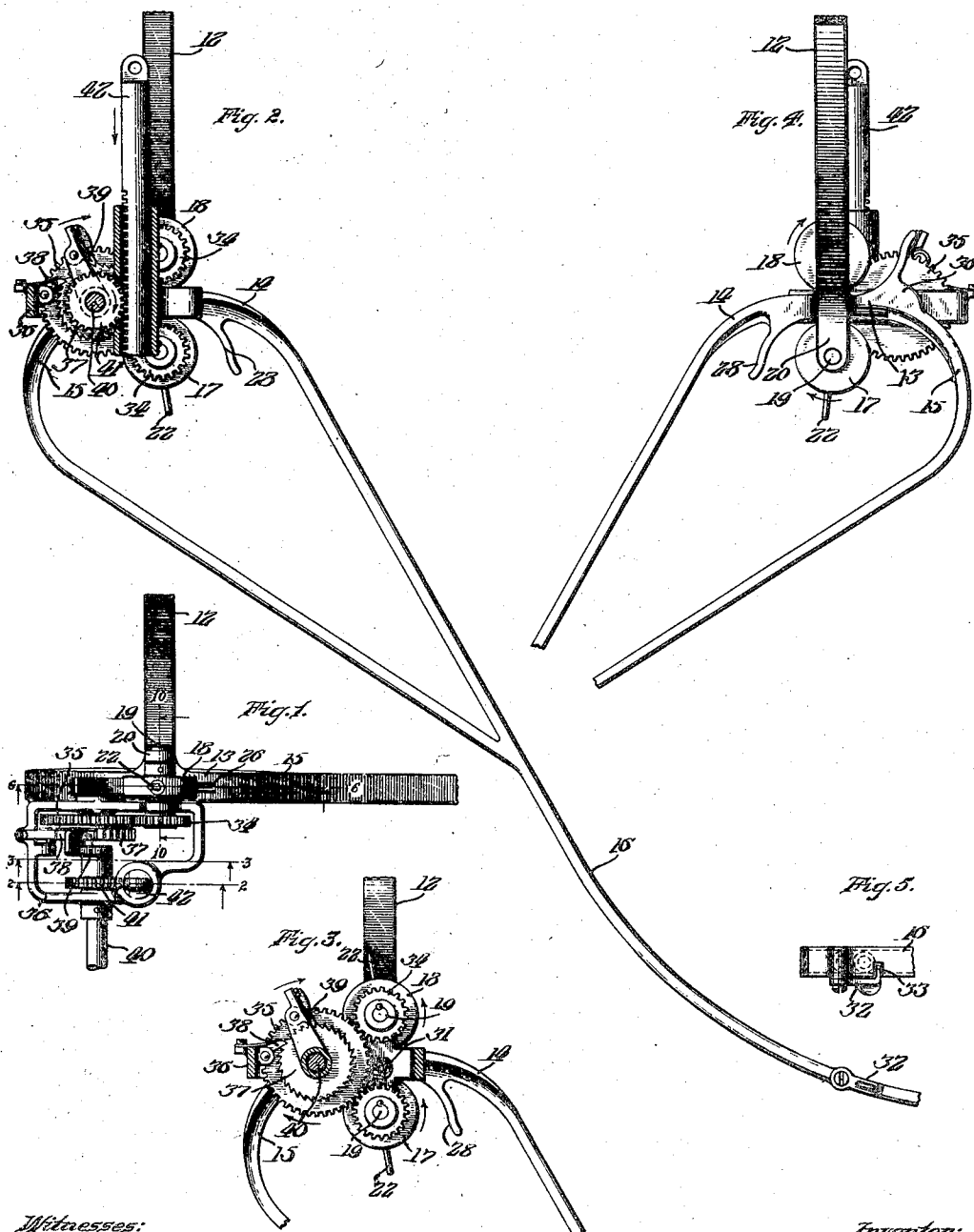


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CAP FEEDING MACHINE.  
APPLICATION FILED NOV. 14, 1913.

1,106,607.

Patented Aug. 11, 1914.

3 SHEETS-SHEET 1.



Witnesses:

W. L. Row  
John T. McLaughlin

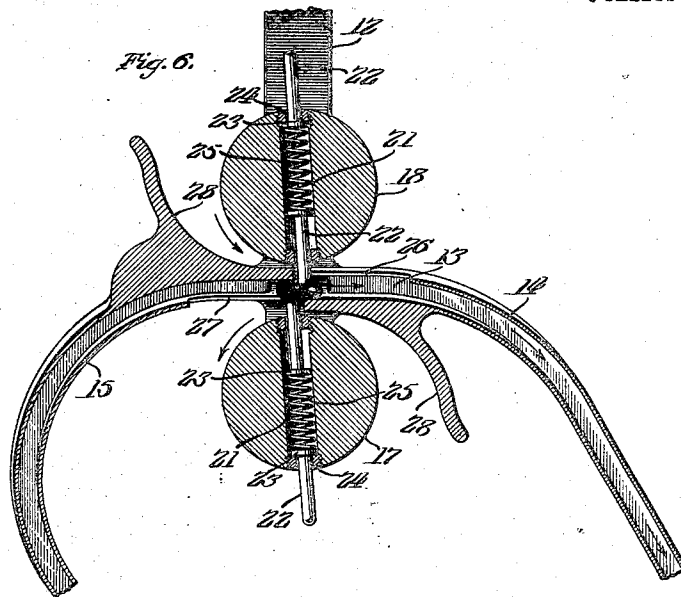
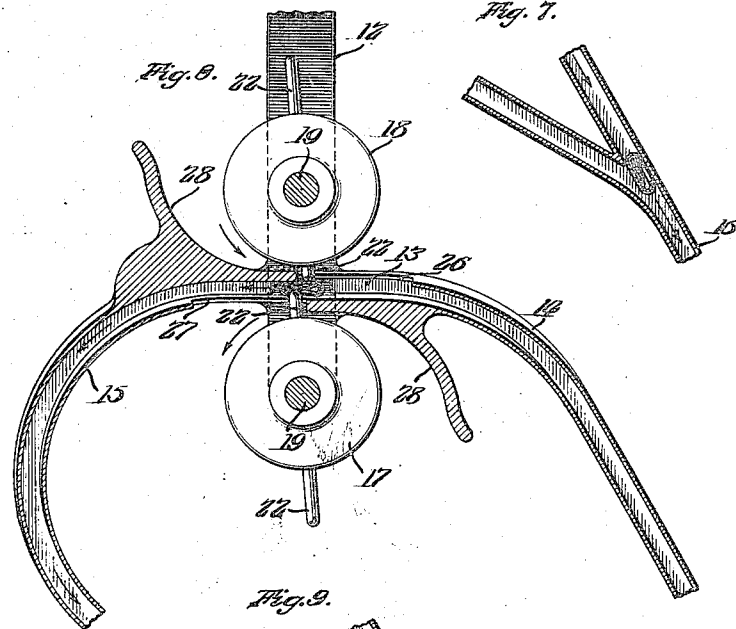
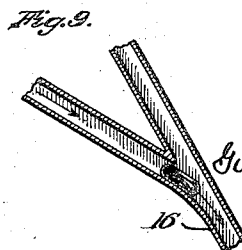
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3 SHEETS-SHEET 2.



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3 SHEETS-SHEET 3.

Fig. 10.

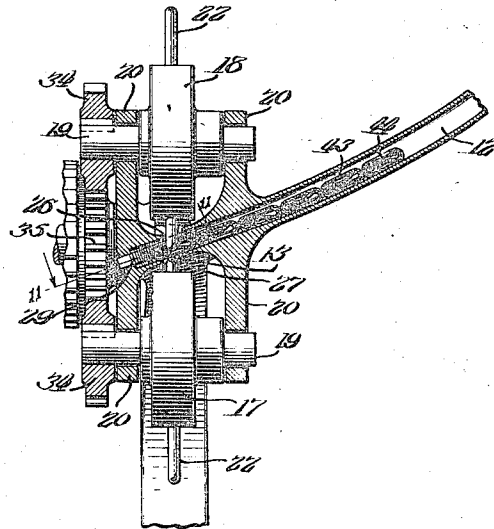
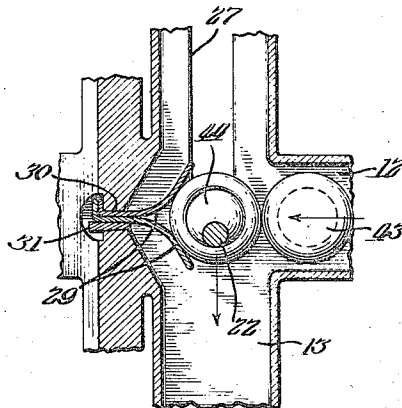


Fig. 11.



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# UNITED STATES PATENT OFFICE.

GUSTAVE J. F. WOELLERT, OF ROCKFORD, ILLINOIS.

## CAP-FEEDING MACHINE.

1,106,607.

Specification of Letters Patent.

Patented Aug. 11, 1914.

Application filed November 14, 1913. Serial No. 801,083.

*To all whom it may concern:*

Be it known that I, GUSTAVE J. F. WOELLERT, a citizen of the United States, residing at Rockford, in the county of Winnebago and the State of Illinois, have invented certain new and useful Improvements in Cap-Feeding Machines, of which the following is a specification.

In a certain class of manufacturing, dealing with the use of caps, heads, buttons and the like, and such that have opposite faces each of a different shape, it is desirable to pass the caps from a container or hopper where they are kept in large numbers, through a conduit or passage in such a manner that all the caps are faced with certain faces thereof faced in a like direction in the conduit; and it is desirous of doing this automatically. This is for the purpose of receiving the caps at a discharge point, every cap in a like position so that it can be operated upon or enter into the operation of its use in a position uniform with the preceding caps. Therefore it is the object of my invention to construct a device for receiving irregularly faced caps individually and automatically facing the caps all in a like direction in a common conduit.

In the accompanying drawings: Figure 1 is a plan view of my improved cap feeding machine. Fig. 2 is a vertical sectional view thereof as taken on the line 2—2 of Fig. 1. Fig. 3 is a vertical sectional view thereof as taken on the line 3—3 of Fig. 1. Fig. 4 is a view looking at the back of the machine. Fig. 5 is a detail plan view of a cap feed-check such as is shown at the lower end of Fig. 2. Fig. 6 is an enlarged vertical sectional view through the cap feeders, as taken on the line 6—6 of Fig. 1, showing a cap about to be fed to the right. Fig. 7 shows a broken continuation of the cap conduit shown in Fig. 6. Fig. 8 is a view similar to Fig. 6 but with the cap feeders in elevation and a cap about to be fed in the opposite direction. Fig. 9 shows a broken continuation of the cap conduit shown in Fig. 8. Fig. 10 is an enlarged vertical sectional view taken on the line 10—10 of Fig. 1, the feeders in elevation. Fig. 11 is an enlarged sectional view taken on the line 11—11 of Fig. 10.

A supply conduit 12, vertically inclined and formed to receive disk shaped caps, is adapted to lead from a hopper (not shown) and to discharge at an angle into a trans-

verse and horizontal conduit 13 whose end portions 14 and 15 are curved toward a common side and converge in the same direction, joining in a common discharge conduit 16. Located at the junction of the conduits 12 and 13 are means for automatically feeding caps received in conduit 13 from conduit 12, in opposite directions in the former conduit. This cap feeding means is operated by suitable mechanism, which together with the feeding means will be more fully described hereinafter; and in the present embodiment of the device the frame and means for carrying the feed operating mechanism is associated with said conduits so as to support same, but it is evident that means of support may be in other suitable embodiments.

Mounted above and below, directly opposite the intersection of conduits 12 and 13 are rotary feed members each on an axis transverse to the longitudinally of conduit 13. The feeders are each of like construction and comprise circular bodies 17 and 18 mounted on shaft extensions 19 which are journaled in bearings 20 extending above and below the casings of conduits 12 and 13. Each feeder has a circular bore 21 extending diametrically therethrough, in each of which is located two feeder fingers 22 adapted to project beyond the periphery of the feeders, each finger having a head 23 located within the bore 21 and held slidable and from outward displacement by apertured bushings 24 screwed into each end of said bore; and a spiral spring 25 is located in the bore intermediate the heads 23 to hold the feeder fingers normally in an outwardly extended position. Said fingers are adapted to reach into conduit 13 through openings 26 and 27 at the upper and lower sides thereof, respectively, said openings being elongated so as to allow the fingers to move longitudinally through the conduits, and said openings extend in opposite directions relative to conduit 12, the termination of the openings at their ends adjacent said conduit being such that the feeder fingers will be allowed to enter conduit 13 at right angles thereto. The feeders are adapted to be rotated in a like direction as indicated by arrows in the drawings; and it will be observed that in so doing, the fingers normally extended approach conduit 13 on the inlet sides thereto opposite the openings 26 and 27 so that they may enter said conduit at

the adjacent ends of said openings. Since the fingers would collide with said sides, cam faces 28 are provided, each in a curve approaching the periphery of the feeders and terminating at the commencing of openings 26 and 27; thus the ends of the fingers, in their extended positions, will contact said cam faces as they approach the openings and be moved by said faces to a retracted position within the feeders. As seen in Fig. 11, a yieldable means is located in conduit 13 directly opposite the discharge of conduit 12 to receive a cap and hold it from displacement until it is moved by the feeding fingers; and this means is in the form of two curved spring members 29 which are held in position by being located in an opening 30 and held fixed therein by a wedge 31, the spring ends diverging so as to present a spring pocket to receive a cap, whereby, with the feed of the cap to either side the springs will yield to allow such movement. Located in discharge conduit 16 is a stop 32 pivoted so that its end 33 may be swung into the conduit to stop the passage of caps therethrough.

Keyed to common ends of shafts 19 are spur-gears 34 which mesh with a driving spur-gear 35 journaled on a framework 36 fixed with conduit 13; and the spur-gears are in such relation that the bores 21 of feeders 17 and 18 will be brought in direct alignment when they are moved by the gears. A toothed wheel 37 is fixed to spur-gear 35 and a spring pawl 38 holds it from back movement. An operating pawl 39 carried by an arm mounted loose on a shaft 40, which is journaled on frame 36, is adapted to rotate toothed wheel 37 by oscillation of said arm; and a spur-gear 41 fixed to said pawl arm is adapted to be rotated by a rack bar 42 which may be reciprocated in any suitable manner.

The above means for operating the feeders is adapted to rotate them intermittently, a half revolution at each down stroke of rack bar 42, so that at each such action one cap will be fed. This intermittent feed is adapted for use where the feeding mechanism is embodied or coöperates with mechanism to receive and operate upon the fed caps, thus there would be a coöperation of each mechanism and a cap would be fed simultaneously with the receiving of one cap by the mechanism operating upon the cap; but it is evident that the feeders might be rotated continuously at a suitable speed to feed the caps as desired. Therefore, by the down reciprocation of rack bar 42 the feeders are rotated a half cycle, through the ratchet and spur-gear connections, the commencing of such movement being with the feeder fingers in contact with cams 28 (inoperative position) and the course and termination of the feed movement carries the said fingers

through and out of conduits 13 by way of openings 26 and 27.

The caps illustrated as being fed in this type of machine are adapted for use in riveting machines, as caps to a rivet member, and have a smooth face 43 and an inset or depressed face 44 which receives the rivet member; but other forms of caps of a like character, that is, such that have irregular opposite faces, may also be used without departing from the scope of my invention.

Assuming a continuous supply of caps in conduit 12 in which the caps will be irregularly faced by chance, and the feeders in their inoperative position, one cap will lie in conduit 13 held from displacement by the spring arms 29, the caps being moved to such position by gravity. Since the cap shown in Figs. 6, 10 and 11 has its open face upward, when the feeders are rotated their fingers riding on cams 28 will both come to the ends of said cams at the same instant and will enter openings 26 and 27 simultaneously at right angles to conduit 13, the fingers being so moved by their springs and will each strike the cap on an opposite side thereof; and as the top side of the cap is depressed the top finger will engage in said depression. The fingers move in opposite directions so that the cap will be moved with the upper finger, the lower finger merely sliding over the smooth face of the cap; and the cap will be moved along conduit 13 to the right by the finger, a sufficient distance clear of conduit 12, until the finger has been extended to its most outward position when it will be lifted from the cap by the rotation of the feeder. The cap will be guided by conduit 14 into conduit 16 as shown in Fig. 7, the open side of the cap to the right. As this cap is moved from its position held by spring arms 29 a second cap will take its place; and for the purpose of explanation this cap is chanced to be oppositely faced from the former one, so that when the feeders are rotated the bottom finger will engage the cap's open face, as shown in Fig. 8, and the cap will be fed to the left. In its passage through conduit 15 it makes a half turn without any lateral displacement from the general course of said conduit, so that when it reaches conduit 16 its open side is faced to the right, the same as is the preceding cap.

I claim as my invention:

1. In a cap feeding machine of the character set forth, a feed conduit for caps, a conduit intersected thereby, and feeding means located adjacent the intersection of said conduits for engaging and positively moving caps received from said feed conduit, in the second mentioned conduit in opposite directions.

2. In a cap feeding machine of the char-

acter set forth, a conduit, a feed conduit joining same intermediate the ends thereof, and means for engaging caps received in the first mentioned conduit from said feed conduit, and imparting movement thereto to feed the caps in either direction in the former conduit.

3. A cap feeding machine having a loop conduit, said conduit having a cap entrance thereto, and means for engaging and positively moving a cap received at said entrance a perceptible distance in either direction in the conduit.

4. In a cap feeding machine, a conduit having a cap inlet intermediate its ends, means movable into and out of the conduit at said inlet thereof for moving caps in the conduit in opposite directions, and means for guiding the oppositely directed caps to a common conduit.

5. In a cap feeding machine, a conduit having a cap inlet intermediate its ends, and cap feeding means for entering the conduit from opposite sides thereof for moving caps received from said inlet, in opposite directions in the conduit.

6. In a cap feeding machine, a pair of differently directed conduits, and cap feeding means having feed movements in opposite directions and constructed and arranged at each feed movement to contact a cap on different sides thereof to move the cap in one of said conduits, according to the resistance of the cap with the feeding means.

7. In a cap feeding machine, a cap conduit having a cap entrance intermediate its ends, and cap feeding means in operable relation with said conduit entrance for contacting a cap received into the conduit at said entrance, on two opposite sides thereof, and for moving the cap in the conduit in either of said two directions according to the facing of the contacted sides of the cap.

8. In a cap feeding machine, a cap conduit, separate passages communicating therewith, and means for separating caps irregularly faced in said conduit by engaging individually the depressed face of each cap and moving positively, like faced caps to either of said separate passages.

9. In a cap feeding machine, a cap conduit, separate passages communicating therewith, and feeding fingers in operative relation with said conduit for engaging and moving caps received therein into said separate passages according to the facing of the caps, by contacting a depression in the cap face.

10. In a cap feeding machine, feeding fingers adapted to move in opposite directions and to contact a cap simultaneously on opposite sides thereof, one of said fingers constructed and arranged to move the cap therewith by contacting a depression in the cap face.

11. In a cap feeding machine, a conduit, an entrance thereto intermediate its ends whereby a single cap may enter the conduit, and means for intermittently entering said conduit and imparting movement to said single cap in either direction in the conduit by engaging a depressed face of the cap.

12. A cap feeding machine having a loop conduit, means for allowing caps to enter individually into the conduit at a common point, and means for moving an entered cap in either direction in the conduit, said direction of movement being governed by the facing of the cap and the moving being effected by said means applying a pressure to engage the governing face and moving the cap thereby.

13. In a cap feeding machine, a conduit having an entrance thereto intermediate its ends, and means for holding a cap received in the conduit from said entrance, yieldingly from movement in the conduit, and for feeding the cap in the conduit according to the facing of the cap and against the action of said holding means.

14. In a cap feeding machine, a conduit, yieldable means for maintaining a cap received in the conduit from displacement therein, and means separate from said yieldable means for moving caps from said maintained position and for guiding them into conduits to effect facing of the caps in a like direction.

15. In a cap feeding machine, a conduit, and rotary feed members located on opposite sides of the conduit, each feed member carrying a yieldable finger movable into and out of the conduit during rotation of the feed member for operating upon a cap located in the conduit.

16. In a cap feeding machine, a conduit, a rotary feed member located adjacent the conduit, and a yieldable finger carried by the feed member and being movable into the conduit at substantially right angles thereto to contact a cap located therein and to move same along the conduit by rotary movement of said feed member.

17. In a cap feeding machine, a conduit, a rotary feed member located at each of two opposite sides of the conduit, a yieldable finger carried by each feed member, and means for causing said fingers, when the feed members are rotated in a like direction, to contact simultaneously a cap located in the conduit, to allow one of said fingers to engage an irregular face of the cap and move the cap along the conduit.

18. In a cap feeding machine, a cap container, a plurality of passage-ways leading therefrom, and means for applying pressure to a cap located in said container, simultaneously in directions leading from said container to said passage-ways for moving the cap into either of said passage-ways.

19. In a cap feeding machine, a cap container, means for applying pressure in one direction to a cap in said container for engaging a depressed face of the cap and positively moving the cap in the direction of said pressure movement, and means for effecting movement of a cap in the container in a different direction when the latter cap has not a depressed face engageable by said pressure applying means.

20. In a cap feeding device, a cap conduit into which caps are received irregularly faced and in which caps are movable in either of opposite directions, and means movable into engagement with each cap for positively moving caps faced in a particular manner, a perceptible distance in one direction in the conduit.

21. In a cap feeding device, a pair of cap conduits communicating at a cap receiving point, and means movable into engagement with a cap at said cap receiving point for engaging and positively moving the cap in one of the said conduits according to resistance to the movement of said means by a cap face.

22. In a cap feeding device, intersecting differently directed cap conduits, and means movable into engagement with a cap located at the intersection of said conduits, for engaging and moving the cap a perceptible distance in either of the conduits according to resistance to the movement of said means by a cap face.

23. In a cap feeding device, a cap conduit for receiving caps irregularly faced, a plu-

rality of passage-ways leading therefrom and each constructed and arranged to receive caps moved in different paths, and means for positively feeding a cap according to the facing thereof, into the passage-way adapted to receive similar caps.

24. In a cap feeding machine adapted to feed caps having differently shaped sides, a conduit for receiving caps faced in irregular order, passage-ways leading from said conduit, each for receiving caps positioned in a particular manner, and means for engaging the differently shaped sides of each cap received from said conduit and moving the cap into either of said passage-ways according to the shape of said cap sides.

25. In a cap feeding machine adapted to feed caps which have differently shaped opposite sides, a cap conduit through which caps pass with their sides faced relatively in irregular order, a pair of cap passage-ways communicating with said conduit, each for receiving caps faced in a particular manner, means for engaging and selecting individually the caps faced in a particular manner and positively moving said selected caps into one of said passage-ways, and means for effecting movement of caps faced otherwise, to the other passage-way.

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

GUSTAVE J. F. WOELLERT.

Witnesses:

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FLORA E. PHILLIPS.