

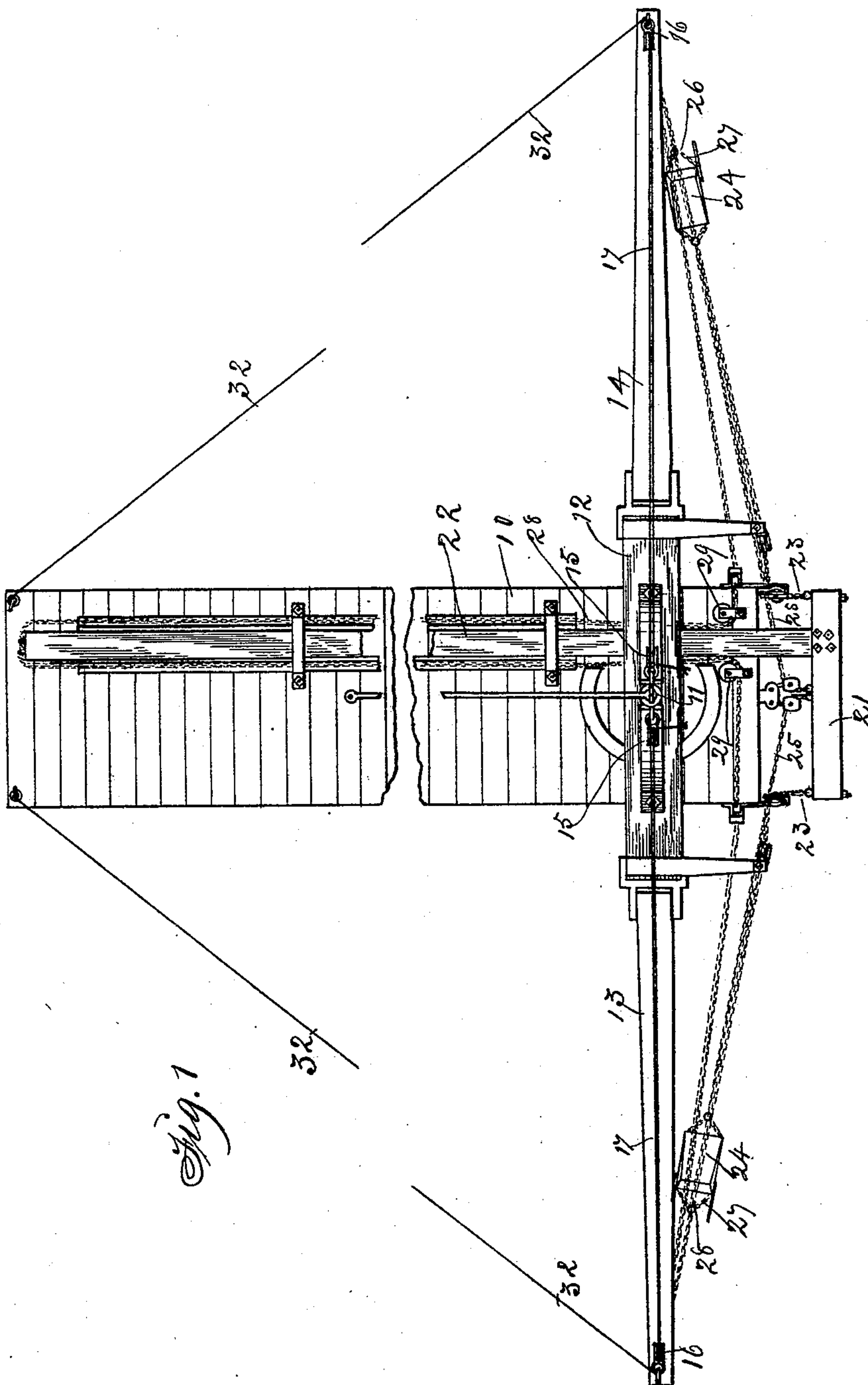
(No Model.)

2 Sheets—Sheet 1.

C. W. ARCH.  
MACHINE FOR GRADING RAILROADS, &c.

No. 517,559.

Patented Apr. 3, 1894.



Witnesses: } Inventor: Charles W. Arch,  
R. H. Orwig, }  
Charles F. Kilcox. } By Thomas G. Orwig, Attorney.

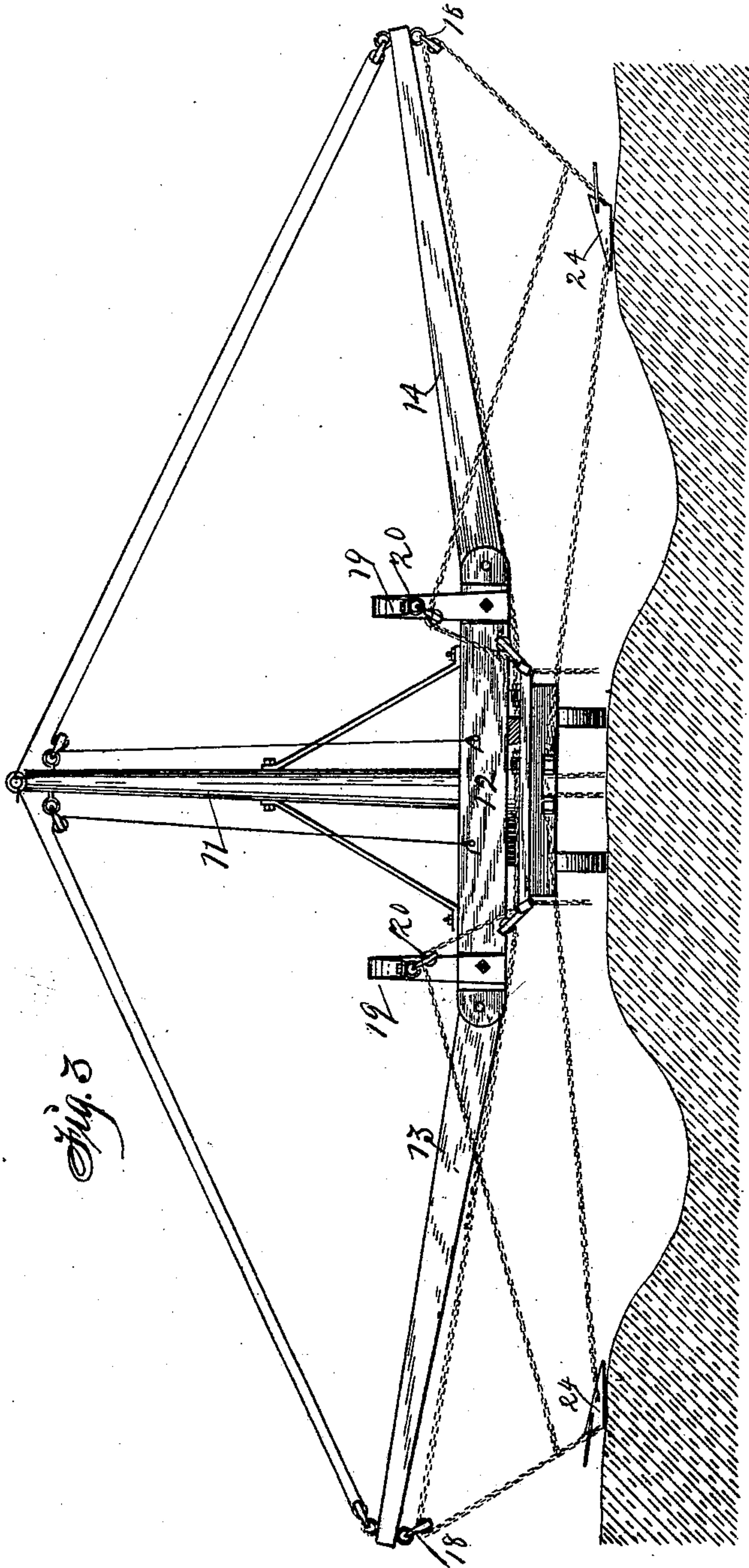
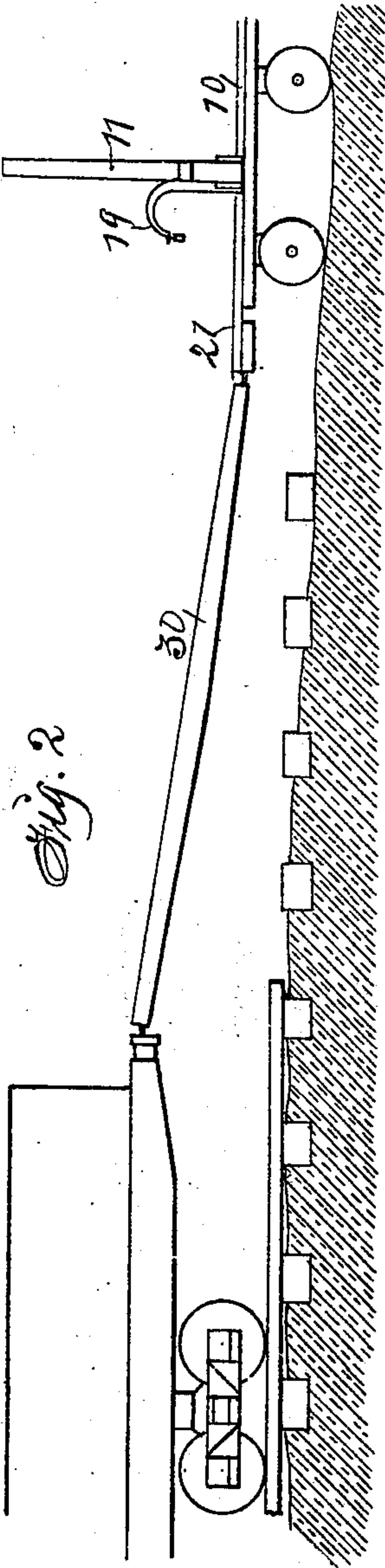
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R. H. Orwig,  
Charles H. Miles

Inventor: Charles W. Arch,  
By Thomas G. Orwig, Attorney.



# UNITED STATES PATENT OFFICE.

CHARLES WILLIAM ARCH, OF EAGLE GROVE, IOWA, ASSIGNOR OF ONE-HALF TO G. H. TRANER, OF SAME PLACE.

## MACHINE FOR GRADING RAILROADS, &c.

SPECIFICATION forming part of Letters Patent No. 517,559, dated April 3, 1894.

Application filed July 14, 1893. Serial No. 480,552. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES WILLIAM ARCH, a citizen of the United States, residing at Eagle Grove, in the county of Wright and State of Iowa, have invented a new and useful Machine for Grading Railroads, &c., of which the following is a specification.

The object of my invention is to be found in the provision of means, adapted to be employed in conjunction with motive power, whereby a plurality of scrapers are caused to move back and forth, across the line of an elevated grade and in so doing gather earth at points distant from said grade and carry the same forward, and deposit it therein.

My invention consists in a car adapted to be anchored in a temporarily stationary position, a mast vertically positioned on said car, booms hitched to said car and extended in opposite directions in approximately horizontal positions, chains connected with said booms, and scrapers connected with said chains, and means for adjusting said booms together with a reciprocating bar adapted for attachment to a prime mover, whereby said chains are operated and the scrapers caused to travel.

My invention consists further in the construction, arrangement, and combination of parts, hereinafter set forth, pointed out in my claims and illustrated in the accompanying drawings, in which—

Figure 1 is a top view of the device, and Fig. 2 is a side view of the truck on a track as required to support the operative parts. Fig. 3, is a front elevation, showing the machine in position as required for practical use.

In the construction of the machine as shown the numeral 10 designates a wheeled truck or car, upon which the working mechanism is supported, a mast 11, is vertically positioned on a base sill 12, mounted on the truck 10, and booms 13, 14, are hinged to opposite ends of said sill 12, and extended approximately, horizontally therefrom. Blocks 15, 16, are fixed respectively to the upper end portion of the mast, and the outer end portions of the booms, and a cable 17 is fixed at its center to the top of the said mast and extends in opposite directions therefrom, to and through the

blocks 16, back to the mast top, and through the blocks 15 and thence downward to the sill 12, to which sill the ends of said cable are detachably connected.

Mounted upon the under side of the outer end portions of the boom are blocks 18, 18, and mounted upon goose-neck arms 19, 19, adjustably fixed to opposite end portions of the sill 12, are blocks 20, 20. A sliding frame 21 is mounted upon and extends forward from the truck 10, and a bar 22, is fixed to said frame, and extends longitudinally of the said truck, an aperture being provided in the sill 12 through which said bar may freely move. Rigidly connected to opposite corners of the frame 21, are chains or cables 23, the outer ends of which cables are bifurcated and connected as a bail to the forward portion of drag scrapers 24, 24. Rigidly secured to the frame 21, at points between the points of attachment of the chains 23, are chains 25, 25, which chains extend from their points of attachment, to and through the blocks 20, 20, respectively, and outward from said blocks, to points of attachment with rings 26, 26, said rings being connected with bails 27, 27, fixed to the rear end portions of the drag scrapers 24, 24. A chain 28 is fixed at its center, to the rear end of the bar 22, extends along said bar, when the parts are in the position shown in Fig. 3, through the aperture in the sill 12, around anti-friction sheaves 29, 29, and diverging therefrom, extends in opposite directions to and through the blocks 18, 18, and downward from thence to points of attachment with the rings 26, 26. A coupling rod 30, is provided adapted to connect the frame 21 to a prime mover, designated as 31.

Stay rods 32, 32, are provided adapted to connect the outer ends of the booms 13, 14, with the rear end portion of the truck 10.

In the practical use of my machine the truck 10 should be anchored, and the different parts being adjusted as shown in Figs. 2 and 3, the prime mover is advanced carrying with it the drag chains 23, 23, thus causing the scrapers to approach the truck, the said scrapers being filled with earth during their advance movement. When the scrapers have reached points approximately in alignment with the goose-neck arms 19, the rear



ends of the chains 25, 25, rising to pass through the blocks 20, 20, elevate the rear end portion of said scrapers and cause the same to dump their contents, the bar 22, moving forward and releasing or slacking the chain 28, sufficiently to permit of the forward movement of the said scrapers. At this time the prime mover is reversed and the bar 22, being caused to travel rearwardly coincident with the rearward movement of the frame 21, exerts a pulling force upon the chain 28 which acting through its several bearing repositions the drag scrapers and withdraws the same to the extremity of the booms 13, 14. Through the manipulation of the cable 17, the outer ends of the boom and the mechanism carried thereby may be vertically adjusted to suit the varying planes, of the banks from which the earth is removed by the scraper.

20 Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent of the United States therefor, is—

1. In a grading machine, the combination of  
25 a suitable support, a frame mounted on said support, and horizontally movable, relative thereto, a mast vertically positioned on said support, booms adjustably secured to said support, and extended transversely there-

from, drag scrapers, and chains connecting  
said drag scrapers with the said frame and  
with the support, and means for moving said  
frame relative to said support. 30

2. A grading machine comprising a suitable  
support, a base sill transversely positioned on  
said support, a mast vertically positioned in  
said sill, booms hinged to the outer ends of  
said sill, adjustable connections, between the  
outer ends of said booms, and the mast-top, a  
frame connected with said support, a sliding  
bar fixed to said frame and extended rear-  
wardly on the said support, drag chains fixed  
to said frame, drag scrapers fixed to said drag  
chains, dumping chains fixed to said frame  
and connected with said scrapers, goose-neck  
arms adjustably mounted on said sill, blocks  
mounted on said arms, and supporting the  
bight of the dumping chains, a return chain  
fixed to the sliding arm and extended through  
sheaves and blocks to a point of attachment  
with the said scraper, and means for operat-  
ing the said frame. 45 50

In testimony whereof I hereunto have set  
my hand this 18th day of May, 1893.

CHARLES WILLIAM ARCH.

Witnesses:

H. A. MILLER,

G. H. TRANER.