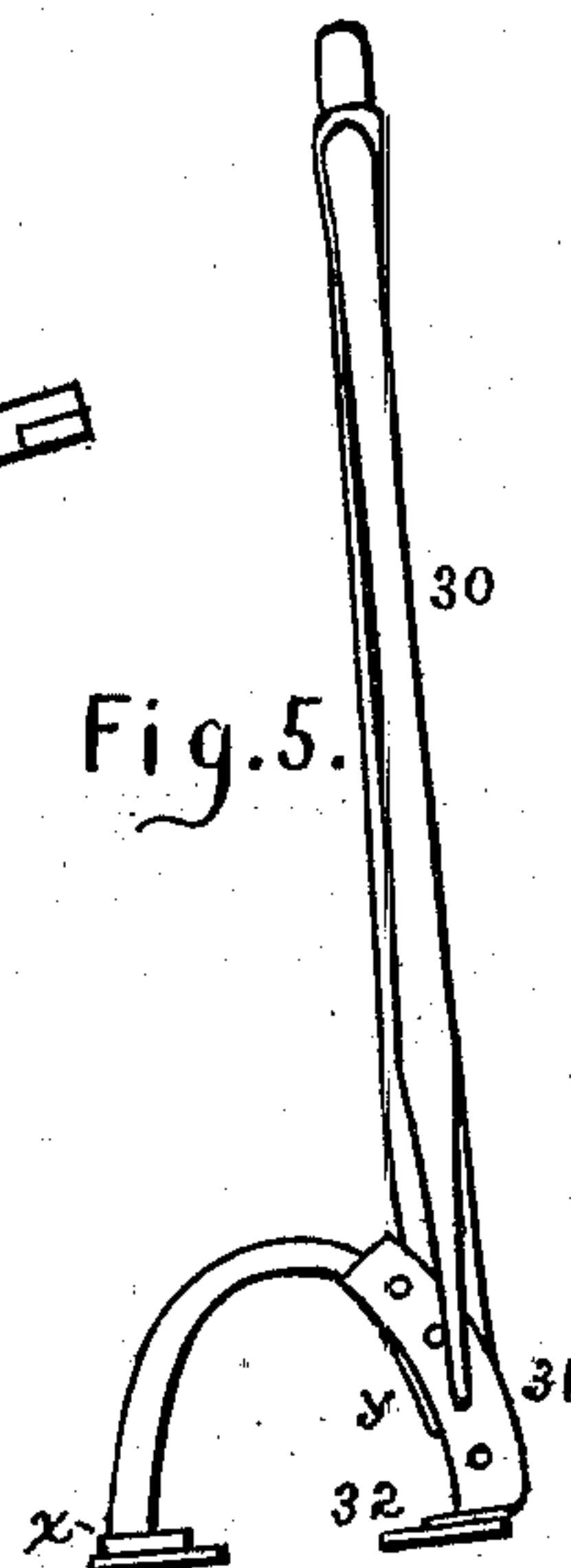
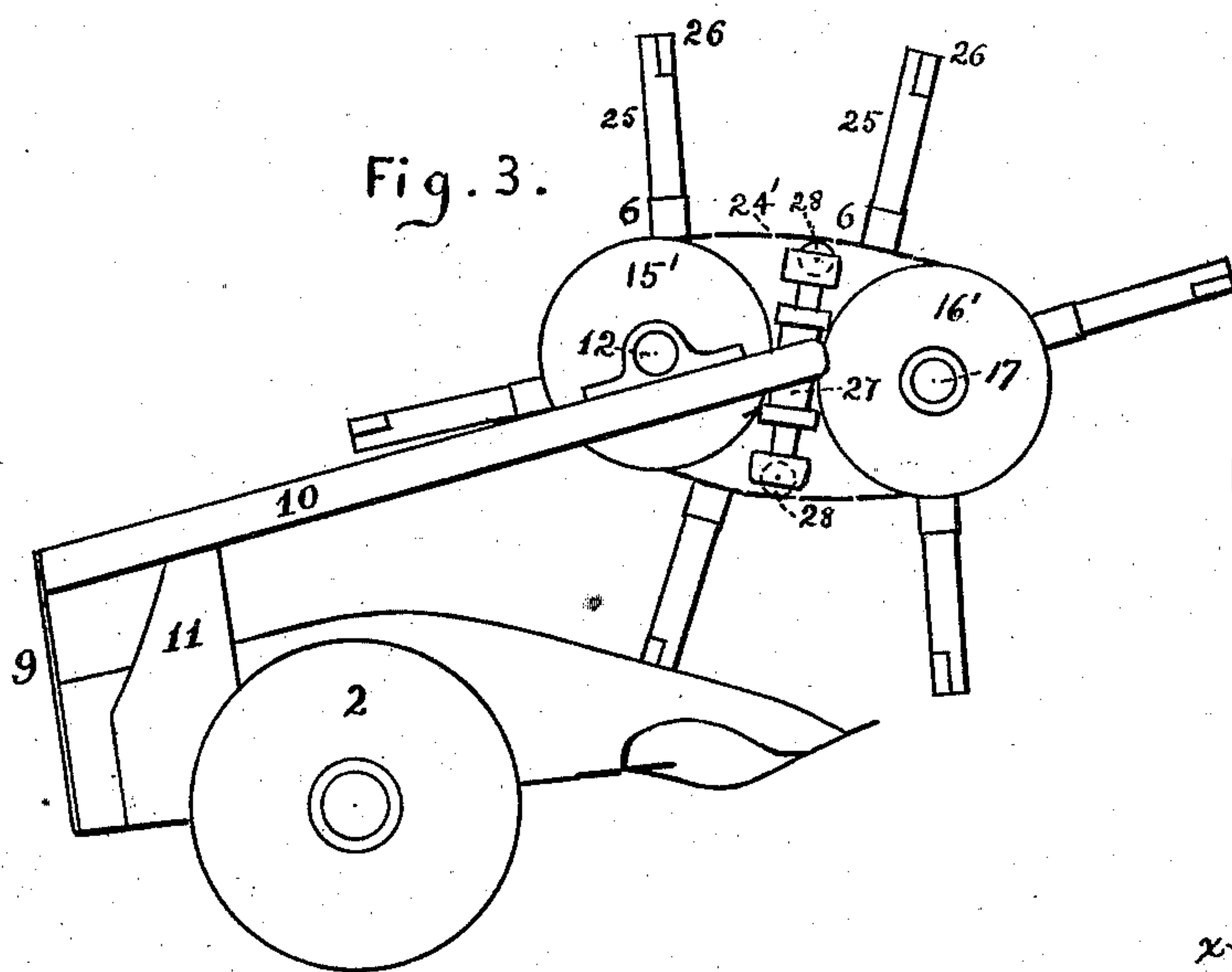
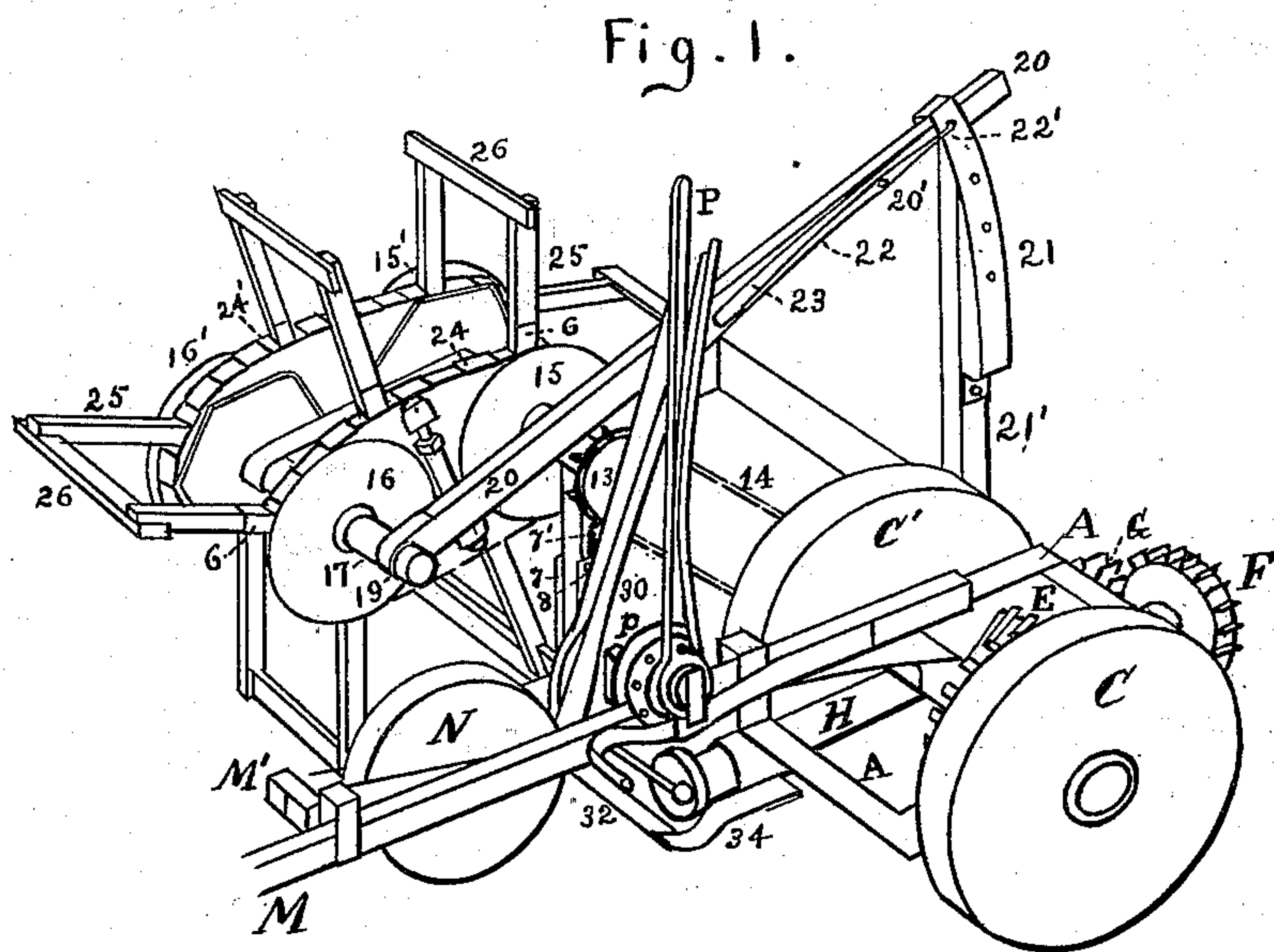


J. F. BLACK.
Harvester-Reel.

No. 164,795.

Patented June 22, 1875.



Witnesses :

A. G. Daniels.
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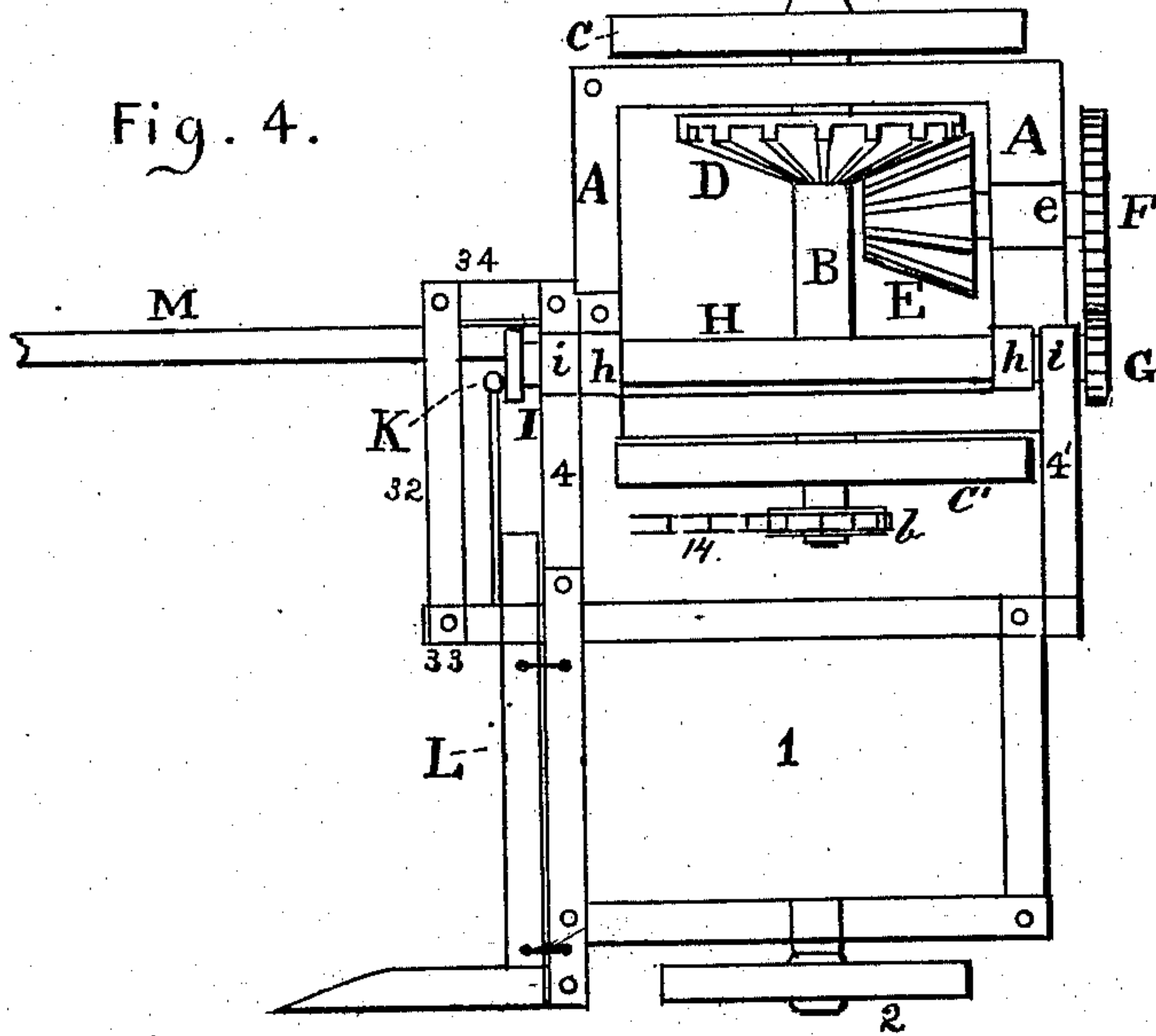
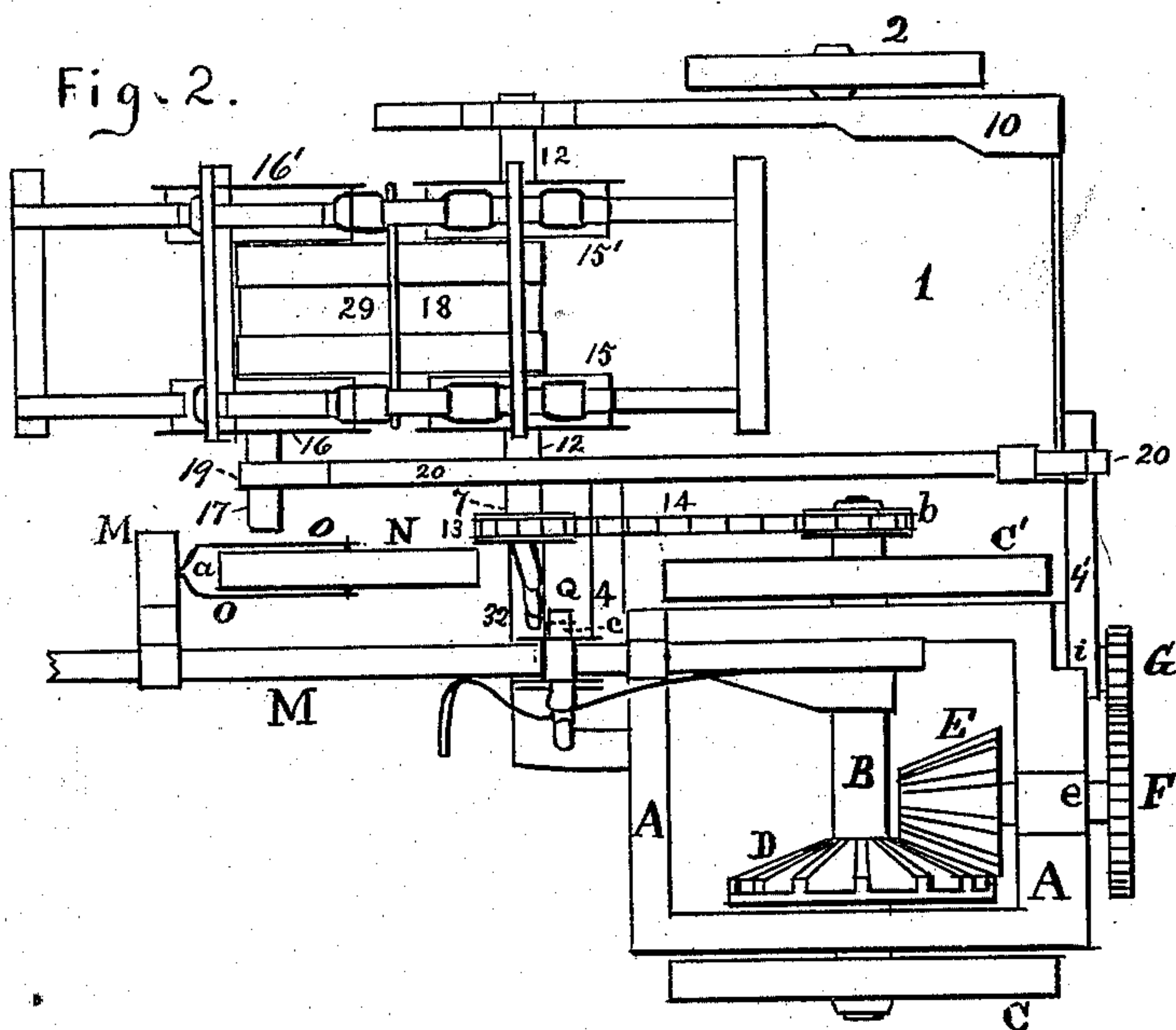
Inventor :

James F. Black
by Louis Bagger.
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UNITED STATES PATENT OFFICE.

JAMES F. BLACK, OF OSHKOSH, WISCONSIN.

IMPROVEMENT IN HARVESTER-REELS.

Specification forming part of Letters Patent No. 164,795, dated June 22, 1875; application filed March 13, 1875.

To all whom it may concern:

Be it known that I, JAMES F. BLACK, of Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Reaping-Machines or Harvesters; and I do hereby declare that the following is a full, clear, and exact description thereof, 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, which form a part of this specification, and in which—

Figure 1 is a perspective view of my improved harvester. Fig. 2 is a top view or plan of the same. Fig. 3 is a side elevation. Fig. 4 is a bottom plan; and Fig. 5 is a side view of a portion of the lever used in operating the sickle and cutter-bar.

My invention relates to the construction and novel combination and arrangement of devices, whereby a harvester is rendered more efficient; and it consists in a compound or "flat" reel, constructed and operating as hereinafter more fully described, reference being had to the accompanying sheets of drawings, and to the letters and numerals of reference marked thereon.

A main frame, A, suitably constructed for the support of the various operative parts of my machine, rests upon an axle, B, to which the two ground-wheels C C' are rigidly secured. Concentric with said ground or drive wheels, and placed rigidly upon the same axle, but within the frame A, is the gear-wheel D, which meshes with the pinion E, whose axle e is journaled in bearings in the rear part of the frame A, as shown. To the other end of the axle e, and outside of the frame, is rigidly secured the gear-wheel F, which meshes into pinion G, by which, when the machine is in operation, a revolving motion is imparted to the underlying shaft H, which hangs in bearings h, suspended from the frame A. The forward end of the shaft H terminates in the disk or pitman wheel I, provided with a crank, by which a reciprocating motion, when the shaft H revolves, in operating the machine, is communicated to the pitman K, and through it to the cutter-bar and sickle, represented by the letter L. M is the tongue, and N the front or guide wheel, which is journaled between

two oblique arms, O, joined at the top at a, where they are pivoted to the arm M' of the tongue M. By this arrangement, the weight of the front part of the machine is more evenly distributed, and is not borne entirely by the team.

All the parts above described refer to the main frame of the machine, with its attachments and mechanism, and which is a separate working part in itself. The grain side or operating part of my machine, to which the main frame with its attachments furnishes the motive power, is also a separate working part, the points of connection between the two being hinges, and the pitman K, arranged as herein-after set forth.

1 is the grain-platform, which forms the basis and main support for the grain part of the machine. It is hinged on one side upon the pitman-shaft H, by bearings i passing around said shaft, and being rigidly secured to the projecting arms or brackets 4 and 4', and is, on the other side, supported upon the grain-wheel 2, which revolves on a spindle or stub-axle secured to the bottom of the platform. By the bearings i a point of flexure is formed between the platform and main frame of the machine, the construction and arrangement of the parts of which is such that the platform may be swung up and upon the main frame when it is carried to or from the place where it is used, or when it is stored away. This is of especial advantage in passing through narrow gateways, or storing it in places where there is but little room to spare. The, for this purpose, necessary position and arrangement of the levers, pitman, and other working parts will easily suggest itself.

7 7' is the rigid perpendicular reel-post secured preferably upon the projecting arm 4 near to the platform. This post consists of a longitudinally-slotted beam, 7', sliding in a socket, 7, in its relation to which it may be adjusted and secured by the set-screws 8. To the rear part of the grain side of the platform there is secured an upright, 9, which carries a forward-projecting arm or bracket, 10, resting adjustably in the upright prop 11, to which it may be secured in any desired position by bolts, in combination with corresponding holes in said prop, or by set-screws or equivalent

devices. The rear portion of the arm 10 is either hinged to the top of the upright 9, or (better) hinged to a sleeve, which slides up and down the said upright, and may be secured in any position thereon by set-screws. By either of these arrangements the arm 10, the front part of which carries the operating-shaft 12 of the reel, may be easily adjusted so as to correspond in elevation with the top of the upright adjustable reel-support 7 7', already described, which carries the bearings for the opposite end of the operating reel-shaft 12. It will thus be seen that this shaft revolves in bearings resting respectively on the top of the adjustable upright reel-support 7 7', and in the end of the adjustable bracket-support 10, by which arrangement the elevation of the shaft 12 and its vertical position in relation to the platform 1 and axle B may be changed at will. But the adjustability of my reel of peculiar construction is still further increased, and its capacity and operative power greatly enhanced, by a lever, 20, by which the forepart of the reel is operated. Before describing this part of my invention, however, I shall go on to describe the construction of the said reel, so that the mode of operating the lever may be better understood.

A rotating motion is imparted to the shaft 12, already described, by a chain or band, 14, passing around pulley 13 on the end of said shaft, and also around the drum or pulley *b* on the inside end of the main axle B. Upon the shaft 12 are rigidly secured two corresponding and concentric drums, 15 and 15', between which, and upon said shaft, is journaled a movable swing-beam, 18, (see Fig. 2), which forms the bearing or adjustable support for the other shaft, 17, to which two corresponding and concentric drums, 16 and 16', are rigidly attached. That end of the shaft 17 which is nearest to the main frame of the machine projects through and beyond drum 16, and into a bearing, 19, on the end of the lever 20, already referred to, the fulcrum of which is on the upper side of the bearing on top of the reel-support 7 7', which thus serves in the double capacity of reel-support and lever-support. The rear portion, or elongated handle, of the lever 20 may be secured in any desired position by means of a segmental ratchet, 21, (which is attached in an upright position to the post 21' placed in the rear of the platform,) into the holes of which it engages by the angular spring-catch 22'. This catch forms part of a bent rod, 22, which is pivoted upon the lever 20 at the point indicated by 20', and is operated by pressure on its long arm forward of the pivoting-point. The catch 22' is kept in its place in the holes in the segmental ratchet 21 by a spring, 23, which is rigidly attached to the side of lever 20, between it and the long arm of the rod 22. Any other mode may, however, be adopted in the construction of the catch and ratchet, by which the lever 20 is secured in any desired position, which will satisfactorily accomplish

the same purpose, viz: firmly secure the end of the said lever in said rigid ratchet, and, at the same time, make its readjustment easy. 24 and 24' represent two endless chains composed of flat links, which pass around the drums 15 16 and 15' 16', respectively. To these chains are affixed equidistant sockets 6, in which the standards 25, carrying the beaters 26, are secured. The number of these sockets may be varied, and need not all be occupied by reel-standards. A greater or smaller number of revolving standards and beaters may thus be used in the reel, according to the conditions and requirements of the grain operated upon, without interfering in the least with the other working parts of the machine. To prevent the said endless chains from sliding or slipping on the drums, I prefer to make these latter not cylindrical, but many-sided or polygonal, in shape, so as to engage with the flat links of which the socket-chains 24 and 24' are composed.

To prevent the chains from slipping off the drums sidewise, the latter may be suitably flanged; or a circular concentric disk, of a larger diameter, may be attached to the outside of each drum, as shown in the drawings. To prevent the endless chains carrying the sockets, standards, and beaters from working slack, and to support them in the middle so as to carry the sockets, standards, and beaters firmly around and through the grain, so as to force it into the reaper, I employ two corresponding tighteners, placed, opposite each other, vertically on the middle of the edges of the swing-beam 18. Each of these tighteners consists simply in a double set-screw, or, more properly, jack-screw, 27, operated in the usual manner, and the movable heads of which carry rollers 28, pivoted in suitable bearings. These rollers work against the over and under middle portions of the chains 24 24'; and by elongating the sides of the bearings in which the rollers are pivoted, so as to cause them to project above the rollers on each side, the said bearings will act also as guides for the chains 24 24' on their line of travel between the drums. To facilitate a uniform and corresponding movement of the rollers 28 when they are being adjusted, and also to insure greater stability and strength to this part of my machine, I prefer to unite each upper and under pair of rollers, respectively, by a rod, 29.

My object in constructing and arranging the reel as herein described is to reach ahead of the cutter-bar and rake the grain directly back into the reaper before cutting. It will also be perceived that by a slight modification of the arrangement—viz: by placing the reel-shaft 12 farther to the rear of the machine—the reel may also be made to perform the functions of a rake or dropper, for which separate and complicated contrivances are generally used. The object of the construction and arrangement, as set forth, of the devices employed in adjusting the reel is to provide easy and ready

means for raising or lowering the front part of the same, so as to suit the varying heights and conditions of the crops operated upon. 30 is an upright lever, provided with a catch and operating-rod similar to that described in connection with the lever 20, by which its position on a segmental ratchet, 31, may be adjusted. Fig. 5 is a side view of this lever, which is rigidly secured at *x* to the cutter-bar, while at *y* it engages, by its spring-catch, (on the opposite side of lever, and not shown in the drawing,) with the holes in the ratchet 31. This ratchet is firmly secured, in an upright position, to a sill, 32, which projects from an arm or bracket, 33, forward of the cutter-bar and sickle *L*, (which are operated through a slot in said arm,) and runs parallel with the arm 4, to which it is united at its end by the girt or cross-piece 34. By moving the lever 30 backward the edges of the sickle and cutter-bar are lifted, while by moving it in a forward direction they are lowered. *P* is the lever, attached to the main frame of the machine, by which the elevation of the grain-platform, with its cutter-bar, sickle, and other attachments, is controlled and adjusted. This lever is reciprocating, and by a pawl attachment operates the ratchet-wheel *p*, which is rigidly secured to the windlass *Q*. A chain, *c*, is secured upon said windlass, and fastened at its opposite end to the sill 32. It will thus be seen that, by operating the reciprocating lever

P, the ratchet-wheel *p* and with it the windlass *Q* are turned, and the chain *c* is accordingly wound up, and the sill 32, and with it the platform 1 with its attachments, raised. By this arrangement any desired elevation of the grain-platform, with its sickle, cutter-bar, &c., may be attained while the machine is in operation, and without interfering with its working. To lower the platform it is only necessary to release the ratchet upon the ratchet-wheel *p*, when it will sink by its own weight until a suitable elevation has been attained, when any further motion is stopped by re-inserting the ratchet—all of which may be done without stopping the machine, and while it is in full operation.

Having thus, in the foregoing specification, fully described my invention, I claim and desire to secure by Letters Patent—

The flat reel, consisting of the shafts 12 and 17, drums 15, 15' and 16, 16', swing-beam 18, tighteners 27, and rollers 28, endless chains 24 24', sockets 6, and standards 25, all arranged and operating substantially as and for the purpose set forth.

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

JAMES F. BLACK.

Witnesses:

L. W. HALSEY,
H. B. JACKSON.