2 Sheets—Sheet 1.

G. MATHESON.

DEVICE FOR PUSHING TUBE-SKELPS INTO AND THROUGH FURNACES.

No. 169,460. Patented Nov. 2, 1875

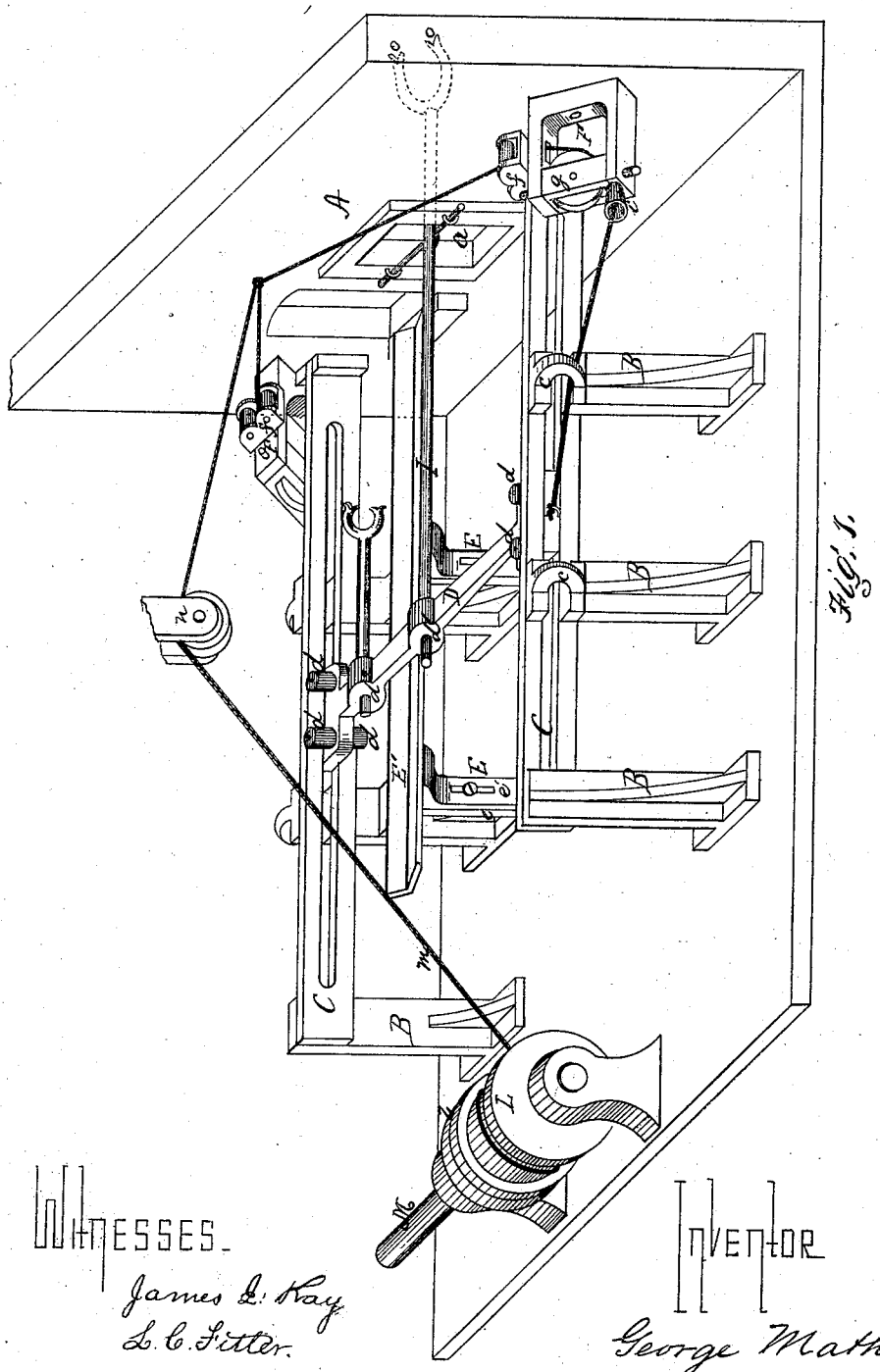

Fig. 1.

WITNESSES.

James L. Kay

L. C. Fitler.

INVENTOR

George Matheson

by Bakewell & Kerr

Attys

2 Sheets—Sheet 2.

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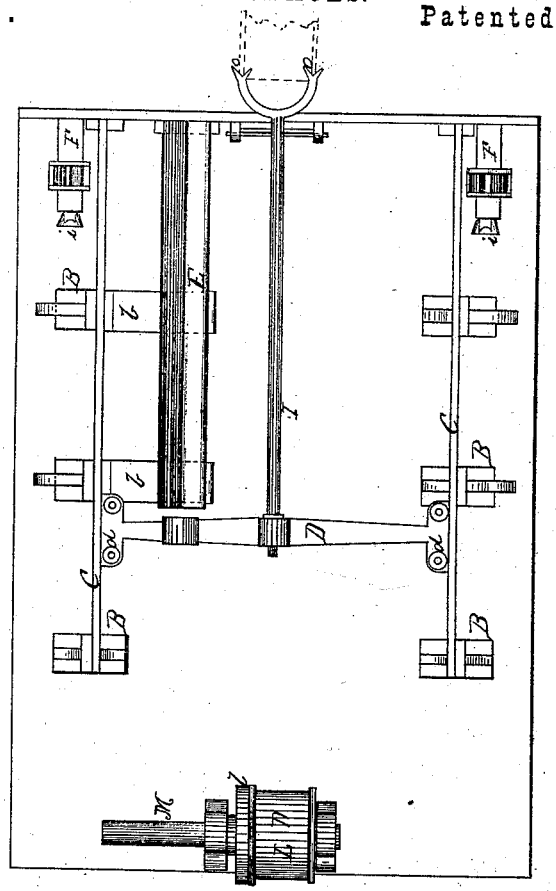

Fig. 2.

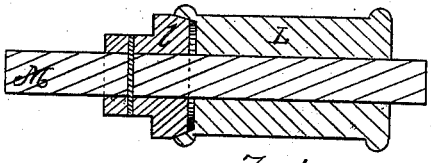

Fig. 3.

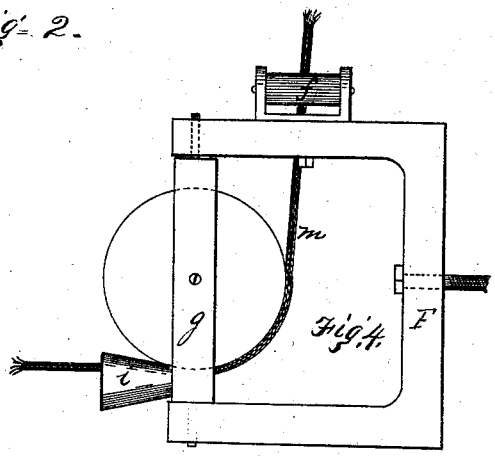

Fig. 4.

WITNESSES.

James L. Kay
L. C. Fitler

INVENTOR.

George Matheson
by Bakewell & Kerr
Attys.

UNITED STATES PATENT OFFICE.

GEORGE MATHESON, OF McKEESPORT, PENNSYLVANIA.

IMPROVEMENT IN DEVICES FOR PUSHING TUBE-SKELPS INTO AND THROUGH FURNACES.

Specification forming part of Letters Patent No. **169,460**, dated November 2, 1875; application filed July 6, 1875.

To all whom it may concern:

Be it known that I, GEORGE MATHESON, of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Power Pushing-Machine; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a perspective, and Fig. 2 is a plan, view, and Fig. 3 is a section of friction-drum. Fig. 4 is is an enlarged view of one of the pulleys, the guide-rolls, and swiveling-sheave.

Like letters refer to like parts wherever they occur.

My invention relates to power pushing-machines for introducing and withdrawing skelp and tubing from welding-furnaces; and it consists, first, in combining, with a pipe-welding or similar furnace, a pusher and suitable intermediate mechanism for guiding the same, and a friction-drum, by means of which a yielding power is applied to the pipe to prevent bending or crimping as it enters the welding-rolls; secondly, in combining, with a pipe-welding or similar furnace, a pusher and the power for operating the same, and a cross-head or pusher-guide, having anti-friction guide rolls, whereby the pusher is guided in a straight line and injury to the pipe is avoided; thirdly, in combining, with a welding-furnace, a pusher or cross-head, and a guide-trough for conducting the skelp to and introducing the same into the furnace; fourth, in combining, with the pusher and the ropes for applying the power thereto, a series of pulleys provided with swiveling-sheaves and guide-rollers, so that the rope may accommodate itself to the position of the pusher and power; fifth, in combining, with the pulley-sheave and pulley, a bell-mouth or conical sleeve, whereby chafing of the rope is prevented.

Heretofore, in the manufacture of iron pipe, the skelp has been introduced to the welding-furnace by manual labor, and the heated skelp and tubing removed from the welding-furnace and introduced to the die or rolls by suitable tongs or a pusher operated directly by the hands—a method involving much unnecessary labor, and only capable of application where small or medium-sized pipes are made.

The object of the present invention is the construction and adaptation of machinery whereby skelps and pipes of any size may be handled with ease.

I will now proceed to describe my invention, so that others skilled in the art may apply the same.

In the drawing, A represents the front of a welding-furnace of the ordinary construction, and with which my devices are employed. B B are a series of standards or posts, which support guide rails or ways C C, and to the ways or to the upper part of posts B are secured loops *c c*, or similar devices, to guide the ropes by which power is applied to the cross-head, which travels in ways C C. *b b* are a set of braces and rests extending from the posts B B to posts E E, upon which is supported a guide-trough, E′, and by means of said trough heavy skelp are guided into furnace A. D is a cross-head, which moves in ways C C, and is provided with a series of guide and anti-friction rollers, *d d*, above and below the head, which bear upon the ways C C in such a manner as to prevent the canting or wedging of the cross-head. In the cross-head, about midway thereof, and opposite a door or opening, *a*, of the furnace, is a slot, d^1, for the reception of one end of the pusher, and when a second rod or pusher is to be used for introducing skelp, a second slot, d^2, will be made in the cross-head at a point in line with guide-trough E′. E′ is a guide-trough supported upon suitable posts E E, and, in order that the height and inclination of the trough may be changed to suit different skelp, the posts E are made either in two sections, *e e′*, one sliding on the other, as shown, or in some manner which will permit of the adjusting of trough E′. F F are pulleys secured to the furnace or other convenient object by swivel-connections, and provided with a set of guide-rolls, *f f*, over or between which the power-rope passes. The forward part *g* of the pulley-sheave is also swiveled, and is provided with a bell-mouth or funnel-shaped tube, *i*, which prevents the fraying or chafing of the rope, and acts as a guide therefor. The swivel-connections of the sheave permit the rope to assume any angle or bend

necessitated by the change of direction of the draft due to the travel of the cross-head and pusher. I is a rod, one end of which is secured in cross-head D, and the other bifurcated, as shown in the drawing, and recessed, as at *o o*, to receive the end of the pipe. This rod is termed the "pusher," and is employed for forcing the skelp and tubing through and out of the welding-furnace up to the welding-rolls, which are, in pipe-works, placed near the furnace. L is a friction-drum, to which the wire rope *m* is secured at one end, and around which it is wound, the opposite end of the rope being passed over a pulley, *n*, where it divides and is passed through pulleys F and loops *c*, and secured to the cross-head D.

The power to revolve drum L is applied to shaft M, on the end of which is a friction-clutch, *b*, the shaft M having a slight end play, and being provided with a suitable lever, so that the operator can control the power that drives the drum, the whole being geared in the usual manner of gearing.

The operation of these devices is as follows: In introducing skelp into the furnace, they are lifted and placed in the guide-trough, and for this purpose an ordinary crane may be arranged near by; next, the friction-drum is revolved to wind up the rope and bring the cross-head forward, which, striking the skelp, pushes it along the guide-trough into the welding-furnace. If desired, a short pusher (shown in Fig. 1) may be secured to the cross-head for that purpose, instead of bringing the cross-head directly in contact with the skelp.

When a pipe is to be withdrawn from the furnace and forced to the welding-rolls, the pusher is placed with the forked end against the pipe in the furnace, the opposite end of the pusher being secured to the cross-head, which is drawn back upon the ways or guide-rails. The friction-clutch *l* is next forced against the drum gradually, until the friction is just enough to give the power required to move the pipe, when the revolution of the drum will, through the medium of the wire rope or suitable gearing, cause the travel of the cross-head and the pusher, and force the pipe or skelp out of the furnace and to the welding-rolls. If the pipe is traveling at the same or a less speed than the welding-rolls it will enter the rolls without trouble; but if, from the speed of the welding-rolls or other cause, the pipe meets an obstruction, the hold of the clutch will yield, being such as to transmit only sufficient power to move the pipe; consequently the pipe will not be crimped, twisted, or bent, as it would be were the feeding mechanism a positive one.

The advantages of my device are: the number of men required to introduce and withdraw the skelp and pipe is reduced, the labor required of the men is lessened, pipes of any desired size can be conveniently made, no stock is injured in passing it to the welding-rolls, and the feed to the rolls is certain and can be controlled to the exact force required, which is not the case when the pipe is fed by hand.

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

1. The combination, with a pipe-welding furnace, of the pusher, the friction-drum, and intermediate mechanism for guiding the pusher and transmitting the power from the drum to the pusher, substantially as and for the purpose specified.

2. The combination, with a pipe-welding furnace, of the pusher, a cross-head provided with anti-friction and guide rolls, and suitable ways or frame for supporting the cross-head, substantially as and for the purpose specified.

3. The combination, with a pipe-welding furnace, of the guide-trough, the cross-head, and suitable power mechanism for operating the head, substantially as and for the purpose specified.

4. The combination of the pusher, the ropes for transmitting power to the pusher, and a set of swiveling-sheaves and guide-rollers, substantially as and for the purpose specified.

5. In combination with the pulley-sheave and pulley, the bell-mouth or funnel-shaped sleeve, substantially as and for the purposes set forth.

In testimony whereof I, the said GEORGE MATHESON, have hereunto set my hand.

GEORGE MATHESON.

Witnesses:
F. W. RITTER, Jr.,
GEO. A. LENKARD.