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Air Spring Printing Press.

The old maxim, that "time is money," has never been better exemplified, perhaps, than in the multitude of efforts that have been made, in a variety of devices, to increase the speed of the flat bed cylinder printing press. To achieve this desideratum, it is of the greatest importance that the best system of resistance be employed to overcome the momentum of the bed of the press when in rapid motion. Wire springs have been tried but were found wanting, although for many years they have been employed almost exclusively.

Compressed air, however, has been for a long time universally acknowledged to be the best spring for that purpose, and it is our province here to show some important improvements which have lately been made in its construction.

The air spring heretofore in use was made with a solid or non-yielding plunger which caused much inconvenience and not infrequent damage, by carrying into the air chamber any sheet, tape, etc., that might accidentally have dropped on it. This was attended by the instant stoppage of the press, and vexatious delay and difficulty were incurred in forcing the plunger and its incumbrance from the air chamber; sometimes fracture of the bed and destruction of gearing took place. With the old wire spring, if enough pressure were exerted by it to properly overcome the momentum of the bed, it would be impossible to help it over the centers by hand and start the press; we may therefore infer that the resistance actually offered by it was never

the spring should be inoperative, as without springs there are no centers. It now remains to describe the improvements and see how they meet the case presented.

The accompanying engraving (Fig. 1) represents a press supplied with the improved spring. The bed is provided with two cylinders to engage with the plungers seen at the ends

Messrs. Cottrell & Babcock, at the above address, by whom the improved press is extensively manufactured.

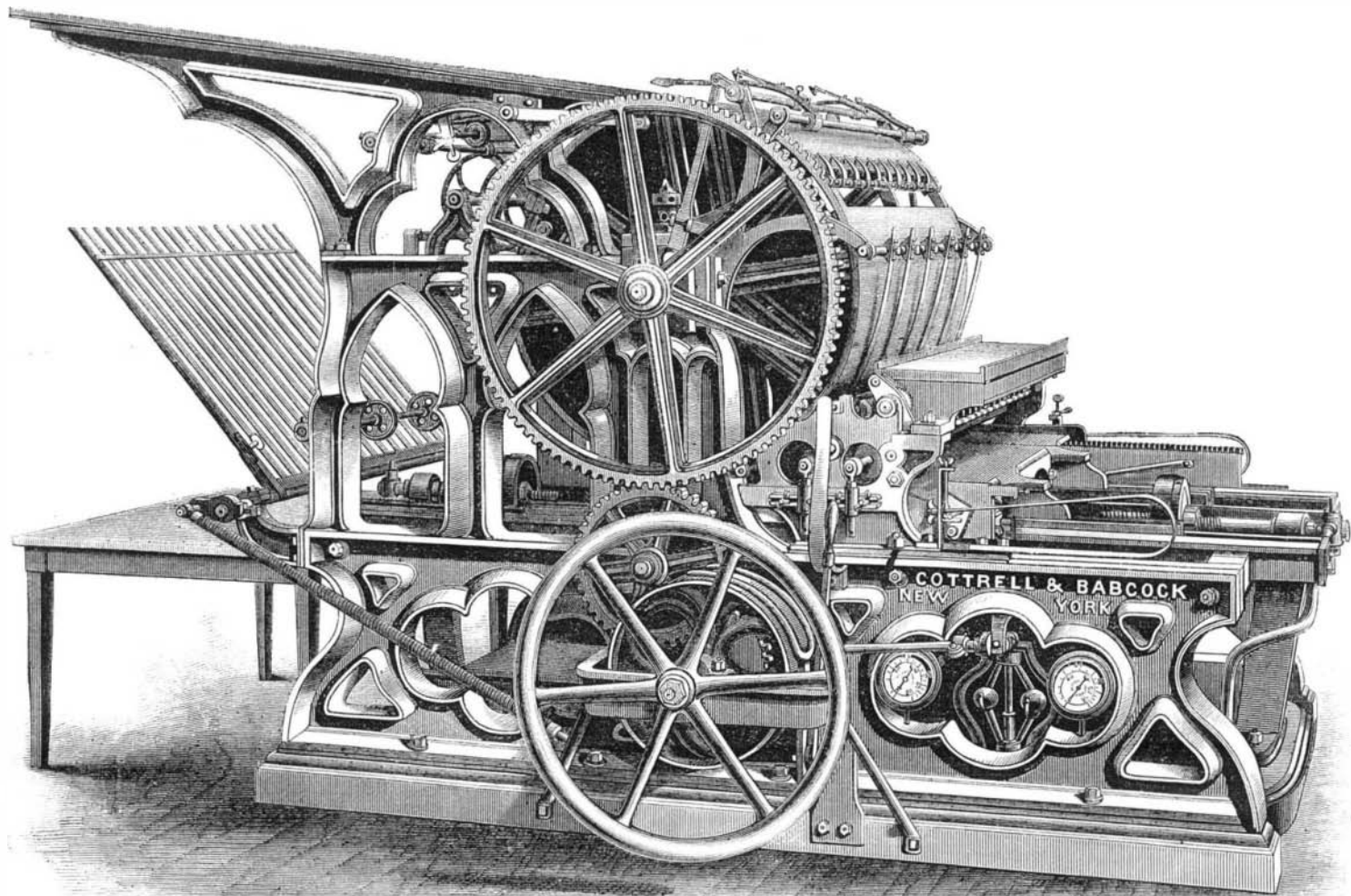
NOVEL MODE OF SAWING WOOD WITHOUT A SAW.

The dominion so long held unquestioned by ax and saw has been at length invaded. Electricity has been pressed into the service and threatens to drive these implements into banishment, while the muscular and other forces which were so largely expended in their use are replaced by the action of the galvanic battery in one of its most simple forms.

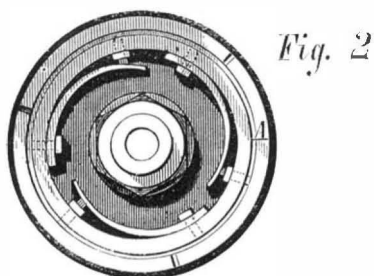
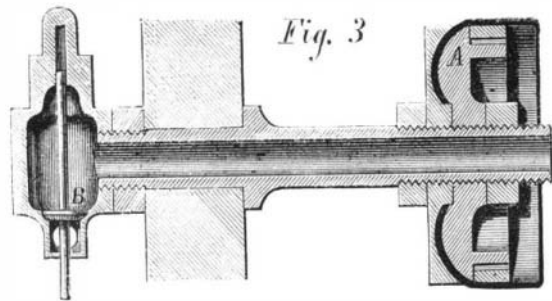
The invention we are about to describe, and which was patented through the Scientific American Patent Agency, on the 28th of last May, is that of George Robinson, M. D., of this city.

That gentleman was well aware that a galvanic current in sufficient quantity, when passed over fine platinum wire, would raise its

temperature to a red or even white heat. The most important application of the principle had previously lain in the employment of the heated wire in certain surgical operations as a substitute for the knife or red hot iron. It was found that the red hot wire easily cut or rather burnt its way, through the living flesh, and tumors of considerable size were thus removed from the human body. The inventor's attention



COTTRELL & BABCOCK'S AIR SPRING PRINTING PRESS.



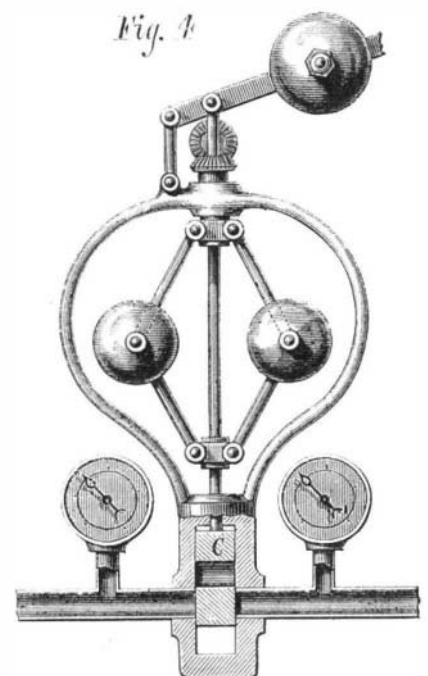
of the frame, and the hollow rods of these plungers are connected by a pipe running along the lower part of the frame; which pipe is opened or closed by the valve of the governor shown through the opening in the framework.

Fig. 2 represents a cross section of the plunger, A, which, it will be seen from the engraving, is arranged with springs so as to allow the outside packing to contract and expand; it thereby obviates, the inventor says, all difficulty arising from paper, tapes, or other matter falling on the plunger while the press is in motion. Fig. 3 shows a longitudinal section of the plunger, A, its hollow rod, and an automatic valve, B, at its extremity. This valve rises on the return motion of the bed and prevents a vacuum forming in the cylinder, whereby all strain or drag is prevented and power saved.

Fig. 4 represents the governor attached to the connecting pipe, with the plug valve, C, which it operates, and two spring gages to indicate the amount of condensation in the cylinders. The valve is shut by the motion of the press when running at speed, and is, of course, open when the press is at rest. This enables the press to be started at any point without helping it over the centers by hand. The spring gages perform an important function. As they indicate the pressure in the air cylinders, and as this is determined by setting the plungers backward or forward on their rods, there is no difficulty whatever in exactly adjusting the amount of spring to the speed of the press. Every press is furnished with a table showing the gage pressures, indicating the amount of spring required for the different speeds run. All the workman has to do is to adjust the plungers until the gages indicate the pressure laid down in the table.

As compared with the wire spring, it is stated, this spring admits of the press being run quite 25 per cent faster, and without the wear, consequent on the strain caused by the wire spring, and the accompanying jar and noise.

Patents were obtained through the Scientific American Patent Agency, May 2, October 17, and December 12, 1871, for the inventor, Mr. C. B. Cottrell, of No. 8, Spruce street, New York city. Further information may be obtained of



being fixed on the fact that sodden, wet flesh was cut through in this way, a little reflection satisfied him that the division of wood, a comparatively dry substance even when green, could be more readily effected by the electrically heated wire.

sufficient for the requirements of the press. In running at different speeds, the springs should be regulated to accord with them, which, in the old springs, could not be done with any certainty; and while the press is at rest, it is desirable that