

April 22 , 1924.

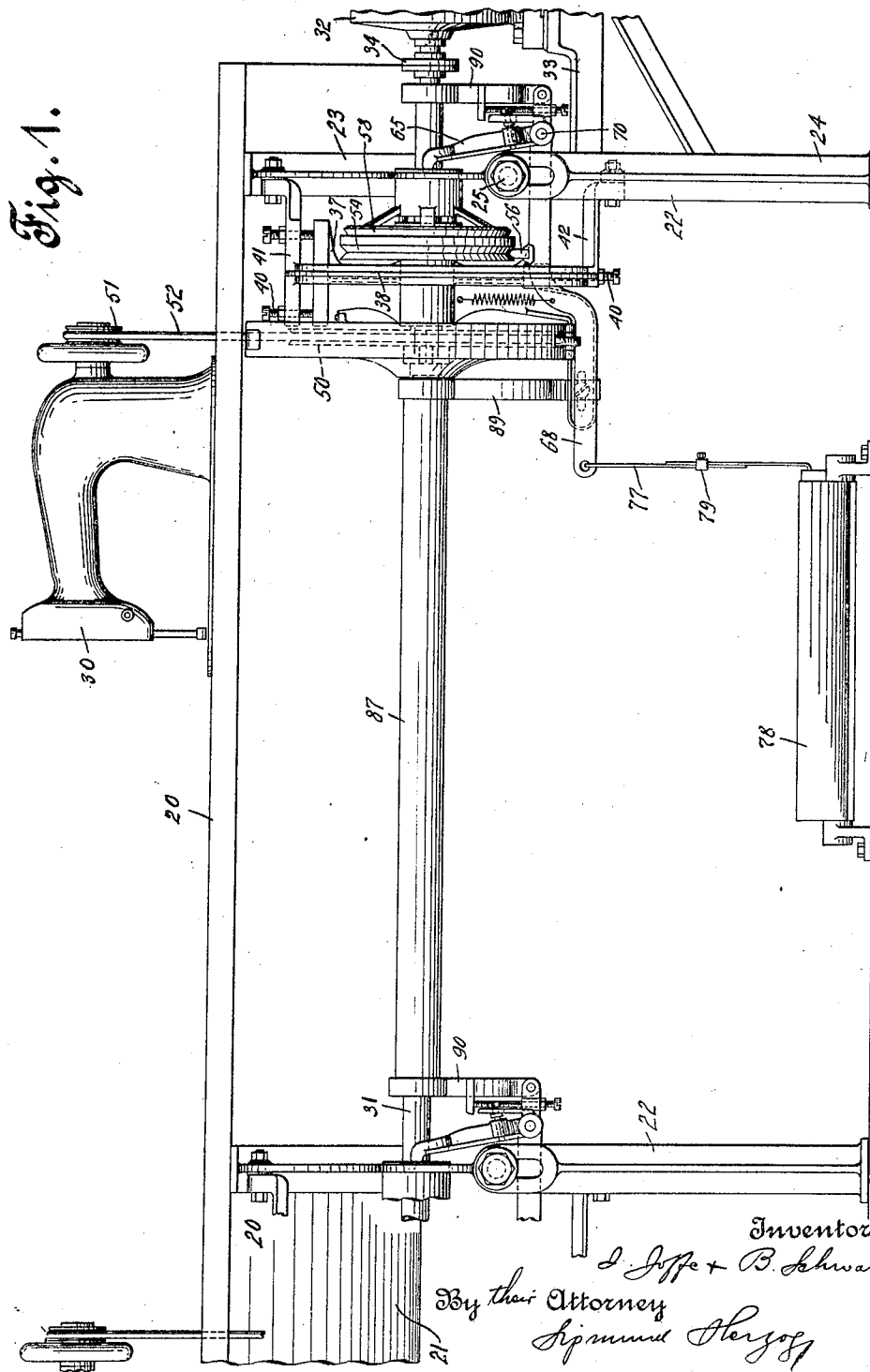
1,491,267

I. JOFFE ET AL

SEWING MACHINE

Filed May 24. 1922

5 Sheets-Sheet 1



Inventors

L. Jaffe + B. Schwartz

By their Attorney

Attorney
Sigmund Herzog

April 22, 1924.

I. JOFFE ET AL

1,491,267

SEWING MACHINE

Filed May 24, 1922

5 Sheets-Sheet 2

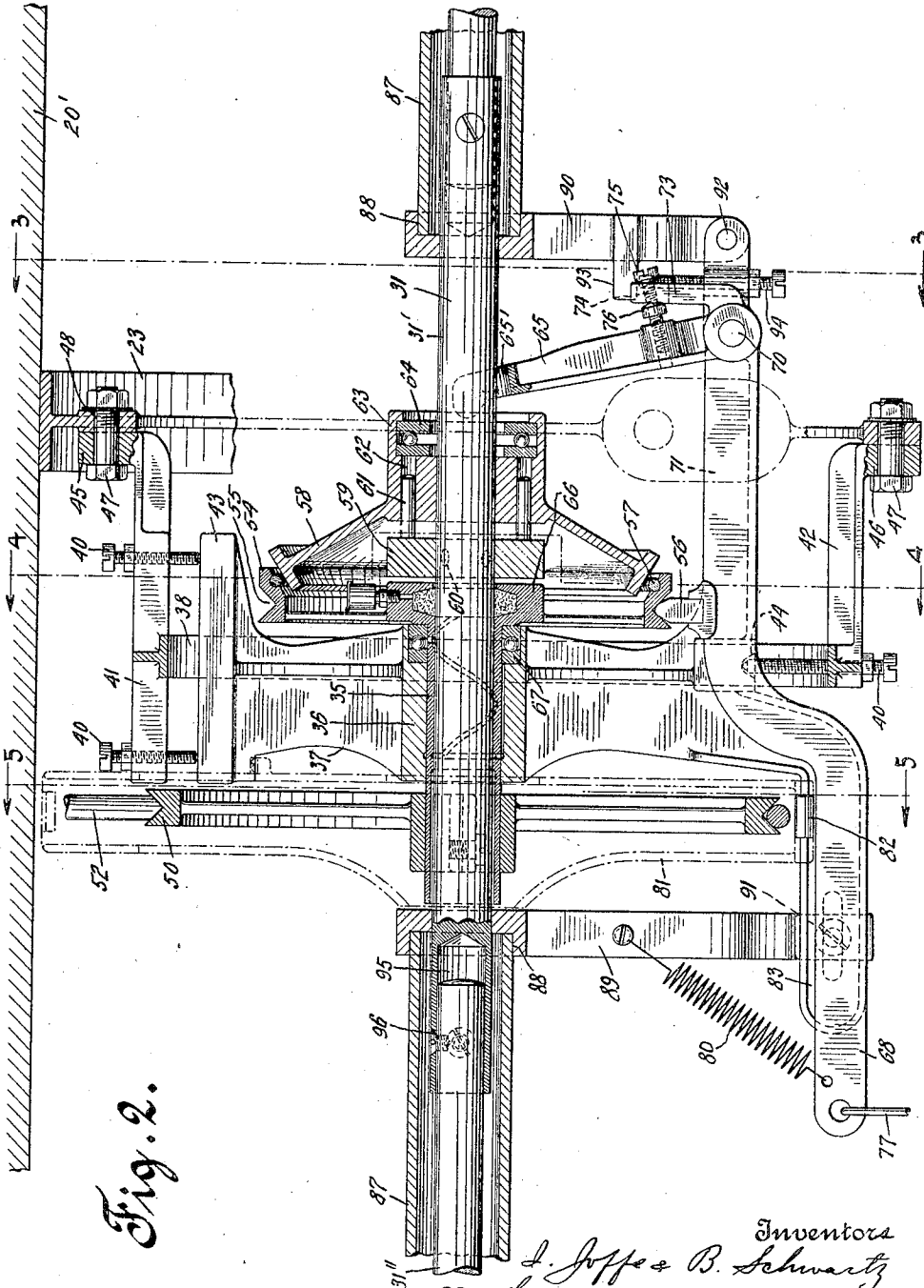


Fig. 2.

Inventors
I. Joffe & B. Schwartz
By their Attorneys
Sigmund Herzog

April 22, 1924.

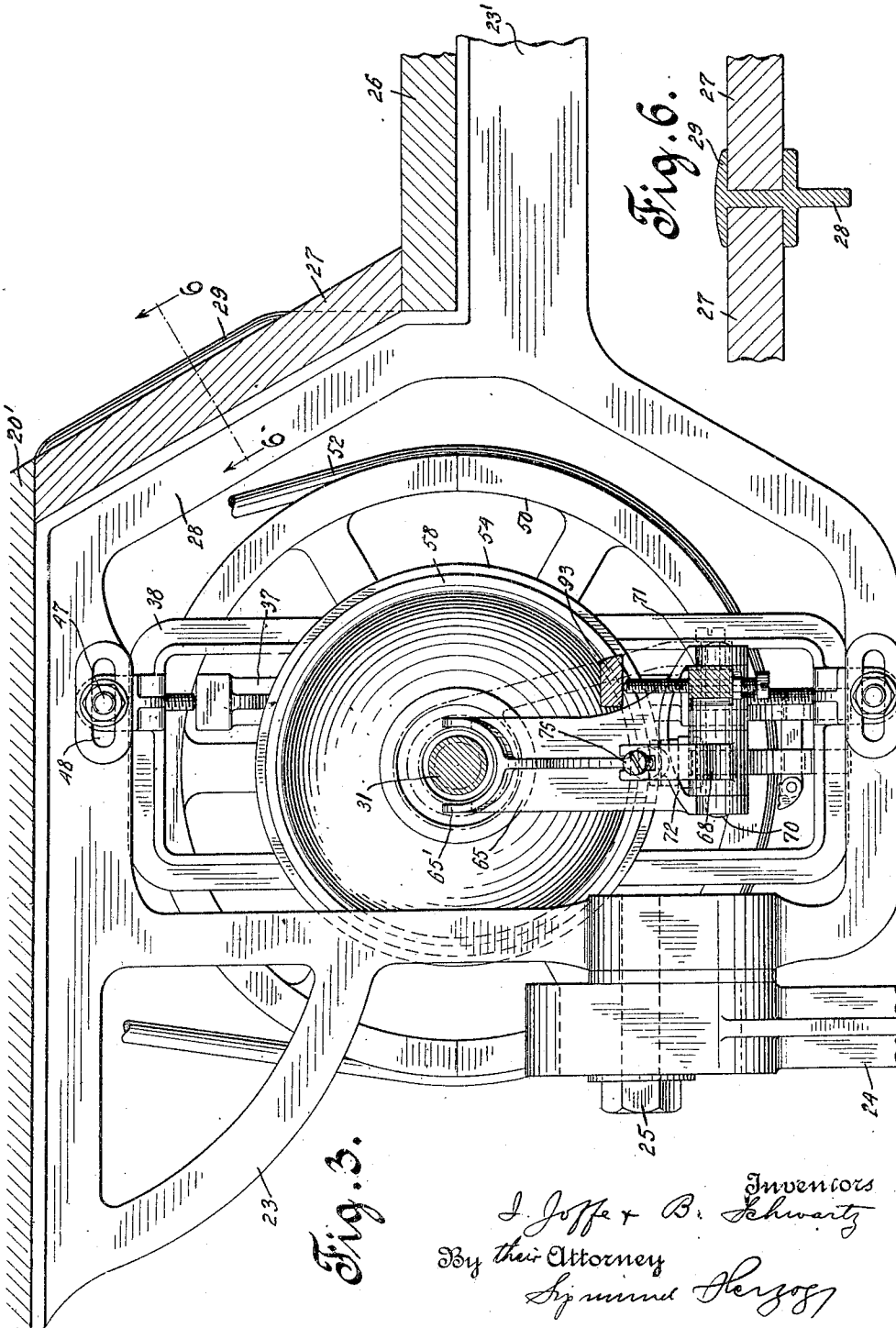
I. JOFFE ET AL

1,491,267

SEWING MACHINE

Filed May 24, 1922

5 Sheets-Sheet 3



I. Joffe & B. Schwartz
Inventors
By *their Attorney*
Sigmund Herzog

April 22, 1924.

1,491,267

I. JOFFE ET AL

SEWING MACHINE

Filed May 24, 1922

5 Sheets-Sheet 4

Fig. 5.

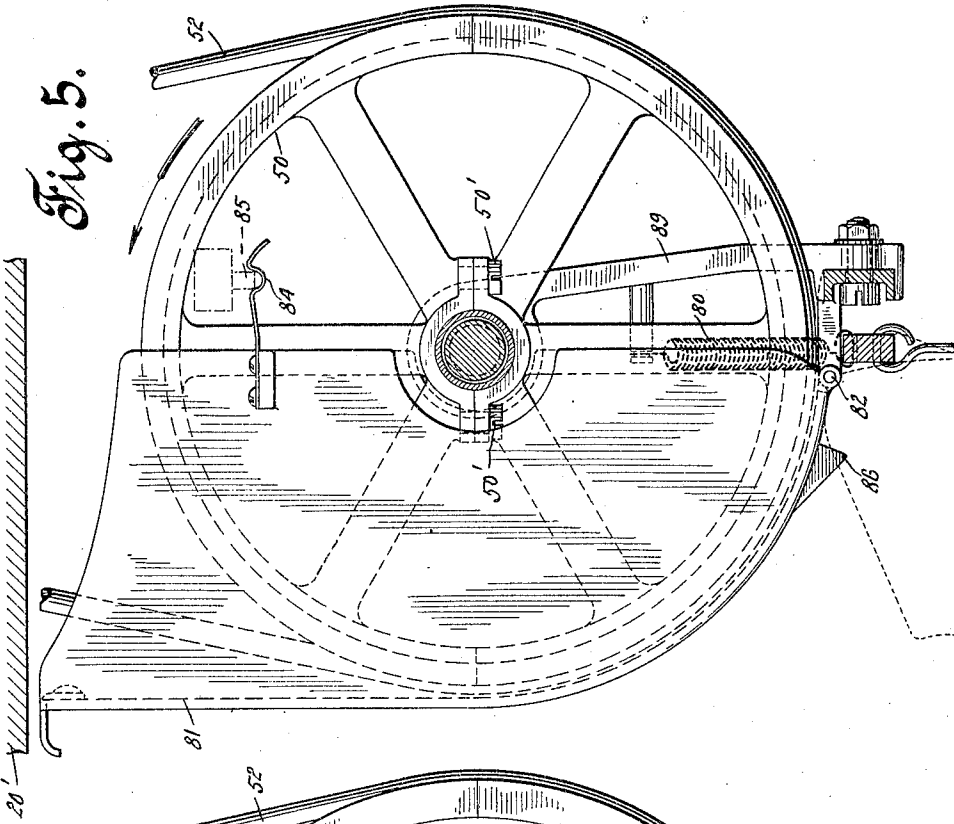
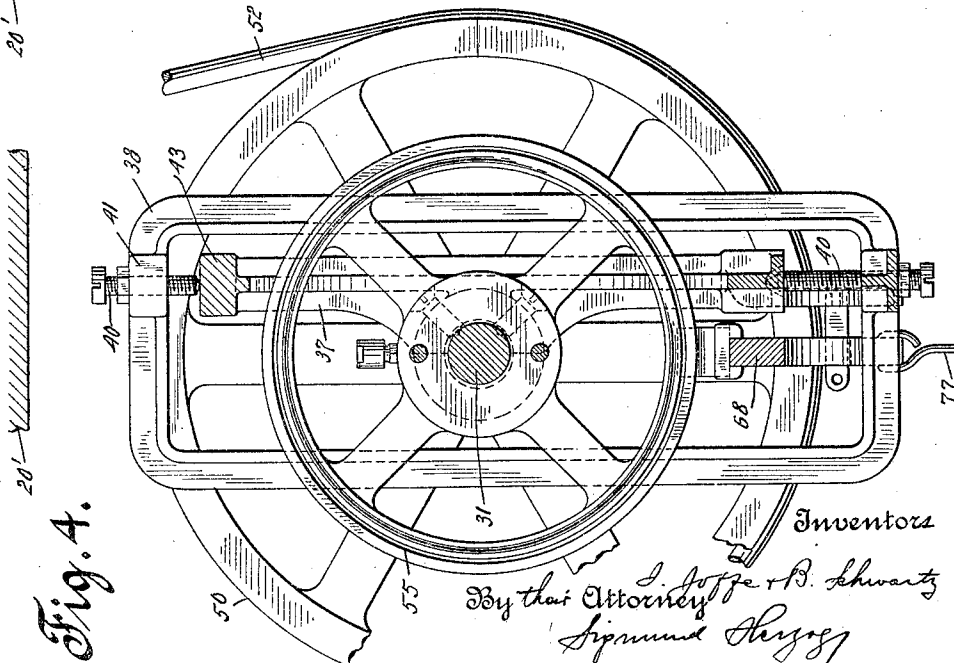


Fig. 4.



Inventors
I. Joffe & B. Schwart
By their Attorneys
Sigmond Herzog

April 22, 1924.

I. JOFFE ET AL

1,491,267

SEWING MACHINE

Filed May 24, 1922

5 Sheets-Sheet 5

Fig. 7.

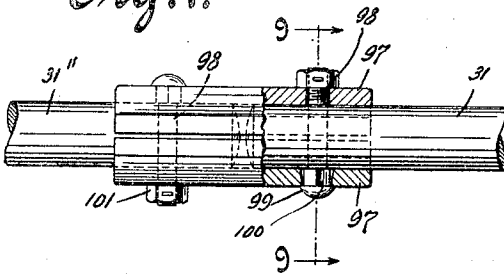


Fig. 8.

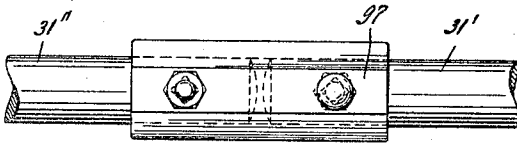


Fig. 9.

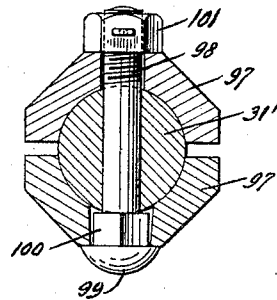


Fig. 10.

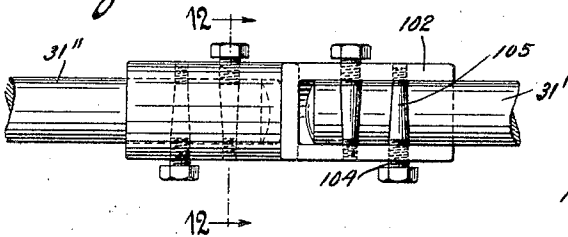


Fig. 11.

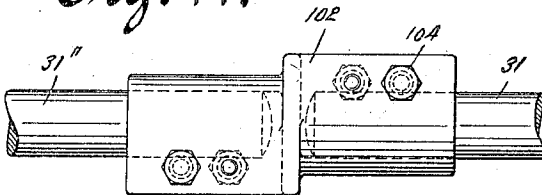
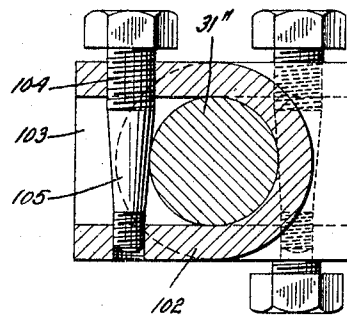


Fig. 12.



Inventors
I. Joffe + B. Schwartz
By the Attorney
Sigmund Herzog

UNITED STATES PATENT OFFICE.

ISAAC JOFFE, OF NEW YORK, N. Y., AND BENJAMIN SCHWARTZ, OF JERSEY CITY,
NEW JERSEY.

SEWING MACHINE.

Application filed May 24, 1922. Serial No. 563,285.

To all whom it may concern:

Be it known that we, ISAAC JOFFE and BENJAMIN SCHWARTZ, citizens of the United States, and residents, respectively, of the city of New York, in the county of Queens and State of New York, and of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Sewing Machines, of which the following is a specification.

The present invention relates to improvements in sewing machines, and more particularly to power transmitting devices for use with power benches, carrying a number of sewing-machines, which are driven independently of one another from a rotating shaft, the latter being disposed underneath the table portion of the bench.

The main object of the invention is to provide a simple, efficient and durable power transmitting mechanism, the elements of which are so constructed that they may be removed as a unit from the driving shaft without interfering with the operation of the other transmitters thereon.

Another object of the invention is to so arrange and design the main bearing of the transmission that it may be quickly and easily aligned with the other bearings of the driving shaft.

A further object of the invention is to provide a power shaft which is made up of a plurality of sections, united by extremely simple means, so that the said sections may be taken apart quickly without the aid of any other tool but a screw driver or a wrench.

A further object of the invention is to protect the operator from the rotating parts of the power transmitting apparatus by providing a shield, which locks the brake-carrying lever of the device in braking position when the shield is swung to open or uncovering position.

A still further object of the invention is to produce a power transmitting apparatus of the type mentioned, which is so simple in construction that it is capable of manufacture on a commercial scale, or in other words one which is not so difficult to produce as to be beyond the reasonable cost of such a contrivance.

With these and objects in view, which will more fully appear as the nature of the invention is better understood, the same con-

sists in the combination, arrangement and construction of parts hereinafter described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and details of construction within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a front elevation of a portion of a work bench, containing the improved power transmitting apparatus; Fig. 2 is a vertical, longitudinal section taken through the apparatus, on a larger scale; Fig. 3 is a section taken on line 3—3 of Fig. 2; Fig. 4 is a section taken on line 4—4 of Fig. 2; Fig. 5 is a section taken on line 5—5 of Fig. 2; Fig. 6 is a section taken on line 6—6 of Fig. 3; Fig. 7 is an elevation, partly in section, of a modified shaft coupling; Fig. 8 is a bottom plan view of the said coupling; Fig. 9 is a section taken on line 9—9 of Fig. 7, on a larger scale; Fig. 10 is an elevation of a further modification of a shaft coupling; Fig. 11 is a bottom plan view of the coupling shown in Fig. 10; and Fig. 12 is a section taken on line 12—12 of Fig. 10, on a larger scale.

Referring now first to Figs. 1 to 6, inclusive, of the drawings, the numeral 20 indicates a bench, comprising a table 20', provided with a trough 21, into which the finished articles are deposited by the operators. As usual in constructions of this type there are two parallel tables provided in the same plane, the trough 21 being located between the same. The tables and trough are mounted upon legs 22, arranged in pairs, each leg comprising an upper section 23 and a lower section 24, which are adjustably secured together by screw bolts 25, or similar fastening devices, so as to permit the heights of the legs to be varied according to the requirements. The upper sections 23 of each pair of legs are connected by a transverse rail 23', on which rests the trough above referred to. The trough is made up of a bottom section 26 and side sections 27, the bottom section being placed upon the transverse rails 23' and the side sections on inclined

portions 28 of the leg sections 23. These inclined portions are provided with I-shaped projections 29, into which the ends of adjoining side sections 27 are fitted, as clearly shown in Figs. 3 and 6 of the drawings, they being thus prevented from longitudinal and lateral movement on the table legs. To hold the side sections 27 of the trough against upward movement, the tables 20' are extended over the same (Fig. 3).

Upon the tables are mounted sewing-machine heads 30, one row on each side of the trough, each row being actuated from a driving shaft 31, coupled to a motor 32. The two motors of the bench are disposed upon a shelf 33 at one end of the same. The sewing-machine heads are arranged in such a manner that one of the same is disposed on each side of the trough between two adjacent legs 22.

The shaft 31 is connected by a suitable coupling 34 with the motor, and may be made of a plurality of sections, suitably joined. The said shaft is journaled in sleeves 35, which will be more fully described hereinafter, said sleeves being rotatably mounted in bearings 36, that are either made integral with or carried by frames 37. There is one of these frames associated with each leg 22, each frame being adjustably mounted, in a manner presently to be described, upon a substantially elliptical body 38, which is adjustably carried by the respective leg section 23. The elliptical body extends transversely of the power bench in a vertical plane and embraces, as it were, the bearing frame 37. The connection between the bearing frame and the said elliptical body is made by a plurality of vertically extending screw bolts 40. Two of these screw bolts extend through a horizontal portion 41 on the upper part of the elliptical body and one screw bolt through a horizontal extension 42 on the lower part of the elliptical body, the first mentioned two bolts bearing against a horizontal ledge 43 on the bearing frame 37 and the lower screw bolt projecting into a recess 44 in the bearing frame. The three screw bolts serve to adjust the bearing 36 in a vertical plane. In order to permit the bearing to be adjusted transversely of the power bench, or in other words in a horizontal plane, the elliptical body must be made shiftable transversely on the leg section 23. For this purpose the horizontal extensions 41 and 42 are provided with lugs 45 and 46, respectively. Through these lugs pass screw bolts 47, that extend through horizontal slots 48 in the leg sections 23.

With each sewing-machine head co-operates a power transmitting apparatus, disposed adjacent one of the legs 22. This apparatus includes a pulley 50, constituting the driven member of the apparatus, said

pulley being disposed in alignment with a pulley 51 on the machine head, through which power is transmitted for operating the stitch forming and feeding mechanism. Over the pulleys runs a belt 52, transmitting the rotation of the driven member 50 to the pulley 51. The pulley 50 is fixedly attached to the sleeve 35 on one side of the bearing 36, the said sleeve being, preferably, made integral, on the other side of the said bearing, with a clutch drum 54, having an outer peripheral groove 55, for engagement with a brake member 56. The drum carries an annular friction member 57, adapted to co-operate with a driving clutch member 58, mounted upon the driving shaft 31. The connection between the clutch member 58 and the shaft 31 is made by a collar 59, that is fixed to the shaft 31 by set screws 60 and provided with two or more pins 61, which extend in parallel relation to the longitudinal axis of the shaft 31 into bores 62 in the hub 63 of the clutch member 58. Within the said hub is mounted a thrust bearing 64, for co-operation with a shifting lever 65, hereinafter to be described. The hub 66 of the drum 54 abuts against a thrust bearing 67 in the bearing 36, to lessen the friction between the said drum and bearing.

The driving clutch member 58 is shiftable longitudinally upon the shaft 31. For shifting the said driving clutch member, so as to engage with the driven member 54, there is a lever 68 fulcrumed at 70 to an extension 71 of the bearing frame 37. This lever carries the lever 65 above referred to. The lever 65 extends substantially vertically, its free end being fork-shaped as shown at 65', its prongs being in engagement with the thrust bearing 64. The lower end of the lever 65 is also fork-shaped, as clearly indicated at 72 in Fig. 3 of the drawings, it fitting over the lever 68 and frame extension 71, it being held in position by the fulcrum pin 70. In order to hold the lever 65 rigidly upon the lever 68, the latter is provided with a vertical extension 73, through which passes a screw bolt 74 into the lever 65. The head 75 of the screw bolt abuts against one face of the extension 73 and a lock nut 76 against the opposite face thereof. The screw bolt 74 permits of an adjustment of the lever 65 in relation to the lever 68 in case the parts wear. The outer end of the lever 68 is connected by a rod 77 with a treadle 78 of any suitable construction. The rod 77 is, preferably, made of two sections, that are adjustably secured together by a coupling 79. A spring 80, secured to the lever 68 and to some stationary part of the mechanism, serves to hold, normally, the brake block 56 in the groove 55 in the drum 54.

A shield 81 swivels around a pin 82, the latter being carried by an extension 83 of

the bearing frame 37. This shield encloses and surrounds the front portion of the pulley 50, it being held in closing position by a spring 84, engaging a lug 85 on the frame member 37. The shield is provided with a nose 86, that is adapted to contact with the underface of the lever 68 when the said shield is swung to open position, shown in dotted lines in Fig. 5 of the drawings.

The driving shaft 31 is enclosed in tubular members 87, which extend from the shield 81 of one transmitter substantially to the lever 65 of the other transmitter, (Figs. 1 and 2). The tubular members are kept concentrically in relation to the driving shaft by being seated in cylindrical recesses 88 in standards 89 and 90. The standards 89 are adjustably fixed by screws 91 to the extensions 83 on the bearing frames 37. The standards 90, on the other hand, are pivoted at 92 to the extension 71 on the said frame members. Each standard 90 carries a lug 93, against which bears a screw bolt 94, that extends through the respective extension 71. The screw bolts hold the standards 90 in substantially vertical position, preventing a disengagement of said tubular members from the standards.

As above mentioned, the driving shaft 31 may be made of a plurality of sections, in order to permit of a convenient mounting and dismounting thereof on the power bench. There are two shaft sections associated with each power transmitting device, more particularly a short section 31' and a longer section 31''. The shorter section extends from the standard 89 to the standard 90 on the same frame member, projecting somewhat beyond the said standards as clearly shown in Fig. 2 of the drawings, and the longer section extends from the shorter section to the next shorter section in the series. The shorter sections are of a somewhat larger diameter than the longer sections, and provided in both ends with cylindrical bores 95, into which fit the longer sections. The connection between the shorter and longer sections is made by screws 96.

A modified shaft coupling is illustrated in Figs. 7 to 9, inclusive, of the drawings. In this case, the shaft sections are of the same diameter, the abutting ends thereof being placed into two semi-cylindrical bodies 97, which are united with the shaft sections by screw bolts 98. These bolts are provided, adjacent their heads 99, with polygonal shoulders 100, extending into one of the semi-cylindrical bodies 97, to prevent rotation of the screw-bolt, when the nut 101 is screwed into place.

A further modification of the shaft coupling is shown in Figs. 10 to 12, inclusive. In this instance, a coupling sleeve 102 is employed, having longitudinal openings 103 in opposite faces thereof, through which the

shaft sections may be inserted sideways. The shaft sections are held in place by screw bolts 104, having conical shank sections 105, which contact with the shaft sections and confine the same against lateral movement. The shank sections 105 are conical to permit of an adjustment of the shaft sections in relation to one another. With each shaft section are associated two screw bolts 104, which are passed through the body 102 from opposite sides thereof, so as to permit of an accurate adjustment of said shaft section.

The operation of this device is as follows: The driving shaft on the work bench is rotating continuously, and, in order to transmit its rotation to any one of the sewing machine heads thereon, the respective treadle is depressed, whereby the respective brake block 56 is disengaged from the drum 54 and the driving clutch member 58 shifted into operative relation with the said drum. When in engagement, the rotation of the driving clutch member 58 is transmitted to the pulley 50 and thus to the pulley 51 on the machine head. When the treadle is released, the spring 50 returns the lever 68 to the position shown in Fig. 2 of the drawings, whereby the brake is applied to the drum 54 and the driving clutch member 58 is permitted to move toward the standard 90 adjacent thereto. The driving clutch member has a tendency to move in the direction mentioned as soon as released. The end thrust of the driven clutch member 54 is taken up by the bearing 36, so that the engaging and disengaging of the said driven clutch member with the driving clutch member does in no way effect the operation of the other power transmitting devices on the bench.

The tubular members 87 and the shields 81 serve as coverings for the driving shaft and that part of the power transmitting device with which the operator would come into contact. Whenever a shield is shifted to open position, it is impossible to actuate the respective power transmitting apparatus by reason of the nose 86 preventing a shifting of the lever 68 and thus an engagement of the driving clutch member 58 with the driven clutch member of the device. The operators are thus effectively guarded against accident.

It is to be observed that, no matter how tight the belt 52 is drawn on a transmitter, it does not create a lateral stress on the shaft, by reason of the fact that the stress is taken up by the frame member 37, against which the sleeve 35 rests. The same conditions prevail when the brake is applied to the drum 54.

Attention is called to the fact that each power transmitter is placed as near as possible to one of the legs 22, the result being

that almost the entire space under the respective table portion becomes available for use.

It is to be noted that each individual power transmitter can be removed as a unit from the bench by loosening the screw bolts 47, connecting the body 38 thereof with the respective leg section 23.

Inasmuch as the levers 65 and 68 are mounted on the bearing frames 37, the said levers will follow the bearing frames when the shaft sections are being aligned, or in other words no separate adjustments must be made as far as these levers are concerned.

Attention is called to the fact that the pulley 50 may be conveniently aligned with the pulley 51 on the machine head without disturbing any other element of the transmitting device. In fact, the pulley 50 may be removed from the device without changing the positions of other elements of the device, the said pulley being for this purpose made of two sections, as clearly shown in Fig. 5 of the drawings, said two sections being united by screws 50'.

What we claim is:—

1. In a power transmitting apparatus, the combination with a supporting leg, of a bearing supporting body adjustably secured thereto, a bearing on said body adjustable thereon in a direction at right angles to that in which the adjustment of said supporting body is capable of being made on said leg, a shaft journaled in said bearing, a clutch on one side of said bearing, and a pulley on said shaft on the other side of said bearing, said bearing supporting body with all the elements thereon being detachable as a unit from said leg.

2. A power transmitting apparatus according to claim 1, comprising a brake lever operatively connected with said bearing, and a brake on said lever co-operating with said clutch, said lever and brake being removable with said bearing supporting body from said leg without disturbing the operative relation thereof to said clutch.

3. In a power transmitting apparatus, the combination with a supporting leg, of a bearing supporting body adjustably secured thereto, a bearing on said body adjustable thereon in a direction at right angles to that in which the adjustment of said supporting body is capable of being made on said leg, a sleeve journaled in said bearing, a shaft rotatable in said sleeve, said sleeve having an extension on one side of said bearing, a driven clutch member of a power transmission on said extension, said extension abutting against said bearing, a driving clutch member fixed to said shaft for co-operation

with said driven clutch member, and a pulley fixed to said sleeve on the other side of said bearing, the thrust of said clutch being taken up by said bearing.

4. In a power transmitting apparatus, the combination with a supporting leg, of a bearing supporting body horizontally adjustable thereon, a bearing on said body vertically adjustable thereon, a shaft journaled in said bearing, a clutch on said shaft on one side of said bearing, and a pulley on said shaft on the other side of said bearing, said bearing supporting body with all the elements thereon being detachable as a unit from said leg.

5. In a power transmitting apparatus, the combination with a supporting leg, of an elliptical supporting body adjustably secured thereto, a frame on said body adjustable thereon in a direction at right angles to which the adjustment of said supporting body is capable of being made on said leg, a bearing on said frame, a shaft journaled in said bearing, a clutch on said shaft on one side of said bearing, and a pulley on said shaft on the other side of said bearing, said bearing supporting body with all the elements thereon being detachable as a unit from said leg.

6. A power transmitting apparatus according to claim 5, comprising a brake lever pivoted to said frame, and a brake on said lever co-operating with said clutch, said brake lever and brake being removable with said bearing supporting body from said leg without disturbing the operative relation thereof to said clutch.

7. In a power transmitting apparatus, the combination with a supporting leg, of a bearing supporting body adjustably secured thereto, a frame on said body adjustable thereon in a direction at right angles to which the adjustment of said supporting body is capable of being made on said leg, a bearing on said frame, a shaft journaled in said bearing, a clutch on said shaft comprising a driving member and a driven member, one of said members being longitudinally shiftable on said shaft, a brake lever pivotally connected with said frame, a brake on said lever cooperating with said clutch, and an arm fixed to said brake lever for actuating the shiftable element of said clutch.

8. In a power transmitting apparatus according to claim 7, said arm being adjustably fixed to said lever.

Signed at New York, in the county of New York and State of New York, this 8th day of October, A. D. 1921.

ISAAC JOFFE.
BENJAMIN SCHWARTZ.