

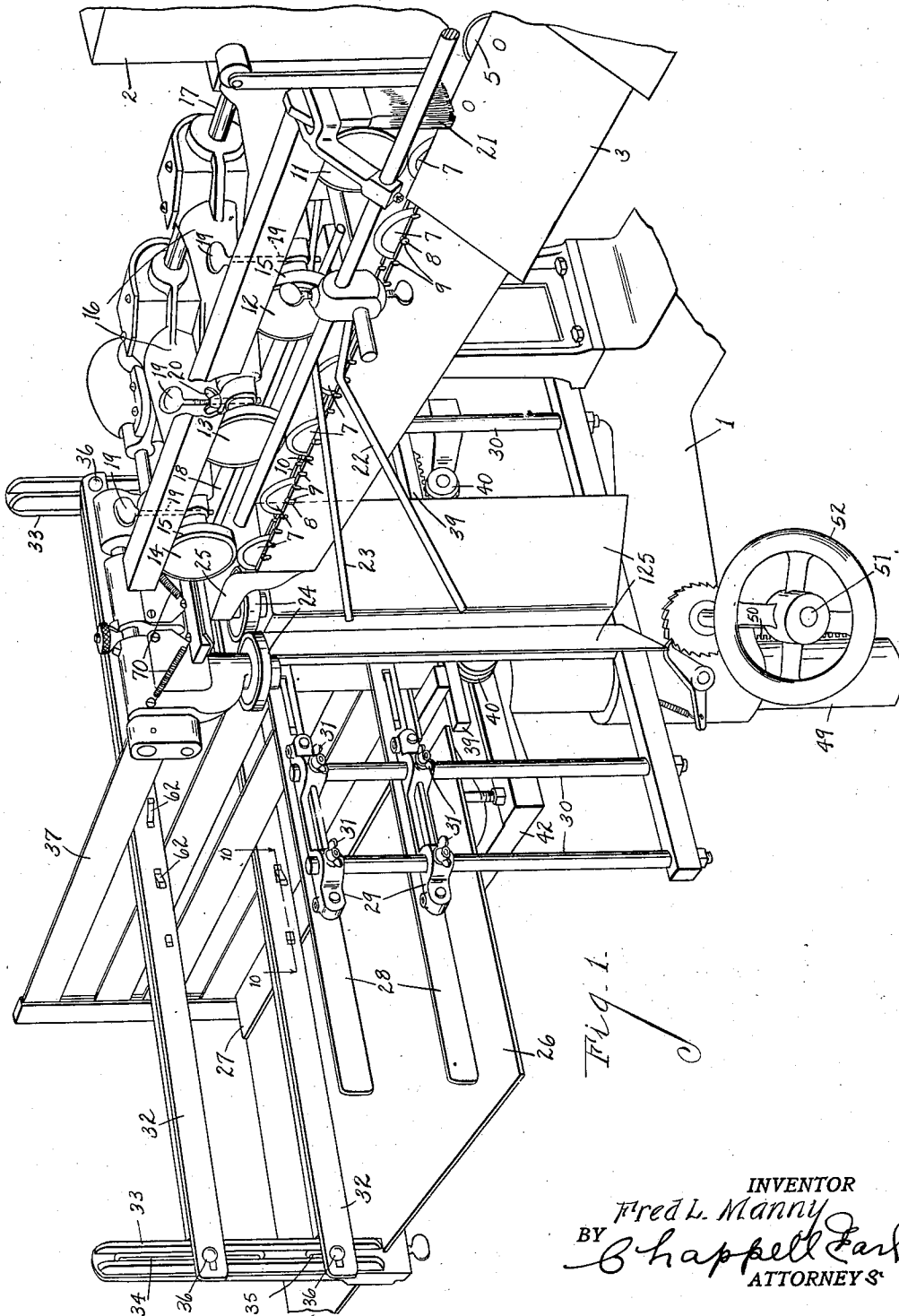
June 10, 1930.

F. L. MANNY

1,762,927

STITCHING MACHINE

Filed June 20, 1929 5 Sheets-Sheet 1



June 10, 1930.

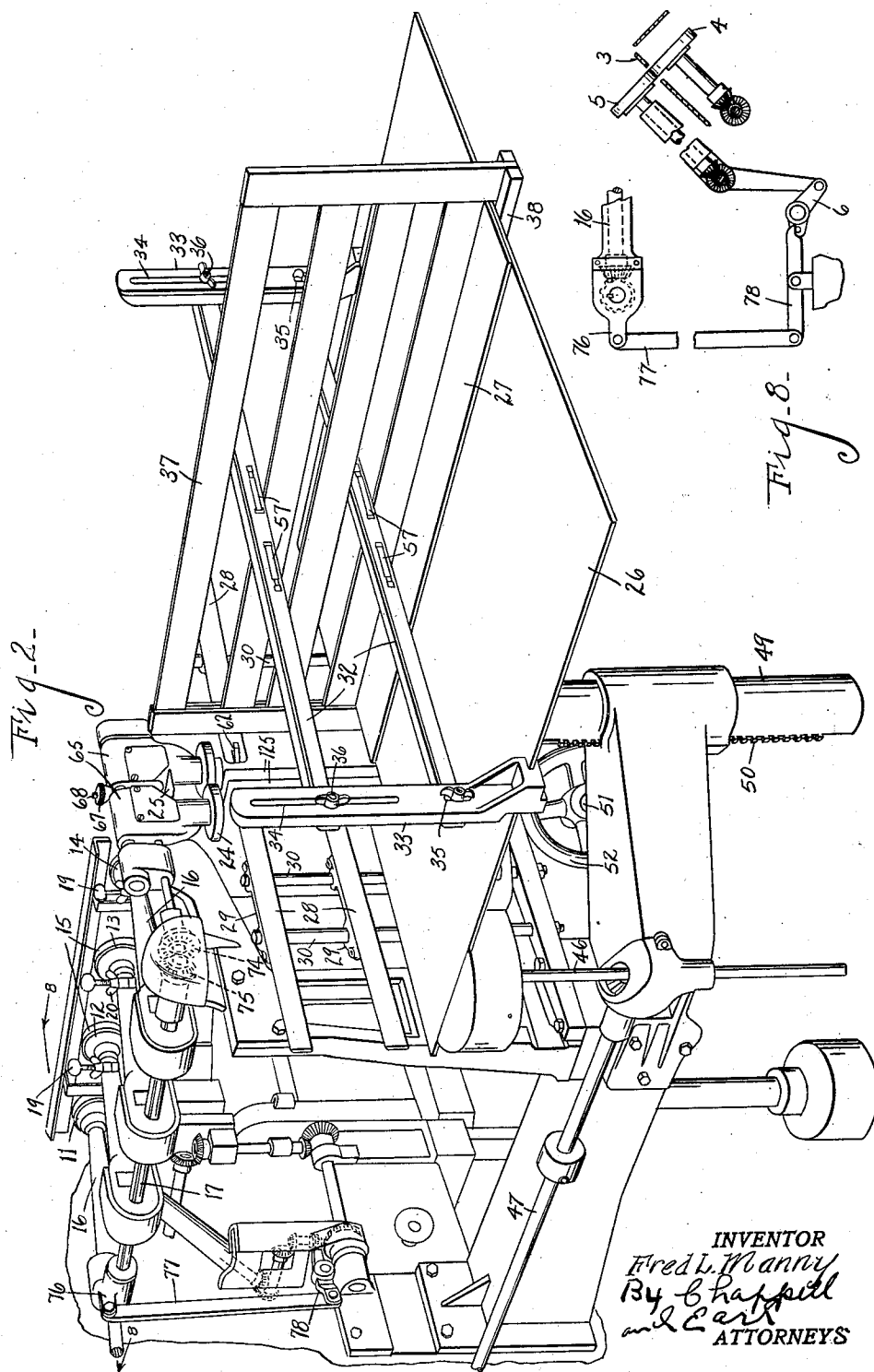
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STITCHING MACHINE

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5 Sheets-Sheet 2



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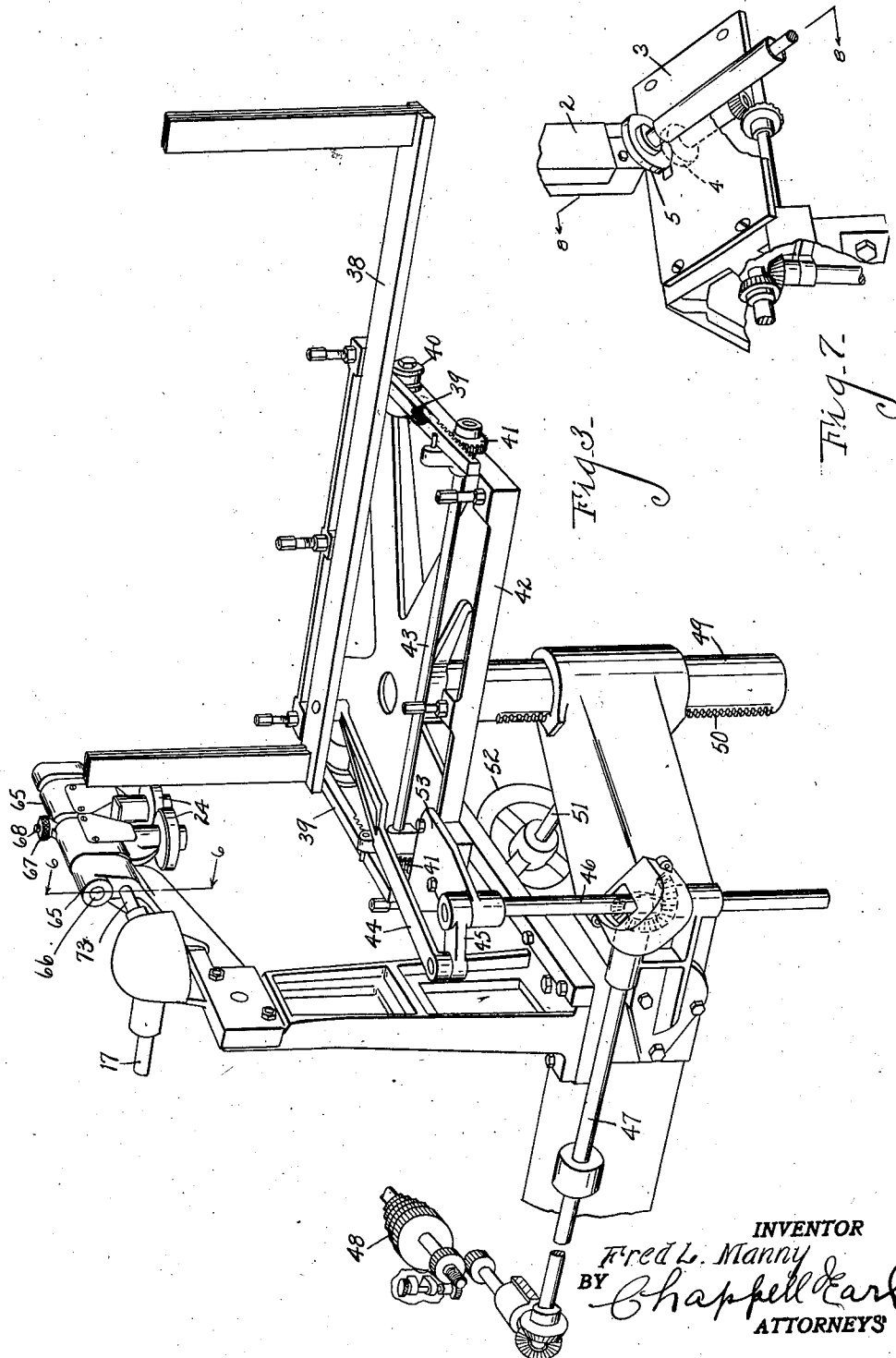
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STITCHING MACHINE

Filed June 20, 1929 5 Sheets-Sheet 3



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STITCHING MACHINE

Filed June 20, 1929

5 Sheets-Sheet 4

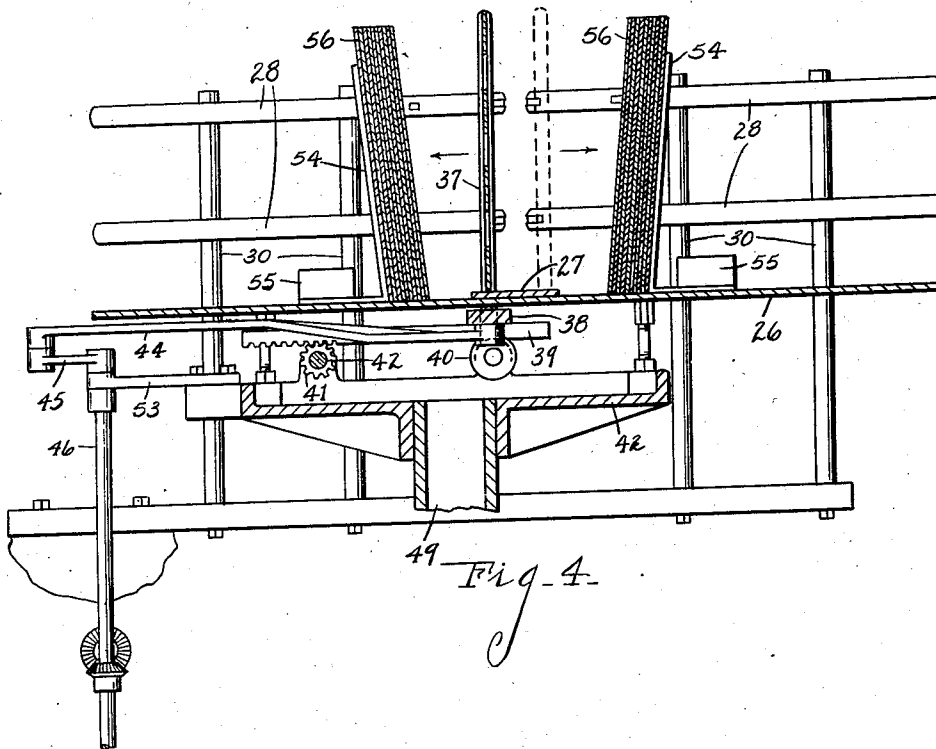


Fig. 4.

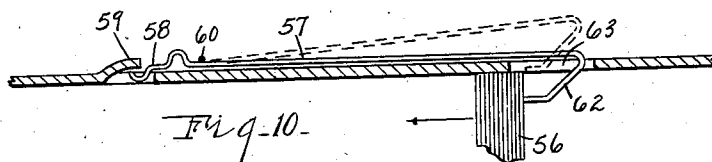


Fig. 10.

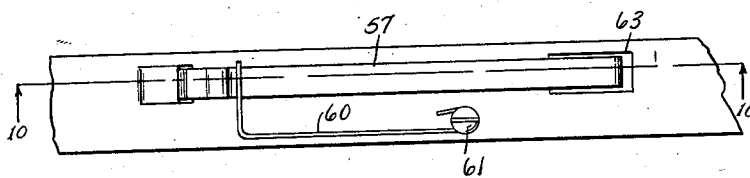


Fig. 9.

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STITCHING MACHINE

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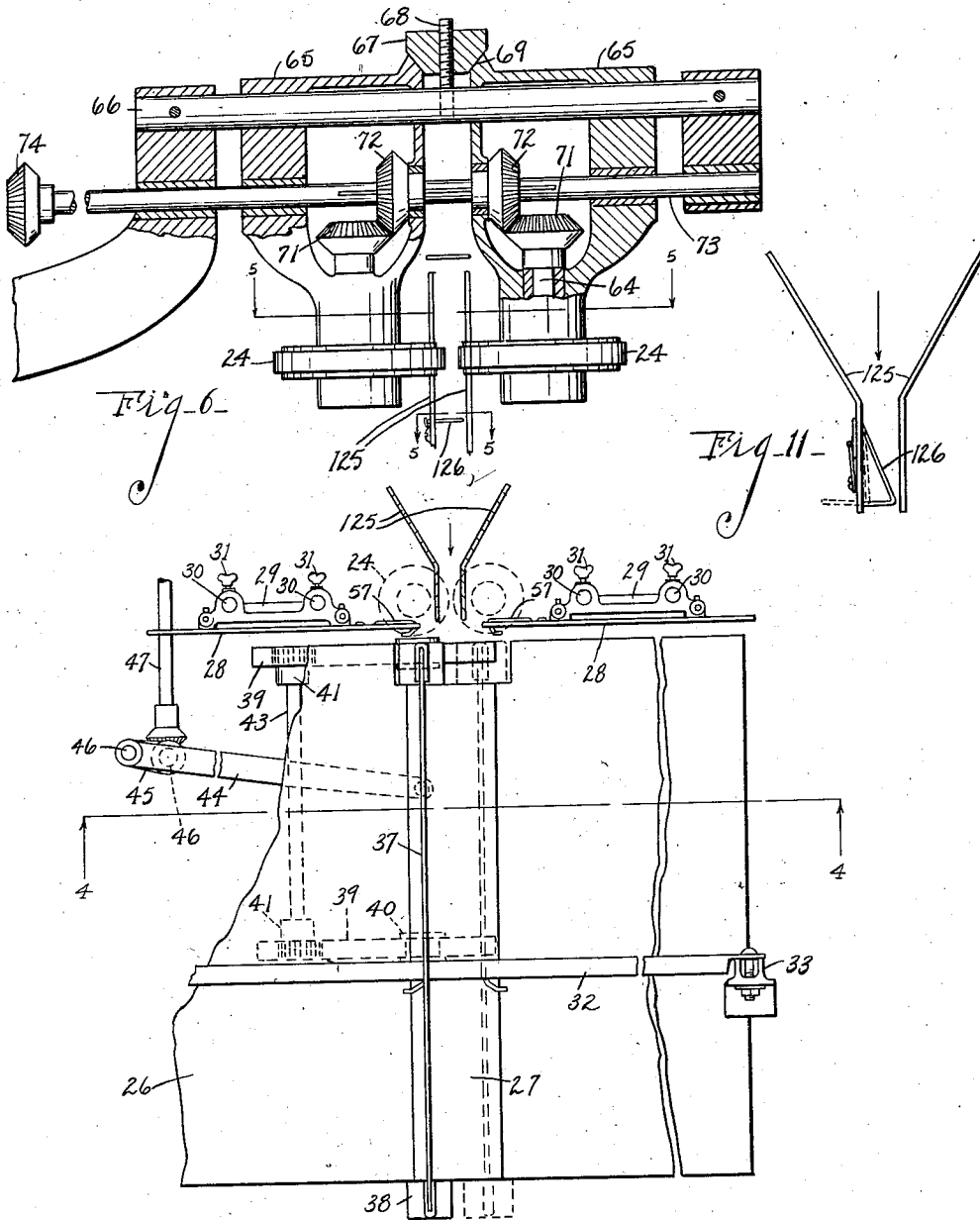


Fig. 5.

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UNITED STATES PATENT OFFICE

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STITCHING MACHINE

Application filed June 20, 1929. Serial No. 372,330.

The main objects of this invention are:

First, to provide in a stitching machine an improved combined discharge and stacking mechanism which is readily adapted or
5 adjusted to work of varying dimensions.

Second, to provide a delivery mechanism for stitching machines which is of very large capacity.

Objects relating to details and economies of my invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is illustrated in the accompanying drawing, forming a part of
15 this application, in which:

Fig. 1 is a fragmentary view of a stitching machine embodying the features of my invention.

20 Fig. 2 is a fragmentary rear perspective view of my improved stitching machine.

Fig. 3 is a fragmentary rear perspective view illustrating details of the driving and adjusting mechanism.

25 Fig. 4 is a fragmentary vertical section through the stacking mechanism on line 4—4 of Fig. 5.

Fig. 5 is a fragmentary plan view partially in section on line 5—5 of Fig. 6.

30 Fig. 6 is a fragmentary view partially in section on line 6—6 of Fig. 3.

Fig. 7 is a fragmentary perspective view showing details of the stitcher feed.

35 Fig. 8 is a fragmentary view partially in section on line 8—8 of Figs. 2 and 7 showing details of the stitcher feed.

Fig. 9 is a fragmentary view showing details of the work supporting detents of the stacker.

40 Fig. 10 is a detail section on line 10—10 of Fig. 9.

Fig. 11 is a fragmentary plan view of the gate or guide through which the work is directed to the stacker.

45 The structure illustrated in the accompanying drawings embodies the work feeding and stitcher features of the structure illustrated in my said application for Letters Patent, Serial No. 247,062. The details of
50 the frame designated generally by the nu-

meral 1 are not described. The stitcher head is shown conventionally at 2.

The feed table 3 is A-shaped, the work being delivered thereto by means not illustrated. The work is fed through the stitcher
55 by means of the feed rollers 4 and 5, the roller 5 being mounted for oscillating movement to and from work engaging position. The means for effecting this are described in detail in my said application for Letters
60 Patent and as they form no part of this invention are not described herein, the same however being partially illustrated in Fig. 8 and designated generally by the numeral 6.

The work is delivered by the stitcher feed
65 rollers to the discharge conveyor, the subject matter of this application. This discharge conveyor consists of a plurality of idler supporting rollers 7, the journals 8 of which are selectively engageable with notch-
70 like bearings 9 in the spaced horizontally disposed bars 10.

A plurality of driving rollers 11, 12, 13 and 14 are provided to coact with certain of the idler rollers, the driving roller 11 being
75 the first in the series and means are provided for controlling it whereby it is swung into and out of work driving position, as will be later described. These driving rollers are suitably spaced to carry the work along on
80 the supporting rollers and deliver the same to the stacker. These driving rollers are preferably provided with rubber or other suitable friction rims or facings indicated
85 at 15.

The shafts of the feed rollers are supported in housings 16 connected by suitable gearing, not illustrated, to the shaft 17, the housings and the gear on the shaft having
90 a sliding key connection thereto so that these rollers may be adjusted relative to each other by sliding their housings along on the shaft 17.

The housings for these feed rollers are supported at their forward ends on the supporting bar 18 extending longitudinally of the machine, the housings being provided with adjustable screws 19 which constitute
95 stops or rests. These supports are provided 100

with thumb nuts 20 for retaining them in their adjusted positions.

To hold the pamphlets firmly and at the same time yieldingly to the stapling table as they are delivered to the stapling feed means and also as they are delivered from such means, I provide a brush 21 which is supported above the saddle-shaped feed table so as to engage the work as it is fed thereto and moved along thereon. This brush also holds the work down as it is delivered to the first discharge conveyor feed roller 11.

The work is held to the supporting rollers by means of the depending guide fingers 22 and 23 which are inclined downwardly and rearwardly at the sides of the supporting rollers. The work is discharged from the rear feed roller 14 into a coacting pair of vertical delivery rollers 24, a supporting plate 25 projecting rearwardly in alignment with the roller 7 so that the pamphlet is delivered in a vertical position onto the stacking table 26. As the work is engaged and moved forward by these rollers 24, it is drawn between the guide plates 125, these plates having vertical parallel portions at their rear ends and forwardly diverging portions at their front ends. The guide plates 125 are provided with a spring stop 126 (see Fig. 11) which swings out of the path of the work as it is discharged through the throat provided by these guide plates and effectively prevents rebound thereof.

The stacking table 26 is provided with a central plate 27 disposed in alignment with the discharge conveyor. At its front end, the stacking table is provided with pairs of spaced bars 28 which are carried by brackets 29 slidable on the vertical supporting rods 30, the brackets being secured in their adjusted position by means of thumb screws 31.

The stacking table is provided with a pair of stop bars 32 mounted on the brackets or uprights 33, these brackets being adjustably secured to the edge of the table. The brackets are vertically slotted at 34 and 35 to receive the supporting bolts 36 for the stop bars so that the stop bars may be adjusted vertically on their supporting brackets and adjusted relative to each other.

The reciprocating gate-like plunger 37 is mounted to reciprocate back and forth across the plane of delivery of the work. This plunger is made up of end uprights and spaced horizontal bars so that the stop bars 32 may be arranged between the bars of the plunger. The plunger 37 is provided with a base bar 38 which is carried by slides 39 supported at one end by the rollers 40 and at the other end by the pinions 41 mounted on the bed 42 of the table—see Fig. 3. The pinions 41 are mounted on a shaft 43 so that they are rotated together and thereby

serve as an equalizing means for the plunger.

The plunger is connected by the pitmen 44 to a crank 45 on the upper end of the shaft 46, this shaft 46 being driven from a shaft 47 disposed longitudinally of the machine and having suitable driving connection to the stitcher driving mechanism indicated generally by the numeral 48.

The stacking table is supported on a pedestal 49 having a rack 50 coacting with a pinion, not shown, mounted on the shaft 51 having a hand wheel 52.

The shaft 46 is mounted on a bracket 53 carried by the table bed so that the shaft is adjusted vertically with the table.

The work is delivered by the plunger against the supports 54 weighted at 55 and slidable on the stacking table, a series of pieces of work 56 being indicated in Figs. 4 and 10. To prevent the return of the work with the plunger and to hold it in upright position, the stop bars 32 and the front bars 28 are provided with detents 57, these detents having offset inner ends 58 engaged with tongues 59 struck up from the bars, the detents being held in position by the springs 60 mounted on screws 61 to engage the detents near their inner ends. The detents have bill portions 62 arranged through holes 63 formed in the bars, as shown in Fig. 10, so that as the pieces of work are successively delivered, they are engaged by these detents and retained thereby.

The edges of the center plate 27 also serve to prevent the return of the work; that is, should the lower end of a piece of work slide towards the plunger, it engages the edge of this plate which supports it so that the next stroke of the plunger will pull it back to position against the pieces of work previously delivered.

Owing to the varying thickness of the work, the rollers 24 are supported on the shafts 64 by hangers 65 slidably mounted on the rods 66. The inward movement of these hangers is limited by the conical stop 67 mounted on the threaded support 68 disposed vertically between the hangers, the hangers being provided with inclined stop faces 69 coacting with the stop 67.

The coiled springs 70 hold the hangers yieldingly against the stop.

The shafts 64 are provided with beveled pinions 71 coacting with the beveled pinions 72 on a shaft 73 disposed parallel with the supporting rods 60. This shaft 73 is provided with a beveled pinion 74 meshing with a beveled pinion 75, shown by dotted lines in Fig. 2, on the shaft 17.

With this arrangement, the parts are all driven in synchronism, the plunger 38 being reciprocated at such speed that the pamphlets or work are delivered, first on one side thereof and then on the other, so that

the work is stacked on the table in two stacks.

The first discharge conveyor feed roller 11 is raised and lowered into and out of engagement with the work in timed relation to the delivery of the work from the stapling feed rollers. The mechanism illustrated consists of the arm 76 connected to the housing of the feed roller 11, this arm being connected by a link 77 to a lever 78 operated from the feed roll oscillating mechanism 6. This results in the operating of the first discharge conveyor feed roller and the stitcher feed roller in proper timed relation; that is, they are oscillated to and from work engaging position.

With this arrangement of parts, the machine may be operated at very high speed, the work being delivered, without danger of crumpling, in stacks which can be easily removed from the table. The machine is quickly adjusted to work of different dimensions and a minimum of attention on the part of the operator.

I have illustrated and described my improvements in an embodiment which I have found very practical. I have not attempted to illustrate or describe certain adaptations and modifications which I contemplate as it is believed that this disclosure will enable those skilled in the art to embody or adapt my improvements as may be desired.

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

1. In a structure of the class described, a conveyor comprising a plurality of work supporting rollers adjustable longitudinally of the conveyor and relative to each other, a plurality of driving rollers cooperating with said supporting rollers and independently adjustable relative to each other, means for adjustably supporting said driven rollers in operative relation to said supporting rollers, and means for automatically moving one of said driving rollers to and from work engaging position.

2. In a structure of the class described, a conveyor comprising a plurality of work supporting rollers adjustable longitudinally of the conveyor and relative to each other, a plurality of driving rollers cooperating with said supporting rollers and independently adjustable relative to each other, and means for adjustably supporting said driven rollers in operative relation to said supporting rollers.

3. In a structure of the class described, a conveyor comprising a plurality of work supporting rollers, a plurality of driving rollers cooperating with said supporting rollers, means for adjustably supporting said driven rollers in operative relation to said supporting rollers, and means for auto-

matically moving one of said driving rollers to and from work engaging position.

4. In a structure of the class described, a conveyor comprising a plurality of work supporting rollers adjustable longitudinally of the conveyor and relative to each other, a plurality of driving rollers cooperating with said supporting rollers and independently adjustable relative to each other, and means for adjustably supporting said driven rollers in operative relation to said supporting rollers.

5. In a structure of the class described, the combination of a plurality of work supporting rollers disposed in alignment and a plurality of driving rollers coacting with said work supporting rollers, a pair of driven delivery rollers having their axes disposed vertically at the rear of said supporting rollers, a pair of guide plates disposed in spaced relation below said delivery rollers and having forwardly diverging front portions, a yielding stop mounted on one of said guide plates to project into the path of the work delivered by said delivery rollers, and downwardly and rearwardly projecting guide fingers disposed at the sides of said supporting rollers to engage the work thereon.

6. In a structure of the class described, the combination of a plurality of work supporting rollers disposed in alignment and a plurality of driving rollers coacting with said work supporting rollers, a pair of driven delivery rollers having their axes disposed vertically at the rear of said supporting rollers, a pair of guide plates disposed in spaced relation below said delivery rollers, and a yielding stop mounted on one of said guide plates to project into the path of the work delivered by said delivery rollers.

7. In a structure of the class described, the combination of a plurality of work supporting rollers disposed in alignment and a plurality of driving rollers coacting with said work supporting rollers, a pair of driven delivery rollers having their axes disposed vertically at the rear of said supporting rollers, and a pair of guide plates disposed in spaced relation below said delivery rollers.

8. In a structure of the class described, the combination of a plurality of work supporting rollers disposed in alignment and a plurality of driving rollers coacting with said work supporting rollers, driven delivery rollers having their axes disposed vertically at the rear of said supporting rollers, hangers for said delivery rollers mounted to slide transversely to the plane of the supporting rollers and having beveled stop faces, a vertically adjustable conical stop coacting with said stop faces, and springs acting to yieldingly hold said hangers against said stop.

9. In a structure of the class described, the combination of a plurality of work supporting rollers disposed in alignment and a plurality of driving rollers coacting with said work supporting rollers, driven delivery rollers having their axes disposed vertically at the rear of said supporting rollers, hangers for said delivery rollers mounted to slide transversely to the plane of the supporting rollers, and an adjustable stop means for said hangers. 70
10. In a structure of the class described, the combination of a conveyor comprising coacting work supporting and driving rollers, coacting driven delivery rollers disposed with their axes in transverse relation to the axes of said conveyor rollers, spaced guide plates operatively associated with said delivery rollers, a work return stop operatively associated with said delivery rollers and guide plates, a table disposed to receive the work delivered by said delivery rollers, and a plunger mounted to reciprocate across the path of the work delivered by said delivery rollers. 75
11. In a structure of the class described, the combination of a conveyor comprising coacting work supporting and driving rollers, coacting driven delivery rollers disposed with their axes in transverse relation to the axes of said conveyor rollers, spaced guide plates operatively associated with said delivery rollers, and a work return stop operatively associated with said delivery rollers and guide plates. 80
12. In a structure of the class described, the combination of a conveyor comprising coacting work supporting and driving rollers, coacting driven delivery rollers disposed with their axes in transverse relation to the axes of said conveyor rollers, spaced guide plates operatively associated with said delivery rollers, a table disposed to receive the work delivered by said delivery rollers, and a plunger mounted to reciprocate across the path of the work delivered by said delivery rollers. 85
13. In a structure of the class described, the combination of a conveyor comprising coacting work supporting and driving rollers, coacting driven delivery rollers disposed with their axes in transverse relation to the axes of said conveyor rollers, and spaced guide plates operatively associated with said delivery rollers. 90
14. In a structure of the class described, the combination of a coacting pair of work delivery rollers mounted on vertical axes, spaced guide plates disposed below said rollers, a yielding return stop disposed in the path of work between said guide plates, a table provided with a center plate aligned with said delivery rollers, vertically slotted stop bar supporting brackets adjustably mounted at the side edges of said table, stop bars mounted on said brackets by means of bolts engaging said slots whereby the bars are supported for vertical adjustment, front bars mounted at the sides of said guide plates for vertical adjustment, said stop and front bars being provided with work supporting detents, and a plunger mounted to reciprocate transversely of said table and provided with bars spaced to receive said stop bars. 95
15. In a structure of the class described, the combination of a coacting pair of work delivery rollers mounted on vertical axes, spaced guide plates disposed below said rollers, a yielding return stop disposed in the path of work between said guide plates, a table, vertically slotted stop bar supporting brackets adjustably mounted at the side edges of said table, stop bars mounted on said brackets by means of bolts engaging said slots whereby the bars are supported for vertical adjustment, front bars mounted at the sides of said guide plates for vertical adjustment, said stop and front bars being provided with work supporting detents, and a plunger mounted to reciprocate transversely of said table and provided with bars spaced to receive said stop bars. 100
16. The combination of a work delivery means, a table provided with a center plate aligned with said delivery rollers, vertically slotted stop bar supporting brackets adjustably mounted at the side edges of said table, stop bars mounted on said brackets by means of bolts engaging said slots whereby the bars are supported for vertical adjustment, front bars mounted at the sides of said guide plates for vertical adjustment, said stop and front bars being provided with work supporting detents, a plunger mounted to reciprocate transversely of said table and provided with a bar spaced to receive said stop bars, and means for reciprocating said plunger across said center plate of said table. 105
17. The combination of a work delivery means, a table, vertically slotted stop bar supporting brackets adjustably mounted at the side edges of said table, stop bars mounted on said brackets by means of bolts engaging said slots whereby the bars are supported for vertical adjustment, front bars mounted at the sides of said guide plates for vertical adjustment, said stop and front bars being provided with work supporting detents, a plunger mounted to reciprocate transversely of said table and provided with a bar spaced to receive said stop bars, and means for reciprocating said plunger. 110
18. In a structure of the class described, the combination of coacting work delivery rollers mounted on vertical axes, spaced guide plates disposed below said rollers, a yielding return stop disposed in the path of 115
19. In a structure of the class described, the combination of coacting work delivery rollers mounted on vertical axes, spaced guide plates disposed below said rollers, a yielding return stop disposed in the path of 120
20. In a structure of the class described, the combination of coacting work delivery rollers mounted on vertical axes, spaced guide plates disposed below said rollers, a yielding return stop disposed in the path of 125
21. In a structure of the class described, the combination of coacting work delivery rollers mounted on vertical axes, spaced guide plates disposed below said rollers, a yielding return stop disposed in the path of 130

work between said guide plates, a vertically adjustable table provided with a center plate aligned with said delivery rollers, stop bars mounted on said table for adjustment from front to rear thereof, front bars, said stop and front bars being provided with work supporting detents, and a plunger mounted to reciprocate transversely of said table across said center plate of said table and provided with bars spaced to receive said stop bars.

19. In a structure of the class described, the combination of coacting work delivery rollers mounted on vertical axes, spaced guide plates disposed below said rollers, a yielding return stop disposed in the path of work between said guide plates, a vertically adjustable table, stop bars mounted on said table for adjustment from front to rear thereof, front bars, said stop and front bars being provided with work supporting detents, and a plunger mounted to reciprocate transversely of said table and provided with bars spaced to receive said stop bars.

20. In a structure of the class described, the combination of work delivery means, a vertically adjustable table provided with a center plate, stop bars mounted on said table for adjustment from front to rear thereof, front bars, said stop and front bars being provided with work supporting detents, and a plunger mounted to reciprocate transversely of said table across said center plate of said table and provided with bars spaced to receive said stop bars.

21. In a structure of the class described, the combination of work delivery means, a vertically adjustable table, stop bars mounted on said table for adjustment from front to rear thereof, front bars, said stop and front bars being provided with work supporting detents, and a plunger mounted to reciprocate transversely of said table and provided with bars spaced to receive said stop bars.

22. In a structure of the class described, the combination of work delivery means, an adjustable table, stop bars mounted on said table, front bars, said stop and front bars being provided with work supporting detents, and a plunger mounted to reciprocate transversely of said table and provided with bars spaced to receive said stop bars.

23. In a structure of the class described, the combination of a coacting pair of work delivery rollers mounted on vertical axes, spaced guide plates disposed below said rollers, a yielding return stop disposed in the path of work between said guide plates, a table, a stop member disposed transversely of said table for adjustment from front to rear thereof, front members, said stop and front members being provided with work supporting detents, and a plunger mounted to reciprocate transversely of said table.

24. In a structure of the class described, the combination of a coacting pair of work delivery rollers mounted on vertical axes, spaced guide plates disposed below said rollers, a yielding return stop disposed in the path of work between said guide plates, a table, a stop member disposed transversely of said table, front members, and a plunger mounted to reciprocate transversely of said table.

25. In a structure of the class described, the combination of work delivery means, a table, stop members mounted transversely of said table for adjustment from front to rear thereof, front members, said stop and front members being provided with work supporting detents, and a plunger mounted to reciprocate transversely of said table.

26. In a structure of the class described, the combination of a coacting pair of work delivery rollers, reciprocating supports for said rollers, an adjustable stop means for said rollers, and means for yieldingly holding said rollers towards each other and against said stop means.

27. In a structure of the class described, the combination of a coacting pair of work delivery rollers, reciprocating supports for said rollers, and means for yieldingly holding said rollers towards each other.

28. In a structure of the class described, the combination of a coacting pair of work delivery rollers mounted on vertical axes, spaced guide plates disposed below said rollers, and a yielding return stop disposed in the path of work between said guide plates.

29. In a structure of the class described, the combination of work delivery means, a stacking table, an adjustable stop means disposed transversely of said table and provided with a work supporting detent, a member disposed in opposed relation to said stop member and provided with a work supporting detent, a plunger mounted to reciprocate across the path of the work delivered to the table, slides for said plunger provided with racks, supporting rollers for said slides, a pair of connected pinions coacting with said racks and constituting supporting members for said slides, and means for reciprocating said plunger.

30. In a structure of the class described, the combination of work delivery means, a stacking table, a plunger mounted to reciprocate across the path of the work delivered to the table, slides for said plunger provided with racks, supporting rollers for said slides, a pair of connected pinions coacting with said racks and constituting supporting members for said slides, and means for reciprocating said plunger.

31. In a structure of the class described, the combination of a work delivery means, a stacking table, a stop means disposed trans-

versely of said table and provided with a
work supporting detent, a member disposed
in opposed relation to said stop member and
provided with a work supporting detent,
5 and a plunger mounted to reciprocate across
the path of work delivered from said work
delivery means.

In witness whereof I have hereunto set
my hand.

FRED L. MANNY.

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