

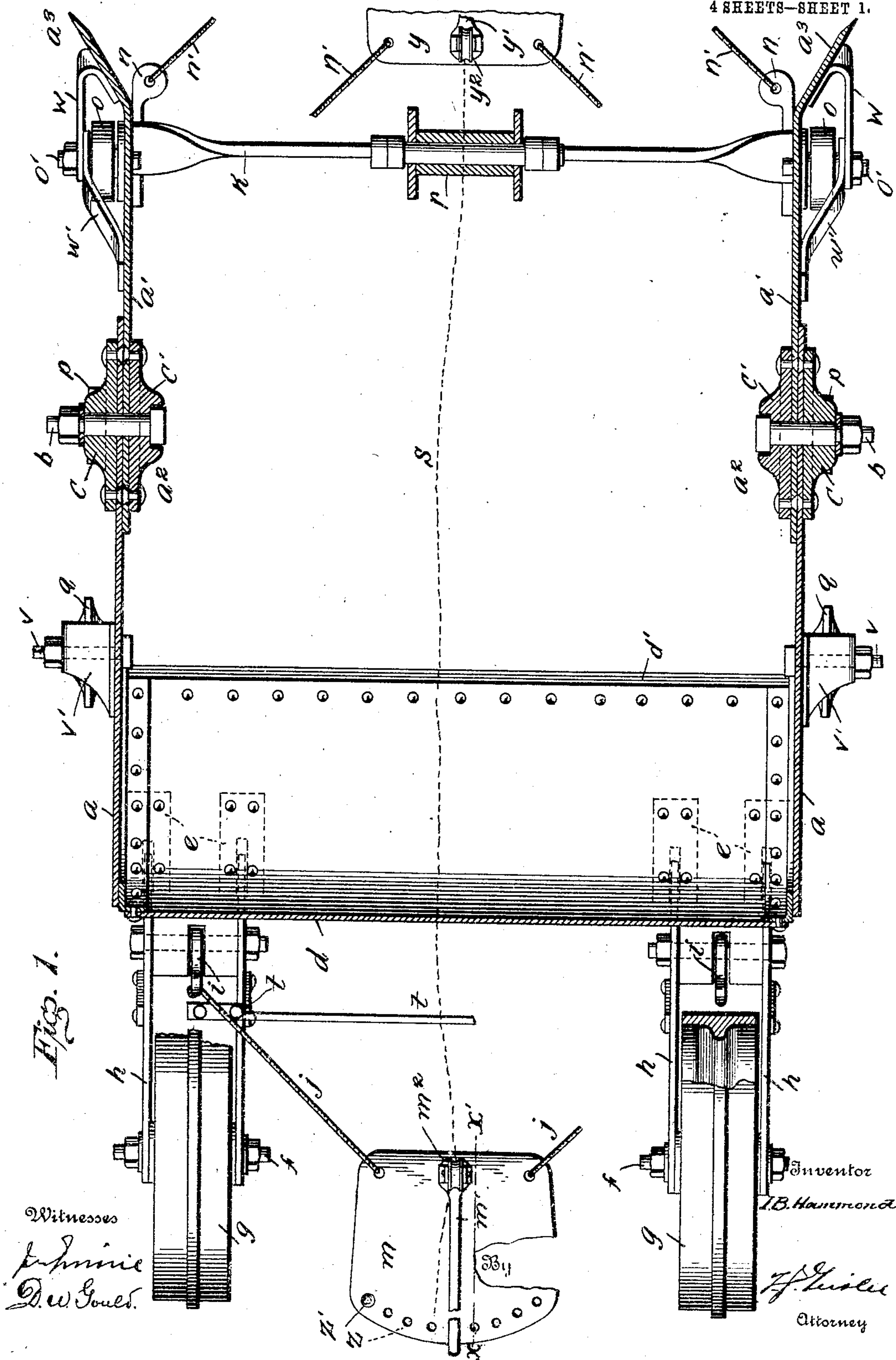
No. 779,648.

PATENTED JAN. 10, 1905.

I. B. HAMMOND.  
SCRAPER.

APPLICATION FILED MAR. 7, 1904.

4 SHEETS--SHEET 1.



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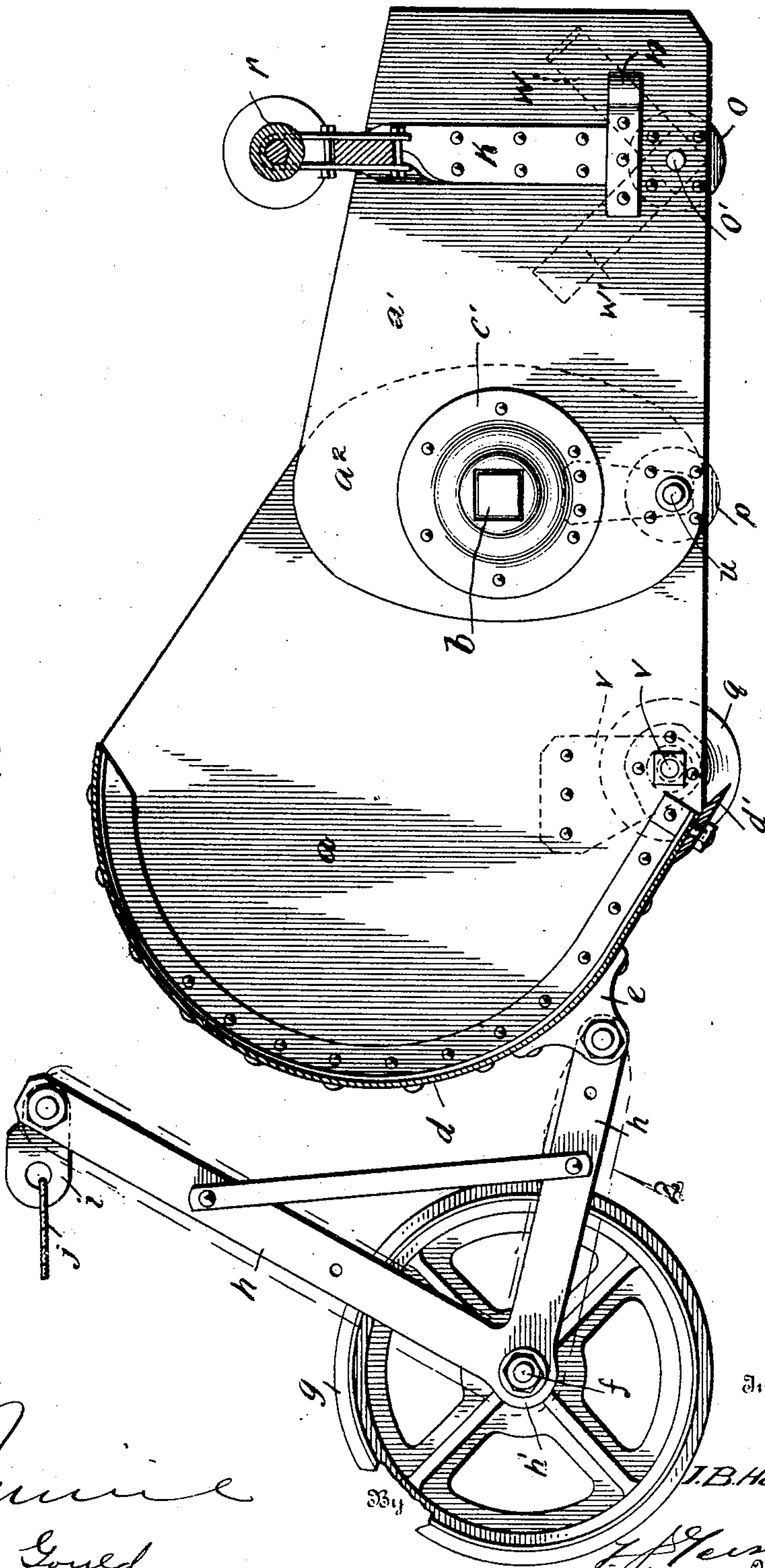
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4 SHEETS—SHEET 2.

Fig. 2.



Witnesses

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No. 779,648.

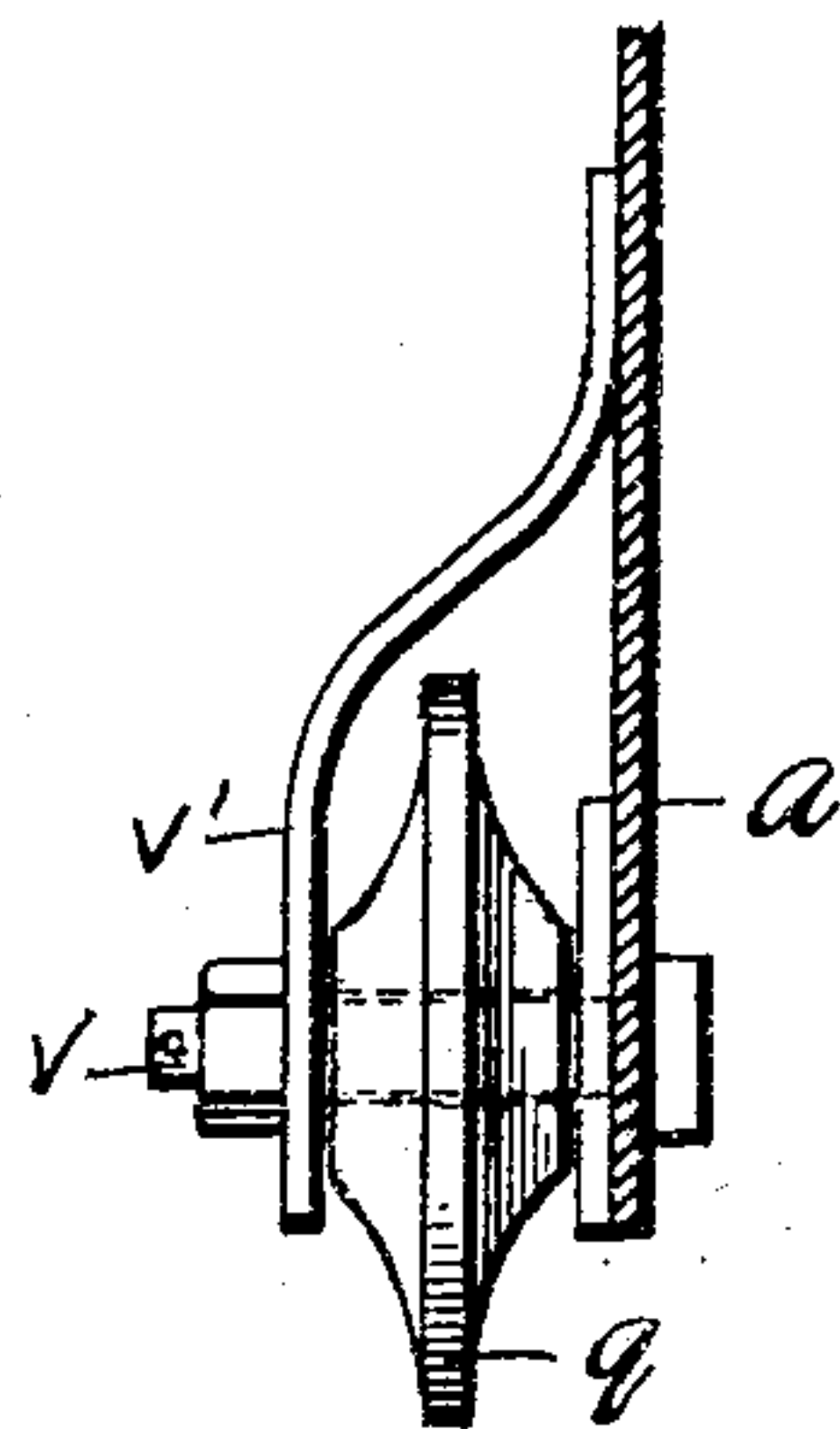
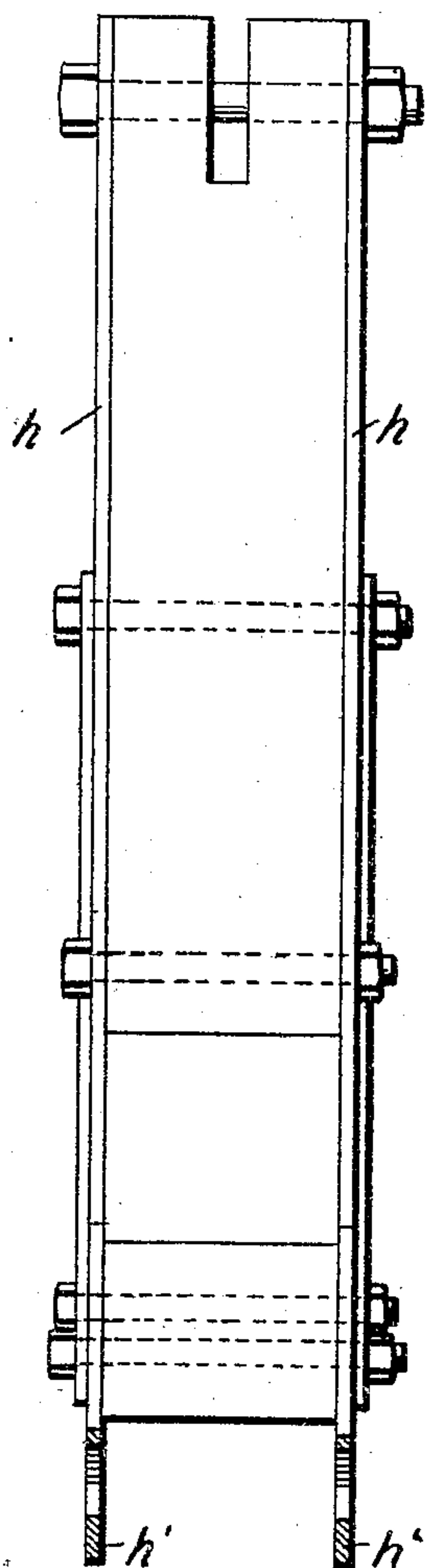
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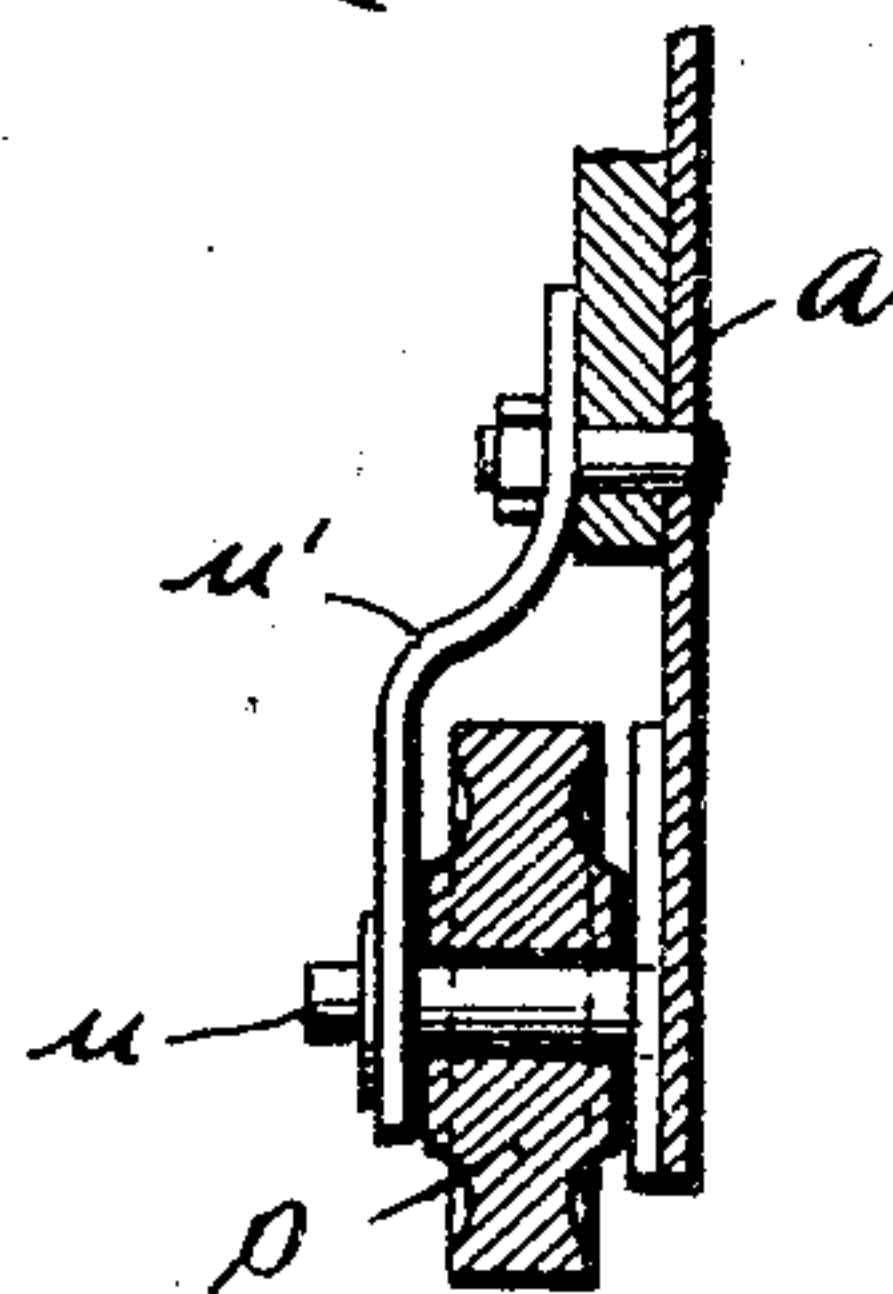
4 SHEETS—SHEET 3.

*Fig. 3.*

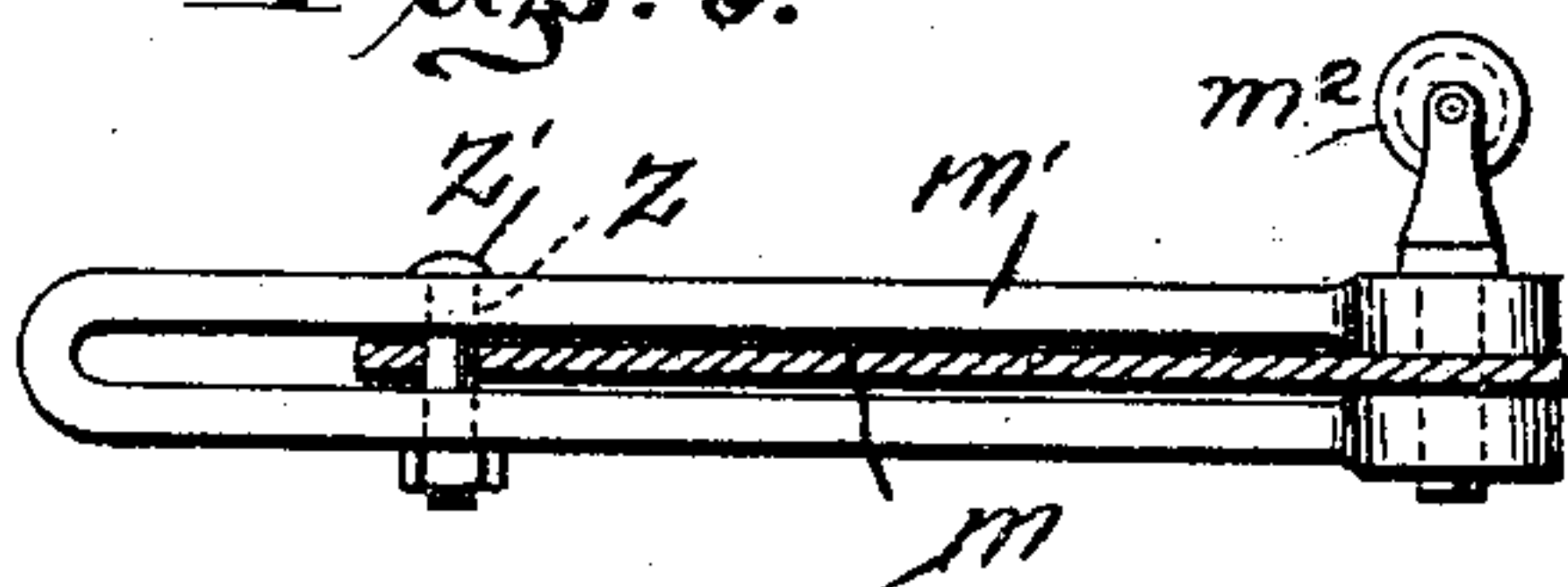


*Fig. 4.*

*Fig. 5.*



*Fig. 6.*



Witnesses

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331

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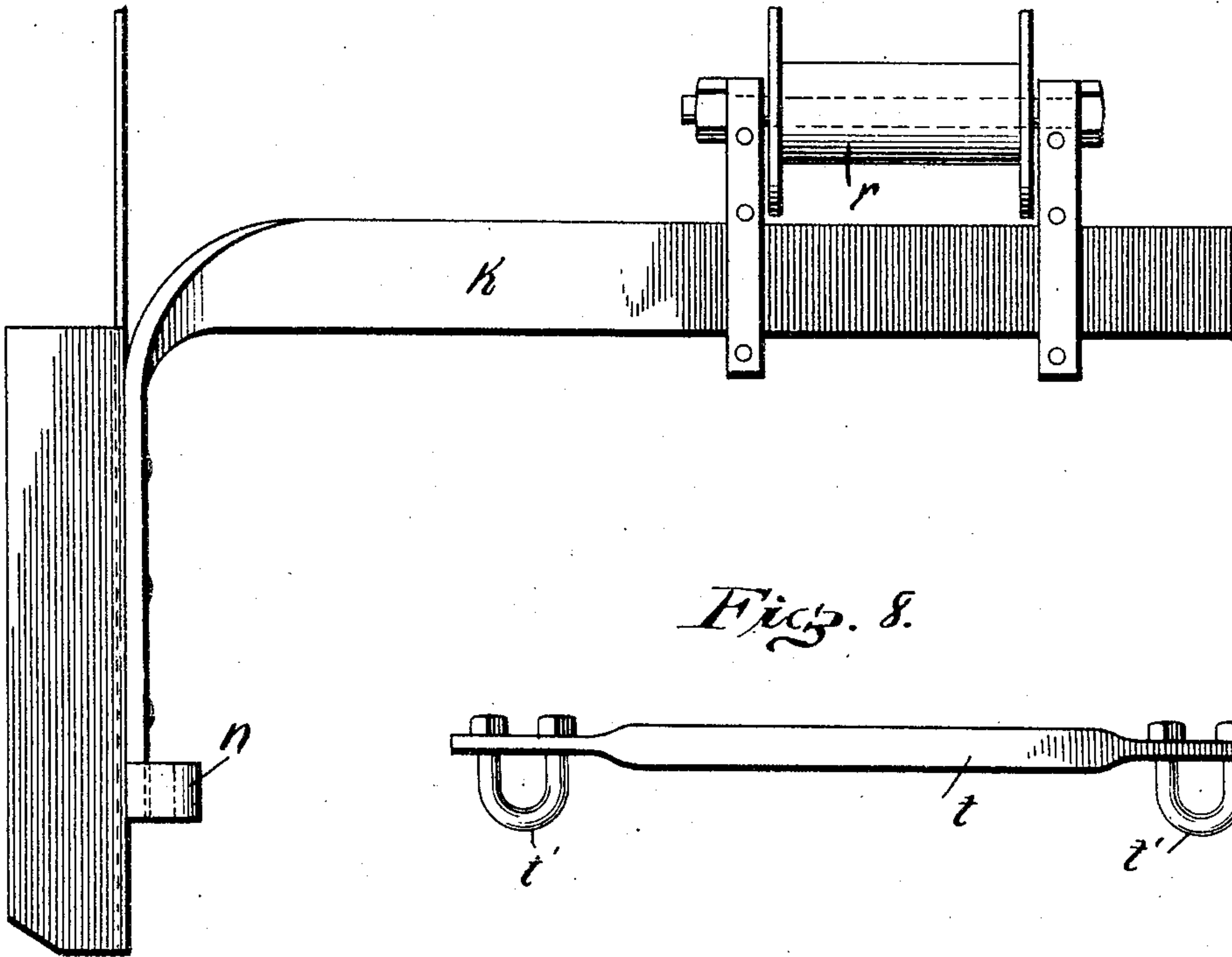
I. B. HAMMOND.

SCRAPER.

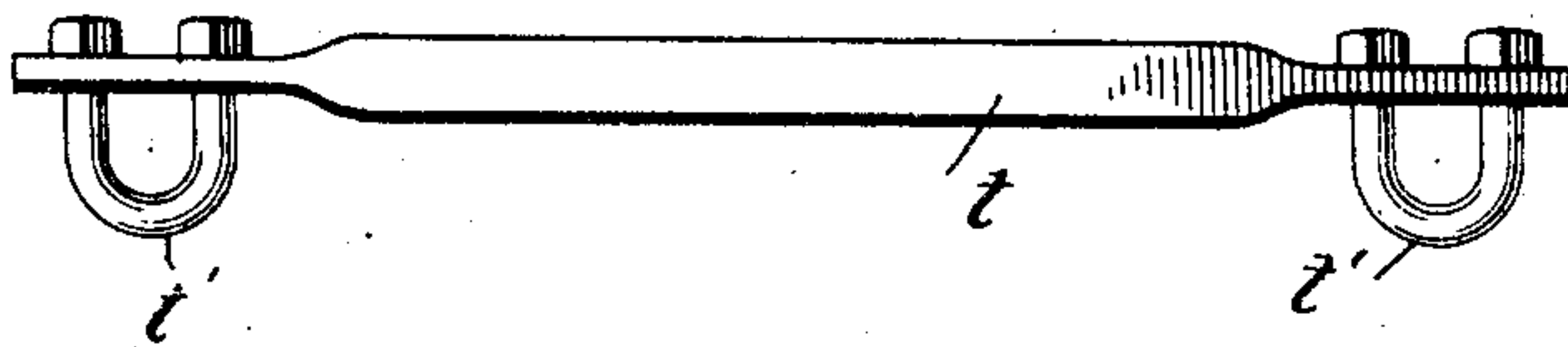
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4 SHEETS—SHEET 4.

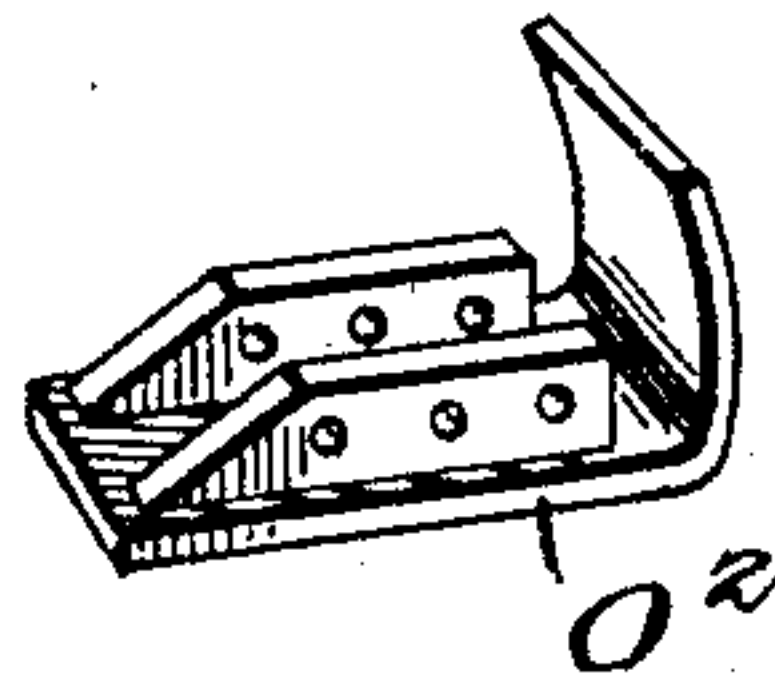
*Fig. 7.*



*Fig. 8.*



*Fig. 9.*



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Witnesses

*J. W. Gould*  
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# UNITED STATES PATENT OFFICE.

ISAAC B. HAMMOND, OF PORTLAND, OREGON.

## SCRAPER.

SPECIFICATION forming part of Letters Patent No. 779,648, dated January 10, 1905.

Application filed March 7, 1904. Serial No. 196,938.

*To all whom it may concern:*

Be it known that I, ISAAC B. HAMMOND, a citizen of the United States, and a resident of Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Improvement in Scrapers, of which the following is a specification.

My invention relates to excavating-scrapers, and has for its object—

10 First. To obtain a frame or body with articulated sides, so that the body may to the greater part accommodate itself to the unevenness of the surface over which it is drawn, particularly when loaded. The front part of  
15 the frame of my scraper is thus relieved of the weight of the load and is free to rise and fall with the elevations and depression of the ground. Without this improvement the weight of the load more or less causes the  
20 front end of the sides of the body to plow right into any sudden elevation in the ground. By my improvement the articulated front end helps the frame to climb over such elevations. There is in consequence much less of a strain  
25 on the frame when my scraper is loaded than there would be if the sides of the frame were rigid.

Second. My improvements are designed to facilitate the discharge of the load carried by  
30 my scraper. For this purpose I have provided and combined certain contrivances adapted to cause the back pull of the haul-back cable to lift the rear end of the body of my scraper clear of the ground, said rear end lifting on  
35 the joints in the sides of the frame and accomplishing the twofold purpose of dumping the load and allowing the scraper to be more easily pulled back.

Third. I combine in my improved scraper  
40 certain secondary features and devices for the purpose of placing the same as a whole in the condition required for effectively performing its work.

These features of my invention are fully  
45 illustrated in the accompanying drawings, to which reference is had as a part of this specification, and herein described and claimed.

In the drawings, Figure 1 is a plan section

of my scraper, the arms *h* and part of the draft appliances for the forward haul being  
50 shown in top or plan view. Fig. 2 is a longitudinal section about centrally taken. Fig. 3 is an end elevation of one of the arms, illustrating a modification, which consists in the removal of the wheels *g g* and the converting  
55 of said arms *h h* into skids or runners, as will later be fully explained. Fig. 4 is an end elevation of one of the wheels *g* and the bearings therefor. Fig. 5 is a cross-section of one of the wheels *p* and the bearings therefor. Fig. 60  
6 is a longitudinal section on line *x x* of one, *m*, of the draft-plates. Fig. 7 is a partial elevation of the front end of my scraper. Fig. 8 shows a brace-bar for offsetting the compressing strain exerted on the upper ends of  
65 the arms *h* while hauling back. Fig. 9 is a detail showing shoes *o*<sup>2</sup>, which may be substituted in place of wheels *o* for preventing the front ends of my scraper plowing into the ground.  
70

The letters designate the parts referred to.

The frame of my scraper comprises sides *a a' a'*, each side being made of two parts articulated—that is, connected at their inner  
75 ends by joints *a*<sup>2</sup>, so that the front portions *a' a'* may rise and fall on said joints in order to accommodate themselves to the rise and fall in the surface over which the scraper is drawn. The same provision will also to some extent prevent such front ends from plowing  
80 into any such rises in the ground. The sides are jointed by lapping their inner ends one over the other and securing the parts in place by bolts *b*, the perforated portions of the sides being reinforced by circular plates *c c'*.  
85

The rear end of the frame consists of a back *d*, curved as shown in the section thereof in Fig. 2. To the lower edge of the back is secured a sharp-edged cutting-plate *d'*. On the back at both sides are secured a pair of  
90 brackets *e e*, in which are hinged angle-arms *h h*. In the angle *h'* of the two members of each arm *h* is journaled a bolt or axle *f*, and on such axles *f* are journaled wheels *g g*. To the upper ends of the arms *h* are attached  
95 plates *i*, to which to fasten the ends of the



connecting-chains (indicated by lines  $j j'$ ) of the haul-back cable. To brace the upper ends of the arms  $h h$  against the compressing strain exerted by the pull of the chains  $j j'$ , I use a  
 5 brace-bar  $t$ , provided at its two ends with U-bolts  $t'$ , through which the ends of the chains  $j j'$  are inserted, said brace-bar abutting against the draft-plates  $i$ . As soon as a pull is exerted on the haul-back cable the arms  $h h$ ,  
 10 fulcruming on the wheels  $g$ , will be drawn back and down and lift the rear end of the body of the scraper on the joints  $a^2$ , so as to raise the back of the scraper clear above the ground. The purposes of this action are two-  
 15 fold: First, the load of excavated material carried by my scraper is discharged by the tilting of the back; second, when hauling the scraper back it is more convenient and involves less wear to allow the scraper to travel  
 20 backward on the wheels  $g g$  than to drag the back over the ground. As soon as the haul-back is stopped, the rear end of the scraper will drop back onto the ground by its own weight, and my scraper is ready for further work.  
 25 To securely brace the portions  $a'$  of the sides, and yet avoid interfering with the excavating-work, I provide a brace-bar  $k$ , the two ends of which are bent at an angle and bolted to the members  $a'$ . To the inner sides,  
 30 at the front end of each member  $a'$ , I pivot eye-plates  $n$ , to which to fasten the ends of the chains connecting my scraper with the hauling-cable.

To prevent the front ends of the members  
 35  $a' a'$  plowing into the ground, I provide on each of the front bottom corners a small wheel  $o$ . The same object may, however, be attained by affixing shoes  $o'$  to said corners, as illustrated in Fig. 9, and, indeed, sometimes  
 40 the surface of the ground makes it preferable to use shoes instead of wheels. The operation of the front members  $a' a'$  of the sides of the frame—that is, the climbing of the same  
 45 over the uneven places in the surface of the ground—is apparent, and it is equally apparent that such action facilitates the dragging of the scraper with its load over rough ground, for the front ends will readily climb any rises  
 50 in the ground, and after having mounted such rises the pull of the hauling-cable will cause the front section of the body to lift the following or rear section of the body at the joints  $a^2$ , and thus help the rear part of the body of the scraper over such rises also.

55 To guard against any accidental pull of the haul-back cable on the arms  $h$  and the consequent throwing of the wheels  $g g$  under the rear end of the scraper while the scraper is being hauled forward, which would of course  
 60 materially interfere with the proper working of the scraper, the haul-back cable and the hauling-cable are connected by a cable passing over the body, as indicated by the broken line  $s$  in Fig. 1. Said connecting-cable is

given some slack, and it is convenient to guide 65 the same through a pulley  $m^2$ , secured on the clevis  $m'$ , attached to the inner edge on the draft-plate  $m$ , and a roller  $r$ , secured on a brace-bar  $k$ , to insure that said connecting-cables will remain in place and also to lessen 70 the wear on such connecting-cable.

When my scraper is to be run onto an elevated dumping-platform to discharge its load, I prefer to affix wheels  $p q$  to the bottom edges of the sides of the body to prevent the cutting and wear of the floor of the platform. 75 The platform-floor is preferably covered with metal sheeting along the tracking-path. The wheels  $p$  are of any convenient type, and they revolve on journal-pins  $u$ , extending through 80 the side sections  $a$ , and brackets  $u$ , rigidly affixed to said side sections, as shown in Fig. 5. The wheels  $q$  are journaled on pins  $v$ , extending through said side sections  $a$ , and brackets  $v'$ , rigidly affixed to said side sections. 85 The wheels  $q$  are, however, in cross-section of the particular shape shown in the end view thereof in Fig. 4 for the following purposes. While running on the dumping-platform, the wheels  $q$  hold the back and the knife-edge  $d'$  90 above the floor. The knife-edge may thus be projected to a considerable extent below the body, and the greater such projection the better, of course, the scraper will perform its excavating-work. Wide-rimmed wheels 95 would not answer at the sides of the back, because they would interfere with the knife-edge  $d'$  sufficiently cutting into the surface. The narrow-rimmed wheels  $q$ , however, while ample to support the back clear of the floor of 100 the platform, on the other hand, when run over a soft earth surface will readily sink into the same and allow the cutting edge  $d'$  to properly take hold.

To facilitate the excavating-work of my 105 dredger, I prefer to turn the front ends  $a^3$  of the forward section  $a'$  of the sides outward at an angle, as shown in Fig. 1, said sides being braced by means of straps  $w w'$  and the latter also serving to support the outer ends 110 of the journal-bolts  $o'$  of the wheels  $o o$ .

To enable me to guide and hold my scraper properly to its work, I attach the two ends thereof to the hauling and haul-back cable by means of draft-equalizing devices, as shown 115 in Fig. 1. Without such provision there would be a tendency for the scraper to pull back into the ditch already cut instead of cutting a further furrow alongside of the same. My draft-equalizing devices comprise plates 120  $m$  and  $y$ , the former being attached to the arms  $h h$  by the means already described and the latter, which in its construction and appurtenances is a duplicate of the plate  $m$ , being attached by chains  $m' m'$  to the front end of my 125 scraper. A brace-bar  $t$  is not required to be used on the front end of my scraper, because the brace-bar  $k$  answers the same purpose.



The outer edges of each of the plates  $m y$  are provided with a series of holes  $z$ , adapted to receive bolts  $z'$ , and by the adjustment of the latter in said holes  $z$ , the position of the clevises  $m' y'$  may be properly controlled, and thereby, as is evident, the pull of the hauling and haul-back cables may be controlled as desired.

Under some conditions of the surface of the ground being excavated the wheels  $g g$ , journaled in the arms  $h h$ , may not work satisfactorily. For such conditions I prefer to use runners in place of the wheels  $g g$ . The arms  $h h$  are also adapted to have such runners secured thereto. The runners are made of pieces of timber arranged and secured between the two members of the arms  $h$ , as shown in Fig. 3 and by the dotted outline 2 in Fig. 2. When the arms  $h h$  are thrown back and down by the pull of the haul-back cable, the elbows or angle portions  $h'$  of the runners 2 will bear and slide on the ground. Even when using wheels  $g$  the arms may be stiffened by inserting pieces of timber between the two members thereof above the wheels  $g$ .

The means above described for lifting the back end of the scraper to discharge the load carried by the scraper and also to facilitate the same being drawn back by the haul-back cable are of course not wholly dependent for their successful operation upon the constructing of the sides of the scraper in two sections  $a a'$ , jointed at the center, as above set forth. Such jointed construction has decided advantages, as enumerated. On the other hand, satisfactory results are also obtainable by making each of the sides of the scraper in one integral or rigid piece.

I claim—

1. In a scraper, the combination of a body comprising a scraper-back and sides, means for attaching the hauling-cable to the front end of the body, angle-arms hinged to the exterior of the scraper-back, and means by which said arms are adapted to be drawn over the ground, means for attaching the haul-back cable to said arms; said arms being arranged and adapted to lift and support the scraper-back above the ground while the scraper is being hauled back by the haul-back cable; and means adapted to prevent said arms being thrown into action by an inadvertent pull on the haul-back cable while the scraper is drawn forward.

2. In a scraper, the combination of a body comprising a scraper-back and sides, means for attaching the hauling-cable to the front end of the body, angle-arms hinged to the exterior of the scraper-back, and means by which said arms are adapted to be drawn over the ground, means for attaching the haul-back cable to said arms; said arms being arranged and adapted to lift and support the scraper-back above the ground while the

scraper is being hauled back by the haul-back cable; and a cable connecting the haul-back cable with the hauling-cable to prevent said arms,  $h, h$ , being thrown into action by an inadvertent pull on the haul-back cable while the scraper is running forward.

3. In a scraper, the combination of a body comprising a scraper-back and sides jointed at the center, so that either end of the body may be independently tilted; means for attaching a hauling-cable to the front end of the body; angle-arms hinged to the exterior of the scraper-back; and means by which said arms are adapted to be drawn over the ground; means for attaching a haul-back cable to said arms; said runners being arranged and adapted to lift the rear hinged section and support the scraper-back above the ground, while the scraper is being hauled back by the haul-back cable; and means adapted to prevent said arms being thrown into action, by an inadvertent pull on the haul-back cable, while the scraper is drawn forward.

4. In a scraper, the combination of a body comprising a scraper-back and sides jointed at the center, so that either end of the body may be independently tilted, means for attaching a hauling-cable attached to the front end of the body, angle-arms hinged to the exterior of the scraper-back, and means by which said arms are adapted to be drawn over the ground, means for attaching a haul-back cable to said arms; said arms being arranged and adapted to lift the rear hinged section and support the scraper-back above the ground, while the scraper is being hauled back by the haul-back cable; a cable connecting the haul-back cable with the hauling-cable, to prevent said arms  $h, h$ , being thrown into action by an inadvertent pull on the haul-back cable while the scraper is running forward, and guides for holding said connecting-cable in place.

5. In a scraper, the combination of a body comprising a scraper-back and sides jointed at the center, so that either end of the body may be independently tilted; means attached to the lower front corners of the forward sections of the sides, adapted to prevent said corners plowing into rises in the ground; means for attaching a hauling-cable to the front end of the body; angle-arms hinged to the exterior of the scraper-back; and means by which said arms are adapted to be drawn over the ground; means for attaching a haul-back cable to said arms; said arms being arranged and adapted to lift the rear hinged section and support the scraper-back above the ground, while the scraper is being hauled back by the haul-back cable; and means adapted to prevent said arms being thrown into action, by an inadvertent pull on the haul-back cable, while the scraper is drawn forward.

6. A scraper comprising a body made of a scraper-back, and sides jointed at the center,



so that either end of the body may be independently tilted; means attached to the lower front corners of the forward sections of the sides, adapted to prevent said corners plowing into rises in the ground; means including draft-equalizing devices for attaching a hauling-cable to the front end of the body; angle-arms hinged to the exterior of the scraper-back; and means by which said arms are adapted to be drawn over the ground; means including draft-equalizing devices for attaching the haul-back cable to said arms; said arms being arranged and adapted to lift the rear hinged section and support the scraper-back above the ground, while the scraper is being hauled back by the haul-back cable; and means adapted to prevent said arms being thrown into action, by an inadvertent pull on the haul-back cable, while the scraper is drawn forward.

7. A scraper comprising a body made of a scraper-back, and sides jointed at the center, so that either end of the body may be independently tilted; means attached to the lower front corners of the forward sections of the sides, adapted to prevent said corners plowing into rises in the ground; means including draft-equalizing devices for attaching a hauling-cable to the front end of the body; angle-arms hinged to the exterior of the scraper-back; and means by which said arms are adapted to be drawn over the ground; means including draft-equalizing devices for attaching a haul-back cable to said arms; said arms being arranged and adapted to lift the rear hinged section and support the scraper-back above the ground, while the scraper is being hauled back by the haul-back cable; wheels  $p$  and  $q$  at the bottom of the sides, the wheels  $q$  opposite the scraper-back being made with narrow rims, adapted to sink into the surface being excavated; and means adapted to prevent said arms being thrown into action, by an inadvertent pull on the haul-back cable, while the scraper is drawn forward.

8. A scraper comprising a body made of a scraper-back, and sides jointed at the center, so that either end of the body may be independently tilted; the front ends of the forward sections of said sides being bent outward at an angle; means attached to the lower front corners of the forward sections of the sides, adapted to prevent said corners plowing into rises in the ground; means including draft-equalizing devices for attaching a hauling-cable to the front end of the body; angle-arms hinged to the exterior of the scraper-back; and means by which said arms are adapted to be drawn over the ground; means including draft-equalizing devices for attaching a haul-back cable to said arms; said arms being arranged and adapted to lift the rear hinged section and support the scraper-back above the ground, while the scraper is being hauled back by the haul-back cable; and means adapted to

prevent said arms being thrown into action by an inadvertent pull on the haul-back cable, while the scraper is drawn forward.

9. A scraper comprising a body made of a scraper-back and sides jointed at the center, so that either end of the body may be independently tilted; the front ends of the forward section of said sides being bent outward at an angle; means, attached to the lower front corners of the forward section of the sides, adapted to prevent said corners plowing into rises in the ground; a hauling-cable attached to the front end of the body; angle-arms hinged to the exterior of the scraper-back; and means by which said arms are adapted to be drawn over the ground; a haul-back cable attached to said arms; said arms being arranged and adapted to lift the rear hinged section and support the scraper-back above the ground, while the scraper is being hauled back by the haul-back cable; draft-equalizing devices interposed in the respective connections of the hauling-cable, and the haul-back cable, with the front and the rear ends of the body; wheels  $p$  and  $q$  at the bottom of the sides, the wheels  $q$  opposite the scraper-back, being made with narrow rims, adapted to sink into the surface being excavated; and means adapted to prevent said arms being thrown into action, by an inadvertent pull on the haul-back cable, while the scraper is drawn forward.

10. A scraper comprising a body comprising a scraper-back  $d$ , and sides made of sections  $a$   $a'$  jointed at their inner ends, so that either end of the body may be independently tilted; bent portions  $a^3$  at the forward ends of the sides; means attached to the lower front corners of the forward section of the sides, adapted to prevent said corners plowing into rises in the ground; a hauling-cable attached to the front end of the body; arms  $h$ ,  $h$ , hinged to the exterior of the scraper-back; means by which said arms are adapted to slide over the ground; a haul-back cable attached to said arms; a brace adapted to prevent the compression of the extremities of the arms  $h$ ,  $h$ , by the pull of the haul-back cable; a brace-bar  $h$  secured to the front end of the body; draft-equalizing devices interposed in the respective connections of the hauling-cable, and the haul-back cable, with the front and the rear ends of the body; wheels  $p$  and  $q$  at the bottom of the sides, the wheels  $q$  opposite the scraper-back being made with narrow rims, adapted to sink into the surface being excavated; a cable connecting the haul-back cable with the hauling-cable to prevent said arms  $h$ ,  $h$ , being thrown into action, by an inadvertent pull on the haul-back cable, while the scraper is drawn forward, and guides for holding said connecting-cable in place.

11. In a scraper, the combination of a body formed in sections hinged together, arms pivoted to one of the hinged sections, wheels



carried by the pivoted arms, said wheels bearing on the ground when the scraper is in motion, and means connected to the arm above the wheels for pulling the arms to lift the  
5 hinged section of the scraper to which said arms are secured upwardly to dump a load, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two witnesses.

ISAAC B. HAMMOND.

Witnesses:

H. E. COWGILL,  
T. J. GEISLER.