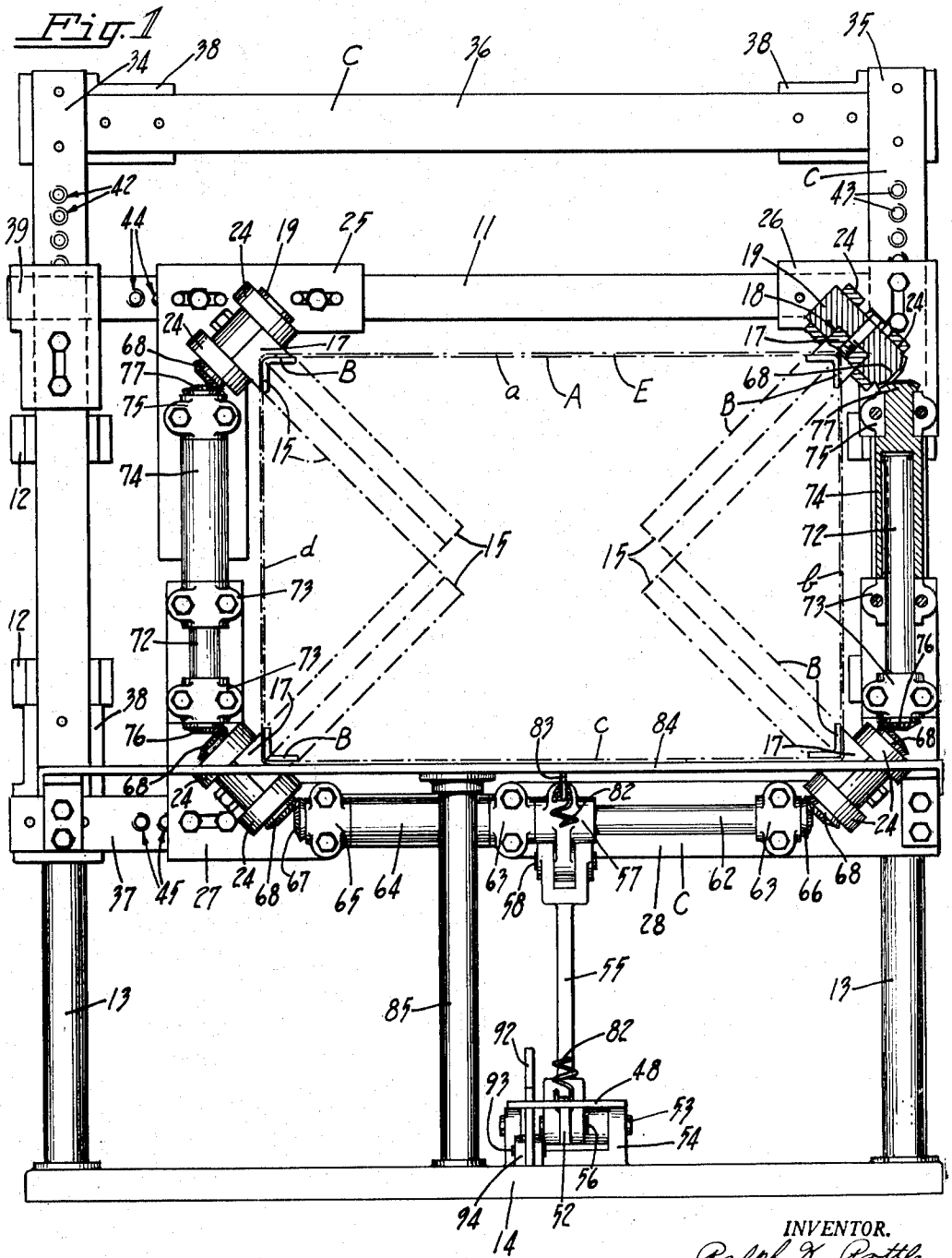
Aug. 26, 1952 R. K. POTTLE 2,608,332

BAG OPENING MACHINE WITH ADJUSTABLY MOUNTED BRACKET SUPPORTED ARMS

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Fig. 1



INVENTOR.
Ralph K. Pottle
BY Swan D. Thornburgh
Charles H. Evans
ATTORNEYS

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Fig. 2

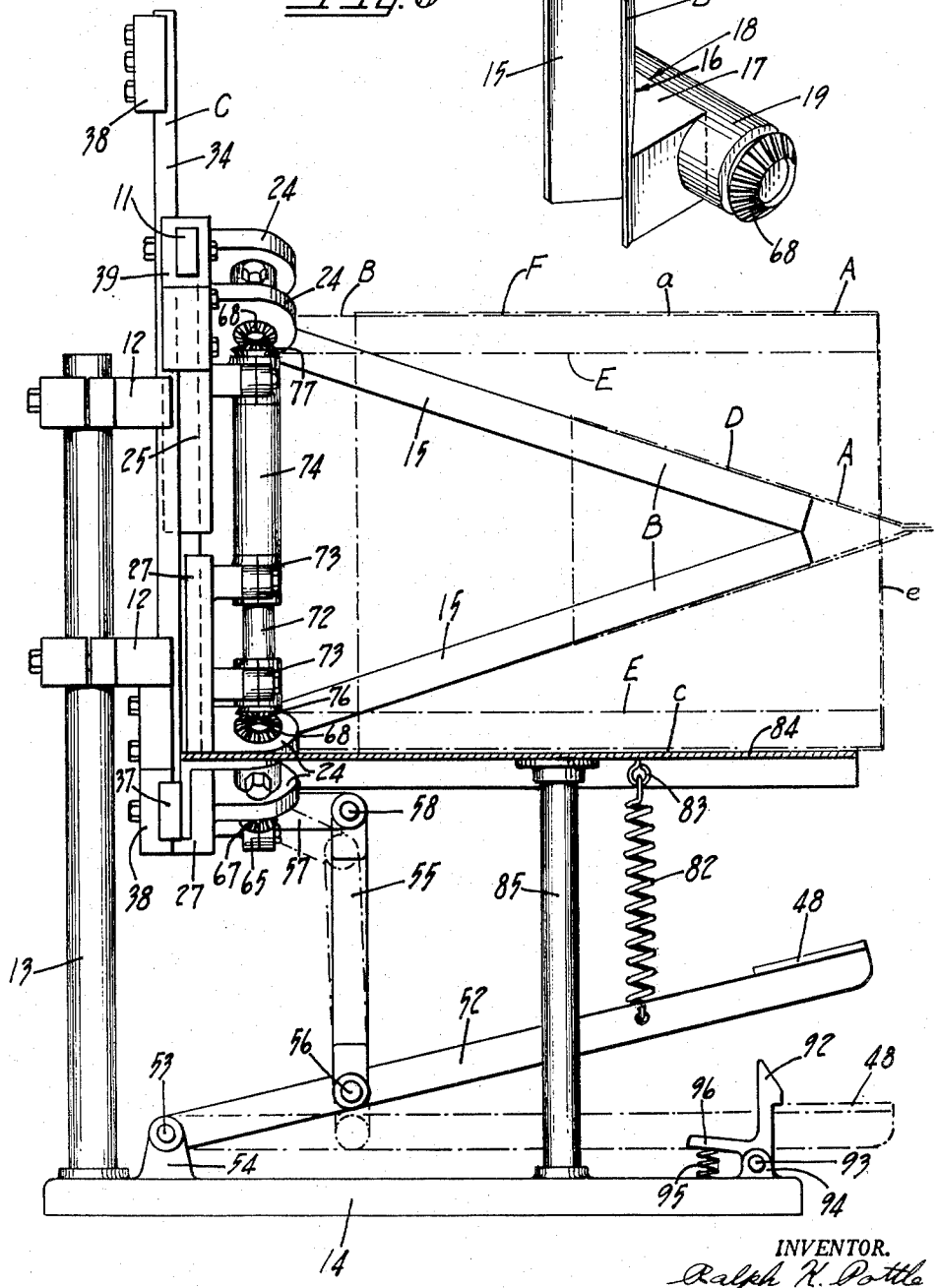



Fig. 3




INVENTOR.
Ralph K. Pottle
BY Ivan D. Thornburgh
Charles H. Ernst
ATTORNEYS

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## BAG OPENING MACHINE WITH ADJUSTABLY MOUNTED BRACKET SUPPORTED ARMS

Ralph K. Pottle, New York, N. Y., assignor to American Can Company, New York, N. Y., a corporation of New Jersey

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This invention relates to bag or container opening machines and has particular reference to a machine for opening or expanding flattened or collapsed bags, flexible containers and the like and for holding them in opened position for filling.

An object of the invention is the provision of a bag or container opening machine for opening flattened, folded or collapsed, flexible bags, shipping carriers and the like into an expanded article receiving condition, and which machine has parts which can be adjusted for different sizes of containers.

Another object of the invention is the provision of a bag or container opening machine having collapsible and expandable elements which in one position permit the telescoping of a partially opened bag thereover and which in another position expands the bag or container and holds the same in condition for filling with articles, the bag thereafter being removed without disarranging the articles which have been filled in the bag.

Still another object of the invention is the provision of such a machine which is of simple construction and wherein coacting or cooperating corner bag forming arms or angle bars or elements expand a collapsed or partially opened bag and hold it in article receiving condition, the expanded bag and the articles filled therein being supported by said angle bars during the filling operation.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a front elevational view of a bag opening machine embodying the present invention;

Fig. 2 is a side elevational view of the machine, shown in Fig. 1, illustrating a bag or shipping carrier held in a partially opened position and in a fully opened position, the bag being indicated by dot and dash lines; and

Fig. 3 is a perspective detail showing part of a corner bag forming arm with part broken away, and in section.

As a preferred embodiment of the invention, the drawings illustrate a machine for opening flattened, folded or collapsed bags, flexible containers, shipping carriers and the like designated by the letter A, which, upon being partially

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opened and slipped over collapsible and expandable corner bag forming arms or angle bars of the machine, may be expanded into article receiving condition.

The bag A usually is made of flexible material such as paper and when expanded preferably forms a square or a rectangular container. Such containers may be of various sizes or proportions, a rectangular form being illustrated in Fig. 1 of the drawings. These containers are used for the shipping of articles such as empty cans from the can making factory to the cannery.

Such a bag A is formed with four side walls indicated by the letters *a*, *b*, *c* and *d*, each wall having a marginal edge at one end bent or folded and secured to a bottom wall *e* (Fig. 2). The bag A just described is received, for example, at a can manufacturer's plant in a flattened, folded or collapsed form and is used for packing empty cans or containers which usually are formed with a tubular body having a bottom end secured thereto. Such cans are in a completed form ready for filling at a cannery (except for the top ends which are usually shipped separately). The complete, ready-to-fill cans are packed in bags or flexible containers A by the can maker for the purpose of shipping them to the canner or packer who fills the desired product therein.

The bag opening machine embodying the present invention comprises collapsible and expandable corner bag forming arms or angle bars B for opening the bags A and for holding them in expanded position and supporting them while they are being filled. There preferably are four such arms, each comprising an elongated angular member located at the upper and lower corners at each side of the machine. The corner bag forming arms B are pivotally carried in suitable bearings which are mounted on an open, rectangular frame C, which has an adjustable crossbar 11, and which cooperates with the frame in varying the position of the corner bag forming arms to accommodate bags of varying dimensions. The frame C is secured on clamping blocks 12, which are slidably clamped to vertical posts or pipes 13 mounted on a base 14 of the machine.

The corner bag forming arms B (Fig. 3) are formed from elongated angle irons 15, which have one end thereof secured in a V-shaped slot 16, as by welding, in a corner block 17. The blocks 17 are each secured in a slot 18 of a rocker shaft 19 (see also Fig. 1). The shafts 19 which rock the corner bag forming arms are journaled or carried in suitable bearings 24 which are formed

in upper L-shaped corner brackets 25, 26 and in lower L-shaped corner brackets 27, 28. The upper angular corner brackets 25, 26 and the lower angular corner bracket 27 are adjustably mounted for the purpose of accommodating the bag forming arms B to varying sizes of square or rectangular bags. The upper bracket 25 is adjustable on the crossbar 11, the upper bracket 26 and the lower bracket 27 being adjustable on the frame C. The lower angular corner bracket 28 is secured to the frame C and for the purpose of this invention does not require adjustability.

The open frame C comprises a pair of spaced vertical bars 34, 35, an upper horizontal bar 36 and a lower horizontal bar 37. These horizontal and vertical bars are secured together at their corners by plates 38, which are bolted to the respective bars. The adjustable bar 11 is secured at one end in the frame C by a clamping bracket 39 and at the opposite end by the upper corner bracket 26.

Vertical adjustment of the frame parts of the machine to accommodate different vertical dimensions of the bag A as viewed in Fig. 1 may be obtained by changing the position of the angular corner bracket 26 and the clamping bracket 39. For this purpose a series of spaced threaded openings 42, 43 are formed in the respective vertical bars 34, 35. This permits vertical adjustment of the crossbar 11 upwardly or downwardly. Provision is made in the crossbar 11 and in the lower frame bar 37 for accommodating them to varying horizontal dimensions of the bag A as viewed in Fig. 1. For this purpose threaded openings 44, 45 are provided for horizontal adjustment of the upper corner bracket 25 and the lower corner bracket 27.

The arms B hereinbefore described are actuated in any suitable manner through a plurality of the telescopical shafts which are carried in suitable bearings in the corner brackets. These shafts are actuated in unison from a foot treadle 48 which is formed on the front end of a treadle extension 52, which is carried on a pin 53, mounted in a boss 54 arising from the base 14. The treadle extension 52 is connected to the lower end of a link connection 55 by a pin 56. The upper end of the link connection 55 is connected to a rocker arm 57 by a pin 58.

Rocker arm 57 is keyed to a horizontal telescopical shaft 62 which is carried in suitable bearings 63 which are mounted on the lower corner bracket 28. Shaft 62 is telescoped at one end in a keyed sleeve 64, which is carried in a bearing 65 mounted on the lower corner bracket 27. The outer ends of the shaft 62 and the sleeve 64 are formed with bevel gears 66, 67 which mesh with and operate bevel gears 68 formed at the lower ends of the two lower corner shafts 19. Actuation of the shaft 62 by means of the foot treadle 48 thus swings the lower corner bars B from a collapsed to an expanded position or vice versa (Figs. 1 and 2).

The upper corner bars are operated in unison with the lower corner bars and for this purpose vertical telescopical shafts 72 are provided, there being one on each side of the machine as viewed in Fig. 1. Each shaft 72 is mounted in spaced bearings 73 formed in the respective L-shaped corner brackets 27 and 28. The shafts 72 are telescopically carried in the keyed sleeves 74 (see section at the right hand side as viewed in Fig. 1 of the drawings). The sleeves 74 are carried at their upper ends in suitable bearings 75 formed in the respective corner brackets 25, 26. Each shaft 72, like shaft 62 hereinbefore described, is formed with a bevel gear 76 at its lower end. These gears mesh with and are driven by bevel gears 68 formed on the upper ends of the two lower shafts 19.

In similar manner the sleeves 74 are formed with bevel gears 77 which engage with bevel gears 68 formed on the lower ends of the upper shafts 19 of the upper corner arms. Actuation of the foot treadle 48 thus rocks the shafts 62, 72 and the sleeves 64 and 74 in unison thereby effecting the simultaneous collapse or expansion of the corner bag forming arms.

The arms B are retained in a normal collapsed condition (see dot and dash lines Fig. 1) by means of a tension spring 82, which has one end connected to the treadle extension 52 and the other end to a screw ring 83 secured in a horizontal stationary platform or wall support 84, which extends outwardly from the open frame C and is carried on a vertical pipe or tube 85, arising from the base 14.

When the foot treadle 48 is depressed the arms B are swung to their expanded position as indicated by dot and dash lines in Fig. 2. Provision is made to maintain the arms B in their expanded position so that empty cans or other articles may be packed into the bag or shipping carrier A while the latter is in article receiving condition. For this purpose a locking latch 92 is pivotally carried on a pin 93 secured in a lug 94 formed integrally on the base 14. The latch 92 is actuated by a spring 95 engaging against an arm 96 of the locking latch. Latch 92 thus is normally disposed in a position for receiving an edge of the foot treadle as it is depressed downwardly and engaged beneath the shoulder section on the locking latch.

In order to restore the corner bag forming arms B to their collapsed position, disengagement of the locking latch 92 from the foot treadle is necessary. This is accomplished by merely pressing the latch against its holding spring 95, allowing the return of the foot treadle to its normal position (Fig. 2).

Operation of the machine hereinbefore described is as follows: Bag A as indicated by the letter D (Fig. 2) is partially opened at its mouth, such a bag then is slipped or telescoped over the outer ends of the four corner bag forming arms while they are in converging or collapsed position. The partially opened bag then is slipped further onto the arms B to open the sides of the bag. The arms B then are swung to their fully expanded position as indicated by the dot and dash lines E (Fig. 2) by depressing the foot treadle 48 as previously described. This action fully opens the bag or carrier A into article receiving condition.

After full expansion of the arms B, the bag or carrier A is brought into square or rectangular shape as indicated by the dot and dash lines F (Figs. 1 and 2), the lower wall C of the bag being supported by the horizontal platform 84 as the bag or container A is filled with empty cans or other articles which are passed through the open frame of the machine and into the fully opened mouth of the bag.

The bag or container A upon being filled with empty cans or other articles then may be slipped off the corner bag forming arms B while they are still in expanded position by reversibly sliding the filled bag on the platform 84. This is effected without disturbing the arrangement of the cans or other articles in the filled bag. The filled bag

is then closed and sealed at its open end in any suitable manner and is now ready for shipment to the cannery or other packing place.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. In a machine for opening bags and the like and for holding them in position for filling, the combination of an open frame through which articles are passed during said filling, a plurality of brackets mounted on said frame, said brackets comprising upper brackets vertically movable on the frame to adapt the machine to one dimension of a bag to be expanded and lower brackets one being horizontally movable on the frame and cooperating with a horizontally movable upper bracket to adapt the machine to another dimension of the bag, rocker shafts journaled in said brackets, a bag forming arm secured to each of said rocker shafts, telescopical shafts carried on said brackets and having an interconnection at each of its ends with an end of a said rocker shaft for actuating said telescopical shafts and said rocker shafts, a connecting linkage secured to one of said telescopical shafts for swinging said arms in unison to a collapsed position and to an expanded position, and a foot treadle for operating said connecting linkage, the positions of said brackets and telescopical shafts being in accordance with the size and shape of a bag to be expanded, said arms being disposed in said collapsed position to receive a partially opened bag when in a collapsed position, the said arms thereafter being expandable within the bag to open it into article receiving condition.

2. In a machine for opening rectangular bags and the like and for holding them in position for filling with articles, the combination of a rectangular frame, a bracket mounted diagonally on each corner of said frame, some of the brackets being slidable on said frame into selected positions in accordance with the dimensions of the bag being opened, rocker shafts journaled in said brackets, corner bag forming arms mounted on said rocker shafts to swing diagonally inwardly into collapsed substantially pyramidal formation to receive a partially opened bag thereon and to swing outwardly into expanded substantially parallel formation in which each of said arms engages a corner of the bag to hold the latter in open and extended position for filling, axially adjustable actuating means mounted between and operatively connected with adjacent rocker shafts to swing said arms in unison, and a bag supporting platform secured to said frame and disposed parallel to said arms when the latter are in extended position, for supporting a wall of the bag during the filling operation.

3. In a machine for opening bags and the like and for holding them in position for filling with articles, the combination of a frame, a plurality of brackets mounted on said frame, some of said brackets being slidable on the frame into selected positions in accordance with the dimensions of the bag being opened, an arm pivotally carried in each of said brackets, rotary means carried on said brackets for swinging said arms



to an expanded formation in which each of said arms engages a corner of a bag to hold the latter in open and extended position for filling, and adjustable intermediate means between said rotary means of adjacent brackets and cooperable with said rotary means for swinging said arms in unison, adjustment of said intermediate means being effected by sliding of said brackets on said frame in accordance with the size and shape of a bag to be expanded.

4. In a machine for opening bags and the like and for holding them in position for filling with articles, the combination of a frame, a plurality of brackets mounted on said frame, some of said brackets being slidable on the frame into selected positions in accordance with the dimensions of the bag being opened, a rocker shaft journaled in each of said brackets, a bag forming arm secured to each of said rocker shafts, gear means on said rocker shafts for simultaneously swinging said arms to an expanded formation in which each of said arms engages a corner of a bag to hold the latter in open and extended position for filling, telescopical shafts extended between adjacent brackets, said telescopical shafts having gear means meshing with said rocker shaft gear means, and actuating means operating through said gear connected shafts for swinging said arms to a normally collapsible formation to receive a partially opened bag thereon and to an expanded formation within the bag to hold the latter in open and extended position for filling.

5. In a machine for opening bags and the like and for holding them in position for filling, the combination of an open frame through which articles are passed during said filling, a bar adjustably secured to said frame and coactive therewith, a plurality of brackets secured to said frame and to said bar, one of said brackets being movable on said bar and other brackets being movable on said frame in accordance with the dimensions of the bag being opened, a bag forming arm pivotally carried in each of said brackets, and means operable through all selected positions of said brackets for swinging said arms to a collapsed position to receive a partially opened bag, and to an expanded position with said arms engaging within the corners of the bag to open the bag and to hold it in article-receiving condition.

6. In a machine for opening bags and the like and for holding them in position for filling, the combination of an open frame through which articles are passed during said filling, a plurality of brackets mounted on said frame, some of said brackets being slidable on the frame into selected positions in accordance with the dimensions of the bag being opened, a rocker shaft journaled in each of said brackets, a bag forming arm secured to each of said rocker shafts, telescopical shafts carried on and interposed between adjacent brackets, gears secured to each of said telescopical and said rocker shafts with adjacent gears meshing for operating the shafts in unison, and actuating means having application to one of said shafts for swinging said arms to a collapsed position to receive a partially opened bag, and to an expanded position within the bag to open the bag and hold it in article-receiving condition.

7. In a machine for opening bags and the like and for holding them in position for filling, the combination of an open frame through which articles are passed during said filling, a plurality

of brackets secured to said frame, some of said brackets being slidable on said frame into selected positions in accordance with the dimensions of the bag being opened, rocker shafts journaled in said brackets for oscillating movement, a bag forming arm carried by each rocker shaft for engaging inside of a bag to be opened, axially adjustable oscillating means interposed between and connected to adjacent rocker shafts for swinging said arms in unison to a collapsed position to receive a partially opened bag in its collapsed form and to an expanded position to open the bag for filling, actuating means connected with said oscillating means for operating the latter to collapse and to expand said bag forming arms, and means operable on said actuating means for locking said arms in expanded position within a bag during the filling operation.



RALPH K. POTTLE.


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