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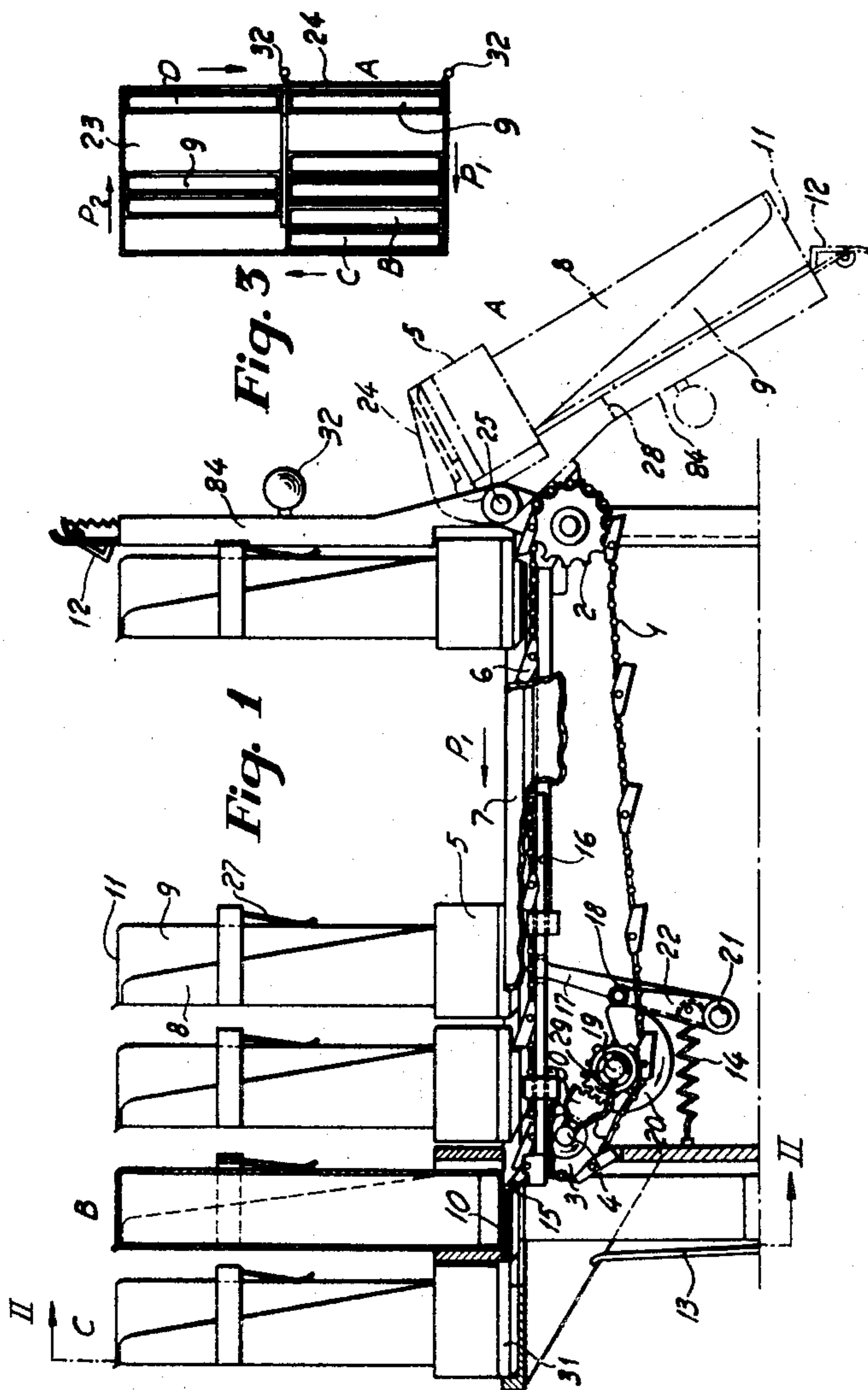
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SUPPLYING PACKING MACHINE OR THE LIKE WITH CIGARETTES

Filed June 8, 1951

3 Sheets-Sheet 1



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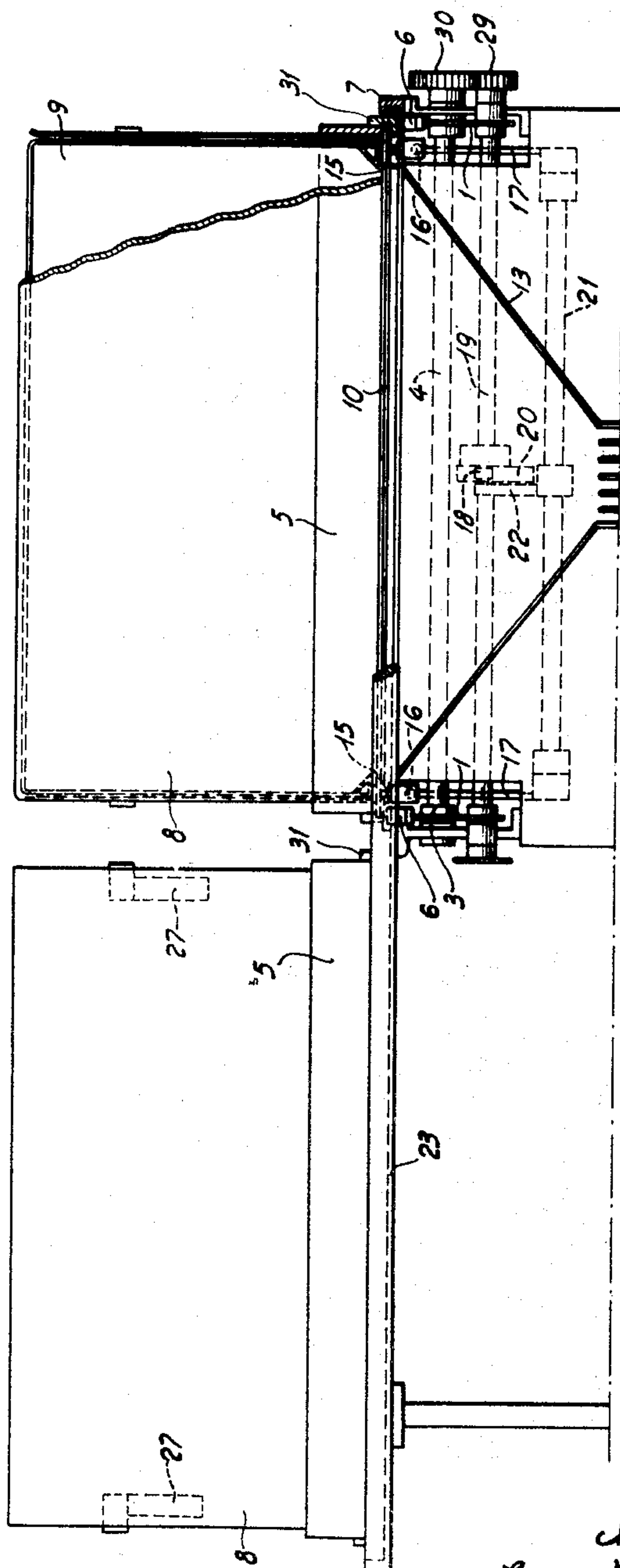


Fig. 2

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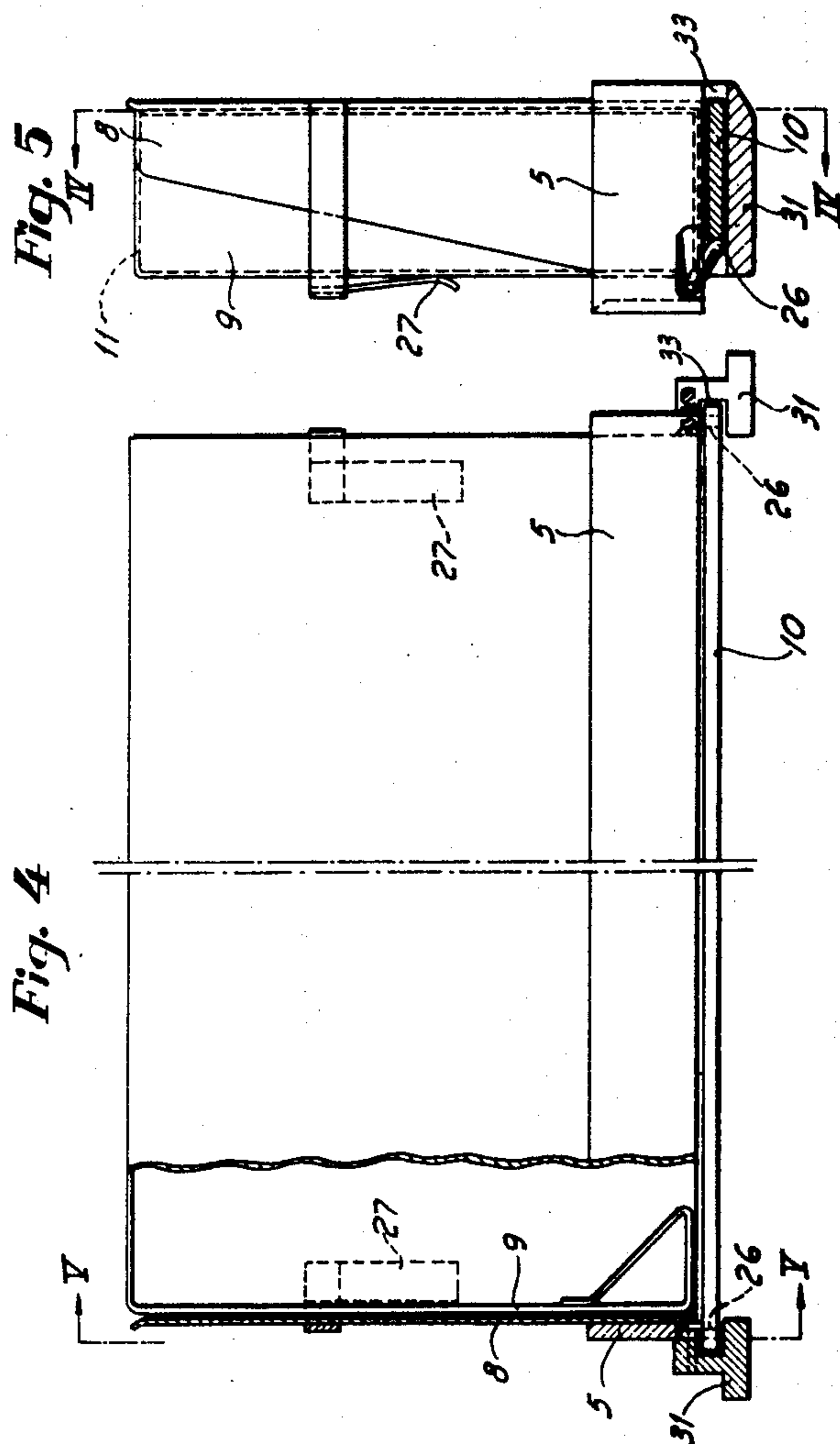
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## UNITED STATES PATENT OFFICE

2,653,723

SUPPLYING PACKING MACHINE OR THE  
LIKE WITH CIGARETTES

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3 Claims. (Cl. 214—302)

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In the supply of packing machines with cigarettes it has been customary to use transportable containers which, after having been emptied, are removed as units from the machine for repeated filling. Since the cigarettes have to be stored for some days to be dried before they are delivered to the packing machine a continuous work of the packing machines has necessitated the use of a large stock of such complete containers which involves a correspondingly expensive equipment of the plant. Also, such containers are provided with hinged bottoms or with slidable bottom plates which are removable lengthwise to empty the containers. This necessitates manual operation or a complicated and large machine construction and, furthermore, a reduction of the working speed of the packing machine.

It is an object of present invention to remove said drawbacks. Thus, one object of the invention consists in the reduction of the equipment for the supply of the cigarettes.

Another object of the invention consists in utilizing the provision for such reduction of equipment to enable the packing machine to run at an increased speed.

A further object of the invention consists in utilizing the provision for such reduction to reduce the size of certain portions of the machine.

Still another object of the invention consists in utilizing said reduction to facilitate the labour of the attendant of a machine or a plurality of machines running simultaneously.

Still another object of the invention consists in utilizing the provision for such reduction to enable the cigarettes to discharge from the container evenly over the entire outlet area and even though slidable shutters are used.

The nature and characteristic features of the invention will be more readily understood from the following description taken in connection with the accompanying drawings, in which:

Fig. 1 is a vertical side view, partly in section, of the portion of a cigarette packing machine embodying the invention;

Fig. 2 is a front view, partly in section taken on the line II—II of Fig. 1;

Fig. 3 illustrates diagrammatically the travel of the cigarette containers in the machine;

Fig. 4 is an enlarged front view of a container for the cigarettes, partly in section, taken on the line IV—IV of Fig. 5; and

Fig. 5 is a side view, partly in section, taken on the line V—V of Fig. 4.

Referring to the drawings, the machine has a

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conveyor comprising two endless chains 1 running over idle sprocket wheels 2 and driving sprocket wheels 3, one of which is in part broken away in Fig. 1. The sprocket wheels 3 are secured to a shaft 4. The chains 1 are equipped with ratchet teeth 6 which serve as impellers for advancing the containers. Each container is composed of an open box 9 having an integral top plate 11 and a channel-shaped wall plate 8 serving as a cover for said box. The wall plate 8 is secured to a base 5 having a pair of slide bars 31 adapted to travel in guide rails 7 in the machine. A plate 10 is slidably mounted in grooves 33 in the slide bars 31 and serves as a removable bottom of the container when composed of the wall plate 8 and box 9. The ratchet teeth 6 engage the slide bars 31 to advance the containers on the rails 7.

At the right hand end of the conveyor, at A, the wall plate 8 is inserted into a holder 24 whereby it is directed obliquely downwardly. Thereby its base 5 rests on side plates 28 on the holder 24 which has a rear bar for supporting the box 9 and is turnably mounted on a pin 25. In this position the inverted channel-shaped wall plate 8 receives a box 9 filled with cigarettes. Thus, the box 9 is, with its top plate 11 turned downwards, pushed into the wall plate 8 between same and the bar 84 of the holder 24, serving as a guide, inside a pair of blade springs 27 secured to the wall plate 8 whereby a spring tensioned latch 12 on the holder 24 snaps over the top plate 11 of the box. Thereafter, the bar 84 of the holder 24 together with the assembled container 8, 9 are by means of handles 32 swung upward into the position shown in full lines to the right in Fig. 1 and delivered to the conveyor 1. The conveyor 1 moves stepwise in the direction of the arrow P<sub>1</sub> so that the containers 8, 9 are successively moved into the position at B above a hopper 13. When the container has reached this position its bottom plate 10 is expelled from the container so that the cigarettes drop into the hopper 13, whereafter they are distributed and packed in well known manner. The bottom plate 10 is expelled by a pair of pistons each consisting of a yielding ratchet tooth 15 adapted to be yieldingly depressed by the bottom plate 10 when the containers move over them. The teeth 15 are each mounted on a slidable rod 16, which rods are each pivotally connected to an arm 17. Both the arms 17 are secured to a rotatable shaft 21 to which is secured another arm 22 provided with a roller 18. A tension spring 14 urges the roller 18 against a cam disc 20 secured to a rotary



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shaft 19. To the shaft 19 is secured a gear wheel 29, partly broken away in Fig. 1, which meshes with a gear wheel 30, partly broken away in Fig. 1, secured to the shaft 4.

When the container 8, 9 has reached its position at B above the hopper 13 the cam disc 20 allows the spring 14 to advance the rods 16 quickly so that the bottom plate 10 is pushed forwardly into the grooves 33 in the slide bars 31 of the preceding emptied container occupying the position at C. Thereby the plate 10 moves past a pair of yielding latch members 26 on swinging them upwardly. The members 26 prevent the plate 10 from recoiling when having been introduced into the container at C. Since the bottom plate 10 is ejected quickly from the wall plate 8 of the filled container and since it moves transversely to said wall plate, i. e. longitudinally of the cigarettes, the cigarettes will drop simultaneously into the hopper, viz. evenly over the entire outlet area of the container. Since the movements for the ejection of the plate 10 are short it can be effected fully automatically and by means requiring a minimum of space. Since the bottom plate 10 of a filled container is introduced into the wall plate 8 of the preceding emptied container the bottom plates 10 will circulate in the machine together with the wall plates 8. Thus, the empty container at C is displaced, laterally onto a table 23, upon which it is moved back in the direction of the arrow P<sub>2</sub>. When this container, still being closed, has reached the position at D it is moved, laterally into the holder 24 in the initial inclined position at A where the empty box 9 is pulled out of the cover or wall plate 9 and a filled box is inserted into same as aforesaid. The empty boxes 9 removed at A are transferred to a cigarette machine or another station where they are filled anew and stored for some time. Thereafter they are again supplied to the packing machine in the manner as described. The relatively heavy wall plates 8 comprising the bases 5 and the bottom plates 10 loosely inserted therein will not be removed from the machine, wherefore the manual labour will be facilitated and the plates 10 will not unintentionally drop out of the containers. Thus, the light boxes 9 only consisting of sheet metal or another material that may be still lighter, e. g. artificial resin, are removed from the machine. Only a relatively small number of wall plates including bases 5 and bottom plates 10 needs to be used. While a large number of

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boxes 9 has to be stored the costs for such an equipment will be by far less than the costs for a corresponding number of complete containers.

Having thus described my invention I claim:

1. In a cigarette packing machine, a cigarette receiver, a holder adapted to receive a container wall plate having a slidable bottom plate and a box filled with cigarettes to be assembled to form a cigarette container, means for delivering the assembled container to said cigarette receiver, an expeller operative at said cigarette receiver to eject said bottom plate from a filled container to discharge the cigarettes into said receiver, and means for actuating said expeller to transfer said ejected bottom plate from said container to the wall plate of an adjacent emptied container.

2. In a cigarette packing machine, a cigarette receiver, a holder adapted to receive a container wall plate having a slidable bottom plate and adapted to receive an open box filled with cigarettes to form an assembled cigarette container, means for delivering the assembled container to said cigarette receiver, an expeller operative at said cigarette receiver to eject said bottom plate from a filled container to discharge the cigarettes into said receiver, means for actuating said expeller to transfer said ejected bottom plate from said container to the wall plate of an adjacent emptied container and means for returning the empty containers to the holder.

3. In a cigarette packing machine, a cigarette receiver, a holder adapted to receive a container wall plate having a slidable bottom plate and adapted to receive an open box filled with cigarettes to form an assembled cigarette container, means for delivering the assembled container to said cigarette receiver, an expeller operative at said cigarette receiver to eject said bottom plate from a filled container to discharge the cigarettes into said receiver, a cam, and a spring adapted to urge said expeller against said cam, said cam being adapted to periodically allow said spring to advance said expeller to transfer said ejected bottom plate from said container to the wall plate of an adjacent emptied container and to retract said expeller against the action of said spring.

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