

draft of 1-in. water gauge is usually sufficient, but can readily be reduced on any engine, or increased on the whole system. The pipe (Fig. 3), is connected to an exhaust fan operating the power plant boilers, and is dampered so that the draft on the boilers or in the main pipe can be regulated at will. Another fan may be installed with that of the power boilers, or it may be an independent installation located where desired. The main pipe may be connected to a suitable chimney or stack, and the fan omitted or used as an auxiliary.

The temperature inside the main pipe always being equal to or above that in the house, there will not be any condensation and deposit of dirt over the locomotives. The draft keeps the pipes clean. There always being an inward draft at all openings no fire or smoke can escape. Further, as concrete and other fireproof roofs are now being constructed, or insulation if required could be provided, these questions can be dismissed.

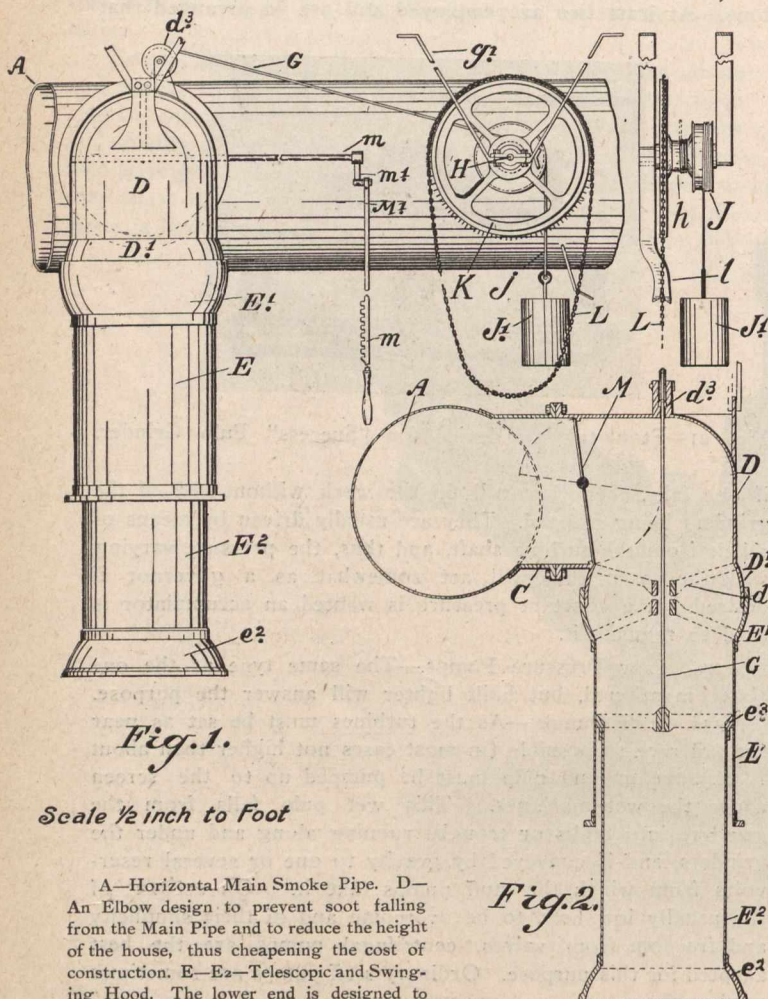
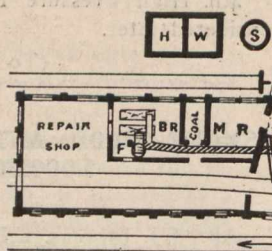


Fig. 1.

Scale 1/2 inch to Foot

A—Horizontal Main Smoke Pipe. D—An Elbow design to prevent soot falling from the Main Pipe and to reduce the height of the house, thus cheapening the cost of construction. E—E2—Telescopic and Swinging Hood. The lower end is designed to closely fit the locomotive stack. M—An adjustable Damper, designed so its weight and draft will assist in closing it. The damper when closed effectively prevents unnecessary drafts through the Engine, and saves heat and money which escape through the Wigwam Jack. G—A Cord or Chain adjusting the telescopic E2. If found necessary, an auxiliary check chain or stop may be provided. K.H.—A Differential Hoisting Winch for adjusting the telescopic part of the Hood. The counter balance weight J1, is designed so as to nearly overcome the weight of the telescopic part E2. Other suitable counterbalance weights or lifting mechanisms can be provided.

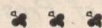
Fig. 2.



B.R.—Boiler Room. F.—Induced Draft Fan for Boilers and Horizontal Main Smoke Pipe. M.R.—Machinery Room, Fan Heater, Dynamos, Pumps, etc. D.D.—Hot Air Duct, Lorry Track above. H.W.—Hot Well. S.—Slushing Tank.

the employer and the homes of the employed near each other.

The advantages of this system are summed up as follows: It is independent of wind, weather, high buildings or hills; quick steaming and despatch of locomotives; no air or steam blowers required; freedom from storm water, condensation or back smoke; there being no pipes through roofs, no flashings are required; clean machinery, pure air, and improved conditions for employees, as well as for residents in the neighborhood.



SCIENCE AND ENGINEERING AWARDS AT TORONTO UNIVERSITY.

The following degrees and certificates are announced as the result of the recent examinations at Toronto University:

H. H. Angus, F. A. Gaby, N. R. Gibson, P. Gillespie, N. D. Wilson are eligible for admission to the degree of Bachelor of Applied Science, with honors.

E. W. M. Edward, C. J. Fensom, J. C. Gardiner, J. F. Hamilton, D. Mackintosh, A. H. McBride, J. A. McFarlane, I. H. Nevitt, E. W. Oliver, J. D. Pace, B. B. Patten, T. H. Plunkett, H. G. Smith, S. L. Trees are eligible for admission to the degree of Bachelor of Applied Science.

Prize in Civil Engineering for general proficiency in the third year, W. N. Moorhouse. The prize is a gift of Mr. T. Kennard Thomson, C.E., of New York, a graduate of '85.

S.P.S. Certificates.—Honors—H. H. Angus, F. A. Gaby, N. R. Gibson, P. Gillespie, A. H. McBride, H. G. Smith, N. D. Wilson.

Pass.—C. L. Coulson, W. M. Edwards, C. J. Fensom, J. C. Gardner, J. F. Hamilton, J. A. McFarlane, I. H. Nevitt, E. W. Oliver, J. D. Pace, B. B. Patton, T. H. Plunkett, S. L. Trees.

Department of Civil Engineering.—Honors—First Year—O. B. Bourne, A. L. Carruthers, M. J. Carroll, W. A. M. Cook, G. Clendinning, C. Johnston, A. G. Mackay, J. A. McKenzie, J. V. McNab, M. K. McQuarrie, J. M. Menzies, J. E. Parsons, H. L. Pringle, H. T. Routly, W. A. Scott, W. M. Stewart. Second Year.—W. Barber, N. L. Crosby, T. R. Loudon, W. J. Moore, W. M. Treadgold. Third Year.—T. F.

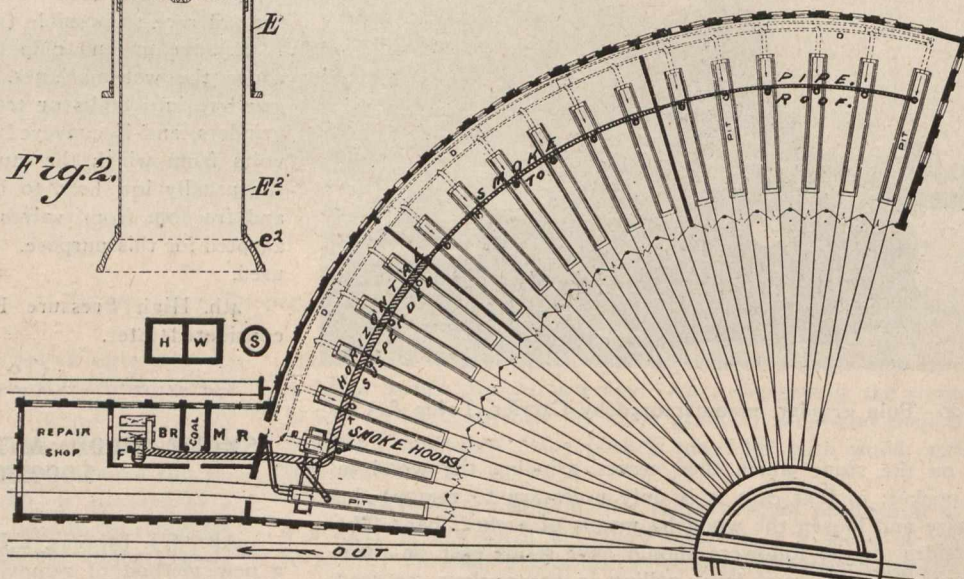


Figure 3.

Code, W. A. Cowan, S. R. Crerar, A. L. Ford, W. C. McFarlane, W. N. Moorhouse, J. D. Sheply, E. W. Walker, A. F. Wolls.

Department of Mining Engineering.—Honors—First Year—W. Huber, R. C. Purser, O. Rolfson. Second Year—W. A. Begg, C. S. Scott. Third Year—E. Wade.

Pass.—First Year—C. S. Acton, E. W. Banting, M. Bates, C. W. Bissett, E. J. Hassard, K. A. Mackenzie, C. J. Murphy, J. H. Ryckman, G. P. Stirrett. Second Year—W. C. Campbell, C. S. L. Hertzberg, D. W. McKenzie, W. N. Mc-

The main pipe somewhat resembles the breeching over a battery of boilers, but as the conditions are not so severe, the pipes may be of lighter material.

Railway corporations and municipalities will find this system removes all objections to the location of engine houses near residential property, where a factory chimney is permissible. The better draft in the fire-box of the locomotive will cause less smoke, and what is made can be delivered at a high elevation. There are many advantages to railway companies, cities, towns and employees in keeping the work of