

(No Model.)

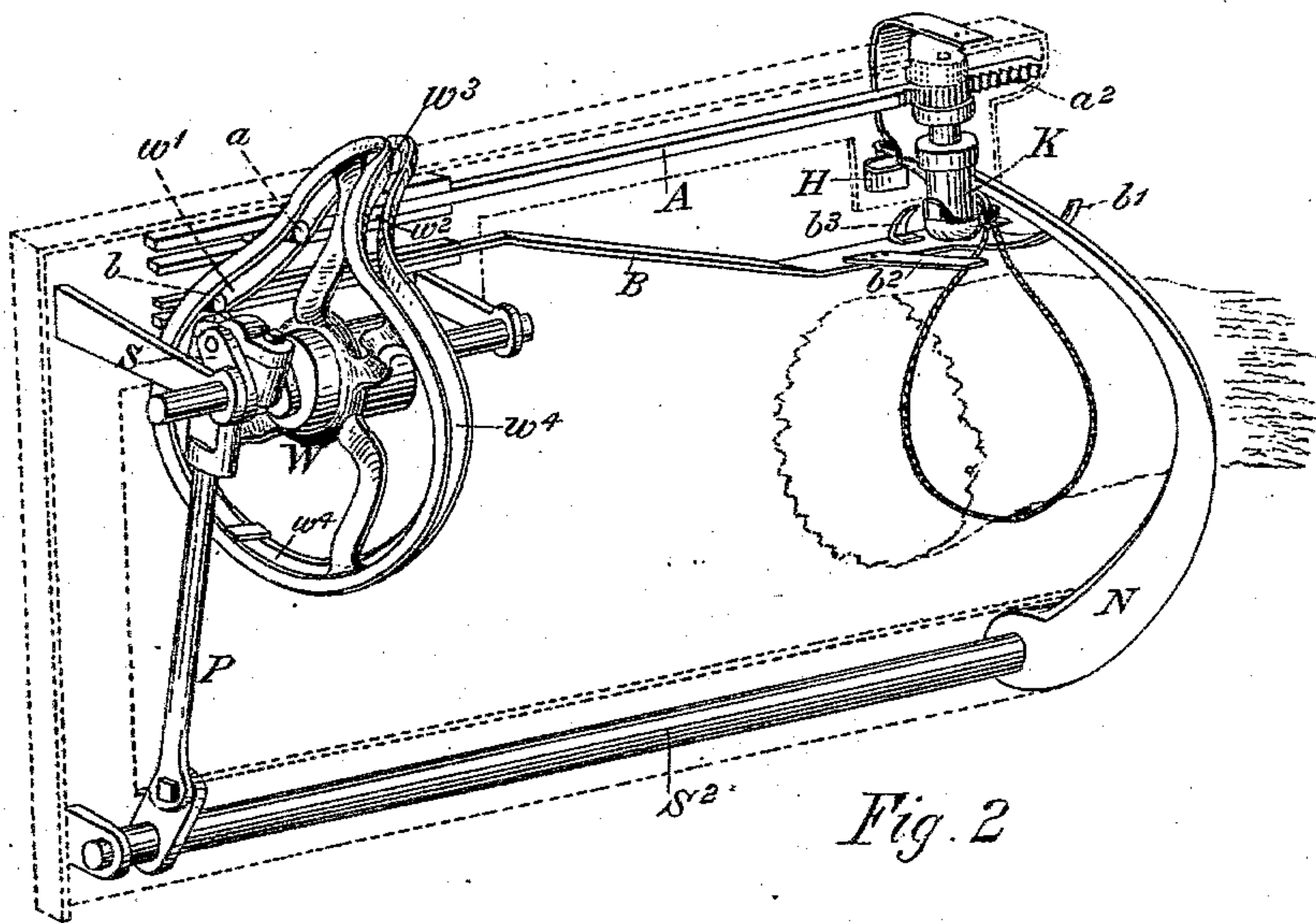
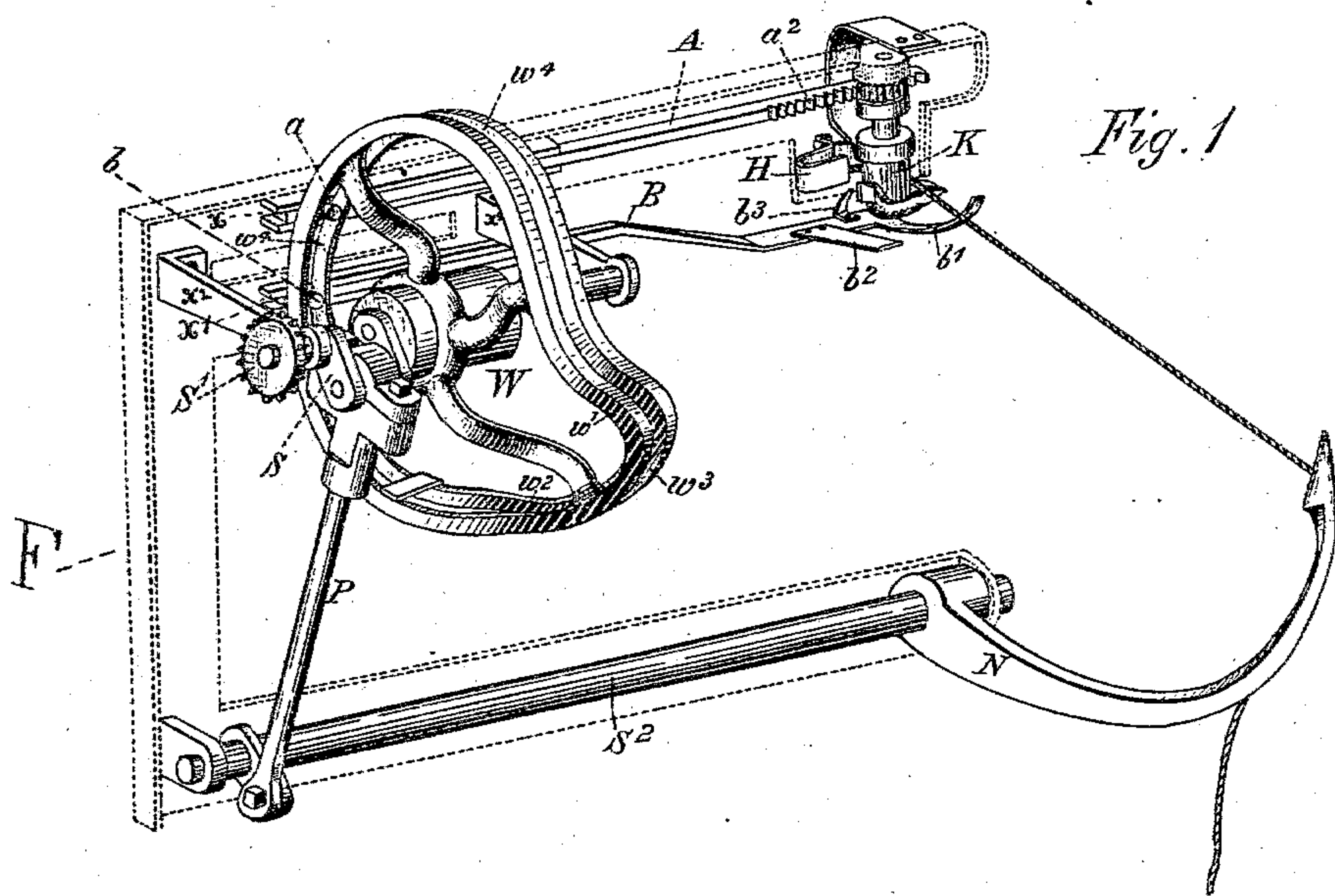
2 Sheets—Sheet 1.

H. D. W. BAILEY.

GRAIN BINDER.

No. 283,457.

Patented Aug. 21, 1883.



B. J. Dando.
Herbert Speman

Witnesses

Henry D W Bailey Inventor

(No Model.)

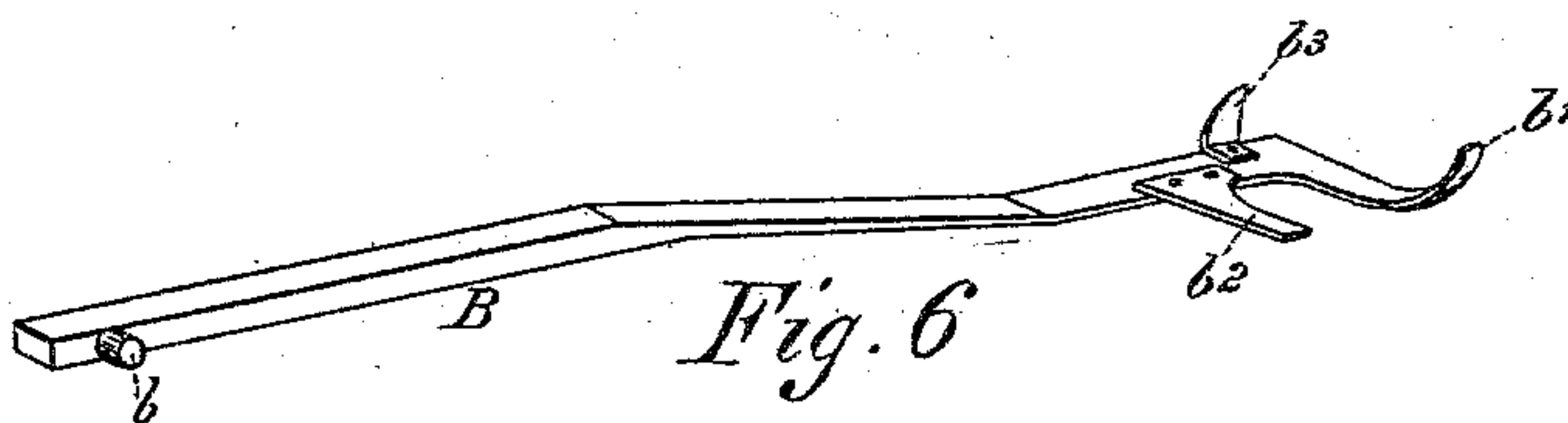
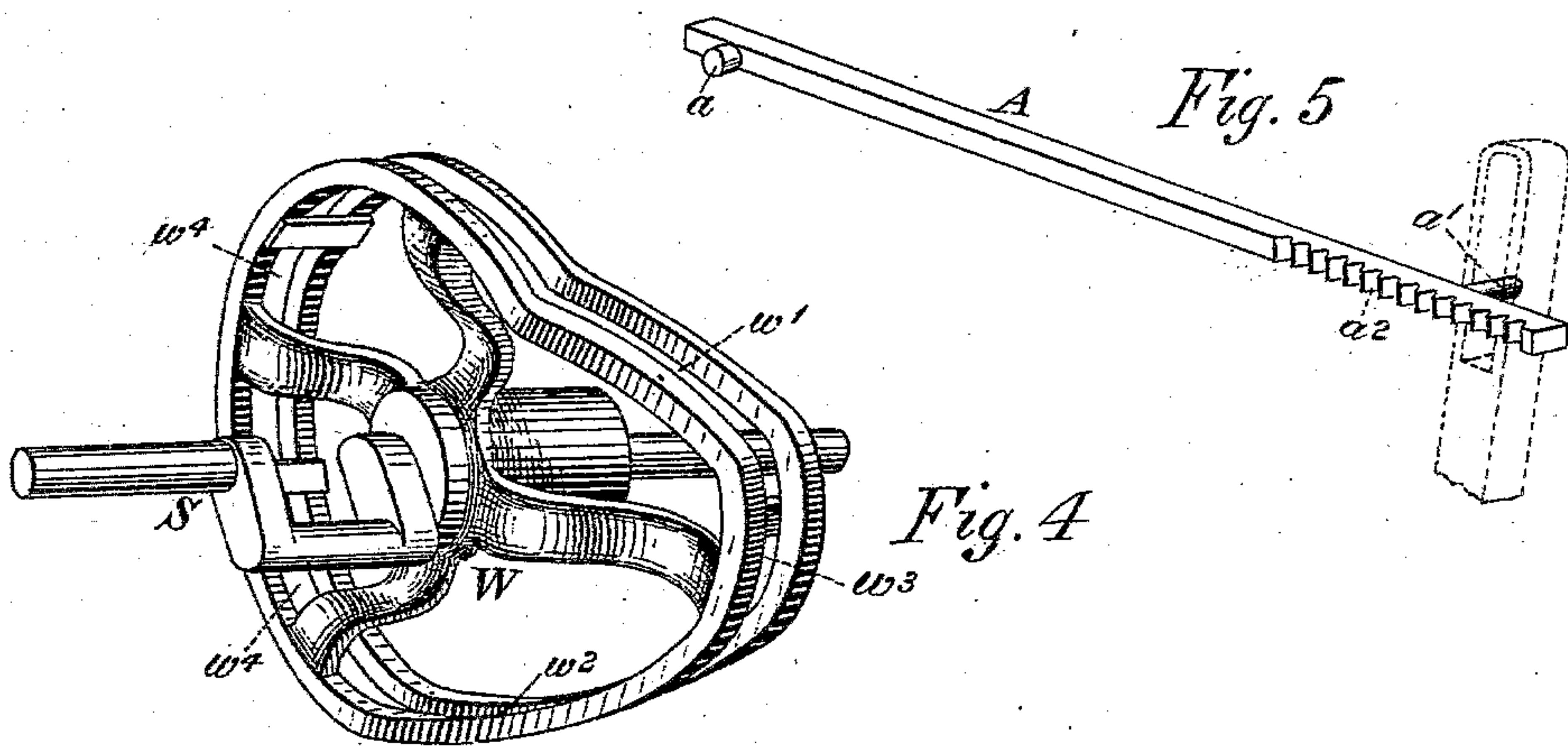
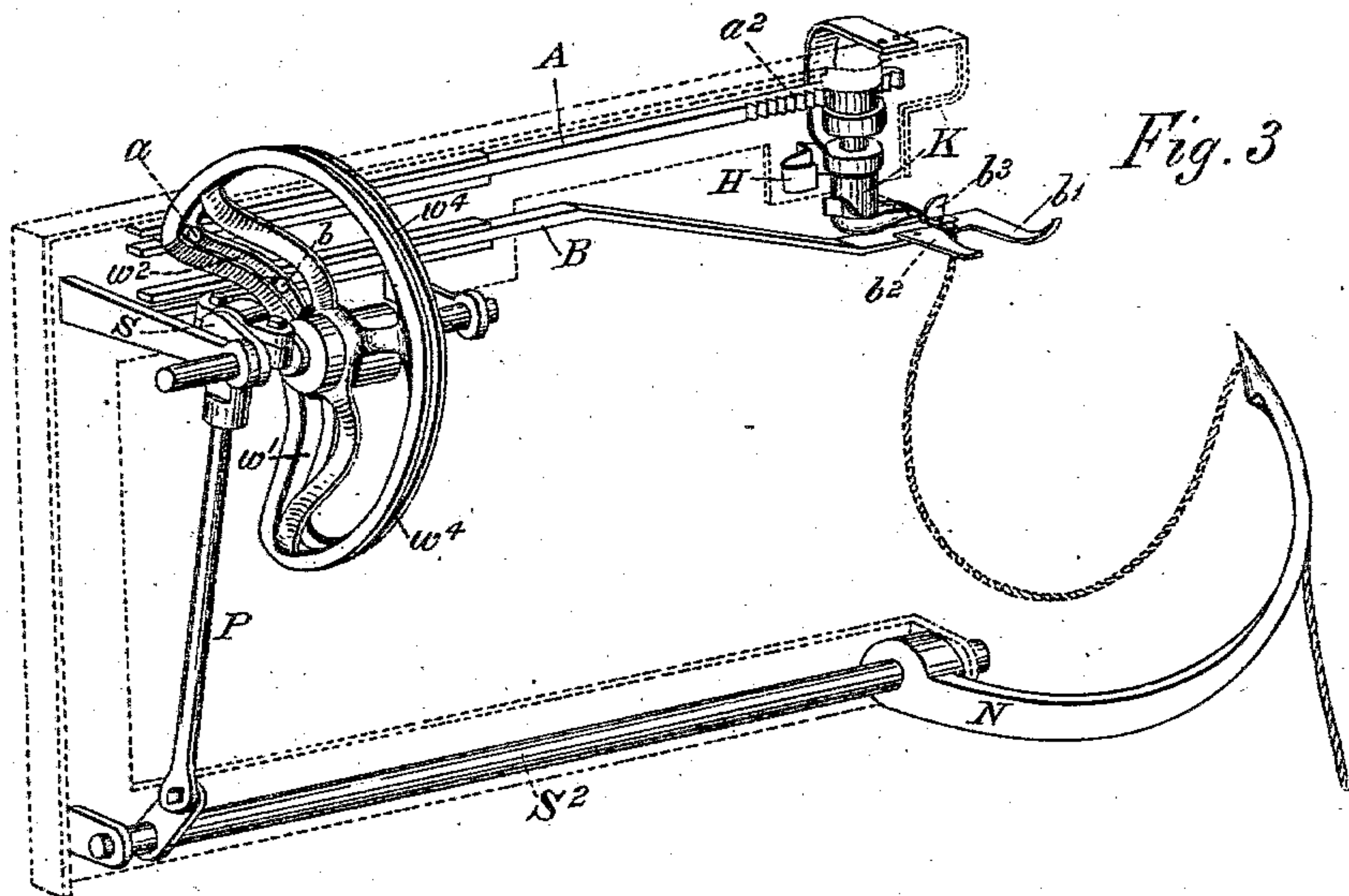
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Witnesses

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UNITED STATES PATENT OFFICE.

HENRY D. W. BAILEY, OF CANTON, OHIO.

GRAIN-BINDER.

SPECIFICATION forming part of Letters Patent No. 283,457, dated August 21, 1883.

Application filed March 9, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY D. W. BAILEY, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Grain-Binder, of which the following is a specification.

The objects of my improvements are, first, to provide a grain-binder in which two reciprocating rods or bars will transmit motion from a single cam-wheel located at or near the end of the machine to the entire cord-holding, knotting, cutting, and stripping devices; second, to provide a single reciprocating rod for operating both the cord-holding and knotting devices; third, to provide a single reciprocating rod for carrying and operating both the cutting and stripping devices by a direct motion; fourth, to provide a grain-binder in which the transmitting-rods which operate the entire cord-holding, knotting, cutting, and stripping devices are operated by a single cam-wheel located at the end of the machine for the following purposes: to make direct connection with the harvesting-machine and the main shaft of the binder; to remove weight from the forward end of the overhanging arm of the binder-frame to the end of the said frame; to render the aforesaid devices easy of access, and to permit the same to be easily inclosed, because being alone and brought close together they occupy but a small space; to get greater room for the grain to be received and bound; fifth, to provide a cam-wheel having a cam-groove which will give said two rods a reciprocating motion, and in which the same cam-wheel will operate said rods or bars in succession, and which will hold one or both stationary at proper intervals. This cam-wheel is so constructed that it can be placed at one end of the frame, so as to operate said cord holding, knotting, cutting, and stripping devices through the rods from that end of the machine. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my invention. Fig. 2 is a similar view at another stage of its action, and Fig. 3 is a view at yet another stage of its operation. Fig. 4 is a detached view of the cam-wheel and crank-shaft. Fig. 5 is a detached view of the rod or bar A,

and Fig. 6 is a detached view of the rod or bar B.

Similar letters refer to similar parts throughout the several views.

F is the frame of the machine. To this frame are attached two brackets, a^2 a^3 , which support a crank-shaft, S, which is the main shaft of the binder. This crank-shaft carries and operates a cam-wheel, W, and has attached to its outer end a sprocket-wheel, S', which is connected directly with the harvesting-machine to which the grain-binder is attached, thus procuring direct connection of the said harvester with the shaft carrying the cam-wheel, and thus entirely discarding the series of intervening gear-wheels now generally, if not universally, used. This crank-shaft also operates, through the pitman P, the oscillating shaft S', which carries the binder-arm N, this arm being located at a point about equidistant from the ends of the grain-binder. (The platform for receiving the grain not being here shown.)

The cam-wheel previously referred to has two peripheral cam-flanges, each of which forms one side of a tortuous cam-groove, w' , w^2 , w^3 , and w^4 . This cam-wheel reciprocates two horizontal bars, A and B, acting upon each alternately, and holding one or both at rest at proper intervals. This cam-wheel is so constructed that the bars will be operated or held stationary "in time" with the action of the other parts of the grain-binder.

The reciprocating bar A, previously referred to, has at one end a friction-roller, a , which travels in the groove of the cam-wheel. Near its opposite end is a pin, a' , to which the lever of the cord-holder H is attached. This bar has at the same end a toothed rack, a^2 , which meshes with the pinion of the knotter.

The reciprocating bar B, previously referred to, has at one extremity a friction-roller, b , which travels in the groove of the cam-wheel, as the friction-roller of the bar A does. This bar B carries at its opposite extremity a stripper, b^2 , and a knife, b^3 , and a guard or cord-guide, b^4 . These two bars move in ways x x' , forming part of the binder-frame.

The operation of this machine is as follows: The binder-arm N comes forward with the gavel and the cord which is around the same, and lays the cord across the knotter K, along-

side the cord previously laid there during the retreat of the binder-arm, and carries the end forward to the cord-holder H, ready to be secured. The cam-wheel W, (being operated by the crank-shaft S,) in its revolution, causes the inclined portion w' of the cam-groove to engage with the friction-roller of the bar A, driving the bar forward, as in Fig. 2, thereby causing its pin a' to act upon the lever of the cord-holder H, securing the ends of the cord and holding the same as the knot is being tied and the cord severed, while at the same time the knotter K is acted upon by the toothed rack a^2 , through its pinion, and the knotter is revolved, whereby the loop of the knot is formed. As the cam-wheel revolves yet further the bar A holds the knotter and cord-holder stationary for a moment by means of its friction-roller traveling in the portion w^3 of the cam-groove, while at the same time the inclined portion w' engages with the friction-roller b of the bar B, driving the bar forward with the knife and stripper, by which movement the knife passes forward between the knotter and cord-holder, severing the cords which extend from the one to the other, and the stripper passes forward between the knotter and sheaf, bearing heavily upon the cords which extend from the one to the other, forcing the cords forward, and thereby stripping the loop from off the knotter and over the severed ends, thus completing the knot. As the cam-wheel revolves yet further the inclined portion w^2 of the cam-groove engages with the friction-roller of the bar A, driving the bar backward, thereby causing the cord-holder to be placed in position to secure the end of the next cord as the binder-arm brings it forward, while at the same time the knotter is acted upon and a counter-revolution is made, placing it in position to receive the next cord and to tie the next knot. During this movement of the bar A the bar B, with its knife and stripper, are held stationary by its friction-roller traveling in the short portion w^3 of the cam-groove. As the cam-wheel revolves yet further the bar A is held stationary by its friction-roller moving in the long straight portion w^4 , while at the same time the bar B is driven backward by its friction-roller being acted upon by the inclined portion w^2 of the cam-groove, by which move-

ment the knife and stripper are again returned to their normal positions. As the cam-wheel continues its revolution both the bars A and B are held stationary by their friction-rollers traveling in the long straight portion w^4 until the inclined portion w' of the groove is again reached and acts again in the manner heretofore described. When the inclined portions of the cam-groove are acting on the rods the crank is in its highest position, so as to keep the binder-arm up.

I do not claim the cord-holder H or knotter K in my present application, these forming the subject-matter of other applications heretofore filed by me.

I am aware that prior to my invention grain-binders have been made with cams to operate one or more of the knotting, cord-holding, cutting, and stripping devices, such cams being located at or attached near or to said devices, and operating one or more of the same through various machines.

I am also aware that bars or rods have been made to operate the cord-holder and knotter separately by a reciprocating motion; also, that devices have been made with a knife and stripper having a lever action; also, that cam-wheels of various kinds have been made and used in grain-binders; but

What I claim, and desire to secure by Letters Patent, is—

1. The combination, with the cam-wheel, the cord-holder, and the knotter, of the reciprocating bar A, having the friction-roller a for working in the groove of the cam-wheel, the pin a' for operating the cord-holder, and the toothed rack a^2 for operating the knotter, substantially as described.

2. The combination, with the cam-wheel, of the reciprocating bar B, having the friction-roller b at one end for working in the groove of the cam-wheel, and having at the opposite end the knife and the stripper, substantially as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses:

HENRY D. W. BAILEY.

Witnesses:

B. J. DOUDS,
HERBERT SPENCER.