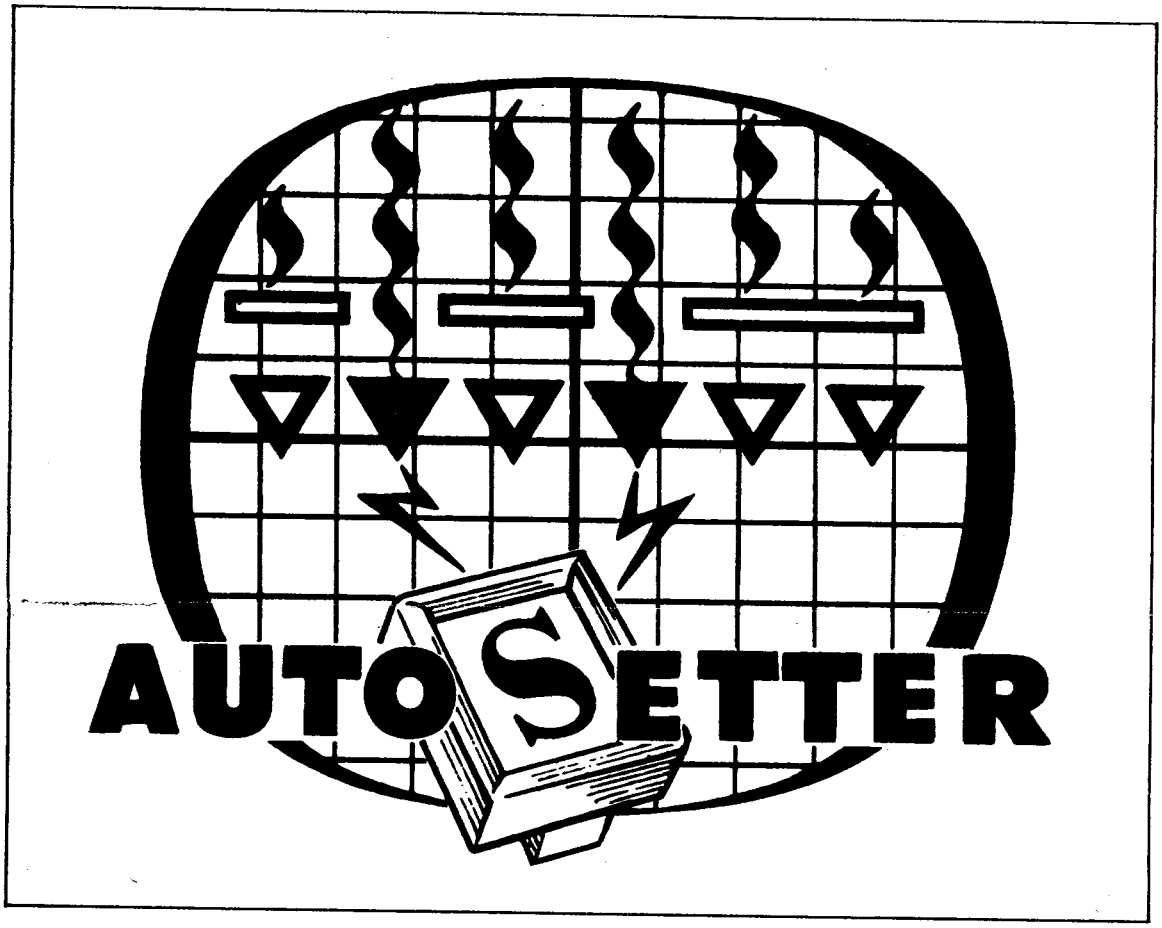
VOLUME 3 NUMBER 1

SHOP TALK

Published bi-monthly by Star Parts, Inc., South Hackensack, N. J. in the interest of those who maintain typesetting machines.



A WORD FROM YOUR EDITOR...

There have been some changes in personnel at Star Parts, Inc., in South Hackensack, N. J. Mr. I. Bendow, president and one of the founders of the Company, now Chairman of the Board. Mr. Emil Bendow, Vice-President, who has been Sales Manager, of Star Parts, Inc., moved up to the Presidency . . . and by now you probably know that Shop Talk's editor has been named Sales Manager.

The new position has necessitated moving to the East Coast from California, where my son Lawrence is now manager of the West Coast agency, Quido E. Herman & Co., Inc., in Los Angeles. During this transition, you will understand the delay in Shop Talk.

There will be no change in editorship of Shop Talk. We will continue to present articles which we hope will prove informative to the men responsible for keeping their machines in good condition.

Cordially,

Quido E. Herman

QUIDO E. HERMAN

SHOP TALK

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Text of this issue of SHOP TALK set in 8 pt. StarNews

FRONT LOCK-UP . . . A BASIC ADJUSTMENT

One of the most important adjustments of a typesetting machine is the front lockup. Strangely enough, there are no adjusting screws for this important function. The purpose of the front lockup is to create a condition in which the line of mats and spacebands is presented squarely to the front face of the mold.

A previous article in "Shop Talk" (Volume 1, Number 1 entitled "Descenders Keep Them on the Slug") pointed out the procedure for vertical alignment of mats to the mold. We shall point out in this article the procedure for alignment of the mats, with the front of the mold, as well as other factors contributing to a satisfactory lockup.

More Than Changing The Shims

Many of us, in our early experience as a machinist, would look at the "snow" on the front of the mold, change the mold wiper, take out or add a shim back of the Vise Locking Stud . . . and feel we had done all we could do. Sometimes we were lucky, but if the trouble continued—we were lost!

Let's start at the beginning. The first requirement is a mold disk and hub which has a minimum amount of wear. Remove the mold disk guides on the left side of the disk. Try to raise the disk by hand. Next, grasp the disk on each side, and try to "twist" it. If there is any noticeable "play" it is an indication of a worn hub and/or disk. If there is over a few thousandths motion, it is quite possible the back knife is already striking the mold opposite ejecting position, because the disk will be driven back into the knife, at time of ejection. This accounts for the vertical groove in the back of many molds at about the 11 to 12-em measure.

If there is evidence of wear in the disk and hub, these parts have probably served their usefulness, and should be replaced. Star disks and hubs are ground to a precision fit, and for Intertype are complete with the mold disk stud, using a special nut and laminated washer. By peeling off the laminations of the washers, an adjustment can be made to compensate for end-to-end wear in the mold disk slide. The disk and hub require periodic oiling through the hole in the front plate on Linotypes (which is often clogged with metal) and through the oil tube or grease fittings on Intertypes.

The First Elevator Jaw

The relationship of the first elevator jaw to the front lockup is obvious. Because the jaw fits between the vise and the mold during casting, it is essential that all jaw measurements be correct. Remove the entire jaw from the elevator slide, clean it thoroughly and check for any nicks or projections on the surface next to the vise cap. If there are nicks, they can usually be removed with a mouthpiece stone, being careful to take a "clean-up" cut only. The jaw is a precision part. Use a micrometer to measure the distance from front to back of the jaw against the hardened aligning plate. This should measure .687" at all points. A good lockup is impossible if there is wear in the plate or jaw. Replace the aligning plate and shim, if necessary, to get this exact measurement. It is most important to check the entire front jaw for warpage, using a straight edge. A micrometer reading

may show proper measurements, but if the jaw is warped or bent from end to end, a good front lockup can not be obtained. Front jaw warpage is caused from strain or bending of the back jaw and even though the front jaw is a sturdy part, a bend of a few thousandths will make the jaw unusable. Again, take advantage of the replacement allowance we offer on these parts.

Alignment Of Elevator Jaw To Vise

Let's now assume we have the mold disk and jaw in alignment and to the correct measurements. The sequence of lockup at casting is as follows: the pot compression spring forces the pot and mouthpiece against the back of the mold, the mold is pushed against the mats and vise jaws, which, in turn, exert pressure on the first elevator jaw front. It follows that the first elevator front jaw must bank against the inside surface of the vise cap, in order to complete the alignment. Therefore all pressure of the pot spring is ultimately exerted against the vise cap. In order to accomplish this, there must be clearance between the elevator slide and the gibs, to permit the front jaw to bank against the vise cap. Now we are getting to fundamentals. (See illustration A)

There is a hardened steel plate on the vise located between the upper elevator slide gibs, upon which the first elevator slide banks. The plate is subject to wear, and should measure .240". The distance between the inside surface of the vise frame and the first elevator jaws should measure less than .005" when the jaws are in the vise. Because there should be at least .005" clearance between the elevator slide and gibs, it follows that the elevator jaw and vise cap can then make contact and "bank" at casting position. In some instances, when these measurements are wrong, the gibs actually hold the elevator jaw away from the vise cap during cast. Simple, when one thinks about it, don't you agree?

Vise Aligning Block

Another point to check . . . How do we know that the vise jaws themselves are not holding a mold away from the elevator jaw at time of cast? We could use the first elevator jaw as a gauge, but for this purpose we advise the use of the Star Aligning Block Z-84 (Page 174 in the Star catalog). The Block (shown in solid black, illustration B.) makes the job much easier.

With a machine in normal position, the block should fit between the vise jaws and the vise cap. There should be no bind when the jaws are moved back and fourth, indicating the vise jaws and blocks (inside the vise cap) have clearance. Remove the block and dress the jaws toward the front of the machine. It should be impossible to remove the block with the jaws pressed forward. This means, therefore, there must be

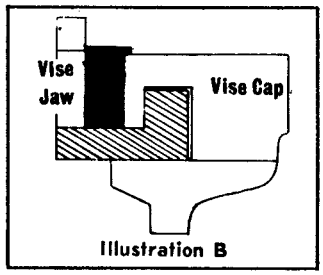

Illustration B

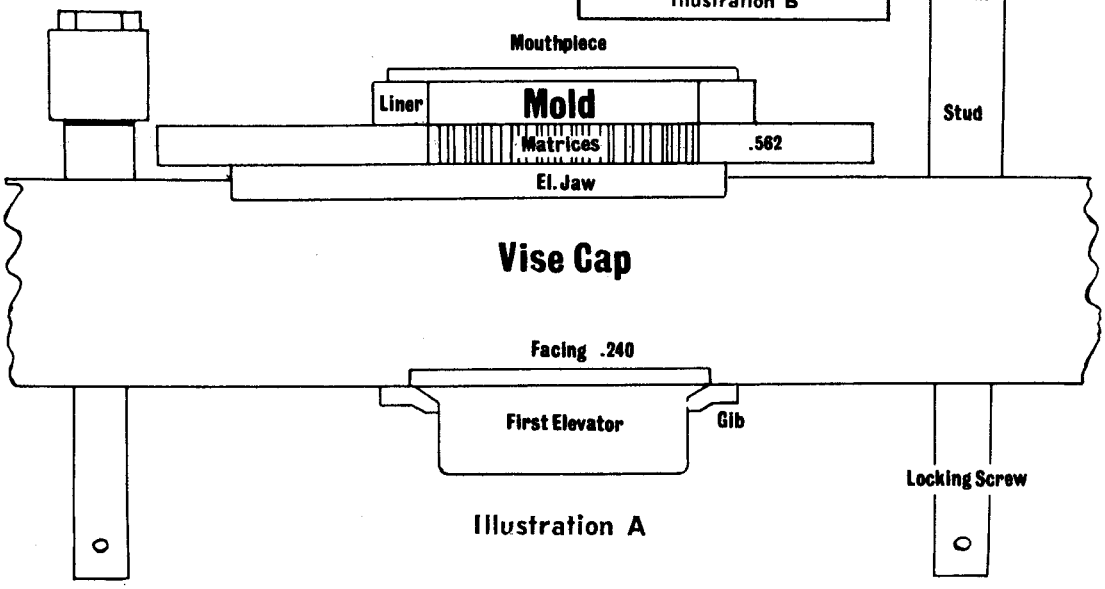

Illustration A

enough clearance of the vise jaw blocks inside the vise cap to permit the jaws to move in and out a distance of several thousandths.

A true test is to remove all parts from the vise cap except the jaws and block. All parts should be clean. Hold a light on the one end of the vise and sight through the vise cap, being certain that when the aligning block or first elevator jaw is in position, there will be at least .010" clearance between the vise jaw block and the back of the vise cap. Sometimes a clearance must be ground or filed on the jaw block to get this important clearance. This is especially true when jaw blocks have been changed. The entire idea is that the jaws themselves must "float" to permit a good lockup from mold to vise cap. This .010" clearance is used later as a "retreat" position for the jaws and blocks during ejection.

Straight Molds Important

As you know, all metal tends to warp away from heat. Shop Talk, Vol 2 No. 2 carried an article "Molds", the Heart of Your Machines" which mentioned mold warpage. Molds will show cap warpage first, followed by body warpage — the center of the mold making first contact with the mats or jaws. Sometimes the mold posts bend, which also contributes to poor front alignment. Check your molds with a straight edge, and you can determine warpage. Part No. Z-131-7 Straight Edge, is made for this purpose. It is impossible to get a good lockup, front or back, with warped molds. Don't take a mold for granted. While all molds are carefully ground and tempered, they will not withstand abuse such as overheating or continuous casting without proper cooling, and they will bend if subjected to continuous misalignment—either in front or back lockup. In this regard Star Molds are no exception . . . only the users can control the conditions under which molds are used.

Using either a new mold, or the straightest mold you may have, you are now ready to check the alignment of the vise jaws to the face of the mold . . . front lockup.

Obtaining Good Mold Lock-up

Remove the pot pump plunger pin. Place the aligning block between the vise jaws and vise cap, set the measure as short as you can, either close the vise jaws completely or set the measure to 4 ems. Turn the machine by hand until the mold slide is advanced upon the second mold advance shoe. (There is a position on almost all machines where the second shoe advances the mold, just before the mouthpiece contacts the back of the mold.) Place a .003" feeler gauge between the mold and the vise jaws, then adjust the mold advance so it has a drag on the feeler gauge.

The important adjustment to achieve is an equal distance between the vise jaws and mold at both ends as well as the center. If the center is tight and both ends are even, there is warpage somewhere. If either end is tight, adjust the close fitting end to the required distance by adjusting the mold advance. Equalize the distance on the opposite end by either adding or removing the brass shims behind the vise locking studs. A lot of time can be saved by slipping the shims between the vise cap and end of the stud, to determine the size required. Place that amount behind the tight stud or remove it from the loose stud, as required. Do the preliminary checking from the front, then remove the stud and put the shims where they belong.

How do you know whether to take a few shims out or to add shims to get a square lockup? First, check the present Vise locking studs to see if there are any shims in use, if you want to remove them. Also check the alignment of the first elevator jaw with the delivery channel and transfer channel. Of course, any change in shims will be reflected in these settings, too. Maintain squareness —if one end has too much clearance and has no shims—add shims to the opposite side and advance the mold.

When we are finished, there is still a basic function required in the front lockup. It must show a perfect impression of the front of the mold against the vise jaws. Use red lead, Prussian blue or even a light film of ink if necessary, on the front of the mold. Turn the machine to lockup position and with the jaws closed, you should have a perfect mold impression on the vise jaws. This impression will be quite similar to that of setting the mouthpiece lockup. If the

impression is not perfect, then neither is the front lockup.

Mold Banking Blocks

Mold banking blocks, located above and below the side knives, are not adjustable except on late Intertypes. They must either be ground, filed or shimmed to give an even impression during ejection, and must not contact the front of the mold during casting. Use red lead on each of these blocks, check the mold after the cast to be sure there is no transfer of color to the mold. Blocks must, however, show an even contact when a slug is ejected.

Final Test

We can write all we want about technicalities — the proof is in operation. There is going to be some "snow" appear on the cap and body after a cast because spacebands are thinner than mats. They must be. The purpose of the front mold wiper is to remove this metal. The use of a small amount of Star Slic on the front mold wiper will prevent the metal from adhering.

Here is a short-cut check of mold advance setting. The mold must not advance much more than .003" to .005" when the mouthpiece makes first contact before cast. This tells us whether the mold advance is too loose.

If the mold advance is too tight, the lines cannot justify properly and hairlines will result. The problem of end squirts, because of poor justification, will also be noticed.

There are two justifications during which spacebands are driven upwards or justified. The mold advance must not be too tight or it will prevent this spreading action of the line of mats and spacebands. Remove the plunger pin, set the machine for 30 ems, assemble a line of mats about 26 ems long using about 10 spacebands. The spacebands will be driven upward during first justification. Stop the machine at this point, and turn off the motor. Have someone turn the clutch forward until the justification lever comes down. At this point you should be able to push these spacebands down. Try pushing one spaceband down, and the balance will fall by themselves. If they don't, the mold advance is too tight. It's just that simple.

DRILLS and TAPS

One of the traits of a good machinist is his ability to drill holes accurately and tap them straight. A good center punch is usually used to locate the desired hole. Star Parts supplies Starrett punches in sets of 5 (Z-95) for this purpose. A companion set of 8 Drive Pin Punches (Z-94) is also available.

Locating the punch mark is one thing, but getting the drill started exactly on the mark is sometimes a problem. We have found by turning the chuck a few turns by hand, a sufficient indention will be made to prevent run-off of the drill, especially if the power is turned on and off several times before bringing the drill to full speed.

Whenever possible, use a drill-press for holes because the bit is held more securely than is possible with an electric hand-drill. Speaking of accuracy . . . did you know that every STAR Stainless Steel Liner which requires the hole for the Mold Liner Block is drilled undersize, using a special jig, then reamed to precise size and location? We are not content to use only the ⅛" drill for this critical operation.

Ever have to drill a hole to an exact depth? Place a small piece of pipe or tubing over the drill, leaving the end of the drill protrude the exact depth you wish the hole. The pipe acts as a stop and you can't go any deeper. Accuracy of depth can be determined by moving the drill in the chuck in relation to the end of the pipe, until it is the desired depth.

Many of us have a real good ¼" drill,

but just never did get around to getting that new ½" drill we've always wanted, so we grind down the shank of drills over ¼" (once in a while we do a pretty good job, too) but there are still those times when the ¼" drill is either too fast or doesn't have the power required. Did you know that for about $10 some of the good hardware stores can supply a "Speed Reducer" which is a comparatively small unit that fits into the chuck of a ¼" drill and reduces the speed and increases the power comparable to that of a ½" drill? It is actually a ½" chuck geared down from ¼" shaft.

It seems that drilling for dowels is a lot of unnecessary work, because of the "go and no-go" drill changing necessary. STAR has made it possible to eliminate a lot of work for our fellow machinists by the use of the "Knurled Dowels" shown on page 164A of the catalog. Drop us a line and we'll send you the complete list of Knurled Dowels available. These dowels are standard size, with the exception of being knurled at one end. This means that by drilling one hole,—the clearance size,—the dowel will remain in the part into which the knurled portion is driven. We've even made up a dowel assortment M-18-5 for Linotypes and M-18-6 for Intertypes.

Every machinist should have a set of taps and dies. STAR Part No. Z-70 consists of one each of the 6 taps and dies in 4-48, 6-48, 8-32, 10-28, 10-32 and ¼-24, as well as the tap wrench and stock . . . all packed in a nice wooden box. (See catalog page 182). The secret of not breaking taps was revealed to me years ago by an old-time machinist . . . "stop turning just before the tap breaks". Maybe I've been too enthusiastic at times!

In addition to the Z-70 Set, we recommend a .020 oversize ¼-24 tap be ordered, Part No. Z-54-20. Whenever you have a stripped mold cap clamping screw thread, or a mouthpiece screw thread, use this tap along with the oversize mold clamping screws (F-14-A or F-584A) or the oversize mouthpiece screws (G-308AA for gas pots, or F-2791AA for electric pots).

Have you ever noticed how some steel seems to want to gum up and grab hold of a tap? You are afraid to turn the tap either way for fear of breaking it. I didn't believe this either, but if you will dip the tap into a little carbon-tetrachloride (or Energene **Non-Inflammable** Cleaner) you will marvel at the difference in tapping. I don't know what does the trick, but it sure works. Try it next time you are tapping steel.

Whenever we find a thread stripped, for instance an 8-32, we usually drill and tap for a ¼-24 and plug the hole with a round-head screw. Be sure you don't tap all the way through, and use a standard tap—not a bottoming tap. This will permit tightening the screw real tight into the new threads. Saw off the screw and dress the material flush with the surface. It is suggested a center punch be used in several spots around the circumference of the newly inserted plug for locking purposes. You can now re-locate the hole, drill and tap.

Whenever a ¼-24 thread is stripped, and there is enough space for a plug, we have had excellent results by drilling the hole large enough to accommodate a ⅛" **cast iron** pipe plug. You can get this drill and plug tap at your hardware store. Check the plug with a file to be sure it is cast iron. Turn the plug into the threads as tight as you can, dress it down and re-drill and tap. It makes a fine repair job, and is much easier to tap than using a steel screw or bolt. If you really want trouble . . . have the hole welded and try to drill into the weld! Sometimes the flux is so hard a drill won't touch it . . . that's why the pipe plug works well on larger sizes.

Here is a little chart of the most commonly used drills and taps:

Tap Size	Drill Size	Clearance Drill Size
4-48	42	31
6-48	34	27
8-32	29	18
10-28	23	10
10-32	21	10
¼-24	4-5	¼
¼-20	4-5	¼
¼-24-.020" oversize	1	(letter) I

The above table is approximate and is satisfactory for all general shop purposes.

GRANDPA SAYS...

Early Friday morning, two weeks ago, randpa was waiting at the shop when drove up. He was leaning on some- ning, and smoking his favorite pipe. When I got close enough to see it was a pade, I yelled out: "Hey, Grandpa, what ya doin' gonna dig for gold?"

"Nope," he said, "Ma's gonna make ne do some spading around her flower eds, and this thing's dull, so thought 'd stop in and sharpen it up a bit my- self, if you don't mind doin' it fer me." Now that was a clever way he put that one across . . . don't you think so?

"Some of that ground out there is as hard as trying to dig out those heating elements in a pot after they been in fer a few years," said Grandpa. Agreeing it was a rough job to get them out with that hardened dross around them, Grandpa went on:

"Remember jest one time I had to dig both of them there elements out, and that back one was in there like it was welded. Never could figger out how any heat was a-gettin' to the metal with all that dross between them elements. Looked to me like the only thing that was heatin' the pot was jest the front one. Sure took a long time for heatin' up the pot, too. Figgered I was wastin' a lot of juice, and wasn't gettin' the heat I should. Maybe that's why one of 'em burned out."

Got Grandpa's spade all fixed up nice and sharp and gave it to him.

"Boy, what a difference", said Grandpa.

"There you go again, trying to flatter me for sharpening your spade," I replied. "Glad to do it for you."

"No, no," said Grandpa. "I mean, what a difference in heatin' elements! I put in that one you STAR people sell—that single unit that works on 110 or 220. You use jest one of them, instead of two, so you ain't got no place for all that dross to get in between."

"Oh, you mean the M-13", I replied.

"Don't know them part numbers like you do, son", said Grandpa, "but they tell me you got two kinds of elements, that you got this here M-13 or whatever it is, and then you got a round one like on Ma's electric stove, and they don't take up hardly no room in the pot. That leaves more space for metal, ain't that right?"

"Yes," Grandpa was assured, "that's an M-45 but you need to order them for either 110, 208 or 220 volts. They are even less expensive than the M-13, and you only need one of them in the pot."

"That's where you're wrong, Son" said Grandpa. "I don't need any—all I need right now is a good sharp spade."

With a twinkle in his eye, Grandpa gave me a wink, still grinning to himself as he drove away . . .

World-wide leaders in scientific and electronic development are regularly consulted by Star Parts research

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Printed in U.S.A.

Attention Linotype Machinists

STAR PARTS, INC., SOUTH HACKENSACK, N. J.

SHOP TALK
VOLUME 3 NUMBER 1
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OUR COVER— THE STAR AUTOSETTER

The device on our cover is the nameplate of the new Star AutoSetter. The AutoSetter is electronic and automatically operates Linotypes and Intertypes from standard 6-unit tape. It translates tape signals into machine functions at high speeds and can be synchronized to the exact requirements of linecasting machines.

The AutoSetter operates on an entirely new principle. A beam of light is focused on photoelectric cells, and as the tape feeds through, different combinations of photoelectric cells are energized by each perforated signal. These cells convert the light to electrical impulses which are instantly sorted out and routed to solenoids attached to the back of the machine keyboard.

The AutoSetter recognizes signals for machine functions, spacebands, and double characters, and automatically adds to these signals the millisecond delays necessary for proper assembly.

There are push button controls attached to the keyboard for the convenience of the machine monitor. With these buttons he can start or stop the tape, control upper and lower rail and operate the assembling elevator. The same buttons facilitate manual operation, because the elevator and rail are both controlled from the keyboard.

The AutoSetter is another product of Star PRACTICAL research. It is manufactured and guaranteed by Star Parts, Inc. in South Hackensack, New Jersey. A descriptive folder is available on request.