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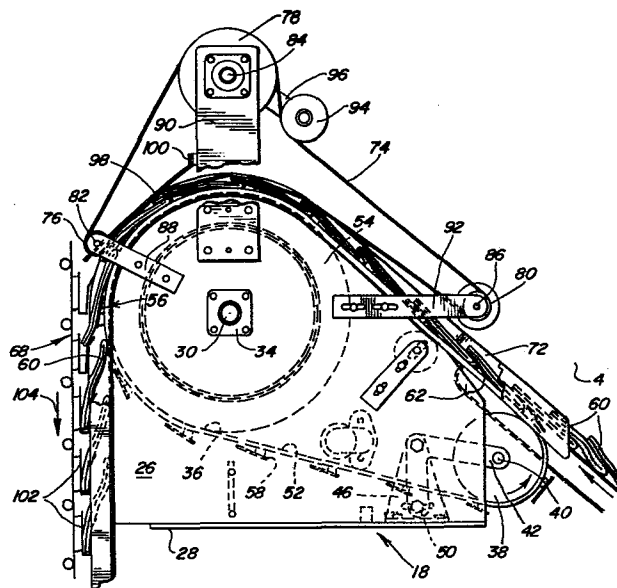
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⑤④ **Newspaper conveyor loading apparatus.**

⑤⑦ An apparatus for successively removing single newspapers (60) being advanced along a stream conveyor (62) in shingled relation and transferring them to a gripper type conveyor (68) for additional processing. The apparatus includes a supporting frame (24, 26, 28) having an endless timing belt (52) operatively connected to a pair of spaced timing pulleys (36, 38) one of which is rotatably driven. The outer surface of the timing belt (52) has a plurality of cleat members (56) fixed thereon in spaced relation and travel with the belt between positions of operative association with both the stream and gripper conveyors. The cleat members (56) are effective in engaging the folded edge of each newspaper (60) to remove it from the stream conveyor (62) and, prior to being inserted into the gripper conveyor (68), an endless guide belt (74) is caused to frictionally engage the newspapers so as to maintain their position in the cleat members while being transferred by the endless timing belt (52).



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Background of the Invention

Field of the Invention. The present invention pertains to an improved apparatus for removing folded newspapers traveling in shingled relation from a stream conveyor and transferring them to a gripper type conveyor. More particularly, the invention pertains to an apparatus for independent control of each newspaper by engaging the folded edge to remove it from the stream conveyor, guiding it to an elevated position and then
10 guiding it downwardly so that its cut edge will enter into the trough or pocket of a gripper conveyor where it is held while being transferred to another location for further processing.

Description of the Prior Art. A number of United States patents show and describe devices for transferring printed products such as newspapers from one conveyor to another for the purpose of additional processing and, for reference to the teachings of such disclosures, attention is hereby directed to U.S. Patents 3,955,667 and
20 4,039,182.

Summary of the Invention

The apparatus for effecting individual withdrawal of folded newspapers or the like from a stream conveyor and transferring them to a gripper type conveyor
25 according to the invention includes a supporting frame having an endless timing belt mounted for rotative movement therein. The belt is operatively connected to a pair of spaced timing pulleys with one of said pulleys being rotatably driven. The timing belt has a plurality
30 of spaced cleat members fixed in spaced relation thereon which are caused to travel with the timing belt between positions of operative association with both the stream and gripper type conveyors. Each cleat member is adapted

to engage the folded edge of a single newspaper and withdraw it from the stream conveyor. The timing belt moves upwardly with the newspapers taken from the stream conveyor with their cut edges directed forwardly or in
5 the direction of travel. As the timing belt is guided over the upper surface of the upper timing pulley, the newspapers are then directed downwardly to a position where their cut edges enter into troughs or pockets of the gripper type conveyor. This conveyor is effective in
10 gripping the newspapers until they reach a predetermined downstream location whereat they receive additional processing.

An endless guide belt operatively associated with a plurality of idler rollers frictionally engages and
15 guides the newspapers as they move with their respective cleat members about the upper surface of the upper timing pulley. As the newspapers move downwardly, engagement with the guide belt is removed which permits the newspapers to drop out of their respective cleat member
20 and enter one of the pockets of the gripper conveyor.

It is a general object of the invention to provide an improved apparatus for successively withdrawing single newspapers from a stream conveyor and transferring them to a gripper type conveyor.

25 A further object is to provide an improved apparatus that will independently engage and guide each newspaper while being transferred from one form of conveyor to another.

Another object is to provide an improved apparatus
30 for transferring newspapers from one conveyor to another which is of simplified construction, having a minimum number of parts that are relatively inexpensive to manufacture and with long life expectancy.

These and other objects of the invention will become
35 more fully apparent by reference to the appended claims and as the following detailed description proceeds in reference to the figures of drawing wherein:

Brief Description of the Drawings

Fig. 1 is a perspective view of a newspaper

assembler showing a plurality of apparatus according to the invention forming a part thereof;

Fig. 2 is a view in side elevation of the apparatus according to the invention;

5 Fig. 3 is a top view of the apparatus shown in Fig. 2;

Fig. 4 is an end view as seen looking in the direction of the indicating arrow 4 in Fig. 3;

10 Fig. 5 is a perspective view of the apparatus shown in Fig. 2; and

Fig. 6 is a perspective view showing a portion of the opposite end of the apparatus in Fig. 5.

Description of the Preferred Embodiment

Referring now to Fig. 1, the various mechanisms are
15 shown that form a newspaper assembler that is identified generally by numeral 10. This assembler includes among its several mechanisms a pair of spaced stream makers 12 and 14, a gripper conveyor 16 and conveyor loading apparatus, according to the invention, that are
20 identified generally by numeral 18 and which will be described in greater detail hereinafter.

A pocket carousel or endless conveyor with which the present invention is operatively associated is identified generally by numeral 20 and is provided with a
25 multiplicity of pockets of V-shaped configuration that are depicted by numeral 22.

The conveyor loading apparatus 18 hereinafter referred to as "loader" is provided with a supporting frame consisting of a pair of spaced side walls 24 and 26
30 mounted on a base plate 28.

As shown in Fig. 3, a shaft 30 extends through aligned openings in side walls 24 and 26 and the ends thereof are journaled in bearing members 32 and 34 that are mounted on the outer sides of the walls 24 and 26,
35 respectively. A timing pulley 36 (Figs. 2 and 5) is mounted on shaft 30 intermediate the side walls 24 and 26 and is rotatably driven by any suitable means (not shown). Below and spaced from the timing pulley 36, a second timing pulley 38 (Figs. 2 and 6) is provided that

is rotatably mounted on a bar 40 which is supported on a pair of spaced arms 42 and 44 that are carried on a support bracket 46 which is assembled on the base plate 28.

5 As shown in Fig. 2, arm 42 is part of a bell crank lever with a downwardly directed second arm 48 that is adjustably connected to the support bracket 46 as at 50 and provides a means for selectively raising or lowering the second timing pulley 38 for reasons that will become
10 obvious as further details of the invention are described.

An endless timing belt 52 operatively interconnects the timing pulleys 36 and 38 and is caused to travel in the direction of the indicating arrows 54 shown in Figs. 2-6. This timing belt 52 has a plurality of cleat
15 members generally indicated by numeral 56 fixed on the outer surface thereof and they are disposed in evenly spaced relation about the entire outer surface. Each cleat member 56 is attached to the timing belt 52 in a manner whereby a portion thereof is disposed in spaced
20 relation to the belt and defines a lip 58. As the cleat members move with the timing belt 52 about the outer surface of the timing pulley 38, they are caused to intercept a lapped stream of folded newspapers 60 being advanced by any suitable conveying apparatus, such as an
25 endless wire type, a portion of which is shown at 62 in Fig. 2.

The lips 58 of each cleat member 56 are effective in engaging the folded edge of a newspaper and move the same in the direction of the indicating arrow 54 shown in Fig.
30 2. As the newspapers move with their respective cleat members on the timing belt 52, the sides of the newspapers are supported by arcuated plate members 64 and 66. These arcuated plate members 64 and 66 extend along the sides of the endless belt 52 within the side walls 24
35 and 26 for a distance which places one of their ends in operative association with the endless wire type conveyor 62 and the opposite ends in association with a gripper type conveyor identified generally by numeral 68 in Fig. 2. To maintain the newspapers in alignment as they are

taken and advanced by the cleat members 56, a pair of arcuated guide fences 70 and 72 are provided which are disposed in contiguous relation with the outer edges of the arcuated plate members 64 and 66, respectively. To
5 prevent displacement of the newspapers from the lips 58 of their respective cleat members 56 while being advanced to the gripper type conveyor 68, a guide belt 74 is provided that is operatively connected to guide rollers 76, 78 and 80 rotatably mounted on shafts 82, 84 and 86,
10 respectively. These shafts traverse the distance between the side walls 24 and 26 and their ends are supported by pairs of opposed bracket members 88, 90 and 92 which are mounted on side walls 24 and 26, respectively. As shown in Figs. 2 and 5, the lower outer surface of the guide
15 belt is adapted to frictionally engage the newspapers being advanced by the timing belt 52 and effects rotation of the belt around the guide rollers 76, 78 and 80. To increase or decrease the force with which the guide belt 74 engages the newspapers 60, an idler guide roller 94 is
20 provided which is rotatably mounted on one end of an arm 96. The opposite end of arm 96 is connected to shaft 84 and by any suitable means (not shown) the arm 96 is selectively positioned in order to increase or decrease the force with which it engages the outer surface of the
25 guide belt 74.

The newspapers 60, after passing the uppermost surface of the timing pulley 36, start in a downwardly direction and, to prevent displacement of the side portions of the newspapers not engaged by the guide belt
30 74, a plurality of guide rods 98 are provided. These guide rods have one end mounted in a bar 100 which traverses the distance between the side walls 24 and 26 and with the ends thereof being attached to the pair of opposed bracket members 90. From the bar 100, the guide
35 rods extend in a generally downward direction toward the gripper type conveyor 68 and are effective in engaging those portions of the newspapers not engaged by the guide belt 74.

As shown in Fig. 2, the gripper type conveyor 68

includes a multiplicity of V-shaped pockets 102 which are caused to travel in the direction of the indicating arrow 104. As the newspapers travel in a downwardly direction, their contact with the guide belt is lost and permits a
5 newspaper with its cut edges directed downwardly to drop into one of the pockets 102. By a means (not shown) the newspapers, after entering the pockets 102, are gripped and held till they arrive at a predetermined downstream location whereat they will be subjected to further
10 processing.

Although the present invention has been described in connection with a preferred embodiment, it is to be understood that modifications and variations may be resorted to without departing from the spirit and scope
15 of the invention as those skilled in the art will readily understand. Such modifications and variations are considered to be within the purview and scope of the invention and the appended claims.

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I CLAIM:

1. An apparatus for successively engaging single newspapers or the like being advanced by a stream conveyor in shingled relation and independently guiding
5 them to a gripper conveyor for further processing, said apparatus comprising:
 - (a) a supporting frame;
 - (b) a conveying member mounted in said supporting frame;
 - 10 (c) means for rotating said conveying member between positions of operative association with the stream and gripper conveyors;
 - (d) means mounted on said conveyor
15 member for engaging and removing each newspaper from the stream conveyor; and
 - (e) means for maintaining the
20 newspapers in the position initiated by said engaging and removing means as they are advanced to the gripper conveyor by said conveying member.
2. The structure according to claim 1, wherein said
25 conveying member defines an endless timing belt.
3. The structure according to claim 2, wherein said rotating means defines a pair of spaced timing pulleys operatively connected to said endless timing belt and with one of said timing pulleys being rotatably driven.

4. The structure according to claim 2, wherein said engaging and removing means defines a plurality of cleat elements fixedly mounted in spaced and aligned relation about the outer surface of said endless timing belt.
- 5 5. The structure according to claim 4, wherein said maintaining means defines an endless guide belt mounted in said supporting frame in frictional contact with the newspapers being advanced to the gripper conveyor by said cleat elements on said conveying member.
- 10 6. The structure according to claim 5, herein said endless guide belt is operatively connected to a plurality of spaced idler pulleys, and includes means for selectively changing the frictional force with which it engages the newspapers on said conveying member.

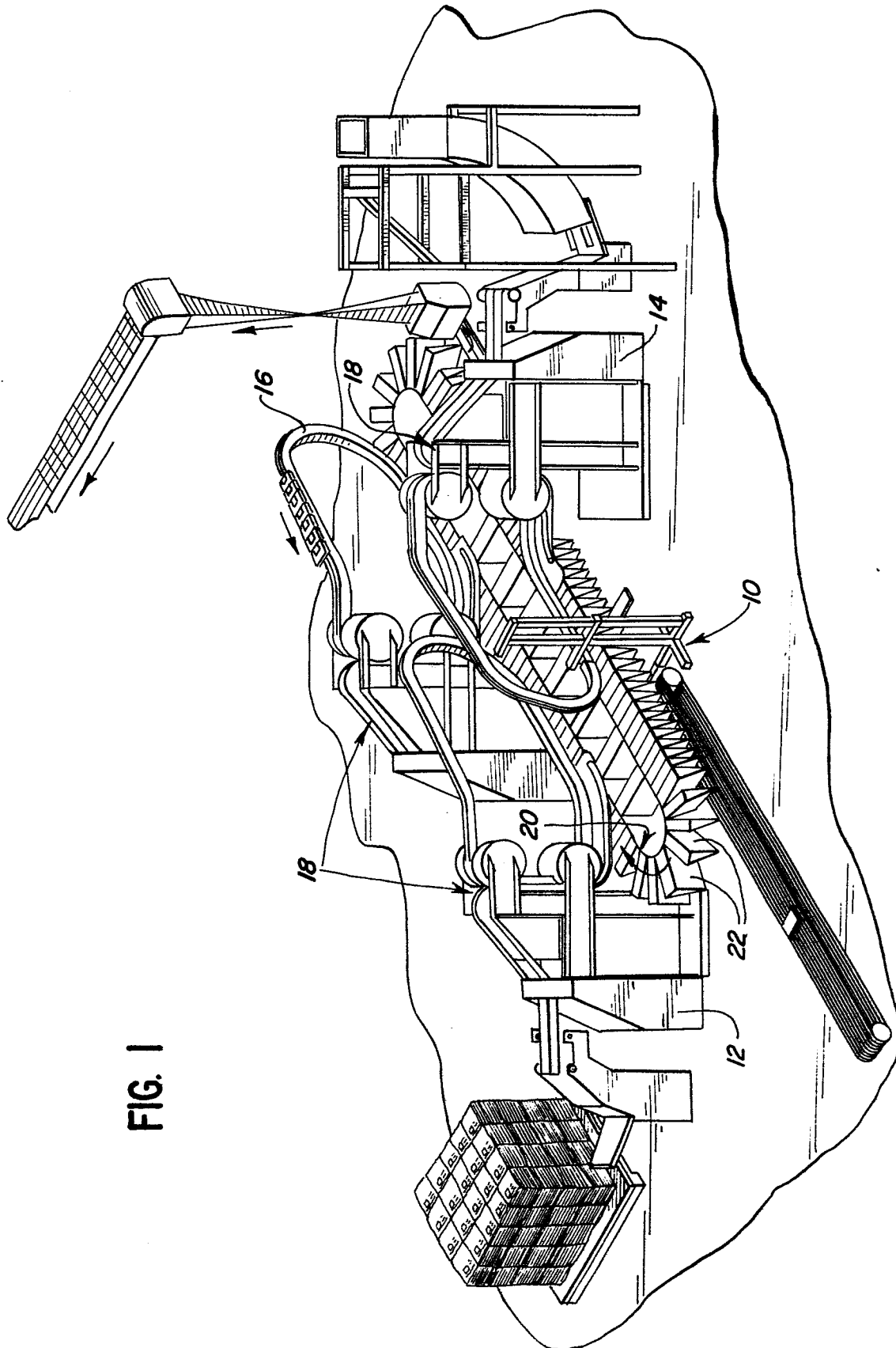


FIG. 1

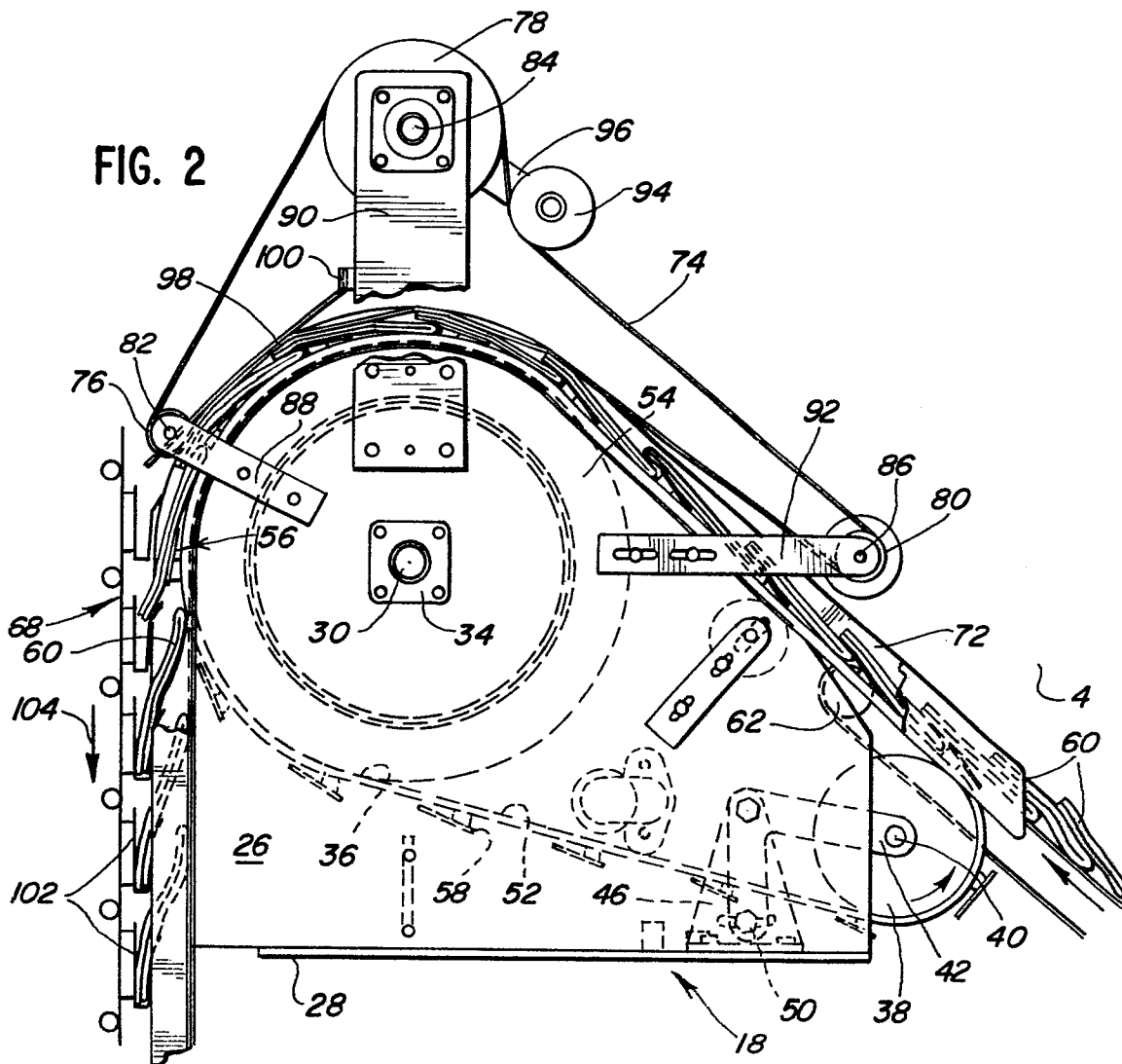
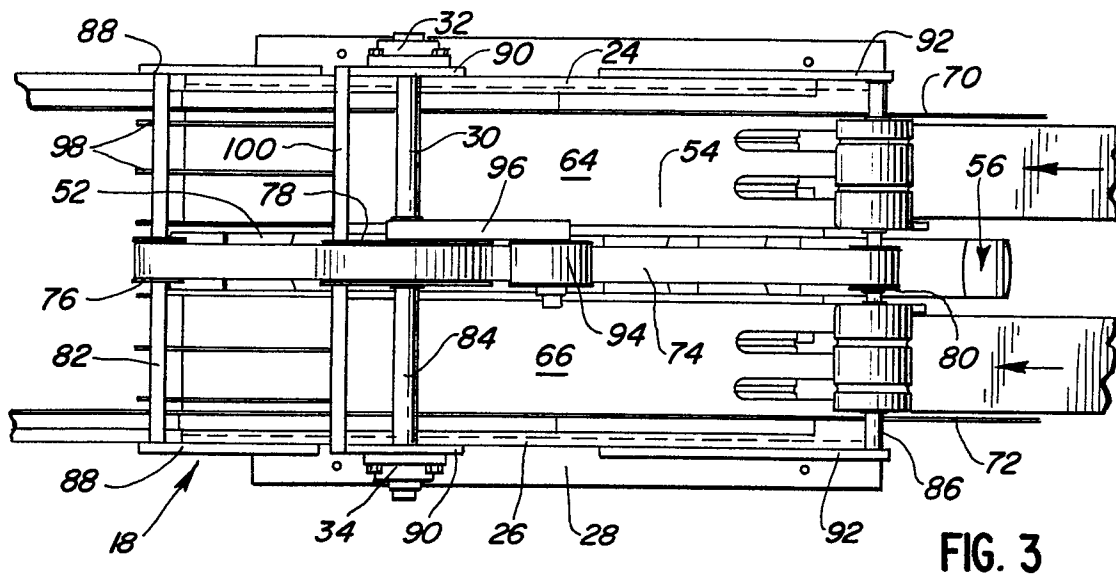


FIG. 4

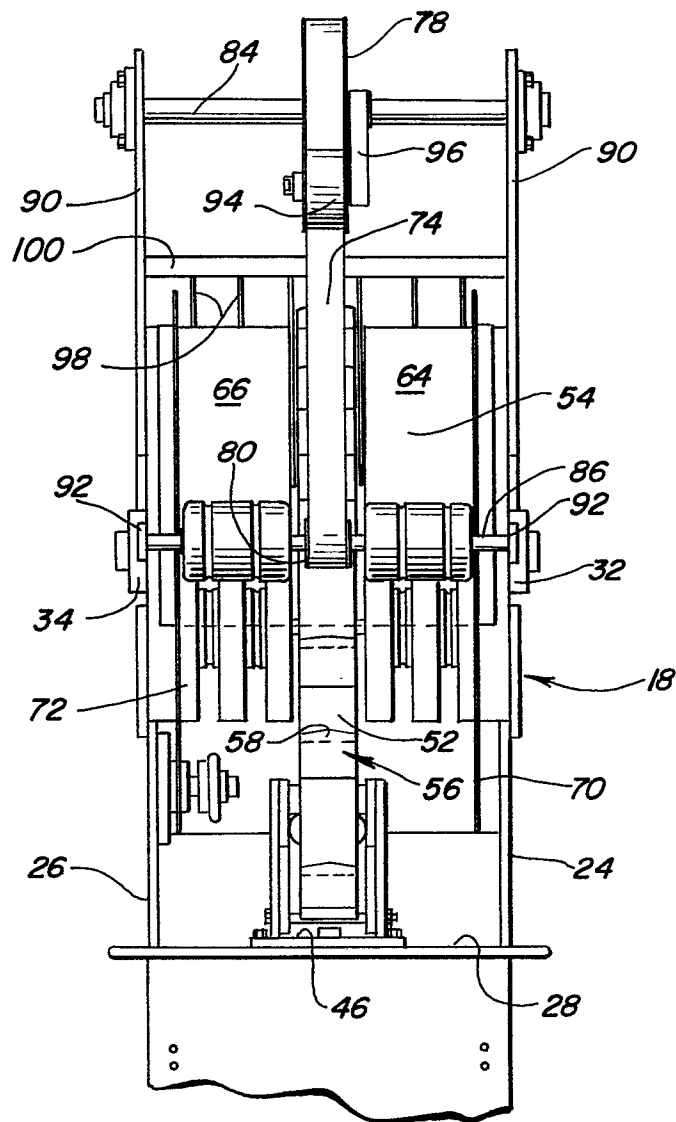


FIG. 5

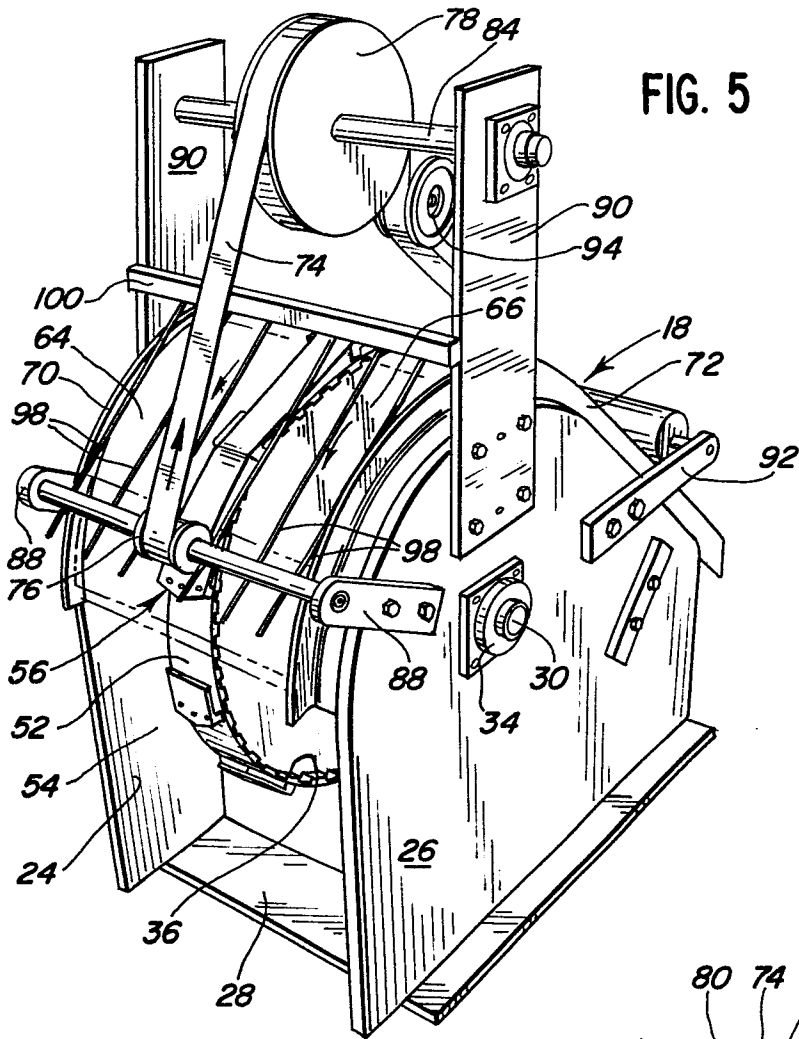
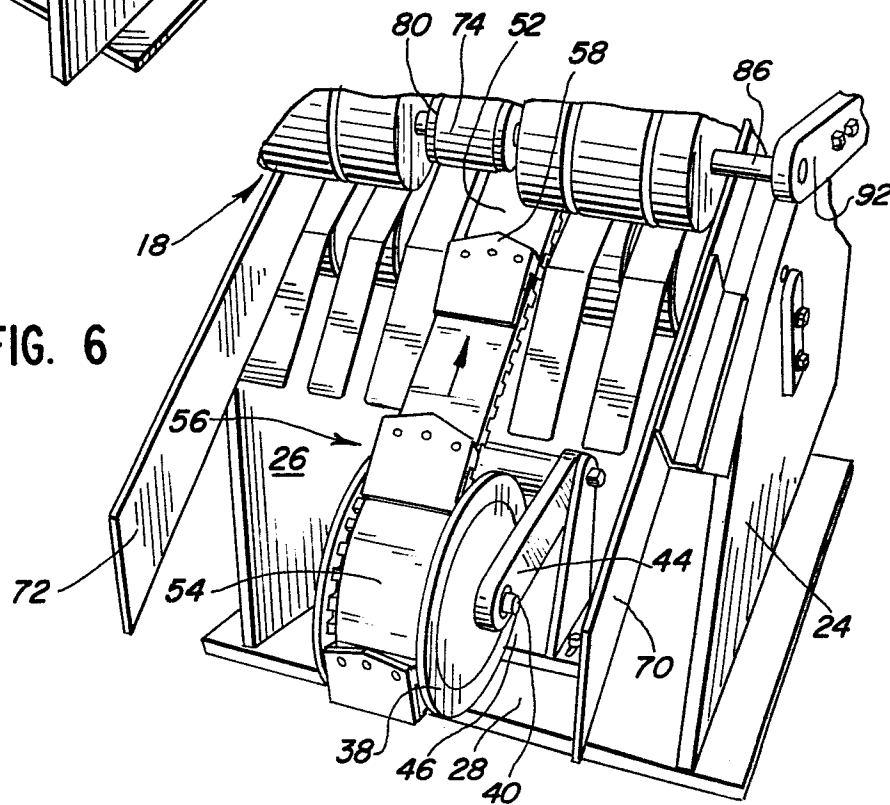


FIG. 6





EP 83111029.1

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
A	<u>US - A - 4 361 318</u> (STOBB) * Fig. 1 * --	5,6	B 65 H 29/12
A	<u>DD - A - 57 348</u> (STIEFEL) * Fig. 1 * --	5,6	
A	<u>FR - A7 - 2 408 280</u> (O.M.G. OFFICINA MACCHINE GRAFICHE DI PESSINA E PEROBELLI) * Fig. 1 * --	5,6	
A	<u>CH - A5 - 559 692</u> (FERAG AG) --		
A	<u>GB - A - 2 108 937 A</u> (MAN) --		TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
A,D	<u>US - A - 3 955 667</u> (MÜLLER et al.) --		B 65 H
A,D	<u>US - A - 4 039 182</u> (REIST et al.) -----		
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 20-03-1984	Examiner PANGRATZ
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	