

FSK FOR THE HT-44

R. LEIGH NORTON, W6CEM — 570 El Bosque Rd., Santa Barbara, Calif.

After some thirty years of hamming, the writer finally abandoned his creaky home-brew receiver and equally decrepit home-brew exciter, and became a full-fledged appliance operator. This brought about the problem of FSKing the exciter, an HT-44. Variable shift was desired, but admonishment by others more skilled in the store-bought-gear field regarding the adverse effect of hole drilling on something called "resale value" discouraged adding new panel-mounted shift pots or variable capacitors.

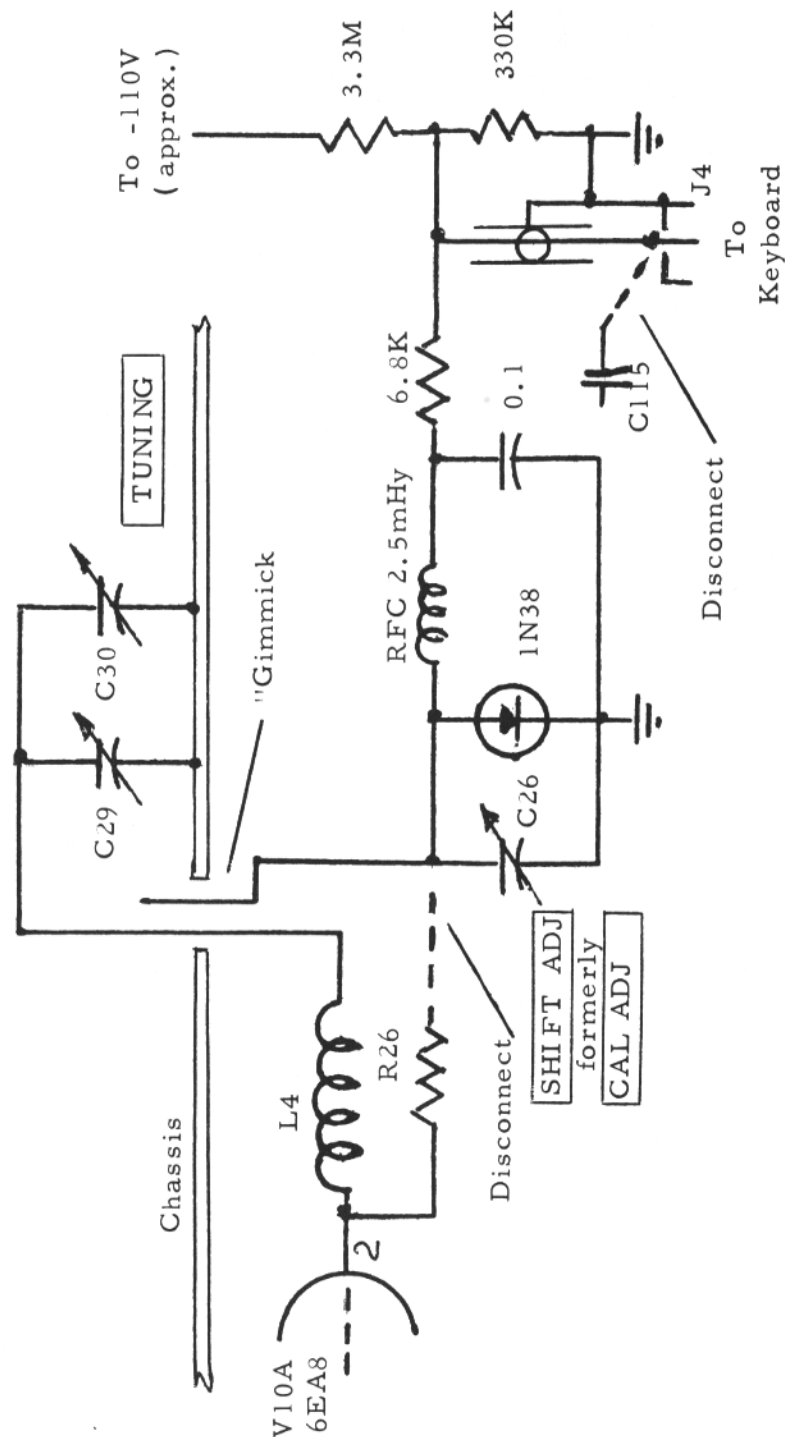
The solution to the variable FSK problem for the HT-44 is shown in the schematic. This scheme is designed for situations where the exciter is keyed directly from the keyboard contacts. Those using local loops and the like will have to devise their own systems. A "gimmick" consisting of about an inch of hook-up wire is shoved through the hole through which the lead from the VFO coil passes on its way to the tuning capacitor. The new wire is held in place by gluing it to the original one with fingernail polish. (Purists may wish to use coil dope.) The maximum amount of shift which occurs depends upon the amount of wire which is glued to the original lead, and the dielectric constant of the glue. Final adjustment should be made just before the glue sets up. The gimmick goes to ground via the small panel-mounted variable capacitor originally intended for adjusting the VFO frequency to match the dial calibration. R26 was merely unsoldered from C26 and pushed aside. This eliminates the possibility of having the calibration on the nose at all points, but since the calibration of the new receiver (Drake R-4) is quite good, it turned out to be a rather minor loss. A three-terminal tie point held in place by one

of the VFO hold-down nuts supports the R-F choke, 6.8K resistor, and one end of the 0.1 ufd capacitor.

The gimmick is keyed to ground via a diode. The combination of the gimmick and C26 acts like a capacitance divider; when C26 is at maximum capacity, the shift is the least. The shift can be adjusted from about 100 to 1000 cycles.

This arrangement will actually work without applying bias to the diode, but the space signal is somewhat ragged due to hum pick-up in the wiring and in the machine. Putting bias on the diode gets it out of the act on space, and gives a clean signal. The 6.8K resistor and 0.1 ufd capacitor form a key-click filter. Bias for the diode was swiped from the bias voltage available in the HT-44. This voltage was found on a seven-terminal tie point behind the function switch (left-hand terminal). There is an extra unused terminal on another seven-terminal tie point immediately to the rear, behind the crystal socket. This terminal supports the junction of the two resistors which divide the bias voltage down to a value which won't pop the diode. The diode used is a 1N38, simply because it happened to be on hand. Any of a number of other diode types could probably be used.

Since there was no need for the transceiver provision incorporated in the HT-44, the capacitor leading to the VFO output phono jack at the rear was disconnected from the jack and shoved out of the way, and the jack used for connection to the keyboard contacts. If transceiver operation is desired, the phono jack provided for R-F output from the exciter could be used for connection to the machine, with R-F being taken from a UHF coax connector installed in the pre-punched hole available alongside.



WESTERN UNION SURPLUS TELEPRINTER DISTRIBUTION

MEMORANDUM FROM: Frank C. White

TO: Distribution List

SUBJECT: Disposal of Teleprinters and Ancillary Equipment to
Licensed Radio Amateurs by Western Union, Information
Concerning

Through arrangements consummated by the American Radio Relay League (ARRL), surplus Western Union teleprinter (and related) equipment will be made available at no charge to licensed radio amateurs. The program will be coordinated to assure that the MARS programs, civil defense programs, recognized radioteleprinter societies, amateur radio clubs, and individual licensed amateurs, (generally in that order of priority) obtain the equipment they can use. The ARRL has named me national coordinator. My responsibility is to keep the three general groups (MARS—recognized RTTY societies and clubs—and individual licensed amateurs) informed of the availability of surplus WU teleprinters and to act as a coordinator between WU and these three groups and individuals as may be appropriate.

You may communicate with me at the following address:

Frank C. White (Coordinator—WUSP)
2706 Harmon Road
Silver Spring, Maryland 20902

Please use the complete address; it helps me to sort my mail.

Here is additional information you may require:

1. Western Union is disposing of surplus teleprinter (and related) equipment. Currently it includes costly Model 2B (same as Model 14 narrow tape printer), Model 26, and Model 100 page printers. Like the Model 26, the Model 100 is difficult to find parts for since it has (also) been out of production many years. Later WU expects to dispose of Model 14 reperfors, as well as Model 15 and Model 19 equipment. When equipment is removed from service, certain related equipment is also removed and will be made available, together with the printing equipment. This may include 100V DC power supply, patch panel, etc.
2. Equipment will be made available by Western Union on an "as is" basis and at no charge. The equipment will be released from Western Union offices in cities scattered throughout the United States. The equipment cannot be sold. After the amateur is finished with the equipment, then

the appropriate society or club is to be notified so that the teleprinter may be listed on the availability list for other amateurs; it is intended for use by licensed amateur radio operators for the exchange of traffic or their technical training.

3. This office will advise the location, type and quantity of equipment available. Representatives of MARS and authorized teleprinter societies and amateur radio clubs (upon proper identification) may claim and sign for that equipment they can employ or distribute. See *para 6c* for information on qualifying a club or teleprinter society to receive equipment in quantity. Individual amateurs may claim a single unit and related appurtenances that are a part of single unit. The restriction of a single unit for release to an individual may be changed, but currently is the policy.
4. Equipment will be held by Western Union until a deadline date (normally three weeks following original availability) specified by the WU office that holds the equipment. This information will be relayed as noted in paragraph 6 following.
5. Equipment will be signed for by the individual, or representative of recognized societies or organizations (previously mentioned) at the time it is picked up.
6. Two methods will be used to distribute information on the location and quantity of the Western Union surplus printers and related equipment awaiting disposal:
 - a. Bulletins will be mailed to MARS Chiefs and to a named individual of each authorized and certified RTTY society or radio club at the time the information is provided to me. You will be provided all the information we receive. Please do not phone me for additional information. If you write and enclose a self-addressed stamped envelope, you will receive a reply at the earliest practicable date.
 - b. Broadcasts containing the identical information provided by the bulletins will be transmitted by station W3PYW once weekly at 2200 Saturday afternoon using: 3620 Kc/s, 7040 Kc/s, 14,090 Kc/s, and 144.1 Mc/s. Broadcasts may be skipped during periods when there is no equipment being distributed.

Continued . . .

WESTERN UNION SURPLUS (Continued) . . .

c. A list of authorized and certified teleprinter societies and amateur radio clubs will be prepared and be provided to Western Union, Organizations which wish to be recognized should provide me information as to their organization (names and addresses of officers), the objectives of the organizations, and should certify (sworn notarized statement) to the fact that machines provided to their society will be released only to licensed radio amateurs for (1) communication on amateur frequencies, or (2) training purposes.

d. Clubs or societies may recover nominal "out of pocket" expenses in connection with obtaining and holding machines for distribution to licensed amateurs. It should be clearly understood that the reimbursement to the organization for such expenditures will provide NO profit to the club and DOES NOT constitute payment for the machine which is provided at no charge.

The Western Union teleprinters operate at about 66 words per minute since the stop pulse is 22 ms long (60 WPM sending speed). This results in transmission at a slightly faster speed than the 60 words per minute U.S. amateur standard. FCC Rules (Section 97.69b) permit a speed variation from 55 to 65 wpm so the WU equipment falls right at the upper limit and is, therefore, legal to use without any equipment adjustments. I have this on the authority of the FCC, Washington, D. C.

The 2B printers use a paper 5/16" wide which is not a standard normally used paper in teleprinter operations these days. Standard reperfors paper is 11/16" wide and is in widely available supply. This suggests two solutions, if the 2B printer is to be employed:

1. Make a minor change in the printer to hold the 11/16" paper and feed it through the paper guides past the printing location.
2. Buy some 5/16" wide paper tape. One such source is "Paper Manufacturers Company," 9800 Bustleton Avenue, Philadelphia, Pa. Write to the attention of Mr. Frank Walker (Phone 215-673-4500). Mr. Walker quoted me a price of \$15.00 a carton of 60 rolls (25¢ per roll), but hastened to say "No sales of lesser quantities." Several clubs have indicated they would buy a quantity of paper and sell it Three rolls for \$1.00."

As of this date, approximately 350 machines have been distributed. Most of them are complete with keyboard and in operating condition.

I am not a paid employee of the Western Union Company. This work is volunteer on my part to assist the cause of amateur radio teleprinter operations.

FRANK C. WHITE, W3PYW

K6QGR REDLANDS CALIF. DE K7VDD
Couldn't seem to get going here, Bob. Here is the Tape —

TEN COMMANDMENTS OF AN ELECTRICAL ENGINEER

1. Beware the lightning that lurketh in an undischarged capacitor lest it cause thee to bounce upon thy buttocks in a most ungentlemanly like manner.
 2. Cause thou the switch that supplieth large quantities of juice to be opened and thusly tagged that thy days may be long in this earthly vale of tears.
 3. Prove to thyself that all circuits that radiateth and upon which thou work are grounded and thusly tagged lest they lift thee to radio frequency potential and cause thee to make like a glow lamp.
 4. Tarry thou not amongst those fools that engage in intentional shocks for they are surely non-believers and are not long for this world.
 5. Take care thou useth the proper method when thou taketh the measure of a high voltage circuit so that thou dost not incinerate both thee and thy simpson, for verily thou hast no plant account number and can easily be replaced thy simpson doth have one and as a consequence bringeth much woe unto thee.
 6. Be sure thou tampereth not with interlock safety devices for this incurreth the wrath of thy fellow workers and bringeth forth the mighty fury of thou supervisor upon thy head and shoulders.
 7. Work thee not on energized equipment for if thou doest thy fellow workers will surely be buying beers for thy widow and consoling her in certain ways not generally accepted by thee.
 8. Verily, verily, I say unto thee never service equipment alone for electrical cooking is often times a slothful process and thou might sizzle in thy own fat upon a hot circuit for hours on end before thy maker sees fit to end thy misery and take thee into his fold.
 9. Trifle not with radioactive tubes and substances lest thou commence to glow in the dark like a lightning bug and thy wife be frustrated and have no further use for thee except for thy wages.
 10. Commit thou to memory words of the prophets which are here written down on this tablet and which giveth out with the straight dope and consoleth thee when thou has suffered a ream job by the ever watchful supervisor.
- Well, there it is Bob. I picked it up from a fellow in Oklahoma City a couple of weeks ago and I really got a kick out of it myself.

K6QGR DE K7VDD CW ID KKK

AUTOMATIC CARRIAGE RETURN AND LINE FEED

1. Remove the three (3) screws holding the comb to the bottom of the frame casting and carefully remove the comb.

2. Place the function lever and crossbar assembly in position #6 and attach spring No. 74705 to the function lever.

3. Replace the comb, being careful not to bind the push rod of the alarm bell. Use caution at this time and do not try to rush, as the push rods and latch bars must go into the proper slot and work free. To make sure the alarm push rod does not bind, move the hammer arm of the bell to its normal position.

4. Rotate the main shaft until the function levers are fully depressed.

5. The crossbar should now be free and not pressing against the line feed push rod or the carriage latch bar. If it is not free a slight adjustment must be made by twisting the narrow section to the left of the function lever. This is done by using two pair of pliers so that you do not damage the function lever.

6. Again rotate the main shaft and check that the knife blade on the bail engages the line feed push rod and trips the carriage return latch bar. If the carriage return latch bar does not trip check that you have the correct spring. If the line feed push rod does not engage the blade of the bail, carefully adjust the left end of the blade until satisfactory engagement is accomplished.

Note: To lower the blade first loosen the screw on the right and then snug it up so that the bar can turn but is not loose, now loosen the screw on the left end of the bar until it can be moved with a slight pressure. After the blade is properly adjusted be sure to tighten both screws.

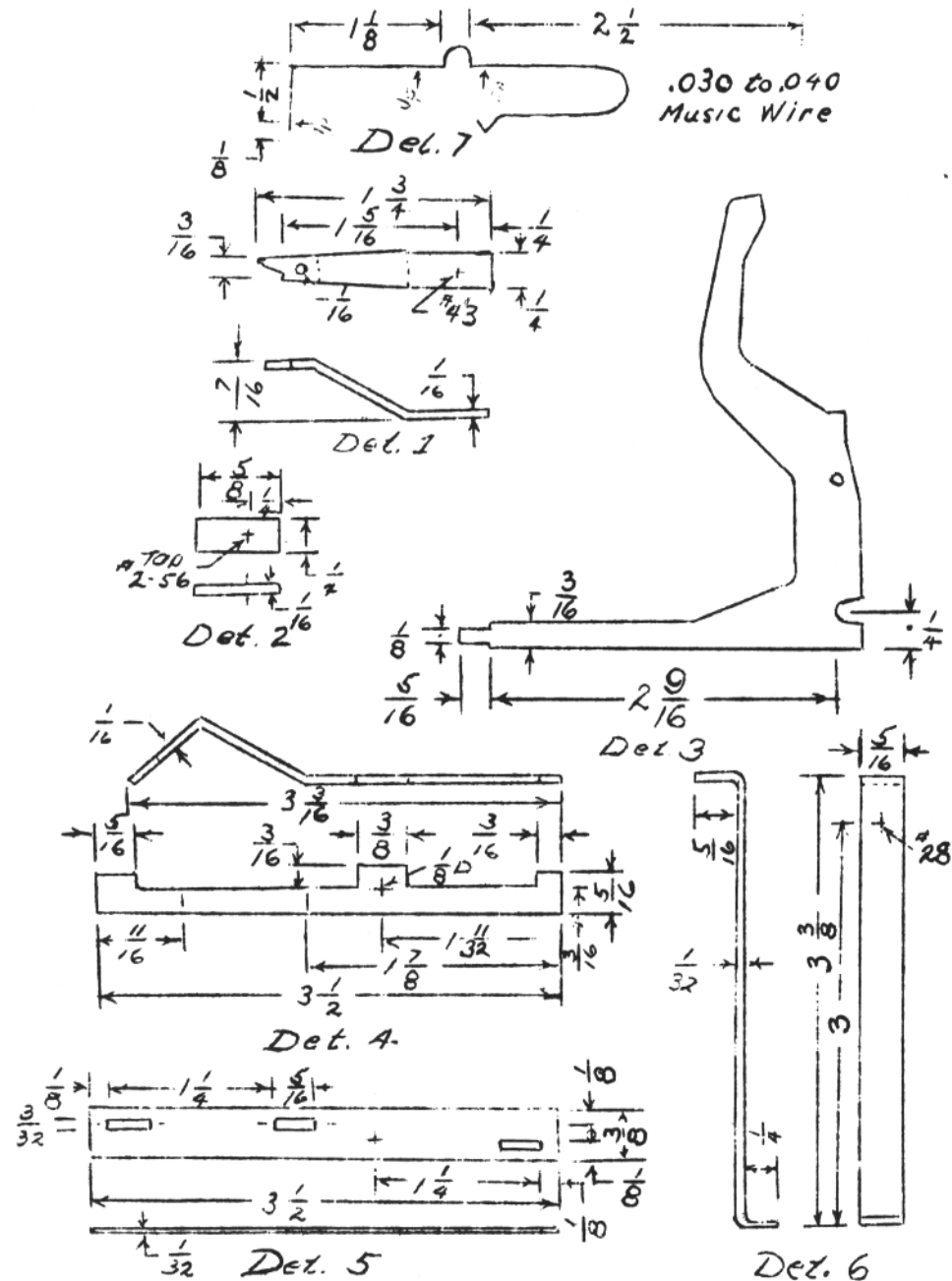
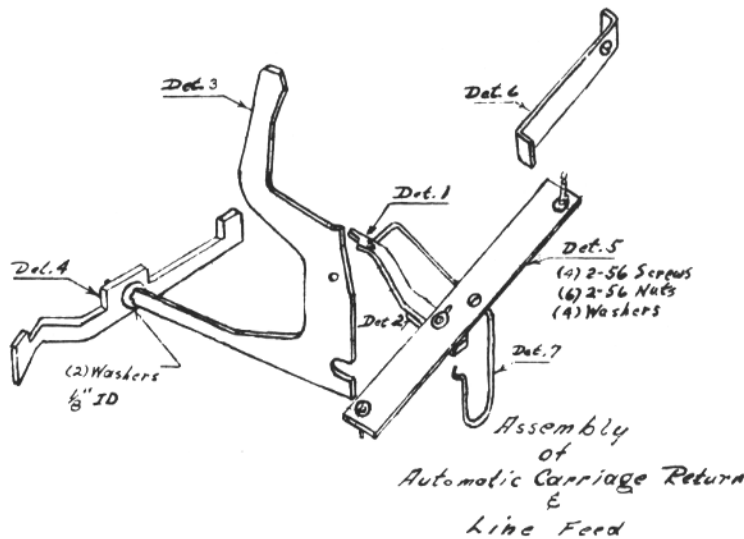
7. Assemble the trip mechanism using holes # 5 and # 10 of the spring retaining bar, hook the return spring in the large hole in the offset of the bar. When tightening the two nuts which hold the assembly in place be sure that the slide is free.

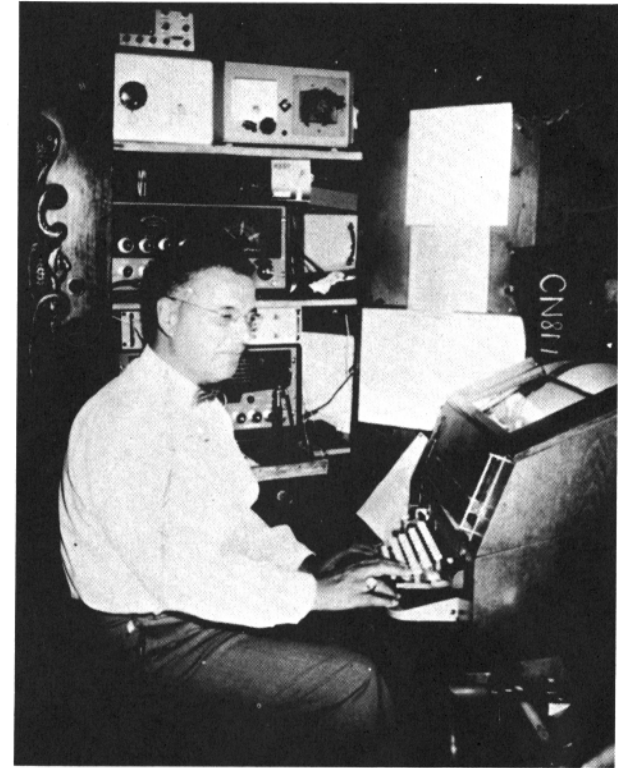
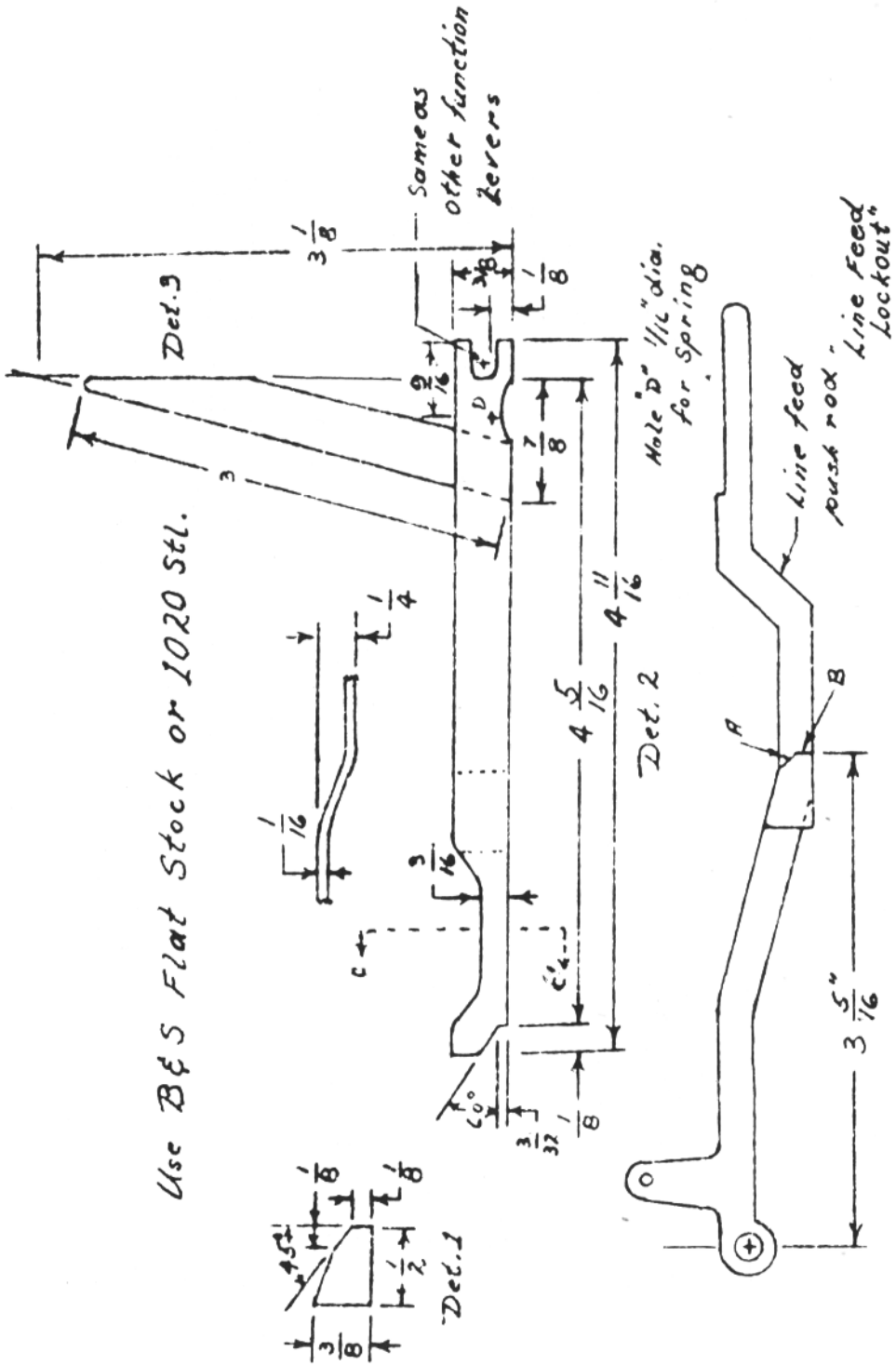
8. Rotate the main shaft again through one revolution and check that the function lever locks out when the slide is in the retracted position. If not, make sure the lock out lever passes in front of the function lever. If it does pass in front of the lever, but does not lock out then it will be necessary to remove the assembly and straighten out the lock out lever a slight amount. A slight twist in the crossbar as in step # 5 may be sufficient.

9. Replace the washer under the head of the screw at the lower left hand corner of the type basket with detail # 6.

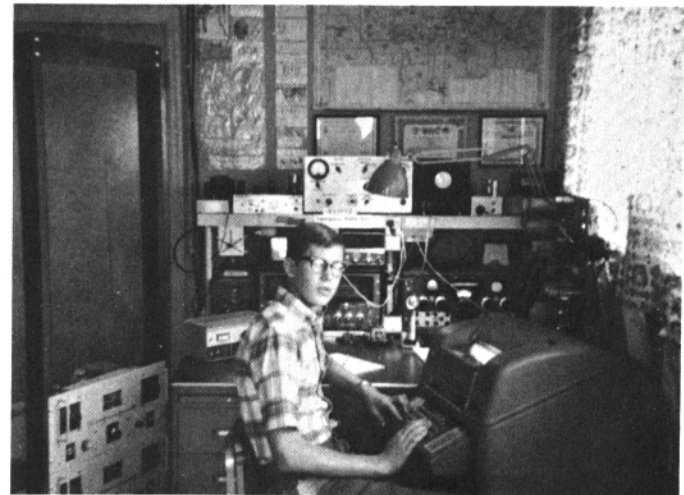
10. Adjust the screw on the right end of the slide to trip after the 72nd space.

Bob W9IQS





HB9P, BASEL, SWITZERLAND



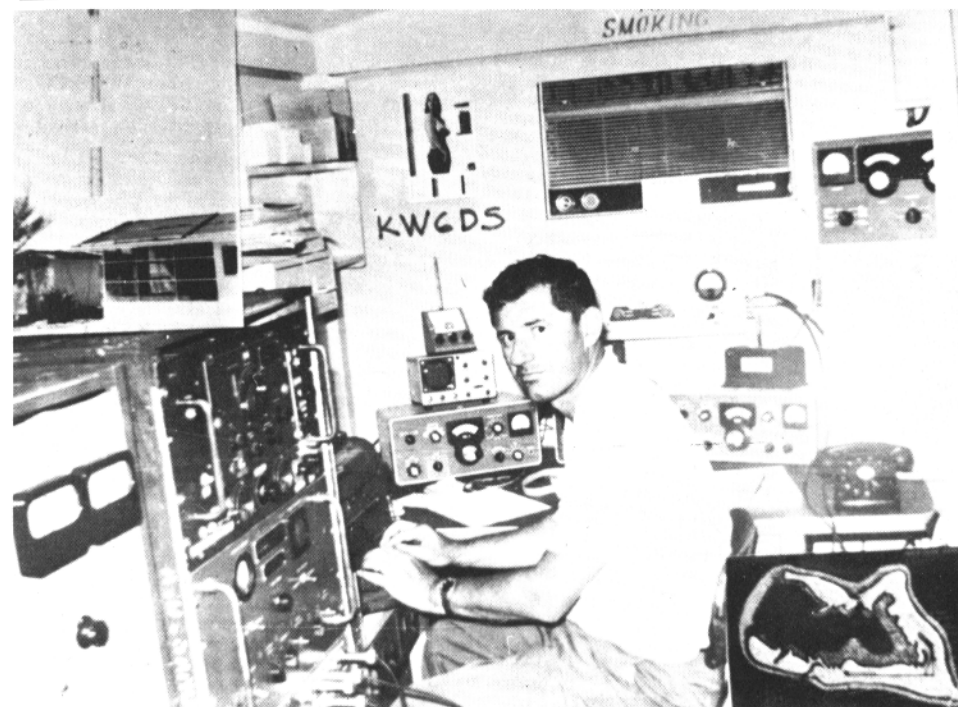
SHERWOOD SNYDER, WA8POU CENTERVILLE, OHIO



OBRA BLISS, EL2F MONROVIA, LIBERIA



JEAN WEIGIMONT, FG7XT



ARNOLD SAMUELS, KW6DS WAKE ISLAND



JACK BERMAN, WIBGV, BOSTON, MASS.

"I received a letter the other day from KC4USV and they have changed their minds, instead of waiting until next June as originally discussed, they write asking if something can't be started in February as soon as they go to what they call 'Parade Rest.' That's when all the people leave except the wintering over people. They have decided that 'RTTY' is so much more dependable and workable on a basis that is effective that they want to start in February and carry it straight through until September 30 when the next year comes down and then they will have planes flying mail until they all pull out again in February 1967. So, I want to help them but sure would like to have some of the high power chaps with directive antennas in various areas. Anything they can do to carry some of the load, because I can tell from the tone of this letter, they're going to really POUR ON THE COALS this year. I spoiled them last year and this year it's gonna take all a lot of us have to lay on the line to handle the work load and keep 'em happy I'm afraid. Anyone interested can either write me or to KC4USV, VEON, HARRY G., RM1, USN, ASA Box 21, c/o FPO San Francisco 96692."

"Dear Brad: May I say a few words re your 'intriguing article' in December '65 RTTY... I have been a ham since '33 and am now (sorry so late) very impressed with RTTY and all its possibilities. I hope to have my first real RTTY qso this weekend... I read your article thru once - like I've done with so many others, then, by golly - I had to read it again and after the third reading, I thought I had better let you know that I think it was dern good... To someone like myself, just getting started, there was a combination of Progress, sweat and humor in your words amply sufficient to goad one on to what must be the extreme end, entering a RTTY SS contest." VE6BJ (Chief Dispatcher for Pacific Western Airlines, Ltd.) Ed. Note: Brian expresses our feeling on Brad's article.

"Dear Bud: Had your message from FG7XT/K3GIF and from I1ORL. So am sending right away two pictures of the station with the operator! Equipment: Halli-crafters line: HT-32B/HT-33B/SX-115. Antennas: TH4 up 60 feet for 20-15-10 meters. Mosley 'El Toro' for 80 and 40. Hy Gain Vertical for all 5 bands. TU: 9 tubes home brew with addition of input FM filter (Mainliner). Printer: Model 15 with perforator and TD.-Have been away in Milan and Rome for past two weeks. Hope to be able to contact you soon.-Lou I1ORS."

RTTY received a novel announcement for David Lloyd Crawford, from WA6PCG of San Diego. Printed as a "SPEC" sheet. Congrats to Lloyd and his wife on arrival of David.

"Here is a hint on use of a typing reperforator. I am a coin collector, and use my tape to make copies of the coins that I need. These lists I give to my friends for reference. Have a 26 and 15 in my DC loop and can make two copies at a time.-I also have a tape cut for my camping check list so I can run off a list before making a trip, so that I can check off the camping items I need and don't want to forget. 73 Bob, W8LXW."

"Understand that some misinformation is being spread in England as to USA amateurs being authorized to use 50 BAUD for transmitting." RTTY wishes to point out that unlike the British amateurs, the American amateurs printers for the most part are operated by Sync motors with gears which provide 60 wpm speed in accordance with the FCC rules covering FSK operations by amateurs. To make such a change would require new gears for some 4,000 printers of various types, additionally new selector cams as well as keyboard cams. It is doubted that such a change to operate at 50 bauds will be made. More is to be gained by using one set of standards than two. Also the number of stations using 60 wpm far exceeds those using 67 wpm speed. Ed.

In Cleveland, Ohio there is a Mark-hold autostart net operating on 146.700 MHz using AFSK (2125 Hz Mark and 2975 Hz Space) on "Wide-Band" FM equipment. Two stations, W8BBB and K8AOE, are active and two more stations promise to be on by 1 FEB 66. W8BBB is monitoring 24-Hours per day. Anyone capable of operation with AFSK-FM give a call. If anyone is contemplating getting on, we strongly recommend using crystal-controlled transmitters and receivers such as "police-type" Motorola or G.E. units. We would like to hear from other cities that have any activity of this type on 146.700 MHz and we are willing to act as a "clearing-house" giving and receiving information on activity as done by W9BF for the 52.525 and 146.940 MHz 40F3 nets.

Ronald E. Guentzler, W8BBB

FLORIDA AMATEUR TELETYPE TRAFFIC NET

BOB STREET, W4IET

The new Florida Radio Teletype Traffic (FATT) Net is continuing to grow with addition of more new stations. The new cities represented are Cocoa, Ted WA4IZZ/4; Ocala, Johnny K4ANJ; Tavares, Pete WA4-NWM; and the University of Florida station in Gainesville is back on the RTTY circuit, W4DFU with Sandy and Dick at the key-board.

Rex Peters, W4ZAG, NCS in Tampa starts the roll call tape every night at 2330 GMT (6:30 PM) on 3700 kcs. After roll call by W4ZAG the net stands by for new stations that desire to check in by RTTY. Traffic is then handled, followed by a round table discussion.

Experiments with narrow frequency shift have been made under heavy QRM and QRN conditions and have convinced most of

the net members that narrow shift is the answer to obtaining 100 percent QSOs under extremely bad band conditions. Several of the net members are planning on constructing the new FT/L RTTY converter that appeared in the August 65 QST. This unit should also help solve the QRN/QRM problem prevalent on the low frequencies when "long skip" sets in.

Regular stations (in addition to the above listed) reporting in the FATT net are the following: Dick W4VAF of St. Petersburg, Red W4IMZ in Plantation, Frank W4PGP in Winter Haven, John W5WVI/5 in Homestead, Allen/W4IYP in Palatka, Bob W4IET in Miami Springs, and Rex W4ZAG, NCS in Tampa.

-From Florida Skip

DX-RTTY (Continued)...

G3CQE makes formal announcement of the BARTG QCA Award as follows:

"This certificate is now available to anyone who can submit proof of having completed two-way RTTY QSO's with stations in 25 different countries. It is entitled the 'Quarter Century Award (QCA)' and there are stickers for each batch of additional 25 countries up to the 100 mark. Applicants should send their cards, together with the equivalent of one dollar (which covers only the cost of return registered postage of cards and certificates) to the BARTG Certificate Manager, G3CQE." This is the news that so many of you have been asking me about, so now - have at it! Incidentally, in case any are interested in subscribing to the "Short Wave magazine" which is a really worthwhile publication which caters to RTTY'ers here's the info. Annual subscription rate is six dollars and the address is 55 Victoria Street, London, S. W. 1.

Nearly forgot to mention that in the mail bag was a log for the SS contest from Olle, SM5KV which arrived here after all the data had gone to the printer. Olle had a fine score of 15,110 points. He had 610 Exchange

of 15,110 points. He had 610 Exchange points, 11 States, 14 countries and 3 continents. Sorry your fine score was too late for the summary, Olle. Finally, a letter from OZ4NV who writes to tell us that a lot of Creed 7B teleprinters have been released by the OZ Post and Telecom. Dept. and many Danish amateurs have gotten one for 15 dollars apiece! Sounds like we can expect to hear more FSK from Denmark soon.

The boss and I had hoped we could spend some of this space talking about the CW QRM situation which has brought so much mail and caustic (?) comments to this desk in the past couple of weeks but as usual I have let things get out of hand so it will have to wait. To all those who helped with the news this month I offer my sincerest thanks; namely-K3GIF, ON4HW, ON4BX, SM5KV, OZ4NV, K8MZS, G3CQE, FG7XT. Why not add your call to this list next month? Remember-this is your column-all I do is put it down on paper-you fellers make the news. Let me hear from you.

Happy hunting, 73
Bud, W6CC

RTTY-DX

BUD SCHULTZ, W6CG
5226 N. Willmonte Avenue
Temple City, California 91780

Hi Gang:

It's time for the monthly party line and rumor round-up again. Let's start with the mail bag. Olle, SM5KV writes that he made the first QSO with HA5KBP! He reports that HA5KBP has reverse shift but copy is OK. Olle also tells me that MP4BEK is on his way to VK3 land and hopes to have his VK ticket soon. SM5KV is still very anxious to get in touch with VK and ZL stations and has been spending lots of time listening for the "down under" group. Speaking of the VK stations brings up what appears to be the big news of the month. VK2EG, Bill Storer of Sydney, has been consistently working into the States via long path since the first of the year. Ed, K3GIF, originally set up a daily sked with VK2EG at 2000 GMT when he discovered that Bill's signals were very strong at this particular hour via the long path. Since the start of these skeds Ed has generously hooked up quite a number of the Stateside gang with VK2EG - including your DX editor. I can honestly tell you it has been one of the biggest thrills of my RTTY career to be able to work Australia via the long path with nearly solid copy at both ends! With tongue in cheek I would like to get some opinion as to whether this constitutes some sort of DX record for RTTY. Wish someone who is familiar with such things could give me some sort of accurate mileage on this QSO. In order to pull it off I had to point my beam 60° across the north central portion of Africa. Unofficial estimates of the distance have placed it at between 15,000 and 16,000 miles. VK2EG has been doing a fine job on the Europeans also since he started this big "push." He runs an HT-37, SX-27, a model 15 and FRXD, homebrew TU and a TA-33 beam.

By way of K3GIF comes the following from Arthur, ON4BX: "Belgian hams had the first meeting about RTTY in Brussels on December 16. There were about 40 interested hams there. The meeting was directed by ON4BX and ON4RT. From this meeting it was noted that almost all ON stations are working only on 2 or 80 meters because the speed is 50 bauds only, in Belgium. On 45 bauds are ON4LL, ON4CK, ON4HW, and ON4BX - but we will receive from the Administration the possibility to transmit also with either 45 or 50 bauds in January." Arthur also mentions that at the December meeting the Belgian Bureau (UBA) decided that it should subscribe to "RTTY" which of course, makes us pleased to know that another official Amateur organization has recognized RTTY

as an acceptable means of communication. To many of you this may not seem very impressive but, when one recalls that only a few short years ago many of the Amateur Organizations considered RTTY as just a "pipe dream," it's another sign that our facet of this hobby has come of age.

OK1KUL is still active on the bauds with his usual fine signals. UA4KN and UA4KED are also a couple of good new ones appearing on the European list these days.

Also in the mail bag is a long letter from Wilf, ON4HW, commenting on the meeting mentioned earlier in this column. Wilf informs us that starting in January - ON4UB, the official station of the UBA will transmit a regular RTTY bulletin. Here's a note from Chuck, K8MZS, telling of a fine QSO with Endel, UR2KAX. Chuck comments further that for some reason none of the other Stateside stations went after UR2KAX after he signed although the signals were very good. Sorry I didn't hear him, Chuck, I'd have been calling yet! hi K3GIF also managed a contact with Endel for country number 56! Rafael, YV5AVW is still looking for an Asian station to complete his WAC-RTTY. He would like to contact one of the KR6 stations if possible so if you can give Rafael any help it would be appreciated. W6AEE worked YV3LD for a new one from Venezuela. YV5AVW points out that at least five new ones should be on shortly from Caracas so South American activity is once again on an up-swing. PY2ON has been heard several times calling CQ with no answers from Stateside so perhaps it may be worthwhile to turn the beams down that way after the Europeans fade out.

The fifteen meter band has been picking up in the past few days and by the time this gets in the mail that band should be quite good for those hard to get places. At the present time RTTY on fifteen has been very conspicuous by its absence. Why not run a tape around 21,090 Kcs. for a few minutes every day or so and see if we can't get things started again. When fifteen meters is open you can't beat it for that long-haul DX. Don't pass up any bets.

In the current issue of "The Short Wave Magazine," Bill Brennan, G3CQE, has his usual fine 'RTTY Topics' column and this month is no exception. Bill has four pages loaded with excellent gossip, technical info and DX news and photos. In his column,

Continued . . .



HORSE TRADES

FOR SALE: 88 mhy toroids, also 44 mhy toroids. 5 in can, uncased, center tapped, \$1.75 postpaid. 110 volt AC motors (sync) for model 15, less base and fans, \$12.50. Model 28 KSR, table top cabinet, less LESU unit, \$350.00. Model 15, 19 and 14 also . . . Send SASE for list. W6VPC, 1067 Mandana Blvd., Oakland, California 94610.

FOR SALE: TWO TONE TU Printed circuit boards as shown in August '65 RTTY. Phenolic, \$4.00. Epoxy, \$8.00. K7AVI, P.O. Box 7307, Phoenix, Arizona.

WANTED: Wiring diagram for Collins 75A3 or 75A4. Just send a postcard and I will send a SASE and payment. OZ7OF, Joe, Vestergade 161, Silkeborg, Denmark.

FOR SALE: Synchronous motors for models 14, 15, 28 and TD's. Send for free RTTY Catalog. Atlantic Surplus Sales, 250 Columbia St., Brooklyn, N.Y. 11231.

FOR SALE: Typing reperf., Model 14 typing unit only with sync motor, \$24.50. Model 14 TD with governor motor for multiplex work 60 WPM with cover, \$17.50. Model 15 paper 10 rolls to carton, \$9.95 per carton. Model 14 reperf tape 11/16" carton of 40 rolls, \$7.95 per carton. 88 mhy toroid coils potted, 5 for \$1.49. Unpotted 5 for \$1.95. J. J. Glass Electronics, 1624 South Main Street, Los Angeles, California. Phone RI. 9-1179.

FOR SALE: Electrocom FSC-250 converter with 2 channel and extra notch filter. On 3 1/2" panel with scope. With instruction book, like new, \$225.00. HX-500 transmitter designed for RTTY. FSK output 100 watts. Also AM, SSB and FM modes. Excellent condition. Like new with instruction book. Original price, \$675.00 - \$275.00. Model 15, \$75.00. Model 26, \$50.00. Model 14 TR, \$75.00. Model 14 TD, \$50.00. K4UZI, Frederick R. Macklin, 506 Gerona Avenue, Coral Gables, Florida 33146.

WANTED: Back issues of RTTY, Vol. 1, May 1953, Vol. 11, November 1963. Have December 1960 thru May 1963 inclusive except February 1961, and October 1961. Also October 1964 thru December 1965 except November 1964. Bill Gates, 8224 Lindley Ave., Reseda, California 91335.

FOR SALE: Thirty cases of 3/4" perforator tape. W5WBA, 3648 Vista Grande NW, Albuquerque, N.M.

FOR SALE: Teletype paper 8 1/2" standard rolls, \$8.00 case of 12 rolls. Teledots (electro sensitive fax) 8 channel chart recorder paper 12" wide, 6" diameter roll, \$1.00. PINK manifold 8 1/2 x 11", 1,000 sheet pack, 95¢ (sample for SASE). All paper new original packaging. REC-29 RA-87 power supply, \$6.00. Model 101, \$35.00. Model 26 with oak table, \$60.00. Model 15, \$75.00. Heath DX-35 like new, \$35.00. 0-150 VAC 2" meters, \$1.50. W2DLT, 348R, Essex, Stirling, N. J. 07980.

WANTED: Kleinschmidt 180 VPS tuning fork with shutter or shuttered sync motor. Also instruction manual or schematic for Northern Radio Model 152 tone converter, or loan of same for copying. K5OIU, 5128 Paris Ave., El Paso, Texas 79924.

FOR SALE: Model 15 nage printer w/pwr supply (model IREC29). Best offer. Phone 245-8888, Phil Oak, 977 Amador St., Sunnyvale, California 94086.

WANTED: Technical manual TM 11-2216, Teletypewriters TT-7/FG and TT-8/FG. WINFR, 393 Jelliff Mill Road, New Canaan, Conn. 06840.

FOR SALE: Several model 14 typing reperf with sync motors for 100 WPM, \$18.00. A few 60 WPM with series govnd motors, \$15.00, plus postage. Complete but dirty. NO COVERS, BASES, or TAPE REELS. Gordon White, 5716 North King's Highway, Alexandria, Virginia 22303.

WANTED: RTTY-DX news items, or contacts. Send to W6CG, 5226 Willmonte Ave., Temple City, California 91780.

FOR SALE: Special Small Scope Tube, 1-7/16" dia. and 6" long, 6.3 volt filament. Low anode and deflection voltages. Electrical data furnished. \$6.95 plus postage. Weight 1 lb. A.R.C. Sales, P.O. Box 12, Worthington, Ohio 43085.

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