

E. K. Wisell.

Wood-Turning Lathe.

N^o 73423

Patented Jan. 14, 1868.

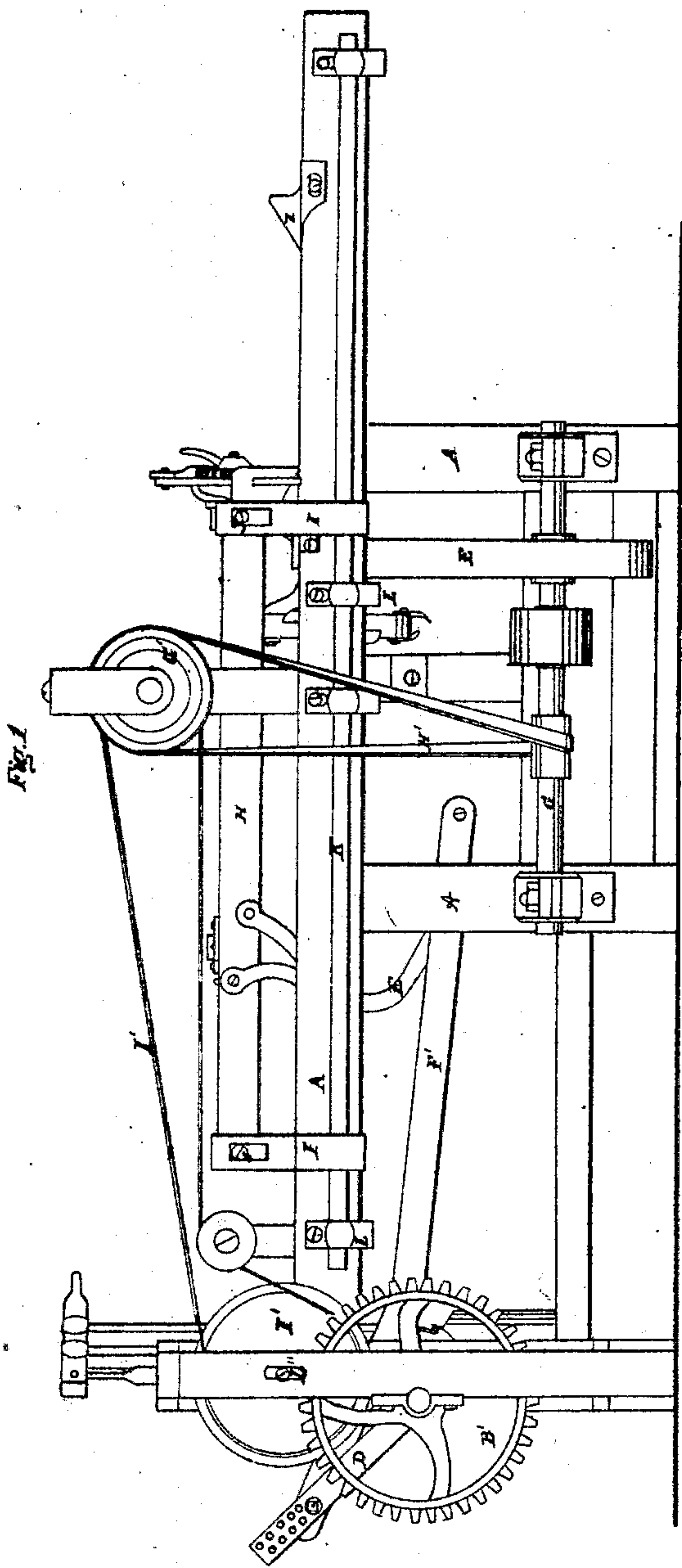


Fig. 1.

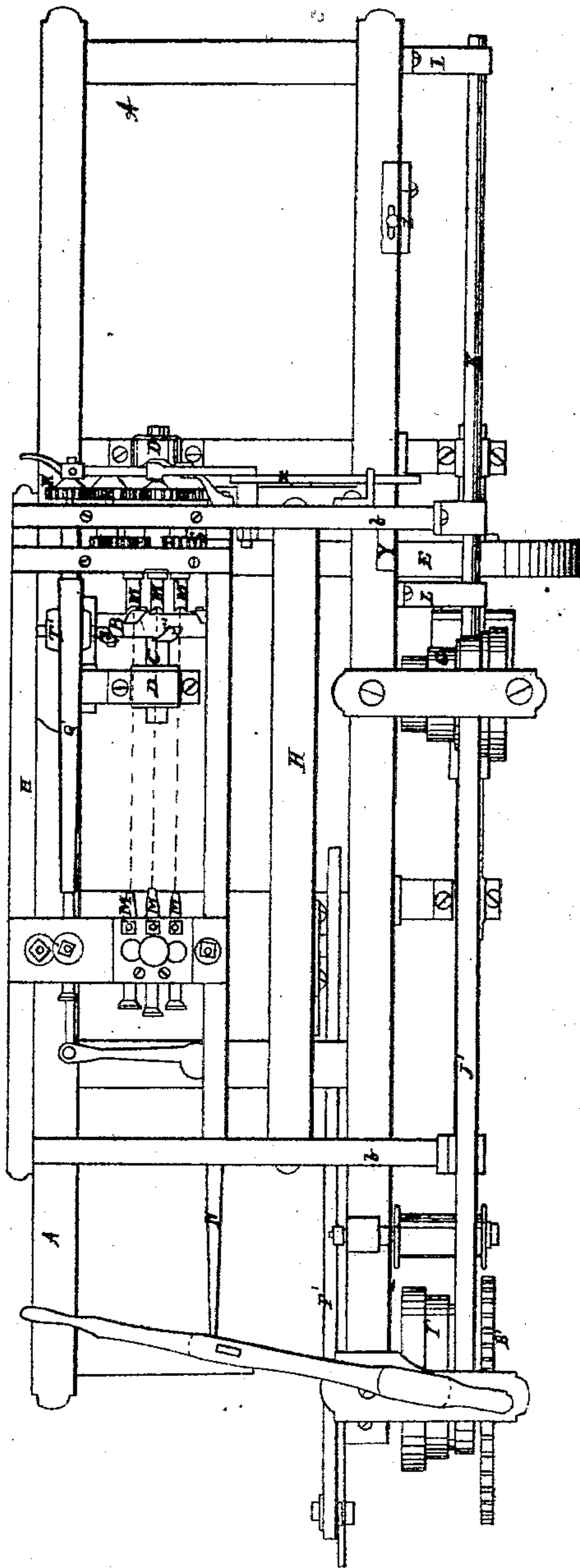


Fig. 2.

Witnesses.

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Inventor.

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Fig. 3.

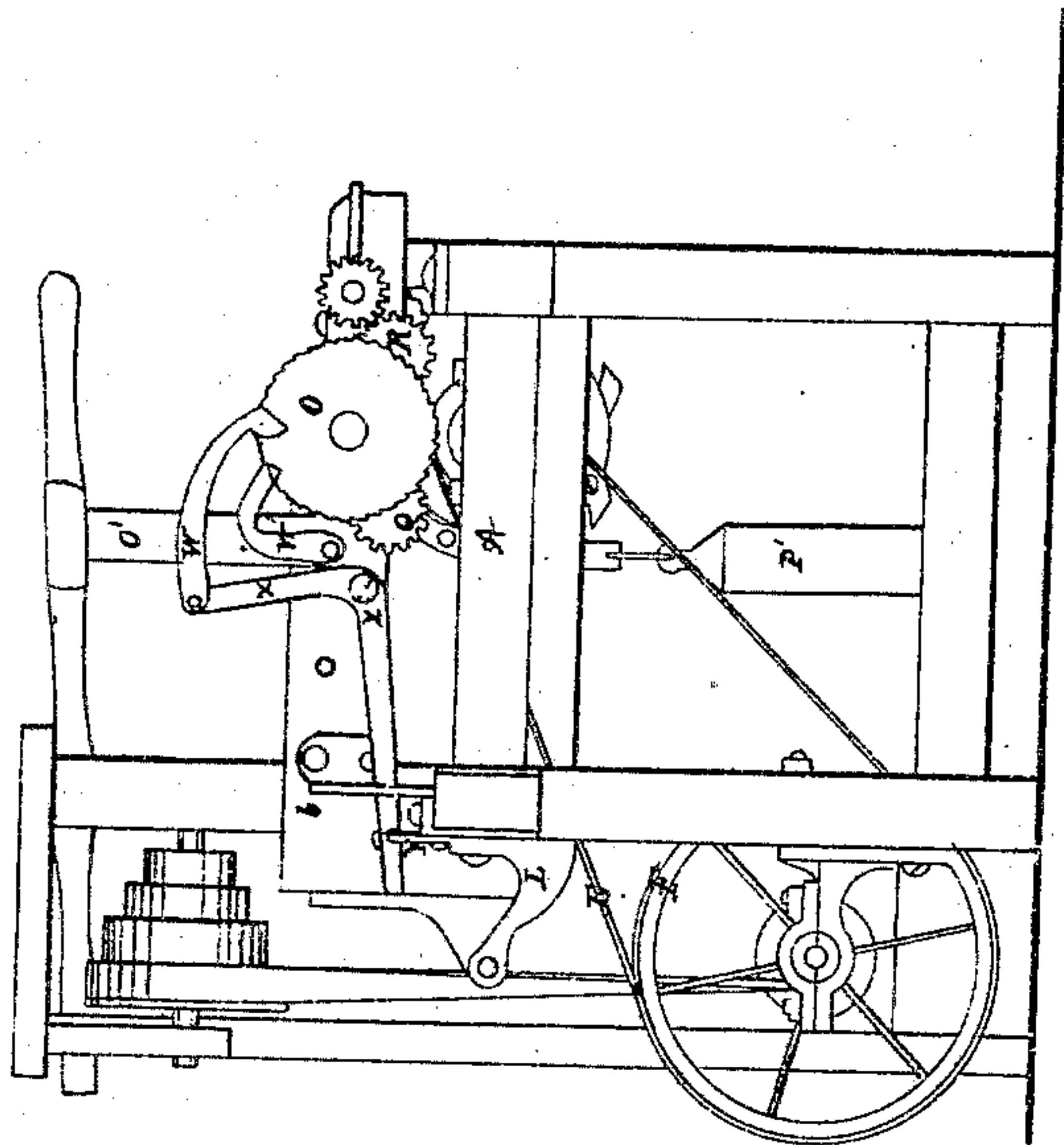


Fig. 4.

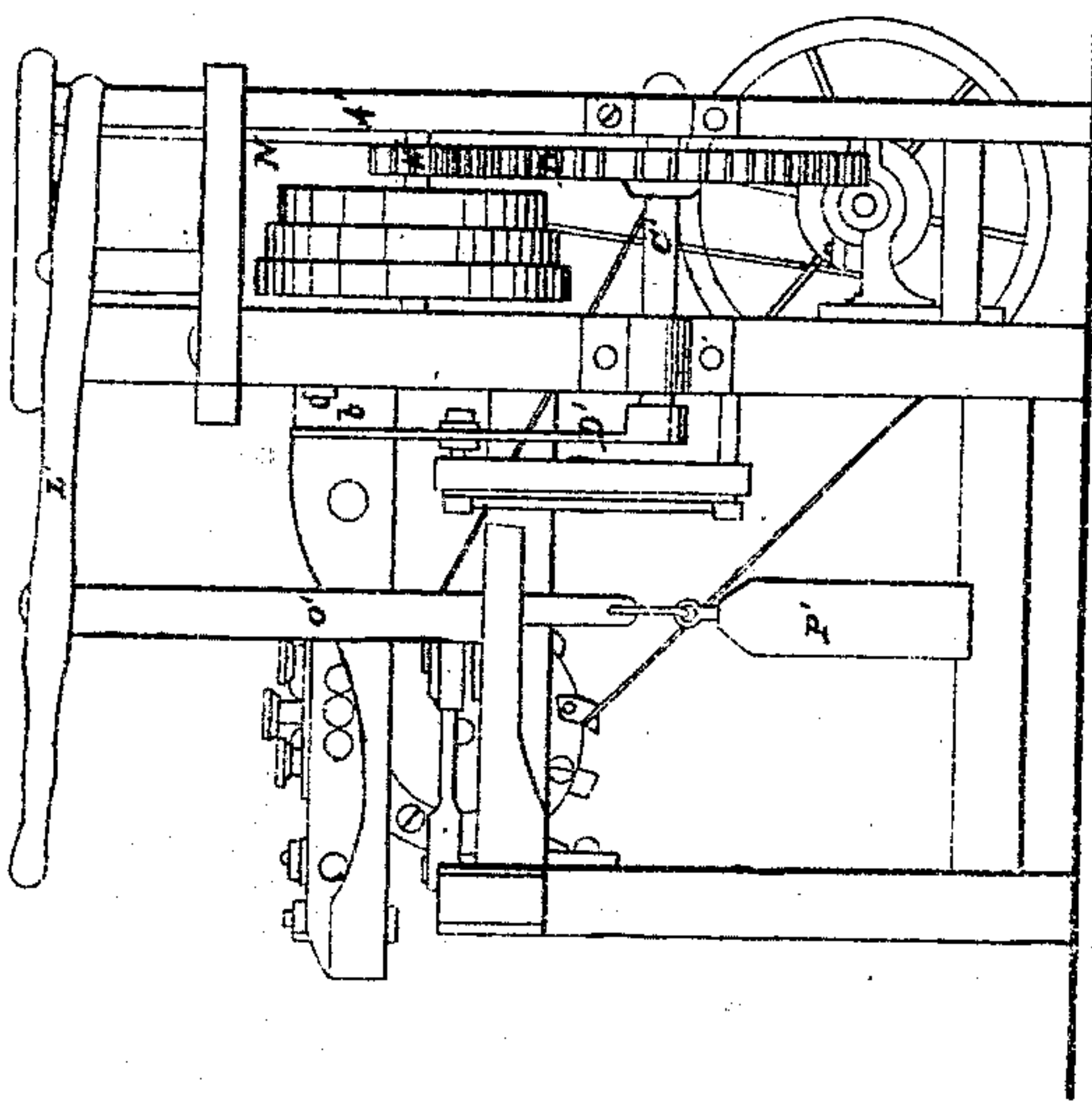


Fig. 2.

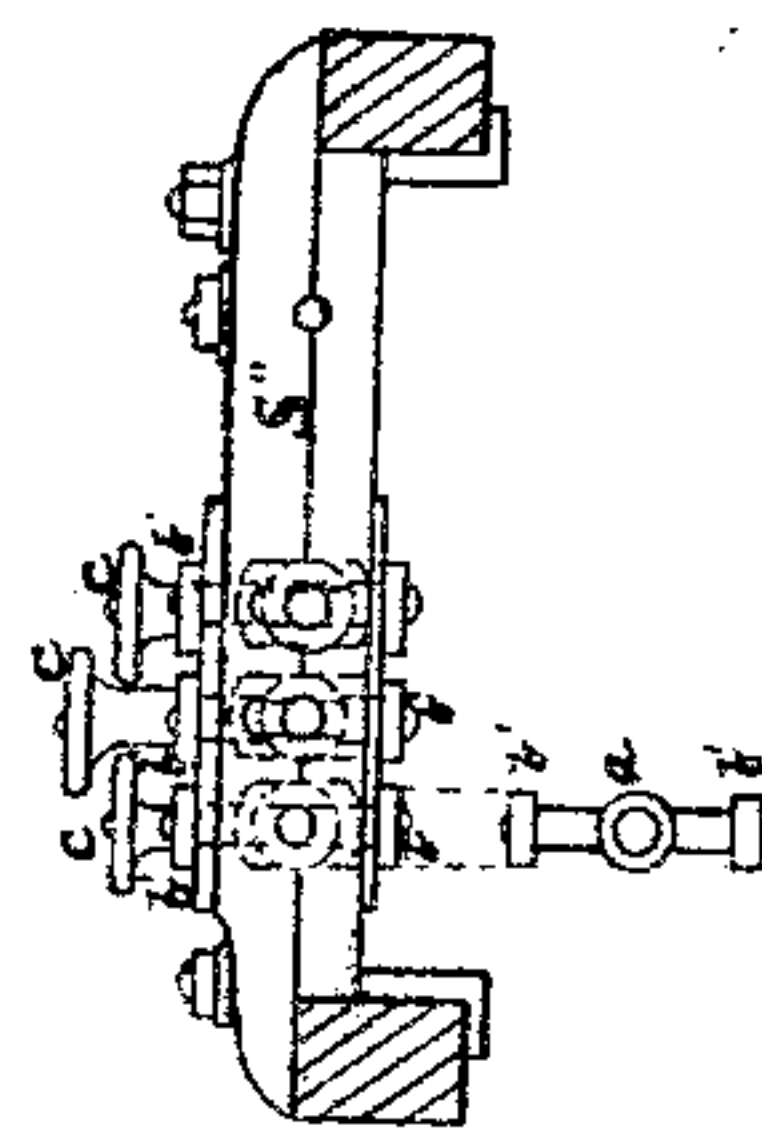
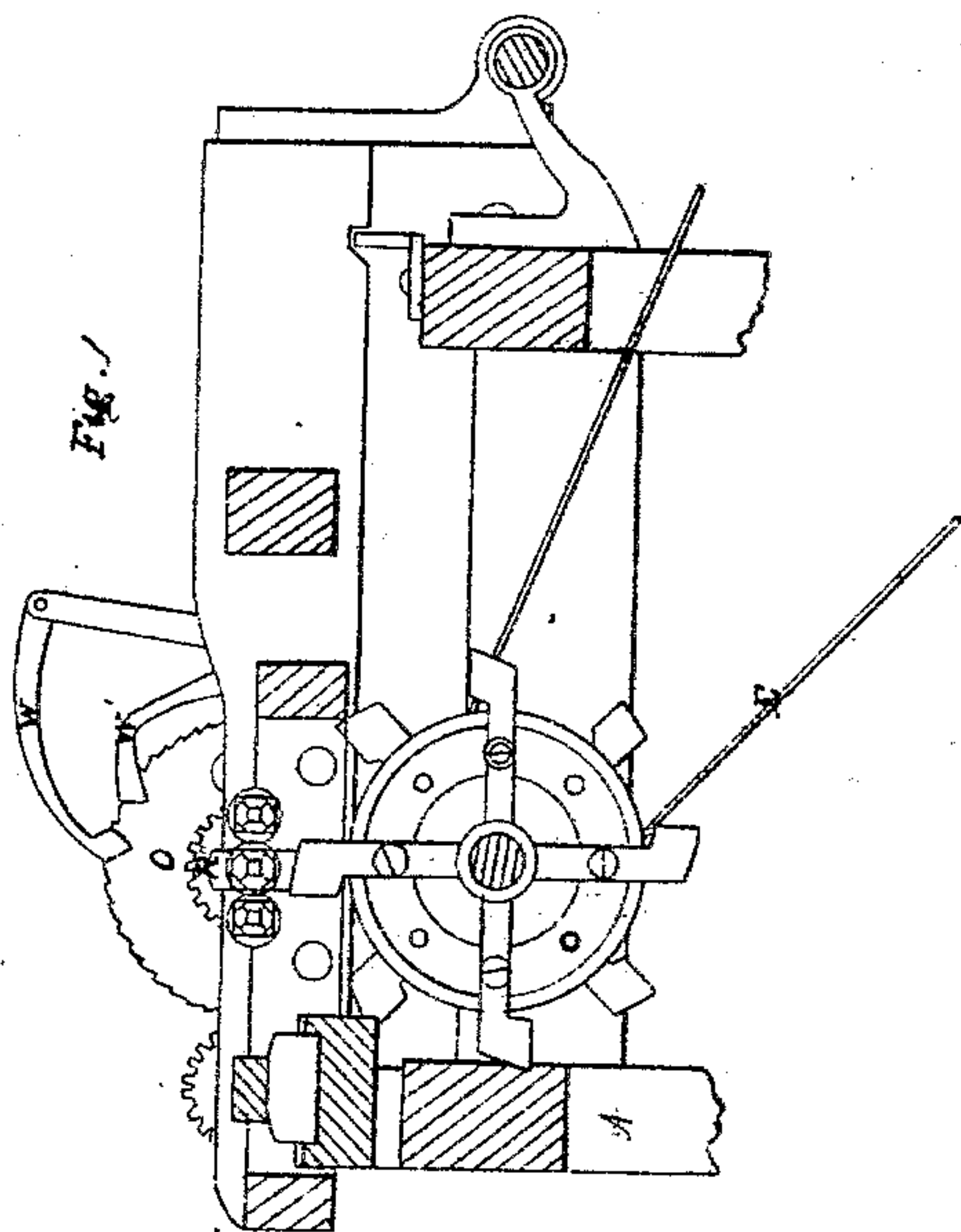


Fig. 1.



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United States Patent Office.

E. K. WISELL, OF WARREN, OHIO.

Letters Patent No. 73,423, dated January 14, 1868.

IMPROVEMENT IN WOOD-TURNING LATHES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, E. K. WISELL, of Warren, in the county of Trumbull, and State of Ohio, have invented certain new and useful Improvements in Machines for Turning Irregular Forms; and I do hereby declare that the following is a full and complete description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, Plate I, is a side view of the machine.

Figure 2 is a view of the top.

Figure 3 is a view of the front end.

Figure 4 is a view of the rear end.

Figure 1, Plate II, a transverse section.

Figure 2 is a detached section.

Like letters of reference refer to like parts in the views.

This invention relates to an improvement on a former machine, for which Letters Patent were granted to me, March 3, 1863, and for a full and complete understanding of this improvement, its application and importance, a description of the machine will be made, and which is as follows, viz:

A, fig. 1, is the frame of the machine, in which is mounted the cutter-head B, fig. 2, on the shaft C, fig. 2, journaled in the boxes D, and which is driven by a belt, E, passing from the large wheel F, fig. 3, on the shaft G, fig. 1, to a pulley on the shaft C referred to. On the top of the frame A, immediately over the cutter-head, is a sliding frame or carriage, H, fig. 2. This carriage is hinged to the frame A, by means of the adjusting-stays I, fig. 1, secured to the ends of the carriage by a screw, J, by means of which, and the slot, through which the screw passes, the carriage may be adjusted for a purpose presently shown. The lower ends of the stays referred to are fitted to the rod K, and on which they slide, said rod being attached to the side of the frame by adjusting-brackets, L, fig. 2, and thus connecting the carriage to the frame, as above said. In this carriage are arranged the centres M M', for holding the work while being turned, and of which M are the foot or dead-centres, and M' the head centres or drivers.

It will be observed that there are three centres at each end, and that the head centres are operated by an arrangement of gearing, as follows: The middle centre passes through the end of the carriage, and upon the projecting end is keyed a feed-wheel, O, fig. 3, between which and the frame is keyed a cog-wheel, P, fig. 2. On the opposite diameters of this wheel are engaged the wheels Q R, shown also in fig. 3. The wheel Q communicates motion to a small wheel, S, which in turn operates the wheel T, on the end of the centre M', causing it to revolve in the same direction as the middle centre. The wheel R being on the same shaft with the cog-wheel U, and which wheel U engages in the wheel V, on the end of the side centre M', causes it to turn in the same direction as the others. Thus the three centres, by the peculiar arrangement of the cog-wheels, have one common direction, and simultaneous in their revolution, and which is made to revolve by the feed-wheel referred to, and pawl W, fig. 3. This pawl is pivoted to the minor arm of the right-angled lever X, fig. 3, pivoted to the carriage, at the point X'. The major arm of said lever reaches out over the side of the frame A, upon the top of which frame is secured a pair of inclined planes or cams, Y Z, figs. 1 and 3, which operate the free end of the lever and pawl, as will hereafter be shown.

The carriage is made to traverse backward and forward on the frame by means of the following device, viz: In the small supplementary frame A', fig. 4, is hung a cog-wheel, B', fig. 1, on the shaft C', to the end of which is keyed an arm, D'. Depending from the under side of the carriage is an arm, E', which is connected to the arm D' by the link F'. Now, it will be evident that, by this arrangement, as the arm D' is made to revolve, the carriage will be carried backward and forward by the link, and the distance traversed will be greater or less, according to the adjustment of the link, being made near to or distant from the end of the arm D', a series of holes being made in the arm for that purpose.

As above said, the cutter-head is driven by the belt E and pulley F. This pulley, in turn, is driven by the cone-pulley G' and belt H', which, in its turn, is driven by the cone-pulley I' and belt J', the cone I' being geared to the wheel B' by a pinion, K', fig. 4, which is thrown into and out of gear with the wheel by the lever L'. The end of the shaft, on which the pinion K' is keyed, is fitted in a slot, L'', so as to allow of its being lifted up, and thus disengaged from the wheel, by the lever referred to, and to which it is connected by the link N. The pinion, when engaged with the wheel, is kept thus by the lever or slide N', fig. 2, which is slid into a notch cut in the lower end of the standard O', fig. 4, but which, on being slipped from the notch, the pinion is disengaged by the weight P', attached to the lower end of the standard, which draws down the major arm of the lever L', and, as a consequence, raises the short arm, to which the pinion or the shaft of the pinion is connected, by the link N, and thus disengages it, as before said.

Having thus described the construction and arrangement of the machine, the practical operation of the same is as follows: The bolts or timber, cut of a proper length and size for a spoke, axe-helve, &c., is put into the machine on the centres, as indicated by the dotted lines in fig. 2, which, in this instance, is supposed to be a spoke, the iron pattern Q' of which is hung in the same way at one side of the carriage, and which is operated by the wheel R', conjointly with the three wooden spokes, and after which they are patterned. It will be remarked that the position of the three spokes is such as to place them in a relative circle with the cutter-head, i. e., the cutter-head, and the arc of a circle, described by the three spokes around the head, have a common centre, as seen in fig. 1, Plate II; hence the three spokes are equally distant from the axis of the cutter-head; and, as a consequence, will be turned the same size, which is done by the cutter S' cutting across the grain of the wood. The spoke, at the same time, is fed to the cutter lengthwise, by the carriage being moved reciprocally, by the link F', as above described. When the tenon-end of the spoke has arrived to the cutter, the lever X is raised by the cam Y, which causes the pawl W, and the supplementary pawl W', to hitch along the feed-wheel O, giving thereby a slight turn to the spokes, bringing the yet uncut wood to the head. The carriage now moves back in the opposite direction, and, when the felloe-ends of the spokes come to the cutters, the lever is again raised by the cam Z, which gives another turn to the feed-wheel and spokes, which again returns, bringing the tenon-end once more to the cutters, and so on, each time the ends of the spokes reach the cutter-head they are turned enough for a cut, and fed up reciprocally, as before observed, until the spokes have made one complete revolution, thus finishing the work of turning, which, it will be seen, is done in longitudinal sections.

In a former machine, the spokes thus turned were of unequal size, owing to the carriage being hinged or pivoted to the frame A, at the points b, fig. 2. Thus, when the pattern Q' lies flat on the friction-roller T', the spokes were equally distant from the cutter-head, but, on turning the pattern, so as to bring it edgewise on the roller, the carriage would be raised up more or less, and would thus carry the spoke or centre M', the one most distant from the point b, farther from the cutters than it would the middle spoke, and the middle spoke farther than the third one; hence the three spokes would be turned of unequal size.

In order to remedy this defect, and cause the spokes to be turned of an equal size, the carriage in this machine is hinged to the rod K, at one side, and below the top of the frame A, by the adjusting-stays I, above described. Now, as the carriage may be raised up by the irregular pattern, the spoke M' will be raised also. At the same time will be raised the middle spoke and last M''. Now, as the carriage is hinged below its horizontal centre, it will be obvious that, on its being raised by the irregular pattern, the carriage will, at the time of raising, be thrown slightly back, and thus bring the spoke M' a little nearer to the cutters, and, at the same time, the spoke M'' will be carried the same distance from the cutters that the spoke M' was moved towards it, and thus the several spokes will retain their same relative distance to the axis of the cutter-head, and, therefore, will be turned all of an equal size.

In order to turn different-sized spokes or other work in this machine, it is done by bringing the centres closer to, or moving them away from, the cutter-head, more or less, according to the size of the spokes required, and which is effected by raising or lowering the carriage, by means of the adjusting-stays I, or by the adjusting-brackets y, the rod K, at the same time, raising or depressing the roller, so as to correspond with the adjustment of the stays, thus elevating or depressing the carriage, thereby bringing the several centres closer to, or moving them away from, the cutter-head, according to the size of the spokes or work required. Should greater difference in the size of the work be required, a larger or a small pattern must be used, instead of changing the position of the roller.

In making these changes in the distance of the centres from the cutter, for the purpose above said, it will sometimes be found necessary to change the distance of the middle centre more or less, independent of the change made in the side centres, as the position of this centre is less affected by the adjusting of the carriage than are the two side centres. In order to do this, the centre is secured in a slotted slide, R'', fig. 1, Plate II, by which it can be raised or depressed, as the nature of the circumstances may render it necessary to adjust it.

With the elevation and depression of the head centres, a corresponding change must be made in the foot or dead-centres. To effect this change, the centres, which, it will be obvious, hold the same relative distance to the axis of the cutter-head as do the head centre, are made to pass through a collar or yoke, a, fig. 2, Plate II. This collar is provided with a screw, projecting from two of its opposite sides, which are made to pass through above and below, when placed in the foot-block S'', slots or elongated holes being prepared in the block for its reception.

By this arrangement, it will be evident that, in order to raise the centres, it can be easily done, and, to the least degree, by loosening the nuts b' below the block, and screwing up those above; and so, on the contrary, to depress the centres, the upper nuts are loosened, and the bottom ones tightened, and, when thus properly adjusted to the work, they are securely held by a yoke and thumb-nut, c, arranged in the ordinary way, common to wood or other lathes.

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

The reciprocating and vibrating frame H, pivoted to the adjustable rod K, and carrying the adjustable live and dead-centres M M', arranged concentrically with the axis of the revolving cutter-head B, and operating substantially as and for the purpose described.

Witnesses:

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J. HOLMES.

E. K. WISELL.