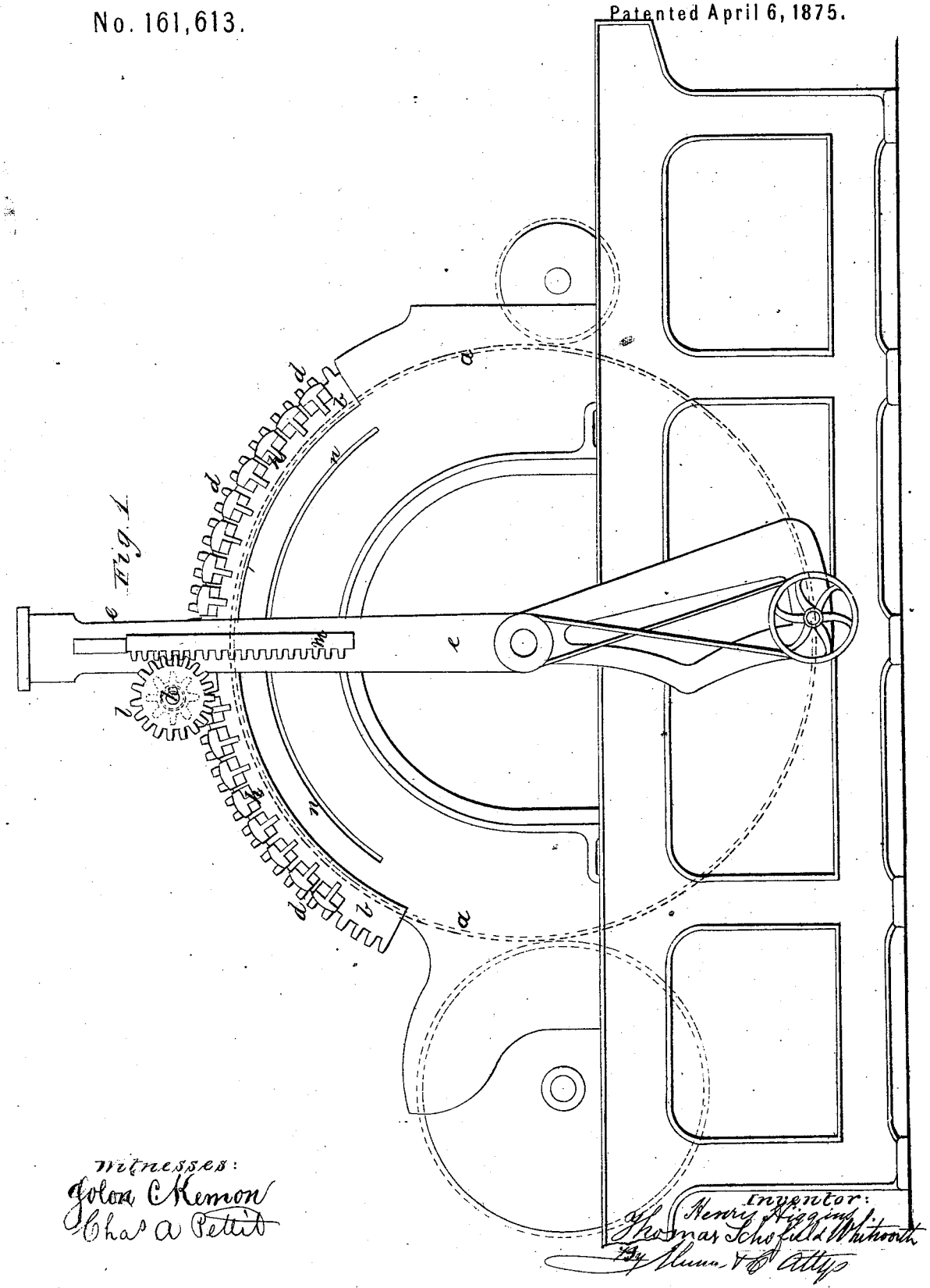
4 Sheets--Sheet 1.

H. HIGGINS & T. S. WHITWORTH.

Carding-Machine.

No. 161,613. Patented April 6, 1875.



Witnesses:
Solon C. Kemon
Chas A. Pettit

Inventor:
Henry Higgins
Thomas Schofield Whitworth
By Munn & Co Attys

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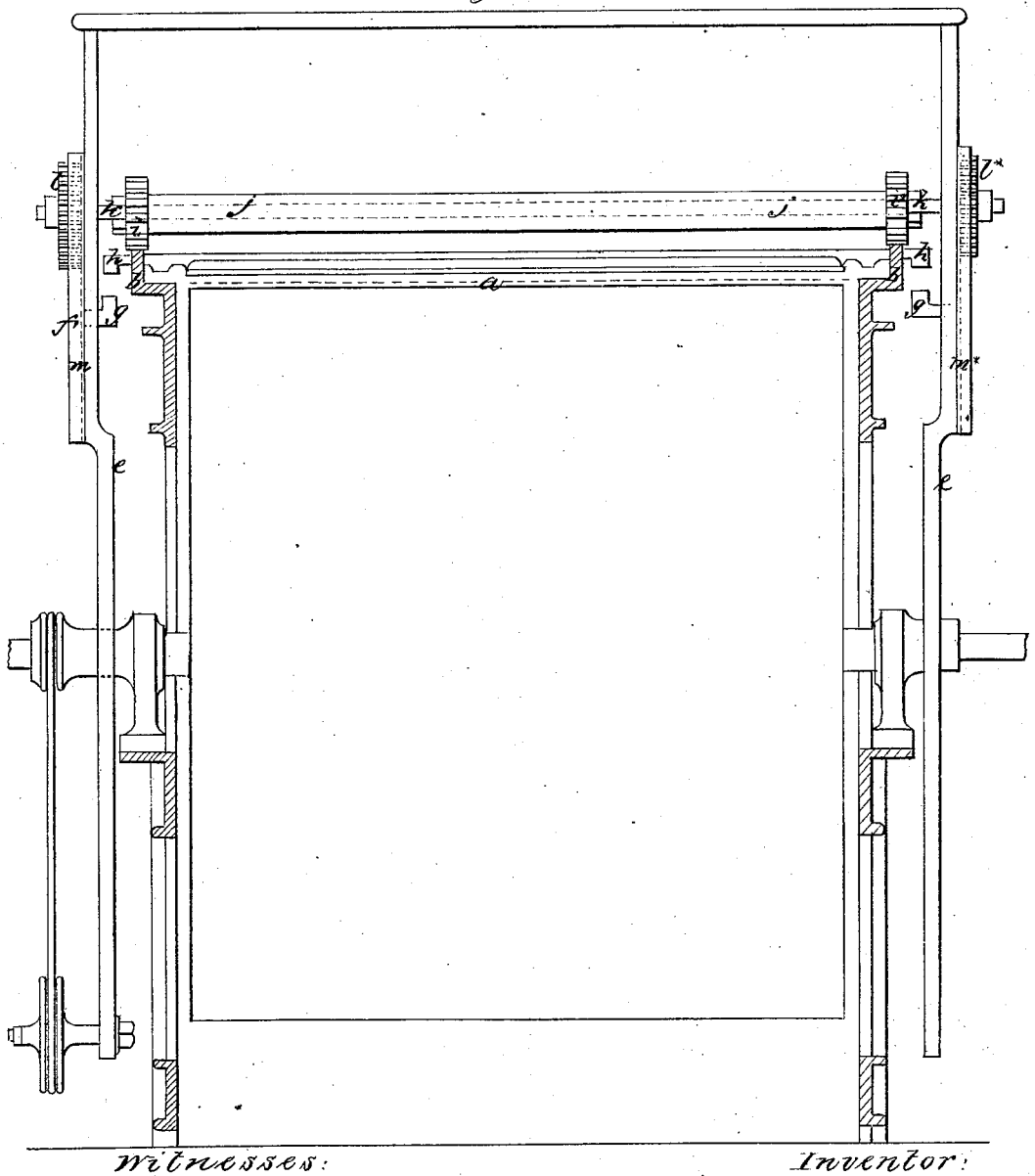
Fig. 2



Witnesses:
Solon C Kemon
Chas. A. Pettit

Inventor:
Henry Higgins
Thomas Schofield Whitworth
By Munn & Co. Attys

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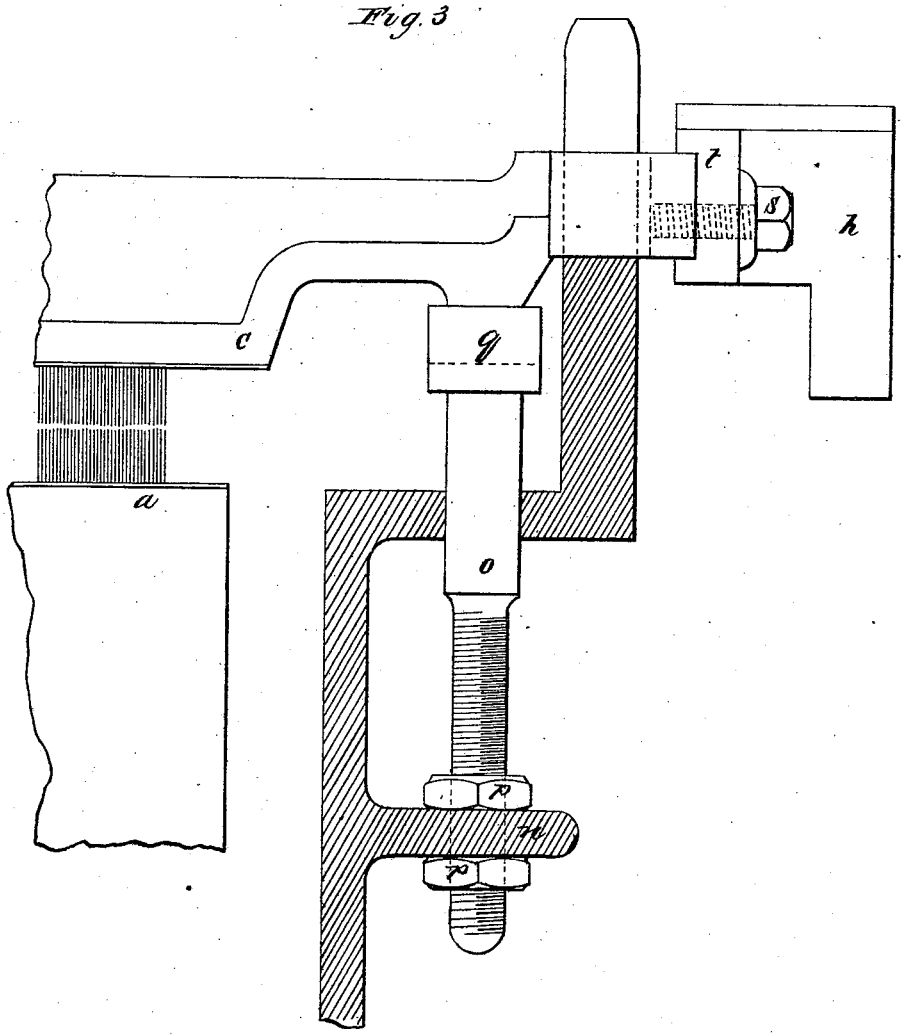
Fig. 3



Witnesses:
Colon C Kemon
Chas. A. Pettit

Inventor:
Henry Higgins
Thomas Schofield Whitworth
By Munn & Co Attys

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Fig. 5

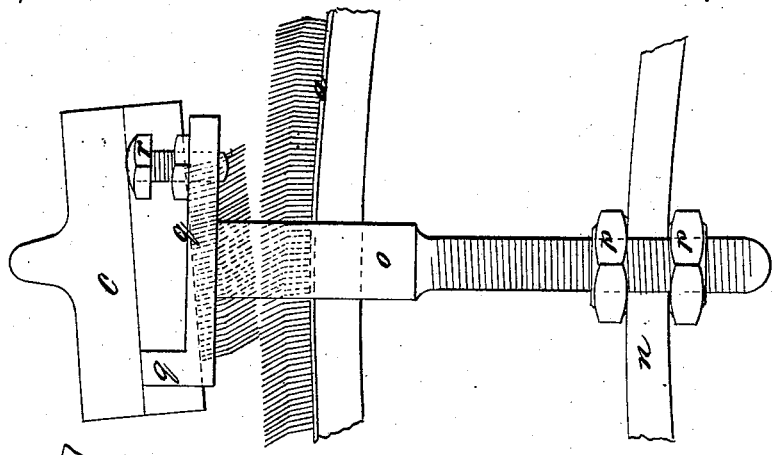
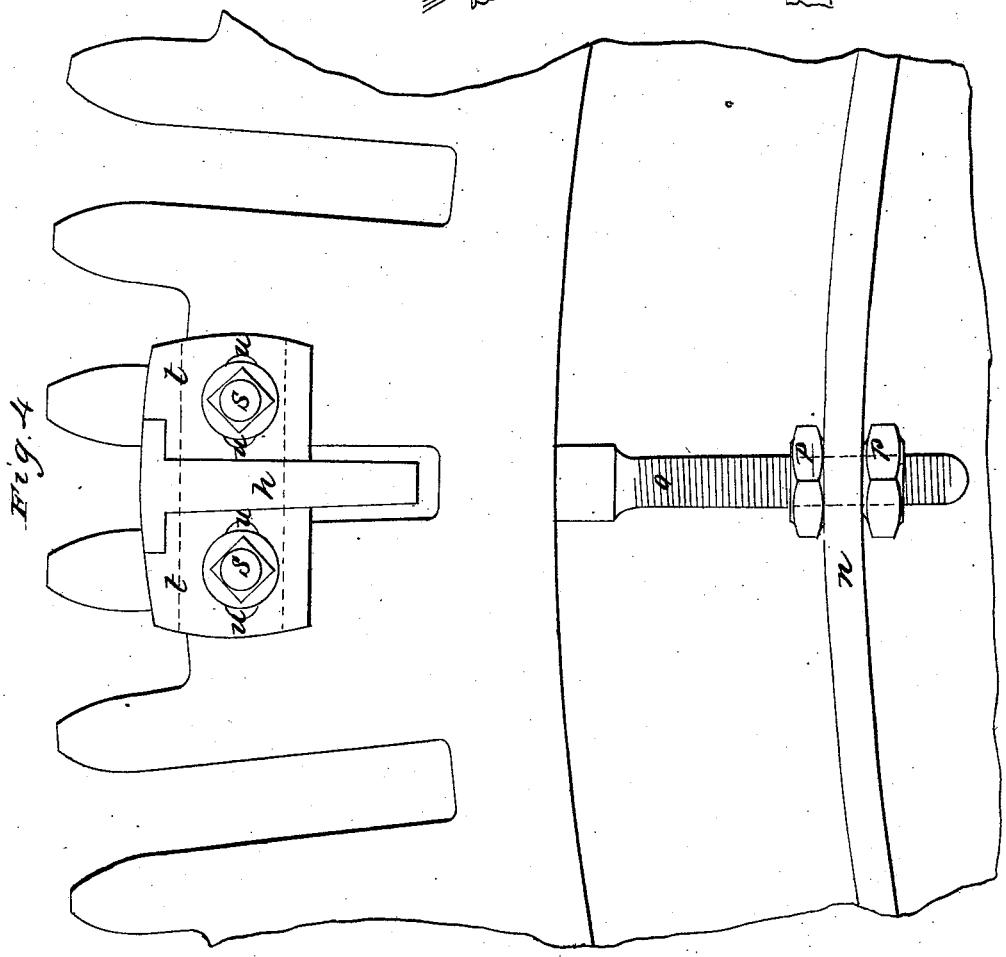


Fig. 4



Witnesses
Solon C. Kemon
Chas A. Pettit

Inventor:
Henry Higgins
Thomas Schofield Whitworth
By Munn & Co Attys

UNITED STATES PATENT OFFICE.

HENRY HIGGINS AND THOMAS S. WHITWORTH, OF MANCHESTER, GREAT BRITAIN.

IMPROVEMENT IN CARDING-MACHINES.

Specification forming part of Letters Patent No. **161,613**, dated April 6, 1875; application filed September 2, 1874.

To all whom it may concern:

Be it known that we, HENRY HIGGINS and THOMAS SCHOFIELD WHITWORTH, of Manchester, in the county of Lancaster, Great Britain, have invented certain Improvements in Carding-Engines, of which the following is a specification:

Our invention relates to those carding-engines which are provided with flats which are raised periodically by an automatic operation for the purpose of being cleaned; and consists, first, in an arrangement by means of which the vibrating levers which convey the flats over the surface of the cylinder are squared during their motion; secondly, in a novel construction of the ends of the flats, which pass into the parts of the vibrating levers by which they are lifted.

In the accompanying drawings, Figure 1 represents, in side view, a portion of a carding-engine, with the first part of our invention adapted; and Fig. 2, a cross-section of the same.

At *a* is the cylinder, upon the bends *b* of which are the flats *c*, the said bends being formed, according to our invention, with toothed racks *d*. At *e* are the vibrating levers, which are caused to vibrate by a mangle-rack, or in any other ordinary manner; and at *f* are the sliding pieces moving thereon, and which, when they are lifted by ordinary apparatus, (not shown,) bring the pockets *g* onto the ends *h* of the flats for the purpose of raising them, to be turned over and cleaned in any manner now in use. In gear with the bend-racks *d* are pinions *i i**, carried by a hollow shaft, *j*, and through this there passes a shaft, *k*, provided with pinions *l l**, taking into the racks *m m**. When the rack *m* is moved upward for the aforesaid purpose it communicates motion to the other rack, *m**, by means of the pinions *l l**, the shaft *k* of which is loose within the hollow shaft *j*, and when the levers *e* are caused to vibrate they carry with them the said hollow shaft, which rolls the pinions *i i** within the teeth *d*, and secures the square movement of the vibrating levers *e*.

The second part of our invention is shown at the detached views, Figs. 3 and 4, and Fig. 5 is a detached view, which, although not claimed by us, is necessarily referred to in order to explain one object we have in view; and this figure we will in the first place describe, but referring also to Figs. 3 and 4, in which some of the same parts are shown. Upon the frame is a flange, *n*, which carries a bolt, *o*, capable of adjustment upward and downward by nuts *p*, and having at its other end a flange, *q*, provided with an adjustable screw, *r*. At *c* is the flat in its working position, one side thereof resting on the flange *q* and the other on the set-screw *r*, which, if it be raised or lowered, alters the heeling of the flat. When the pockets *g*, Fig. 2, ascend, it is, of course, necessary that the parts *h* of the flat shall be over them, so that they may be received therein; but, by altering the heeling of the flat, the said parts *h* are necessarily turned on one side and out of their proper relative position, and one object of this part of our invention is to correct that disarrangement, and this we do by forming the parts *h* in distinct pieces and attaching them so that they may be adjustable. The flat is shown at *c*, upon which is secured, by means of set-screws *s*, a plate, *t*, from which there projects the part *h*, which is to be received by the pocket *g*. The set-screws *s* pass through slots *u*, and when they are loosened the part *h* may be moved in one direction or the other, so as to bring it immediately over the line in which the pocket will be raised. But another object is attained by this part of our invention, for, supposing that no adjustment is required arising from an alteration in the heeling of the flats, our improvement facilitates the adjustment of the parts in the original construction of the machine.

We claim as our invention—

1. The combination, with the vibrating levers *e*, of the bends *b*, having racks *d*, and the shafts *j k*, having pinions *i i** and *l l**, as and for the purpose described.

2. A flat having the parts *h* made in separate pieces, and adjustable, as and for the purpose specified.

HENRY HIGGINS.
THOMAS SCHOFIELD WHITWORTH.

Witnesses:
WM. TUDOR MOBLEY,
W. T. CHATHAM.