

June 24, 1930.

W. CAMERON

1,765,758

MECHANISM FOR OPERATING ON CAN BODIES

Filed March 4, 1927

3 Sheets-Sheet 1

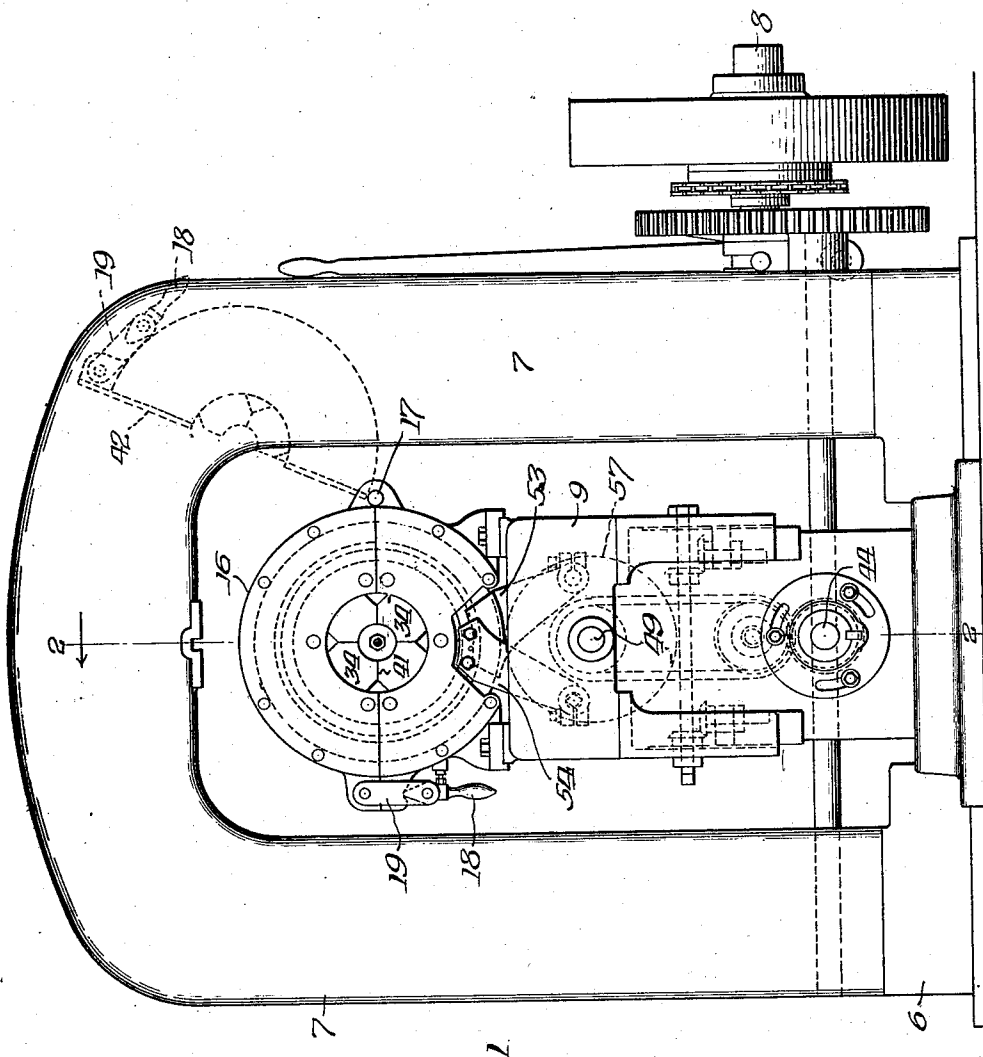


Fig. 1

Witness:

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Inventor

William Cameron

By *Ira Wilson* Attorney

June 24, 1930.

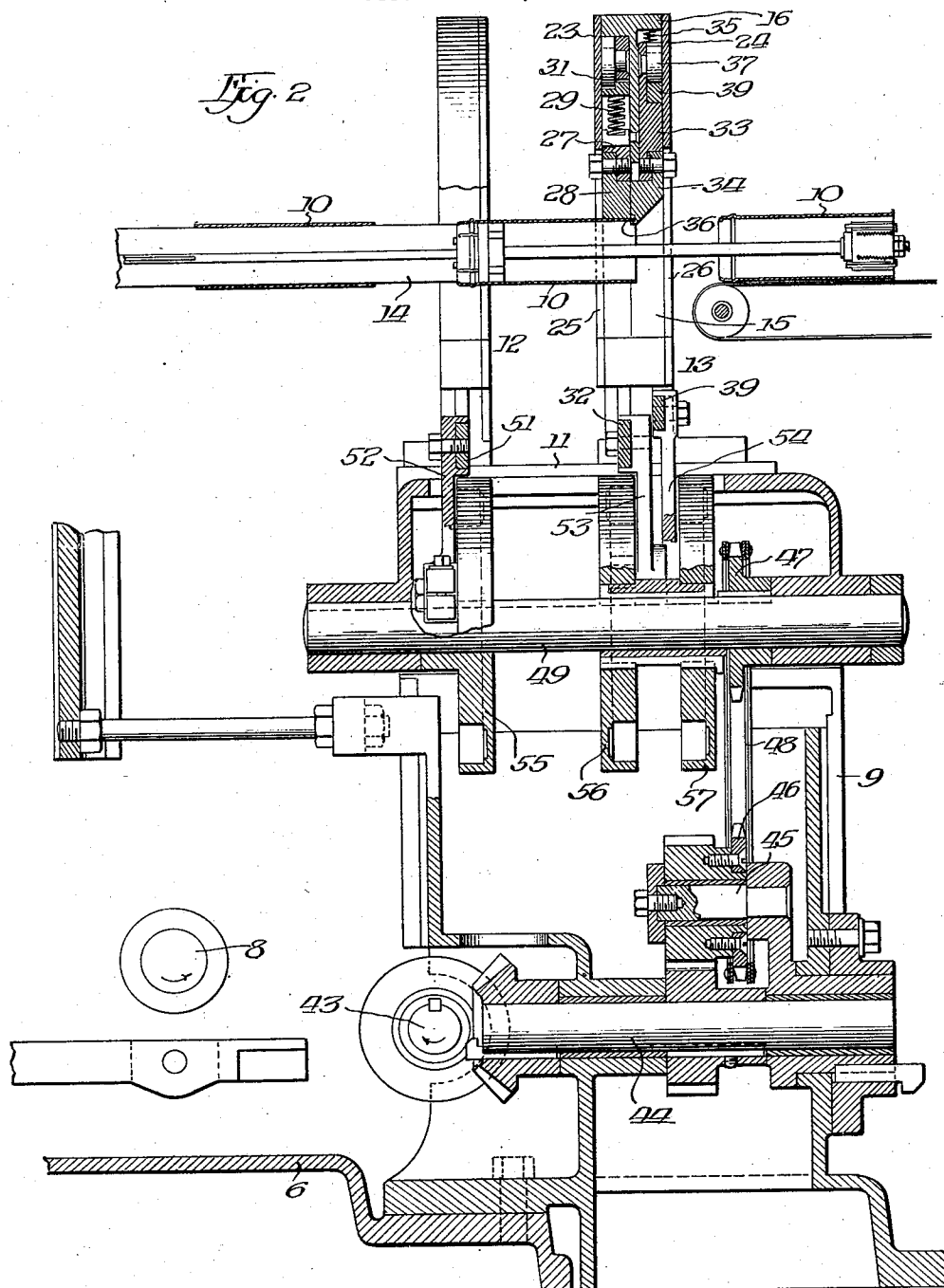
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MECHANISM FOR OPERATING ON CAN BODIES

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3 Sheets-Sheet 2



Witness:

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June 24, 1930.

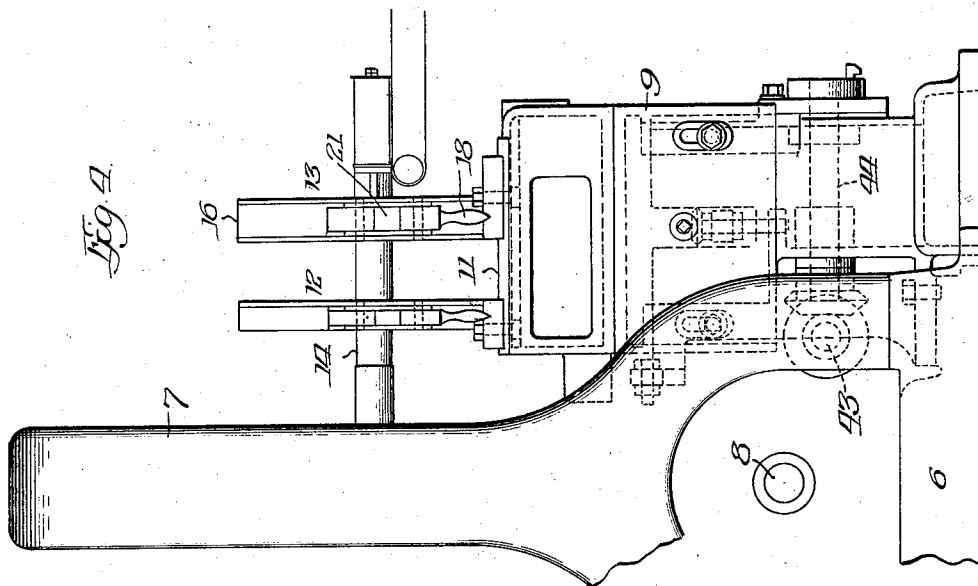
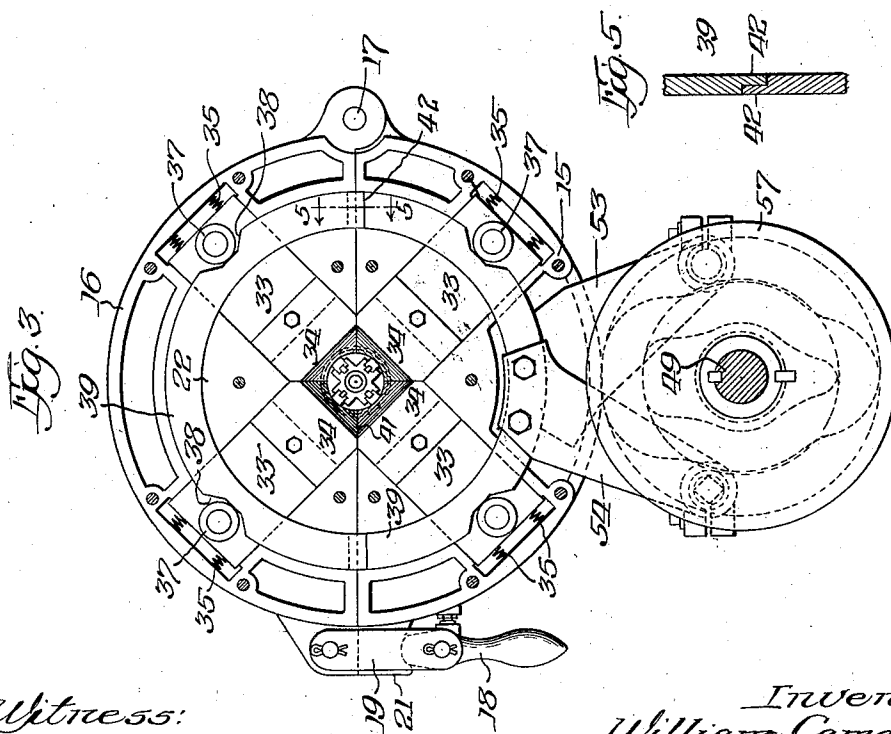
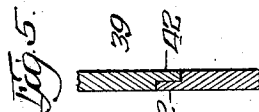
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1,765,758

MECHANISM FOR OPERATING ON CAN BODIES

Filed March 4, 1927

3 Sheets-Sheet 3



Witness:

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UNITED STATES PATENT OFFICE

WILLIAM CAMERON, OF CHICAGO, ILLINOIS, ASSIGNOR TO CAMERON CAN MACHINERY CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

MECHANISM FOR OPERATING ON CAN BODIES

Application filed March 4, 1927. Serial No. 172,587.

This invention relates to machines for operating on can bodies and aims to improve upon the type of machine represented generally by my co-pending application for can body making machine, Serial No. 62,424, filed October 14, 1925 which has matured into Patent No. 1,624,213, dated April 12, 1927.

I have found it very desirable in machines of the above type where the flanging and beading dies are supported in die heads surrounding the can body to be able to obtain access to said can body and the parts in said heads within a minimum space of time.

It is accordingly one of the principal objects of this invention to provide a machine of the above type having a die head adapted to inclose the can body, the construction of said head being such that access to the can body may be readily obtained.

It is also an object of this invention to provide a machine of the above type having a die head in which access to the dies therein may be obtained with a maximum of convenience for inspection, renewal or repair.

I have also found it generally advantageous and particularly so in view of the high speed of the machine to drive the oscillatory die actuating rings of the type disclosed in my co-pending application aforesaid more positively and directly from the cam shaft by eliminating the use of linkages and springs for maintaining the cam followers in contact with the cams.

It is therefore another object of this invention to provide an improved and novel means for driving the oscillatory die actuating members of a machine of the above type.

Other and further objects of this invention will become apparent as the same becomes better understood from an examination of the specification and claims in connection with the accompanying drawings wherein:

Fig. 1 is a rear elevation showing the discharge end of a can body making machine embodying this invention;

Fig. 2 is an enlarged detail fragmentary view partly in section and with parts omitted

illustrating the means for driving the oscillatory members for actuating the dies;

Fig. 3 is an enlarged rear elevation with parts omitted of the flanging die head, the rear cover plates of said head being removed;

Fig. 4 is a fragmentary view from the left of Fig. 1; and

Fig. 5 is an enlarged fragmentary section taken at the line 5—5 of Fig. 3, showing the segmentary parts of one of the oscillatory rings.

Referring to the drawings more particularly reference character 6 indicates generally the base of a can body forming machine of the same general type as that represented by my aforesaid co-pending application. The structure of the machine illustrated, so far as the mechanism for feeding and notching the blanks is concerned, may be of any preferred type and only the rear portion of the machine is shown.

Near the rear end of the machine is located an arch 7 adapted to contain suitable mechanism (not shown) driven from the main shaft 8 supported transversely of said arch for actuating the forming rings (not shown) substantially as disclosed in said co-pending application.

A frame 9 of box-like construction is bolted at its forward end to the base 6. The frame 9 is provided with an upper flat surface 11 on which is secured die heads 12 and 13, respectively, containing the beading and flanging dies, respectively. The heads 12 and 13 are disposed at the discharge end of the horn 14 and are axially aligned therewith as in said co-pending application. The can bodies 10 are fed along the horn 14, are lock seamed, delivered to the beading and flanging dies, and discharged therefrom in substantially the same manner as in said co-pending application. Likewise the individual beading and flanging dies carried by the heads 12 and 13, respectively, are substantially the same and are actuated by oscillatory rings more or less the same as in said co-pending application.

I have found it desirable, however, in

order to obtain access to the can body in case of a jam or to conveniently examine the interior of the die heads for inspection, renewal or repair to make the same in sections which are relatively movable. To this end the head 13 includes a lower semi-cylindrical section 15 which, incidentally, is bolted to the surface 11 preferably in a manner which will permit of longitudinal adjustment on said surface to accommodate different lengths of cans. An upper semi-cylindrical section 16 of the head 13 is hinged as at 17 at one end to a corresponding end of the section 15. The ends of the sections 15 and 16 are releasably locked together by a dog 18 pivoted on the lower end of a toggle 19 connected to the section 16. The dog 18 is normally in locking engagement with an integral keeper 21 on the section 15. The opposite faces of the sections 15 and 16 are recessed so that together they provide a plurality, four at the front and four at the rear, of guide ways the walls of said guide ways being formed by ribs 22. Semi-circular front and rear plates 23 and 24, respectively, are provided on the section 16 and similar plates 25 and 26 are provided on the section 15. In each of the front guide ways there is disposed a reciprocable die carrier 27 provided at its inner end with a segmental holding or embracing die 28 suitably secured thereto. These dies are each normally held out of operative relation with the can body by springs 29 one for each carrier and are adapted to be forced inwardly into operative relation with respect to said body by corresponding rollers 31 carried by an oscillatory ring 32.

In each of the guide ways at the rear of the head 13 there is provided a die carrier 33 equipped at its inner end with a flanging die 34 suitably secured thereto. The carriers 33 are normally urged inwardly by springs 35 in which position segmentary grooves 36 one in the inner end of each die together form an annular groove to receive the end of the advancing can body. Each carrier 33 is provided near its outer end with a roller or cam follower 37 adapted to be engaged by a cam surface 38 in an oscillatory ring 39 when the latter is oscillated so that the dies 34 will be drawn radially outwardly to expand the end of the can body into a radially disposed flange.

The operation of the dies 28 and 34 per se to effect the flanging operation on the can body is substantially the same as in my aforesaid co-pending application. The inner ends of the dies 28 and 34 converge toward said ends so that when they are in innermost position with the dies 28 completely embracing the can body and the dies 34 forming a complete circular groove adapted to receive the end of the can body the edges of the dies carried by the upper

section 16 and the edges of the dies carried by the lower section 15 will extend to the line of division between the said sections.

Each of the reciprocatory rings 32 and 39 is divided into two semi-circular portions as indicated in Fig. 5 with the ends of such portions overlapping as at 42. Thus the entire mechanism contained in the upper section 16 of the die head 13 may be removed very readily for inspection, renewal or repair or to obtain access to the can body by simply swinging the upper half of the housing upwardly about the pivot 12 into the dotted line position shown in Fig. 1.

The beading die head 12 is likewise in two semi-circular sections similarly hinged and locked together. The die carriers are substantially the same as the carriers 27 and are operated by a sectional cam ring similar to the ring 32. The only difference is that the dies carried by the carriers are external beading dies and are adapted to cooperate with suitable internal beading dies in substantially the same manner as in my aforesaid co-pending application.

The manner in which the oscillatory rings of the die heads 12 and 13 are oscillated will now be described. A shaft 43 suitably mounted above the base 6 and geared to the driving shaft 8 is in turn geared to an intermediary shaft 44 journaled in the frame 9 at right angles to the shaft 43. The shaft 44 through the intermediary of a short shaft 45 geared thereto, sprockets 46, 47 and chain 48 drives a cam shaft 49. In order that the oscillatory rings may be more positively and directly driven by the cams on the shaft 49 said rings are each provided with radially extending rigid arms bolted thereto. The oscillatory ring 51 for the beading die head 12, for instance, is provided with an arm 52 extending through a suitable opening in the lower section of said head and a transverse slot in the top of frame 9. Oscillatory rings 32 and 39 of the head 13 are provided with arms 53 and 54, respectively, likewise extending through suitable openings in the lower section 15 of said head and transverse slots in the top of frame 9. The lower end of each of the arms 52, 53 and 54 is provided with a cam follower in the form of a roller projecting laterally of the arm and adapted to track in an axially cut cam groove formed in the side face of the corresponding one of the cams 55, 56 and 57, respectively. The cam grooves of the different cams are adapted to confine their respective followers thereto so that it is not necessary to use springs for maintaining the followers in engagement with the cams. The shape of the different grooves in the cams 55, 56 and 57 is such as to effect substantially the same timing in regard to the operation of the dies as in my said co-pending application.

I am aware that many changes may be made and the many details of construction varied without departing from the principles of this invention and I therefore do not wish to be limited to the details shown and described.

I claim:

1. In a can body making machine, the combination of a tool adapted to operate upon a can body, a rotatable oscillatory member for actuating said tool and means for driving said member including a shaft, a cam thereon, the latter having a track adapted to confine a follower thereto and a connection between said cam and member provided with a cam follower confined to said track.

2. In a can body making machine, the combination of a tool adapted to operate upon a can body, a rotatable oscillatory member for actuating said tool and means for driving said member including a shaft, a cam thereon, the latter having a track adapted to confine a follower thereto and an arm rigid on said member and provided with a follower confined to said track.

3. In a can body making machine, the combination of a tool adapted to operate upon a can body, a rotatable oscillatory member for actuating said tool and means for driving said member including a shaft, a cam thereon having a track in the side face thereof adapted to confine a follower and a connection between said cam and member provided with a follower confined to said track.

4. In a can body making machine, the combination of a tool adapted to operate upon a can body, a rotatable oscillatory member for actuating said tool and means for driving said member including a shaft, a cam thereon provided with a track in the side face thereof adapted to confine a follower thereto and an arm rigid on said member and provided with a follower confined to said track.

5. In a can body making machine, the combination of a die head provided with radially movable dies adapted to surround a can body for operating thereon and an oscillatory member for actuating said dies, and means for driving said member including a shaft, a cam thereon, the latter having a track adapted to confine a follower thereto and a connection between said cam and member provided with a follower confined to said track.

6. In a can body making machine, the combination of a die head provided with radially movable dies adapted to surround a can body for operating thereon and an oscillatory member for actuating said dies, and means for driving said member including a shaft, a cam thereon, the latter having a track adapted to confine a follower thereto

and an arm rigid on said member and provided with a follower confined to said track.

In witness of the foregoing I affix my signature.

WILLIAM CAMERON.

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