

Jan. 18, 1944.

I. SICARD

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LOAD GATHERING, PRESSING, AND EXPELLING DEVICE

Filed March 24, 1943

14 Sheets-Sheet 1

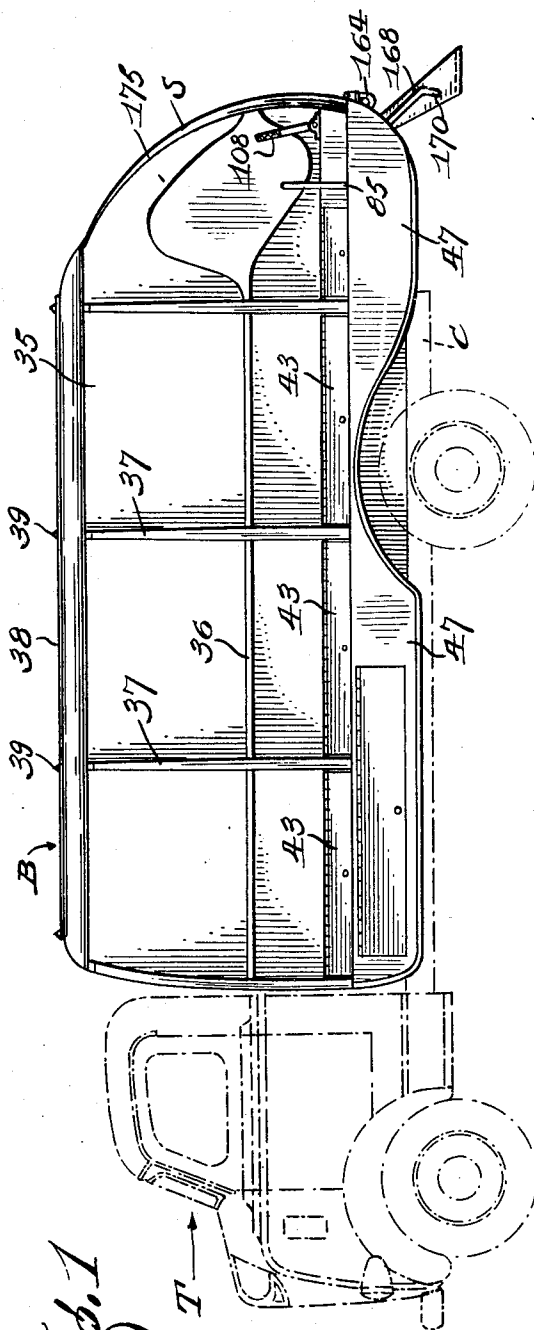


Fig. 1

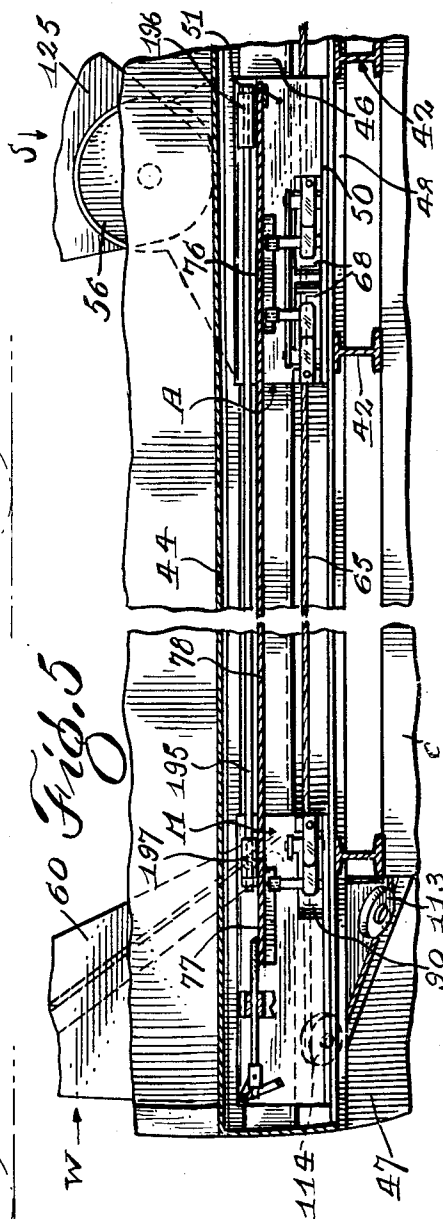


Fig. 5

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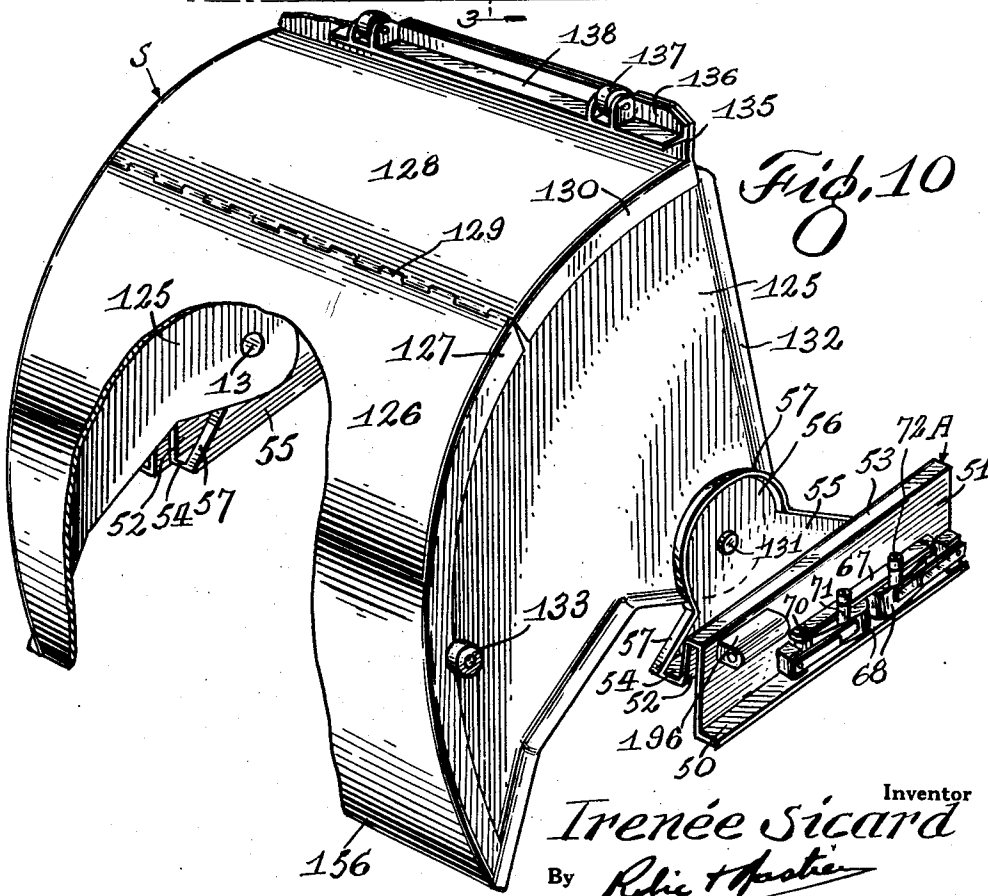
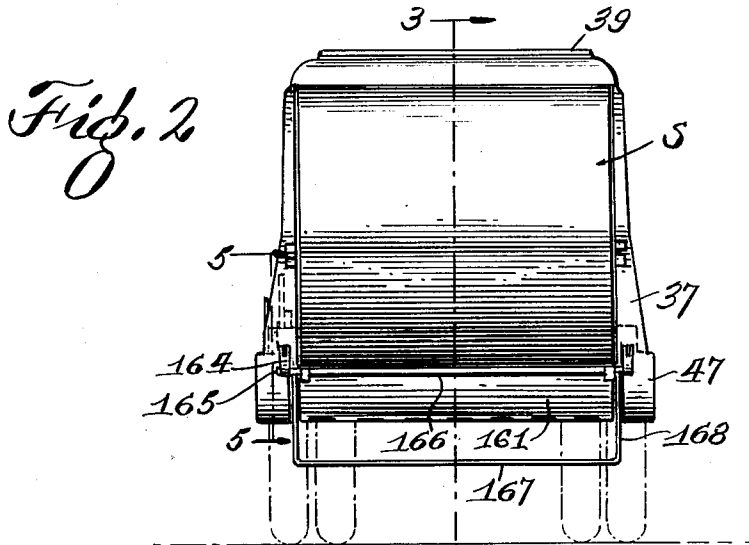
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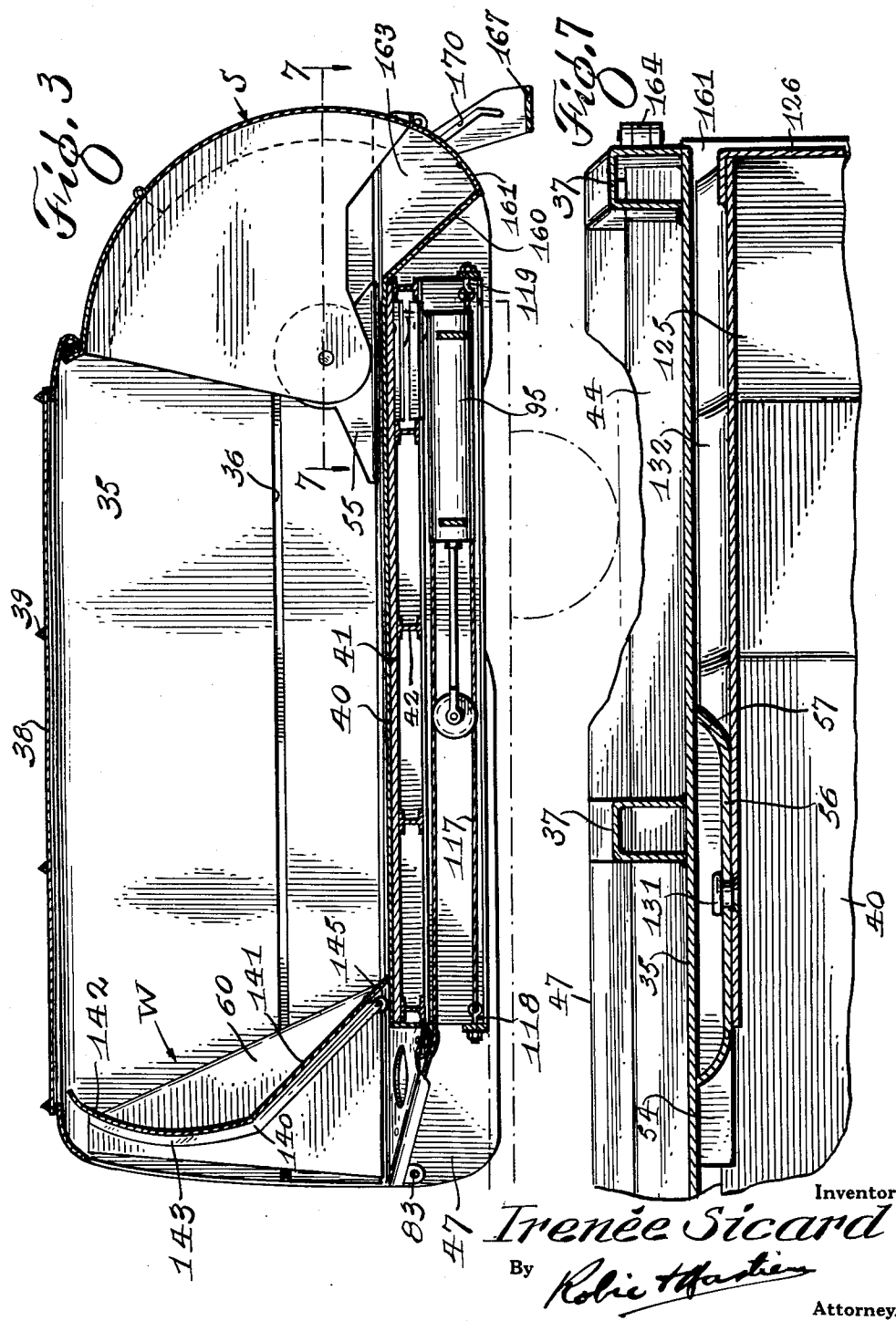
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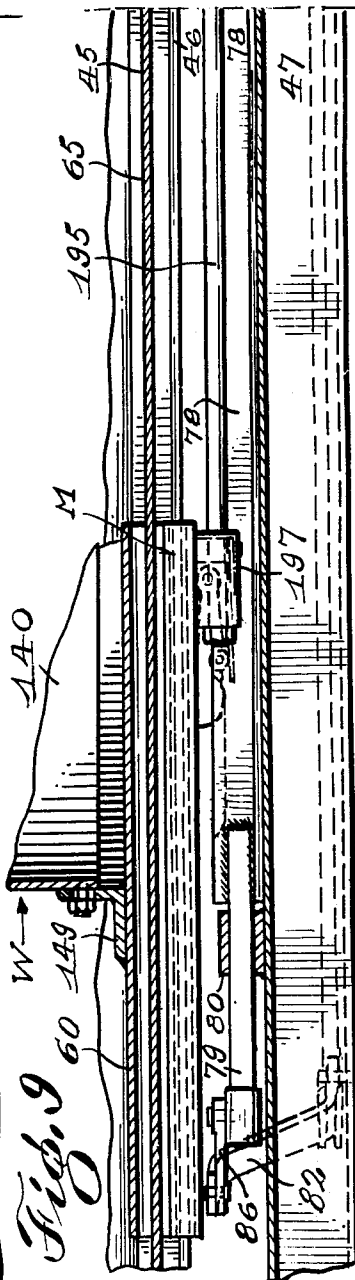
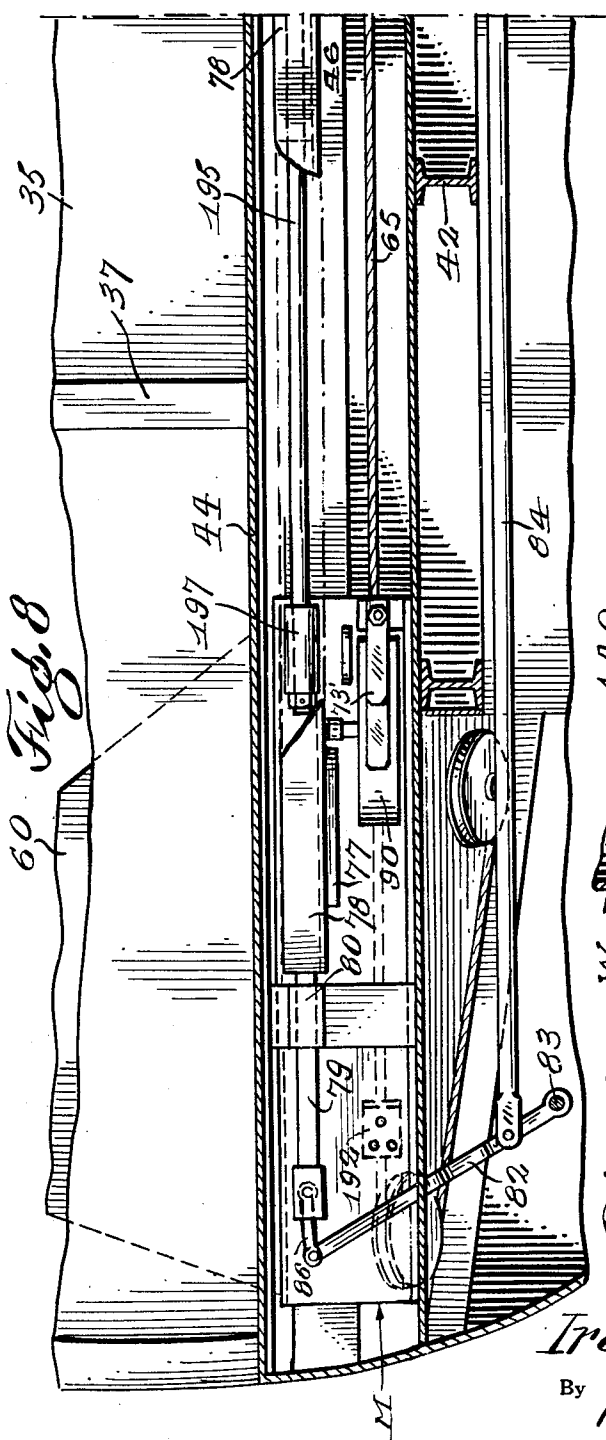
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14 Sheets-Sheet 5



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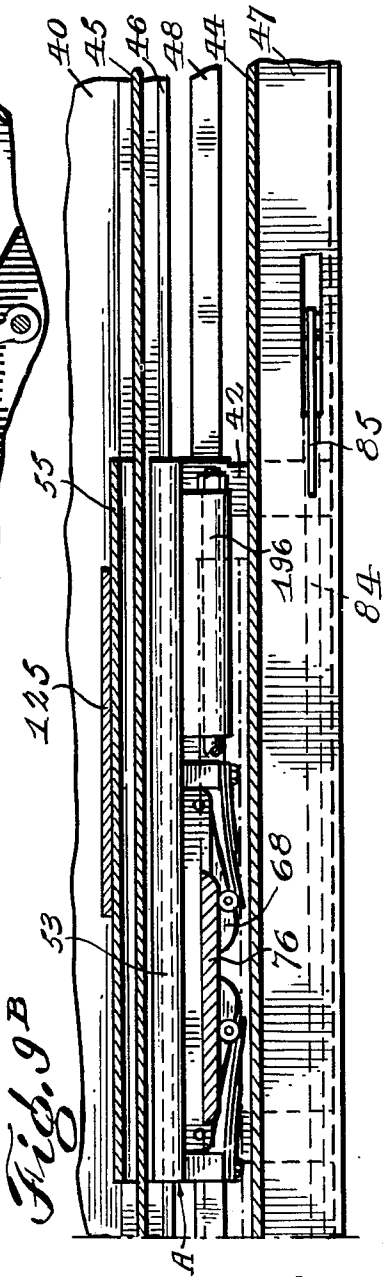
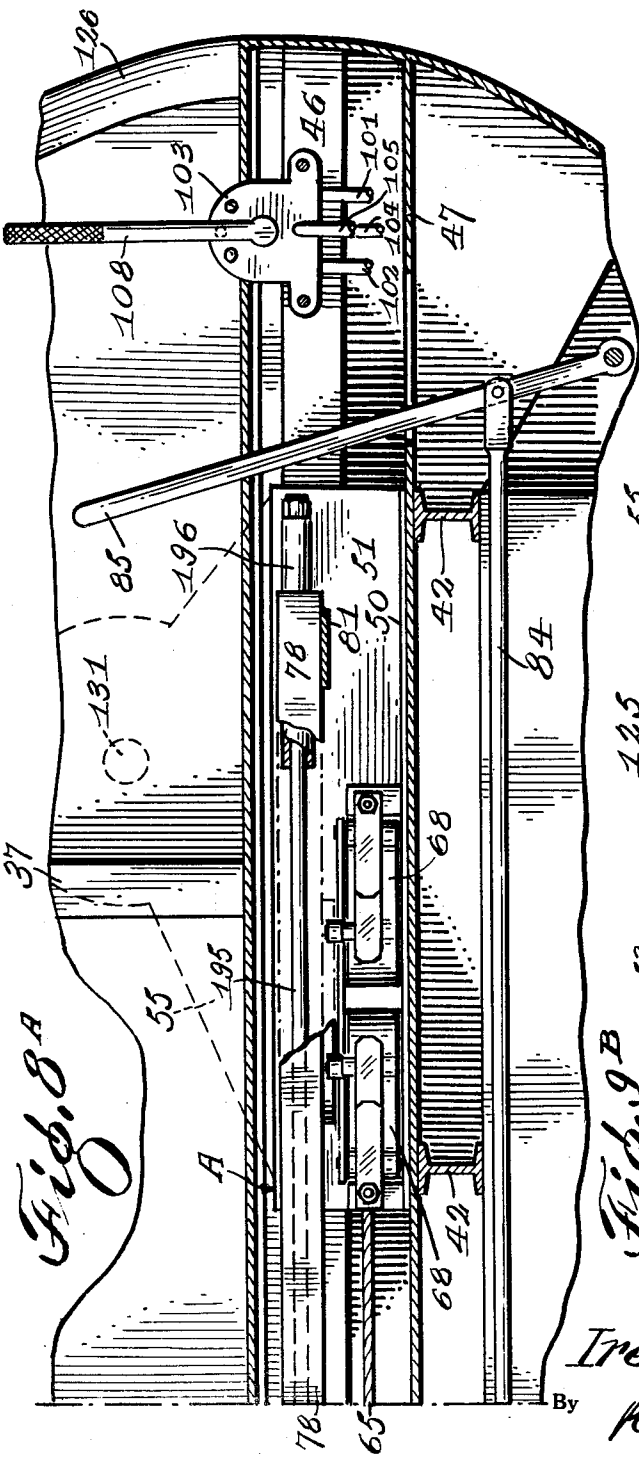
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Fig. 11

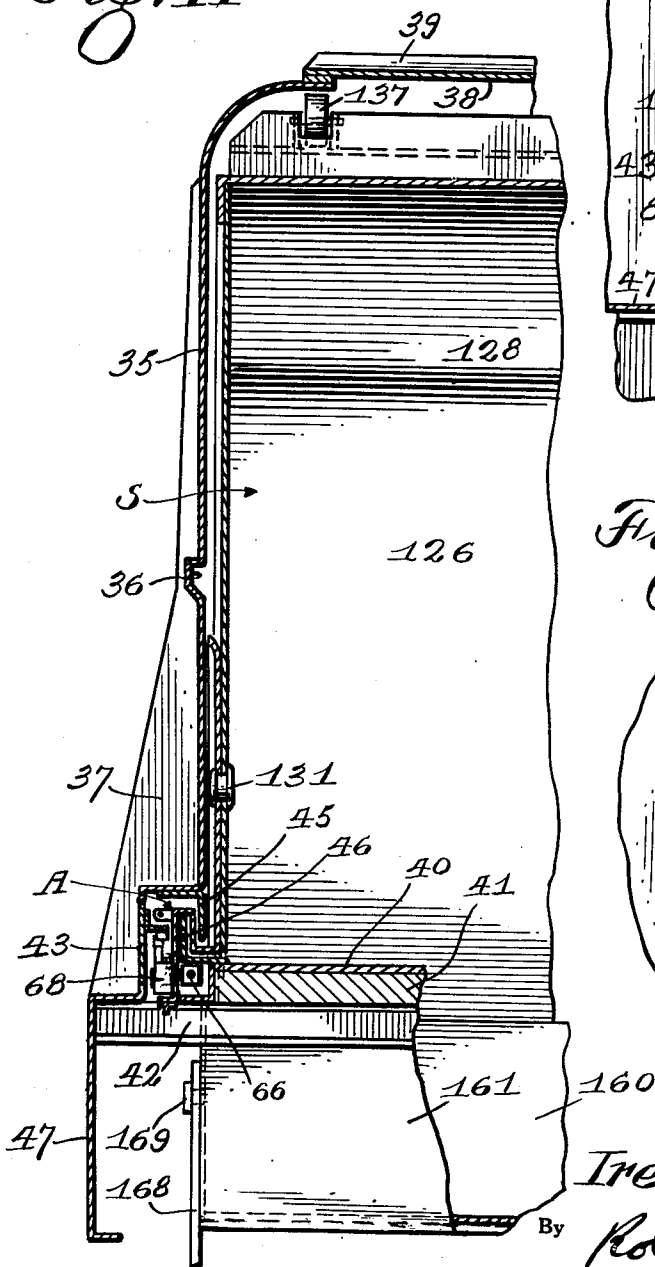


Fig. 12

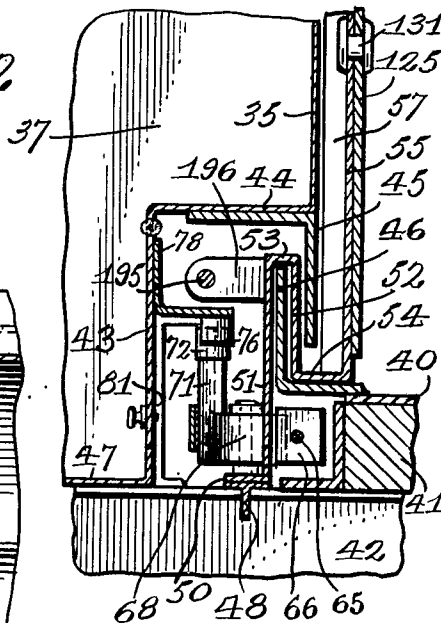
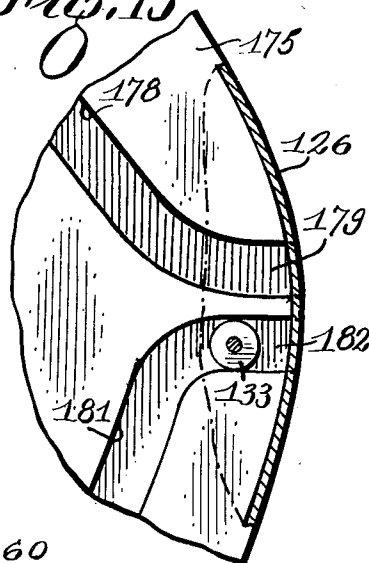


Fig. 13



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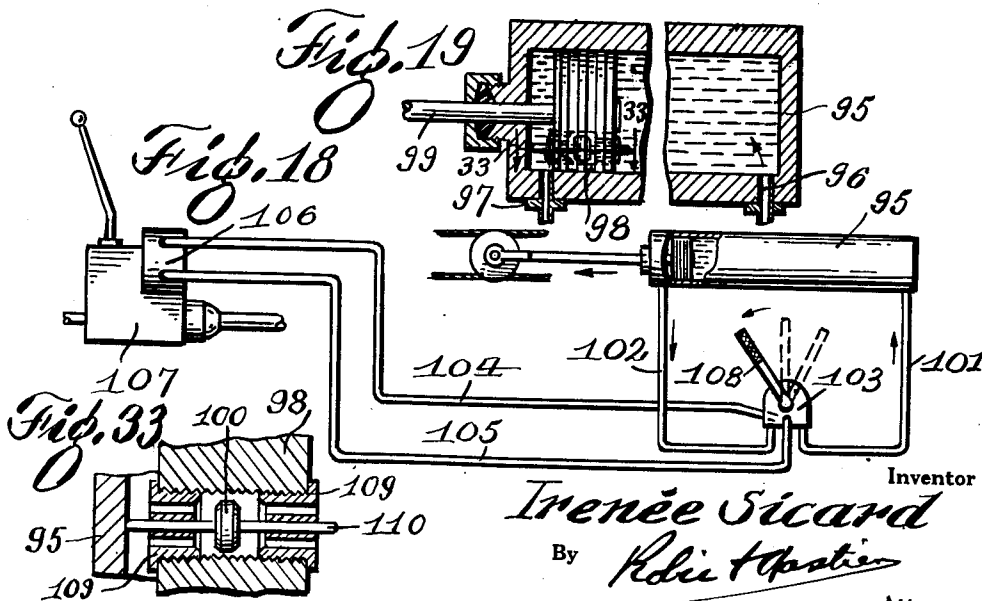
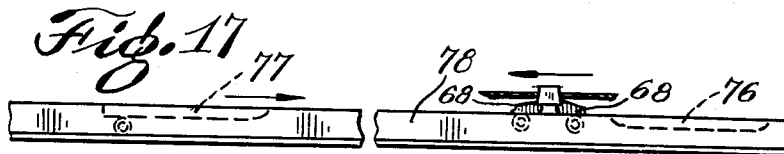
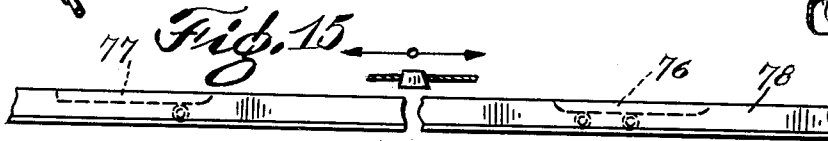
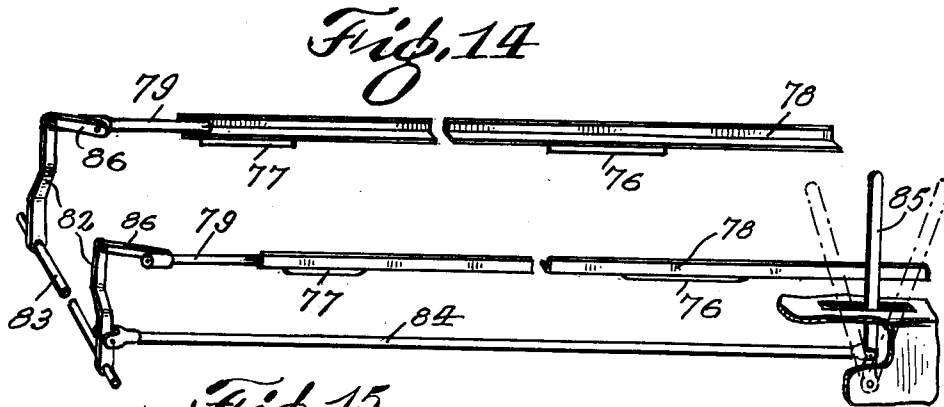
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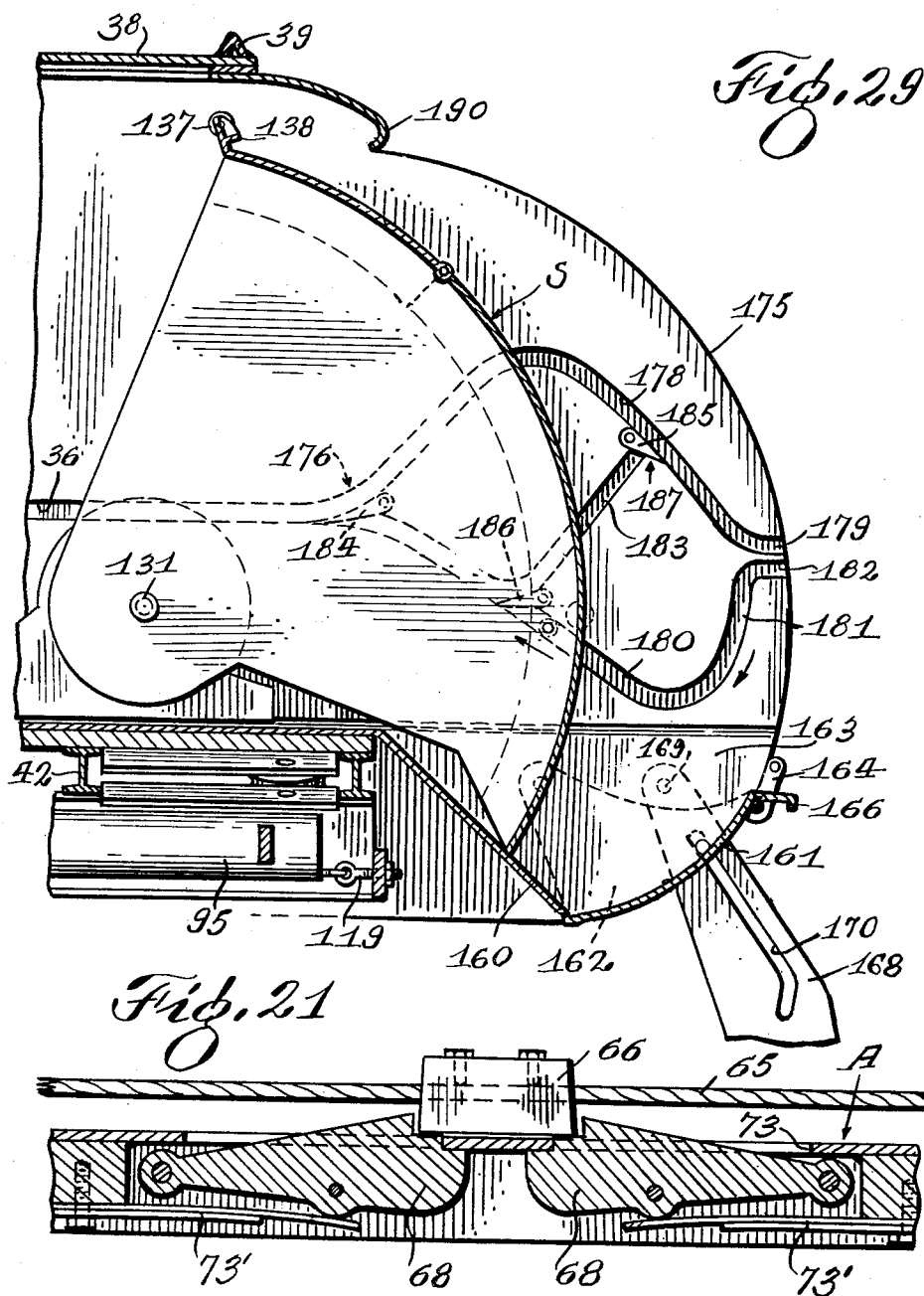
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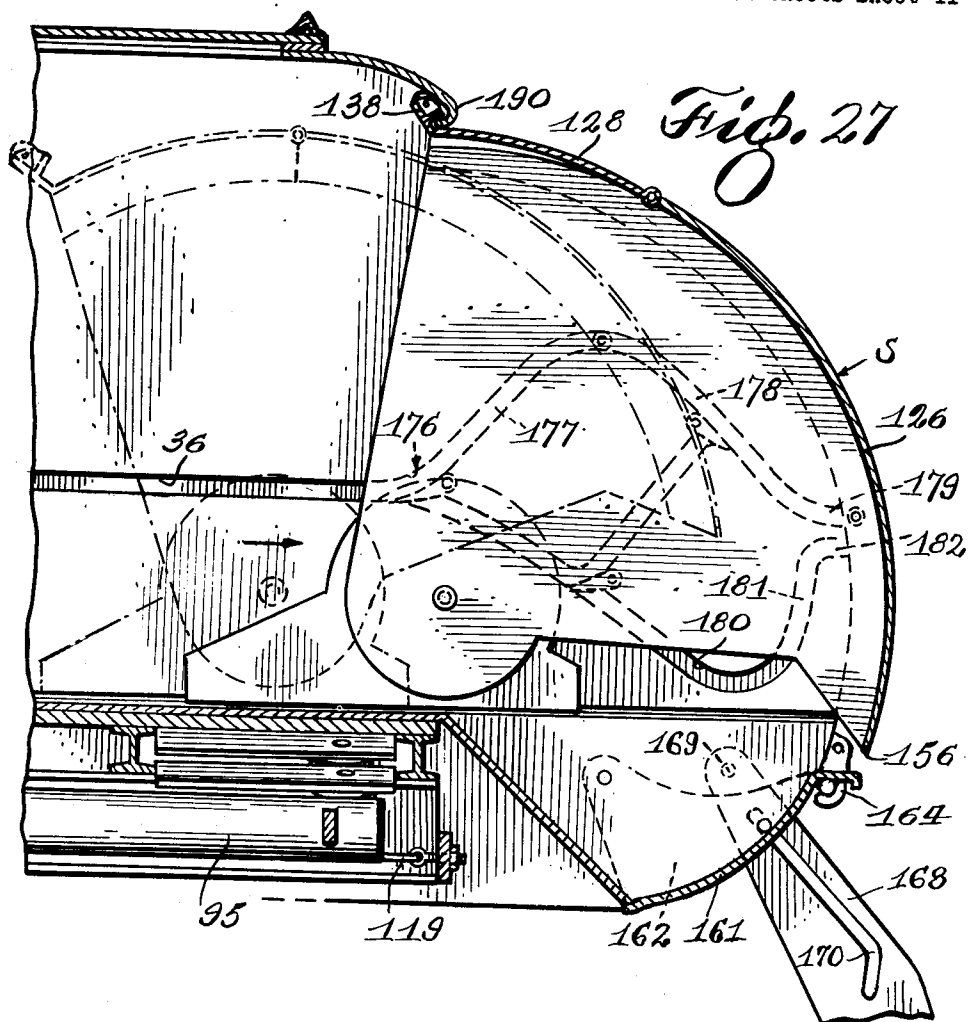
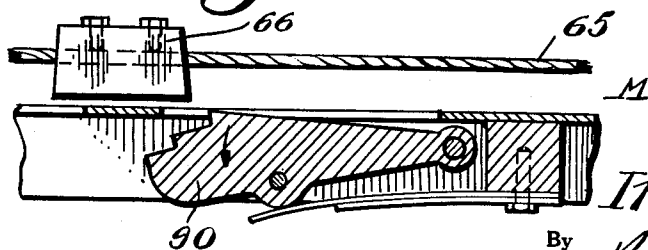


Fig. 22



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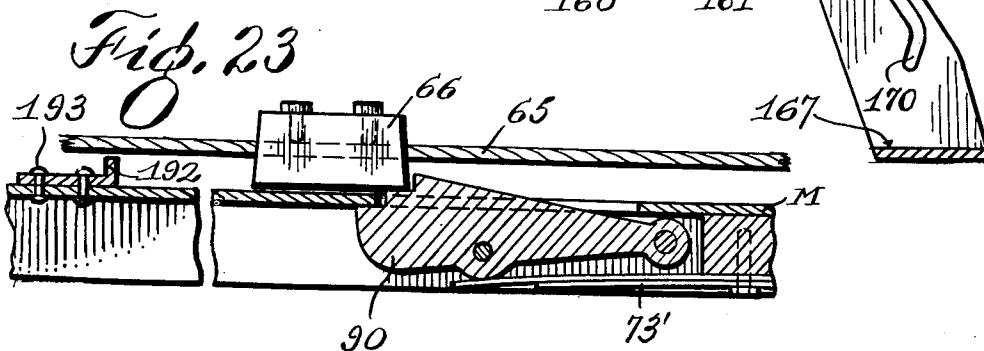
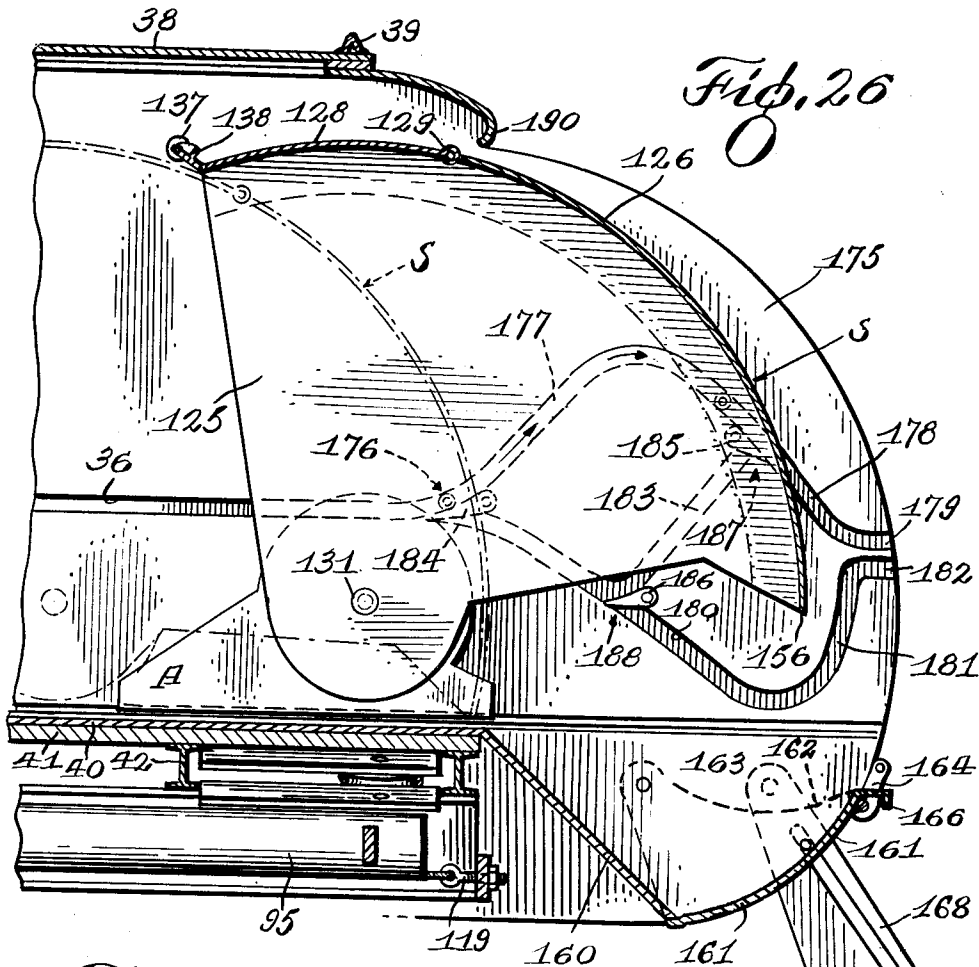
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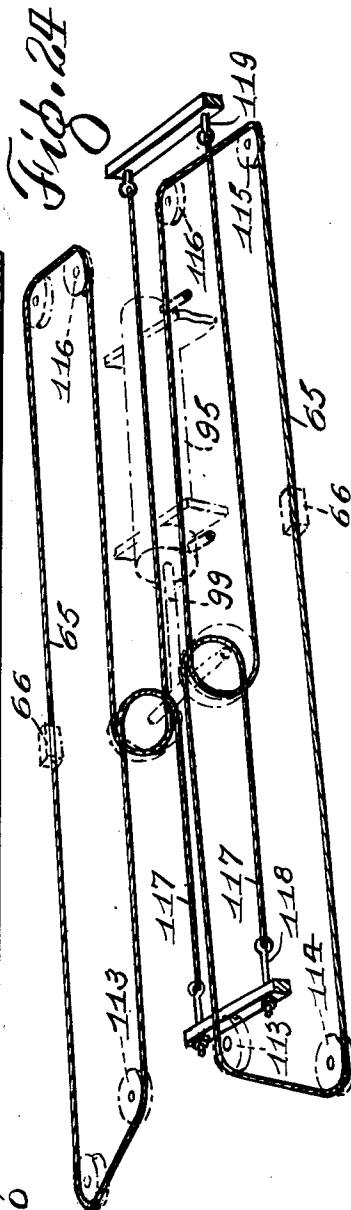
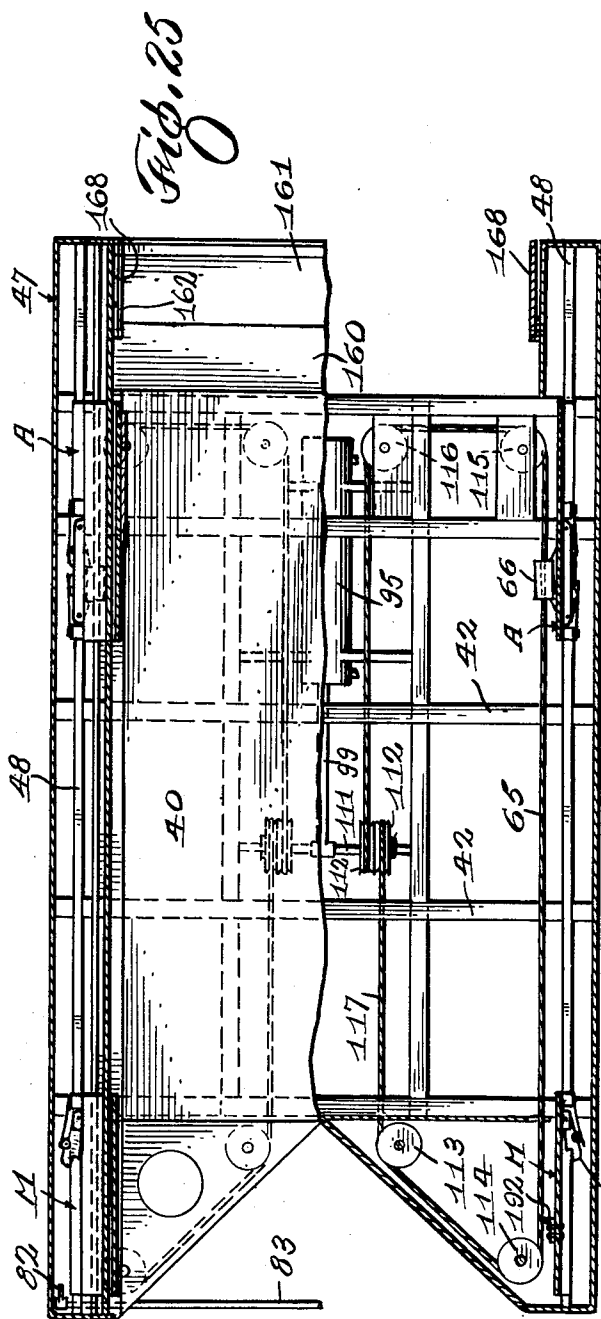
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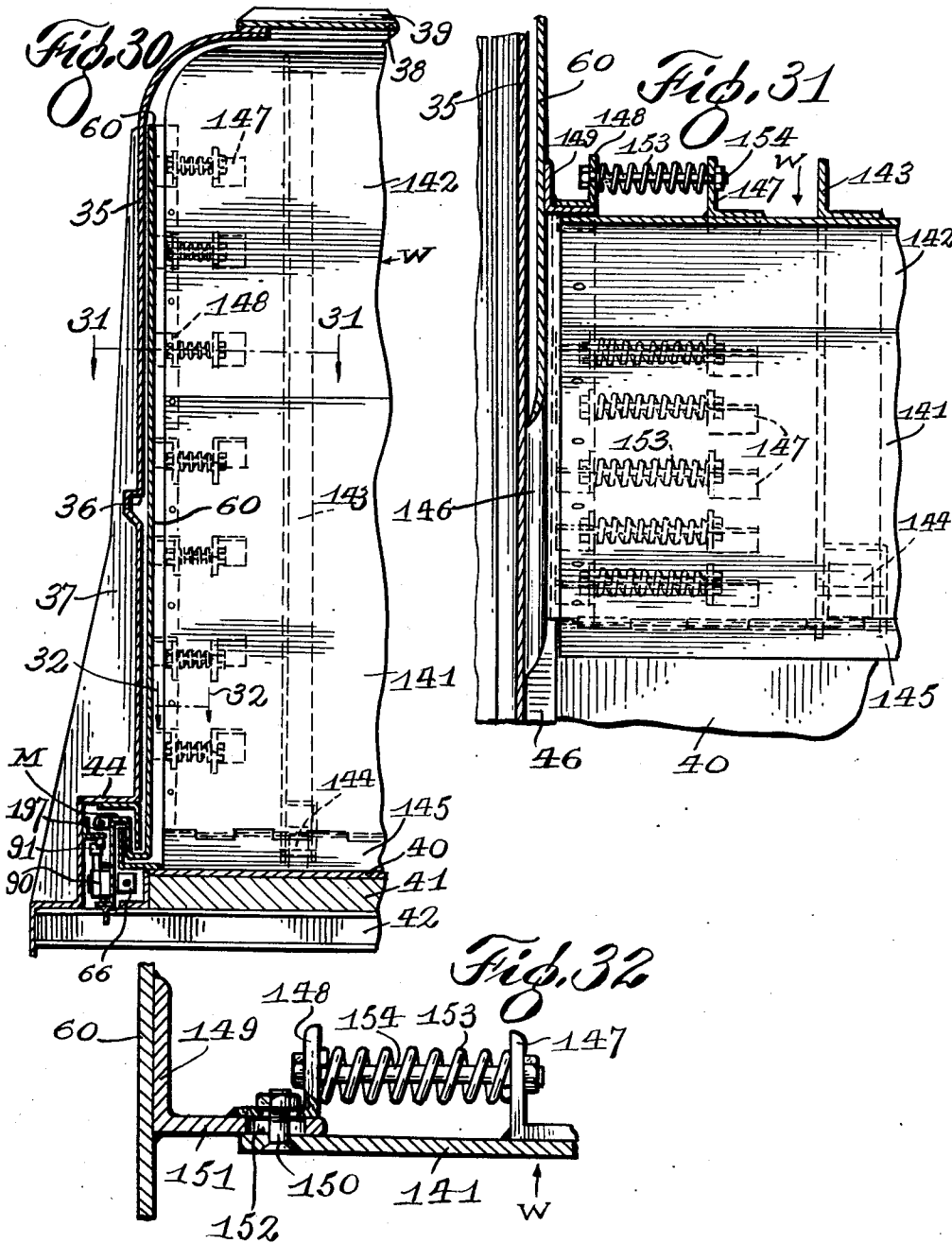
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UNITED STATES PATENT OFFICE

2,339,360

LOAD GATHERING, PRESSING, AND
EXPPELLING DEVICE

Irenée Sicard, Montreal, Quebec, Canada

Application March 24, 1943, Serial No. 480,282

14 Claims. (Cl. 214—67)

The present invention relates to a loading, load-pressing and unloading mechanism and, more particularly, to such a mechanism applicable to vehicles and carriers in general.

Of course, loading and unloading devices are known, and commercially used, for a variety of purposes. Generally speaking, the known devices comprise either a movable wall for expelling the load, tilting means for removing said load when in covered enclosures or, in certain cases, tilting means and elevating means for dumping in the enclosures portions of the load disposed in said elevating means.

But, in none of the devices briefly reviewed above, is it possible to load such material as refuse, garbage and other resilient matter, tightly compress said load evenly in a completely enclosed structure and, thereafter, remove quickly and completely the loaded material, without tilting the device, at the same end from which the load entered the structure.

The present invention has been conceived to meet the requirements enumerated above, and to avoid the disadvantages of the known devices, in a simple and efficient manner.

Consequently, the primary object of the invention resides in the provision of means for loading an enclosed structure, compressing the load therein, and, finally, expelling the compressed load.

A further important object of the invention contemplates the provision of means of the character described applicable easily and in a simple manner to vehicles and carriers such as motor vehicles, railway cars, barges, etc.

Still another object is the provision of a device of the character described which is rugged, efficient, unaffected by the material constituting the load, of simple operation and relatively low cost.

A still further object of the invention envisages the provision of a device having means whereby an enclosure may be partially, or fully loaded, said load tightly compressed when of a springy or compressible nature and kept in that state during transportation, for instance, and thereafter adapted to be expelled bodily and forcibly from said enclosure.

Other objects and advantages of the invention shall become apparent, or be specifically pointed out, in the course of the description to follow.

As a non-limitative example, an application of

the device to a garbage-collecting truck is shown in the annexed drawings, wherein:

Figure 1 is a side elevational view of a garbage collector mounted on a truck chassis shown in dotted lines,

Figure 2 is a rear end elevational view of said collector in load-enclosing position,

Figure 3 is a vertical sectional view of the collector also in load-enclosing position, showing the operating mechanism,

Figure 4 is a view similar to that of Figure 3, showing the collector in load-expelling position,

Figure 5 is an enlarged detail view of the mechanism for engaging the loading and expelling means,

Figure 6 is an horizontal section through the base of the load expelling means,

Figure 7 is a section taken on line 7—7 of Figure 3,

Figures 8—8a represent, in a detailed longitudinal elevation, the controlling mechanism for the loading and expelling means,

Figures 9—9a represent the same mechanism in a detail plan view,

Figure 10 is a perspective view of the end scoop constituting the loading means,

Figure 11 is a part-sectional and vertical view through the side of the collector, showing the scoop and the relation of its operating mechanism with the side of the collector body,

Figure 12 is an enlarged detail of the operating mechanism shown in the preceding figure,

Figure 13 is an enlarged detail view of the outer ends of scoop-guiding channels in the body sides of the collector,

Figure 14 is a perspective skeleton view of the manual mechanism for selectively rendering operative either loading and expelling means,

Figure 15 is a schematic representation of the controlling mechanism in inoperative position,

Figure 16 is a similar figure showing the expelling means in operative position,

Figure 17 is another similar view with the loading means operative,

Figure 18 is a diagrammatic view showing the driving hydraulic means and the hydraulic circuit thereof,

Figure 19 is an inside sectional view of the hydraulic driving cylinder,

Figure 20 is a detail view of the loading means engaging members in position disengaged from the hydraulic means driving cable,

Figure 21 is a similar view with the members in engaged position,

Figure 22 is a view corresponding to Figure 20 but applicable to the expelling means,

Figure 23 is the same as Figure 21 but applicable to the expelling means,

Figure 24 is a skeleton perspective view of the complete driving mechanism,

Figure 25 is a plan view showing the mechanism of Figure 24 in position on the body of the collector,

Figure 26 is an elevational and sectional view through the loading scoop in its initial loading position,

Figure 27 is a similar view of the scoop in its outermost position of loading,

Figure 28 is still another view of the scoop in position for inward loading movement,

Figure 29 is a further view of the scoop in well advanced inward position,

Figure 30 is a partial elevation of the expelling means, constituted by a wall having spring-pressed sealing strips,

Figure 31 is a section taken on line 31—31 of Figure 30, showing the position of the sealing strip,

Figure 32 is a detail of the spring-pressed strip taken on line 32—32 of Figure 30, and

Figure 33 is a section taken on line 33—33 of Figure 19.

Before proceeding with the detailed description of the device, it is believed that a summary of operation and construction will be a great help to the better understanding of the descriptive text to follow.

Briefly stated, therefore, the collector of the invention is in the form of an elongated body, shaped like a quadrangular tunnel and having reinforced sides and bottom. The outer rear end of said tunnel is open, while the front end may be closed.

A substantially vertical wall is movable longitudinally in the tunnel, said wall being normally at the outermost front end of the tunnel and adapted to move backwardly to expel the material loaded in the tunnel; it is, therefore, broadly called the expelling means.

The material is loaded into the tunnel by means of a scoop pivoted to carriages movable, longitudinally of the tunnel, in tracks serving also for the vertical expelling wall. Said scoop is shaped like a sector, the arc being constituted by a circular outer plate adapted to close the outer rear end of the tunnel (see Figures 1, 2, 3).

The scoop is adapted to move within the tunnel to force the material loaded against the vertical wall, thereby compressing the load to occupy the smallest possible space. Said scoop is further adapted to assume a plurality of positions, shown in Figures 26, 27, 28, 29, to facilitate the loading of the material; said positions being made possible by the pivoted construction and channels in the sides of the body shown clearly in the above figures.

The back and fro movement of the wall and scoop is assured by means of side blocks engageable with block-clutching means disposed on the carriages of said wall and scoops. The blocks are secured to travelling cables forming part of a driving system shown in Figures 24, 25, the feature of said system being that the course of the blocks is twice that of the stroke of the hydraulic actuating piston.

The said blocks may be clutched to either of the carriages, at will, by means of cams, formed on longitudinal angle irons, and slidable longitudinally by the manually operated mechanism

shown in Figure 14. Said cams act on the pivoted spring-pressed pawls shown in Figures 20, 21, 22, 23, to retract the same out of engagement with the block secured on the driving cable. Thus, one carriage at a time may be connected to the driving cable and actuated thereby.

Finally, the cable driving means are preferably in the form of an hydraulic power device constituted by a cylinder wherein a piston is movable, back and forth, by oil pressure generated in an oil pump driven by a truck engine, or any other source of power, as shown in Figure 18.

Detailed explanation of the construction and operation of the device according to the invention will now be given with reference to the drawings, wherein similar reference characters represent corresponding parts throughout.

In said drawings, the body of the collector is designated by the reference character B which, as shown in Figure 1, is mounted on the chassis C of the truck shown in dotted lines and indicated at T. Said body is in the form of a quadrangular tunnel preferably constructed of steel and formed of vertical plates 35 forming side walls having a horizontal longitudinal channel 36 to provide internal guide tracks, the side wall plates 35 being reinforced by means of a plurality of vertical cross sections 37. The body is completed by the addition of a roof plate 38, reinforced by transverse triangular strips 39, and a floor which consists of an inner continuous plate 40 supported by the heavy base plate 41 which is in turn suitably secured to the chassis of the truck by means of transverse I-beams 42. All said details are shown clearly in Figures 3, 4 and 7.

As previously explained, the loading and expelling means of the collector are attached to carriages movable along tracks especially provided for the purpose. Said tracks are provided within a box-like enclosure disposed at the lower outside edge of the body, longitudinally thereof. This is shown more particularly in Figures 11, 12, 13, in cross section and, outwardly in Figure 1 wherein the hinged covers 43 are clearly shown. As illustrated clearly in Figure 12, the lower portion of the side plates 35 is bent angularly and outwardly to form a flange 44 to which the doors 43, already described, are hinged. The continuity of the wall 35 is extended downwardly, near the floor plate 40, by means of an angle plate 45 attached to the flange 44 and acting also to reinforce the lower portion of the body proper. Also shown in Figure 12, the floor plate 40 is provided on the side marginal edges thereof with an upwardly directed angle plate 46, the upstanding portion of which is parallel to and spaced from the vertical portion of the angle plate 45.

The track proper comprises a longitudinal T-beam 48, received in suitable cavities of the beams 42, whereby the upper plane surface of said T-beam is above the top of beams 42; this arrangement is visible in Figure 12, and in Figures 5 and 6. Said track, with the spaced arrangement of vertical, parallel, angle plates 45—46, is used to receive the carriages of the loading and load-expelling means, said carriages consisting of bent steel plates similar in cross-section but differing slightly in their vertical dimensions.

The carriage for the loading means, or scoop, is illustrated in perspective in Figure 10 and in cross-section in Figure 12, this showing applying also to the carriage of the load-expelling means,

or movable wall, except for small differences to be described later. The scoop carriage represented by the latter A comprises, first, a shoe 50 adapted to rest on the track 48, said shoe being constituted of a flange formed at the lower end of a vertical carriage body panel 51 to which the carriage-entraining means are secured. Said panel 51 is parallel with, and spaced from, another vertical plate 52 joined therewith at the top by a narrow horizontal strip 53, the plate 52 being bent angularly to form a horizontal web 54 which, as shown in Figure 12, is intended to rest on the horizontal section of angle plate 46. Finally, an upstanding extension 55 is formed on web 54, which extension is pyramidal in shape and provided with a semi-circular enlargement 56 near the apex of the extension. In order to reenforce said extension, and also for a purpose to be described later, a marginal flange 57 is formed at the edges of extension and enlargement.

The movable wall carriage, represented in Figures 3, 4, 5, 8 and 30 by the letter M, corresponds exactly, in cross-section, to the carriage A already described, since it occupies the same spaces in the body and travels on the same path. The upstanding extension 60, however, which corresponds to extension 55 of carriage A, is much higher and extends practically to the top of the body; it is, furthermore, triangularly shaped as shown in Figures 3 and 4.

Both carriages A and M are adapted to slide longitudinally of the body, partly on the track 48 and partly between the spaced vertical extension of angle bars 45 and 46. Thus, the portions 51—52 of the carriages straddle the plate 46, while the vertical plate 52 is disposed between angles 45 and 46. Consequently, the vertical extensions 55 and 60 of carriages A and M extend inside the body, whereas the carriage panels 51 are outside said body and adapted to be driven by a mechanism to be described. This arrangement has the advantage of firmly guiding the carriages, supporting the same against distortion and forming a seal to prevent the material in the collector from escaping and hindering the operation of the carriages. The body is outwardly completed by the addition of a longitudinal apron 47 secured to the beam 42 and extending downwardly to hide from view the chassis of the truck and associated mechanism.

The carriages are driven, back and forth, along the tracks by means of a travelling cable 65 to which a block 66 is secured, as shown clearly in Figures 20, 21, 22 and 23. Said blocks, one on each side of the collector body, are adapted to be engaged by dogs pivoted to the carriages and selectively actuated to control the movement of said carriages. The carriages A, on the panel 51, are provided with a horizontal, angularly projecting bracket 67 (Fig. 10), parallel with the shoe 50 and to which bracket and shoe a pair of dogs 68 are pivoted by means of pins 70. Each dog, furthermore, is formed with an upstanding extension 71 to the top of which a free roller 72 is secured.

As shown to advantage in Figure 20, the panel 51 of the carriages is provided with openings 73 through which the inner set face of the dog is adapted to project; leaf springs 73' being provided for that purpose, which urge the lower set 74 of the dogs against the carriage panels. Thus, the higher projection 75, tapering down to the pivoted end, extends out from the inner

face of the carriage body into the path of the moving block 66 (Fig. 21).

The dogs are retracted, at will, by a cam 76 engaging the rollers 72, said cam being mounted on a longitudinal angle iron 78 supported at one end by a rod 79 which, in turn, is slidably disposed within a bushing 80 stationary with respect to said rod. The other end of said angle iron is supported by a bracket 81 welded to the apron 47 (Fig. 12). Longitudinal movement of the cam, to selectively retract the dogs 68, is effectuated simply by means of the linkage shown in Figure 14, and which consists of a pair of arms 82 secured to a transverse rod 83, one of the arms 82 being connected by a link 84 to actuating lever 85 extending through the apron at the rear of the selector body. The arms are, in turn, linked to the rod 79 by means of pivoted connections 86; thus, according to the position of the lever 85, shown in Fig. 14 in dotted lines, the dogs 68 can be retracted or left to engage the travelling block 66.

A similar arrangement exists for the carriage M which, however, carries only one dog 90 intended solely to pull the vertical wall rearwardly when engaged by the block 66. Said dog 90 is retractable by means of the cam 77 engaging a roller 91 of the dog corresponding to roller 72 on the dog of carriage A. Said cam 77 is so disposed with respect to cam 76 that the dog 90 is released only when the dogs 68 are retracted; this arrangement will readily be understood when it is considered that only one carriage can be engaged, at one time, with the travelling block (see Figure 16).

The driving mechanism for the carriages, embodying the block 66 already described, consists, first of all, of a cylinder 95 (Figures 18, 19, 24) suitably secured to the frame of the collector or truck. Said cylinder is provided with end ports 96, 97 for the admission and exhaust of a driving fluid, preferably oil. A piston 98 is movable within said cylinder, said piston having a piston-rod 99 projecting outside the cylinder.

The ports 96—97 are connected, by means of ducts 101—102, to a three-way valve 103, said valve being connected to suction and pressure ducts 104—105 from the hydraulic pump 106 driven directly from the truck transmission 107. According to the position of the lever 108, controlling the action of the valve 103, the ducts 101—102 can be connected to the ducts 104—105, this arrangement reversed, or the ducts 104—105 connected together whereby, in the last case, the pump runs idle. Consequently, the oil pressure can be applied, at will, on either side of the piston and the same moved correspondingly.

In order to stop the piston automatically, at the end of its course, said piston is provided with an inner double-seat valve 100 freely mounted in apertured bushings 109 by means of a sliding rod 110. As shown in Figure 33, the bushings are formed inwardly with seats adapted to co-operate with the valve 100; due to the spaced arrangement of said seats, the valve may be seated upon one, or the other, thereof according to the side of the piston which is subjected to oil pressure. Since the rod 110 normally projects out of both faces of the piston 98, it operates to contact the wall of the cylinder ahead of the piston, whereby the closed valve 100 is lifted from its seat, against the fluid pressure tending to close it. Thus, at each end of the piston stroke, the valve 100 is operated to open a communication through the piston body, to allow the fluid under pressure to

pass through the apertures of the bushing, from one side of the piston to the other, to equalize pressure on both sides thereof.

The piston rod 88 is provided with an outer cross-shaft 111 having at each end a pair of pulleys 112 loosely mounted on said cross-shaft (Fig. 24). Other pulleys 113-114-115-116 are mounted, horizontally, on the frame or chassis of the truck to receive a cable 117, one end of which is secured, at 118, to the frame and trained upwardly over the inner pulley of the pair 112. Said cable is thereafter passed over pulleys 113-114-115-116, in their order, and finally trained downwardly over the outer pulley 112 to the eye-bolt 119 where it is secured. Thus, both ends of the cable are firmly attached to the frame and trained, in opposite directions, over adjoining pulleys to form a loop passed around the pulleys 113 to 116; the reach 65 of said loop carries the block 66 already described and which, due to the doubled arrangement of the cable, travels twice the distance covered by the piston actuating said cable. Since the mechanism of the present invention is always in duplicate, one for each side, the description just given for one side of the driving system applies also to the other side and the same numerals may be used.

The means for supporting and driving the movable wall and scoop having been described, the description of the construction and operation of said members may now be made.

The scoop is illustrated in perspective in Figure 10 and is generally designated by the reference character S. Said scoop consists, essentially, of parallel side panels 125 substantially sector-shaped, the arcuate portion of which is closed by a curved plate 126 the marginal flange 127 of which overlies, and is welded to, the outer edge of the panels 125. It must be noted that the upper portion 128 of the scoop plate is hinged at 129 to form a cover, the flange 130 of which overlies also the outer edge of the panels but is not welded thereto. The triangular structure described is pivoted to the centre of the upstanding extension 65 by means of a pivot pin or rivet 131 around which the scoop is adapted to oscillate; as shown to advantage in Figure 10, the edges of the panels 125 are provided with a flange 132 the edges of which are sharpened so as to scrape against the side panels or body of the collector to prevent the passage of material between said scoop and said body. The scoop is completed by the addition of a small roller 133 freely secured to the side panels 125 and the flange 127 and slightly below the center of the curved plate 126. The purpose of said roller will be explained later.

The free end of the pivoted cover 128 is upturned to form a flange 135, to which an angle-iron 136, having rollers 137, is secured; said angle iron is so disposed that its horizontal portion 138 is spaced from, and parallel to, the cover 128 to form a hook-like depression adapted to prevent the upper part of the scoop from coming out of the collector body.

The movable wall, generally represented in Figures 3, 4, 5, 30 and 31 by the reference letter W, consists, as previously described, of the carriage extension plates 60, one on each side, between which a partition 140 extends. Said partition consists of a lower slanting section 141 and an upper curved section 142; the purpose of this arrangement is to force loaded material upwardly, against the body ceiling, to provide for more complete loading of the collector. The partition

140 is braced against buckling by the reinforcing angle bars 143 which carry rollers 144 at the bottom end thereof to facilitate longitudinal movement. Said partition, furthermore, is provided with a bottom scraper strip 145 hingedly secured to the lower edge of the partition and adapted to maintain, at all times, a sliding contact with the floor plate 40.

As shown to advantage in Figure 31, the extensions 60 are beveled on the sides and turned outwardly at 146 to contact snugly the side vertical walls of the collector body. In order that said extensions be pressed against the body walls even when said walls are slightly bulged, a spring arrangement is used which is illustrated in Figure 32. To the partition 140 a number of brackets 147 are welded in a line approximately halfway between the angle 143 and the vertical edge of the said partition; similar brackets 148 are secured in corresponding positions on an angle bar 149 welded to the extensions 60 in line with the partition 140.

The partition is supported in place against the angle bar 149 by means of bolts 150 passed through holes provided in the edge of the partition and slots 152 formed in the flange 151 and the brackets 148 welded thereto; thus, the partition is capable of a slight lateral movement, limited by the extent of the slots. Compression springs 153 are disposed between the brackets 147-148 and are held in place by the loose bolts 154; consequently, the tension of the springs is transmitted from brackets 147 directly to the extensions 60 through the intermediary of brackets 148 and flange 151. The result is a perfect scraping contact between movable wall and collector body, whereby all material therein can be speedily and completely expelled.

Reference to the drawings will show that movable wall W is capable of longitudinal movement only, while scoop S executes a plurality of arcuate movements, besides the longitudinal movement. Those multiple displacements of the scoop are necessitated by the function of this element which acts as a loading and pressing member.

As previously disclosed, the scoop is provided with a roller 133 on each side thereof; said rollers are normally engaged within the longitudinal body groove or channel 36, whereby the height of the scraping edge 156 of said scoop is fixed with respect to the floor. This height is calculated to be barely above said floor, should undue strains tend to lift the scoop; since, however, the scoop is pivoted forwardly, away from said scraping edge 156, the weight of the scoop is normally sufficient to keep the rear edge of said scoop in scraping contact with the floor.

The body floor is not continuously level, however, and reference to Figures 3, 26, 28, 29 will reveal that the floor plate 40 is bent angularly downwards at the rear of the body to form an inclined plane 160. To the lower edge of said plate 160 a pivoted curved section 161 is operable to form a trough-like depression 163 into which the material to be loaded is initially disposed, manually, by the operator of the device.

The curved section 161 is pivoted to the body, by means of the side cheeks 162 shown in dotted lines; it may be swung, therefore, forwardly out of engagement with the outer edge of the plate 160, for unloading purposes as depicted in Figure 4. It is retained in raised position by the catches 164 engaging rod-extensions 165 projecting sideways from the turned edge 166 of said section (Fig. 2). A running-board 167 having side sus-

pension arms 168 pivoted to the body sides at 169 is provided at the rear of the collector for the convenience of the operator. The arms 168 of said running board are slotted at 170 to engage pins welded to suitable points of the side edges of the curved section, the purpose of this arrangement being to move the running board forwardly, out of the way, and to swing also the curved section under the plate 160.

In order that the scoop may drop into the trough 153, for load-gathering purposes, it is obviously necessary that means be provided to disengage the scoop rollers from the horizontal channel 36, maintaining said scoop at the level of the floor. Such means are in the form of runways or guiding grooves provided in the side extensions 175 of the body and shown in detail in Figures 26, 27, 28, 29; it will be noted, in said figures, that the channel 36 bifurcates, up and down from the horizontal, into a network of grooves adapted to guide the scoop for a variety of angular movements.

The said grooves are of the same physical dimensions as the main guiding channel 36 and merge therewith at 176, the upper groove comprises an ascending portion 177 and a descending section 178 opening at 179 to the outer rear edge of the body extension 175. Of course, the terms "ascending" and "descending" refer to the motion of the rollers in said grooves, as they travel from points 176 to 179. The lower groove comprises an inclined portion 180, substantially parallel to the upper portion 178, and a steep, almost vertical, shorter section 181 ending at 182 just below the end 179 of the upper groove. The network is completed by the addition of a transverse, cross-groove 183 bridging together sections 178 and 180, at approximately half their length, for a purpose to be described later. Finally, pivoted spring-pressed pawls 184-185 and 186 are disposed at the points 176-187-188, respectively, in normal positions as shown in Figure 26.

The purpose of said pawls is to guide the rollers 133 in a given direction over one groove at the points 176-187-188; thus, in Figure 26, the position X of the scoop, shown in dotted lines, shows the roller 133 just emerging from the channels 36 and bridging the groove 180 over the pawl 184. Consequently, further movement to the right of the carriage A shall force the roller up the inclined groove 177, and down the groove 178, to the position illustrated in said figure, with corresponding movement of the edge 156 of the scoop over whatever material may be present in the trough 163.

Further movement (Fig. 27) will lower the scoop somewhat below the floor level when it reaches the end of its course to the right, at 179 where, outside the groove 178, the free rollers drop, into 182, in the lower groove 181. This position of the scoop is the outermost one of which the block 66 is capable when coupled to the carriage A; in other words, said block does not travel to the right far enough to move the carriage A, and attached scoop, beyond the point where rollers 133 leave the groove 178 just enough to drop into 182, below.

At this point, the projection 138 of the scoop cover 128 engages the turned-in portion 190 of the body roof to prevent said scoop from becoming disengaged from the body; furthermore, this engagement of the cover acts as a pivot to swing the scoop outwardly, under conditions to be described later.

The scoop is now in loading position; upon

manipulation of the proper levers, as described before, the movement of the carriage A will be reversed, to the left, and the scoop moved accordingly. Since the scoop must drop down into the trough, to gather the material therein, the guiding groove 181 is steeply inclined so that the roller 133 may guide the scoop edge 156 downwardly (see Figure 28). Therefore, said edge will move close to the section 161 and, finally, scrape against the inclined plane 160, as shown in Figure 29; during this movement, the rollers 113 lift the pawl 186 which drops back after their passage.

The material gathered by the scoop is being pushed into the body as, gradually, said scoop moves leftward until, finally, its edge 156 is again in contact with the floor 40 and the rollers, after passing under pawl 184, are once more in the channel 36. The leftward movement is then continued until the loaded material is pushed against the movable wall and compressed there; this compression, due to the inclination of said wall, tends to force the load upwardly. Thus, the pivoted cover of the scoop may be lifted slightly to contact the roof. When this occurs, said contact is made by the rollers 137 (Fig. 11), their purpose being to avoid friction when this contacting occurs.

The loading operation above described is continued until the collector body is filled up; the load, near the mouth of the body, might render it impossible to push the scoop far enough, inward, to permit its coming back over pawl 184. In that case, therefore, the scoop travel is reversed and the groove 183 utilized to return the scoop to the upper groove for another load portion; thus, the device can be filled until it is no longer possible to move the scoop inward so that the roller 133 is able to lift pawl 186. The scoop is then left in its innermost position to hold the load compressed during transit.

The collector is now in position to be unloaded; for that purpose, the curved section 161 and the running board are swung out of the way to allow free escape of the load. The block 66 is then disengaged from carriage A and moved to the front to engage dog 90 of the movable wall. Upon causing block 66 to move rearward, the wall is carried therewith and, in so doing, expels the load from the body. Since said load, in compressed form, is likely to be bulky, it generally happens that it engages the scoop, which is now free, and pushes the same rearwardly to occupy a position substantially as shown in Fig. 4 the rollers 133 becoming disengaged entirely from the groove 179 and the carriage A pushed out of reach of the block 66.

After the movable wall has been moved to expel the load completely, it is returned to its original front position by the block 66 abutting the lug 192 secured to the carriage M by rivets 193. Since, as stated above, the carriage A is now out of reach of the block 66, it is backed in by means of a coupling device between both carriages consisting of a rod 195 freely supported in sleeves 196 and 197 secured, respectively, to carriages A and M (see Figs. 5, 8, 9, 10, 12) and having nuts or the like at the ends thereof.

Once the movable wall has been pushed to its extreme forward position, the length of the rod 195 is calculated to pull the carriage A, inwardly, to a point where the block 66 can again be clutched to the dogs of said carriage; the scoop is then, once more, in position to effectuate the movements already described.

So, from the foregoing description and explanations, the general construction of the device object of the invention should be clear: The said device comprises, essentially, an open-ended enclosure, movable closing means for the ends, one of said movable means called the scoop being adapted to perform a number of oscillating movements, and actuating means for selectively operating one or the other movable means at will.

The advantages of this construction are obvious: in the case of a garbage collector, for instance, the load is dumped, in small quantities, into the trough at the back of the collector. Due to the fact that said trough is relatively low, the manual labour involved is reduced to a minimum; furthermore, the back, or mouth, of the collector being open, rather bulky objects such as cases, cardboard boxes and the like can be loaded without trouble. The power-driven scoop exerting a great pressure inwardly, the load is tightly compressed whereby boxes and other hollow objects are crushed to occupy the smallest possible space; thus, a bigger load can be transported. Again, the front closing member being movable backwards, the load is easily and quickly expelled, in rather cramped spaces, since the body is not tiltable. Other features include the rather tight sealing of the closures to prevent odors, dust and parts of the load from escaping during transit.

Finally, the driving means are so designed that foolproof operation is possible at all times, whereby inexperienced labor can easily and safely operate and man the collector.

It is to be understood that the form of my invention herein shown and described is to be taken as a preferred example of the same, and that various changes as to the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A carrier of the character described, comprising an open-ended elongated body, loading means at the rear end of said body consisting of a pivoted scoop, unloading means at the other end constituted by a vertical movable wall, a trough at the rear of the body, means for selectively engaging and moving either the scoop or movable wall, and guiding means on the body whereby the scoop may be oscillated to pick material in the trough and load the same in the body against the movable wall.

2. A device of the character described, comprising a quadrangular open-ended body, tracks formed at the bottom of the body sides, said tracks consisting of parallel, spaced and overlapping sections of said sides, carriages movable in said tracks and extending partly inward and partly outward of said body sides, a vertical movable partition secured to one of said carriages on each side of the body, a scoop having sector-shaped sides and an arcuate wall joining the arcuate portion of the sides pivoted to another pair of opposed carriages, a depressed trough formed at the rearward outer end of the body floor, and a travelling block adapted to move the partition and scoop, whereby material in the trough can be picked by the scoop and loaded into the body against the movable partition acting also as a load-expelling member.

3. In a device as claimed in claim 2, a pair of opposed spring-pressed dogs disposed on the outside of the scoop carriages operable to engage

the travelling block, whereby said scoop may be moved to and fro in and out of the body, a single dog mounted on the partition carriages engageable with the block in a rearward direction only, a lug secured to said partition carriages for returning said partition forwardly, rollers on said dogs, and manually actuating cams for retracting either the scoop or partition dogs away from the travelling block.

4. In a device as claimed in claim 2, a longitudinal channel formed in each side of the body, a roller on each side of the scoop engaged in said channels to guide said scoop, and a network of grooves extended from the longitudinal channels, at the rear of the body sides, for guiding the scoop upwardly over material in the trough, down into said scoop behind said material and then upwardly into the body and against the vertical partition.

5. In a device as claimed in claim 2, a pivoted cover at the top of the scoop arcuate wall, and rollers at the free edge of said cover adapted to contact the body roof when the cover is forced up by material being compressed by the scoop against the vertical partition.

6. In a device as claimed in claim 2, flanges formed on the forward and lower edges of the scoop sides for scraping against the sides of the body.

7. In a device as claimed in claim 2, upstanding vertical extensions formed on the vertical wall carriages for supporting said partition, scraper flanges formed on said extensions, and spring means on the partition for pressing said flanges against the body sides.

8. In a device as claimed in claim 2, block-actuating means comprising a cable to which said block is secured in the middle thereof, fixed pulleys over which the cable is trained to form a loop, and longitudinally movable pulleys over which the loop ends are trained in opposite directions and secured to a fixed point, whereby movement of said movable pulleys will result in a motion of the cable corresponding to twice the distance travelled by said pulleys.

9. In a device as claimed in claim 2, a curved section constituting one-half of the trough, and means for swinging said section to allow free passage of the load expelled by the rearwardly travelling vertical partition.

10. In a device as claimed in claim 2, block-actuating means including a cylinder, a piston movable in said cylinder, a rod on said piston extending out of the cylinder for supporting pulleys, pipes for admitting a fluid under pressure at both ends of the cylinder, valvular means for controlling the fluid into the fluid-admitting pipes, and by-pass means at both ends of the cylinder operable to stop automatically admission of fluid when the piston has reached the ends of its course.

11. In a device as claimed in claim 2, slidable connecting rods joining the carriages of the partition and scoop, whereby said scoop may be retracted slightly when extended out of the body past the rearward end of the travelling block course.

12. In a device as claimed in claim 2, a lower scraping edge hinged to the bottom of the vertical partition, and rollers at the bottom of said partition for facilitating movement thereof.

13. A material collecting device, comprising a tubular body, a trough at the lower part of one end of said body, an internally movable partition normally closing the other end of the body, a

scoop movable also inside the body and adapted to close the trough end of the body, means for selectively actuating either of said body closing members, and means whereby the scoop is additionally movable partly out of the body and below the same to dip into the trough, pick up material therein, and thereafter load same into the body against the movable partition.

14. In a device of the character described, having a tubular open-ended body and a pair of movable body-closing means, a trough at one

5 end of said body below the lower level thereof, means for selectively and longitudinally moving within the body either of the body-closing means, and additional guiding means at the trough end of the body for causing one of the body-closing means to dip in said trough, for material picking and body-loading purposes, and to uncover the said end of the body for material expelling purposes by the other member.

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