

(No Model.)

3 Sheets—Sheet 1.

G. B. & J. T. SNOW.

CORN HARVESTER.

No. 412,209.

Patented Oct. 1, 1889.

Fig 1

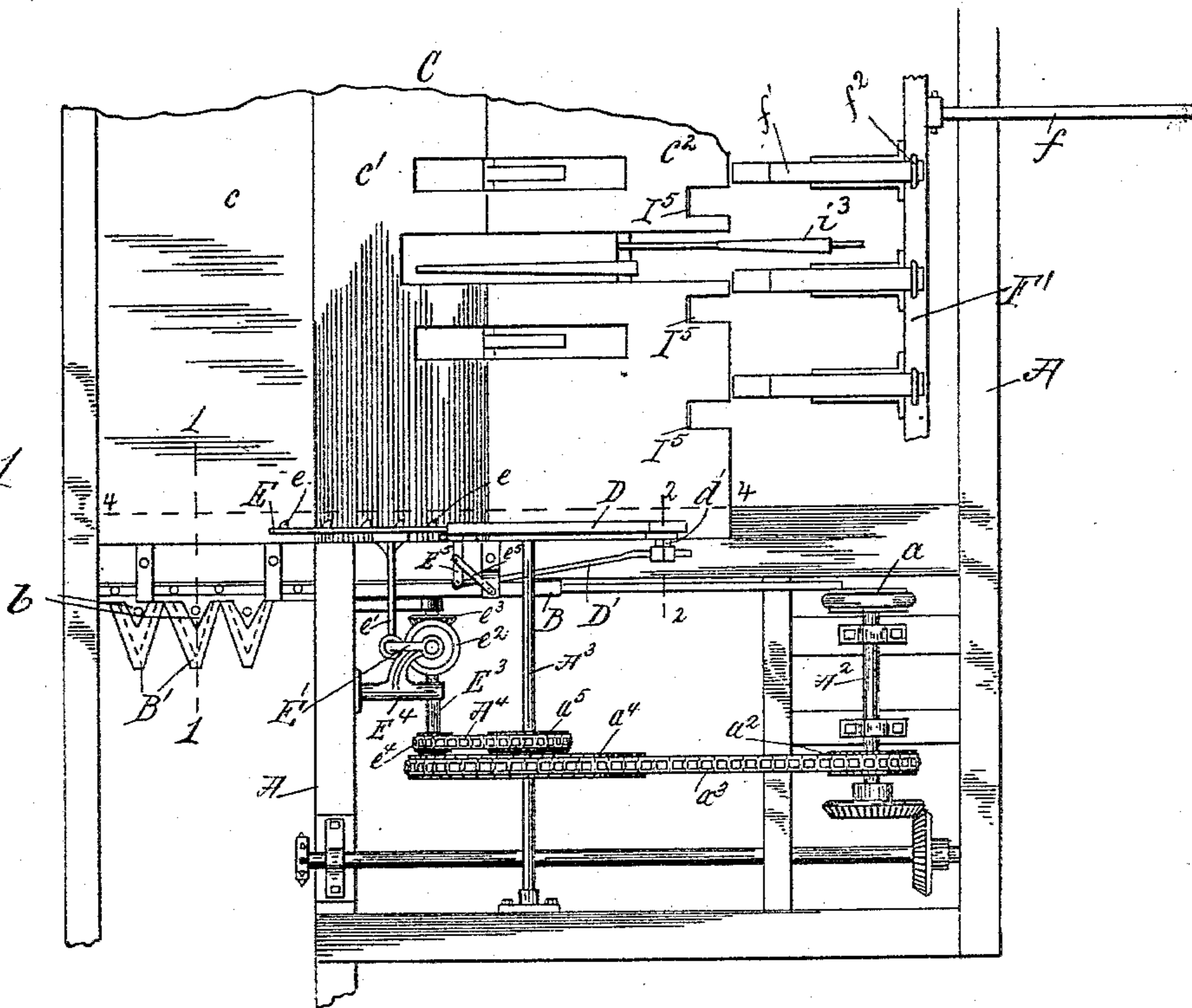


Fig 3

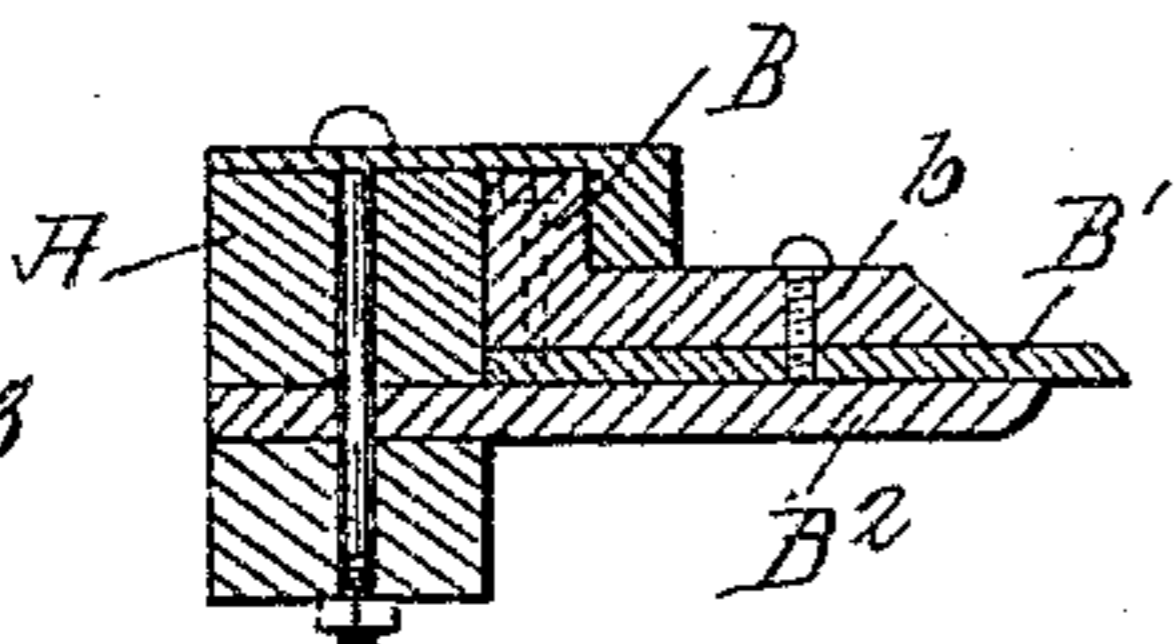


Fig 4

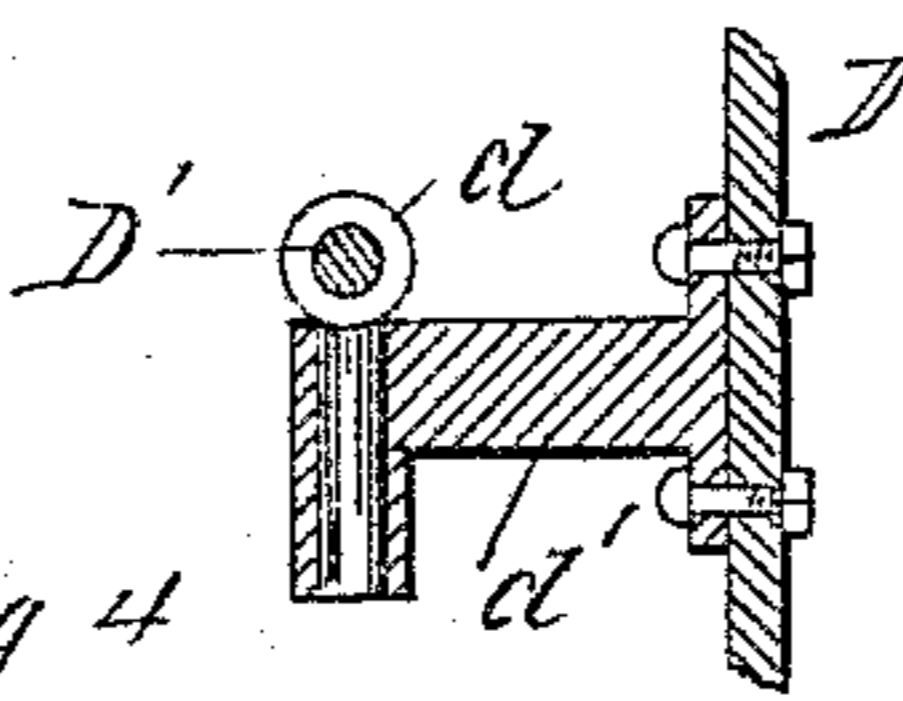


Fig 5

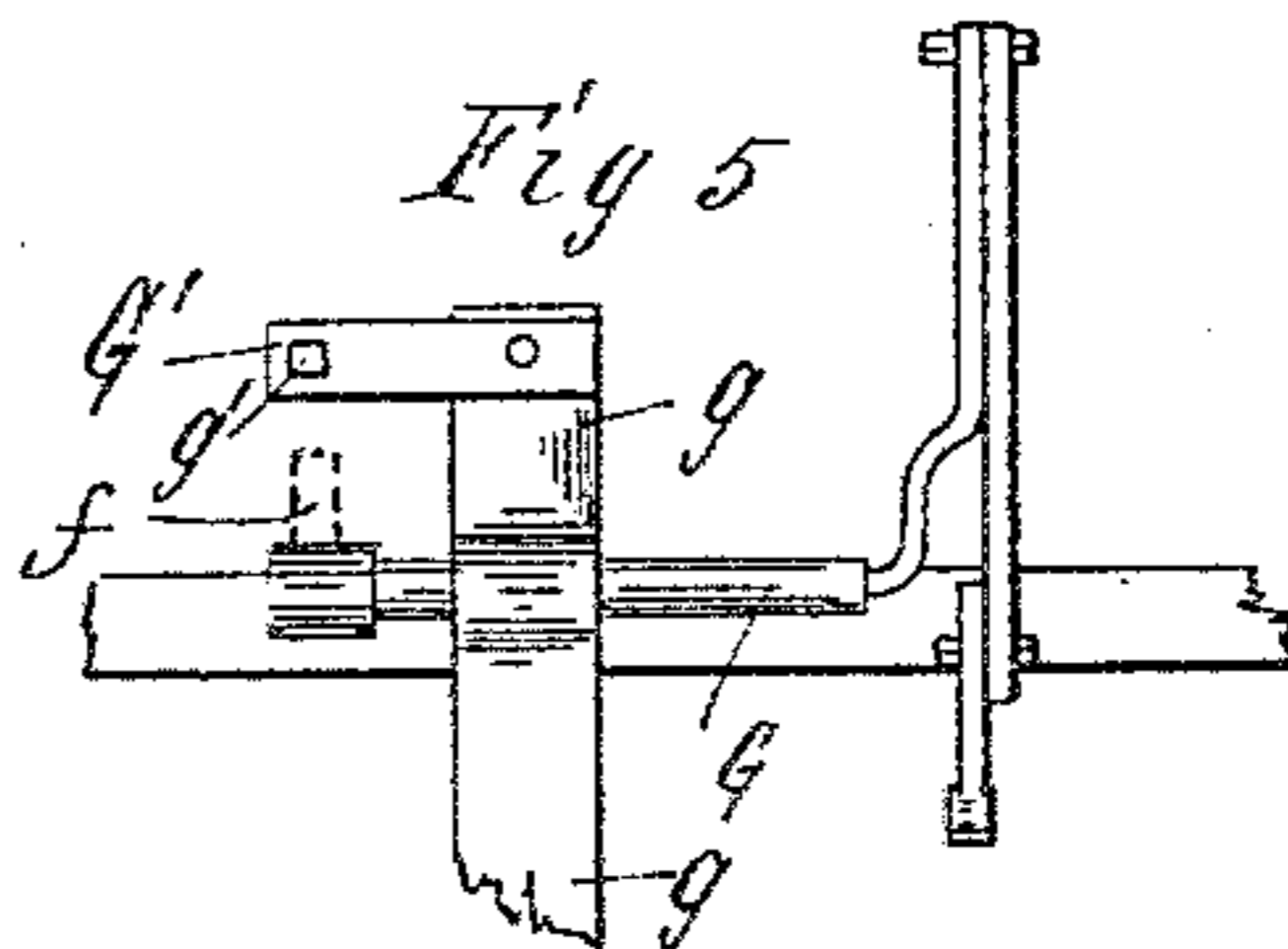
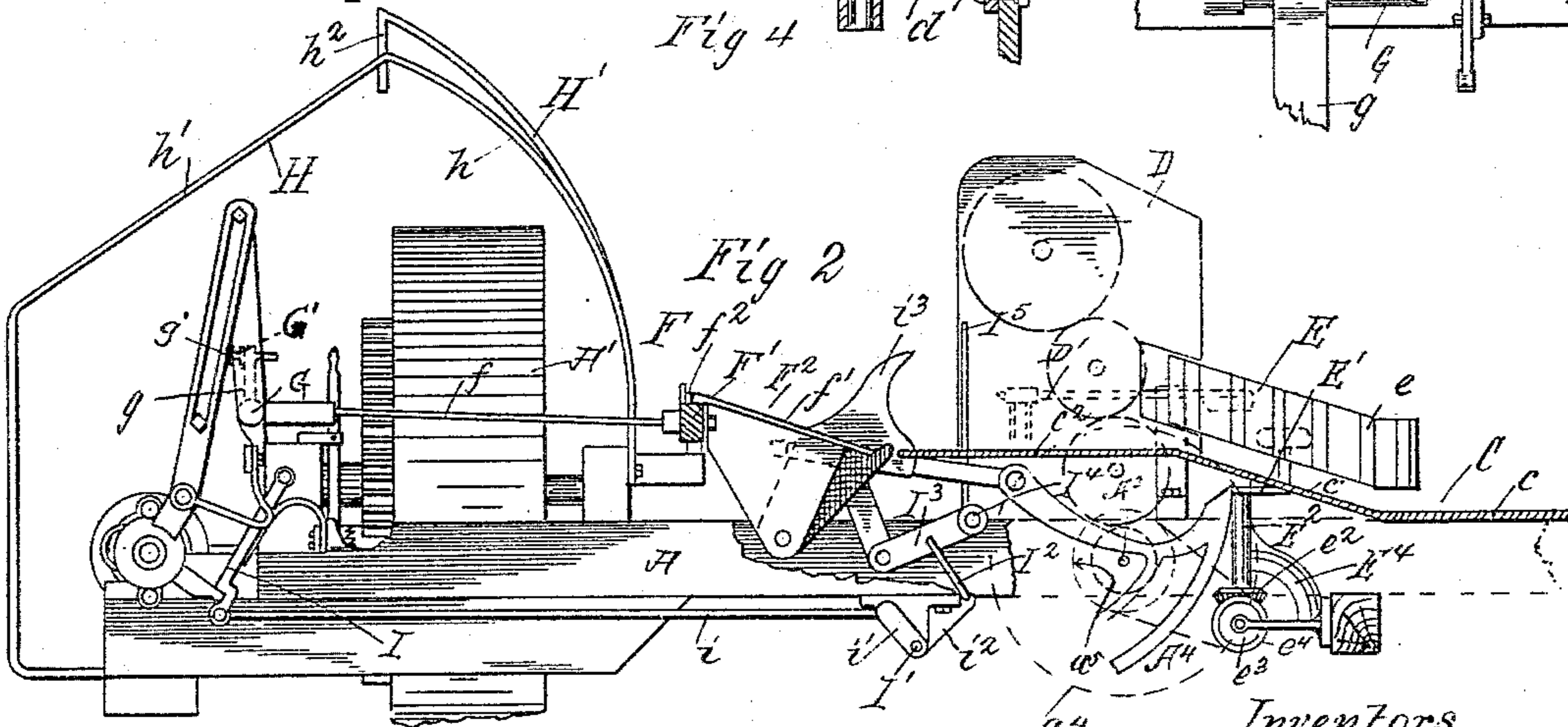


Fig 2



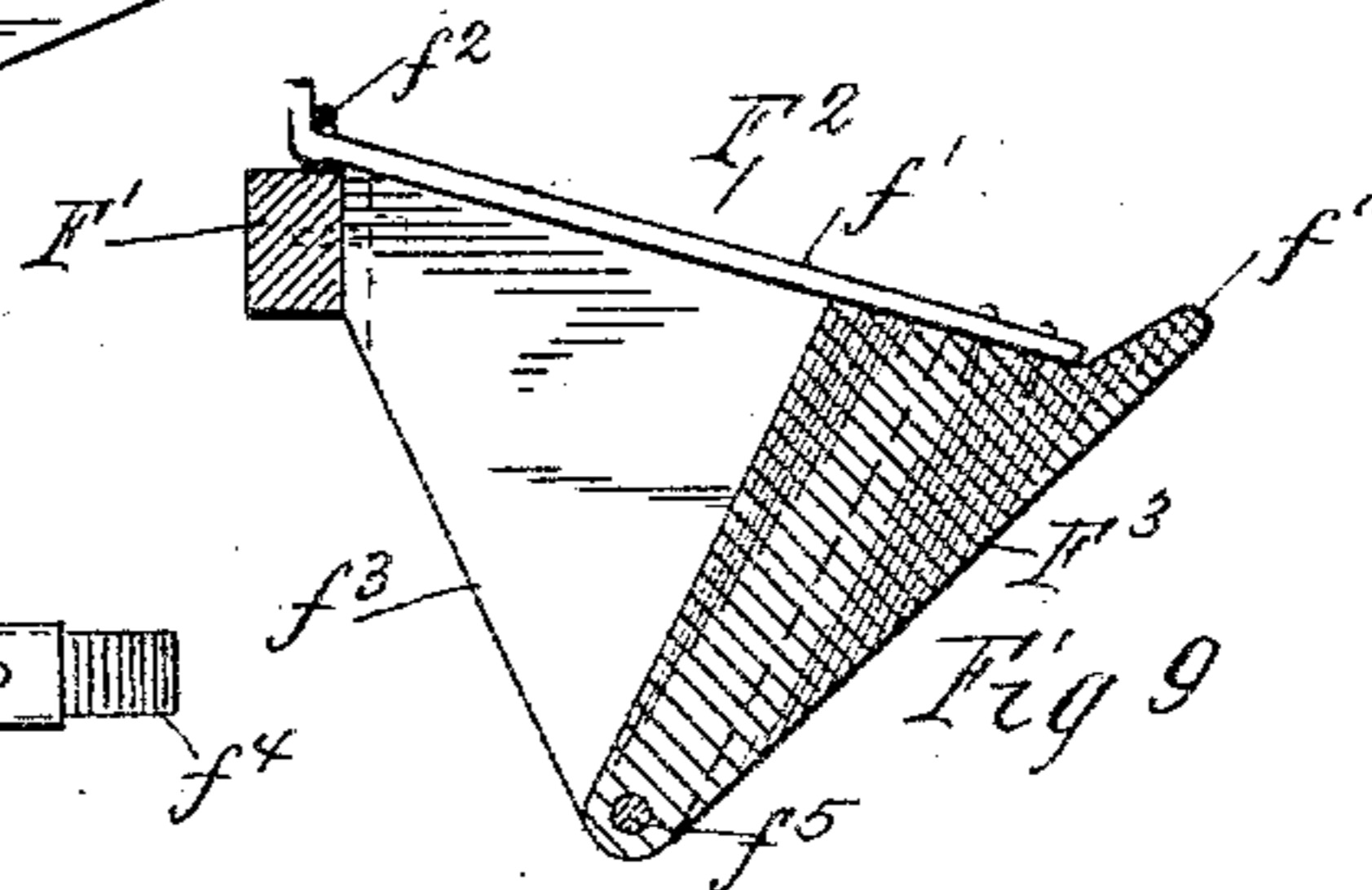
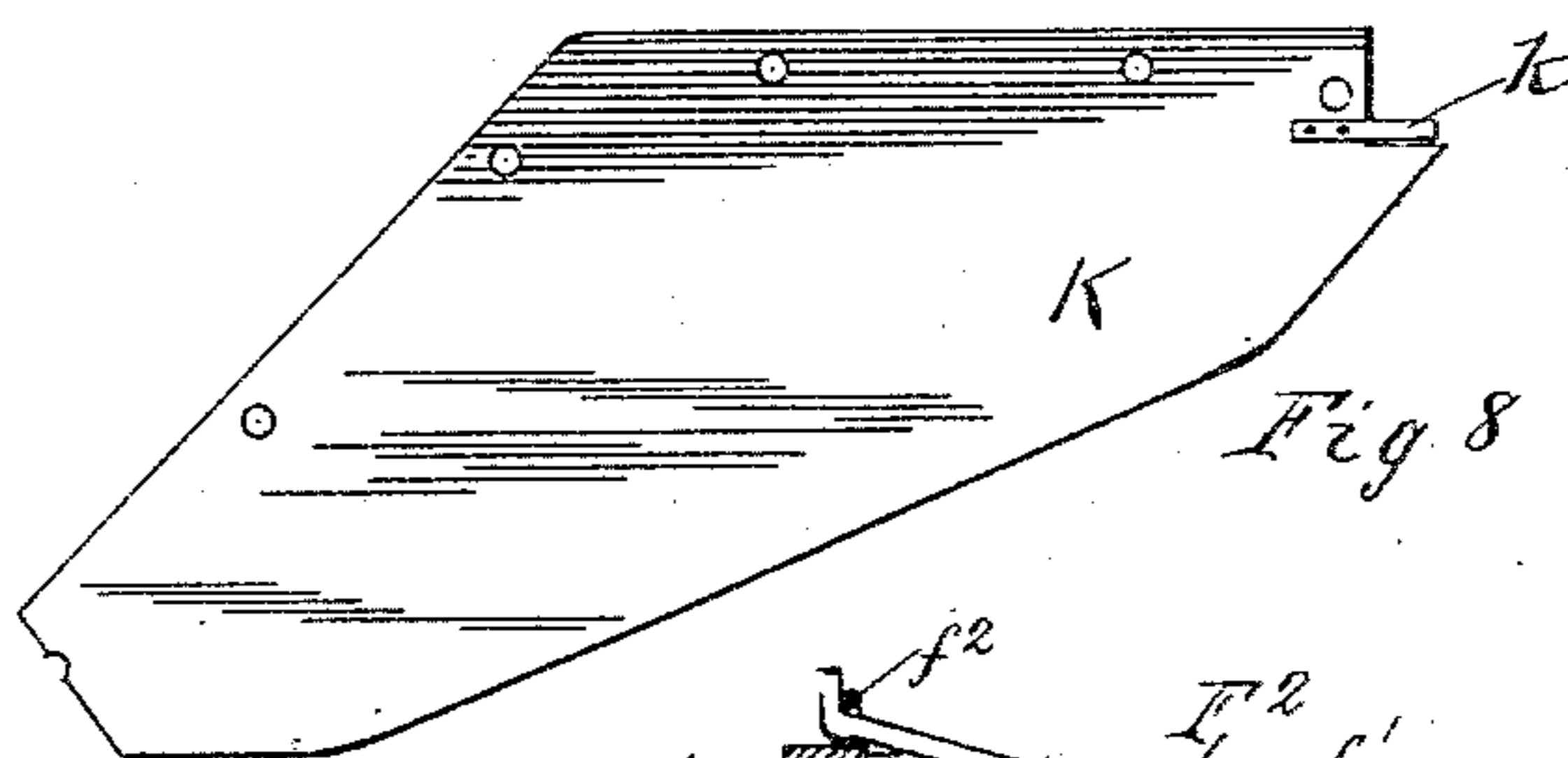
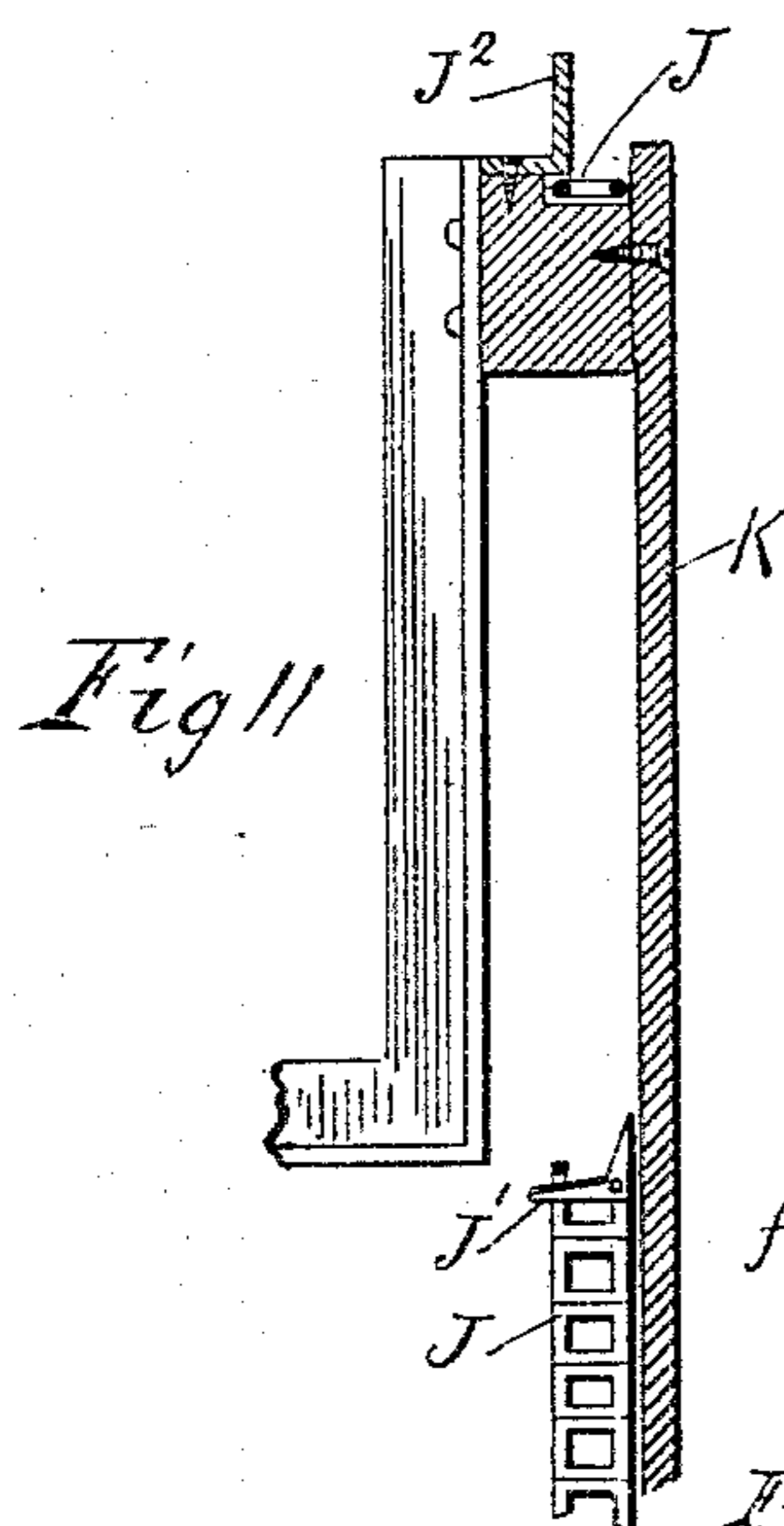
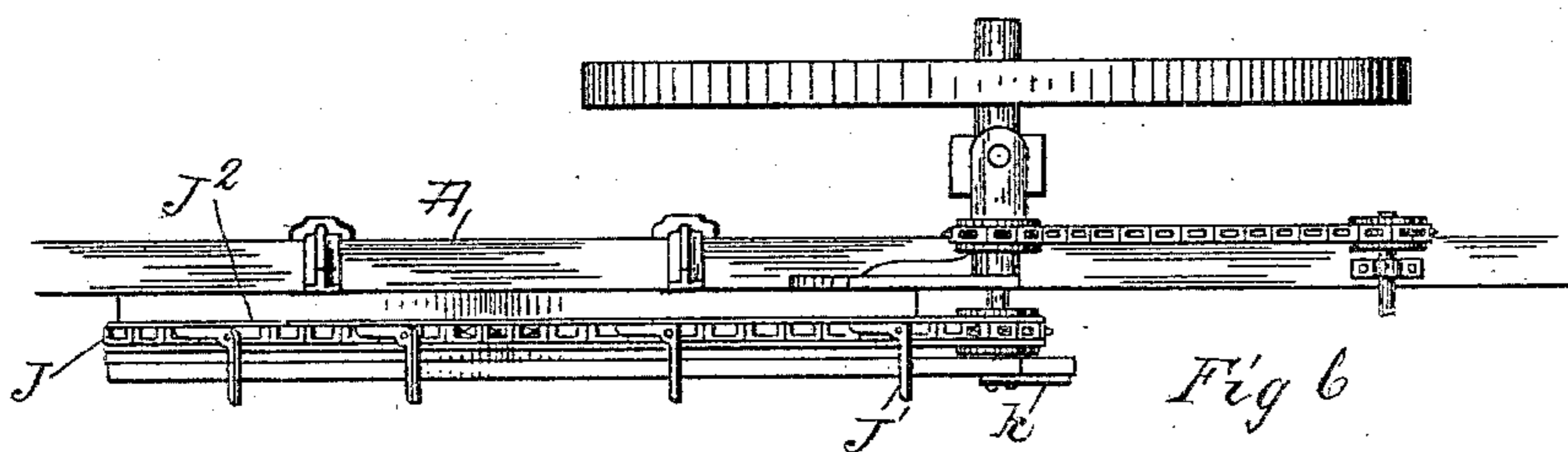
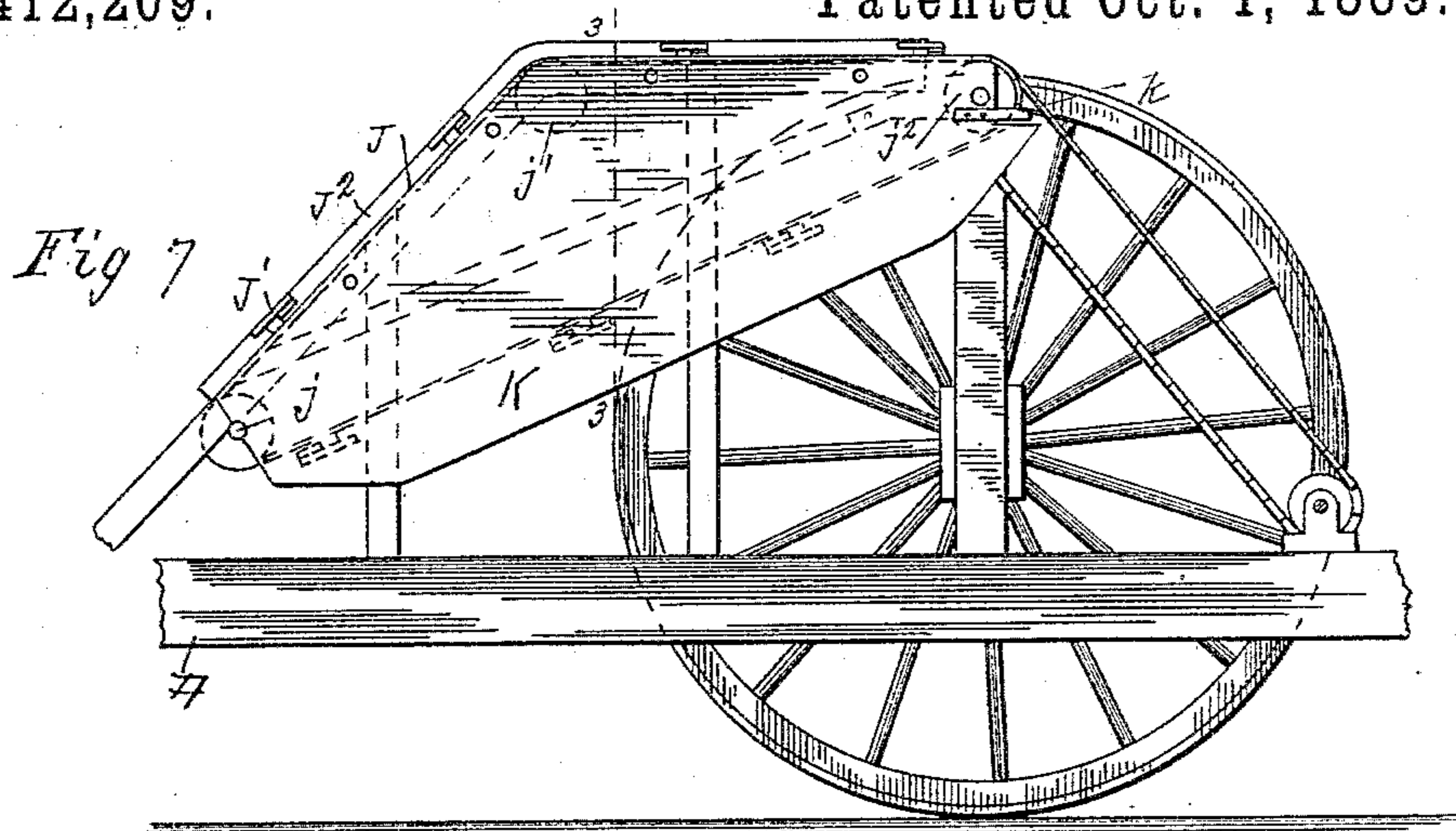
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3 Sheets—Sheet 2.

CORN HARVESTER.

Patented Oct. 1, 1889.



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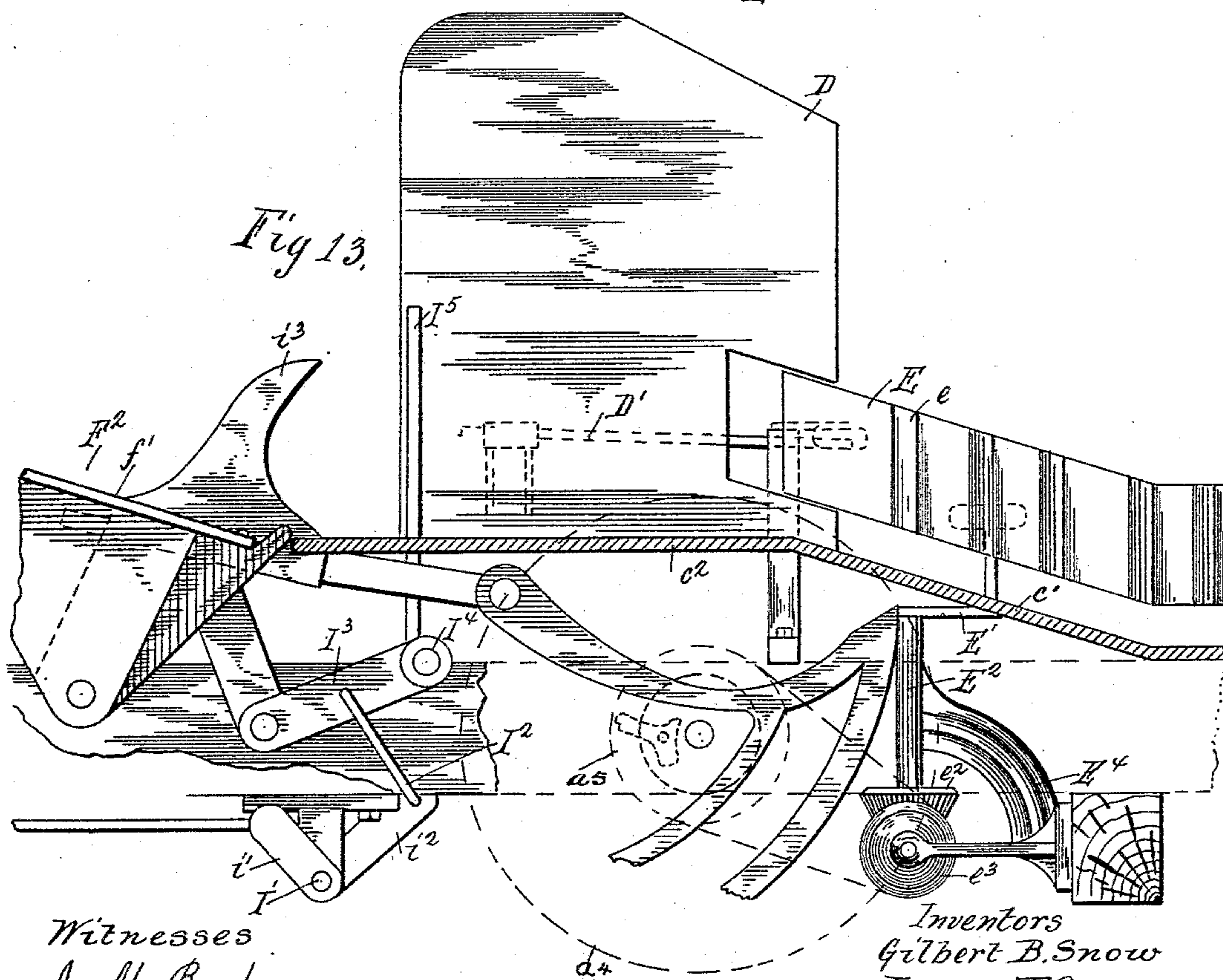
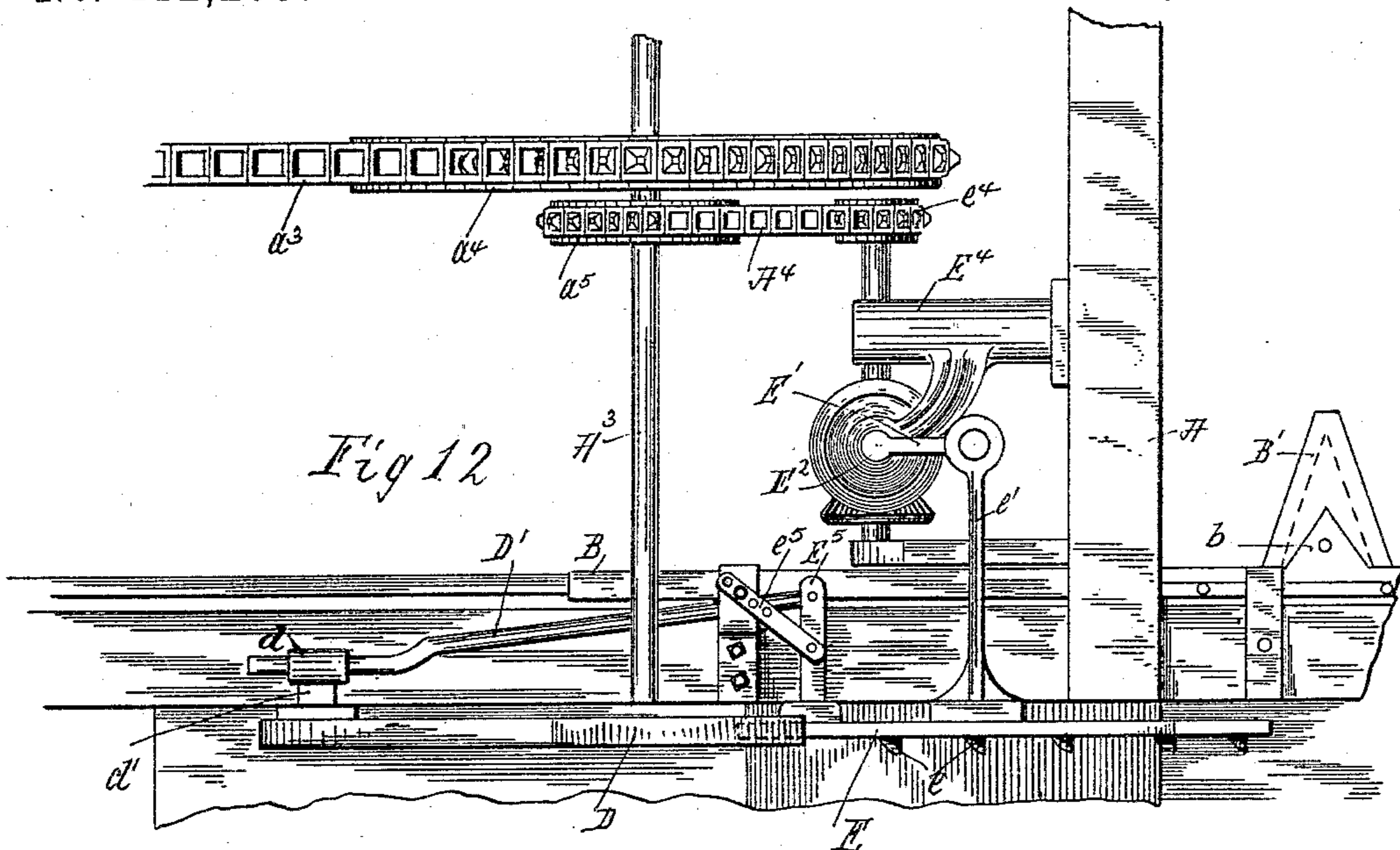
3 Sheets—Sheet 3.

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CORN HARVESTER.

No. 412,209.

Patented Oct. 1, 1889.



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UNITED STATES PATENT OFFICE.

GILBERT B. SNOW AND JAMES T. SNOW, OF SUGAR GROVE, ILLINOIS.

CORN-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 412,209, dated October 1, 1889.

Application filed October 17, 1888. Serial No. 288,394. (No model.)

To all whom it may concern:

Be it known that we, GILBERT B. SNOW and JAMES T. SNOW, citizens of the United States, residing at Sugar Grove, in the county of Kane and State of Illinois, have invented a certain new and useful Improvement in Corn-Harvesters, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a detail plan view of a portion of a machine embodying our invention; Fig. 2, a rear elevation of a portion of said machine; Fig. 3, a detail sectional view taken on the line 1 1 of Fig. 1; Fig. 4, a detail sectional view taken on the line 2 2 of Fig. 1; Fig. 5, a detail side elevation of a portion of the mechanism which operates the bundle-discharger; Fig. 6, a detail plan view of one of the carrying-chains and the adjacent parts; Fig. 7, a side elevation of the same, viewed from the inner side; Fig. 8, a similar view of the carrying-chain, shield, or guard, detached; Fig. 9, a sectional view of the bundle-discharger; Fig. 10, a plan view of a portion thereof; Fig. 11, a sectional view taken on the line 3 3 of Fig. 7; Fig. 12, an enlarged plan view of the butt-elevator and its associated mechanism, and Fig. 13 an enlarged sectional view taken on the line 4 4 of Fig. 1.

Like letters refer to like parts in all the figures of the drawings.

Our invention relates to corn-harvesters, and is in the nature of an improvement upon the invention set forth in Letters Patent No. 385,286, granted to us June 26, 1888, its object being to provide various improvements and alterations in the construction of said machine, whereby its operation will be rendered more effective.

To these ends our invention consists in certain novel features, which we will now proceed to describe, and will then particularly point out in the claims.

In describing our present improvements we shall only refer to and show such parts of the machine as are necessary to a proper understanding of their construction and operation, and it will be understood that the machine, so far as the main features of its construction are concerned, is identical with that set forth in our prior Letters Patent, hereinbefore referred to.

In the drawings, A represents the main frame, and A' the driving-wheel.

A² represents a shaft driven from the driving-wheel and provided with a crank-wheel *a*, to which is connected a pitman *a'*, to drive the cutter.

B represents the cutter-bar, to which the knives B' are secured in any suitable manner. The cutter-bar is provided at a point above each knife with a suitable rib or projection *b*, which extends over a portion of the top of the knife and serves to strengthen the same. The stationary guards B² are arranged underneath the knives. In our prior patent, hereinbefore referred to, these guards are shown as constructed of greater length than the knives, and consequently projecting forward of the same. In practice we have found that owing to this construction the stalks are liable to catch upon the points of the guards and thereby clog the machine. In order to overcome this difficulty, we make the guards B² of less length than the knives B', so that the guards do not project beyond the said knives, as clearly shown in Figs. 1 and 3 of the drawings. This construction renders it impossible for the stalks to catch upon the ends of the guards, since, even if they do so during the short time that the guards are not covered by the knives, the lateral motion of these latter will displace them immediately and bring them into proper position for cutting.

C represents the deck. In our prior Letters Patent, hereinbefore referred to, this deck is shown as constructed on a single continuous incline extending across the rear of the machine from the cutter to the binding mechanism. In its improved form this deck is constructed in three sections, to wit: a horizontal section *c* in the rear of the cutter, an inclined section *c'*, adjacent thereto and extending upward to the binder, and a second horizontal section *c''*, located at the binder and forming the binder-deck. By reason of this construction horizontal surfaces are provided, upon which the stalks may fall as they come from the cutter and upon which the stalks may lie and be held firmly during the operation of binding. Moreover, this horizontal position of the binder-deck serves to overcome a difficulty which exists when this deck

is inclined upward—to wit, the tendency of the butt-end of the bundle to drag during its discharge from the deck—thereby displacing the same and rendering the operation of the discharge-fingers ineffectual. This difficulty is of course overcome when the deck is horizontal.

D represents the transverse shield in front of the deck, and E the butt-evenner arranged parallel to said shield. This butt-evenner consists of an upright board or plate of suitable shape, provided with vertical slats or ribs e to engage with the butts of the stalks. To its front side is attached an arm e' , which is pivotally connected to a crank E' on a vertical shaft E^2 . This vertical shaft is provided at its lower end with a bevel-gear e^2 , which meshes with a corresponding gear e^3 on a short horizontal shaft E^3 . The shafts E^2 and E^3 are supported by means of a suitable bracket E^4 , attached to the main frame A.

A^3 represents a shaft parallel to the shaft A^2 and driven therefrom by a sprocket-chain a^3 , which passes over a sprocket-wheel a^2 on the shaft A^2 , and over a similar wheel a^4 on the shaft A^3 . The shaft A^3 is provided with a second sprocket-wheel a^5 , over which and over a sprocket-wheel e^4 on the shaft E^3 a sprocket-chain A^4 passes, rotating this shaft A^3 constantly. This shaft, like the corresponding one in our patent above referred to, drives the binder, which, as in the other case, may be of any preferred construction, the Appleby type, however, being the one intended to be represented in the drawings. This type of binder being now so well known, I have not deemed it necessary to show it herein in detail, nor does it seem necessary to describe it further than to state its connection with the shaft A^3 . This shaft A^3 is provided with the usual pinion adapted to drive the binder-train, the pinion being connected to the shaft in the ordinary manner, the clutch used for that purpose being the same as that shown herein to start the ejector. This clutch is operated, generally, by the compressor through the pressure of the bundle thereagainst; but it may be actuated by a separate trip. By this means power is transmitted to the shaft E^2 to rotate the same.

E^5 indicates an arm attached to the front of the butt-evenner E, and having pivoted to it one end of a guide-rod D' , the other end of which passes loosely through a bearing or guide d , pivoted in a bracket d' , attached to the front of the shield D. A link e^5 , one end of which is pivoted to the arm E^5 , has its other end suitably pivoted to a fixed support on the framing A, this latter connection being adjustable through the medium of a series of perforations in said link.

The butt-evenner thus constructed operates in the following manner: It first moves outward sufficiently to strike the butts of the stalks and even the same properly, and then moves to the right in Fig. 1 along with the stalks as they are carried up the incline c' .

It is then withdrawn forward, so as to clear the butts and return to its original position, when it is ready for another stroke. The stroke may be readily adjusted through the medium of the link e^5 .

F represents the bundle-discharger, secured to the rock-shaft G, and consisting of an arm f , connected to said rock-shaft and provided at its end with a transverse bar F' , to which the bundle-receiving cradle is attached. This cradle consists of separate fingers F^2 , each composed of two side plates f^3 , bolted to the bar F' and having between them a yielding guard F^3 , provided at its upper end with an upwardly-projecting finger f^4 , and pivoted at its lower end at f^5 between the plates f^3 . A spring f' is attached to this yielding guard and extends rearward through a staple f^2 on the cross-bar F' . This spring serves to press the yielding guard F^3 normally outward in the position shown. Being secured at its rear end by the staple F^2 , the spring will buckle or curve when the guard is forced toward the cross-bar, and when the pressure is removed it will assume the straight position shown, and thereby return the guard to its normal position. This guard serves when the bundle-discharger returns to its normal position to crowd back any stalks or ears which may project beyond the deck toward the discharger, and the yielding of the guard is obviously advantageous to prevent any locking of the parts and to permit the discharger to descend down to the position shown in the drawings or on a level with the deck. The post g , in which the rock-shaft G has its bearing, is provided with a spring G' , the free end of which is in turn provided with a forward-projecting screw g' , against which the arm f strikes at the end of its outward movement. The purpose of this spring is to accelerate the return of the bundle-discharger, which during its outward movement forces the said spring outward along with it. As soon, however, as the actuating mechanism is in position to permit the return of the bundle-discharger, this spring forces the same inward and causes it to return much more quickly. The screw g' may be adjusted in the spring G' , so as to project to a greater or less extent, and thereby regulate the action of said spring in an obvious manner.

H represents an arch extending over the main wheel A' and the adjacent mechanism, the inner part h of said arch being constructed upon a curve substantially parallel to the curve of motion of the bundle-discharger, while the outer part h' forms an incline from the highest point of said arch downward toward the side of the machine, said arch being preferably composed of a frame of rods covered with sheet metal. To the inner curved part h of said arch is attached a curved spring H' , provided at its free end with a downwardly-bent arm h^2 , which extends down through the arch. As the bundle is carried upward and outward by

the discharger, it compresses this spring H' until the latter lies flat upon the arch; but as soon as the bundle has passed clear of the end of said spring its elasticity forces it outward, and the downwardly-bent arm h^2 thereof acts as a cut-off to prevent any of the stalks from being carried back by the bundle-discharger on its return to its first position.

I represents the stop-arm, which controls the mechanism by which the bundle-discharger is operated, and i the rod by which said stop-arm is actuated. In our Letters Patent hereinbefore mentioned this latter rod is connected to a trip-arm, which is struck by the bundle as it leaves the binder. In our present construction the rod i is connected to a crank-arm i' on a shaft I' , the other end of which is provided with a crank-arm i^2 , which is connected by a link I^2 to the crank-arm I^3 on the rock-shaft I^4 , which operates the usual compressors i^3 of this type of binding mechanism. It will thus be seen that the stop-arm I in the present construction is positively actuated by the binder itself instead of by the bundle, and great surety of operation is thereby obtained.

In order to retain the stalks straight upon the binder-deck during the time when the bundle is being first formed and prevent them from swinging around or off the deck, I employ a series of yielding or spring arms I^5 . These arms are attached at their lower ends to the rock-shaft I^4 on each side of the compressor and extend upward therefrom, as shown in Figs. 1 and 2, above the deck C, and when the bundle is formed and ready to be discharged they drop along with the compressors i^3 , being attached to the rock-shaft which operates these compressors. They return to their upright position as soon as the bundle-discharger has started upon its upward travel, and, being spring-arms capable of yielding, they will not interfere with the working of the other parts in case they should happen to come in contact with them during this return movement.

J represents one of the carrying-chains which pass upward and rearward over suitable sprocket-wheels j , j' , and j^2 , and then return forward and downward from the sprocket-wheel j^2 to the sprocket-wheel j . This chain is provided with right-angled pivoted dogs J' , which during their upward and rearward motion are held with their arms in position to engage the stalks by means of suitable guides J^2 . This construction and operation are fully shown and described in our prior patent. During their return or forward movement these dogs have hitherto been allowed to swing freely, and we have found that they are liable to become entangled with the stalks. In order to prevent this, we have devised the guard or shield K, which is arranged inside of the lower portion of the said carrying-chain, between it and the stalks, and which not only prevents con-

tact between the carrying-chains and the stalks along that portion of the chain which is moving forward, but also holds the dogs firmly in position with their arms pointed away from the stalks. Each guard K is provided at its rear upper end with a spring k , arranged in the path of the inwardly-projecting arms of the dogs J' , and immediately adjacent to the sprocket-wheel j^2 . As the sprocket-chain J passes over this wheel, the projecting arm of each dog will strike upon the spring k , and will be turned into position to bear against the guard K, as shown in the drawings. The spring acts in an obvious manner as a cushion to prevent the shock which would occur if the dogs struck directly against the unyielding guard K.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a corn-harvester, the combination, with the stationary guards B^2 , of the reciprocating cutting-knives B' , arranged above said guards and extending forward of the same, substantially as and for the purposes specified.

2. In a corn-harvester, the combination, with the cutting and binding mechanism, of the vertically-swinging bundle-discharger arranged at the stubble side of the binding mechanism and provided with guards extending downward from its inner end, substantially as and for the purposes specified.

3. In a corn-harvester, the combination, with the cutting and binding mechanism, of the vertically-swinging bundle-discharger arranged at the stubble side of the binding mechanism and provided with fingers, each having a yielding guard, and a suitable spring to press the guard outward, substantially as and for the purposes specified.

4. In a corn-harvester, the combination, with the arm f and cross-bar F' , of the fingers F^2 , each composed of side plates f^3 , attached to said cross-bar, guard F^3 , pivoted between said plates, and spring f' , interposed between said guard and cross-bar, substantially as and for the purposes specified.

5. In a corn-harvester, the combination, with the binder, of the vertically-swinging bundle-discharger, its operating mechanism, and a trip for throwing said mechanism into connection, substantially as described, and a connection between the binder and said trip, whereby the latter is operated by the binder to start the bundle-discharger, substantially as and for the purposes specified.

6. In a corn-harvester, the combination, with the bundle-discharger and its operating mechanism, of the stop-arm I, controlling the same, the rod i , connected thereto, the shaft I' , having crank-arms i' and i^2 , the former connected to the rod i , the rock-shaft I^4 , carrying crank-arm I^3 , and the link I^2 , connecting said crank-arm and the crank-arm i^2 , substantially as and for the purposes specified.

7. In a corn-harvester, the combination,

with the vertical shaft E^2 , having crank-arm E' , of the butt-elever having arm e' pivoted to said crank-arm, the arm E^5 , connected to said butt-elever, the guide-rod D' , pivoted to
 5 said arm at one end, the pivoted bearing d , through which the other end of said guide-rod passes, and the link e^5 , having one end pivotally connected to the butt-elever and its
 10 other end adjustably pivoted to a suitable fixed support, substantially as and for the purposes specified

8. In a corn-harvester, the combination, with the gathering and carrying chains, arranged in vertical planes, and their pivoted
 15 dogs, of the shield K , arranged on the inner side of each chain along the forward-moving portion thereof, substantially as and for the purposes specified.

9. In a corn-harvester, the combination,
 20 with the main wheel and the bundle-discharger swinging over the same, of the arch H , arranged over the wheel and having the inner part h curved to conform to the curved motion of the discharger, an outer part h' , inclined downward and outward, and a curved
 25 spring H' , attached at its lower end to the curved portion h of the arch and provided at its upper end with the downwardly-bent arm h^2 , substantially as and for the purposes specified.
 30

10. In a corn-harvester, the combination, with the vertically-swinging bundle-discharger and its operating mechanism, of a
 35 spring arranged in the path of said bundle-discharger near the outer limit of its motion and adapted to engage with the same and assist its return, substantially as and for the purposes specified.

11. The combination, with the vertically-swinging bundle-discharger F , having arm f ,
 40 of the spring G' , attached to a suitable support and provided with an adjustable screw g' , arranged in the path of the said arm near the outer limit of its motion, substantially as and for the purposes specified. 45

12. In a corn-harvester, the combination, with the binding mechanism and the vertically-swinging bundle-discharger arranged at the delivery side thereof, of yielding arms projecting above the binding-deck on each side
 50 of the compressor and between the latter and the needle-shaft, substantially as and for the purposes specified.

13. In a corn-harvester, the combination, with the vertically-swinging bundle-discharger and the binding mechanism provided with the rock-shaft I^4 , which operates the
 55 compressors, of the arms I^5 , attached to said rock-shaft and projecting normally upward above the deck on each side of the compressor
 60 and between it and the needle-shaft, substantially as and for the purposes specified.

14. In a corn-harvester, the combination, with the gathering and carrying chains and their pivoted dogs, of the shield K , arranged
 65 on the inner side of each chain along the forward-moving portion thereof and provided at its rear upper end with a cushioning-spring k , against which the dogs strike at the beginning of their forward motion, substantially as and for the purposes specified.

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Witnesses:

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