Aug. 8, 1944. F. K. HENDRICKSON 2,355,071

SLIVER CAN MOTION

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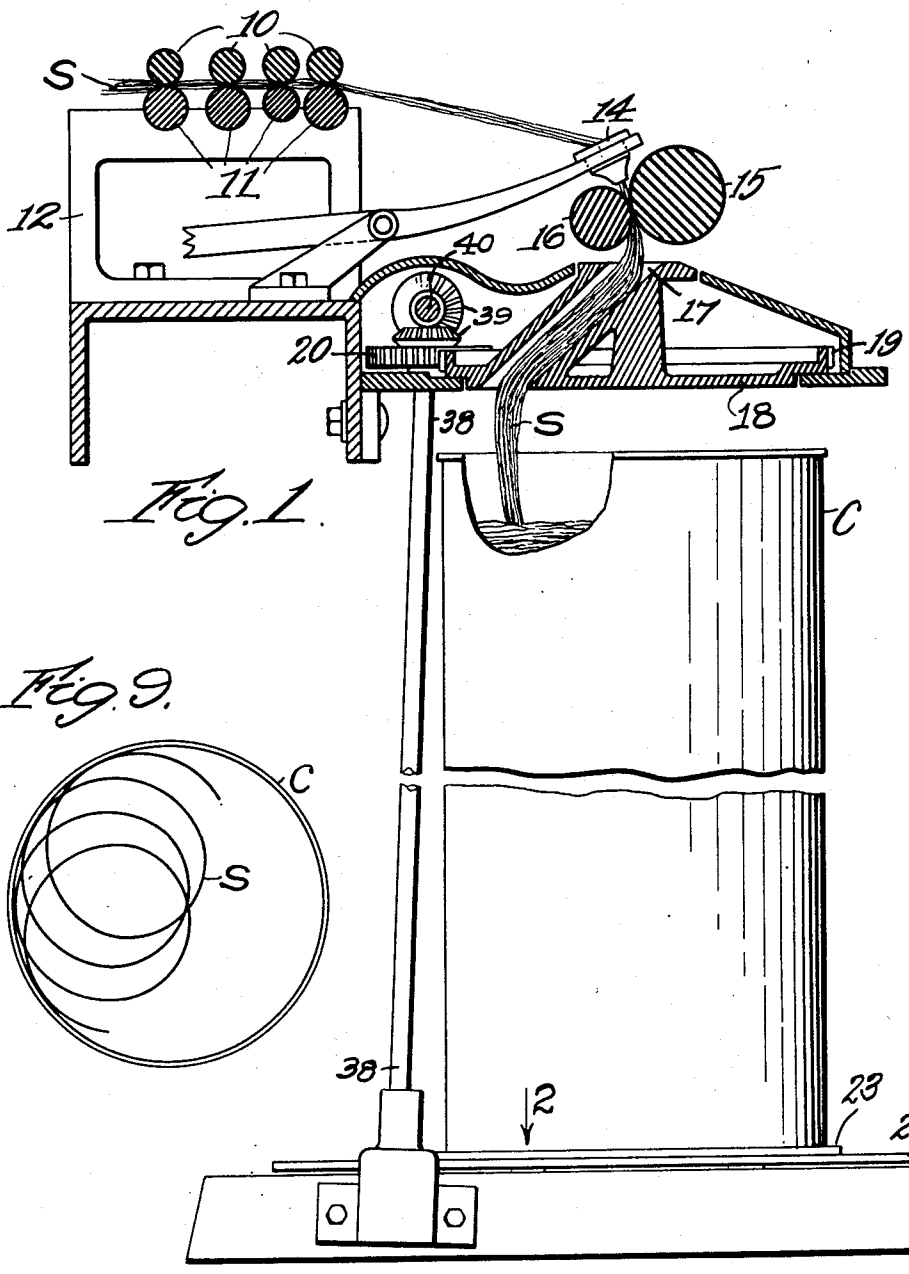



Fig. 1.

Fig. 9.




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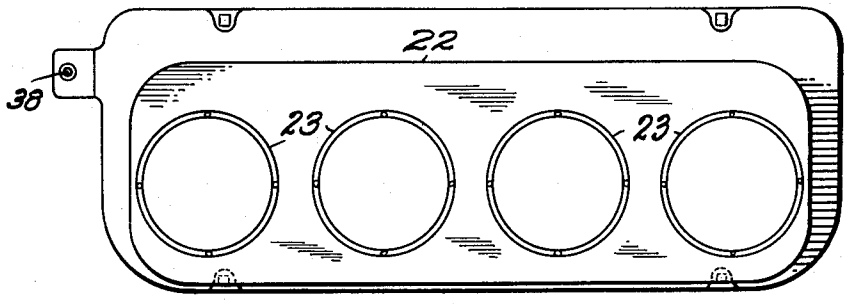



Fig. 2.

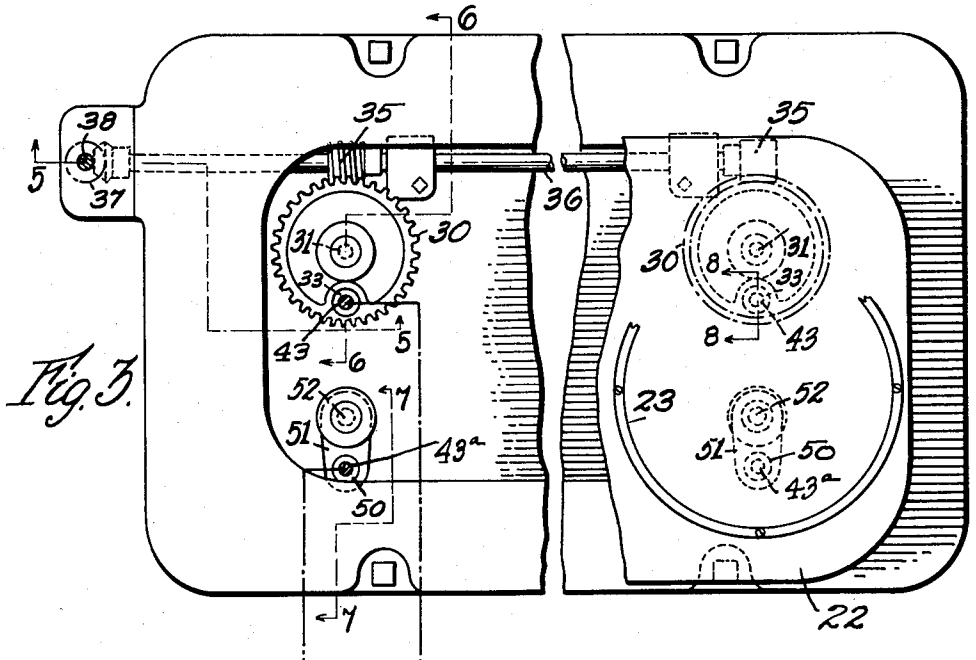



Fig. 3.

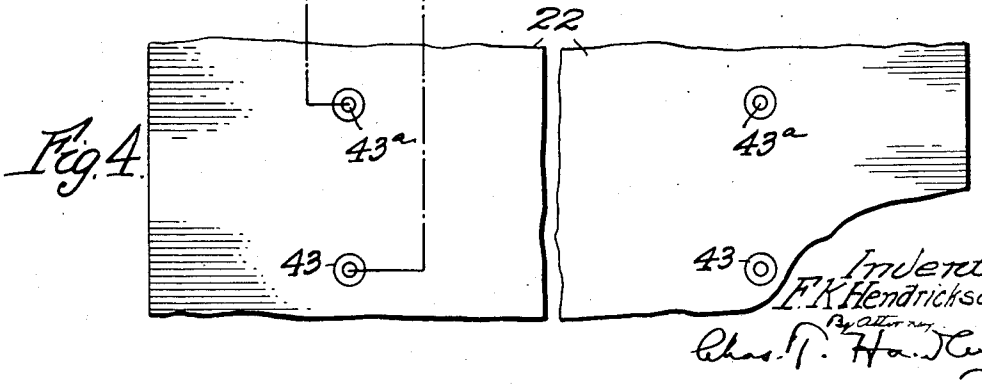



Fig. 4.

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Fig. 5.

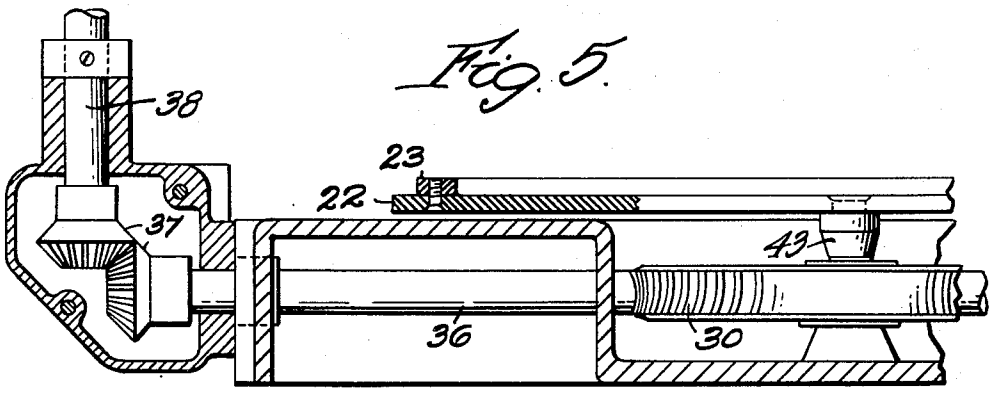
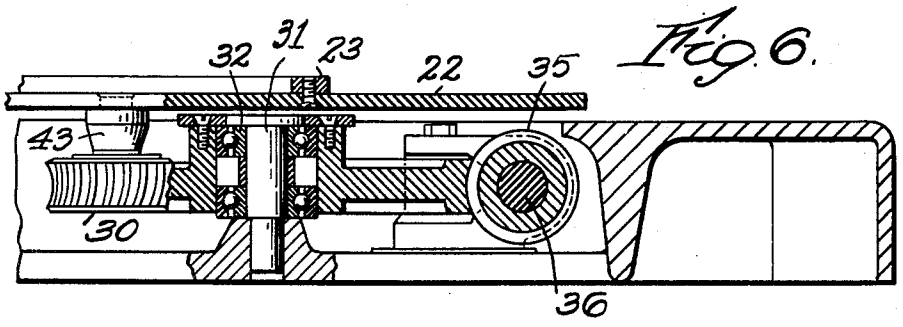



Fig. 6.



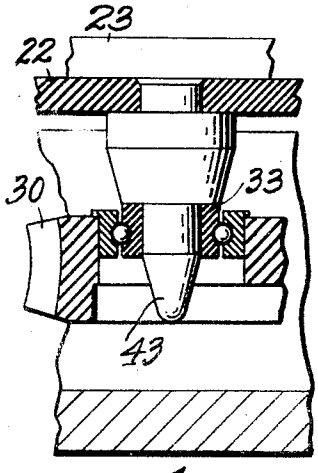




Fig. 8

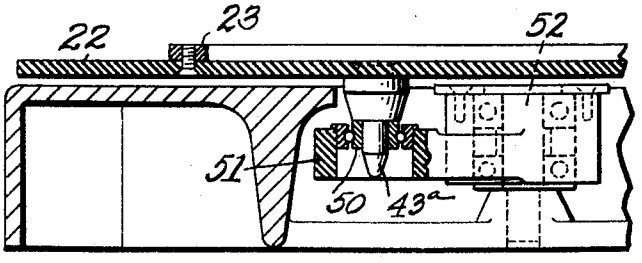



Fig. 7.

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# UNITED STATES PATENT OFFICE

2,355,071

## SLIVER CAN MOTION

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Application March 9, 1942, Serial No. 433,946

8 Claims. (Cl. 19—159)

This invention relates to drawing frames and other similar machines, and more particularly to mechanism provided for continuously moving the sliver cans during the operation of the machine and as the product of the machine is being coiled therein.

It is desirable that the sliver be deposited in superposed but circumferentially displaced coils in the sliver cans, and it is also desirable that no twist be imparted to the sliver by the motion of the can.

It is the general object of my invention to provide improved and very simple mechanism for producing a circular but non-rotational motion of a sliver can in a drawing frame or other similar machine. A further object is to provide means for simultaneously moving a plurality of sliver cans in the manner above defined.

My invention further relates to certain arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a side elevation, partly in section, of a drawing frame embodying my improvements;

Fig. 2 is a plan view of the can-supporting table, looking in the direction of the arrow 2 in Fig. 1;

Fig. 3 is a partial enlarged plan view, similar to Fig. 2 but with the table removed;

Fig. 4 is a partial bottom view of the can-supporting table;

Fig. 5 is a partial sectional front elevation, taken along the line 5—5 in Fig. 3;

Fig. 6 is a partial end elevation, taken along the line 6—6 in Fig. 3;

Figs. 7 and 8 are detail sectional elevations, taken along the lines 7—7 and 8—8 in Fig. 3; and

Fig. 9 is a diagrammatic plan view illustrating the coiling of the sliver.

Referring to Fig. 1, I have shown parts of a drawing frame which comprises a plurality of upper drawing rolls 10 and lower drawing rolls 11 mounted in a drawing head 12 and adapted to receive sliver S from any suitable source of supply and to forward the sliver, after drafting by the drawing rolls, to a trumpet 14 which delivers the roving to calender rolls 15 and 16. The calender rolls discharge the sliver into an inclined passage 17 in a coiler head 18, which is provided with a ring gear 19 engaged by a driving pinion 20 and continuously rotated thereby. As the sliver leaves the coiler head 18, it is deposited in a can C which is supported on a table 22 and which is preferably located thereon by guides or ribs 23. As shown in Fig. 2, the table 22 is designed to support four cans which are spaced to correspond with the spacing of four coiler heads in the drawing frame.

The parts thus far described, with the exception of the table 22, are or may be of any usual or commercial construction and in themselves form no part of my invention, which relates specifically to the mechanism for moving the table 22 in a horizontal plane.

This mechanism, as clearly shown in Figs. 3 to 8, comprises a pair of crank members in the form of worm gears 30 mounted on and rotated about fixed studs 31 and preferably provided with anti-friction bearings 32 (Fig. 6). Each worm gear 30 is provided with an eccentrically mounted and freely rotatable bushing 33 which is equivalent to a crankpin. The gears 30 are engaged by worms 35 (Fig. 3) mounted on a shaft 36 which is connected by bevel gears 37, a substantially upright shaft 38 and bevel gears 39 (Fig. 1) to a drive shaft 40, which shaft rotates in fixed speed relation to the driving pinions 20 for the coiler heads 18.

The bushings 33 are so located in the worm gears 30 and the gears 30 are so meshed with the worms 35 that the bushings 33 rotate in angular unison and with the distance between the two bushings maintained constant, as the bushings are mounted at the same radial distances from the studs 31. The table 22 is provided with downwardly extending pins or studs 43, adapted to slidably enter the bushings 33. The table 22 is also preferably provided with two additional pins or studs 43a adapted to slidably enter bushings 50 mounted for free rotation at the free ends of crank members or arms 51, pivoted on studs 52. The bushings 50 are mounted at the same radial distances as the bushings 33, and the arms 51 are at all times free to swing or rotate in either direction.

When the studs 43 are inserted in the bushings 33 and the studs 43a in the bushings 50, the table 22 is firmly supported near each corner thereof but in such manner that it may be moved in a horizontal plane.

If now the worm gears 30 are rotated in unison, the studs 43 will be caused to describe circles about the axes of the worm gear studs 31 and at the equal radial distances of the bushings 33, and all parts of the table 22 will receive a similar circular or crank motion. The arms 51 and bushings 50 serve only as supports but

are free to move and to follow the same circular motion.

The table 22 thus receives a circular motion in a horizontal plane but without change in the orientation of the table with respect to the fixed structure of the drawing frame.

The can C is offset or eccentrically positioned with respect to the coiler head 18, and the circular movement of the can C is at a much slower speed than the rotation of the coiler head 18.

The combination of these two motions causes the sliver S to be deposited in the can C in a series of superposed and substantially circular coils, each of which is angularly offset to a small extent from the preceding coil, as clearly shown in Fig. 9. With the coils thus disposed and with no twist imparted by the movement of the can, the sliver is deposited in perfect condition for withdrawal, whether single or duplex sliver is delivered to the sliver can.

By imparting movement to an entire table as a unit, rather than to each can separately, I am able to simplify the can-moving mechanism and to produce identical coiling results in each of a plurality of cans.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. Means for feeding slivers in circular paths, in combination with apparatus for giving motion to associated sliver cans comprising an elongated can-supporting table, means to locate a plurality of cans on said table, and motion-imparting means engaging said table at a plurality of spaced points and effective to give said table as a unit a single continuous horizontal movement at uniform speed and in a closed and accurately circular path eccentric to every can and while maintaining the longitudinal axis of the table at all times parallel to its original position.

2. Means for feeding slivers in circular paths, in combination with apparatus for giving motion to associated sliver cans comprising an elongated can-supporting table, means to locate a plurality of cans on said table, and motion-imparting means engaging said table at a plurality of spaced points and effective to move said table as a unit continuously and at uniform speed in a closed and accurately circular horizontal path by a single uniform and continuous motion eccentric to every can, and without change in the orientation of said table.

3. Means for feeding slivers in circular paths, in combination with apparatus for giving motion to associated sliver cans comprising an elongated can-supporting table, means to locate a plurality of cans on said table, a pair of spaced pins mounted in the under side of said table and near each end thereof, and crank means engaging and moving said pins continuously and at uniform speed and in angular unison about fixed vertical axes and in equal horizontal circular paths parallel to the plane of said table and eccentric to every can, whereby said cans are moved in corresponding eccentric circular paths without change in the orientation of said table.

4. Apparatus for giving motion to sliver cans comprising a substantially rectangular can-supporting table, means to locate a plurality of cans on said table, a pair of pins mounted below said table and near each end thereof and near one longitudinal edge thereof, a second pair of pins mounted below said table and near each end thereof and near the second longitudinal edge thereof, freely moving supporting arms which receive said latter pins, and crank means to move said first pair of pins continuously and in angular unison about fixed axes and in equal horizontal circular paths parallel to said table.

5. Apparatus for giving motion to sliver cans comprising a substantially rectangular can-supporting table, means to locate a plurality of cans on said table, pivotal supports for said table in each corner thereof, means to give the pivotal supports adjacent one longitudinal edge of said table a continuous rotary motion in angular unison about fixed vertical axes and in equal circular horizontal paths parallel to the plane of the table, and fixed bearing devices for the pivotal supports adjacent the second longitudinal edge of said table and in which devices said supports are free to swing horizontally.

6. Apparatus for giving motion to sliver cans comprising a substantially rectangular can-supporting table, means to locate a plurality of cans on said table, pivotally mounted crank members mounted below said table and having pivotal engagement with said table near each corner thereof, and means to positively rotate two of said crank members continuously and in angular unison in equal circular horizontal paths parallel to the plane of said table, said other two crank members being mounted for free horizontal swinging movements parallel to the plane of said table.

7. Apparatus for giving motion to sliver cans comprising a can-supporting table, means to locate a plurality of cans on said table, a pair of worm gears, bushings eccentrically mounted on said gears, spaced crankpins for said bushings fixed in said table, means to continuously rotate said gears with said bushings in similar angular positions, whereby said table is given a continuous horizontal circular motion without change in orientation, and additional supporting means for said table.

8. Apparatus for giving motion to sliver cans comprising a can-supporting table, means to locate a plurality of cans on said table, a pair of worm gears, bushings eccentrically mounted on said gears, spaced crankpins for said bushings fixed in said table, means to continuously rotate said gears with said bushings in similar angular positions, whereby said table is given a continuous horizontal circular motion without change in orientation, and additional freely pivoted supporting members for said table.

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