

(No Model.)

4 Sheets—Sheet 1.

W. J. PERKINS.
LOG HANDLING MECHANISM.

No. 342,536.

Patented May 25, 1886.

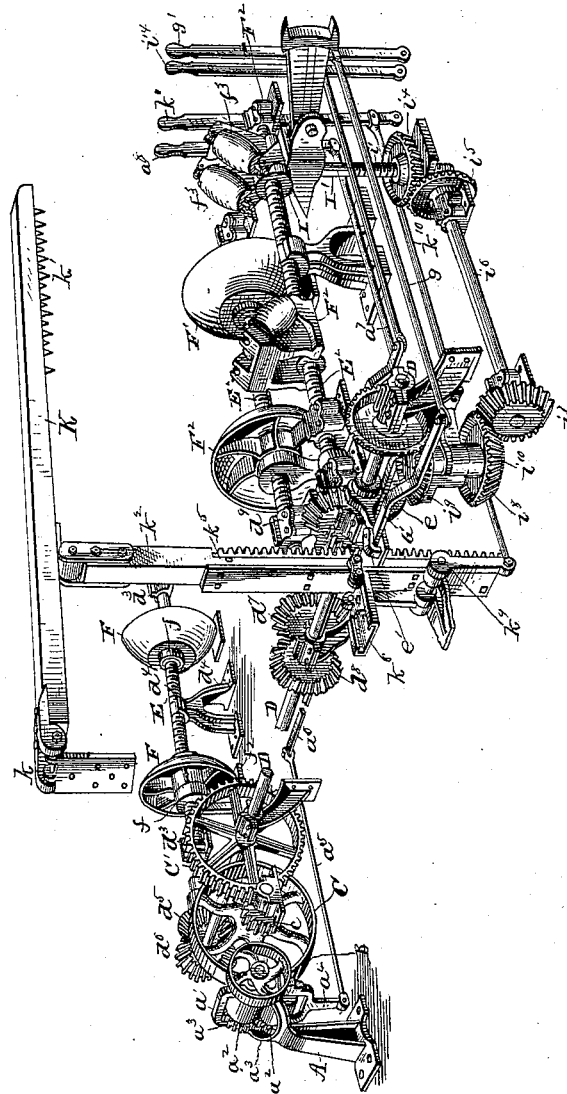


Fig. 1

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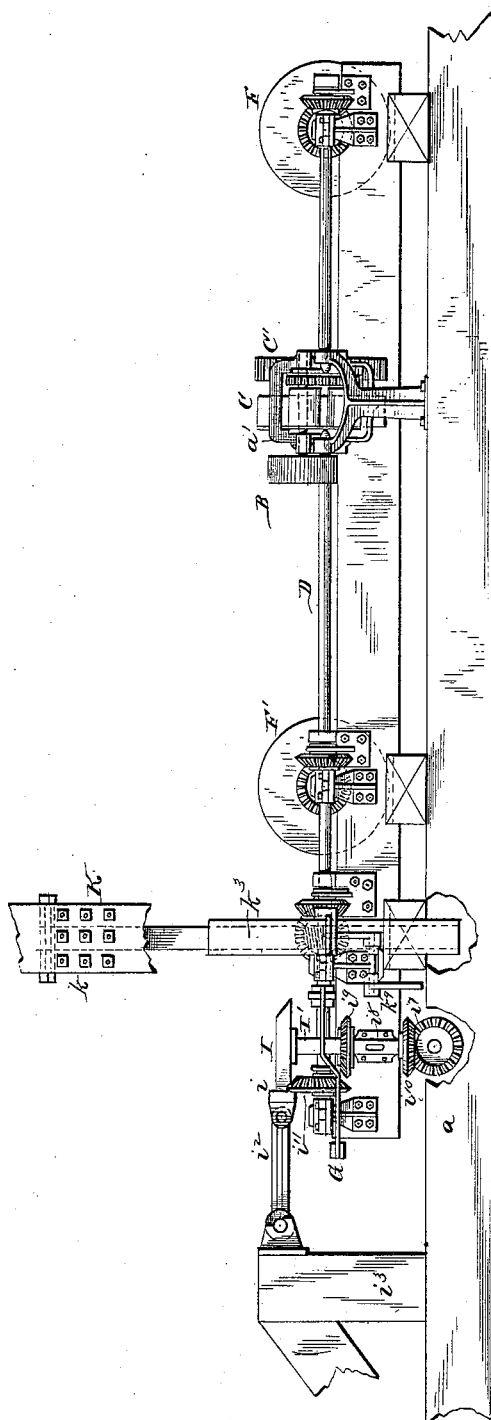
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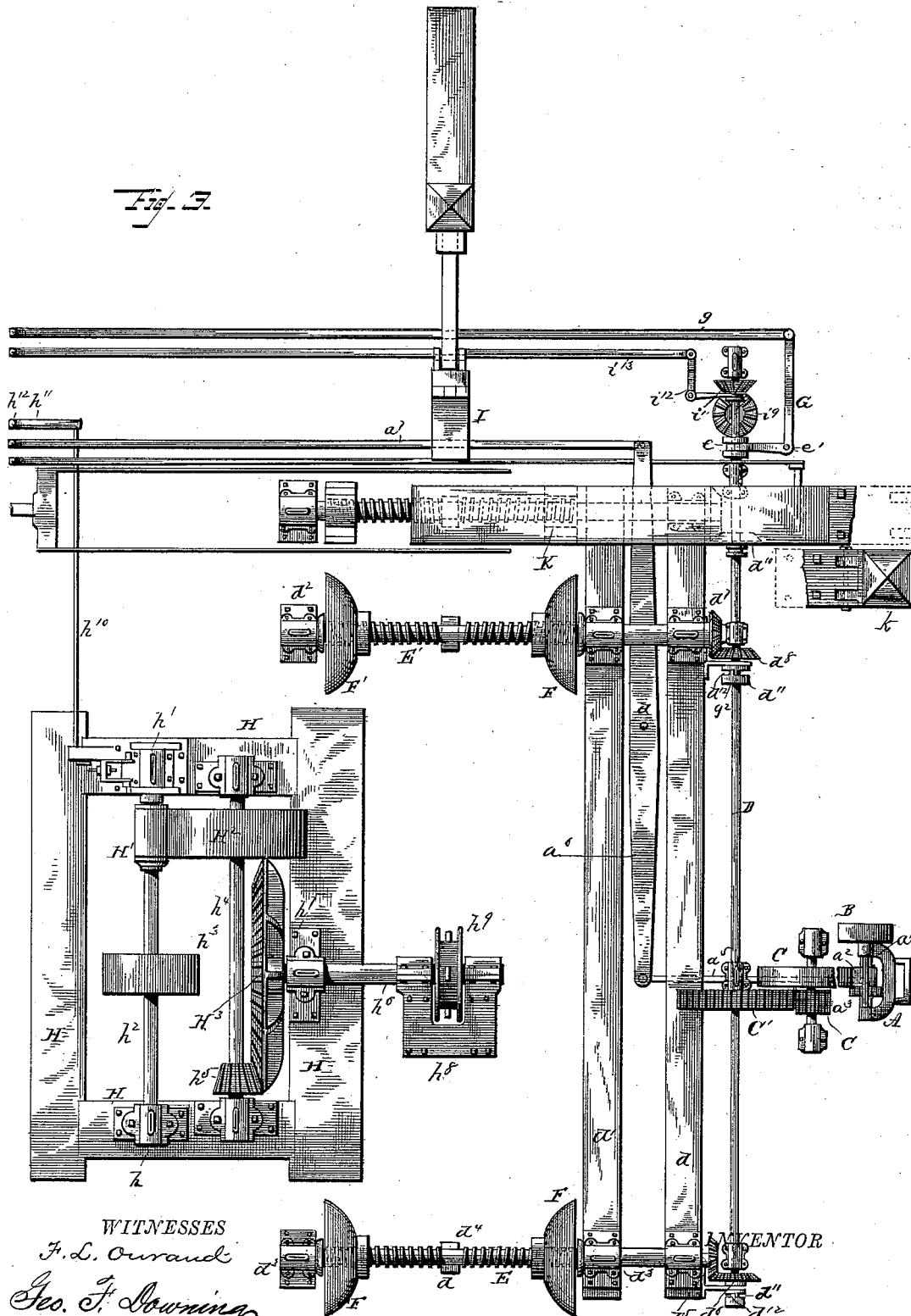
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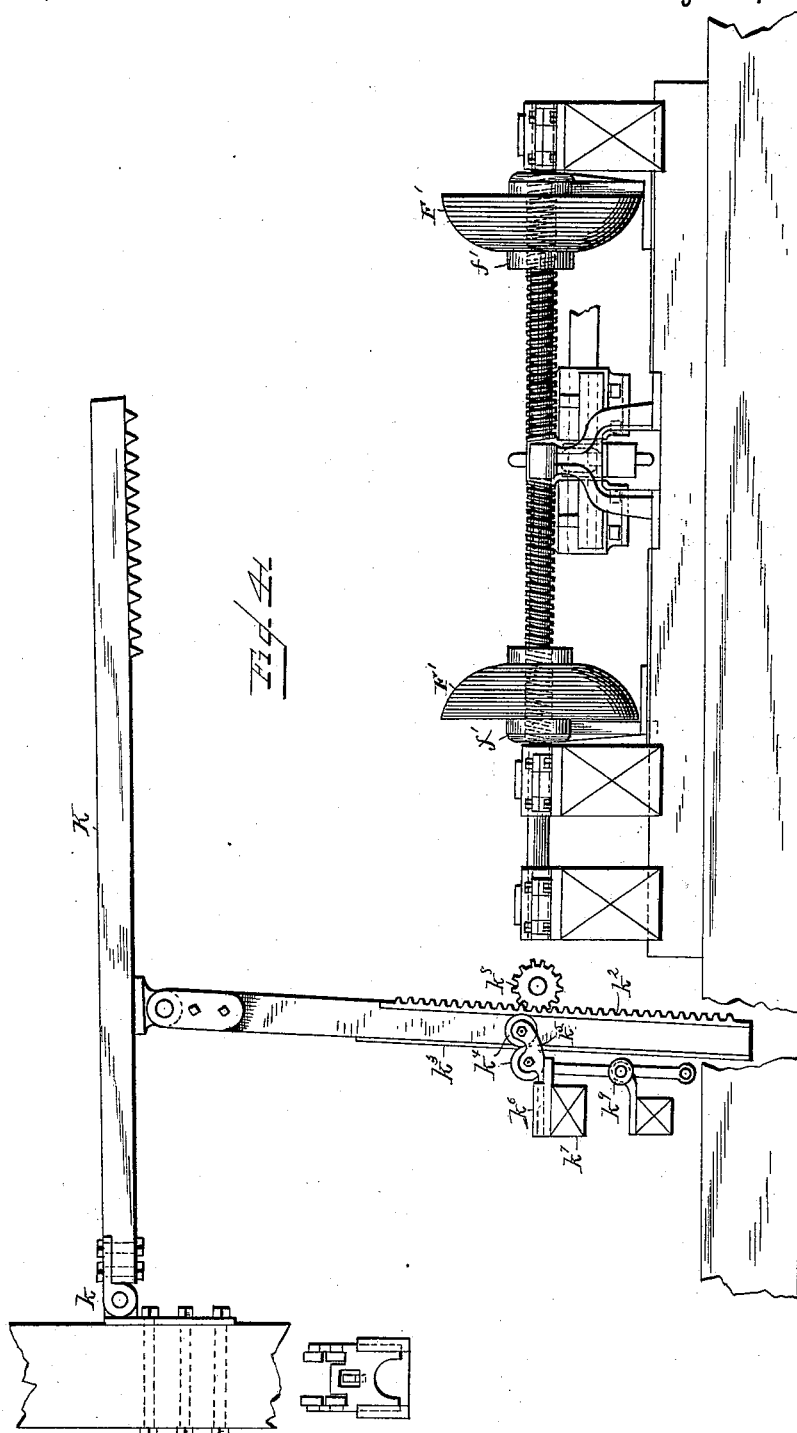
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UNITED STATES PATENT OFFICE.

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LOG-HANDLING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 342,536, dated May 25, 1886.

Application filed December 31, 1884. Renewed January 20, 1886. Serial No. 189,179. (No model.)

To all whom it may concern:

Be it known that I, WILLIS J. PERKINS, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Log-Handlers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a combination log-handler for handling logs previous to and during the operation of being cut into bolts, the object being to provide devices whereby a person by means of a set of levers may adjust the machine to a log of any dimensions, level it, regulate the distance of its travel, aid in moving it lengthwise, and also aid to hold it rigidly in place while being cut.

A further object of my invention is to provide a device of this character which shall be simple and capable of being easily and readily operated and strong and durable in use; and with these ends in view my invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of my improved device, the drag-chains, driving parts, and foundation-timbers being omitted. Fig. 2 is a view in side elevation. Fig. 3 is a top plan view thereof. Fig. 4 is a view in end elevation.

A represents a pillar-casting rigidly secured at its lower end to a beam, *a*, of a suitable frame or foundation, to which casting is pivotally secured a yoke, *a'*. In this yoke are mounted two friction-rolls, *a²*, the ends of which are provided with pinions *a³*, meshing with each other, to the outer end of the shaft of one of which rolls is secured a band-wheel, B, through which power is applied to the machine.

To one of the cross-beams of the main frame or foundation of the mill are secured bearings, in which is journaled a shaft carrying a friction-pulley, C, the shaft also carrying a small gear-wheel, *c*, adapted to mesh with a gear, *C'*, mounted on the main shaft D, the latter being journaled in suitable bearings secured to one of the beams *d* of the main frame.

To the yoke *a'* is secured or formed integral

therewith a downwardly-projecting arm, *a⁴*, to the lower end of which is pivotally secured one end of a pitman, *a⁵*, the opposite end of which is connected to a lever, *a⁶*, pivoted at *x* to a suitable bearing. To the opposite end of the lever *a⁶* is connected a pitman, *a⁷*, the opposite end of which is secured to the lower end of the lever *a⁸*, pivoted at its center to one of the foundation-timbers. (Not shown.) It will now be readily seen that as the two rollers *a²* are geared together they will travel in opposite directions, and by pulling on the lever *a⁸* one of the rolls will be brought into contact with the pulley C, and thereby impart its motion through said pulley and gears *c* *C'* to the main shaft, and again by pushing on the lever *a⁸* the opposite friction-roll will bear on the pulley C, and the main shaft be turned in the opposite direction, and when the lever is brought to a vertical position the yoke *a'* will assume a similar position and hold both rolls out of contact with the pulley, and the main shaft D will remain stationary.

To the foundation-timbers *d*, *d'*, and *d²* are secured bearings *d³*, in which is journaled the shaft E, provided on opposite sides of the central bearings, *d⁴*, and between the beams *d'* and *d²*, with a right and left hand screw-thread, the outer end of said shaft being provided with a bevel-gear, *d⁵*, meshing with a similar gear, *d⁶*, loosely secured near the outer end of the main shaft D.

F represents cone-rollers loosely secured on long nuts *f*, the latter being mounted on the shaft E, one on either side of the support *d*, the lower ends of these nuts extending downwardly beyond the iron strap *f²*, secured to one of the foundation-timbers.

To the main shaft D is loosely secured the gear *d⁸*, similar to the gear *d⁷*, and adapted to mesh with the gear *d⁷*, secured to the shaft or screw E', similar in construction and mounted in a similar manner to the shaft E. On this shaft are mounted cone-rollers F', in line with the cones F, the said cones being secured to long nuts *f'* on the shaft, similar to the nuts *f*.

On the shaft D, and beyond the gear *d⁸*, is loosely secured a similar gear, *d¹⁰*, with which meshes a gear, *d⁹*, secured on the outer end of a shaft, E³, similar to the shafts E and E' and mounted in a similar manner. On this latter

*shaft, E², are mounted the nuts F², each carrying two rollers, f², mounted thereon, and also having depending arms fitting against an iron strap.

5 To the shaft D are rigidly secured two collars, e, between which fits one arm of a bell-crank, G, the other arm of the latter being connected to a pitman, g, which has its opposite end connected with a lever, g', pivoted at its lower end to one of the foundation-timbers, the said bell-crank being pivoted at e'. By
10 operating this lever the main shaft D is moved back and forth in its bearings, and also through the gears d², d³, d¹⁰, each of which is provided on its hub with a lug or projection, d¹¹, which, when the lever g' is operated to pull the shaft D in a direction toward the pitman g, engages it with a similar lug, d, formed on a collar or clamp, g², rigidly secured to the shaft. It will
20 now be readily observed that by operating the lever g' the gears d², d³, and d¹⁰ may be locked to the shaft D, and by operating the lever a⁸ the shaft D set into motion, as before described, thereby turning the screws E, E', and E², whereupon the cones F, F', and F² will be simultaneously moved toward or away from the centers of their respective shafts, the nuts on which they are secured being prevented from turning by means of the metallic strap f². By
30 these means I am enabled to readily and easily adjust the machine for the reception of a log of any diameter and hold it securely in position and prevent it from rocking. After the cones have been properly adjusted the shaft is moved, thereby throwing it out of engagement with the gears d², d³, and d¹⁰.

Between the shafts E and E' is secured the rectangular frame H, to which are secured bearings h h', in which is journaled a shaft, h², the latter being turned by means of a driven hand-wheel, h³, keyed thereto, a friction-roller, H', being also secured to the shaft and near one end thereof.

Parallel to the shaft h² is secured the shaft h⁴, to which, near one end thereof and in line with the roller H', is keyed the large friction-wheel H², and near the opposite end thereof is secured the bevel-gear h⁵, meshing with a gear, H³, mounted on one end of a shaft, h⁶, which latter is journaled at right angles to the shafts h⁴ h², secured to the frame H and to the foundation-timbers, the shaft h⁶ near its opposite end being provided with a sprocket-wheel, h⁹.

35 To the bearing h', which is adapted to slide on a metal plate, is secured an arm to which is secured one end of a bell-crank, the opposite end of the latter being connected with a pitman, h¹⁰, connected with the lever h¹¹, which latter is secured to the operating-lever h¹². When the lever h¹² is moved in one direction, the roller H is forced against the friction-pulley H, and thereby sets in motion, through the intervention of the gears h⁵ and H³ and shaft h⁶, the sprocket-wheel h⁹. When the lever is moved in the opposite direction, the

roller H' is pulled away from the pulley H² and the sprocket-wheel h⁹ stopped. Around the wheel h⁹ passes an endless chain, the lower portion of which passes between the legs of the support d⁴ and the upper portion above the shaft E, the chain being provided with teeth which catch on the log to be sawed. By thus operating the lever the log may be drawn upon the cones without the necessity of handling or lifting it, thus saving a great amount of time and labor.

I represents a bumper or stop provided with a shoulder or step, i, against which the end of the log strikes when pulled upon the cones. This stop is secured on its under side to a vertical shaft, I', the lower portion of which is screw-threaded, as shown at i', the rear end of the stop being hinged to a horizontal beam, i², loosely secured at its opposite end to a heavily-braced timber, i³. The lower end of the shaft passes through a central screw-threaded opening in a bevel-gear, i⁴, having an upper and a lower bearing secured to one of the foundation-timbers and meshing with a similar gear, i⁵, secured to one end of a shaft, i⁶, the opposite end of the latter being also provided with a gear, i⁷, on its opposite end, the said shaft being journaled in bearings secured to the foundation-timbers. To one of the timbers is secured a bearing, i⁸, through which passes a vertical shaft having on its upper and lower ends a bevel-gear, i⁹ and i¹⁰, the latter meshing with the gear i⁷ and the former adapted to mesh with the gear i¹¹, loosely secured to the shaft D, having a groove in its hub in which fits one end of the bell-crank i¹², the opposite end of the latter being connected with the pitman i¹³, which is secured to the lever i¹⁴, pivoted at its lower end to one of the foundation-timbers. By moving this lever in one direction the gear i¹¹ is slid on the shaft D in mesh with the gear i⁹, and by operating the lever a⁸ the two gears are set in motion, which, through the intervention of the gears i⁷, i⁵, and i⁴ and the shaft i⁶, raise or lower the shaft or screw I' and the strike or stop I. By these means the end of a log may be raised or lowered, as desired, and so held while sawing that the saw-cut may be parallel with the end of the log, thus wasting no timber, and also forming shingles from the upper and lower portion of the bolt of equal length. After the log has been raised or lowered the proper distance the lever i¹⁴ is moved in the opposite direction, thereby separating the two gears i¹¹ and i⁹, retaining the strike or stop in its adjustment, and at the same time allowing the shaft D to be turned in either direction without changing it.

K represents a log-dog hinged at k to a heavy post in the mill-frame, and provided at its opposite end with depending pointed metal dogs k', adapted to enter the log and hold it in a stationary position, as will be hereinafter described.

To the dog or beam K is hinged the verti-

cal rack-bar k^2 , provided on its rear face with the guide-plate k^3 , extending out beyond the sides of the rack k^2 . This plate is fitted between four rollers, k^4 , mounted in a yoke, k^5 , the forward end of which slides in a grooved box or bearing, k^6 , secured to a frame-timber, k^7 . The rack k^2 is adapted to mesh with a pinion, k^8 , secured to the shaft D, the rack being adapted to be moved out of mesh with said pinion by means of the rock-shaft k^9 , which is connected with the pitman k^{10} , the lower part being secured to the operating-lever k^{11} . When this lever is moved in one direction, the rock-shaft, which is connected with the yoke k^5 , moves the latter in the box k^6 , and forces the rack-bar k^2 in mesh with the pinion k^8 , which, revolving with the shaft D, lowers the latter and forces the dogs k' into the log, and securely holds the same against any movement while sawing, and thus prevents the breakage of saws. When it is desired to set the log ahead, the lever a^8 is moved in the opposite direction and shaft D reversed, as before described, thus raising the dog K and allowing the log to be moved.

By means of my improved machine, timber, time, and labor are saved, one man only being required to operate the machine, all the levers being within easy reach of the operator. Again, any size log may be cut and held rigid in the machine, all danger of the log rocking or twisting being overcome.

It is evident that many slight changes in the construction and relative arrangement of the different parts might be resorted to without departing from the spirit and scope of my invention, and hence I would have it understood that I do not limit myself to the exact construction shown and described; but,

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

1. In a log-handler, the combination, with a frame and a driving-shaft, of a screw geared with said driving-shaft, and guide-rollers having female screw-threaded bearings, which latter are mounted on and geared with said screw, whereby the rollers are adjusted transversely.

2. In a log-handler, the combination, with a driving-shaft, of a series of rollers arranged in pairs, as shown, on one side of the driving-shaft, and devices connecting said rollers with the driving-shaft, whereby the rollers of the several pairs are simultaneously adjusted toward or away from each other.

3. In a log-handler, the combination, with a frame and driving-shaft, of log-supporting rollers secured on shafts provided with right and left hand screw-threads, and gearing connecting the driving-shaft and screw-threaded shafts, whereby the rotation of one or more of the said threaded shafts causes the rollers thereon to approach each other or separate, substantially as set forth.

4. In a log-handler, the combination, with

a frame, driving-shaft, and adjustable log-supporting rollers connected with said driving-shaft, of a log-dogging bar located above said rollers and hinged to a rigid support and dog-operating gear connecting the said log-dogging bar and driving-shaft, substantially as set forth.

5. In a log-handler, the combination, with a driving-shaft, adjustable log-supporting rollers, and a rack-bar for raising and lowering the log-dog, said rack-bar and adjustable rollers being operated by the driving-shaft, of a movable box for throwing the rack-bar into and out of engagement with the drive-shaft, substantially as set forth.

6. In a log-handler, the combination, with a series of log-supporting rollers, of a stop located at or near one end of the machine and in a position to engage the log on the rollers, and a screw-shaft for vertically adjusting the stop, substantially as set forth.

7. In a log-handler, the combination, with transversely-adjustable log-supporting rollers and a log-stop, of a driving-shaft, and a screw-shaft indirectly connected with said driving-shaft for vertically adjusting the log-stop, substantially as set forth.

8. In a log-handler, the combination, with a series of rollers for supporting a log, and a log-stop located at a point outside of said rollers, of a driving-shaft, intermediate devices connected with said driving-shaft for vertically adjusting said stop, a lever, and clutch operated by said lever for throwing the stop-elevating mechanism out of engagement with the driving-shaft, substantially as set forth.

9. In a log-handler, the combination, with a driving-shaft, gear-wheels loosely mounted thereon, clutches or equivalent devices for locking said gear-wheels to said shaft, and a lever or levers for operating the clutch mechanism, of transversely-adjustable log-supporting rollers, and gearing connecting the roller-shafts with the driving-shaft, substantially as set forth.

10. In a log-handler, the combination, with transversely-adjustable log-supporting rollers, a vertically-adjustable log-stop located at one end of the machine, and a movable log-dog located in a plane above the rollers, of a single shaft for moving the log-dog and adjusting the rollers and stop.

11. In a log-handler, the combination, with the screw-threaded shafts, rollers mounted thereon, and gear-wheels connected to said shafts, of a longitudinally-sliding drive-shaft, gear-wheels loosely mounted thereon and meshing with the gear-wheels on the screw-threaded shafts, and devices for locking the gear-wheels on the driving-shaft to said driving-shaft, substantially as set forth.

12. In a log-handler, the combination, with the screw-shafts, transversely-adjustable log-supporting rollers mounted on said shafts, and drive-shaft, and gear-wheels loosely mounted on said drive-shaft, of lugs formed on the loose gear-wheels and on the shaft, for locking the

gear-wheels to the shaft, and thereby operating the rollers, substantially as set forth.

13. In a log-handler, the combination, with a driving-shaft and the friction devices geared
5 with said driving-shaft, of transversely-adjustable log-supporting rollers, a vertically-adjustable stop located at one end of the machine, and a log-dog located in a plane above the supporting-rollers, the said stop, rollers,
10 and dog being adjusted by the driving-shaft.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIS J. PERKINS.

Witnesses:

EDWARD TAGGART,
FRED W. STEVENS.