

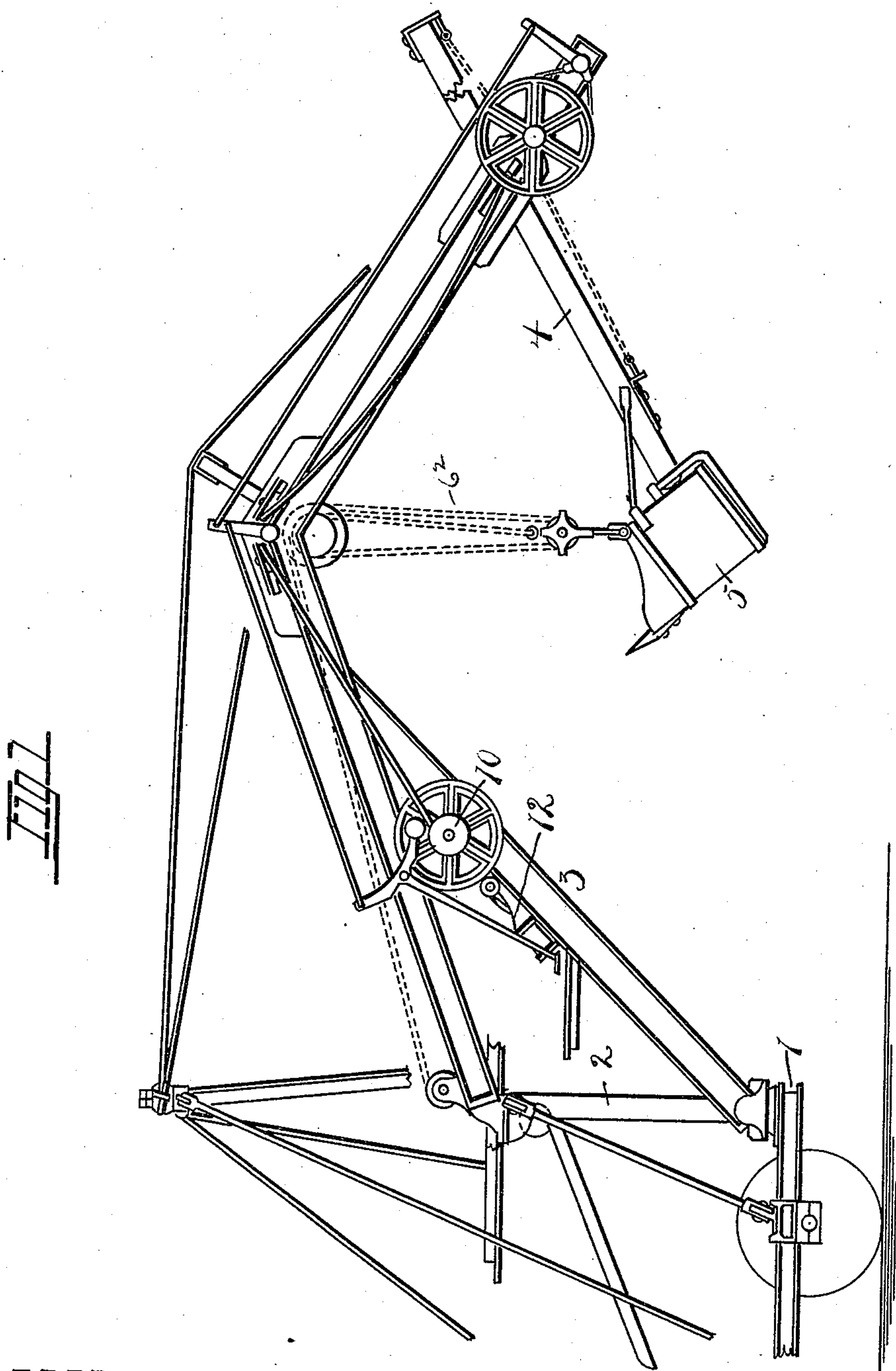
(No Model.)

J. B. WEBBER.
STEAM SHOVEL OR EXCAVATOR.

3 Sheets—Sheet 1.

No. 557,350.

Patented Mar. 31, 1896.



WITNESSES

Sare H. Keller.
Maud Schmeacher

INVENTOR _____

John B Webber
By William Webster
Atty

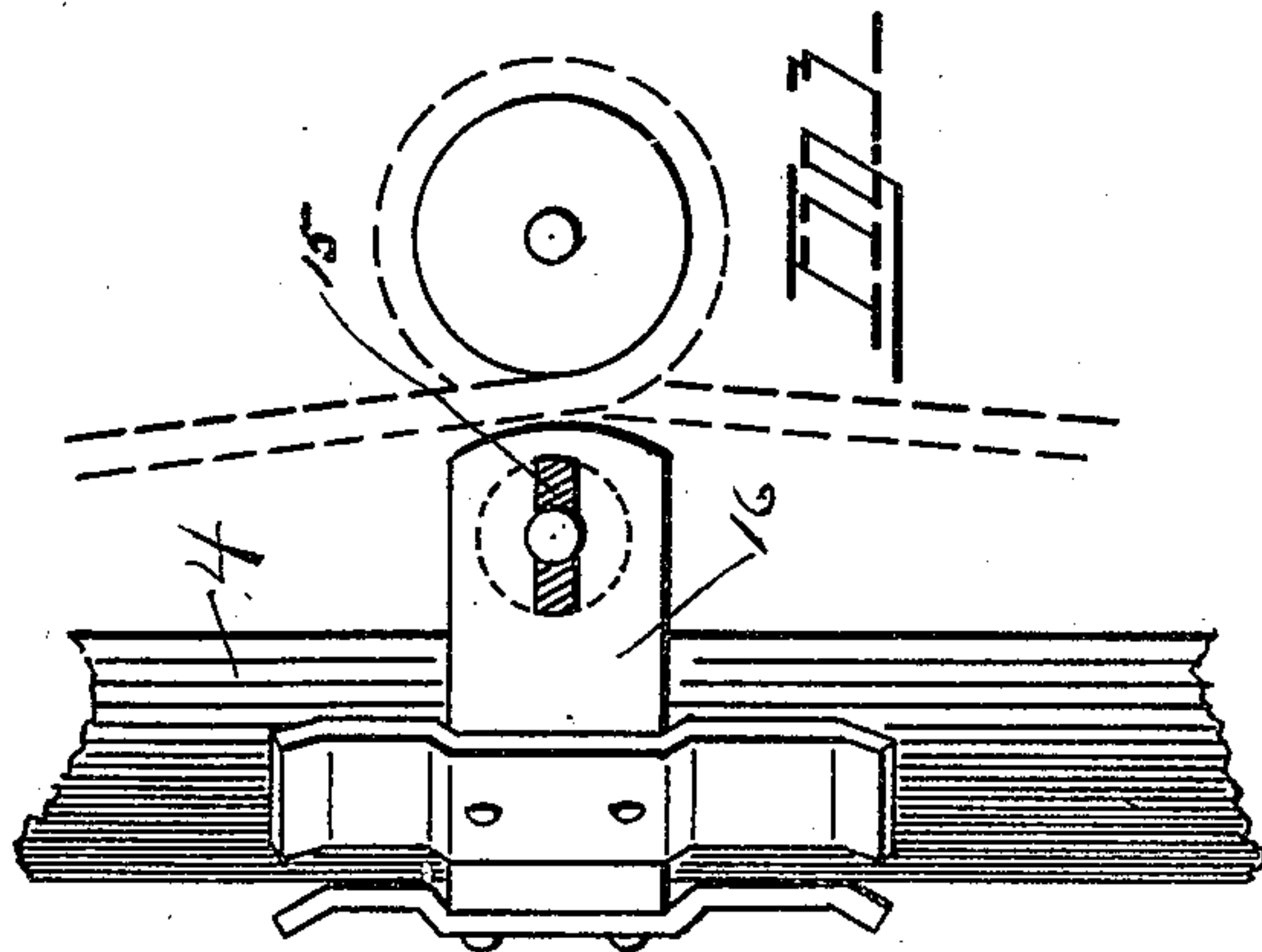
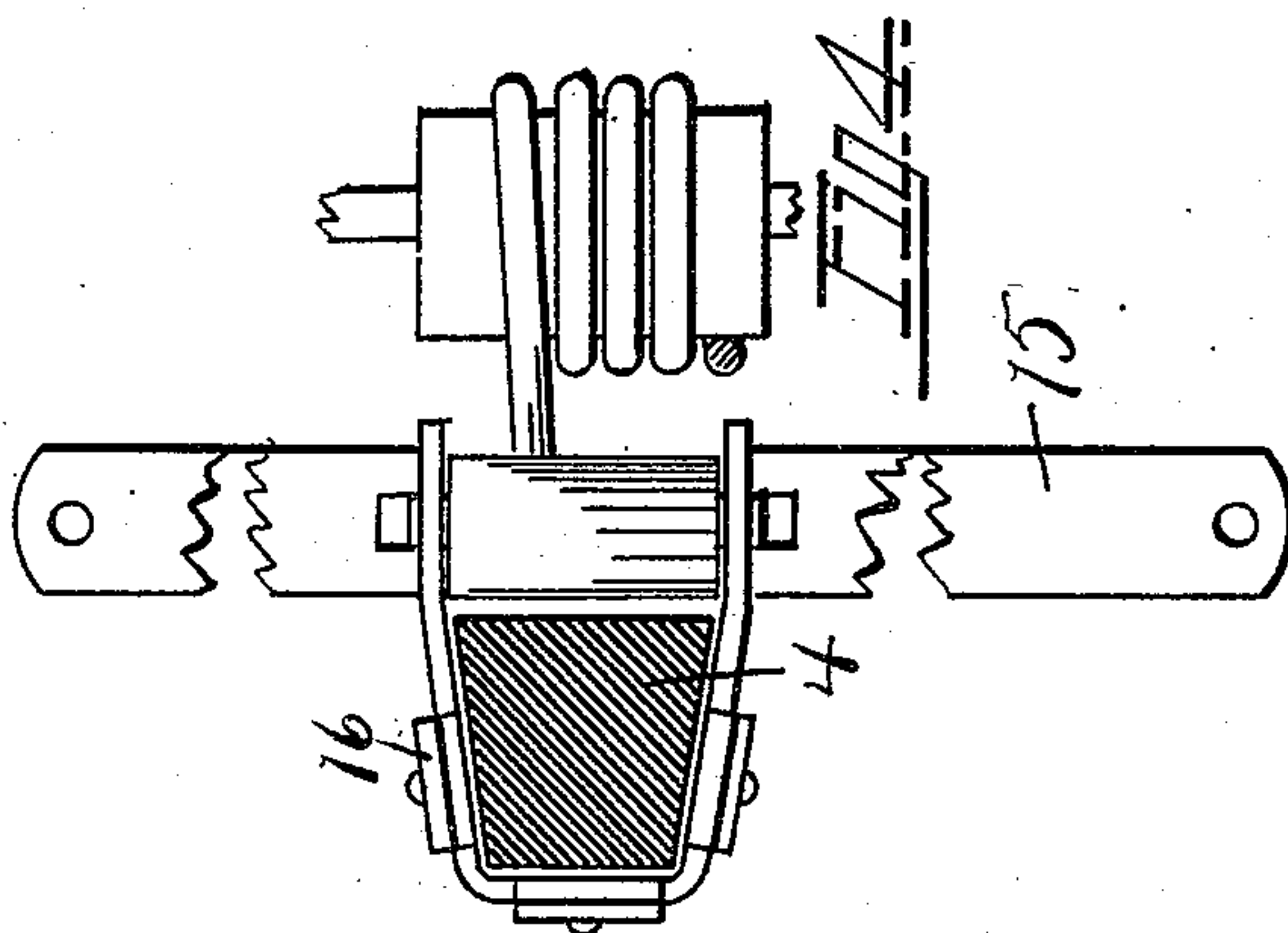
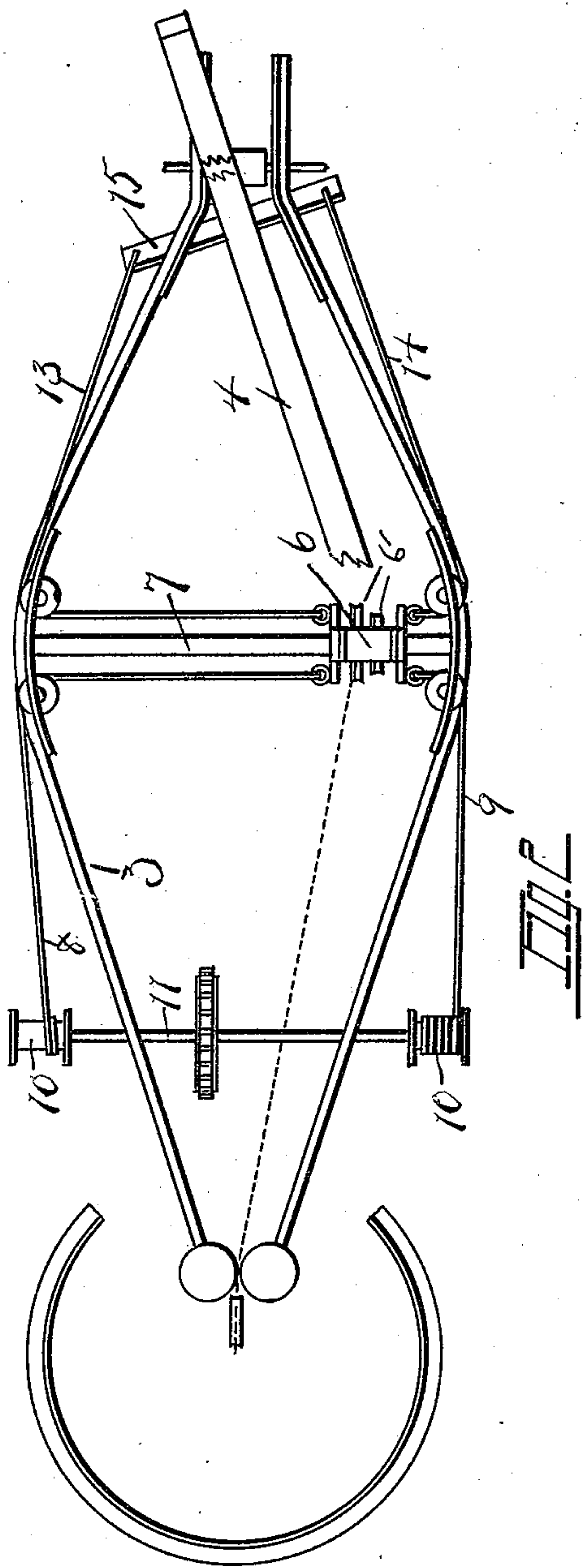
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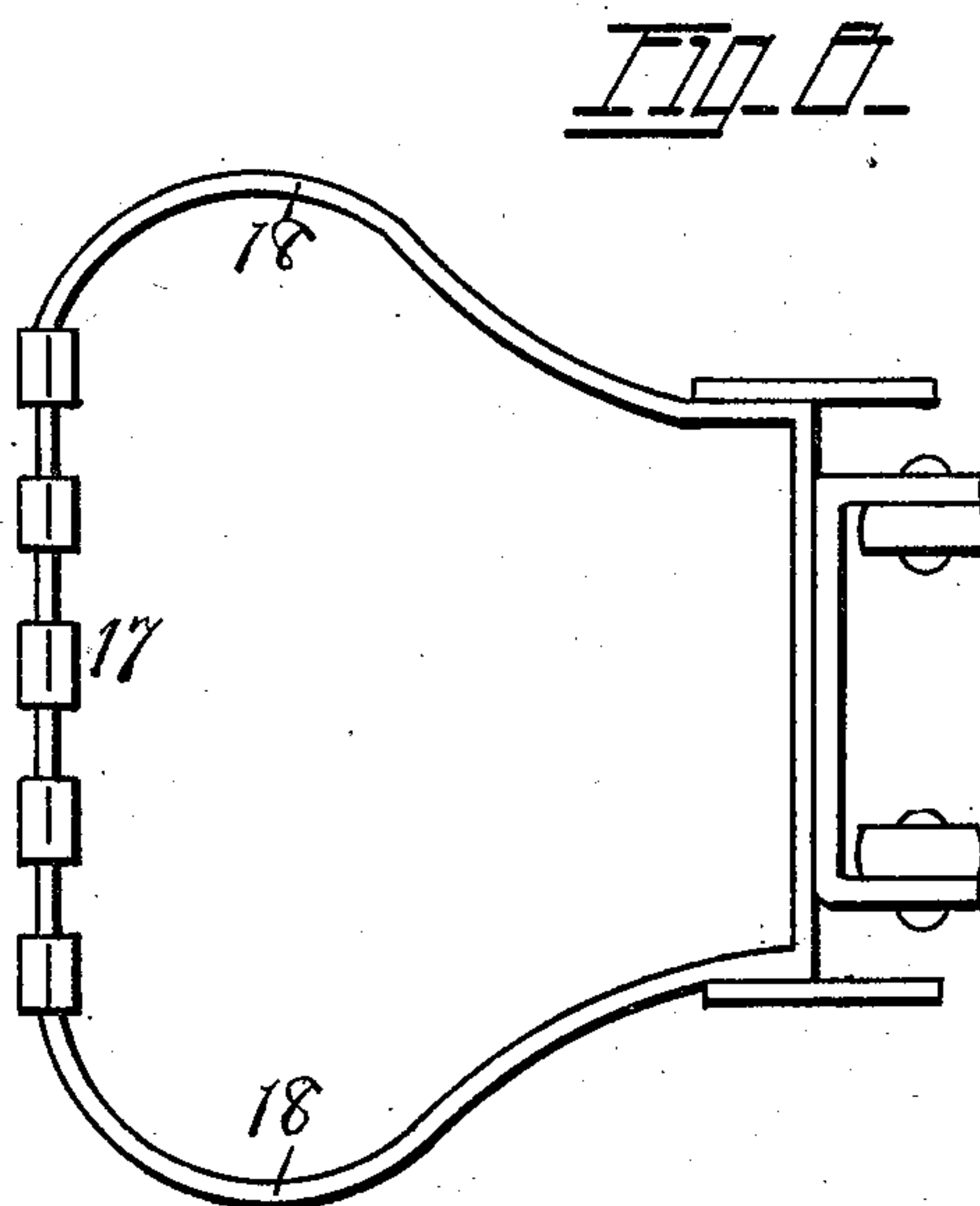
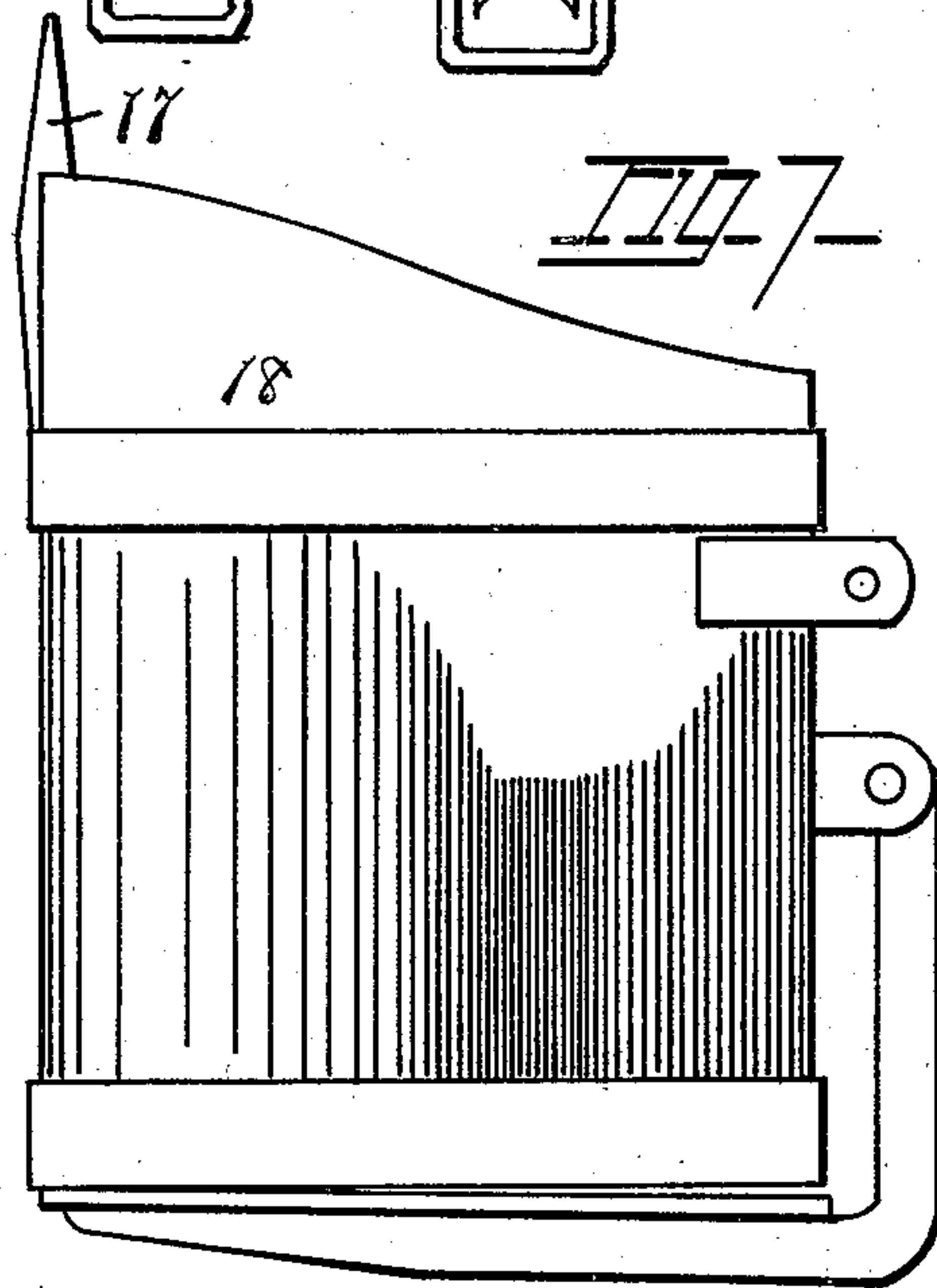
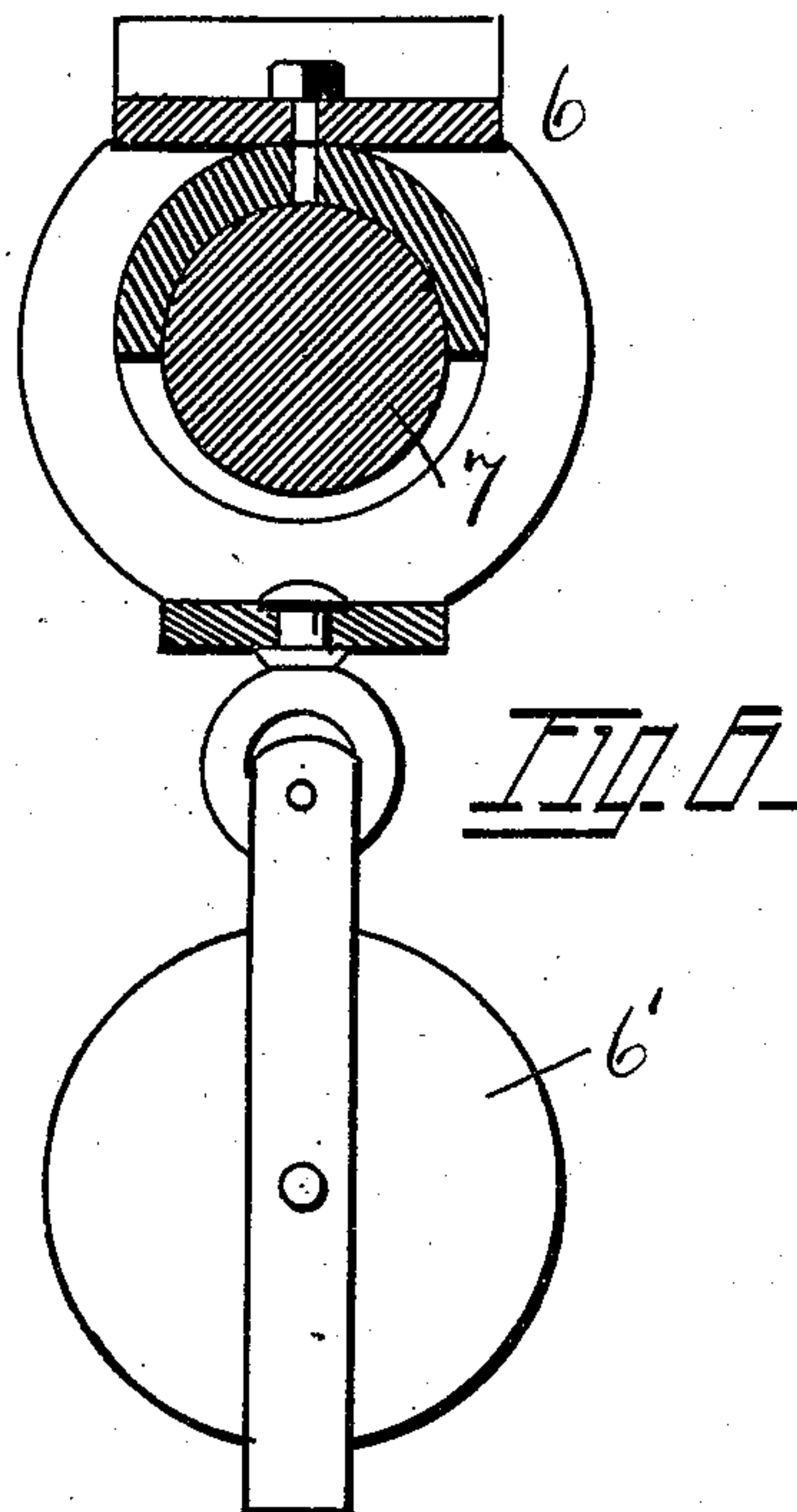
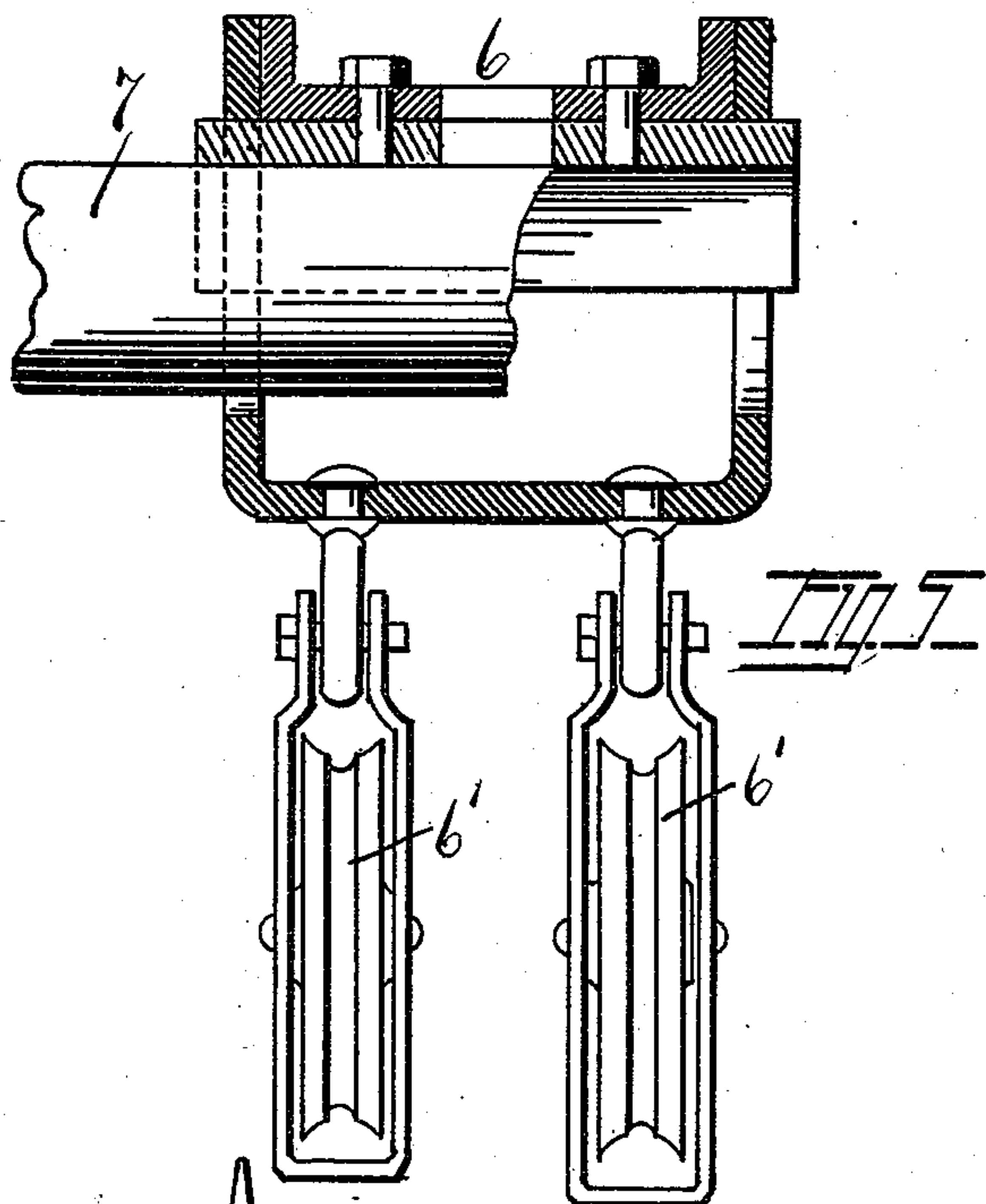
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UNITED STATES PATENT OFFICE.

JOHN B. WEBBER, OF TOLEDO, OHIO, ASSIGNOR TO THE VULCAN IRON WORKS COMPANY, OF OHIO.

STEAM SHOVEL OR EXCAVATOR.

SPECIFICATION forming part of Letters Patent No. 557,350, dated March 31, 1896.

Application filed July 8, 1895. Serial No. 555,357. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. WEBBER, of Toledo, county of Lucas, and State of Ohio, have invented certain new and useful Improvements in a Steam Shovel or Excavator; 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form part of this specification.

My invention relates to a steam shovel or excavator, and has for its object to provide means whereby the dipper-handle may be turned upon the swinging crane to cause the dipper to cut and fill with the front cutting edge of the dipper presented squarely to the side of the embankment or surface from which the earth is to be removed.

A further object is to provide independent means to those used in swinging the crane for turning the dipper-handle at any desired angle thereto to cause the cutting edge of the dipper to be presented squarely to the embankment or surface from which the earth is to be removed, irrespective of the relative angles of the crane to the embankment.

With these objects in view I have independently devised a dipper of a conformation to allow the maximum cutting-surface when presented squarely to the work.

In the drawings, Figure 1 is an elevation of the crane and dipper mechanism, certain parts being omitted to allow a more complete disclosure of those parts which contribute to the essential features of my invention. Fig. 2 is a plan view of the crane and transversely-movable chain-sheaves. Fig. 3 is a side elevation of the dipper-handle guide with a section of the dipper-handle therein, also showing the antifriction-roller and dipper-chain sheaves. Fig. 4 is a transverse section of the dipper-handle, guide, controlling-bar, and chain-sheave. Fig. 5 is a view, partly in section, of the transversely-movable chain-sheave and yoke. Fig. 6 is a transverse section of the same. Fig. 7 is a side elevation of the dipper, and Fig. 8 is a top plan view of the same.

Heretofore in the branch of the art to which my invention belongs in swinging the crane the cutting-face of the dipper has been presented unfavorably for a direct cut into the embankment or earth to be removed, by reason of the fact that the cutting-face of the dipper has been necessarily presented in its broadest sense when the crane was in direct horizontal alinement with the body portion of the excavator. Hence instead of presenting the front cutting edge of the dipper squarely to the work the tendency and natural result has been, when the crane was swung at an angle to the horizontal sides of the excavator or shovel, that the direct cutting edge of the shovel has been at an angle to the embankment and the sides of the shovel have been more particularly relied upon to cut and fill the shovel.

It is the object of my invention to entirely overcome these difficulties by so arranging proper controlling mechanism with the dipper-handle that the dipper may be swung to cause its cutting-face to aline squarely with the wall of the embankment, irrespective of the swing of the crane.

In the drawings illustrating my invention I have shown a convenient form of carrying out my invention, and have gone somewhat into a specific detail illustration of the same; but I wish to be understood as not confining myself to the specific construction herein shown, since I may vary the mechanism greatly without departing from the spirit of my invention.

I have shown an inwardly-operating dipper with the proper mechanism for controlling the same in connection with the swinging crane; but my invention is equally adaptable to the ordinary form of outwardly-moving dippers.

1 designates the body-frame, 2 the mast, and 3 the swinging crane, of any of the well-known constructions or modifications thereof, and 4 the dipper-handle controllable upon the outer end of the crane by means of any preferred form of gearing, and having a dipper 5 at the lower end thereof in the present construction.

6 is a yoke movable horizontally upon guide 7, and having secured thereto, in swiveled

relation, chain-sheave 6', over which passes the cable 6², controlling the dipper runs.

Cables 8 and 9 are coiled in opposite directions upon reels 10 mounted upon the power-shaft 11, controlled by a suitable motor 12. Attached to yoke 6 are cables 13 and 14, the other ends of which are attached to the ends of controlling-lever 15. The controlling-lever is rigidly attached to guide 16 of the dipper-handle 4 in such a manner that when it is revolved the dipper-handle 4, and consequently dipper 5, is turned in the same direction to cause the cutting face of the dipper to aline squarely with the embankment or earth to be filled into the dipper.

From the foregoing the operation will be readily understood.

Presuming the embankment from which the earth is to be removed to be at an angle to the crane when in a normal straight alinement with the body of the excavator by means of motor 12, the controlling-lever 15 is moved to cause the dipper-handle to assume any desired angle to that of the crane—that is to say, a sufficient angle thereto to allow of swinging the crane in unison therewith to bring the cutting edge of the dipper squarely in alinement with the embankment. By this construction I avoid the necessity heretofore existing of cutting with but a portion of the dipper and the incidental strain upon the one side of the dipper, and am allowed to fill the dipper equally from all sides. This construction of movable dipper-handle with relation to the crane allows the use of a dipper of novel construction, as shown in Figs. 7 and 8, wherein there is a broad cutting-surface 17 and outwardly-flaring sides 18, somewhat receding from the cutting edge 17.

I claim—

1. In a steam shovel or excavator, a crane, a dipper-handle connected therewith having a mechanism of its own for giving it a lateral movement independently of the movement of the crane.

2. In a steam shovel or excavator, a swinging crane, a vertically-movable dipper-handle connected therewith and means connected with the crane for turning the dipper-handle and dipper at an angle to the vertical plane of the crane.

3. In a steam shovel or excavator, a crane and a dipper-handle vertically movable therein and controlling power bearing upon the

dipper-handle and connected with means for axially turning the dipper-handle and a dipper connected therewith and movable inward toward the base of the crane by independent means.

4. In a steam shovel or excavator, a swinging crane, a transverse horizontal guide-shaft mounted therein, a movable support for chain-sheaves mounted on said shaft, and connections to the motive power whereby the sheaves may be moved horizontally, and connections to the sheave-support with the dipper-handle mounted in the crane for moving the same at an angle to the crane.

5. In a steam shovel or excavator, a swinging crane, a power-shaft mounted therein, and means for revolving the same, a dipper-handle mounted in the crane, and a controlling-lever bearing upon one side of the dipper-handle, and connections from the power-shaft to the controlling-lever whereby the latter may be turned at an angle to the swinging crane.

6. In a steam shovel or excavator, a swinging crane, a controlling-lever properly guided thereon, an antifriction-roller mounted upon the lever and a dipper-handle normally bearing against the antifriction-roller, a horizontally-movable yoke mounted in the crane and having flexible connections with the controlling-lever, and a power mechanism controlling the yoke whereby the same may be moved horizontally, sheaves mounted in the yoke, and a chain rove over the pulleys and connected with the dipper upon the dipper-handle.

7. In a steam shovel or excavator, a swinging crane, a power-shaft mounted therein and connected with a suitable motor, chains or ropes wound in inverse order upon the shaft, and connected with a horizontally-movable yoke, a dipper-handle mounted in the crane and a dipper connected therewith and with a chain mechanism rove upon pulleys in the yoke, a controlling-lever frictionally connected with the dipper-handle and connected by chains at each end secured to the yoke.

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

JOHN B. WEBBER.

Witnesses:

PETER J. MEETLER,
WILLIAM WEBSTER.