UNION SPECIAL
Industrial Sewing Machines

INSTRUCTIONS

FOR

INSTALLING AND OPERATING

CUP FEED MACHINES

CLASS 41300

Catalog No. 78
Second Edition

UNION SPECIAL MACHINE COMPANY
CHICAGO

USE GENUINE NEEDLES AND REPAIR PARTS

Success in the operation of these machines can be secured only by the use of genuine Union Special Needles and Repair Parts as furnished by the Union Special Machine Company, its subsidiaries and authorized distributors. Obviously, it is to our interest to maintain the reputation of Union Specials by furnishing the very best goods obtainable. They are designed according to the most approved scientific principles, and are made with the utmost precision. The maximum efficiency and durability are assured.

Genuine needles are put up in packages marked at the top "Trade 'UNION SPECIAL' mark". Needles put up in packages marked "For U. S. Machines" are not furnished by us.

Genuine repair parts are stamped with a reproduction of the well known two padlocks with a link connecting the shackles.

Both trade marks are symbolic of superlative excellence. All other needles and parts are bogus.

Printed in U.S.A.

DEPENDABLE SERVICE

AROUND THE WORLD WITH

Union Special®

INDUSTRIAL SEWING MACHINES

• Africa

BULAWAYO, SO. RHODESIA, FEDERATION OF RHODESIA and NYASALAND, Berzack Bros. Ltd., 16 14th Avenue. (Textile Machines).

CASABLANCA, MOROCCO, Etablissements Geissmann & Fils, 34 Blvd. de la Gare.

JOHANNESBURG, UNION OF SOUTH AFRICA, South African Scale Co., (Pty.) Ltd., P.O. Box 1463, 32 Von Brandis St., for bag closing machines. Branches also at Bloemfontein, (53 Zaston St.), Capetown, (Box 779), Durban, (22 Aliwal St.), East London (53A Cambridge St.) Pietermaritzburg, Port Elizabeth, (Box 611), Pretoria, Vereeninging and Worcester.

JOHANNESBURG, UNION OF SOUTH AFRICA, Berzack Bros. Ltd., Berbro House, 135/7 Pritchard St. Branches also at 487 West St., Durban; 78 Darling St., Capetown; 58 Queen St., Port Elizabeth. Textile machines.

MAURITIUS, Hall, Geneve, Langlois, Ltd., Port Louis, P.O. Box 77.

SALISBURY, SO. RHODESIA, FEDERATION OF RHODESIA and NYASALAND, So. African Scale Co., Corner of Forbes and Angwa Sts., Bag Closing Machines.

• Asia

CALCUTTA, INDIA, Don Watson & Co., Ltd., 19 British Indian St.

DACCA, PAKISTAN, Roberts & McLean & Co., Ltd., 91 Nawabpur Rd., Bag closing and Bag seaming machines.

DELHI 6, INDIA, Munshi Ram Bs. C., P.O. Box 1114, Kashmere Gate. Above Keventers.

HONGKONG, G. R. Coleman Co. (Hongkong) Ltd., Room 308, Bank of Canton Bldg., 6 Des Voeux Road, Central.

KARACHI 2, PAKISTAN, Universal Trading Corp., Textile Machines, 29 Zeenat Mansion, McLeod Road, P.O. Box 4635.

OSAKA, JAPAN, Mima Sewing Machine Mfg. Co. 29, 1-chrome, Ebi-kami, Fukushima—KU.

SEOUL, KOREA, Uebersee-Handel A. G., Iwang Wha Moon, P.O. Box 268.

TAIPEI, TAIWAN, G. R. Coleman, Hongkong, Ltd., 78 Po Ai Road.

TOKYO, JAPAN, Iwase Sewing Machine Co., Ltd., 39, 1-chrome, Kamezawa-cho, Sumida—KU.

• Australia

BRISBANE, AUSTRALIA, Capron, Carter (Pty.) Ltd., Rm. 55—Rex Bldg., Wickham St., Valley.

MELBOURNE, VICT., AUSTRALIA, Capron, Carter (Pty.) Ltd., 78 A'Beckett St.

SYDNEY, N.S.W., AUSTRALIA, Capron, Carter (Pty.) Ltd., 86 Liverpool St.

• British West Indies

KINGSTON, JAMAICA, B. W. I., Mr. Morris E. Parkin, 102 King St.

• Canada

Union Special Machine Co. of Canada, Ltd.

CALGARY, ALTA., 1809 24th Ave., N.W. N. W. Holt, Tel. 891690.

MONTREAL 14, QUE., 40 Moliere St., Clyde F. Amey, Tel. Victoria 2575.

QUEBEC, P. Q., Ave. Des Pins Ouest. Lucien Bouchard. Tel. 3-8126.

★TORONTO 2, ONT., 135 Peter St. S. J. Storey, Mgr. Tel. Empire 6-2939.

WINNIPEG, MAN., Room 201, Whitla Bldg., Frank Thierman. Tel. 934933.

• Europe

AMSTERDAM, THE NETHERLANDS, N. V. Machinehandel C. & H. Verbeek, Klaveniersburgwal 77. Also offices in: Rotterdam, Sittard, Groningen, Enschede, Eindhoven.

ATHENS, GREECE, Michel D. Dimoulis, Rue Deka, 4A.

BARCELONA, SPAIN, Rapida, S. A. Avino 9.

BERGEN, NORWAY, Jac. Jacobsen A/S, Bjornsongst 24.

BORAS, SWEDEN, Rud. Nystrom & Co., A/B, Lilla Bannerigatan 6.

BRUSSELS, BELGIUM, Union Special Machine Corporation of America, 23 Rue Philippe de Champagne. Henri Deloof, Mgr.

COPENHAGEN, DENMARK, Rothenborg Specialmaskiner for Sy-Industrian A/S, Nikolaj Plads 23. Also offices in: Herning, Kolding, Odense, Silkeborg, Riisakov.

DUBLIN, EIRE, Machines, Ltd., 24 Upper Abbey St. Textile Machines.

DUNDEE, SCOTLAND, Thomas C. Keay, Ltd., 15 Baltic St. Bag Closing and Bag Making.

HELSINKI, FINLAND, Suomen Koneliike O/Y, Vilhonkatu 9.

LEICESTER, ENGLAND, Union Special Machine Co., Ltd., 25 Bede St. Braunstone Gate, A. B. Fitzpatrick, Mgr. Textile Machines.

LONDON, E. C. 1, ENGLAND, Union Special Machine Co., Ltd., Parksworth House, 30, City Road. Textile Machines.

MALMO, SWEDEN, Rud. Nystrom & Co., A/B Vargatan 10-A.

MILANO, ITALY, Giovanni Conti y Nipoti, Piazzale Marengo 6.

NOTTINGHAM, ENGLAND, Mr. W. Wilkes, Plantation Road, Wellaton. Textile Machines.

OPORTO, PORTUGAL, Rost & Janus, Succrs., Rua Barao de Forrester, 914.

OREBRO, SWEDEN, Rud. Nystrom & Co., A/B Skebacksvagen 17-19.

OSLO, NORWAY, Jac. Jacobsen A/S, Kr. Augustsgate 19 (Tullingarden).

PARIS, FRANCE, Cie. des Machines Union Special de France, 91 Avenue de la Republique, Georges Linotte, Mgr.

STOCKHOLM, SWEDEN, Rud. Nystrom & Co., A/B, St. Nygaten 10-12.

STUTTGART, GERMANY, Union Special Maschinenfabrik, G.m.b.h., Schwabstrasse 33, A. W. Krieger, Managing Director.

VIENNA, VI, AUSTRIA, Firma Nahschuster, Mariahilferstr, 51.

ZURICH, 9/47, SWITZERLAND, M. L. Bourquin, Albisriederstrasse 226.

• Latin America

Union Special International, Inc.

BARRANQUILLA, COLOMBIA, C. Ceballos & Cia., Ltda., Almacenes "Carceco," Banco Comercial, Anticqueno, OF. 401.

BOGOTA, COLOMBIA, C. Ceballos & Cia., Ltda., Avenida Caracas 17-18.

BUENOS AIRES, ARGENTINA, Kay, Grandjean & Cia., Bartolome Mitre 760.

CALI, COLOMBIA, C. Ceballos & Cia., Ltd., Calle 4, No. 9-21.

CARACAS, VENEZUELA, H. Blohm, S.A., Dr. Paul A. Charro 29.

CIUDAD TRUJILLO, DOMINICAN REPUBLIC, Luis Dominguez, Apartado 57, Hostos esq. El Conde.

GUADALAJARA, JAL., MEXICO, Talleres Perez Zozaya, S. A. Hidalgo 45 y 47.

GUATEMALA CITY, GUATEMALA, Cia. Agro Commercial S.A., 8a Ave. Sur. 10-43. Bag Closing Machines.

HAVANA, CUBA, Antilla Yarn & Supply Co., S. A. Factoria 70, Textile, Bag Seaming, and Shoe Machines.

HAVANA, CUBA, Mr. Miguel A. Vilato, Apartado No. 124, Bag Closing Machines.

LIMA, PERU, A. y F. Wiese, S.A., Esq. Nunez y Filipinos.

MANAGUA, NICARAGUA, Hentgen & Co., Ltd., Apartado 14. 5 A. Calle, N. O. 214.

MEDELLIN, COLOMBIA, C. Ceballos & Cia., Ltda., Carrera Junin 44-34.

MEXICO, D.F., MEXICO, Perez Zaragoza, S.A., Regina 26.

MONTERREY, N.L., MEXICO, Talleres Perez Zozaya, S.A., Apartado 197, Cuahtemoc Norte 335.

MONTEVIDEO, URUGUAY, Carlos Dighiero e Hijos, Convencion 1424.

PORTO ALEGRE, RIO GRANDE DO SUL, BRAZIL, Casa de Maquinas Falk, Ltda., Rua Hoffman 533. Bag Closing and Bag Making Machines.

PORTO ALEGRE, RIO GRANDE DO SUL. Maquinas de Costura Panambra, S.A., Rua Sigueira de Campos 1172. Textile Machines.

RECIFE, PERNAMBUCO, Maquinas de Costura Panambra, S.A., Av. Guararapez 154. Textile Machines.

REPRESENTATIVES

RIO DE JANEIRO, D.F., Maquinas de Costura Panambra, S.A., Rua Alexandre Mackenzie 117. Textile Machines.
SAN JOSE, COSTA RICA, Champion Co., Ltda., APDO. 2742.
SAN JUAN, PUERTO RICO, Abarca Warehouse, Inc., P.O. Box 2352.
SAN LUIS POTOSI, S.L.P., MEXICO, Talleres Perez Zozaya, J. de los Reyes 80.
SAN SALVADOR, EL SALVADOR, Vairo Hermanos, Colonia Vairo.
SANTIAGO, CHILE, Lowenstein & Stewart, S.A.C., P.O. Box 2195, Calle Santo Domingo 1140.
SAO PAULO, BRAZIL, Casa de Maquinas Falk, Ltda., Av. Duque de Caxias 610. Bag Closing & Bag Making Machines.
SAO PAULO, BRAZIL, Maquinas de Costura Panambra, S.A., Rua Brigadiero Tobias 388. Textile Machines

• Near East

BAGHDAD, IRAQ, Sons of O. O. Agopian, P.O. Box 121.
BEIRUT, LEBANON, Sons of O. O. Agopian, P.O. Box 1165.
CAIRO, EGYPT, Mr. A. Kavaldjian, 4, Midan El-Hami, Kasr el Nil Bridge.
DAMAS, SYRIA, Elias Aractingi & Fils, Sidi Amoud.
ISTANBUL, TURKEY, David ve Varber ve Seriki, Hamdi Bey Gecidi 36, 38, 40, Posta Kutusu 385.
TEL AVIV, ISRAEL, L. Taube, Ltd., 15 Lilienblum St.

• New Zealand

Sole Distributors—H. A. Tuck & Co., Ltd.
AUCKLAND, 171 Albert St., C. 1. (Head Office
WELLINGTON, Ford Bldg., Courtenoy Place.
CHRISTCHURCH, (Sub-Agents) Glendermid, Ltd., 78 Lichfield St.
DUNEDIN, (Sub-Agents) Glendermid, Ltd., 18 Dowling St.

• Pacific Islands

CEBU, THE PHILIPPINES, Atkins, Kroll and Co., Inc., Textile Machines.
HONOLULU, HAWAII, Commercial Sewing Machine Service, Ltd., 732 Ilaniwai St. Textile Machines.
HONOLULU, HAWAII, H. S. Gray Company, P.O. Box 3016, 759 Puuloa Rd. Bag Closing Machines.
MANILA, PHILIPPINE ISLANDS, Atkins, Kroll & Co., Inc., 124 Myers Bldg., Port Area. Textile Machines.
MANILA, PHILIPPINE ISLANDS, Earnshaws Docks & Honolulu Iron Works Co., Corner of Tacoma and 2nd Sts., Port Area. Bag Closing Machines.

• United States

ALLENTOWN, PA., 1512 Catalina Ave., Box 542, L. D. Cassell. Tel. Hemlock 4-3900.
★ATLANTA, GA., 81 Peachtree Pl., N.W., M. O. Moulton, Mgr. Tel. Atwood 2733, 2734.
BALTIMORE 15, MD., P.O. Box 2505 R. B. Foster. Tel. Sar. 7-8499.
BELLEVILLE, N. J., 18 Preston St., D. C. Jenkins. Tel. Plymouth 1-0304.
★BOSTON 11, MASS., 179 Lincoln St., Wm. E. Palm, Mgr. Tel. Liberty 2-0147-48.
★CHICAGO 10, ILL., 404 N. Franklin St., O. A. Ullrick, Mgr., Tel. Superior 7-6920.
★CINCINNATI 25, O., 3372 Central Pkwy. A. E. Brauch, Mgr. Tel. Kirby 5558.
CLEVELAND 11, OHIO, 11902 Milligan Ave., David G. Lee. Tel. Clearwater 1-3462.
COLUMBIA, S. C., 319 Howard St., C. A. Page, Tel. 6-8806.
COMMERCE, GA., State St. J. T. Hanley. Tel. 3-6872.
CONYNGHAM, PA., Box 46, Robert S. Vogt. Tel. Sunset 8-5556.
DALLAS 2, TEXAS, P.O. Box 5013. Emmett Richards. Randolph 5722.
DENVER 10, COLO., 1801 South Marion St. L. E. Carter, Tel. Spruce 7-7060.
DETROIT 21, MICH., 16630 Ward Ave. John F. Lux, Tel. University 3-4948.
GREENSBORO, N. C., P.O. Box 226. W. D. Harrod. Phone: 3-7648.
GREENVILLE, S. C., 119 Phillips Lane, M. M. Ambrose, Tel. 3-4647.
INDIANAPOLIS 1, IND., 3731 N. Tacoma Ave. B. L. Rogers. Tel. Liberty 6-2277.
JACKSON, MISS., 327 Eastview St. J. A. Boyette. Tel. 5-1976.
JOHNSON CITY, N. Y., 471 Main St., J. J. Lafler, Tel. 7-3994.
KANSAS CITY 41, MO., P.O. Box 824, T. O. Biggers, Tel. South 5030.
LATHAM (TROY), NEW YORK, 19 Aragon Ave., J. R. LeTourneur, Tel. State 5-6663.
LYNCHBURG, VA., P.O. Box 1075. C. D. Mairs. Tel. 3-1215.
★LOS ANGELES 15, CAL., 119 E. Pico Blvd. P. M. Mason, Mgr. Tel. Richmond 7-9187, 7-9188.
MEMPHIS, TENN., 4695 Dunn Rd., R. J. Lindhorst, Tel. Mutual 5-6750.
MIAMI 37, FLA., 2101 Northwest 1st Ave., H. L. Simon, Tel. 82-0323.
MINNEAPOLIS, MINN., 2800 Texas Ave., St. Louis Park, Minn. Leonard Koehler. Tel. Midway 6236.
NASHVILLE 12, TENN., 1602 South Observatory Drive. W. J. Brauch. Tel. Cypress 2-5123.
NEW ORLEANS, LA., 59 W. Claiborne Square, Chalmette, La., L. A. Van Hooser. Tel. Edgewood 1-3106.
★NEW YORK 16, N.Y., 116 E. 27th St. W. G. Booth, Mgr. Tel. Murray Hill 9-1266, 9-1267, 9-1268.
★PHILADELPHIA 7, PA., 1316 Arch St. B. W. Merz, Mgr. Tel. Locust 7-1023.
PITTSBURGH 26, PA., 521 Brookline Blvd., Richard Marsh, Tel. Locust 3-3589.
PLANT CITY, FLA., 214 N. Gordon St. J. C. Morgan. Tel. 3-2681.
PORTLAND 7, ORE., P.O. Box 843, Marvin H. Corns. Capital 3-7500.
RAYNHAM, MASS., P.O. Box 141. W. P. Godek. Tel. Tauton 2-5149.
RUTHERFORD, N. J., 246 Sylvan St., Richard Whitson. Tel. Geneva 8-2178.
★ST. LOUIS, MO., 1517-21 Olive St., Z. X. Bennett, Mgr. Tel. Chestnut 1-2368.
SALT LAKE CITY, UTAH, 1215 E. 13th South St. L. F. Rosvall.
SAN ANTONIO, TEXAS, P.O. Box 201, H. E. Pearson. Tel. Pershing 2-2884.
SAN FRANCISCO 7, CALIF., 1275 Mission St. R. J. Vail. Tel. Underhill 1-1580.
SEATTLE, WASH., 808 Motor Pl. Paul Lockett. Tel. Seneca 8083.
TUPELO, MISS., 831 Strauss St., Lloyd Baldwin. Tel. 1859-J.
WAKEFIELD, MASS., 195 North Ave., H. Haberman Jr., Tel. Crystal 9-0455.
YORK, PA., 444 South George St. Richard L. Smith. Tel. York 8-5592.

FOREWORD

The one dominating idea back of "Union Special" is to build the best industrial sewing machines in the world. Our new line of high speed hosiery seamers Class 41300 is a pronounced achievement along these lines.

All parts are made to gauges with exceedingly close limits. The machines are provided with an automatic, spray oiling system insuring an adequate supply of oil to all bearings.

It is our constant aim to furnish carefully prepared information that will enable the customer to secure all possible economies and advantages from the use of Union Specials. On the pages which follow will be found instructions for installing and operating Styles 41300 E, 41300 T, 41300 U, 41300 V, and 41300 W.

Additional catalogs, containing information relative to these machines, and which will be furnished on request, are listed below:

Catalog No. 78 M	Illustrations and descriptions of the parts for Styles 41300 E, 41300 T, 41300 U, 41300 V, 41300 W
Catalog No. 29 Third Edition	List of miscellaneous accessories and transmitter parts.
Catalog No. 45 Form 357	Needle Manual Engineering Department Adjusting Instructions, specify the style of machines for which the adjusting instructions are required.

In all manufacturing centers will be found Union Special representatives, who will cooperate with those who desire in planning and estimating their requirements.

UNION SPECIAL MACHINE COMPANY
Engineering Department

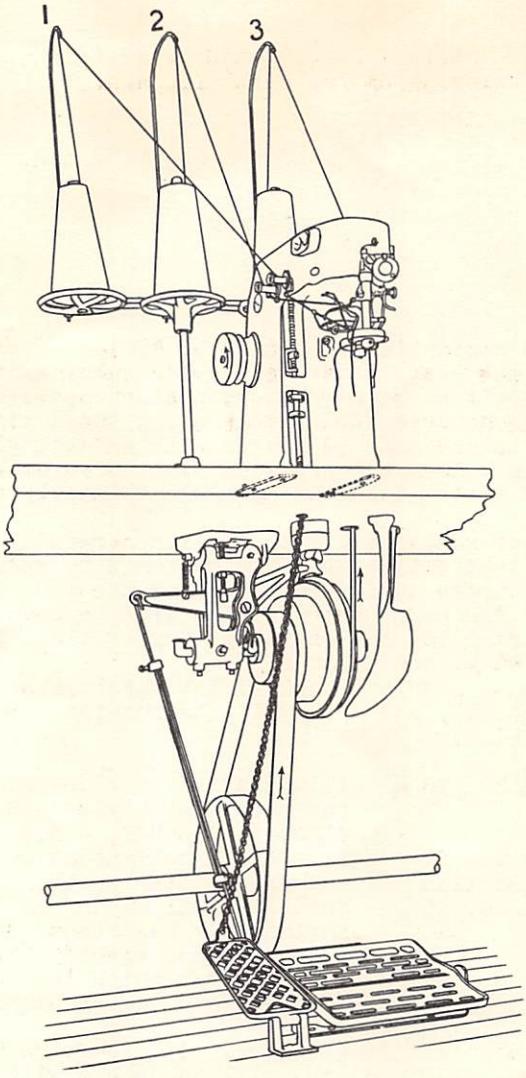


Fig. 1
Installation of Class 41300 machine with Union Special Transmitter No. 28636 AA.

INSTALLING

GENERAL PLAN

Fig. 1 shows the general plan of installation where the Union Special Transmitter No. 28636 AA is employed. The direction the machine runs is also indicated. Installations with "Electro Drive", a self-contained electric transmitter, and installations on American Safety Tables are substantially the same.

READY TO OPERATE

Before shipment, each machine is thoroughly run in, accurately adjusted, and carefully inspected. This is evidenced by the test sample left in the machine. Packed by skilled hands, they arrive at their destination ready for service.

CAUTION

Carefully note the threading of the machine when taken from the shipping box. Do not withdraw the threads. The operator can use the threads advantageously by tying the ends and drawing the new thread into the machine. It will do no harm to turn the machine pulley one or two revolutions, provided it is turned in the indicated direction.

TABLES

Any sewing machine table of ordinary construction can be used. If a new table is to be erected, a height of twenty-nine inches will be found best suited for operators of average size. New, blank table tops No. 21371 BT, made of maple, can be promptly furnished. They are 16 inches wide, 1 3/4 inches thick, are made in 42, 48, 54 or 60 inch lengths and are suitable for installations with Union Special Transmitter or "Electro Drive".

BELTS

A 1 inch flat belt for driving the transmitter and a 1/4 inch round belt for driving the machine are recommended. It is preferable to run the flat belt on the small cone of the transmitter driven pulley.

SPEED AND PULLEY DIAMETERS

The recommended speed is 4000 R.P.M. Speed variations are secured by using varying sizes of line shaft pulleys, "Electro Drive" pulleys and American Safety Table Transmitter pulleys. Working diameters of the various pulleys are: Machine pulley 2 3/8 inches; transmitter driving pulley 7 inches, transmitter driven pulley, small cone, 3 3/4 inches, large cone 5 3/4 inches. Line shaft pulleys are made in diameters of 6, 8, 9, 9 1/2, 10, 10 1/2, 11, 11 1/2, 12, 12 1/2, 13, 13 1/2, 14, 14 1/2 and 15 inches.

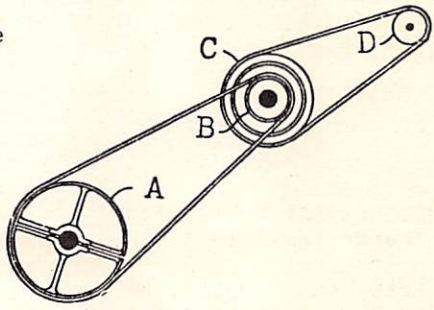
SPEED AND PULLEY DIAMETERS (Continued)

"Electro Drive" pulleys are furnished in 1/4 inch sizes ranging from 1 3/4 inches to 6 1/2 inches working diameters, both inclusive.

American Safety Table transmitter pulleys are furnished in 1/2 inch sizes ranging from 6 inches to 10 1/2 inches working diameters, both inclusive.

UNION SPECIAL TRANSMITTER DRIVE

To find the required diameter of the line shaft pulley "A" to produce the required speed on the sewing machine (see diagram) when the R.P.M. of the line shaft and diameters of pulleys "B", "C", and "D" are known, allowing 6% for the inevitable belt slippage:



RULE

The required diameter of the line shaft pulley "A" equals the required speed of the machine, times the diameter of the machine pulley "D", times the diameter of the transmitter driven pulley "B", divided by the diameter of the transmitter driving pulley "C", times the R.P.M. of the line shaft, times 94%.

EXAMPLE

4000 R.P.M. equals required speed of machine
2 1/4 inches equals diameter of machine pulley "D" (driven pulley)
3 3/4 inches equals diameter of transmitter pulley "B" (driven pulley)
7 inches equals diameter of transmitter pulley "C" (driving pulley)
475 R.P.M. equals speed of line shaft
94% equals belt efficiency (6% allowance for slippage)

Then the required diameter of the line shaft pulley "A" is:

$$\frac{4000 \times 2\ 1/4 \times 3\ 3/4}{7 \times 475 \times .94} \quad \text{equals 10 inches}$$

"ELECTRO DRIVE" AND AMERICAN SAFETY TABLE DRIVE

To find the required diameter of the driving pulleys to produce the required speed on the sewing machine when the R.P.M. of the driving pulleys and diameter of the machine

"ELECTRO DRIVE" AND AMERICAN SAFETY TABLE DRIVE (Cont'd)
pulley are known, allowing 3% for belt slippage:

RULE

The required diameter of the driving pulley equals the required speed of the machine times the diameter of the machine pulley divided by the product of the driving pulley R.P.M. times 97%.

EXAMPLE

4000 R.P.M. equals required speed of machine
2 1/4 inches equals diameter of machine pulley
3500 R.P.M. equals speed of driving pulley
97% equals belt efficiency (3% allowance for slippage)

Then the required diameter of the driving pulley is:

$$\frac{4000 \times 2\ 1/4}{3500 \times .97} \quad \text{equals } 2\ 3/4 \text{ inches}$$

UNION SPECIAL TRANSMITTER AND MACHINE

Paper template PL108 is furnished for locating the slot for the belt, the hole for fastening the machine to the table, the one bolt hole for the front right hole in the Union Special transmitter plate, the three holes for the "Electro Drive", hole for knee press chain, the two holes for the rubber mounting isolators, pilot holes for the thread stand base No. 21104 A, and pilot holes for feed cup separating lever.

Place the template in position on the table and mark the location of the various holes required for the machine and transmitter. Bore these holes. It is not necessary to cut a slot for the belt as a 1 inch hole will be equally satisfactory. If the line shaft rotates reversely to the direction the machine runs, bore the belt holes for a cross belt.

Insert the machine locating pins in the isolators with the rounded end up and place the isolators in the board. Tear the cloth backing from the gasket and press the adhesive side on the table board locating from the pins in the isolators.

Insert the 1/4 inch bolt from the top of the table. Place the front right-hand hole of the transmitter over the bolt and tighten securely. This will be sufficient to hold it temporarily.

The transmitter is equipped with a pivoted frame for regulating the tension on the flat belt. To secure the benefit of this feature swing the frame 1/2 inch out of

UNION SPECIAL TRANSMITTER AND MACHINE (Cont'd.)
the vertical and toward the line shaft by loosening the rear belt adjusting screw, and tightening the front one. Fasten the lock nuts securely to maintain the adjustment.

Place the pulley on the line shaft. Tighten sufficiently to bind, allowing for susceptibility of movement. Measure the length of flat belt required to go around the line shaft pulley and the transmitter pulley. Cut the belt 1 1/4 inches short. This will give ample tension without readjusting the transmitter frame. Place the belt around the line shaft and abut the ends on the cone. Drive in the malleable iron belt lacing No. 21350. See that the lacing conforms to the curvature of the cone and that the teeth are well clinched. Turn the pulleys by hand to note whether the belt runs true. Should it fail to ride the crowns evenly, the error may be rectified by turning the transmitter and laterally moving the line shaft pulley as required. Once set correctly, the transmitter should be permanently secured to the table by placing screws in the remaining holes. Tighten the line shaft pulley securely.

Place the machine in position and fasten with the machine mounting screw No. 105. Use the large metal washer No. 21353 A. Use both felt washers if the table top is approximately 1 3/4 inches thick and one felt washer if the table top is approximately 2 3/4 inches thick. Tighten this screw so that the felt washer used single is compressed approximately 1/16 inch and each felt washer used double is compressed approximately 1/16 inch. Any substantial variation from this adjustment will tend to produce more noise. A locking screw "B", shown in Figs. 2 and 5 of the threading diagram furnished with the machine, with a brass pin bearing against the machine mounting screw is provided to maintain the adjustment.

Measure the length of round belt required to go around the transmitter pulley and machine pulley. Cut the belt 1 inch short and fasten with belt hook No. 21351 B.

The transmitter treadle should be located as shown in PL108.,The pitman rod should be adjusted in length to give a forward slope to the treadle best suited for the operator. Likewise, the treadle can be located farther to the rear to suit the operator's convenience. The pitman rod need not necessarily hang in a vertical position.

CUP OPERATING TREADLE

This is a device for opening the feed cups. It consists of a small treadle secured to the floor at the left of, and even with the transmitter treadle. A chain connects the treadle to a lever which is secured to the under side of the table board at the front edge. Another chain is used to

CUP OPERATING TREADLE (Cont'd.)
connect the lever with the feed cup separating rod. The purpose of this lever is to make it easier for the operator to open the feed cups.

DRESS GUARD
Secure the dress guard to the under side of the table, directly in front of the transmitter pulleys. A space of one inch between them is desirable.

"ELECTRO DRIVE" AND AMERICAN SAFETY TABLE
The installation of the machine with "Electro Drive" or on American Safety Table is the same as with Union Special Transmitter. The location of the "Electro Drive" holes is shown on the template.

CAUTION
Before operating by power, put the required amount of oil in the reservoir. See directions on the can of oil No. 28604 G furnished.

OPERATING

SIMPLICITY
Inexperienced operators quickly adapt themselves to Union Specials. Obviously, practice will increase proficiency in threading the machine, and handling the work

OILING
These machines are provided with an automatic spray oiling system, insuring an adequate supply of oil to all bearings. The oil reservoir is drained prior to shipment. A can of oil No. 28604 G is furnished with each machine. See directions on can.

To secure the best results use an S.A.E. 10 W oil. A heavier oil will not spray properly, and a lighter oil may leak at the bearings. On the right side of the machine will be found a sight oil gauge that shows the volume of oil in the reservoir. When the oil level in the gauge reaches 1/16 inch above the bottom of the visible portion of the glass tube, the reservoir should be refilled so that there is only a slight space between the oil level and top of the visible portion of the glass tube. Remove the large plug screw "A" shown on the left side of the machine in threading diagram enclosed with machine. Pour the oil in this hole. A tin funnel or one made of heavy paper will be helpful for filling the oil reservoir. Replace plug screw. Don't tip the machine on its side. Refilling will not be necessary oftener than once a month. The original supply with occasional

OILING (Sont'd.)
refilling will last an indefinite period.

CAUTION
Should the oil level disappear from the gauge, stop the machine immediately and refill the reservoir.
Clean the inside of the glass tube occasionally to remove any discoloration so that oil level will always be visible.

SETTING THE NEEDLE
The needle has a short groove and a long groove. Insert it as far into the needle bar as it will go with the short groove up and turned a trifle to the left. Then tighten the needle clamp screw. Use needle Type 155 A.

THREADING
Fig. 1 shows the general thread stand arrangement. Fig. 2, 3, 4 of threading diagram No. PL173 show the threading of the two thread machines. Fig. 6 of the threading diagram No. PL207 shows the threading of the three thread machines using thread ratio control.
Prior to the exhaustion of the thread on a given cone, tie the end to the thread from a new cone and draw the new thread into the machine.
When threading a two thread machine each thread must be passed through its tension discs so that it is drawn against the post, but under no circumstances should it be turned completely around the post. If the tension exerts a strain on the thread beyond its strength, open the tension discs slightly. Threading of two thread machines is shown on threading diagram No. PL173 furnished with the machine.
When threading a three thread machine, equipped with thread ratio control, each thread must be passed through its tension disc and then on to the ratio control. Each thread should be wound around the thread rollers five times for nylon thread and decreased to four when using cotton thread for the most satisfactory results. Thread tweezer, No. 118 B furnished, can be used advantageously. Threading of three thread machines with thread ratio control is shown in threading diagram No. PL207 furnished with the machine. Detailed information on the threading and component parts of the thread ratio control is given on diagrams Nos. PL212 and PL223 furnished with the machine.

TO COMMENCE SEWING
There should be about two and one-half inches of thread beyond the eyes of the needle and loopers before commencing to sew. Carry the threads to the left and place them in the angle of the feed cups. The machine will commence sewing

TO COMMENCE SEWING (Cont'd.)
without any fabric between the feed cups.

CAUTION

Do not pull on the stitches while the machine is in motion without material between the cups. The machine should shed the stitches from the stitch tongue unaided by the operator; otherwise the threads will become snarled and trouble will result.

SUGGESTIONS

If a machine fails to work satisfactorily, though apparently in good repair, it is possible that some minor trouble exists. For this reason, delay may be avoided by acting on the following suggestions:

(1) Note carefully whether the machine is threaded as instructed, especially at the tensions. Remove any lint which may have accumulated.

(2) Examine the needle and note if it is set with the short groove up, that the groove is turned a trifle to the left, and the needle is inserted in the needle bar as far as possible.

(3) Remove the needle and note whether it is straight. The best possible test is to roll it on a perfectly flat surface; the point should roll true.

(4) Remove all the threads from the machine, and carefully rethread it, as shown in its threading diagram.

(5) Clean the machine thoroughly, particularly at the tensions. Try a new needle.