

(No Model.)

2 Sheets—Sheet 1.

F. E. KOHLER.  
HORSE HAY FORK.

Patented May 19, 1885.

No. 318,375.

Fig. 3.

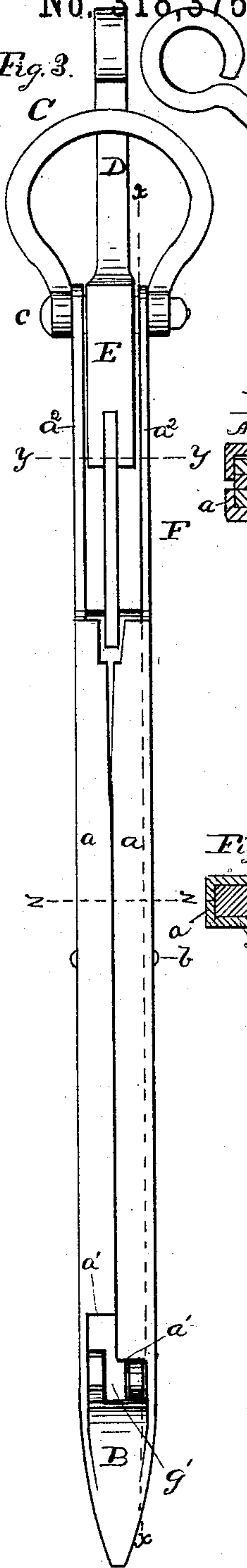


Fig. 1.

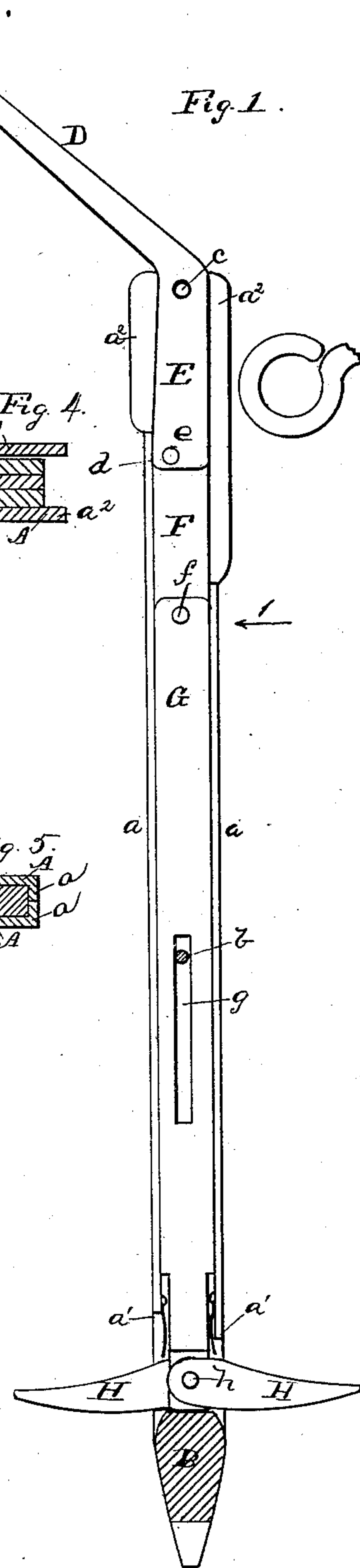


Fig. 2.

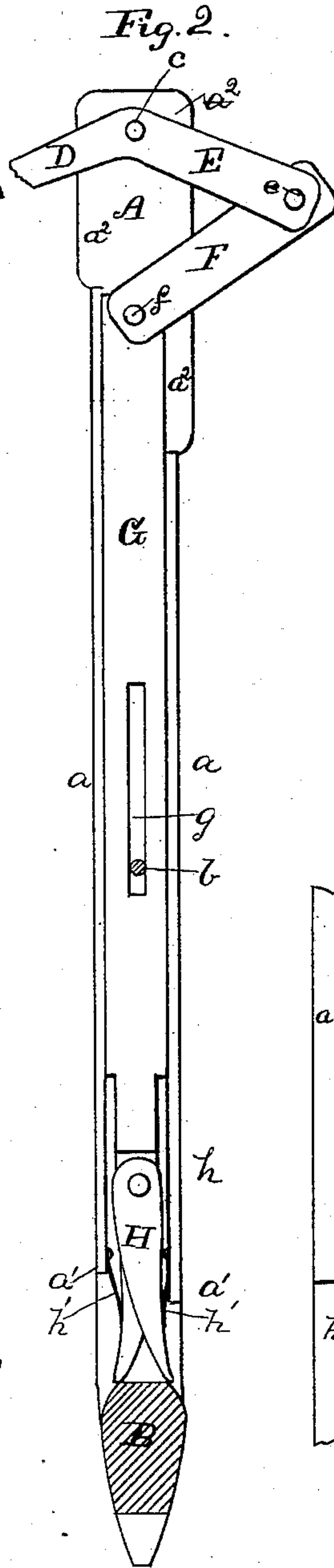


Fig. 4.

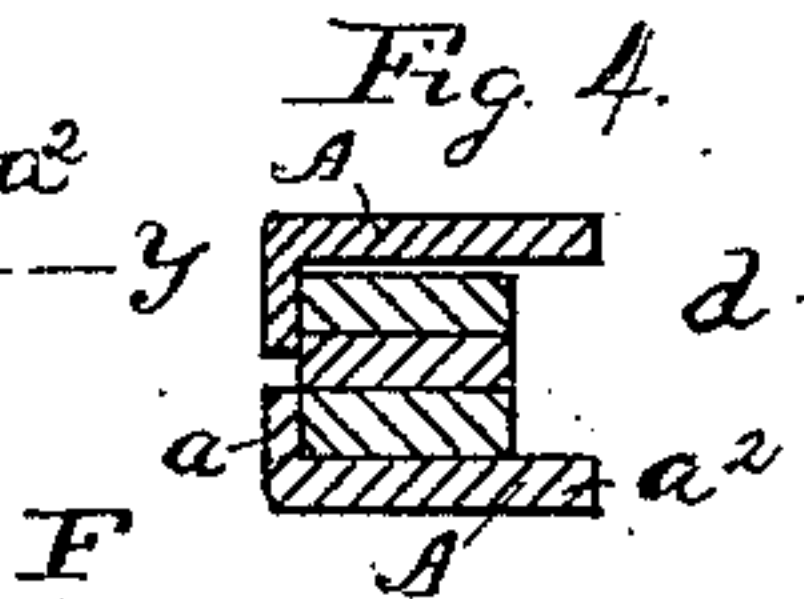


Fig. 5.

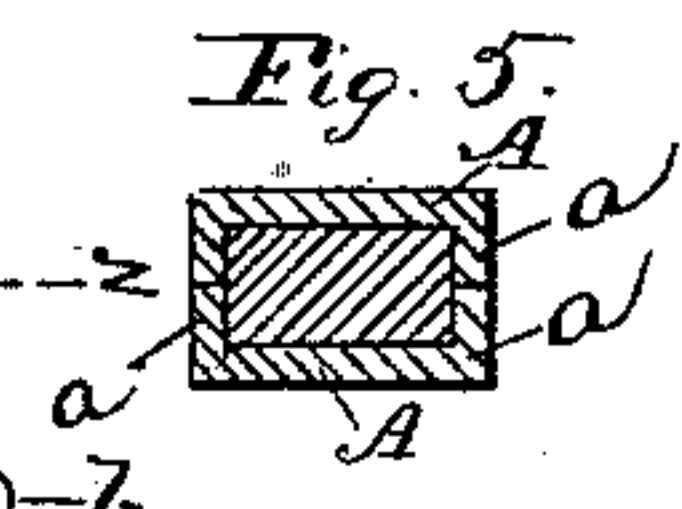
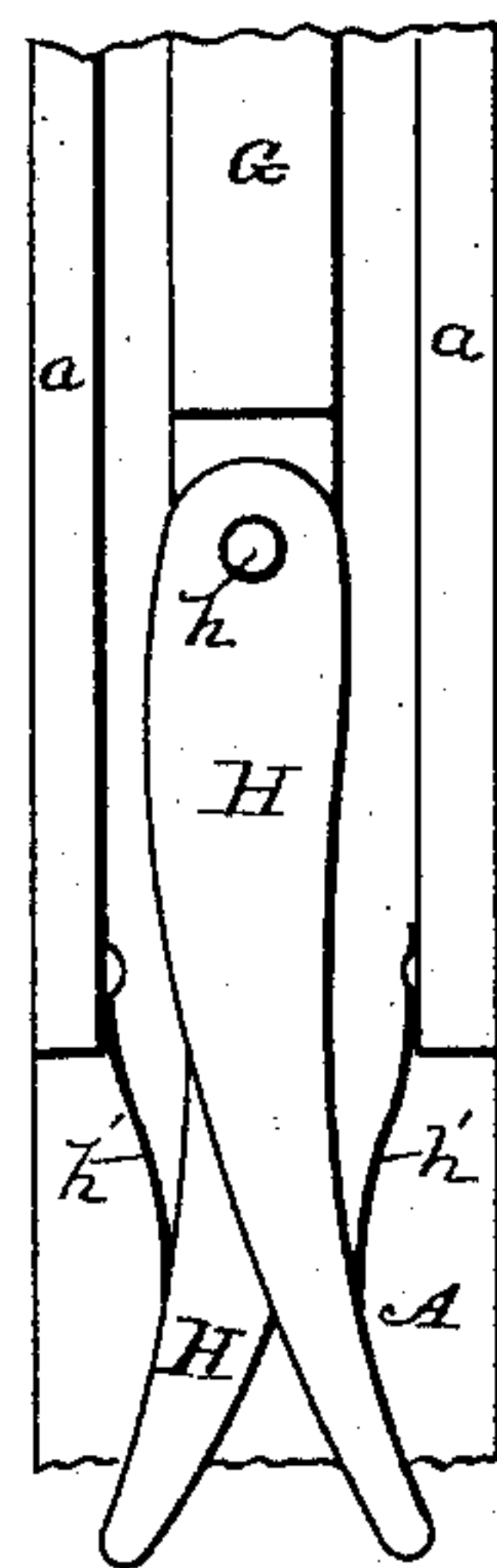


Fig. 3<sup>a</sup>.



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by Doubleday & Bliss attys.

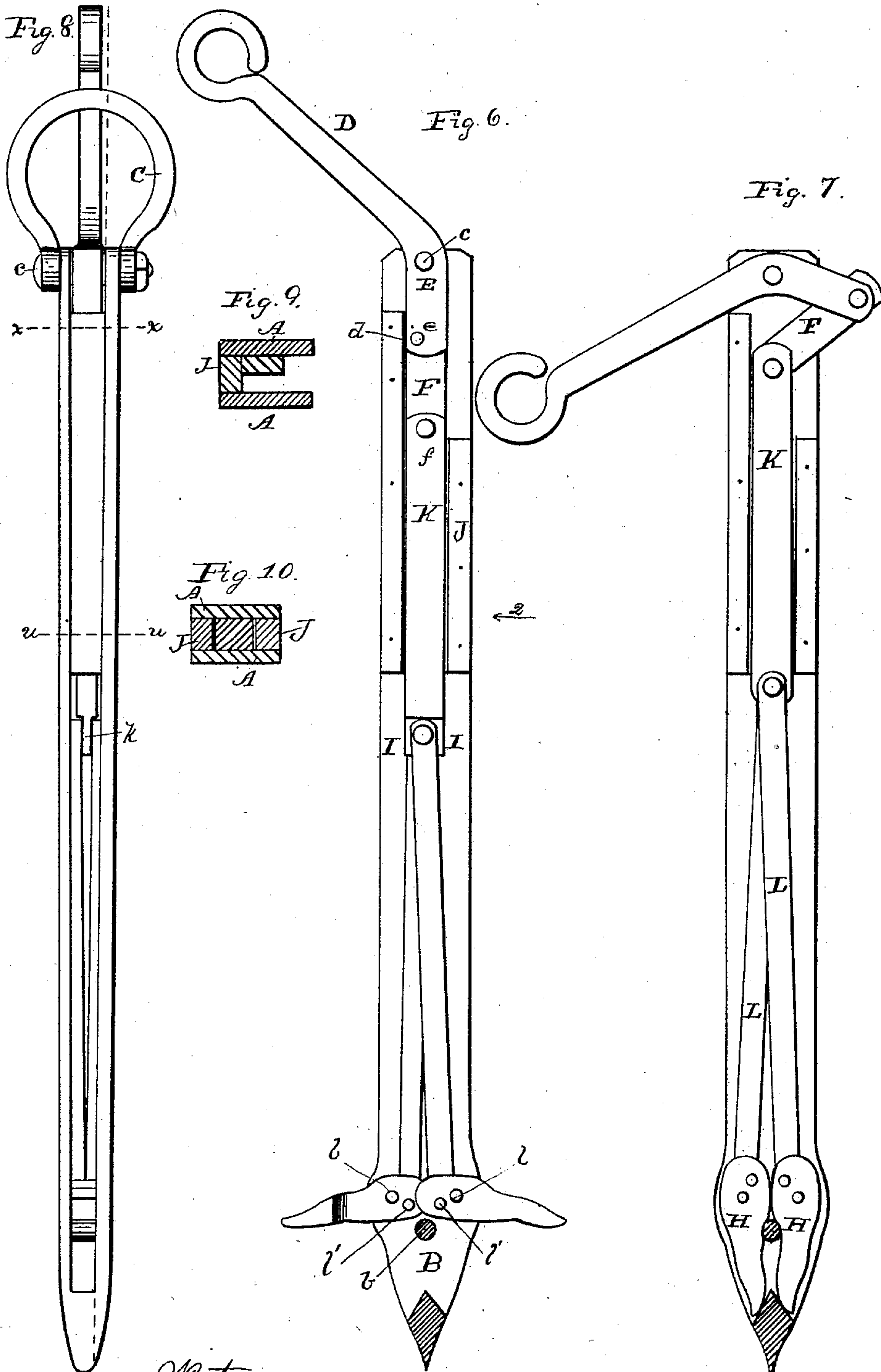
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# UNITED STATES PATENT OFFICE.

FREDERICK E. KOHLER, OF CANTON, OHIO.

## HORSE HAY-FORK.

SPECIFICATION forming part of Letters Patent No. 318,375, dated May 19, 1885.

Application filed June 19, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK E. KOHLER, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Horse Hay-Forks, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a side elevation of a hay-fork containing my invention, one wall of the casing or boxing having been removed upon the line X X, Fig. 3, the suspending-loop having been also removed, the parts being in position for lifting hay. Fig. 2 is a similar view showing the parts in position for either thrusting the fork into the hay or withdrawing it therefrom. Fig. 3 is an edge view, looking in the direction indicated by arrow 1, Fig. 1. Fig. 3<sup>a</sup> is a detail view. Fig. 4 is a horizontal section on line y y, Fig. 3. Fig. 5 is a transverse section on line z z, Fig. 3. Fig. 6 is a side elevation of a modification, with one side of the casing or boxing removed, on line w w, Fig. 8, and with the lifting-bail removed, the tines and other parts being in position for lifting the hay. Fig. 7 is a similar view with the parts in position for being thrust into or withdrawn from the hay. Fig. 8 is an edge view, looking in the direction indicated by arrow 2, Fig. 6. Fig. 9 is a transverse section on line x x, Fig. 8. Fig. 10 is a transverse section on line u u, Fig. 8.

This invention relates to that class of horse hay-forks which are commonly known as "harpoon" forks; and it consists in certain details of construction, as will be hereinafter fully explained.

Referring particularly to Figs. 1 to 5, inclusive, A A *a a* represent the flat sides and edges of the casing or boxing, upon and within which the operative parts of the mechanism are supported. Each of these sides A A consists of a flat thin sheet of metal of suitable width, and having a portion—say about three-quarters in length—of each edge turned over at about a right angle, so as to form one-half of each edge of the boxing or casing, as indicated at *a a*, there being by preference a transverse cut made at the upper end of this turned-over portion, so as to leave the parts *a*<sup>2</sup>

*a*<sup>2</sup> projecting in the same plane with the sides A A, for a purpose which will be explained. The lower ends of the turned-over parts *a a* are also by preference cut off squarely, as at *a' a'*, thus leaving throats between these lower ends and the point or spear end B, to which the sides are firmly welded, and, when desired, this point may be made of steel.

C is the bail, pivoted to the upper ends of the sides A A, as at *c*, Figs. 1, 2, 3.

D E is a bent lever, pivoted upon the bail-pivot *c*, the upper end, D, terminating in a ring or eye adapted to receive the unlocking rope or cord. The lower end of the lever is pivoted at *e* to a downwardly-projecting link, F, which in turn is pivoted at *f* to a sliding bar, G, which fits loosely within the casing or boxing. This sliding bar is slotted, as at *g*, to receive a pin or rivet, *b*, which serves to support the sides of the boxing and prevent them from unduly spreading apart.

H H are the tines, each pivoted at its heel end to the lower end of the bar G, as at *h*, the lower end of the bar being of reduced thickness, as indicated at *g'*, Fig. 3, so that it may readily enter between the heel ends of the tines.

By an examination of the drawings, particularly Figs. 1 and 2, it will be seen that after the fork has been thrust a sufficient distance into the hay the tines can be thrown out at right angles to the bar G by raising the outer end of the bent lever B E, and it will be also understood that when the parts are in the position shown in Fig. 1 the tines will be locked and cannot be thrust inward by the weight of the hay, because the pivot *e* has been carried past a line drawn through the centers of the pivots *c f*, and the lower end of the part E of the lever rests against the upper end of the adjacent inner face of the edge boxing at *d*, so that this edge of the boxing will prevent the ends of the lever and link, which are united by the pivot *e*, from moving any farther in the direction indicated by the arrow 1. After the hay which is suspended upon the fork has been moved to the proper place, the attendant can pull upon the cord and unlock the bent lever and link F, thus permitting these parts to be moved into the position shown in Fig. 2, by which operation



the tines will be withdrawn within the casing, as shown in Fig. 2, so that the fork can be readily removed from the hay, as will be understood by those who are familiar with this class of implements.

$h'$  is a small flat spring attached to the lower part of the casing and adapted to bear against the outer edge of the tine H. This spring I have found very desirable, as it keeps the tine from vibrating and extending its point after it has been withdrawn within the casing, and the fork is ready to be thrust into the hay. It will of course be understood that each tine is provided with one of these springs  $h'$ .

In the modification shown in Figs. 6 to 10, inclusive, the sides A, point B, the bail C, the bent lever D E, link F, and tines H H are of substantially the same construction as the corresponding parts in the other figures; but the sides of the boxing or casing are united to each other at their upper ends by means of interposed ribs or edge pieces, J J.

K is a short sliding bar, pivoted at  $f$  to the link F, and having its lower end, which is of reduced thickness, as at  $k$ , Fig. 3, connected to the tines H H by links L L, which are pivoted to the sliding bar, and also to the tines at  $l$   $l$ , the tines being pivoted to the sides of the boxing at  $l'$   $l'$ .  $b$  is a rivet connecting the lower ends of the sides to each other. In this construction the tines are locked in horizontal position by reason of the engagement of the lower end of the bent lever with one of the edge pieces J at  $d$ , Fig. 6, when the pivot  $e$  is upon that side of a line intersecting the center of the pivots  $e$   $f$  in substantially the same manner as the locking of the tines is effected in Fig. 1.

Of course the unlocking can be effected by pulling in a downward direction upon the outer end of the bent lever.

Although in both constructions I have shown the lower end of the bent lever as engaging with and locking against the edge of the boxing, it is apparent that the edge need not be extended up so far as is shown, because, even though it stopped below the pivot  $e$ , so as to engage with the upper part of the link F, instead of the lower end of the lever, the operation would be substantially the same so far as the locking operation is concerned.

In both constructions shown the tines are pivoted at their inner or heel ends to the sliding bars or links, and are thrust outward or extended when the heel ends of the tines are forced downward, by reason of the tines engaging with their inclosing-casing at points between their connection with the sliding bar and their outer ends. In the construction shown in Figs. 1 to 5 the fulera upon which the tines turn, and which cause them to be thrust outward substantially horizontal, consist of the upper corners of the spear-head B, which are somewhat rounded to facilitate this movement, while in the other construction the fulera consist of the pivots  $l$   $l$ , in both cases the result being the same. This

construction of parts enables me to arrange the parts compactly, and makes a fork which is small in cross-section and can be easily thrust into the hay. The method of locking the tines in an extended position hereinbefore described is particularly applicable to a fork having the tines attached as just described.

As shown in Figs. 1 and 2, the upper edges of the sides at  $a^2$   $a^2$  are of increased width, and therefore form a wide bearing and support for the sides of the bent lever, and thus materially relieve the pivot  $e$  of strain.

While I prefer to make the sides of either wrought-iron or steel, I do not wish to be limited to the use of either of these materials, because they may under some circumstances be advantageously made of malleable iron.

The bent lever is pivoted between the sides A A of the boxing, near its upper end, the edges of the boxing being cut away or left open at this end to allow free movement of the working parts. The front wall or edge is open a proper distance to permit the end E of the bent lever and the link F to be thrust through it, while the other or rear wall or edge is carried up somewhat higher to receive the thrust of the end E of the lever, and yet allow the arm D to swing into the position shown in Figs. 2 and 7.

What I claim is—

1. In a horse hay-fork, the combination of the boxing formed of the sides A A and the edges  $a$   $a$ , the tines, the sliding bar, the bent lever, and a link connecting the sliding bar and the bent lever, the lower end of the bent lever being adapted to rest against the inner face of the boxing at  $d$  to lock the tines in an extended position, substantially as set forth.

2. In a horse hay-fork, a boxing or casing consisting of the sides having their edges bent toward each other to form the edges of the casing, substantially as set forth.

3. In a horse hay-fork, the combination of the sliding bar, the link F, the bent lever D E, and the boxing in which said parts are mounted, it consisting of the sides A A, between which the bent lever is pivoted, and the edges cut away or left open at their upper ends to permit the movements of the lever D E, the rear edge being carried up higher than the front edge to receive the thrust of the lower end of the lever and lock the tines in their extended position, substantially as set forth.

4. In a horse hay-fork, the combination, with the casing, of the bent lever, the link F, the sliding bar, and the tines pivoted to the sliding bar near their rear ends, and adapted to be thrust outward when the sliding bar descends by engagement with the upper corners of the spear-head B, substantially as set forth.

5. In a horse hay-fork, the combination of the casing, the tines, mechanism, substantially such as described, for operating the tines, and springs adapted to bear against the tines when drawn within the casing to prevent them from



vibrating or becoming accidentally extended, substantially as set forth.

6. In a horse hay-fork, the combination of the casing, the sliding bar, the link F, the bent lever, the tines pivoted to the sliding bar, and springs *h'*, supported upon the casing and adapted to bear against the tines to prevent them from vibrating, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK E. KOHLER.

Witnesses:

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C. F. PERKINS.