F. C. PRINDLE.

GUNPOWDER PILE-DRIVER.

No. 181,982. Patented Sept. 5, 1876.

Fig. 1.

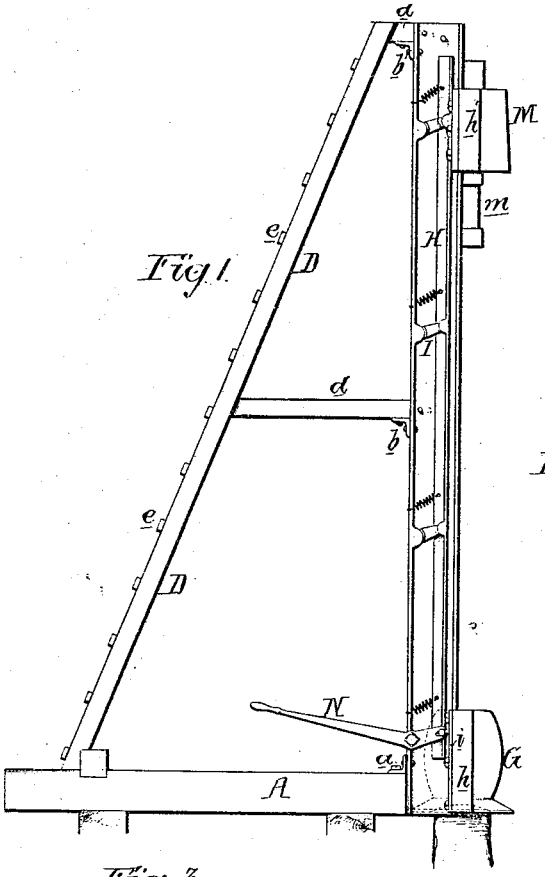


Fig. 5.

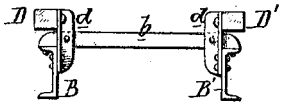


Fig. 2.

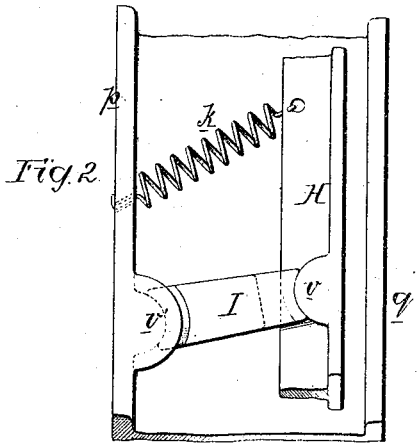


Fig. 6.

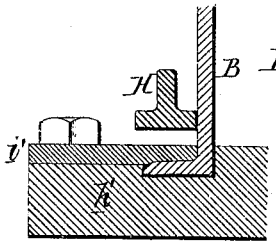


Fig. 3.

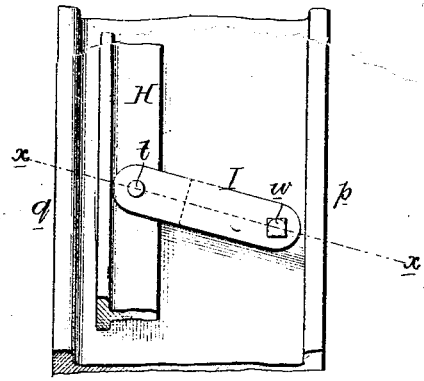
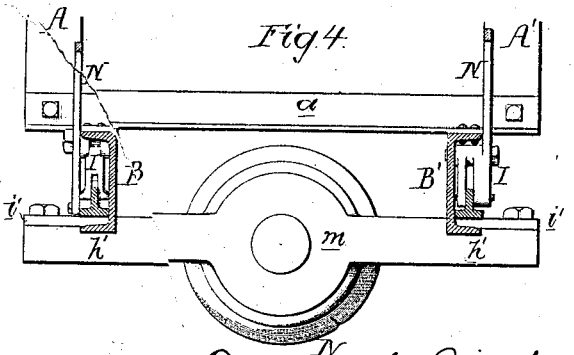


Fig. 4.



Witnesses
Richard L. Gardiner
Harry Smith

Franklin C. Prindle
by his Attorneys
Howson and Son

UNITED STATES PATENT OFFICE.

FRANKLIN C. PRINDLE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN GUNPOWDER PILE-DRIVERS.

Specification forming part of Letters Patent No. **181,982**, dated September 5, 1876; application filed August 4, 1876.

To all whom it may concern:

Be it known that I, FRANKLIN C. PRINDLE, of Philadelphia, Pennsylvania, have invented certain Improvements in Gunpowder Pile-Drivers, of which the following is a specification:

My invention relates to certain improvements, fully described hereafter, in the gunpowder pile-driver for which Letters Patent were granted to Thomas Shaw, November 24, 1868, my improvements being directed to the construction of the frame-work and braking apparatus, with a view to economy in the construction of the former, and efficiency in the action of the latter.

In the accompanying drawing, Figure 1 is a side view of a gunpowder pile-driver with my improvement; Fig. 2, an enlarged view, showing the braking device; Fig. 3, a modification of Fig. 2; Fig. 4, a sectional plan; Fig. 5, a plan view of the top of the frame, and Fig. 6 a sectional plan drawn to an enlarged scale of part of the frame and ram.

The frame-work of the machine is constructed as follows: The base is composed of two or more substantial beams, A and A′, connected together at the front by a bar, *a*, of angle-iron, to the vertical flange of which are secured the lower ends of posts B and B′ of rolled channel-iron. These parts are secured together at the top by an angle-iron bar, *b*, and both this bar and the posts are secured by angle-iron bars *d d* to the upper ends of diagonal braces D D′, (preferably of wood,) the lower ends of which are secured to the base A, these diagonal braces serving, with transverse rungs *e*, as a ladder. At one or more points between the base and top of the frame the posts may be connected together and to the braces by angle-iron bars *b* and *d* in the same manner as they are connected at the top, and as shown in Fig. 5. The above structure is simple, comparatively light and inexpensive, and at the same time less cumbrous than the elaborate frame-work heretofore used in connection with gunpowder pile-drivers, the continuity of the channel-iron post giving great strength, rigidity, and durability to the structure; at the same time the flanges of the post present most available guides for the ram and gun, and for the application of braking appliances for the ram, as described hereafter.

G is the gun, constructed in the usual manner, and having wings *h*, which bear against the front edges of the channel-iron posts, the wings having shallow recesses for receiving the flanges of the posts, and having plates *i* overlapping the insides of the flanges, which thus afford appropriate guides. The ram M is made in the same manner as those of the gunpowder pile-drivers now in use, and is adapted to the projection *m*, the latter having wings *h′ h′* adapted to, and guided by, the channel-iron posts of the frame in the same manner as the wings of the gun, and as shown in Fig. 6. The plates *i* of the gun, however, are thinner than the plates *i′* of the ram, for a purpose rendered apparent hereafter. In the recess formed by the flanges *p* and *q* of each channel-iron post is the vertical brake-bar H, composed, by preference, of T-iron, as shown, and this bar, as shown in Fig. 3, is connected by any desired number of links, I, to the web of the post, one end of each link being jointed to a pin, *t*, on the flange of the brake-bar, and the other to the bolt *w* on the post; or the brake-bars may be connected to the post in the manner shown in Fig. 2, where the outer forked end of each link bears against a rounded projection, *v*, on the bar, and the inner end against a rounded projection, *v′*, on the flange *p* of the post, the said projection being recessed for receiving a portion of the link, so that the latter may be maintained in its proper lateral position. In this instance the brake-bar is connected by a series of springs, *k*, to the flange *p* of the post, so that the bar and links may be retained in their proper position. The bars are operated at their lower ends by levers N, which should be so connected that both bars can be operated simultaneously. When the brake-bars are elevated their faces are at such a distance from the plates *i′* on the wings *h′* of the ram M that the latter is at liberty to descend; but when the brake-bars are depressed they will force the plates *i′* against the inside of the flanges *q* of the post, and thus arrest the ram, the weight of which will, owing to the inclination of the links I, tend to insure the griping of the plates *i′* between the brake-bars and flanges

of the posts until the said brake-bars are elevated by depressing the levers N, when the ram will fall. The links I and brake-bars H are so arranged in respect to the flange *q* that the links will be at about the angle shown by the dotted line *x x* Fig. 3, when the plates *i'* of the ram are acted on by the brake-bar, the angle being such as to insure the self-griping of the ram by its own weight, and such as to prevent the jumming of the plates *i'* of the ram too tightly, to render the elevating of the bar difficult.

It should be understood that the guide-plates *i* of the gun are such that they are always beyond the control of the brake-bars.

A prominent advantage is presented by the combination of the channel-iron posts with the brake-bars, the latter with their connections being contained between, and protected by, the flanges, so that the fouling action of the gun cannot interfere with the friction-surfaces or proper action of the bars.

I claim as my invention—

1. A pile-driver frame, in which guide-posts B B′ of wrought-iron, channel, or flanged bars are combined with a base, A, and braces D, all substantially as set forth.

2. The combination of the channel-iron or flanged posts, transverse angle-iron bars *b*, angle-bars *d*, and braces D.

3. The combination of the ram and gun G of a gunpowder pile-driver with the channel-iron or flanged posts, the front flanges *p* of which serve as guides for the ram and gun.

4. The combination of the channel-iron or flanged posts with the brake-bars H contained between the flanges, connected to the posts, and adapted to the ram, all substantially as set forth.

5. The combination described of the brake-bars H, flanged posts, and inclined links I.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANKLIN C. PRINDLE.

Witnesses:

HARRY HOWSON, Jr.,

HARRY SMITH.