## AUTOMATON MEN.

WHAT manager, superintendent or proprietor of a wood-working establishment who has not had in his employ, for a time at least, men who were mere automatons—men who appeared to have no more intelligence so far as to discern the difference between doing a certain kind of work the right way, or the wrong way, or if they knew did not care, than the machine which they attended? They performed their work in a mechanical manner. They would handle a board or plank and feed it through the planer or matcher, because they were told to do so by the "boss." They would hold such board or plank up to the guide of the rip saw, or shove it up to the cut-off saw, with about as much interest in their work, or evidence of a true purpose to secure the best results from their work, as the machines which worked up the lumber. A new idea or suggestion from anyone as to how a piece should be examined, studied and manipulated so that it might otherwise yield a larger profit to the proprietor would stagger such a man like a stroke of paralysis. His only ideas of the duties of his daily life were that they were of a mechanical nature. He worked, ate and slept as if he were a human machine. Originality, study, thought were entirely foreign to his nature.

If in a planing-mill where he attended a planer, the lumber to be surfaced only on one side, he never turned over the piece of lumber to examine it and to ascertain the best side to surface. Instead, he would pick it up and allow it to go through the machine, the same side up as that which he found it. It would be the same if a piece was to be surfaced and matched, or made into flooring or ceiling. He could not comprehend that there was a difference in the quality of the two sides of the piece of lumber, and quite as likely as not surfaced the poorest side. His dominant idea was that he was there in the same capacity as if he were feeding a sausage machine or emptying the grist into the hopper of a corn mill.

Every day that he worked he damaged lumber to the extent of more than two weeks of his wages. In a lot of lumber which you had bought as culls, some of it so graded on account of bad sawing, and being thick or thin in the middle or ends of the boards, what had been intended by the sawyer to be an inch board, by the saw "snaking" had become as one and a-half or two inches thick piece of lumber in places. While it was thus not an attractive looking piece, the quality, had it been sawed properly, would have placed it in one of the higher grades. The automaton has the planer set to surface seven-eighth inch thick, regardless of the thickness of the lumber. He places this thick and thin piece of lumber on the bed plate of the planer, gawks around the mill, or outside, or watches a railway train pass by the mill, or gives more attention to somebody else's business than to his own. Meanwhile the planer draws in the piece of lumber until it gets to the thick part where the knives have to cut way an inch of solid wood without slacking the feed. The planer, which is not a heavy one, struggles and groans under the imposition of the task. Something must give way. Snap goes a belt, or it flies off the pulley, if nothing more serious occurs. Then follows delay in fixing or repairing and valuable time is lost, all through the stupidity of the automaton booby, who made pretense of attending the machine. In this instance the machine seems to have shown more intelligence than the man, for it would not submit to unfair treatment beyond a certain limit.

How much better for the interests of the proprietor of an establishment for the work required, is such a man than an ingeniously-contrived machine which would answer the same purpose? Some may say that this is overdrawn, but there are hundreds of just such men to-day who are at work in planing mills all over the country.

It is pleasing to know that we have another type of men entirely opposite to that of the automaton. It is the inquiring, investigating, studious, watchful man, who is always trying to do his work well, but better from time to time. He is always alert, vigilant. Nothing in his line of business escapes his notice. He is said to possess knowledge of an intuitive nature. We shall not discuss the metaphysical view of that question, more than to say that we have good grounds for believing that much of his discernment and clearness in his judgment resulted from his study in his special line of work.

## THE DISADVANTAGES OF INSUFFICIENT BELT SURFACE.

A FRIEND of the writer was talking with a belt manufacturer the other day, and in the course of conversation the belt man said, "I wish you would try some of this new belting of mine in some of your hard places where the belts must stand the hardest kind of strain and wear." "Well, I would if I had any such places; but I don't, and what is more I won't have, as long as I am a sane man."

On being asked to explain he spoke as follows: "I run belts wide enough so that there need be no undue strain on any of them, and I haven't got a double belt in my place." There was only one thing for the belt manufacturer to say, and he said it. "If everyone would plan shafting and machinery in the same manner, there would be no trouble from belting," and he struck the key-note of successful belt running. What my friend meant by saying he had no hard places in his establishment, was that he always used belts wide enough to do the work without straining them like fiddle-strings, as we often see.

To a certain extent this is impossible, as the makers of machinery have not yet reached that point in their education which teaches them to give the proper amount of belt surface, for the work in hand, without straining the belt until it is ashamed of itself. Lathes and other machinery as well will be found with a three-inch belt where a four-inch is required to do the work nicely without undue strain. When full capacity is expected of any machine the belt suffers, as it must be laced up another notch or two, without improving the belt in the least.

The harm does not stop here, but it continues until the machinery suffers as well, and many cut boxes and bearings worn out of true, can testify. This strain is not evenly distributed, and the lathes have got out of line as a result of this barbarous treatment.

We see belts listed as having such a carrying capacity, and invariably we find that the double belt is rated as having double the carrying capacity, yet it is to be doubted when we think of it thoroughly. What increases the power of the double belt over the single? There is no increase of surface, and is not surface the main factor in the question of the power of a belt?

The only increase of power due to the double belt is in the ability to stand a greater strain on the bearings, shafting and all other interested parts. It is an undoubted fact that a double belt will stand a much greater strain than a single, but it is hardly good practice to strain bearings in order to save the room occupied by the additional width, that a single belt would necessitate, and the cost of the wider pulleys.

It is just as cheap to buy a 10-inch single belt as a five-inch double, and the machinery fares a great deal better; the cost of the wider pulley is hardly to be considered at all, as the saving in cost of maintenance of shafting and the attendant parts. The rating of double belts as twice the carrying or transmitting capacity of single belts seems absurd when it is considered in detail. With nothing to increase the capacity except the ability to stand greater tension, this claim should be droppped as soon as possible as a relic of the past. Whether the theory of air pressure on the outside of the belt be abandoned or not (and in the face of the success of the wire link belt it looks a little doubtful if it can be maintained) the question of slack belts is the same. For if the frictional theory be the accepted one, the increase of surface on the pulley will certainly add to the driving power.

The advent of the perforated belt was by many deemed as proof conclusive, that the "air" theory was doomed to retirement, but to the writer it has appeared as an additional argument in its favor. For assuming the theory just mentioned the presence of air under the belt would prevent the atmospheric pressure from acting to its full extent, the imprisoned air being a sort of back pressure which lessens the efficiency of any means of transmission or power.

There are few appliances that are so abused as the one under consideration, namely, the old and tried friend of all shops, the belt. We find it stretched out of all resemblance to its former self, laced in a slip-shod manner and half the lace holes torn out, making a fine place for the belt to catch against the fingers of the shifter and finally tear out and come down on somebody's head. When we go into a shop of this kind and see the belts as just described, we are pretty sure to find a shop where the time of attending to the shafting, hot bearings and the attendant ills, would make a big item in the shop accounts, if it was counted in the list of running expenses. But this kind of a shop never keeps much account anyhow, and guesses at the charges to be made for work, with the result of either losing money or driving custom elsewhere.

It is not idle capital to have belts running slack and doing less work than they possibly might be made to do, for it is much better to have the capital invested in this way than to have delays, cut boxes and the annoyance that follows in the wake of all unsatisfactory machinery and parts, in the whole establishment. It is a pleasure to see a nicely running belt, to go in a nice engine room and see the great driving belt that is running the whole of a great plant and doing it without apparent effort, the belt being so loose as to almost touch the lower part where the sag of the upper half comes. This is a sure sign that the journals are running cool and everything is going along as nicely as possible. That is perhaps a rash statement, for there are exceptions and a cool journal may not follow, as there may be some cause that is foreign to the belt question; the bearings may not be large enough for the work and heat from that reason even without any belt on the engine.

In one case to the writer's knowledge a new engine was installed, and run hot from the first; all kinds of lubricants were tried without making any improvement in the bearings being cool, and finally the makers had to increase the size of the journals to secure the desired end. This is a case where the belt has no bearing on the subject whatever and is an exception to the above statement.

Designers of machinery are too apt to slight the bearings, or else are not versed in the practical side of the question, for we often find machinery with bearings so small that it is impossible to keep them from heating and cutting. These cases must not be attributed to the belting, though the practice of tight belts, strained to their utmost, is responsible for additional trouble.

In this as in nearly all other branches of the shop or factory management, it is well to beware of the "tinker," for he is on hand here as elsewhere and is just as destructive. The care of the belting should be in responsible hands, and the increased efficiency and lack of trouble will more than repay the expense.

## SENSIBLE TALK.

LUMBERMEN, read your lumber trade newspaper very closely. In the hurry and midst of business do not throw it aside, to be forgotten and perhaps finally used for waste paper After the day's work, when the evening lamp is lighted in the study and the good wife supervising the clearing away of the supper table, draw your easy chair near the lamp—light the evening pipe—put on your spectacles and go through your lumber trade paper from the title page to the last column of the advertising pages. You may, if you choose, give but a cursory glance to the editorials, but subject the correspondence and price-lists to your closet scrutiny. The notes of new enterprises, and new incorporations may offer many timely and valuable suggestions, and the review of the market is always worthy of consideration and reflection. Above all don't slight the column of advertised "wants." These are always newsy, and indicate the drift of current trade. Advertisements of labor-saving machines generally suggest ideas of practical economy. In the resting intervals, between suns, is the time to con the columns of the trade paper—to digest the information it contains, and then to sleep on it.

Pay a reasonable price for an economical boiler, and you have made a first-rate business investment.