No. 845,369. PATENTED FEB. 26, 1907.

J. MURRAY.

SIGNATURE GATHERING MACHINE ATTACHMENT FOR BOOKBINDERS.

APPLICATION FILED OCT. 30, 1905. 4 SHEETS—SHEET 1.

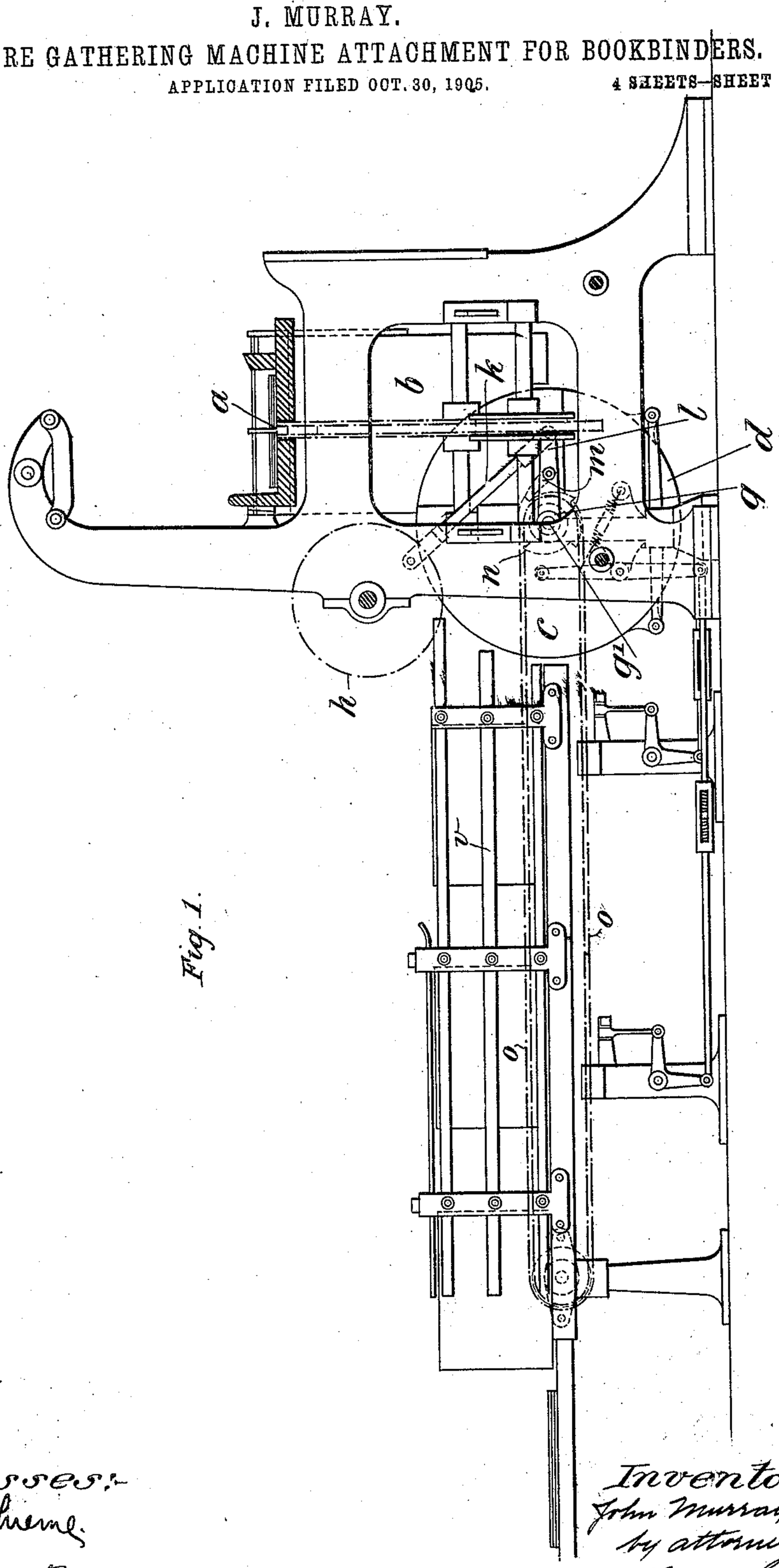

Fig. 1.

Witnesses:-
Henry Thieme.
F. George Barry.

Inventor
John Murray
by attorneys
Bowie Howard

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4 SHEETS—SHEET 2.

Fig. 9

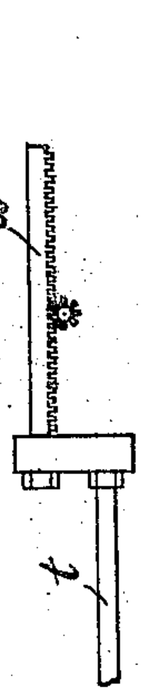

Fig. 2

Fig. 8

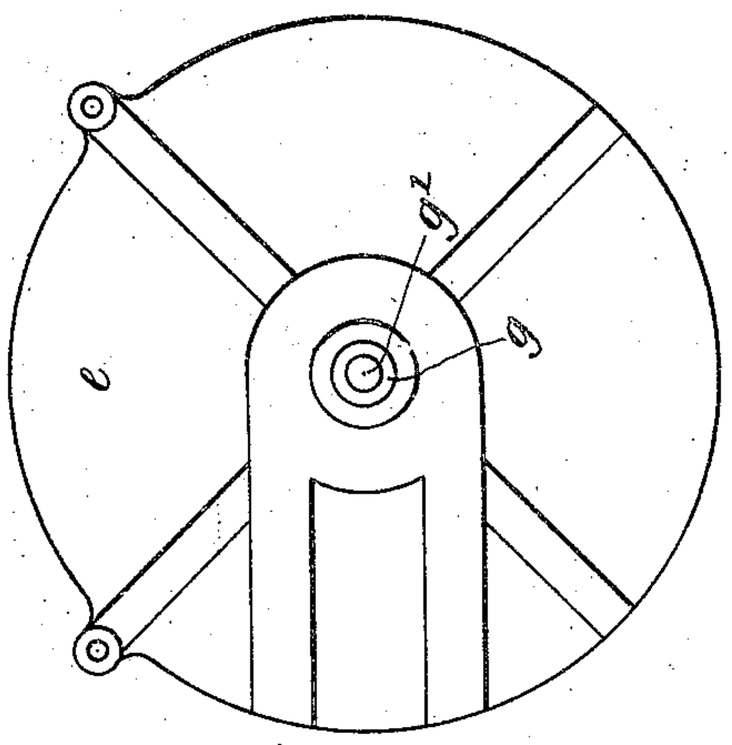

Fig. 7

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4 SHEETS—SHEET 3.

Fig. 6

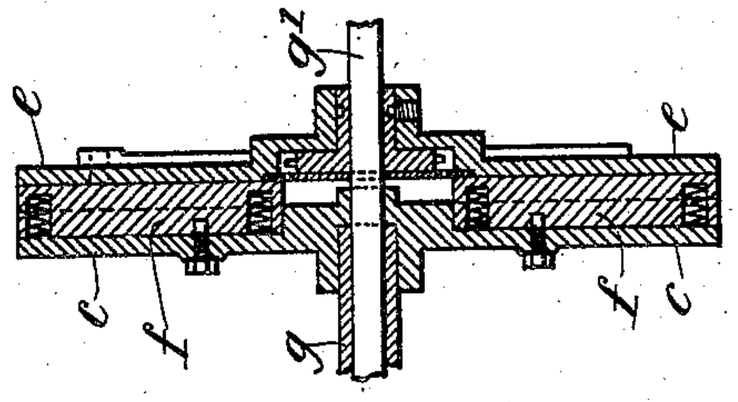


Fig. 5

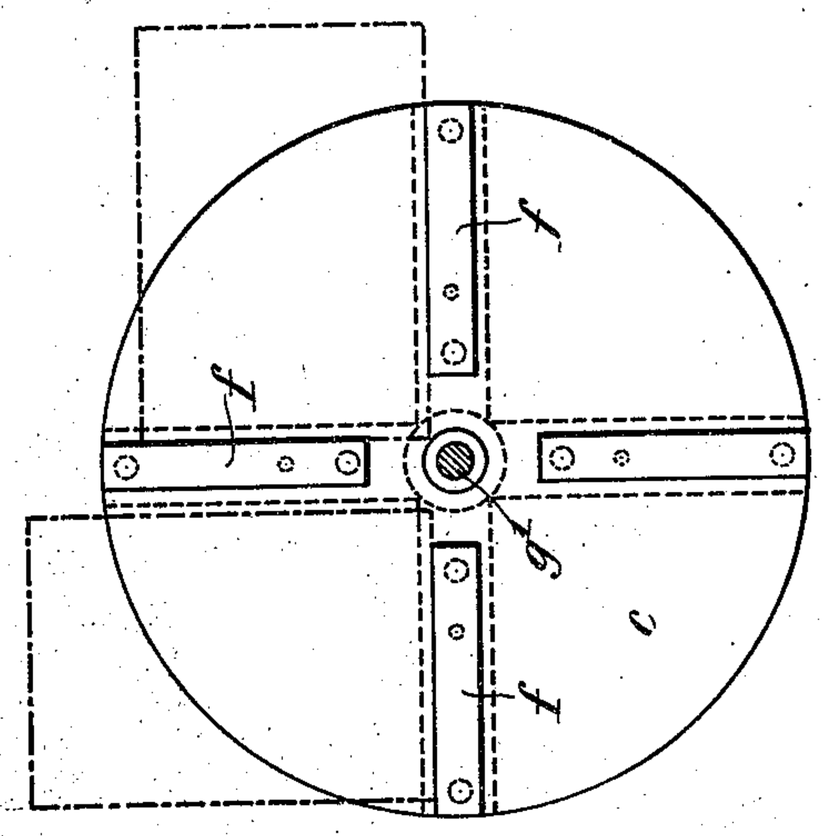
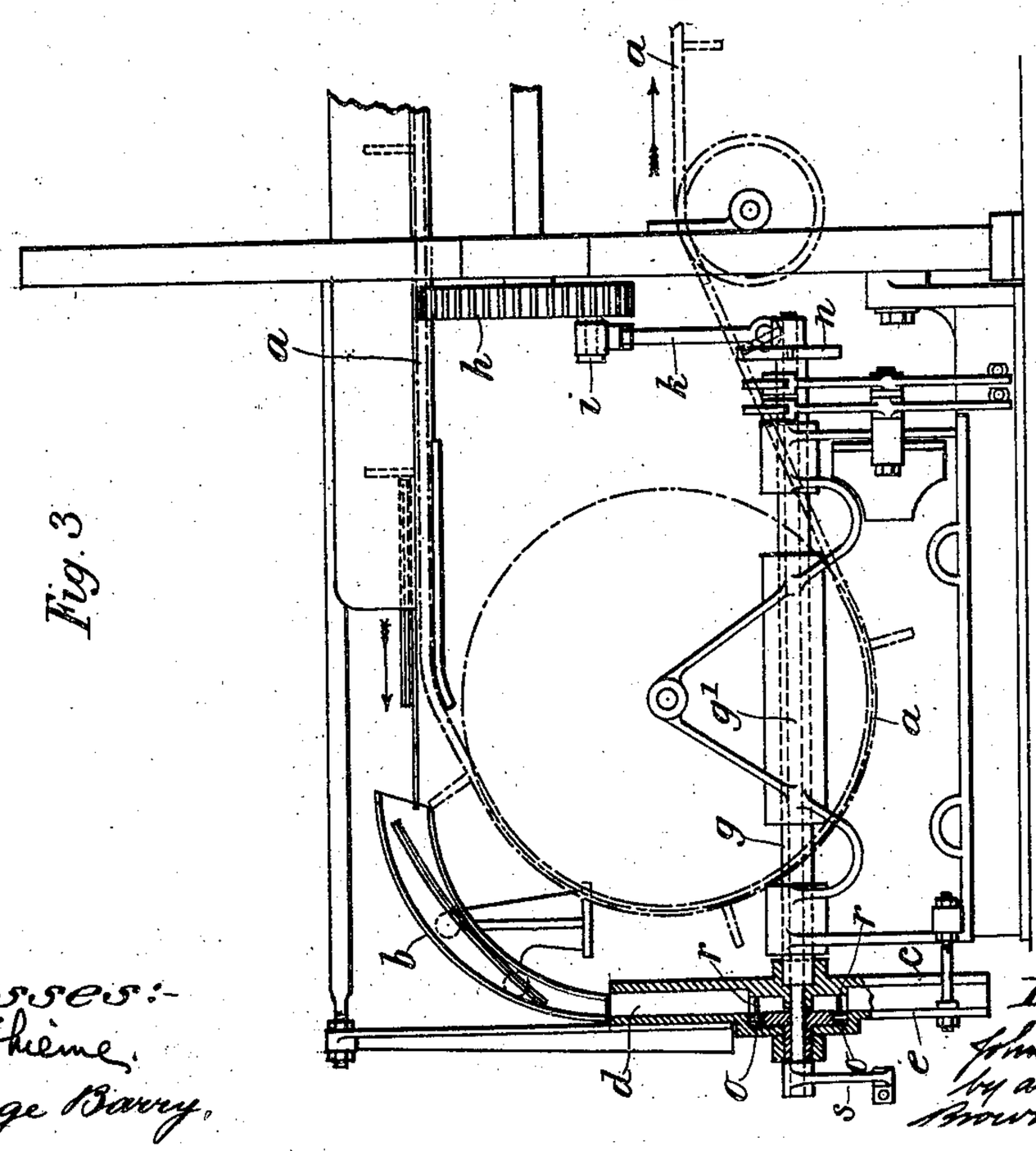


Fig. 3



Witnesses:-
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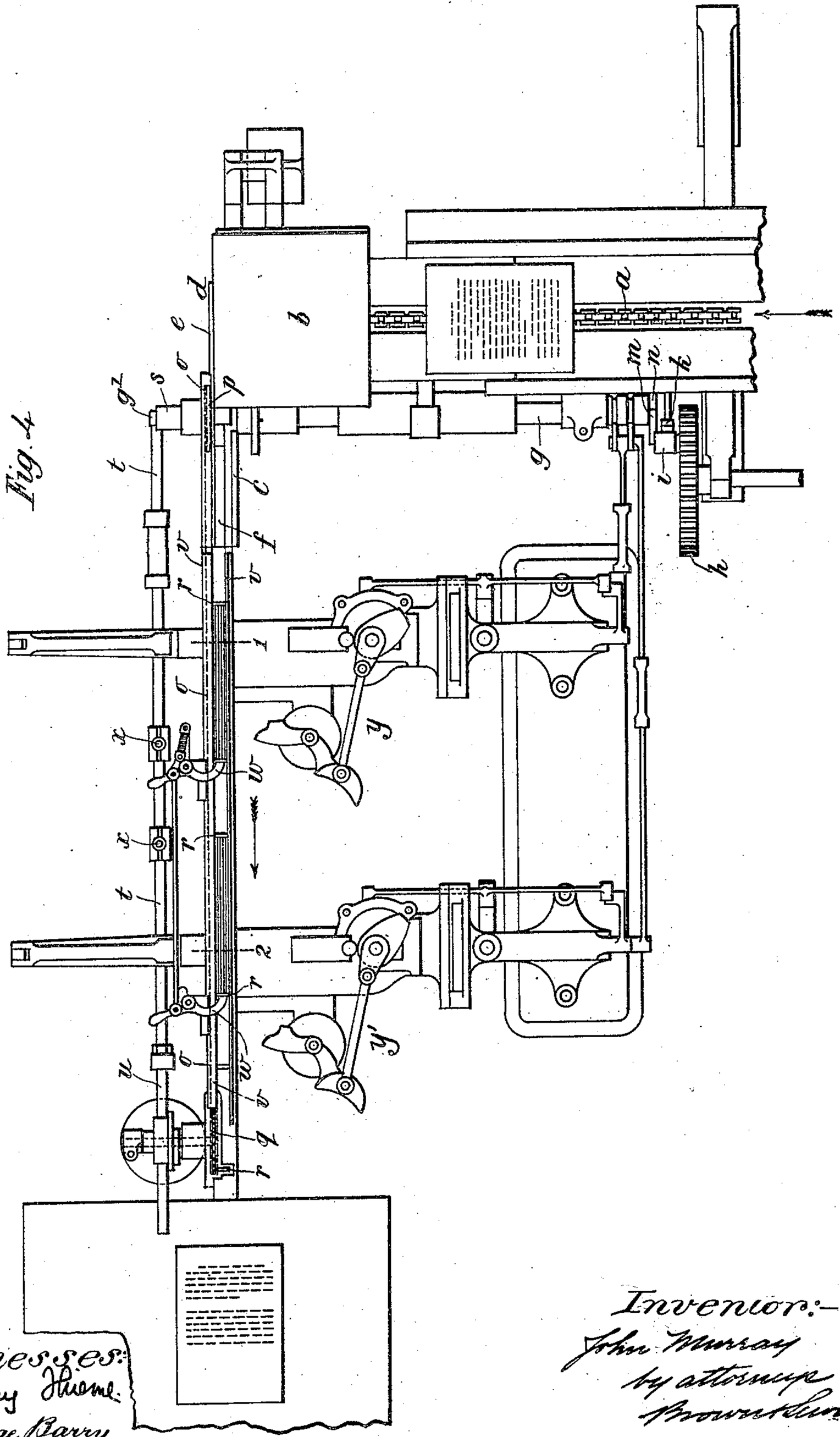
APPLICATION FILED OCT. 30, 1905.

4 SHEETS—SHEET 4.

Fig. 4.



Witnesses:
Henry Thieme.
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Inventor:—
John Murray
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UNITED STATES PATENT OFFICE

JOHN MURRAY, OF EDINBURGH, SCOTLAND.

SIGNATURE-GATHERING-MACHINE ATTACHMENT FOR BOOKBINDERS.

No. 845,369. Specification of Letters Patent. Patented Feb. 26, 1907.

Application filed October 30, 1905. Serial No. 284,930.

To all whom it may concern:

Be it known that I, JOHN MURRAY, engineer, a subject of the King of Great Britain, and a resident of Parkside Works, Dalkeith Road, Edinburgh, North Britain, have invented a new and useful Improved Signature-Gathering-Machine Attachment for the Use of Bookbinders, of which the following is a specification.

The present invention has reference to means which may be attached to signature-gathering machines to receive the gathered books and to convey them to the stitching-machines in a proper condition for stitching.

An ordinary signature-gathering machine, to which this invention may be applied, comprises an endless conveyer which travels in front of a row of boxes wherein are piled the sheets or signatures which are to be bound into a book. The conveyer receives the signatures in order from the boxes one upon the other and carries them along to the delivery-place. At this point the piled signatures are usually taken from the conveyer by hand. According to this invention, however, they are mechanically guided into an intermittently-rotating receptacle consisting of a disk fitted on its face with radial bars arranged at right angles to one another. There is a cover for the receptacle consisting of a stationary plate or disk situated near to the face of the rotating disk, but just clear of the radial bars, which can thus freely rotate with their supporting-disk. The loosely-piled signatures when they leave the conveyer fall into one of the compartments of the receptacle, where they stand on one of the radial bars now in a horizontal position. A quarter-turn of the receptacle in the proper direction throws the signatures sidewise onto the next bar, which has passed from a vertical to a horizontal position, and at the same time a fresh compartment of the receptacle is presented to the conveyer. When in the second position, the book, which is now "knocked up" by contact with the radial bars, is ready for removal to the stitching-machine. This removal may be effected mechanically by any suitable contrivance—for instance, by an endless chain having at intervals pins or fingers which project laterally through a slot in the receptacle-cover and by their outward movement draw the book from the compartment where it rests. The movements of the receptacle are derived from the gathering-machine and are properly synchronized therewith.

It is obvious that where no gathering-machine is employed the books or sheets may be placed by hand in the rotating receptacle, which will transfer them to the stitching-machine in the manner already explained. The stitching-machine, which may be of any suitable character, is, moreover, synchronized so as to properly deal with the work delivered to it from the rotating receptacle.

In the accompanying drawings, Figure 1 is a back elevation, Fig. 2 a front elevation, Fig. 3 an end elevation, and Fig. 4 a plan view, of the gathering-machine attachment which embodies my improvements. Fig. 5 is a detail of the movable disk as seen from the inside. Fig. 6 is a cross-section of the receptacle for knocking up the signatures. Figs. 7 and 8 are inside and outside views of the fixed disk, and Fig. 9 is a detail view of the rod and rack forming part of the device for imparting the intermittent movement to the book-withdrawing mechanism.

a is an endless conveyer which forms part of a gathering-machine of any suitable construction. (Not shown.) This conveyer receives the signatures to be bound and delivers them intermittently to a guide *b*, situated above the receptacle *d*. This receptacle *d* comprises a movable disk *c* and a stationary disk *e*. The movable disk *c* has four radial bars *f*, arranged at right angles to one another in any convenient manner. By preference the bars *f* consist of wooden blocks fitted into recesses in the disk *c* and held elastically against the opposite or stationary disk *e* by means of springs. (See cross-section, Fig. 6.)

Intermittent rotation is imparted to the disk *c* by means of the hollow shaft *g*, which receives its rotation from the driving-wheel *h* of the gathering-machine by means of a crank-pin *i* and a link rod *k*, jointed to the lever *l*, pivoted to the said shaft *g* and carrying a pawl *m*, engaging with a four-toothed ratchet-wheel *n*, keyed on the said hollow shaft *g*. For each rotation of the wheel *h* there will be one quarter-rotation of the disk *c*.

The signatures passing through the guide *b* into the receptacle formed between the disks *c* and *e* fall on their ends upon one of the radial bars *f*. (See Fig. 5.) The rotation of the disk *c* one quarter-turn throws the signatures onto their backs, and thus they are knocked up in two directions. When the book is thus knocked up, the disk *c* rests, and the book is withdrawn from the receptacle

by means of a chain *o*, carrying at intervals pins *r*, which draw the book toward the stitching mechanism. (Best seen in the plan view, Fig. 4.) The chain *o* is supported on chain-wheels *p* and *q*. The former is situated in a recess within the stationary disk *e*, and the pins *r* of the chain protrude laterally into the path of the book, so as to push it from behind, when the signatures are adjusted, between the guides *v*. The intermittent movement of the endless chain *o* is derived from the shaft *g'* within the hollow shaft *g* by means of a crank *s*, which is connected to the rod *t*, to the end of which is connected a rack *u*. This rack engages with a ratchet device on the axle of the chain-wheel *q* and imparts to it an intermittent rotation, so as to move the chain intermittently in the proper direction.

While the stitching of the book is in progress the latter remains between the guides *v*. The stitching device may be of any suitable construction and, being well understood, needs no description. The stitching device *y y'* is shown double. The first portion *y* inserts a stitch in the book at the point 1 and the second portion *y'* at the point 2 after the book has been moved. After stitching, the books are removed out of the guides *v* to the table.

The chain *o* while moving travels at high speed and projects the books from the receptacle *d* slightly beyond the stitching apparatus before the chain comes to rest. This being so, fingers *w w* are provided to return the books to their contact with the pins. These fingers are operated by adjustable tappets *x x*, carried on the rod *t*, to which an endwise movement is imparted, as above explained.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. A knocking-up attachment for signature-gathering machines comprising a receptacle, means for guiding the associated signatures edgewise thereto, radial bars arranged at right angles within the receptacle for receiving the falling signatures on edge, means for intermittently rotating the receptacle to throw the signatures edgewise onto an adjacent bar and means for withdrawing the knocked-up signatures from the receptacle, substantially as described.

2. A knocking-up attachment for signature-gathering machines comprising a receptacle, means for guiding the associated signatures edgewise thereto, radial bars arranged at right angles within the receptacle for receiving the falling signatures on edge, means for intermittently rotating the receptacle to throw the signatures edgewise onto an adjacent bar, means for withdrawing the knocked-up signatures from the receptacle comprising an endless chain, pins extending laterally therefrom and means for intermittently moving said chain, substantially as described.

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

JOHN MURRAY.

Witnesses:

J. SIMPSON JACK,

GEORGE COBB.