b, and cam 104 on cam-shaft 33. 53 is the auxiliary gage at the leading-in end of auxiliary conveyer 55. Gage 53 is vertically movable in the usual guides and is operated by rock-arms 53^a, mounted on rock-shaft 53^b, actuated by rock-arm 53^c, link 53^d, and cam 54 on cam-shaft 33. 108 is the lower feed-roller, and 109 the cooperating drop-rollers for starting forward on auxiliary conveyer 55 the assembled cover and insert sheets after they have been arrested by gage 53. Drop-rollers 109 are journaled upon a shaft carried in rock-arms 109^a, operated by link 109^b and cam 110 on cam-shaft 33. The cams which operate drop-rollers 42, 51, and 109 and the cams which operate the side-registering gripper 102, switch-operating bar 92, and the auxiliary gage 53 are all constructed alike, each cam being in the form shown in the drawings of my above-named application, Serial No. 118,446, in which the cam is shown with two low portions and a circumferentially-adjustable cover portion which is adapted to cover one of the low portions when the machine is operating to make single thirty-six-page covered books or pamphlets and only one cover-sheet and one insert-sheet is delivered at each revolution and is adapted to be moved to one side of the low portion to expose the same when the machine is operating to make double twenty-page covered books or pamphlets and two cover-sheets and two insert-sheets are delivered each revolution. The cams 71 and 81 of the sheet-actuated controlling mechanism are also constructed as shown in my above-named application, in which each cam has two low portions and a removable cover portion adapted to cover one of the low portions. These cams operate with cover portion on when single thirty-six-page covered books are being made and with the cover portion off when double twenty-page covered books are being made.

Returning now to the controlling mechanism in section C of the machine and referring particularly to Figs. 7, 11, 12, 13, 14, 19^a, 20^a, 21^a, 22^a, 23^a, 24^a of the drawings, 285 is a rotating frame or spider having radial arms or spokes 286 formed on their outer ends with enlargements or yokes 287, in which are cut

lateral rectangular guideways to receive the shiftable tappets 288. Each of these tappets 288, of which four are shown, is formed as illustrated in detail in Fig. 13 of the drawings, with beveled ends 288^a and 288^b, by which it is shifted longitudinally in its support transversely of the spider, and limiting stops or shoulders 288^c and 288^d. The movement of each shiftable tappet 288 is confined by a curved leaf-spring arm 289, mounted in the inner radially-extended lug 287^a of each yoke 287 and engaging the tappet between the stops or shoulders 288^c and 288^d. The side wall of said tappet between the shoulders 288^c and 288^d is curved to allow the tappet to slide under the spring-arm 289 when longitudinal pressure is imparted to the tappet, the movement of the tappet being limited by the engagement of spring-arm 289 with shoulders 288^c and 288^d. The outward movement of the tappets is caused by the engagement of pin 283 with the inner beveled ends 288^a of the tappets when said pin 283 is shifted into the path of the tappets by the sheet-actuated tripping devices of the subauxiliary conveyers 43 and 52, hereinbefore described. The inward movement of the tappets 288 is accomplished by means of an inclined stationary arm 290, mounted upon a bracket 291, secured to the machine-frame. This rigid arm 290 is supported so as to project beyond the outer face of the rotating frame or spider 285 286 in position to engage the outer bevel ends 288^b of the tappets 288 when the tappets are in their outer shifted position. The arm 290 is so located that it will act upon the tappets after they have performed their work so as to return them to their normal inactive position. The rotating frame or spider 285 286, Figs. 7, 11, 14, 19^a, 20^a, 21^a, 22^a, 23^a, and 24^a, is mounted upon a short shaft 295, suitably journaled in bearings 296 of the machine-frame and carrying a large gear 297, which is rotated by the train of gears 298, 299, and 300 from one of the second fold-roller mechanisms, as shown. By the means described the spider 285 286, carrying the shiftable tappets 288, is constantly rotated in unison with the other parts of the mechanism. The purpose of shifting the tappets outwardly in their rotating supporting frame or spider is to engage and control the action of an arm or lever suitably connected with the main controller-bar, which is also acted upon by the tripping devices of the first and second auxiliary conveyers for controlling the operation of the stitching and final-fold mechanisms in the manner presently to be explained. 100 and 101 are the first and second auxiliary sheet-conveyers. 55 is the third auxiliary sheet-conveyer, as above explained. These auxiliary conveyers 100, 101, and 55 converge to the point of common assemblage at gage 105, Figs. 1 and 8—that is, the point where the individual sheets or signatures or collections of sheets or signatures

are gathered together preparatory to being passed as a whole to the stitching-machines. This gage 105 is supported in the usual guides and operated by the usual rock-arms 105^a, 5 mounted on rock-shaft 105^b, actuated by rock-arm 105^c, link 105^d, and cam 106 on shaft 33, to intermittently raise the gage out of the path of the sheets. Adjacent to this gage 105 is mounted the lower feed-roll 107 and the cooperating drop-rollers 107^a, which latter are also operated in the usual manner. (Not shown.) 111, Figs. 7, 25, 26, and 27 of section D, is a rock-shaft extending transversely of the machine adjacent to the lower feed-roll 107. Secured to said rock-shaft 111, at one side of the machine, is a downwardly-extending curved rock-arm 205, to which is pivotally connected a link 204, extending rearwardly to the clutch of the stitching-machines for controlling them, as hereinafter described. At the opposite side of the machine a rock-arm 112 extends forwardly from the rock-shaft 111 and is connected through link 113, bell-crank lever 114, and link 115 with a reciprocating operating-bar 116, Figs. 7, 11, 19^a, 20^a, 21^a, 22^a, 23^a, and 24^a, which slides in a swiveled guide 116^a and is operated through bell-crank lever 116^b, Fig. 7, link 116^c, and cam 117 on cam-shaft 33. This bar 116 is formed with a notch 118, Figs. 7, 11, 19^a, 20^a, 21^a, 22^a, 23^a, and 24^a, in which is adapted to engage a pivotally-mounted pawl 119, journaled at 119^a. The pawl 119 is pivotally connected to the lower end of a reciprocating bar 120, which is operated by a bell-crank lever 121 and cam 122 on cam-shaft 33. The bar 120 carries a pivotally-mounted dog 125, formed with a heel 126, said dog being adapted to engage a notch 127, formed in a bracket 127^a, fixed to the machine-frame.

128 is the main controller-bar, which is operated intermittently by a bell-crank lever 129 and cam 130 on shaft 33. This bar 128 carries an adjustable tappet 131, which is adapted to engage the heel 126 of dog 125 for moving the dog out of the plane of the notch 127. Supported in the path of each of the auxiliary conveyers 100 and 101 is a sheet-actuated tripping-finger 140, each of which fingers is mounted upon a rock-shaft 141, suitably journaled in a bracket 143. Projecting upwardly from each rock-shaft 141 is a heel 144, which rests directly beneath a rock-arm 145, keyed to a rock-shaft 146, said rock-shaft 146 being suitably journaled in the machine-frame and extending transversely of the machine from points at or adjacent to the longitudinal center of the machine to one side of the machine. The upper rock-shaft 146 carries on its outer end a rock-arm 147, which is pivotally connected to the upper end of the vertically-movable main controller-bar 128. The lower rock-shaft 146 carries a rearwardly-projecting finger 150, which rests directly beneath a screw stop or tappet 151, adjustably

mounted in a bracket-arm secured to the controller-bar 128. This lower rock-shaft 146 carries also a forwardly-projecting rock-arm 153, connected through a link 156 with a short rock-arm 157 on a rock-shaft 157^a, 70 journaled in the frame in line with the upper trip-finger rock-shaft 141. This rock-shaft 157^a also carries a rock-arm 158, formed with a laterally-projecting finger 158^a, which rests normally above a rearwardly-projecting lug or finger 159, secured to the rock-shaft 141 of the upper tripping-finger 140. 160, Fig. 12, is a coil-spring mounted upon the lower rock-shaft 146, and having one end secured to an adjustable collar 161 upon said 80 shaft and its opposite end secured at 162 to the supporting-bracket 143. This spring 160 tends to hold the lower rock-shaft 146 in position to cause the finger 150 to remain in close contact with and follow tappet 151, so 85 that when the sheets have tripped the lower trip-finger 140 and the tripping devices of the subauxiliary conveyers hereinbefore described (said latter devices operating upon the rotating series of tappets which are adapted to engage an arm 329, hereinafter referred to, connected with the lower end of the main controller-bar) and the controller-bar 128 starts to move upwardly the movement of rock-arm 153, link 156, rock-arm 157, rock-shaft 157^a, rock-arm 158, and fingers 158^a and 159 will actuate the upper-trip shaft 141 and move finger 144 out of path of arm 145 to allow bar 128 to move. When, on the other hand, the upper trip-finger 140 and the tripping devices of the subauxiliary conveyers are actuated at the proper time by the passage of sheets, the upper arms 145 and controller-arm 329 (hereinafter referred to) will be released to allow bar 128 to move upwardly, the 105 lower rock-shaft 146 and connected rock-shaft 157^a being in this case held against movement by the lower trip-finger 144 and arm 145 without interfering with the upper tripping device. Pivotaly connected to the lower end 110 of the main controller-bar 128 at 325 is a rock-arm 326, keyed to a short rock-shaft 327, suitably journaled in a bracket 328, secured to the side frame of the machine. 329 is a controlling-arm keyed to the rock-shaft 327 and projecting forwardly therefrom alongside of the rotating frame or spider 285 286 in position to be engaged and sustained by any one of the sliding tappets 288 which has been moved outwardly in its supporting-frame by 120 the sheet-actuated tripping devices of the subauxiliary conveyers, hereinbefore described. If by reason of the omission of the insert or cover sheet from one of the subauxiliary conveyers the controller-pin 283 is allowed to remain in the path of the inner ends of the tappets 288, one of said tappets will engage said pin 283 as it passes and be forced outwardly in its rotating support, so that when said shifted tappet comes within reach of the control- 130

ler-arm 329, just described, it will engage and ride under said arm and hold it against motion until the tappet passes beyond the controller-arm. This period of engagement between the shifted tappet 288 and the controller-arm 329 is coincident with the period during which the operating mechanism attempts to raise the controller-bar 128, and if an insert or cover sheet is missing said controller-arm 329 will be engaged by a shifted tappet, so that the bar 128 will not be allowed to move upwardly even though a main-sheet section is in position upon one of the auxiliary conveyers 100 and 101 and has tripped its controlling-finger 140 to release the bar 128 from the mechanism actuated thereby, as above described. If, on the other hand, the cover and insert sheets are in proper position upon the lowest auxiliary conveyer 55, no tappet will be shifted, and the controller-arm 329 will be free to allow the controller-bar 128 to move in case it has been otherwise freed by the proper arrival of one of the main-sheet sections upon one of the auxiliary conveyers 100 and 101. Again, it will be clear that the controller-bar 128 will be held against movement by the sheet-actuated tripping devices of auxiliary conveyers 100 and 101 if neither main-sheet section arrives in proper position at the required time, even though the insert and cover sheets have been properly fed forward on auxiliary conveyer 55. When, therefore, the cover and insert sheets are in proper position upon the lowest auxiliary conveyer 55 and one (or both) of the main-sheet sections is in position upon one (or both) of the auxiliary conveyers 100 and 101, the controller-bar 128 is allowed to move upwardly to disengage dog 125 from notch 127, and thereby allow bar 120 to move upwardly for throwing dog 119 into engagement with notch 118 of bar 116 to hold bar 116 against longitudinal movement. The movement of bar 116 throws out the clutch of the stitching-machines, as hereinafter described, so that when said bar 116 is held against motion the stitching-machines are allowed to operate upon the arrival of the properly-assembled sheets or signatures which have caused the release of the controlling mechanism, as just described. 170, Figs. 7 and 8, is a side-registering gripper operated by an oscillating arm or frame 171, connected through link 172, bell-crank lever 173, and pitman 174 with an operating-cam 175 on cam-shaft 33. This side-registering mechanism operates to pull the insert-sheet and cover into proper-gaged position on auxiliary conveyer 55 immediately before the sheets are assembled at the main assembling-gage 105.

Section D of the machine, Figs. 9, 10, 15, 16, 17, 18, 25, 25^a, 26, 26^a, 27, and 27^a, which will now be described, includes the main conveyer, the stitching-machines, and the final fold and delivery mechanisms. Tapes 180 leading from the lower feed-roll 107 of sec-

tion C to the final fold and incomplete sheet-delivery mechanisms constitute the main conveyer. 185 is the assemblage-arresting gage for positioning the assemblages for the stitching operation. This gage 185 is formed in two parts, as shown, mounted upon a rock-shaft 185^a to operate in unison. The rock-shaft 185^a is operated in the usual manner by rock-arm 186, rod 186^a, and cam 187, Fig. 10, on shaft 188 and is timed to arrest a set of signatures in front of the stitching-machines once every revolution of the machine when the machine is producing single thirty-six-sheet covered books or pamphlets and twice every revolution of the machine when producing double twenty-sheet covered books or pamphlets. 190 and 191, Figs. 9 and 10, are the stapling or stitching machines operated through suitable gearing in the usual manner. An adjustable arm 195 carries a power-transmitting gear-wheel 196, which is adapted to transmit motion from the driving-gear 197 to either of the driven gears 198 and 199 of the stitcher-operating mechanism to cause the stitcher to operate at different speeds. The gear 196 is mounted on a stud 195^a of arm 195 and is held in the desired position thereon by collars 196^a. To shift the gear to change the speed of the stitchers, the collars 196^a are loosened and gear 196 is shifted into position to mesh with the desired gear 198 or 199 of the stitcher. The stitcher 190 is adjustable upon the machine-frame with relation to the stitcher 191, toggle-arms 190^a and 191^a being journaled upon the stitcher-driving shafts and pivoted to each other and carrying on their pivotal connection a freely-journaled gear 191^c for transmitting power from one stitcher-shaft to the other. The adjustment of stitcher 190 is effected by rack-bar 190^b and pinion 190^c. The stationary stapling-machine 191 also has a throw-out clutch for controlling the operation of the two stapling-machines. This clutch is preferably in the form of the clutch shown and described in my above-named Patent No. 632,448, of September 5, 1899, and it will not be necessary to describe the same in detail in my present case. 200 is the clutch-dog, mounted on the loosely-journaled clutch member and adapted to lock the loose member to the fixed member on the stitcher-shaft. 201 and 201^a constitute the tripping-lever, mounted upon rock-shaft 202, from which extends a rock-arm 203, connected by link 204 with the curved rock-arm 205, keyed to the rock-shaft 111 of section C, above described, and operated from the reciprocating bar 116 and cam 117. It will be observed that when the main controlling mechanism has been released by the presence of the proper signatures or parts upon the respective auxiliary conveyers the stitcher-clutch will be in clutched position to operate the stitching-machines when the assembled sheets or signatures arrive in

proper position with relation thereto. When, however, one or more of the sheets or signatures is missing from the assemblage to be bound, the controlling mechanism will cause the stitcher-clutch to be thrown out. 207, Fig. 10, is a header-up device mounted on a rock-arm 208 and operated through link 208^a by a cam 209 on shaft 188. This header-up device shifts the assembled collection of signatures with respect to the stitching-machines just prior to the stitching operation to insure the placing of the staples in the center or line of final fold of the signatures. Immediately after the operation of the stitching-machines the assemblage-gage 185 is elevated and the stapled sheets are again carried forward by the main conveyer until they engage the final-fold gage 210, after which another header-up device 214 comes into play to position the sheets for the final fold. The final-fold knife 215, Figs. 15, 16, and 17, forces the stapled sheets down through the final-fold rollers 216 and the completed book or pamphlet is passed by the usual tapes to packing-box 220, Fig. 9, supported beneath the rollers 216 and provided with the reciprocating plunger or packer 225, which is operated in the usual manner. When single thirty-six-page books are delivered, they are packed in one end of the packing-box, the plunger 225 operating on one stroke only, but when double twenty-page books are delivered the plunger packs them in both ends of the packing-box, a book being engaged on each stroke of the plunger. This brings me to the last important feature of my present invention—viz., the automatic control of the final-fold mechanism from the stitching-machines to determine whether the final fold will be made or the sheets or signatures be passed out through the end of the machine without receiving the final fold. This mechanism will now be described with particular reference to Figs. 9, 10, 15, 16, 17, 18, 25^a, 26^a, and 27^a of the drawings.

Each of the final-fold gage-plates 210 is mounted to move vertically in a suitable stationary guide-bracket 211, Figs. 9 and 10, and is operated by forked rock-arms 212, projecting forwardly from a transverse rock-shaft 213, suitably journaled in the machine-frame. The rock-shaft 213 is moved in one direction to raise gage 210 by means of a rock-arm 350, keyed to shaft 213, and a spring-actuated rod 351, guided by the swiveled block 352 and pivotally connected with rock-arm 350. The rock-shaft 213 is moved in the opposite direction to lower the gage 210 against the tendency of spring-actuated rod 351 by means of rock-arm 355, also keyed to shaft 213 and carrying antifriction-roller 356 and a rotary cam 357, keyed to the shaft 188 and engaged by antifriction-roller 356. This cam 357 is formed with two diametrically opposite high portions and two diametrically

opposite low portions. When the antifriction-roller 356 of rock-arm 355 is in engagement with one of the high portions of cam 357, the gage 210 is in its lowered position, and when said roller 356 is in engagement with one of the low portions of said cam the gage 210 is in its elevated position. The rock-shaft 213 also carries an upwardly-projecting rock-arm 360, Figs. 9, 10, 25^a, 26^a, and 27^a, to the upper end of which is pivotally connected a rearwardly-extending controller-bar 361, sliding in a guide-block 362 and formed on its upper edge with a notch 363. A dog 365 is pivotally mounted upon a bracket 366 in position to engage the notch 363 of bar 361 for holding said bar against rearward movement and securing the final-fold gages 210 in their lowered position for registering properly-stitched assembled sheets preparatory to the final fold. Said gages cannot be raised so long as dog 365 is in engagement with notch 363 of bar 361. A small spring 366^a, Fig. 10, holds the dog 365 yieldingly in engagement with bar 361.

A frame or spider consisting of hub 370 and radial arms or spokes 371 is keyed to the rotary shaft 188 alongside of gage-cam 357. On the outer end of each spoke 371 is formed a block or enlargement 372, having a lateral socket or recess cut in it to receive a shiftable tappet-pin 373. The rotatable spider 370 371, carrying tappets 373, is of practically the same construction as the rotating frame or spider 285 286, having tappets 288, of the main controlling mechanism, as above described with reference to Figs. 11, 12, 13, 14, 19^a, 20^a, 21^a, 22^a, 23^a, and 24^a of the drawings, and a further description of the same is thought to be unnecessary here. The rotatable spider 370 371 is so arranged with reference to the above-described controller-dog 365 that when one of the tappets is shifted outwardly in its supporting-arm it will engage the tail 365^a of dog 365 and disengage the dog from the notch in the controller-bar 361 and hold it disengaged during the time the shifted tappet is passing the dog, the spring 366^a of the dog allowing the dog to yield sufficiently for the tappet to travel past it. This engagement of a shifted tappet with dog 365 takes place during the time one of the low portions of cam 357 is passing antifriction-roller 356, so that when the dog is disengaged from controller-bar 361 the spring-actuated rod 351 is allowed to raise gages 210 to permit the passage of an incomplete number of assembled and unstitched signatures, the main conveyer 180 carrying such incomplete parts under gage 210 and depositing them out of the rear end of the machine beyond the packing-box 220 into a receptacle 220^a, Figs. 25^a, 26^a, and 27^a, provided to receive them.

The tappets 373 normally rest in their inner position out of the plane of dog 365, so

that the dog is normally in engagement with the controller-bar, and the final-fold gages are normally intermittently lowered into position to gage stitched books preparatory to the final fold. After a tappet has been shifted by the means presently to be described and it has done its work and has passed the dog 365 it is returned to its inner normal position by the engagement of its outer end with a rigid arm 375, Fig. 9, projecting up from the machine-frame beneath the dog 365.

As above explained, the main controlling mechanism prevents the operation of the stitching-machines every time an incomplete assemblage of sheets or signatures arrives in stitching position. The controller of the final-fold mechanism must prevent the operation of the knife and elevate the final-fold gages when such incomplete books arrive, and therefore said final-fold-controlling mechanism is actuated or controlled from the stitching-machines in the manner which will now be explained.

A longitudinally-movable pin 380, Figs. 9, 10, 25^a, 26^a, and 27^a, is mounted in bracket-arms 381 in the same vertical plane as the inner ends of the shiftable tappets 373 when said tappets are in their normal inner position. This pin 380 carries a vertically-projecting lug 382, Fig. 10, which engages the slotted end 383 of a rock-arm 384, mounted upon a short upright rock-shaft 385. This rock-shaft 385 carries a second shorter rock-arm 386, connected through rod 387 with a bell-crank lever 388, journaled upon the machine-frame at 389. One arm of bell-crank lever 388 is formed with a slot 390, in which engages a pin 391, projecting from a link 392, pivoted to the upper end of a vertical rock-arm 393, projecting up from and rigidly attached to the oscillating hub portion 191^a of the hammer-arm 191^b of the stitcher 191. It will be observed that by reason of this structure just described when the stitching-machines are thrown out of operation by the action of the main controlling mechanism hereinbefore described the stitcher hammer-arm 191^b will be held in its raised position, and by the connections referred to the pin 380 will be held in the path of the shiftable tappets 373, so that one of said tappets will be shifted in time to release dog 365 at the proper moment to allow the upward movement of final-fold gages 210 just prior to the arrival of the incomplete set of signatures which the stitching-machines refused to bind, so as to allow such unbound incomplete parts to pass out through the rear end of the machine.

In addition to the arrest of operation of the stitching-machines and the raising of the final-fold gages to allow the passage of incomplete parts it is necessary to arrest the action of the final-fold knife upon such incomplete unbound parts, so as not to interfere with such parts passing out of the machine. This mech-

anism for controlling the action of the final-fold knife is operated from the final-fold gage mechanism, so that it will therefore be under the control of the stitching-machines. The rock-shaft 213, Figs. 9, 10, 15, 16, 17, and 18, by which the final-fold gages 210 are raised and lowered, carries a rearwardly-projecting cam-finger 395, which rests beneath and in contact with the heel 396, projecting from the hub portion of a dog 397. This dog 397 is journaled at 398 upon a bracket 399, mounted upon the machine-frame, an adjustable tension-spring 400 being coiled upon journaled pin 398 and arranged with one end secured to the head of the pin and the other end engaging dog 397 to hold the dog normally out of the path of a part carried by the final-fold knife and to cause the heel 396 to closely follow the cam-finger 395. The final-fold knife 215 is provided at its end nearest rock-shaft 213 with a bracket-arm 405, having an approximately horizontal end 405^a, which is adapted to engage the upper end of the dog 397 when the latter is shifted by the rocking of shaft 213. The folding-blade 215 being arranged, as usual, to be raised positively by a cam and lowered by the action of a spring, it will be observed that the engagement of dog 397 beneath end 405^a of bracket-arm 405 will lock the folding-blade in raised position. This action takes place when the final-fold gages are raised to allow the free passage of unbound incomplete sets of parts or signatures, the action being caused, as described, by the arrest of the operation of the stitching-machines.

The main driving-shaft 1 is geared to drive cam-shaft 2 and other rotating parts in section A of the machine.

250, Fig. 1, is a power-transmitting shaft driven through suitable gearing by main shaft 1, and all of the operative parts of the machine are suitably geared to and driven by the shaft 250.

250^a, Figs. 1, 4, 5, 6, and 8, is a driven shaft. The cams 106, 117, 122, 130, and 175 are constructed as shown and described in my above-named application Serial No. 118,446. The side registering-grippers 9, 102, and 170 are constructed substantially as shown and described in my prior patents, No. 599,319, dated February 2, 1898, and No. 669,724, dated March 12, 1901.

My improved machine may be operated to produce bound and covered pamphlets of thirty-six pages or bound and covered pamphlets of twenty pages. I will first describe the operation of the machine when it is working at its full capacity for producing the larger pamphlets.

The main sheet, the insert-sheet, and the cover-sheet are fed to the machine at three different points, it being preferable to feed the main sheet and cover-sheet by automatic feeding-machines and the insert-sheet by

hand. The main sheet, being of a size to form two sixteen-page signatures, is fed by the main drop-roller mechanism to the main folding-machine section A of the machine, where it is folded longitudinally and passed by suitable conveyer-tapes into one side of section C of the machine, the once-folded double sheet being cut in two by the rotary slitter as it passes through the first-fold mechanism. The two parts of the main divided folded sheet move into engagement with the end gages of the second-fold mechanisms of the assembling-machine, and immediately after they are registered the knives of the second-fold mechanisms pass the two parts of the main sheet down through the folding-rollers, from which they are conveyed forwardly upon the first and second auxiliary conveyers. These twice-folded parts of the main sheet then pass the first and second tripping devices, respectively, and if the insert and cover sheets have been properly fed into the machine will meet said insert and cover sheets and be superposed upon them at the main assembling-gage. After the sheets have been properly assembled by said gage the gage is moved out of the path of the sheets and the assembled sheets pass forward through the machine until they are arrested by the stitcher-gage. At this point in the machine the first header-up device moves the assembled sheets laterally of the machine to accurately place the central longitudinal line of the assembled sheets in proper position for the reception of the wire staples. The stitching devices then operate, and the sheets are bound together. Immediately after this the stitcher-gage is moved out of the path of the sheets, and the bound sheets pass forwardly until they are arrested by the gage of the final-folding mechanism, at which point the second heading-up or jogging device accurately positions the bound sheets to insure the final fold being made upon the line of the staples. The final-folding mechanism then operates to fold the bound sheets into the cover and to pass the completed pamphlet to the packing-box. After the main sheet has started into the first-fold mechanism from the main feeding-machine the insert-sheet is fed by hand from the feed-board to the first auxiliary drop-roller mechanism and the cover-sheet is fed automatically by the auxiliary feeding-machine to the second set of auxiliary drop-rollers, said auxiliary drop-roller mechanisms passing the sheets to subauxiliary conveyer-tapes, which are arranged one above the other in converging planes. Each of these insert and cover sheets passes a tripping device suitably connected with the auxiliary controlling mechanism, as above described, and will pass together and be assembled at the first or auxiliary assembling-gage. Immediately after this the auxiliary assembling-gage is moved out of the path of the assembled insert and cover sheets, and they are carried forwardly

in the machine by the third auxiliary conveyer. At the moment that the previously-assembled insert and cover sheets approach the main assembling-gages the first and second parts of the main sheet have reached the first and second of the main tripping devices, so that the two parts of the main sheet, the insert-sheet, and the cover-sheet pass together to the main assembling-gage, as above explained.

Referring to Figs. 19 to 27^a of the drawings, in which I have represented the several stages of operation of the machine during the operation of producing two twenty-page covered pamphlets at each revolution of the machine, the successive positions of the sheets or signatures will now be explained. These figures of the drawings represent a case in which there has been a failure to properly feed into the machine an insert-sheet or a cover-sheet. In the particular case illustrated the cover-sheet is the one which has been lost or omitted; but it will be clear that the operation will be substantially the same when the insert-sheet is omitted.

In Fig. 19 the insert-sheet I is shown traveling with subauxiliary conveyer 43 and actuating the tripping-finger 60; but the cover-sheet has failed to pass into the machine on the subauxiliary conveyer 52, and hence the tripping-finger 61 has not been actuated, so that it still remains in engagement with the lower finger 65 of the rock-shaft 66, and the stop-bar 70 will not be allowed to move upwardly for withdrawing the pin or bolt 283, Fig. 19^a, from the path of the tappets 288. The result of this omission of the cover-sheet, therefore, is that the pin or bolt 283 will remain in the path of the rotating tappets 288 and engage the inner end of one of said tappets and shift it outwardly in its supporting-arm to place its outer end in the same vertical plane as the controller-arm 329, so that when said shifted tappet reaches the controller-arm 329 it will ride under said arm and prevent the downward movement of the arm, and consequently the upward movement of controller-bar 128. Immediately after the shifted tappet 288 passes controller-arm 329 it engages the rigid arm 290, Figs. 12 and 13, and is shifted inwardly thereby into its inactive position. The controller-bar 128 being held against upward movement, the dog 125 will remain in engaged position to prevent the upward movement of bar 120, so that dog 119 will be held out of engagement with bar 116, and at the proper time said bar 116, and thereby the bar 204, will be moved in the manner hereinbefore described to actuate the throw-out mechanism of the stitching-machines. It will of course be understood that the mechanisms are so timed that a shifted tappet 288 (actuated as described and indicating the absence of the cover or insert sheet) will arrive in operative relation to controller-arm

329 at the same time that one (or both) of the main-sheet sections is due to arrive beneath one (or both) of the tripping-fingers 140, and the stitching-machine will be thrown out of operation just prior to the arrival of the incomplete set of signatures or parts at the stitcher-gage. When, therefore, the cover or insert sheet is missing and the other is present, the controlling mechanism is so set into operation that the resulting incomplete book or pamphlet will not be bound. If the cover and insert sheet are both present and the main-sheet section is missing, the same effect is produced through the control of tripping-fingers 140. The parts or signatures of the incomplete book pass on through the machine and are assembled in the same manner as complete books, with the exception that the incomplete books are not stitched and are not finally folded and are passed out at the end of the machine and separated from complete bound and folded books.

In Fig. 20 the first insert-sheet I is shown upon auxiliary conveyer 55, passing beyond auxiliary assembling-gage 53 on its way to the main assembling-gage, and the succeeding insert and cover sheets I' and C' are shown upon the subauxiliary conveyers 43 and 52, respectively, in the act of tripping the trippers 50 and 61, which have released the auxiliary controller-bar 70 and permitted it to withdraw the pin 283, Fig. 20^a, from the path of shiftable tappets 288. The pin 283 having been withdrawn, the succeeding tappet 288 of the series (which is due to arrive beneath controller-arm 329 at the same time that a main-sheet section arrives beneath one of the trippers 140 and at which time the insert and cover sheets I' C' will be in a corresponding position upon auxiliary conveyer 55) will not be shifted and the controller-arm 329 will be unrestrained when the insert and cover sheets I' C' approach the general assembly-gage 105.

In Fig. 21^a the lone insert-sheet I is shown farther along on auxiliary conveyer 55, the assembled insert and cover sheets I' C', Fig. 21, are just starting past gage 53 upon auxiliary conveyer 55, and the third insert and cover sheets I² C² are passing in upon subauxiliary conveyers 43 52 and have tripped the trippers 60 61 and again caused the withdrawal of pin 283, Fig. 21^a, from the path of tappets 288. In this figure is also shown the first two main-sheet sections M M^a in position above the second-fold rollers, from which they pass to auxiliary conveyers 100 and 101. Up to this stage the main sheet M M^a has been moving through section A of the machine and has been once folded and cut in two.

In Fig. 22^a is shown the first insert-sheet I upon the auxiliary conveyer 55, nearing the point of general assemblage and the first main-sheet section M upon the upper auxiliary conveyer 100 also nearing the point of general assemblage. The upper tripper 140 has been

released by the main-sheet section M, as shown; but owing to the absence of the first cover-sheet, as illustrated in Fig. 19, and the consequent shifting of a tappet 288, which has the same relative movement toward controller-arm 329 as the first insert-sheet I has toward the point of general assemblage, this shifted tappet has just arrived beneath the controlling-arm 329 in the position of the parts shown in Fig. 22^a. This being the case, the main controller-bar 128 is held against movement, so that the bar 116, and thereby the bar 204, will be allowed to move, as already explained, for throwing out of operation the stitching-machines when the incomplete parts M and I reach the stitcher-gages. In this Fig. 22^a it will also be observed that the second main-sheet section M^a, which will form a part of the succeeding sixteen-page pamphlet, has passed through the second-fold rollers and is just entering upon the central auxiliary conveyer 101. This Fig. 22^a also shows the second and Fig. 22 the third and fourth pairs of insert and cover sheets (indicated, respectively, as I' C', Fig. 22^a, and I² C² and I³ C³, Fig. 22) in successive stages of progress from the subauxiliary conveyers to the lowest auxiliary conveyer.

In the positions of parts shown in Figs. 19^a, 20^a, 21^a, and 22^a, the main controller-bar 128 is locked against movement, so that the stitching-machines will be held out of operation and will not be thrown into action until a complete set of parts or signatures releases the controller-bar. The folding mechanisms for the first and second sections of the main sheet are so adjusted when the machine is making up sixteen-page pamphlets that the first section will pass through the machine in advance of the second section and will form a part of the pamphlet which is completed just prior to the one in which the second section of the main sheet is included.

In Fig. 23^a the insert-sheet I and the first main-sheet section M are represented upon the main conveyer 180 just after leaving the main assembling-gage 105, and being an incomplete book or pamphlet the stitching-machines will remain inactive when these parts arrive at the stitcher-gages. Fig. 23^a also shows the second main-sheet section M^a in position upon the second auxiliary conveyer 101 with the connected tripping-fingers 140 in tripped position by the action of sheet-section M^a upon the lower tripping-finger 140 and the second insert and cover sheets I' C' in corresponding position upon the lower auxiliary conveyer 55, these main-sheet sections, insert-section, and cover-section being just about to arrive at the main assembling-gage 105. In this Fig. 23^a it will be observed that the main controller-bar 128 has been released, because all of the three parts of the book are in position, said bar being shown as slightly raised with the dog 125 disengaged to release bar 120 in readiness to lower the dog 119 into engage-

ment with the bar 116 when said bar 116 is returned, so as to hold said bar from another stroke and insure the operation of the stitching-machines when the complete book or pamphlet, consisting of parts M^a, I', and C', reaches the stitching-gages. Figs. 23^a and 23 also show successive insert and cover sheets in various stages of progress from the subauxiliary conveyers to the lower auxiliary conveyor, (indicated by the references I² C², Fig. 23^a, and I³ C³ and I⁴ C⁴, Fig. 23.) Fig. 23^a also shows the second main-sheet sections M' M'' in position above the second-fold rollers.

In Fig. 24^a the same signatures or parts referred to in Figs. 23^a and 23 are shown in the next stage of advancement, the incomplete pamphlet M I having passed on to the stitching-machine, as shown in Fig. 25, while the first complete pamphlet M^a I' C', Fig. 24^a, is shown upon the main sheet-conveyor 180 just leaving the main assembling-gage. The parts of the machine are in the same position as those shown in Fig. 23^a, excepting that the stitcher throw-out bar 116 is shown in its returned position engaged by the dog 119, by which it is held against movement to insure the operation of the stitching-machines upon the successive complete pamphlets.

In Fig. 25 is shown the essential parts of the stitching-machines and final fold and in Fig. 25^a the delivery mechanisms. The first incomplete pamphlet M I, Fig. 25, is represented upon the main conveyor 180 in engagement with the stitching-machine gages 185 in position for receiving the binding-staples; but by reason of the tripping of the main controller by the shifted tappet (caused by the absence of the first cover-sheet section, as already explained) the stitching-machines are thrown out of operation and refuse to stitch the incomplete pamphlet. In Fig. 25^a the controlling devices of the final-fold mechanism are also shown tripped, because no pamphlet or parts preceded incomplete pamphlet M I, and hence the inaction of the stitchers caused the tripping of said devices.

In Fig. 26^a the first or incomplete pamphlet is represented as just arriving at the final-fold gages, which are held in elevated position to allow them to pass on out at the end of the machine. In Fig. 26 the first complete pamphlet M^a I' C' is shown in engagement with the stitcher-gages, and the stitching-machines are represented in operation, so that this complete pamphlet will receive the binding-staples in the line of final fold. In this figure the next succeeding complete pamphlet is shown just starting in upon the main conveyor 180 after leaving the main assembling-gage. The position of parts shown in Figs. 26^a and 26 immediately follows the position of parts shown in Figs. 24^a and 24—that is, some of the pamphlet parts shown in Figs. 24^a and 24 are shown in their next succeeding position in Figs. 26^a and 26.

In Fig. 27^a the first complete pamphlet M^a I' C' is shown in engagement with the final-fold gages in readiness to be folded upon the line of stitches and dropped into the packing-box, while in Fig. 27 the second complete pamphlet M^a I² C² is shown at position at the stitching-gages in readiness to receive the binding-staples. In Fig. 27^a the first incomplete pamphlet is shown in the receiving-box 220^a.

It will be observed that by using the rotating series of tappets the successive complete and incomplete sets of sheets or signatures are allowed to pass through the machine without interruption, the control of the stitcher and final-fold mechanisms being such that the complete sets will be bound and final-folded, while the incomplete sets will pass by the stitcher and final-fold mechanisms without being acted upon by them and will be deposited in a suitable receptacle separate from the packing-boxes, in which the complete bound and folded pamphlets are deposited.

While I have illustrated and described my present invention as applied to a machine in which one main sheet, an insert-sheet, and cover-sheet are assembled, bound, and folded into thirty-six page or twenty-page covered pamphlets, I would have it understood that my invention is not to be considered as limited to this size of machine, but is applicable to machines of larger capacity, in which a greater number of parts or signatures are formed into pamphlets.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a machine of the character described, the combination of an assemblage-conveyor adapted to carry both complete and incomplete assemblages of sheets or signatures, means for feeding the individual sheets or signatures along different paths to the assemblage-conveyor, and sheet-actuated controlling devices adapted to detect complete and incomplete assemblages and to cause the complete assemblages to be arrested at a certain point and to permit the incomplete assemblages to pass on beyond the arresting-point and out of the machine, substantially as set forth.

2. In a machine of the character described, the combination of an assemblage-conveyor adapted to carry both complete and incomplete assemblages of sheets or signatures, means for feeding the individual sheets or signatures and collections of sheets or signatures along different paths to the assemblage-conveyor, a final-fold gage for assembling sheets or signatures upon the assemblage-conveyor, and sheet-actuated controlling devices adapted to detect complete and incomplete assemblages and to cause the operation of the final-fold gage to arrest the complete assemblages and to prevent the op-

eration of the final-fold gage when the assemblages are incomplete so as to permit the latter to pass on beyond the arresting-point and out of the machine, substantially as set forth.

3. In a machine of the character described, the combination of a mechanism adapted to act upon assemblages of sheets or signatures, an assemblage-conveyer adapted to carry both complete and incomplete assemblages of sheets or signatures to said mechanism, means for feeding the individual sheets or signatures and collections of sheets or signatures along different paths to the assemblage-conveyer, an assemblage-gage for assembling sheets or signatures upon the assemblage-conveyer, and sheet-actuated controlling devices adapted to detect complete or incomplete assemblages and cause the operation of said mechanism when the assemblages are complete and prevent the operation of said mechanism when the assemblages are incomplete and permit the incomplete assemblages to pass on beyond the assemblage-gage and out of the machine, substantially as set forth.

4. In a machine of the character described, the combination of a binding mechanism adapted to act upon assemblages of sheets or signatures, an assemblage-conveyer adapted to carry both complete and incomplete assemblages of sheets or signatures past said binding mechanism, means for feeding the individual sheets or signatures and collections of sheets or signatures along different paths to the assemblage-conveyer, an assemblage-gage for assembling the sheets or signatures upon the assemblage-conveyer and sheet-actuated controlling devices adapted to detect both complete and incomplete assemblages and cause the operation of the binding mechanism when the assemblages are complete and prevent the operation of the binding mechanism when the assemblages are incomplete and permit the incomplete assemblages to pass on beyond the assemblage-gage and out of the machine, substantially as set forth.

5. In a machine of the character described, the combination of a binding mechanism adapted to act upon assemblages of sheets or signatures, a final-fold mechanism, an assemblage-conveyer adapted to carry both complete and incomplete assemblages of sheets or signatures to the binding and final-fold mechanisms, means for feeding the individual sheets or signatures and collections of sheets or signatures along different paths to the assemblage-conveyer, an assemblage-gage for assembling sheets or signatures upon the assemblage-conveyer, and sheet-actuated controlling devices adapted to detect both complete and incomplete assemblages and cause the operation of the binding and final-fold mechanisms when the assemblages are complete and prevent the operation of the binding and final-fold mechanisms when the assemblages

are incomplete and permit the incomplete assemblages to pass on beyond the assemblage-gage and out of the machine, substantially as set forth.

6. In a machine of the character described, the combination of suitable binding and final-fold mechanisms adapted to act upon assemblages of sheets or signatures, means for positioning assemblages with relation to the binding and final-fold mechanisms, an assemblage-conveyer adapted to carry both complete and incomplete assemblages of sheets or signatures to the binding and final-fold mechanisms, means for feeding the individual sheets or signatures and collections of sheets or signatures along different paths to the assemblage-conveyer, an assemblage-gage for assembling sheets or signatures upon the assemblage-conveyer, and sheet-actuated controlling devices adapted to detect both complete and incomplete assemblages and cause the operation of the binding and final-fold mechanisms and the positioning means when the assemblages presented by the conveyer are complete, and prevent the operation of the binding and final-fold mechanisms and the positioning means when the assemblages presented are incomplete and permit the incomplete assemblages to pass on beyond the assemblage-gage and out of the machine, substantially as set forth.

7. In a machine of the character described, the combination of a conveyer adapted to receive and convey both complete and incomplete assemblages of sheets or signatures, means for feeding the individual sheets or signatures and collections of sheets or signatures along different paths to the conveyer, a gage for assembling the sheets or signatures upon the conveyer, a stapling or stitching machine supported adjacent to the path of the successive assemblages of sheets or signatures, a final-fold mechanism adapted to fold and deliver assemblages, controlling means under the influence of all of the individual sheets or signatures adapted to arrest the action of said stapling or stitching machine when an incomplete assemblage is presented to it, and auxiliary controlling means actuated by the stapling or stitching machine and adapted to arrest the action of the final-fold mechanism when an incomplete unbound assemblage is presented to it and permit the incomplete unbound assemblages to pass on beyond the final-fold mechanism and out of the machine, substantially as set forth.

8. In a machine of the character described, the combination of a conveyer adapted to receive and convey both complete and incomplete assemblages of sheets or signatures, means for feeding the individual sheets or signatures and collections of sheets or signatures along different paths to the conveyer, a gage for assembling the sheets or signatures upon the conveyer, separate deliveries for the com-

plete and incomplete assemblages, a binding mechanism adapted to act upon assemblages of sheets or signatures, a folding mechanism adapted to fold the successive complete assemblages of sheets or signatures and direct them to the delivery for complete assemblages, and controlling means under the influence of all of the individual sheets or signatures, adapted to arrest the action of the binding mechanism and the folding mechanism without stopping the machine when an incomplete assemblage is presented, allow the incomplete assemblage to pass on beyond the folding mechanism to the delivery for incomplete assemblages and cause the action of the said binding mechanism and folding mechanism when a complete assemblage is presented, substantially as set forth.

9. In a machine of the character described, the combination of a main conveyer adapted to receive and convey both complete and incomplete assemblages of sheets or signatures, a plurality of auxiliary conveyers adapted to feed the individual sheets or signatures and collections of sheets or signatures along different paths to the main conveyer, an assemblage-gage operating to assemble the sheets or signatures upon the main conveyer, a mechanism supported adjacent to the path of the main conveyer and adapted to act upon assemblages of sheets or signatures thereon, and controlling means under the influence of all of the individual sheets or signatures, adapted to prevent the action of said mechanism when an incomplete assemblage of sheets or signatures is presented and permit the incomplete assemblages to pass on beyond said mechanism and to cause the action of said mechanism when a complete assemblage of sheets or signatures is presented, substantially as set forth.

10. In a machine of the character described, the combination of a conveyer adapted to receive and convey both complete and incomplete assemblages of sheets or signatures, means for feeding the individual sheets or signatures and collections of sheets or signatures along different paths to the conveyer, a gage for assembling the sheets or signatures upon the conveyer, a mechanism supported adjacent to the path of the conveyer and adapted to act upon assemblages of sheets or signatures thereon, controlling means under the influence of all the individual sheets or signatures, adapted to prevent the action of said mechanism when an incomplete assemblage of sheets or signatures is presented and permit the incomplete assemblages to pass on beyond said mechanism and to cause the action of said mechanism when a complete assemblage of sheets or signatures is presented, and means controlled by said mechanism, adapted to separate the complete and incomplete assemblages of sheets or signatures as they pass from the machine, substantially as set forth.

11. In a machine of the character described, the combination of a conveyer adapted to receive and convey both complete and incomplete assemblages of sheets or signatures, means for feeding the individual sheets or signatures and collections of sheets or signatures along different paths to the conveyer, a gage for assembling the sheets or signatures upon the conveyer, and means, under control of all of the individual sheets or signatures, adapted to arrest and separate the complete from the incomplete assemblages of sheets or signatures and permit the incomplete assemblages to pass on beyond the said arresting and separating means, substantially as set forth.

12. In a machine of the character described, the combination of a plurality of sheet or signature conveyers, one of which is arranged to receive sheets or signatures from all of the others, said plurality of conveyers being adapted to carry to the rear end of the machine the successive assemblages of sheets or signatures whether complete or incomplete, separate deliveries at the rear end of the machine for the complete and incomplete assemblages of sheets or signatures, and sheet-actuated controlling mechanism adapted to direct the complete assemblages of sheets or signatures to the proper delivery and permit the passage of the incomplete assemblages of sheets or signatures beyond the delivery for the complete assemblages to the other delivery of the machine, substantially as set forth.

13. In a machine of the character described, the combination of a plurality of sheet or signature conveyers, one of which is arranged to receive sheets or signatures from all of the others, said plurality of conveyers being adapted to carry to the rear end of the machine the successive assemblages of sheets or signatures whether complete or incomplete, separate receptacles for the complete and incomplete assemblages of sheets or signatures at the rear end of the machine, and sheet-actuated controlling mechanism adapted to direct the complete assemblages of sheets or signatures into the proper receptacle while permitting the incomplete assemblages to pass on beyond the receptacle for the complete assemblages to the receptacle for incomplete assemblages, substantially as set forth.

14. In a machine of the character described, the combination with auxiliary conveyers of an assemblage-conveyer adapted to carry both complete and incomplete assemblages to the rear end of the machine, separate deliveries at the rear end of the machine for complete and incomplete assemblages, respectively, and controlling devices actuated by the sheets for directing the complete assemblages to their proper delivery while permitting the incomplete assemblages to pass on to the proper delivery beyond the delivery for the complete assemblages, substantially as set forth.

15. In a machine of the character described, the combination with auxiliary conveyers of an assemblage-conveyer adapted to carry both complete and incomplete assemblages to the rear end of the machine, separate deliveries
5 at the rear end of the machine for complete and incomplete assemblages, respectively, binding mechanism located adjacent to the path of the assemblage-conveyer, and controlling devices actuated by the sheets and adapted
10 to cause the operation of the binding mechanism when the assemblages are complete and permit them to be conveyed to their proper delivery, and prevent the operation of the binding mechanism when the assemblages are
15 incomplete and permit the assemblage-conveyer to convey the incomplete assemblages to their proper delivery beyond the delivery for the complete assemblages without binding; substantially as set forth.

16. In a machine of the character described, the combination with auxiliary conveyers of an assemblage-conveyer adapted to carry both complete and incomplete assemblages to the
25 rear end of the machine, separate deliveries at the rear end of the machine for complete and incomplete assemblages, respectively, binding mechanism located adjacent to the path of the assemblage-conveyer, a gage for
30 positioning the assemblages upon the assemblage-conveyer with relation to the binding mechanism, and controlling devices actuated by the sheets and adapted to cause the operation of the binding mechanism when the as-
35 semblages are complete and permit them to be conveyed to their proper delivery, and prevent the operation of the binding mechanism when the assemblages are incomplete and permit the assemblage-conveyer to convey the in-
40 complete assemblages to their proper delivery beyond the delivery for the complete assemblages without binding; substantially as set forth.

17. In a machine of the character described, the combination with auxiliary conveyers of an assemblage-conveyer adapted to carry both complete and incomplete assemblages to the
45 rear end of the machine, separate deliveries at the rear end of the machine for complete and incomplete assemblages, respectively, binding and final-fold mechanisms located ad-
50 jacent to the path of the assemblage-conveyer, and controlling devices actuated by the sheets and adapted to cause the operation of the binding and final-fold mechanisms when the assemblages are complete and permit them to
55 be conveyed to their proper delivery, and prevent the operation of the binding and final-fold mechanisms when the assemblages are incomplete and permit the assemblage-conveyer to convey the incomplete assemblages to their
60 proper delivery beyond the delivery for the complete assemblages without binding or final folding; substantially as set forth.

65 18. In a machine of the character described,

the combination with auxiliary conveyers of an assemblage-conveyer adapted to carry both complete and incomplete assemblages to the rear end of the machine, a receptacle for complete assemblages located beneath the assem-
70 blage-conveyer, a receptacle for incomplete assemblages located at the end of the assemblage-conveyer, binding and final-fold mechanisms located adjacent to the path of the assemblage-conveyer, and controlling devices
75 actuated by the sheets and adapted to cause the operation of the binding and final-fold mechanisms when the assemblages are complete and permit them to be conveyed to their proper receptacle, and prevent the operation
80 of the binding and final-fold mechanisms when the assemblages are incomplete and permit the assemblage-conveyer to deliver the incomplete assemblages into their proper receptacle beyond the receptacle for the complete
85 assemblages without binding or final folding; substantially as set forth.

19. In a machine of the character described, the combination with auxiliary conveyers of an assemblage-conveyer adapted to carry both complete and incomplete assemblages to the
90 rear end of the machine, receptacles at the rear end of the machine for complete and incomplete assemblages, respectively, binding and final-fold mechanisms located adjacent to the path of the assemblage-conveyer, means
95 for positioning the assemblages upon the assemblage-conveyer with relation to the binding and final-fold mechanisms, and controlling devices actuated by the sheets and adapted to cause the operation of the binding and final-
100 fold mechanisms when the assemblages are complete and permit them to be conveyed to their proper receptacle, and prevent the operation of the binding and final-fold mechanisms when the assemblages are incomplete and
105 permit the assemblage-conveyer to deliver the incomplete assemblages into their proper receptacle beyond the receptacle for the complete assemblages without binding or final folding; substantially as set forth.

20. In a machine of the character described, the combination of a plurality of sheet or signature feeding conveyers, an assemblage-conveyer adapted to carry both complete and in-
110 complete assemblages from the feeding-conveyers to the rear end of the machine, separate deliveries at the rear end of the machine for complete and incomplete assemblages, respectively, binding mechanism located adja-
115 cent to the path of the assemblage-conveyer, and controlling devices actuated by the sheets or signatures and adapted to cause the operation of the binding mechanism when the assemblages are complete and permit them to
120 be conveyed to their proper delivery and prevent the operation of the binding mechanism when the assemblages are incomplete and permit the assemblage-conveyer to convey the incomplete assemblages to their proper de-
125

livery beyond the delivery for the complete assemblages without binding; substantially as set forth.

21. In a machine of the character described, the combination of a plurality of sheet or signature conveyers, one of which is arranged to receive sheets or signatures from all of the others, said plurality of conveyers being adapted to carry to the rear end of the machine the successive assemblages of sheets or signatures whether complete or incomplete, mechanism supported adjacent to the path of the assemblages of sheets or signatures and adapted to act upon assemblages of sheets or signatures, separate deliveries for the complete and incomplete assemblages of sheets or signatures, and sheet-actuated controlling means adapted to prevent the action of said mechanism when an incomplete assemblage is presented, cause the action of said mechanism when a complete assemblage is presented, direct the complete assemblages of sheets or signatures to the proper delivery and permit the incomplete assemblages of sheets or signatures to pass on to the proper delivery beyond the delivery for the complete assemblages, substantially as set forth.

22. In a machine of the character described, the combination of a plurality of sheet or signature conveyers, one of which is adapted to receive sheets or signatures from the others, a mechanism supported adjacent to the path of, and adapted to operate upon assemblages of sheets or signatures, separate receptacles for receiving respectively the complete and incomplete assemblages of sheets or signatures, and sheet-actuated controlling means constructed and arranged to prevent the action of said mechanism when incomplete assemblages are presented to it and cause the action of said mechanism when complete assemblages are presented, and means actuated by said mechanism for directing the complete assemblages of sheets or signatures into the proper receptacle, and permitting the incomplete assemblages to pass on to the receptacle beyond the receptacle for the complete assemblages, substantially as set forth.

23. In a machine of the character described, the combination of a plurality of sheet or signature conveyers, one of which is adapted to receive sheets or signatures from the others, a stitching or stapling machine supported adjacent to the path of, and adapted to bind assemblages of sheets or signatures, separate deliveries for the complete bound and incomplete unbound assemblages of sheets or signatures, sheet-actuated controlling means constructed and arranged to prevent the action of said stitching or stapling machine when incomplete assemblages are presented to it and cause the action of said stitching or stapling machine when complete assemblages are presented, and means actuated by said stitching or stapling machine for directing the com-

plete assemblages of sheets or signatures to the proper delivery and permitting the incomplete assemblages to pass on to the delivery beyond the delivery for the complete assemblages, substantially as set forth.

24. In a machine of the character described, the combination of a plurality of sheet or signature conveyers, one of which is adapted to receive sheets or signatures from the others, a stitching or stapling machine supported adjacent to the path of the assemblages of sheets or signatures, separate deliveries for the complete bound and incomplete unbound assemblages of sheets or signatures, final-fold mechanism adapted to fold and deliver complete bound assemblages of sheets or signatures, sheet-actuated controlling means constructed and arranged to prevent the action of said stitching or stapling machine when incomplete assemblages are presented to it and cause the action of said stitching or stapling machine when complete assemblages are presented, and means actuated by said stitching or stapling machine for controlling said final-fold mechanism to cause it to final fold and deliver complete bound assemblages and to arrest its operation upon incomplete unbound assemblages, substantially as set forth.

25. In a machine of the character described, the combination of a main conveyer for carrying sheets or signatures to the rear end of the machine, a plurality of auxiliary conveyers leading to said main conveyer, a sheet-actuated tripping device interposed in the path of each auxiliary conveyer, a plurality of subauxiliary conveyers, a sheet-actuated tripping device arranged in the path of each subauxiliary conveyer, a controller operatively connected with all of said tripping devices, separate deliveries for the complete and incomplete assemblages of sheets or signatures, and a final gage under the control of said controller, adapted to direct the complete assemblages to the proper delivery without preventing the passage of incomplete assemblages to the proper delivery beyond the delivery for the complete assemblages, substantially as set forth.

26. In a machine of the character described, the combination of a main conveyer for carrying sheets or signatures, a stapling or stitching machine interposed in the path of the main conveyer adapted to bind assemblages of sheets or signatures, a plurality of auxiliary conveyers leading to said main conveyer, a sheet-actuated tripping device interposed in the path of each auxiliary conveyer, a plurality of subauxiliary conveyers leading to one or more of the auxiliary conveyers, a sheet-actuated tripping device arranged in the path of each subauxiliary conveyer, a controller operatively connected with all of said tripping devices and adapted to prevent the operation of the stapling or stitching machine when an incomplete assemblage of sheets

or signatures is presented to it and cause the operation of said machine when a complete assemblage is presented to it, a final-fold mechanism, and means, controlled by the stapling or stitching machine, adapted to prevent the action of the final-fold mechanism when an incomplete unbound assemblage is presented to it and allow the action of said final-fold mechanism when a complete bound assemblage is presented to it, substantially as set forth.

27. In a machine of the character described, the combination of a main conveyer for carrying sheets or signatures, a stapling or stitching machine interposed in the path of the main conveyer adapted to bind assemblages of sheets or signatures, a plurality of auxiliary conveyers leading to said main conveyer, a sheet-actuated tripping device interposed in the path of each auxiliary conveyer, a plurality of subauxiliary conveyers leading to one or more of the auxiliary conveyers, a sheet-actuated tripping device arranged in the path of each subauxiliary conveyer, a controller operatively connected with all of said tripping devices and adapted to prevent the operation of the stapling or stitching machine when an incomplete assemblage of sheets or signatures is presented to it and cause the operation of said machine when a complete assemblage is presented to it, separate deliveries for the complete bound and incomplete unbound assemblages, and means, controlled by said stapling or stitching machine, adapted to direct the complete assemblages to the proper delivery while permitting the incomplete assemblages to pass on to the proper delivery beyond the delivery for the complete assemblages, substantially as set forth.

28. In a machine of the character described, the combination of a main conveyer for carrying sheets or signatures, a stapling or stitching machine interposed in the path of the main conveyer adapted to bind assemblages of sheets or signatures, a plurality of auxiliary conveyers leading to said main conveyer, a sheet-actuated tripping device interposed in the path of each auxiliary conveyer, a plurality of subauxiliary conveyers leading to one or more of the auxiliary conveyers, a sheet-actuated tripping device arranged in the path of each subauxiliary conveyer, a controller operatively connected with all of said tripping devices and adapted to prevent the operation of the stapling or stitching machine when an incomplete assemblage of sheets or signatures is presented to it and cause the operation of said machine when a complete assemblage is presented to it, a final-fold mechanism, separate deliveries for the complete bound and incomplete unbound assemblages, and means, controlled by said stapling or stitching machine, adapted to arrest the action of the final-fold mechanism when an incomplete unbound assemblage is presented to it and permit said

incomplete assemblage to pass on to the delivery for incomplete assemblages, and cause the action of said final-fold mechanism when a complete bound assemblage is presented to it, said final-fold mechanism being arranged to fold and deliver complete bound assemblages to the delivery for complete assemblages, substantially as set forth.

29. In a machine of the character described, the combination of a mechanism adapted to act upon assemblages of sheets or signatures, a main conveyer for carrying sheets or signatures to the rear end of the machine, a plurality of auxiliary conveyers leading to said main conveyer, a sheet-actuated tripping device interposed in the path of each auxiliary conveyer, a plurality of subauxiliary conveyers leading to one or more of the auxiliary conveyers, a sheet-actuated tripping device arranged in the path of each subauxiliary conveyer, a controller operatively connected with all of said tripping devices, separate deliveries located at the rear end of the machine for the complete and incomplete assemblages of sheets or signatures, a final-fold mechanism adapted to fold complete assemblages and pass them to the delivery for complete assemblages, and means, under the control of said controller, adapted to prevent the action of said final-fold mechanism when an incomplete assemblage is presented to it, substantially as set forth.

30. In a machine of the character described, the combination of conveyers for carrying complete and incomplete assemblages of sheets or signatures to the rear end of the machine, a plurality of gages adapted to assemble sheets or signatures at a plurality of points, a plurality of sheet-actuated tripping devices, one of which is arranged in the path of each sheet or signature to be assembled, a common controlling device under the direct control of all of said sheet-actuating devices and adapted to determine the disposition at the rear end of the machine of the complete assemblages of sheets or signatures while permitting the incomplete assemblages of sheets or signatures to pass on beyond the depository for the complete assemblages, substantially as set forth.

31. In a machine of the character described, the combination of a plurality of sheet-conveying mechanisms adapted to convey sheets or signatures to a common point of assemblage, an independent sheet-actuated tripping device supported in the path of each sheet or signature to be assembled, a common conveyer leading from the point of assemblage and adapted to convey to the rear end of the machine the successive assemblages whether complete or incomplete, mechanism adapted to operate upon complete assemblages, and controlling means, under the direct control of all of the individual sheet-actuated tripping devices, adapted to prevent the action of said mechanism when incomplete assemblages are pre-

sented to it and to permit the latter to pass on beyond and out of the machine, substantially as set forth.

32. In a machine of the character described, the combination of a mechanism to be controlled, with a constantly-rotating frame or spider carrying a circumferential series of shiftable controlling parts successively passing into and out of controlling relation with said mechanism, and means for shifting said controlling parts independently parallel with the axis of the frame or spider, substantially as set forth.

33. In a machine of the character described, the combination of a mechanism to be controlled, with a rotating frame or spider carrying a circumferential series of shiftable controlling parts arranged to successively pass into and out of controlling relation with said mechanism, means for returning said controlling parts to inactive position after they have been operated, and automatically-operated means for shifting said controlling parts independently into active position parallel with the axis of the frame or spider, substantially as set forth.

34. In a machine of the character described, the combination of a mechanism to be controlled, with a rotating frame carrying a circumferential series of independent shiftable controlling parts which successively pass into and out of controlling relation with said mechanism, and are adapted to be shifted transversely of their direction of rotation, a device mounted in operative relation to said shiftable controlling parts adapted to return said parts to inactive position in their supporting-frame, and automatically-operated means adapted to shift said controlling parts independently into active position parallel with the axis of the frame, substantially as set forth.

35. In a machine of the character described, the combination of an intermittently-operating mechanism to be controlled, with a constantly-rotating frame carrying a circumferential series of independent laterally-shiftable controlling parts which successively pass into and out of controlling relation with said mechanism, a device mounted in operative relation to said shiftable controlling parts adapted to return said parts to inactive position in their supporting-frame, and automatically-operated means adapted to shift said controlling parts independently into active position parallel with the axis of the frame, substantially as set forth.

36. In a machine of the character described, the combination of a plurality of sheet or signature conveyers, and a mechanism adapted to operate upon said sheets or signatures, with a controller for said mechanism including an intermittently-operated part, a constantly-rotating frame carrying a circumferential series of shiftable parts arranged to successively pass into and out of controlling relation with

said intermittently-operated part, an automatically-operated pin or bolt for shifting said shiftable parts independently into active position parallel with the axis of the frame, and means for returning said shiftable parts to their inactive position, substantially as set forth.

37. In a machine of the character described, the combination of a plurality of sheet or signature conveyers, and a mechanism adapted to operate upon said sheets or signatures, with a controller for said mechanism including an intermittently-operated part, a rotating frame carrying a circumferential series of laterally-shiftable parts arranged to successively pass into and out of controlling relation with said intermittently-operated part, a movable pin or bolt for shifting said shiftable parts independently into active position parallel with the axis of the frame, sheet-actuated means controlling the movement of said pin-bolt, and means for returning said shiftable parts to inactive position, substantially as set forth.

38. In a machine of the character described, the combination of a plurality of sheet or signature conveyers, one of which is adapted to carry successive assemblages of sheets or signatures, and a stapling or stitching machine adapted to bind complete assemblages of sheets or signatures, with a controller for said machine, including an intermittently-operated bar, a constantly-rotating frame carrying a circumferential series of shiftable tappets arranged to successively pass into and out of controlling relation with said intermittently-operated bar, sheet-actuated means for shifting said tappets independently into active position parallel with the axis of the frame, and means for returning said tappets to their inactive position, substantially as set forth.

39. In a machine of the character described, the combination of a plurality of sheet or signature conveyers, and a mechanism adapted to operate upon said sheets or signatures, with a controller for said mechanism, including an intermittently-operated part, a constantly-rotating frame, a circumferential series of shiftable tappets mounted in said frame and carried thereby successively past the intermittently-operated part of the controller, sheet-actuated means for shifting said tappets independently in said rotating frame to move them into active position parallel with the axis of the frame, and means for returning said tappets to their inactive position after they have performed their work, substantially as set forth.

40. In a machine of the character described, the combination of a main conveyer for assembled sheets or signatures, mechanism for operating upon complete assemblages of sheets or signatures, a series of independent conveyers for feeding said sheets or signatures to the main conveyer, with a controller for said mechanism including an intermittently-oper-

ated part, a rotating frame, a circumferential series of shiftable tappets mounted in said frame parallel with the axis of the frame and carried thereby successively past the inter-
 5 mittently-operated part of the controller, a movable pin having means for projecting it into and withdrawing it from the path of said tappets, sheet-actuated tripping devices supported in the path of sheets or signatures and
 10 controlling the movement of said pin, and means for returning the tappets to inactive position in their supporting-frame, substantially as set forth.

41. In a machine of the character described,
 15 the combination of a plurality of conveyers one of which is adapted to carry to the rear end of the machine a succession of assemblages of sheets or signatures, mechanism interposed in the path of said assemblage-carrying con-
 20 veyer adapted to operate upon assemblages of sheets or signatures, a controlling-bar operatively connected with and controlling the action of said mechanism, a controller-arm connected with said controlling-bar, a rotating
 25 frame independent of the conveyers and carrying a series of shiftable tappets which are adapted to be brought successively into operative relation with said controller-arm, a pin or bolt arranged adjacent to said rotating series of tappets and adapted to be moved into
 30 and out of their path, and sheet-actuated tripping devices supported in the path of some of said conveyers and operatively connected with said pin or bolt, substantially as set forth.

42. In a machine of the character described,
 35 the combination of a plurality of conveyers, one of which is adapted to carry to the rear end of the machine a succession of assemblages of sheets or signatures, mechanism interposed
 40 in the path of said assemblage-carrying conveyer adapted to operate upon assemblages of sheets or signatures, a controlling-bar operatively connected with and controlling the action of said mechanism, a controller-arm connected
 45 with said controlling-bar, a rotating frame or spider independent of the assemblage-carrying conveyer, a series of shiftable tappets mounted upon the frame or spider and adapted to be brought successively into oper-
 50 ative relation with said controller-arm, a pin or bolt arranged adjacent to said rotating series of tappets and adapted to be moved into and out of their path, to engage the tappets and shift them into active position, sheet-actuated tripping devices supported in the path
 55 of some of said conveyers and operatively connected with said pin or bolt, and means for returning the shiftable tappets to inactive position in their supporting frame or spider, substantially as set forth.
 60

43. In a machine of the character described, the combination of a plurality of conveyers adapted to carry sheets or signatures and assemblages of sheets or signatures, mechanism
 65 interposed in the path of one of said convey-

ers adapted to operate upon assemblages of sheets or signatures, a controlling-bar operatively connected with and controlling the action of said mechanism, sheet-actuated tripping devices supported in the path of some of
 70 said conveyers and directly controlling said controller-bar, a controller-arm also connected with said controlling-bar, a rotating frame carrying a series of shiftable tappets which are adapted to be brought successively into
 75 operative relation with said controller-arm, a pin or bolt arranged adjacent to said rotating series of tappets and adapted to be moved into and out of their path to engage the tappets and shift them into active position, and other sheet-actuated tripping devices supported in the path of other conveyers and operatively
 80 connected with said pin or bolt, substantially as set forth.

44. In a machine of the character described,
 85 the combination of a plurality of conveyers adapted to carry sheets or signatures and assemblages of sheets or signatures, mechanism interposed in the path of one of said conveyers adapted to operate upon assemblages of
 90 sheets or signatures, a controlling-bar operatively connected with and controlling the action of said mechanism, sheet-actuated tripping devices supported in the path of some of said conveyers and directly controlling said
 95 controlling-bar, a controller-arm also connected with said controlling-bar, a rotating frame carrying a series of shiftable tappets which are adapted to be brought successively into operative relation with said controller-arm, a pin or bolt arranged adjacent to said
 100 tappets and adapted to be moved into and out of their path to engage the tappets and shift them into active position, means for returning the shiftable tappets to inactive position in their supporting-frame, and other sheet-actuated tripping devices supported in the path of other conveyers and operatively connected
 105 with said pin or bolt, substantially as set forth.

45. In a machine of the character described,
 110 the combination of a conveyer adapted to carry to the rear end of the machine a succession of assemblages of sheets or signatures, whether complete or incomplete, mechanism interposed in the path of said conveyer adapted to operate
 115 upon assemblages of sheets or signatures, a plurality of auxiliary conveyers leading to the main conveyer, a controlling-bar operatively connected with and controlling the action of said mechanism, sheet-actuated tripping devices supported in the path of some of
 120 said auxiliary conveyers and operatively connected with said controlling-bar, a controller-arm also connected with said controlling-bar, a rotating frame carrying a series of shiftable tappets which are adapted to be brought successively into operative relation with said controller-arm, a pin or bolt arranged adjacent to said rotating series of tappets and adapted to be moved into and out of their path, a plu-

ality of subauxiliary conveyers leading to one or more of the auxiliary conveyers, and sheet-actuated tripping devices supported in the path of said subauxiliary conveyers and operatively connected with said pin or bolt, substantially as set forth.

46. In a machine of the character described, the combination of a conveyer adapted to convey successive assemblages of sheets or signatures, whether complete or incomplete, mechanism adapted to operate upon assemblages of sheets or signatures, and means for feeding a plurality of sheets or signatures to said assemblage-conveyer, with a controller for said mechanism including an intermittently-operated part, a rotating frame independent of said conveyer, a series of normally inactive shiftable parts mounted upon said rotating frame and carried thereby successively past said intermittently-movable part, means for shifting said shiftable parts independently for rendering them active, and a plurality of sheet-actuated devices each independently controlling said shifting means, one of said sheet-actuated devices being provided for each of the sheets or signatures to be fed to the assemblage-conveyer, whereby the absence of any one of the sheets or signatures of an assemblage will be detected and one of the shiftable parts of the controller will be set to actuate the controller and prevent the operation of said mechanism when the incomplete assemblage is presented to it, substantially as set forth.

47. In a machine of the character described, the combination of a conveyer adapted to carry to the rear end of the machine a succession of complete and incomplete assemblages of sheets or signatures, mechanism interposed in the path of said conveyer adapted to operate upon assemblages of sheets or signatures, three auxiliary conveyers leading to the main conveyer, a controlling-bar operatively connected with and controlling the action of said mechanism, connected sheet-actuated tripping devices supported in the paths of two of said auxiliary conveyers and means operatively connecting one of said connected tripping devices with said controlling-bar, a controller-arm also connected with said controlling-bar, a rotating frame carrying a series of shiftable tappets which are adapted to be brought successively into operative relation with said controller-arm, a pin or bolt arranged adjacent to said rotating series of tappets and adapted to be shifted into and out of their path, a plurality of subauxiliary conveyers leading to the third one of the auxiliary conveyers, and sheet-actuated tripping devices supported in the paths of said subauxiliary conveyers and operatively connected with said pin or bolt, substantially as set forth.

48. In a machine of the character described, the combination of a main conveyer adapted to carry to the rear end of the machine a suc-

cession of complete and incomplete assemblages of sheets or signatures, mechanism interposed in the path of said main conveyer adapted to operate upon assemblages of sheets or signatures, three auxiliary conveyers leading to the main conveyer, a controlling-bar operatively connected with and controlling the action of said mechanism, sheet-actuated tripping devices supported in the paths of two of said auxiliary conveyers, means operatively connecting one of said auxiliary tripping devices with said controlling-bar, a loose-joint connection between said two auxiliary tripping devices, a controller-arm also connected with said controlling-bar, a rotating frame carrying a series of shiftable tappets which are adapted to be brought successively into operative relation with said controller-arm, a pin or bolt arranged adjacent to said rotating series of tappets and adapted to be shifted into and out of their path, a plurality of subauxiliary conveyers leading to the third one of the auxiliary conveyers, and sheet-actuated tripping devices supported in the paths of said subauxiliary conveyers and operatively connected with said pin or bolt, substantially as set forth.

49. In a machine of the character described, the combination of a plurality of sheet-conveyers, mechanism adapted to operate upon assemblages of sheets, a controlling-bar operatively connected with and controlling the action of said mechanism, a controller-arm connected with said controlling-bar, a rotating frame, a series of tappets mounted in said frame and adapted to be shifted transversely therein for engaging the controller-arm, each of said tappets being formed with beveled ends, a pin or bolt supported adjacent to said rotating frame and adapted to be moved into the path of and engage one of the beveled ends of a tappet and shift the tappet laterally in the frame into active position, sheet-actuated tripping devices supported in the path of some of said conveyers and operatively connected with said pin or bolt, and a rigid arm projecting into the path of the opposite beveled end of said shifted tappet for returning the tappet into inactive position, substantially as set forth.

50. In a machine of the character described, the combination of a plurality of sheet-conveyers, mechanism adapted to operate upon assemblages of sheets, a controlling-bar operatively connected with and controlling the action of said mechanism, a controller-arm connected with said controlling-bar, a rotating frame, a series of tappets mounted in said frame and adapted to be shifted therein for engaging the controller-arm, each of said tappets being formed with limiting-shoulders, spring-arms mounted upon said rotating frame and engaging said tappets between said limiting-shoulders, a pin or bolt supported adjacent to said rotating frame and adapted to be moved

into the path of the tappets to engage and shift the tappets into active position in the frame, sheet-actuated tripping devices supported in the path of some of said conveyers and operatively connected with said pin or bolt, and means for returning the tappets into inactive position, substantially as set forth.

51. In a machine of the character described, the combination of a plurality of sheet-conveyers, mechanism adapted to operate upon assemblages of sheets, a controlling-bar operatively connected with and controlling the action of said mechanism, a controller-arm connected with said controlling-bar, a rotating frame, a series of tappets mounted in said frame and adapted to be shifted transversely therein for engaging the controller-arm, each of said tappets being formed with oppositely-presented beveled ends and intermediate limiting-shoulders, spring-arms mounted upon said rotating frame and engaging said tappets between said limiting-shoulders, a pin or bolt supported adjacent to said rotating frame and adapted to be moved into the path of and engage one of the beveled ends of a tappet and shift the tappet into active position in the frame, sheet-actuated tripping devices supported in the path of some of said conveyers and operatively connected with said pin or bolt, and a rigid arm projecting into the path of the opposite beveled end of said shifted tappet for returning the tappet into inactive position, substantially as set forth.

52. In a machine of the character described, the combination of a conveyer adapted to receive and convey successive assemblages of sheets or signatures, means for feeding the individual sheets or signatures and collections of sheets or signatures to the conveyer, a gage for assembling the sheets or signatures upon the conveyer, a stapling or stitching machine supported adjacent to the path of the successive assemblages of sheets or signatures upon the conveyer and adapted to bind complete assemblages, a folding mechanism adapted to finally fold and deliver complete bound assemblages, controlling means under the influence of all of the individual sheets or signatures adapted to arrest the action of the stapling or stitching machine when incomplete assemblages are presented to it, and cause the action of said stapling or stitching machine when complete assemblages are presented to it, a rotating series of shiftable tappets, a device, controlled by said tappets, for throwing said folding mechanism into and out of action, and a pin or bolt operated by the stitching-machine and movable into and out of the path of said tappets and adapted to render the tappets active, substantially as set forth.

53. In a machine of the character described,

the combination of a conveyer adapted to carry assemblages of sheets or signatures, a stapling or stitching machine interposed in the path of said conveyer and adapted to bind complete assemblages of sheets or signatures, automatically-operating means for controlling the said stapling-machine, a final-fold mechanism arranged to fold the bound assemblages of sheets or signatures, said final-fold mechanism including a final-fold gage, folding-rollers, and a folding-knife, an oscillating shaft operatively connected with the final-fold gage for raising and lowering it, an arm projecting from the folding-blade, a spring-released dog adapted to engage said arm for holding the blade in raised position, a cam-arm upon said oscillating shaft adapted to move said dog into engagement with the folding-blade arm, a controlling-cam controlling the oscillations of said shaft, a reciprocating bar connected with said shaft, a dog engaging said bar for holding it against movement, a rotating series of shiftable tappets adapted to disengage said dog from said bar, a pin or bolt adapted to be moved into the path of said tappets for shifting them, and connections between said pin or bolt and the stapling or stitching machine, substantially as set forth.

54. In a machine of the character described, the combination of a conveyer adapted to carry assemblages of sheets or signatures, a stapling or stitching machine, a folding mechanism interposed in the path of said conveyer and adapted to fold complete assemblages of sheets or signatures, said folding mechanism including a gage, folding-rollers, and a folding-knife, an oscillating shaft operatively connected with said gage for raising and lowering it, an arm projecting from the folding-blade, a spring-released dog adapted to engage said blade-arm for holding the blade in raised position, a cam-arm upon said oscillating shaft adapted to actuate said dog, a rotary controlling-cam controlling the oscillations of said shaft, a reciprocating bar connected with said shaft, a dog normally engaging said bar for holding said shaft against movement to thereby retain the gage in lowered gaging position and allow the folding-blade to operate, a rotating series of normally inactive shiftable tappets adapted when shifted to disengage said dog from said bar, a pin or bolt adapted to be moved into the path of said tappets, and connections between said bolt and the stapling or stitching machine, substantially as set forth.

TALBOT C. DEXTER.

Witnesses:

G. O. D. LEITCH,
V. E. MARSH.