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MACHINE FOR PLACING DISHES IN CARTONS OR CONTAINERS

Filed Jan. 10, 1949

4 Sheets-Sheet 1

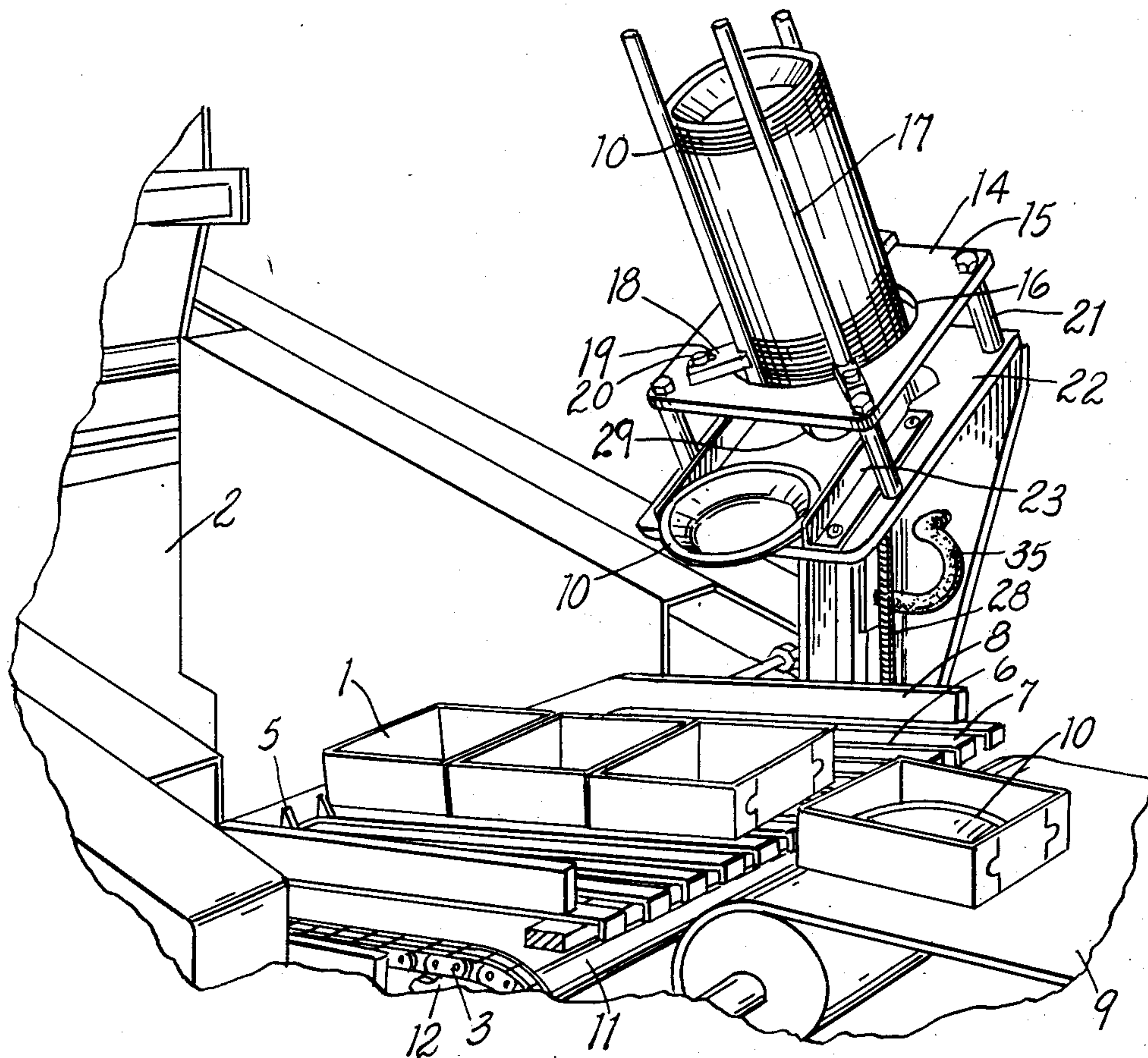


FIG. 1

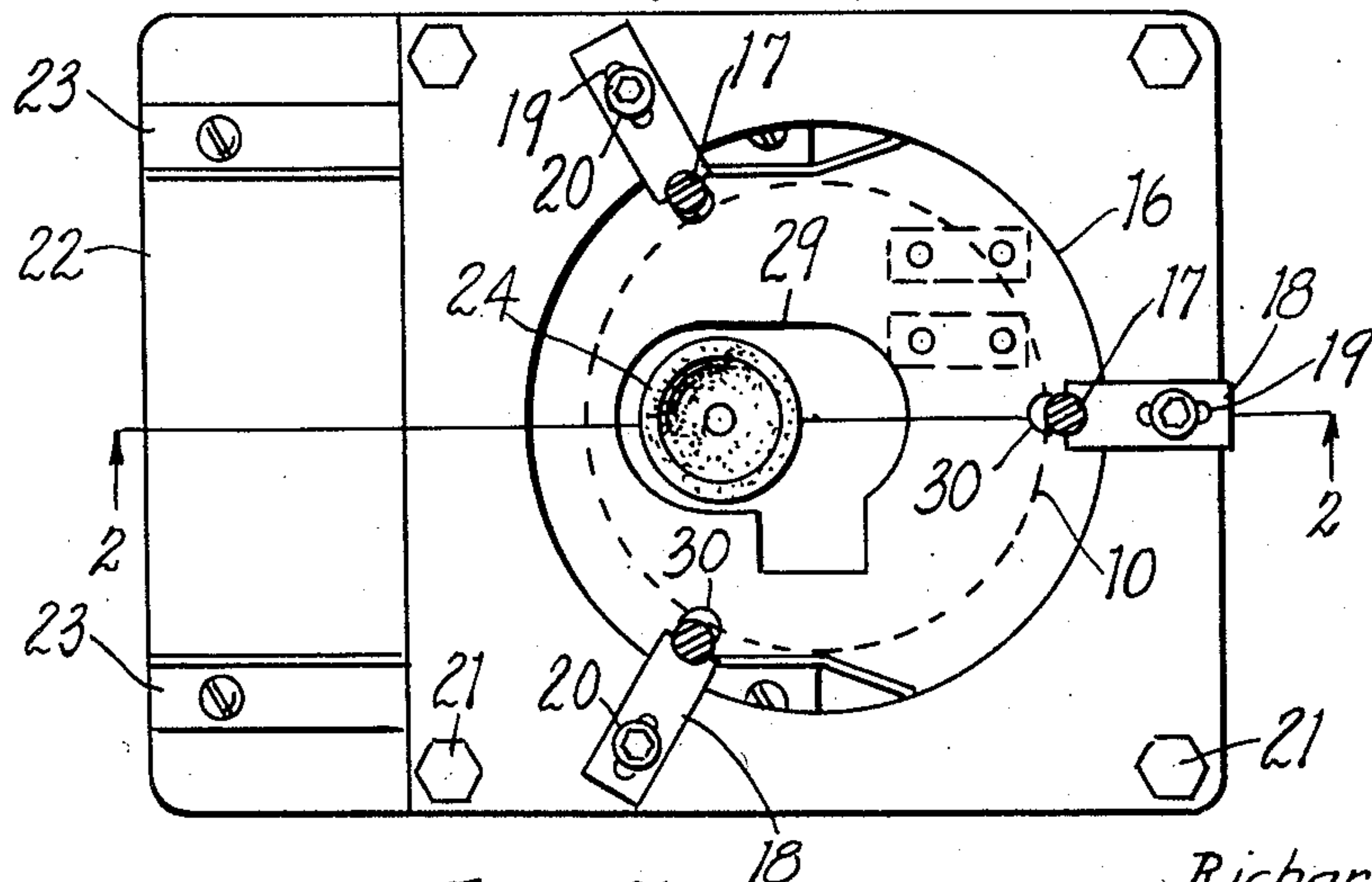


Fig. 3

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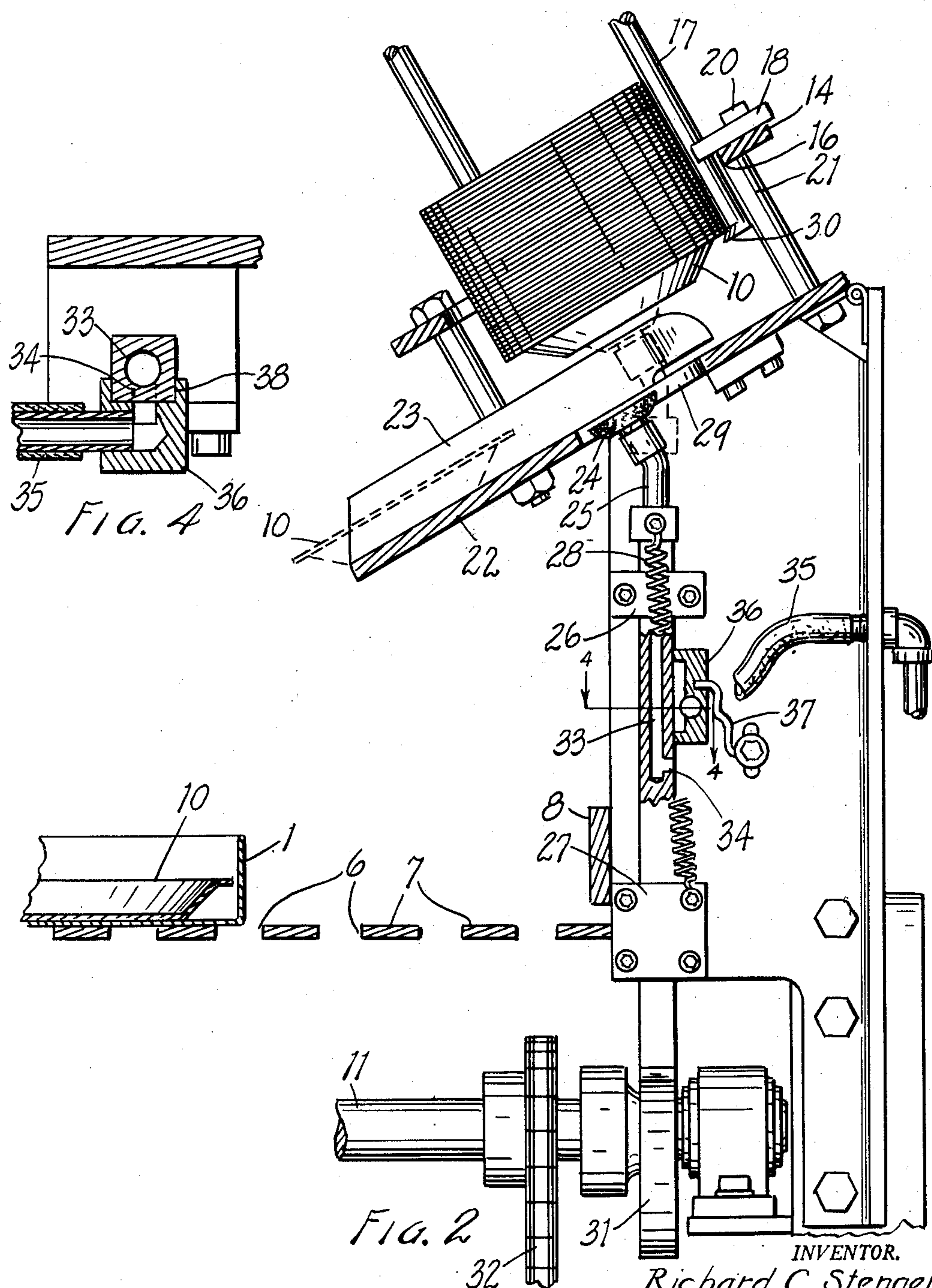
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4 Sheets-Sheet 2



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4 Sheets-Sheet 3

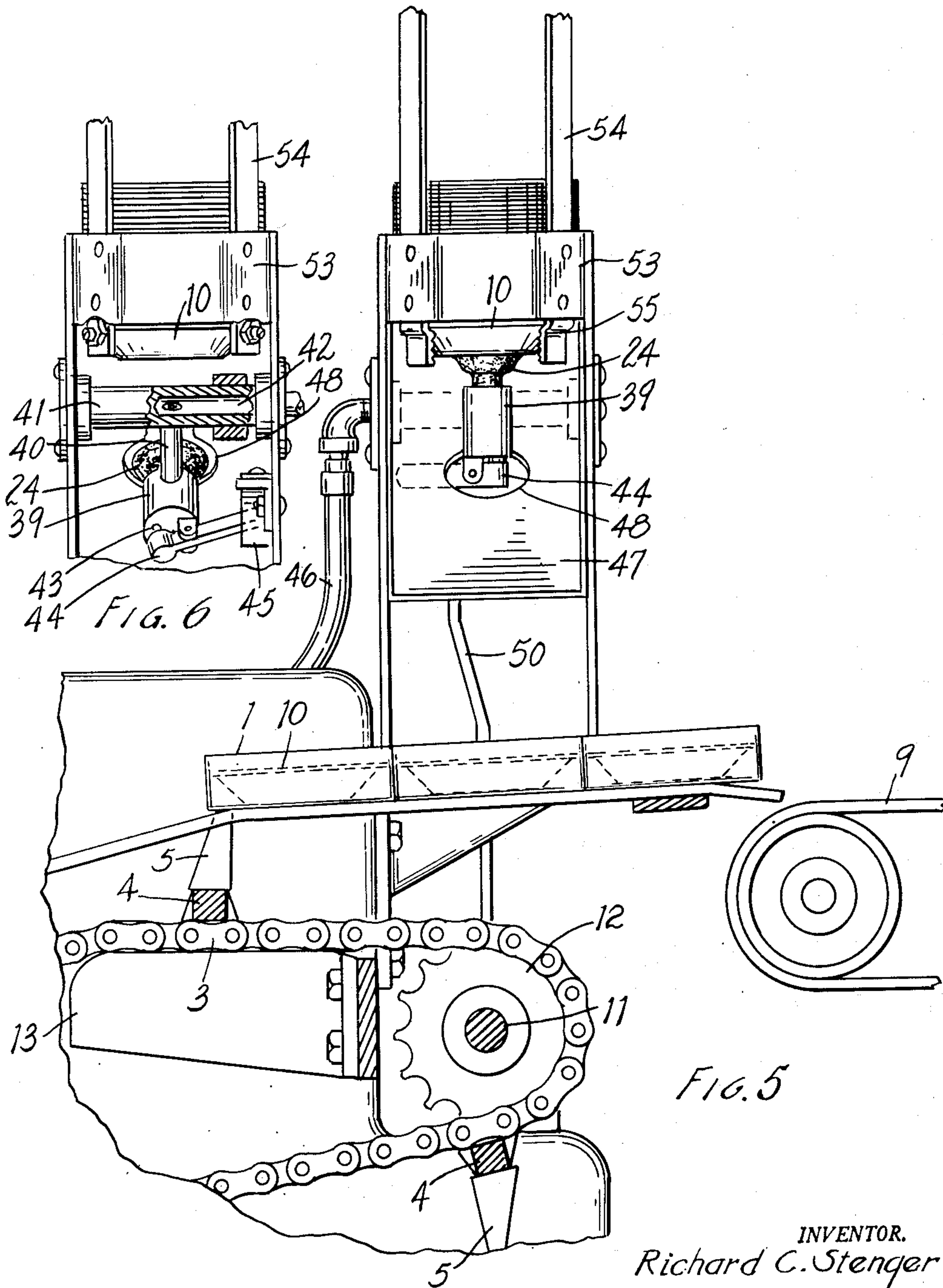


FIG. 5

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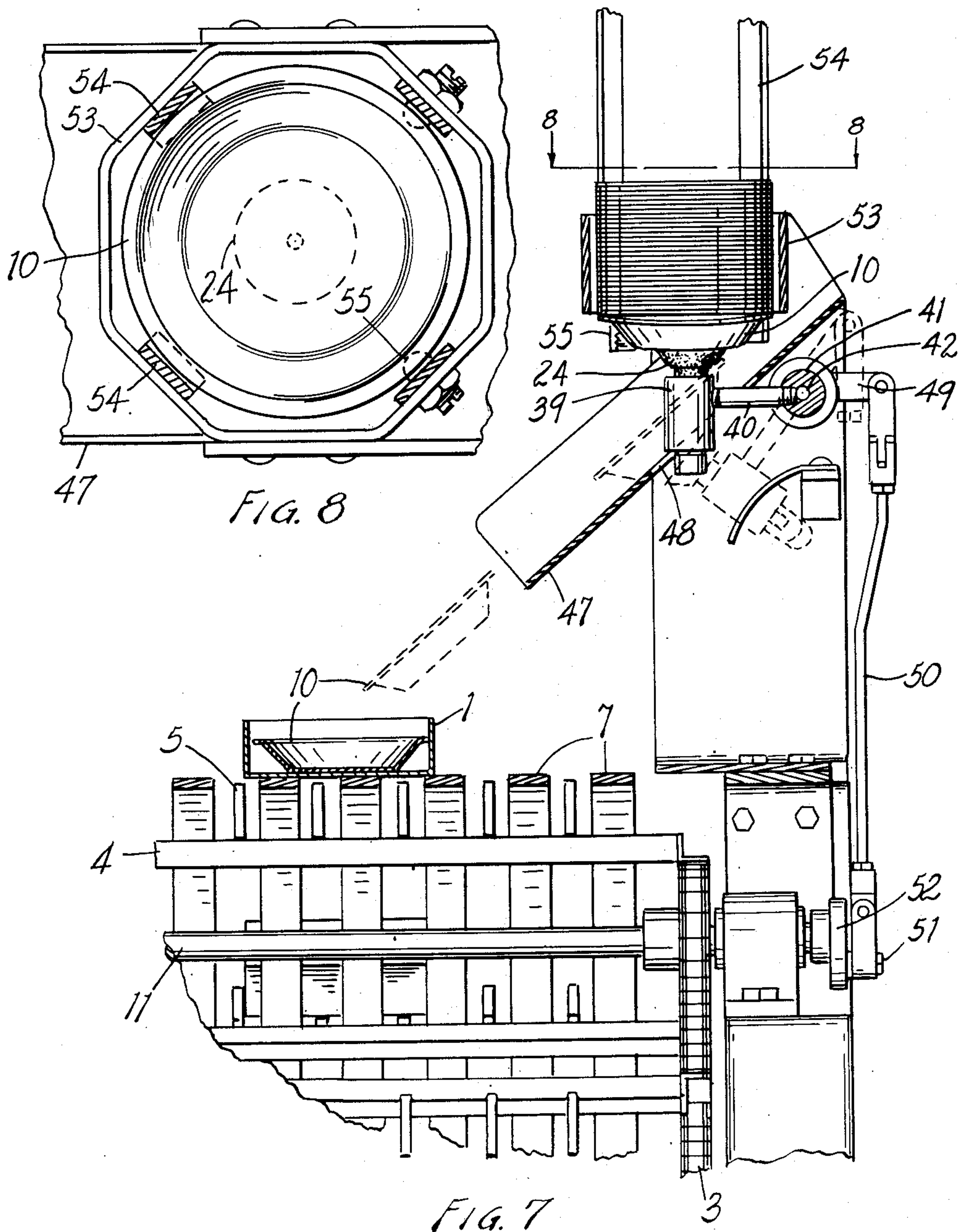
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MACHINE FOR PLACING DISHES IN CARTONS OR CONTAINERS

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4 Sheets-Sheet 4



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MACHINE FOR PLACING DISHES IN
CARTONS OR CONTAINERS

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2 Claims. (Cl. 226—2)

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This invention relates to improvements in machines for placing dishes in cartons or containers.

The main objects of this invention are:

First, to provide a machine for assembling dishes and cartons by means of which the dishes are automatically placed in the cartons or containers to be later filled with comestibles or other products requiring dishes.

Second, to provide a machine or apparatus of this character which is of large capacity and at the same time is simple in structure and positive in operation.

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

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmentary perspective view of a machine embodying my invention, various parts being omitted as not being deemed necessary to the features illustrated in this view.

Fig. 2 is an enlarged fragmentary view partially in vertical transverse section on a line corresponding to line 2—2 of Fig. 3.

Fig. 3 is a fragmentary plan view of the dish magazine and delivery chute mechanism, the magazine uprights or side members being shown in section.

Fig. 4 is an enlarged fragmentary view in section on a line corresponding to line 4—4 of Fig. 2 showing details of the suction control valve with the control valve in position to communicate with the inlet port of the suction cup carrying plunger.

Fig. 5 is a fragmentary view partially in longitudinal section and partially in side elevation of a modified form or embodiment of my invention.

Fig. 6 is an enlarged fragmentary rear elevational view of the suction cup mounting of Fig. 5 and partially sectioned to illustrate the suction connections and the control therefor.

Fig. 7 is an enlarged fragmentary view partially in transverse section illustrating the relation of the magazine and feed chute to the feed conveyer, dishes being shown in released positions by dotted lines, the suction cup being shown in actuated position by full lines and retracted position by dotted lines.

Fig. 8 is an enlarged fragmentary view of the magazine in section on a line corresponding to line 8—8 of Fig. 7.

The embodiment of my invention illustrated is designed for the assembling of dishes in tray-

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like containers or cartons or the bottoms of cartons such as designated by the numeral 1. The apparatus is shown in operative relation to a machine, designated generally by the numeral 2, designed for erecting these containers or cartons 1 from flat blanks. However, the details of the erecting machine form no part of my present invention.

The embodiment of my invention illustrated comprises an endless conveyer 3 having cross pieces 4 longitudinally spaced thereon and provided with a series of flights 5. These flights are adapted to project through the longitudinal slots or spaces 6 between the laterally spaced slats or bars 7 of the conveyer way, designated generally by the numeral 8. The containers 1 are discharged from the erecting machine 2 or otherwise discharged or placed upon the way 8 to be translated thereon by the flights 5. The containers are delivered by the feed conveyer onto the receiving conveyer belt 9 which is designed to carry them past operators or filling stations in which the contents are placed in the dishes 10 which have been deposited in the containers.

The drive shaft 11 is provided with sprockets 12 for the conveyer chains carrying the flights 5. The rear end portion of the way is approximately horizontal as shown in Figs. 1 and 5, the forward portion being inclined. The sprocket wheel 12 and the driving shaft 11 are so disposed relative to the guides 13 that the flights are retracted at the rear of their stroke thereby releasing the containers, the containers in advance of the released containers being successively pushed along by succeeding containers. These flights are so spaced that a step by step feed results at the delivery end of the conveyer way although the feed conveyer is continuously driven.

In the embodiment shown in Figs. 1 to 4, inclusive, I provide a dish magazine designated generally by the numeral 14 which comprises a supporting plate 15 having a central opening 16 therein. This supporting plate carries a plurality of angularly positioned or spaced rod-like side members 17 which are adjustably supported on the supporting plate 15 by means of base members 18 having longitudinal slots 19 therein receiving the screws 20. This permits the magazine being adapted for dishes of different diameter within the range of the magazine.

The base plate 15 is carried by posts 21 on the chute 22 which is disposed below the magazine and inclined to discharge by gravity the dishes transferred from the magazine to the chute, one by one. The chute is provided with side guides

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23 for the dishes. The dishes are discharged to the chute one by one by means of the suction cup 24 which is mounted on the vertically reciprocating plunger 25 slidably supported in the guides 26 and 27.

The spring 28 serves to retract the plunger. The suction cup is mounted to reciprocate through the opening 29 in the chute. The suction cup is disposed at an angle on the plunger corresponding to the angle at which the bottom of the bottom dish of the stack is supported. The magazine is provided with retaining lugs 30 which support the stack of dishes but permit the dishes being pulled one by one from the bottom of the stack. The dishes are formed of paper or have yielding rims so that they can be pulled past these supporting lugs. The plunger is actuated in timed relation to the feed of the containers by means of the cam 31 on the shaft 11. Driving means for the shaft 11 is conventionally indicated at 32.

The plunger is provided with a suction conduit or passage 33 having a laterally opening port 34 which alternately becomes a suction port and a venting port or venting passage 33 to the atmosphere. A suitable source of suction is connected by the conduit 35 to the valve 36 which is yieldingly urged against the side of the plunger by means of the spring 37. The plunger is provided with a guide way 38 embracing the valve. When the plunger is in retracted position as shown by full lines in Fig. 2, the port 34 is open to the atmosphere, thereby breaking the suction on the cup when the plunger is in retracted position. The cup, as shown by dotted lines in Fig. 2, is engaged with the bottom of the bottom dish of the stack and is subject to suction so that on the retracting stroke of the plunger the bottom dish is pulled from the magazine and is released upon the chute to be discharged into the containers on the feed conveyer as shown in the drawing.

In the embodiment of my invention shown in Figs. 5 to 8 inclusive, the parts are arranged substantially as described with the exception of the mounting of the suction cup and the control connections therefor. In this embodiment the suction cup 24 is mounted upon the head 39 carried by the arm 40 on the rock shaft 41, having a passage 42 therein which communicates with passage in the arm 40 and through it with the head 39, as is best shown in Figs. 6 and 7. In this embodiment the suction cup carrying head is provided with a vent 43 controlled by the valve 44 which, when the suction cup is in retracted position, is opened by the spring tappet 45.

The rock shaft is connected by the conduit 46 to a suitable source of vacuum or suction source. When the suction cup is in retracted position it is below the bottom of the chute 47 which corresponds to the chute 22 and has an opening 48 therein through which the suction head and cup swing. The rock shaft 41 is provided with an arm 49 which is connected by the link 50 to the crank pin 51 of the crank 52 on the shaft 11 or a shaft corresponding to the shaft 11.

In this embodiment the magazine is in a vertical position and comprises the support 53 having the angularly spaced side members or uprights 54 receiving the stack of dishes. The magazine is provided with retaining lugs 55 past which the dishes are successively pulled by the suction cup. In Fig. 7 the bottom dish is illustrated as being engaged and initially moved by the suction cup. Both embodiments of my invention are com-

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mercial embodiments but that shown in Figs. 1 to 4, inclusive, is presently regarded by me as a preferred construction.

I have illustrated and described my invention in these embodiments as it is believed that they will enable those skilled in the art to embody or adapt my invention as may be desired.

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

1. A machine for assembling dishes and cartons comprising in combination, an endless feed conveyer provided with longitudinally spaced flights, a feed way provided with longitudinal openings through which the flights project on the work stroke thereof for translating containers along the way, a magazine disposed at the side of said feed way and adapted to receive a stack of upwardly facing dishes, dish holding projections disposed at spaced intervals around the bottom of said magazine to engage and support the edges of the bottom dish of a stack of dishes in said magazine, a delivery chute disposed below said magazine and inclined toward said way to deliver dishes to containers translated on the way, said magazine being disposed to support the stack of dishes in a position normal to the chute so that the bottom of the bottom dish is supported in a plane parallel to the plane of the chute, the chute having an opening therein below the magazine, a vertically reciprocating plunger disposed to reciprocate through said opening and having a suction cup disposed thereon at an angle corresponding to the angle of the bottom of the lower most dish in the magazine, said suction cup being movable by said plunger from below said chute through said opening to the bottom dish in said magazine, said plunger having a suction passage therein opening to said cup and having a lateral port opening at one side thereof, a spring biased valve mounted at the side of the plunger in thrust engagement therewith, a suction conduit connected to said valve, said port being connected to said suction conduit through said valve when the plunger is in its actuated position to engage the suction cup with the bottom of the bottom dish of the magazine and opened to break the section connection when the plunger is in retracted position, a continuously rotatable driving shaft for said feed conveyer, an actuating cam for said plunger mounted on said driving shaft, and a retracting spring for said plunger whereby successive bottom dishes are pulled past said projections and discharged from said magazine in timed relation with the translation of containers by said feed conveyer and the dishes discharged into the containers.

2. A machine for assembling dishes and cartons comprising in combination, an endless feed conveyer provided with longitudinally spaced flights, a feed way provided with longitudinal openings through which the flights project on the work stroke thereof for translating containers along the way, a magazine disposed at the side of said feed way and adapted to receive a stack of upwardly facing dishes, dish holding projections disposed at spaced intervals around the bottom of said magazine to engage and support the edges of the bottom dish of a stack of dishes in said magazine, a delivery chute disposed below said magazine and inclined toward said way to deliver dishes to containers translated on the way, said magazine being disposed

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to support the stack of dishes in a position normal to the chute so that the bottom of the bottom dish is supported in a plane parallel to the plane of the chute, the chute having an opening therein below the magazine, a vertically reciprocating plunger disposed to reciprocate through said opening and having a suction cup disposed thereon at an angle corresponding to the angle of the bottom of the lower most dish in the magazine, said suction cup being movable by said plunger from below said chute through said opening to the bottom dish in said magazine, said cup being engageable with the bottom of the bottom dish in said magazine when said plunger is in advanced actuated position, said plunger having a suction passage therein opening to said cup and control means for said suction passage timed with the actuation of the plunger where-

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by said plunger and suction cup will pull each successive bottom dish past said projections and release it on to said chute.

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