

# O. Morse. Bed Plate.

N<sup>o</sup> 47,849.

Patented May 23, 1865.

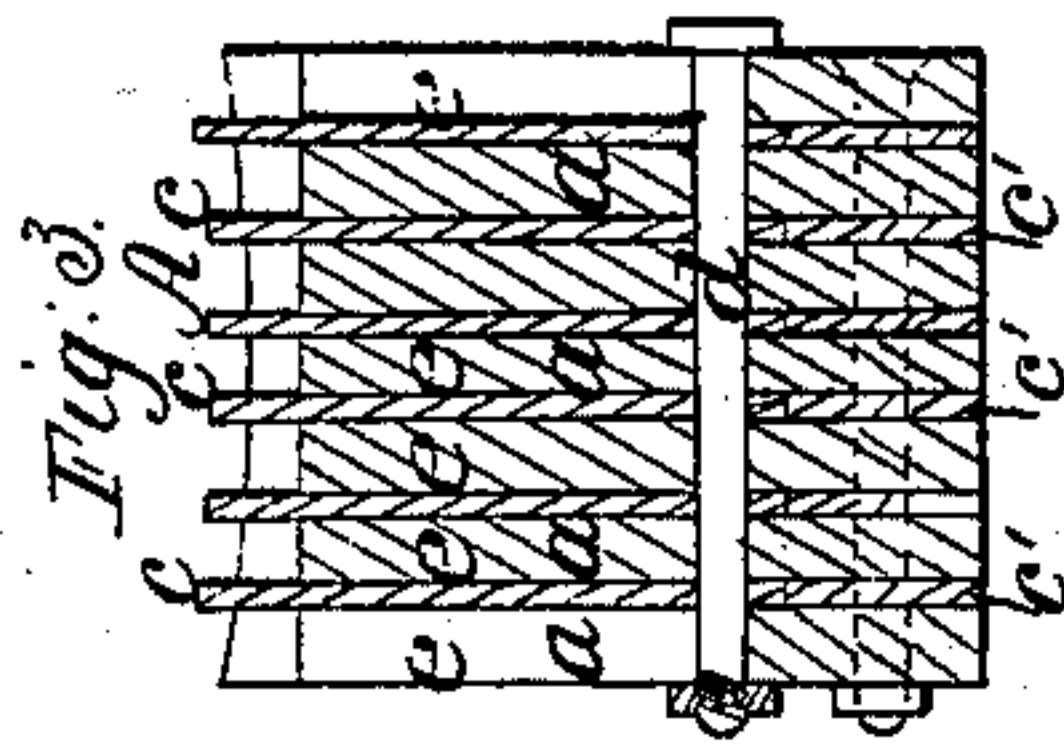


Fig. 3.

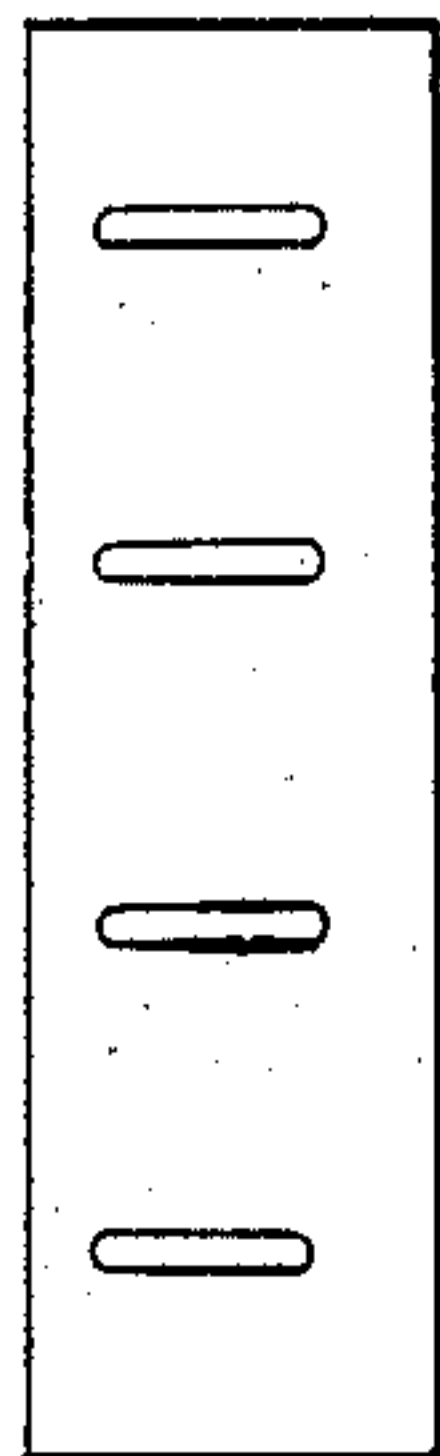


Fig. 4.

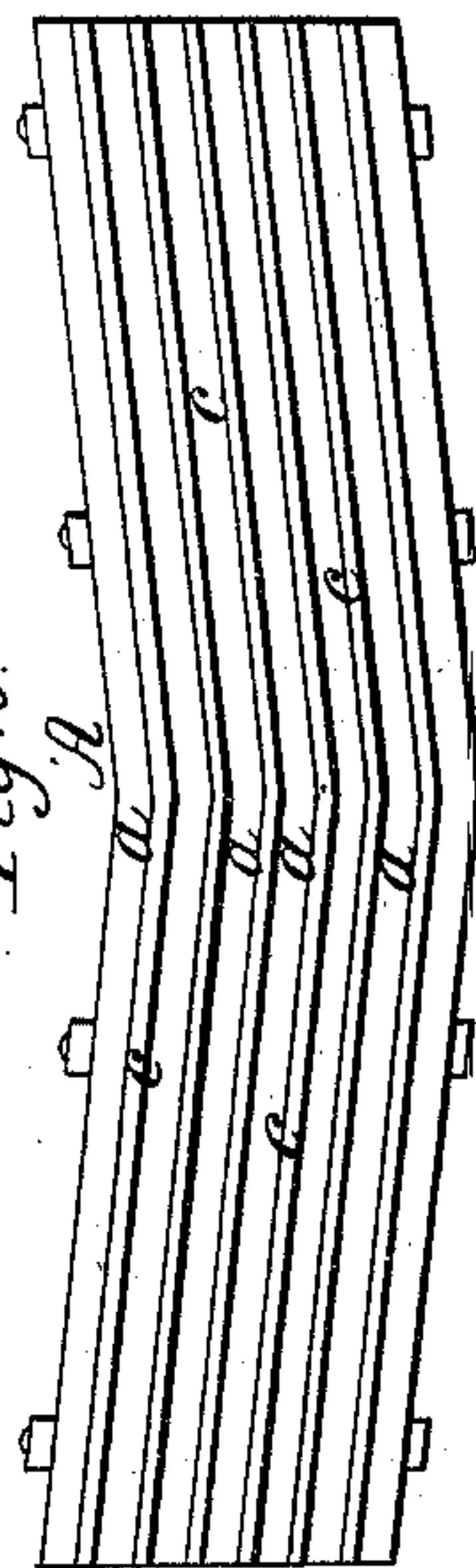


Fig. 5.

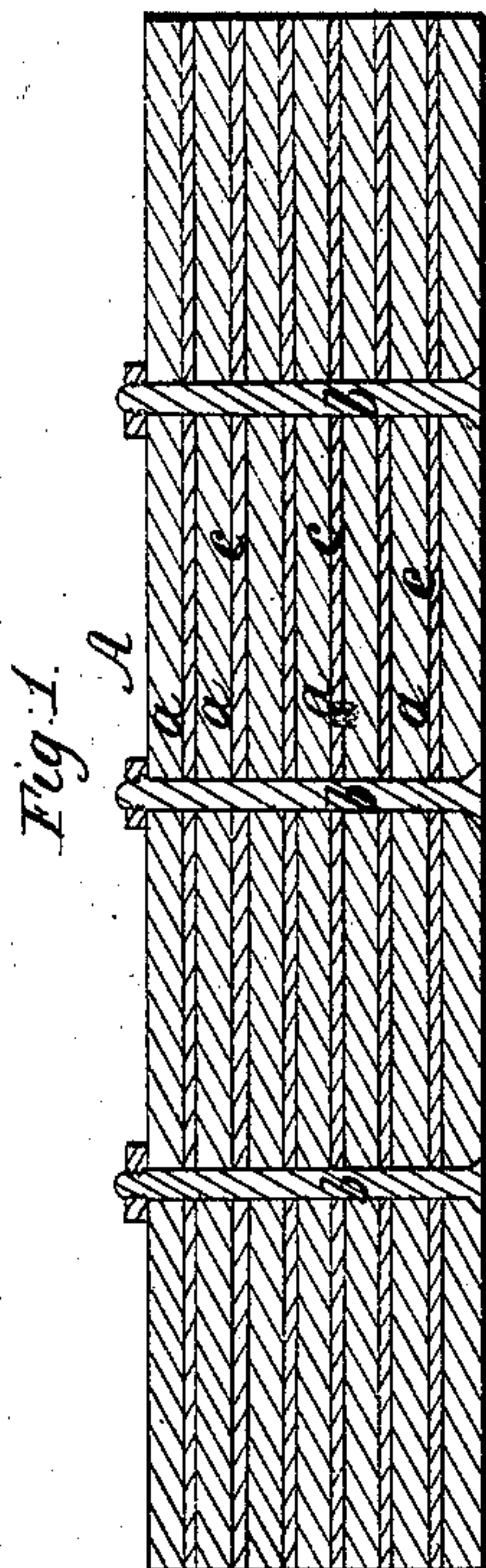


Fig. 1.

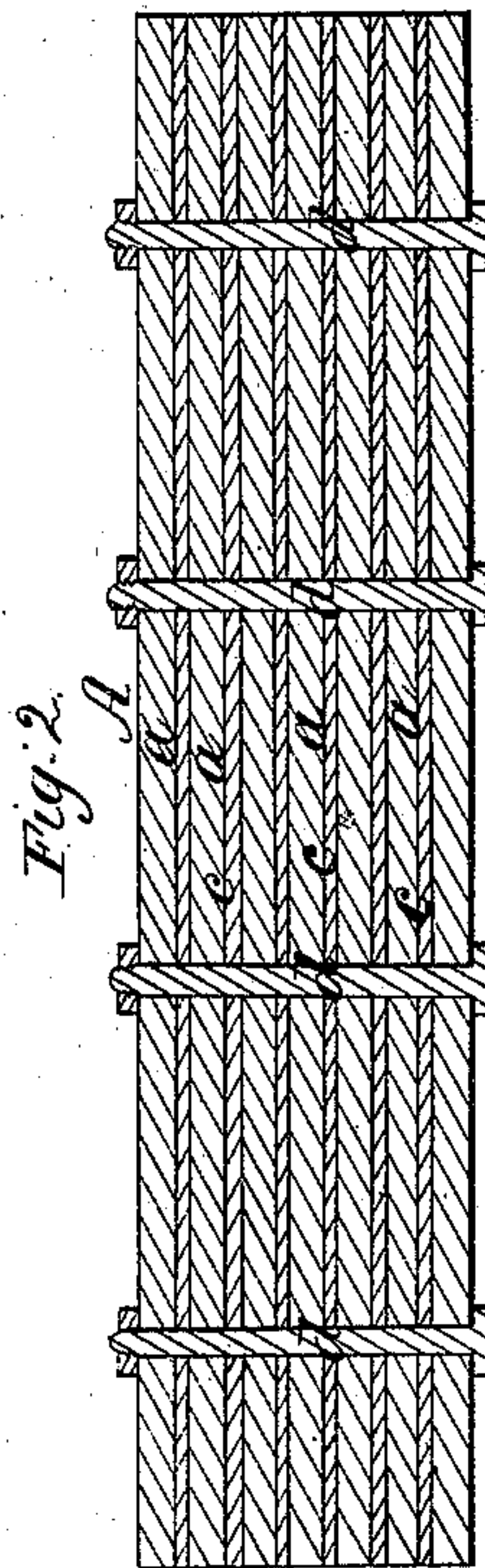


Fig. 2.

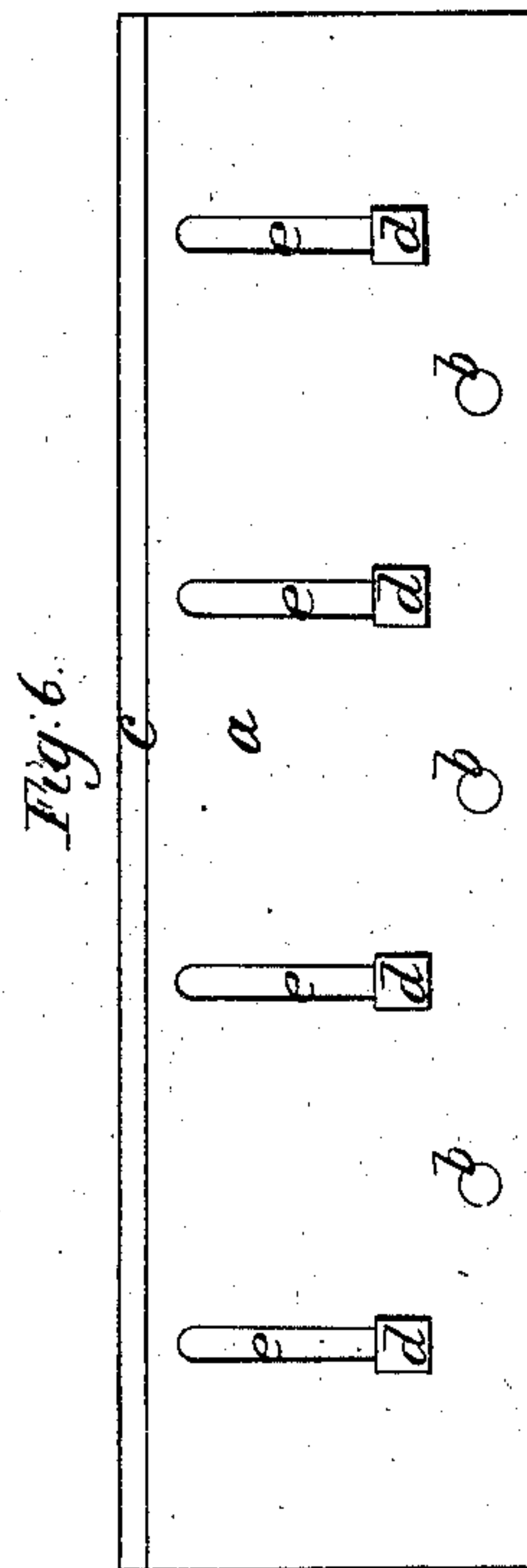


Fig. 6.

Witnesses.  
Reuben Ware  
Lydia P. Ware

Inventor.  
Oliver Morse



# UNITED STATES PATENT OFFICE.

OLIVER MORSE, OF NEEDHAM LOWER FALLS, MASSACHUSETTS.

## IMPROVEMENT IN BED-PLATES FOR PAPER-MILL ENGINES.

Specification forming part of Letters Patent No. 47,849, dated May 23, 1865.

*To all whom it may concern:*

Be it known that I, OLIVER MORSE, of Needham Lower Falls, in the county of Norfolk and State of Massachusetts, have made a new and useful invention having reference to the manufacture of paper; and I hereby declare the following to be a full and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which—

Figures 1 and 2 are horizontal sections of my invention. Fig. 3 is a vertical and transverse section of the same. Fig. 4 is a side elevation of one the movable grinding plates or knives in a modified form, to be hereinafter described. Fig. 5 is a modified form, of construction of my invention. Fig. 6 is a side view of my invention.

The process of grinding or reducing rags and other material to "pulp" in the engine of a paper-mill is well known, the means employed being a rotary cylinder provided with a series of knives whose edges revolve over the upper surface of another series of knives bolted together and placed at the bottom of the engine below the said cylinder, forming what is termed the "bed" or "bed-plate." These knives require to be frequently removed and ground or sharpened separately at a great expenditure of time and labor, being, in fact, one of the most laborious operations in the manufacture of paper. After these knives have been worn down a certain distance, perhaps one-half their width, they are thrown away as useless.

My invention consists in the application as well as the arrangement of thin, independent steel plates or knives with the bed in such manner as to allow of their being raised and firmly held above its upper surface as fast as may become necessary under the wear of the operation of grinding the rags or pulp.

In the drawings, A denotes the bed or bed-plate, composed of a series of iron clamp-bars, *a a a*, of any suitable number, united together at their lower parts by means of bolts *b b b*, a narrow space being left between them for the reception of the steel grinding-plates or knives *c c c*, the lower parts of these spaces being filled with strips *c' c' c'* of iron, through

which the bolts *b* pass, and confine the whole together, as shown in Fig. 1 of the drawings. The grinding-plates *c* are held in place between the clamp-bars *a* by means of a suitable number of bolts, *d d d d*, passing through them and the clamp-bars, the said clamp-bars being formed with vertical slots *e e* for the reception of the bolts and to allow of the grinding-knives being raised between them as occasion may require.

As the knives are raised upward, in addition to the support they receive from the bolts, they may be further sustained in position by means of blocks or keys placed under them, or by any suitable means.

The slots *e*, instead of being made in the iron clamp-bars, may be formed in the grinding-knives, as shown in Fig. 4, the confining bolts being stationary within the clamp-bars. I prefer, however, the former construction.

In the drawings I have shown the bed as being straight its entire length. A common mode of constructing them is to have the knives diverge from the center at an obtuse angle, as shown in Fig. 5 of the drawings.

In my invention the stiff unyielding character of the clamp-bars, together with the bolts, will retain the steel plates firmly in place between them until the bolts come in contact with the upper terminus of the slots *e*, which may be so near the top of the bed as to allow of the plates being almost entirely worn out, thus greatly economizing the use of the steel, this constituting one important feature of my invention.

Another advantage in my invention is the fact that duplicate plates may be prepared and furnished from a distance by means of numbers, without the necessity of making an entirely new bed, as by the old method.

The grinding-plates *c* may rest upon the top of the bolts *d*, instead of having the bolts pass through them. In practice this will probably be found preferable. I am aware that a bed-plate has been constructed of a series of thin grinding-knives with intermediate bars, and the whole bolted together, so that the knives are immovable with respect to the main portion of the bed, as shown in Patent No. 22,707, and granted January 25,

1859, and, consequently I lay no claim to such.

I claim—

1. So applying the grinding-plates or knives to the bed as to allow of their being raised or lowered relatively thereto, substantially as hereinbefore set forth.

2. The combination of the steel grinding-knives with the clamp-bars when the latter are constructed with a series of slots, sub-

stantially in manner and for the purpose as hereinbefore set forth.

In testimony whereof I have hereunto set my signature this 8th day of March, A. D. 1865.

OLIVER MORSE.

Witnesses:

REUBEN WARE,  
LYDIA P. WARE.