G. H. DENISON.

WEIGHING MACHINE.

APPLICATION FILED MAY 9, 1908.

951,777.

Patented Mar. 8, 1910.

5 SHEETS—SHEET 1.

Fig. 1.

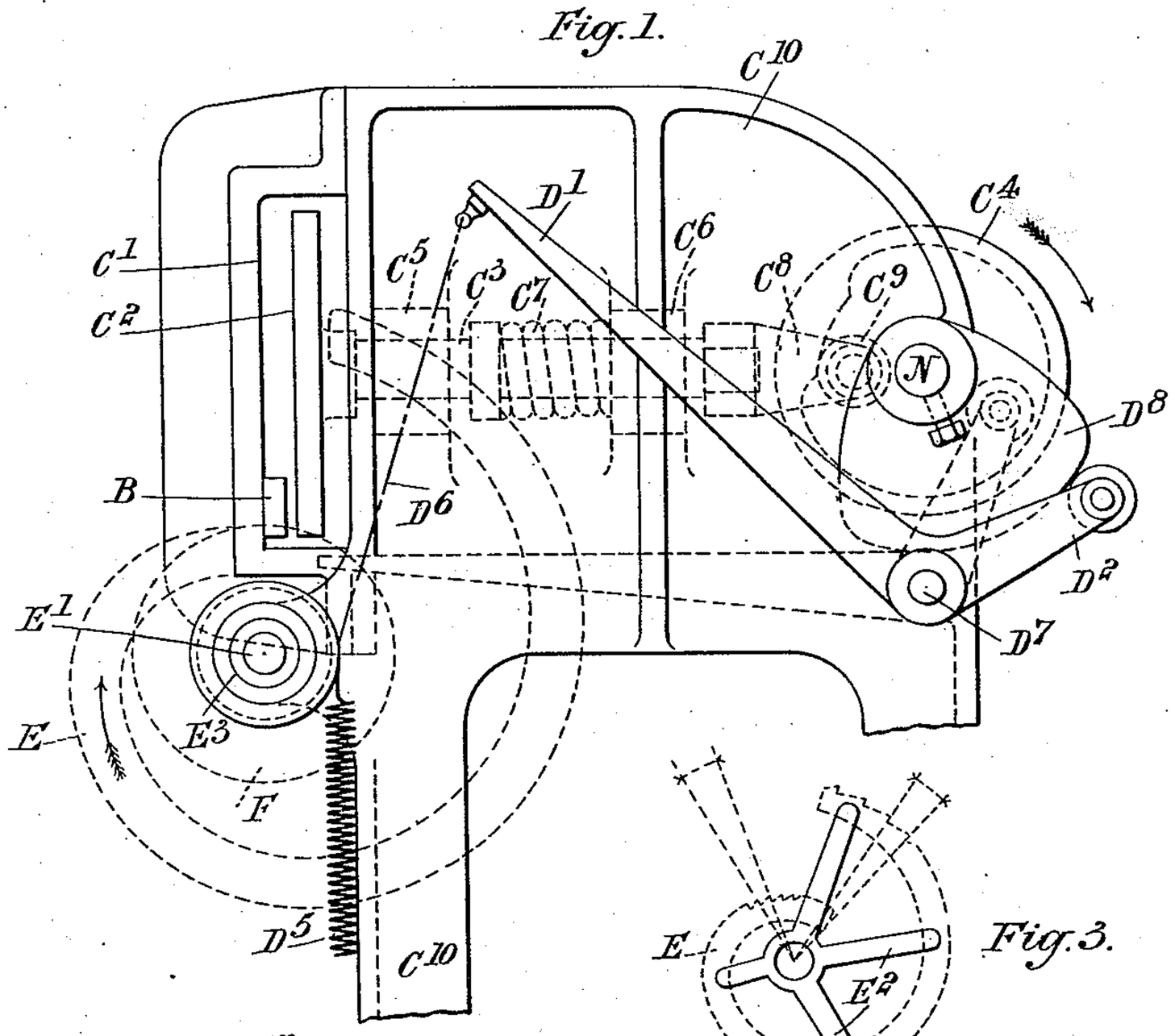
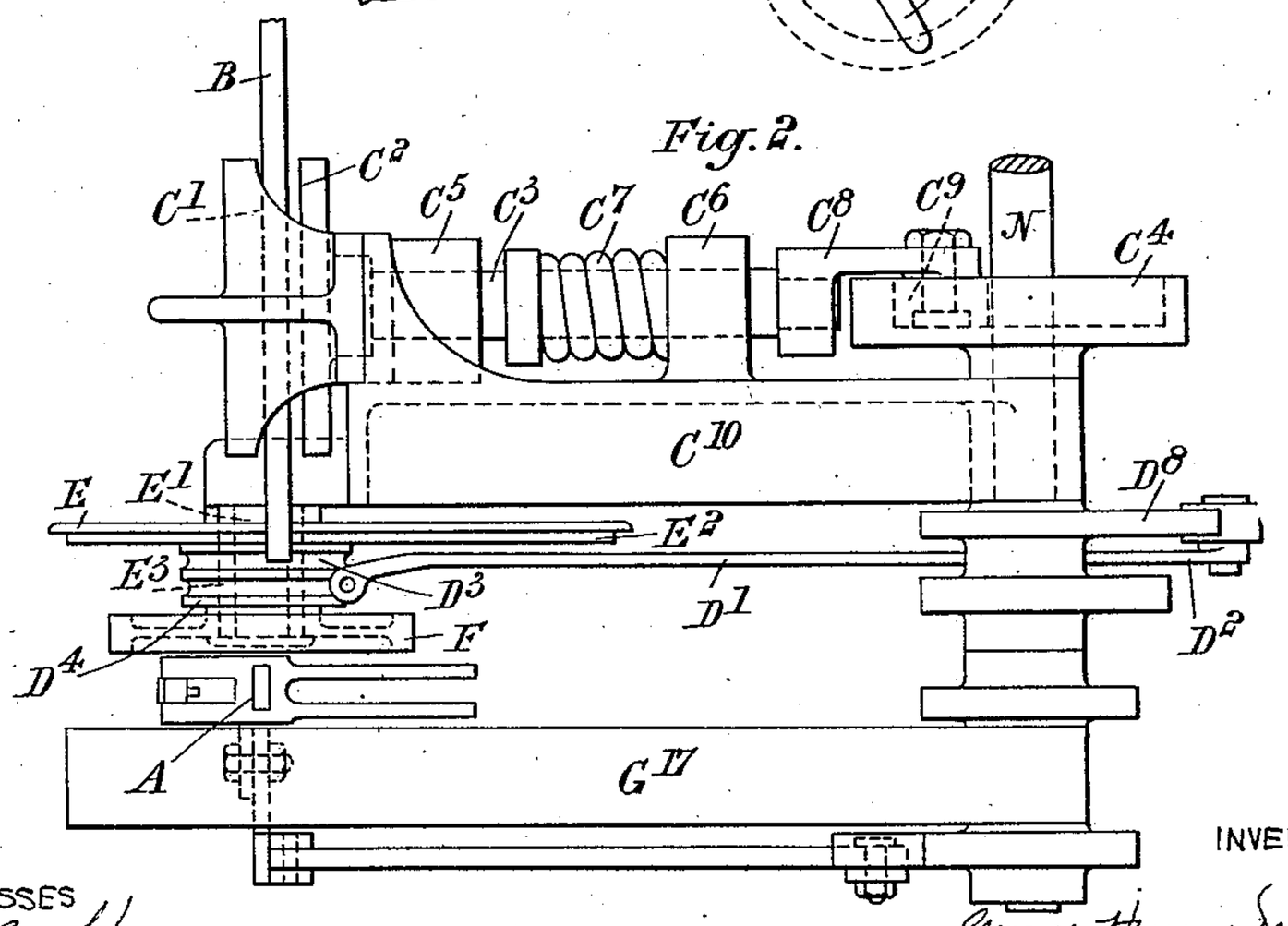


Fig. 3.

Fig. 2.



WITNESSES

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5 SHEETS—SHEET 2.

Fig. 6.

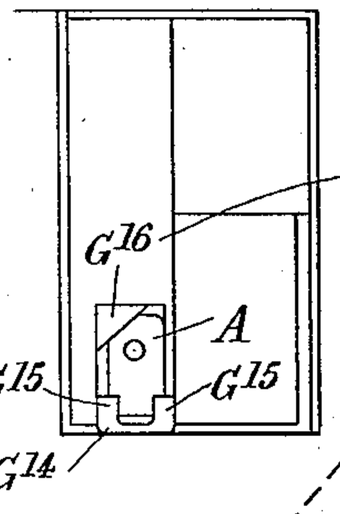

Fig. 4.

Fig. 5.

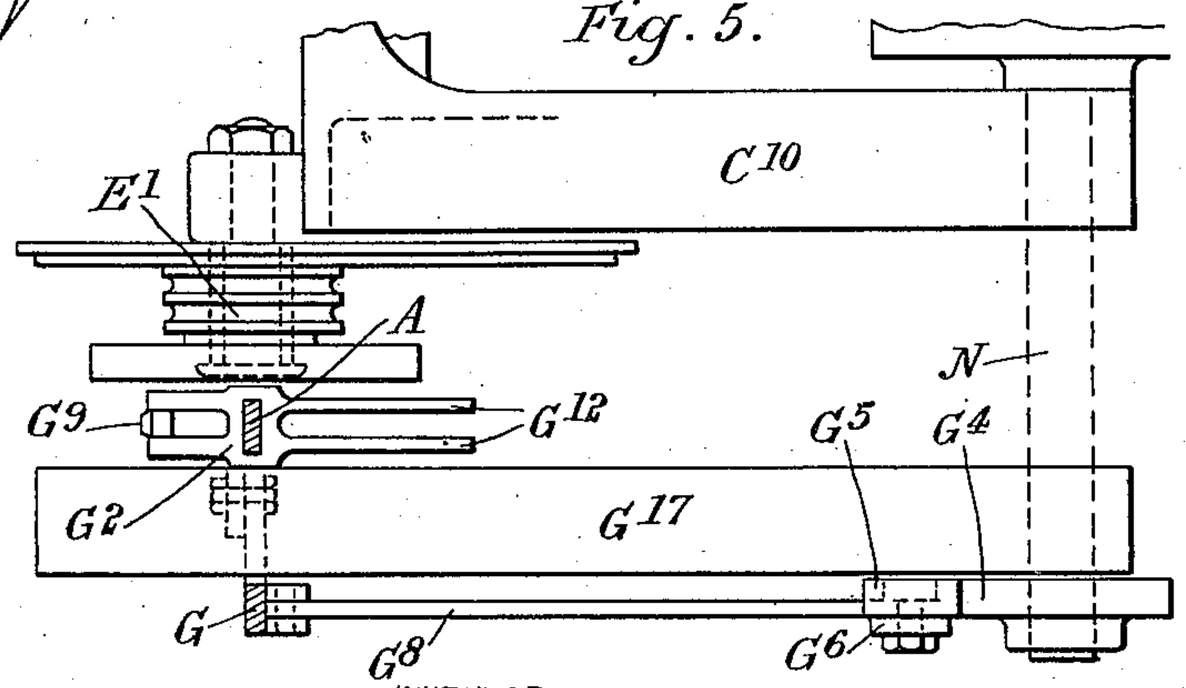

Fig. 7A

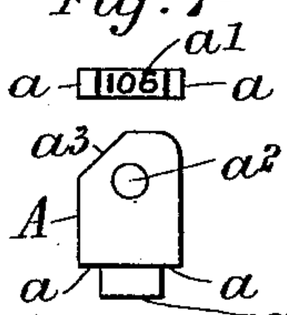

Fig. 7.

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5 SHEETS—SHEET 3.

Fig. 10.

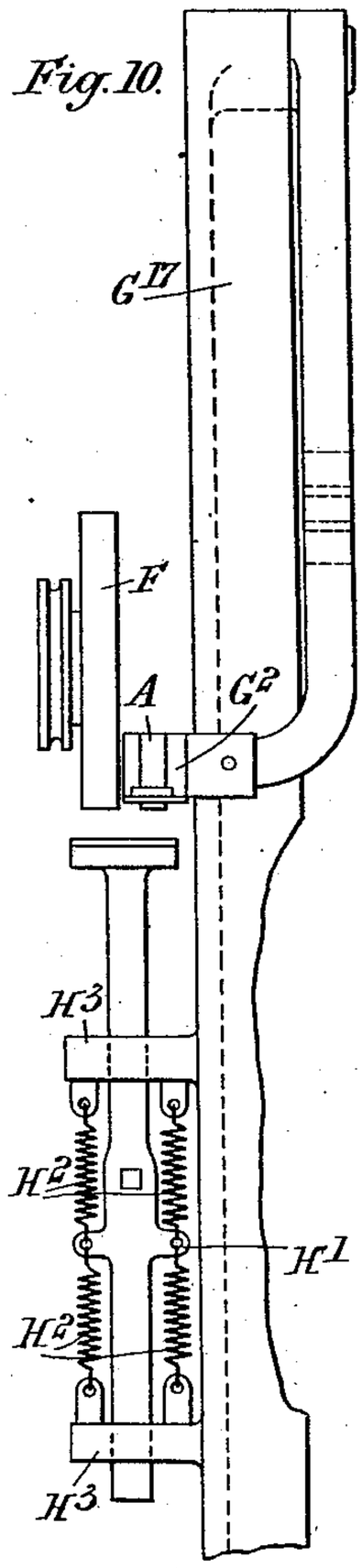


Fig. 8.

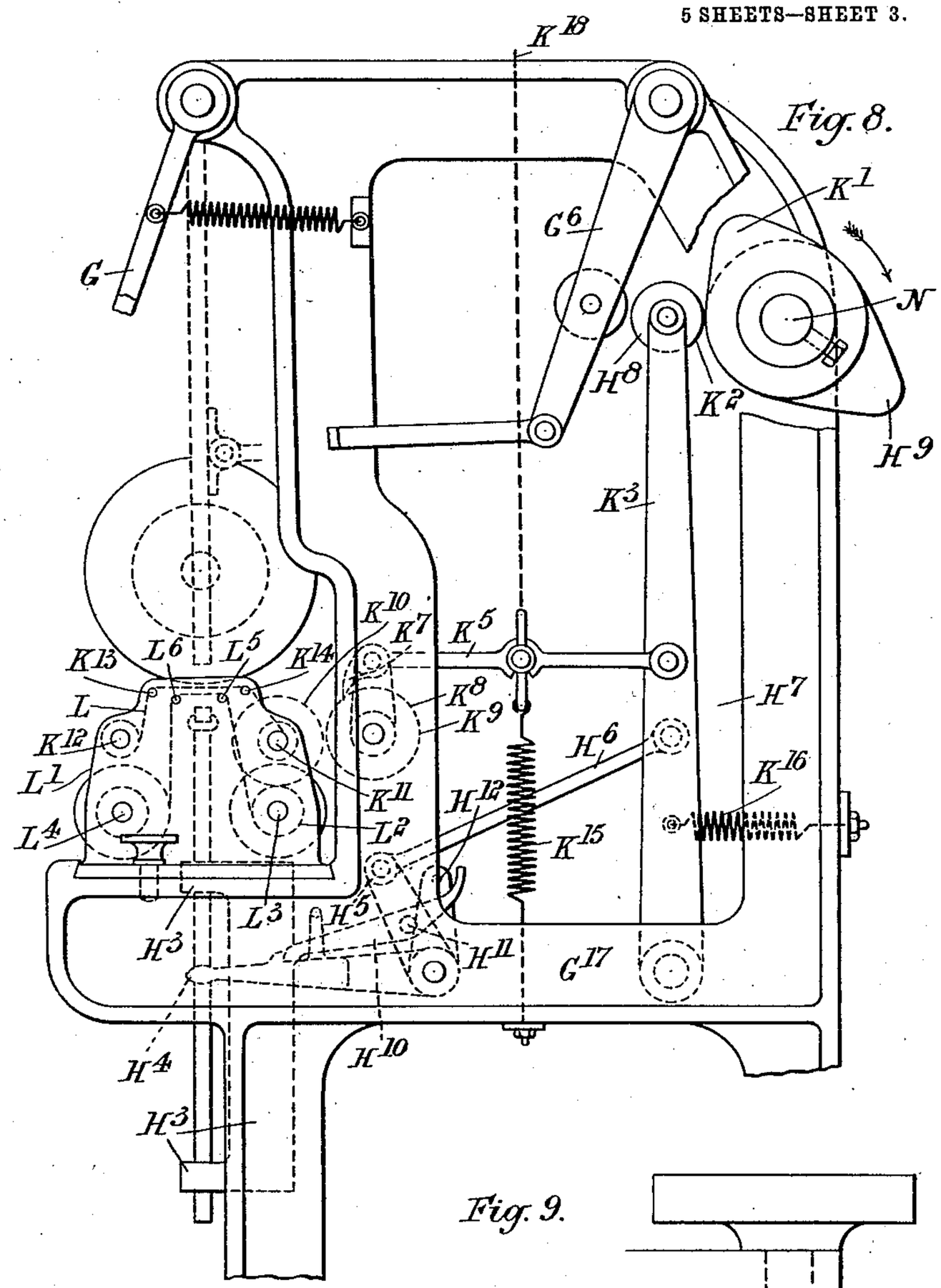


Fig. 12.

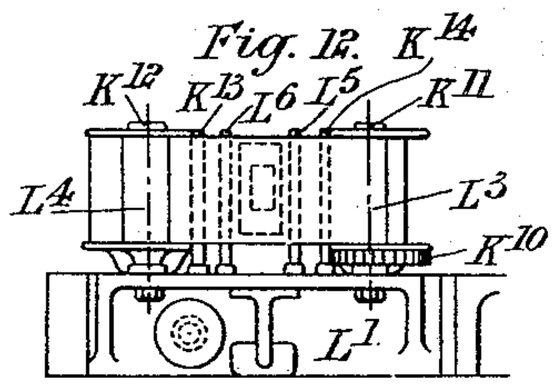


Fig. 9.

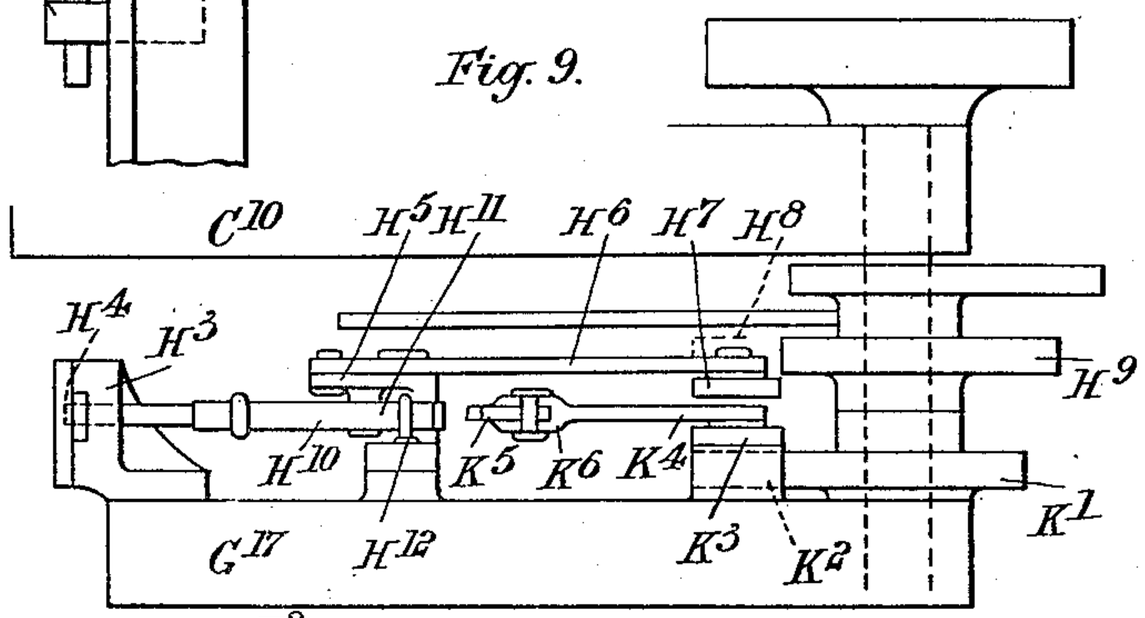
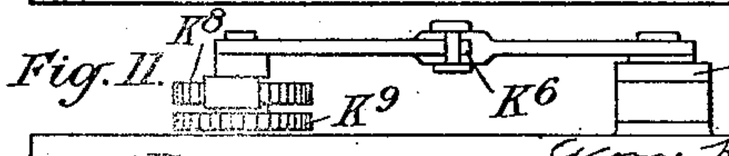


Fig. 11.



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APPLICATION FILED MAY 9, 1908.

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5 SHEETS—SHEET 4.

Fig. 13.

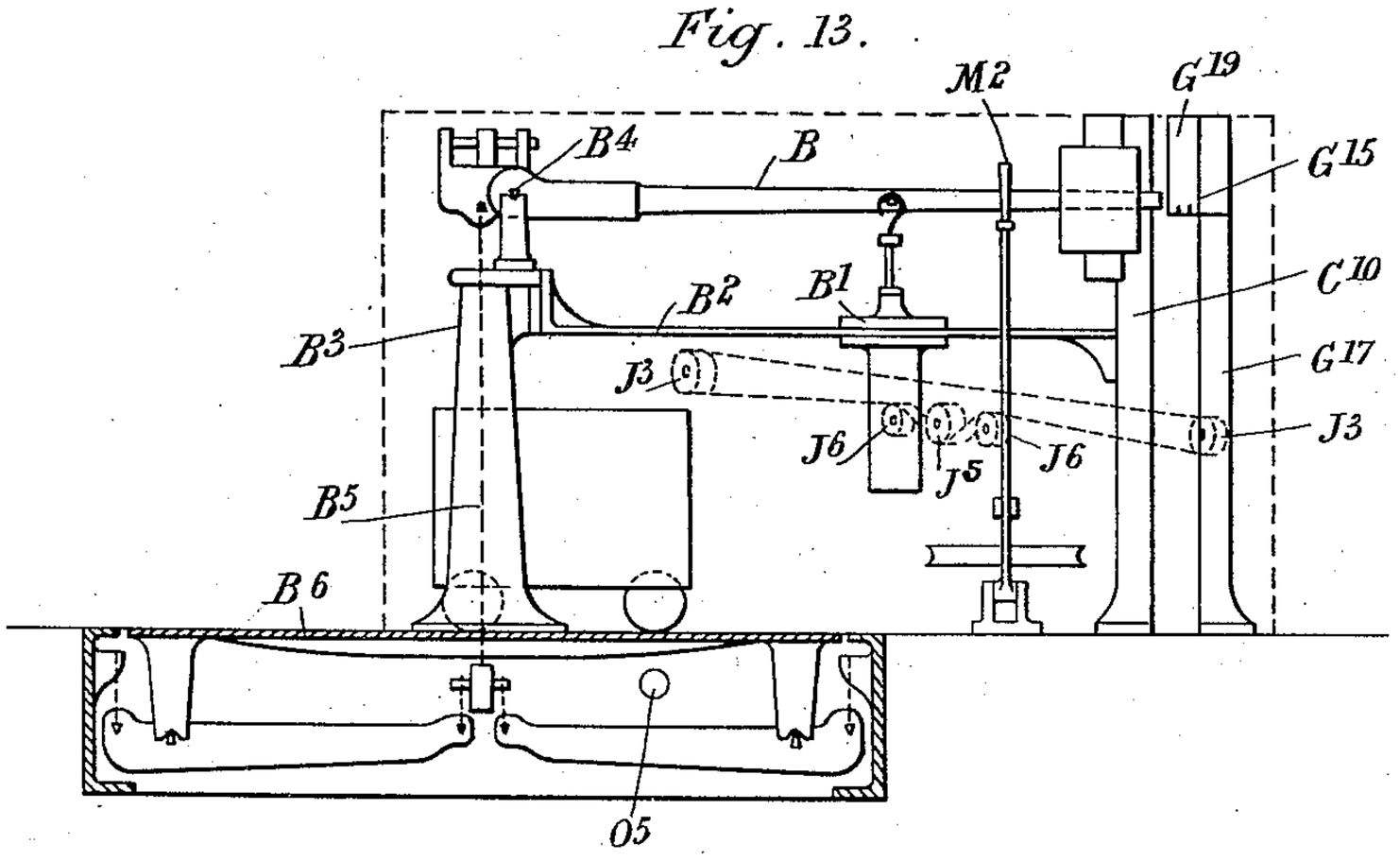
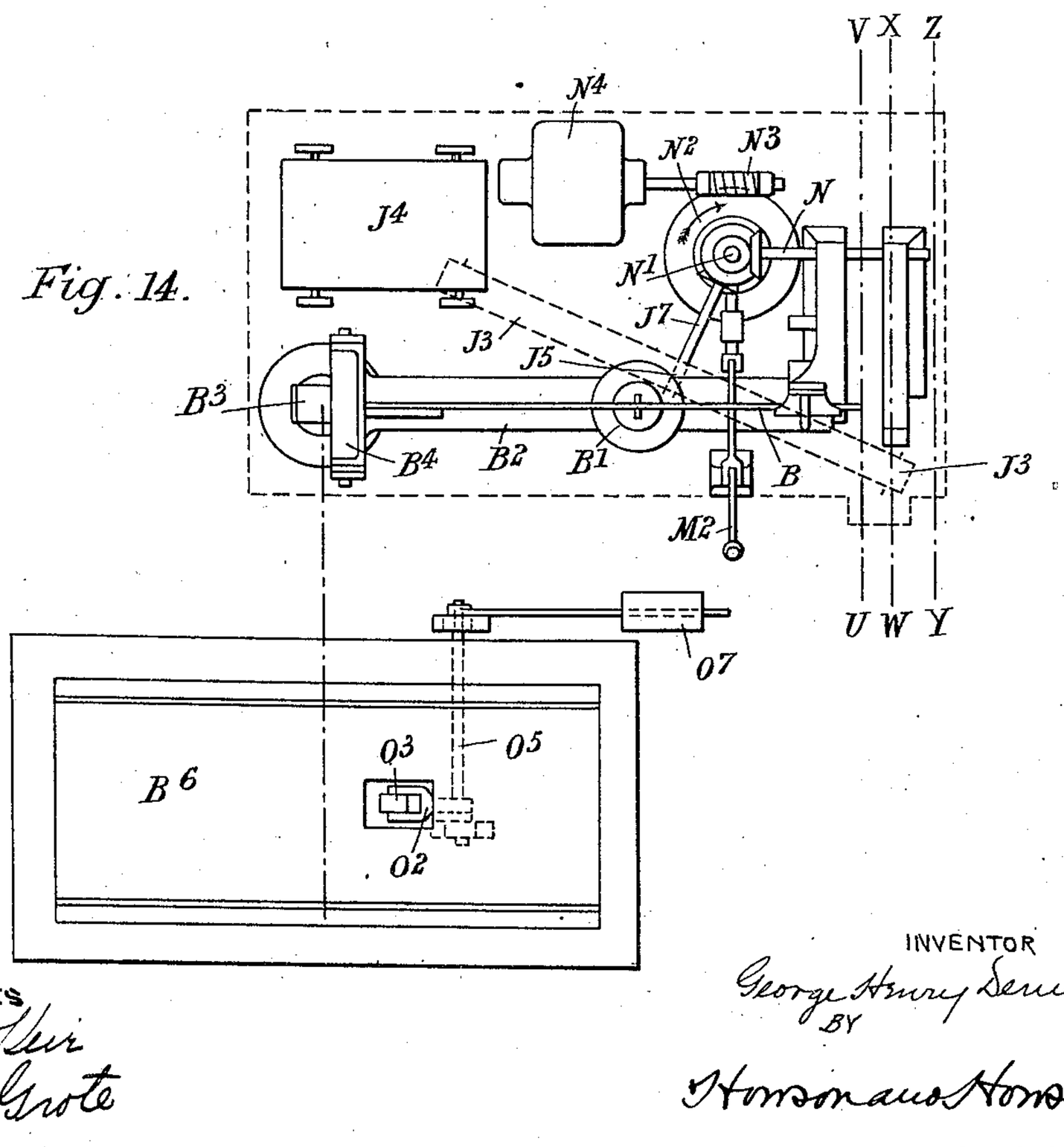


Fig. 14.



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5 SHEETS—SHEET 5.

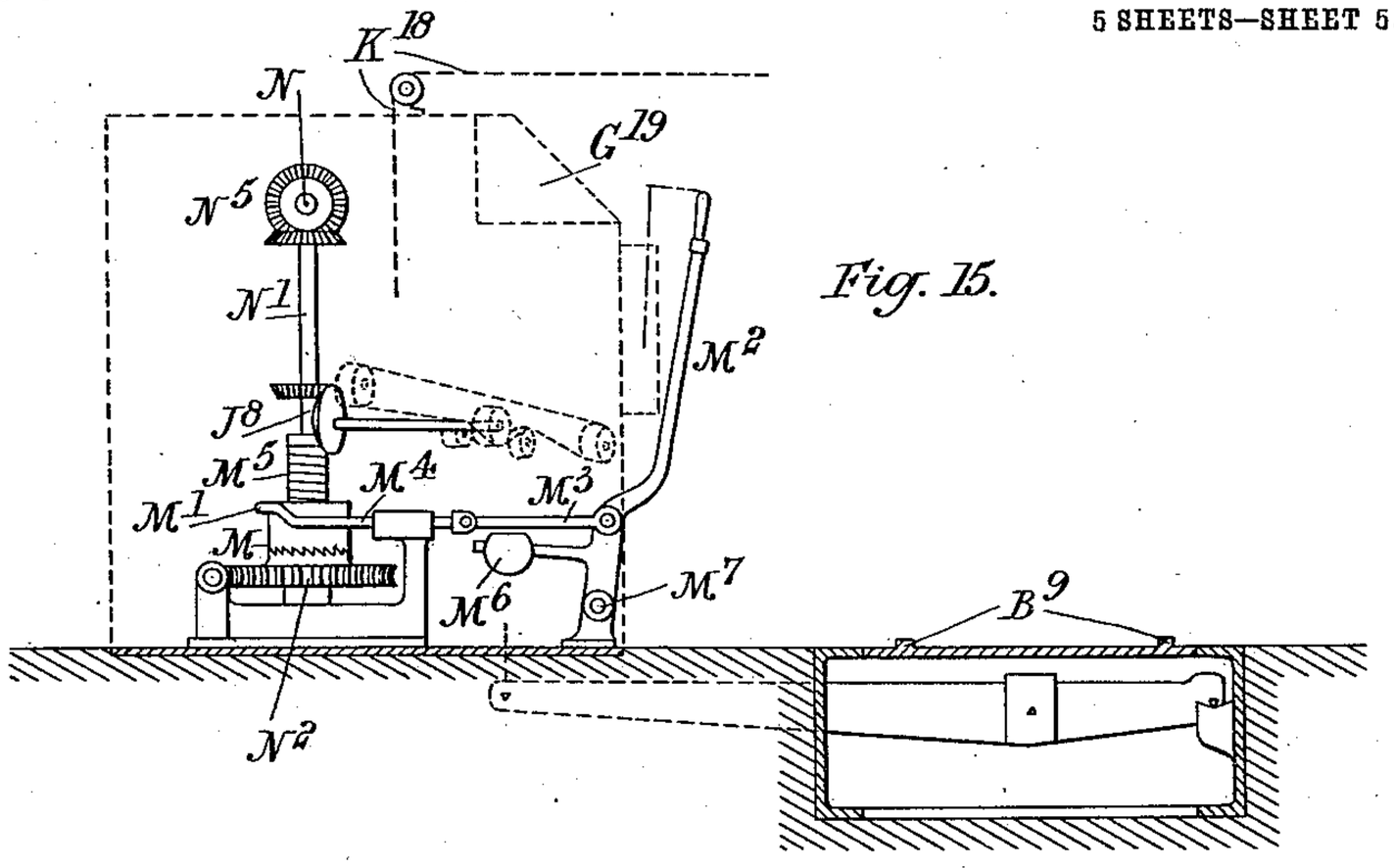

Fig. 15.

Fig. 16.

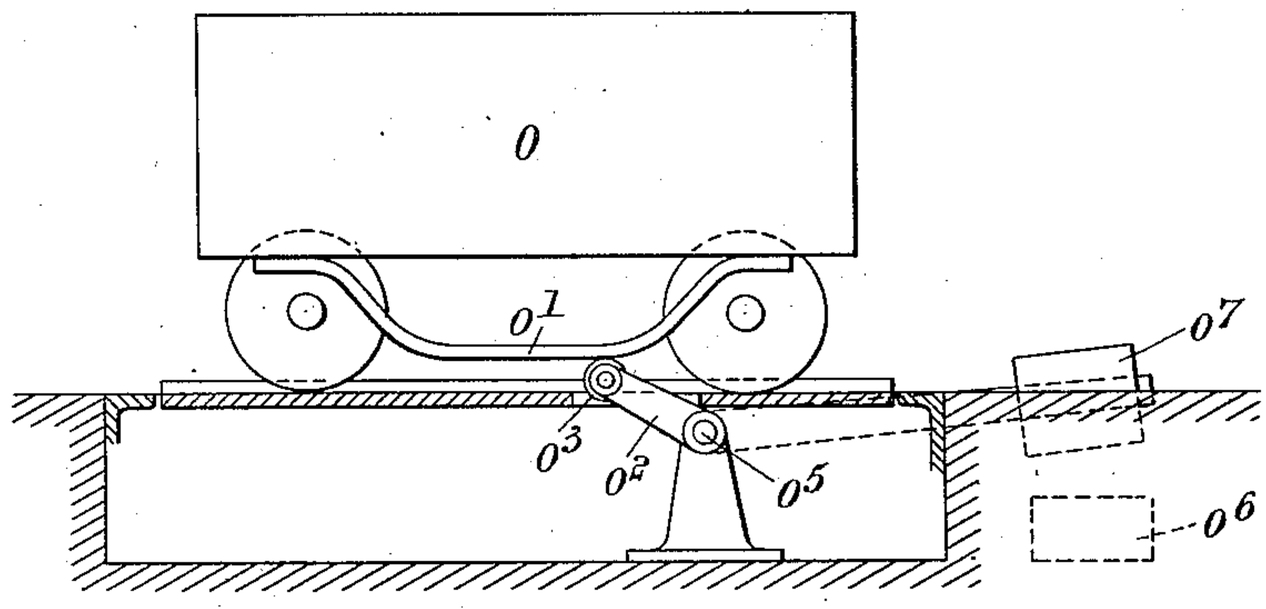

Fig. 17.

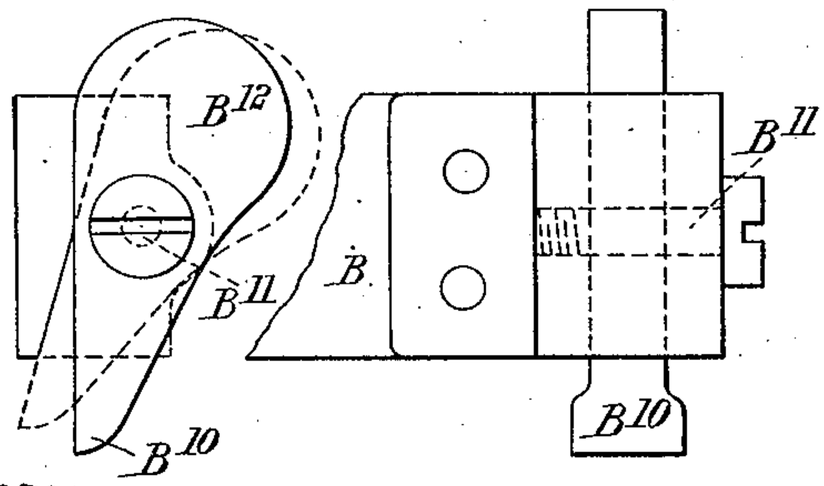

Fig. 17A.

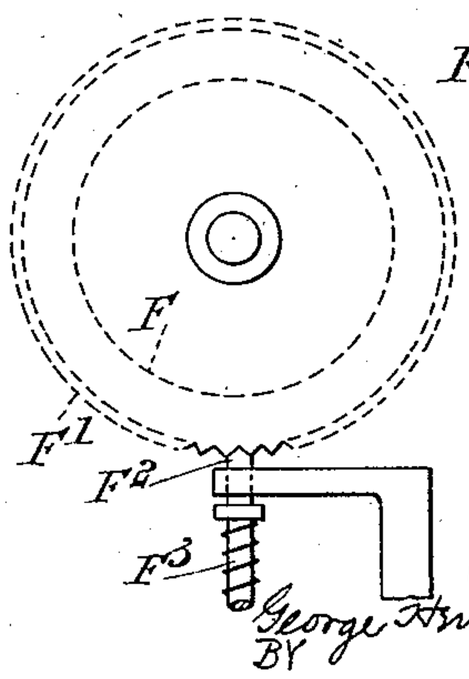

Fig. 18.

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UNITED STATES PATENT OFFICE.

GEORGE HENRY DENISON, OF LEEDS, ENGLAND.

WEIGHING-MACHINE.

951,777. Specification of Letters Patent. Patented Mar. 8, 1910.

Application filed May 9, 1908. Serial No. 431,978.

To all whom it may concern:

Be it known that I, GEORGE HENRY DENISON, a subject of the King of Great Britain and Ireland, of Hunslet Foundry, in the city of Leeds, England, engineer, have invented a new and useful Weighing-Machine, of which the following is a specification.

This invention has reference to machinery for weighing materials, such as those for instance brought out of mines in "corves", or trucks, and its object is to provide a system, or means, whereby the weight of each load can be automatically ascertained and recorded upon a suitable scroll, or ticket. Further to provide means whereby, side by side with the weight, the number, or "tally", of the miner, or person interested in the weight, can be automatically recorded in such manner as shall render the result above doubt, or suspicion. Further, when necessary, to provide means for distinguishing, on a ticket, or scroll, (even after the printing has been carried out), a load that may appear to be of inferior quality. Further, when required, to provide means for an automatic differentiation between the tare weights of different classes of trucks, so that they may be indiscriminately passed forward to one and the same machine and have their contents correctly recorded.

I will describe my invention with reference to the accompanying drawings.

Figure 1 is a side elevation showing details both of the gripping-gear and the measuring-gear at the position of the line U V in Fig. 14; Fig. 2 is a plan of the same with some neighboring parts added; Fig. 3 is a side elevation of the measuring "snail" and its "spider", or carrier, separately and drawn to a smaller scale; Fig. 4 is a side elevation of the details of the tally-carrier at the position of the line W X in Fig. 14; Fig. 5 is a plan of the same with neighboring parts added; Fig. 6 is a front elevation of the opening giving access to the tally insertion-hole; Figs. 7 and 7[A] are respectively a front elevation and a plan of a tally; Fig. 8 is a side elevation of the details both of the printing gear and the paper and ribbon-feeding gear at the position of the line Y Z in Fig. 14; Fig. 9 is a plan of certain of the printing gear and other details; Fig. 10 is a front elevation of some of the printing gear details; Fig. 11 is a plan of a portion of the paper and ribbon-feeding gear; Fig. 12 is a plan of the carrier for the scrolls of the same; Fig. 13 is a front elevation of the assembled parts of the entire machine sufficient to explain the general arrangement; Fig. 14 is a plan of the same; Fig. 15 is a side elevation of Fig. 13; Fig. 16 is a front elevation of a truck having its extra tare weight deducted; Figs. 17 and 17[A] are side and front elevations of the measuring pawl at the end of the steelyard, and, Fig. 18 shows how a type-wheel, recording from a smooth snail, may have a companion wheel suitably indented for alining the weight-figures.

Parts of the figures are sectioned and others broken away.

In describing my invention I will presume that loaded miners' trucks are to be weighed. Each miner is provided with a number of special "tallies" (suitable for the machine) which bear marks, or numbers, indicating particular individuals. Following the usual practice, the miner attaches a tally (in this case one of the special ones) to each of his trucks, and they are then passed forward in the usual manner regardless of any order of ownership. Upon the arrival of a truck upon the weighing machine the attendant detaches the tally A (see Figs. 7 and 7[A]) and inserts it in a slot A[1], Fig. 4, provided for the purpose in the casing of the machine. While this is being done, the steelyard B takes up a position corresponding to the load, and, when it has come to a standstill, the attendant puts the machine in motion, should it be at rest, by the movement of a lever, or the like. The operations carried out by the machine consist in (1) gripping the steelyard B between the cheeks C[1] and C[2]; (2) measuring its position by an arm D[1] and snail E; (3) moving a type-wheel F into a corresponding position; (4) bringing the tally A by means of a carrier arm G into printing position; (5) printing the result by an upward stroke of a hammer H; (6) discharging the tally, say with the aid of a scoop-like receptacle; (7) feeding the ink ribbon K and the scroll L forward ready for the next operation; and finally (8) stopping the machine at the completion of the cycle at a position ready to commence another cycle, say by means of a clutch M on the shaft N[1], Fig. 15. The gripping of the steelyard B is performed by a spring-arm C[3] operated by a cam C[4]. The arm C[3] which, at its grip-

ping end, carries the plate C^2, runs through guides C^5 and C^6, and is pressed toward the steelyard by the spring C^7. At its outer end it carries a crosshead C^8 carrying a roller C^9, by the aid of which it is drawn out of action for a time as the cam C^4 rotates.

The height-measuring device consists of a snail E with, or without, steps which is arranged to rotate on a pivot at E^1, permissively, at the proper time, until it stops itself against an abutment on the steelyard B. The shape of the snail is such that its radii correspond accurately with the various positions of the steelyard, so that the height of the said steelyard is correctly measured by the angular movement of the snail, see examples of indentations in Fig. 3, where the snail and its carrier E^2 are shown on a smaller scale. In Figs. 1 and 3 the snail E is shown, in dotted lines, in its zero position. It is mounted on a sleeve E^3 alongside a pulley with double grooves D^3 and D^4, and farther along on the sleeve is the type-wheel F. The groove D^3 carries a flexible wire, or the like, attached therein and also to a spring D^5 anchored below and capable of stretching very considerably, the duty of this spring being to rotate the snail E in the direction of the arrow thereon. The other groove D^4 carries another flexible wire D^6 attached above to the end of the long arm D^1 of a bell-crank lever pivoted at D^7, the short arm D^2 of which lever is held against a cam D^8 mounted on the shaft N whose rotation actuates the said bell-crank lever at the proper time for measurement-taking.

Connected with the snail E, either upon the same axis, or connected by suitable gearing, I fix a type-wheel F carrying a series of printing figures corresponding with the positions, or steps, of the snail, and corresponding therefore with the height of the steelyard. In this case the type-wheel F is mounted on the sleeve E^3.

In a position ready to receive the tally A (which when dropped travels down the tube G^1) I arrange a tally-carrier G^2 preferably comprising an arm G which swings upon a pivot G^3, and whose movements are controlled by a cam G^4 on the main shaft N. This cam first acts on a roller G^5 mounted on the lever G^6, pivoted at G^7, which in its turn passes the motion on to the carrier arm G itself, through the connecting rod G^8 (see Fig. 4) the arm G and lever G^6 working parallel with each other. By the time the correct figures on the type-wheel F have been brought into printing position (below the center of the said wheel) the tally-carrier G^2 which has previously caught the tally last inserted at the feeding slot, has brought its numbered, or otherwise marked, face into a position side by side with the steelyard's correctly selected weight-figure and all is ready for an impression. At this moment a smart blow, delivered from below, through a printing ribbon K and a layer of paper L (preferably forming scrolls in each case) records both the weight and the miner's tally number on the said scroll of paper L. The printing blow is given by a spring striking bar H, operated by a cam-controlled trigger device, which provides a sudden release of the bar at the proper time. This latter gear is shown in Figs. 8, 9 and 10; the head of the bar extends to each side to come opposite both the type-wheel F and the tally A held in the carrier G^2 (see Fig. 10). At the center of the striker are cross-lugs H^1 harnessed between four springs H^2 anchored above and below to a small frame H^3, which constitute guides for the bar itself. Thus slung in springs, the bar is actuated by the toe of a lever H^4 worked by an intermediate lever H^5 connected by a rod H^6 to the main hammer lever H^7. At the head of this last lever is a roller H^8 which is actuated by the cam H^9. On the lever H^5 is pivoted at H^{11} a trigger H^{10} whose nose fits into a notch in the H^4 lever, while its tail, as the head of H^5 depresses the toe of H^4, is capable of being tripped by a stationary pin H^{12}. It follows from this that H^5 depresses the toe of H^4 until the trigger is released by the pin H^{12}, when the upward printing-blow is struck. It may be here noted that the top of the tally when in printing position rests against an overhead abutment, in the form of an adjustable screw H^{13} (see Fig. 4) specially provided to take the printing blow. This abutment screw is carried on a small bracket H^{14} which also carries another adjusting screw G^{18} for regulating the inward travel of the tally-carrier G^2. After the printing action has been completed, the ink ribbon and the paper scroll are both fed forward through a suitable distance by means of a ratchet and pawl device actuated by a cam and lever.

In Fig. 8 K^1 is the feed cam bearing against a roller K^2 at the head of the lever K^3 (which stands immediately in front of the hammer-lever H^7). This lever K^3, through the two ends K^4 K^5 of a rod knuckle-jointed at K^6, passes the motion forward to the lever and ratchet K^7. By the side of the ratchet wheel K^8 is a companion spur wheel K^9 which gears into a wheel K^{10} carried on the spool frame L^1. In its turn the wheel K^{10}, which is mounted on the axis K^{11} of the ink ribbon spool, gears into the wheel L^2 mounted on the axis L^3 of the spool carrying the paper L. Both of the ink ribbon spools and their axes K^{11}, K^{12}, and both of the paper spools and their axes L^3, L^4, are mounted on the before mentioned spool frame L^1, and, from the top of the said spool frame, project studs K^{13}, K^{14}, and L^5, L^6, for carrying the ribbon and paper, respectively, up to the printing zone, as shown in Figs. 8

and 12, the whole being arranged so that the frame and its dependents may be removed as a unit. If however a truck when just weighed shows inferior material, the attendant may pull a handle, which is so internally connected with the knuckle-joint K^6, that an upward pull draws the ratchet K^7 back, and on its return, due to the spring K^{15}, an extra tooth on the ratchet wheel of the paper scroll gear is pressed forward and a space double the ordinary one is left on the scroll, thus distinguishing the previous truck as the one that turned out bad material. Should the material be considered extra bad, another pull may be given, whereupon a space between the figures three times the ordinary width denotes the specially bad load. It may be noted that a differentiating gear passes the paper forward at a greater speed than the printing ribbon in order to economize the latter, the diameters of the wheels at K^{10} and L^2 being arranged accordingly. While the paper scroll is moved forward, by the action of its cam K^1, the snail is withdrawn to its zero position (that shown in Fig. 1) in order that all may be ready for dealing with the next truck-load; this is done by the movement of the cam-controlled lever D^1 on its return stroke, which turns the snail backward, as will be understood by the previous description. This retiring movement is a positive one, unlike the measuring stroke which is permissive only, a maximum forward movement of the snail being possible only when the steelyard is at its highest point. The snail's measuring movement may be influenced by a spring, or weight, as required, as exemplified by the spring D^5 already referred to. While the snail E is being withdrawn, the tally A is moved by its carrier arm G from the printing position, immediately over the hammer H, to another position (clearly shown in Fig. 4) where it is discharged, say for example by the tripping of a trigger catch G^9 and deposited by gravity into a scoop-like receptacle J on a rubber, or like, elastic pad J^{10}. This receptacle being provided with a suitable balance-weight, at J^1, turns on its axis J^2 by the extra weight of the tally, and quietly deposits it in safe keeping and thus prevents its being used again until it has been returned to its proper owner, in the usual course. The trip releases a retaining slide G^{10}, which then sets the tally free, the exact moment of the trip being regulated by the screw G^{11}. A stop at J^9 is arranged to compel the scoop to come to rest where desired. In Fig. 4 the tally is about to be dropped on a traveling belt J^3 in order that it may be delivered elsewhere, as hereinafter described. The carrier arm G at the moment of discharge is in the position shown in dotted lines in Fig. 4, and on its return, directly it retreats, the spring-governed trigger G^9 closes the retaining slide G^{10} at the foot of the tally-carrier G^2 and when it comes into line with the foot of the feed-tube G^1, the formation of the cam G^4 causes it to rest awhile in order to be ready to receive the coming tally. This point makes a suitable starting place for the new cycle of work. Having received the new tally, the restarting of the machine allows it to follow the cam inwardly, until the tally's figures stand vertically above the hammer H, and in order to regulate this position to a nicety, the position-regulating screw G^{18} is provided, and a screwed union on the rod G^8 may be used in regulating the position of the carrier-arm at the foot of the feeding tube. All the levers are arranged to retire toward their cams by the action of springs after the manner shown at K^{16} in Fig. 8. The carrier arm G bends inward as shown in Fig. 10 and thus supports the carrier G^2 without fouling anything.

In order to prevent a miscarriage of a tally, horns G^{12} extend to the rear of the carrier itself, and, in front, the brackets carrying the trigger G^9 do similar duty with a view of keeping the tally in the tube until the pocket comes into true line. The arm supporting the screw G^{18} is situated between these rear horns. The screw G^{11} which trips the tally-trigger, may be carried on an arm G^{13}, which may also support the feed tube G^1, and also the axis J^2 of the depositing arm J, all as shown in Fig. 4.

It must be understood that the movements of the various parts all emanate from, and are governed by, one main shaft N of the machine; and all periodic actions are governed by and are included in, one revolution of this shaft, which thus determines the cycle of work in connection with the weighing and printing of each truck load with its accompanying tally.

The gear that carries the paper scroll and printing ribbon may be mounted on a small base-plate of its own so that it can be withdrawn as a whole for refilling, it being preferred to supply all this gear in duplicate for prompt exchange.

It is of course essential that the tally shall be inserted at the proper time, and in some cases it may prove convenient to supply means for closing the feed slot, or otherwise so arranging the stopping and starting gear as to prevent anything undesirable taking place, the guarding horns on the carrier G^2 being introduced with this object.

Referring to Fig. 13 the steelyard B is shown in connection with a plunger floating in a bath of mercury, B^1 supported on a member B^2 extending between the measuring frame C^{10} and the steelyard pillar B^3; the steelyard is supported at B^4 and the vertical rod B^5 extends down to the weigh-table B^6 as usual.

G^{15} shows the position of the tally feeding-guide near the inserting slot (in Fig. 6) and G^{17} shows the frame of the tally-carrying gear.

In Fig. 14 is shown the main shaft N of the machine driven by a vertical shaft N^1, near the foot of which is a worm wheel N^2 driven by a worm N^3 actuated by a motor N^4. The tally-carrying belt J^3 is shown running diagonally in order to deliver the recorded tallies into a small truck J^4; this belt is driven on its return side by the pulley J^5, mounted on a shaft J^7 driven through suitable bevel gear from the vertical shaft N^1. On each side of the belt pulley J^5 are other pulleys J^6 J^6 which act as tightening guides.

The clutch M for stopping and starting is best seen in Fig. 15. Its lower teeth are attached to the worm-wheel N^2 while its upper teeth form the bottom of a sleeve which slides on the vertical shaft N^1. On this sleeve is a feather M^1 by which the clutch is made to rise and fall as desired. In the position shown the attendant has first pulled the starting handle M^2, and this, acting through the connecting rod M^3, has withdrawn the clutch-bolt M^4, which has released the clutch and allowed it to fall into gear. A light spring M^5 may be used to keep the clutch in gear. The starting lever is weighted at M^6 so that it may automatically stop the machine by withdrawing the clutch, which it does as follows: After the feather has traveled around a pre-arranged distance, the clutch-bolt falls into place beneath it, the later curve of the feather being so formed as to withdraw the clutch when its circular movement has been completed. Miter wheels at N^5 drive the shaft N of the machine, and a second pair at J^8 drive the tally-carrying belt.

A plan of dealing with the tare of the trucks is to permanently weight down the steelyard to suit the minimum tare x (Fig. 13); after this the heavier trucks, see O in Fig. 16, are made to carry a depressing bar O^1, which, before the truck can settle down on the weigh-table, has to depress a weighted lever O^2 giving an upward pressure equal to the difference between the two classes of trucks.

O^3 is a roller on the short arm of the double lever whose fulcrum is at O^5. A block at O^6 is arranged for the weight O^7 on the long arm to rest upon. The fulcrum shaft is passed through the weigh-table gear in such a position as not to disturb anything. The weighted lever, according to its weight, rises only to a predetermined height, and so allows other trucks, not provided with the requisite depressing bar, to pass over it.

Any suitable means may be employed to insure the proper positioning of the tally pieces with relation to the printing wheel, as for instance the following. Reverting first to Fig. 7, it will be seen that the tally A has a hole through it at a^2 by which it can be hooked onto the miner's truck with its figures face a^1 hanging in a protected position downward. The example shows the number 106 which must of course not be inserted so as to print 901 (see Fig. 7^a a plan of Fig. 7). The top left hand corner at a^3 is cut off in order that it may pass under the lop-sided canopy shown in front elevation in Fig. 6 at G^{16}. The tally having been detached from the truck about to be weighed may be taken in one hand of the attendant leaving his other hand free for the manipulation of the starting handle M^2, see Figs. 13 and 15, and with outstretched arm (free play for which is provided by an opening in the incased machine, shown as G^{19}) he proceeds to insert the tally in the feed-slot. The projecting spout-like bracket G^{14} for guiding the tally to this slot, has two flanges, G^{15}, suited for receiving the shoulders a, a, of the tally so that its printing face, a^1, need suffer no damage, see the larger details in Figs. 4 and 6. Proceeding to push the tally along these guide-flanges, G^{15}, its top, before it can reach the feeding-slot (which is situated immediately over the guide-tube G^1) has to pass under the lop-sided canopy, G^{16}, and here, unless the tally is being inserted properly, the attendant is reminded of his oversight, for the full shoulder of the tally blocks its progress. This canopy also serves as a stop for preventing the insertion of any unlawful instrument down the feed tube G^1. Having inserted the tally the machine may be set in motion. The printing face of the tally is carefully protected throughout; when it falls through the spout into the carriage G^2 the shoulders a, a, and not the type face, take the impact; as also, when the horns G^{12} on the carrier hold it back, the shoulders again take the weight.

In Fig. 18 is shown a printing wheel F, which, in the case of a smooth snail, has an indented wheel F^1 mounted side by side with a pointed bar F^2 and spring F^3 for insuring the correct alinement.

The abutment on the end of the steelyard previously mentioned for the snail is shown in Figs. 17 and 17^A. B^{10} is the toe of the abutment pawl, pivoted at B^{11}, and counterweighted with an overbalancing head B^{12}. Its idle position is shown in dotted lines, but when caught by the snail indentations it at once increases its depth of contact by taking up the position shown in full lines.

The whole of the measuring and recording mechanism is suitably incased as shown by the dotted lines in Figs. 13 and 14 and all parts which might be otherwise tampered with are protected, so that, by lock and key only can they be approached. If necessary two locks and keys may be arranged to act

together so that a witness holding the second key is compelled to be present. One for instance may represent the master and the other the miners.

Peep-holes with lamp and reflectors may be provided, when required, to enable the attendant to see that clear records are being given as the weighing proceeds.

It must be understood that variations in detail may be made without departing from the spirit of the invention.

In Fig. 15 the cord K^{18} may be led to the most convenient position for seeing unsatisfactory material. In this figure the handle M^2 has its fulcrum at M^7. Flanges B^9 on the weightable should be arranged to guide the trucks over the extra tare device lever, O^2, if the trucks do not run on rails.

The cam outlines, while they are intended to be approximately correct, and are sufficiently near for the purposes of explanation, may be varied as required; the exact subdivision of the 360 degrees of the circular path being open to variations as may be found most expedient. The arrows denote the directions of revolution; and the various letters and numerals refer to the same parts in all the figures.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. In a weighing machine arranged to print records, and denote the origin or ownership of the material weighed the combination of a steelyard floated by the load, the weight of which is to be recorded, a device for gripping the steelyard and means for actuating the said device, a snail with operating means, flexibly connected, for measuring the position of the said steelyard and a type wheel connected with the said snail, in combination with a tally bearing a printing face, a lever with a carrier thereon for catching the tally when placed in the machine and bringing it into printing position beside the type wheel, a spring-hammer and means in connection therewith for delivering a printing pressure, together with a printing-scroll and means for traversing the same between the hammer and printing surface and means for releasing the tally from the carrier and depositing it in safe keeping after the record has been made, the whole arranged correlatively and in correct sequence for bringing about the desired result, substantially as described.

2. In a weighing machine arranged to print records, and denote the origin or ownership of the material weighed, the combination of a steelyard floated by the load the weight of which is to be recorded, a cam-governed spring actuated gripping device therefor, a measuring-snail with a cam-governed actuating lever, whereby a permissive forward motion, with a positive return is secured for the snail, a toe-like abutment on the end of the steelyard against which said snail impinges, a type-wheel mounted in connection with the measuring snail, a tally bearing a printing face, a cam-actuated tally-carrier with releasing device, mounted on a vibrating arm adapted to bring said tally into printing position adjacent the type wheel, a cam actuated spring-hammer with trigger release for giving the printing blow, a cam-actuated, self-contained and removable paper-scroll and ink ribbon device adapted to pass the paper scroll forward intermittently between said hammer and printing surfaces, a counterbalanced scoop and means for releasing the tally from the carrier and delivering it thereto, the whole arranged to act correlatively and in correct sequence, substantially as described and shown.

3. In a weighing machine arranged to print records and denote the origin or ownership of the material weighed, the combination of a tally provided with a printing face, means to insure its correct insertion in the machine, said tally having also supporting shoulders, a moving tally-carrier with shoulder-stops and a releasing slide and catch, an adjustable releasing toe, a counter-weighted scoop for receiving the tally and gently depositing it, the whole arranged with the special view of protecting the printing-face and securing a correct reading of the tally numbers, substantially as described and shown.

4. In a weighing machine arranged to print records, and denote the origin or ownership of the material weighed, the combination of a steelyard floated by the load, the weight of which is to be recorded, a device for gripping the steelyard and means for actuating the said device, a snail mechanically coöperating with said steelyard and provided with operating means, flexibly connected, for measuring the position of the said steelyard and a type wheel connected with the said snail, in combination with a tally bearing a printing face, a lever with a carrier thereon for catching the tally when placed in the machine and bringing it into printing position beside the type wheel, a spring-hammer and means in connection therewith for delivering a printing pressure, together with a printing-scroll and means for traversing the same between the hammer and printing surface and means for releasing the tally from the carrier and depositing it in safe keeping after the record has been made, together with the further combination in connection with the printing scroll of an operating lever adapted to be manually operated after a record has been printed to move said record scroll forward an extra space by leaving an extra gap thereon

whereby the inferiority of the material of the load or the like may be indicated, substantially as described and shown.

5. In a weighing machine arranged to print records, and denote the origin or ownership of the material weighed, a device for recording only the net weight of a load apart from its carrier, said device comprising a floating steelyard with a secondary weight "*x*" attached thereto representing the weight of the carrier, in combination with a weightable having a counter-weighted depressible lever adapted to be actuated by the load carriers of greater weight and counterbalance the additional weight of said carriers whereby only the weight of their loads is recorded, the said heavier carriers being fitted with depressing bars extending downward to engage said counterweighted lever and riding thereon, substantially as described and shown.

6. In a weighing machine a member actuated by the load, means for gripping the same, means to measure the extent of movement of said member under the influence of load, a type device adapted to be actuated by the said measuring means, an ownership "tally" having a printing face, means to position the same with relation to said type device and means to take an impression from said type device and tally simultaneously, substantially as described.

7. In a weighing machine, a floating steelyard, spring means for gripping the same, cam means for controlling said spring grip, a measuring snail to measure the extent of movement of said steelyard under load, a bell crank lever, an actuating connection from one arm thereof to said snail and a cam adapted to move said lever through the other arm, a type wheel rotated by said snail, an ownership "tally" provided with a printing face, means to position the same adjacent said type wheel and means to secure an impression simultaneously from said wheel and tally, substantially as described.

8. In a weighing machine, a member actuated by the load, means in connection therewith for measuring and securing a printed record of the load, in combination with an ownership tally having a printing face, a swinging arm adapted to carry said tally and position the same with relation to the printing mechanism for the load record, cam means controlling the movement of said arm and means for discharging the tally after the record has been taken, substantially as described.

9. In a weighing machine adapted to make a printed record of the weight and ownership of the load, an independent tally with printing face denoting the individuality of owner of load, means for receiving and positioning said tally with relation to the weight recording means for the purpose of securing the printed record of weight and tally together and means to insure the proper insertion of said tally to present its printing face in the desired direction, substantially as described.

10. In a weighing machine adapted to make a printed record of the weight and ownership of the load, an independent tally with printing face denoting the individuality of owner of load, means for receiving and positioning said tally with relation to the weight recording means for the purpose of securing the printed record of weight and tally together and means to insure the proper insertion of said tally to present its printing face in the desired direction and means to protect said face from injury during the travel of said tally through the machine, substantially as described.

11. In a machine for weighing the load carried by rolling stock, means for compensating the weight of rolling stock of normal weight, in combination with a device adapted to be automatically actuated by contact with the rolling stock as it enters upon the weighing platform, for compensating the extra weight of abnormally heavy rolling stock, substantially as described.

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

GEORGE HENRY DENISON.

Witnesses:
WM. SNOWDON,
C. VIVIAN WALKER.