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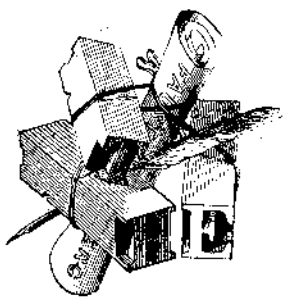
AMERICAN TYPE-SETTING MACHINES.



Art of type-composing consists in setting-up metallic letters in separate pieces, and arranging them into words, sentences, lines, columns and pages. The type thus composed, after having been printed from on a press, are distributed, letter by letter, with all the requisite spaces and punctuation marks, into boxes, ready to be set up again. This was the great discovery of Guttemberg, (1436) whereby he was enabled to use the same type over and over again for different literary productions. The tedious labor of composing and distributing type by hand is well known. Each *pick* of type requires two motions—back and forth—of the hand in setting-up, and yet it is remarkable how much work one expert printer can execute in ten hours. A skillful compositor can set up and distribute eight thousand "ems" in one day, and this averages two and a half picks for each, or about 80,000 movements of the hand and arm.

When it is considered that machinery executes work more rapidly than can be done by hand, the reasonable idea has been entertained that this hand labor might be superseded. Many efforts have been made in this direction, and several type-setting machines have been constructed, both in Europe and America; but with only one exception—to which we shall hereafter refer—all have been unsuccessful, so far as we have knowledge. At the present moment this subject seems to be exciting some attention, both at home and abroad; but as the public and inventors generally do not seem to be aware of what has already been done in this department, we purpose to give them some reliable information.

In recent numbers of the London *Mechanics' Magazine*, the question, "will type-setting machines pay," has been discussed; and Robert Hattersley (a correspondent of that journal) states that he has such a machine in action, and that it operates economically. We learn, that it is as yet, only an experiment, and that it has not been tried sufficiently to prove whether it may not meet the same fate as its European predecessors, one of which was illustrated on page 105, Vol. II, (old series) of the SCIENTIFIC AMERICAN.

We have recently noticed in our Boston cotemporaries, some flattering comments upon a machine for this purpose—the invention of C. W. Felt, of Salem, Mass. This improvement may be a valuable one, but its author does not seem to be fully aware of what others have done in the same field of invention. The inventor states that his machine is operated by keys like a piano, and then says in regard to printing, "The last great step, the introduction of type-setting machinery, has yet to be taken. Much has already been done and the prospect is very fair that it will be accomplished."

We assure our London and Boston cotemporaries that the thing *is* accomplished already, and that type-setting and distributing machines have been in operation in this city for several years. It is now about eight years since we first examined two such machines (invented and patented by William Mitchell), in operation in the printing establishment of Mr. John F. Trow, of this city; and as there were some doubts of their success, then, we have at considerable intervals of time taken the trouble to inspect them personally and watch their operations. These two type-composing instruments have now increased to ten, with six others for distributing the type—all by the same inventor. For plain book-work we have been assured that they effect a saving of about 30 per cent. One of those for composing somewhat resembles a melodeon. The type is placed in rows above small boxes at the ends of keys, with which the compositor "plays up" his copy into metallic composition. Each touch of a key opens a valve, and a type drops down upon a revolving tape, of which there is one for each letter, and the whole of these have their motion so regulated as to deposit the letters in unison with the movement of the keys upon a general traverse tape which carries them to a "composing stick," where they are arranged in proper lines, ready to be lifted by hand and placed on the galley for adjustment. When adjusted, the type is taken off in lines, by a peculiar clasp-composing-rule and properly arranged in columns. These machines are very simple, considering the number of motions executed; but we do not say they are above improvement—we have not yet seen the mechanism that had arrived at such a climax.

The distributing machines are quite neat and small. The type are placed in a long channel and carried forward to a vibrating finger which trips each separately, and makes it drop into a proper groove in a revolving ring below, from which each letter is stript off and conducted into its receiving plate, ready to be fed into the composing machine. Boys attend the distributing machines, and two compositors are at once employed on a setting-up machine. While one is adjusting his composed type, the other is setting-up copy, and thus the productions of two different authors may be going through the same *mill* nearly at the same time. These machines are not an experiment now; they have been tried for years, and are reduced to practical, every-day operations.

The good people of London will soon have an opportunity of witnessing some of these inventions at work in their venerable and vast city, as Mr. Mitchell left New York for Liverpool on the 28th ult., with one composing and one distributing machine, which he intends to introduce into the British metropolis. It is said that London printers are very conservative, but we really hope they will give these machines a candid examination and a fair trial.

IS A PATENT LIABLE TO LEVY AND SALE ON EXECUTION?

This is a question which has been so frequently asked of us recently that we have taken pains to examine it carefully, and now give the result of that examination. We think that no such power exists, either in regard to a patent right or a copyright, which both stand upon the same footing in this respect. It is a little remarkable that no adjudicated case can be found wherein this question has been directly decided; but, after a pretty careful search and inquiry, we have been unable to find any such. But questions have arisen incidentally affecting this subject, and which throw light upon the principle by which it should be controlled.

In the case of Sawin *vs.* Guild (1 Gallison's Reports, 485), a suit for infringement was brought against a sheriff for having sold a patented machine without a license from the patentee. It had been levied upon and sold by him by virtue of an execution against the patentee. The court held that this was no infringement—not because a patent might be levied upon and sold in this manner, but because the sale in this case was merely of the materials of which the machine was composed, and did not include the right to use the machine at all. Surely, if an interest in a patent could even be levied upon and sold, that was the very case in which it might be done.

In the case of Stevens *vs.* Cady (14 Howard, 528), and and again in Stevens *vs.* Gladding *et al* (17 Howard, 448), the question was brought before the Supreme Court of the United States, whether a sale on execution of a copper plate engraved for printing maps, for which a copyright had been obtained, gave to the purchaser the right to print and sell the maps. The court held that it conveyed no such right; that the purchaser of the copper plate possessed no other right to use it than he would have enjoyed if he had prepared and engraved it himself; and that a license from the holder of the copyright was necessary to enable him to print and sell the maps after he had the plate.

In delivering the opinions in these cases, the court expressed the opinion that neither a copyright nor patent right is liable to be levied upon and sold on execution; and, although that point did not rise directly in those cases, so that these opinions may be regarded as *obiter dicta*, still, coming from the source they did, they are certainly entitled to be regarded as possessing great weight.

But, to lay aside authority and refer to principle, how would an attachment or levy be made of this intangible property? Will the sheriff seize upon the patentee himself? The courts have decided that a seizure and sale of the patented machine conveys no right in the patent itself. How, then, can the levy be made?

Again, how will the property be transferred after being thus sold? The only way provided by law for transferring any interest in a patent is by a written instrument, which must, within 90 days after its execution, be recorded in the Patent Office. Is there any other mode of making such transfer? Suppose, after a sale on execution, the purchaser should find on the records of the Office an assignment from the patentee, dated either before or after his purchase, could he set aside such a transfer unless, at least, he could show fraud in the assignee? These difficulties seem to us insuperable; and hence we conclude that there is no power to attach or levy upon the incorporeal right secured by a patent or copyright.

But cannot such property be subjected in any mode to the payment of debts? Certainly it can. The act of Congress sufficiently provides for its being used by executors for that purpose. By the law and the practice in England, it goes to assignees in bankruptcy; and the same rule would be observed here under a bankrupt law passed by Congress. In both countries it could doubtless be subjected to the payment of debts in proper cases, through the instrumentality of a bill in chancery.

The power of the chancellor operates upon the person of the patentee. It can direct him to execute an assignment which may be placed upon the records of the Patent Office, and it can commit him to prison until he complies with the order. The assignment thus recorded would be notice of the transfer to all the world, in the same way as in case of an assignment by an executor or assignee in bankruptcy, and would therefore be in accordance with the provisions of the act of Congress authorizing the assignments of patents.

Whether it is competent for State laws to authorize the transfer of an interest in a patent by levy and sale, has never, as we believe, been settled by judicial decisions. It certainly cannot be done as the laws now stand; some mode of making the levy is evidently necessary for that purpose. Nor do we believe any State law can cause a transfer of such interest in any other way than by an instrument executed by the party himself or some one legally authorized to act for him. A law which should authorize a guardian to make such conveyance for a minor or insane person would doubtless be valid; but we doubt whether a sheriff's deed would be sufficient to convey a title of this kind. Such, at all events, would not be the case without the enactment of provisions different from any which we believe to exist in any State in the Union.

THE ACHIEVEMENTS OF SCIENCE.

Never, in the history of the world, has science been more actively and efficiently engaged in pushing its researches, than now; and mainly because this is an age of peace. Hitherto, war has been the rule—peace the exception. Now, it is the reverse. Time is allowed to men to apply their mental energies to more elevated and useful purposes than slaying one another, pillaging cities, and subverting empires. The steam engine saves labor; the telegraph economizes time; hence less work, greater comfort and more leisure are secured to the busy brain-worker—leisure for devising appliances which shall be the instrumentalities of a higher civilization, at once enobling and happyfying. Horrid wars, in the past, destroyed the populations; gentle peace, in the present, increases them. But to preserve the increasing millions physically, science must be appealed to; morally, religion. Thus it is that, in every year of the world's future history, science will become more perfectly the hand-maid of religion, and they will be co-workers in making this earth an Arcadia more enrapturing than any of which