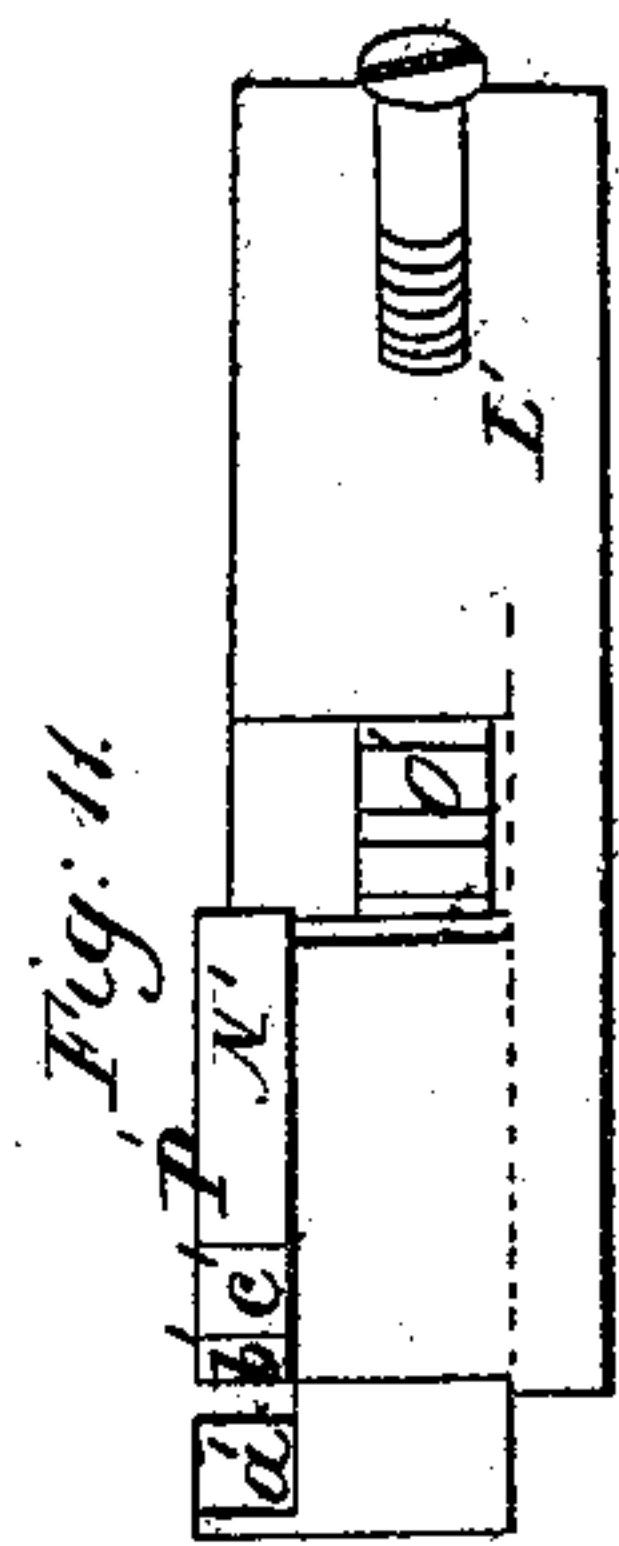
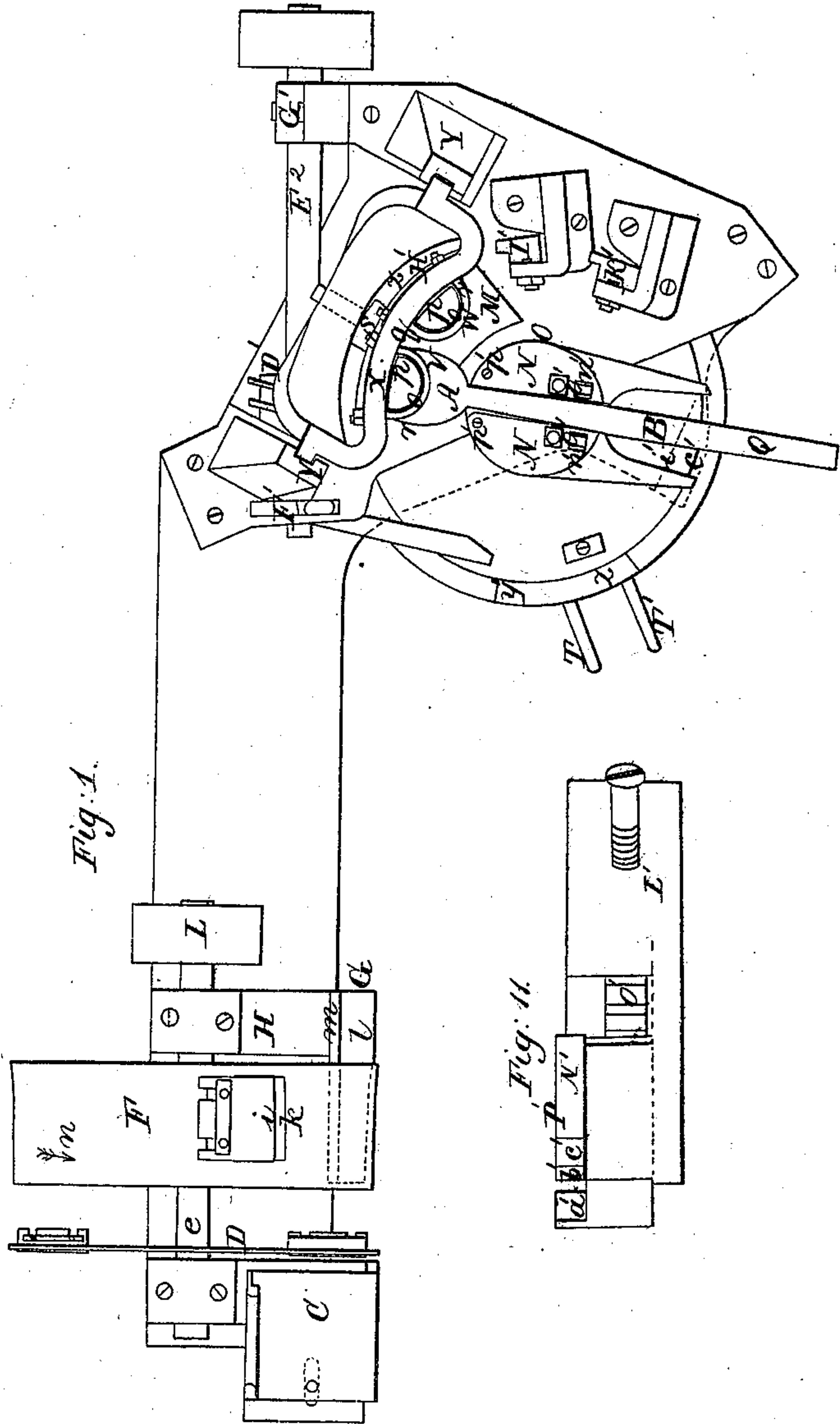
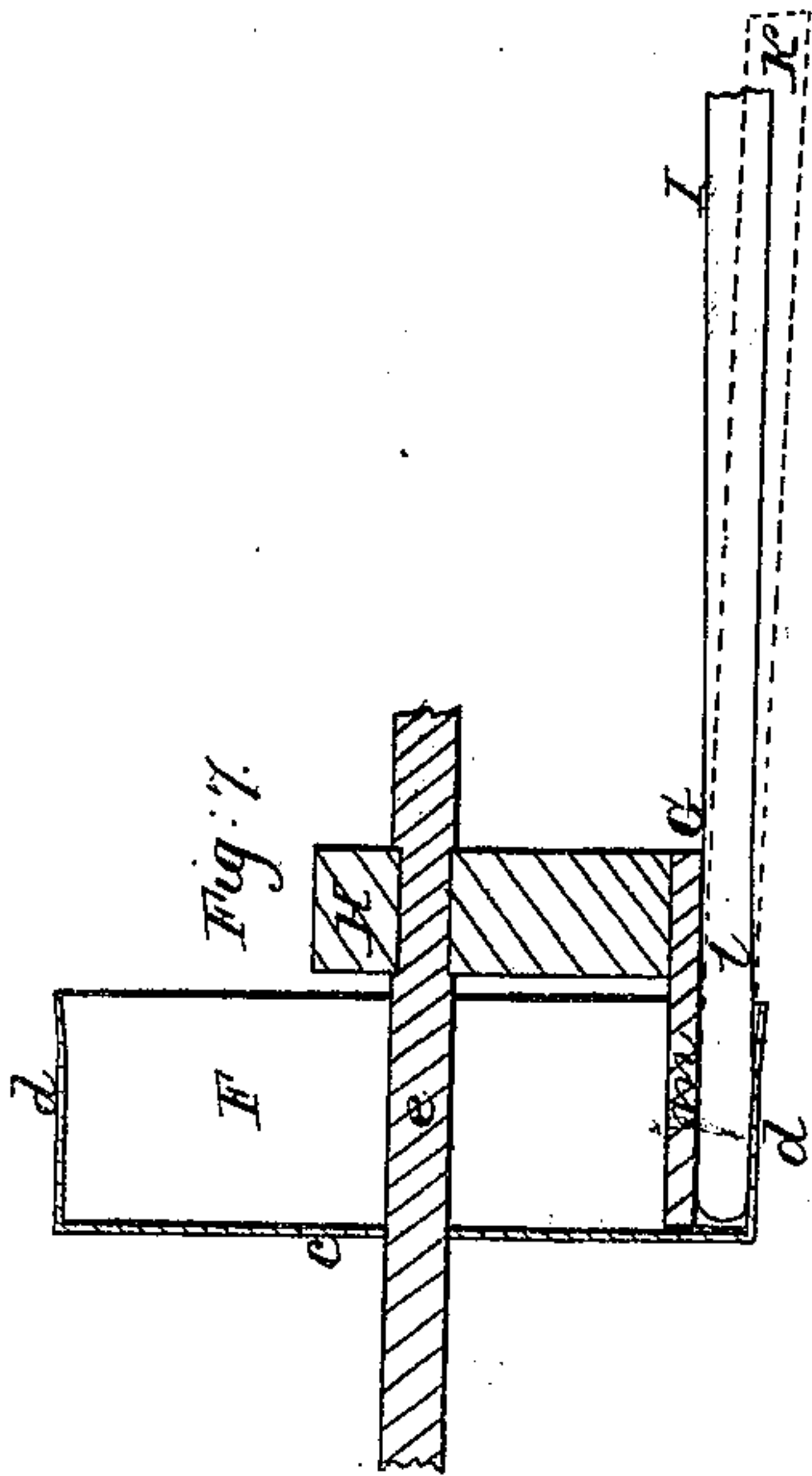
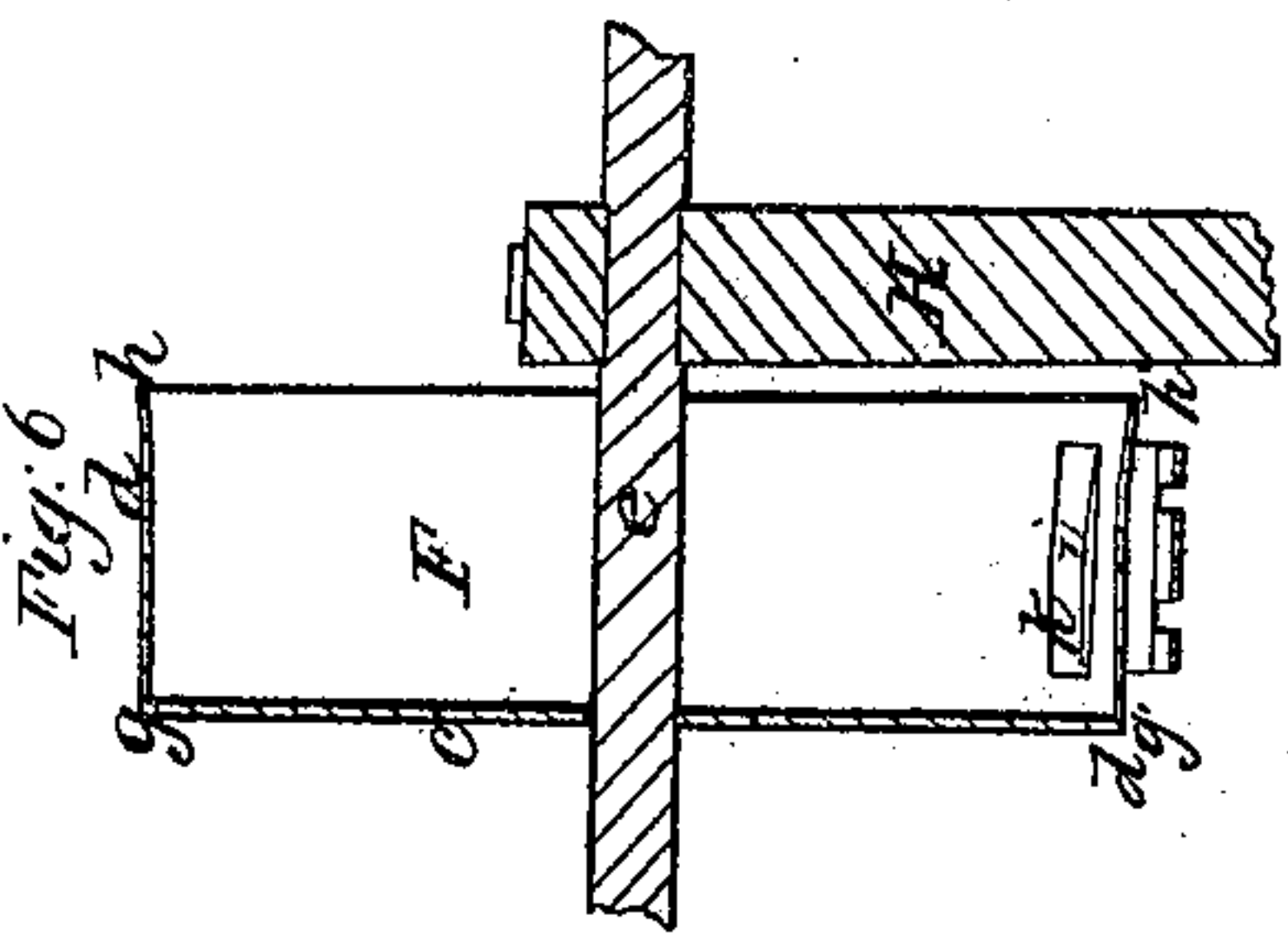
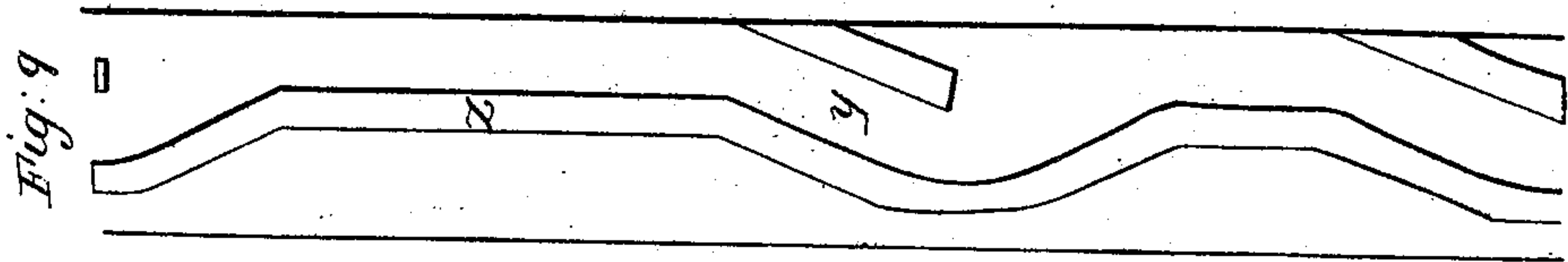
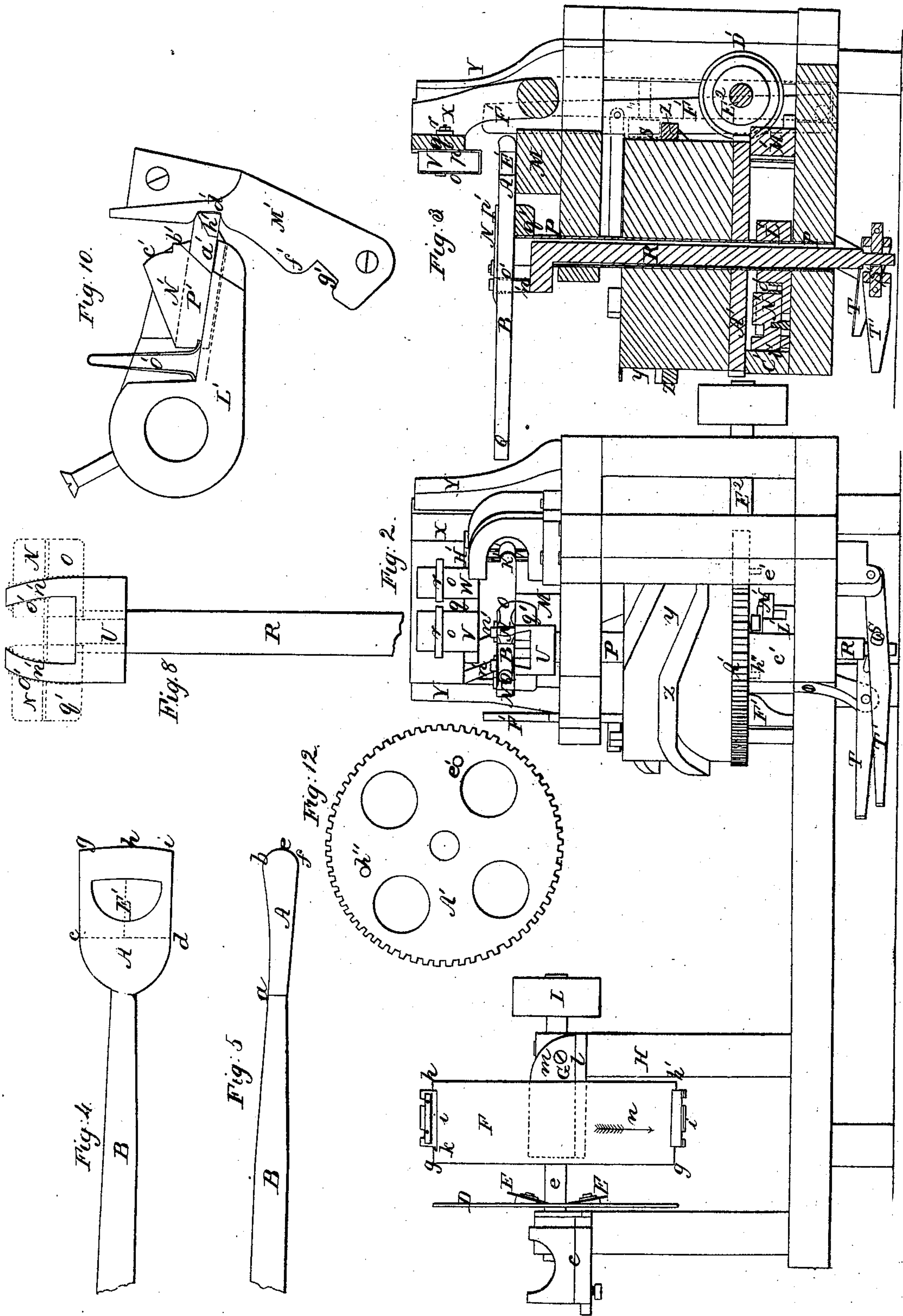


R.D. Bartlett,
Machine for Making Heads of Shovel,
No 10,631, *Handles, Patented Mar. 14, 1854 -*



R.D. Bartlett,
Machine for Making Heads of Shovels
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UNITED STATES PATENT OFFICE.

RUSSELL D. BARTLETT, OF BANGOR, MAINE.

MACHINE FOR MAKING SHOVEL-HANDLES.

Specification of Letters Patent No. 10,631, dated March 14, 1854.

To all whom it may concern:

Be it known that I, RUSSELL D. BARTLETT, of Bangor, in the county of Penobscot and State of Maine, have invented new and useful Improvements in Machinery for Manufacturing the Hand Part or Head of Shovel-Handles; and I do hereby declare that the same are fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1, denotes a top view of the mechanism constituting my invention or machine for manufacturing the head or hand parts of a shovel handle. Fig. 2, is a front elevation of the same. Fig. 3, is a transverse section taken longitudinally through the shovel handle when in the position for the correct operation of the first one of the two vertical and movable cutters. Fig. 4 denotes a top view, and Fig. 5, a side view of a shovel handle. The D or head part (or that part A, which is united to the shank B) is made with a concave curve in a longitudinal direction from *a*, to *b*, and with a convex curve in a transverse direction or from *c*, to *d*. It is also made with an opening *E'* for the reception of the hand of a person. That part which is grasped by the hand is rounded off by my machine in two directions as seen at *g*, *h*, *i*, in Fig. 4, and *b*, *e*, *f*, in Fig. 5. The underside of the head A, is made a plane surface, the same being formed by holding or applying it on a rest C, and against the face of a rotary disk D, that is provided with cutters E, E.

In order to correctly form the upper curved surface of the head A, I make use of a dished wheel F, a vertical section of which is shown in Fig. 6, as taken in line of its axis. This dished wheel consists of a flat disk *e*, or its equivalent united to a projecting rim or flanch, *d*, which is circular in section taken in any plane which is perpendicular to its shaft, *e*, while it is curved to a larger radius from where it joins the disk to its opposite edge, the curve being shown at *g*, *h*, and *g' h'* in Figs. 2 and 6. This dished wheel is provided with one or more cutters *i*, each of which extends through a throat *k*, (made through the rim of the wheel) and has its cutting edge projecting inward from the inside surface of the rim. The cutter is shaped so as to form the curve *a b*, seen in Fig. 5. Each cutter is so applied to the wheel, and there may be such

a number of them as circumstances may require. In to the wheel, a rest G, projects from a standard H. This rest consists of a shelf *l*, and a bearer plate *m*, raised on and vertically above the said shelf. A horizontal section of the wheel F, taken just above the shelf and showing the mode of applying the shovel handle, is given in Fig. 7.

In the process of forming the curved surface of the head A, such head is passed into the wheel, and with its plane surface resting against the bearer *m*, while the head is supported on the shelf *l*. The cutter wheel being in motion in the direction as denoted by the arrow *n*, the shovel handle is gradually turned horizontally from the position seen at I, into that represented by dotted lines at K. In so doing it will be cut down or curved in two directions, that is both longitudinally and transversely, as hereinbefore described. The bearer of the rest is so placed with respect to the rim, that sustains the cutters, that its inner edge or end shall be at a distance from the rim equal to or a little greater than the distance from *b* to *f* of Fig. 5, or in other words, the greatest thickness of the head. This will enable the head to be turned or moved under the operation of the cutters so as to impart to it the required form on its curved surface. The wheel is rotated by a band made to operate a pulley L, fixed on the shaft of the wheel. After the handle has been thus treated, it is placed on a bed, M, and between the jaws N, N, of a holder, O, that is fixed on the top of a vertical tubular shaft P, the position of the handle being shown at Q, in the drawings.

Within the shaft P, there is a vertical shaft R, that is supported on and connected to a cross bar S, that extends between and is jointed to two treadles T, T', one of which, viz, T, is so applied as to enable a person to raise the shaft R, by the downward pressure of his foot on the longer arm of said lever. The other lever is so applied as to enable him to depress the shaft R, by pressing down the longer arm of said lever. A fork U, formed as seen in side view in Fig. 8, is attached to the upper part of the shaft R, and is moved with and by such shaft. Its prongs *n'*, *n'*, incline toward one another as they proceed upward, and they respectively pass through two corresponding orifices *o'*, *o'*, formed through the jaws N, N. These jaws turn horizontally on fulcra or

pins at p' , p' , extending up from a head q' , fixed on the shaft P. When the shaft R, is raised upward, the jaws of the holder will be opened apart ready to receive a shovel handle. When the shaft R, is depressed,

Above the holder, and in front of it, are arranged two sets of cutters, as seen at V, W. They are affixed to a Y shaped frame X, that is made to slide freely up or down between guides Y, Y. Each set of cutters is composed of a gouge o , and a chisel p , the bevel of the cutting edges of each of which is formed on its inside surface. The gouge is of a semicircular or semielliptic shape in horizontal section, while the chisel is straight or slightly curved in such section of it. The purpose of such is to cut out the opening E, of the head part of the handle. By employing two such cutting tools together the process of sharpening them may be more easily effected than if they were connected in one piece. They are confined to the bar q , of the frame X, by a screw clamp r . Such frame X, has a friction roller s , extended into the groove y , of a cam Z, the form of such cam when developed on a plane surface being given in Fig. 9. This cam is supported on and fastened to a gear A', which in its turn rests on the tops of two blocks C', M', and is rotated by means of a worm or endless screw D', that is fixed on a driving shaft E'. One journal of this shaft works in a shifting lever F', while the other is so supported in a stationary box G', as to enable the shaft to be moved by the shifting lever in such way as to carry the screw D', either into or out of engagement with the gear A'.

Besides the cutters which form the hole E' (one set of which is intended to remove nearly the whole of the wood necessary therefor, while the other set is for finishing the hole, or taking away the remainder necessary to be removed) there is another curved cutter H', affixed to the bar q , of the frame X, the purpose of such cutter gouge H', being to remove the surplus wood from the end of the head A, so as to form the curve $g h i$, as seen in Fig. 4, such curve being the arc of a circle, whose center is in the axis of the shaft R. There are other cutters as seen at I', K', the same being arranged so as to produce the curve $b e f$, (in Fig. 5) of the extreme end of the head A. For this purpose they are so placed in the circular path of horizontal movement of the shovel handle as to cut such handle away after the other cutters have performed their offices. The first cutter (I') is a "roughing cutter," while the second one (K') is a "finisher."

In the operation of the machine, the shovel handle, held by the holder, is made to rest stationary on the bed M, not only while the

frame X, descends and forces the set of cutters V, down through the head of the handle, but while the frame X, is being elevated so as to carry the said cutters out of and above the handle. This done, the holder is turned through the sector of a circle so as to carry the head of the handle directly under the cutters W, and H', and such holder is kept stationary during the depression and elevation of such cutters, which next takes place. On the accomplishment of the latter operation the holder is moved through another sector of a circle sufficient to carry the handle successively in contact with and by or beyond the cutters I', K'. The machinery by which such operations are performed may be thus described: On the lower end of the tubular shaft P, is an arm L', see Figs. 2 and 10, the latter being a top view of the arm and locking block M', with which it operates. The arm L', carries a sliding bolt N', which at its rear end rests against a spring O'. On this spring bolt there is a cam P', which is formed of an inclined passage a' , a shoulder b' , and a cam projection c' , shaped as seen in top view in Fig. 10, and in side view in Fig. 11, which is a side view of the arm. When the holder is in a proper position for the operation of the set of cutters V, to take place, the spring bolt N', is pressed into a notch or recess d' , of the block M', such notch or recess serving to maintain the position of the holder during the descent and ascent of the set of cutters V. As soon as such movements of the cutters V have taken place, a stud e' , that projects down from the gear wheel A', is carried against the part c' , of the cam P', and so as to move the spring bolt backward out of the recess d' . Next the stud during its further movement bears against the shoulder b' , and pushes the spring bolt against a cam projection f' , of the block M'. This cam f' , causes a further backward movement of the spring bolts, sufficient to enable the stud to enter the groove a' , and bear against the side h' , of it. Next the stud by its pressure against the part, h' , moves the arm L', still further until the spring bolt passes into another recess g' , in the block M', the stud in the meantime passing through the groove a' , in consequence of the forward motion of the spring bolt in passing from the cam f' , into the recess g' . This last recess g' receives the spring bolt and maintains the stationary position of the holder during the time the cutters W, are depressed and elevated. As soon as their elevation has taken place, another stud h'' (projecting down from the gear wheel A', see Fig. 12, which is an underside view of the gear wheel A', and its studs e' and h'' ,) is carried into contact with the cam c' , so as to move the spring bolt back out of the recess g' , and by its pressure against the shoulder b' move the arm L',

so as to carry the holder around not only far enough for it to cause the cutters I', K', to perform their offices, but against a cam i', formed on the inner side of the block C', and so made as to force back the spring bolt far enough to permit the stud to pass through the groove a', and clear itself from the spring bolt. On the accomplishment of all this the shovel handle is to be removed from the holder and another one put in its place and the holder turned around, so as to again bring the spring bolt into the recess d'.

Having thus described my invention, I claim—

1. The combination and arrangement of the bed M, the rotary holder O, one or more vertical movable cutters V, W, H', and one or more stationary cutters I', K', as made to operate together and form the D, or head part of the shovel handle substantially as specified.

2. And I claim the combination of the

curved knife, o, and the arc knife, p, so applied together as not only to allow them to be separated for the purpose of being ground, but to enable them to cut out the opening of the shovel handle as specified.

3. And I claim the combination applied to the shaft of the rotary holder and gear wheel A', for the purpose of operating the holder as specified, the said combination consisting of the cam blocks, C', M', the arm L', the spring bolt N', its cam P', and the two studs, e', and h'', the whole being constructed and made to operate together substantially as specified.

In testimony whereof, I have hereto set my signature this sixteenth day of August, A. D. 1853.

RUSSELL D. BARTLETT.

Witnesses:

R. H. EDDY,
F. P. HALE, Jr.