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Editor's Showcase

The Hay Burner Stove

By Robert C. Pettit, assistant collections manager, NSHS

The hay burner stove arrived at the museum of the Nebraska State Historical Society in 1934. It serves as an example of the pioneer's adaptation to life on the "treeless plains" and the ingenuity of American invention.

This particular stove was manufactured by the Collins and Burgie Stove Works of Chicago.¹ It is unique among hay burners in that it uses removable, spring-operated cylindrical magazines to feed the hay into the fire. This feature was based upon the January 16, 1877, patent of Merritt L. Wood of Valley Springs, Minnehaha County, Dakota Territory.²

The stove was presented to the Historical Society in 1934 by E. H. Bush of Tecumseh who obtained it from J. S. Harman, a Tecumseh hardware merchant.³ In response to questions from Historical Society Superintendent Addison E. Sheldon, Bush described how the stove operated:

Q. How did one feed the hay into the cylinder?

A. It was fed by hand.

Q. One put the hay in and then turned the cylinder?

A. Yes.

Q. Where does the hay come out?

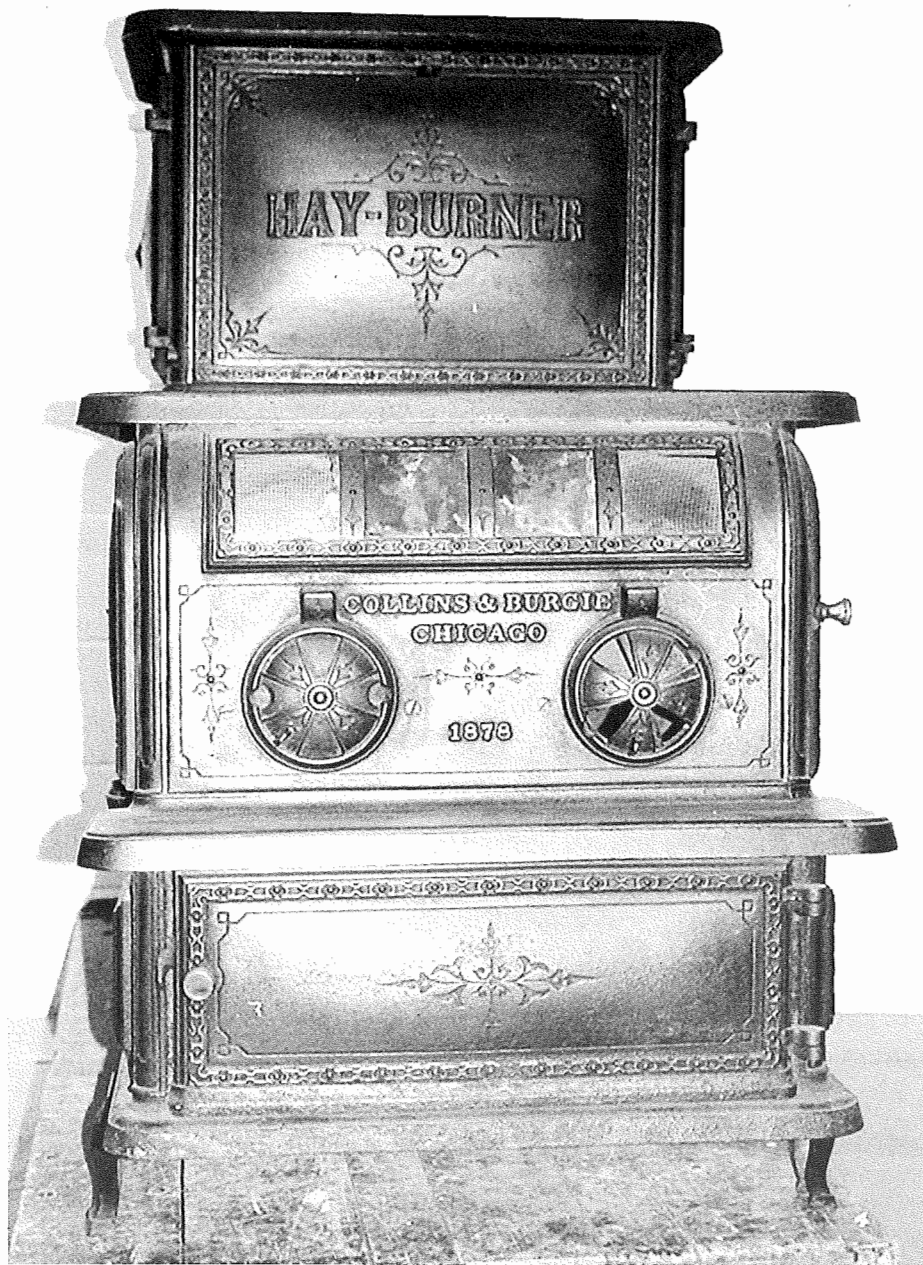
A. The way the stove works, it turns right into the fire box.

Q. Consequently, in order to keep the stove going, it had to be stuffed with hay constantly?

A. Yes, or the hay could be stuffed into the stove when there was no fire, twisted into a rope, and cut off with a corn knife on a block placed cross ways. The hay was cut into fire box lengths and stored ready for use. There was a large space in the fire box and you could keep feeding the stove through the cylinder which works by hand.

Q. What kind of grass was chiefly used?

A. Slough grass.



Q. Do you think many of these stoves were used in Johnson County?

A. There were only three, as I remember.

Q. Is the name of the manufacturer or patent on the stove?

A. I do not remember, but it is probably on the stove.

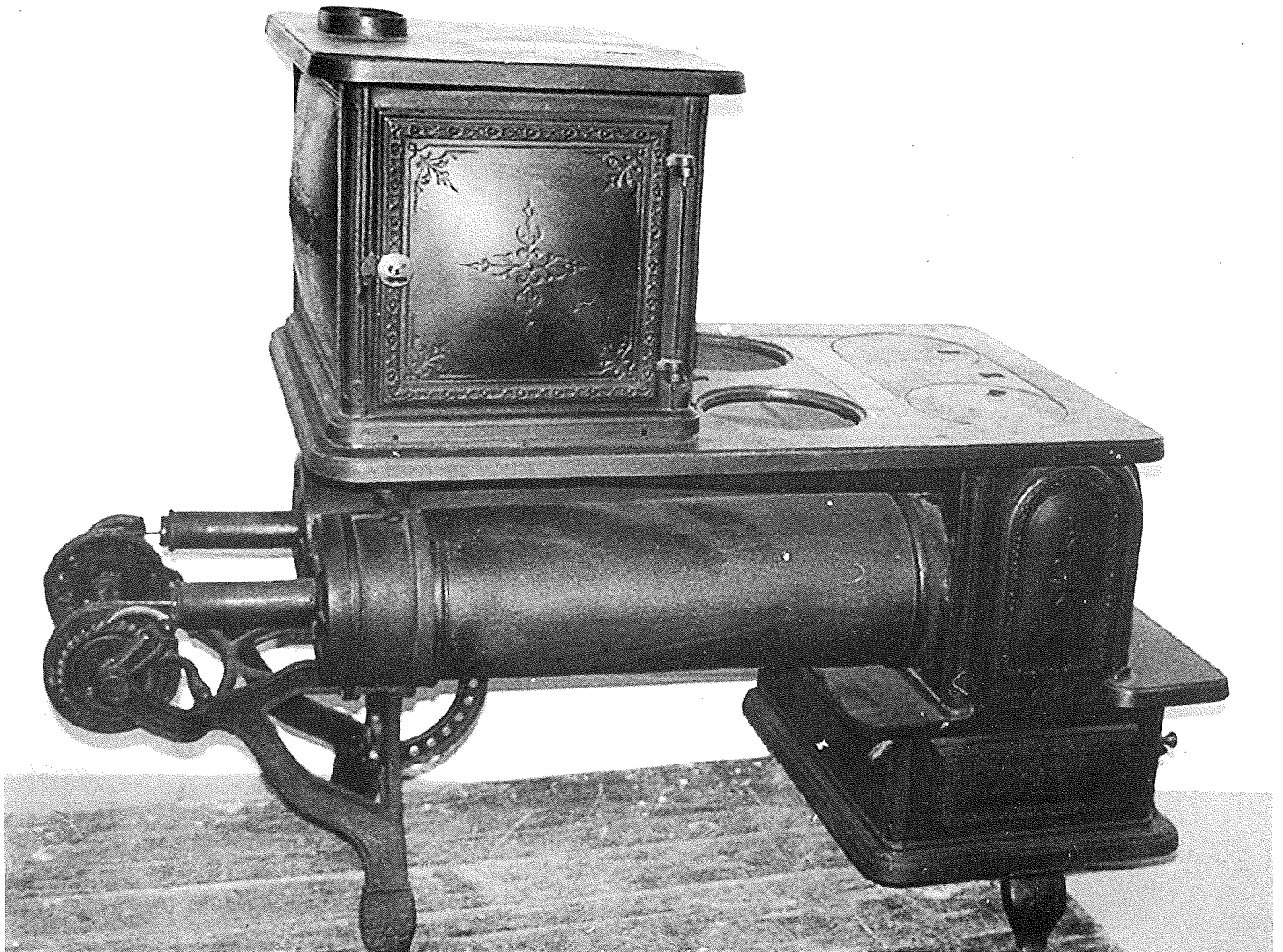
Q. How did you come into possession of the stove?

A. I secured it through some trading stock, and the stove was donated to the Historical Society last year.⁴

In a short article in the July–September, 1939, issue of *Nebraska History*, A. E. Sheldon noted the condition of the stove:

You can see evidence of the heat produced by looking at the ash-pan with the

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bottom almost completely burned out. Bits of hay still cling to its rusty sides where they fell when the stove was moved. Under the front end of the cylinders is a shallow tray evidently designed to catch drippings—for they had to dip the bundles into a pail of water to keep them from burning too fast. There is a small high oven at the back of the stove, and a large iron kettle takes the place of one griddle.⁵

Notes

¹ Emily Clark, assistant librarian, Chicago Historical Society, to Robert C. Pettit, Feb. 13, 1990. Collins and Burgie was established in 1857 and last listed in the 1895 Chicago city directory. It is

not known how long the hay burner was manufactured, but it was not included in the firm's 1894 catalog.

² *U.S. Patent Office Reports*, Jan. 1877, 143, 467. Merritt L. Wood had filed application for his patent on Jan. 6, 1877, and it was granted on Jan. 16, Patent No. 186,286. He is also listed as receiving Patent No. 197,921 on a mowing machine, Dec. 4, 1877.

³ E. H. Bush may be Eugene H. Bush, the son of Tecumseh railroad contractor David R. Bush, whose sketch appeared in *The Portrait and Biographical Album of Johnson and Pawnee Counties* (Chicago: Chapman brothers, 1899), 300–301. One of the copies of the Bush-Sheldon interview refers to E. H. Bush as a "collector of antiques." J. S. Harman, "dealer in hardware, stoves, tinware, fur-

niture, carpets etc." was born and raised in Hillsboro, Ohio, and established his business in Tecumseh in 1869. A. T. Andreas, *History of the State of Nebraska* (Chicago: The Western Historical Company, 1882), 1013.

⁴ Donor File of E. H. Bush, Museum of Nebraska History.

⁵ "The Story of Hay Burners and Balers," *Nebraska History* 20 (July–September, 1939), 188.

Specification forming part of Letters Patent No. 186,286 dated January 16, 1877; application filed January 6, 1877, by Merritt L. Wood of Valley Springs, Dakota Territory. . . .

Figure 1 shows the side elevation of the stove, the position of receptacle R, magazine M, spring cap C, head of bolt D, stop-bar G, ratchet-crank A, hearth H, forked leg K, the upper part of the stove being the same as any ordinary stove. Fig. 2 shows horizontal section of receptacle, magazine, screw-cap, bolt D, and stop S. Fig. 3 shows front elevation of stove, with the position and opening of receptacle R and stop S.

The fuel is introduced into the fire-box through the receptacle R. The magazine containing the supply of fuel, consisting of pressed hay or straw, is inserted into the receptacle and held by a pin and right-angled slot, and can be easily detached from the receptacle. The spring-cap C is likewise attached or detached from the magazine. When they are both connected, the coiled spring in the spring-cap C is set at liberty by turning the bolt D, and the fuel is pressed into the receptacle R, and thence into the fire-box.

The movable stop S, adjusted by the ratchet-crank A and the bar G, is designed to regulate the introduction of the fuel into the fire-box at the mouth of the receptacle, according to the amount of fire desired. The stop is made of perforated conical plates, bars, or any form adapted to that purpose.

The stop-bar G is held to its place at the side of the receptacle by means of a guide under the ratchet-crank A, and passes through the rear of the fire-box, and is attached to the stop S, and moves it to or from the mouth of the receptacle.

The hearth H extends under the rear of the stove and back of the receptacle, and is designed to catch any litter caused by replacing the empty magazine with a filled one.

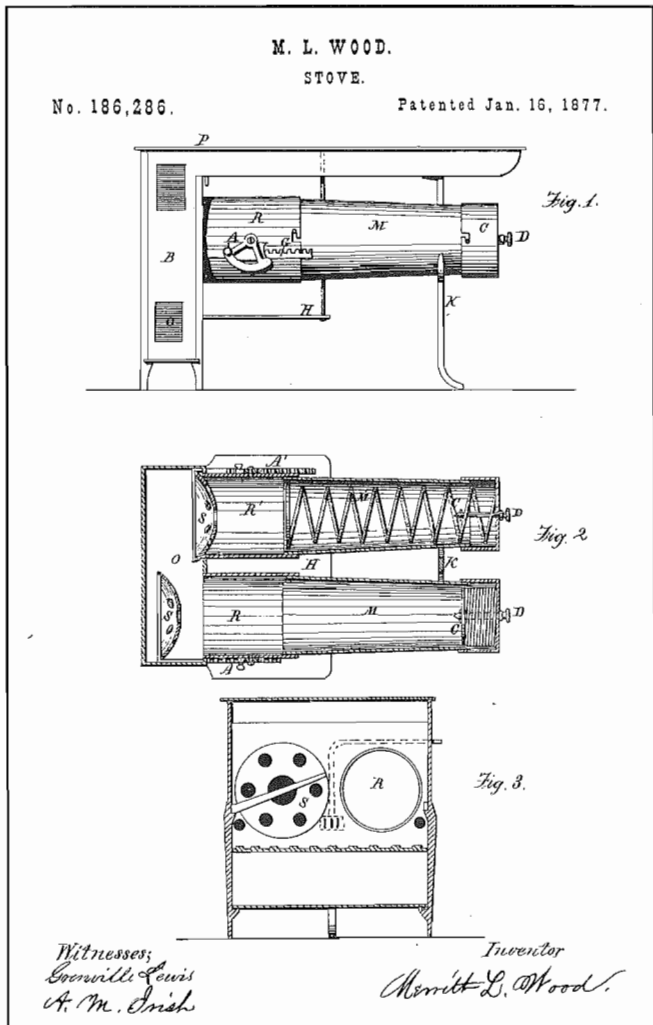
The leg K serves to hold up the rear end of the stove; also, by its forked construction, the magazine.

The bolt D passes through the center of the spring-cap C, and also through an oblong hole in the plate, to which the front of the spring is attached, and holds the coiled spring within the spring-cap by means of a cross-pin in the end, when turned at right-angles with the hole in the plate.

The receptacle and spring-cap are preferably constructed of cast-iron, while the magazine may be made of sheet-iron, and should be funnel-shaped, thereby affording less resistance to the passage of the fuel.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The horizontal magazine M, located beneath the griddle-holes, and connected with the rear of the fire-box, substantially as described, and for the purposes specified.
2. The receptacle R and the spring-cap C, containing spring



and bolt D, with magazine M, all arranged and combined substantially as described, and for the purpose set forth.

3. The stop S, having the stop-bar G operated by means of the ratchet-crank A or its equivalent, substantially as described, and for the purpose specified.
4. The hearth H, located in the rear of the fire-box and underneath the receptacle, substantially as described, and for the purpose set forth.
5. In a stove or furnace, the combination of the magazine M, receptacle R, stop S, and spring-cap C, arranged and combined substantially as described, and for the purposes set forth. . . .

Directions

Place the large end of the Magazine over a block 1 1/2 inches thick, and fill by hand; apply the pressure around the outer edge of the hay, and for the first fire (or at any time when the stove is empty and cold), fill the Magazines lightly.

Before placing the Magazine in the stove put the large end of it on a flat surface and start the hay forward, and then it will be moved easily by the springs.

After the Magazines are filled and placed in position in the stove, light the fire and *release the springs* by disconnecting the stationary detent from the ratchet wheel.

If the hay is pressed in the Magazine so firmly that the springs fail to move it forward, assist the springs by moderate pressure against the rear end of the telescope until they will act unaided.

Do not shake the grate more than once or twice a day; the fire burns better when the fire box is well filled with charcoal (made from the hay), even it be not on fire; and with the first fire it is best to revolve the Tuyeres* and let the fuel come into the fire box liberally.

To check the fire, close the front Registers or open the Register in the Pipe, or open the Ash-pit door, the idea being that when the air is kept from circulating through the Tuyeres, the combustion is checked.

These are practically all the instructions necessary, as the **parts of the stove suggest their own use.**

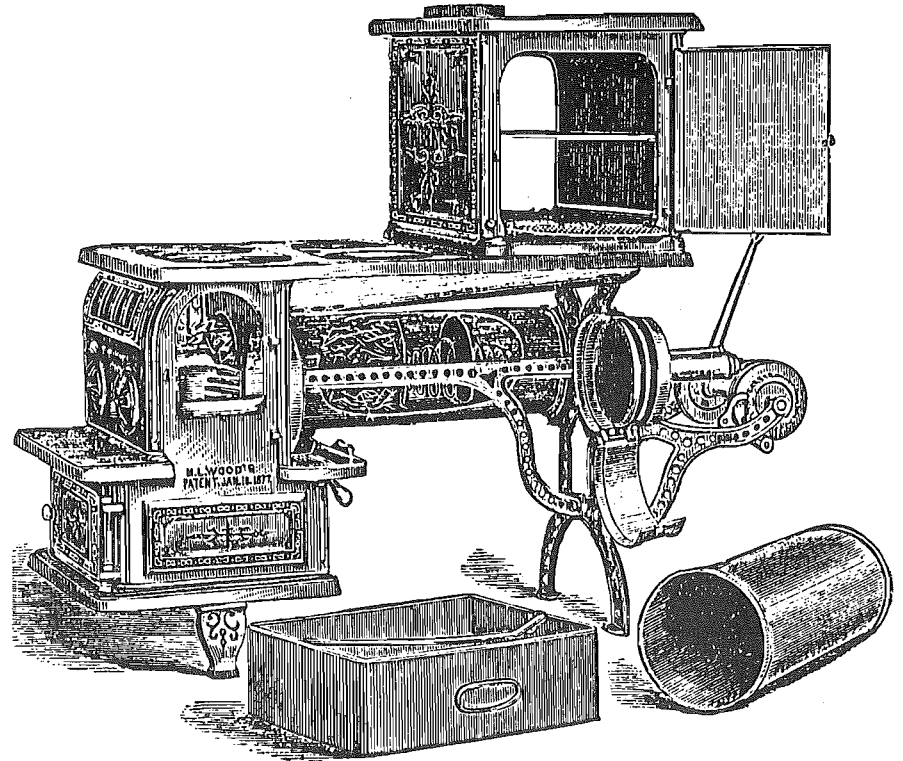
The more hay you put into the Magazines the longer it will last, but the more revolving of the Tuyeres will be necessary, for pressed hay will not burn freely and it must be loosened by the Tuyeres.

With but ordinary filling the Magazines will hold enough for about one hour's fire, and when they are emptied you will find a good bed of charcoal that will keep up the heat for some time, and light a fresh Magazine hours after.

If only a little fire is required, fill but one Magazine and give direct draft up the front of the oven.

* Tuyeres convey air to the center of the fuel and can be revolved to loosen the fuel and increase combustion.

HAY BURNER.



No. 8.

No. 9.

Cut showing one Magazine removed, one Spring coiled back and the other partially expanded, also Automatic Oven Shelf which closes inside the oven as you shut the door.

End Door for use only when burning wood. Large Ash Pan.

Text and Illustrations from Collins and Burgie Stove Works Catalog, about 1878. NSHS Museum Collections