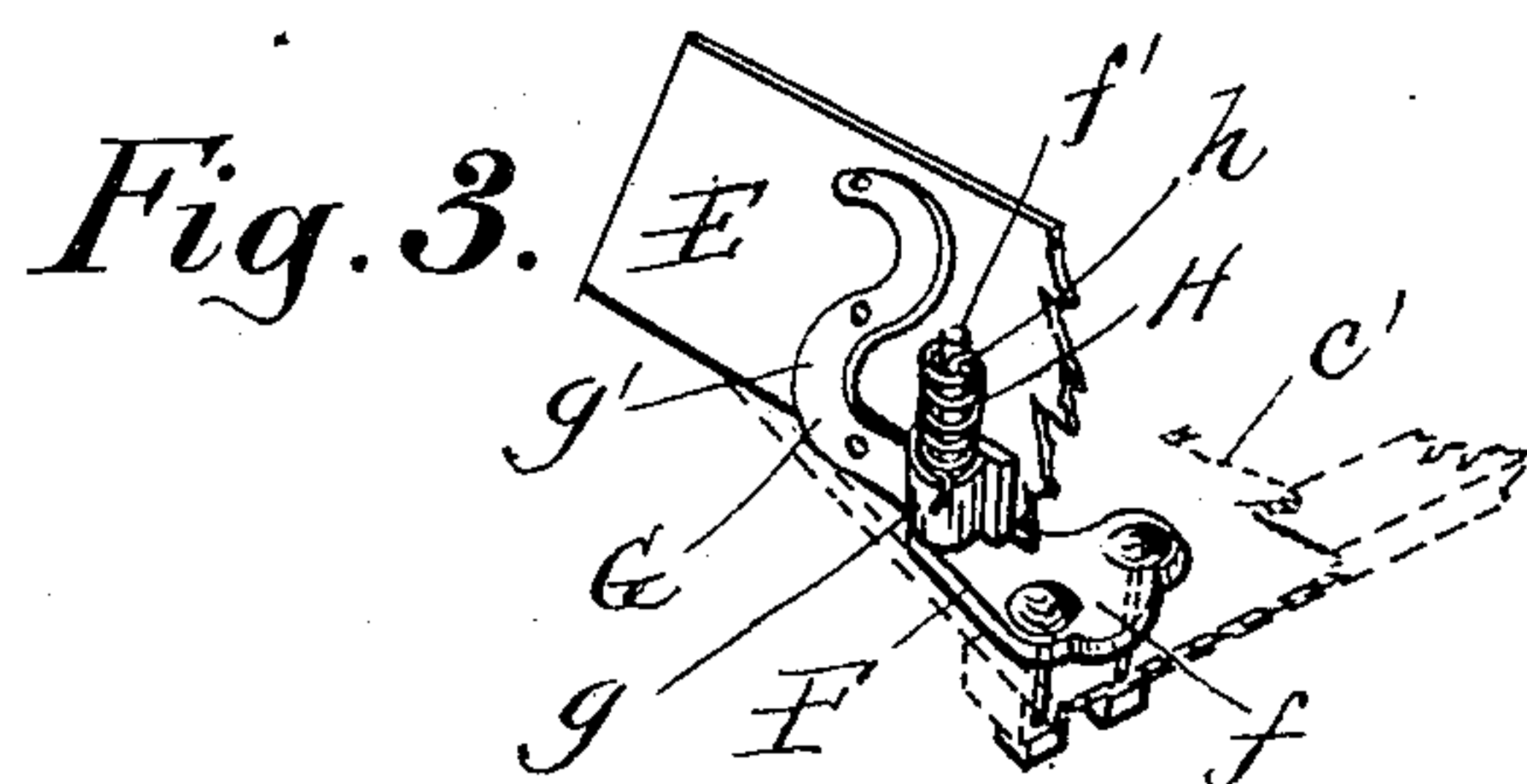
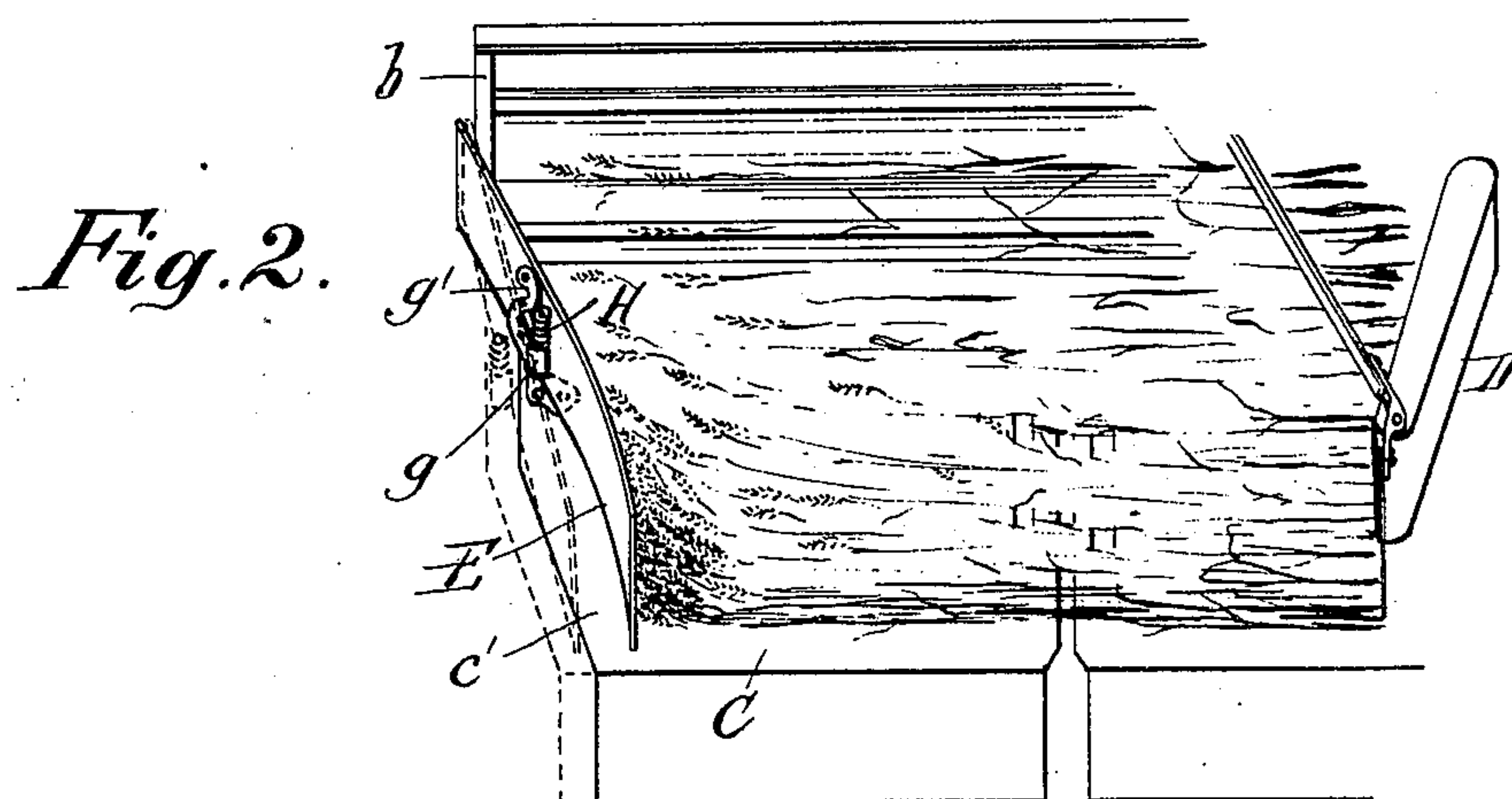
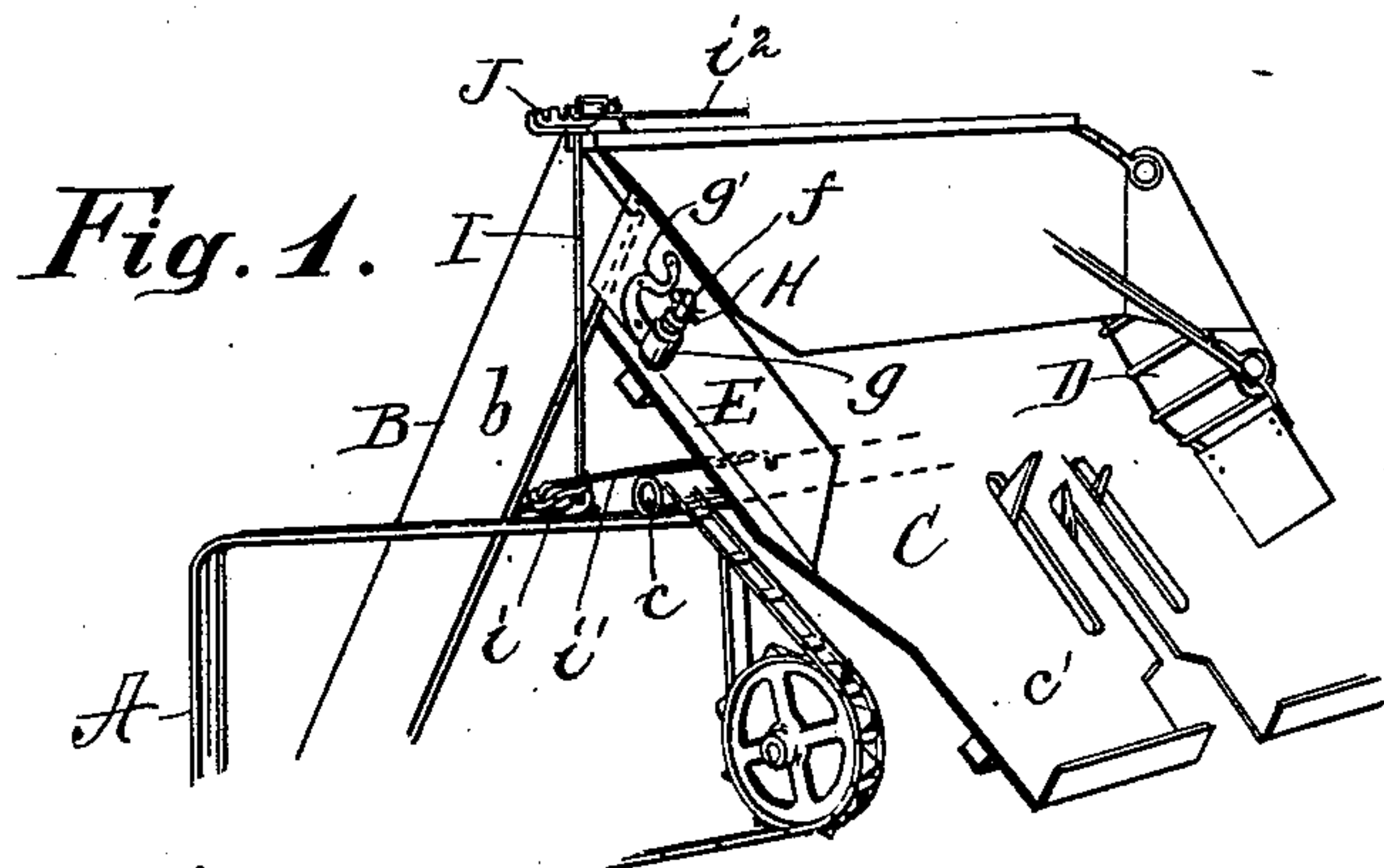


(No Model.)

J. MACPHAIL.  
HEAD BOARD FOR GRAIN BINDERS.

No. 567,148.

Patented Sept. 8, 1896.



Witnesses  
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# UNITED STATES PATENT OFFICE.

JAMES MACPHAIL, OF BLUE ISLAND, ILLINOIS, ASSIGNOR TO THE PLANO MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS.

## HEAD-BOARD FOR GRAIN-BINDERS.

SPECIFICATION forming part of Letters Patent No. 567,148, dated September 8, 1896.

Application filed May 14, 1894. Serial No. 511,137. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES MACPHAIL, a citizen of the United States, residing at Blue Island, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Head-Boards for Grain-Binders, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a perspective view of the rear end of a grain-binder and elevator-frame embodying my invention; Fig. 2, a front side elevation of the same, and Fig. 3 a detail perspective view showing the means for attaching the head-board to the binder-frame.

In the drawings, Figs. 1 and 2 are upon one scale, and Fig. 3 is upon another and enlarged scale.

My invention relates to the device generally known as a "head-board," which is usually hinged or pivoted to some suitable support at the rear of the machine for the purpose of guiding and adjusting the heads of the grain as the latter is delivered from the elevator to the binder. These head-boards are designed for use with adjustable grain-binders, that is, binders which are movable toward the front or rear of the machine to suit different lengths of grain, and it is intended that the head-board shall turn on its pivot with this sliding movement of the grain-binder, so as to operate as required with different lengths of grain.

The invention consists in pivoting or hinging the head-board to the binder at a point somewhere between the respective ends of the board, in connection with a spring operative normally to throw the upper end of the board inward, which end extends a little beyond the elevator-frame at the rear side of the latter.

The improvement is applicable to any grain-binding harvester of ordinary construction, with the binder movable toward the front or rear of the machine, which is now the usual construction, in order to adjust the binder to different lengths of grain. Hence, there is no necessity for showing and describing a

full machine, and I have shown only such parts of a grain-binding harvester as are necessary for an understanding of the construction and operation of my improvement and shall confine the description to these parts.

In the drawings, A represents a portion of the upright frame, and B the elevator-frame, constructed and arranged in the usual way. The grain-binder C is also of ordinary construction in all its general features and is mounted in any suitable way to permit a sliding movement toward the front or rear of the machine. The construction indicated in the drawings is one well known, in which the binder-frame is secured to a tubular bar *c*, arranged transversely of the binder-frame and mounted on supports on which it is free to slide. The incline *c'* of the binder is usually secured to this tubular bar, so as to move with it, and the grain is delivered by the elevator to the upper edge of the incline in the well-known way. The binder is provided with a butt-adjuster or butt-board D, mounted adjustably at the front end of the binder for the usual purpose. It is usual in grain-binders to also provide a device for adjusting the heads of the grain at the rear end of the binder. This device is generally known as the "head-board," and obviously it must be adjusted to correspond with the arrangement of the binder, so as to perform its function upon grain of different lengths. In the present improvement this head-board E is pivotally connected to the incline of the binder at a point between the ends of the head-board, both of these ends being left free and disconnected from any other part. This mounting of the head-board upon the binder may be effected in various ways. As shown in the drawings, the connecting device consists of a kind of bracket F, which is provided with a flat foot *f*, by which it is bolted or otherwise secured to the upper side of the incline, as seen in Fig. 3. A stud or post *f'* rises from this flat foot, and a suitable bearing-bracket G is secured to one side of the head-board, in this instance the outside, being constructed with a suitable bearing *g* at one end, adapted to receive the stud or post *f'*, and the bear-



ing passing down over this post becomes jour-  
naled thereon, thus providing for the vibra-  
tion of the head-board on this journal as a  
pivot. The bearing-bracket G in the draw-  
ings is shown provided with a long arm  $g'$ ,  
5 extending from the bearing  $g$  upward along  
the side of the head-board and thereby fur-  
nishing means for securing the bracket to  
this board by bolts passing through this ex-  
10 tension. This bearing-bracket is secured to  
the head-board between the two ends of the  
latter, but preferably nearer to the upper than  
the lower end, as seen in the drawings.

The length of the head-board and the po-  
15 sition of its pivotal support with reference to  
the elevator-frame are such that when the  
board is mounted in place its upper end will  
pass just a little beyond the rear side piece  
 $b$  of the elevator-frame, as seen in Fig. 1.  
20 The journal-post  $f'$  is considerably longer  
than the journal-bearing  $g$ , so that when the  
latter is applied thereto, as described above,  
the post will extend considerably above the  
bearing, and to this projecting portion of the  
25 post an actuating-spring H is applied, this  
spring, as seen in the drawings, being a coil  
surrounding the post, with its lower end con-  
nected to the bearing and its upper end to  
the post, as seen in Fig. 3, and held thereto  
30 by means of a pin  $h$ . The arrangement of  
this spring with reference to the bearing-  
bracket and other parts mentioned above  
is such that its normal action is to turn the  
upper end of the head-board inward, which,  
35 of course, will throw the opposite end of the  
said board outward. The spring therefore  
acts normally to hold the upper end of the  
head-board against and in contact with the  
side piece  $b$  of the elevator-frame, as seen in  
40 Figs. 1 and 2, and the relation is such that  
the spring will act to effect this result at the  
very limit of the rearward adjustment of the  
binder; but, as already stated, the head-board  
is entirely disconnected from the binder-  
45 frame or any other part of the machine,  
except by its journal attachment, already  
described, and therefore it is perfectly free  
to turn on its journal in either direction.  
Obviously upon moving the binder forward  
50 the upper end of the head-board will be turned  
outward by reason of its free contact with  
the elevator-frame, already described, which  
motion will, of course, throw the lower end  
of the said board inward, the actuating-spring  
55 yielding sufficiently to permit this motion.  
When, therefore, the binder is adjusted to  
suit shorter grain, the head-board is corre-  
spondingly adjusted by the inward throw of  
its lower end, as just stated above. Upon a  
60 movement of the binder to the rear again,  
the spring, the tension of which has been in-  
creased by the former adjustment just de-  
scribed, will, of course, act to turn this board  
in the opposite direction, the movement being

guided and controlled by the elevator-frame, 65  
with which the spring keeps the upper end of  
the head-board in constant contact. This ac-  
tion of the spring, of course, turns the lower  
end of the head-board outward, thus adjust-  
ing it to grain of greater length, as required, 70  
and as indicated in dotted lines in Fig. 2.

The head-board may be made of any suit-  
able material, in all cases comparatively thin  
and light, however. I prefer to make it of  
thin metal sufficiently elastic to yield some- 75  
what and thin enough to yield to a compar-  
atively light force along the portion below the  
journal attachment, that is, at the lower or  
outer end of the board. This is to provide  
for a limited yielding of the lower end of the 80  
head-board independently of any movement  
of the upper end, so that it will give slightly  
to the pressure even of the heads of grain as  
the latter pass down the incline, as indicated  
in Fig. 2. This accommodates to a reason- 85  
able extent the slight variations in the lengths  
of grain which occur, whatever the adjust-  
ment of the binder may be; but it is not an ab-  
solutely essential feature of the invention.

Means for adjusting the binder bodily, as 90  
described, are so well known that there is no  
necessity of any particular description here.  
It is sufficient to say that, for the purpose of  
showing working mechanism of some kind, I  
have illustrated a device for this purpose in 95  
Fig. 1, consisting of a shaft I at the rear of  
the elevator, having a crank-arm  $i$  at its lower  
end, which is connected by a link-rod  $i'$  with  
the binder, and a handle  $i''$  at its upper end.  
The swinging of the handle will, of course, 100  
oscillate the shaft, which will correspondingly  
move the binder. A notched sector J may be  
fixed at the upper end of the shaft, adapted  
to engage the handle to set any adjustment  
made. 105

As described above and shown in the draw-  
ings, the journal or pivot of the head-board  
is directly on the incline of the binder; but  
this is only a matter of judgment and con-  
venience, as this pivotal support may be fixed 110  
on some other part of the binder-frame, pro-  
vided the arrangement is such as to bring the  
parts into relation with each other, as de-  
scribed above.

It will be noticed, as already suggested 115  
above, that the head-board has no positive  
connection whatever with any part of the ma-  
chine except the binder, and it will also be  
noted that it is secured to the latter so that  
it can be easily and quickly removed. All 120  
that is required is to remove the fastening-pin  
from the journal-post, when the head-board  
and spring may be slipped off from the post  
and so completely detached from the machine.  
This provides for the attachment and detach- 125  
ment of the head-board without any difficulty  
and without disturbing any other part of the  
machine.



Having thus described my invention, what I claim to be new, and desire to secure by Letters Patent, is—

5 In a grain-binding harvester, an elevator-frame, in combination with a grain-binder adjustable transversely thereof, a head-board, E, of thin elastic metal to yield easily at its lower end, a pivot device connecting the said

board to the grain-binder, and an actuating-spring adapted to hold the upper end of the said board in contact with the elevator-frame, substantially as described.

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Witnesses:

LE OTIE LEIB,  
ALLAN A. MURRAY.