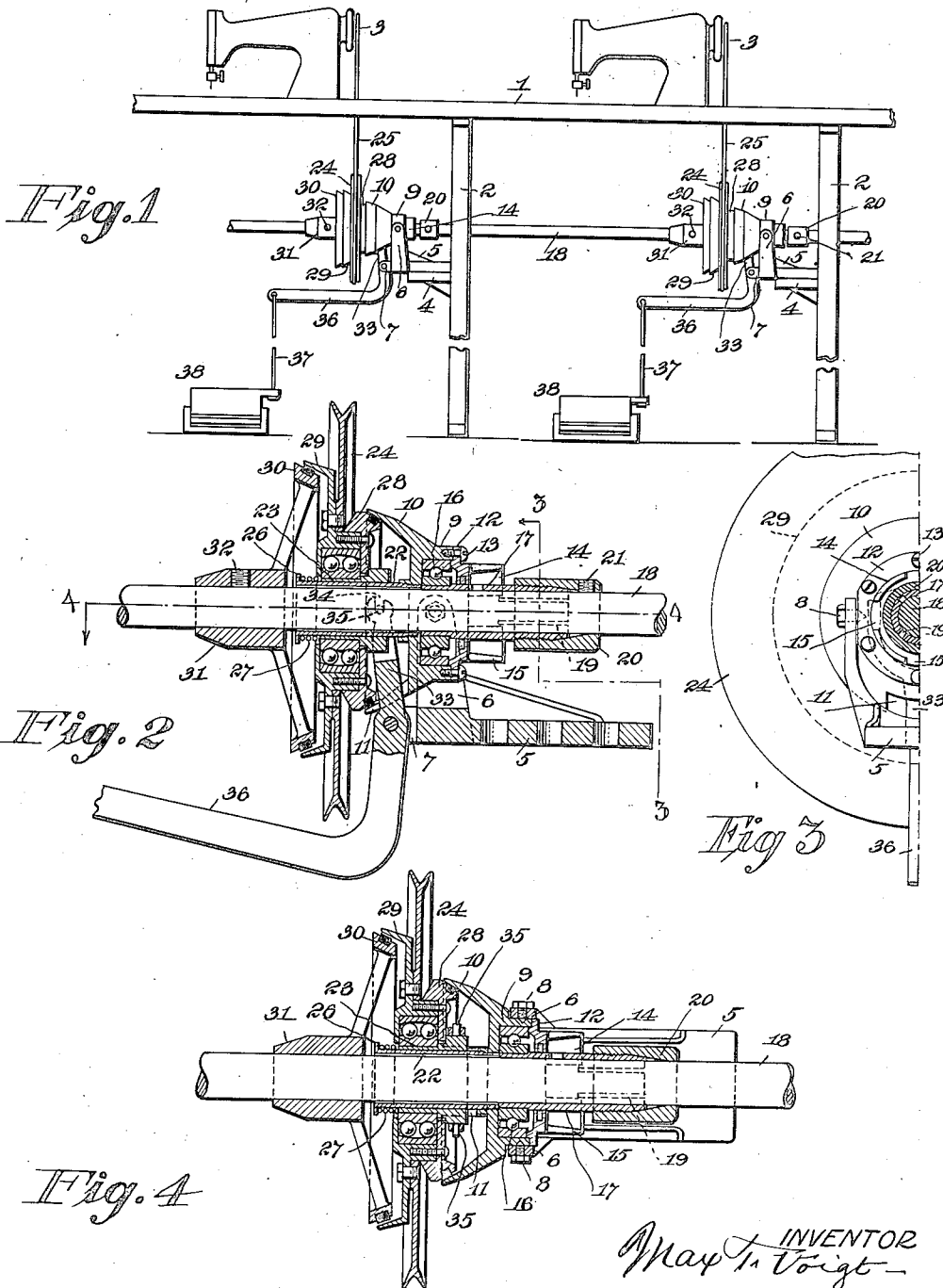


Feb. 6, 1923.

M. T. VOIGT.
TRANSMISSION APPARATUS.
FILED SEPT. 10, 1921.

1,444,573.



INVENTOR
Max T. Voigt—
BY
Dyer Taylor
ATTORNEYS

UNITED STATES PATENT OFFICE.

MAX T. VOIGT, OF READING, PENNSYLVANIA, ASSIGNOR TO LOUIS FRANKEL, OF
NEW YORK, N. Y.

TRANSMISSION APPARATUS.

Application filed September 10, 1921. Serial No. 499,747.

To all whom it may concern:

Be it known that I, MAX T. VOIGT, a citizen of Germany, and a resident of Reading, in the county of Berks and State of Pennsylvania, have invented a certain new and useful Transmission Apparatus, of which the following is a specification.

The invention relates to apparatus for transmitting power from a continuously operating line shaft to a plurality of mechanisms adapted to be operated therefrom, and to means whereby any one of said mechanisms may be individually placed in operative relation to the shaft, or disconnected therefrom, without affecting any others of the mechanisms, and is more particularly directed to sewing machine benches or tables in which a number of machines are operated from a single line shaft below the bench, and to which the each individual sewing machine may be operatively connected to or disconnected from the shaft at the will of the individual operator. The apparatus of the present invention is of the same general type as that illustrated and described in my co-pending application for Patent Serial Number 355,141, filed January 30, 1920.

The objects of the present invention are to provide a device of the character described which is compact in structure; having means for automatically aligning the line shaft; wherein strains and stresses will evenly distribute; which will be easy running; which may be easily secured to, or released from, the shaft; in which the clutching and released mechanisms will be centrally aligned; which will be cheap to construct; which will not easily get out of order; which may be easily repaired, and which will have but few parts.

These and further objects will more fully appear in the following specification and accompanying drawings considered together or separately.

One embodiment of the invention is illustrated in the accompanying drawings, in which like parts in all of the several figures

are designated by similar characters of reference, and in which

Fig. 1 is a side elevation of a sewing machine bench illustrating the invention in position thereon.

Fig. 2 is a vertical longitudinal section of the device.

Fig. 3 is a half section on the line 3—3 of Fig. 2, and

Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 2.

In the embodiment of the invention illustrated, 1 designates a sewing machine bench or table of any desired construction supported upon legs or supports 2 as is common and said bench carries a plurality of sewing machines, each provided with a driving pulley 3. The supports 2 are disposed at proper intervals preferably one in the vicinity of each sewing machine, and each support carries a bracket 4.

Secured to each bracket is a standard or pedestal 5 having a pair of spaced vertical arms 6 and a pair of spaced horizontally extending perforated lugs 7.

Pivoted on conical ended bolts 8 carried in the arms 6 is a shaft bearing comprising a cylindrical shell 9 having a conically recessed extension 10 in axial alinement therewith. A portion of the extension is cut away forming an opening 11. The shell 9 is provided with a cap 12 secured thereto by means of screws 13, and said cap has an axial cylindrical sleeve 14 provided with a plurality of longitudinal slots 15. The bore of the shell 9 carries a ball race with which a series of balls 16 engage, and said balls co-operate with a ball race carried on one end of a tubular bushing 17 which encircles a line shaft 18 which extends the entire length of the bench 1 and from which all of the sewing machines are driven.

The end of the bushing 17 opposite the shell is provided with a plurality of longitudinal slots 19. Its extreme end is tapered and back of the tapered portion is screw threaded for the reception of a nut 20 hav-

ing a portion of its bore cylindrical and screw threaded, and the outer portion of its bore conical. The nut when screwed up on the bushing will, by the engagement of the
 5 conical portion of its bore with the tapered end of the bushing compress the latter into intimate engagement with the shaft. A set screw 21 may be employed to secure the nut against rotation. The shell 9 forms the
 10 actual bearing for the shaft, of which the bushing 17 is a part, and because of its pivotal connection with the pedestal 5 will automatically aline the shaft 18. The cap 12 carries a felt washer which will prevent the
 15 entrance of grit to the ball bearings.

Rigidly secured to, and axially alined with the shell 9 is a tubular stud 22 extending in the direction opposite the sleeve 17. The stud 22 is of such internal diameter as to
 20 clear the shaft 18. Rotatably and slidably mounted on the stud 22 is a tubular carriage 23 on which is carried, by means of ball bearings, a pulley 24 over which runs a belt
 25 means of which the sewing machine is driven in the usual manner.

The free end of the tubular stud 22 is provided with a peripheral flange 26, and a coil spring 27 encircles the stud and bears
 30 against the said flange and the end of the tubular carriage 23.

Rigidly secured to one side of the pulley 24 is a conical brake 28 adapted to cooperate with the conical recess in the extension 10 of
 35 the shell 9 which forms the female member of the brake.

Carried by the opposite side of, and rigidly secured to, the pulley 24 is a member 29 having a conical recess therein in axial
 40 alinement with the shaft 18. The member 29 forms the female portion of a clutch, the male member of which is a conical rim 30 supported on a hub 31 which is rigidly secured to the shaft 18 as by means of a set
 45 screw 32.

When the pulley member 24 is moved to the left in Figs. 1, 2 and 4 the female clutch member 29 will engage the male clutch member 30, and the pulley will be clutched to
 50 the shaft 18 and rotate therewith.

When the pulley is moved in the opposite direction by means of the spring 27 or otherwise, the brake member 28 will engage the member 10 of the non-rotatable shell 9 and the pulley will be brought to rest.
 55

Pivoted between the lugs 7 of the pedestal 5 is an angle lever, the short arm 33 of which extends through the opening 11 in the member 10. The free end of the arm
 60 33 is bifurcated as shown, the extremities of the crutch are slotted as at 34, and the slots engage pins 35 extending diametrically from the tubular carriage 23. The extremities of the crutch arms are rounded for engage-

ment with the pulley member 24. The long arm 36 of the angle lever is, by means of a rod 37, operatively connected to a pedal 38 of any approved type.

When that end of the pedal to which the rod 37 is attached is depressed by the foot
 70 of the operator the clutch member 29 is moved into engagement with the member 30, and the pulley 24 will rotate with the shaft 18 and the particular sewing machine will be operated as long as the foot of the oper-
 75 ator remains on the pedal. When the foot is removed from the pedal, or the pressure is released, the spring 27 will move the carriage 22 in the opposite direction, the clutching surfaces of 29 and 30 will be disengaged,
 80 and the brake member 28 will be caused to engage the stationary brake member 10 and the operation of the sewing machine will be arrested.

The movement of the carriage 23 carrying
 85 the pulley 24, from the clutching to the braking position and vice versa, is extremely slight, and will have no ill effect on the travel of the belt 25.

Either of the clutch members and either
 90 of the brake members may be provided with the usual shoe, or lining, as the case may be, to increase the friction of the parts.

For convenience the apparatus of the invention is shown employed in connection
 95 with a sewing machine bench, but it is to be understood that the device is not limited to such use, but may be employed in any situation where a plurality of individually attended machines are driven from a common
 100 power shaft.

The shaft 18 may be driven in any desired manner, and the direction of rotation of the shaft will have no effect on the operation of the device.
 105

In accordance with the provisions of the patent statutes, I have described the principle of my invention together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to
 110 have it understood that the apparatus shown is merely illustrative and that the invention may be carried out in other ways.

The invention having been described what is claimed and desired to be secured by
 115 Letters Patent, is:—

1. An apparatus of the character described, comprising a rotating shaft, a member forming a portion of the shaft, a relatively stationary element, said member having
 120 a bearing in said element, a device carried by said element and rotatable relatively thereto, and means for coupling said device to said element whereby the shaft will rotate relatively to the device.
 125

2. An apparatus of the character described, comprising a rotating shaft, a member forming a portion of the shaft, a rela-

tively stationary element, said member having a bearing in said element, a device carried by said element and rotatable relatively thereto, and means for automatically coupling said device to said element whereby the shaft will rotate relatively to the device.

3. An apparatus of the character described, comprising a rotating shaft, a tubular bushing surrounding the shaft, a stationary element in which the bushing is journaled, a pulley mounted on and movable relatively to the element, means for clamping the bushing to the shaft, and means for automatically coupling the pulley to the element whereby said shaft and bushing will rotate relatively to the element.

4. An apparatus of the character described, comprising a rotating shaft, a tubular bushing surrounding the shaft, a stationary element in which the bushing is journaled, a pulley mounted on and movable relatively to the element, a nut for clamping the bushing to the shaft, and means for automatically coupling the pulley to the element whereby said shaft and bushing will rotate relatively to the element.

5. An apparatus of the character described, comprising a rotating shaft, a tubular bushing surrounding the shaft, a stationary element in which the bushing is journaled, a pulley mounted on and movable relatively to the element, a nut having a tapered bore for clamping the bushing to the shaft, and means for automatically coupling the pulley to the element whereby said shaft and bushing will rotate relatively to the element.

6. An apparatus of the character described, comprising a rotating shaft, a tubular bushing surrounding the shaft, said bushing having a tapered extremity, there being slots in the extremity of the bushing, a stationary element in which the bushing is journaled, a pulley mounted on and movable relatively to the element, a nut for engaging the tapered extremity of the bushing and clamping the bushing to the shaft, and means for automatically coupling the pulley to the element whereby said shaft and bushing will rotate relatively to the element.

7. An apparatus of the character described, comprising a rotating shaft, a bearing for said shaft, a tubular stud carried by said bearing and encircling the shaft, a pulley journaled on the stud, a spring encircling said stud and normally engaging said pulley with the bearing whereby the shaft will rotate relatively to the pulley and means for engaging the pulley to break the connection between the bearing and pulley and for causing the latter to rotate with the shaft.

8. An apparatus of the character described, comprising a rotating shaft a bearing for the shaft, a tubular stud carried by the bearing, said stud surrounding and extending longitudinally of the shaft, an abutment on the stud, a tubular carriage slidably mounted on the stud, a pulley, said carriage forming a journal for the pulley, a brake member carried by the shaft bearing, a brake member carried by the pulley, and a coil spring encircling the stud and bearing against the abutment and carriage whereby the brake members will be normally engaged one with the other.

9. An apparatus of the character described, comprising a rotating shaft, a bearing for the shaft, said bearing being pivoted in a plane perpendicular to the axis of the shaft, a tubular stud carried by the bearing in axial alinement with the shaft, said shaft passing through the stud, there being clearance between the bore of the stud and the shaft, an abutment on the free extremity of the stud, a tubular carriage mounted on the stud, a spring coiled around the stud and abutting against the abutment and the carriage, a lever for moving the carriage longitudinally of the stud to compress the spring, said lever acting to prevent relative rotation of the stud and carriage.

10. An apparatus of the character described, comprising a rotating shaft, a bearing for the shaft, said bearing being pivoted in a plane perpendicular to the axis of the shaft, a tubular stud carried by the bearing in axial alinement with the shaft, said shaft passing through the stud, there being clearance between the bore of the stud and the shaft, an abutment on the free extremity of the stud, a tubular carriage mounted on the stud, a spring coiled around the stud and abutting against the abutment and the carriage, a lever, pins projecting diametrically from said carriage, a crutch on said lever, there being slots in the crutch arms for engagement with said pins, said arms engaging the pulley for moving the carriage longitudinally of the stud to compress the spring, the engagement of the pins with said lever acting to prevent relative rotation of the stud and carriage.

11. An apparatus of the character described, comprising a pedestal, a bearing member pivoted in the pedestal, a shaft, a bushing on the shaft, a portion of said bushing being flexible, a nut threaded on the bushing whereby said bushing will engage the shaft, ball bearings between the bearing member and the bushing, a carriage carried on the bearing member and movable relatively thereto, a pulley carried on the carriage, ball bearings between the carriage and the pulley, a brake member on the bearing, a cooperating brake member on the pulley,

a clutch member on the pulley, a cooperating clutch member secured to the shaft, means enclosed by the bearing brake member for engaging the pulley clutch member with the shaft clutch member, and means carried by the bearing member for engaging the pulley brake member with the bearing brake member.

This specification signed and witnessed this 6th day of September, 1921.

MAX T. VOIGT.

Witnesses:

ISAAC FRANKEL,

MOE COHEN,

ARTHUR J. NATHAN,

CHARLES WINTER.