Aug. 6, 1929. H. O. DYESS 1,723,335

APPARATUS FOR VIBRATING DOFFER COMBS

Filed May 28, 1928

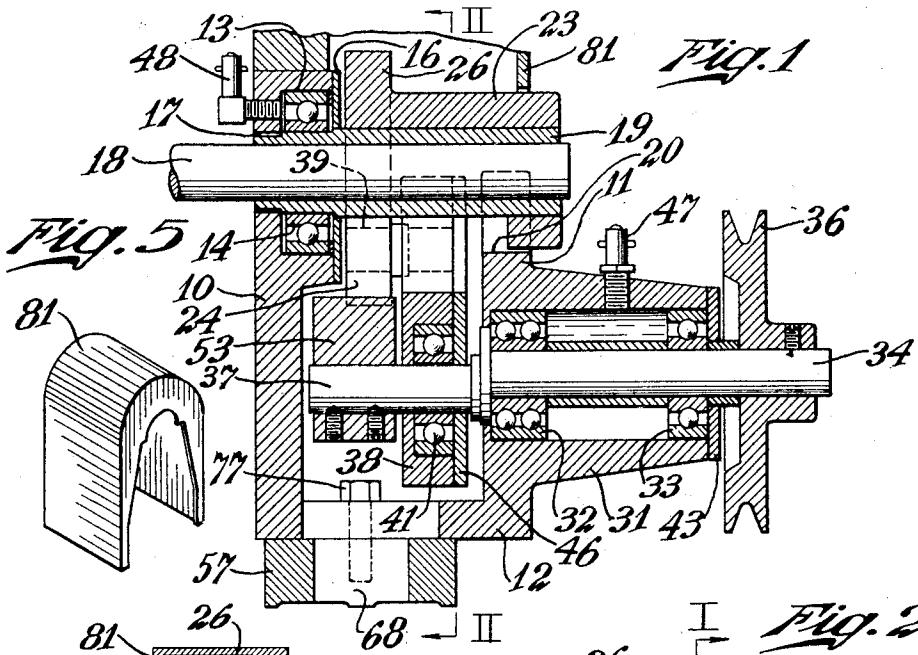


Fig. 1

Fig. 5

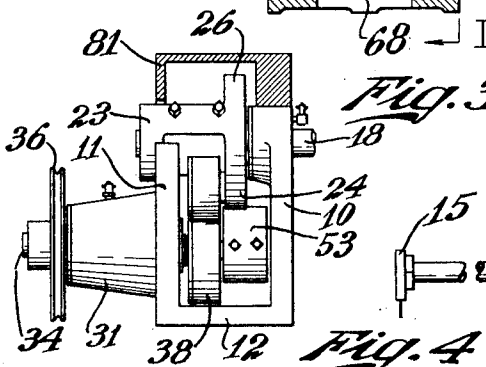


Fig. 3

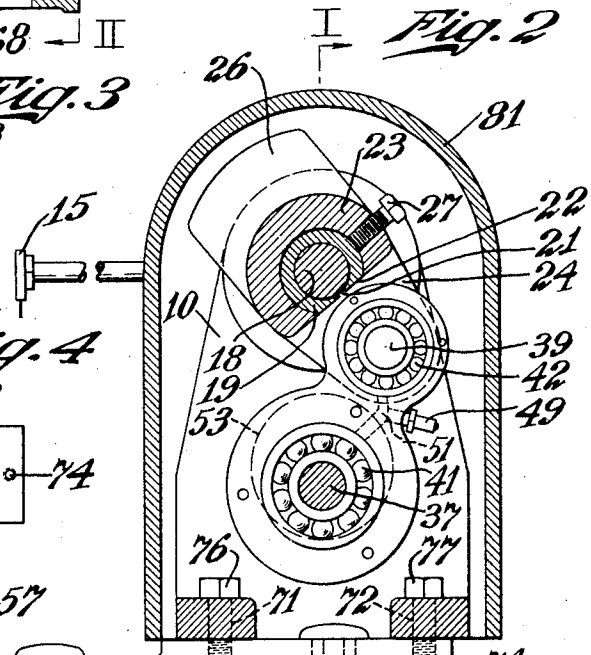


Fig. 2

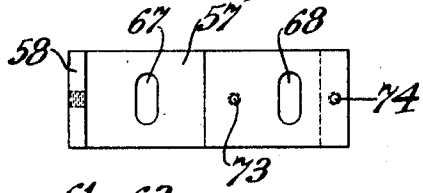
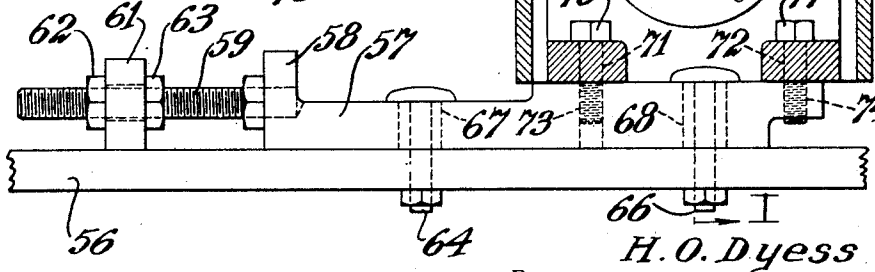


Fig. 4



Inventor

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR VIBRATING DOFFER COMBS.

Application filed May 28, 1928. Serial No. 281,284.

My invention relates to apparatus for imparting vibratory motion to doffer combs on carding machines and has for its object the simplification of design of such apparatus and the provision of a device which shall be cleanly in operation and capable of running for long periods of time with little attention and a minimum of repairs.

A further object of my invention is to provide a device for imparting vibratory motion to doffer combs on carding machines which shall be of relatively light weight, easily and quickly set in place and which shall be adapted to be mounted on either end of the carding machine without change of parts.

A still further object of my invention is to provide apparatus of the character designated having simple, effective bearings for the moving parts thereof which shall require a minimum of lubrication and which retain the lubricant so that it does not escape therefrom and contaminate the cotton being carded.

A still further object of my invention is to provide novel mounting means for apparatus of the character designated whereby it may be readily mounted for either right or left hand drive.

Apparatus for imparting vibratory motion to doffer combs on carding machines, as heretofore known to me, has usually comprised a housing enclosing a rotary driving shaft and an oscillatory driven shaft with crank and connecting rod means between the driving and driven shafts in order to impart oscillatory motion to the latter. As is well known, the period, or rate of oscillation, of the doffer comb is relatively high so that, in order to minimize friction, it has been customary to partially fill the housing with oil so that the moving parts would run in a bath of oil. Despite all precaution against it, such as tightly sealing the housing and packing the protruding shafts, the excess oil required for lubricating such apparatus is very difficult to keep within the housing and it seeps through over the apparatus and along the shafts, finally coming in contact with and contaminating the cotton being carded. The wastage from this cause has heretofore amounted to a considerable sum annually in all cotton mills where apparatus of the prior art has been employed.

A further difficulty with apparatus of this character, as heretofore known to me, has resided in the fact that it could only be mounted to operate in one relation with respect to the carding machine with which it was associated. It has been accordingly necessary to manufacture the apparatus for right and left hand drive involving the necessity for mills to carry extra apparatus and extra, non-interchangeable parts.

These and other difficulties are overcome by means of my invention and I provide an apparatus which is extremely simple of design, capable of being mounted for either right or left hand drive, and which entirely eliminates the difficulties of lubrication heretofore encountered with apparatus of the prior art.

Briefly, my invention comprises a frame embodying spaced upright members and a base member and having driving and driven shafts mounted in the same vertical plane in the upright members. This feature, together with securing means disposed equidistantly on opposite sides of the vertical plane passing through the shafts, provides means for reversing the position of the device with respect to its mounting bracket and adapts it for either right or left hand drive. The driving and driven shafts are mounted in supporting ball bearings in the upright members and a crank on the driving shaft is connected to a crank on the driven shaft by an arm also provided with ball bearings whereby friction between the parts is reduced to a minimum. All of the bearings are lubricated by hard grease lubrication which is retained in the bearings and only requires infrequent replenishment. The difficulties heretofore encountered with respect to oil seepage from apparatus of the prior art are thus entirely eliminated.

Apparatus embodying features of my invention is illustrated in the accompanying drawings, forming a part of this application, wherein

Fig. 1 is a vertical sectional view through the apparatus taken along the line I—I of Fig. 2;

Fig. 2 is a sectional view taken along the line II—II of Fig. 1;

Fig. 3 is an elevational view of the apparatus and showing the cover in section;

Fig. 4 is a plan view of the mounting bracket for the apparatus, and

Fig. 5 is a perspective view of the dust cover.

Referring to the drawings, I show a U frame comprising spaced upright members 10 and 11 and a base member 12 integral with the upright members. The upper part of the upright member 10 is recessed at 13 to provide a housing for a ball bearing 14, held in place by a cap 16. Opposite the ball bearing 14 is a hole 17 through which the doffer comb shaft 18 extends, the latter driving a suitable number of doffer combs 15 as is well understood. The ball bearing 14 supports a sleeve 19 which has its outer end split at 21, and which is flattened adjacent the split portion as shown at 22 in Fig. 2.

Mounted over the sleeve 19 is a relatively heavy crank 23 having a crank arm 24 and an oppositely extending portion 26 for counter balancing the crank arm. The crank 23 is tapped and threaded to accomodate set screws 27 which serve to close the sleeve 19 around the shaft 18 and firmly hold both the shaft 18 and the crank 23 in place with respect to the sleeve 19. The sleeve 19 and crank 23 are only supported on one end, the other end overhanging the upright portion 11, said portion being cut out at 20 to permit the crank 23 to oscillate freely.

The lower portion of the upright member 11 is provided with a bearing housing 31 enclosing a pair of spaced ball bearings 32 and 33 which support a driving shaft 34 having a driving pulley 36 mounted on the outer end thereof. The driving shaft 34 has an off-set crank portion 37 on which is mounted a connecting arm 38 having its other end connected to a crank pin 39 on the crank arm 24. The connecting rod 38 is provided with ball bearings 41 and 42 at its connections with the crank 37 and crank pin 39 respectively.

The ball bearings 32 and 33 are enclosed by the housing 31 and by a cap member 43. The ball bearings 41 and 42 are enclosed in suitable recesses formed in the connecting arm 38 and by means of a cap member 46 over the recesses and the bearings. It will thus be seen that the bearings are thoroughly enclosed to prevent escape of lubricant. Grease lubricant is supplied to the bearings 32 and 33 through a well known form of nipple 47 adapted for grease gun pressure lubrication. Similar lubricant is supplied to the bearing 14 through a nipple 48. Lubricant for the bearings 41 and 42 is supplied through a nipple 49 leading to a passage 51 which communicates with both of the bearings.

In order to minimize vibration of the apparatus, the reciprocatory motion of the connecting arm 38 is counterbalanced by means of a weight 53 mounted on the outer end of the crank 37, while, as has already been explained, the oscillatory motion of the crank 23 is counterbalanced by the counterweight 26.

At 56 is shown a fragment of the frame of the carding machine upon which is secured a mounting bracket 57. The mounting bracket 57 is provided at one end with a flange 58 to which is secured a bolt 59 which passes through a lug 61 secured to the frame 56. On opposite sides of the lug 61 are adjusting nuts 62 and 63 to provide slight adjustment of the position of the bracket 57 on the frame 56. The bracket 57 is held to the frame 56 by means of bolts 64 and 66 which pass through slots 67 and 68 in the bracket 57, the slots being of such width as to permit slight adjustment of the position of the bracket on the frame.

The base member 12 is provided with a pair of bolt holes 71 and 72 spaced equi-distantly on opposite sides of the vertical plane passing through the shafts 18 and 34 while the bracket 57 is provided with tapped holes 73 and 74 for receiving bolts 76 and 77 to secure the apparatus to the bracket. It will be seen, with this arrangement, if the apparatus be reversed on the bracket, the driving and driven shafts lie in the same vertical plane and that the apparatus may be thus employed for either right or left hand driving.

In operation, the apparatus is enclosed by a dust cover 81 which snugly fits over the upright members and extends downwardly around the base member 12. The cover 81 serves the double purpose of protecting the apparatus from dust and protecting the workmen from moving parts.

From the foregoing it will be apparent that I have devised an improved apparatus for imparting vibratory motion to doffer combs on carding machines which is simple of design, free from vibration in operation and capable of running for long periods of time with practically no attention and with a minimum of wear.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited but is susceptible of various changes and modifications without departing from the spirit thereof and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:

1. In apparatus for imparting vibratory motion to doffer combs on carding machines, a frame embodying spaced upright members and a base member, a rotary driving shaft and an oscillatory driven shaft mounted in the same vertical plane in the upright members, a supporting bracket for the frame, and bolts for securing the frame to the supporting bracket and mounted equi-distantly from the plane of the driving and driven shafts.

2. In apparatus for imparting vibratory

motion to doffer combs on carding machines, a frame embodying spaced upright members and a base member, a sleeve member adapted for coupling to a driven shaft, a bearing mounted in one of the upright members and supporting the sleeve member, a driving shaft mounted in the other upright member and lying in the same vertical plane with the sleeve member, means for imparting oscillatory motion to the sleeve member from the driving shaft, a mounting bracket for the frame, and securing bolts cooperating with the bracket and base to hold the frame in place and disposed equi-distantly on opposite sides of the vertical plane passing through the sleeve member and driving shaft.

3. In apparatus for imparting vibratory motion to doffer combs on carding machines, a frame embodying spaced upright members and a base member, a sleeve member adapted for coupling to a driven shaft, a bearing mounted in one of the upright members and supporting the sleeve member, a driving shaft mounted in the other upright member and lying in the same vertical plane with the sleeve member, means for imparting oscillatory motion to the sleeve member from the driving shaft, a mounting bracket for the frame, securing bolts cooperating with the bracket and base to hold the frame in place and disposed equi-distantly on opposite sides of the vertical plane passing through the sleeve member and driving shaft, and means for adjusting the position of the bracket with respect to the carding machine.

4. Apparatus as set forth in claim 3 wherein the upright members are recessed in their opposed faces to receive ball bearings for the shafts, and cap members embrace the shafts and enclose the ball bearings to prevent the escape of lubricant.

5. Apparatus as set forth in claim 3 wherein the upright members are recessed in their opposed faces to receive ball bearings for the shafts, and cap members embrace the shafts and enclose the ball bearings to prevent the escape of lubricant, in combination with means for supplying grease to lubricate the bearings.

6. In a drive for comb shafts, a U frame having a dust cover and a bearing extension at one side, a pulley shaft projecting through said extension and having a crank end within the frame, a ball bearing in said extension and an exposed grease gun connection for lubricating same, a comb shaft socket member in the frame and having a ball bearing, an exposed grease gun connection for lubricating said bearing a balanced crank on the said socket, a connecting rod connecting said cranks, ball bearings for said rod connections, a grease gun connection for lubricating said latter bearings, and a counterweight on the first mentioned crank to balance the connecting rod.

7. Apparatus for imparting vibratory motion to doffer combs comprising a U shaped frame having a bearing housing on one side thereof and a recessed opening on the opposite side above the bearing housing, a driving shaft extending through the housing and having an off-set crank portion, ball bearings for supporting the driving shaft and disposed within the housing, a split sleeve extending through the opening in the other side of the frame and overhanging the crank of the driving shaft, ball bearings in the recess for supporting the split sleeve, a relatively heavy crank member surrounding the split sleeve, a comb shaft extending through the split sleeve, set screws cooperating to clamp the shaft and the crank to the sleeve, a connecting arm between the cranks, ball bearings between the cranks and the connecting arms, and grease gun connections for lubricating the ball bearings.

8. Apparatus for imparting vibratory motion to doffer combs comprising a U shaped frame having a bearing housing on one side thereof and a recessed opening on the opposite side above the bearing housing, a driving shaft extending through the housing and having an off-set crank portion, ball bearings for supporting the driving shaft and disposed within the housing, a split sleeve extending through the opening in the other side of the frame and overhanging the crank of the driving shaft, said sleeve and said driving shaft lying in the same vertical plane, ball bearings in the recess for supporting the split sleeve, a relatively heavy crank member surrounding the split sleeve, a comb shaft extending through the split sleeve, set screws cooperating to clamp the shaft and the crank to the sleeve, a connecting arm between the cranks, ball bearings between the cranks and the connecting arms, grease gun connections for lubricating the ball bearings, a mounting bracket for the frame having a pair of tapped threaded holes therein, and securing bolts carried by the frame and fitting in the holes, said securing bolts being spaced equi-distantly on opposite sides of the vertical plane passing through the shaft and the split sleeve.

In testimony whereof I affix my signature.

HENRY O. DYESS.