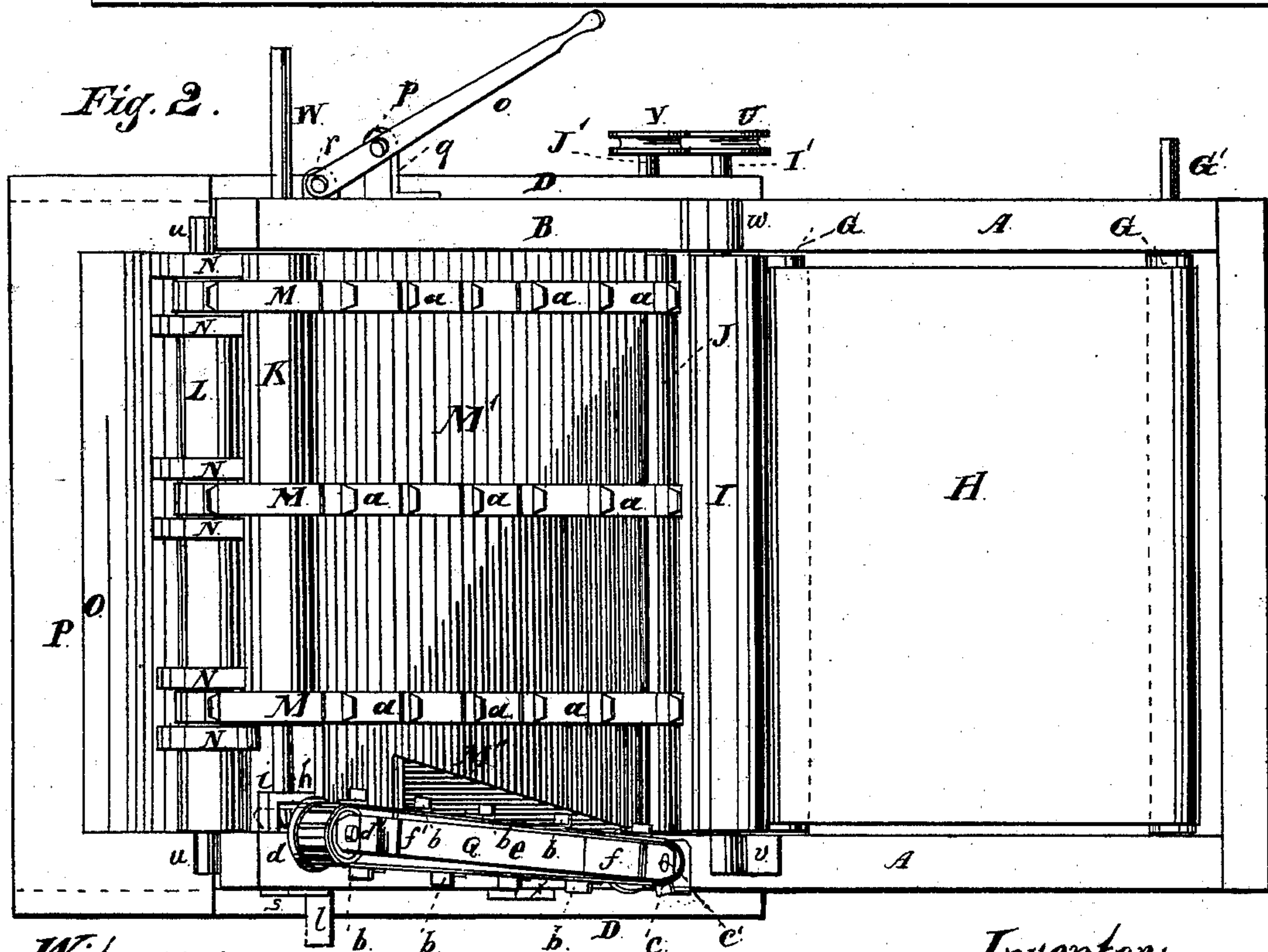
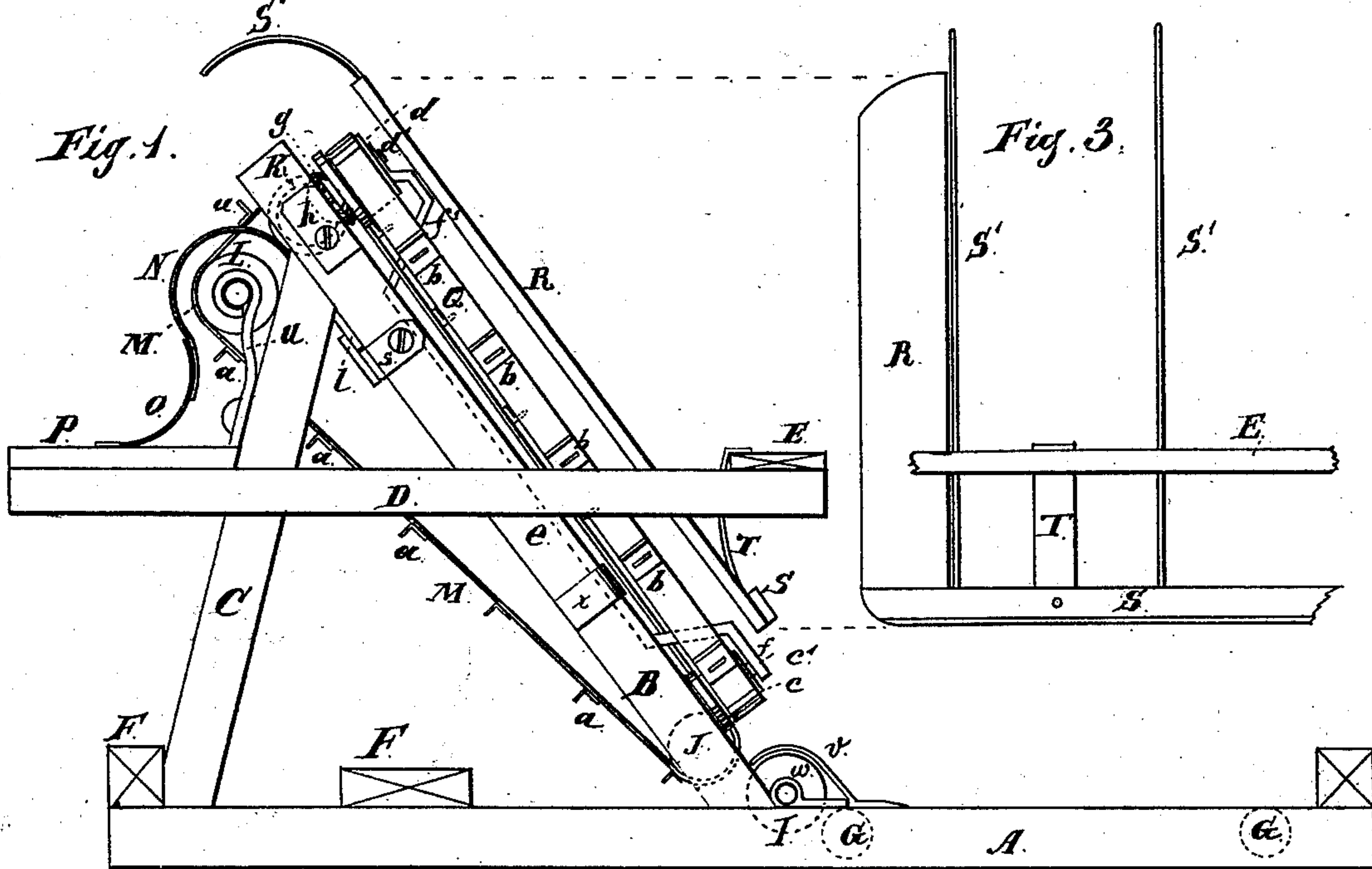


W. F. OLIN.
Harvester.

No. 223,812.

Patented Jan. 27, 1880.



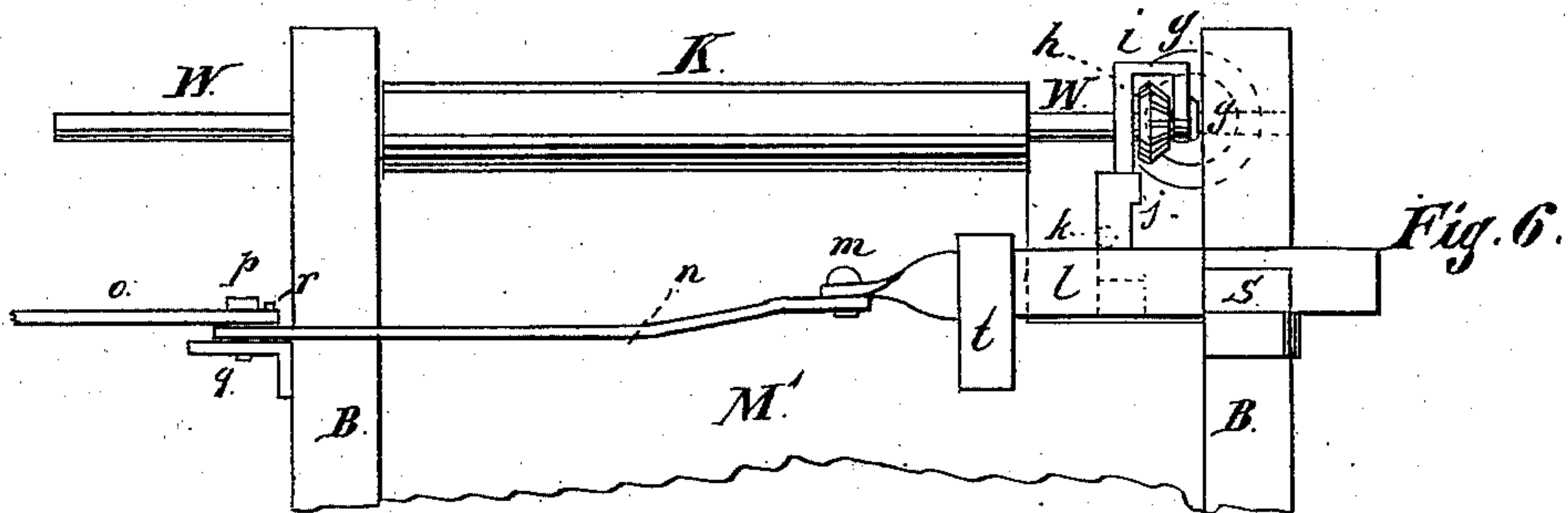
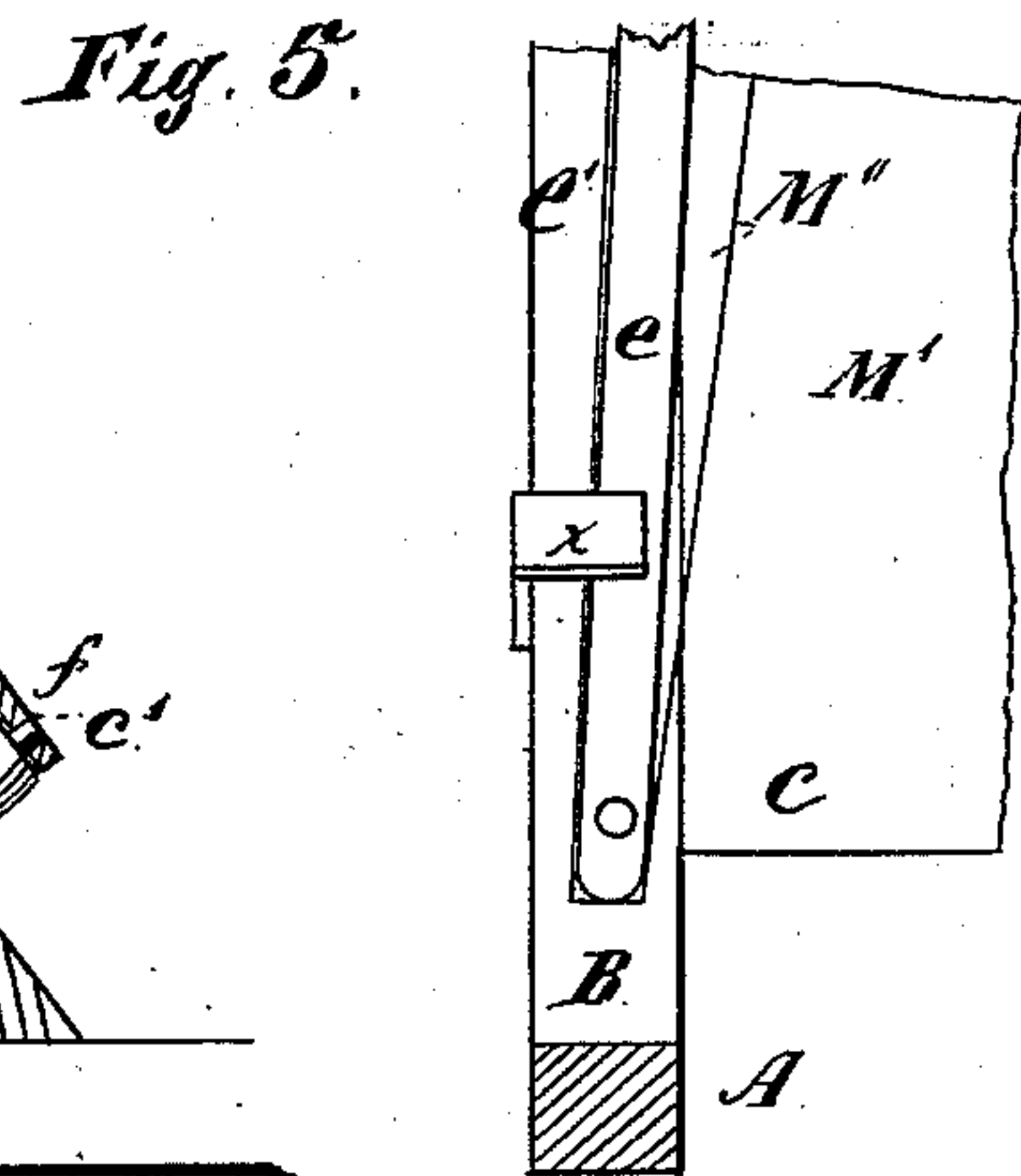
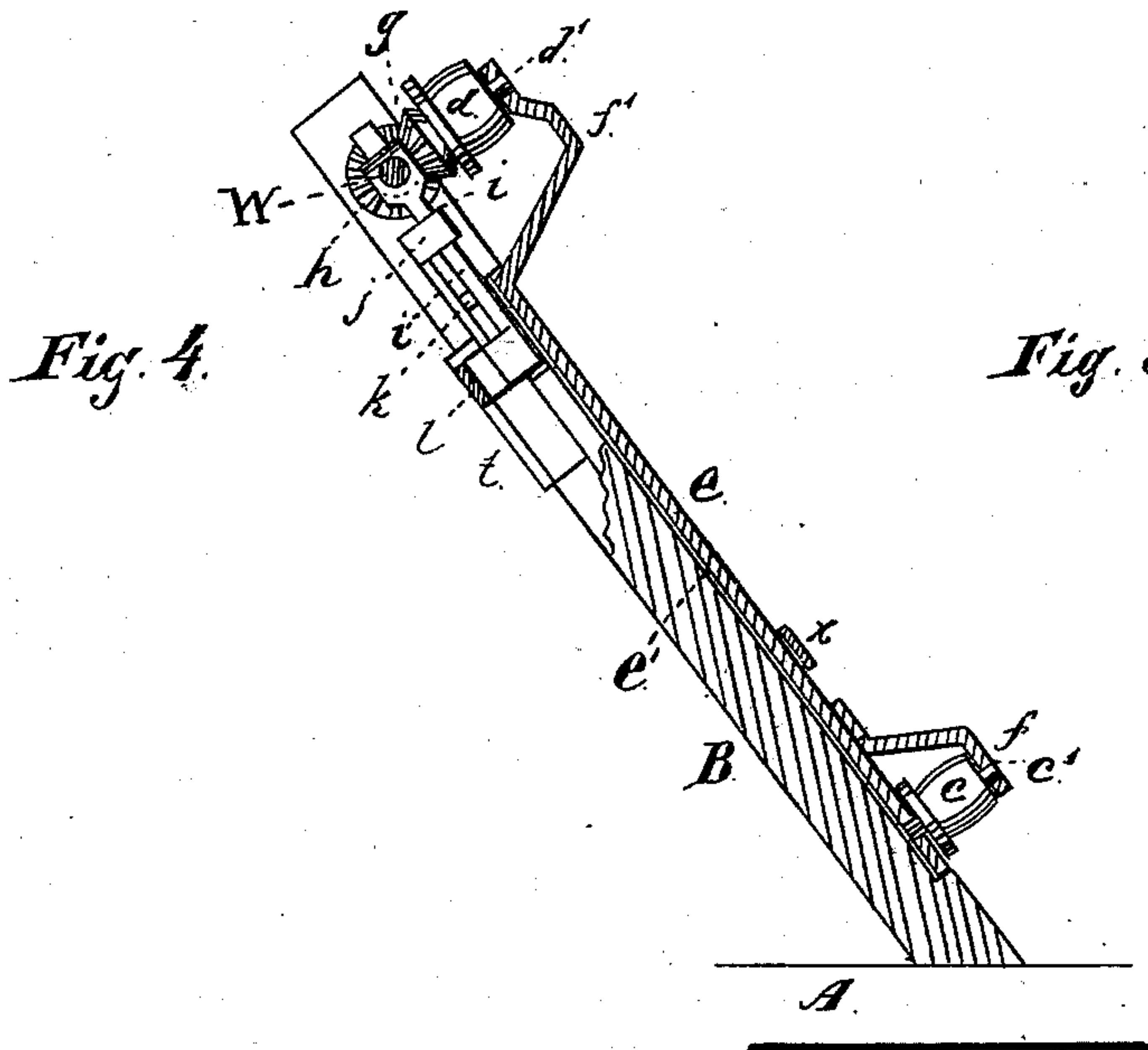
Witnesses:
O. W. Bond.
Albert H. Adams.

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UNITED STATES PATENT OFFICE.

WILLIAM F. OLIN, OF CHICAGO, ILLINOIS.

HARVESTER.

SPECIFICATION forming part of Letters Patent No. 223,812, dated January 27, 1880.

Application filed November 17, 1877.

To all whom it may concern :

Be it known that I, WILLIAM F. OLIN, of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Harvesting-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a front elevation; Fig. 2, a top or plan view; Fig. 3, a detail of the cover of the elevator; Fig. 4, a detail, in section, of the devices for elevating the butts of the grain; Fig. 5, a detail of the same parts; Fig. 6, a detail, showing the devices for shifting the butt-elevator.

In that class of harvesting-machines where the grain is received upon a carrier-platform and elevated over the drive-wheel by an elevator and deliverer to the binders or an automatic binder it is desirable that there shall be no stoppage in the flow of the grain in its passage to its place of delivery; that the butts of the grain shall be carried up parallel, or nearly so, with the heads of the grain, so as to deliver the grain in proper shape for binding purposes, and that the grain shall be delivered to the receiving-table so that it can be bound at or near the middle.

The object of this invention is to provide devices for attaining all of these results; and it consists in interposing a roller between the lower end of the elevator and the inner end of the grain-carrier, to facilitate elevating the grain and prevent clogging at that point, and prevent the grain from being carried down or falling through between the elevator and carrier; in providing a belt or chain at the grain side of the machine for elevating the butts of the grain, supported on a swinging bar, so that it can be adjusted, according to the length of grain being elevated, to deliver the grain so that it can be bound at the middle; in devices for operating and adjusting the elevator for the butts; in the peculiar construction of the cover; in arranging and operating the belt for the butts so that it prevents any clogging

by short grain at the heel of the sickle; in arranging the device for elevating the butts so that it will bear against the butts of the grain and crowd or move the grain back on the elevator toward the center, for the purpose of straightening the grain in its passage up the elevator, and delivering it so that it can be clasped or bound near the middle, to facilitate the ease of binding; and in the several parts and combination of parts hereinafter described as new.

In the drawings, A represents the main frame; B C, the elevator-frame; D, the cross-pieces supporting the binder-table or platform or binder; E, the cross-piece secured to the cross-pieces D, and supporting the driver's seat; F, the cross-pieces between which the main or driving wheel (not shown) is located, and on which it is journaled in any suitable manner; G, the rollers for the carrier-platform; G', the axles or shafts of said rollers; H, the carrier-platform; I, the interposed roller; I', the shaft of the roller I; J, the lower elevator-roller; J', the shaft of the roller J; K L, the upper elevator-rollers; M, the elevating-belts; M', the backing-board; M'', the angular opening on the front edge of the backing-board; N, the strips of metal or fingers at the upper end of the elevator; O, the curved piece of metal supporting the fingers N; P, the platform on which the grain is delivered; Q, the belt for elevating the butts; R, the board portion of the cover; S, the cross-piece secured to the board R; S', the spring-arms, forming the other portion of the cover; T, the springs connecting the piece S with the driver's platform; U V, the driving-pulleys; W, the shaft of the roller K; a, the teeth on the elevating-belts; b, the teeth on the butt-elevator belt; c d, the pulleys carrying the butt-elevator belt; c' d', the pulley-shafts; e, the pivoted connecting bar or strap, on which the butt-elevator pulleys are mounted; f f', the caps for the pulleys c d; g h, the miter-wheels, giving motion to the butt-elevator; i, the sliding head or journal-support for the miter-wheel g; j, the frame or guide in which the support i slides; k, the pin for holding the head i in place laterally; l, the sliding plate or bar; m, the pivot for the sliding plate l and bar n; n, the bar connecting the sliding plate with the operating-lever;

o, the lever; p, the pivot for the lever o; q, the bracket supporting the lever; r, the pivot at lower end of lever for connecting it to the rod or bar n; s t, the supports for the sliding bar l; u, the adjustable bearing for the lower of the upper rollers of the elevator; v, the curved plate at the foot of elevator over the front bearing of the roller I; w, journal-bearings of the roller I; x, the plate or catch for holding the bar e in place and preventing it from rising.

The parts A, B, C, D, E, F, G, G', and H may be of any of the ordinary forms of construction, and the complete machine is to be provided with a drive-wheel, sickle, divider, grain-wheel, and suitable gearing for operating the several parts; but as these parts may be of any of the usual forms of construction, they are neither shown nor described.

The lower elevator-roller, J, is suitably journaled, near the lower end of the elevator, in the pieces B of the elevator-frame. Between this roller J and the inner roller of the carrier-platform is another roller, I, so located and arranged as to permit and aid the passage of the grain from the carrier-platform to the proper position to be taken by the elevating belts or devices, and prevent the grain from falling through at that point. This roller, as shown, is journaled in suitable bearings w, secured to the main frame A, and its shaft I' projects some distance beyond the rear of the frame, and is provided with a pulley, U, by means of which the roller is driven. The roller J is so arranged in relation to this interposed roller I that the teeth a of the elevating-belts M will just clear the roller I.

The shaft J' of the roller J extends beyond the elevator-frame, and is provided with a pulley, V, for driving the roller J.

The elevating-belts M pass over the roller J at the bottom and over the rollers K L at the top of the elevator-frame. These belts M are provided with teeth or pins a for engaging with and elevating the grain, and by passing the belts over two rollers, K L, at the top, as shown, instead of one, a positive downward movement is given to the grain, which greatly facilitates its delivery upon the receiving-table or grain-receptacle.

The receiving-table P, as shown, is located on the cross-bars D, and to it is secured a curved piece of metal, O, so arranged as to prevent the grain on the table from falling back into the machine beneath the elevator. To this curved piece of metal O are secured springs or fingers N, so arranged and formed as to extend up and over the lower one of the upper elevator-rollers, L, the object of which fingers is to prevent the grain from going between the two upper rollers, and also to insure its delivery to the binder.

The butt-elevator belt is provided with suitable teeth b, and is located on top of the forward piece, B, of the elevator-frame, and is supported and driven by two pulleys, c d, which have their faces or sides parallel with the top

of the piece B. These pulleys c d are connected together by the piece e. This piece e may be located in a groove, e', formed in the piece B, which groove is of such form as to permit the piece e to move backward and forward, or may be located directly on top of the piece B. The shaft c' of the wheel c has its lower bearing in the piece B and its upper one in the cap or bent-up bar f, which bar or cap is permanently secured, as shown, to the bar or strap e. This shaft c' also forms a pivot for the bar or strap e to swing on. The upper bearing for the shaft d' of the pulley d is in the bent-up portion or cap f' of the strap e, and to the lower end of this shaft d' is secured a miter-wheel, g, which gears with a similar miter-wheel, h, secured to the shaft W of the roller K. On the shaft W, and sliding thereon, is a piece of metal, i, so formed as to have two arms parallel to each other and a connecting-piece. The arms of this piece i are located on the shaft W, and between them is the wheel h, so that this piece i is above and on each side of the wheel h, and forms a guard therefor, to prevent any grain from becoming entangled therein. In the outer arm of this sliding head i is the journal-bearing for the lower end of the shaft d' of the pulley or wheel d for the upper end of chain Q, so that as the head i is moved back and forth on the shaft the upper end of this belt Q must be carried with it, by reason of the journal-bearing for the shaft d' being in the sliding head.

By locating the wheel h between the arms of the sliding head and journaling the wheel g thereto, as shown and described, it will be seen that the wheels g h must be in gear, no matter what the position of the upper end of Q may be.

The inner arm of the sliding head i extends some distance below the shaft W and enters a suitable guideway in the support or frame j. As shown, this arm passes between a pin, k, secured to j near its middle, and ears or projections formed on the edge of j at the top and bottom, so that this arm can slide up and down to some extent, but has no lateral play.

The guide or support j is permanently secured to the bar l, which bar moves forward and back in the bearings or guides s t, one of which, s, is secured to the piece B, and the other, t, to the backing M' of the elevator. To the inner end of this bar l is pivoted, at m, a bar or rod, n, which extends across the elevator and projects some distance beyond the elevator-frame, and to its outer end is pivoted, at r, the lever o, which lever is supported on a bracket, q, attached to the piece B, and is held in place thereon by the pivot p.

The roller L is journaled in adjustable bearings u, secured to the pieces C of the elevator-frame, by means of which the belts M can be kept at the proper tension.

As shown, the forward bearing of the roller I is covered with a curved piece, v; but in practice this piece may be dispensed with and the bearing so formed as to accomplish the

same purpose of permitting the grain at that point to pass up so as to be reached by the teeth *b* of the belt *Q*.

The rollers *G I J K L* are to be driven by means of suitable belts and pulleys operated from the main or drive wheel.

It will be seen that as the lever *o* is moved to or from the driver it will carry the upper end of the elevator *Q* out or in, as desired, by reason of the connecting-rod *n*, sliding bar *l*, supporting frame or piece *j*, sliding head *i*, gear-wheels *g h*, and shaft *d'*, and as the upper end of the belt or elevator is carried in or out it will describe an arc of a circle, so that the pulley *d* will be carried up and down slightly, carrying with it the gear-wheel *g*. The sliding head *i* must, therefore, be so arranged and connected to the shaft *W* and the devices for sliding it that it will be self-adjustable, in order to allow the upper end of the elevator or belt *Q* to operate.

The cover for preventing the grain from being blown away as it is elevated consists of the board *R* and spring-arms *S'*. The board *R* is located over the belt or elevator *Q*, and is so arranged as to keep the butts of the grain down, so that the belt can elevate them and at the same time permit their easy passage up the backing-board *M'*. To the lower end of this board *R* is secured a cross-piece, *S*, which is connected and supported from the driver's platform by means of spring-arms *T*. This arrangement permits the cover or arms *S'* to yield according to the amount of grain being elevated.

The backing-board *M'* is secured to and between the posts or pieces *B* in any suitable manner, and is so arranged as to permit the easy passage of the grain, the grain in its passage being between this backing-board *M'* and the cover *R S'*. The front edge of this backing-board *M'* is provided with an angular recess, *M''*, formed by cutting out a portion of its upper face, as shown in Figs. 2 and 5, so that the backing-board will not interfere with the swinging of the belt or elevator *Q* on its pivot.

The backing-board *M'* might be so arranged as to dispense with the recess *M''*; but by using this recess *M''* it permits the lower edge of the butt-elevator to come below the upper line of the backing-board, so as to insure its engagement with all the butts of the grain and prevent the grain from getting between the backing-board and butt-elevator.

The elevator or belt *Q* can be used with other forms of elevators than the one shown to accomplish the same results, the belt being so arranged in relation to such elevator as to run with its edge parallel with the upper face of the backing-board or elevator.

As shown, the frame or support for the elevator or belt *Q* is pivoted at the lower end of the elevator-frame and has its driving mechanism located at the upper end; but the driving mechanism may be located at the lower end of the belt *Q* or elevator, if desired.

As shown, the butt-elevator *Q* consists of a belt, *Q*, provided with suitable teeth *b*, operated by pulley-wheels; but a chain provided with teeth or not, operated by suitable sprocket-wheels at the upper and lower ends, might be used in place of the belt.

By arranging the pulleys *c d* so that their flat faces will be parallel with the top surface of the elevator-frame, the butt-elevator will be operated so that its face will strike against the end of the butts of the grain when elevating the butts; and by supporting the butt-elevator on a frame or support pivoted at its lower end and free to swing back and forth at its upper end, the elevator can be so adjusted as to cause the grain to be delivered at one point, no matter what the length may be, for as the butts are carried up by the elevator the grain will be forced back toward the middle of the elevator by reason of the belt or chain striking against the ends of the butts and forcing them back, so that by this arrangement of the butt-elevator it not only serves the purpose of elevating the grain, but also acts as means to cause the grain in its passage up the elevator to be carried back, so as to deliver it at one point, regardless of its length, the upper end of the butt-elevator being carried in or out as the grain is short or long.

For delivering long grain in proper position for binding purposes the belt or elevator *Q* is to be so arranged that its upper end will be over, or nearly over, the piece *B*, in which position the elevator will operate on a line with, or nearly with, the front of the backing *M'*, and the grain will be carried up thereby, so as to deliver it at a point where it can be clasped and bound at or near the middle.

For delivering medium grain the upper end of the elevator *Q* is to be carried or swung over the backing or elevator the required distance, and then, as the grain is carried up the elevator, the action of the face of the elevator or belt striking the ends of the butts will force the grain back, as it ascends, toward the middle of the backing or elevator; and this carrying or forcing endwise of the grain will continue until it has reached the top of the elevator *Q*, when it is in proper position to be delivered at the same point as the long grain, so that it can be clasped or bound near or at the middle.

For delivering short grain the upper end of the elevator *Q* is carried still farther over the backing or elevator for the grain, which makes the angle at which it stands greater, and forces the grain, as it ascends, still farther back on the backing or elevator by the action of belt or elevator *Q* on the ends of the butts, so that short grain will be carried up the elevator and delivered at the same point as before, so that it can be clasped or bound at or near the middle.

The upper end of the elevator *Q* is shifted to bring it to the desired position to deliver long, medium, or short grain by the operator,

who takes hold of the lever *o* and moves it toward or from the elevator-frame. As the upper end of the lever is moved away from the frame its lower end will be carried in, and, carrying with it the rod *n*, will slide the plate or bar *l* forward, carrying with it the support or frame *j*, with which the sliding head *i* is connected, which head will be moved forward on the shaft *W*, carrying with it the gears *g h*, and, through the shaft *d'*, the upper end of the elevator *Q*, bringing the parts into the position shown in Fig. 2.

When the upper end of the lever *o* is carried toward the driver its lower end is carried out, carrying with it the rod *n* and sliding bar or plate *l* and frame or support *j*, which moves the sliding head *i* back on the shaft *W*, and with it the gears *g h*, and, through the shaft *d'*, carries the upper end of the elevator *Q* over the backing or elevator to any desired position to deliver the grain at a point where it can be clasped or bound at or near the middle.

By this arrangement the grain as it is being elevated will be carried back or endwise, so that the middle of the grain will always come to the same point, no matter what the length of the grain may be, and so that it will be delivered in such a position that a binder who stands at a given place or point can clasp the sheaf in the middle and bind it without the necessity of shifting his position to accommodate himself to the delivery of the grain, and by thus delivering all lengths of grain at a uniform point the ease with which it is bound is greatly facilitated; and in case an automatic or self binder is used, it can be arranged stationary at the point to bind the grain properly, and the grain will be carried up and delivered at that point, so as to enable it to be bound by the self-binder at or near the middle, so that all devices which are now used for the purpose of adjusting a self-binder to the position to enable it to bind the grain properly are dispensed with, as the grain, whether long or short, will be delivered at the same point by shifting the upper end of the butt-elevator, as before described.

By this arrangement all the devices for effecting a fore-and-aft adjustment for binding purposes are dispensed with, and the same means employed for elevating the butts also afford the means for properly delivering the grain, and such delivery is effected during the transit of the grain up the elevator.

The elevator *Q* need not extend the entire length of the elevator, but may stop some distance below the upper elevator-roller, as the grain, after it is once forced to the proper point on the elevator, will be carried up and delivered in that condition.

In operation, the grain, as it falls upon the carrier-platform *H*, is carried forward to the roller *I*, which also being in motion carries the grain up over it, when it is received by the teeth *a* of the elevator-belts, and by the belts *M* carried up and delivered to the receiving platform or table.

As machines have been heretofore constructed, the grain as it passes to the foot of the elevator was liable to stop and accumulate at that point, which prevented the easy elevation of the grain. By interposing the roller *I* between the foot of the elevator and the end of the carrier, as shown, it will be seen that no grain can accumulate at that point, as the roller *I* will move it forward and over the roller under all circumstances, thus keeping the grain constantly in motion at the foot of the elevator, so that it cannot become tangled, or accumulate and clog the elevator, and this roller *I*, by reason of its revolving, will also tend, to some extent, to straighten the grain before it is elevated, and it also prevents any grain from falling through at this point. This roller *I* is so located as not to interfere with the transit of the grain to the elevator from the carrier, and operates in such a manner as to facilitate such transit.

The butts of grain are heavier than the heads, and consequently lag behind unless some means are provided to make them move faster than the heads. In order to elevate the butts even with the heads the belt or elevator *Q* is so arranged that the teeth *b* will engage with the butts of the grain on the roller *I* and carry them up while the heads are being carried up by the elevator-belts *M*. The lower pulley, *c*, is to be so arranged that it will permit the teeth *b* on the elevator *Q* to clear the end of the roller and engage the butts, and this pulley *c* is located as close to the main frame as is possible and permit the operation of the butt-elevator, which location of the pulley brings the butt-elevator in position to enable it to catch any short grain, which short grain is liable to fall down and be caught by the heel of the sickle and clog the sickle. By locating the lower pulley, *c*, of the belt *Q* at the proper distance above the main frame *A* the teeth *b* on the elevator will come in contact with such short grain and force it forward onto the carrier-platform, thus keeping the heel of the sickle clear at this point.

As shown in the drawings, in Fig. 2, the belt or chain *Q* is in position for elevating long grain and delivering it at the proper point for binding, in which position the lever *o* is carried away from the elevator. For elevating short grain and delivering it at the proper point, the operator takes hold of the lever *o* and pulls it toward the elevator-frame, which carries the upper end of the belt or chain *Q* over the elevator to the proper point for elevating short grain.

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

1. In combination with a harvester-elevator, a swinging elevator pivoted at its lower end and suitable devices for shifting its upper end, whereby the swinging elevator forms a means for elevating the butts of the grain and delivering grain of different lengths at the same point, substantially as specified.

2. The adjustable elevator or belt *Q*, having

its pulleys or wheels arranged with their faces parallel with the upper surface of the main elevator, in combination with such main elevator, for carrying the butts up even with the heads, substantially as specified.

3. The adjustable elevator or belt Q, having its lower end, *c*, advanced in front of the line of grain travel, and arranged as described in relation to the main elevator, substantially as and for the purposes set forth.

4. The pivoted frame or bar *e*, supporting the elevator Q, in combination with the sliding bar *l*, rod *n*, and lever *o*, for adjusting the upper end of the belt, substantially as and for the purpose specified.

5. The shaft W, wheel *h*, and frame *i*, in combination with the gear-wheel *g* and pulley-wheel *d*, for driving the elevator and keeping the gear-wheels *g h* in gear, substantially as specified.

6. The elevator or belt Q, in combination with the inclined board R and main elevator, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I hereto affix my signature in presence of two witnesses.

WILLIAM F. OLIN.

Witnesses:

WILLIAM H. CALHOUN,
MERRITT GREENE, Jr.