W. CAMERON.

BLANK FEEDING MECHANISM.

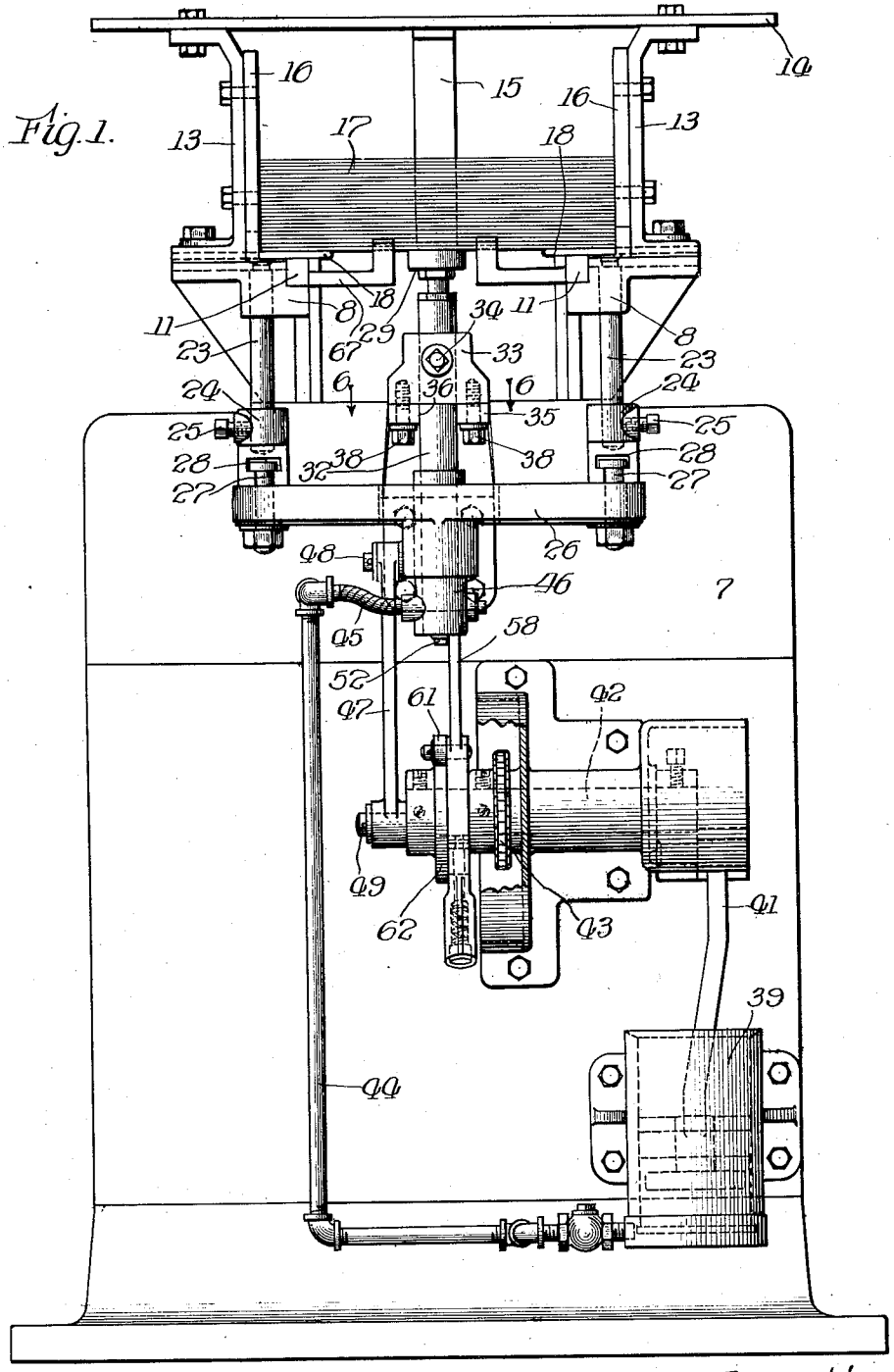
APPLICATION FILED MAY 28, 1919.

1,318,540.

Patented Oct. 14, 1919.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 2.

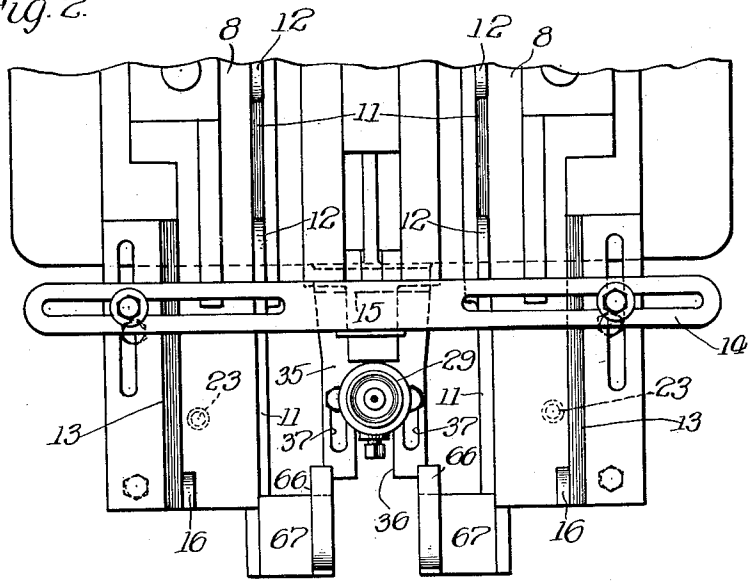
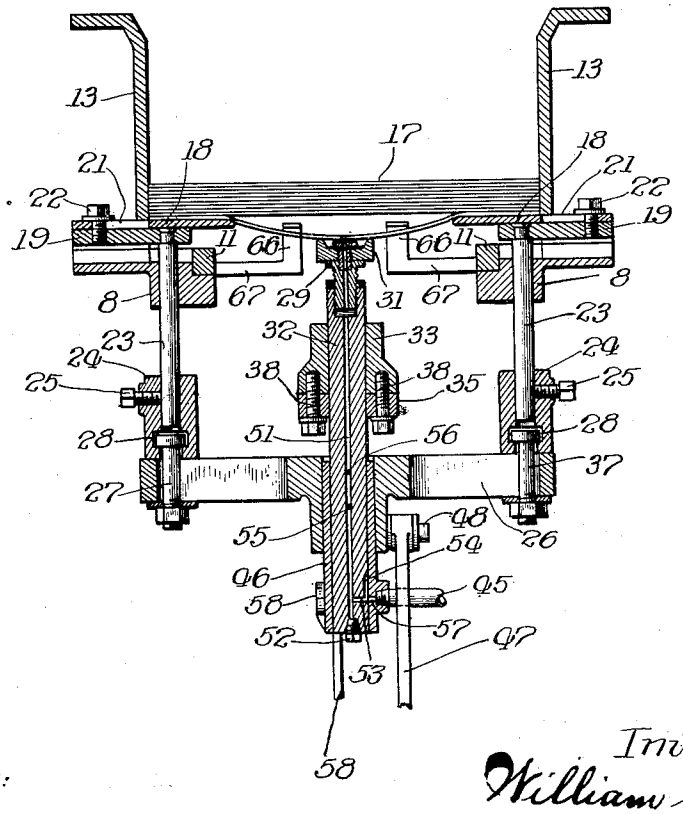


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

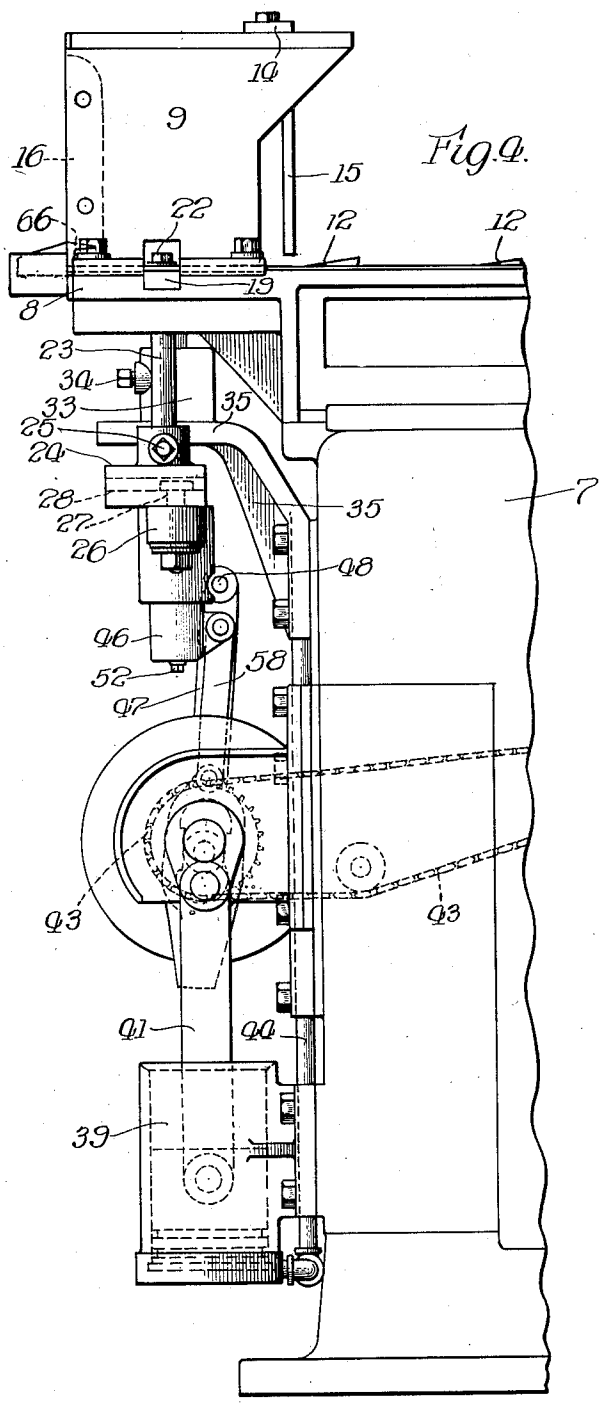


Fig. 5

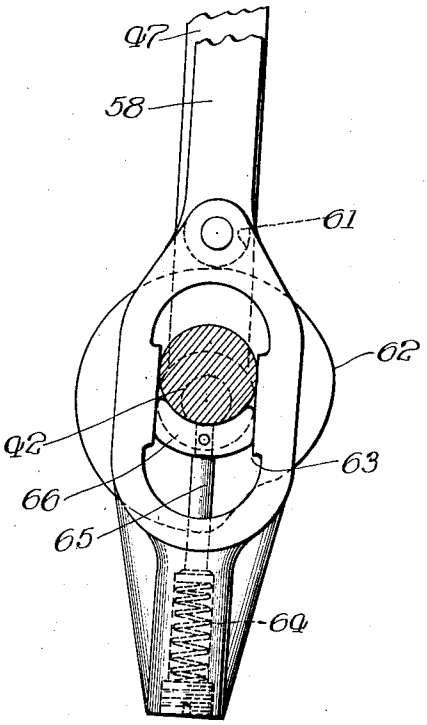
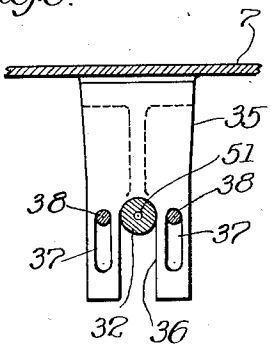


Fig. 6.



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UNITED STATES PATENT OFFICE.

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BLANK-FEEDING MECHANISM.

1,318,540. Specification of Letters Patent. Patented Oct. 14, 1919.

Application filed May 28, 1919. Serial No. 300,434.

To all whom it may concern:

Be it known that I, WILLIAM CAMERON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Blank-Feeding Mechanisms, of which the following is a specification.

This invention pertains to blank feeding mechanisms adapted for separating and feeding in succession sheet metal blanks from a magazine to a machine in which the blanks are operated upon, the embodiment of my invention herein disclosed being particularly adapted for the feeding of sheet metal blanks to a tin can body forming machine and constituting an improvement upon the mechanism disclosed in my prior Patent No. 1,283,659, granted November 5, 1918.

One of the objects of my present invention is to provide a blank feeding mechanism which is capable of adjustment and adaptation to the successful feeding of blanks of various sizes and dimensions. With this end in view, the invention embodies certain novel features of construction which permit adjustment and regulation of the mechanism to a fine degree of nicety which will insure its successful operation and enable the feeding of blanks with accuracy and precision.

Another object is to provide novel and improved mechanism for actuating the various moving parts of the apparatus so that the suction will be applied to and cut off from the blank holding device in accurate predetermined timed relation to the movements of the blank raising and lowering mechanism.

Other objects and advantages of the invention will be understood and appreciated as the embodiment of my invention, selected for purposes of illustration, are better understood by reference to the following description when considered in connection with the accompanying drawings.

Referring to the drawings—

Figure 1 is an end elevation of a blank feeding mechanism embodying my invention.

Fig. 2 is a plan view thereof.

Fig. 3 is a vertical sectional view.

Fig. 4 is a side elevation.

Fig. 5 is an enlarged fragmentary view showing the manner in which the moving parts are actuated from the drive shaft; and

Fig. 6 is a sectional detail taken on the line 6—6 of Fig. 1.

This invention is customarily used as an attachment to a machine for operating upon sheet metal blanks and in the present instance I have illustrated a portion of the frame construction 7 of a can body forming machine. This frame is equipped with a pair of tracks or slideways 8 upon or along which the blanks are fed from the magazine 9 to the body forming mechanism, not shown. A pair of reciprocatory feed bars 11 equipped with feed dogs 12 are reciprocated longitudinally of the machine by mechanism not shown, and these feed dogs, having their rear ends yieldingly projected upwardly slightly above the tracks 8, serve to advance the blanks through the machine by step by step motion.

The magazine 9 comprises a pair of vertically disposed side plates 13 adjustably mounted upon the slideways 8 so that they may be moved toward or from each other to accommodate blanks of various lengths, these plates being connected at their upper ends by a cross-bar 14 through an adjustable bolt and slot connection and this bar carries intermediate its ends a depending member 15 which forms the front of the magazine and prevents the blanks from being accidentally moved forward out of the magazine. The rear of the magazine comprises a pair of bars 16 fixedly secured to the opposed faces of the side plates. The bottom of the magazine upon which the stack of blanks 17 in the magazine is supported consists of a pair of inwardly projecting plates 18 carried by bars or members 19. It will be observed that the plates 18 are provided with slots 21 through which fastening bolts 22 project into the supporting members 19 to securely and adjustably attach the plates to their respective members. This adjustability of the plates 18 permits them to be adjusted toward or from each other similarly to the adjustment of the sides 13 of the magazine, and also permits them to be adjusted independently of the magazine adjustment so that they may project inwardly beneath the stack any distance which will give the most satisfactory results with the size and character of the blank to be fed.

The supporting members 19 are carried upon the upper ends of posts 23 guided for vertical reciprocation in the track members 8 and at their lower ends these posts project

into sockets formed in members 24 and in which they are securely held, but adapted for vertical adjustment by set-screws 25. The members 24 in turn are carried by a cross-head 26 and to permit the post to move inwardly and outwardly on the cross-head with the track members 8 when they are adjusted, the cross-head is slotted longitudinally, as shown in Fig. 3, and bolts 27 passing through these slots serve to clamp the members 24 to the cross-head in adjusted position. Since the cross-head is also adjustable longitudinally of the machine, as will be later explained, the members 24 are provided with undercut slots 28, as shown in Figs. 3 and 4, in which the heads of the bolts 27 are disposed, and when these bolts are loosened, the cross-head may be adjusted toward and from the machine without altering the position of the posts and the posts may be adjusted toward and from each other together with their guiding track members 8 without disturbing the position of the cross-head.

Between the members 8 and projecting upwardly, preferably a slight distance above the horizontal plane of the plates 18 when in their lowermost position, there is disposed a blank holding device which, in the present instance, is in the form of a pneumatic sucker 29. The head proper 31 of the sucker is preferably made of rubber and the sucker is carried by a tubular post 32 which is clamped in a holder 33 by means of a set-screw 34. Upon loosening the set-screw, the post may be adjusted vertically to bring the sucker-head into the desired vertical position with respect to the magazine.

The blanks in the magazine differ in length and width according to the diameter and height of the can body which is to be formed. Since the most satisfactory results in the operation of the feeding mechanism are obtained when the sucker is positioned substantially in the center of the stack of blanks, I have made provision for adjusting the sucker horizontally toward and from the body of the machine so that when wider or narrower blanks are to be fed, the sucker may be adjusted into the desired central position with respect to the stack of blanks in the magazine. The holder 33 is therefore carried upon a bracket 35 bolted to the main frame of the machine, as shown in Fig. 4, the horizontal portion of the bracket being provided with a central recess 36 to accommodate the post 32 and with slots 37 through which bolts 38 project into the holder 33 which is provided with tapped holes to receive the threaded ends of the bolts. By loosening these bolts the holder 33 may be moved toward or from the main frame 7 to thereby position the blank holding sucker in requisite horizontal relation to the superposed blanks. It is to permit of this adjustment of the sucker that the slots 28 are provided in the members 24.

Suction is applied to the sucker at predetermined intervals by a reciprocatory suction pump 39 mounted upon the main frame 7 and actuated through a pitman 41 from the drive shaft 42 which is driven by chain 43 or other suitable driving means from a shaft of the body forming machine. The pump is connected by pipe 44 and flexible hose 45 with a sleeve 46 surrounding the sucker post 32 and this sleeve is reciprocated vertically on the post by means of a pitman 47 connected by a pin 48 to the sleeve and at its lower end to a crank pin 49 on the shaft 42. The bore 51 of the post 32 is closed at its lower end by a plug 52 and near its lower end is provided with a radially extending port 53 which is elongated at its outer end as indicated at 54. The sleeve 46 is also provided nearer its upper end with a port 55 adapted, when the sleeve is at its upper limit of travel, to register with a port 56 extending from the bore of the post 32.

When the parts are in the position shown in Fig. 3, with the sleeve 46 at the lower limit of its travel, suction is being applied to the head 29 and this suction will be continued until the port 57 in the sleeve 46 is moved upwardly beyond the upper end of the groove 54 at which point the suction is cut off and practically simultaneously with the cut off, port 55 is brought into register with port 56, thereby admitting atmospheric air to the bore 51 of the sucker so as to release the suction through the sucker-head.

The cross-head 26 surrounds and is guided by the sleeve 46 and this head is reciprocated vertically by means of a pitman 58 connected to the cross-head by a pin 59. This pitman is provided near its lower end with a laterally projecting cam follower 61 which rides upon a cam 62 fixed on the shaft 42. The pitman is also provided with an elongated opening 63 which surrounds the shaft 42 and serves as a guide for the lower end of the pitman and the cam follower 61 is held against its cam 62 by an expansion spring 64 disposed in the lower end of the pitman and acting against a rod 65 carrying a shoulder 66 at its upper end which abuts against the shaft 42. As the shaft revolves, the cam moves the pitman upwardly and as the lower portion of the cam comes beneath the follower the spring 64 forces the pitman down, maintaining the follower 61 in engagement with its cam.

In the operation of the apparatus, the blank supporting plates are reciprocated vertically in the magazine by the cross-head 26 actuated through the pitman 58 thus moving the stack of blanks 17 up and down in the magazine. As the plates reach the limit of their downward stroke, the lower-