

Planing and Molding

TEMPERING KNIVES.

The tempering of knives is the subject of more thought, experiment, and careful attention than any other step in the process of manufacture from the crude ore to the finished product, and even then it retains the greatest degree of uncertainty of any. In the making of steel itself scientific research and a long line of experiments have reduced the work to a satisfactory degree of positiveness. There are flaws, of course, now and then, but, generally speaking, we are in position to-day to know pretty well just what we are getting in our steel, what chemical properties, and what kind of structure, and the process of manufacture has been perfected enough that the product runs so nearly uniform as not to give serious trouble. The same thing is true in all the mechanical work of making knives, and, while it requires care and skilful manipulation all the time to turn out the best product, still, that is comparatively easily obtained, but when we come to tempering we strike the most difficult and uncertain step in all the work.

This comes partly from the fact that two pieces of metal exactly alike in chemical parts and physical structure may be given what appears to be the same treatment, and yet produce varying results in tempering. This is only a part of the uncertainty, however, and another part—a very prominent part, too—comes from the different uses to which knives are put and the difference in temper required under these various conditions. The problem of tempering would, of course, be materially simplified if the knife-maker could know in each instance the exact service required of the knife. That is, if it were a planer knife, if he knew just the kind of wood it was intended to be used on, speed at which it would be run, and average depth of cut, and whether for doing finishing work or roughing off. Without this exact knowledge, however, the knife man must work with the idea of getting a cosmopolitan temper, so to speak, so as to give good service under quite a wide range of conditions. Some special knives are made to specific order with a reasonably clear understanding of the work they are to perform, and then the work is simplified somewhat, though naturally made more expensive, and usually the knife under these special conditions has to do the most trying work, so it puts the knife man on his metal anyway.

The majority of knives, however, are made like what we might call hand-me-down clothes, being given a certain range of tempers just as the manufacturer of ready-made clothes makes certain sizes calculated to fit with a reasonable degree of satisfaction a large class of people, and by being able to make up large quantities in these sizes can materially reduce the cost to the purchaser, as compared to the cost of making individual suits by tailors. This may sound like an odd kind of comparison, but it will maybe serve to give you an idea of what I mean. We make a certain range of standard tempers on stock knives, not only because of certain standard conditions that are always met with, but because there is quite a difference in the opinions of users, just as there is a difference in the taste of wearers of clothes. Some want the knives hard, and do practically all the sharpening on the grinder, while others want them soft so that they can dress them up with a file frequently without

taking the knives off the machine; and so it goes, some with one kind of an idea and some with another, until the knife man is kept guessing all the time on the subject of temper."

It is worthy of remark in this connection, however, that users of knives are coming to realize the general importance of this subject of tempering, and to have more respect for the temper that has been put in their knives. In times gone by, and among some careless workmen even to-day, there has been many a carefully-tempered knife practically spoiled by careless grinding.

SYSTEM OF ACCOUNTS FOR VARIED PLANING MILL WORK.

The extent to which the superintendent goes into the making of detailed cutting bills generally depends upon the amount of work which falls to his lot, and sometimes upon the amount of time at the command of the general foreman of the mill or heads of departments. For instance, the superintendent may make piece bills for all the frames, interior trim, stair work, cupboards, porches and the like, but bill the doors, windows, screens and so forth to the heads of their respective departments, who will make the piece bills and see that they are cut out and machined. In many of the smaller mills the superintendent will do all the billing when he has time, but so instructs his sash and door man that he will be able to attend to this important duty whenever necessary. Nearly every concern of any size employs a stair-builder, and in such a case he will bill out all his own work, including piece bills for his newels, hall seats, panel work, pilasters, columns, beams, etc.

But no matter in what form the bills leave the superintendent, they must cover all the work turned in for the mill to make, and each sheet must carry the number of the order, the name or mark of the customer and the date of billing. All of the bills made by the superintendent or his assistants should be made in duplicate—that is, with a carbon copy—and in case of sending out work k. d. the bills should be made in triplicate, so that a copy may accompany the goods for the carpenters to work by.

The original ticket and duplicate are both turned into the mill, and the foreman or heads of departments will file the original and give out the carbons for the men to work from. When the work is completed, both tickets are checked with the date, and the original sent along with the completed goods to the shipping clerk or warehouse, as the case may be, while the carbon copy is filed in the mill for future reference.

The making of duplicates takes very little longer than to make the bills singly, and many times more than pays for the trouble. They make it absolutely possible to fix the responsibility for errors, and this alone is worth the while; they make it possible to ascertain if delays in shipping are caused by the neglect of the shipping clerk or slow work in the mill, and they always show on the face how long a time has transpired between the billing and the completion of the job. However, it sometimes occurs that the superintendent will work a long way ahead of the mill, as in the