(No Model.) 2 Sheets—Sheet 1.

J. F. BUDKE.

APPARATUS FOR FORMING FAGOTS OR PILES.

No. 522,645. Patented July 10, 1894.

Fig. 1.

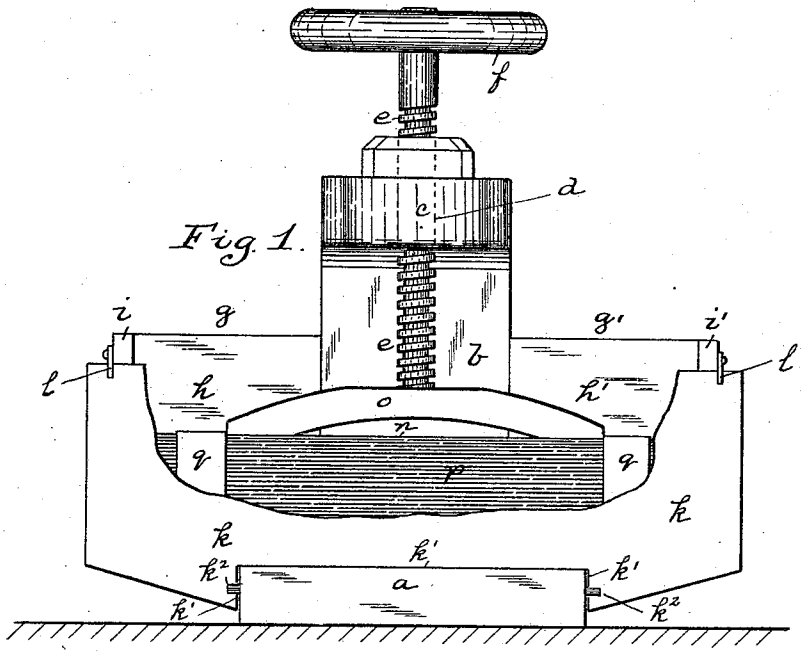
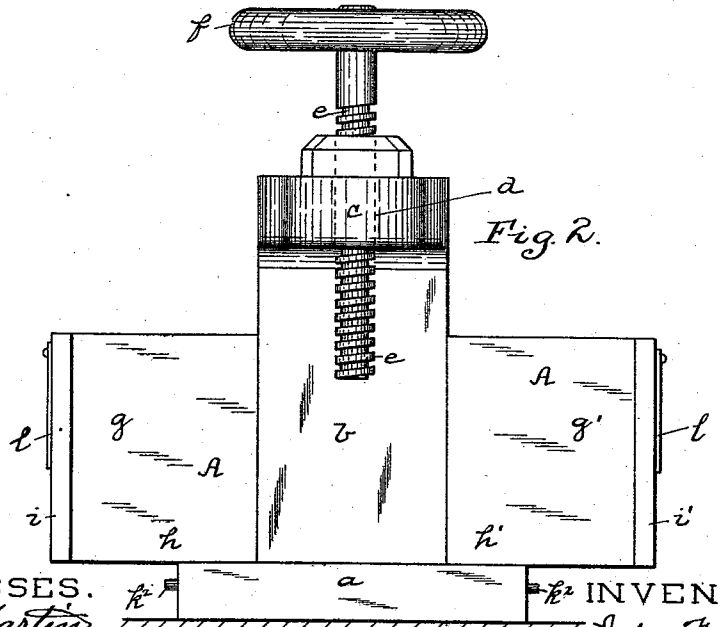


Fig. 2.



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Fig. 3.

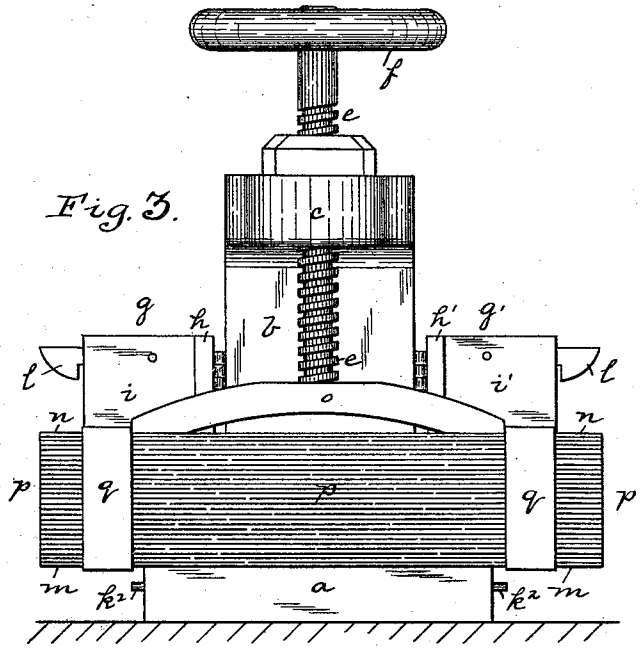
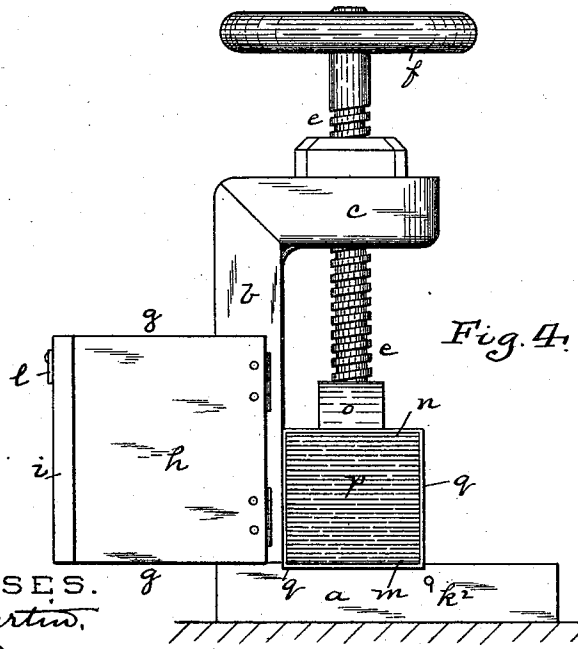


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN F. BUDKE, OF CANNONSBURG, PENNSYLVANIA, ASSIGNOR TO THE CANONSBURG IRON AND STEEL COMPANY, OF SAME PLACE.

APPARATUS FOR FORMING FAGOTS OR PILES.

SPECIFICATION forming part of Letters Patent No. 522,645, dated July 10, 1894.

Application filed December 17, 1892. Serial No. 455,456. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. BUDKE, a resident of Cannonsburg, in the county of Washington and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Forming Fagots or Piles; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an apparatus for forming metal fagots. These fagots or piles are composed of bars, slabs, scrap or crop-ends bound together by a hoop-iron and after being raised to a welding heat in the reheating furnace, the component parts of the fagot or pile are welded together by passing the same through suitable rolls to form billets or bars. Where these fagots or piles are made up of bars of a uniform length and width, the formation of the fagot or pile is a simple operation, as by simply piling the bars or slabs uniformly, the one upon the other, a compact and even-edged fagot or pile is formed. But where the fagot or pile is made up chiefly of scrap or crop-ends much difficulty has been, heretofore, experienced in the formation of such a fagot or pile, due to the inability to hold the component parts of the fagot or pile properly in place while the hoop-iron is secured around the ends thereof to bind the component parts thereof closely together. The result has been that it has been practically impossible to form a close, compact, and even-edged fagot or pile by the methods heretofore practiced, where the fagot or pile was composed of scrap or crop-ends. The scrap and crop-ends form a large item of waste in the manufacture of iron and steel of different shapes, and can only be disposed of at very low prices, so that the utilization of such scrap and crop-ends in the form of fagots or piles which can be reduced to billets and sheets, would create a great saving.

The object of my invention, therefore, is to provide means of forming fagots or piles by which a solid, compact, and even-edged fagot or pile is produced, even though the component parts of said fagot or pile consist largely of scrap or crop-ends.

My invention comprises the improved apparatus for forming fagots or piles, which comprises, generally stated, a box for receiving the component parts of the fagot or pile, a compressing block arranged above said box and adapted to compact the fagot or pile therein, and hinged sections on said box for exposing the ends of the fagot or pile, all of which will be fully hereinafter set forth and claimed.

To enable others skilled in the art to make and practice my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a front view, partly broken away, of my improved apparatus, showing the fagot or pile compressed. Fig. 2 is a view of the box with the fagot or pile removed, as well as the front plate of said box. Fig. 3 is a view of the apparatus with the front plate removed and the hinged portions swung back to expose the ends of the fagot or pile therein; and Fig. 4 is an end view.

Like letters indicate like parts in each of the figures.

The apparatus consists of the base plate *a* on which is erected the standard *b* of suitable height. Projecting from the standard *b* is the bracket or arm *c*, said bracket or arm having formed therein a screw-threaded opening *d* with which the screw bar *e* engages, the upper end of said bar having a hand wheel *f*, or other device for turning said screw bar *e*, whereby said screw bar *e* may be raised or lowered in said opening *d*. Hinged to the standard *b* are the swinging sections *g g'*, said swinging sections consisting of the portions *h* *h'* and *i i'*, respectively. The portions *h h'* in conjunction with the standard *b* compose the back, while the portions *i i'* compose the ends of a box A to receive the component parts of the fagot or pile, as will more fully hereinafter appear. A removable plate *k* forms the front of the box A, said plate being held in position by means of suitable catches *l* on the end portions *i i'*. The lower edge of said front plate *k* is cut away, as at *k'*, to fit over the base plate *a*, and pins or lugs k^2 are formed on said base plate *a* with which the lower edge of said front plate *k* engages to retain said plate in position at its base, as shown in Fig. 1, the catches *l* acting to secure it at its top.

While I have described the screw for exert-

ing the compressing force in forming the fagot, it is evident that any suitable compressing apparatus may be employed for the purpose.

The operation of my improved apparatus is as follows:—It is customary in making up a fagot or pile from scrap or crop-ends, to form the top and bottom members of such a fagot or pile by single bars or slabs; accordingly, a bar or slab *m* of suitable thickness is placed on the base plate *a* of the box A, said bar or slab being of a length and breadth that will enable it to fit snugly within said box when the hinged sections *g g'* thereof are in their normal position and the front plate *k* is in place. The several parts of the box A are constructed to embrace an area equal to the length and breadth of the fagot or pile to be formed. The bottom bar or slab *m* having been placed within the box, the scrap and crop-ends of sheets, bars or plates are placed thereon, care being taken to arrange the same in such a manner that they will form as compact a body as possible. The piling of the scrap and crop-ends in a box inclosed on all sides insures a fagot or pile with even edges and perfectly rectangular in cross-section. When the fagot has been built up in this manner to the proper height, the top bar or slab *n*, equal in area to the bottom bar *m*, is then placed thereon. A compressing block *o* is then placed upon the top bar or slab *n*, said block occupying a portion of the space intermediate of the ends of the fagot or pile *p*, but not extending the entire length thereof. When the block has been arranged in position, the screw bar *e* is lowered into contact with the compressing block *o*, when upon a further lowering of said screw bar the said block *o* is compressed and the component parts of the fagot or pile interposed between the bars or slabs *m n* are compacted closely together, the solid area of the top and bottom slabs *m n* serving to equalize the pressure brought to bear upon the interposed scrap and crop-ends, so that all the component parts of the fagot or pile are acted on by an equal pressure at all points at the same time.

It is apparent that instead of the screw bar *e* and the separate compressing block *o*, a compressing block secured to the end of a piston rod operated by steam or hydraulic power may be employed.

The component parts of the fagot or pile being held in this manner against displacement, the front plate *k* of the box is released from the catches *l* on the ends *i i'*, and said plate is removed. The swinging sections *g g'* are then swung back to the position shown in Fig. 3, leaving the ends of the fagot or pile *p* exposed. With the fagot or pile held securely in place by the compressing block *o*, and with no liability of any movement on the part of the fagot or pile or any displacement on the part of any of the component parts thereof, the iron bands to bind the fagot can be secured about the ends thereof without difficulty. Accordingly these bands *q* of suitable width and thickness are adjusted around the ends of said fagot or pile *p* and the bands riveted or otherwise firmly secured to provide a tight connection which will withstand the severe strain to which it is exposed when the fagot or pile is introduced into the welding furnace and the expansion of said fagot or pile takes place. The attempts heretofore made to compact and bind the ends of a fagot or pile made up of scrap and crop-ends have been failures owing to the inability to hold the fagot or pile in such position that easy access could be obtained to the ends thereof for securing the bands around the same to insure the tight binding of the fagot or pile. By my improved form of apparatus the ends of the fagot or pile can be exposed while at the same time the fagot or pile is tightly compressed.

When the bands *q* have been properly adjusted and secured, the screw bar *e* is raised and the compressing block *o* removed, whereupon the fagot or pile is complete and ready for the welding furnace, and the apparatus is then prepared for another fagot.

I find my improved apparatus extremely advantageous in connection with sheet mills where there is a great deal of scrap metal, as a fagot constructed as above described upon its removal from the welding furnace can be passed through the rolls and reduced to a sheet bar without further re-heating, instead of having to first re-melt it in a knobbling furnace and form it into a billet, and then after re-heating it reduce it to a sheet bar. In forming such fagots from scrap sheet, the narrow or short pieces can be laid in place within the box, being built up to form the solid fagot, and as the sheets are of substantially the same thickness when built up to a certain height within the box, they will be compressed to form a fagot of substantially the same thickness, and the confining bands can be formed to shape and riveted together to form the complete bands, as shown in Fig. 3, and when the ends of the fagot are exposed, as above described, the bands may be slipped over the ends, after which the fagots are released from the pressure, fagots of regular length, width and thickness being thus produced. It is found that such fagots can be heated and rolled to sheet bars at an average loss of less than ten per cent., because of the even end and side faces and the compactness of the fagots produced.

While I have alluded more particularly to a fagot or pile composed of scrap or crop-ends, I do not confine my invention to this single use, but broadly to the formation of fagots or piles of whatever nature.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An apparatus for forming fagots or piles, consisting of a box for receiving the component parts of a fagot or pile, the bottom piece of said box being of less length than the space inclosed by the sides and ends thereof, mech-

anism for compressing said fagot or pile therein, and means for exposing the ends of said fagot or pile, substantially as set forth.

2. An apparatus for forming fagots or piles, consisting of a box for receiving the component parts of a fagot or pile, the bottom piece of said box being of less length than the space inclosed by the sides and ends thereof, mechanism for compressing said fagot or pile therein, and swinging sections on said box for exposing the ends of said fagot or pile, substantially as set forth.

3. An apparatus for forming fagots or piles, consisting of a box for receiving the component parts of a fagot or pile, the bottom piece being of less length than the space inclosed by the sides and ends thereof, mechanism for compressing said fagot or pile therein, swinging sections on said box and a removable front, whereby the ends of said fagot or pile may be exposed, substantially as set forth.

4. An apparatus for forming fagots or piles, consisting of a box for receiving the component parts of a fagot or pile, the bottom piece being of less length than the space inclosed by the sides and ends thereof, mechanism for compressing said fagot or pile therein, swinging sections on said box forming the ends and a portion of the back of said box, and a removable front, substantially as set forth.

5. The combination of the base *a*, the standard *b*, the bracket *c*, the screw bar *e* engaging with said bracket, the swinging sections *g g'* hinged to said standard *b*, the removable front plate *k*, and the compressing block *o*, substantially as set forth.

In testimony whereof I, the said JOHN F. BUDKE, have hereunto set my hand.

JOHN F. BUDKE.

Witnesses:
ROBT. D. TOTTEN,
J. N. COOKE.