

Aug. 2, 1932.

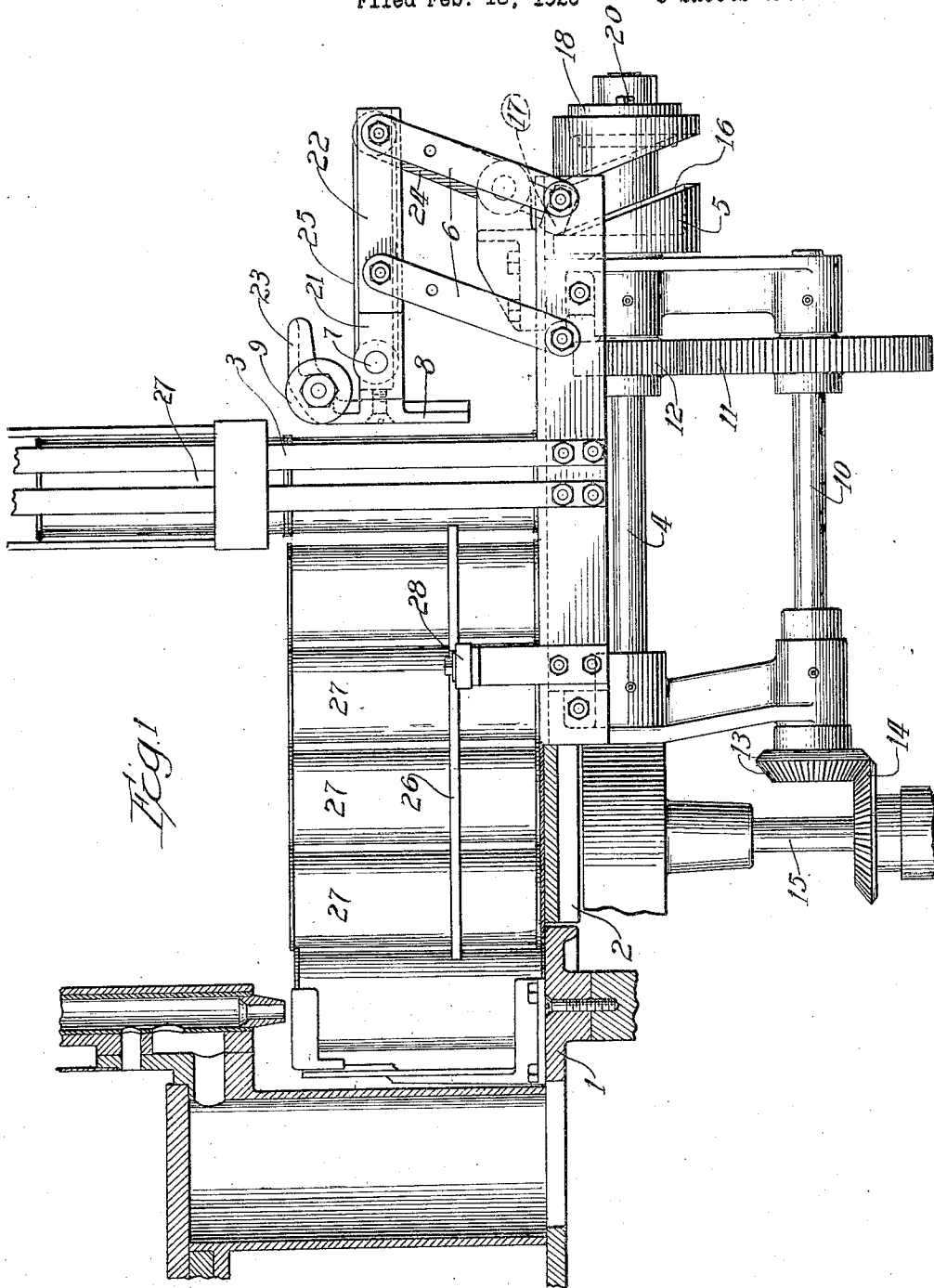
E. G. BAUER

1,869,653

CAN FEEDING APPARATUS

Filed Feb. 18, 1926

3 Sheets-Sheet 1



Inventor:
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Attorney:

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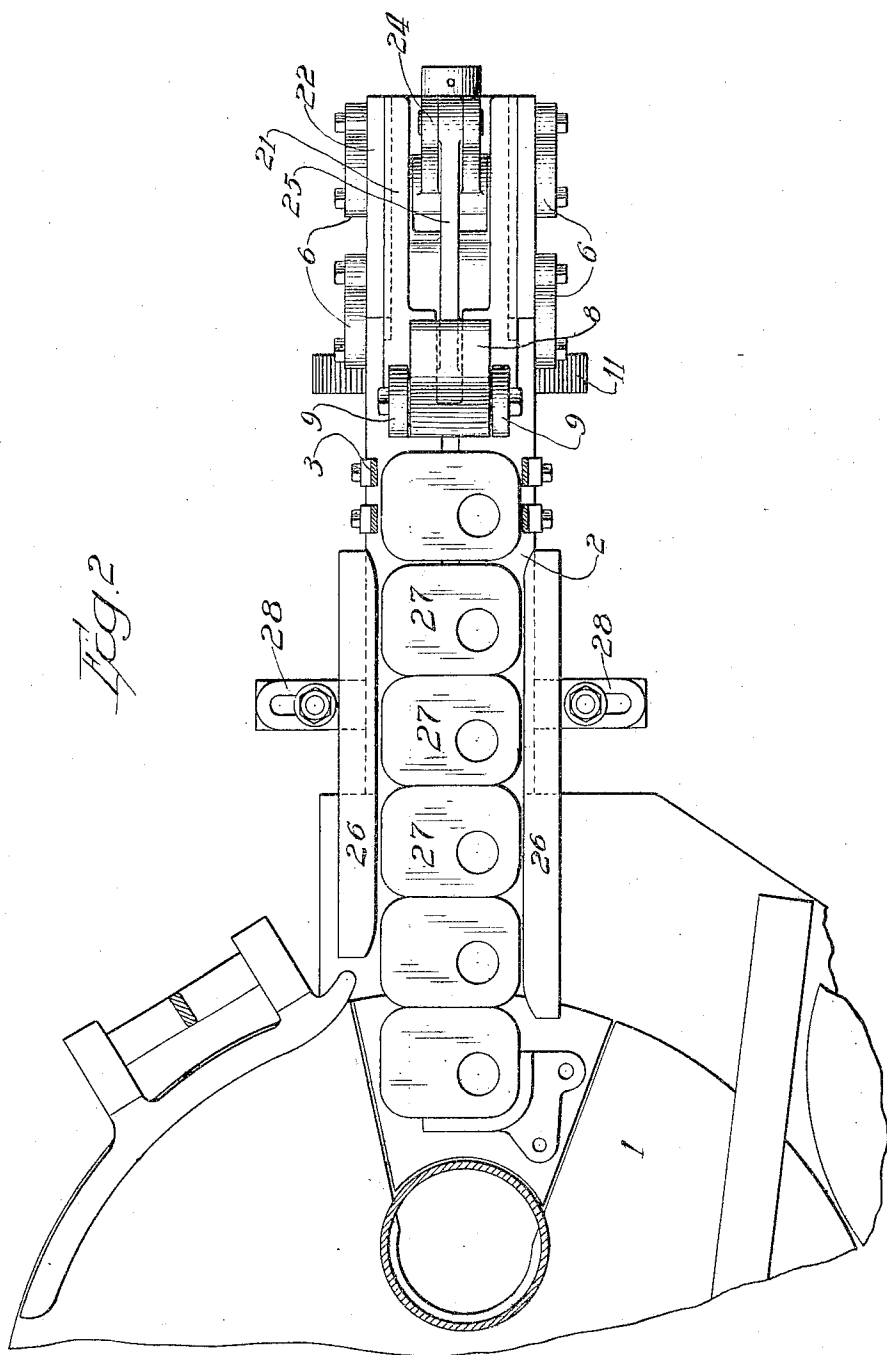
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

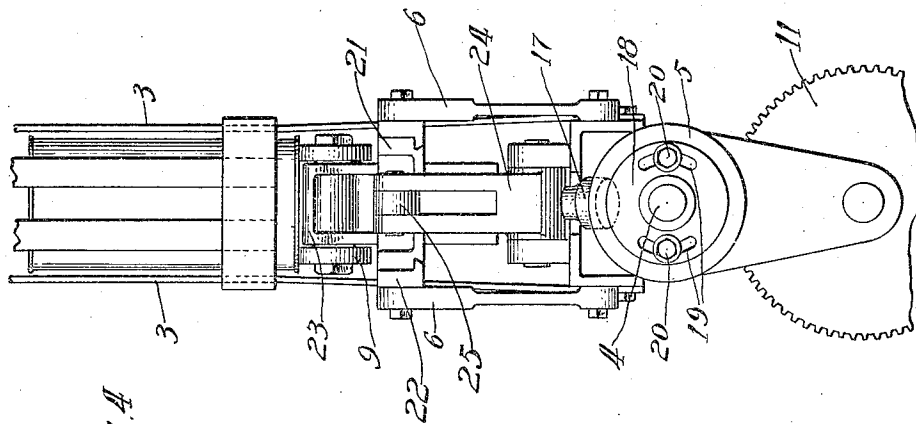


Fig. 4

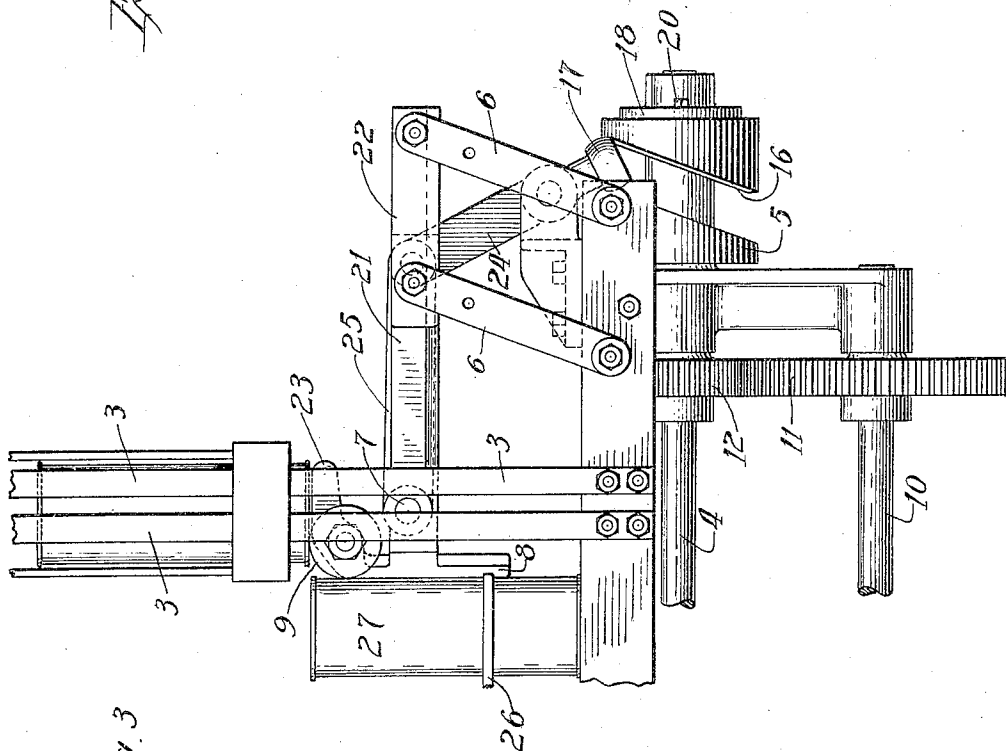


Fig. 3

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UNITED STATES PATENT OFFICE

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CAN FEEDING APPARATUS

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This invention relates to an apparatus for feeding square or rectangular cans to filling machines.

It is the general practice where square or rectangular cans are being filled by automatic machinery, with fluid substances, to place the cans on belt or other types of conveyors, and by them move the cans into operative relation with the filling mechanism of the filling machines.

It is also the practice in some factories to have an operator place the cans directly into the filling station of the filling machine by a hand operation.

Neither of these plans of feeding square or rectangular cans has proven satisfactory. In the first instance the cans usually have to be carted from the storage and handled in crates in order to keep a supply of cans ready for an operator to place them on a belt, this means extra handling and an added expense, in fact this is true as well of the second instance.

It is to be noted here that there is considerable difference in the structural features between round and square or rectangular cans. There are successful systems in operation for automatically feeding round cans to filling machines. This has been possible because round cans always have, either full open tops or tops with concentric openings, so that the cans need no orientation in order to place them properly in the filling machine.

Square or rectangular cans, however, have the openings or filling nozzles placed out of center in relation to the axis of the can. These openings are usually placed adjacent one corner of the top of the can. This placement is done to facilitate pouring the contents from the cans. On account of the location of the filling nozzles it becomes necessary that each can being fed to a filling machine must be properly oriented in order to have the opening come in register with the filling nozzle of the filling machine. On this account it has been rather difficult to construct a feeding apparatus that would insure proper orientation and given a continuous automatic feed so timed and speeded that the filling machine would be continuously supplied with cans.

The main difficulty encountered with the belt conveyor has been that friction has had to be depended on for placing the cans into proper position under the filling nozzles of the filling machines, and that there has been no way to time the movement of the cans so that one would positively be placed each time a station passed by the row of cans. This was also true where an operator was depended on to place the cans by hand into the filling station. Failure to place a can in either of these instances has usually resulted in wasted product since the filling machine would release the charge of material that was intended to go into a can and no can being present the material would be wasted, this applying especially to those filling machines not provided with a "no-can-no-feed" device.

It is therefore a principal object of this invention to provide a square or rectangular can feeding apparatus that will surely and certainly place a can at a filling station on a filling machine each time one passes the feed chute.

Other objects of the invention contemplate the provision of feeding apparatus that will receive cans from an overhead storage through a vertical chute and feed them one by one from said chute; align them in a horizontal row for advancement toward the filling machine; move this horizontal row intermittently and in timed relation with the movement of the filling machine whereby one can will be properly placed in the filling machine each time a filling station passes the row of cans; to provide an apparatus that will be positive and simple in operation and that will be adaptable to different size cans by the replacing of suitable parts.

With such objects in view as well as other advantages inherent in the invention, I wish it understood that the several necessary elements and combinations constituting the same may be varied in their proportions, placements, general arrangement and operative relation without departing from the nature of the invention, also that the described devices are simply embodiments of the invention which other structures might employ without departing from the purview

of the invention and I regard myself as entitled to such variations from the shown and described devices as fall within the scope and meaning of the claims hereto appended.

Reference being now had to the accompanying drawings a better and clearer understanding of the invention will be had. The drawings herewith are more or less diagrammatic in character; are not necessarily drawn to scale and do not necessarily represent the best or the preferred engineering practices in the construction of apparatus of this nature, the invention as illustrated is in a preferred form and clearly represents the application of the invention to a concrete form or machine.

Figure 1 is a side elevation of a machine embodying the invention, only fragmentary parts of the filling machine proper being shown. This view illustrates clearly the vertical chute into which the cans are placed from a floor above; the horizontal column of cans directed toward the filling machine; the apparatus that pushes the column of cans forward and the mechanism operating the pusher.

Figure 2 is a plan of Fig. 1 but with the filling nozzle of Fig. 1 removed to more clearly show just when the can is properly placed at the filling station.

Figure 3 is a side elevation of a portion of the mechanism of Fig. 1 but with the moving parts in the forward position showing just how the pusher moves the cans and at the same time supports the stack of cans in the vertical chute.

Figure 4 is an end elevation of Fig. 1 looking from the right of the drawings.

A portion of the filling machine proper is indicated by the numeral 1. 2 represents a horizontally disposed feed table mounted adjacent the filler turret. This feed table carries the vertical chute 3; the cam shaft 4; the cam 5; the links 6 and the pusher member 7, the feeding head 8 being removably mounted on the forward end of the pusher 7, and carrying the stack supporting rollers 9. Mounted under the feed table 2 is the drive shaft 10; gear and pinions 11 and 12, the bevel gears 13 and 14 and the main power shaft 15. The cam 5 is provided with the cam groove 16 in which rides the cam roller 17. The cam 5 is adjustably mounted on the shaft 4 by means of the collar 18 fixed to the shaft 4 and having arcuate slots 19. The cam 5 is secured to the collar by the cap screws 20. This manner of mounting permits adjusting the rotary relation of the cam to the rotary movement of the filler turret 1 and thus time the parts as may be desired. The can pusher 7 comprises a slide member 21 mounted for sliding movement in the bearing member 22 and the removable head member 8 carrying the supporting rollers 9. Fig. 3 indicates how the pusher 21 moves the cans from the

vertical chute 3 and how the rollers 9 support the stack while the undermost can is being removed. An extension 23 on the head 8 also assists in supporting the stack when it is necessary through adjustment for different size cans to set the head 8 farther ahead. The cam roller 17 is mounted on the lower end of a rocker arm 24, and a link 25 connects the arm 24 with the slide member 21. The links 6 act as supports for the bearing block 22.

Side guide rails 26 are provided to guide the cans 27 along the horizontal feed table 2. The guide rails 26 are mounted on the adjustable brackets 28 which provide adjustment of the guide rails for different size cans.

For handling different size cans some adjustment to the feed mechanism may be necessary. Referring to Fig. 1 it will be noticed that the links 6 are provided with extra holes for mounting the block 22 in a somewhat lower position to permit of proper adjustment of the head 8 to accommodate different height cans. The head 8 is removed and one of suitable dimensions replaced when necessary to have added adjustment relative to the longitudinal position thereof.

Operation

The operation of the apparatus would be substantially as follows:

The chute 3 would extend vertically to any floor above, on which cans may be stored. An operator on this floor would place the cans in the chute properly oriented so the pouring nozzle would be in the right position relative to the chute to register with the filling nozzle of the filling machine when the cans reached this station. The weight of the column of cans in the vertical chute will always be sufficient to keep the cans resting on the feed table 2 unless the operator feeding the chute places bent or damaged cans therein and thus clogs it. With a chute full of cans the machine is started and as the pusher member 7 advances the parts comprising the pusher mechanism move forward into the position of Fig. 3, thus moving the lowermost can from under the stack of cans in the vertical chute.

Just as the lowermost can in the stack is started the rollers 9, which are mounted to be just a little higher than the lowermost can, move under the stack and raise it slightly so the weight of the stack is lifted from the lowermost can, thus permitting it to be moved without the friction of the stack. As the pusher member 7 retraces its travel the weight of the cans in the stack will cause the stack to drop down on the feed table 2 so that as the pusher again moves forward another can is removed from the stack and pushed along the feed table 2. The second can encounters the first can removed and moves it along. This sequence of operation is repeated until the horizontal canway is filled with cans abutting against each other. The length

of this column of cans is determined so that the first can will eventually just reach the pocket of the filler turret as is shown in Fig. 2. From now on the movement of the feed slide

7 will each time place a can in a pocket of the filler turret each time a pocket appears at the end of the column.

The drawings show four cans between the chute 3 and the pocket of the filler turret. It is obvious that any number desired may be provided for in the design and construction of a feeding apparatus. The machine operator can also observe when the cans are running low in the vertical chute 3 and thus close off his filling machine before the cans are fully exhausted, and in this manner prevent the loss of material if no cans are present.

What I claim as new and desire to secure by Letters Patent is—

1. An apparatus for feeding square or rectangular cans singly from a stack of cans comprising a horizontally disposed feed table, a vertical chute adjacent said table, a reciprocating slide moving through said chute, a removable feeding head on said slide for engaging cans in said chute and moving them along said feed table, said removable head having a horizontal extension for engaging the remaining stack of cans and lifting them away from the can being removed, a support for said feed slide, means on said support to permit repositioning said feed slide to thereby adjust it for different size cans.

2. An apparatus for feeding square or rectangular cans singly from a stack of cans comprising a horizontally disposed feed table along which cans may be moved, a vertical chute for a supply of cans, a reciprocating slide moving through said chute, a feed head on said slide consisting of a depending member for engagement with the lowermost can in the said chute to remove it therefrom and a horizontally extending member for engaging the next uppermost can in the stack and lifting the stack away from the can being removed, said member including an antifriction roller for engaging the bottom of the stack with means for adjusting the said feed slide vertically to accommodate varying conditions of operation.

3. An apparatus for feeding square or rectangular cans from a vertical stack comprising a horizontally disposed feed table along which cans may be fed, a vertical chute for a supply of cans, a reciprocating slide moving through said chute, a removable feed head on said slide adapted to simultaneously engage the side of the lowermost can in the chute to remove it therefrom and a movable member to engage the bottom of the next can above to lift the stack away from the moving can with means for reciprocating said slide.

4. An apparatus for feeding square or rectangular cans from a vertical stack compris-

ing a feed table over which cans may be fed, a vertical chute for a supply of cans, a feed slide positioned above and out of contact with said feed table, a support for said slide, means for altering the vertical position of said support and said slide, a two part member carried by said slide for simultaneously engaging the lowermost and the next can above in said chute and adapted to move the lowermost from under the stack and to raise the stack away from the moving can with means for moving said slide.

5. An apparatus for feeding square or rectangular cans from a vertical stack of cans comprising a horizontally disposed feed table, a vertical chute for a stack of cans, a feed slide positioned in a plane away from said feed table, a support for said slide, means for altering the vertical position of said slide and said support, a feed head removably secured to said slide for engaging the side of the lowermost can in said chute and move it therefrom along said feed table, a roller carried by said feed head for engaging the next can above in the chute immediately after the lowermost can begins movement to thereby lift and support the remaining stack while the lowermost can is being removed therefrom and moved along said feed table.

6. An apparatus for feeding square or rectangular cans from a vertical stack of cans comprising a horizontally disposed feed table, a vertical chute for a stack of cans, a feed slide positioned above and out of contact with said feed table, a support therefor, said feed slide being adapted to engage and feed the lowermost can from the stack and at the same time engage the next above can to support the stack while the lowermost can is removed, a power shaft located underneath said feed slide and disposed axially parallel therewith, a cam adjacent the end of said shaft, a disk secured to said shaft, a transfer arm connecting said cam and said slide whereby reciprocating movement is transmitted to said slide with means connecting said cam and said disk for timing its movement relative to the movement of cans along said feed table.

7. An apparatus for feeding square or rectangular cans from the bottom of a vertical stack of cans comprising a feed table along which cans may be moved in timed relation, a feed slide for moving said cans, a cam and a rocker arm for imparting movement to said slide, a shaft loosely supporting said cam, a flanged member fixed on said shaft and connected with said cam for permitting timing adjustment of said cam relative to the movement of cans along said feed table.

8. An apparatus for feeding square or rectangular cans from a stack of cans comprising a feed table along which cans may be fed, a feed slide mounted for reciprocation above and out of contact with said table, a remov-

able head on said slide performing the dual function of engaging and feeding the lowermost can from said stack and engaging and supporting the remaining stack while the lowermost can is fed therefrom and supporting the stack until the feed slide is again in the retracted position, a support for said slide permitting repositioning to give a different adjustment for different size cans and the removable head being replaceable with another of differing dimensions to give adjustment for different size cans with means for reciprocating said slide.

9. An apparatus for feeding square or rectangular cans singly from a stack of cans comprising a horizontally disposed feed table along which cans may be moved, a vertical chute for a supply of cans, a reciprocating slide moving through said chute, a feed head on said slide consisting of a vertical wall for engagement with the lowermost can in the said chute to remove it therefrom and a horizontally extending member for engaging the next uppermost can in the stack and lifting the stack away from the can being removed, said feed head including a roller for engaging the stack.

In testimony whereof I affix my signature.
EDWARD G. BAUER.