F. J. SMITH.

CAN BODY FLANGING MACHINE.

APPLICATION FILED SEPT. 12, 1911.

1,114,301.

Patented Oct. 20, 1914.

3 SHEETS—SHEET 1.

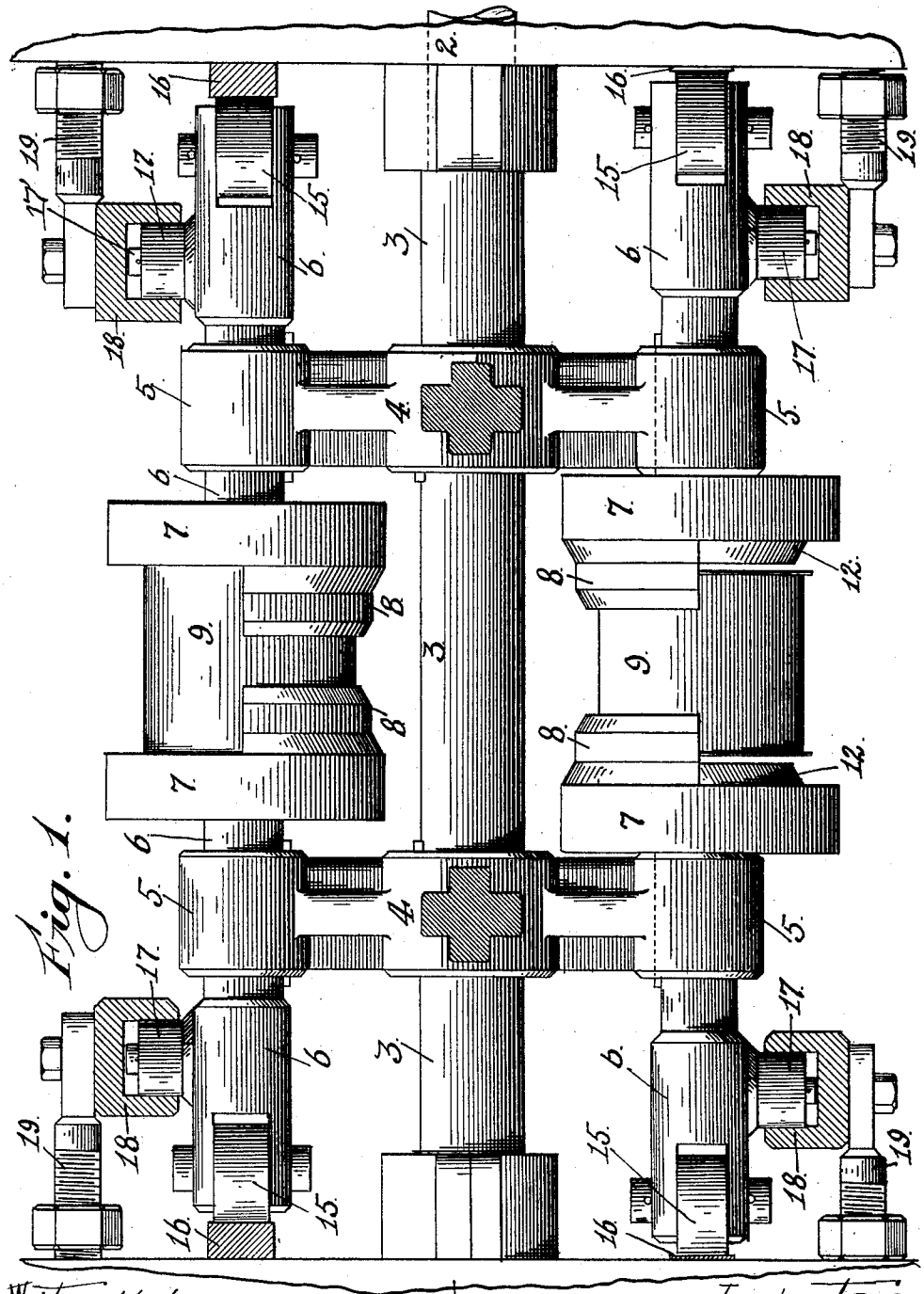


Fig. 1.

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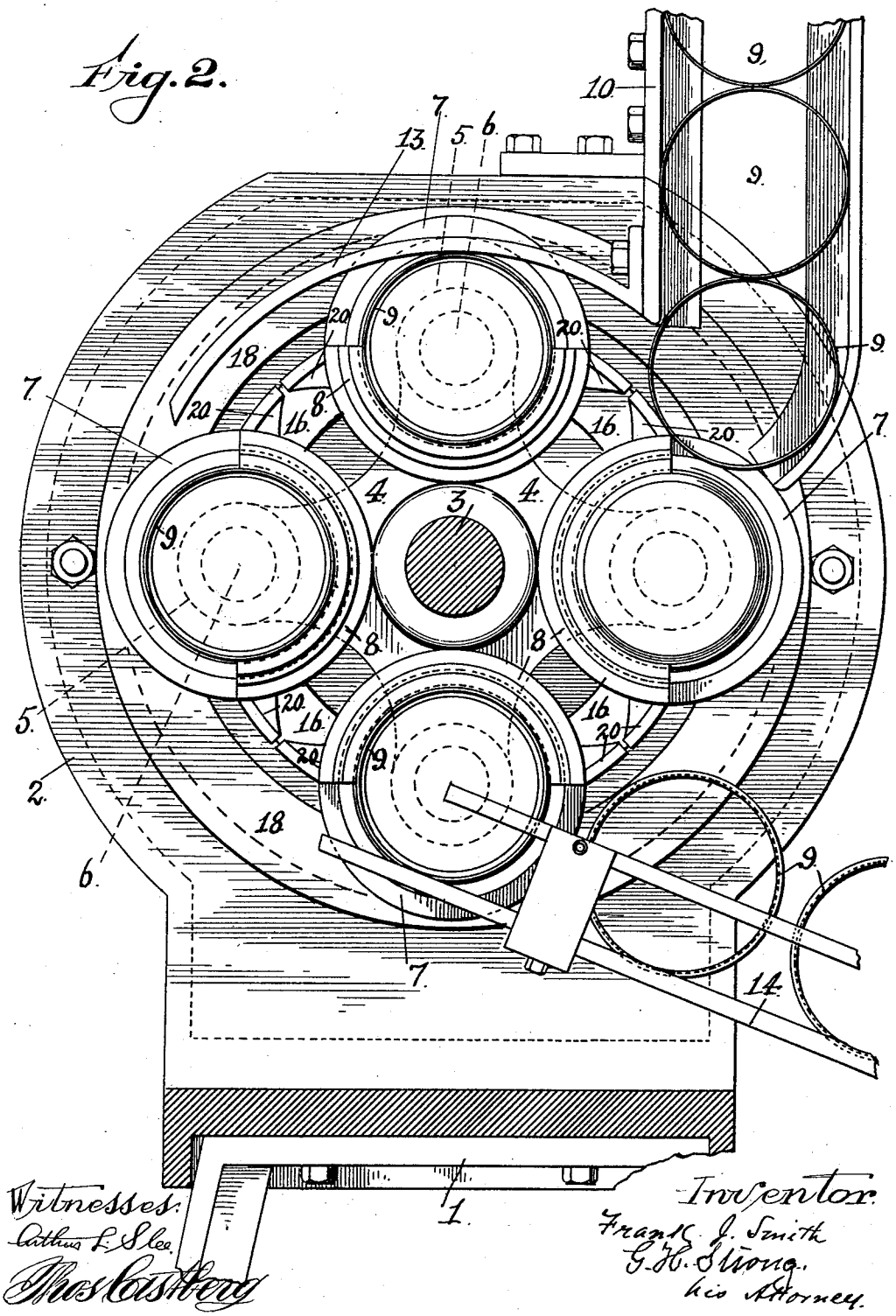
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

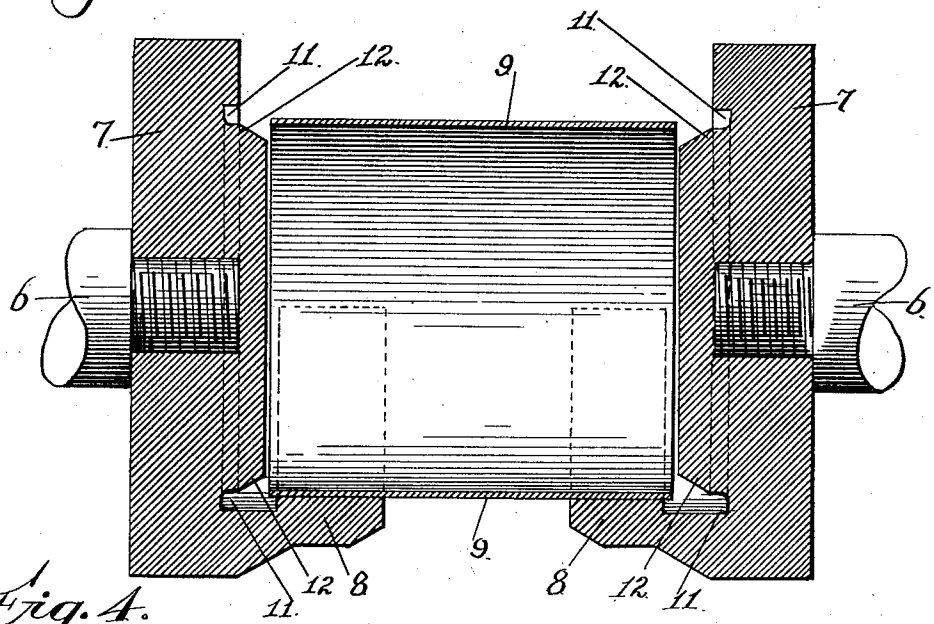
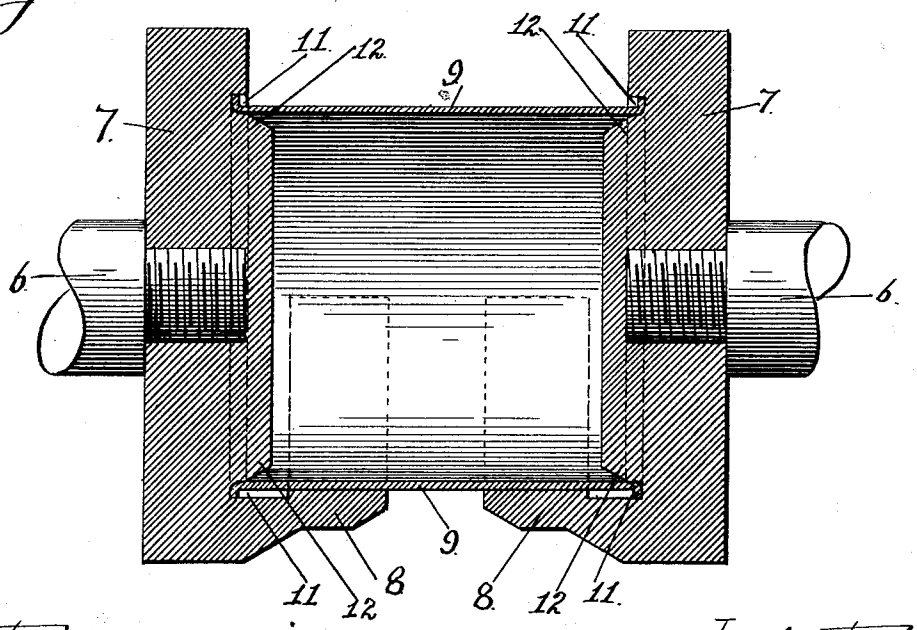


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANK J. SMITH, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO CALIFORNIA FRUIT CANNERS ASSOCIATION, OF SAN FRANCISCO, CALIFORNIA.

CAN-BODY-FLANGING MACHINE.

1,114,301. Specification of Letters Patent. Patented Oct. 20, 1914.

Application filed September 12, 1911. Serial No. 648,848.

To all whom it may concern:

Be it known that I, FRANK J. SMITH, citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Can-Body-Flanging Machines, of which the following is a specification.

My invention relates to the class of machines for making the flanges on the ends of can-bodies, which flanges are intended to be assembled with the flanges on the can heads, and said assembled flanges bent and doubled together and pressed down in the now well known operation of double seaming.

The object of my invention is to provide a simple and effective machine for flanging the ends of the can-body, and to this end my invention consists in the novel constructions, arrangements and combinations of parts which I shall hereinafter fully describe and claim, by reference to the accompanying drawings in which—

Figure 1 is a plan view of my machine, the flanging-heads in the upper and lower positions, and the can feed chute being omitted. Fig. 2 is a vertical section of the machine. Fig. 3 is a sectional view, enlarged, of one pair of flanging-heads, showing them in position about to operate on a can. Fig. 4 is a similar view showing the flanging-heads pressed in and the flanges on the can thereby formed.

The frame of the machine is composed of the stand 1 and the end plates 2. In the end plates is mounted the main shaft 3, to which a continuous rotation is to be applied by suitable power. Upon the shaft 3 are mounted the spiders 4, two in number, and here shown as having four arms. In bearings 5 on the extremities of the arms of the spiders 4 the stems or spindles 6 of the flanging heads 7 are slidably and non-turnably mounted. Their inner surfaces are formed with the annular grooves 11, from the inner walls of which project the converging tapering portion 12. Each flanging head has diametrically opposite peripheral projections 20, as shown in Fig. 2, to support the bottom can body in the chute, and prevent it from entering in the spaces between the successive pairs of heads. On their inner sides the flanging heads 7 are formed with semicircular rests 8, which are adapted to receive and support the can-body 9 while it is being flanged. The semicircular rests 8 have grooves 8′ in front of the plane of the tapering portions 12 and extending endwise toward and intersecting with the bottom wall of the groove 11.

It will now be seen that as the flanging heads revolve, the can bodies resting against supports 20, Fig. 2, will successively drop by gravity onto the successive pairs of rests 8 of the flanging heads. In this position they are temporarily held by an overlying concentric guard rail 13, Fig. 2. As the opposing flanging heads reach the upper portions of their revolution about the shaft 3, they are moved toward each other from the position shown in Fig. 3 to the position shown in Fig. 4. During this movement the tapering projecting portions 12 of said heads enter the open ends of the can-body, forming it perfectly cylindrical as it approaches the largest diameter. As the ends of the can-body come in contact with the rounded corners of the grooves 11, they are turned outwardly, forming flanges, the diameters of which are determined by the width of the grooves at the bottom. As the revolution of the machine continues, the flanging heads are withdrawn until one or the other of the flanges of the can-body comes in contact with the shoulder of the groove 8′, and as the flanging heads continue to withdraw, the can-body will be pulled out of the opposite flanging heads in which it may have jammed; the shoulder of the groove thus acting as a positive extractor. The flanging heads having been carried around by the shaft 3 to the lower portion of their revolution, and the rests 8 of the heads being now inverted, the can-body, now free, will drop out of said heads by gravity and move away in the discharge runway 14. In order to actuate the flanging heads, rollers 17 are journaled on pins 17′, projecting from the spindles 6 and these rollers travel in annular channeled cam-tracks 18 attached to the plate 2 and which are adapted to move the heads to and from each other. When the heads reach nearly a point where the flanges begin to be formed on the can-body, rollers 15, which are journaled in the ends of the spindle 6, come in contact with adjustable cam-tracks 16 on the plate 2, Fig. 1, which force the heads toward each other and from the flanges. This is to

exert a direct pressure on the center of the heads, and this cam does not extend beyond where it is required to do this work. In order to secure a proper adjustment of the flanging head 7, the cam-tracks 18 are carried by adjustable screw-hangers 19.

An important feature in this invention is the positive, effective and accurate structure which extracts the flanged body from the flanging heads and bring it to a position where it will be free to move out of the machine. This structure comprises the peculiarly designed seats or rests 7 with their segmental, internal recesses or grooves 8′. When the flanges have been formed and the heads move apart, one or the other of the shoulders of the groove 8′ will abut the adjacent body flange, and then further movement of the heads will pull the other flange from the channel or groove 11 in the other head until the can-body is entirely freed, as indicated at the lower part of Fig. 1.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

1. In a can-body flanging machine, the combination of a pair of opposing flanging heads, each head having a portion of its inner side extended a substantial distance to form a segmental rest to receive and support the can-body, and each head having also in its inner face an annular groove with a tapering portion rigid with the head and projecting from the inner wall of said groove, said tapering portion being adapted to enter the open end of the can-body, and the groove being adapted to form the flange on said end, means for delivering the can to the heads, means for revolving said heads past the station of can-body delivery, and means called into action by the revolution of the heads for forcing them toward and from each other.

2. In a can-body flanging machine, the combination of a frame, a rotating main shaft mounted therein, a pair of spiders carried by the shaft, a pair of opposing flanging heads each having a stem slidably mounted in the spider, and each head having a portion of its inner side extended a substantial distance to form a segmental rest to receive and support the can-body, and further formed on its inner face with an annular groove and a tapering portion projecting a substantial distance from the inner wall of said groove, and beyond the inner face of the head, whereby the flange on the ends of the can-body is formed as described, and the means for oppositely reciprocating said heads consisting of the rollers carried by the stems of the heads, the fixed graded track carried by the frame and upon which one of said rollers travels, and the channeled cam track in which the other of said rollers travels.

3. A can-body flanging machine, including a revoluble shaft, spiders carried thereby, spindles slidable and non-turnable in said spider, and carrying channeled flanging heads, said heads having central projections and having a portion at one side of the projections extended beyond the inner face of the central projection, a chute to guide can-bodies into the path of the heads, segmental rests on the heads upon which the can-bodies are received and from which they subsequently drop to a central position by the revolution of the carrier, rollers upon the flange head spindles, and fixed cams by which said rollers are actuated.

4. A can-body flanging machine, including a revoluble shaft, spiders carried thereby, spindles slidable and non-turnable in said spider, and carrying channeled flanging heads, said heads having central projections and having a portion at one side of the projections extended beyond the inner face of the central projection, a chute to guide can-bodies into the path of the heads, segmental rests on the heads upon which the can-bodies are received, and from which they subsequently drop to a central position by the revolution of the carrier, rollers upon the flange head spindles, fixed cams in which said rollers travel to reciprocate the heads, other rollers journaled transversely in the spindle ends, and thrust cams against which they travel.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANK J. SMITH.

Witnesses:
ZELA HASTINGS,
M. V. COLLINS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."