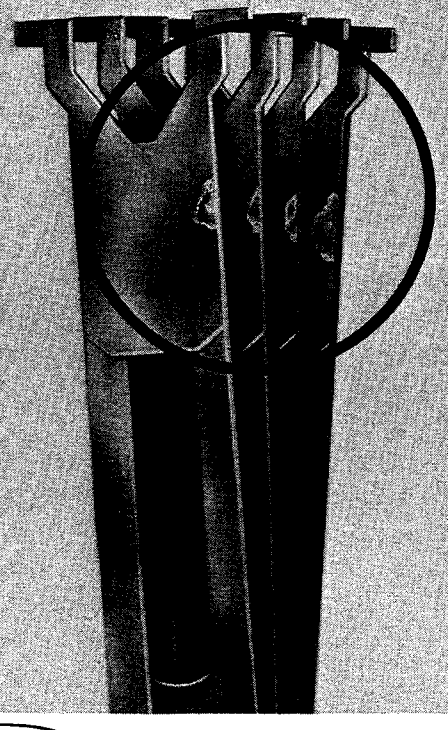
SHOP TALK VOLUME 6 NO. 2

HAIRLINES

THEIR CAUSE AND SOME SUGGESTED CURES



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SHOP TALK

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ANCIENT PRINTING HOUSE CUSTOMS

The printing industry is unique in many ways. It has its own language and customs, which are intelligible only to those who have worked at the trade for some time.

One of these words is "chapel" which today applies only to union composing rooms. It originally meant any association or meeting of workers in a printing office for dealing with matters affecting their interests. Webster's dictionary states that the word probably was first used because English printing was originally produced in a chapel near Westminster Abbey.

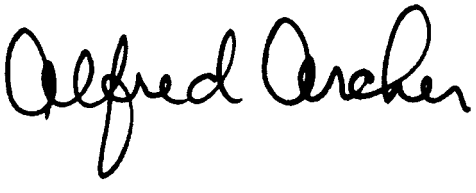
There seem to be one or two other theories regarding the origin of "chapel". One seventeenth century authority states "I suppose the name was originally conferred on it by the courtesie of some great Churchman who gave it the Reverend Title of Chapel for the Books of Divinity that proceed from a Printing-house."

The word was used in the early 1600s in Europe, but even at that time its original derivation was not known. It is probable that "chapel" derived from "chapeau" or "capella" (meaning "hat"), for early printers had the unusual privilege of wearing their hats while at work.

The purpose of the first chapel apparently was twofold, the first of which was to maintain discipline within the printing house and the other to act jointly in matters of mutual interest. It differed rather distinctly from today's meaning of the word, since the master printer or owner was almost always a member.

Fines were assessed against offending members for swearing, fighting, drunkenness or for a compositor to leave his candle burning at night. (If the master printer left his candle burning, the fine was doubled.) It is significant that the chapel rules pertained only to actions within the printing house. The fund which was built up from fines and other small sources of income, was spent on two Holy Days "in rejoicings and often in immoderate carousing".

While ours is indeed an ancient and honorable craft it is apparent, from the observations of earlier authors, that printing has always attracted men of intelligence, and many of these with keen appreciation for the lighter side of life.



THE HAIRLINE PROBLEM

Continued

By Marshall A. Joachim

(Formerly Supervisor, Deluxe Check Printers, Inc., Clifton, New Jersey) *(Now Retired)*

Hairlines in any composing room are a problem. In Deluxe Check Printers, where a perfect printing surface is mandatory, they can be disastrous. Marshall Joachim originally wrote this article solely for the guidance of Deluxe Check composing rooms across the country. We wish to thank him and Deluxe Check Printers, Inc. for their permission to share their knowledge with our readers.

WHAT CAUSES HAIRLINES?

If the vise jaws do not hold the line of matrices and spacing material tightly during the cast, it is possible for the molten metal to get between the individual matrices. If the wedge locking device does not operate properly, the lines may not be held tightly during the break-away (separation of the line of matrices and slug) and damage to the side walls of the matrices may result.

If any metal should adhere to the side surfaces of quads, spacebands, or vise jaws, such metal may bend the side walls of matrices adjoining it in the next line in which they are used. Once metal adheres to any of these surfaces, it will gather and hold more metal in subsequent use until the area and thickness of this accumulated metal is such as to be violently destructive to side walls of matrices.

This, I believe, is the cause of bent side walls which result in hairlines in the printing.

WHAT CAN BE DONE TO PREVENT METAL ADHERING TO THESE SURFACES?

In ordinary use, we know that the space band sleeve will collect an oxide stain in the area adjacent to the punched character of the matrices. If we would continue to use these spacebands without removing this oxide stain, we would note in time that this stain area would hold particles of metal and we would have started an accumulation of metal on these surfaces that will lead to the destruction of matrix side walls. It is absolutely necessary to clean spacebands before these particles of metal become attached. How often is this? If there are 25 spacebands in the set in use on the machine, and the machine is setting 1,500 lines per day, it should be necessary to polish spacebands only once a day. If there are only 15 spacebands in use, and 1,500 lines per day are set, I am of the opinion we are treading close to the edge of danger to go a whole day before cleaning. If we set 3,000 or 4,000 lines per day, or when overtime increases even these figures, we must clean spacebands proportionately oftener. Remember that the number of spacebands in a set is important. The fewer spacebands in a set, the more often each one is used. Spacebands must be cleaned before metal particles adhere.

It is well to note also that new spacebands are more subject to collecting metal than spacebands which have been polished to a high lustre from continued cleaning on the graphite board. Until a high lustre is achieved, it may be necessary to clean spacebands two or three times as often as the figures stated above.

If quads are used instead of spacebands, will they collect metal and to the same degree? This is a difficult question to answer. I do not believe that brass quads will hold metal oxide and particles of metal as readily as does the steel spacebands but I am sure they will hold in time. Examination of matrices with bent side walls has shown that when spacebands were used, the bent side wall occurs only on one side of the matrix—the side adjoining the sleeve of the spaceband. When quads have been used, however, the side walls were bent on either or both sides. Also, it is possible that the cleaner the quad is, the better the metal will adhere.

VISE JAWS

Whenever possible try to achieve a wiping action between the matrices and the vise jaws as the assembled line of matrices ascends from the casting position between the vise jaws when quadding. This wiping action on every line will keep the jaws clean.

SPACEBANDS

We have noted there is an upward drive of the spaceband wedge which effectively wipes the wedge side of the spaceband. The remaining sleeve side must be cleaned often enough so that they are cleaned BEFORE metal has started to adhere. If there are specks of metal on the sleeve at the time of cleaning, the destruction of side walls is already under way. Remember, it is only when the destruction is so complete that metal can reach the printing plane that hairlines are apparent in the printed job. However, once we start to bend side walls, we have started a cancer which will, in a short period of time, be fatal as far as hairlines are concerned no matter how much we clean and polish. Clean spacebands, polished on the sleeve side to a high lustre, are the best medicine in our battle against hairlines. The most highly polished spaceband will have metal oxide adhere to it in normal operation, and if the oxide is not removed, will hold metal particles. It is well to note a difference in the design of the Linotype spaceband as compared to the Intertype. Because of this, the Linotype spaceband is much easier to clean. More pounds per square inch of pressure are working for you in the critical area. Clean spacebands—they are never too clean but are often not clean enough.

Is it necessary to clean matrices? I think not. One side of the matrix is kept rather clean in its travel down the assembler belt. The other side does not get any cleaning action except that it does get a wipe from the adjoining matrix as it is elevated to the distributor screws in the distributor box. Examination of a font of matrices from which an estimated 3,000,000 lines have been cast, without cleaning the matrices in any way, indicates matrix cleaning is not required.

IS THERE ANY EVIDENCE TO SUPPORT ANY OF THE FOREGOING?

Four years ago, a new font of matrices was put into the model F Intertype in New York. That same font is still in use today, some 3,000,000 lines later, and there are no signs of hairlines at this writing. No quads were used at the ends of lines—not even at the end of the datelines. The vise jaws have never shown oxide stain or metal traces on the surfaces that contact the matrices, and these surfaces are not polished in any way. Two sets of spacebands, 25 to each set, are used on this machine. A clean set is put in the machine each morning and noon. The other set is cleaned while the machine is running on tape. When longer hours of machine operation are required, a clean set of spacebands is put in the machine at the end of the normal working day. We say that we change spacebands every 1,500 lines. I believe we might better say we change at approximately 1,500 lines as I am sure that on occasion we exceed 2,000 lines before changing. I must say at this point that I have never seen spacebands kept in such good condition as does the operator running this machine.

WHAT ARE THE POSSIBILITIES OF ELIMINATING THE WORK INVOLVED?

There have been several machines developed for cleaning spacebands. I have seen at least five. I have not as yet found such a machine that bears the recommendation of what I would call a "person with adequate knowledge of the subject."

Using quads instead of spacebands—Here, it would seem, lies the best possibility. Perhaps spacing quads can be treated in some manner that they will not hold type metal. Perhaps a daily dusting with Silicon or a daily rubbing on the graphite board would make the surface immune to the adhering of type metal—perhaps a smoother finish of the matrix sides. I don't know how, but it would seem that if we could somehow keep the quads from holding type metal, we could eliminate what is now a lot of work.

WHAT POINTS HAVE WE TRIED TO MAKE IN ALL OF THE FOREGOING?

1. The area in which hairlines occur is a very small one indeed.
2. The mechanism of the machines is not to blame for the greater part of the hairline difficulty. It is a factor, but should not be the whipping boy for our own shortcomings.
3. Type metal, attaching itself like a barnacle to certain specific surfaces, is the major cause of hairlines.
4. We cannot take shortcuts. There is as yet no proven easy way out of maintenance.

M. A. Joachim

A handy binder has been specially designed to help you keep SHOP TALK as a permanent reference. It is available from Star Parts, Co., South Hackensack, New Jersey, at 20 cents.

A FEW HINTS ON MATRIX CARE

In the article "The Hairline Problem" which is concluded in this issue of Shop Talk, the author has concerned himself primarily with the effects of metal adhesion to the spaceband sleeve, and the complex relationship of spacebands, vice jaws and quads to the matrix sidewall. As Marshall Joachim points out in his article, hairlines are frequently the symptom of front lock-up misadjustment as well as by improperly cleaned spacebands.

Spacebands not only should be clean and well lubricated, but they must also be in first-class mechanical condition. It is rarely if ever possible to straighten a badly bent spaceband. A repaired band can provide a small opening through which metal can enter at the point of the "kink" during casting. It is also probable that such a band will interfere with full upward motion of the bar brace, thus leaving the line improperly justified.

Before putting new matrices into use, check each spaceband sleeve with a straight edge to make certain that the edges are square, since even the slightest rounding provides the beginning of an opening eventually leading to hairlines. Spaceband sleeves which are scored through improper removal of accumulated metal will quickly pick up metal again and the build-up will be much faster than with a sleeve in first class condition.

If wire news tape is used, be sure the spaceband is of proper size. The standard used by Associated Press and United Press International calls for a No. 7 Star spaceband, or J-3572 or T-2932 of other manufacture. These spacebands have a minimum size of .037" and a maximum of approximately .122". Both of these dimensions are important, and any variation from them can result in either tight or loose lines.

If locally punched tape is used, any size of spaceband can be used, but be certain that the perforator indicator setting coincides with the spacebands actually used in the machine. Check both the maximum and minimum perforator spaceband settings, since misadjustment at either point can cause poor justification.

Except in emergencies, new matrices should never be added to a font which has already begun to hairline. This is truly throwing good money after bad, since new matrices will quickly become "infected" with hairlines.

Now let's assume that the matrices are in good shape and the spacebands in fine mechanical condition, well lubricated. A line is delivered to the first elevator jaws and the bands must be driven upward in order to achieve complete, hairline-proof lock-up. Anything which interferes with this complete lock-up or "spread" from vise jaw to vise jaw can cause a loose line and eventually hairlines. Here is a brief check list of possible trouble spots:

1. If the elevator jaws are not parallel to each other both horizontally and vertically the line can be pinched. Frequently the cause is in the jaw separating block. Other times a bent or damaged back jaw will give the same result.

2. Wear or "chatter" marks in the first elevator jaw rails (particularly the back rail) or in the grooves for the spaceband ears can prevent full expansion of the line, even under normal spaceband drive.

3. Insufficient relief between the first and second justification spaceband drive can result in a loose line. Check the .010" vertical shake to make certain that the first elevator descends far enough between justifications to completely release the matrices from their lock-up position in the mold aligning groove.

4. If the mold disk advance is set too far forward, this also can lock the matrices in unjustified position and allow metal to begin entering between them.

5. When set too low, the mold disk guide will allow the mold disk and slide to tilt downward to the left, causing the matrices to bind and preventing full spaceband justification. This tilting of the disk also burdens the machine driving system which in turn can result in weaker upward motion of the justification bar.

6. Worn mold disk studs and blocks will also prevent smooth front lock-up. A step-by-step procedure for checking and replacing studs and blocks will be carried in the next issue of Shop Talk.

7. Improperly set justification lever springs will not provide sufficient drive on the block to justify a line. Check and if necessary adjust the two large springs at the back of the machine.

8. Make sure the pot pump stop operates freely and is correctly adjusted. The pump stop lever should have clearance in moving back and forth under the block on the pot pump lever.

9. Do not use excessive lubricant on either the front or back mold wipers. This will eventually work itself onto the sidewalls of the matrices, and provide a path for metal to enter where ordinarily it could not pass.

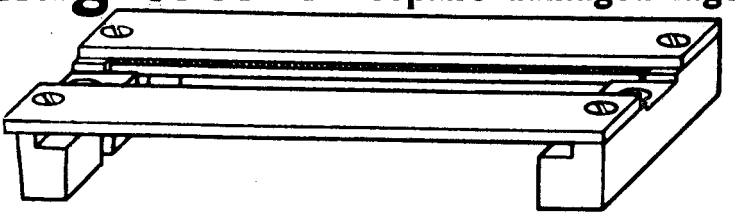
10. In straightening a bent matrix carefully check the sidewall to make certain that it is absolutely flat. Improperly straightened matrices are better in the hell box than circulating through the machine where they can be the cause of hairlines.

11. Toes and ears of matrices should be clean so they will slide freely in the magazine channels. However, a slight film on the sidewalls of the matrices actually inhibits metal accumulation since it is less likely to adhere to a slightly dirty surface.

There are other causes of matrix hairlines, but a careful check of the above adjustments will help you to improve matrix life.

STAR REPAIR AND MAINTENANCE TOOLS...

Matrix ear filing tool... repairs damaged lugs



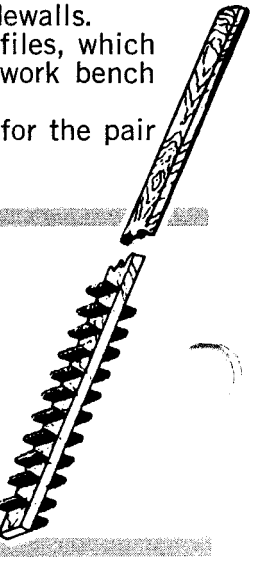
The Star Matrix Ear Filing Tool is the machinist's quick key to matrix lug repair.

Damaged lugs cause matrices to stick in the magazine. This results in frequent transpositions, as well as other operating difficulties. But with the Matrix Ear Filing Tool you will be able to do a quick, accurate job of removing burrs without the danger of damaging sidewalls.

The ears and toes of matrices are accurately cleaned by two parallel files, which are easily replaced when worn. The tool can be readily fastened to any work bench or other convenient location.

Order by Star Part No. Z-13 for the complete tool; and Part No. Z-13-F for the pair of files only.

Magazine brush



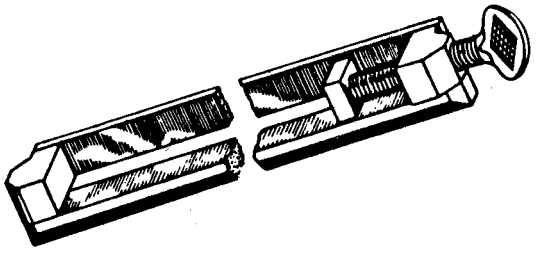
The NYLON Bristle Magazine Brush really gets magazines clean. Tough, resilient NYLON bristles loosen and remove dirt faster, more thoroughly. NYLON bristles don't break off to clog escapement pawls either. On both sides of the brush, the bristles are longer and flared to reach the channels next to the partitions. Longer wearing, this magazine brush will outlast several of the ordinary brushes. The STAR Part number is Z-52.

Circular Brush

Makes cleaning the reference side of your matrices a breeze! For use on a bench grinder, the circular brush is Star Part No. Z-36. Specify whether ½", 9/16", or ⅝" bore is desired.

Matrix cleaning stick

The cleaning stick, in conjunction with the circular brush, permits buffing from 12" to 20" of matrices in a jiffy — ears, toes, and reference side. The Cleaning Stick comes in 12" (Part No. Z-57S) and 20" (Part No. Z-57L) lengths.



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