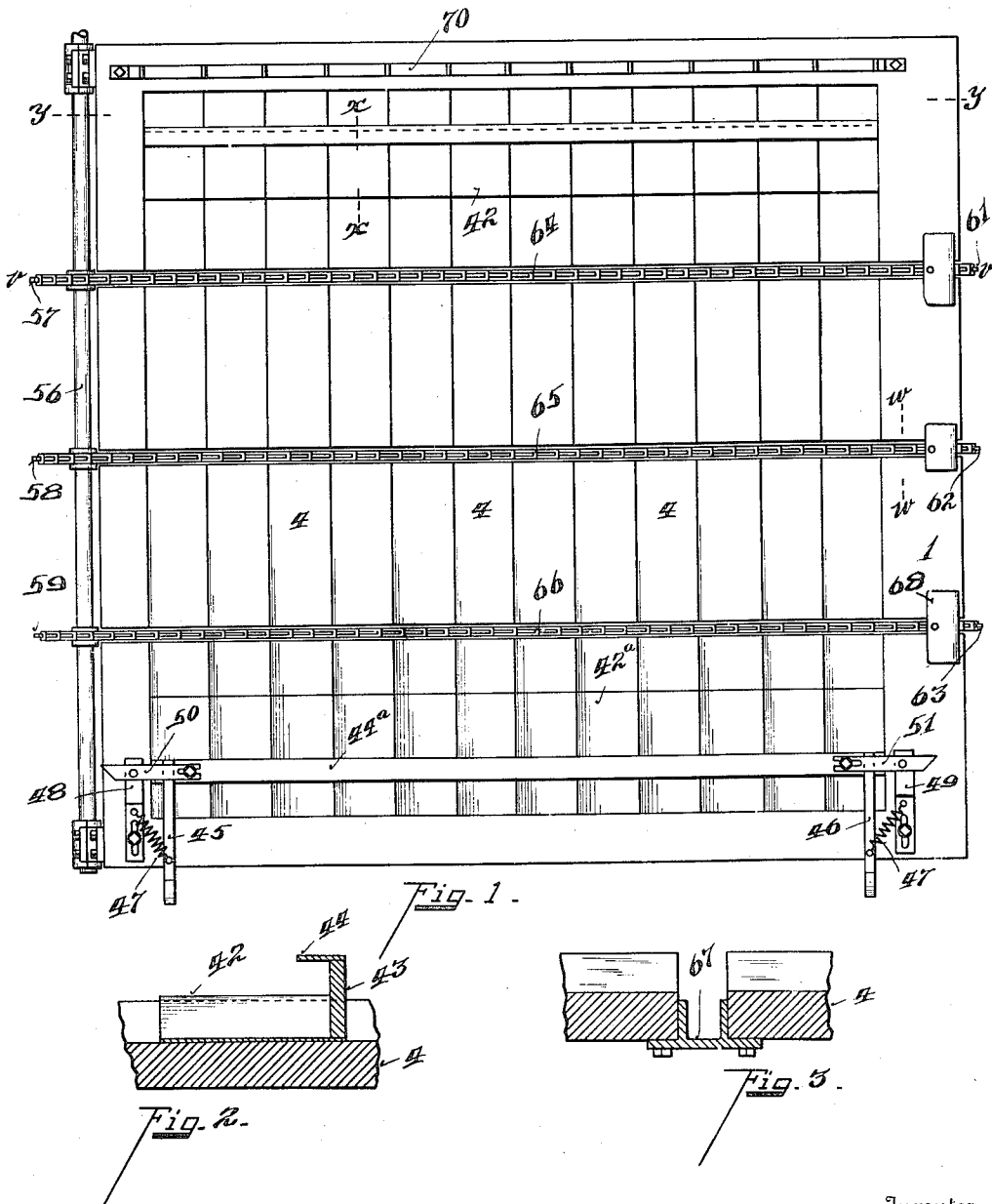


W. T. SULLIVAN.
 COMPILING MACHINE.
 APPLICATION FILED OCT. 27, 1906.

959,644.

Patented May 31, 1910.

3 SHEETS—SHEET 1.



Inventor

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 Leo D. Donnell

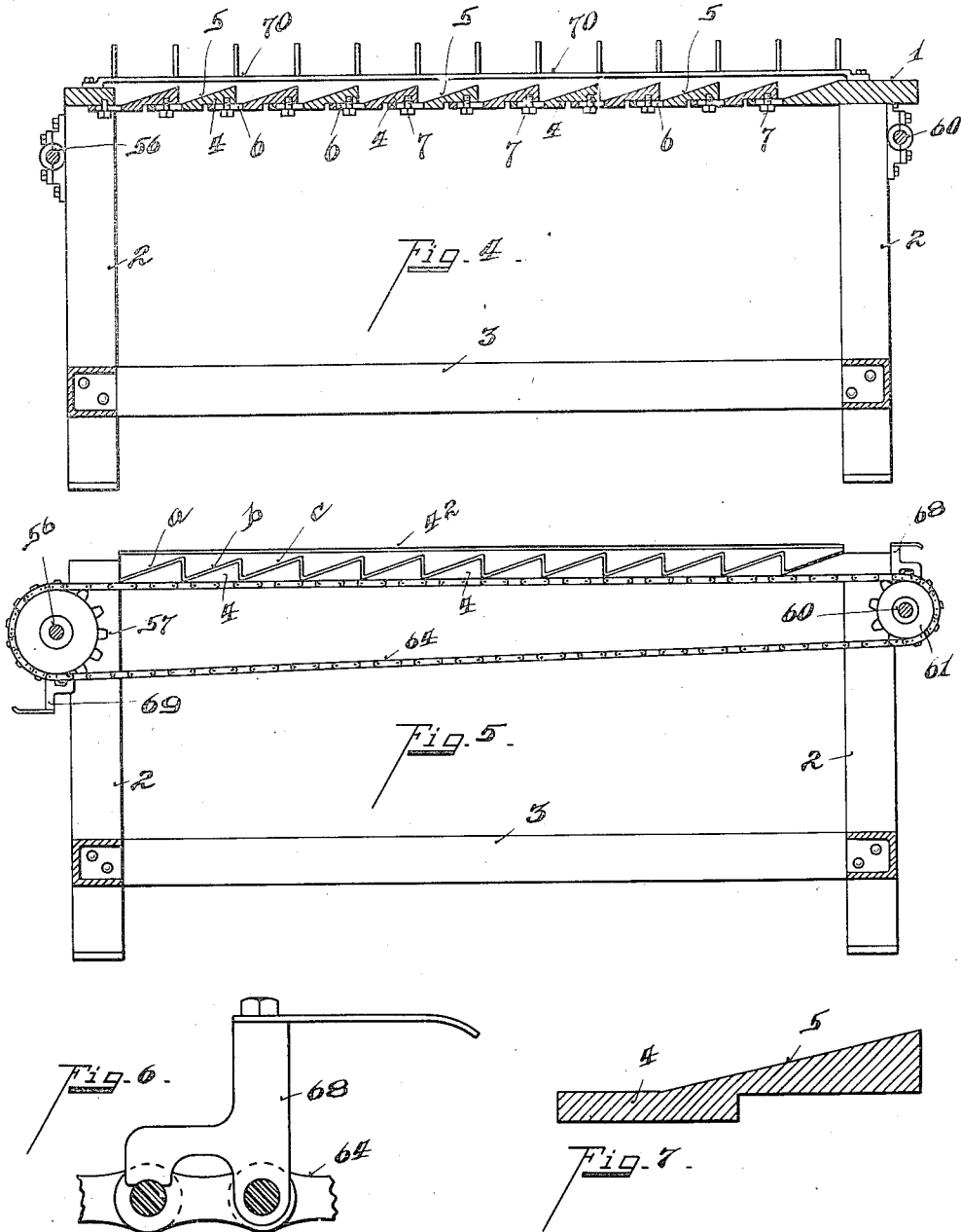
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3 SHEETS—SHEET 2.



Inventor

Witnesses

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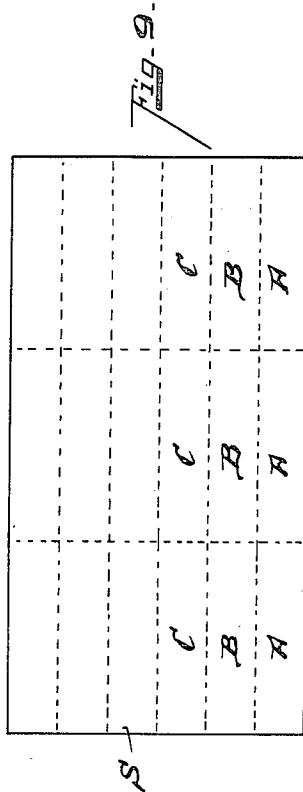
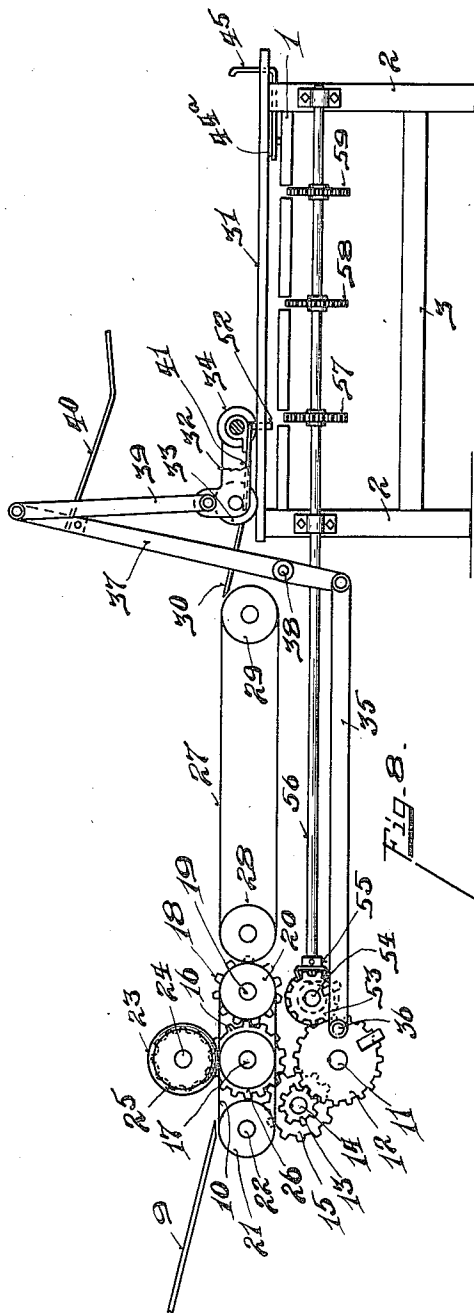
Attorney

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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

WILLIAM T. SULLIVAN, OF CINCINNATI, OHIO.

COMPILING-MACHINE.

959,644.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed October 27, 1906. Serial No. 340,905.

To all whom it may concern:

Be it known that I, WILLIAM T. SULLIVAN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Compiling-Machines, of which the following is a specification.

My invention relates to an automatic compiling machine for signatures or similar printed strips, in which the successive individual signatures are to be compiled in sequential relation.

One of the objects of the invention is to combine such a machine with suitable mechanism for severing a single printed sheet into a series of sequential strips or signatures and delivering them upon a compilation table.

Other objects of my invention relate to carrier mechanism adapted to successively collect these individual signatures and deliver them from the table.

Other objects of the invention relate to the means for actuating the cross-carrier mechanism in time movements relative to the primary feeding devices.

Another object of the invention is to provide an alining mechanism for dressing the signatures upon their respective seats to place them in proper and similar position for perfect registration and compilation.

Various other features of my invention are more fully set forth in the description of the accompanying drawings, forming a part of this specification, in which:—

Figure 1 is a top plan view of the compilation table, alining mechanism and compiling means. Fig. 2 is a section enlarged on line *x, x*, Fig. 1. Fig. 3 is an enlarged section on line *w, w*, Fig. 1. Fig. 4 is a section on line *y, y*, Fig. 1. Fig. 5 is a section taken at *v, v*, Fig. 1. Fig. 6 is an enlarged detailed view of the carrier or gathering dog, showing a method of application to the driving chain. Fig. 7 is an enlarged detailed sectional view of one of the supports of the compilation table. Fig. 8 is a diagrammatic view showing the feeding table, cutter and mechanism for delivering the matter to be compiled, to and upon the compilation table and driving mechanism. Fig. 9 is a plan view of a sample signature sheet, containing six columns.

The machine as shown and described is

preferably adapted for compiling signatures or the like, in which a number of signatures are printed upon a large sheet not requiring a fold until compiled. As illustrated in the drawing, a number of supports are shown, it being desired to compile, say twelve signatures serially, all printed originally on one large sheet.

Preferably the printed sheet *S* contains a parallel series of columns or signatures having a sequential relation such as *A, B, C*, etc. It is to be understood that each signature may contain single denomination, or a plurality of like denominations. The compilation table has sequentially arranged supports or seats *a, b, c*, etc., for the said signatures respectively, the arrangement of the supports being such that the cross carrier mechanism traversing the table can pick up the signatures in the order of their sequential denomination, whereby when delivered from the table the signatures will be registered, alined and compiled, reading downward *A, B, C*, etc.

1 represents the compilation table supported upon frame pieces 2, 3. Upon the compilation table 1 is adjustably secured a parallel series of signature supports 4, twelve being shown in the drawing, of course, more or less may be employed as the occasion requires. The upper faces of the supports 4 are provided with inclines 5, the lower face of one support resting upon the edge of the upper face of the next succeeding support forming a tier or step-like arrangement of supports. The thicker edge of one support overlaps the thin edge of its succeeding support and the supports are upwardly inclined in the direction in which the cross-carrier mechanism travels across the face of the compilation table, so that the cross-carrier mechanism compiles sequentially downward from the top or first signature of the denomination, say *A*. These signature supports are provided with oblong slots through which the set screws 7 pass, and screw thread into the next adjacent signature support. By this means the signature supports may be laterally adjusted for varying sizes.

The signature strips are distributed upon the compilation table and cut into form by the following mechanism:—(See Fig. 8). Only so much of the mechanism as is necessary to understand this operation has been

shown, as it is obvious that various means may be employed for bringing about this result. 9 represents a receiving table upon which the printed sheets are placed to be fed to the carrier 10. Motion is imparted to this carrier by the following instrumentalities:—11 represents a main driving shaft receiving power from any suitable source. 12 represents a gear fixed to the shaft 11 and in mesh with a gear 13 fixed upon an intermediate shaft 14. 15 represents a gear fixed upon the intermediate shaft 14 and receiving motion therefrom, and in mesh with a gear 16 fixed to the shaft 17. 18 represents a gear in mesh with gear 16 fixed to shaft 19. Upon this shaft 19 is fixed a roller 20. 21 represents a roller the duplicate of roller 20, fixed upon shaft 22. The carrier 10 being a series of endless belts, passes around the rollers 20 and 21 and is consequently driven thereby. The sheet is then fed forward by the carrier 10, under the rotary cutter knife or knives 23, (only one being shown), said knives being fixed to a cutter shaft 24. Upon one end of said shaft 24 is fixed a gear 25 in mesh with the gear 16. 26 represents an abutting roll which holds the paper to the cutters. The carrier 10 is preferably made of a number of tape belts placed intermediate of the cutters, preventing the same from being cut by the cutter knives. Thus the sheets are cut into a parallel series of signatures or strips of sequential denomination and fed from the carrier 10 to a carrier 27, likewise composed of a series of tape belts frictionally passing around rollers 28, 29, suitably journaled and driven. Of course it is understood that the various shafts heretofore described are all suitably mounted in bearings supported upon the frame of the machine which details have been omitted for convenience of illustration. From the carrier 27 they are deposited upon the delivery table 30, from whence they are taken by the distributing carrier and deposited in order upon the signature supports of the compilation table 1.

The construction and operation of the distributing carrier are as follows:—31 represents rails supported upon the compilation table 1, at each end, and above the signature supports 4. 32 represents a carrier suitably mounted upon rollers 33, 34, at each end. Said carrier extends the entire width of the compilation table, and the rollers 33, 34, travel upon the rails 31. The carrier 32 is traversed forward and backward by the following instrumentalities:—35 represents a pitman link connected to the main driving gear 12 by the pin 36. 37 represents a connecting link fulcrumed by a pin 38 to the frame of the machine. One end of said link 37 is pivotally connected to the pitman link 35, the opposite end is pivotally connected to a link 39, said link 39 is pivotally

connected to the carrier 32. Thus according to the revolution of gear 12 the carrier 32 will be traversed backward or forward upon the rails 31. 41 represents spring actuated fingers mounted upon the carrier adapted to grip the forward end of the signature strips, pull the signature strips with it in the forward action of the carrier and deposit the same upon the signature supports at the limit of carrier travel, at which point the fingers are released from gripping engagement with the signature strip. Any well-known form of gripping and releasing trip mechanism may be employed. 40 represents elastic tension fingers mounted upon a cross bar secured to the link 37 which arms engage the signature strips slightly before the carrier has reached its limit of travel and before the gripping fingers have been released, the action of which maintains the signature strips upon their respective signature supports, preventing the same from being thrown out of longitudinal alinement upon the signature support caused by air currents due to the machine operation.

After the signatures have been distributed or deposited upon the signature supports they are alined laterally, which is accomplished by the following instrumentalities:—42 is a stationary guide fixed upon the signature supports at one end having the same step-like formation as the signature supports. This guide is provided with the upwardly extending portion 43 and the flange portion 44. Upon the opposite end of the signature support a similar guide is mounted, but which guide is provided with mechanism for imparting a reciprocating action thereto. These guides are normally adjusted from each other equal to the distance or length of the signature strip. The reciprocating action is imparted to the guide 42^a, as follows:—45, 46, represent forwardly projecting rods secured to the top flanged portion 44^a of the guide 42^a, the free end of which is projected upwardly and adapted to be engaged by the carrier 32, in its forward action and carrying the guide 42^a forward, which action allows a free deposit of signature slips between the guides, and below the flanges 44, 44^a. 47 represents coil springs, one end of which is secured to the compilation table, the opposite end to the rods 45, 46, for applying a rearward tension to the guide 42^a.

After the signature strips have been deposited upon their respective supports, it is desired to cause a quick reciprocating action to the guide 42^a to properly aline the signature strips within the guides. And this is accomplished as follows:—48, 49, represent brackets adjustably secured upon the compilation table upon which is pivoted an actuating link or links 50, 51. One end of said

links has a loose connection with the guide 42^a, the opposite end having a beveled edge adapted to be engaged by tripping dogs 52 fixed to the carrier 32. The carrier moving rearward will allow the guide 42^a to recede toward its normal position until tripping dogs 52 on the carrier 32 engage the links 50, 51, moving the guide 42^a again forward until the engagement between the tripping dogs and links is released when a quick return of the guide 42^a through the action of the springs 47 is brought about.

The alining mechanism above described while advantageous, is not absolutely necessary, on some weights of material. The reciprocating alining mechanism may be dispensed with upon light weight material and the same alined through the action of the tension fingers 40, which in their upward movement have a drawing action upon the sheets, toward the stationary alining mechanism. By means of this mechanism the signatures are all simultaneously dressed upon their supports intermediate of their delivery upon the compilation table and the actuation of the compiling mechanism, so that they are properly and similarly alined on their supports for a perfect registration and compilation.

The compilation of the signature strips is effected by the following instrumentalities:—53 represents a segment gear fixed to a shaft 54 suitably journaled, said gear being in mesh with the main driving gear 12. A segment gear is employed in this instance as it is preferable to operate the cross carrier mechanism in time movements relative to the delivery of the sheets upon their supports. Upon the shaft 54 is fixed a bevel gear wheel in mesh with a bevel gear 55 fixed upon the shaft 56 suitably journaled upon the frame and upright supports 2 of the compilation table. 57, 58 and 59 represent sprocket wheels fixed upon the shaft 56. 60 represents a shaft suitably journaled in bearings secured to the upright supports 2 at the opposite end of the frame of the compilation table, upon which are fixed sprocket wheels 61, 62, 63, in a plane with the sprocket wheels 57, 58 and 59. 64, 65, 66, represent sprocket chains carried by the sprocket wheels 57, 61, 58, 62, and 59, 63, respectively. Upon these sprocket chains are mounted two sets of carrier dogs 68, 69, said chains and carrier dogs pass laterally across the signature supports in the carrier ways 67. Said carrier ways also act as intermediate supports for the signature supports. Thus it will be readily seen that when the signature strips are properly deposited upon the signature supports the carrier dogs will be actuated through the transmitting mechanism heretofore described, traveling across the compilation table in time movements. The signature strips upon

the signature support *a* will be carried forward and dropped onto the signature, upon the succeeding support *b*. These two signatures will thence be dropped upon the signature strip upon the support *c*, and so continuing in like manner throughout the series, they will be finally delivered in a compiled form upon the discharging end of the compilation table, at which discharge period the cross carriers will rest until a second deposit of signature strips is made upon the compilation table.

Of course it is obvious that any number of cross carriers may be employed as desired, and it is likewise obvious that the alinement guards may be adjusted in relation to each other for various sizes of signature strips.

70 represents a guide mounted on the forward end of the compilation table between which the series of signature sheets pass in delivering them upon the signature supports acting as separating means for separating one signature strip from the other.

Having described my invention, I claim:—

1. In a machine of the class described, a compilation table having a parallel series of similarly inclined supports, reciprocating means for delivering a parallel series of sheets upon said inclined supports respectively, a cross carrier mechanism on the compilation table intercepting the series of parallel supports in the direction of movement of the upward inclination of the supports, whereby the said sheets may be sequentially compiled as the carrier travels across the table, means for actuating the carrier in time movements relative to the delivery of the sheets upon their supports, an alining device at the end of the compilation table adapted to engage the ends of the sheets and right them upon their respective supports, and means for actuating the said alining device intermediate of the delivery of the sheets upon the supports and the compilation of the carrier, substantially as described.

2. In a machine of the class described, a compilation table having a parallel series of supports, reciprocating means for delivering a parallel series of sheets upon the said series of supports respectively, a cross carrier mechanism on the compilation table intercepting the series of parallel supports transversely and adapted to sequentially compile the severed sheets and deliver them from said table, means for actuating the carrier in time movements relative to the delivery of the sheets upon their supports, an alining device at the end of the compilation table adapted to engage the ends of the sheets and right them upon their respective supports, and means for actuating the said alining device intermediate of the delivery of

the sheets upon the supports and the compilation of the carrier, substantially as described.

3. In a machine of the class described, a
5 compilation table having a parallel series of supports, means for delivering a parallel series of sheets upon the said series of supports respectively, a cross carrier mechanism on the compilation table intercepting
10 the series of parallel supports transversely and adapted to sequentially compile the severed sheets and deliver them from said table, means for actuating the carrier in time movements relative to the delivery of the
15 sheets upon their supports, an alining device at the end of the compilation table adapted to engage the ends of the sheets and right them upon their respective supports, means for actuating the said alining device
20 intermediate of the delivery of the sheets upon the supports and the compilation of the carrier, and means for bringing to bear a momentary arresting pressure upon the faces of the sheets as they are delivered upon
25 the supports, substantially as described.

4. In a machine of the class described, a compilation table having a parallel series of supports, means for adjusting said supports for various sizes of sheets, reciprocating means for delivering a parallel series
30 of sheets upon the said series of supports respectively, alining mechanism for said supports, actuating mechanism for said alining mechanism and cross carrier mechanism on the compilation table intercepting the
35 series of parallel supports transversely, adapted to sequentially compile the severed sheets and deliver them from said table, substantially as described.

40 5. In a machine of the class described, a compilation table having a parallel series of supports, means for adjusting said supports for various sizes of sheets, means for delivering a parallel series of sheets upon
45 the said series of supports respectively, alining mechanism for said supports, actuating mechanism for reciprocating said alining mechanism, guiding mechanism mounted on the compilation table for maintaining a
50 longitudinal alinement of said sheets, cross carrier mechanism on the compilation table intercepting the series of parallel supports transversely and adapted to sequentially compile the severed sheets and deliver them
55 from said table, substantially as described.

6. In a machine of the class described, a compilation table having a parallel series of supports adjustably arranged in step-like formation relative to each other, means for
60 delivering a parallel series of sheets upon the said series of supports respectively, alining mechanism for laterally alining said sheets, guiding mechanism for longitudinally alining said sheets, cross carrier mechanism on
65 the compilation table intercepting the series

of parallel supports transversely and operated in time movements relative to the delivery mechanism whereby the first sheet of the series is deposited upon the second sheet of the series and so on throughout the transverse travel of the carrier mechanism, substantially as described. 70

7. In a machine of the class described, a compilation table having a parallel series of similarly inclined supports, reciprocating
75 means for delivering a parallel series of sheets upon said inclined supports respectively, a cross carrier mechanism on the compilation table intercepting the series of parallel supports in the direction of movement
80 of the upward inclination of the supports, whereby the said sheets may be sequentially compiled as the carrier travels across the table, means for actuating the carrier in time movements relative to the delivery of the
85 sheets upon their supports, an alining device operated in connection with the compilation table to secure alinement of the sheets upon their respective supports, and means for actuating the said alining device, 90 substantially as described.

8. In a machine of the class described, a compilation table having a series of inclined supports, reciprocating means for delivering
95 a series of sheets upon said inclined supports respectively, means for alining said sheets after delivery upon the compilation table, cross carrier mechanism on the compilation table intercepting the series of supports in the direction of movement of the upward inclination of the supports, whereby said
100 sheets may be sequentially compiled as the carrier travels across the table, and means for actuating the carrier in time movements relative to the delivery of the sheets upon their supports, substantially as described. 105

9. In a machine of the class described, a compilation table having a series of inclined supports, reciprocating delivery mechanism for delivering a series of sheets upon said
110 inclined supports respectively in one direction of movement of the delivery mechanism, means for alining said sheets upon the compilation table in the opposite movement of the delivery mechanism, cross carrier mechanism on the compilation table intercepting
115 the series of supports in the direction of movement of the upward inclination of the supports, whereby said sheets may be sequentially compiled as the carrier travels across the table, and means for actuating the carrier in time movements relative to the delivery of the sheets upon their supports, substantially as described. 120

40. In a machine of the class described, a
125 compilation table having a series of inclined supports, means for adjusting said supports relatively to each other, reciprocating delivery mechanism for delivering a series of sheets upon said inclined supports respec- 130

tively in one direction of movement of the delivery mechanism, means for alining said sheets upon the compilation table in the opposite movement of the delivery mechanism, 5 cross carrier mechanism on the compilation table intercepting the series of supports in the direction of movement of the upward inclination of the supports, whereby said sheets may be sequentially compiled as the 10 carrier travels across the table, and means for actuating the carrier in time movements relative to the delivery of the sheets upon their supports, substantially as described.

11. In a machine of the class described, a 15 compilation table having a parallel series of

supports, reciprocating means for delivering parallel sheets thereon, a cross carrier mechanism adapted to intercept such supports and sequentially compile the severed sheets, 20 tension mechanism adapted to engage downwardly on the sheets as they rest upon their supports, and means for actuating said mechanism in time movements, substantially as described.

In testimony whereof, I have hereunto set 25 my hand.

WILLIAM T. SULLIVAN.

Witnesses:

OLIVER B. KAISER,
LEO O'DONNELL.