COMBINED HARROW AND SEED-SOWER.

The machine represented in the annexed engraving has been extensively introduced to practical use, mostly in California, and has received the highest testimonials in regard to its successful operation, and great value to the growers of grain. It is designed to save not only the whole of the labor of sowing, but a portion also of that of harrowing, the same team doing both harrowing and sowing that is ordinarily required for harrowing alone, while the operator rides at his ease instead of trudging through the plowed ground in the hard labor of holding the harrow.

In this machine the motion of the revolving harrow is in the direction opposite to that of the wheels, as will be seen by examining the connections. The harrow is made in two parts, D and D, each of which consists of a cast iron cylinder with the wrought iron, steel-pointed teeth firmly screwed into its circumference. Upon the outer

is made to slide so that its holes will correspond in whole or in part, or none at all, with the holes in the bottom of the box, thus varying the size of the openings, or closing them altogether at the will of the operator. The seed is shaken through these openings by a toothed rod which is caused to vibrate by means of cams upon the inner sides of the wheels, which come in contact with the projecting ends of the rods and force them inward; the rod being made in two pieces and each piece pressed outward by a spring.

The advantages claimed for this machine are, first: The perfect harrowing of the land, the clods not being gathered in heaps as by the ordinary harrow, but torn, tossed and beaten by the teeth until they are perfectly fine, and the ground is left in good tilth. Second, The seed is uniformly distributed, and the quantity to the acre may be accurately adjusted at will, when the same quantity will be sown upon each acre. Third, The

BODIES FALLING THROUGH THE AIR.

Messrs. Editors:—Would you be so kind as to tell me, through your valuable paper, how many feet or inches a flat plane will fall through the air in the first second, with a surface of 10 feet by 20 feet (making 200 square feet), with a weight of 400 lbs. attached to it; and how much pressure per square foot on its surface, supposing it to fall perpendicular? Could you give me a rule to find how many feet or inches bodies fall per second with given surfaces and weights? If you could give me the desired information, you would much oblige me.   J. W.

Boonton, N. J., May 4, 1859.

[A flat plane of 200 square feet area, and with a weight of 400 lbs., equally divided all over its surface, will fall a distance of 24.162 feet in the first second, and its velocity will increase until it reaches 30.227 feet per second. With this velocity it will continue to fall, provided it is kept perfectly horizontal, and the retardation due to the resistance of the air counterbalances
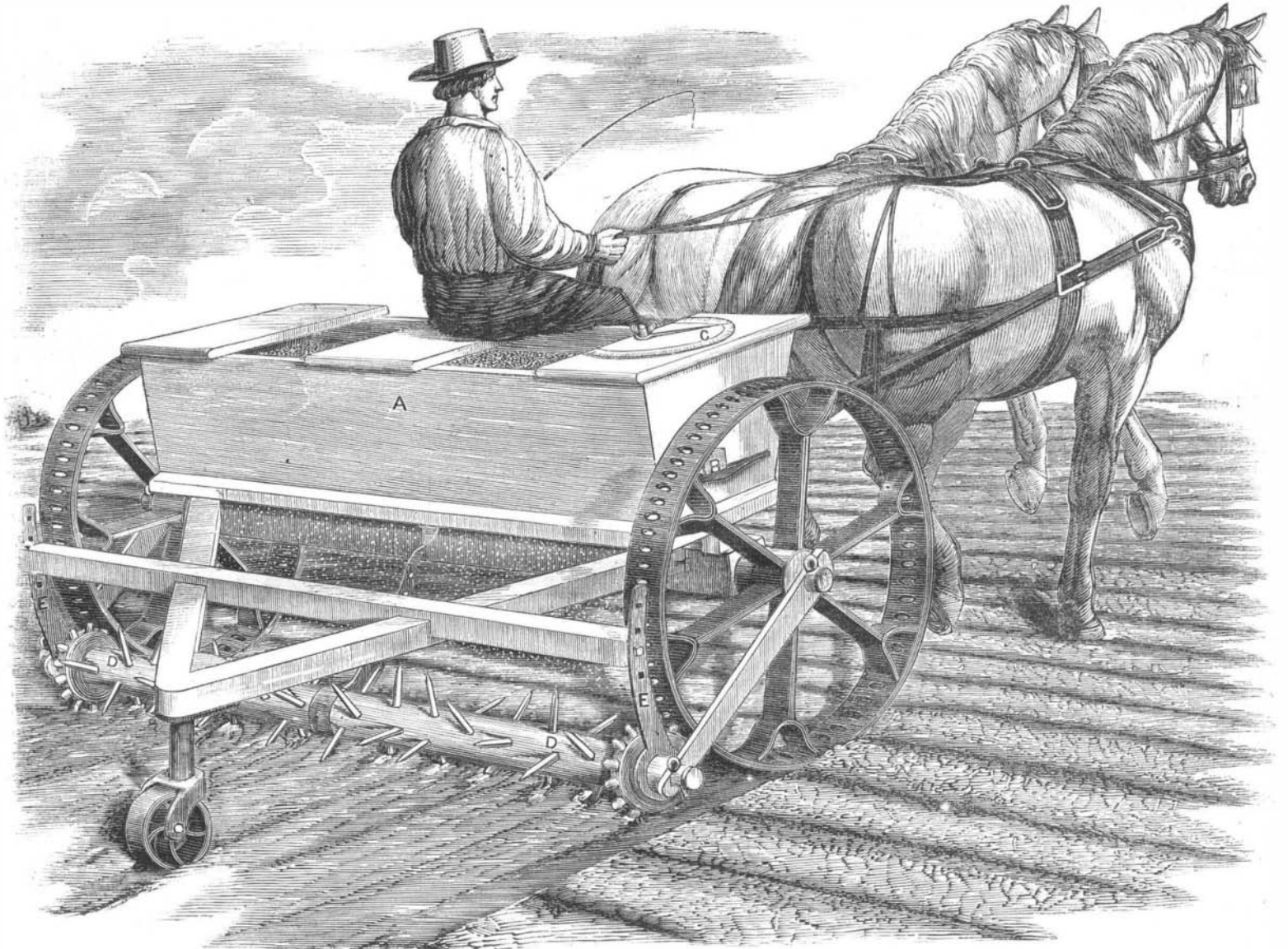
HEWITT'S COMBINED HARROW AND SEED-SOWER.

end of each cylinder is an iron collar or wheel furnished with steel pins which mesh into holes in the rim of the driving wheels, by which means the rotary motion is communicated to the harrow. The cylinders are drawn along by means of the bars which connect their ends with the axle-trees, these bars being pivoted to the axle-tree so that the harrow may rise over any obstruction which it may encounter, and also be raised or lowered to adjust its hight to any depth to which it may be desired to pulverize the ground. For the purpose of this adjustment the metallic plates, E E, which suspend the harrow from the triangular frame, are pierced with a series of holes, through either of which may be passed the pin which secures the plate to the frame.

The seed is placed in the box, A, and is scattered out as the machines moves along through a series of holes through the bottom of the box, extending its whole length. The flow of the seed may be regulated by varying the size of these holes; for which purpose a long plate, pierced with an equal number of holes, is fitted snugly below the bottom of the box, and is so connected with the index, C, that, by turning this index the plate

grain being immediately covered after being sown, none of it is eaten by the birds—a very important consideration in many parts of the country. It is claimed that this machine will sow from from eight to ten acres per day, harrowing in the grain perfectly.

This sower and harrower was awarded the highest premium—a gold medal—at the California State Fair, a silver medal at the Fair of the Mechanics' Institute in San Francisco, and the highest premium in cash at the fair at San Jose, Cal., all in 1858.

The patent for this machine was secured, through the Scientific American Patent Agency, March 27, 1860, and further information in relation to it may be obtained by addressing the inventor, Henry Hewitt, agent, or W. A. Sanford, at Potsdam, N. Y., or Hosea Willard, at Vergennes, Vt.

Rights for territory are for sale, with sample machines and patterns for castings. Address as above.

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The planets Venus, Jupiter and Saturn are all now visible in the evening, near each other, in the western sky. The lowest one is Venus, then Jupiter, and then Saturn.

the acceleration due to the gravity. The pressure of the air on the underside of the falling plane at a velocity of 30.227 feet per second, is equal to 32 ounces per square foot; making the pressure on the entire surface equal to 400 lbs. It is generally assumed that the resistance is equal to the square of the velocity, which rule corresponds pretty nearly with the results obtained from various experiments; and, by applying this rule, you can find the resistance at the end of the first second. The rule by which the above results are found can only be expressed by mathematical terms.—Eds.

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Hoosac Tunnel.—The western face of the tunnel is for the present left by the workmen, and a large force is employed on the shaft. Nearly 80 feet of the shaft has been excavated, and the rock continues to be the original mica slate of which the solid mountain is composed. The shaft, 7 by 14 feet, is to be sunk 290 feet in order to reach the line of the tunnel. The distance reached at the eastern face is over 1,600 feet horizentally, and we have been shown a specimen of the rock thrown out by a blast this week. It is soft mica slate, with slight veins of quartz.—Adams Transcrspt.