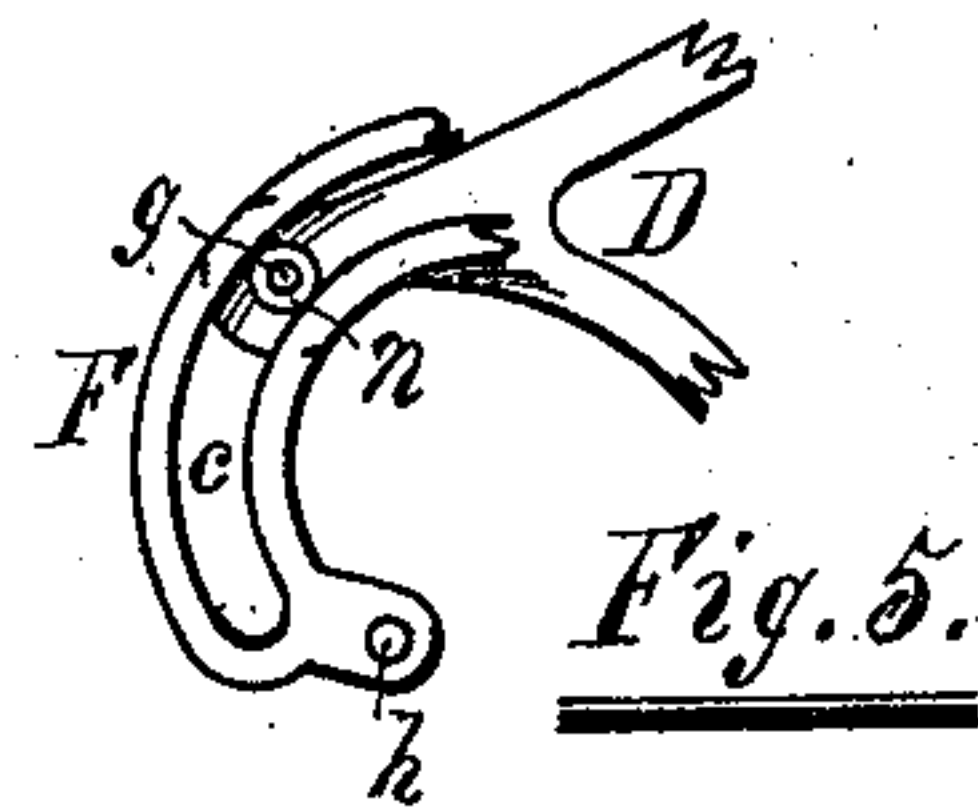
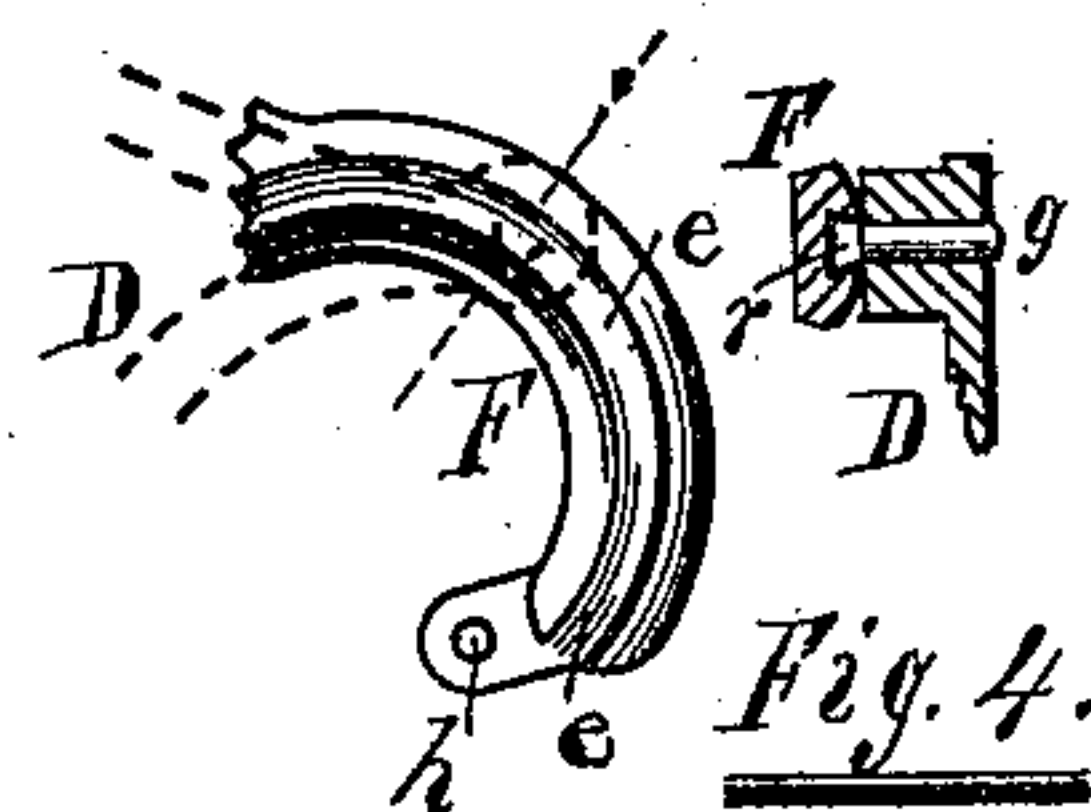
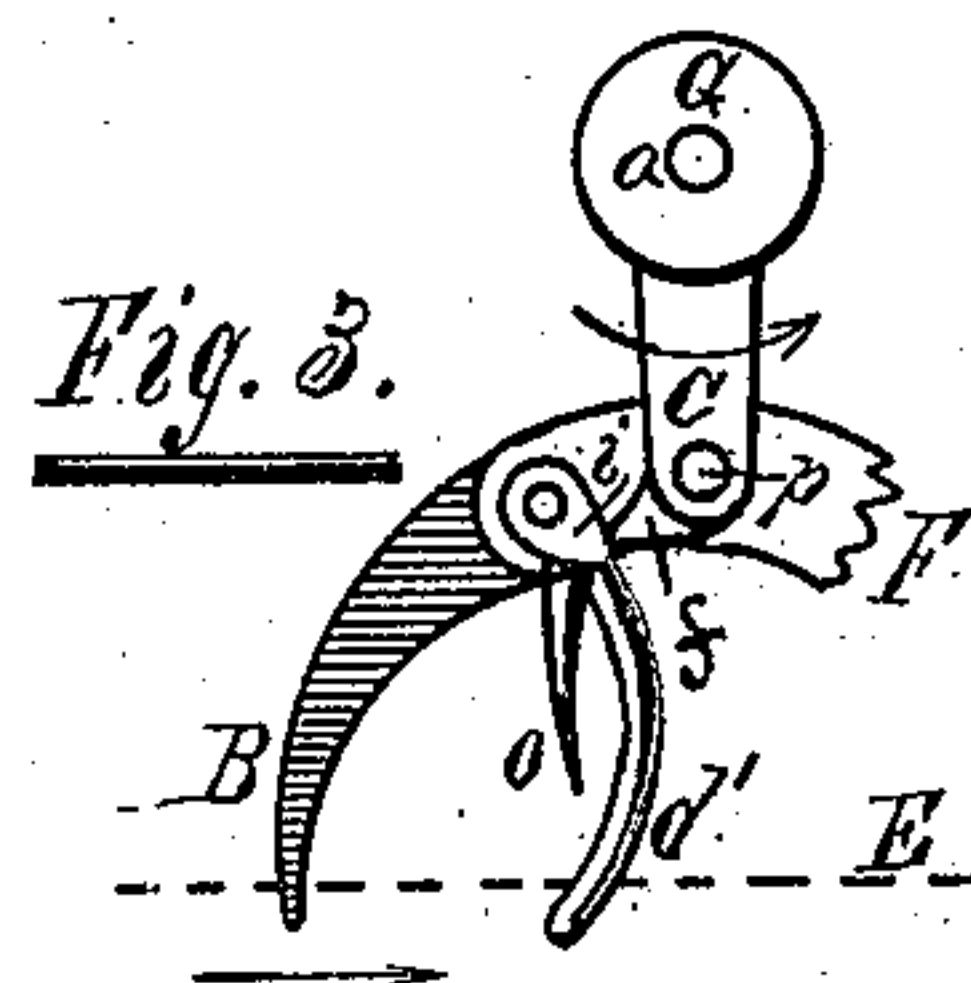
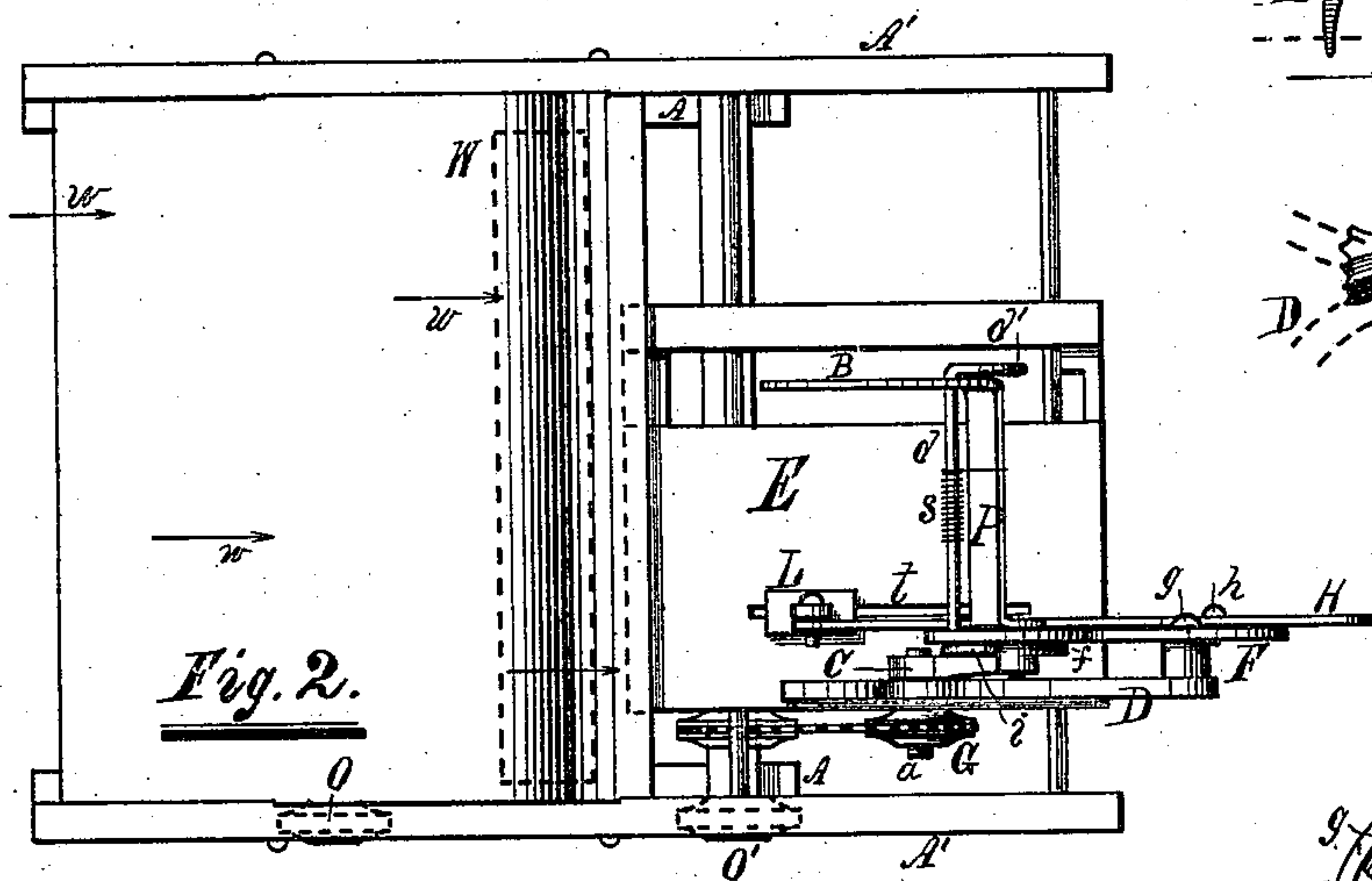
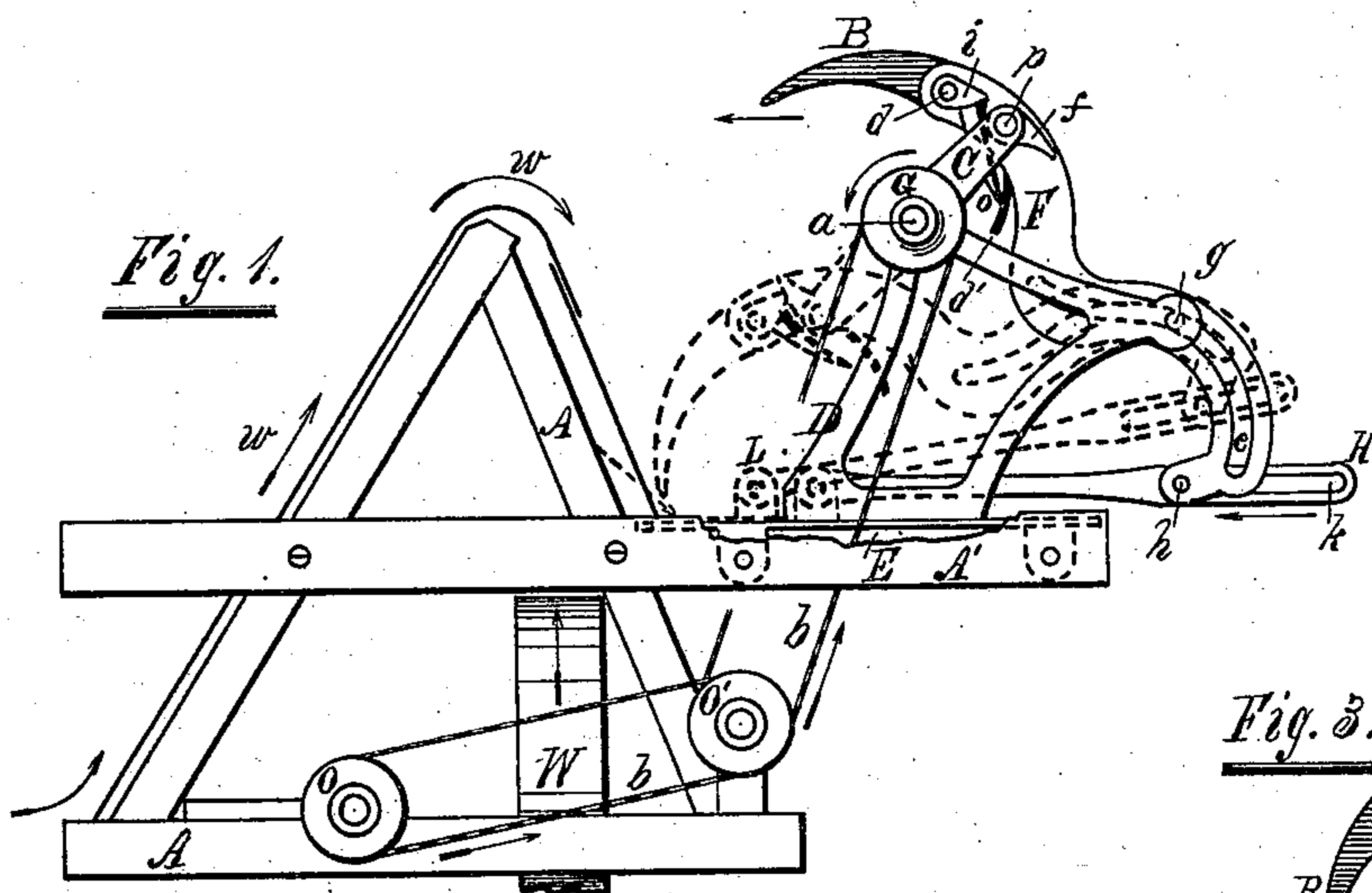


H. CURTIS.  
GRAIN-BINDERS.

No. 195,098.

Patented Sept. 11, 1877.



Witnesses:  
John M. Gardwell  
Harner Gorton

Inventor:  
Henry Curtis.  
By E. B. Whitmore, Atty.



# UNITED STATES PATENT OFFICE.

HENRY CURTIS, OF CHICAGO, ILLINOIS, ASSIGNOR TO JOHN H. GORDON,  
OF ROCHESTER, NEW YORK.

## IMPROVEMENT IN GRAIN-BINDERS.

Specification forming part of Letters Patent No. 195,098, dated September 11, 1877; application filed April 16, 1877.

*To all whom it may concern:*

Be it known that I, HENRY CURTIS, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Grain-Binders, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a rear elevation of a portion of a grain-harvester to which my improvement is attached, showing the various parts in two positions. Fig. 2 shows a plan of the same. Fig. 3 shows a third position of the binding-arm B, &c., mainly showing the compressor *d'* after having been acted upon by the finger *f*. Figs. 4 and 5 show modifications, which will be hereinafter explained.

The object of my invention is to give to the binding-arm of a grain-binder a suitable motion by means of a driving-crank and a sinuous binder-arm carrier, provided with a longitudinal cam-shaped slot, which slides upon a fixed stud or pin; also, to operate the grain-compressor by means of a finger or lug projecting from a point near the end of the driving-crank.

I am aware that a binder-arm has been hitherto mounted directly on a driving-crank, and that binder-arms so mounted have been guided by passing their straight rear ends through a fixed guide, by pivoting them to a swinging link or sway-bar, and by arranging their rear ends to slide in fixed slotted guides, as in the application of John H. Gordon, filed July 1, 1876, and such arrangements I do not claim, my machine being designed as an improvement upon, and being subordinate to, the said Gordon invention.

In the drawings, A is a frame-work surrounding the driving-wheel W, the horizontal timbers A' of which support the binding mechanism, and the grain as it is cut is carried by elevators, as indicated by the arrows *w*, and delivered to the binder.

D is a skeleton standard resting upon an adjustable platform, E, and supporting the binding-arm B and other parts. The shaft *a* rests in a bearing at the upper part of the standard D, and has keyed to it the crank C and sprocket-wheel G, all of which are rotated by the chains *b*.

The binding-arm carrier F is pivoted to the pin *p* of the crank, and as it is carried around by the said crank the slot *c* glides along the stud *g*, which is fixed rigidly in the standard D.

The binder-arm bar P, Fig. 2, is fastened to the carrier F at a point near the pin of the crank, and extends horizontally some distance therefrom, when it bends at a right angle toward the grain-receptacle, and is properly tapered and curved to the form of a binding-arm, B.

The slot *c* in the carrier F is given such a shape that a proper direction is given to the motion of the point of the binding-arm as it is operated by the crank C.

It will be observed that the slotted arm, the form or curve of which may be varied indefinitely, admits of the binder-arm being given any motion required, renders the machine simple and strong, and avoids the necessity of extending the supporting frame or standard backward to the extent required in machines using the stationary slotted guides.

The fixed pin *h* passes through a slot, *k*, in the connecting-bar H, and gives to the sliding plate L an intermittent reciprocal motion, by means of which a suitable wire-twisting device beneath the platform E is operated.

The twisting head or device may be either stationary or movable, and of either of the common and well-known forms in general use, the present invention having no relation thereto.

The compressing-rod *d* is journaled in the carrier F and arm B, and at one end is bent and curved to form a suitable grain-compressor, *d'*, while at the other it is provided with a pointed lug, *i*, and attached guard *o*, Figs. 1 and 3. The spiral spring *s*, Fig. 2, tends to keep the compressor *d'* swung back from the binding-arm, and to keep the guard *o* against the head of the crank C.

The crank C is provided with a projecting finger, *f*, which, as the crank revolves, presses the lug *i*, and forces the compressor *d'* toward the binding-arm, to compress the gavel, as shown in Fig. 3, said compressor being allowed to swing back by the exertion of the spring *s* as the revolution of the crank is continued.



The binding mechanism is designed to be mounted so as to be adjustable bodily forward or backward.

It may be desirable to provide the pin *g* with a friction-roller, as shown at *n* in Fig. 5, or to employ a dovetail groove, *e*, Fig. 4, in the side of the carrier F, instead of the slot above described.

I claim as my invention—

1. In a grain-binding machine, the combination of a sinuously-slotted binder-arm carrier, a fixed stud having said carrier mounted and arranged to slide thereon, and a rotating driving-crank connected directly with the carrier, substantially as shown and described.

2. The crank C, provided with a finger, *f*, in combination with the compressing-rod *d*, provided with the lug *i* and guard *o*, substantially as shown and described.

3. In a grain-binding machine, a driving-crank provided with a finger, *f*, a binder-arm carrier mounted on and carried by said crank, and a compressing-rod, *d*, arranged and operated by means of the finger, substantially as shown and described.

4. The combination of the slotted binder-arm carrier F, mounted on the crank C, and fixed stud *g*, with the stud *h*, bar H, binder-arm, and bar P, substantially as shown.

5. The combination of the binder-arm and slotted carrier F, mounted on the fixed stud *g*, and crank C, with the stud *h*, bar H, and movable twister-operating device L, substantially as shown.

6. In a grain-binder, the combination of a binder-arm and a sinuous or bent carrier attached thereto, a rotary driving-crank connected to and bearing said carrier, and a fixed stud or guide, *g*, having the carrier arranged to slide and pivot thereon as it is moved by the crank, so that as the carrier is moved by the crank it receives by the action of the guide a sinuous or irregular movement, substantially as shown and described.

HENRY CURTIS.

Witnesses:

J. H. GORDON,

GEORGE H. SELLARS.